

Fife SE-20 Reflex Light Sensor

SE-20 GENERAL INFORMATION

The SE-20 Reflex Light Sensor is another Fife advancement in sensor technology that provides superior sensor performance in a small package and under the most stringent requirements.

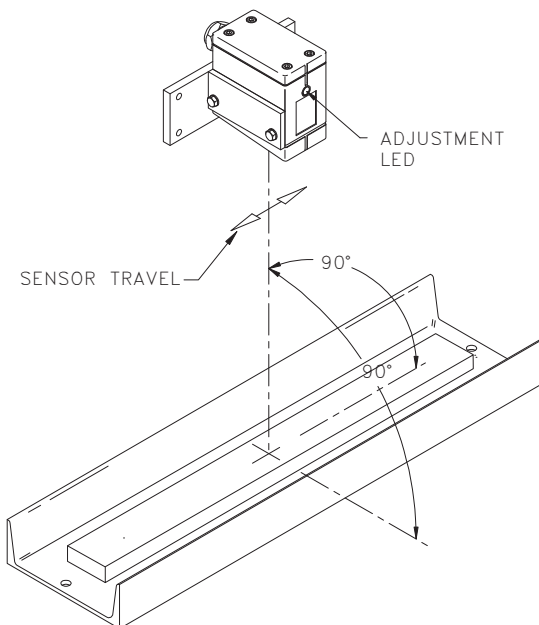
Mounted behind a lens system is a red LED light source. The light is pulsed to enable the sensor to discriminate against ambient light. It is also polarized to enable the sensor to discriminate between light reflected back from the strip and light reflected back from the reflector. This light leaves the sensor as the detecting beam. At the strip, part of the light beam is interrupted by the strip and part of the light beam continues on to the reflex reflector. Light reflected back to the sensor from the reflector passes freely through the receiver optics and onto a photo-transistor. The phototransistor converts this light into the output signal.

SENSOR INSTALLATION AND ALIGNMENT

It is very important to install the sensor so the light beam is truly vertical; otherwise, the point to which the strip is guided will shift sideways as the strip moves down in the sensor gap (see Figure A on page 4). Using a carpenter's level, install the sensor on its mounting bracket or positioning mechanism. Install the sensor cable between the controller and the SE-20 Sensor. See interconnection diagram for proper wiring.

REFLECTOR ALIGNMENT

If a positioning mechanism is used to move the sensor, care should be taken to align the reflector so that the light beam is centered above it, across the full range of sensor movement.



The nature of the reflex reflector is such that it does not require precision leveling to make it perpendicular to the sensor light beam. It will function properly if it is within $\pm 10^\circ$ of perpendicular. Leveling with a carpenter's level laid on the plastic cover will be adequate. Leveling should be done along both the length and width of the reflector.

SENSOR CALIBRATION AND ADJUSTMENTS

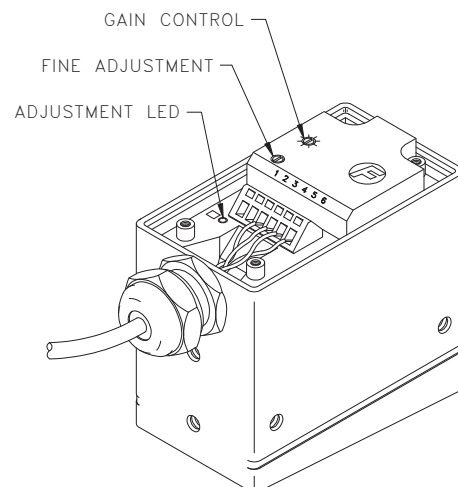
Apply power to the controller. Place a piece of white paper two feet away from the SE-20 Sensor in the light beam. Observe a faint red coloration where the red LED strikes the paper. This verifies that the sensor is active.

Remove the top cover of the SE-20 Sensor. Three ADJUSTMENT LEDs are provided to aid in the calibration of the sensor. One is visible on the front of the sensor, one is visible on the bottom of the sensor, and one is visible inside on top of the sensor. The three ADJUSTMENT LEDs are connected in parallel and work together. There should be no obstruction between the sensor and the reflector.

