Application Recommendations

1. Many plastic fiber optic cables are available in different core diameters. Larger core diameter cables can carry more light between the sensor and application. These cables will generally offer longer sensing ranges.

   Smaller core diameter cables provide greater resolution and the ability to detect smaller targets.

2. The Typical Response curves on page 1–348 show the performance of many Allen-Bradley plastic fiber optic sensors and cables. Note that different sensing distances can be achieved depending upon the cable core diameter. These sensing distances must be derated for adverse environments.

   Longer custom cables will attenuate the light and reduce the operating range. Contact Rockwell Automation/Allen-Bradley product support for application assistance.

3. Avoid sharp bends that can permanently deform the cable. Minimum radius bend is 25.4mm (1.0in).

4. Some plastic fiber optic cables can be cut to length. A very sharp right angle cut is essential to provide good performance. The supplied cable cutter #**57–127** must be used. Each opening in the cutter can be used only once.

5. Some sensing tips cannot be bent. **Only special sensing tips can be bent as specified**. Bends should only be attempted in the areas shown in the illustrations on pages 1–353 to 1–357.

6. Plastic fiber optic cables are suitable for applications where the sensor must be isolated from high voltage.

7. X-RAY or GAMMA radiation will cause plastic fibers to eventually become opaque. Custom cables constructed with special optical quartz fibers must be ordered for use in areas with high radiation.

8. Use Transmitted Beam sensing in submerged applications when possible.

9. A plastic fiber optic sensor with a duplex cable can provide Retroreflective or Diffuse sensing depending upon the distance to the target and the sensitivity adjustment on the sensor. If the sensor and cable are to be used for Retroreflective sensing, the sensitivity of the sensor must be adjusted low enough to avoid unwanted diffuse response from the targets to be sensed.

10. **Plastic fiber optic cables have a wide field of view**. A smaller field of view can be achieved by attaching an Extended Range Lens Assembly such as the #**63–118** (see Plastic Fiber Optic Cables Accessories) to the sensing end of the fiber. These lens assemblies will also increase the available sensing distance.

11. Plastic fiber optics cables can be used in applications where constant motion or flexing of the cable is required. Some coiled cables are available for these applications.

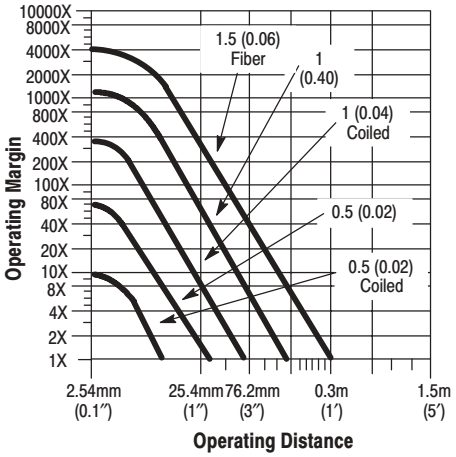
12. Plastic fiber optic cables can be successfully applied in most industrial environments. However, where abrasion or occasional impact to the cable is a concern, stainless steel sheathed glass fiber optic cables may provide more durability.

13. Chemical Resistance: Acid and alkali solvents could damage the Polyethylene Fiber Core. The jacket will offer some washdown protection but long term use in chemical environments could destroy the core material.

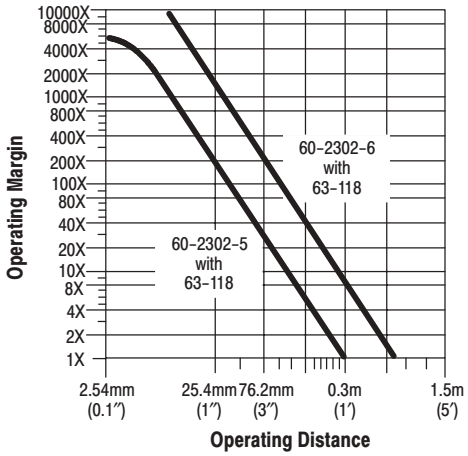
CAUTION: Standard fiber optic cables can be used for explosion-proof applications in hazardous environments. Contact product support for application assistance.

