



Fiberoptic Light Guides

Fiberoptic Light Guides

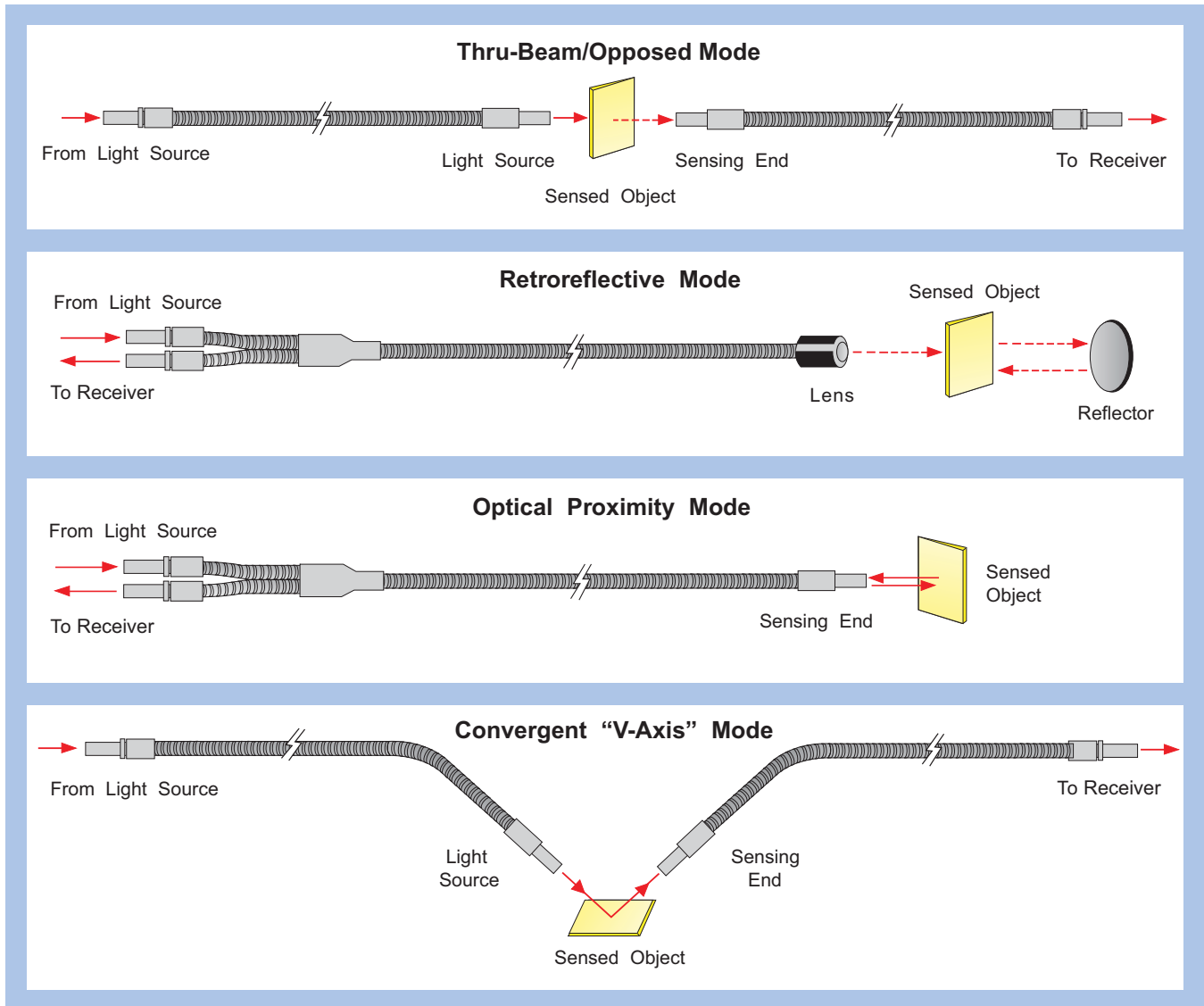
Shine a flashlight into one end of either a flexible plastic or glass fiberoptic light guide and you will see light coming out of the other end. This ability to guide light from one place to another provides many advantages when applied to industrial photoelectric sensing.

Fiberoptic Light Guides are flexible and small enough to fit into difficult sensing sites. This allows the sensor to be located in a more convenient, remote location — out of harm's way. Fibers are resistant to high temperatures, vibration, condensation, and corrosion.

One of the main advantages of glass fiberoptic light guides is that they can be sized and shaped to provide optical advantages. When fiberoptic light guides are utilized, they become the optics of the sensing system.

At the sensing site, the size and shape of the fiberoptic bundle carrying the light controls the size and shape of the transmitted light beam. The size and shape of the fiberoptic bundle receiving the light beam controls the effective viewing area of the sensing system.

Lenses are available to provide additional control of the transmitted and received light beams. Both Beam Break and Beam Make sensing modes are adaptable to fiberoptic sensing.



Fiberoptic Light Guide

Hints & Tips

1. USING STRAIGHT LIGHT GUIDES

Straight light guides are a bundle of glass fibers, with the same number of glass fibers on both ends.

• Thru-Beam/Opposed Mode Sensing

Straight light guides are used in pairs. One light guide is used to transmit the light from the sensor's light source to the sensing site. Here the light beam is focused, or directed across the area the target is to be passing. The receiving light guide is located on the opposite side, aligned in position to receive the light beam. Then this light guide transmits the received light back to the sensor's photo detector. When a target or object passes through the light beam, the sensor responds to the absence of light and switches its output accordingly. This is called Beam Break, or thru-beam sensing. (Refer to illustrations)

• Convergent "V" Axis Mode

At times thru-beam and proximity sensing won't work for a particular application. By using a pair of straight fibers directed at an object in a "V" configuration, a certain part of the object can be detected. (Refer to illustrations)

2. USING BIFURCATED LIGHT GUIDES

Bifurcated light guides start out as one bundle of glass fibers. This single bundle is then split into two separate bundles of fibers at the sensor end, and left as one randomly mixed bundle at the sensing end.

• Beam Break Sensing or Retroreflective Mode

The sensing tip of the fiber is placed on one side of the detection path with a reflector on the other. The object passes between the fiber and the reflector, breaking the beam and switching the output of the sensor. (Refer to illustrations)

• Beam Make Sensing or Proximity Mode

One half of the fiber transmits the light to the sensing site. The other half transmits the reflecting or diffusing light off the surface of the target back to the sensor's photodetector. This "proximity mode" sensing is used to sense nearby objects.

3. EXPLOSIVE ENVIRONMENTS WARNING

While fiberoptics are considered to be intrinsically safe, the sheathing is a hollow tube that could conceivably provide a flame path. Additionally, the photoelectric sensor must be placed into an approved enclosure.

4. LONG FIBERS

Glass fibers absorb 10% of the remaining light for each foot of glass the light travels; 15-foot fibers have brighter beams than 20-foot fibers, etc. Fibers can be ordered in longer lengths in 12-inch increments up to 30 feet.

5. ROUTING/BEND RADII

Avoid sharp bends when routing light guides around machines. A good minimum bend radius is approximately 10 times the jacket diameter.

6. WATERPROOF

Liquid inside the fiber's protective jacket will lower transmission. Use PVC monocoil jackets in wet locations.

7. REPAIRS

Fiberoptics must never be cut or broken. Never pull on a fiberoptics's protective jacket. They cannot be repaired or spliced. The tips cannot be bent unless specifically noted. They are filled with epoxy, and will break. Abrasion can scratch the face of the fiberoptics bundle and lower its performance.

8. CLEANING

Avoid dirt build-up on the bundle face. Clean with filtered air, soap and water, glass cleaners, toothbrushes, etc. Avoid abrasives.

9. FIBEROPTIC LIGHT GUIDES TEMPERATURE RATINGS

GLASS FIBERS (Type 304 stainless steel)

Standard Fibers

Excess heat above the rated temperature damages the epoxy in the tips, or melts the PVC monocoil jacket.

• Flexible Stainless Steel Jacketing

Operating temperatures from -50°F to +525°F (-45°C to +275°C)

• PVC Monocoil Jacketing

Operating temperatures from -40°F to +220°F (-40°C to +105°C)

High Temperature Fibers

On various tests our high temperature fiberoptics were subjected to temperatures above 500°C for ten hours, and they held their bonding elements without failure.

• Stainless Steel Jacketing (Type 304)

Operating temperatures from -50°F to +900°F (-45°C to +480°C)

PLASTIC FIBERS

PLASTIC FIBER OPTIC SPECIFICATIONS	
Operating Temperature	-40° to 80° C (-40° to 176° F)
Sensing Range	Dependent on Fiber & Sensor Combination
Construction	Optical Fiber: Acrylic Monofilament
	Protective Jacket: Black Polyethylene
	Threaded End Tips & Hardware: Nickel Plated Brass Probe End Tips: SUS Stainless Steel
Minimum Bend Radius	.47" (12 mm) for .020" (0.5 mm) Fibers
	.98" (25 mm) for .040" (1.0 mm) Fibers
Chemical Resistance	Core is made of acrylic. Avoid exposing core to acids and aggressive bases as well as solvents. Jacket of fiber will provide a degree of protection from most chemical environments.

Fiberoptic Light Guides

1. Select mode of sensing best suited to your application, e.g., "straight light guide" for Beam Break/opposed mode sensing, or "bifurcated light guide" for Beam Make/proximity sensing.
2. Determine whether the standard size or the miniature fibers will work best.
3. Select "stainless steel armored cable" for most applications, including high temperatures, or "PVC jacketed monocoil" for wet applications.
4. Select fiberoptic bundle size and shape that optimize the viewing area and provide the greatest amount of contrast deviation as displayed on the CONTRAST INDICATOR.
5. Select the tip configuration that best fits the sensing needs, such as, right angle, straight, stainless or brass threaded (both 1.5" and .625" lengths), or side view.
6. Use the Glass Fiberoptic Model Number Matrix below to create the model number that matches your selected sensing mode, jacketing, fiberoptic bundle, size, and tip configuration.

Plastic Fiberoptic Light Guides

Model numbers for plastic fibers do not fit this matrix. If you have a need for a plastic fiber, look through this section and determine the tip configuration and fiber you require. See drawings for plastic fiber bundle sizes.

Model Number Matrix

BUNDLE DESIGNATOR

Glass

- A - .125"
- B - .062"
- C - .032" x .382" Rectangle
- E - .046"
- H - .015"
- J - .027"
- K - .020" x .150" Rectangle, A Tip
- L - .057" 3" Bendable
- P - .010" x 1.50" Rectangle

Miniature Glass

The following suffixes are different for Miniature Fibers

- A - 0.090"
- C - 0.250" X 0.025"

Plastic

- G, H, S, W, Y, Z, Q, CZ
- Diplex fibers have 2 plastic fibers fused together.

NON-STANDARD DESIGNATOR

- Blank - Standard Fiber
- H - High Temp Fiber
- S - Stiff

TIP CONFIGURATION DESIGNATOR

Standard Glass

- T - 5/16" 24 THD x 1.5" Brass Threaded
- TL - 5/16" 24 THD x .625" Brass Threaded
- TR - 5/16" 24 THD x 1.5" Threaded Right Angle
- TLR - 5/16" 24 THD x .625" Threaded Right Angle
- TS - 5/16" 24 THD x 1.5" SS Threaded
- TRS - 5/16" 24 THD x 1.5" SS Threaded Right Angle
- TLRS - 5/16" 24 THD x .625" SS Threaded Right Angle
- RT - 5/16" 24 THD x 1.5" Right Angle Threaded
- RTL - 5/16" 24 THD x .625" Right Angle Threaded
- RTS - 5/16" 24 THD x 1.5" SS Right Angle Threaded
- RTLS - 5/16" 24 THD x .625" SS Right Angle Threaded
- RS - Side View Right Angle Tip
- A - .187" Tip with B or E Bundle Size
- AR - .187" Tip with B or E Bundle Size with Right Angle
- S - Stainless Steel Tip (add to end of model number)
- L - Shorter Threaded Tip .625"

Miniature Glass Fibers

The following suffixes are different for Miniature Fibers

- T - 10 x 32 THD Brass
- TM4 - M4 x 0.70 THD Stainless Steel Threaded Tip
- TM6 - M6 x 0.70 THD Stainless Steel Threaded Tip

Plastic Fibers

- TL - M2.6 x 0.45 THD, M4 x 0.70 THD
- TRL - M2.6 x 0.45 THD, M4 x 0.70 THD, Right Angle
- T70 - 70 mm needle tip, M3 x 0.50 THD
- T - 3 mm straight tip, M3 x 0.50 THD
- T35 - 35 mm needle tip, M3 x 0.50 THD

XXXX-X-XXXXXXX

STYLE DESIGNATOR

- F - Standard Fiber
- BF - Bifurcated Fiber
- MF - Miniature Straight
- MBF - Miniature Bifurcated
- PF - Plastic Fiber
- PFD - Plastic Fiber Diplex

LENGTH DESIGNATOR

- 36 - 36" Glass Standard Length
- Other lengths available in 12" increments
- Plastic (See Drawing)

JACKET DESIGNATOR

- Blank - Stainless Steel
- P - PVC Monocoil

Consult the factory for custom fibers and tips.

This section lists only the most popular fiberoptic light guides. Many more configurations are also available directly from stock. Consult your local sales representative or the factory with your requirements.

Fiberoptic Light Guides

JACKETING FOR FIBEROPTIC LIGHT GUIDES



Glass Fiber – Flexible Stainless Steel Armored Cables

Stainless steel armored cables (Type 304 Stainless) provide maximum protection against shock and abrasion. The interlocked metal hose is both flexible and strong. However, it is not waterproof, oil tight, or vapor proof. Standard operating temperatures from -50°F to 525°F (-45°C to 275°C). High temperature from -50°F to +900°F (-45°C to +480°C).



Glass Fiber – PVC Jacketed Monocoil

PVC jacketed monocoil provides ample protection for most industrial applications. It is a flat-wound steel spring, forming a crush-proof flexible tube around the glass. PVC monocoil fibers are waterproof, oil tight, crush resistant, and very flexible. Operating temperatures from -40°F to 220°F (-40°C to 105°C). Not available in High Temperature. PVC Jacketed Monocoil (add Suffix "P" to Model Numbers).



Miniature Glass Fiber – PVC and Stainless Steel Cables

Smaller O.D, smaller tip configurations, with the same flexibility and durability as our standard fiber optic light guides. Smaller tips and diameter allow these fiber optics to fit into smaller spaces for mechanic constraint issues, and still provide a robust and chemical resistant solution for difficult sensing tasks in harsh environments.



Plastic Fiber – Fluorinated Polymer Jacket

Core – Polymethyl Methacrylate (ultra grade) with an allowable bending radius of >17mm. Operating temperatures from -40°F to +185°F (-40°C to +85°C).

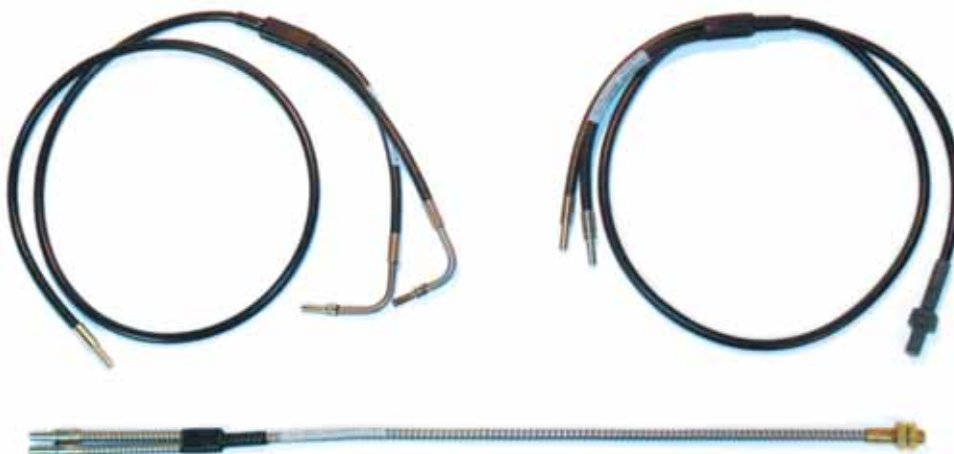
Note: Due to their light transmission properties, plastic fiberoptic light guides are recommended for use only with visible light sensors.

CUSTOM FIBERS

Custom Fiberoptics are a **TRI-TRONICS**® specialty. In most cases, we can meet your "special requirements" for customized tip configurations, fiber bundle sizes, and cable lengths, all with quick delivery. All requests for custom fiberoptic light guides must include a detailed drawing showing the critical tolerances before a quotation can be provided, to ensure construction requirements and tolerances are within **TRI-TRONICS**® capabilities.

Important: Custom fiberoptic light guides are non-refundable and non-returnable. Suitability for purpose is not guaranteed. Custom length fibers are +/- .5 inches per foot.

EXAMPLES:



Glass Single Light Guides

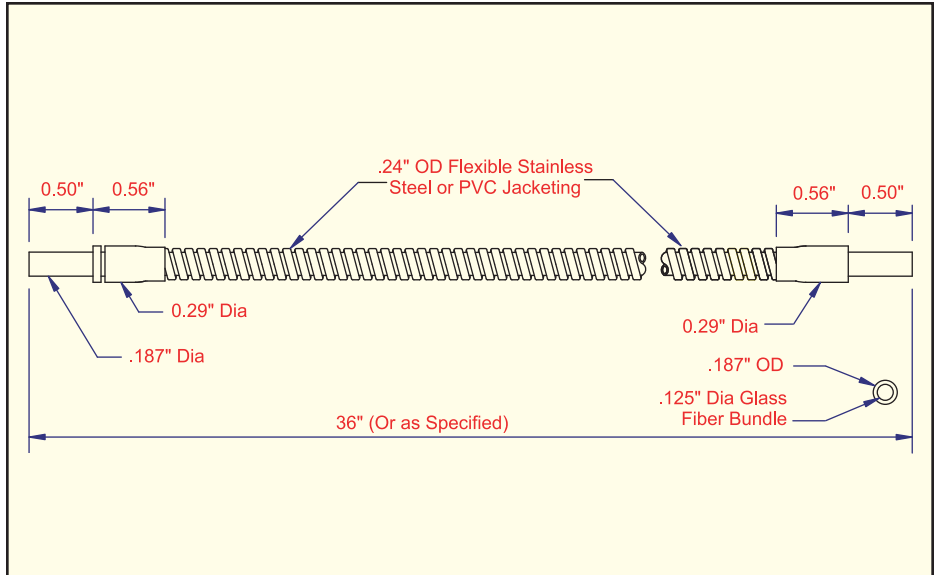
Straight Barrel Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36	.125"
F-B-36A	.062"
F-E-36A	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36P	.125"
F-B-36AP	.062"
F-E-36AP	.046"



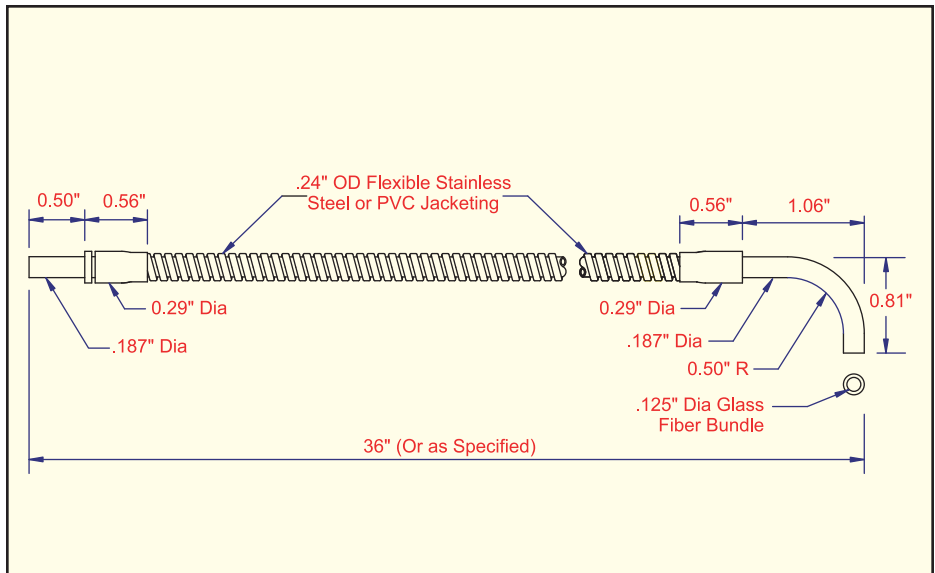
Right Angle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36R	.125"
F-B-36AR	.062"
F-E-36AR	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36RP	.125"
F-B-36ARP	.062"
F-E-36ARP	.046"