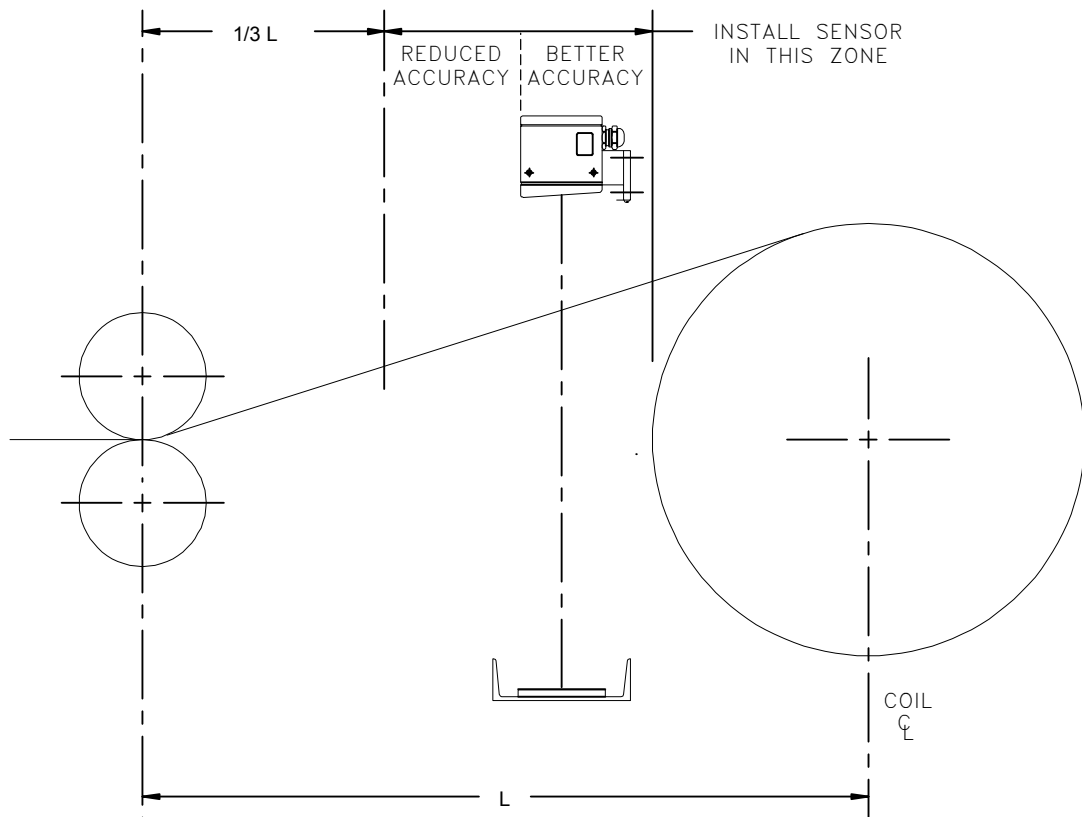
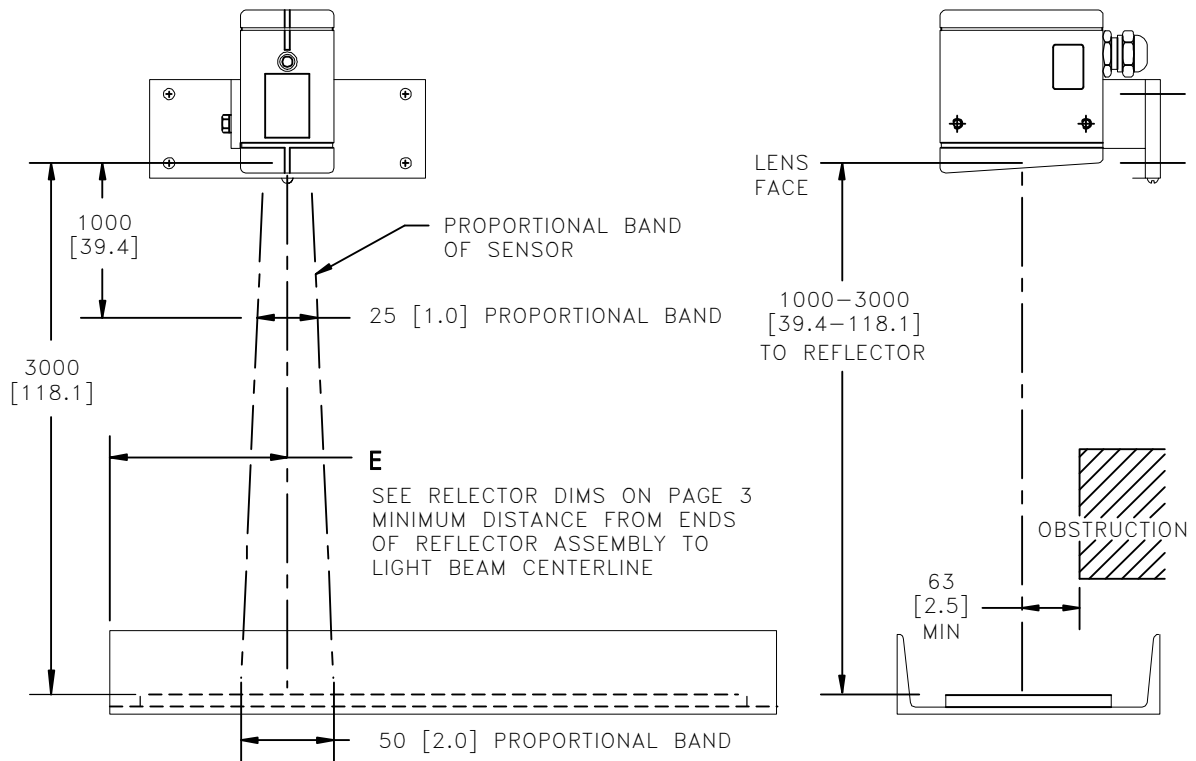
Located on the inside top of the sensor are the GAIN CONTROL switch and the FINE ADJUSTMENT pot. Set the GAIN CONTROL switch to the 10 (ten) position and turn the FINE ADJUSTMENT pot fully counterclockwise to the stop.