Typical Response Curves for Series 9100—mm (inches)

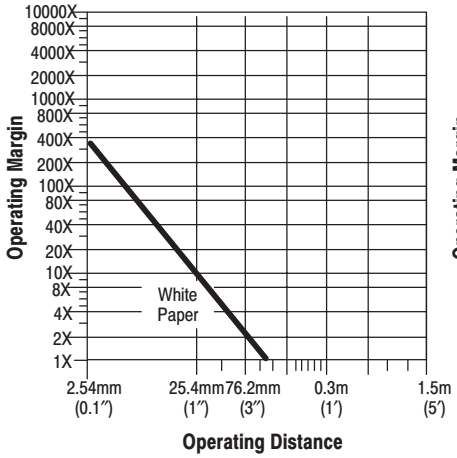
Transmitted Beam



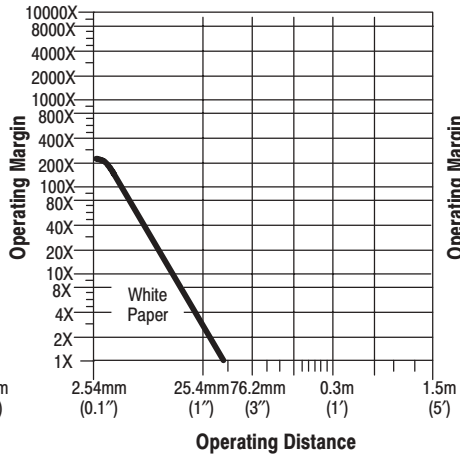
Transmitted Beam



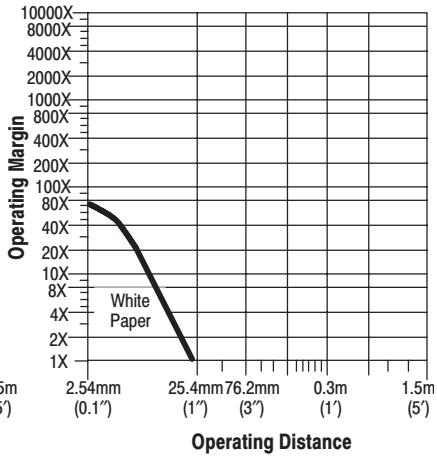
Reflective Beam for 1.5 (0.06) Dia. Fibers with White Paper



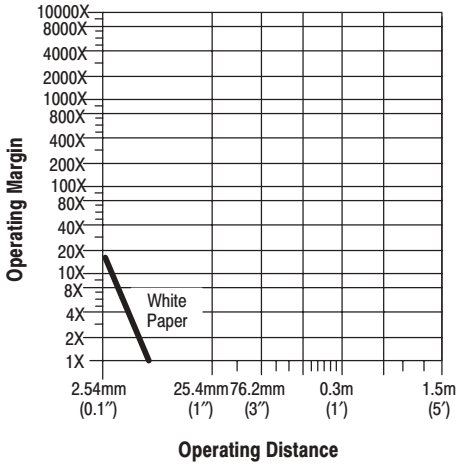
Reflective Beam for 1 (0.04) Dia. Fibers with White Paper



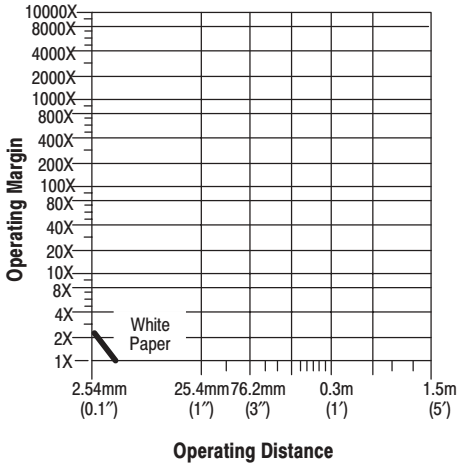
Reflective Beam for 1 (0.04) Dia. Coiled Fibers with White Paper



