



NEOS TECHNOLOGIES

A Gooch & Housego Company

OPERATING MANUAL

**FOCUSING OPTICS ASSEMBLY
FOR THE NEOS 15000 SERIES**

FOA MODULATORS

MODEL NUMBER:

71002

DOCUMENT NUMBER: 51A18418

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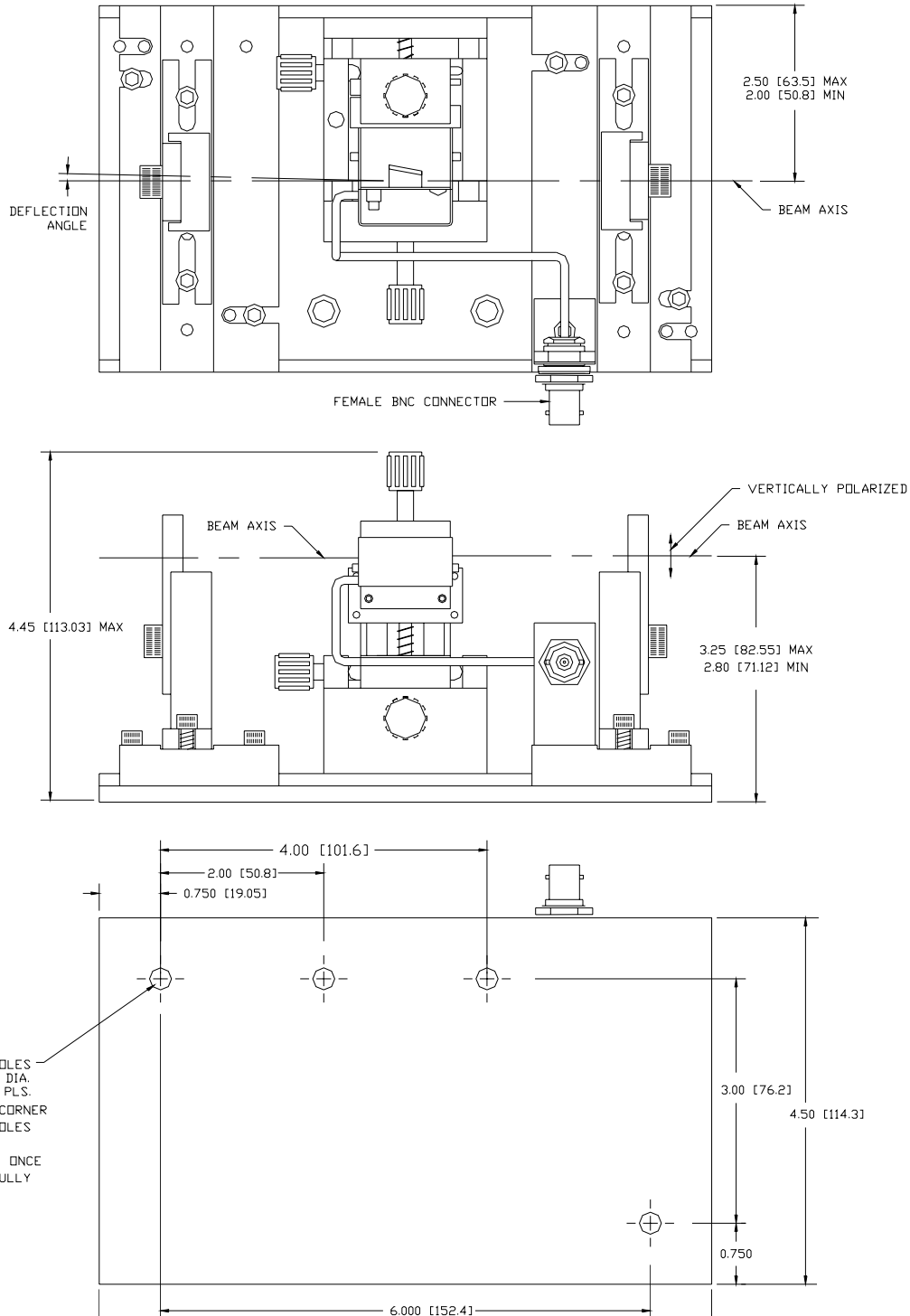
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DESCRIPTION

The focusing optics assembly for the NEOS 15000 series FOA modulators is designed to provide the necessary adjustments and focusing needed to optimize the diffraction efficiency and rise time of the modulator. This includes a stable optical platform and adjustable mounts for the lens necessary to achieve the rise time for the modulation rate desired and an adjustable mount for the modulator. The adjustable mount for the modulator provides adjustment in the vertical (across acoustic axis), horizontal (distance from the transducer), and Bragg angle (diffraction efficiency). The 71002 comes with two 80 mm lenses (input lens and re-collimation lens). The unit can accommodate 75 mm to 85 mm lenses. Custom optics and bases are available to accommodate focal lengths from 25 to 500 mm. The input lens and re-collimation lens mounts are adjustable in the vertical, horizontal, and focus. Caution should be used when adjusting the input lens as the focused laser beam can damage the gold bond wires of the modulator. See the 71002 assembly drawing for an exploded view.

