

# FLENDER COUPLINGS

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FLUDEX - thermal switching equipment

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Operating instructions 4600.2 en  
Edition 10/2017

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## FLENDER COUPLINGS

### FLUDEX - thermal switching equipment 4600.2 en

#### Operating instructions

Translation of the original operating instructions

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## Legal notes

### Warning note concept

This manual comprises notes which must be observed for your personal safety and for preventing material damage. Notes for your personal safety are marked with a warning triangle or an "Ex" symbol (when applying Directive 2014/34/EU), those only for preventing material damage with a "STOP" sign.



#### **WARNING! Imminent explosion!**

The notes indicated by this symbol are given to prevent **explosion damage**. Disregarding these notes may result in serious injury or death.



#### **WARNING! Imminent personal injury!**

The notes indicated by this symbol are given to prevent **personal injury**. Disregarding these notes may result in serious injury or death.



#### **WARNING! Imminent damage to the product!**

The notes indicated by this symbol are given to prevent **damage to the product**. Disregarding these notes may result in material damage.



#### **NOTE!**

The notes indicated by this symbol must be treated as general **operating information**. Disregarding these notes may result in undesirable results or conditions.



#### **WARNING! Hot surfaces!**

The notes indicated by this symbol are made to prevent **risk of burns due to hot surfaces** and must always be observed. Disregarding these notes may result in light or serious injury.

Where there is more than one hazard, the warning note for whichever hazard is the most serious is always used. If in a warning note a warning triangle is used to warn of possible personal injury, a warning of material damage may be added to the same warning note.

### Qualified personnel

The product/system to which this documentation relates may be handled only by **persons qualified** for the work concerned and in accordance with the documentation relating to the work concerned, particularly the safety and warning notes contained in those documents.

Qualified personnel must be specially trained and have the experience necessary to recognise risks associated with these products and to avoid possible hazards.

### Proper use of Flender products

Observe also the following:



Flender products must be used only for the applications provided for in the catalogue and the relevant technical documentation. If products and components of other makes are used, they must be recommended or approved by Flender. The faultfree, safe operation of the products calls for proper transport, proper storage, erection, assembly, installation, start-up, operation and maintenance. The permissible ambient conditions must be adhered to. Notes in the relevant documentations must be observed.

### Trade marks

All designations to which the registered industrial property mark ® is appended are registered trademarks of Flender GmbH. Other designations used in this document may be trademarks the use of which by third parties for their own purposes may infringe holders' rights.

### Exclusion of liability

We have checked the content of the document for compliance with the hard- and software described. Nevertheless, variances may occur, and so we can offer no warranty for complete agreement. The information given in this document is regularly checked, and any necessary corrections are included in subsequent editions.

### Explanation regarding Machinery Directive 2006/42/EC

The couplings described here are "components" in accordance with the Machinery Directive and do not require a declaration of incorporation.

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**Installation and start-up must be carried out by properly trained specialist personnel. Please read these operating instructions carefully before starting up. Flender accepts no liability for personal injury or damage due to incorrect handling.**

## 1. Application

Fitting thermal circuit-breaking equipment can prevent leakage and loss of hydraulic fluid as well as environmental hazards and contamination caused by an overheated coupling.

Thermal circuit-breaking equipment can be used starting from size 297 and up to a peripheral speed of 50 m/s. The maximum permissible operating speeds for the individual sizes are shown in the following table 1.

**Table 1:** Maximally permitted operating speeds

Size	297	342	370	395	425	450	490	516	565	590	655	755	887
<b>Maximally permitted speed 1/min</b>	2500	2240	2100	2000	1900	1800	1650	1600	1500	1450	1250	1100	1000

The fuse screw with a high operating temperature is left in the coupling as an emergency safety device.

Retrofitting of thermal circuit-breaking equipment with already installed FLUDEX couplings is possible without reworking. In this case the thermal circuit-breaker must be fitted to the outside diameter of the coupling in place of the screw plug. The operating temperature of the thermal circuit-breaker must be lower than that of the fuse screw.

## 2. Operation

The thermal circuit-breaking equipment consists of the thermal circuit-breaker and the switching equipment.

The thermal circuit-breaker is fitted to the outside diameter of the coupling housing in the coupling. Inside the switch is an actuating pin soldered into a fusible cartridge. If the melting temperature (110 °C or 140 °C) of the cartridge is exceeded, the actuating pin is released from the fusible cartridge, is pushed approx. 10 mm out of the carrier housing by centrifugal force and, as the coupling rotates, actuates the switching device with its now projecting end.