Reflective Beam for 0.5 (0.02) Dia. Fibers with White Paper

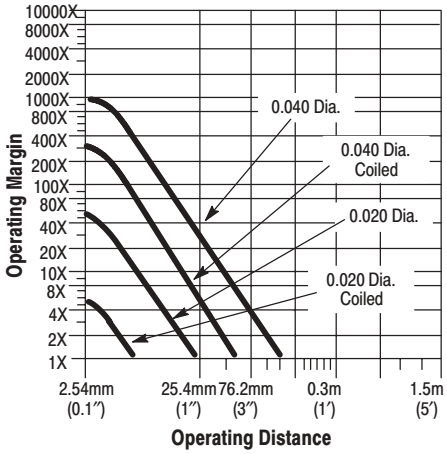


Reflective Beam for 0.5 (0.02) Dia. Coiled Fibers with White Paper

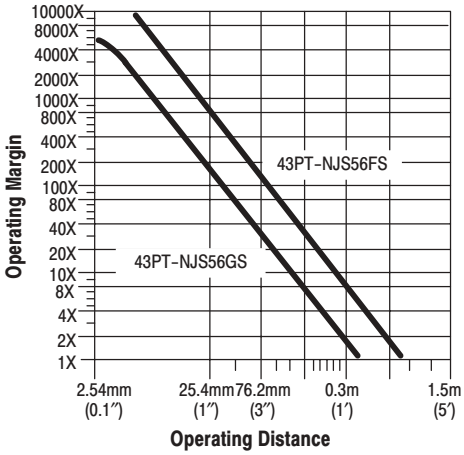


Typical Response Curves for Series 7000—mm (inches)

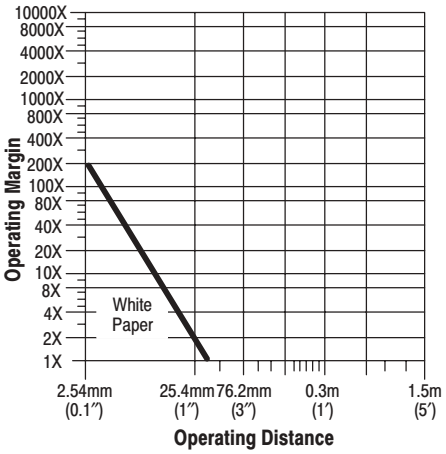
**Transmitted Beam
0.5 (0.020) and
1 (0.040) Dia.**



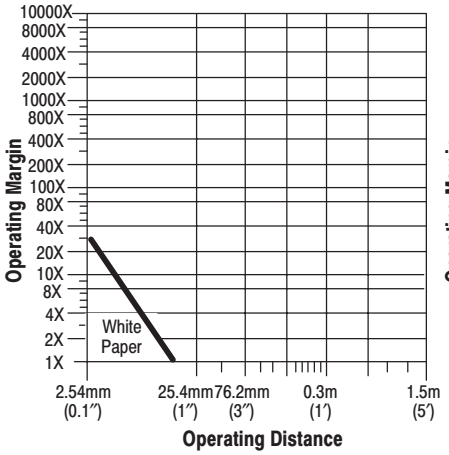
**Transmitted Beam
1 (0.040) Dia. with 63–118
Extended Lens**



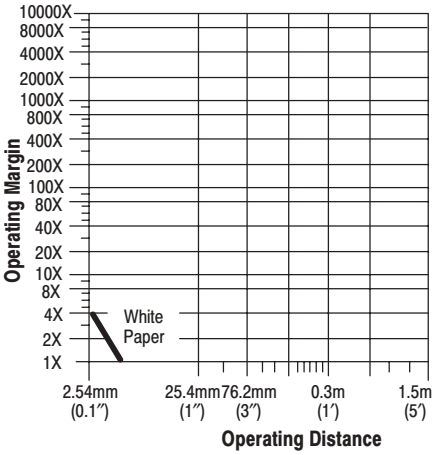
**Reflective Scanning
1 (0.040) Dia.**



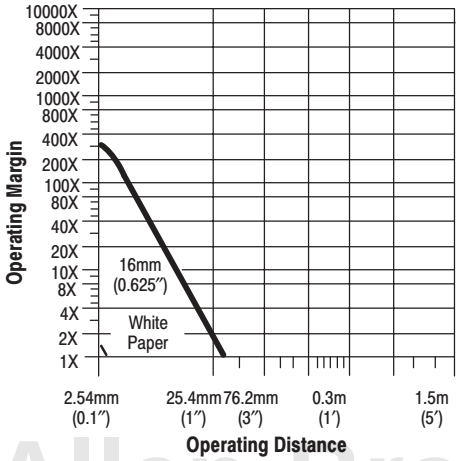
**Reflective Scanning
1 (0.040) Dia. Coiled**



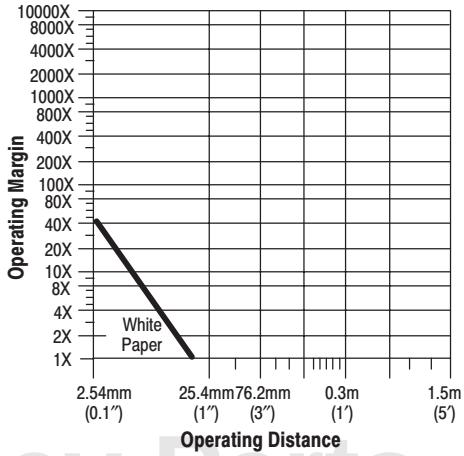
**Reflective Scanning
0.5 (0.020) Dia.**



