Features

1 mm (0.04 in) diameter bifurcated fiber with side-view probe sensing end



- 25 mm bend radius
- Smooth ferrule
- Plastic individual fibers ideal for use in small, confined areas

Overview

Model PBPS46U is a bifurcated plastic fiber optic assembly with a 51 mm (2 in) long non-bendable side-view probe-type sensing end. It is ideal for right-angle sensing in tight areas.

The PBPS46U operates in the diffuse sensing mode. Sensing light is transmitted and received through an opening located in the side of the sensing probe near the tip. Objects are detected by the light they reflect back through the opening. Fiber core diameter is 1 mm (0.04 in).

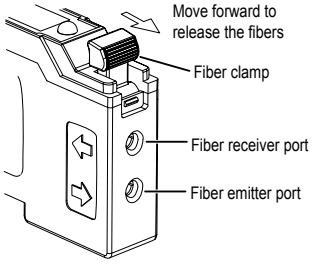
NOTE: The probe tip is non-bendable.

The PBPS46U may be used with plastic fiber optic sensors from the following Banner sensor families: D12, OMNI-BEAM, MAXI-BEAM, VALU-BEAM, Q45, PC44, MINI-BEAM, ECONO-BEAM. See "Install the Plastic Fibers" on page 1.

Install the Plastic Fibers

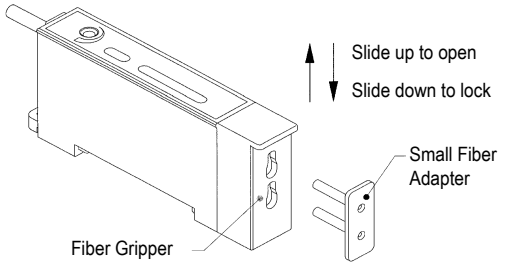
DF-G sensors for use with plastic fibers and glass fibers terminated for plastic amplifiers.

1. Open the dust cover.
2. Move the fiber clamp forward to unlock it.
3. Insert the fiber(s) into the fiber port(s) until they stop.
4. Move the fiber clamp backward to lock the fiber(s).
5. Close the dust cover.



D10 and **D12** series sensors for use with plastic fiber optic assemblies include sensors with the letters **FP** in their model number suffix.

1. Prepare the sensor ends of the fibers (see "Cut the Plastic Fiber" on page 2).
2. Slide the fiber gripper up (open).
3. Gently insert the prepared plastic fiber sensor ends into the ports as far as they will go.
4. Slide the fiber gripper down to lock.



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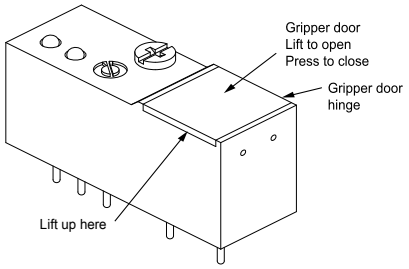
Continued from page 1

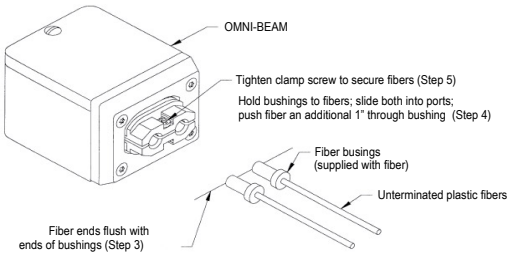
PC44 Series sensors for use with plastic fiber optic assemblies include sensors with the letters **FP** in their model number suffix.

1. Prepare the sensor ends of the fibers (see "Cut the Plastic Fiber" on page 2).
2. Raise (lift up) the fiber gripper door.
3. Gently insert the prepared plastic fiber sensor ends into the ports as far as they will go.
4. Lower the fiber gripper to lock.



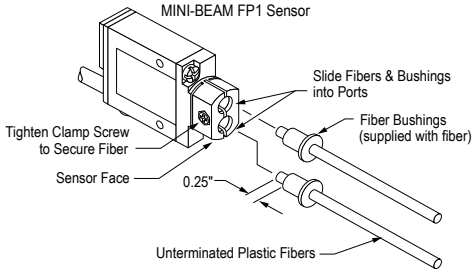
MAXI-BEAM, **VALU-BEAM**, and **Q45** Series sensors for use with plastic fiber optic assemblies include sensors with the letters **FP** in their model number suffix.