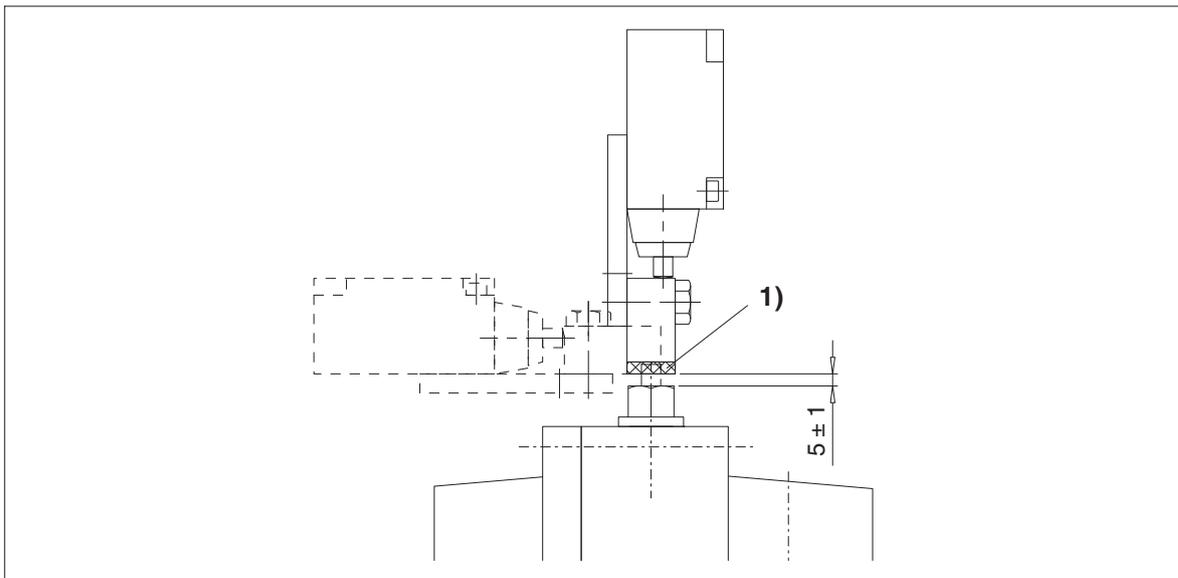


**The thermal circuit-breaking equipment does not function if the machine side is blocked and the coupling housing is connected to this side. If the coupling housing is stationary, the actuating pin cannot actuate the switching equipment.**

The switching device comprises a momentary-contact limit switch with an open and close contact and a rotatable cam. The momentary-contact limit switch and the cam are fitted on a common base plate. If the actuating pin strikes the cam and turns this through 90° the cam actuates the momentary-contact limit switch. The momentary-contact limit switches can trigger a fault signal and/or trip the drive cut-out.

If the thermal circuit-breaking equipment has operated, the operating fault must first be rectified. The thermal circuit-breaker must be replaced with a replacement circuit-breaker with a new sealing ring (tightening torque  $T_A = 60 \text{ Nm}$ ). The cam must be reset to its normal position and the gap ( $5 \pm 1 \text{ mm}$ ) between the thermal circuit-breaker and the cam checked.

### 3. Fitting



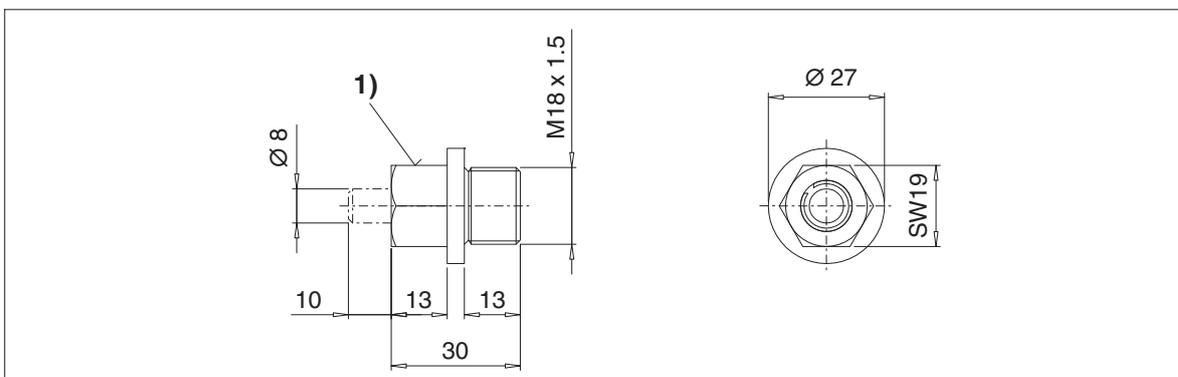
**Fig. 1:** Assembly drawing of the switching device

