Reading the operating state of the switching unit
Instructions

en-US
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ID 443148_en.00

STÖBER

1 Overview

This document contains information about how you can read the operating state of the switching unit.

The tasks described may only be performed by specialized personnel who hold a qualification in the field of metal or electrical technology. The personnel who handle the product must carefully read, understand and observe the valid regulations, legal requirements and applicable basic rules, as well as the operating manual of the PS two-speed gearbox (ID 442639) and the safety instructions it contains.

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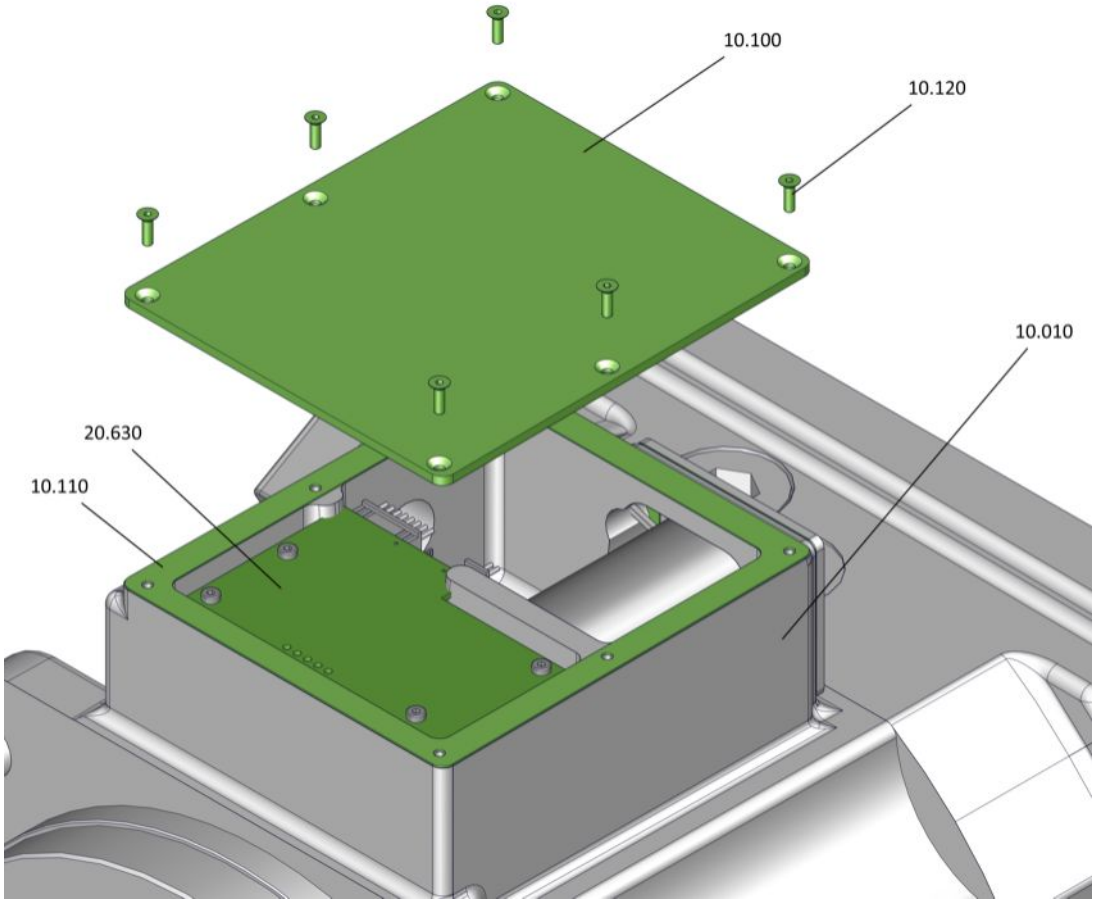
2 Removing/mounting the cover of the switching unit

In order to read the operating state of the switching unit from the LEDs on the SensorShift PCB, the cover of the switching unit must first be removed.

WARNING! Moving machine parts can cause serious injuries or even death! Make sure that no one is standing in the danger area or able to enter it unchecked.

ATTENTION! Electronic components of the SensorShift PCB can be damaged by electrostatic discharge! Do not touch the SensorShift PCB with your fingers.

ATTENTION! Metal particles or chips can impair the function of the magnetic sensor of the switching unit! Make sure that no metal particles or chips get into the switching unit.



10.010	Gear unit housing	10.100	Cover of the switching unit
10.110	Flat seal	10.120	Countersunk-head screws
20.630	SensorShift PCB		

Remove the cover of the switching unit as follows:

1. Stop all of the machine drives and secure them from being turned on again.
2. Remove all six 10.120 countersunk-head screws using a corresponding hex wrench.
3. Remove the 10.110 cover from the gear unit housing.

To finish diagnostics, mount the cover of the switching unit as described above, but in reverse order. Ensure the correct position of the 10.110 sealing.

