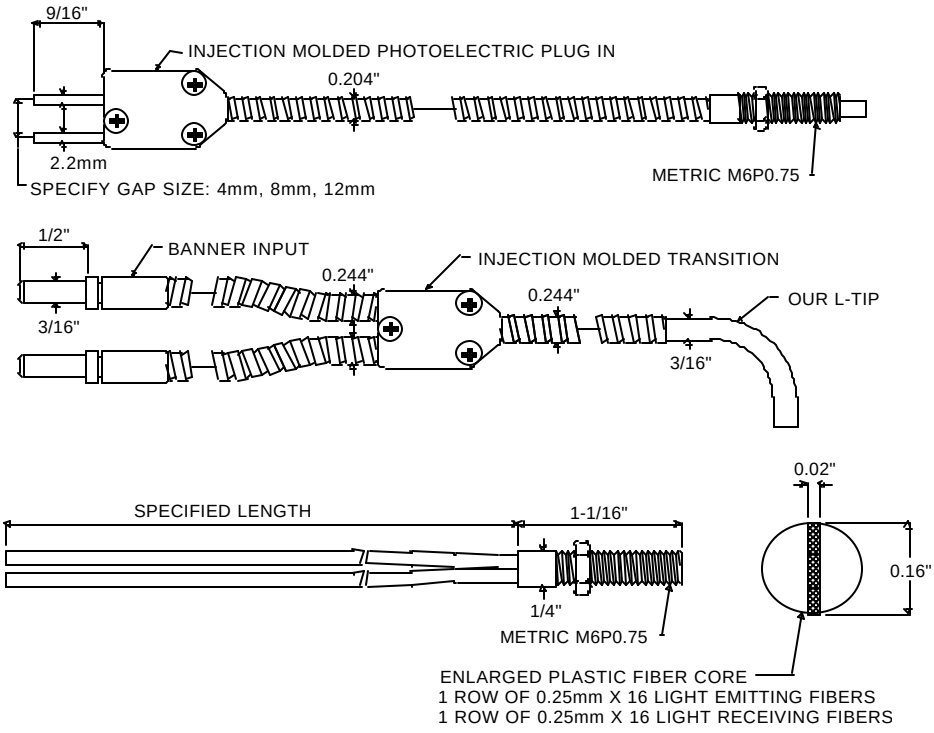
TABLE OF CONTENTS

FIBEROPTIC ENGINEERING CORPORATION

The following pages are dedicated to describing fiber optic scanner geometries and illumination systems we produce as standard components. Our scanner geometries address the American photoelectrics industry, with the versatile Banner tip supplied standard. We also manufacture the inexpensive and efficient Japanese type that require a 2.2mm diameter metal termination or freely cuttable jacketed plastic fiber for direct plug in to there standard photoelectric controls. We inventory all parts in large volume and maintain that volume with two automatic screw machines with capabilities of producing 5000 plus tips per week. We also have our own in house injection molding machine to produce 2000 plus per day transitions and plug in termination's for Japanese photoelectrics.



Some of our more popular configurations

Our glass fibers are made with premium core material from Schott Optical, the oldest and highest quality glass maker in the world. This results in glass fibers equal or superior to any competitor here or abroad. Manufacturing glass fiber is accomplished on two ten foot diameter drawing wheels with solid state programmable controls that wind the required bundle diameter for each application. This results in quick and efficient assembly of scanners since little time is wasted in sizing the bundles. The advantage to the customer is fully stuffed tips, delivering the maximum light output consistently from assembly to assembly.

We utilize, as standard, a high quality 200°C epoxy for all glass to metal. For plastic to plastic or plastic to metal we utilize an epoxy certified for the aerospace industry, capable of excellent bonds to the plastic cladding with no deleterious effects.

Finally, all our scanners and illumination systems are automatically polished in a custom powered lapper and final polished in a $12,000 Loh-Wetzler polishing machine until they appear as optical flats, guaranteeing the highest light output.

For nonstandard fiber optic scanners please send us your print we have one of the quickest turnaround times in the business. We offer a high level of engineering expertise in solving difficult fiber optic applications. Please consult with us if you have any questions.

GLASS FIBER OPTICS

We use the highest quality glass from Schott Optical. Our glass fibers are equal or superior to any competitor here or abroad. Please see bottom of page for our transmission specifications. These transmission specifications are standard for glass, do not be fooled by fiber optic houses calling out higher transmission. For greater transmission please look at plastic or fused silica.

Our opposed (thru-beam) and reflective constructions utilize standard 400°F epoxy. Special configurations to 950°F are available. All our configurations come standard with stainless steel metal hose. Where liquids dripping on the fiber are a problem we can utilize either monocoil PVC sheathing or "Viton" tubing over stainless steel metal hose, sealed on both ends with Teflon heat shrink.

Our reflective scanners employ an injection molded transition that is epoxied and screwed together. The stainless steel metal hose is epoxied within this transition. the super smooth interior of the molded transition coupled with the smooth drawn tubing adapters, place the fibers in an excellent mechanical environment as follows.

1.) The fibers never contact the edge of the stainless steel metal hose while in tension from randomizing.

2.) Extreme strength of the junction protecting the fibers from movement at this most critical junction.

3.) If the device must be flexed, flexure will occur through the flexibility of the stainless steel metal hose not through the transition as in the cheap PVC heat shrink transitions

4.) Metal transitions that clamp to the outside of the metal hose are not only never truly secure but the fiber is moved over the edge of the cut-off and deburred metal hose. This is akin to running the fibers over a hacksaw blade.

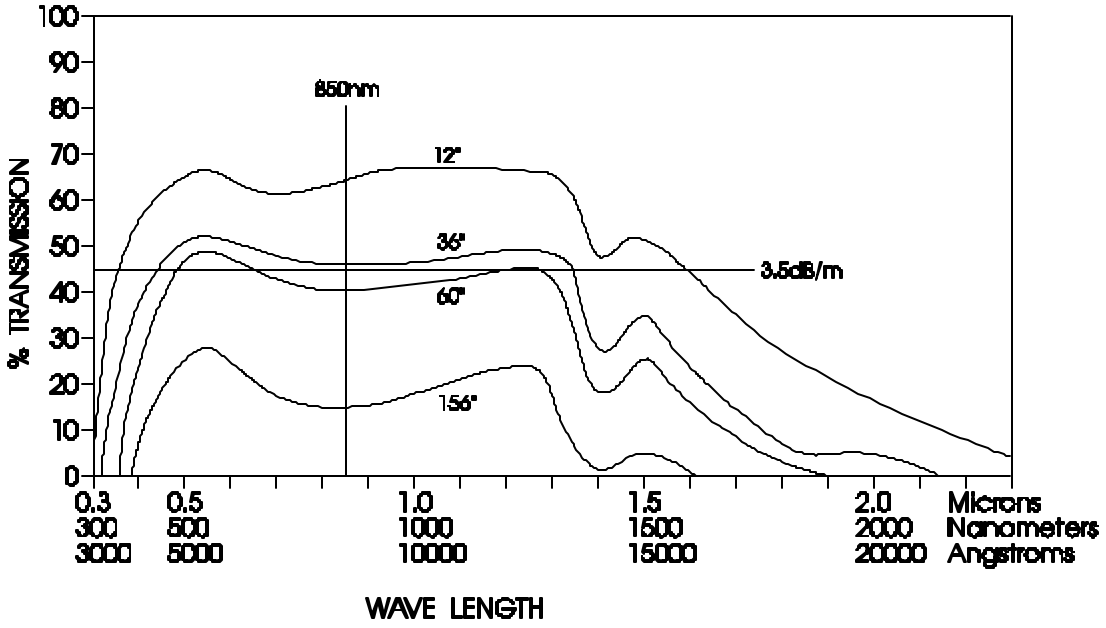
The smooth molded surface of our transition is an elegant solution and too long in coming to the business of quality reflective devices.

Specifications for our standard glass

NA *0.56*

Diameter *50m*

Typical transmission for 1/8" bundles of glass fibers in 12", 36", 60" and 156" lengths.



Order codes S8-24, S8-24-L, S8-24-T will solve 80% of all fiber optic sensing applications. The balance of these illustrations describe other handy geometries to solve less straight forward applications all available from stock.

Order codes S8-24-FM, S8-24-F are designed for edge detection and are available as an injection molded construction for high volume and low cost applications.

Order codes S8-24-LT, S8-24-TL offer mechanical mounting options to make installing and adjusting to one another easier.

Order codes S8-24-T, S8-24-LT are available with our F1.0 threaded lens assembly to increase sensing distance dramatically.

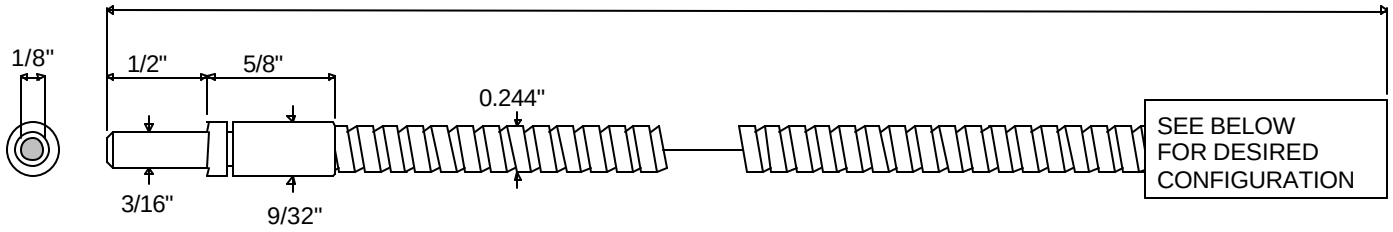
Available in any length to 30”

Standard Ordering lengths of: 24”, 36” & 72”.

OPPOSED CONSTRUCTIONS WITH BANNER INPUT

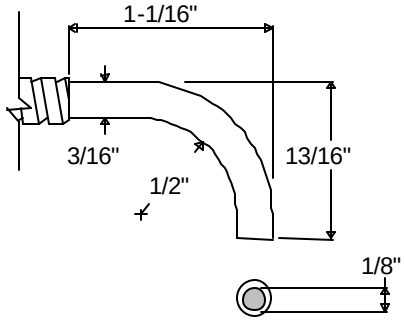
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 1/8"

STANDARD LENGTH 24", 36", OR 72"
Also Available in custom lengths up to 30 Feet

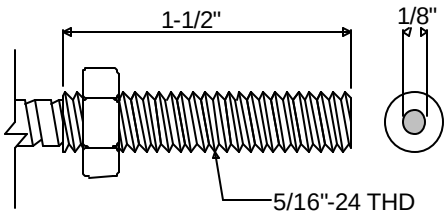


ORDER CODE FORMAT	S8	LENGTH	CONFIGURATION

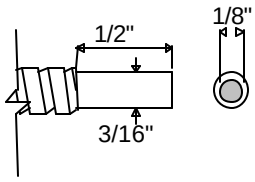
ORDER CODE	S8	24	L
	S8	36	L
	S8	72	L



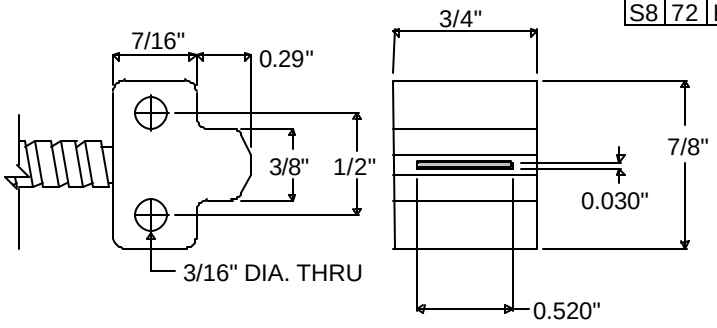
ORDER CODE	S8	24	T
	S8	36	T
	S8	72	T



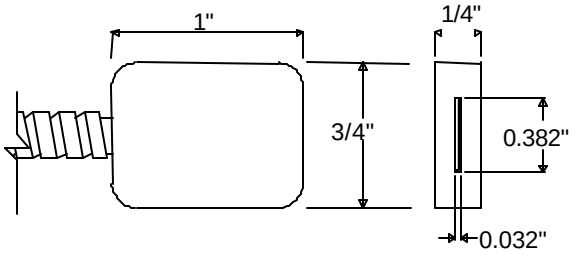
ORDER CODE	S8	24
	S8	36
	S8	72



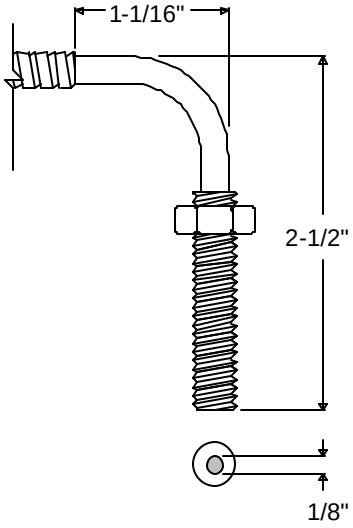
ORDER CODE	S8	24	FM
	S8	36	FM
	S8	72	FM



ORDER CODE	S8	24	F
	S8	36	F
	S8	72	F



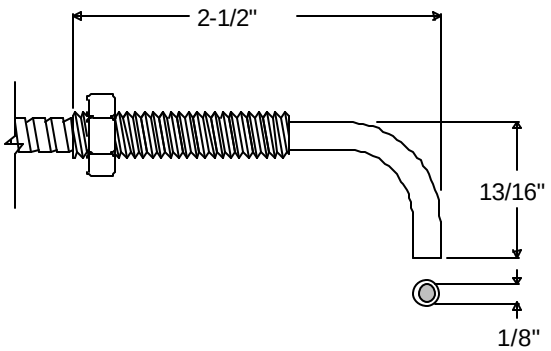
ORDER CODE	S8	24	LT
	S8	36	LT
	S8	72	LT



COMBINATION 90° BEND PLUS 5/16"-24 THREAD NOT TO SCALE

ORDER CODE	S8	24	TL
	S8	36	TL
	S8	72	TL

COMBINATION 5/16"-24 THREAD PLUS 90ø BEND NOT TO SCALE



Order codes S071-24-S, S071-24-L, S071-24-B can be lengthened or shortened to meet your specific requirements. These smaller bundle diameters stuffed in stainless hypodermic needle tubing allow approach to difficult sensing areas and are optimized for small targets.