1) Striking surface

The switching equipment is positioned with its cam radially even with the rotating circle of the thermal circuit-breaker so that there is a gap of  $5 \pm 1$  mm between the end faces of the cam and the thermal circuit-breaker. It must be ensured that the thermal circuit-breaker pin protruding 10 mm max. strikes the striking surface of the cam. The switching equipment must be fitted vibration-free on a fixed bracket or part of the base frame.

### 4. Component description

#### 4.1 Thermal circuit-breaker



**Fig. 2:** Dimensioned drawing of the thermal switch

1) Operating temperature punched in

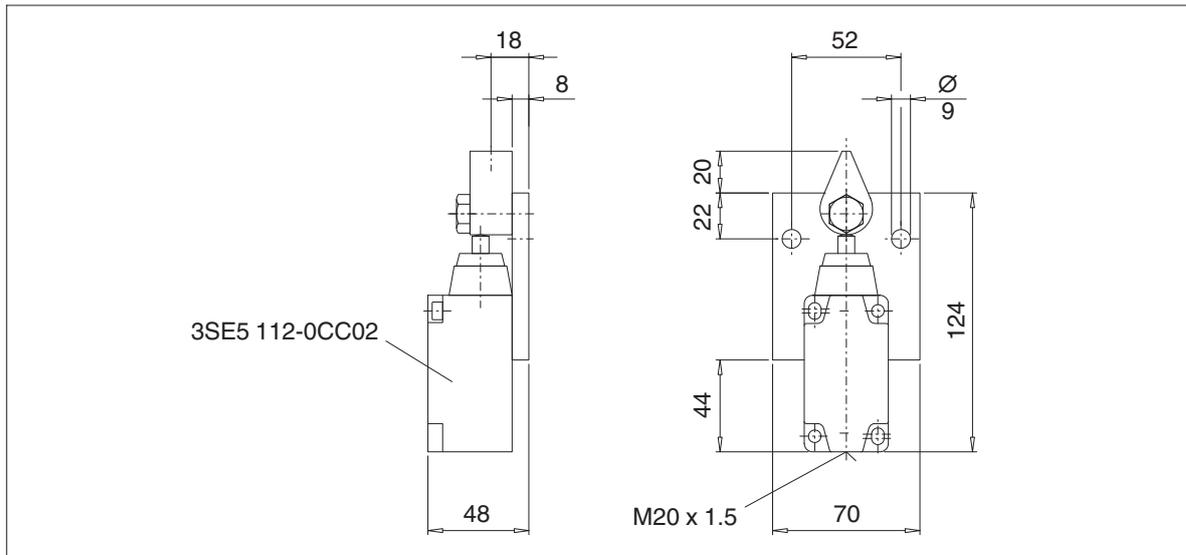
The thermal circuit-breaker consists of an aluminium housing with an M 18 x 1.5 screw-in thread, inside which an actuating pin is soldered flush with the end face. If the coupling heats up and the melting point of the solder is reached, the solder melts and the actuating pin is pushed 10 mm out of the switch housing by the centrifugal force of the rotating coupling.

There are thermal circuit-breakers with an operating temperature of 110 °C (associated fuse screw 140 °C) and with an operating temperature of 140 °C (associated fuse screw 160 °C).

The tightening torque for fitting the thermal circuit-breaker is  $T_A = 60$  Nm.

## 4.2 Switching equipment

The switching equipment is screwed to a bracket or part of the machine frame through the  $\varnothing 9$  holes in the base plate. The electrical connection is effected via the connection hole on the rear end face of the switch.