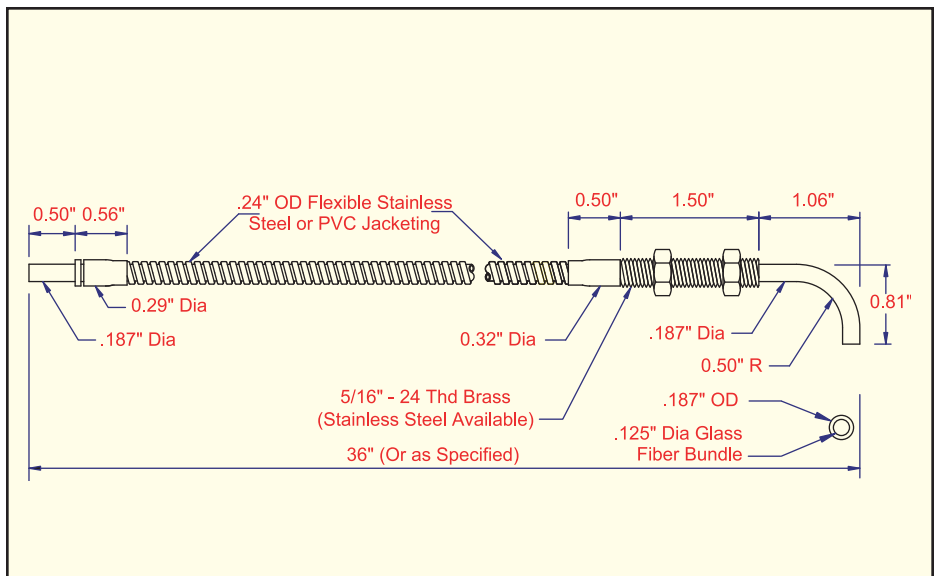
Right Angle Tip, then Threaded Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36RT	.125"
F-B-36RT	.062"
F-E-36RT	.046"

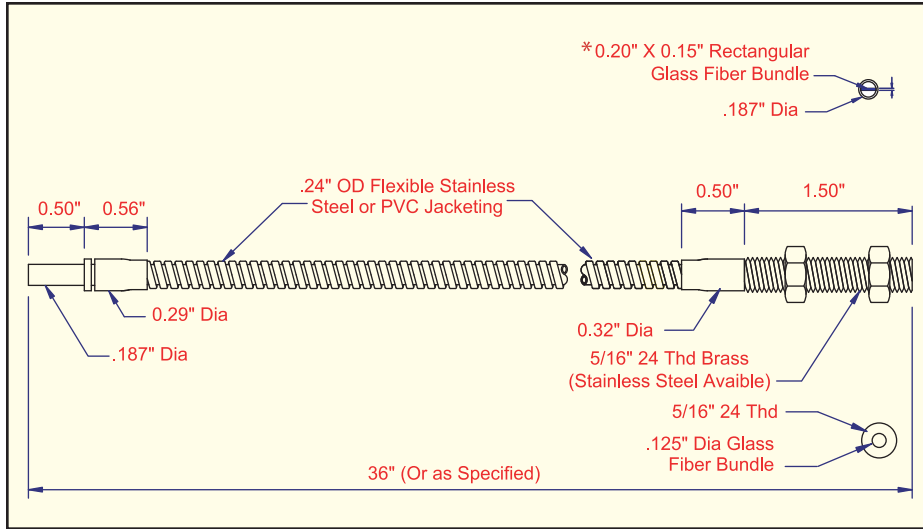


PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36RTP	.125"
F-B-36RTP	.062"
F-E-36RTP	.046"



Glass Single Light Guides



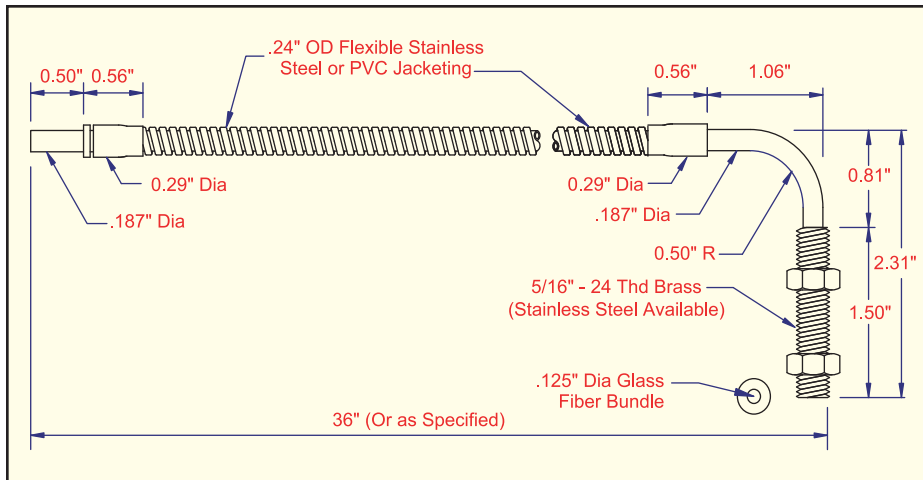
Straight Threaded Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36T	.125"
F-B-36T	.062"
F-E-36T	.046"
*F-K-36T	.020" x .15"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36TP	.125"
F-B-36TP	.062"
F-E-36TP	.046"
*F-K-36TP	.020" x .15"



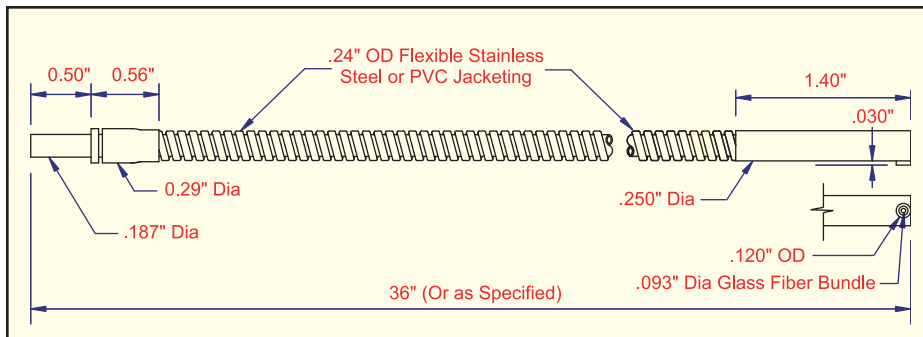
Threaded Tip, then Right Angle Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36TR	.125"
F-B-36TR	.062"
F-E-36TR	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36TRP	.125"
F-B-36TRP	.062"
F-E-36TRP	.046"



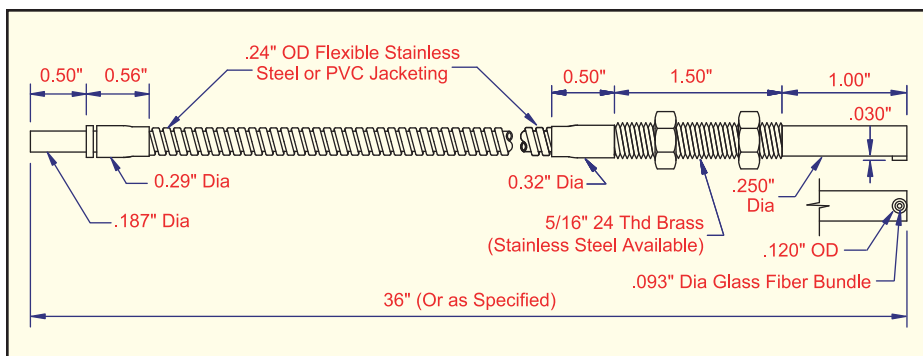
Side View, Right Angle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36RS	.093"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36RSP	.093"



Side View, Right Angle Threaded Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-A-36RST	.093"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-A-36RSTP	.093"

Glass Single Light Guides

3

Fiberoptic Light Guides

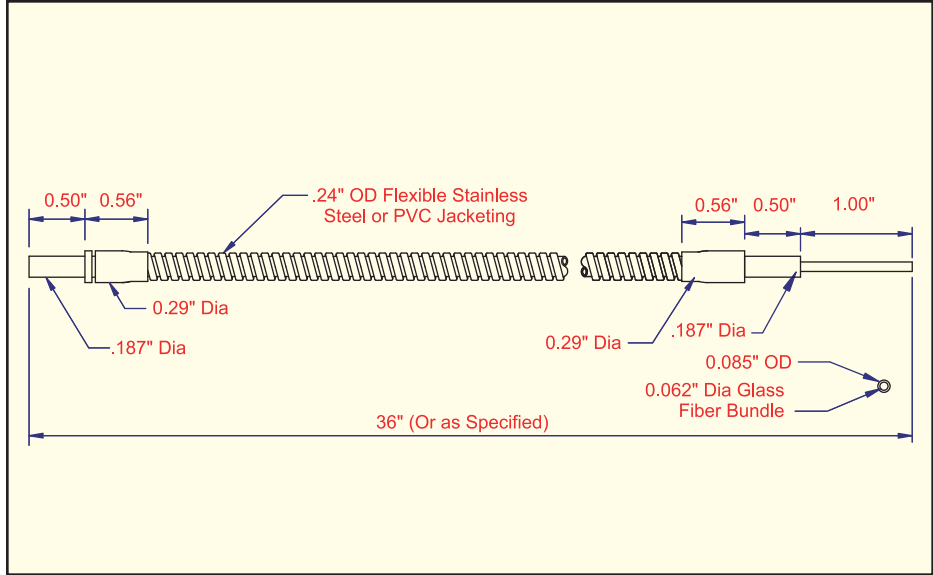
Straight Needle Tip Stainless Steel Jacket

MODEL F-B-36 BUNDLE SIZE .062"



PVC Monocoil Jacket

MODEL F-B-36P BUNDLE SIZE .062"



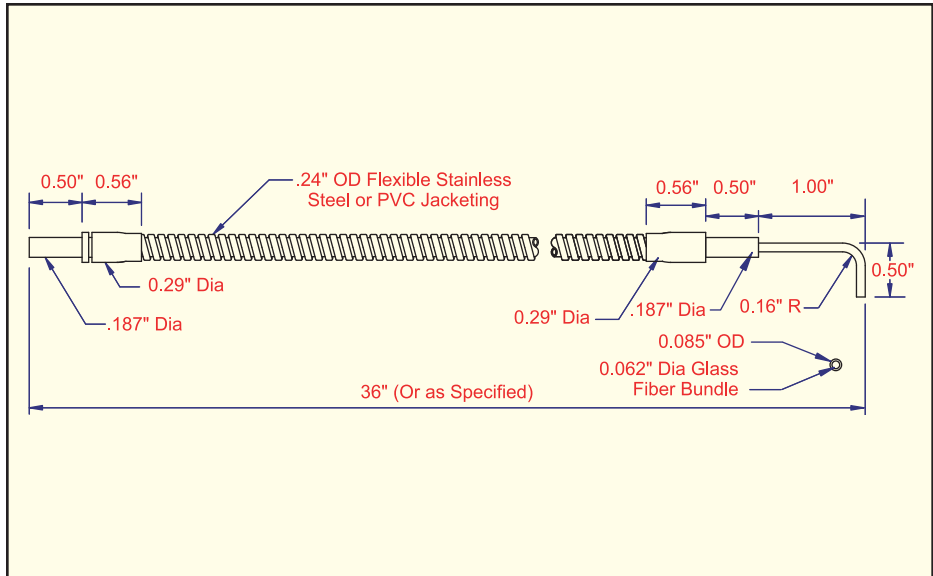
Right Angle Needle Tip Stainless Steel Jacket

MODEL F-B-36R BUNDLE SIZE .062"



PVC Monocoil Jacket

MODEL F-B-36RP BUNDLE SIZE .062"



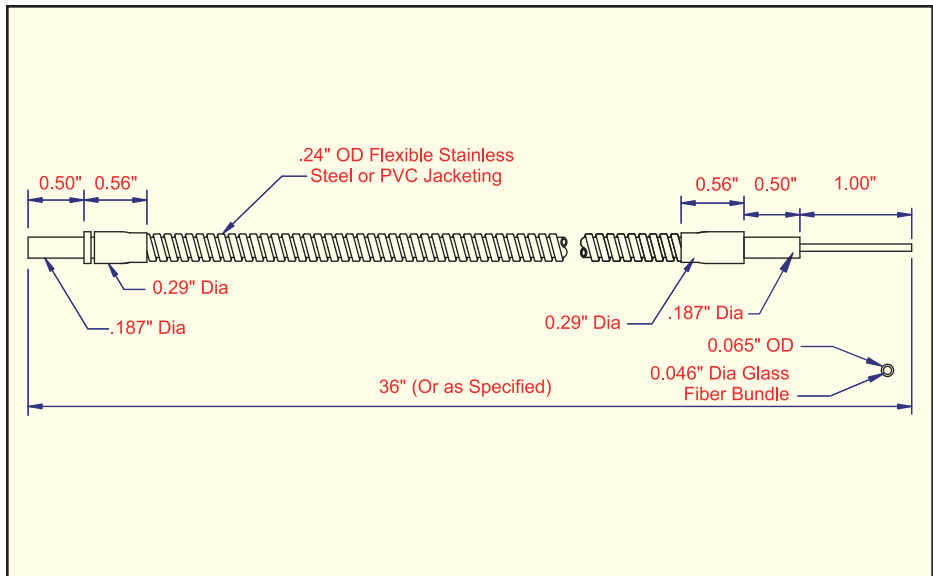
Straight Needle Tip Stainless Steel Jacket

MODEL F-E-36 BUNDLE SIZE .046"

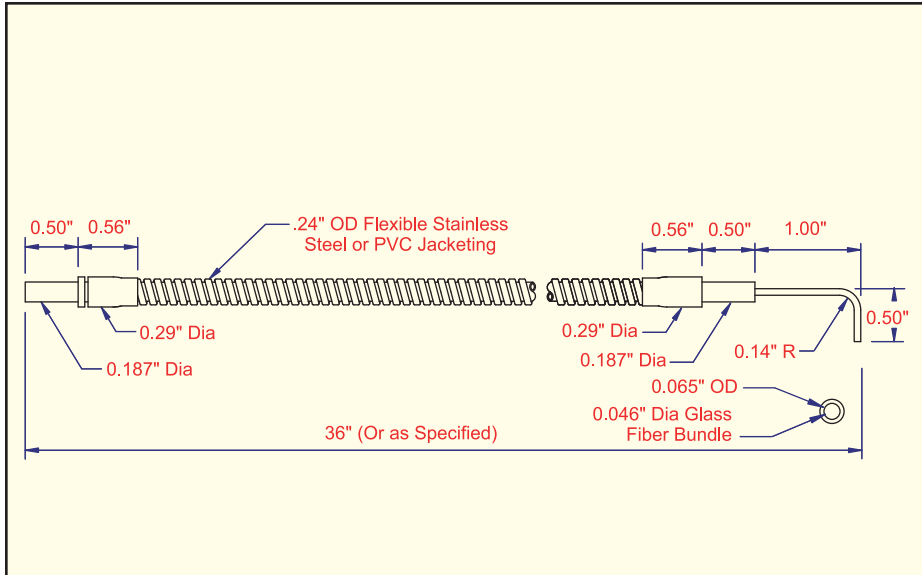


PVC Monocoil Jacket

MODEL F-E-36P BUNDLE SIZE .046"



Glass Single Light Guides



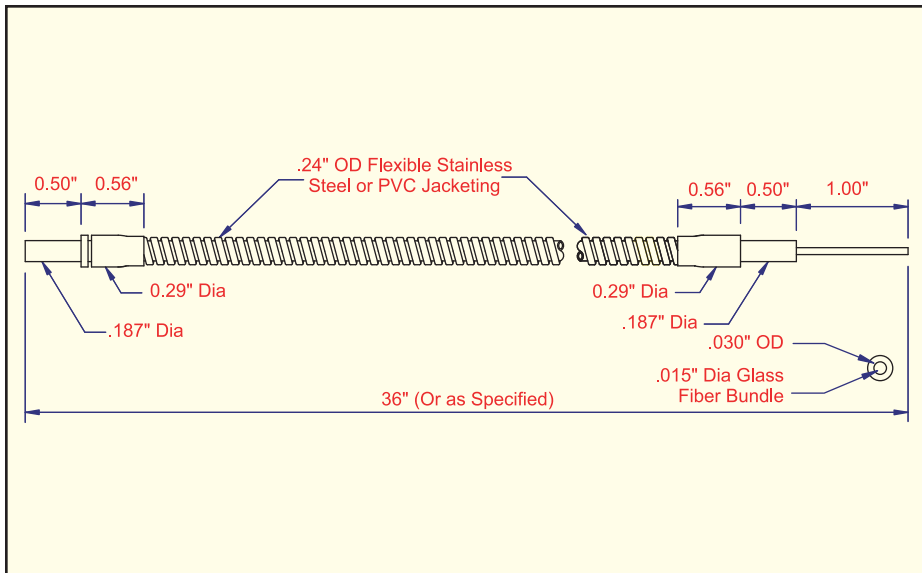
Right Angle Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-E-36R	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-E-36RP	.046"



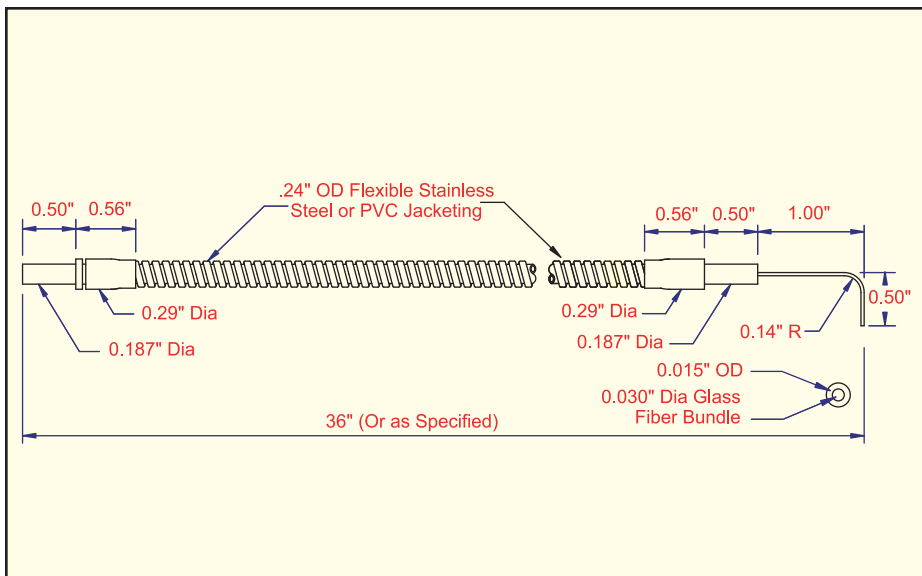
Straight Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-H-36	.015"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-H-36P	.015"



Right Angle Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-H-36R	.015"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-H-36RP	.015"

Glass Single Light Guides

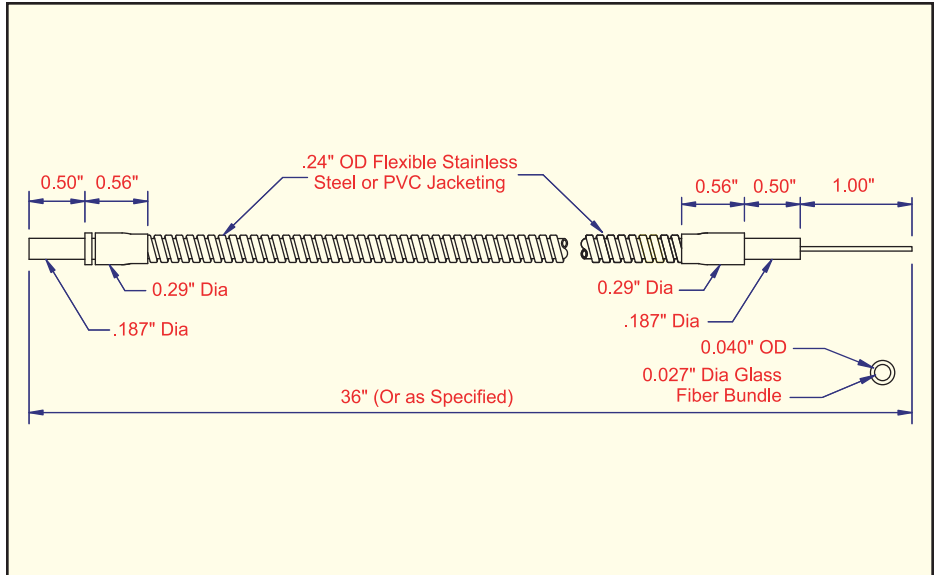
Straight Needle Tip Stainless Steel Jacket