Order code S8-24-FS is a small rectangular fiber optic aperture that is very effective at sensing small rectangular web marks or for discerning subtle pastel colors against a low contrast web background.

Order code S8-24-FH offers the same advantages as above. Many customers prefer this injection molded termination that allows excellent alignment accuracy when clamped on the 3/16" diameter. This item is also made for volume applications.

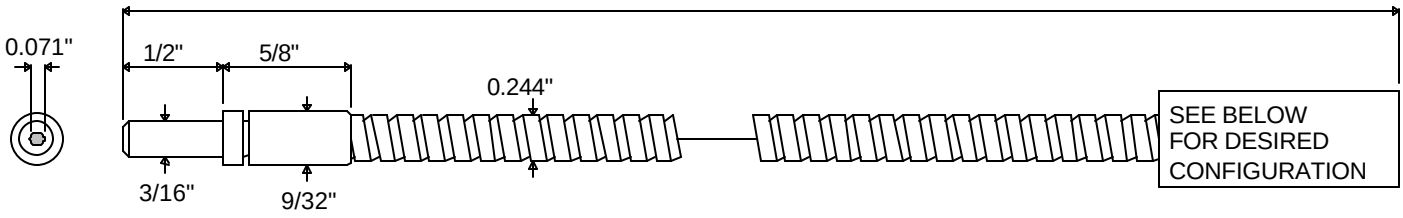
Standard Lengths 24”, 36” or 72”

Custom Lengths up to 30”

[1]OPPOSED CONSTRUCTIONS WITH BANNER INPUT

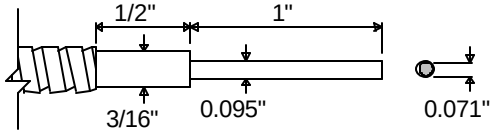
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 0.071"

Standard Lengths 24", 36", 72"
Custom Lengths up to 30 feet

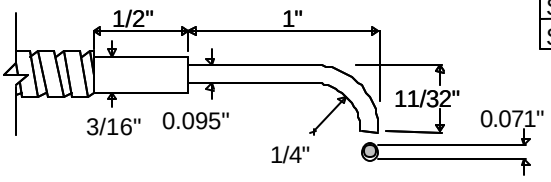


ORDER CODE FORMAT	S071	LENGTH	CONFIGURATION

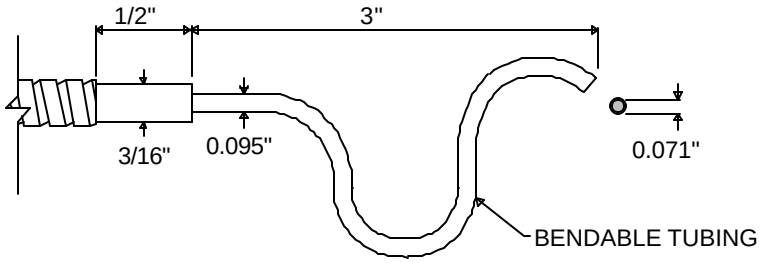
ORDER CODE	S071	24	S
	S071	36	S
	S071	72	S



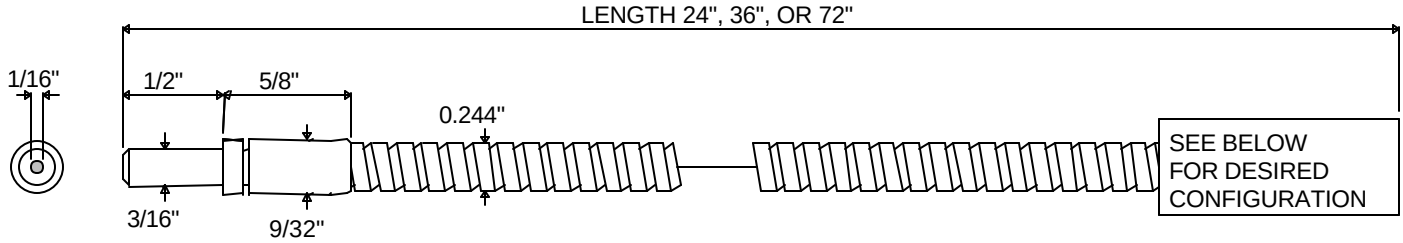
ORDER CODE	S071	24	L
	S071	36	L
	S071	72	L



ORDER CODE	S071	24	B
	S071	36	B
	S071	72	B

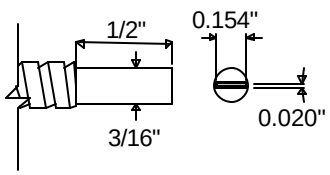


BUNDLE DIAMETER: 1/16"

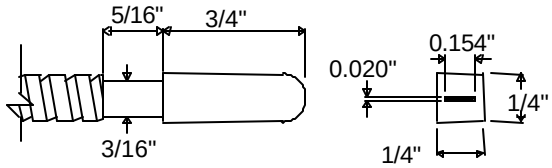


ORDER CODE FORMAT	S6	LENGTH	CONFIGURATION

ORDER CODE	S6	24	FS
	S6	36	FS
	S6	72	FS



ORDER CODE	S6	24	FH
	S6	36	FH
	S6	72	FH



1/16" BUNDLE CONFIGURATIONS CONTINUED PAGE 7

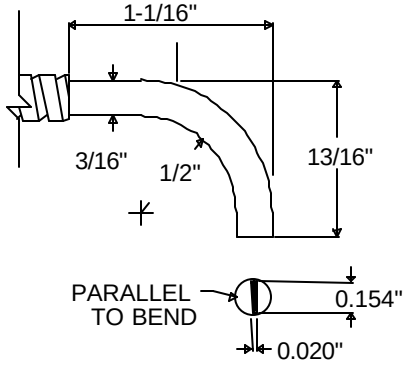
This page is a continuation of useful rectangular aperatures to help solve those "insitu" mounting problems. Please note the different position of the rectangular aperture while maintaining the same exterior shape. For example order code S6-24-FLA has a vertical rectangular aperture while order code S6-24-FLB has a horizontal.

Order codes S6-24-FT, S6-24-FLTB, S6-24-FLTA are available with are F1.0 threaded lens assembly to increase sensing range or by careful alignment detect small changes in geometries to be sensed remotely. Please consult us for help if this is of interest.

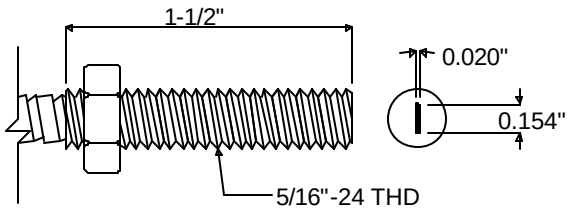
OPPOSED CONSTRUCTIONS WITH BANNER INPUT

1/16" BUNDLE CONFIGURATIONS CONTINUED

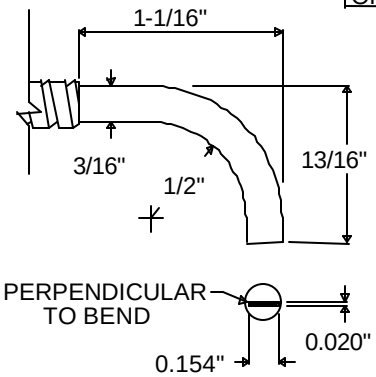
ORDER CODE	S6	24	FLB
	S6	36	FLB
	S6	72	FLB



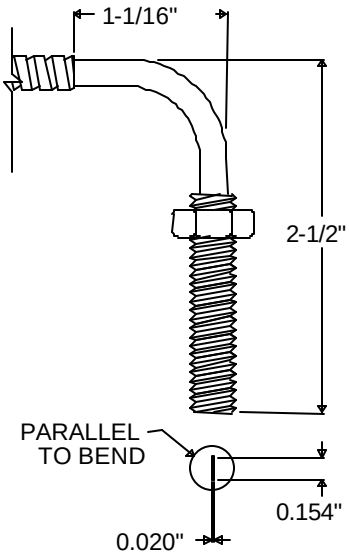
ORDER CODE	S6	24	FT
	S6	36	FT
	S6	72	FT



ORDER CODE	S6	24	FLA
	S6	36	FLA
	S6	72	FLA

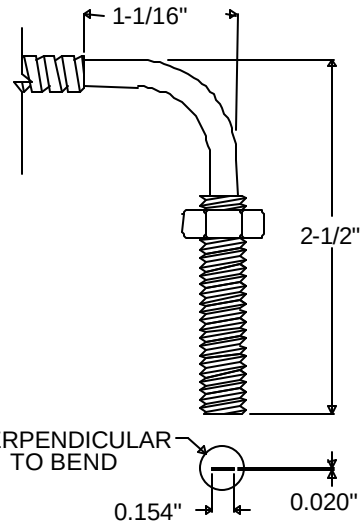


ORDER CODE	S6	24	FLTB
	S6	36	FLTB
	S6	72	FLTB



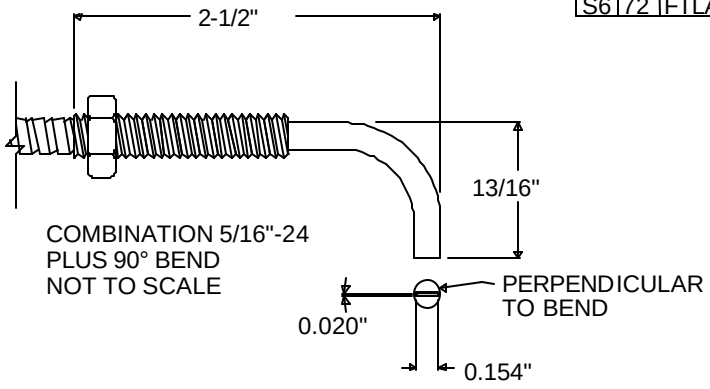
COMBINATION 90°
BEND PLUS
5/16"-24
NOT TO SCALE

ORDER CODE	S6	24	FLTA
	S6	36	FLTA
	S6	72	FLTA



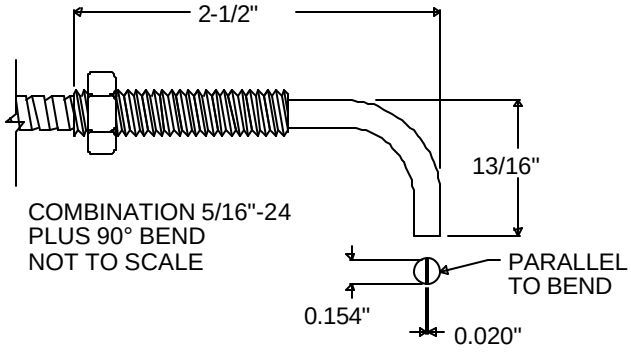
COMBINATION 90°
BEND PLUS
5/16"-24
NOT TO SCALE

ORDER CODE	S6	24	FLTA
	S6	36	FLTA
	S6	72	FLTA



COMBINATION 5/16"-24
PLUS 90° BEND
NOT TO SCALE

ORDER CODE	S6	24	FLTB
	S6	36	FLTB
	S6	72	FLTB



COMBINATION 5/16"-24
PLUS 90° BEND
NOT TO SCALE

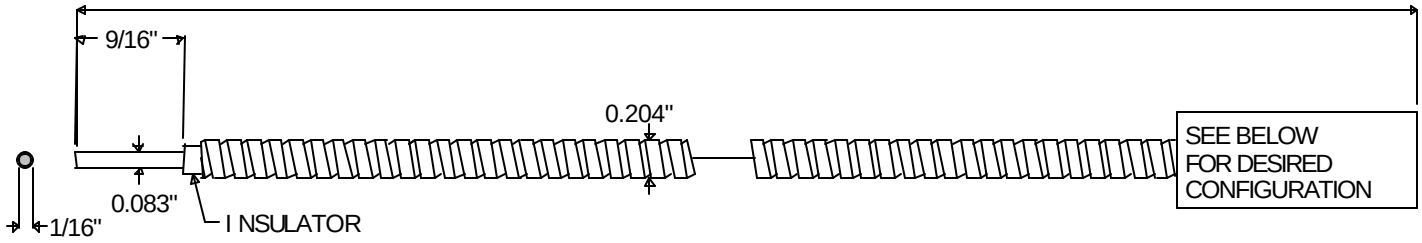
OPPOSED CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

We have developed a line of glass fiber optic assemblies that will add American availability and customizing to the Japanese photo-electric controls that were designed for the plastic 1 mm fiber with 2.2 mm diameter poly jacketing. Since not all applications can be serviced by plastic, glass fibers have their place were heat, and solvents would damage the plastic fibers, or were high mechanical strengths are needed. Utilizing tooling and apertures from our previous designs for large diameter American photoelectrics, we have increased the fiber bundle diameter to 1/16", adding more sensing power than 1mm glass by approximately 50% and as a bonus we have geometry's with American threads and dimensions. Also note that the input tip is insulated to preclude any antenna effect at high sensitivities with this all stainless steel construction.