Loosen the mounting screws on the side of the sensor. Slowly adjust the angle of the sensor until the ADJUSTMENT LEDs go out. Retighten the mounting screws.

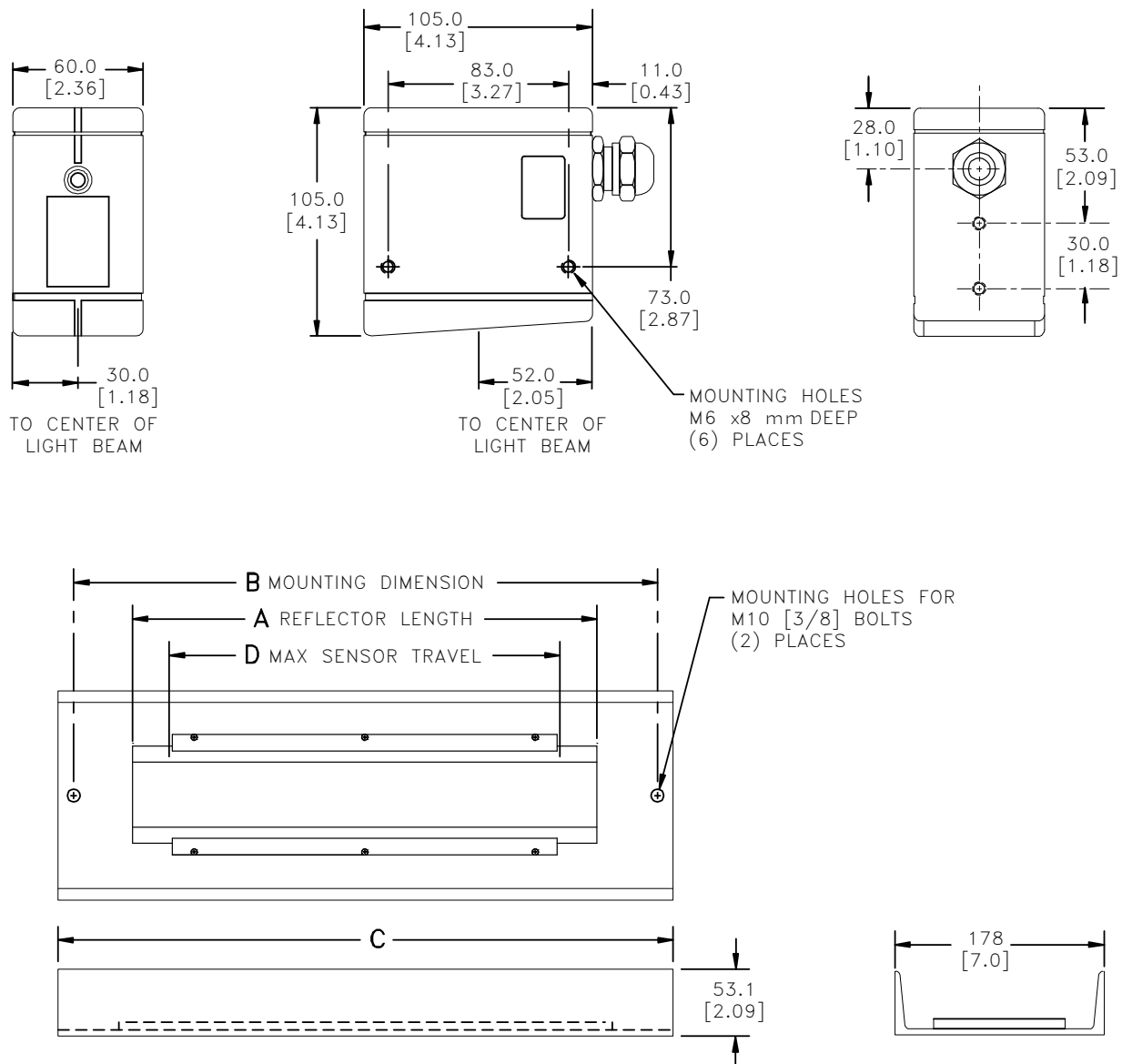
Now, turn the GAIN CONTROL switch counterclockwise step by step until the ADJUSTMENT LEDs come on, then turn it 1 (one) step clockwise so that the ADJUSTMENT LEDs go out again. Next, slowly turn the FINE ADJUSTMENT pot clockwise until the ADJUSTMENT LEDs come on, then turn it counterclockwise until the ADJUSTMENT LEDs go off again. The sensor is now calibrated. Replace the cover.



