



FIFE SE-44R / SE-44 Ultrasonic Sensor Operating Instructions



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1 INTRODUCTION

About these operating instructions

These Operating Instructions describe the installation, operation and maintenance of the SE-44 sensor and provide important instructions for proper use.

These Operating Instructions are directed to both the system construction master as well as the operator who uses the SE-44 sensor in production. The Operating Instructions must be read and used by all persons who have the responsibility of installing, operating and maintaining the SE-44 sensor.

The Operating Instructions must be carefully kept and must always be available throughout the service life of the SE-44 sensor.



Note:

This operating manual also applies to sensor SE-44R.

Translation of the original Operating Instructions:

These Operating Instructions are a translation. The original Operating Instructions were composed in German.

Proper usage

The SE-44 sensor is used for no-contact measurements of the lateral offset of the material web that is being controlled.

The SE-44 is suitable for:

- Web edge guiding and
- Web center guiding for dual application.

The SE-44 sensor can be used to control both opaque and transparent materials. A web guide controller must be used with acoustically transparent materials to calibrate the sensor to the material. For more information, see the web guide controller operating instructions.

The SE-44 sensor must only be used in accordance with its intended purpose and in a technically flawless conditions.

The SE-44 sensor must not be changed or opened

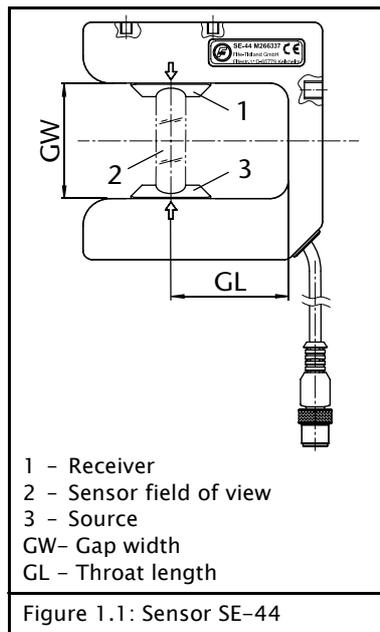
The housing of the SE-44 sensor is made of coated synthetic material (see page 6-7). Please note the chemical resistance of the synthetic material in use.

Improper usage

- Operation outside of the technical specifications is not permitted.
- Operation in areas where there is a danger of explosions is prohibited.
- Any use other than the designated use is not permitted.
- The SE-44 sensor may not be used as a support, handle or step.

Operating principle

The SE-44 sensor works ultrasonically. This ensures the sensor is ideally suited for optically transparent material webs. The SE-44 is totally insensitive to ambient light.



The gap width GW and throat length GL are the characteristic dimensions of the sensor.

The transmitter generates an ultrasonic field. Depending on how far away the material web is in the ultrasonic field, a portion of these ultrasonic waves strikes the receiver. Based on this, the receiver generates the output signal from which the precise position of the web edge is determined.

2 SAFETY INSTRUCTIONS

Important information

To ensure safe and problem-free operation of the SE-44 sensor it must be

- properly shipped and stored,
- properly mounted and placed in operation,
- properly used and carefully maintained.

Proper operation and careful maintenance will ensure a long service life for the sensor.

Only persons who are acquainted with the installation, commissioning, operation and maintenance of the sensor and who possess the necessary qualifications for their activities may work on the SE-44 sensor.



Please note the following:

- The content of these operating instructions
- The safety instructions printed on the unit
- The requirements of the machine manufacturer
- National, state and local requirements for accident prevention and environmental protection

Information about safety instructions

The safety instructions and symbols described in this section are used in these Operating instructions. They are used to avoid possible dangers for users and to prevent material damage.



SIGNAL WORD

Source of danger and its results.

⇒ Avoiding dangers

The signal word **WARNING** refers to the danger of moderate to severe bodily injuries.

The signal word **CAUTION** refers to the danger of slight to moderate bodily injuries or material damage.

Symbols



Warning/caution – dangerous area

Reference to general hazards that may result in bodily injuries or damage to the device



Warning/caution – danger due to crushing

Refers to danger of injury caused by crushing



Warning/caution – danger due to cutting

Refers to danger of injury caused by cutting

Additional symbols

- This endash is followed by an enumeration.
- This dot is followed by a prompt to do something.



Note:

Reference to important information.

Preventing hazards

- The SE-44 sensor may not be used as a support, handle or step. There is a danger that the sensor will become damaged (breaking off/snapping), resulting in personal injury.

Mounting and commissioning

- A damaged sensor must not be installed or placed in operation.
- Assembly work must be performed while the machine is stopped and protected against being turned on again.
- All assembly tasks must only be performed when there is no electrical power in the system.
- The sensor must not be placed in operation unless it has been securely mounted.
- Electrical connections should always be made or disconnected on the sensor while there is no electrical power in the system. Failure to observe these instruction may result in damage to the sensor.

