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Instructions for Mounting and Aligning Model FC-446-030: Imaging Fiber Coupler to SpectraPro Spectrographs

Ver 2.0
FC446030.DOC

NOTE

Prior to mounting the Imaging Fiber Coupler, the detector should be mounted and the spectrograph should be focused.

1. Mount the Imaging Fiber Coupler and either the Filter Wheel or the ARC provided Spacer to the Entrance Slit of the SpectraPro Spectrograph with the "TOP" label oriented at the top of the assembly (See Figure 1), using the four (4) #8-32 screws provided.

2. Loosen the #8-32 set screw that holds the Fiber Adapter in position and slide it out of the Imaging Fiber Coupler (See Figure 2).

3. Slide the Fiber Optic Input into the Fiber Adapter so that the end of the bundle is located approximately 7/16" from the end of the Fiber Adapter (See Figure 2). The standard Fiber Adapter accepts a 10 mm diameter ferrule (other adapters are available as an option).

4. Tighten the #4-40 set screw to hold the Fiber Optic Input in the Fiber Adapter.

5. Carefully slide the Fiber Adapter back into the Entrance of the Imaging Fiber Coupler so that the end of the Fiber Adapter is located approximately 13/16" from the Entrance (See Figure 3).

At this point it will be necessary to illuminate the fibers with a light source.

A mercury pen ray light source is recommended because of its spectral line output. When using a line source, scan the spectrograph to a wavelength setting corresponding to the line output of the light sources used. For the mercury light source, scan the spectrograph to 546.1 nm. If no line sources are available, a broadband light source such as tungsten-halogen can be sued, however we commend setting the spectrograph to a wavelength setting of ERO initially so that the individual fiber diameters can be images. After initial alignment, the spectrograph can be scanned to a desired wavelength.

6. With the CCD detector operating) video mode if possible), slowly slide the Fiber Adapter in or out until best overall vertical focus is achieved across the focal plane.

7. When best focus is achieved, tighten the #8-32 set screw to hold the Fiber Adapter in position (See Figure 2).

> NOTE
> Remember to use only small adjustments and allow the CCD to update the display after each adjustment is made. CCD's can take several seconds to update a display and the Imaging Fiber Coupler could be over-adjusted if adjustments are made too fast.

8. All adjustments to the vertical or horizontal position of the fiber images on the CCD should only be made using the adjusting screws labeled on the housing of the Imaging Fiber Coupler (See Figure 3). NOT OTHER MIRRORS SHOULD BE ADJUSTED.

9. To align the fiber images horizontally (left or right) on the entrance slit of the SpectraPro Spectrograph, alternately tighten and loosen the stainless steel Horizontal Adjusting Screws (See Figure #). Note: If one screw is tightened, the other screw should be loosened by approximately the same amount.

10. To align the fiber images vertically (up or down) on the entrance slit of the SpectraPro Spectrograph, alternately tighten and loosen the stainless steel Horizontal Adjusting Screws (See Figure 3). Note: If one screw is tightened, the other screw should be loosened by approximately the same amount.

11. Adjust eh images until best overall imaging and illumination of the CCD is achieved.

> NOTE
> It may be necessary to repeat steps 6 & 7, after steps 8 thru 11, to achieve best focus.

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RECOMMENDED MINIMUM BEND RADIUS FOR FUSED SILICA FIBERS:

Fiber Diameters in Microns	Momentary Min. Bend Radius		Long Term Min. Bend Radius	
	INCHES	MILLIMETERS	INCHES	MILLIMETERS
50	0.20	5	0.59	15
100	.039	10	1.18	30
150	0.59	15	1.77	45
200	0.79	20	2.36	60
250	0.98	25	2.95	75
300	1.18	30	3.54	90
350	1.38	35	4.13	105
400	1.58	40	4.72	120
450	1.77	45	5.31	135
500	1.97	50	5.90	150
550	2.16	55	6.5	165
600	2.35	60	7.09	180
650	2.55	65	7.98	195
700	2.75	70	8.27	210
750	2.95	75	8.86	225
800	3.15	80	9.45	240
900	3.54	90	10.63	270
1000	3.94	100	11.81	300
1100	4.33	110	12.99-	330
1200	4.72	120	14.17	360
1300	5.12	130	15.35	390
1400	5.51	140	16.54	420
1500	5.90	150	17.72	450
1600	6.30	160	18.90	480

Minimum bend DIAMETER is equal to the radius X2.
Momentary means minutes.