NOTE: DIMENSIONS ARE GIVEN IN MILLIMETERS [INCHES]



TYPICAL UNCOILER

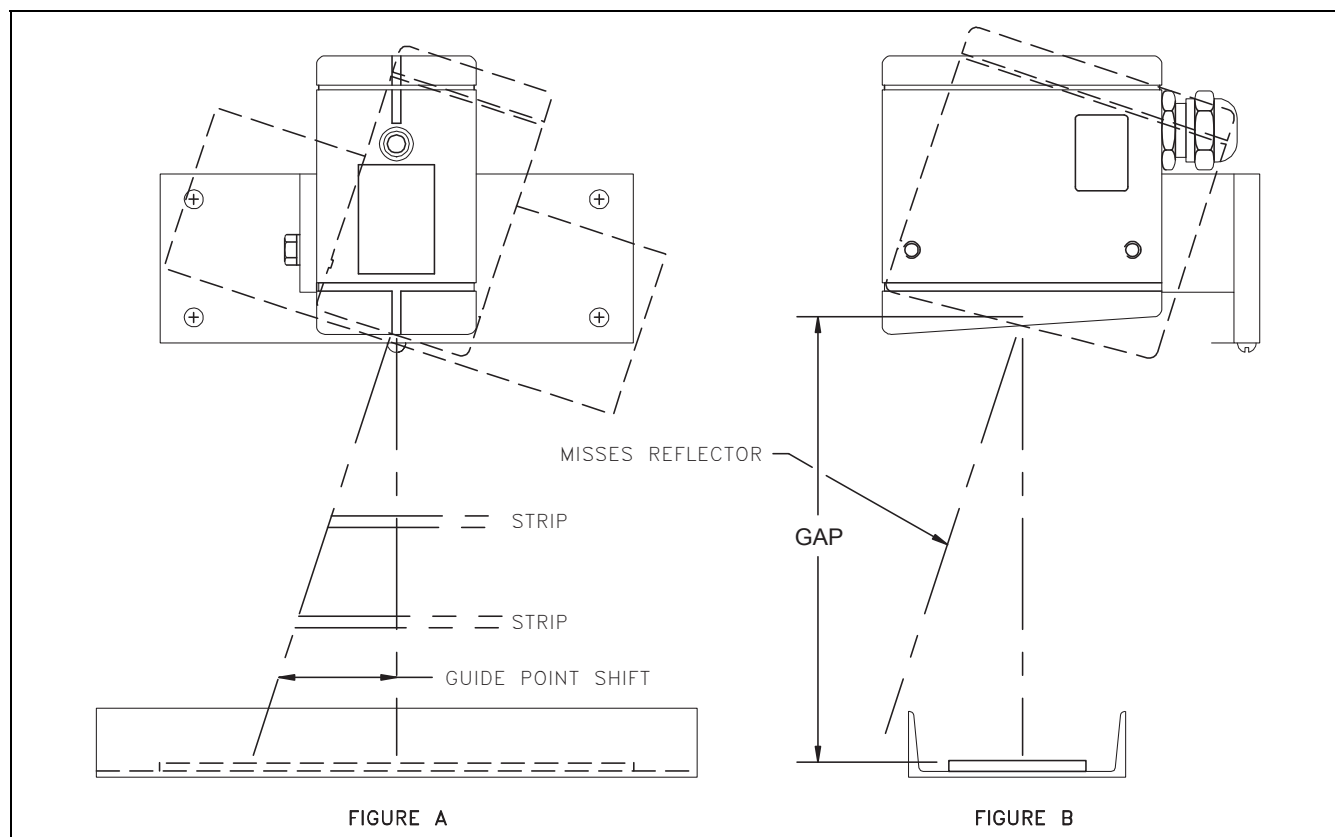


- NOTES:
1. MOUNTING BRACKETS ARE PROVIDED WITH THE SENSOR POSITIONER ASSEMBLY.
 2. DIMENSIONS ARE GIVEN IN MILLIMETERS [INCHES].

SPECIFICATIONS

Power input	+12-18 VDC
Current	45 mA
Signal	0-10 mA
Max temp.	60 C [140 F]
Weight	0.73 Kg [1.6 lbs]

Part No. 78436	A Reflector	B Mounting	C Length	D Travel	E (Page 2)
-002	945.0 [37.20]	987.6 [38.88]	1013.0 [39.88]	845.0 [33.27]	84.0 [3.31]
-003	1355.0 [53.35]	1397.0 [55.00]	1422.4 [56.00]	1255.0 [49.41]	83.7 [3.30]
-004	536.0 [21.10]	578.1 [22.76]	603.5 [23.76]	436.0 [17.17]	83.8 [3.30]
-005	1662.0 [65.43]	1704.1 [67.09]	1729.5 [68.09]	1562.0 [61.50]	83.8 [3.30]



INSTALLATION PROBLEMS

In most applications, the sensor must be mounted on a leadscrew mechanism so that it can be moved to accommodate different strip widths. Customers providing their own mechanism should take considerable care to assure that the sensor cannot tilt as it moves. This is a natural consequence of the sensor application in situations requiring wide gap. Tilting the sensor only 1° will cause a lateral movement of 2.04 inches at a distance of 3000 mm [118.1 inches] from the sensor. As illustrated in Figure B, this could cause the light beam to completely miss the reflex reflector or, as in Figure A, cause the web guiding point to shift that much.

