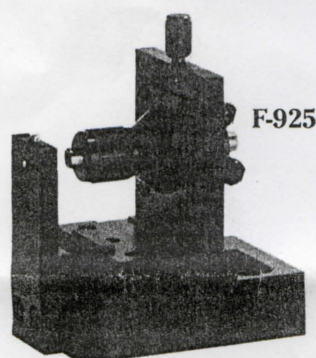
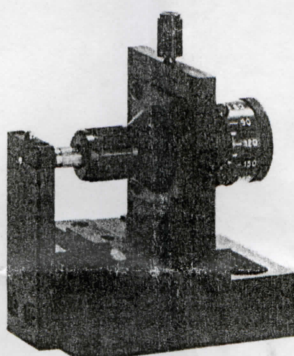


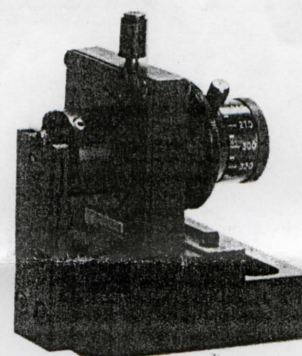
Model F-925, F-926, and F-92-C1 GRIN-Rod Lens Fiber Couplers Instruction Sheet



F-925



F-926



F-92-C1
(Formerly F-927)

The F-925, F-926, and F-92-C1 GRIN-Rod Lens Fiber Couplers are designed to be used along with miniature graded-index (GRIN) rod lenses for low-loss coupling of laser diode or LED output light into fibers or for the collimation of the output light from an optical fiber. The F-925 includes an FP-1 fiber positioner for use with standard bare multimode or single-mode fibers; the F-926 uses the FPR-1 positioner for polarization-preserving fibers; and the F-92-C1 accepts FPH-CA Series chucks for connectorized fibers.

Besides providing easy coupling of semiconductor sources to fibers, the couplers are designed for fiber-to-fiber coupling; a coupling loss between 50- μ m core multimode fibers of <2 dB can be achieved across a 1 inch air gap. This allows the construction of compact optical systems for the laboratory or the prototyping of new fiber optic devices.

INSTRUCTIONS FOR USE:

Semiconductor Source (LED or laser diode)-to-fiber coupling using one Fiber Coupler:

1. Use a 0.29-pitch GRIN-rod lens such as the SLW-1.8-0.29 lens found in Newport's F-GRK1 GRIN-Rod Lens Starter Kit. The 0.29-pitch lens converts the diverging output of the semiconductor source into a converging input at the face of the optical fiber. Insert this into the v-groove in the front lens holder and tighten the nylon-tipped set screw. Do not overtighten, as excess stress may cause a change in the focusing properties of the lens.
2. Align the semiconductor source to the lens. Look for the position of the focused spot coming out of the lens in relation to the optical axis of the lens. When you find the position where the focused spot is on the optical axis of the lens, the source will also be on the optical axis of the lens. Position the window of the source, if

there is one, as close as possible to the end of the lens. All of this is a coarse adjustment which can be refined further in conjunction with Step #3.

3. Place the cleaved fiber in the chuck and insert this into the fiber positioner. Adjust the x, y, and z axes to maximize the power coupled into the fiber. Some adjustment of the z position of the source may also be necessary for maximum coupling.

Fiber-to-fiber coupling using two Fiber Couplers:

1. Use a 0.25-pitch GRIN-rod lens in each of the couplers such as the SLS-2.0-0.25 or SLN-2.0-0.25 lenses found in Newport's F-GRK1 GRIN-Rod Lens Starter Kit. The 0.25-pitch lens collimates the output of a point source, which is approximated by the small core of an optical fiber. Be sure that the GRIN-rod lens has been optimized for a wavelength which is equal to or less than the one at which you are working.
2. Loosen the screws which secure the lens-holding front pieces to the couplers. Push both of the lens holders against the stop on the same side of the optical axis and retighten the screws.
3. Use a straight edge to align the bases when they are bolted to the table. Steps #2 and #3 will align the axes of the GRIN-rod lenses.
4. Align the input fiber to the lens, adjusting x, y, and z, so that a collimated beam is centered on the second lens.
5. Align the output fiber to the lens in the second coupler to maximize the coupled power.
6. Any optics (e.g. beamsplitter, filter, polarizer) may be placed between the lenses for the construction of fiber optic devices.

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