MODEL BUNDLE SIZE
F-J-36 .027"



PVC Monocoil Jacket

MODEL BUNDLE SIZE
F-J-36P .027"



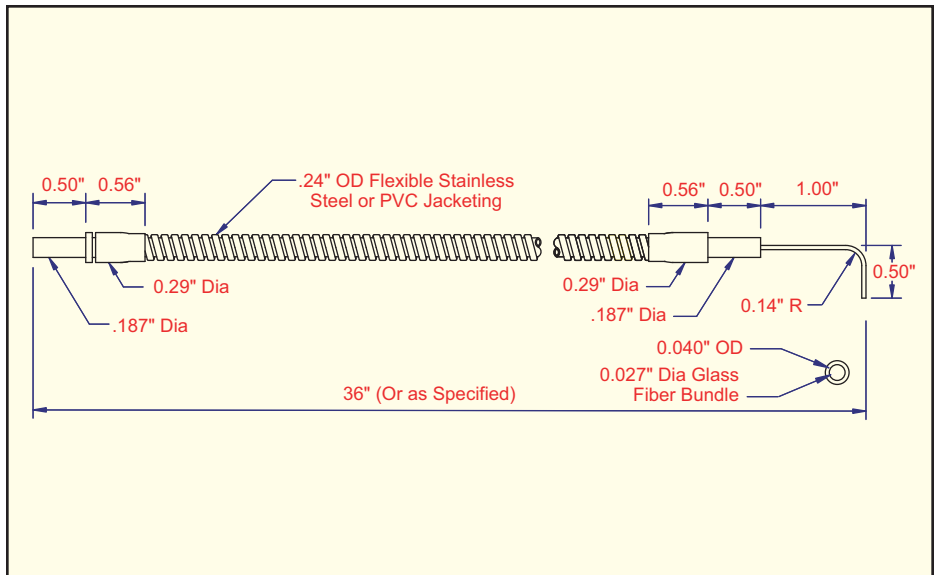
Right Angle Needle Tip Stainless Steel Jacket

MODEL BUNDLE SIZE
F-J-36R .027"



PVC Monocoil Jacket

MODEL BUNDLE SIZE
F-J-36RP .027"



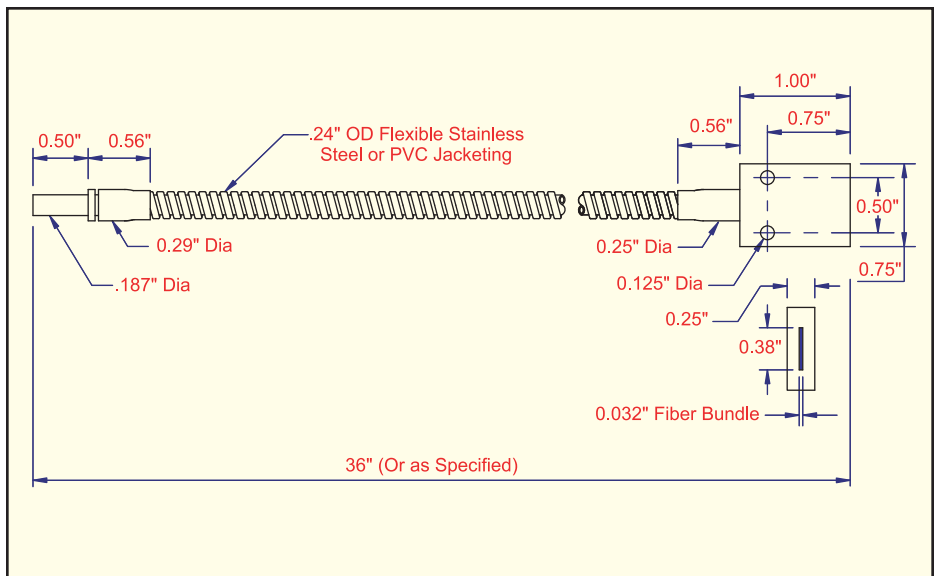
Rectangular Flat Housing Stainless Steel Jacket

MODEL BUNDLE SIZE
F-C-36 .032" x .38"

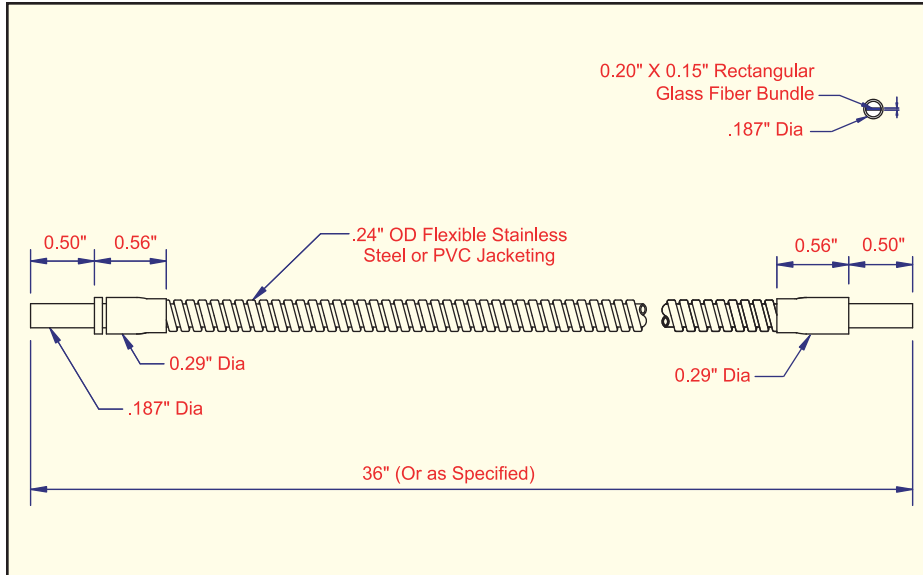


PVC Monocoil Jacket

MODEL BUNDLE SIZE
F-C-36P .032" x .38"



Glass Single Light Guides



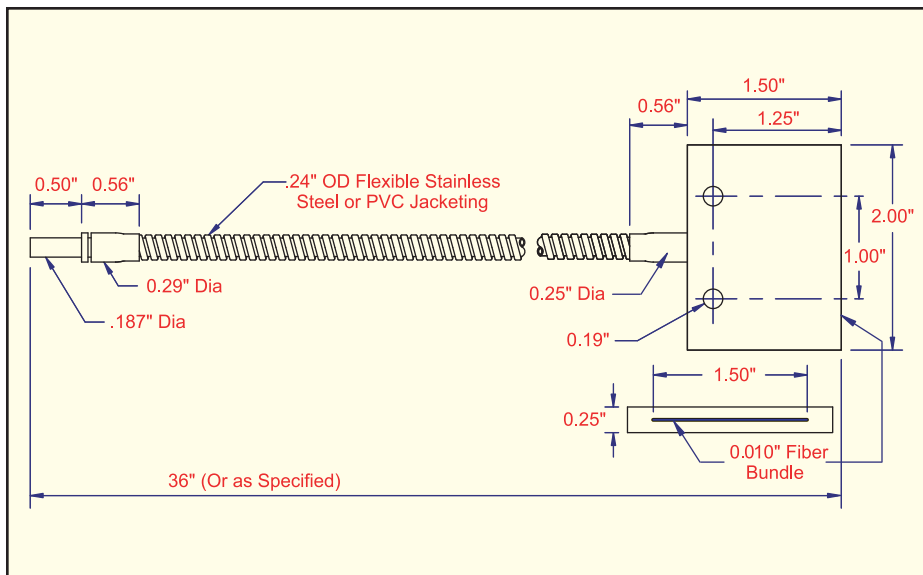
Rectangular Bundle Barrel Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-K-36	.020" x .15"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-K-36P	.020" x .15"



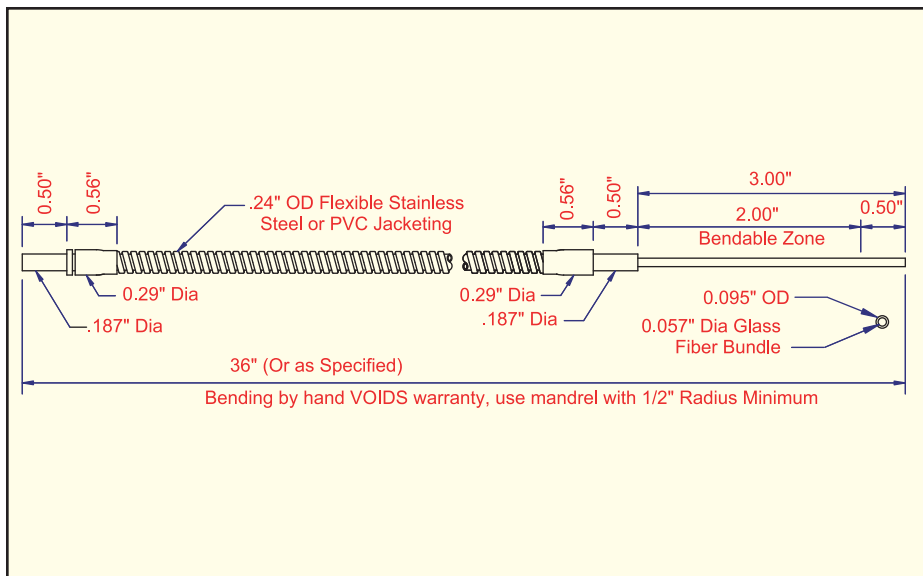
Rectangular 2" Flat Housing Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-P-36	.010" x 1.50"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-P-36P	.010" x 1.50"



3" Long Bendable Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
F-L-36B	.057"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
F-L-36BP	.057"

Glass Bifurcated Light Guides

3

Fiberoptic Light Guides

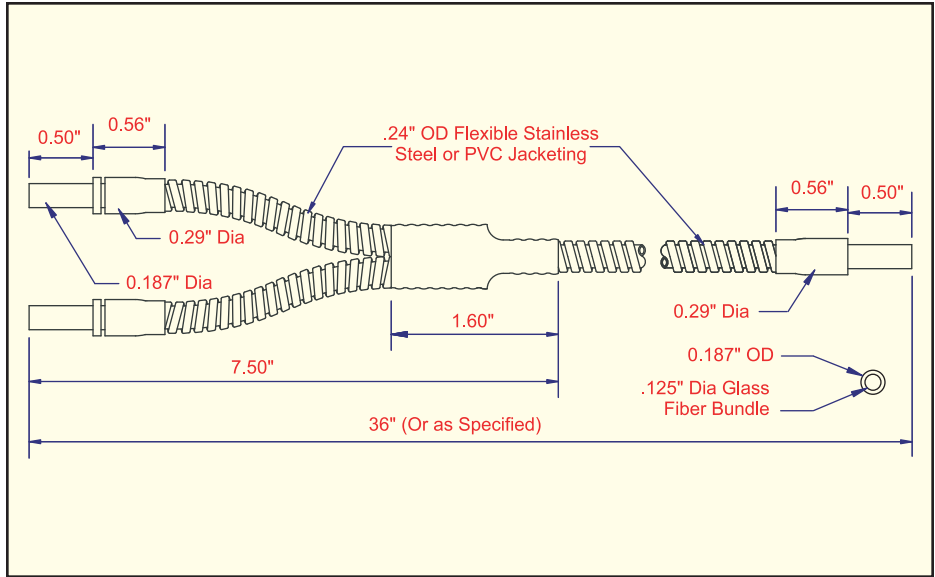
Straight Barrel Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-A-36	.125"
BF-B-36A	.062"
BF-E-36A	.046"
BF-J-36A	.027"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36P	.125"
BF-B-36AP	.062"
BF-E-36AP	.046"
BF-J-36AP	.027"



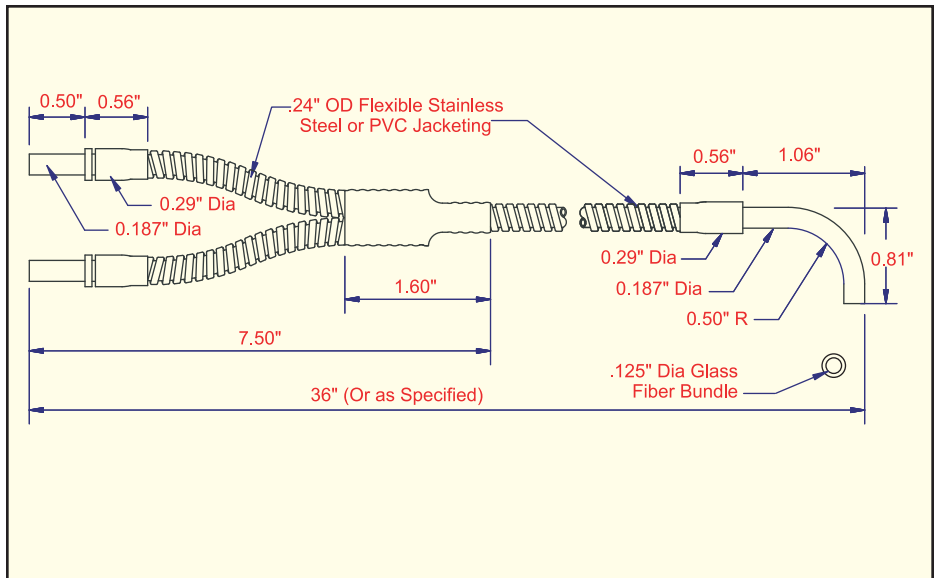
Right Angle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-A-36R	.125"
BF-B-36AR	.062"
BF-E-36AR	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36RP	.125"
BF-B-36ARP	.062"
BF-E-36ARP	.046"



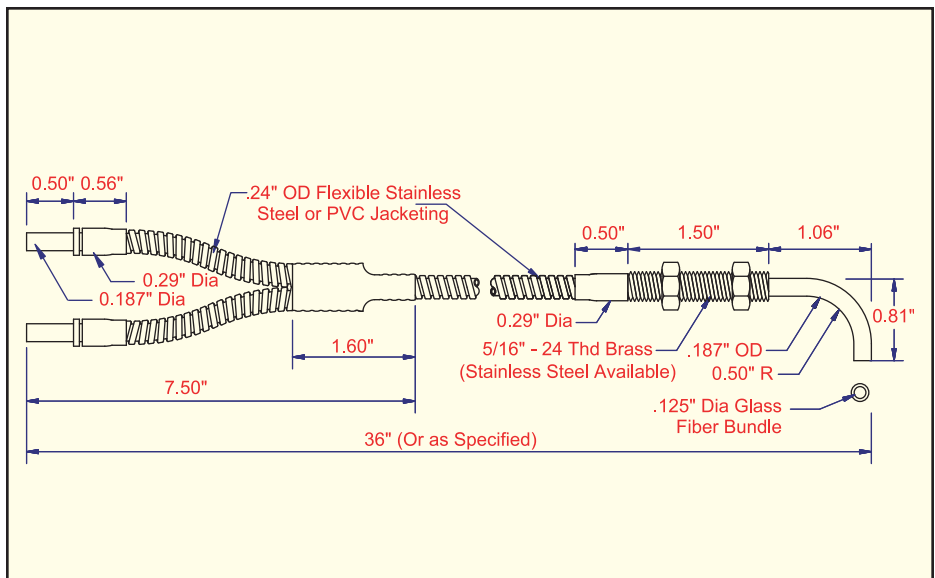
Right Angle Tip, then Threaded Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-A-36RT	.125"
BF-B-36RT	.062"
BF-E-36RT	.046"

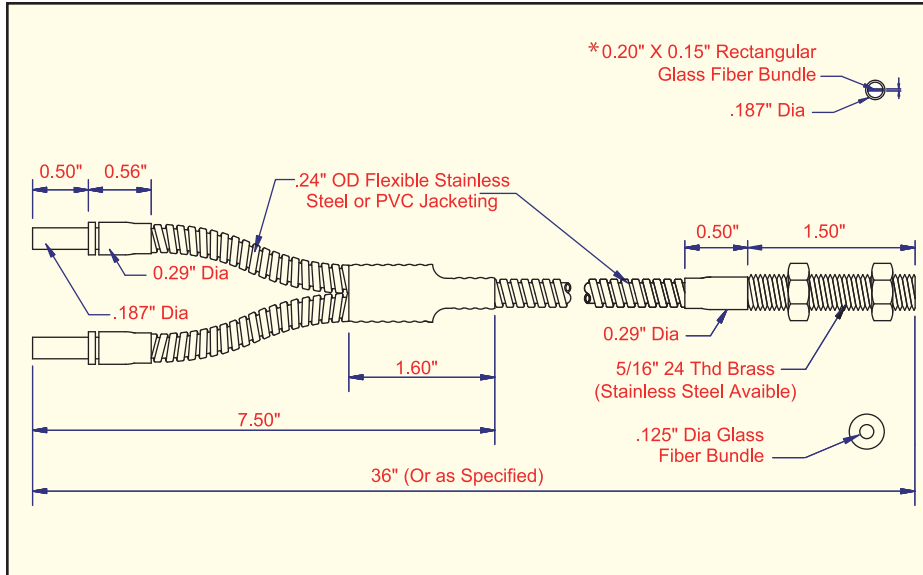


PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36RTP	.125"
BF-B-36RTP	.062"
BF-E-36RTP	.046"



Glass Bifurcated Light Guides



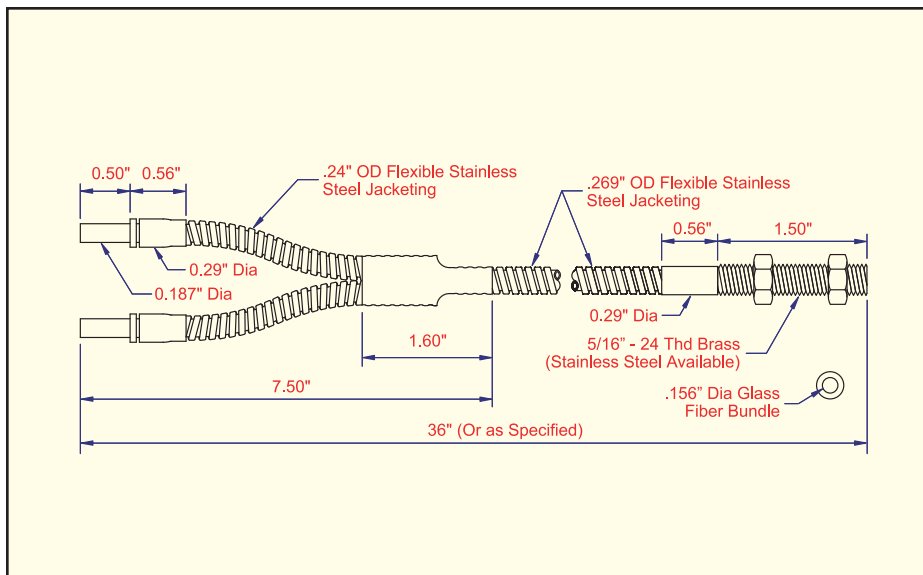
Straight Threaded Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-A-36T	.125"
BF-B-36T	.062"
BF-E-36T	.046"
BF-J-36T	.027"
* BF-K-36T	.020" x .15"