**Reflective Scanning
0.5 (0.020) Dia. Coiled**



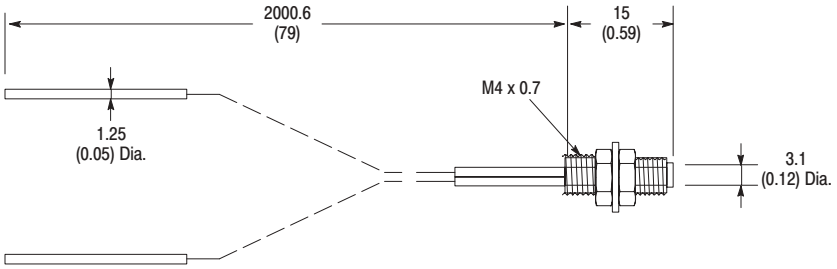
**Reflective Scanning
Plastic Fiber Optic #99–84**



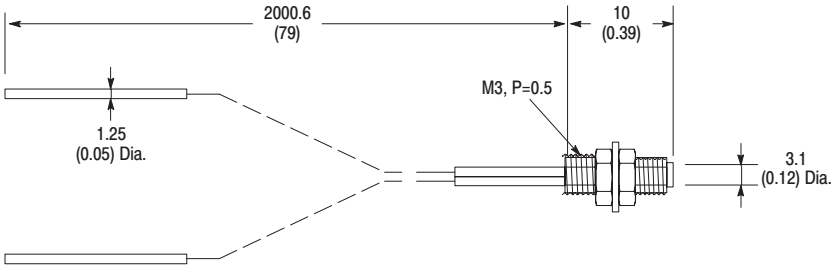
Plastic Fiber Optic Cables

Miniature Cables for Small Aperture Sensors (adaptor required)

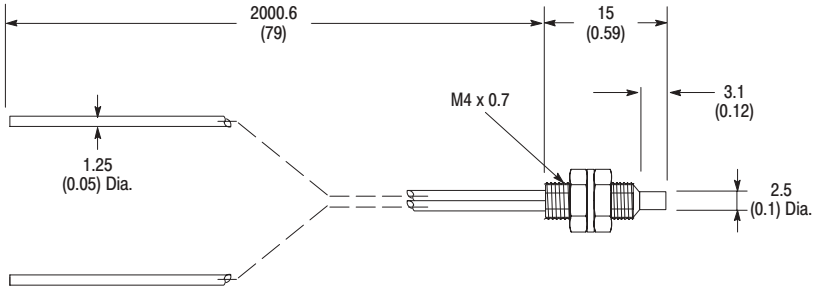
Dimensions and Diameters—mm (inches)



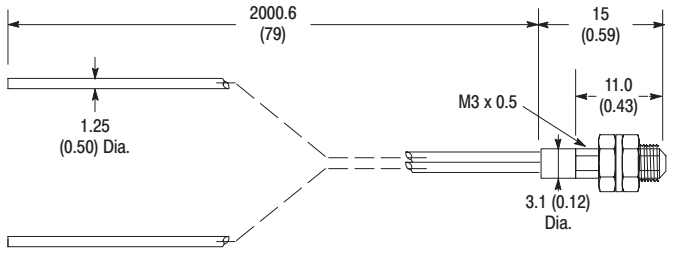
New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-NAS57ZM	**99-802**	Stainless Steel	2 x 1 (0.04)	Polyethylene	90 (3.5)
43PR-NAS60FM	**99-803**		1 x 0.5 (0.02) 4 x 0.25 (0.01)		10 (0.4)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-NBS63YM		Stainless Steel	2 x 0.25 (0.01)	1 R Polyflex	7 (0.28)