OPPOSED CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

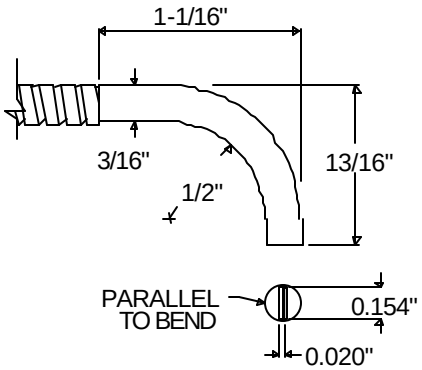
FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 1/16"

STANDARD LENGTH 24", 36", OR 72"
Custom Lengths up to 30 feet

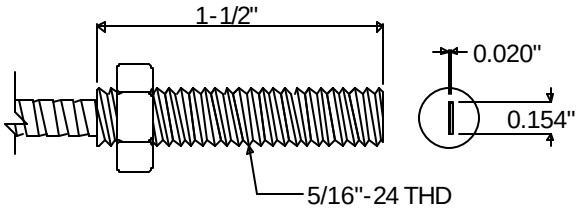


ORDER CODE FORMAT	SJ6	LENGTH	CONFIGURATION

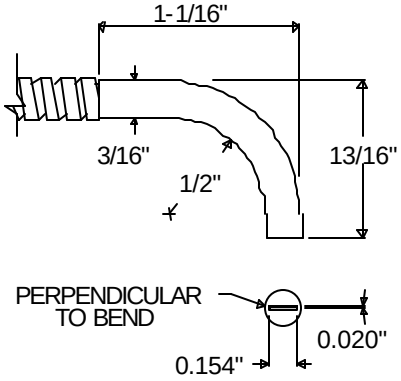
ORDER CODE	SJ6	24	FLB
	SJ6	36	FLB
	SJ6	72	FLB



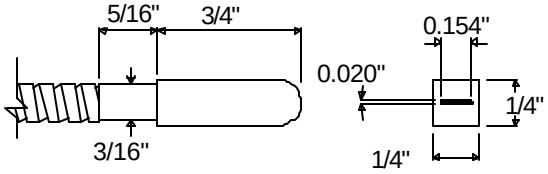
ORDER CODE	SJ6	24	FT
	SJ6	36	FT
	SJ6	72	FT



ORDER CODE	SJ6	24	FLA
	SJ6	36	FLA
	SJ6	72	FLA



ORDER CODE	SJ6	24	FH
	SJ6	36	FH
	SJ6	72	FH



1/16" BUNDLE CONFIGURATIONS CONTINUED PAGE 11

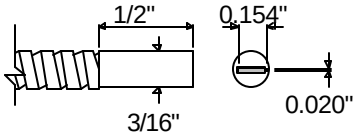
OPPOSED CONSTRUCTIONS FOR JAPANESE PHOTO-ELECTRIC CONTROLS

A continuation of our rectangular apertures available for Japanese photoelectric sensors. Please note the different position of the rectangular aperture while maintaining the same exterior shape.

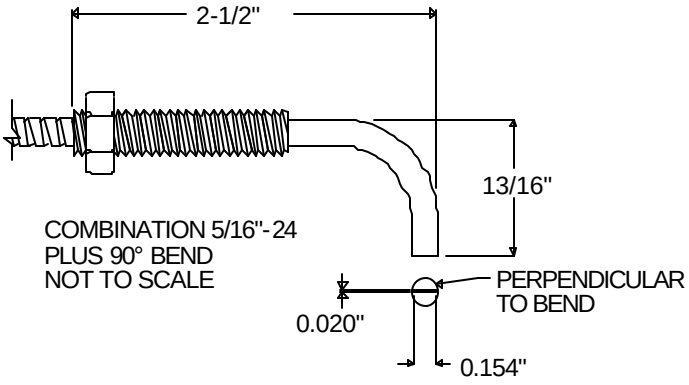
OPPOSED CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
1/16" BUNDLE CONFIGURATIONS CONTINUED

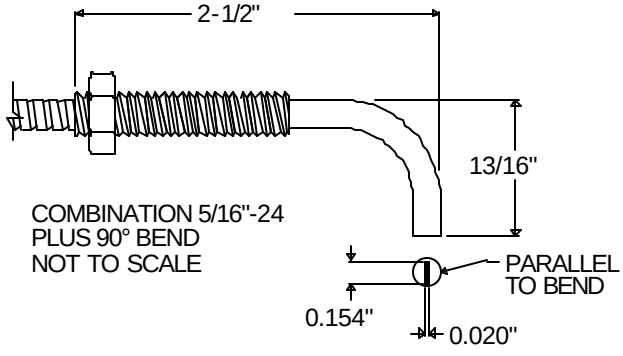
ORDER CODE	SJ6	24	FS
	SJ6	36	FS
	SJ6	72	FS



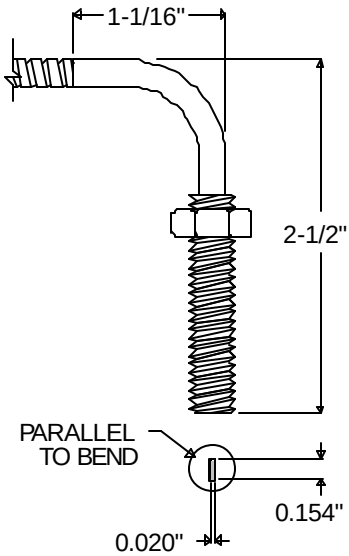
ORDER CODE	SJ6	24	FTLA
	SJ6	36	FTLA
	SJ6	72	FTLA



ORDER CODE	SJ6	24	FTLB
	SJ6	36	FTLB
	SJ6	72	FTLB

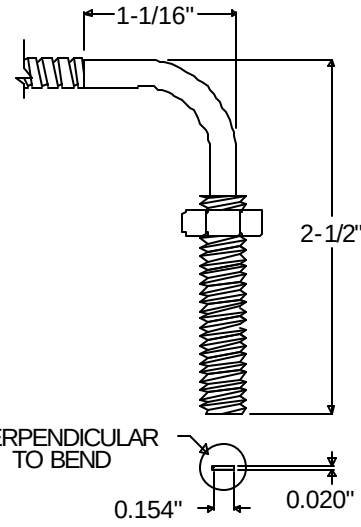


ORDER CODE	SJ6	24	FLTB
	SJ6	36	FLTB
	SJ6	72	FLTB



COMBINATION 90°
BEND PLUS
5/16"-24 THREAD
NOT TO SCALE

ORDER CODE	SJ6	24	FLTA
	SJ6	36	FLTA
	SJ6	72	FLTA



COMBINATION 90°
BEND PLUS
5/16"-24 THREAD
NOT TO SCALE

1/16" BUNDLE CONFIGURATIONS CONTINUED PAGE 13

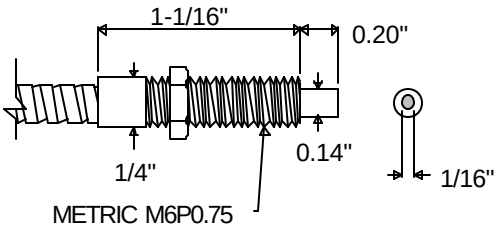
Order codes SJ6-24-MT6, SJ6-24-MT4 are made to help field installation by making the most popular Japanese threads utilized on their plastic available with our glass threaded fibers to our glass. We have even put the obsolete M2.6X.45 end tip so that the available small Japanese lens can be attached.

Order codes SJ6-24-AT, SJ6-24-LT are available with our F1.0 lens assembly for extended sensing range.

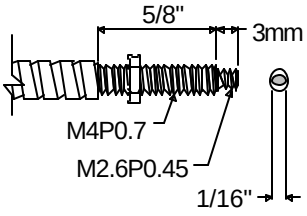
OPPOSED CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
1/16" BUNDLE CONFIGURATIONS CONTINUED

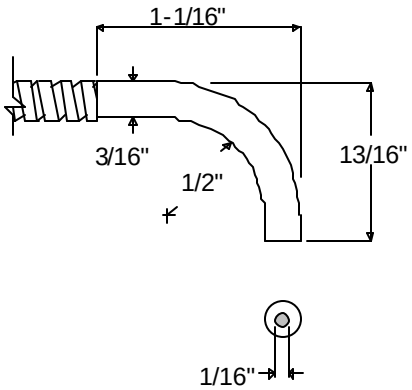
ORDER CODE			
	SJ6	24	MT6
	SJ6	36	MT6
	SJ6	72	MT6



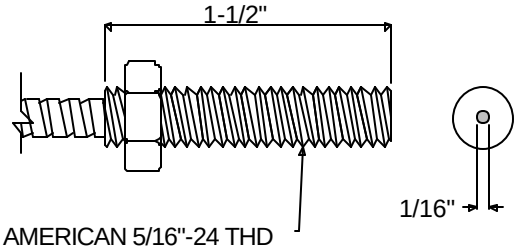
ORDER CODE			
	SJ6	24	MT4
	SJ6	36	MT4
	SJ6	72	MT4



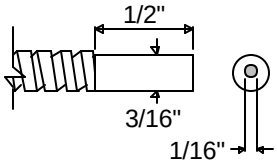
ORDER CODE			
	SJ6	24	L
	SJ6	36	L
	SJ6	72	L



ORDER CODE			
	SJ6	24	AT
	SJ6	36	AT
	SJ6	72	AT

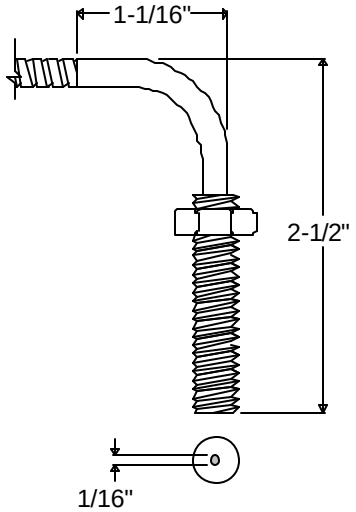


ORDER CODE		
	SJ6	24
	SJ6	36
	SJ6	72



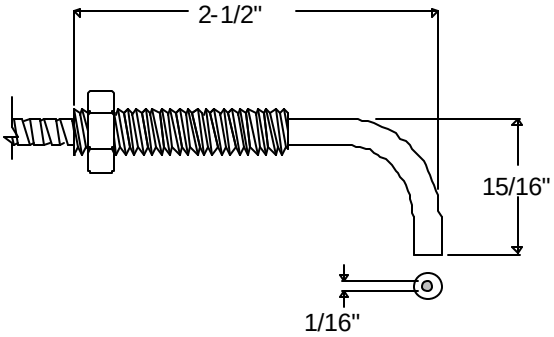
ORDER CODE			
	SJ6	24	LT
	SJ6	36	LT
	SJ6	72	LT

COMBINATION 90°
BEND PLUS
5/16"-24
NOT TO SCALE



ORDER CODE			
	SJ6	24	TL
	SJ6	36	TL
	SJ6	72	TL

COMBINATION 5/16"-24
PLUS 90° BEND
NOT TO SCALE



REFLECTIVE CONSTRUCTIONS WITH BANNER INPUT

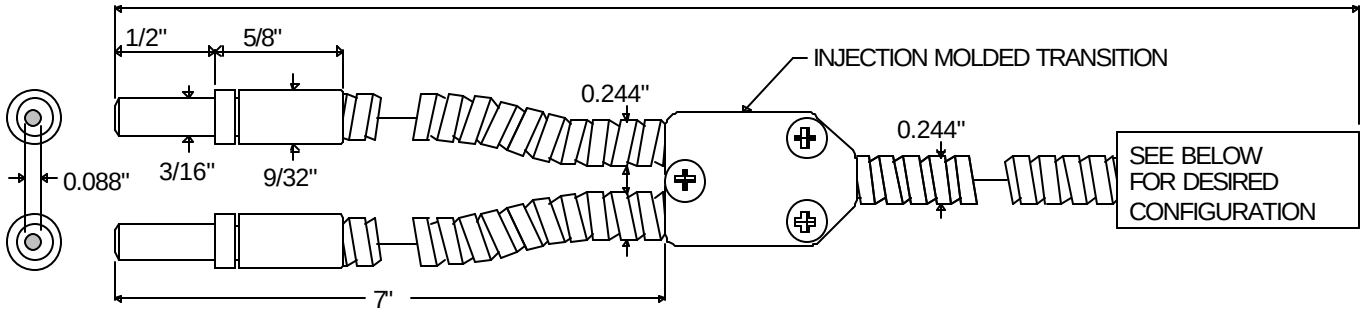
All of our reflective constructions come standard with our injection molded transition see page 1 for explanation.

Order codes D8-24-FM, D8-24-F are designed for edge detection and are available as a injection molded construction for high volume low cost applications.