OUTLINE DRAWING



Dimensions are in inches

Tolerances: Decimal: .xx = .01 .xxx = .005

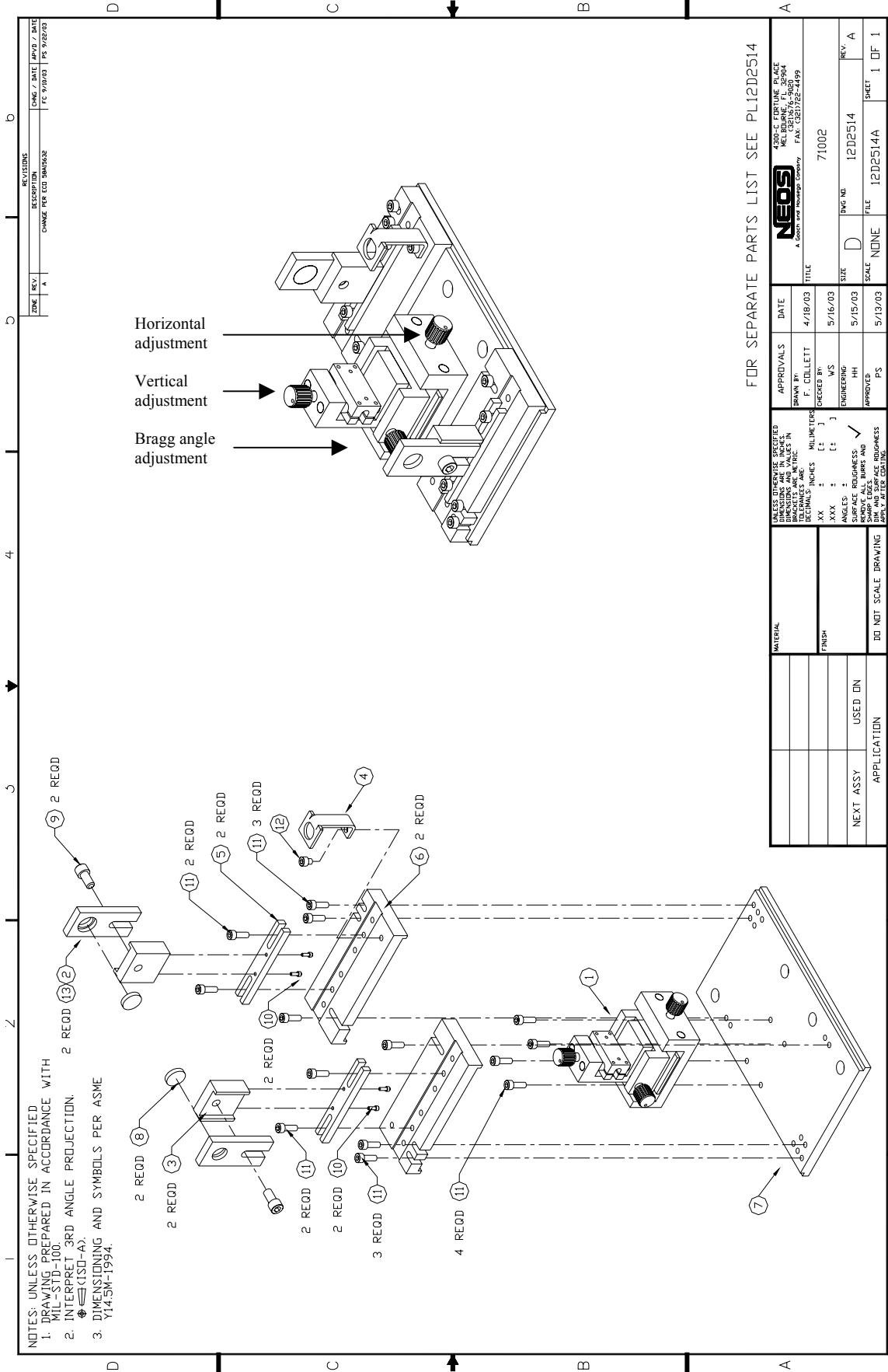
Dimensions in [] are in mm.