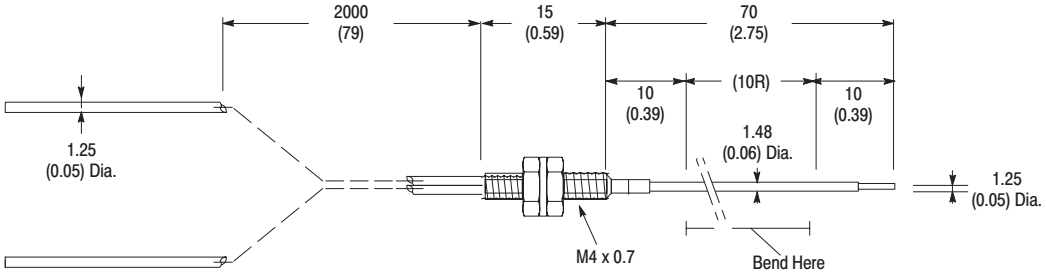


New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-NFS53FM	**99-806**	Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)

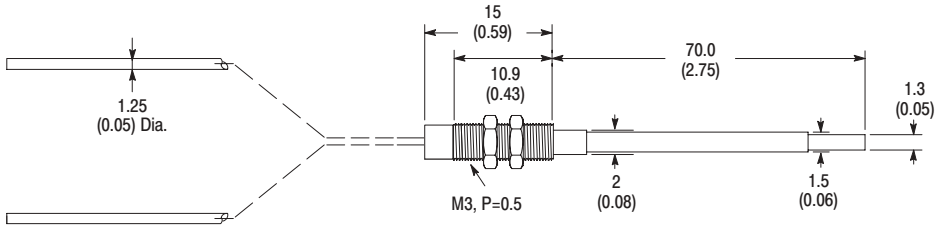


New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-NGS53ZM	**99-808Z**	Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)
43PR-NGS55ZM	**99-809Z**		2 x 0.75 (0.03)		55 (2.2)
43PR-NGS63YM			2 x 0.25 (0.01)	4R Polyflex	5 (0.2)

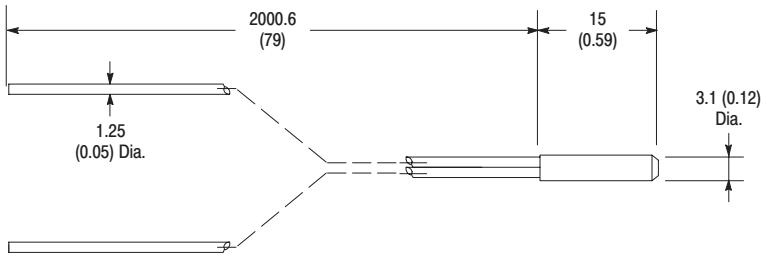
Dimensions—mm (inches)



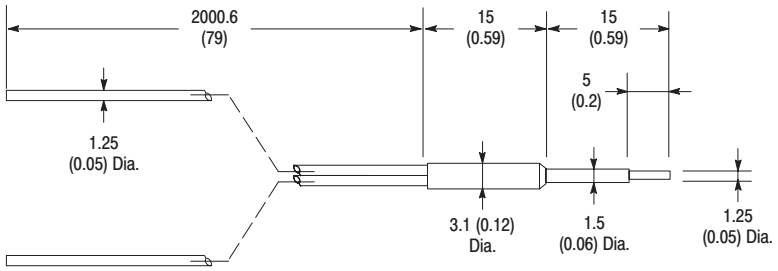
New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-PGS53ZM		Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-PHS53ZM		Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-CBS53ZM	**99-814**	Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)

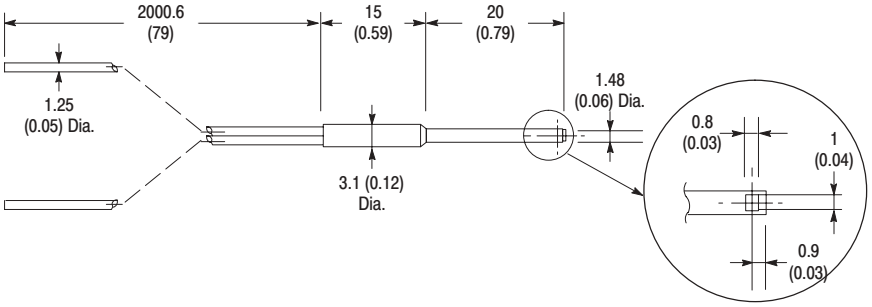


New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-AAS53ZM	**99-816**	Stainless Steel	2 x 0.5 (0.02)	Polyethylene	25 (1.0)

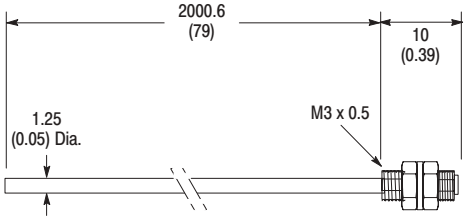
Plastic Fiber Optic Cables

Miniature Cables for Small Aperture Sensors (adaptor required)