REFLECTIVE CONSTRUCTIONS WITH BANNER INPUT

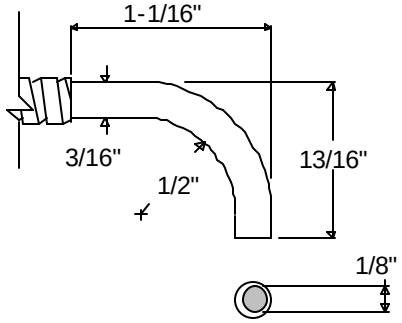
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 1/8"

STANDARD LENGTH 24",36", OR 72"
Custom Lengths up to 30 feet

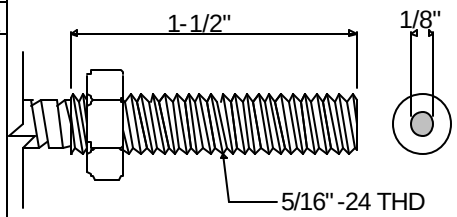


ORDER CODE FORMAT	D8	LENGTH	CONFIGURATION

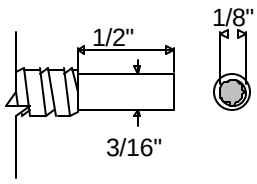
ORDER CODE	D8	24	L
	D8	36	L
	D8	72	L



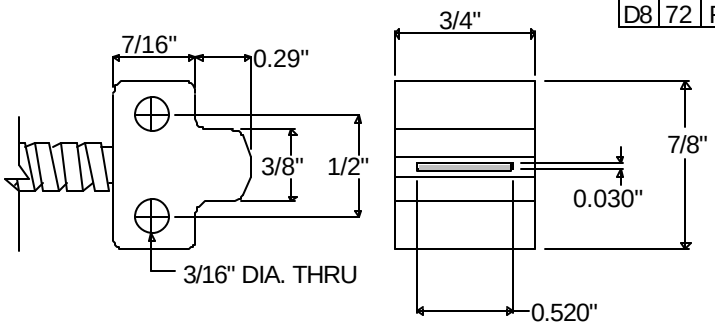
ORDER CODE	D8	24	T
	D8	36	T
	D8	72	T



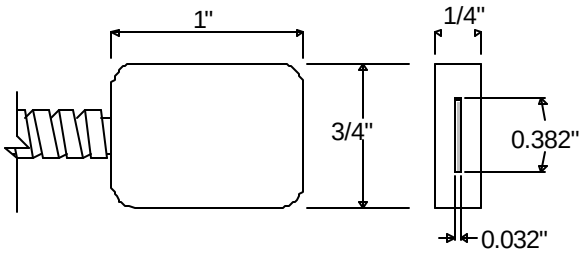
ORDER CODE	D8	24
	D8	36
	D8	72



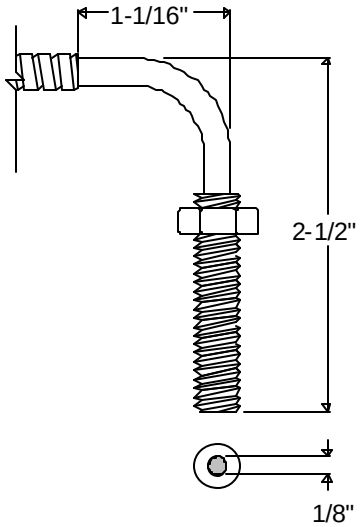
ORDER CODE	D8	24	FM
	D8	36	FM
	D8	72	FM



ORDER CODE	D8	24	F
	D8	36	F
	D8	72	F



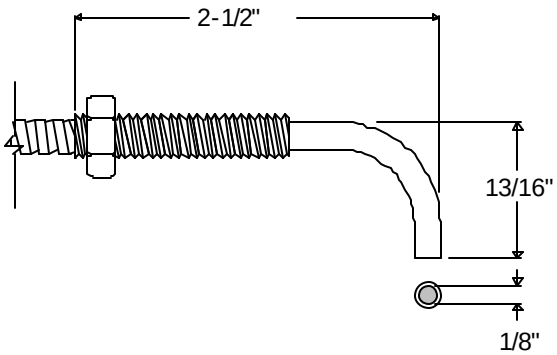
ORDER CODE	D8	24	LT
	D8	36	LT
	D8	72	LT



COMBINATION 90° BEND PLUS 5/16"-24 THREAD NOT TO SCALE

ORDER CODE	D8	24	TL
	D8	36	TL
	D8	72	TL

COMBINATION 5/16"-24 THREAD PLUS 90° BEND NOT TO SCALE



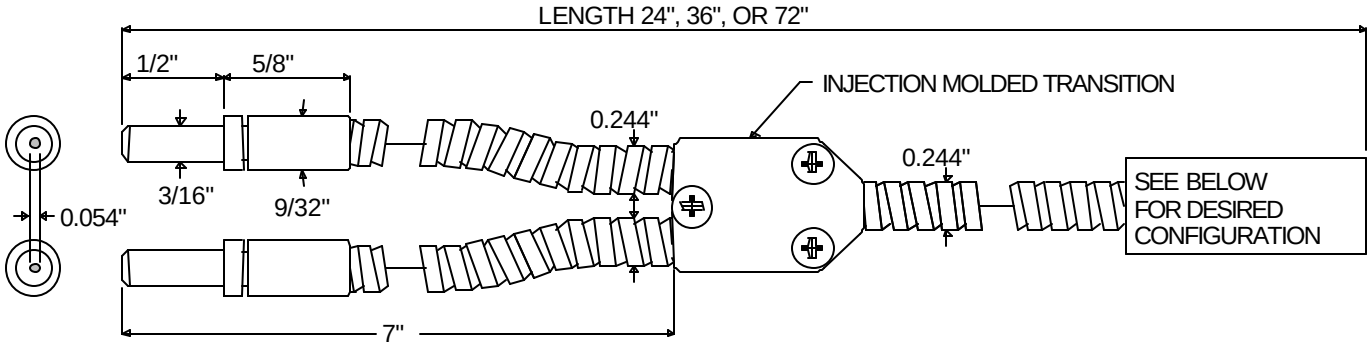
Order codes D071-24-S, D071-24-L, D071-24-B can be lengthened or shortened to meet your specific requirements. These smaller bundle diameters stuffed in stainless hypodermic needle tubing allow approach to difficult sensing areas and are optimized for small targets.

Order code D6-24-FS is a small rectangular fiber optic aperture that is very effective at sensing small rectangular web marks or for discerning subtle pastel colors against a low contrast web background.

Order code D6-24-FH offers the same advantages as above. Many customers prefer this injection molded termination that allows excellent alignment accuracy when clamped on the 3/16" diameter. This item is also made for volume applications.

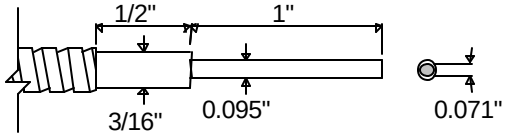
REFLECTIVE CONSTRUCTIONS WITH BANNER INPUT

UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 0.071"

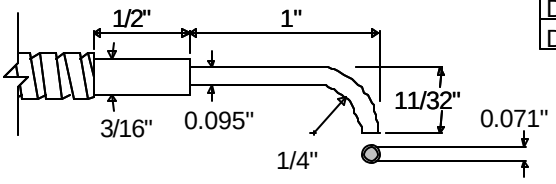


ORDER CODE FORMAT	D071	LENGTH	CONFIGURATION

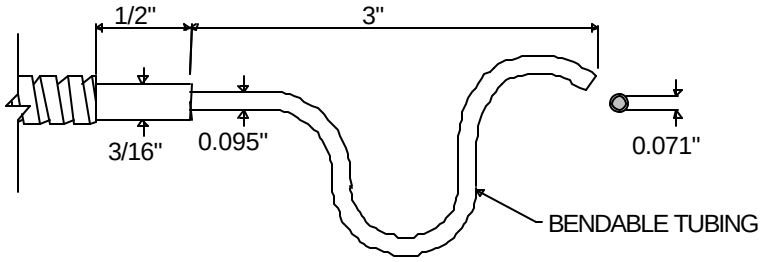
ORDER CODE	D071	24	S
	D071	36	S
	D071	72	S



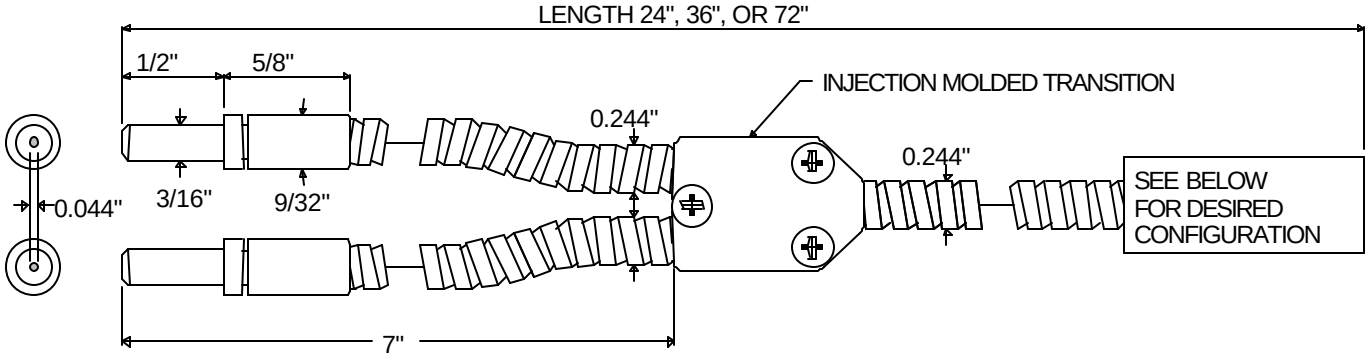
ORDER CODE	D071	24	L
	D071	36	L
	D071	72	L



ORDER CODE	D071	24	B
	D071	36	B
	D071	72	B

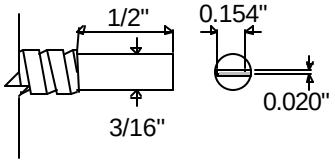


BUNDLE DIAMETER: 1/16"

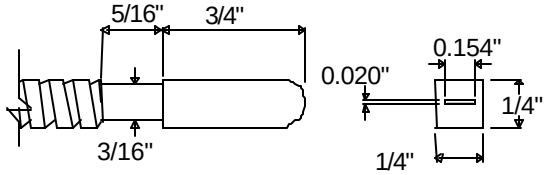


ORDER CODE FORMAT	D6	LENGTH	CONFIGURATION

ORDER CODE	D6	24	FS
	D6	36	FS
	D6	72	FS



ORDER CODE	D6	24	FH
	D6	36	FH
	D6	72	FH



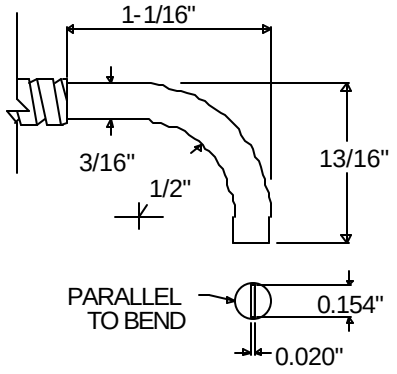
1/16" BUNDLE CONFIGURATIONS CONTINUED PAGE 19

This page is a continuation of useful rectangular apertures to help solve those "insitu" mounting problems. Please note the different position of the rectangular aperture while maintaining the same exterior shape. For example order code D6-24-FLA has a vertical rectangular aperture while order code D6-24-FLB has a horizontal.

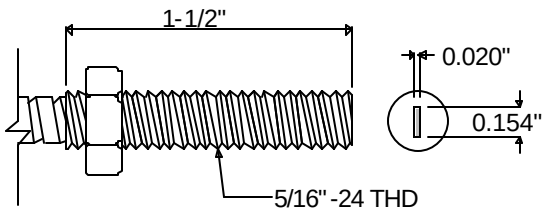
REFLECTIVE CONSTRUCTIONS WITH BANNER INPUT

1/16" BUNDLE CONFIGURATIONS CONTINUED

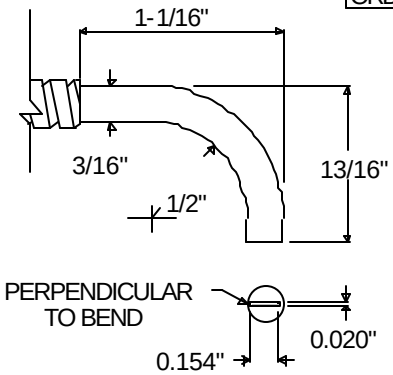
ORDER CODE	D6	24	FLB
	D6	36	FLB
	D6	72	FLB