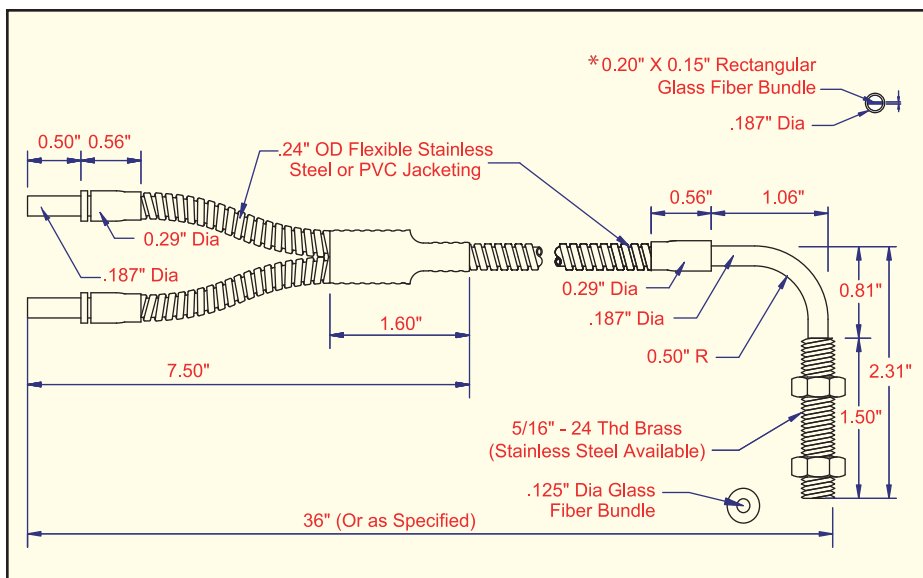
PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36TP	.125"
BF-B-36TP	.062"
BF-E-36TP	.046"
BF-J-36TP	.027"
* BF-K-36TP	.020" x .15"



Straight Threaded Tip Stainless Steel Jacket Micro Polished for Superior Performance and Range

MODEL	BUNDLE SIZE
BF-U-36TUV	.156"



Threaded Tip, then Right Angle Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-A-36TR	.125"
BF-B-36TR	.062"
BF-E-36TR	.046"
* BF-K-36TR	.020" x .15"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36TRP	.125"
BF-B-36TRP	.062"
BF-E-36TRP	.046"
* BF-K-36TRP	.020" x .15"

Glass Bifurcated Light Guides

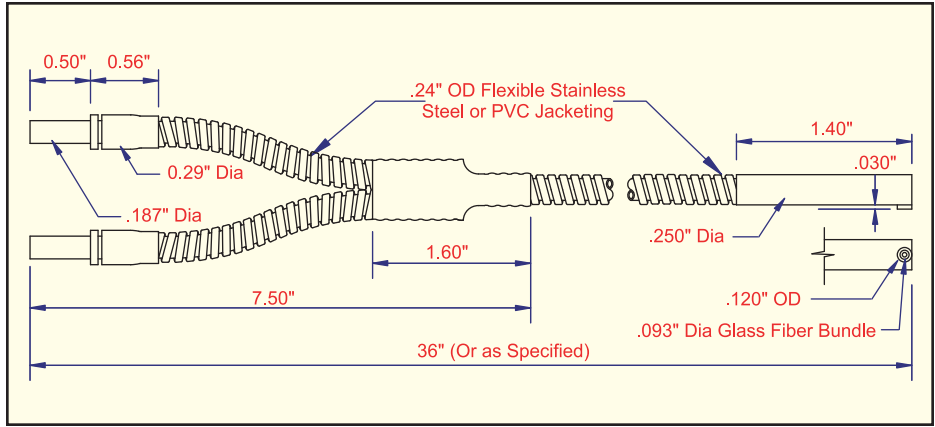
**Side View, Right Angle Tip
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-A-36RS	.093"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36RSP	.093"



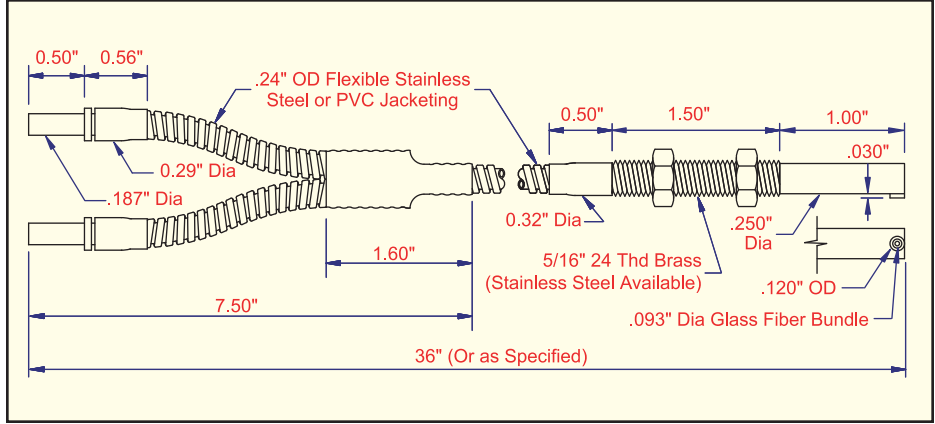
**Side View, Right Angle
Threaded, Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-A-36RST	.093"




PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-A-36RSTP	.093"



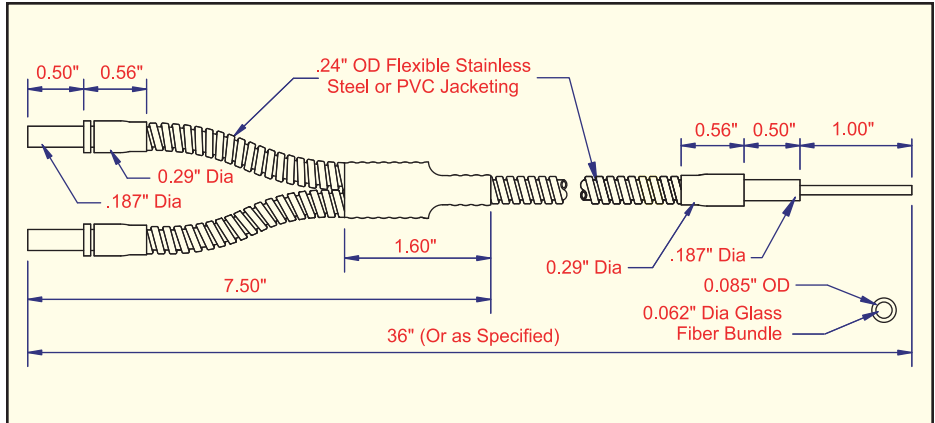
**Straight Needle Tip
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-B-36	.062"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-B-36P	.062"



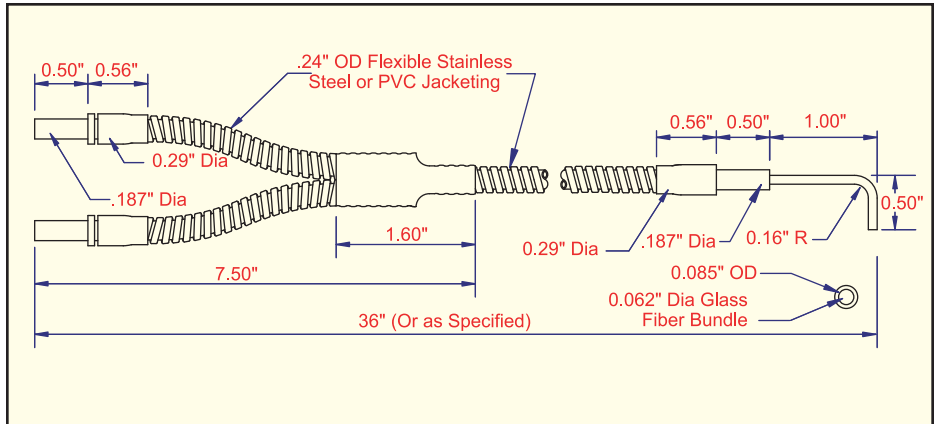
**Right Angle Needle Tip
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-B-36R	.062"

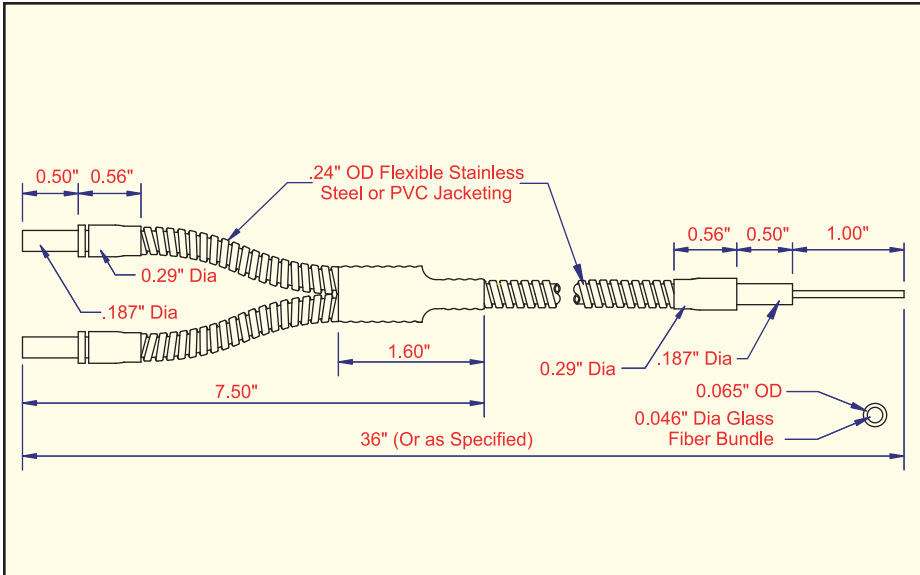


PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-B-36RP	.062"



Glass Bifurcated Light Guides



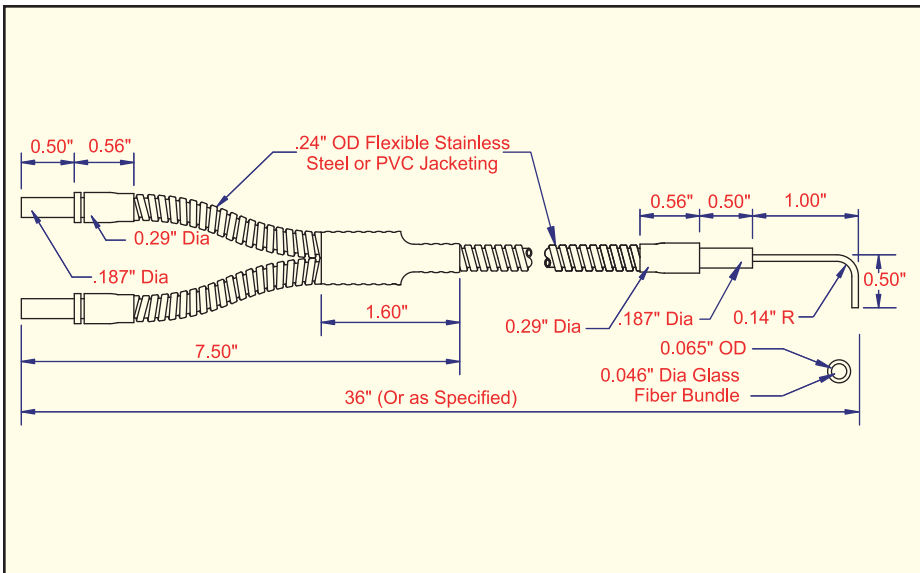
Straight Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-E-36	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-E-36P	.046"



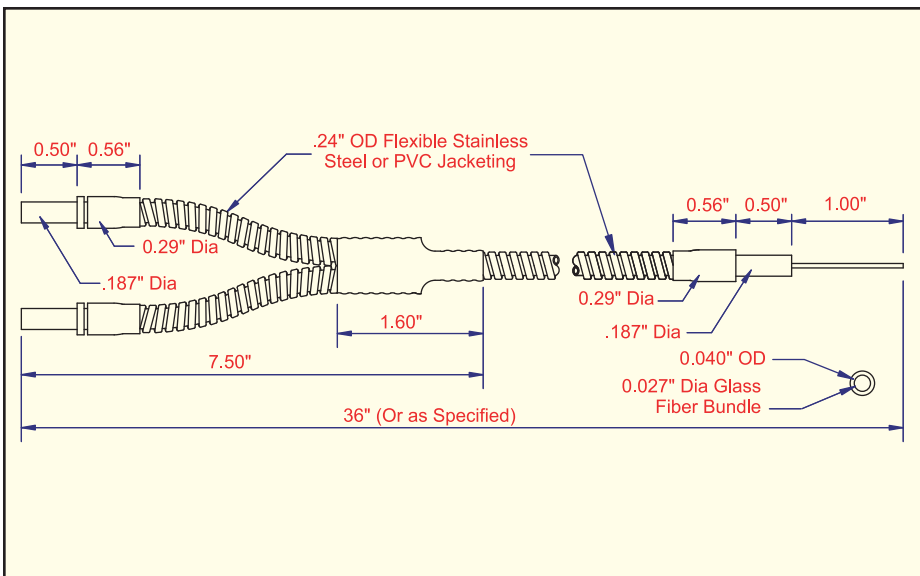
Right Angle Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-E-36R	.046"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-E-36RP	.046"



Straight Needle Tip Stainless Steel Jacket

MODEL	BUNDLE SIZE
BF-J-36	.027"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-J-36P	.027"

Glass Bifurcated Light Guides

3

Fiberoptic Light Guides

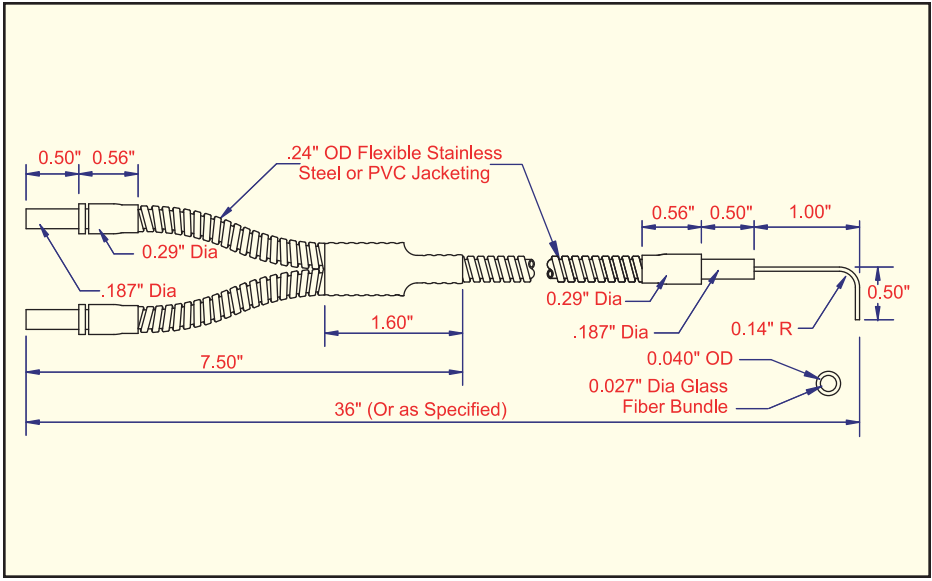
**Right Angle Needle Tip
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-J-36R	.027"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-J-36RP	.027"



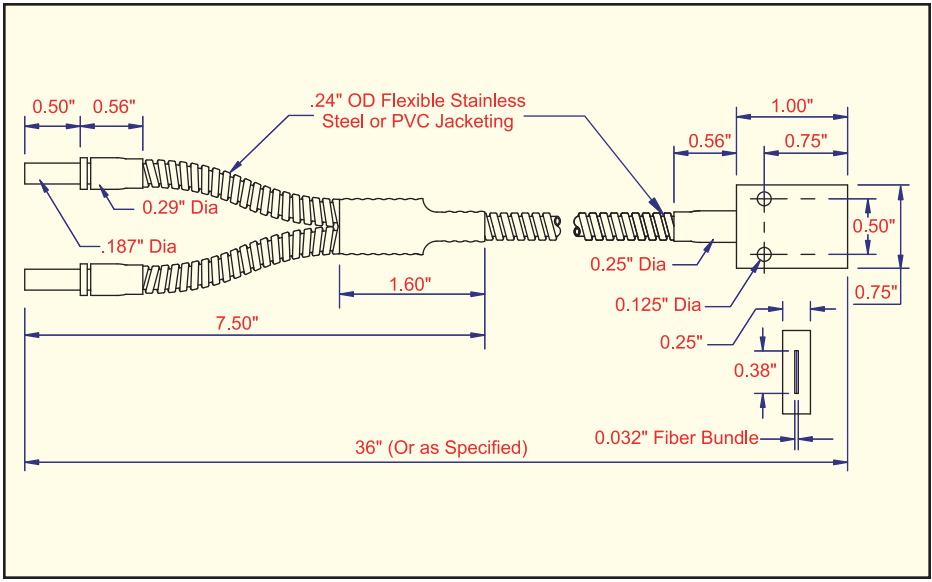
**Rectangular Flat Housing
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-C-36	.032" x .38"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-C-36P	.032" x .38"



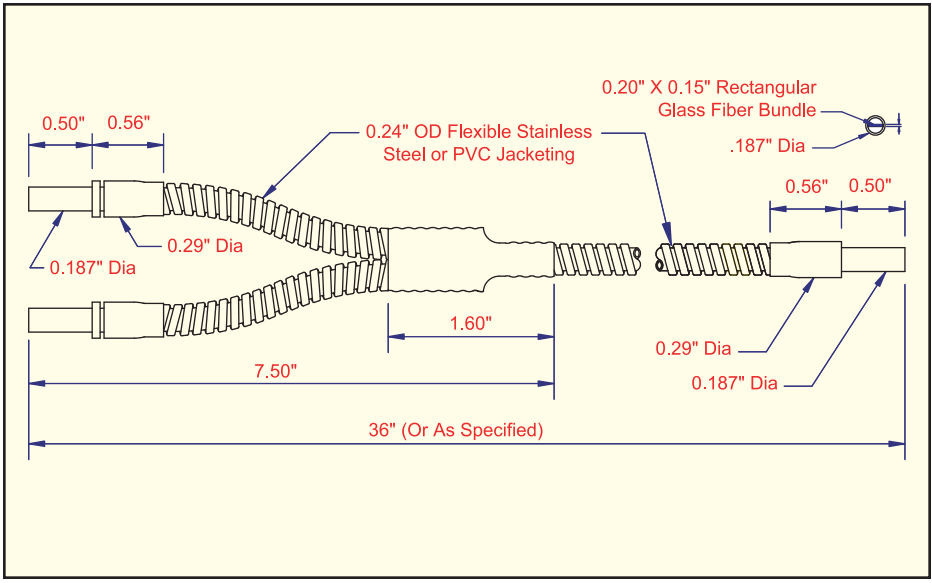
**Rectangular Bundle Barrel Tip
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
BF-K-36	.020" x .15"

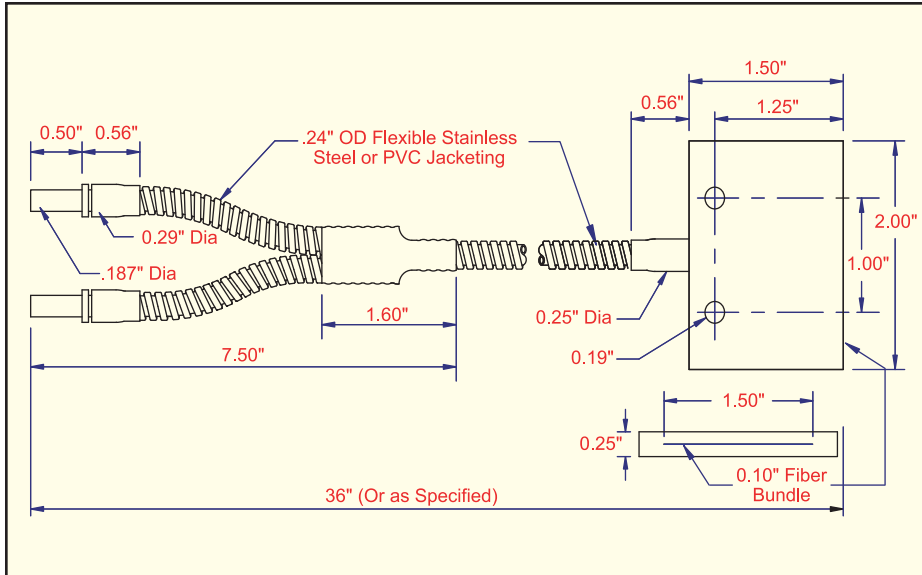


PVC Monocoil Jacket

MODEL	BUNDLE SIZE
BF-K-36P	.020" x .15"