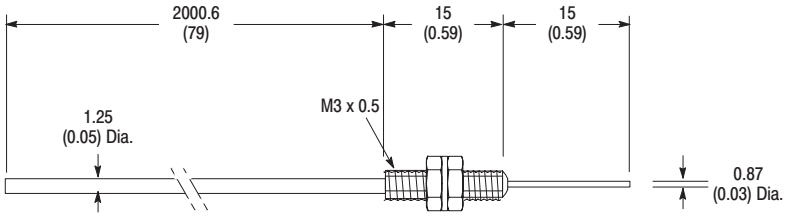
Dimensions—mm (inches)



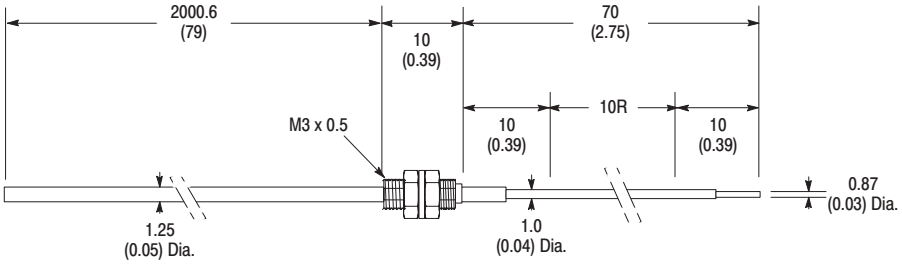
New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PR-VBS53ZM	**99-818**	Stainless Steel	2 x 0.5 (0.02)	Polyethylene	10 (0.4)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PT-NBS56FM	**99-820**	Stainless Steel	1 (0.04)	Polyethylene	240 (9.4)
43PT-NBS54FM	**99-821**		0.75 (0.03)		
43PT-NBS52FM	**99-822**		0.5 (0.02)		
43PT-NBS64RM				1R Polyflex	40 (1.6)

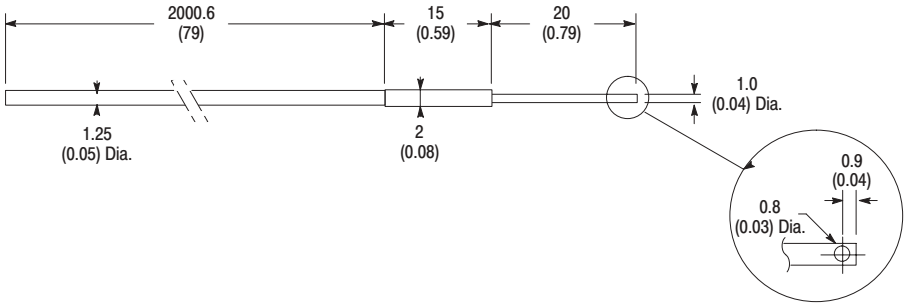


New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PT-PCS52FM	**99-825**	Stainless Steel	0.5 (0.02)	Polyethylene	65 (2.5)

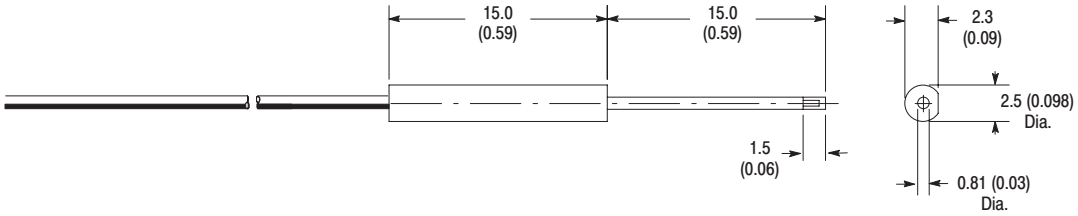


New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PT-PDS52FM		Stainless Steel	0.5 (0.02)	Polyethylene	65 (2.5)

Dimensions—mm (inches)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PT-VAS52FM		Stainless Steel	0.5 (0.02)	Polyethylene	65 (2.5)



New Catalog Number	Prior Catalog Number	Sensing Tip Material	Fiber Diameter—mm (in)	Sheathing Material	Nom. Sen. Ref.—mm (in)
43PT-VCS52FM		Stainless Steel	0.5 (0.02)	Polyethylene	65 (2.5)