Millimeter: .xx = .25mm .xxx = .127mm

Angle: = ± 30'

53D0314

**ASSEMBLY DRAWING FOR 71002
FOCUSING OPTICS ASSEMBLY**



DATE	REV	A
04/19/03		
05/16/03		
05/13/03		

REVISIONS	DESCRIPTION	DATE
1	CHANGE PER ECO DRAWING	05/13/03
2		05/16/03
3		04/19/03

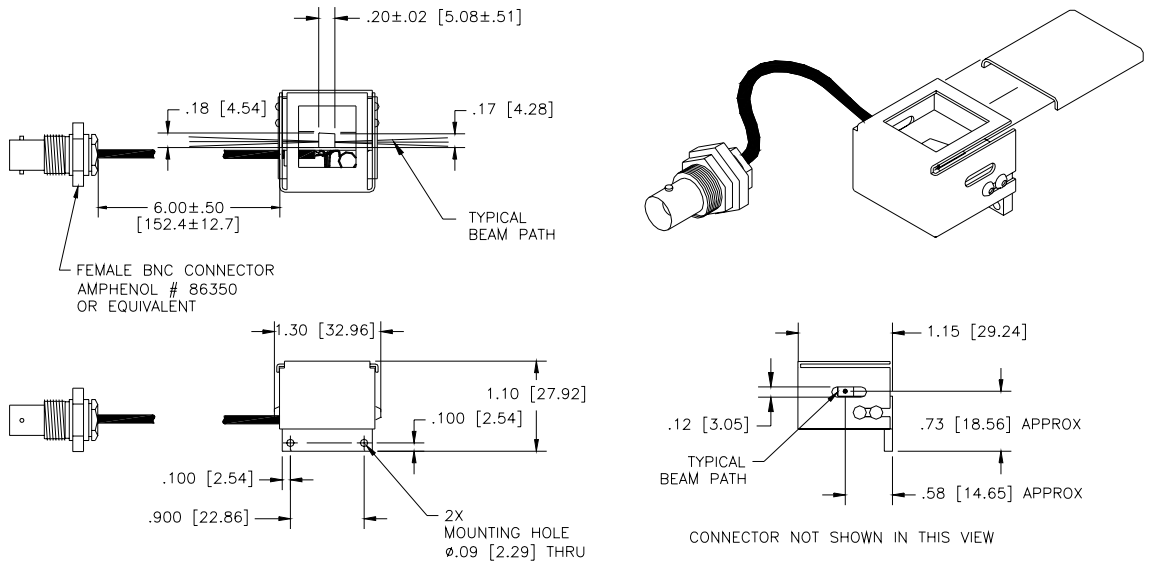
Horizontal adjustment
Vertical adjustment
Bragg angle adjustment

FOR SEPARATE PARTS LIST SEE PL12D2514

NEOS A Gooch and Housego Company 4300-C FORT LANE PLACE MELBOURNE, FL 32904 TEL: (321) 252-4499 FAX: (321) 252-4499		TITLE 71002	
APPROVALS DRAWN BY: F. COLLETT CHECKED BY: WS ENGINEERING: [] APPROVED: PS	DATE 4/19/03 5/16/03 5/15/03 5/13/03	SIZE D SCALE NONE	REV A SHEET 1 OF 1
MATERIAL: FINISH: DO NOT SCALE DRAWING APPLY AFTER COATING	UNLESS OTHERWISE SPECIFIED: DIMENSIONS AND VALUES IN PARENT UNITS GOVERN OVER DIMENSIONS AND VALUES IN DECIMALS AND FRACTIONS .XX : [] .XXX : [] ANGLES: DEGREES DIM AND SURFACE ROUGHNESS APPLY AFTER COATING	NEXT ASSY USED DN APPLICATION	4 3 2 1

- NOTES: UNLESS OTHERWISE SPECIFIED
 1. DRAWING PREPARED IN ACCORDANCE WITH MIL-STD-100
 2. INTERPRET 3RD ANGLE PROJECTION.
 3. DIMENSIONING AND SYMBOLS PER ASME Y14.5M-1994.