- The parameters specified in Section *Technical data* must be observed.
- Only accessory and replacement parts that have been approved by Fife-Tidland GmbH may be used.
- No changes must be made to the sensor.
- Electrical lines must not be subjected to any mechanical loads.

Operation



- Danger of injury by crushing
⇒ Do not place your hands on or near moving parts (rollers, material web, etc.) during operation.



- Danger of injury due to cutting on the edge of the material web
⇒ Do not place your hands on the edge of the (moving) material web during operation.

Maintenance



- Danger of injury by crushing
⇒ Maintenance work must only be performed on the sensor when the power is turned off and the machine is stopped and protected against being turned on again.

3 INSTALLATION

Transport and storage

- The sensor and/or the unit on which the sensor is mounted must be secured against slipping during transport.
- The sensor must be stored in a cool, dry place.
- The sensor must not be stored in the vicinity of powerful magnetic fields. The electronic components of the sensor may be damaged.

Mounting



WARNING

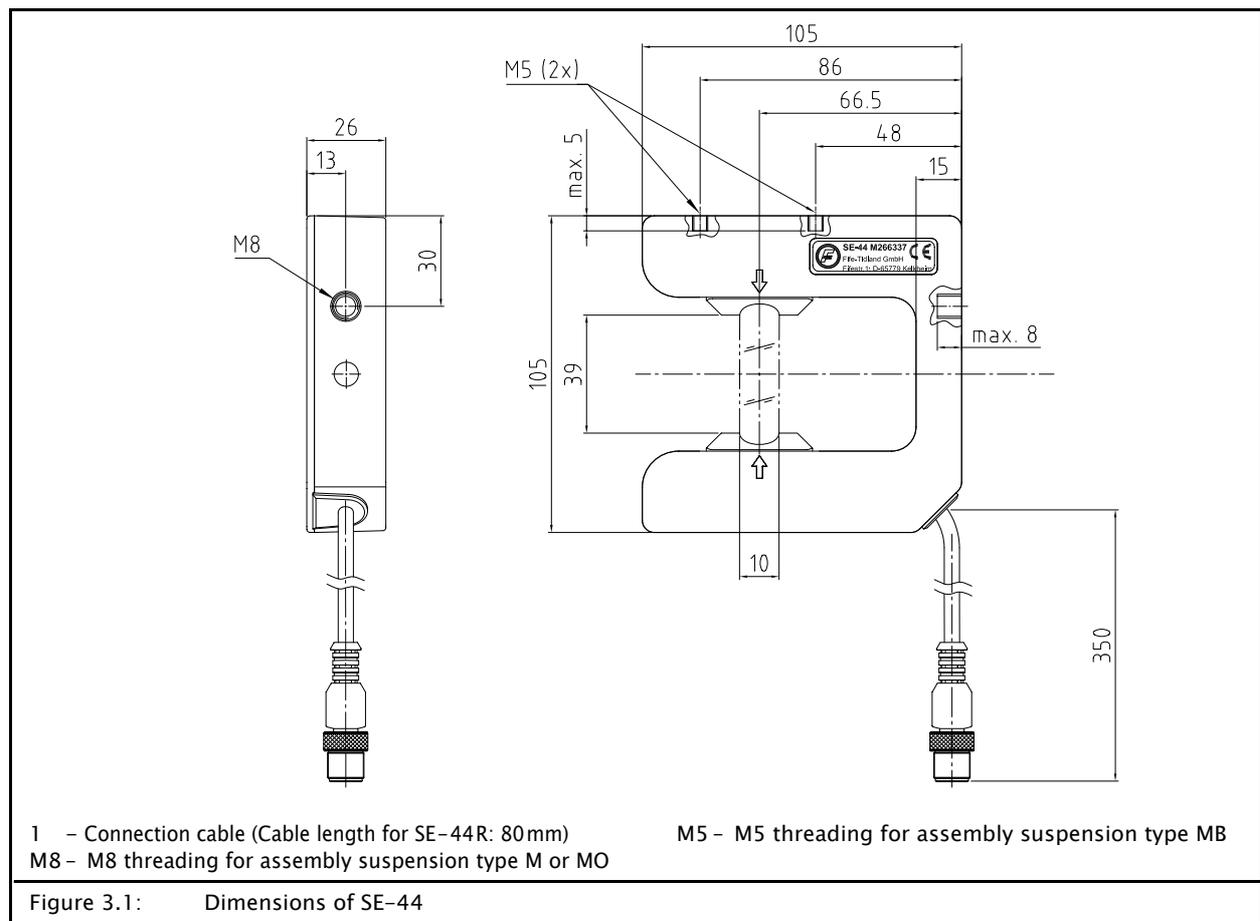
- ⇒ All assembly tasks on the sensor must be performed when there is no electrical power in the system.
 - ⇒ Assembly tasks and mechanical settings must only be performed when the machine has been stopped and has been secured from being turned on again.
-

Mounting location

- Protection Class: IP40
- Operating temperature: 0°C ... 60°C
- Relative humidity: up to 85% non-condensing
- Operating altitude: max. 5000m
- Not in places where there is a risk of explosions.