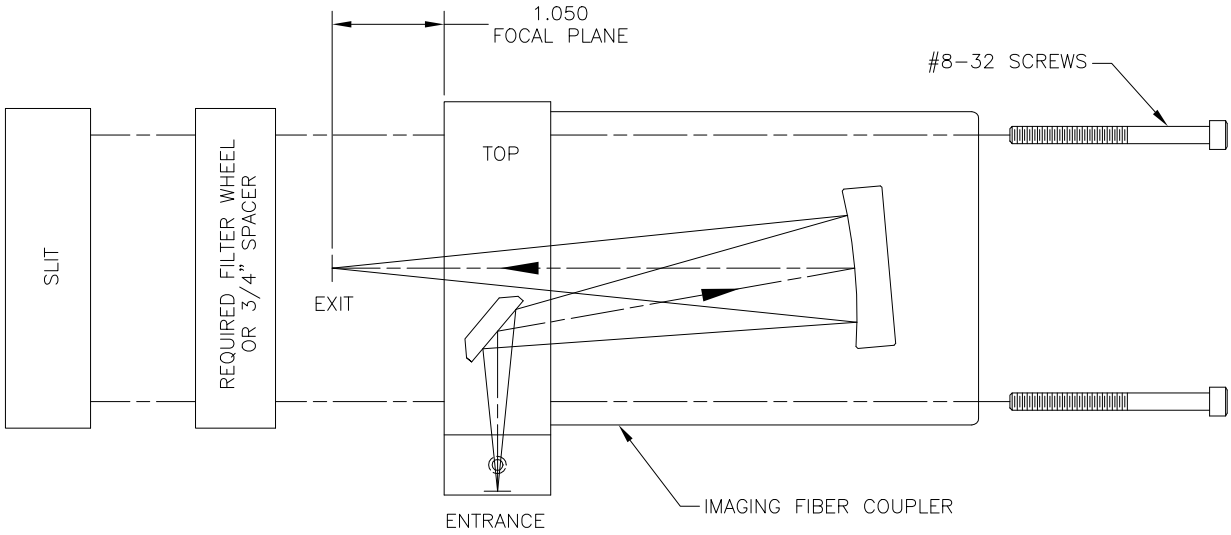

FIGURE 1

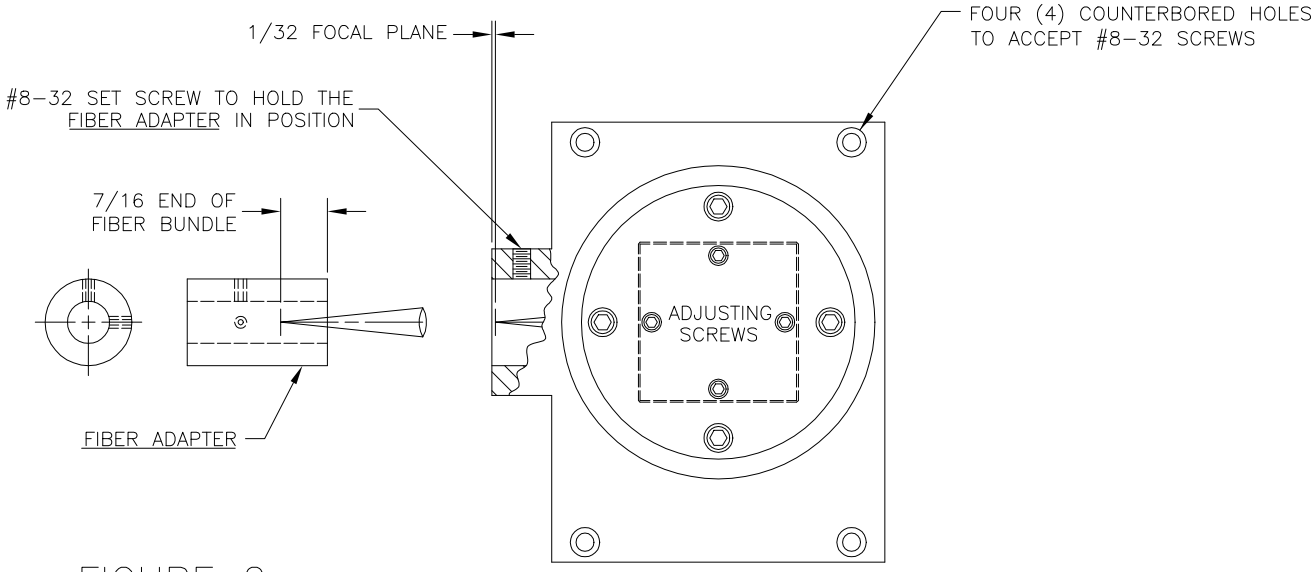