1. Prepare the sensor ends of the fibers (see "Cut the Plastic Fiber" on page 2).
2. Loosen the clamp screw on the sensor face.
3. Align the fiber ends flush with the ends of the bushings as shown.
4. Hold the bushings to the fibers and slide both into the sensor ports. Push the fiber an additional 1 inch through the bushing.
5. Tighten the clamp screw to secure the fibers.



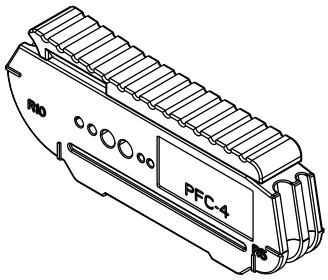
MINI-BEAM and **ECONO-BEAM** sensors for use with plastic fiber optic assemblies include sensors with the letters **FP** in their model number

1. Prepare the sensor ends of the fibers (see "Cut the Plastic Fiber" on page 2).
2. Loosen the clamp screw on the sensor face.
3. Align the fiber ends flush with the ends of the bushings as shown.
4. Hold the bushings to the fibers and slide both into the sensor ports. Push the fiber an additional 1 inch through the bushing.
5. Tighten the clamp screw to secure the fibers.



Cut the Plastic Fiber

An unterminated plastic fiber is designed to be cut by the customer to the length required for the application. To facilitate cutting, a Banner model PFC-4 cutting device is supplied with this fiber.



1. Locate the non-terminated end, and determine the length of fiber required for the application.
2. Lift the top of the cutter to open the cutting ports.
3. Insert the non-terminated end through one of the four large cutting ports on the PFC-4 cutter so that the excess fiber protrudes from the back of the cutter.
4. Double-check the fiber length, and close the cutter until the fiber is cut.
5. Gently wipe the cut ends of the fiber with a clean, dry cloth to remove any contamination.

> **NOTE:** Do not use solvents or abrasives on any exposed optical fiber. Do not use a cutting port more than once. The blade may tend to dull after one cut.

Specifications

Sensing Range

A function of the sensor. Refer to the specific fiber optic/ sensor combination.

Temperature Extremes

Temperatures below –30 °C (-22 °F) will cause embrittlement of the plastic materials but will not cause transmission loss. Temperatures above +70 °C (+158 °F) will cause both transmission loss and fiber shrinkage.

Repeat Bending/Flexing

Life expectancy of plastic fiber optic cable is in excess of one million cycles at bend radii of no less than the minimum and a bend of 90° or less. Avoid stress at the point where the cable enters the sensor (control end) and at the sensing end tip. Coiled plastic fiber optic assemblies are recommended for any application requiring reciprocating fiber motion.

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Operating Temperature

–30 °C to +70 °C (–22 °F to +158 °F)

Chemical Resistance

The acrylic core of the monofilament optical fiber will be damaged by contact with acids, strong bases (alkalis) and solvents. The polyethylene jacket will protect the fiber from most chemical environments. However, materials may migrate through the jacket with long term exposure. Samples of fiber optic material are available from Banner for testing and evaluation.

Minimum Bend Radius of Plastic Fiber

25 mm (1 in)

Construction

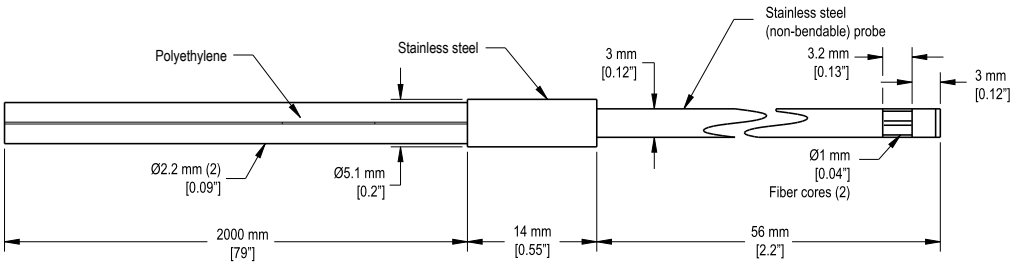
Optical Fiber: Acrylic (PMMA) monofilament

Protective Jacket: Black polyethylene

Probe End Tip: Hardened (non-bendable) T304 stainless steel

Dimensions

All measurements are listed with inches on the top and millimeters on the bottom.



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