Glass Bifurcated Light Guides

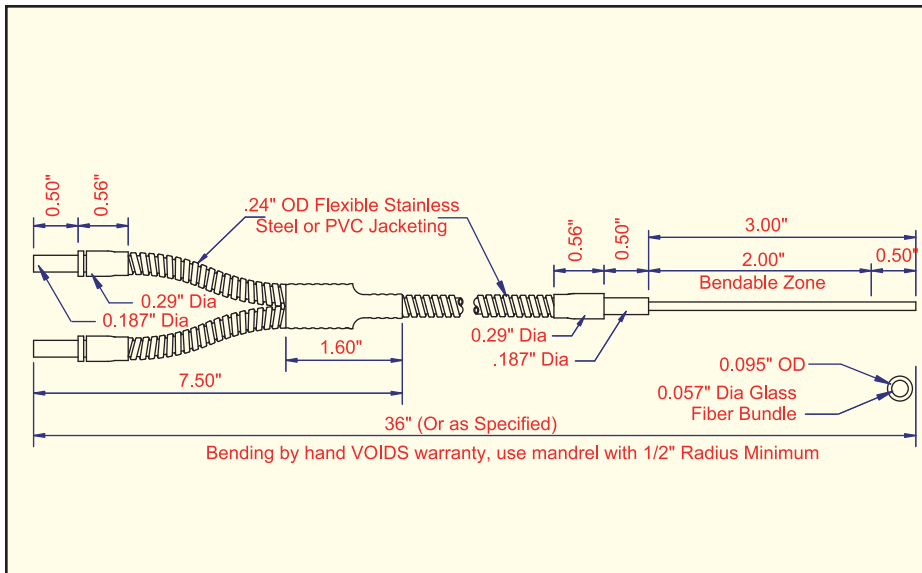


**Rectangular, 2" Flat Housing
Stainless Steel Jacket**

<u>MODEL</u>	<u>BUNDLE SIZE</u>
BF-P-36	.010" x 1.50"

PVC Monocoil Jacket

<u>MODEL</u>	<u>BUNDLE SIZE</u>
BF-P-36P	.010" x 1.50"

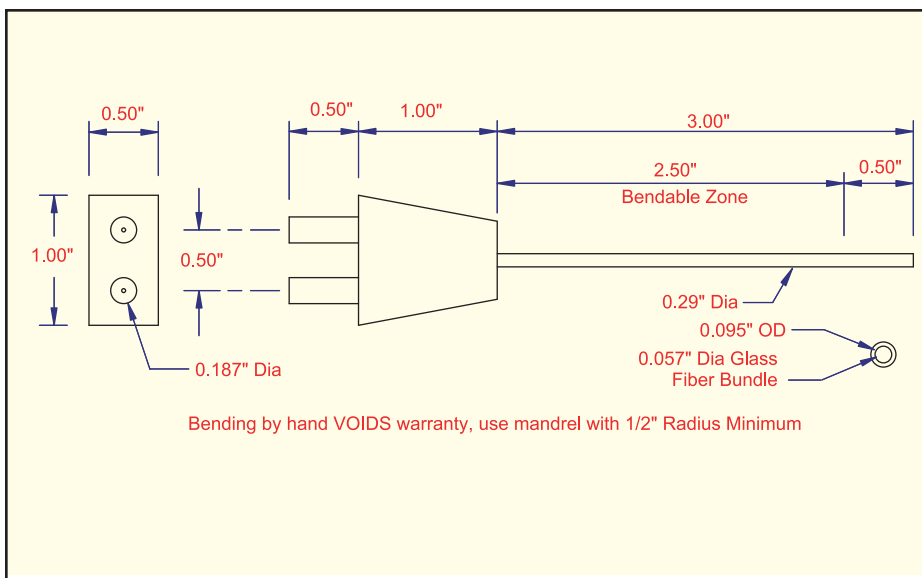


**3" Long Bendable Tip
Stainless Steel Jacket**

<u>MODEL</u>	<u>BUNDLE SIZE</u>
BF-L-36B	.057"

PVC Monocoil Jacket

<u>MODEL</u>	<u>BUNDLE SIZE</u>
BF-L-36BP	.057"



**Sensor Adaptor
Bendable 3" Tip
For use with
F1 Optical Block**

<u>MODEL</u>	<u>BUNDLE SIZE</u>
BF-L-3B	.057"

Miniature Glass Single Light Guides

Our **MINIATURE GLASS FIBEROPTIC LIGHT GUIDES** utilize the high performance and protection of glass fibers with the space saving flexibility of plastic fibers, plus a tighter bend radius. **Now there is nowhere we can't take you.**

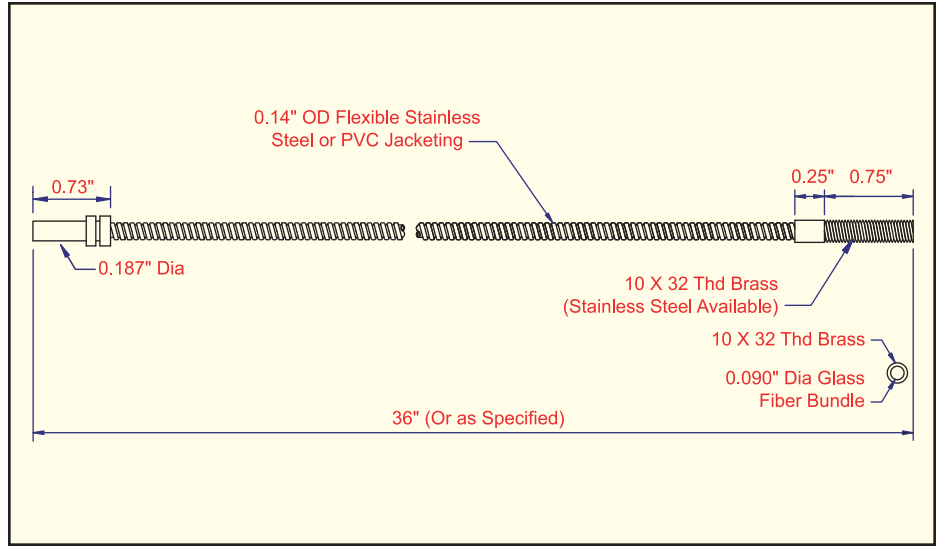
Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-A-36T	.090"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36TP	.062"



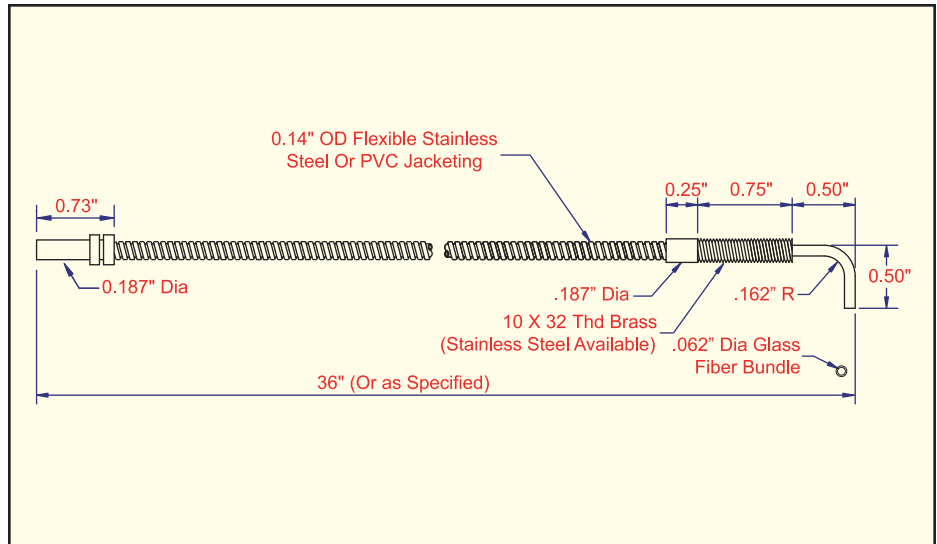
Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-B-36RT	.062"



PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36RTP	.062"



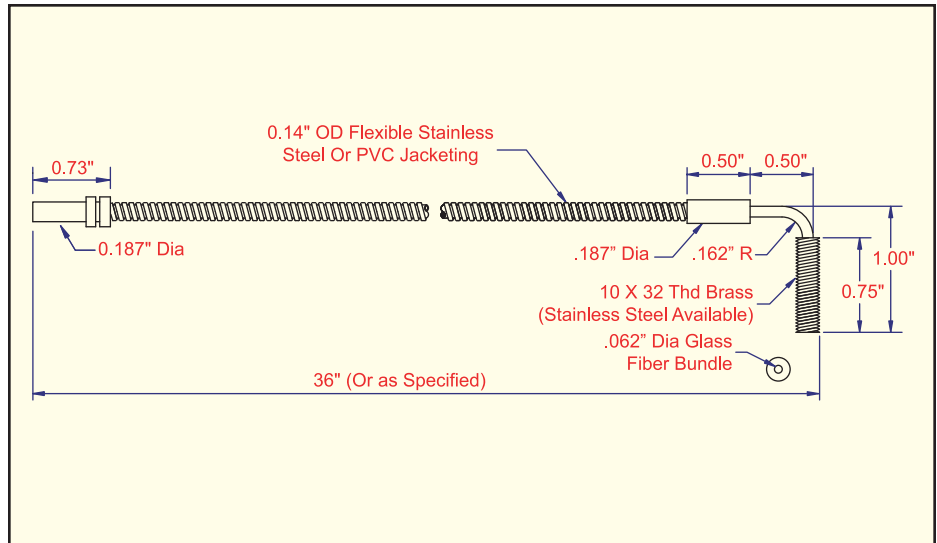
Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-B-36TR	.062"

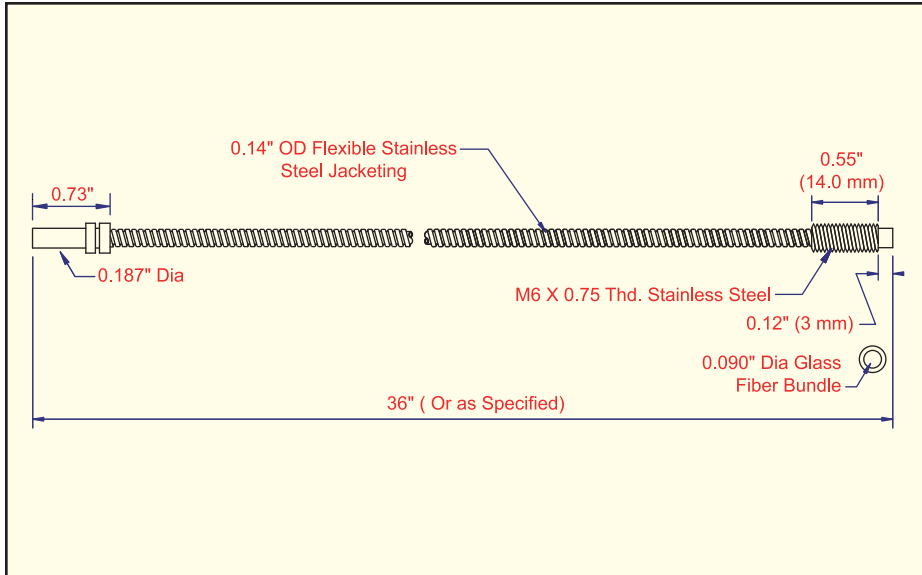


PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36TRP	.062"



Miniature Glass Single Light Guides

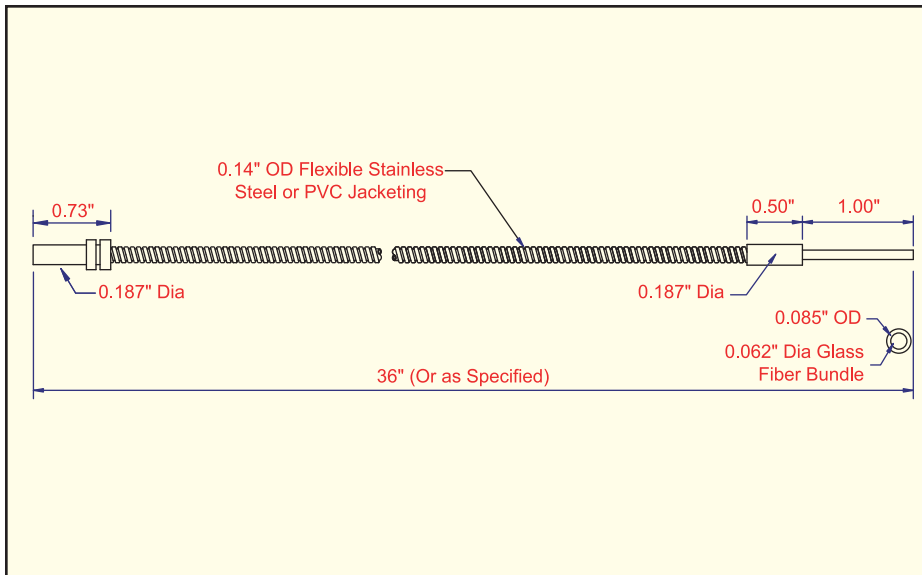


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-A-36TM6	.090"

PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36TM6P	.062"

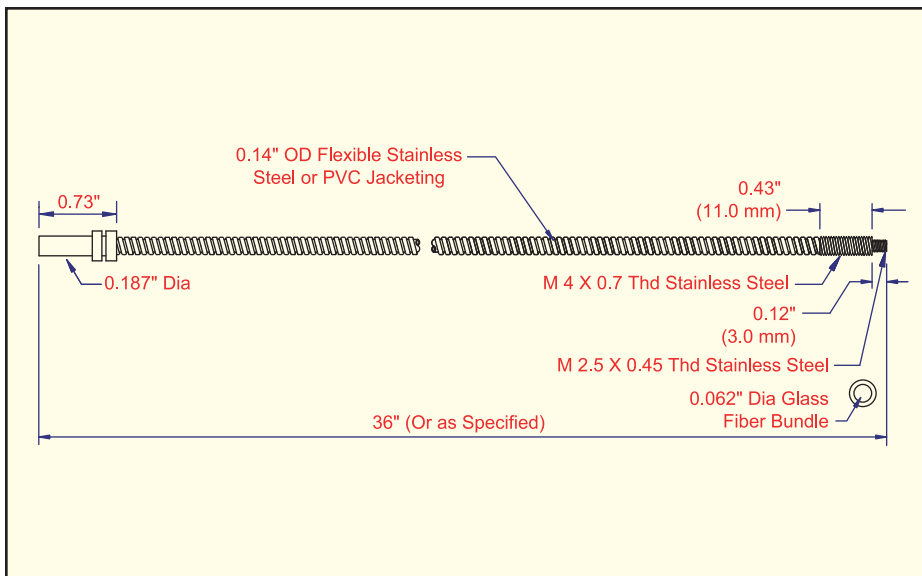


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-B-36	.062"

PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36P	.062"



Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-B-36TM4	.062"

PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36TM4P	.062"

Miniature Glass Single Light Guides

3

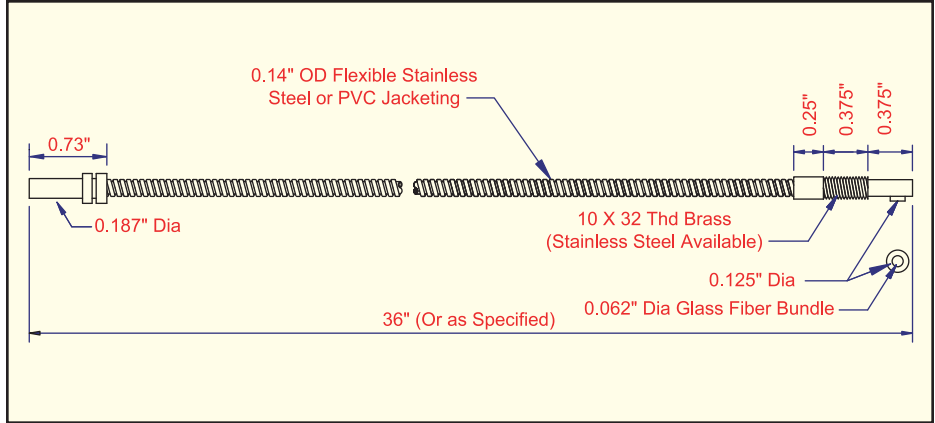
Fiberoptic Light Guides

Side View, Right Angle, Threaded, Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-B-36RS	.062"

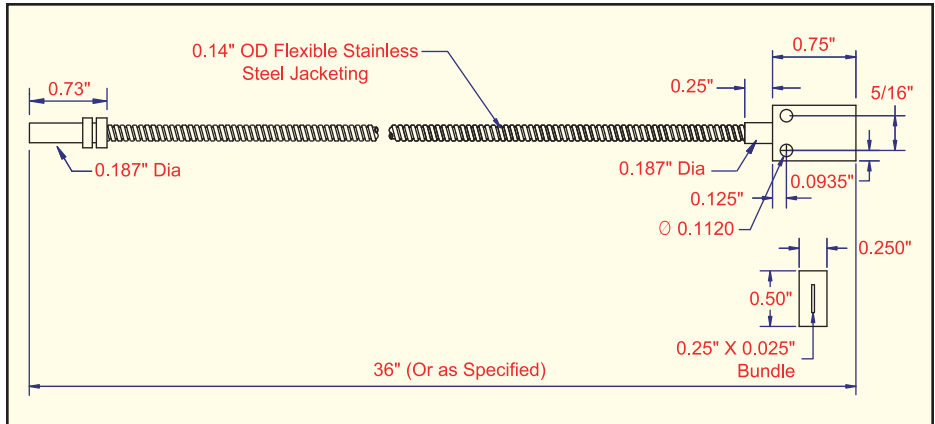
PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-B-36RSP	.062"



Rectangular Flat Housing Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-C-36	0.250" X 0.025"

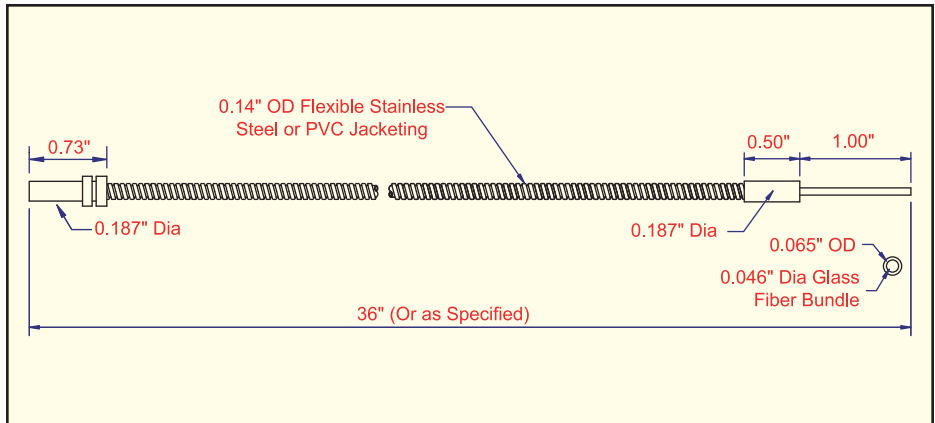


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-E-36	.046"

PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-E-36P	.046"

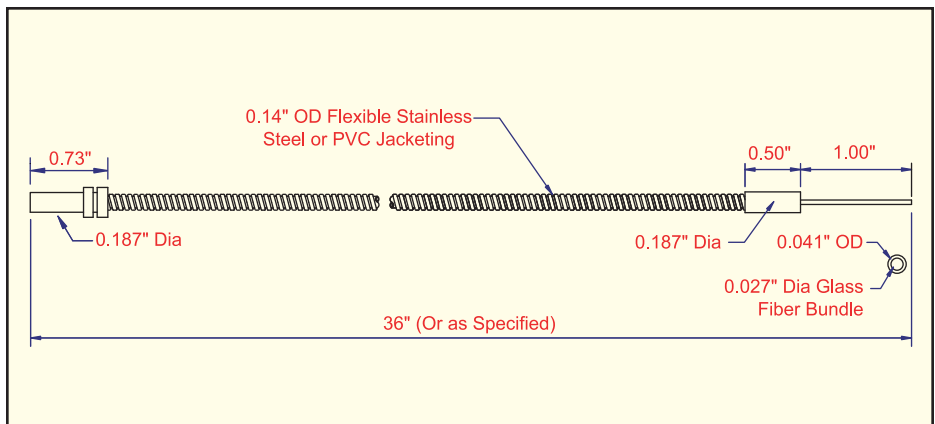


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MF-J-36	.027"