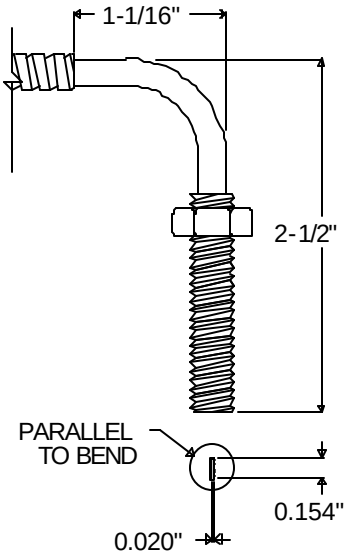
ORDER CODE	D6	24	FT
	D6	36	FT
	D6	72	FT



ORDER CODE	D6	24	FLA
	D6	36	FLA
	D6	72	FLA

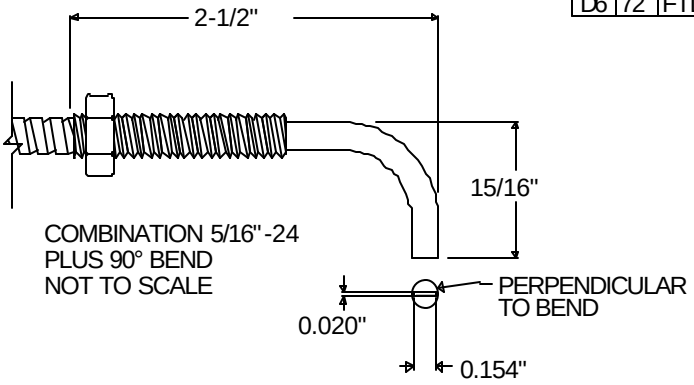


ORDER CODE	D6	24	FLTB
	D6	36	FLTB
	D6	72	FLTB

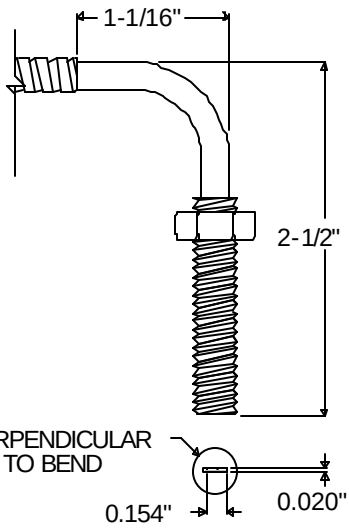


COMBINATION 90°
BEND PLUS
5/16"-24 THREAD
NOT TO SCALE

ORDER CODE	D6	24	FTLA
	D6	36	FTLA
	D6	72	FTLA

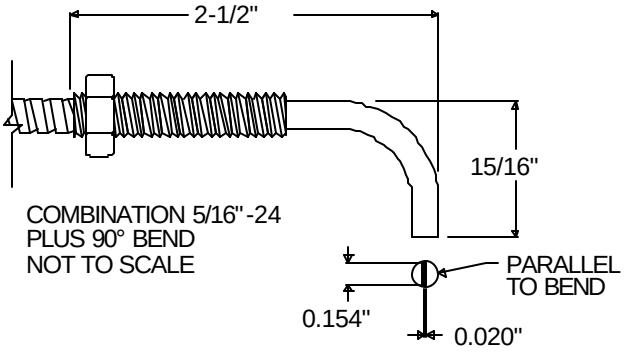


ORDER CODE	D6	24	FLTA
	D6	36	FLTA
	D6	72	FLTA



COMBINATION 90°
BEND PLUS
5/16"-24 THREAD
NOT TO SCALE

ORDER CODE	D6	24	FTLB
	D6	36	FTLB
	D6	72	FTLB



REFLECTIVE CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

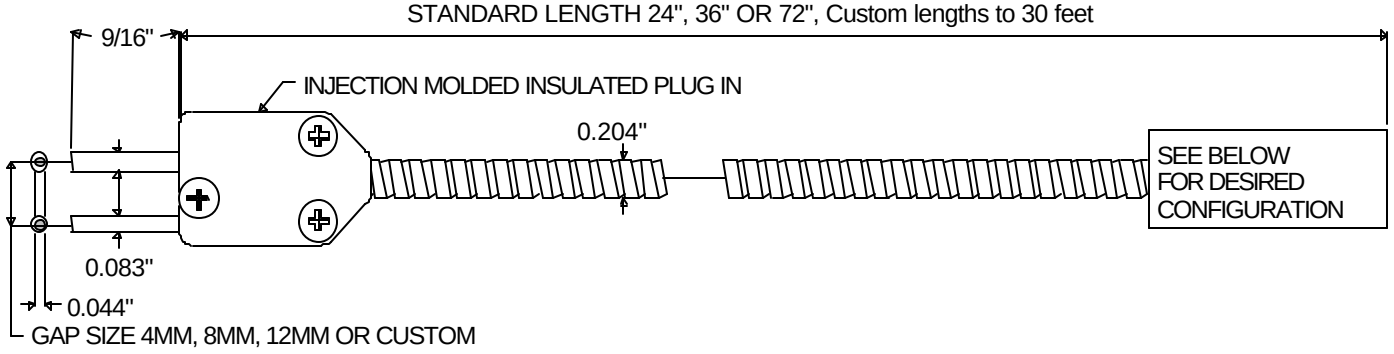
We have developed a line of glass fiber optic assemblies that will add American availability and customizing to the Japanese photo-electric controls that were designed for the plastic 1mm fiber with 2.2mm diameter poly jacketing. Since not all applications can be serviced by plastic, glass fibers have their place were heat, and solvents would damage the plastic fibers, or were high mechanical strengths are needed. Utilizing tooling and apertures from our previous designs for large diameter American photoelectrics, we have increased the fiber bundle diameter to 1/16", adding more sensing power than 1mm glass by approximately 50% and as a bonus we have geometry's with American threads and dimensions. Some customers have a very negative opinion of fragile looking plastic scanners. Here we have stainless steel metal hose construction with a neat plug-in unit that solves many applications that might have soured with plastic. Our injection molded plug-in acts as a insulator to preclude any "antenna effect". Please remember to specify the distance between the light emitting and light receiving ports on your photoelectric control.

Order code DJ6-24-FH is available as a low cost high volume injection molded part and provides excellent alignment accuracy.

REFLECTIVE CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

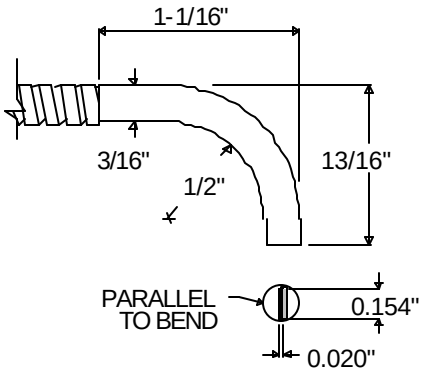
FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 1/16"

STANDARD LENGTH 24", 36" OR 72", Custom lengths to 30 feet

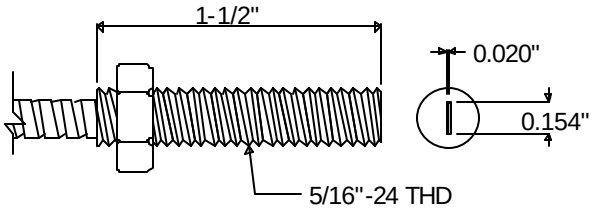


ORDER CODE FORMAT	DJ6	LENGTH	CONFIGURATION

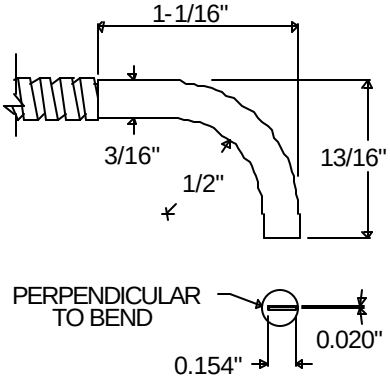
ORDER CODE	DJ6	24	FLB
	DJ6	36	FLB
	DJ6	72	FLB



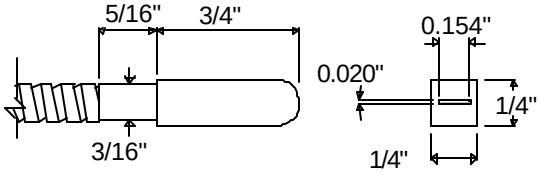
ORDER CODE	DJ6	24	FT
	DJ6	36	FT
	DJ6	72	FT



ORDER CODE	DJ6	24	FLA
	DJ6	36	FLA
	DJ6	72	FLA



ORDER CODE	DJ6	24	FH
	DJ6	36	FH
	DJ6	72	FH



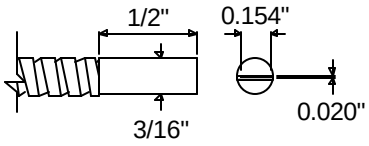
1/16" BUNDLE CONFIGURATIONS CONTINUED PAGE 23

These scanners are a continuation from the previous page with additional shapes to solve mounting/sensing problems.

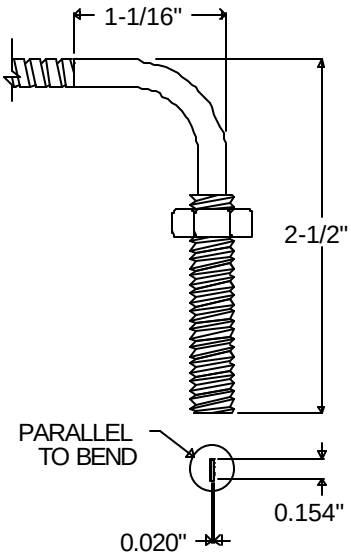
REFLECTIVE CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
1/16" BUNDLE CONFIGURATIONS CONTINUED

ORDER CODE	DJ6	24	FS
	DJ6	36	FS
	DJ6	72	FS

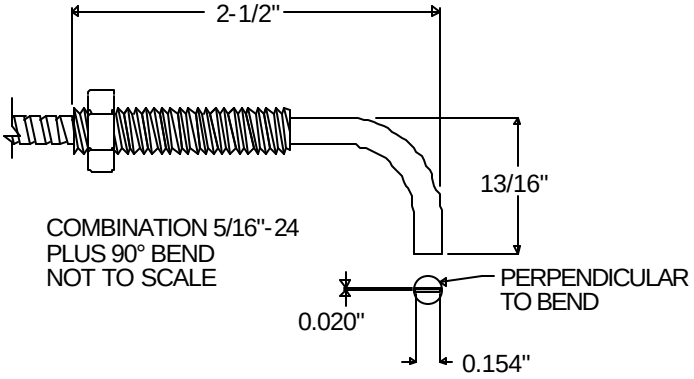


ORDER CODE	DJ6	24	FLTB
	DJ6	36	FLTB
	DJ6	72	FLTB

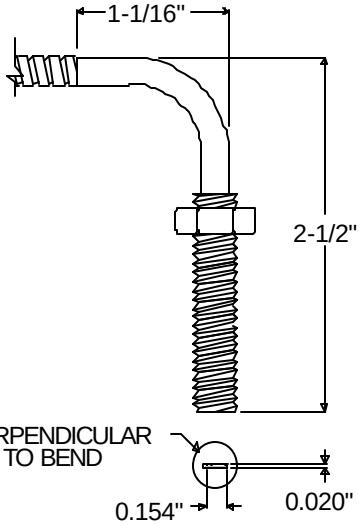


COMBINATION 90°
BEND PLUS
5/16"-24
NOT TO SCALE

ORDER CODE	DJ6	24	FTLA
	DJ6	36	FTLA
	DJ6	72	FTLA

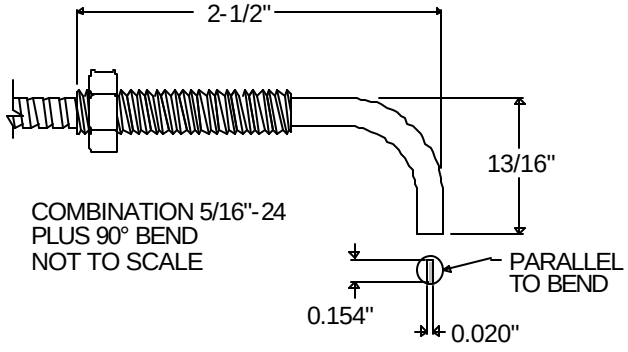


ORDER CODE	DJ6	24	FLTA
	DJ6	36	FLTA
	DJ6	72	FLTA



COMBINATION 90°
BEND PLUS
5/16"-24
NOT TO SCALE

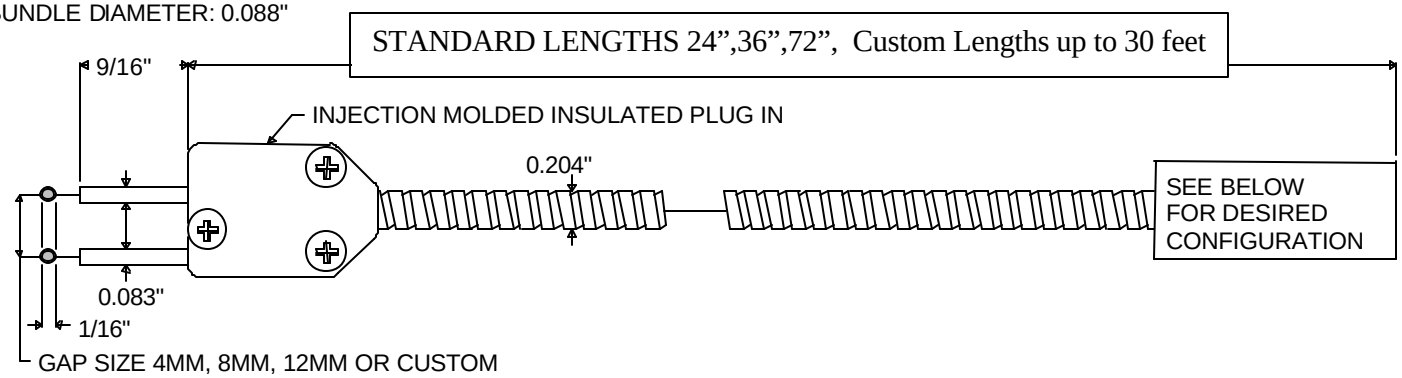
ORDER CODE	DJ6	24	FTLB
	DJ6	36	FTLB
	DJ6	72	FTLB



Order Code DJ088-24-L shows a enlarged bundle detail typical of all configurations this page. The actual bundle size is 0.088" which is enlarged to allow for the 0.008" brass divider separating the light emitting and light receiving fibers. This division of the fibers solves the problem of the photoelectric control receiving a false detection at higher sensitivity's.