Dimensions

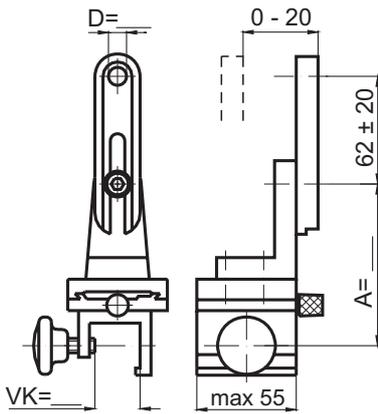
The *figure 3.1* shows the dimensions of the SE-44 sensor.



Mechanical fastening

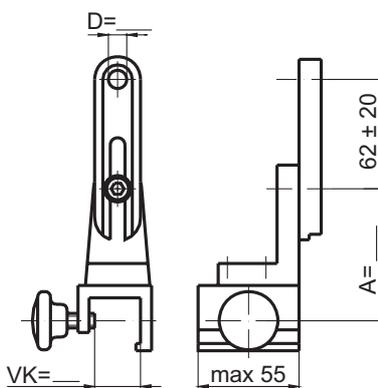
Drill holes are available on the housing for fastening the SE-44 sensor in place (*figure 3.1*). A large variety of assembly options are possible in connection with the various sensor mountings.

Sensor mounts of types M and MO are available for various square bars for assembling the SE-44 sensor with M8 or 7/16 drill holes



Sensor with assembly suspension type M

| Type | A | VK | D |
|-----------|----|----|----|
| M-20/8 | 86 | 20 | 8 |
| M-20/7/16 | 86 | 20 | 12 |
| M-25/8 | 88 | 25 | 8 |
| M-25/7/16 | 88 | 25 | 12 |
| M-32/8 | 94 | 32 | 8 |
| M-32/7/16 | 94 | 32 | 12 |



Sensor with assembly suspension type MO

| Type | A | VK | D |
|------------|----|----|----|
| MO-20/8 | 69 | 20 | 8 |
| MO-20/7/16 | 69 | 20 | 12 |
| MO-25/8 | 71 | 25 | 8 |
| MO-25/7/16 | 71 | 25 | 12 |
| MO-32/8 | 77 | 32 | 8 |
| MO-32/7/16 | 77 | 32 | 12 |

Sensor with assembly suspension type MB

Sensor mounts of type MB are available for assembling the SE-44 sensor on the M5 drill holes.



CAUTION:

Using long bolts introduces the risk of a short-circuit and destroying the electronics that are located inside the housing.

⇒ Please note when assembling sensor SE-44 that only the original M5*8 bolts or similar ones should be used.

Electrical connection



CAUTION:

The sensor could be damaged.

⇒ Electrical connections should always be made or disconnected on the sensor while there is no electrical power in the system

⇒ When attaching the connector with the jack on the sensor, pay close attention to the guide and groove! The connector and jack must not be connected with incorrect orientation or by force, as this will destroy the sensor.

The sensor must be connected to the web guide controller according to the system diagram in the system documentation.

4 OPERATION



WARNING:

Danger of injury by crushing

⇒ Do not place your hands on or near moving parts (rollers, material web, etc.) during operation.



WARNING:

Danger of injury due to cutting on the edge of the material web

⇒ Do not place your hands on the edge of the (moving) material web during operation.



CAUTION:

Depending on the material of the web that is being guided, it is possible that the web edge could grind against the inside of the sensor fork, resulting in notches and incisions on the sensor. The sensor could become unusable.

Settings

All settings required for operating the SE-44 sensor are performed with the web guide controller. Information on this topic is available in the Operating Instructions for the web guide controller.

Before the SE-44 is used for working with acoustically transparent material, the sensor must always be calibrated to the contrast with the web guide controller.

5 MAINTENANCE



WARNING:

Danger of injury by crushing.

⇒ Maintenance work must only be performed on the sensor when the power is turned off and the machine is stopped and protected against being turned on again.

Maintenance

The foam coverings of the ultrasonic converters must be cleaned regularly, depending on how dirty the environment is, of dust and other impurities. To do this, carefully brush off the foam coverings or blow them off with compressed air. Make certain when you do this that no particles get into the inside of the housing.

No additional maintenance tasks are required for the SE-44 sensor.