3 Reading the operating state

There are 5 LEDs on the SensorShift PCB that indicate the operating state of the switching unit. The **OK** and **Error** LEDs indicate the current active operating state; the **1:1**, **Neutral** and **1:n** LEDs indicate additional information for the active operating state.

The gear shift is controlled by the machine control. You will find information about the programming in the operating manual of the two-speed gearbox (ID 442639).

After switching on the power supply, an LED test is carried out in which all LEDs light up simultaneously for approx. 200 ms.

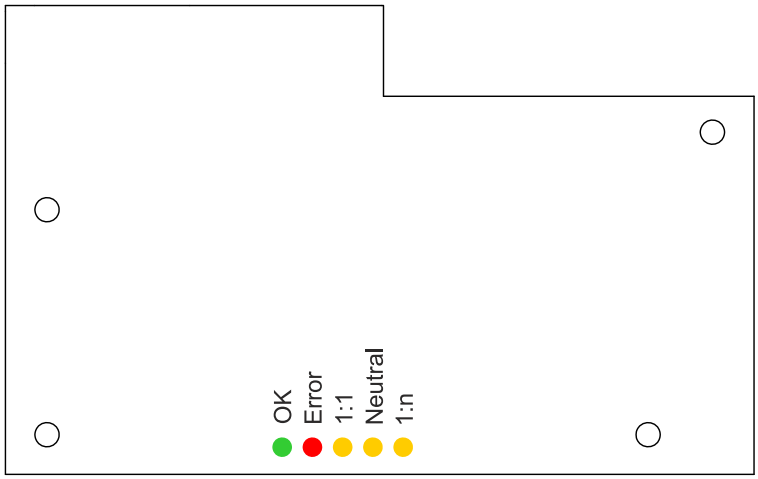


Fig. 1: LEDs on the SensorShift PCB

LED lights up	LED flashes	LED flickers	LED switched off
●	◐	◍	○

Tab. 1: Meaning of the LED symbols (using the green LED as an example)

OK LED	**Error** LED	Meaning
○	○	Power supply switched off
●	○	Normal operation (see table 3)
◍	○	Gear shift in progress (see table 4)
○	◐	Fault (see table 5)
◐	○	Calibration necessary/calibration in progress (table 6)
◐	◐	Calibration ended (see table 6)

Tab. 2: Meaning of the **OK** and **Error** LEDs

1:1 LED	**Neutral** LED	**1:n** LED	Meaning
●	○	○	Direct gear (1:1) active
○	●	○	Neutral gear active
○	○	●	Transmitted gear (1:n) active

Tab. 3: Meaning of the **1:1**, **Neutral** and **1:n** LEDs in normal operation

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1:1 LED	**Neutral** LED	**1:n** LED	Meaning
◍	◍	○	Position of the actuator during the change-over between direct gear (1:1) and neutral gear
○	◍	◍	Position of the actuator during the change-over between neutral gear and transmitted gear (1:n)

Tab. 4: Meaning of the **1:1**, **Neutral** and **1:n** LEDs in normal operation during a gear shift

No.	**1:1** LED	**Neutral** LED	**1:n** LED	Possible cause	Measure
1	○	○	○	Insufficient power supply	Check the power supply of the switching unit
2	○	○	◐	Defective SensorShift PCB	Contact STOBER Service
3	○	◐	○	Error on the position sensor	Contact STOBER Service
4	○	◐	◐	Error on the switching unit motor	Contact STOBER Service
5	◐	○	○	Error on the mechanical drive of the switching unit	Contact STOBER Service
6	◐	○	◐	Switching process not completed after 10 sec.	Contact STOBER Service
7	◐	◐	○	Maximum permitted temperature of the two-speed gearbox exceeded	Allow the two-speed gearbox to cool
8	◐	◐	◐	Power supply was switched off during a change-over	Start the switching process again

Tab. 5: Meaning of the **1:1**, **Neutral** and **1:n** LEDs in case of a fault

No. 1, 2, 3, 7, 8 faults are no longer signaled once the fault is remedied. For no. 4, 5, 6 faults, confirmation is necessary after remedying them.

During a gear shift, confirmation takes place by switching the power supply off and on due to polarity of the power supply.

During a gear shift, confirmation takes place over the binary inputs by applying the signal combination 00 at binary inputs E1/E2.

After confirmation, a gear shift in the opposite direction must take place.

1:1 LED	**Neutral** LED	**1:n** LED	Meaning
○	○	◐	Distance from the PCB to the actuator shaft too large
○	◐	○	Distance from the PCB to the actuator shaft OK
◐	○	○	Distance from the PCB to the actuator shaft too small

Tab. 6: Meaning of the **1:1**, **Neutral** and **1:n** LEDs during calibration

Calibration is necessary when the SensorShift PCB is replaced by STOBER Service.

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