FIGURE 2

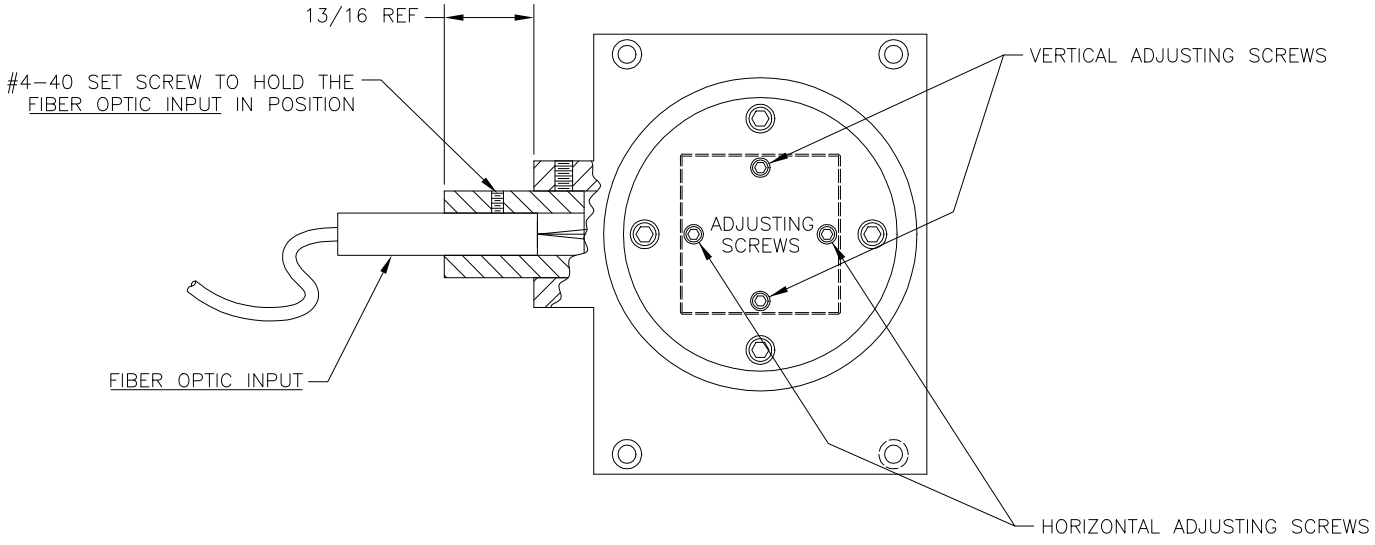

FIGURE 3