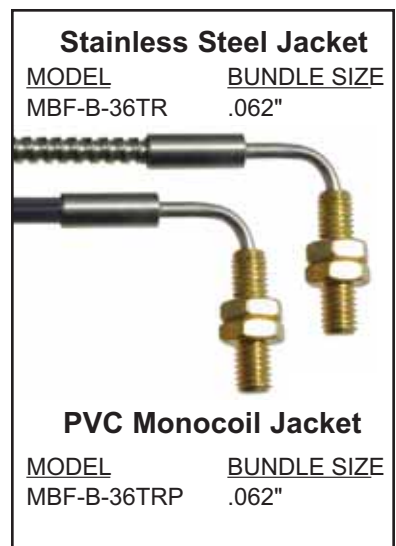
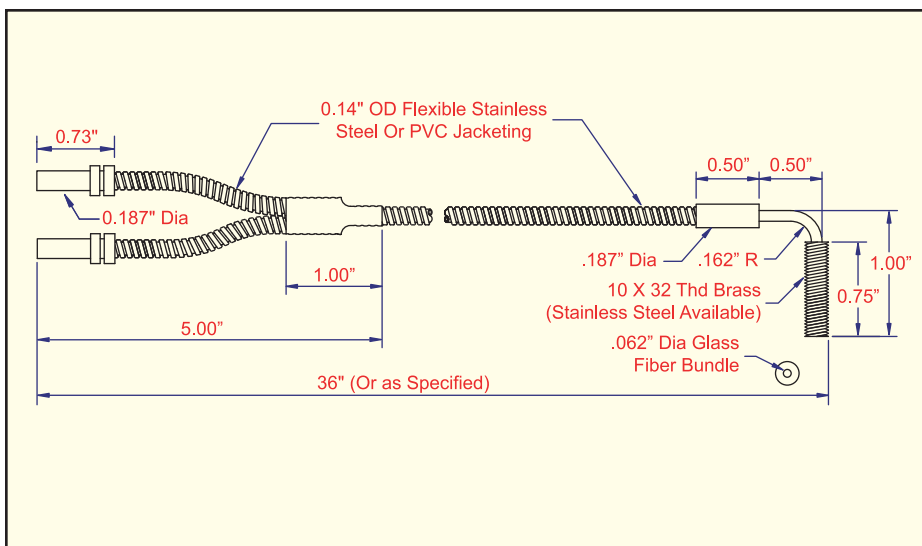
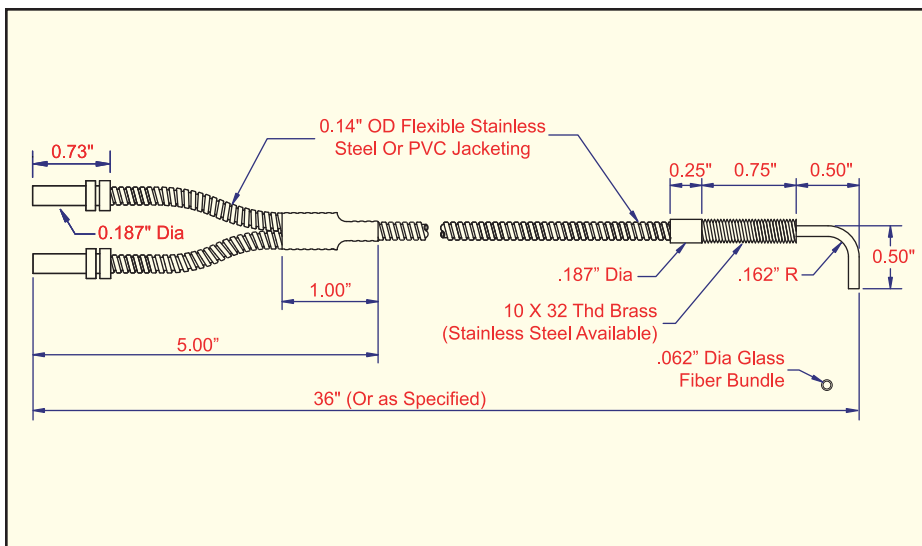
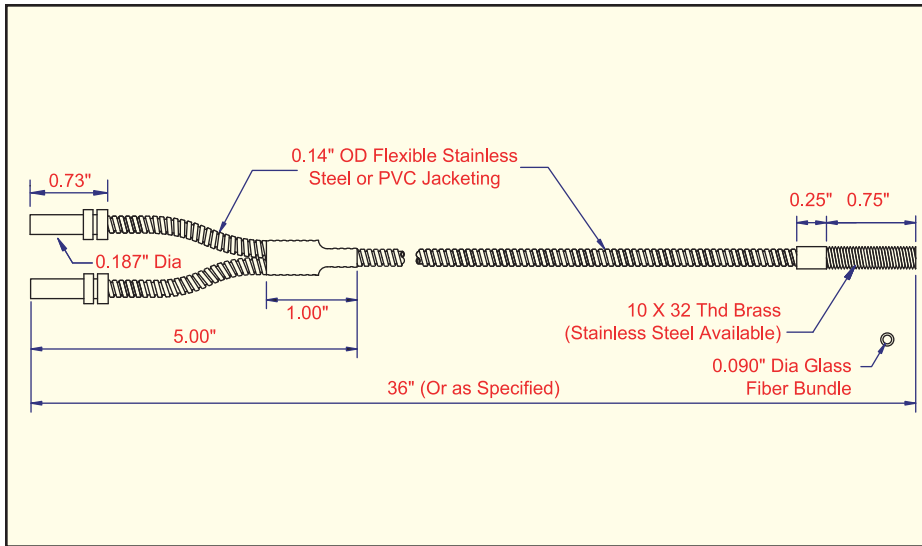
PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MF-J-36P	.027"



Miniature Glass Bifurcated Light Guides

FINALLY... BIFURCATED FIBEROPTIC LIGHT GUIDES
in a small package with the performance of glass



Miniature Glass Bifurcated Light Guides

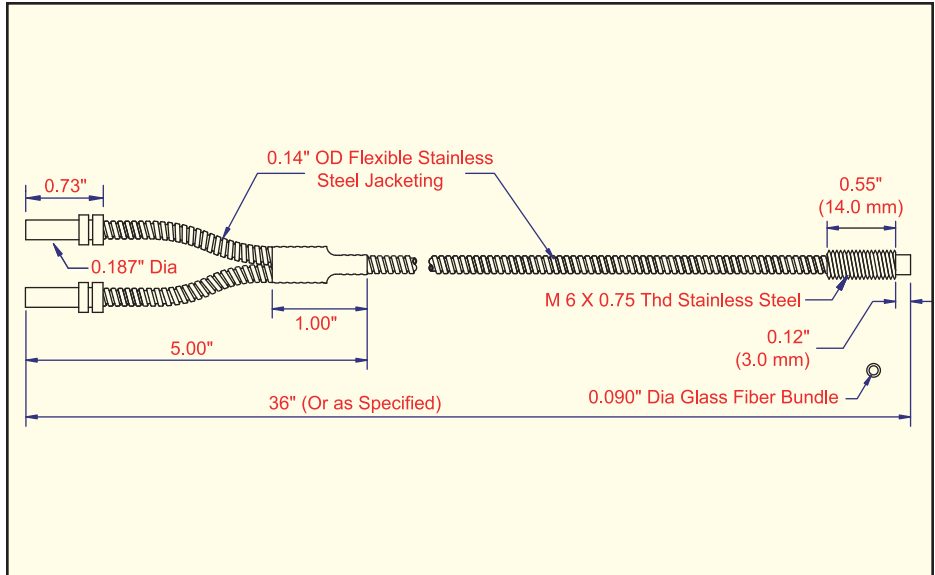
Stainless Steel Jacket

MODEL BUNDLE SIZE
MBF-A-36TM6 .090"



PVC Monocoil Jacket

MODEL BUNDLE SIZE
MBF-B-36TM6P .062"



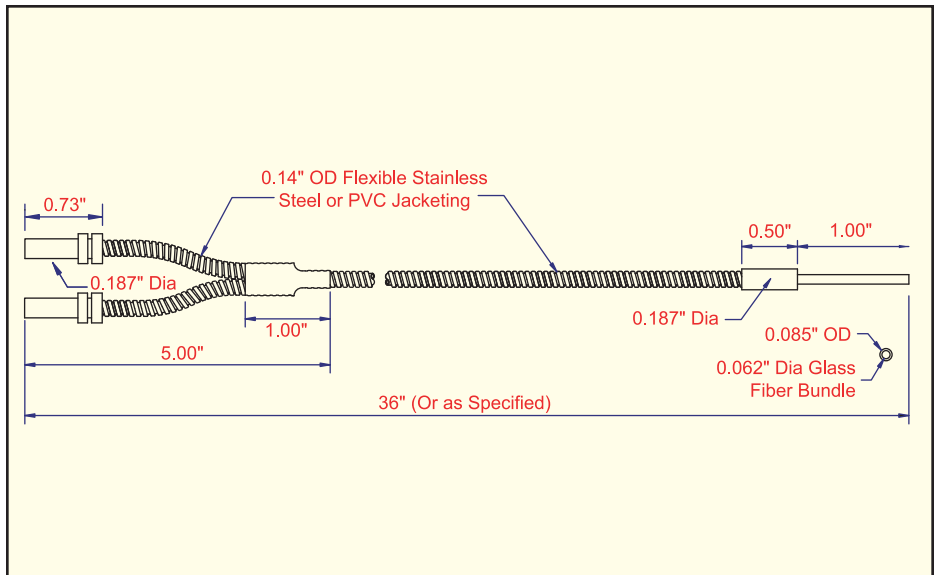
Stainless Steel Jacket

MODEL BUNDLE SIZE
MBF-B-36 .062"



PVC Monocoil Jacket

MODEL BUNDLE SIZE
MBF-B-36P .062"



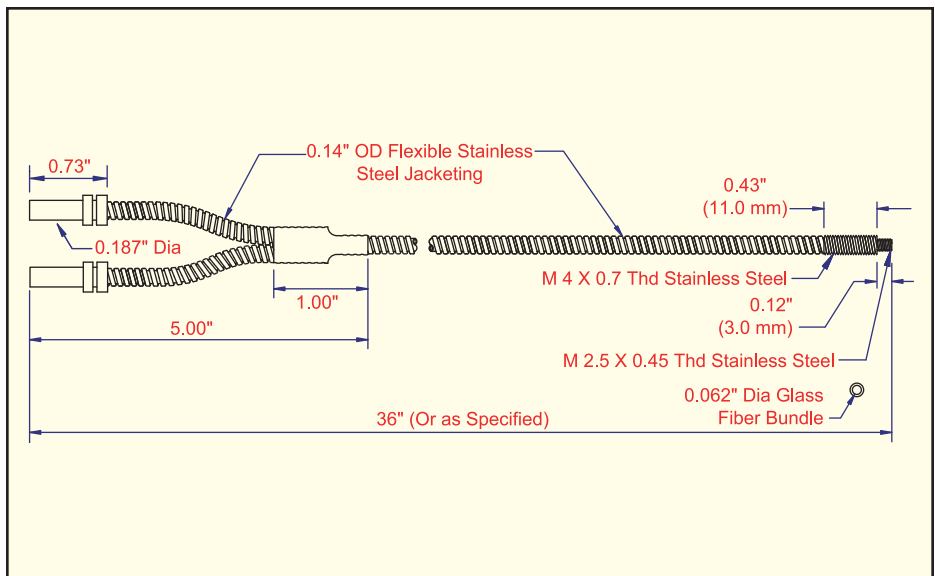
Stainless Steel Jacket

MODEL BUNDLE SIZE
MBF-B-36TM4 .062"

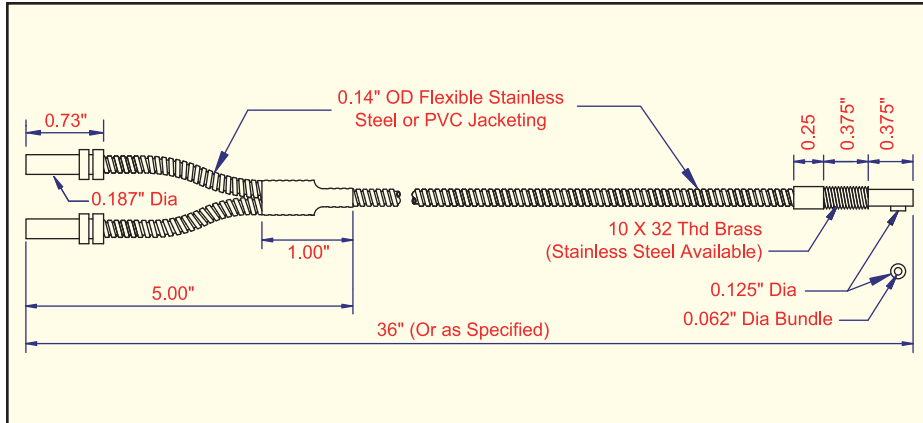


PVC Monocoil Jacket

MODEL BUNDLE SIZE
MBF-B-36TM4P .062"



Miniature Glass Bifurcated Light Guides

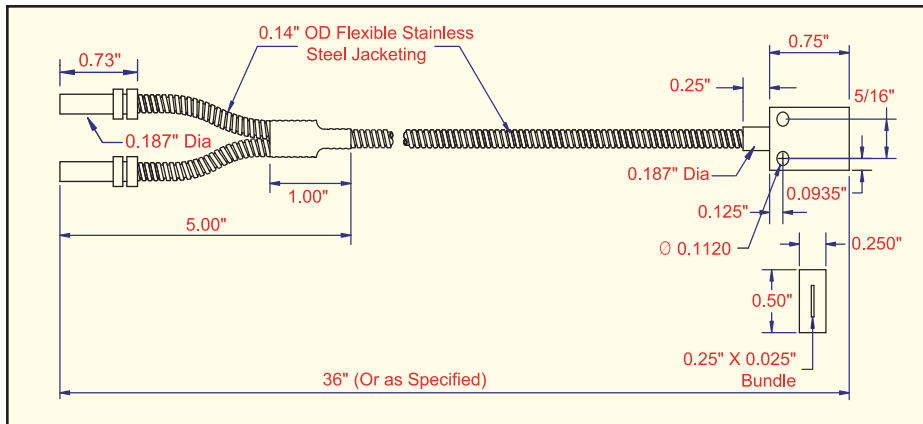


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MBF-B-36RS	.062"

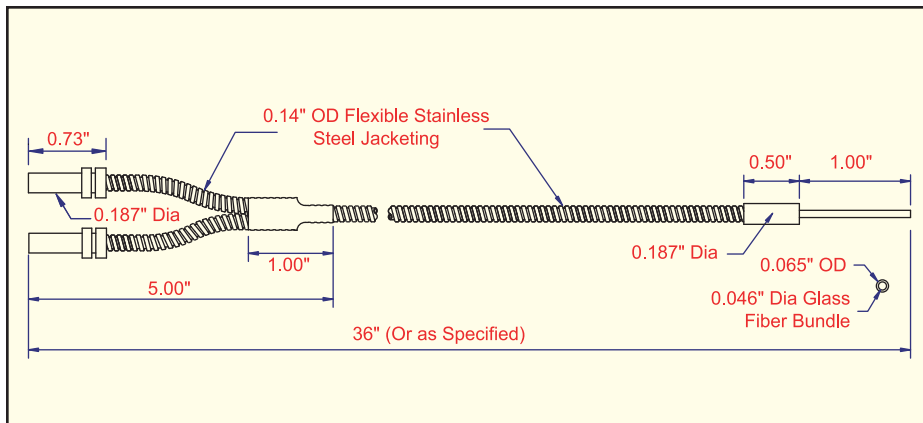
PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MBF-B-36RSP	.062"



**Rectangular Flat Housing
Stainless Steel Jacket**

MODEL	BUNDLE SIZE
MBF-C-36	0.250" X 0.025"

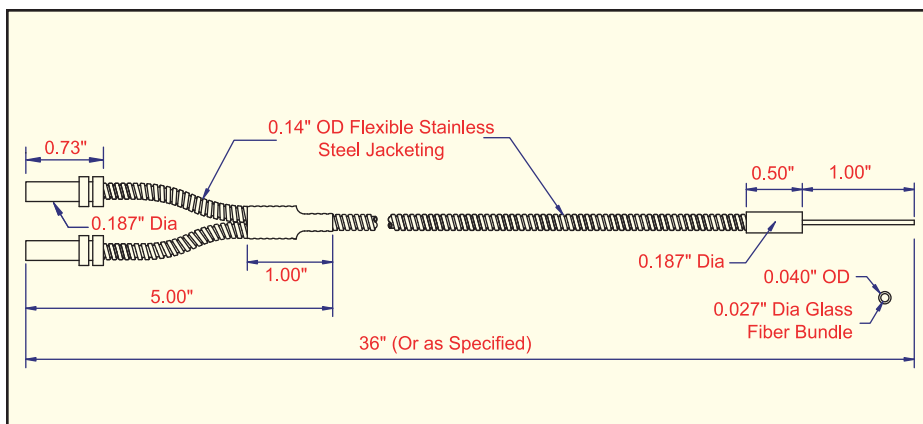


Stainless Steel Jacket

MODEL	BUNDLE SIZE
MBF-E-36	.046"

PVC Monocoil Jacket

MODEL	BUNDLE SIZE
MBF-E-36P	.046"



Stainless Steel Jacket

MODEL	BUNDLE SIZE
MBF-J-36	.027"

PVC Monocoil Jacket

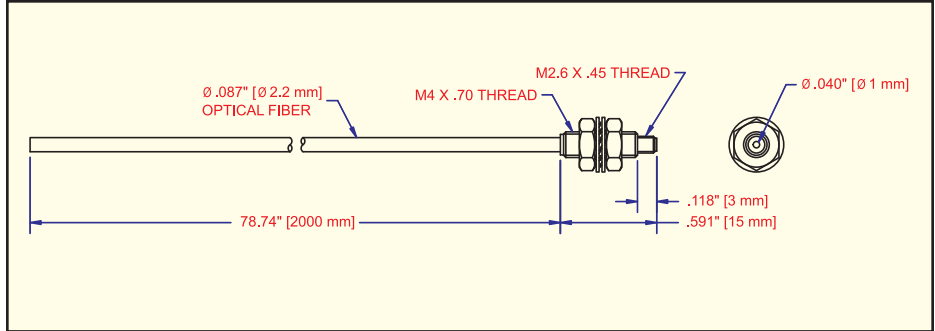
MODEL	BUNDLE SIZE
MBF-J-36P	.027"

Plastic Single Light Guides

All Plastic Fibers are priced per package.
Plastic Single Light Guides have two per package.