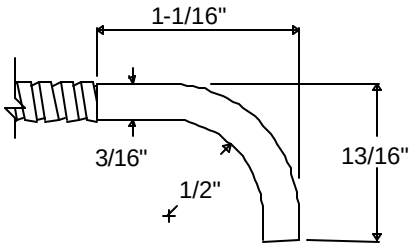
REFLECTIVE CONSTRUCTIONS FOR JAPANESE PHOTOELECTRIC SENSORS

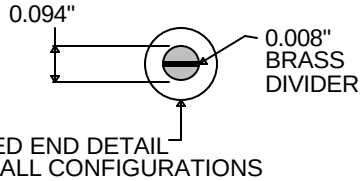
FITS OMRON E3X-A11, MICRO SWITCH FE5F-1MC6-M, MITSUBISHI RAYON, OPCON, OPTEX, SUNX, ETC.
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES
BUNDLE DIAMETER: 0.088"



ORDER CODE FORMAT	DJ088	LENGTH	CONFIGURATION

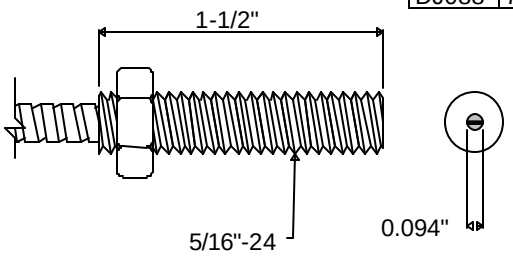
ORDER CODE	DJ088	24	L
	DJ088	36	L
	DJ088	72	L



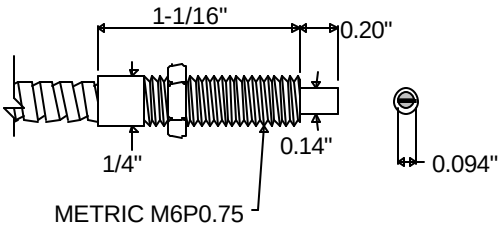


ENLARGED END DETAIL
TYPICAL ALL CONFIGURATIONS

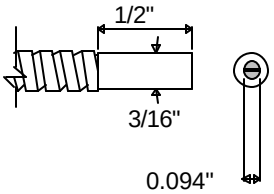
ORDER CODE	DJ088	24	AT
	DJ088	36	AT
	DJ088	72	AT



ORDER CODE	DJ088	24	MT6
	DJ088	36	MT6
	DJ088	72	MT6

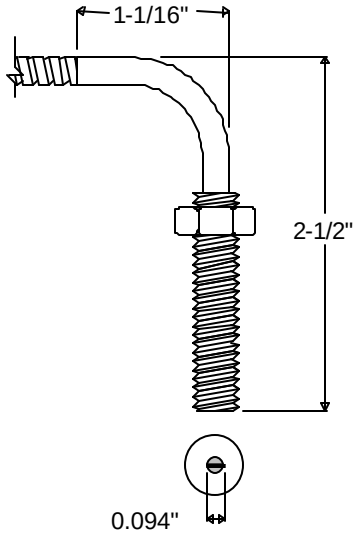


ORDER CODE	DJ088	24	
	DJ088	36	
	DJ088	72	



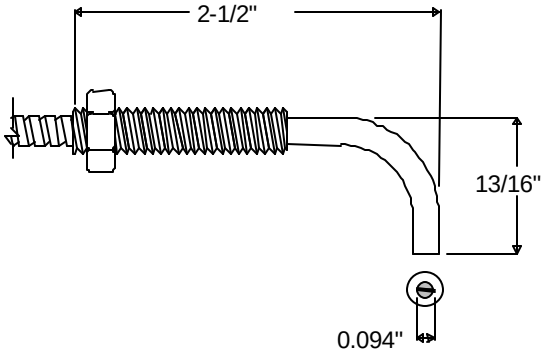
ORDER CODE	DJ088	24	LT
	DJ088	36	LT
	DJ088	72	LT

COMBINATION 90° BEND PLUS 5/16"-24
NOT TO SCALE



ORDER CODE	DJ088	24	TL
	DJ088	36	TL
	DJ088	72	TL

COMBINATION 5/16"-24 PLUS 90° BEND
NOT TO SCALE



OPPOSED FREELY CUTTABLE (PLASTIC FIBER) CONSTRUCTIONS

Here we offer geometries for the 0.5 mm and 1 mm jacketed plastic fibers. They are freely cuttable by razor or hot knife. All of the 0.5 mm fibers are furnished with ferrules for adapting to the 2.2 mm photoelectric apertures. Geometries with extended stainless steel probes can be lengthened or shortened to suite your needs.

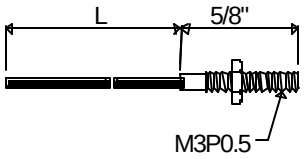
Order codes SP05-T4, SP1-T4, SP05-LT4, SP1-LT4 include the M2.6X.45 threaded tip so that the available small Japanese lens can be attached.

OPPOSED FREELY CUTTABLE CONSTRUCTIONS

STANDARD CABLE LENGTH (L) 2 m, CUSTOM LENGTHS AVAILABLE
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES

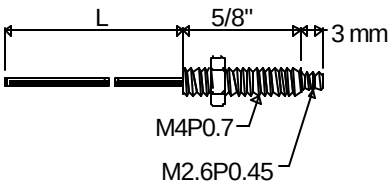
ORDER CODE | SP05 | T3

SINGLE 0.5 mm JACKETED FIBER



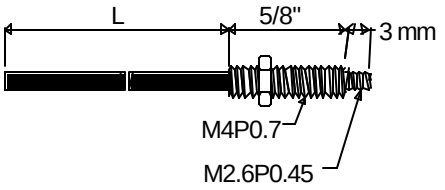
ORDER CODE | SP05 | T4

SINGLE 0.5 mm JACKETED FIBER



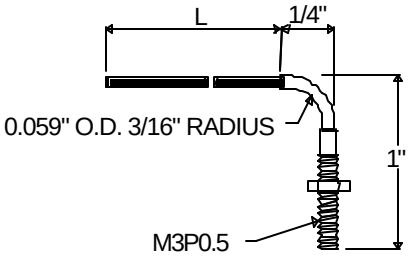
ORDER CODE | SP1 | T4

SINGLE 1 mm JACKETED FIBER



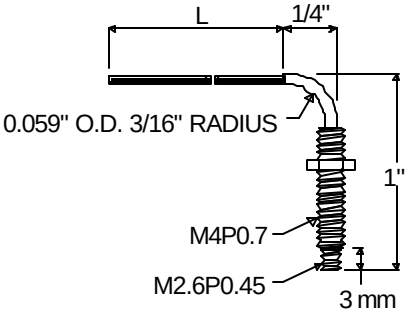
ORDER CODE | SP05 | LT3

SINGLE 0.5 mm JACKETED FIBER



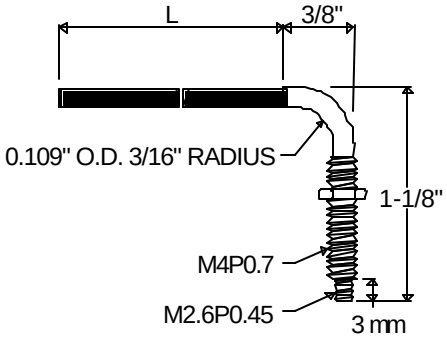
ORDER CODE | SP05 | LT4

SINGLE 0.5 mm JACKETED FIBER



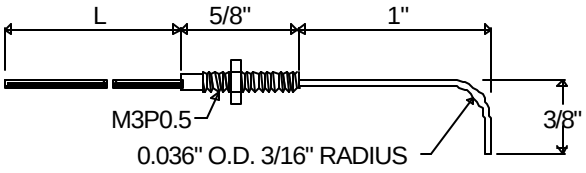
ORDER CODE | SP1 | LT4

SINGLE 1 mm JACKETED FIBER



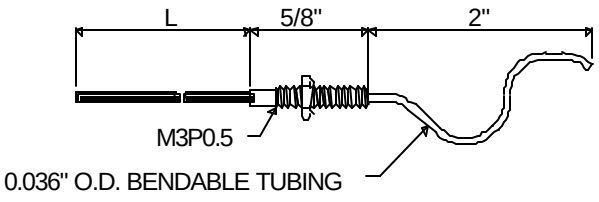
ORDER CODE | SP05 | TL3

SINGLE 0.5 mm JACKETED FIBER



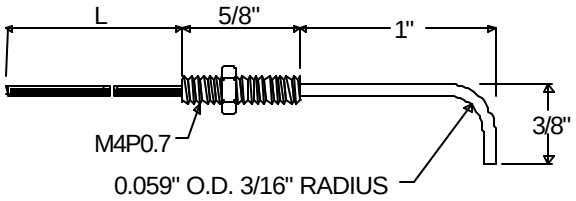
ORDER CODE | SP05 | TB3

SINGLE 0.5 mm JACKETED FIBER



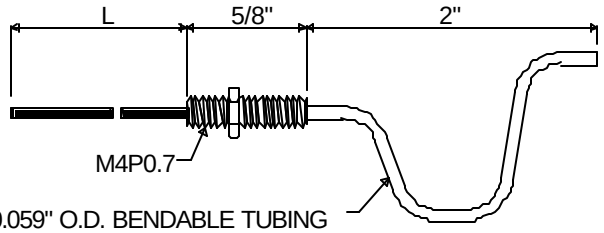
ORDER CODE | SP05 | TL4

SINGLE 0.5 mm JACKETED FIBER



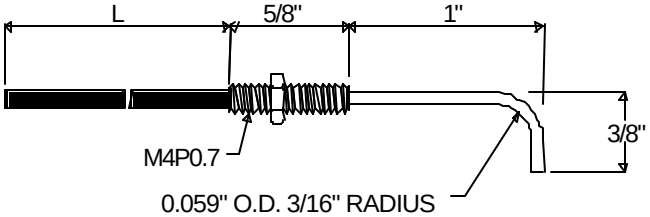
ORDER CODE | SP05 | TB4

SINGLE 0.5 mm JACKETED FIBER



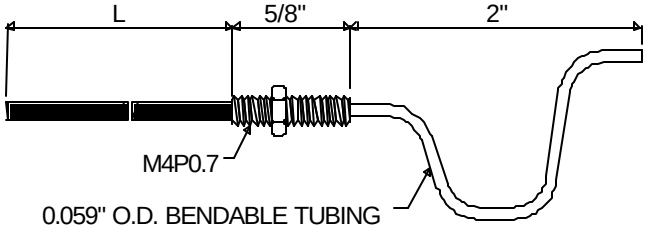
ORDER CODE | SP1 | TL4

SINGLE 1 mm JACKETED FIBER



ORDER CODE | SP1 | TB4

SINGLE 1 mm JACKETED FIBER



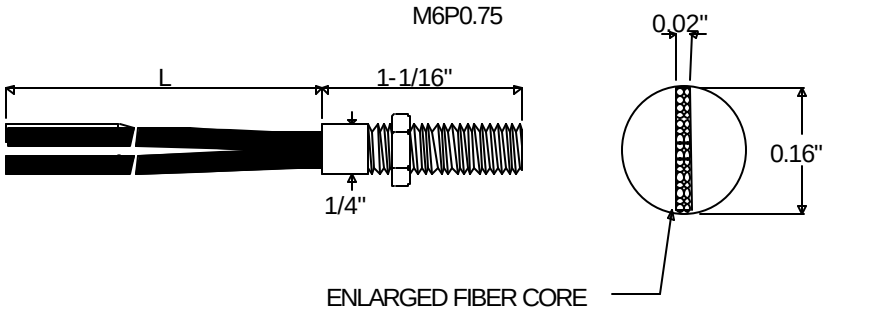
REFLECTIVE FREELY CUTTABLE (PLASTIC FIBER) CONSTRUCTIONS

Here we offer various configurations of freely cuttable plastic fiber for reflective sensing problems. All 0.5 mm fibers are furnished with ferrules for adapting to the 2.2 mm photoelectric apertures.