A good rule to follow is to hold rocking motion of the positioner carriage to less than 0.1°. A good way of achieving this is through the use of ball bushings on precision-ground bars. Even the ball bushings will not be adequate unless two are mounted in tandem on at least one bar. If the sensor gap is less than 3000 [118.1], the angular alignment requirements can be reduced in direct proportion to the ratio of 3000 [118.1] to the gap under consideration.

For example: If the gap is 2000 mm [78.7 inches], the angular alignment can be

$$\frac{3000 \text{ mm}}{2000 \text{ mm}} \times 0.1^\circ = 0.15^\circ \quad \left| \quad \frac{118.1 \text{ in.}}{78.7 \text{ in.}} \times 0.1^\circ = 0.15^\circ \right.$$



**NORTH, CENTRAL
AND SOUTH AMERICA**
Tel +1.405.755.1600
Fax +1.405.755.8425
sales@maxcessintl.com
www.maxcessintl.com

INDIA

Tel +91.22.27602633
Fax +91.22.27602634
india@maxcessintl.com
www.maxcess.in

**EUROPE, MIDDLE EAST
AND AFRICA**
Tel +49.6195.7002.0
Fax +49.6195.7002.933
sales@maxcess.eu
www.maxcess.eu

JAPAN

Tel +81.43.421.1622
Fax +81.43.421.2895
japan@maxcessintl.com
www.maxcess.jp

CHINA

Tel +86.756.881.9398
Fax +86.756.881.9393
info@maxcessintl.com.cn
www.maxcessintl.com.cn

KOREA, TAIWAN, AND SE ASIA

Tel +65.9620.3883
Fax +65.6235.4818
asia@maxcessintl.com