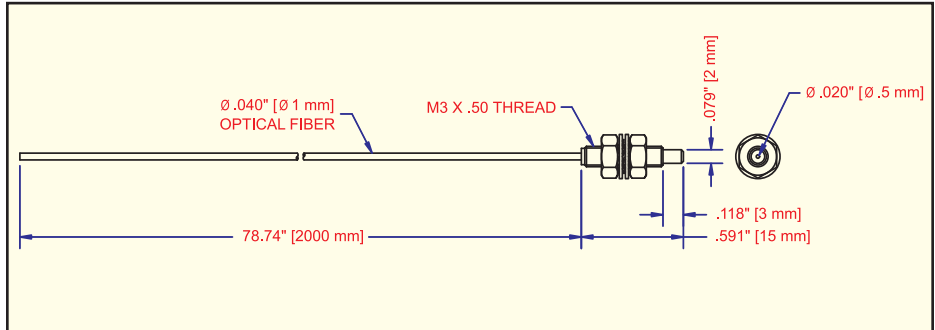
Straight Threaded Tip

MODEL PF-Z-78TL BUNDLE SIZE .040"



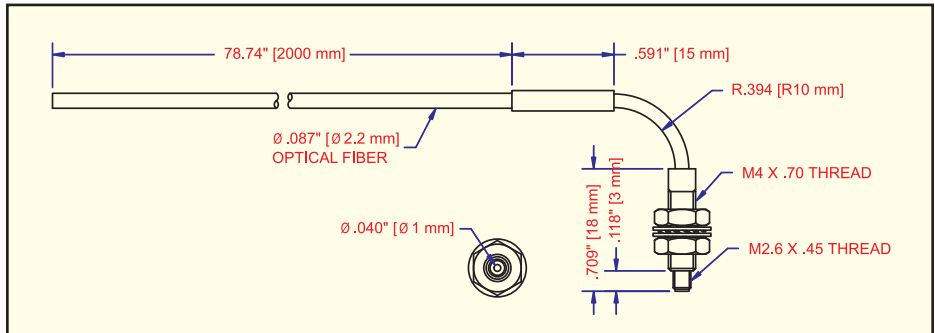
Straight Threaded Tip

MODEL PF-Q-78T BUNDLE SIZE .020"



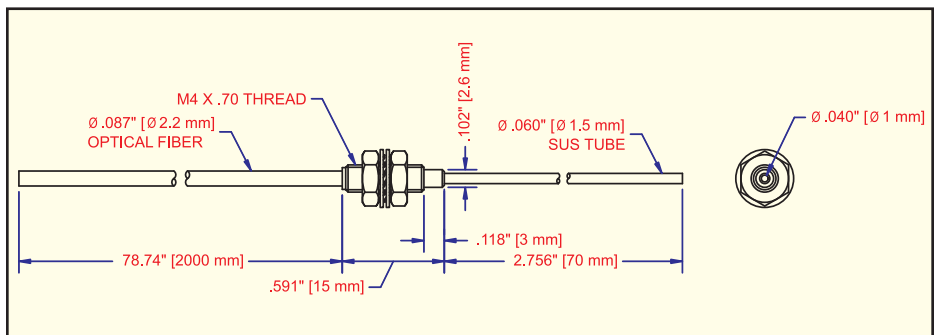
Threaded Tip then Right Angle

MODEL PF-Z-78TRL BUNDLE SIZE .040"



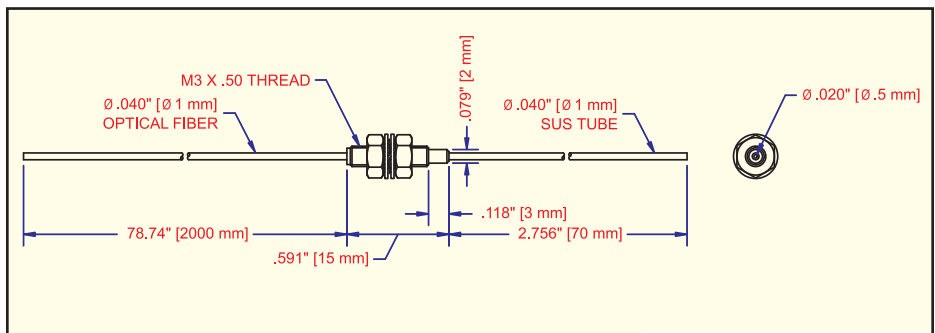
Straight Threaded Needle Tip

MODEL PF-Z-78T70 BUNDLE SIZE .040"



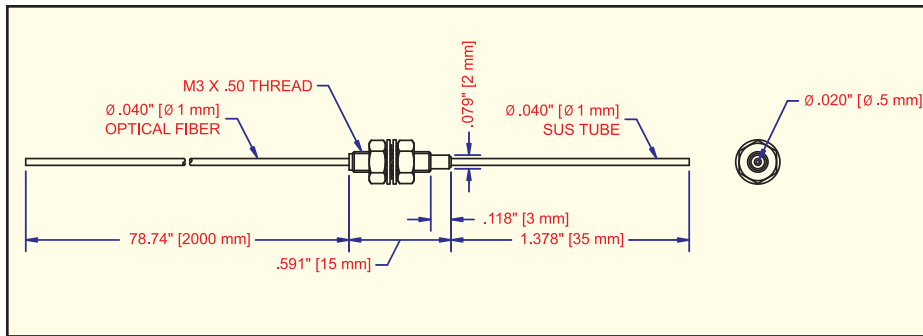
Straight Needle Tip with Threaded Mounting

MODEL PF-Q-78T70 BUNDLE SIZE .020"



Plastic Single Light Guides

All Plastic Fibers are priced per package.
 Plastic Single Light Guides have two per package.

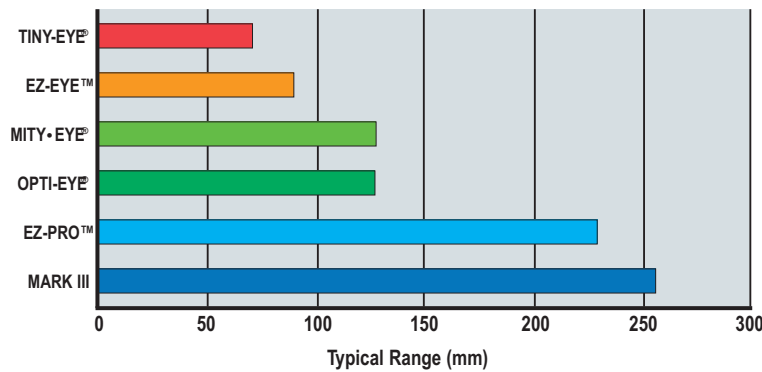


Straight Needle Tip with Threaded Mounting

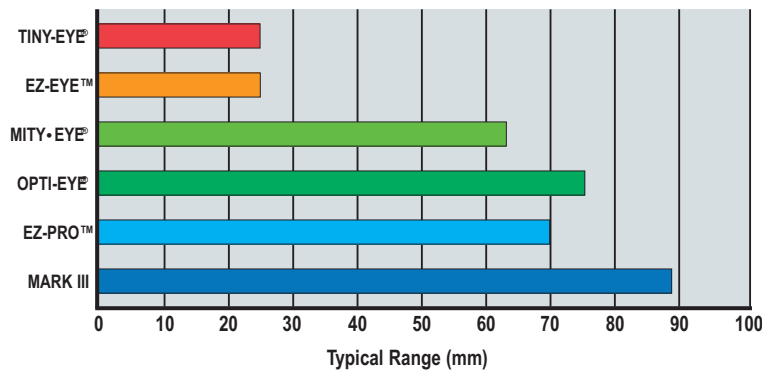
MODEL	BUNDLE SIZE
PF-Q-78T35	.020"

Range Guidelines with Red LED

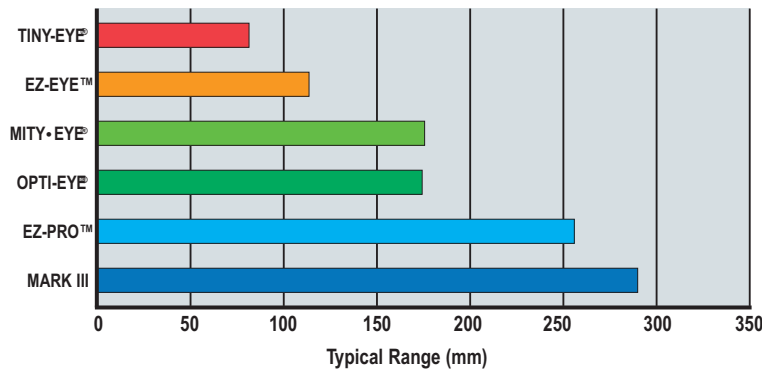
PF-Z-78TL, PF-Z-78T70



PF-Q-78T, PF-Q-78T35, PF-Q-78T70



PF-Z-78TRL

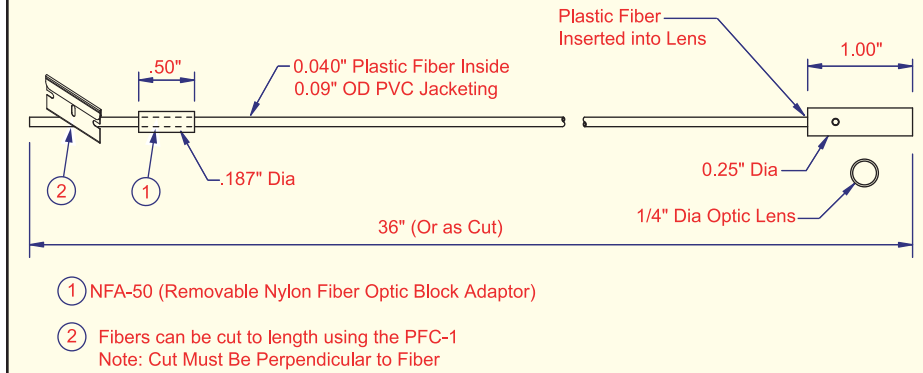


Plastic Single Light Guides

All Plastic Fibers are priced per package.
Plastic Single Light Guides have two per package.

Slip-on Barrel Lens 1/4" x 1"

MODEL	BUNDLE SIZE
LF-G-36	.040" 36" Cable Length
LF-G-72	.040" 72" Cable Length

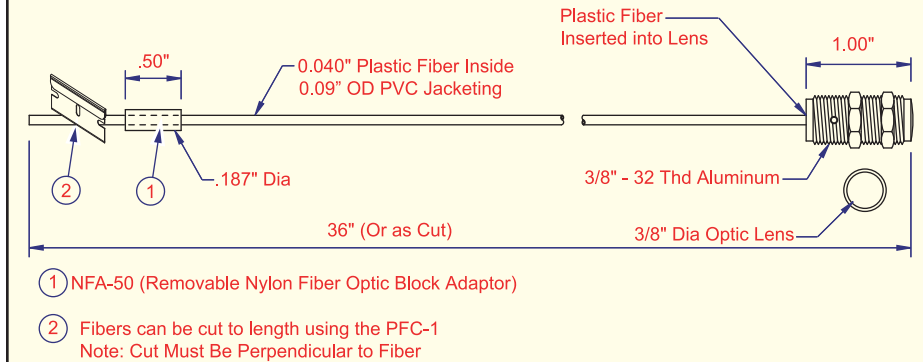


3

Fiberoptic Light Guides

Slip-on Threaded Barrel Lens 3/8" x 1"

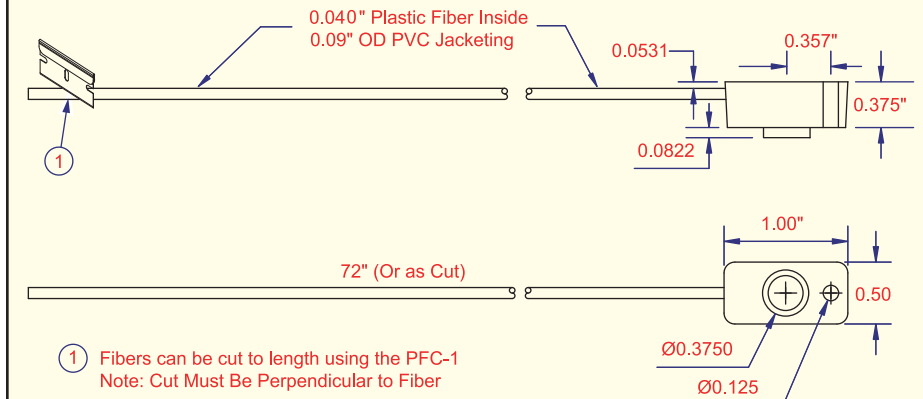
MODEL	BUNDLE SIZE
LF-H-36	.040" 36" Cable Length
LF-H-72	.040" 72" Cable Length



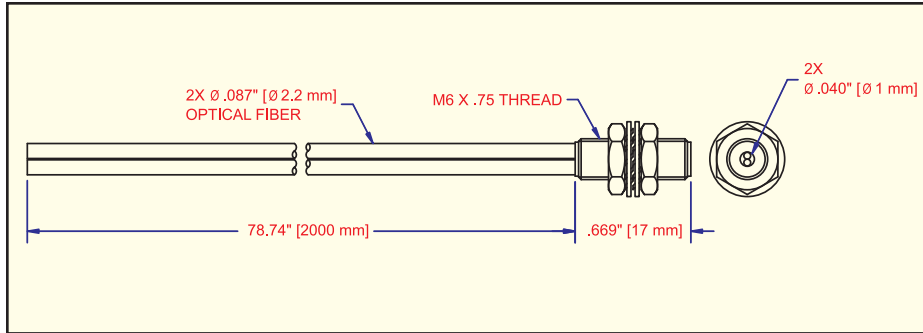
Plastic Fibers Right Angle

MODEL	BUNDLE SIZE
F-S-72R	.040"
F-S-120R	

Low cost, right angle plastic fiberoptic light guides offer the most reliable sensing mode for opaque objects. Wide beam simplifies alignment. **72" or 120" long cut-to-length fibers.**

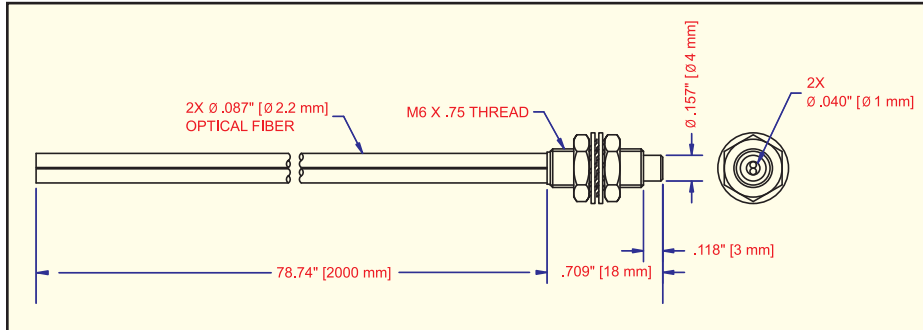


Plastic Diplex Light Guides



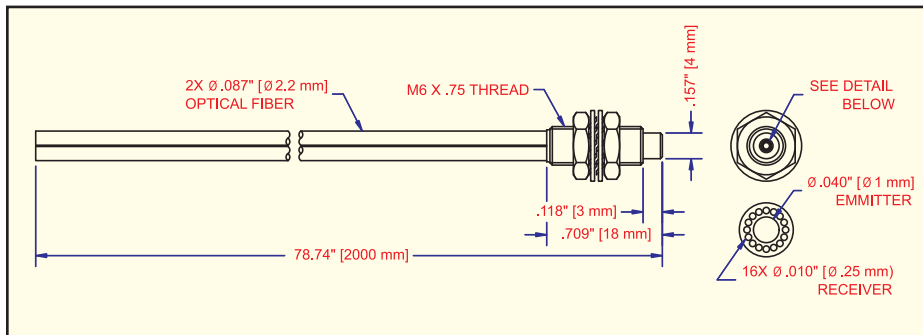
Threaded Tip

MODEL	BUNDLE SIZE
PFD-Z-78M6	.040"



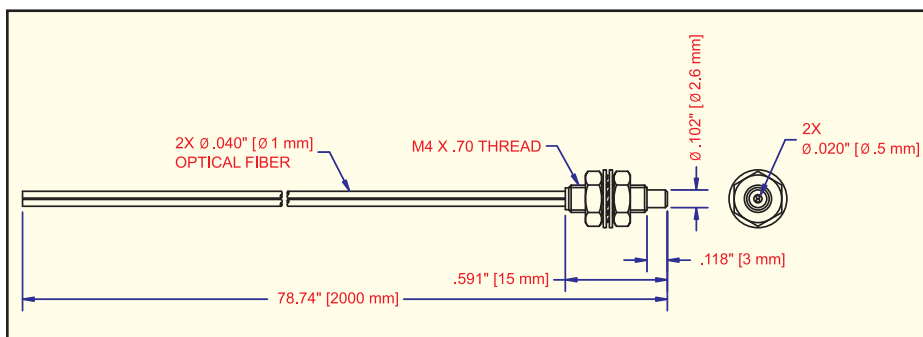
Threaded Tip

MODEL	BUNDLE SIZE
PFD-Z-78M6	.040"



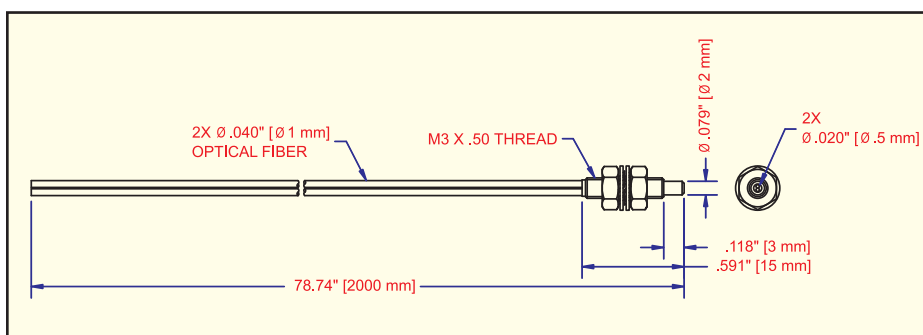
Coaxial Threaded Tip

MODEL	BUNDLE SIZE
PFD-CZ-78T	Emitter: .040" Receiver: .010"



Threaded Tip

MODEL	BUNDLE SIZE
PFD-Q-78M4	.020"



Threaded Tip

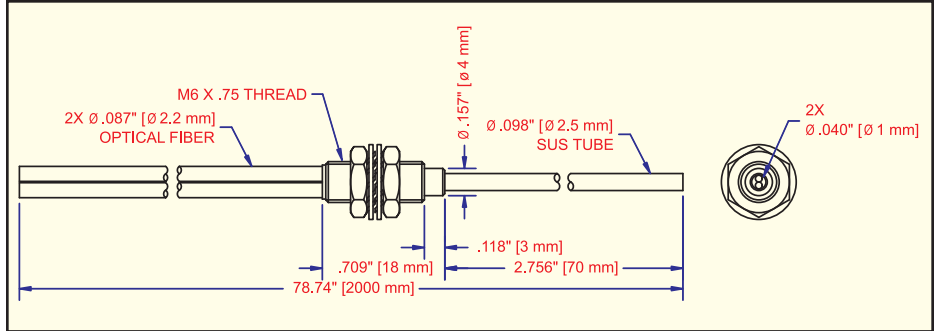
MODEL	BUNDLE SIZE
PFD-Q-78M3	.020"



Plastic Duplex Light Guides

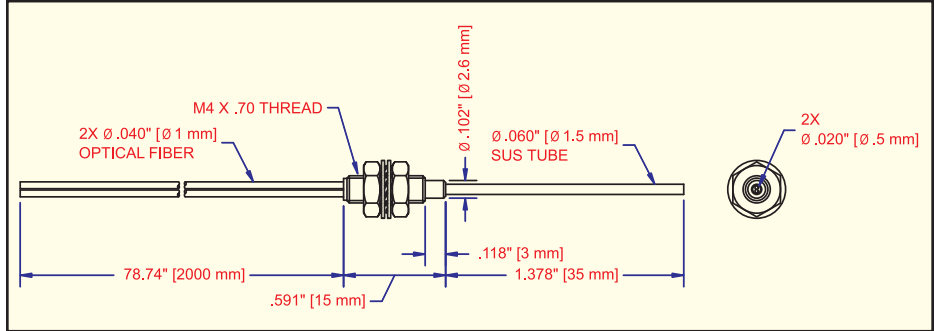
Straight Needle Tip, Threaded

MODEL PFD-Z-78T70 BUNDLE SIZE .040"



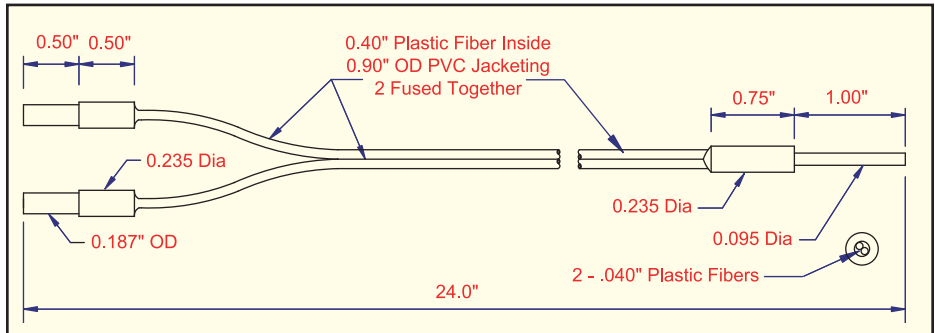
Needle Tip with Threaded Mounting Duplex

MODEL PFD-Q-78T35 BUNDLE SIZE .020"



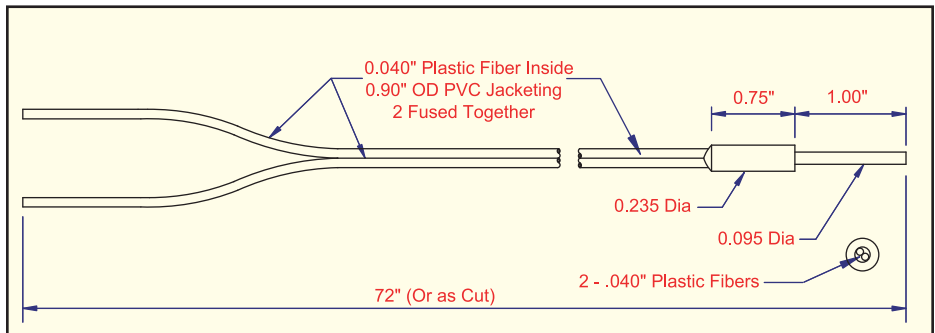
Straight Needle Tip

MODEL BF-W-24PP BUNDLE SIZE .040"