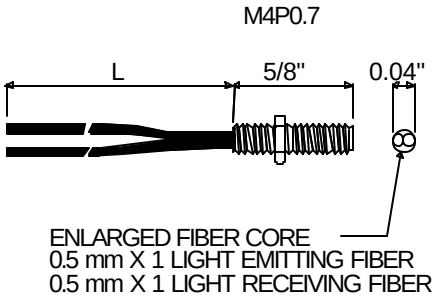
REFLECTIVE FREELY CUTTABLE CONSTRUCTIONS

STANDARD CABLE LENGTH (L) 2 m, CUSTOM LENGTHS AVAILABLE
UNLESS OTHERWISE NOTED, ILLUSTRATIONS ARE FULL SCALE, DIMENSIONS ARE IN INCHES

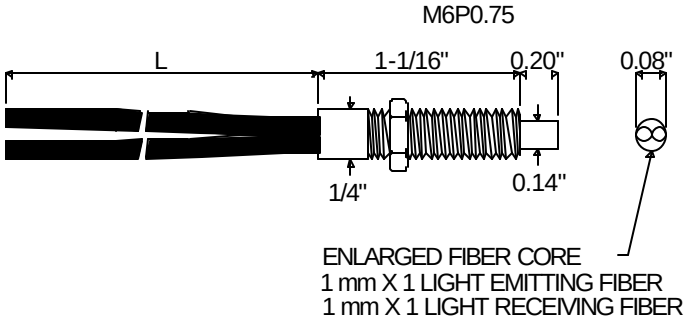
ORDER CODE	DP32	T6



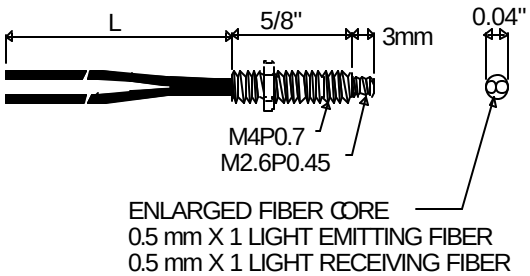
ORDER CODE	DP2	T4



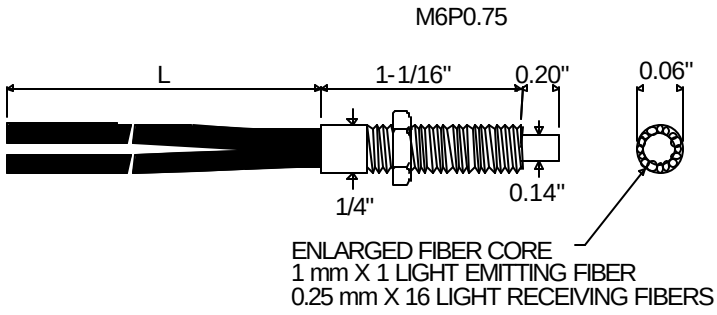
ORDER CODE	DP2	T6



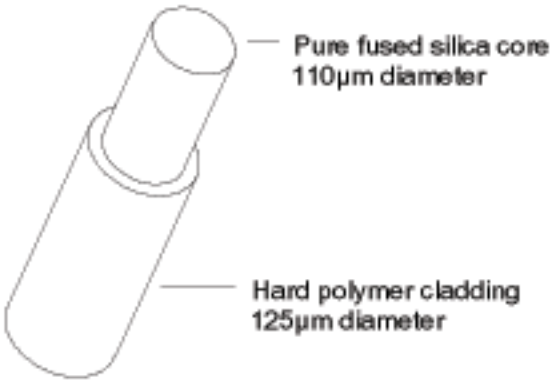
ORDER CODE	DP2	T426



ORDER CODE	DP17	T6



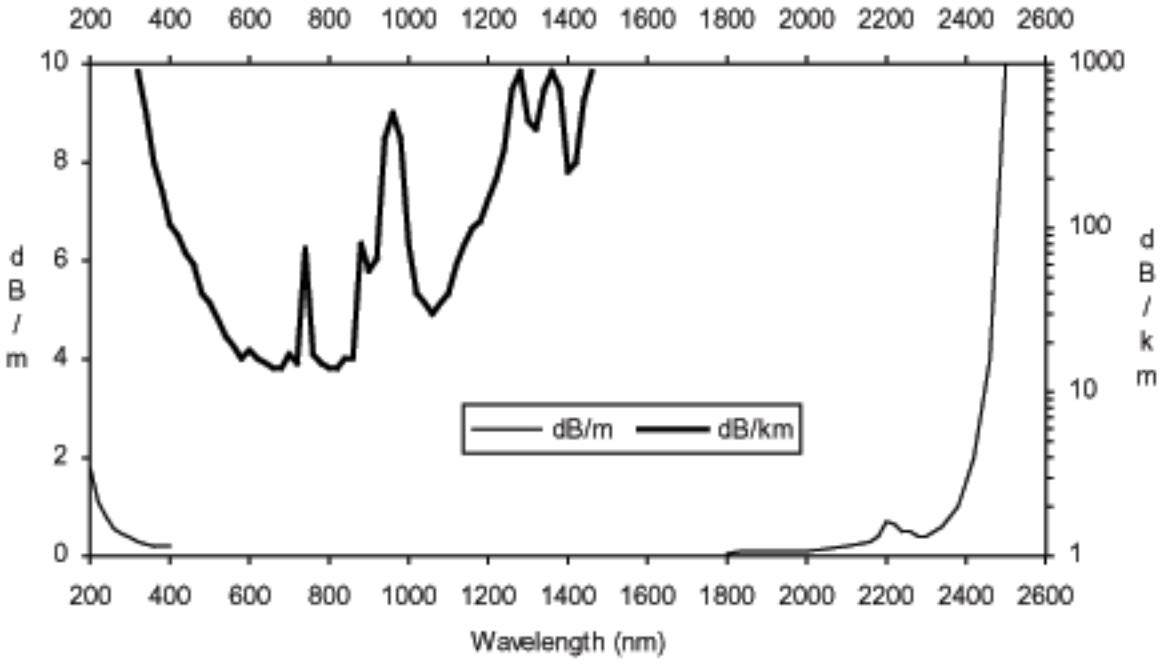
Most of our existing glass fiber geometries are available with fused silica. Please call us for a quote. Our fused silica fiber consists of a radiation resistant silica core and a bonded hard polymer cladding. This construction features high core-to-clad ratio, high tensile strength, excellent static fatigue resistance, and high mechanical reliability. High transmittance down to 200 nm, these fibers can be utilized for deep UV curing, endoscope illumination, mapped laser scanning and delivery. Below are the specifications and graph of typical maximum spectral attenuation.



Maximum Attenuation = 20
(dB/km @ 820 nm)

Numerical Aperature = 0.37

Temperature Range = -65°C to +125°C



The dark bold line is spectral transmission in dB/km refer to the right hand scale. The thin line is in dB/m refer to the left hand scale. When reading the graph to decide if fused silica is applicable for the wavelength of your interest, keep in mind that 45dB/km and lower convert to 99% or better transmission per meter. Actual attenuation values at specific wavelengths can be obtained if needed.

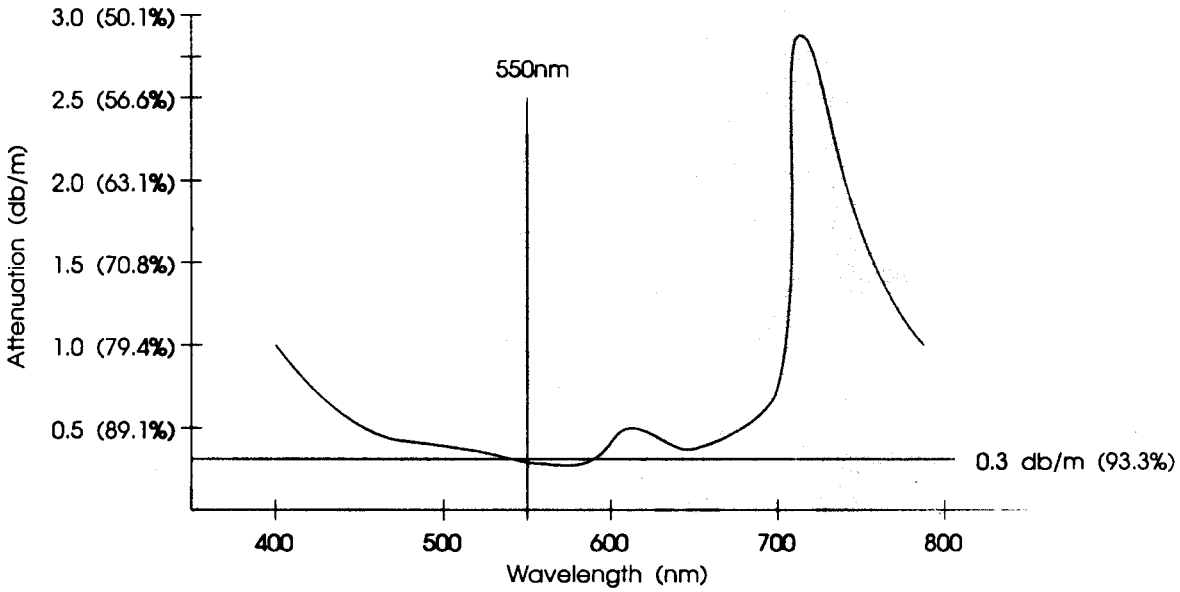
PMMA Plastic Fibers

Typical attenuation for PMMA plastic fibers are shown below, percent transmission per meter is shown in parenthesis. The greatest transmission is the visible region of spectrum, where there is very little discoloration of light transmitted over long lengths. PMMA fiber does uniformly fluoresce light from the side, although not as much as large core fiber. PMMA plastic fiber is available in the following diameters: 0.01", 0.02", 0.03", 0.04"(1mm), 0.06", 0.08"(2mm), 0.12"(3mm). The most common size is 0.03", simply because it is the least expensive. Light guides can be constructed of various bundle diameters depending on your application. Fiber bundles can be terminated and polished in a polymer ferrule to adapt to the illuminator at one end, and one or more fixtures at the other. Fibers are furnished in a PVC jacket for end lighting applications, left bare or placed in clear PVC tubing for side light applications. For displays fibers can be channeled into a light bar for fixed mounting on walls or in a display cases, construction is based on your needs, ports?, number of fibers?, etc.

Numerical aperture: 0.50
Acceptance angle: 60°
Minimum bend radius is 3"

Bundle sizes for 0.03" fiber:

# fibers	Bundle dia.	Dia. of jacket
368	5/8"	1"
235	1/2"	3/4"
125	3/8"	1/2"
58	1/4"	3/8"



Large Core Plastic Fibers

Attenuation values for large core plastic fibers are significantly lower than PMMA, exact values are not available. Fibers consist of a flexible polymer core with a teflon outer jacket. Advantages include, 30% greater side luminance than PMMA, but over a much shorter length, and easier maintenance for they do not require polishing. Used with our Mark III Metal Halide Illuminator side emission of light approaches that of neon. Max. bundle size is two 1/2" fibers or four 3/8" fibers or twelve 1/4" fibers. We do not recommend runs longer than 35ft.

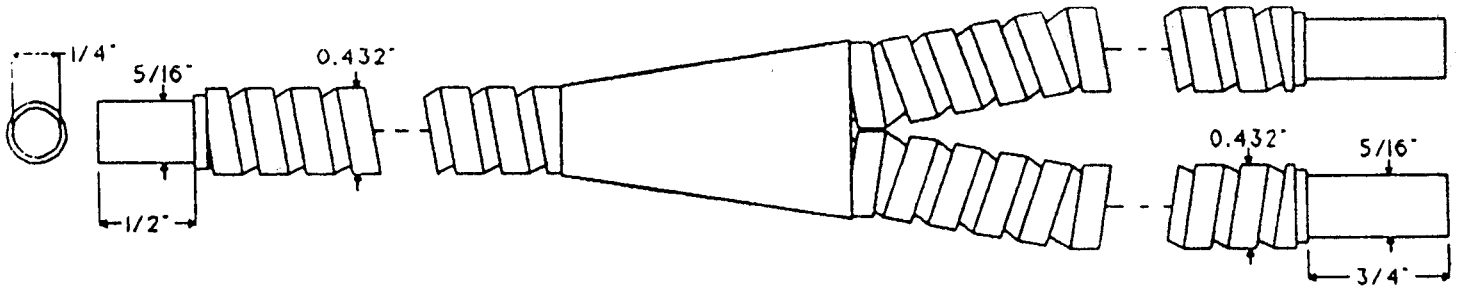
Numerical aperture: 0.66
Acceptance angle: 83°

Bend radii: 1/2" fiber = 5", 3/8" and 1/4" fiber = 3"

GLASS LIGHT GUIDES

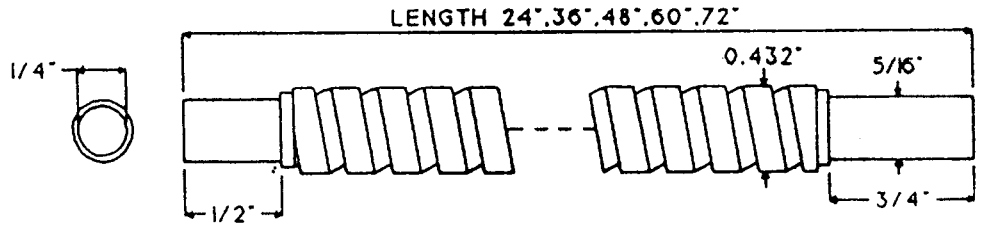
UNLESS OTHERWISE NOTED ILLUSTRATIONS ARE FULL SCALE DIMENSIONS ARE IN INCHES

ORDER CODE D4-24



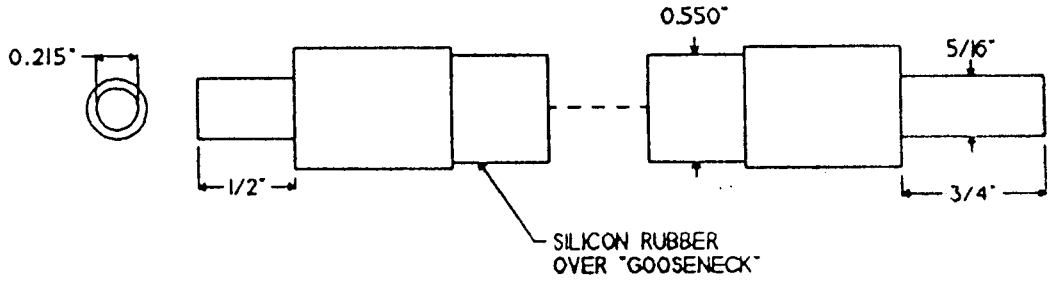
FOR FIXED DUAL LIGHTING IN MICROSCOPES, AND GENERAL LABORATORY USE.
ACCEPTS F1.0 LENS ASSEMBLY