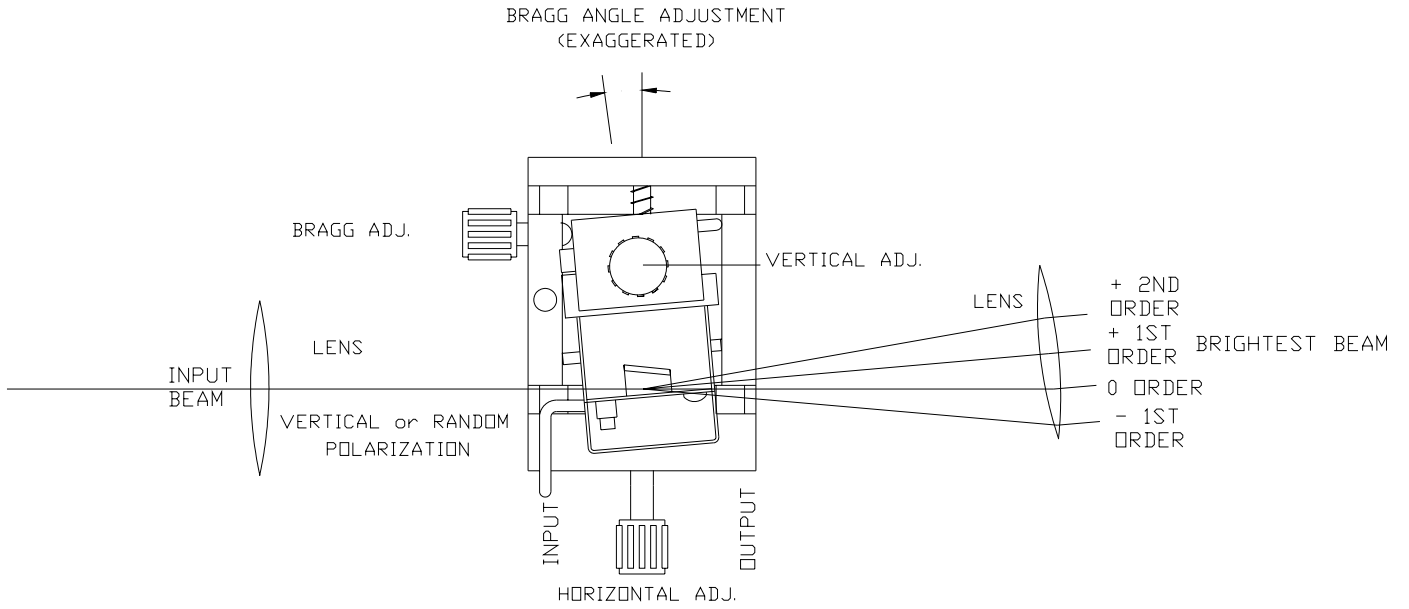
FOA PACKAGE
Figure 1



Dimensions are in inches
Dimensions in [] are in mm.

Tolerances: Decimal: .xx = .01 .xxx = .005
Millimeter: .xx = .25mm .xxx = .127mm
Angle: = ± 30'

53B0957



45A18417

Figure 2

The 15000 FOA series modulator is mounted to the stage of the Bragg mount with two 2/56 x ¼ inch long screws.

ADJUSTMENT PROCEDURE

- See the assemble drawing on page 5.
- The laser beam should be at a height of 3 ± 0.2 inches and parallel to the optical table.
- Loosen the socket head screws (9) and remove the input lens holder (13) and re-collimation lens holder. See the assembly drawing page 5.
- Position the modulator and associated 71002 assembly into the laser beam so that the laser beam is positioned on the modulator's optical window vertically and horizontally and with the side of the assembly parallel to the laser beam.
- Adjust the vertical and horizontal adjustments of the Bragg mount (1) as needed to position the modulator so that the laser beam is centered on the modulator's optical window and close to the transducer. See figure 1 for typical beam position. See figure 2 for adjustments. Secure the mount to the optical table surface.
- With a 50 Ohm load on the driver, set the RF Driver to output RF continuously. Set the RF CW power level of the Driver to the level required for the Modulator. With the Driver turned off, attach the RF cable from the driver to the Modulator. Apply RF power to the Modulator.
- Adjust the Bragg angle on the Bragg mount (1) so as to make the +1st order beam the brightest. See figure 2.
- Calculate to required lens focal length to achieve the required rise time for the desired modulation rate. See the modulator manual for the equations. The 71002 is supplied with two 80 mm lens. The mount will accommodate lens from 75 to 85 mm focal length. Other custom base plates are available to accommodate other focal length lens from 25 to 500 mm focal length lens.
- Install the input lens into its position. Adjust the position of the lens by adjusting the input lens mount slide (5) for horizontal position, slide (6) for focus, and lens holder (13) for height. Readjust the vertical, horizontal and Bragg angle of the 71002 mount to achieve the required diffraction efficiency. See figure 2
- Install the output lens into its position and align it to the +1st order laser beam. Adjust the position of the lens by adjusting the input lens mount slide (5) for horizontal position, slide (6) for focus, and lens holder (13) for height. Note: The output laser beam will be offset by a distance from the original optical path by twice the Bragg angle of the modulator multiplied by the lens focal length.
- To use the modulator, input into the driver the required modulation signal with the driver set to the required operating "mode" for modulation. ("Normal" for a NEOS system Driver.)