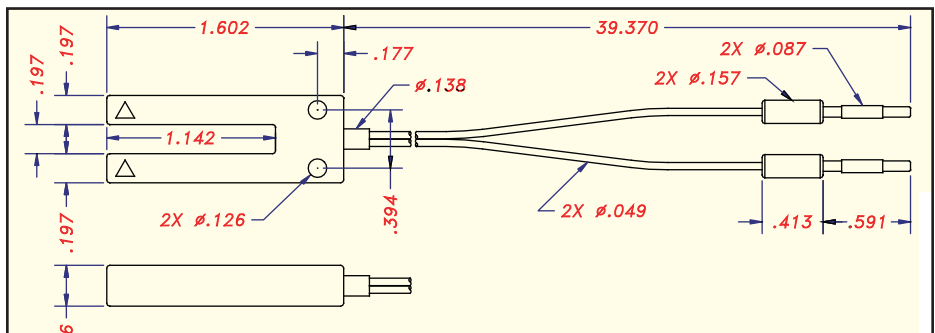
Straight Needle Tip

MODEL BF-Y-72PPC BUNDLE SIZE .040"



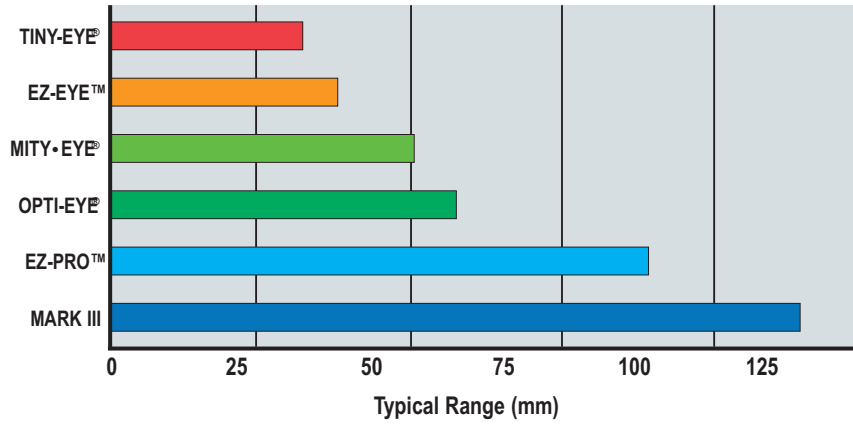
Gap Probe Tip

MODEL PF-G-41 BUNDLE SIZE .40"

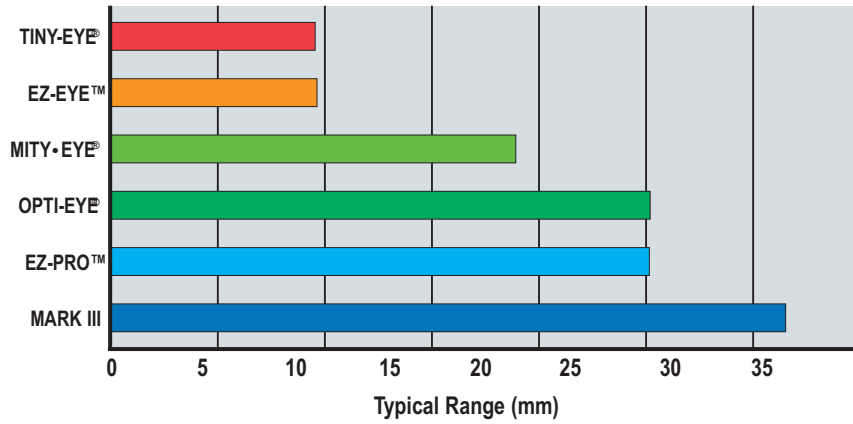


Plastic Diplex Light Guides

PFD-Z-78M6, PFD-Z-78M64, PFD-Z-78T70, PFD-CZ-78T



PFD-Q-78M3, PFD-Q-78M4, PFD-Q-78T35,

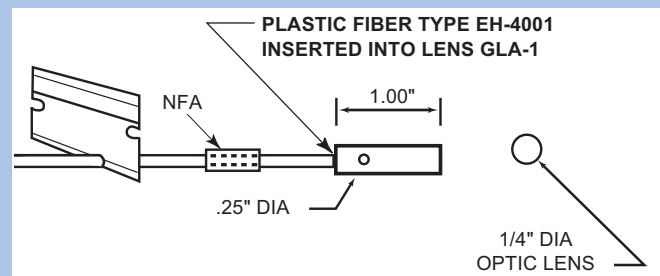
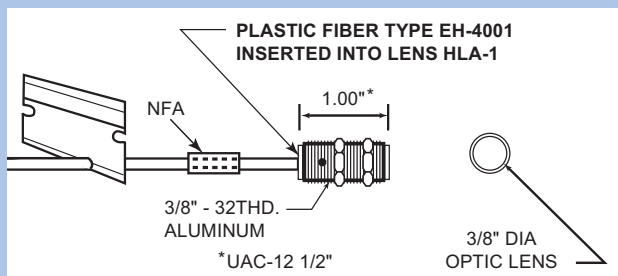


INDIVIDUAL CUT-TO-LENGTH COMPONENTS

Plastic Fiber Cutter, model # PFC-1



Model No.	Description
EH-4001-25	25' of .040 Single Plastic Fiberoptic Cable
EH-4001-50	50' of .040 Single Plastic Fiberoptic Cable
EH-4001-100	100' of .040 Single Plastic Fiberoptic Cable
EH-4002-25	25' of 2-.040" Diplex Plastic Fiberoptic Cable
EH-4002-50	50' of 2-.040" Diplex Plastic Fiberoptic Cable
EH-4002-100	100' of 2-.040" Diplex Plastic Fiberoptic Cable
PFC-1	Plastic Fiber Cutter
NFA-50	.5" Nylon Fiberoptic Adaptor, 50 pieces
NFA12-50	.25" Nylon Fiberoptic Adaptor, 50 pieces



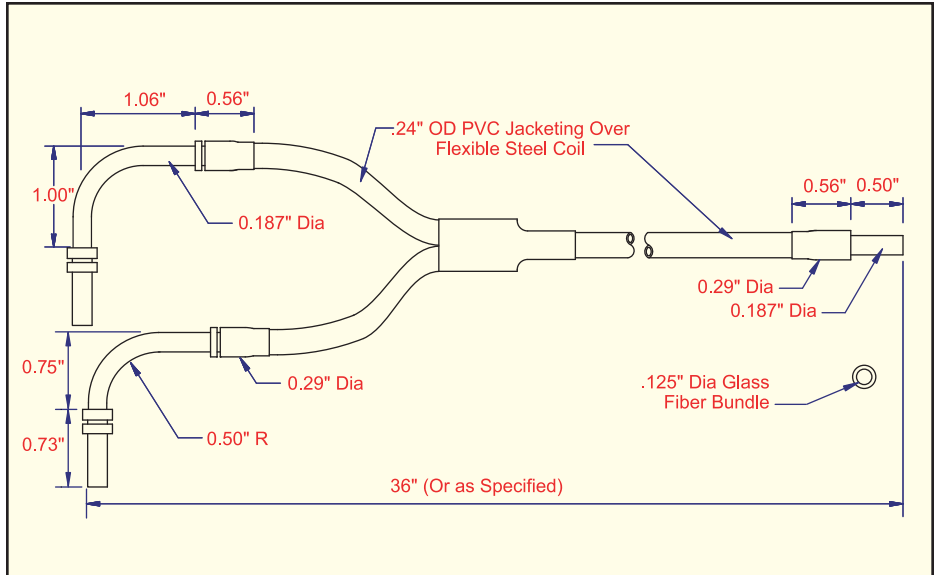
Examples of Custom Light Guides

Custom Fiberoptic tips and lengths BTO (built to order). Please consult factory.

Straight Barrel Tip PVC Monocoil Jacket Low Profile

MODEL
BF-A-36X31

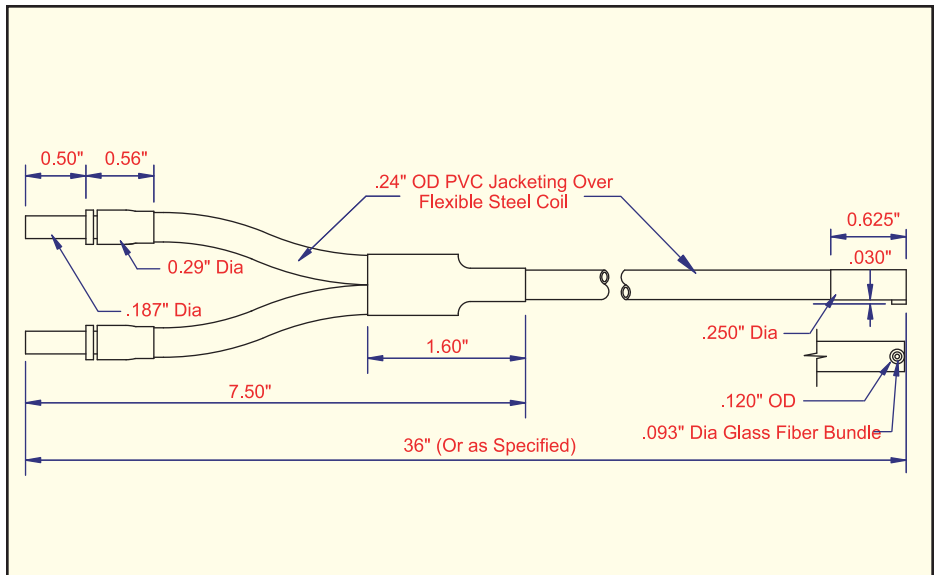
BUNDLE SIZE
.125"



Side View Right Angle Short Tip PVC Monocoil Jacket

MODEL
BF-A-36X408

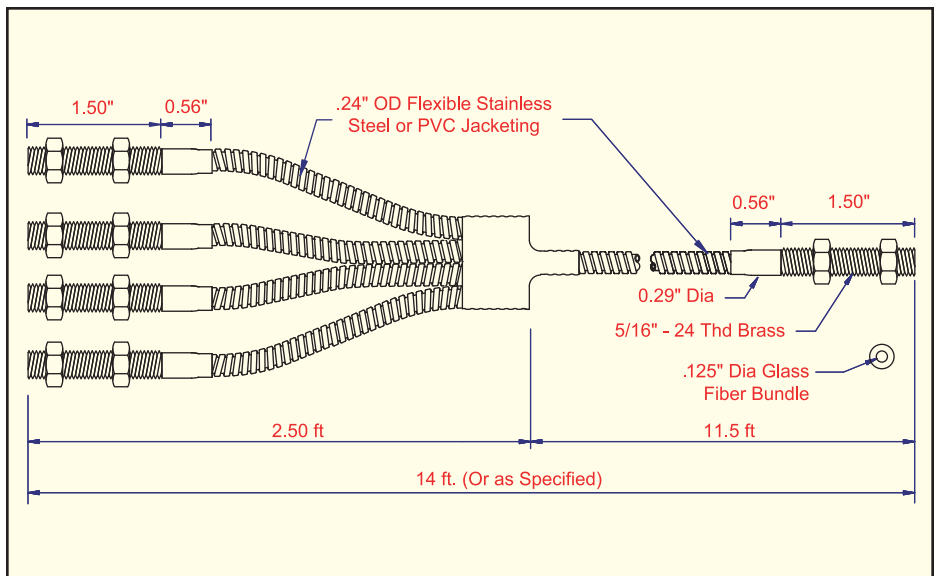
BUNDLE SIZE
.093"



Straight Threaded Tip Stainless Steel Jacket Light Pipe

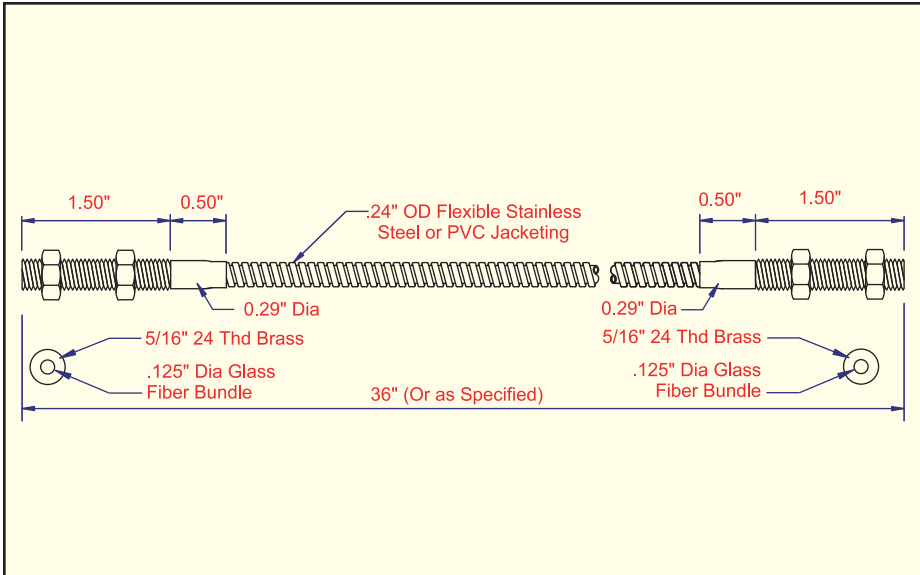
MODEL
F-A-168X448

BUNDLE SIZE
.125"



Examples of Custom Light Guides

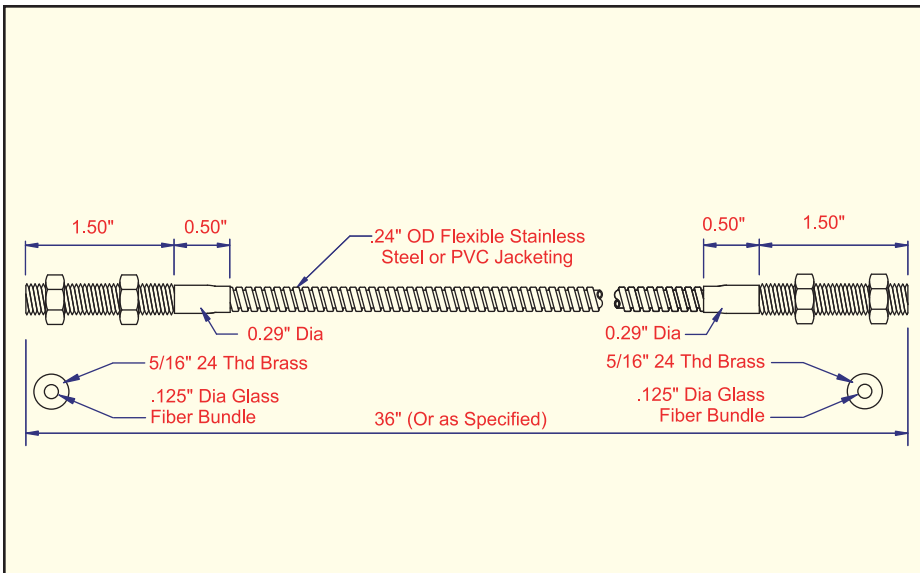
Custom Fiberoptic tips and lengths BTO (built to order). Please consult factory.



Straight Threaded Tip Light Pipe Stainless Steel Jacket

MODEL
F-A-36X70

BUNDLE SIZE
.125"

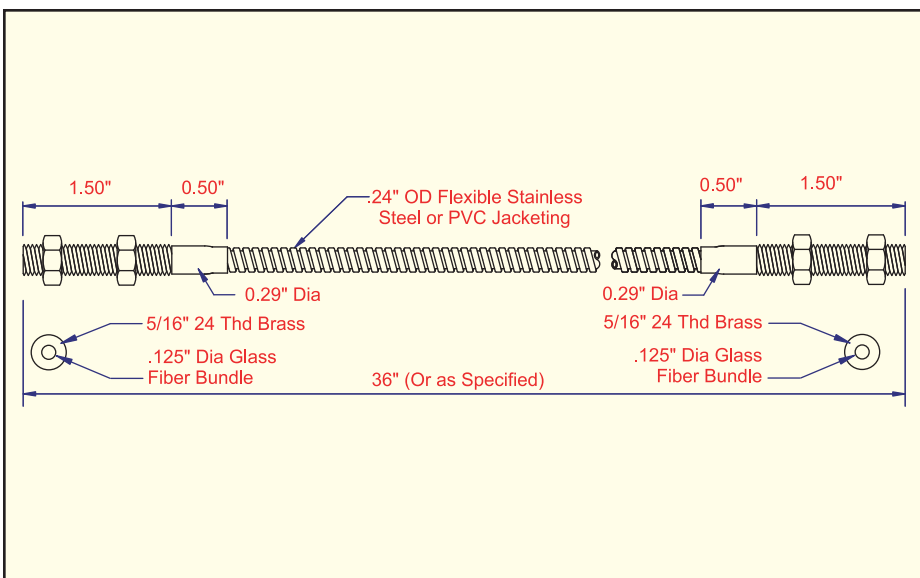


Side View Right Angle Dual Head Tip Stainless Steel Jacket

MODEL
BF-A-36X107

BUNDLE SIZE
.093"

Dual Head Tip



45° Short Curved Tip Stainless Steel Jacket

MODEL
BF-B-36X397

BUNDLE SIZE
.062"

Short Curved Tip

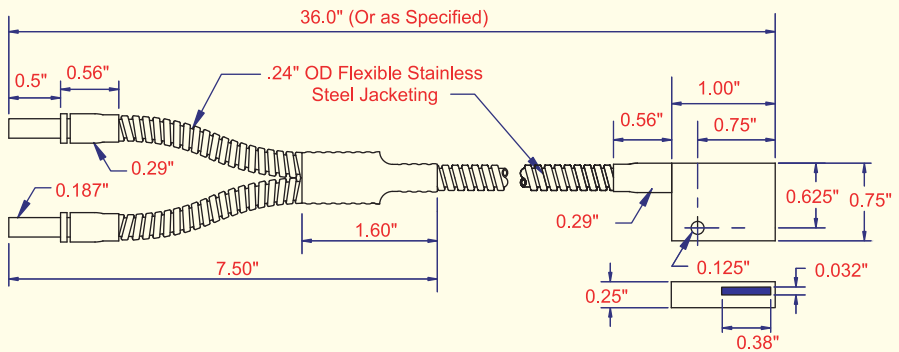
Examples of Custom Light Guides

Custom Fiberoptic tips and lengths BTO (built to order). Please consult factory.

Right Angle "C" Fiber Stainless Steel Jacket

MODEL
BF-C-36X374

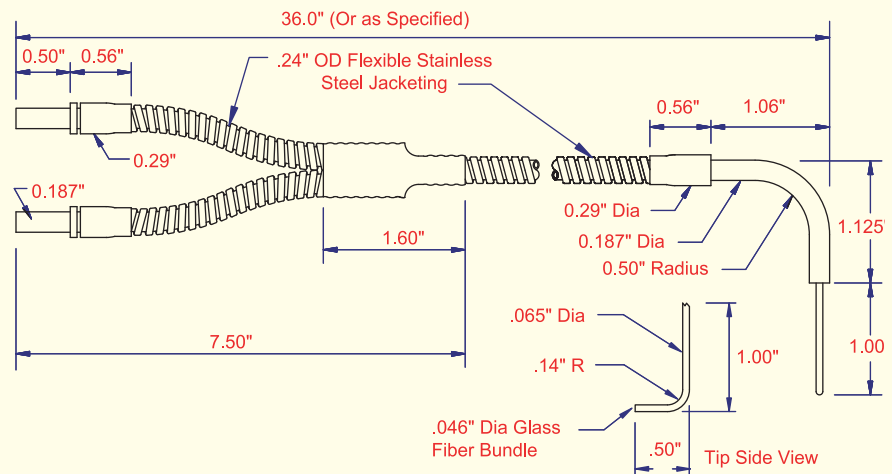
BUNDLE SIZE
0.38" X 0.032"



Jig Fit Fiber Stainless Steel Jacket

MODEL
BF-E-36X92

BUNDLE SIZE
.046"



Jig Fit Fiber Stainless Steel Jacket

MODEL
F-A-36X505

BUNDLE SIZE
.093"