ORDER CODE S4-24
S4-36
S4-48
S4-60
S4-72



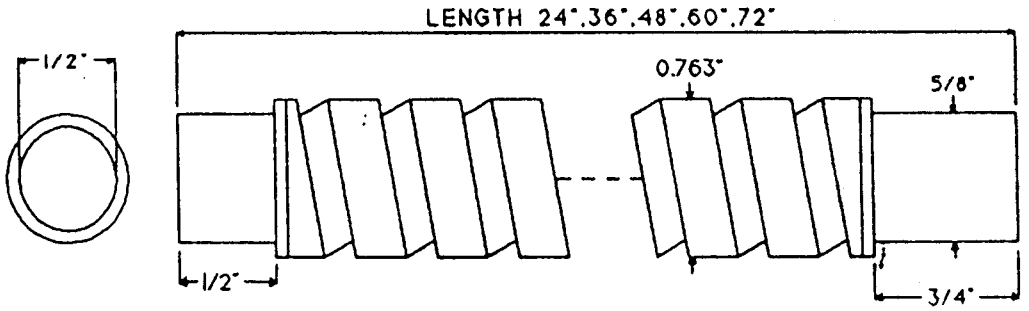
SINGLE LIGHT GUIDE FOR GENERAL LABORATORY USE.
ACCEPTS F1.0 LENS ASSEMBLY

ORDER CODE S.215-18-G



LAB OR INDUSTRY USE. COVERED WITH SILICONE RUBBER FOR RESISTANCE TO LIQUID SPILLS
ACCEPTS F1.0 LENS ASSEMBLY

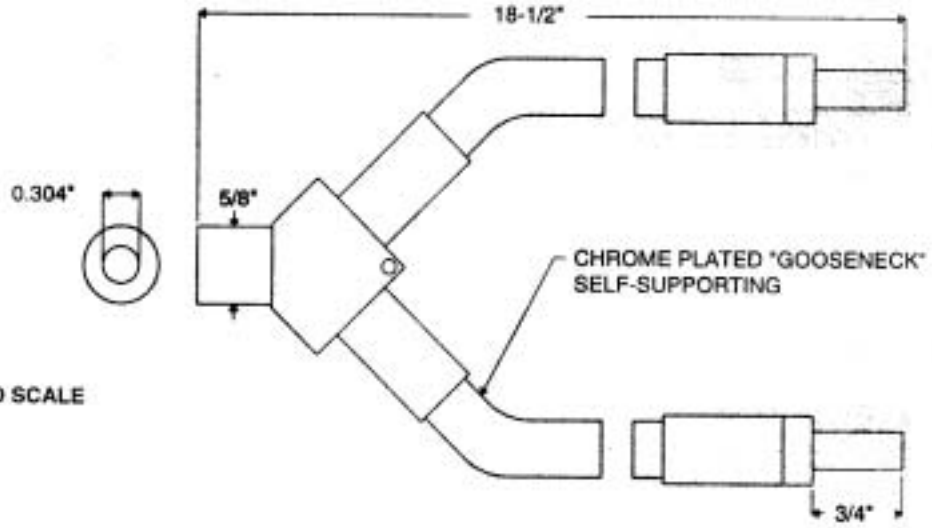
ORDER CODE S2-24
S2-36
S2-48
S2-60
S2-72



LARGEST BUNDLE DIAMETER. USED IN CROSS LIGHTING. REPLACES LARGE NUMBER OF OPTICAL COMPONENTS IN LIGHT GUIDING SYSTEM DELETING MIRROR/PRISM/LENS IN RIGHT ANGLE OR COMPLEX LIGHT PATH SYSTEMS.

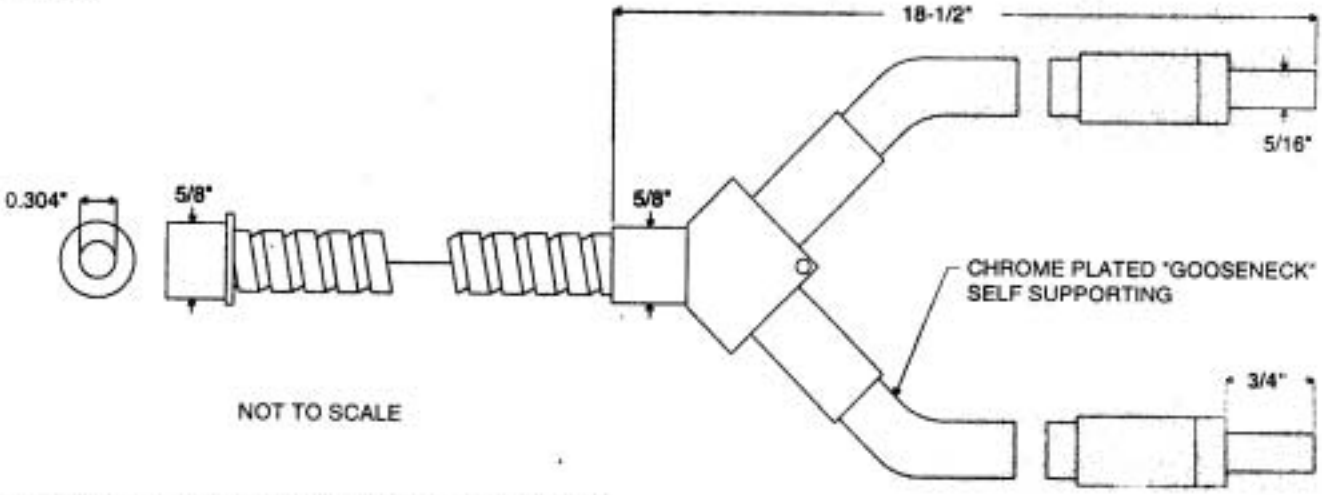
GLASS LIGHT GUIDES

SYSTEM 1



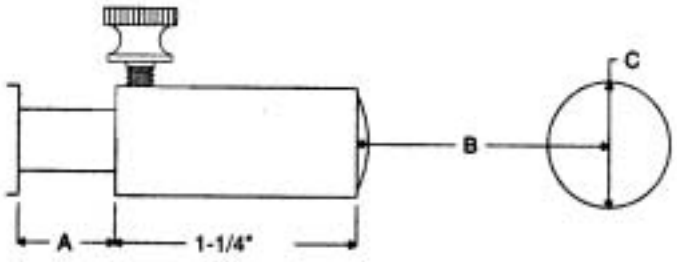
SOLID CONSTRUCTION WITH CRIMPED CONNECTIONS AT TRANSITION AND TERMINATION. ACCEPTS F1.0 LENS ASSEMBLY

SYSTEM 2



SOLID CONSTRUCTION WITH CRIMPED CONNECTIONS AT TRANSITION AND TERMINATION. ACCEPTS F1.0 LENS ASSEMBLY

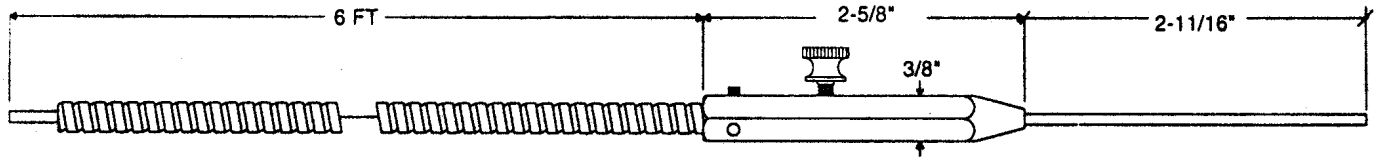
F1.0 LENS ASSEMBLY



PRE-SET DIMENSION	DISTANCE	SPOT SIZE
A	B	C
3/16"	1"	1/4"
1/4"	2-15/16"	3/4"
5/8"	6"	1-1/2"

GLASS LIGHT PROBES

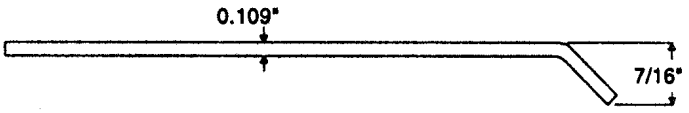
SYSTEM 3



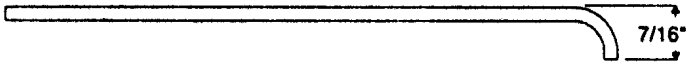
DETACHABLE PROBE KIT

RUGGED CONSTRUCTION WITH STAINLESS STEEL METAL HOSE FOR INDUSTRIAL, MEDICAL, AND LABORATORY USES. PROBES ARE AUTOCLAVEABLE.

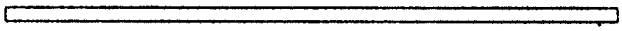
45ø PROBE



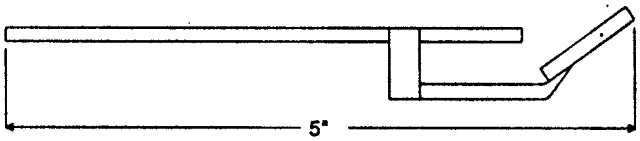
90ø PROBE



STAIGHT



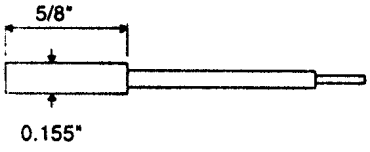
MIRROR



LOW COST PLASTIC LIGHT GUIDES WITH CRIMP ON BRASS FERRULES

ORDER CODE | PLG1

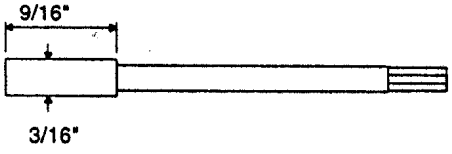
1mm JACKETED FIBER



2 m STANDARD LENGTH

ORDER CODE | PLG164

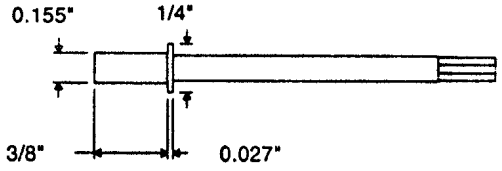
64 0.01" JACKETED FIBER



2 m STANDARD LENGTH

ORDER CODE | PLG264

64 0.01" JACKETED FIBERS

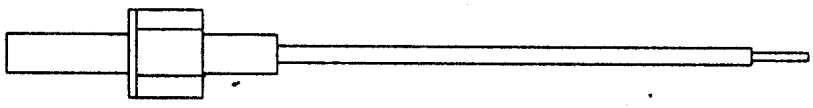


2 m STANDARD LENGTH

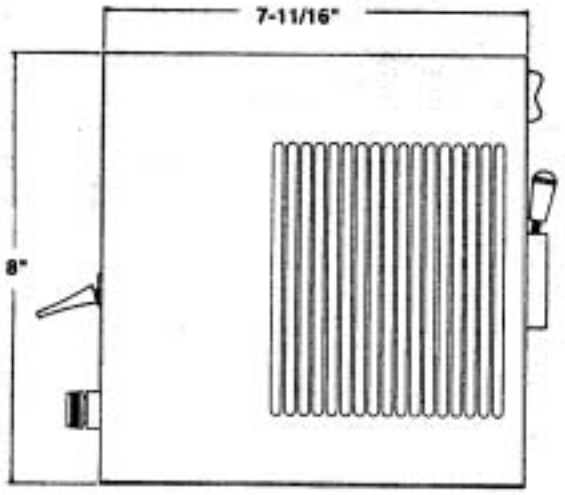
PLASTIC FIBER DATA COMMUNICATION JUMPER

ORDER CODE | SMPJ12

1 mm JACKETED FIBER SMA-905 ONE END OR BOTH ENDS AVAILABLE AS DUPLEX FIBER ALSO

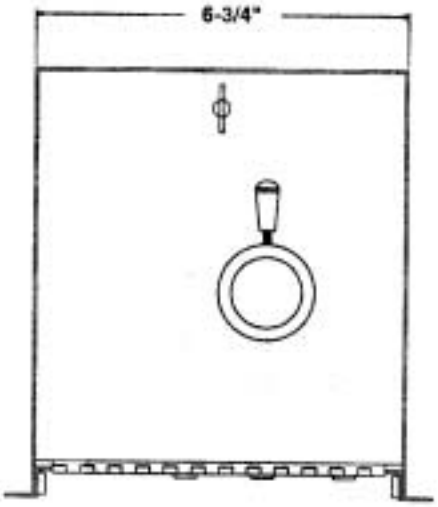


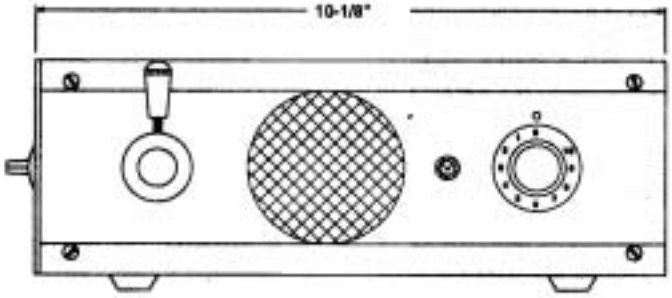
HIGHEST TRANSMISION 12dB/100m @ 650nm FOR "FIBER TO HOME" AND "CAN OPTICAL CONTROLLER NETWORKS".

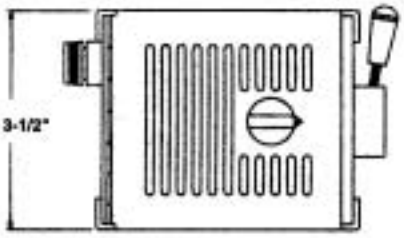


MARK III ILLUMINATOR

- For glass and plastic fiber
- Convenient bulb & color wheel change through hinged front panel
- Low cost adapters for all fiber optic devices
- Cool and quiet running
- 5000 hr bulb life
- 110V AC operating voltage







MARK II ILLUMINATOR

- For glass fibers only
- Convenient bulb change through a hinged door.
- Low cost adapters for all fiber optic devices.
- Quiet running
- 200 hr bulb life @ 3200K
- 110V AC operating voltage
- ON/OFF with separate intensity control