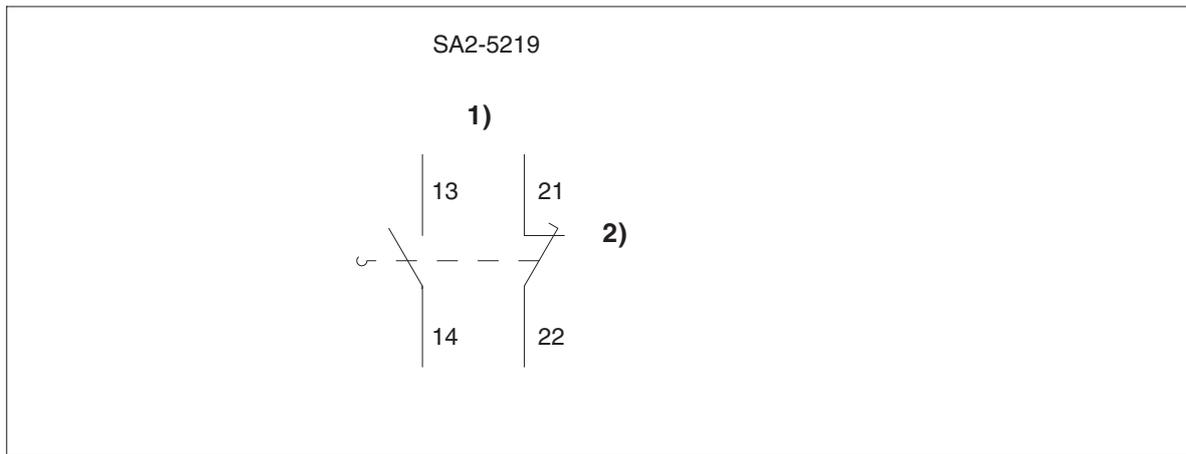
**Fig. 3:** Dimensioned drawing of the switching device

### Momentary-contact limit switch:

**3SE5 112-0CC02**

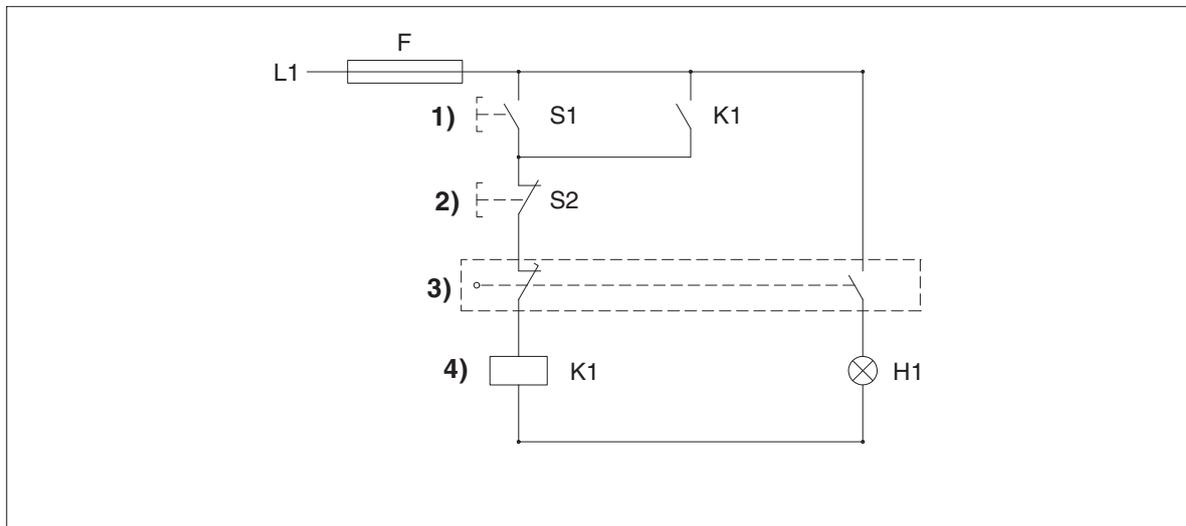
#### Technical data:

Rated isolation voltage	$U_i$	400 V
Rated operating voltage	$U_e$	400 V
Thermal rated current	$I_{th}$	6 A
Cable entry		M 20 x 1.5
Ambient temperature		- 25 °C to + 85 °C
Protection type		IP 66 or IP 67
Connection cross-section		maximally 2 x 2.5 <sup>2</sup> one-wire maximally 2 x 1.5 <sup>2</sup> fine wire with multi-core cable end
Installation position		optional



**Fig. 4:** Terminal plan of the snap-action switch

- 1) 6 mm Hub
- 2) Code number 11 according to DIN EN 50013



**Fig. 5:** Terminal plan of the wiring suggestion

- 1) ON
- 2) OFF
- 3) Limit switch
- 4) Motor protection

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