Decommissioning

- Turn off the electrical power to the system.
- Disconnect the signal cable from the sensor.
- Unscrew the sensor from its bracket.
- Store the sensor in a cool, clean and dry place.

OR

Dispose of the sensor according to your national requirements.

6 TECHNICAL DATA

General information

Dimensions

Gap widths: 51 mm
effective gap width at 45° mounting: 19 mm
effective gap width at 55° mounting: 28 mm

Throat length: 51 mm

Weight: 130 g

Protection class

IP40

Ambient conditions

Ambient temperature: 0°C – 60°C

Relative humidity: up to 85% non-condensing

Operating altitude max. 5000 m above sea level

Materials used

Housing: ABS (acrylonitrile / butadiene / styrene), nickel-plated.

Data sheet can be requested on these material (ABS: EK0143).

Properties

Source

Ultrasonic

Frequency

ca. 40 kHz

Proportional band

10 mm (Sensor field of view)

Linearity

10% max. error (10% .. 90%)

Web plane change

5% max. error (at 45° angle between web and sensor)

Temperature error

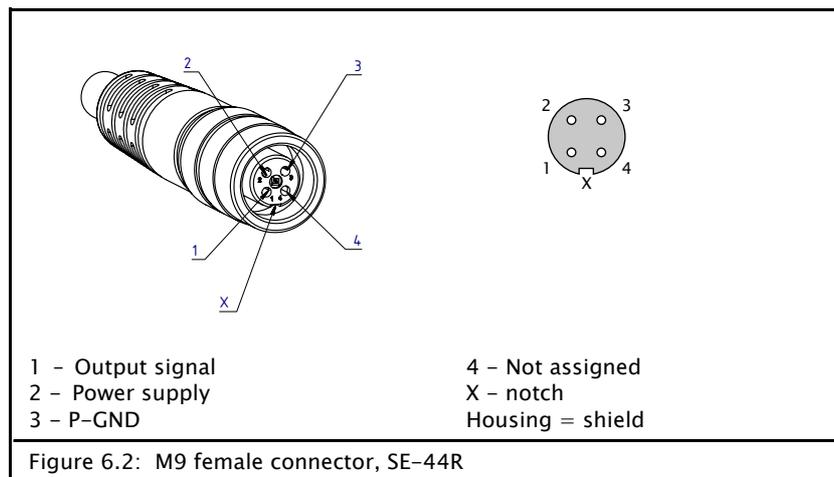
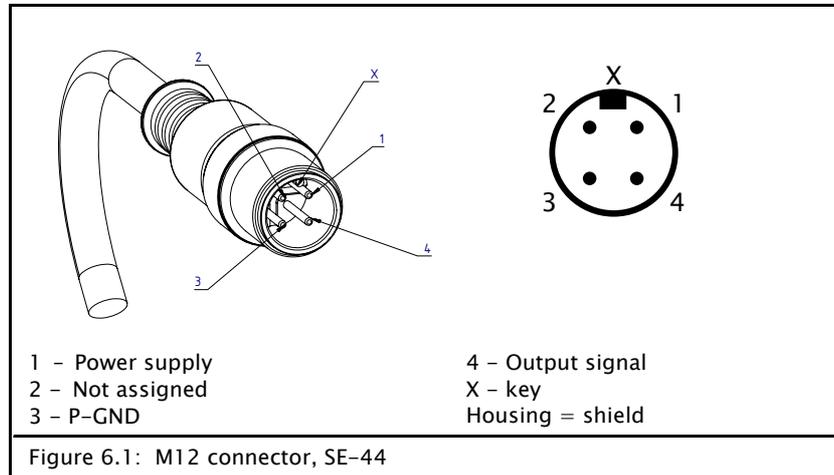
7% (at 10°C .. 50°C)

Electrical connection**Power supply**

10V ... 15V at 40mA

Output signal

0 - 10mA

Pin assignment**Standards**

The SE-44 sensor was constructed in accordance with the standards and regulations of the European Union. A Declaration of Conformity is available.

7 SERVICE

Requests for Service

When requesting service, please have a copy of the order confirmation ready with the order number.

When ordering replacement parts, please indicate, (where possible) Part Number, Drawing Number and Model description.

Please be careful to keep all documents accompanying the product in a safe place. This will allow us to help you more quickly in the event that service is required.

Addresses

To request service, or if you need replacement parts, please contact one of the following addresses.

Fife-Tidland GmbH

| | |
|--|---------------------|
| Max-Planck-Straße 8 | Siemensstraße 13-15 |
| 65779 Kelkheim | 48683 Ahaus |
| Germany | Germany |
| Phone: +49 - 6195 - 7002 - 0 | |
| Fax: +49 - 6195 - 3018 | |
| E-Mail: service@maxcess.eu | |
| Web: www.maxcess.eu | |

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