

L-111/L-111LD Laser Stand L-102 Beam Translator

*To mount the laser outside bores
in high accuracy bore alignment*

The L-111 Laser Stand is used to hold the L-700, L-705, L-706 and L-708 Lasers, typically for high-accuracy bore alignment applications where it is desirable or required to mount the laser outside the bores. It has coarse Pitch (vertical) and Yaw (horizontal) angular adjustments and is used to buck-in (make parallel to) the laser to two reference points. It works with the L-102 Beam Translator, which optically centers the laser in the first reference bore.

The L-102 Beam Translator is an optical beam-steering device used to translate the vertical and horizontal position of Hamar's straight-line lasers without affecting the angle of the laser beam. It is typically used with the L-111 Laser Stand and features coarse and fine adjustments for translations as small as .0001 in. (0.0025 mm) with a maximum beam displacement of $\pm .100$ in. (2.54 mm).

Applications include:

- Compressor Bearing Bores
- Engine Block Bores
- Large Caliber Gun Barrels
- Stern Tube Bores

Features of the L-111 Laser Stand :

- 275 lb. (125 kg) holding-force and 12 in. (300 mm) posts
- 6.5 in. (165.1 mm) of vertical travel
- Two mounting orientations: one for horizontal surfaces (shown), and one for vertical surfaces, such as bore or gearbox flanges
- Coarse Pitch (vertical) and Yaw (horizontal) angular adjustments
- Steel mounting block for L-705/L-706/L-708 Lasers

Features of the L-102 Beam Translator:

- Translates laser beam in Vertical and Horizontal axes without changing the angle
- Comes with mounting block for L-111 Laser Stand
- $\pm .100$ in. (25 mm) of translation range
- .0001 in. (0.0025 mm) translation sensitivity (resolution)
- Coarse Vertical and Horizontal translation adjustments

L-111 FM Support Fixture

- Used to support and stiffen the L-111 for large-diameter (>30 in. or 755 mm) bores when mounting on the face/flange
- Includes 6 in. (152 mm) and 12 in. (305 mm) extension posts
- Can also be used to mount the laser on a gearbox flange



L-706 in L-111 Laser Stand and L-102 Beam Translator



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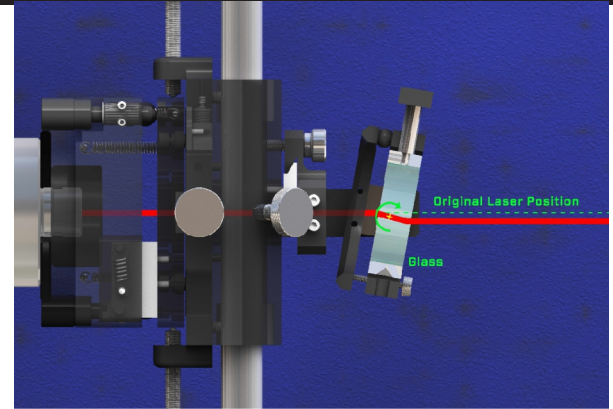
How the L-111 Laser Stand and the L-102 Beam Translator Work

General Setup

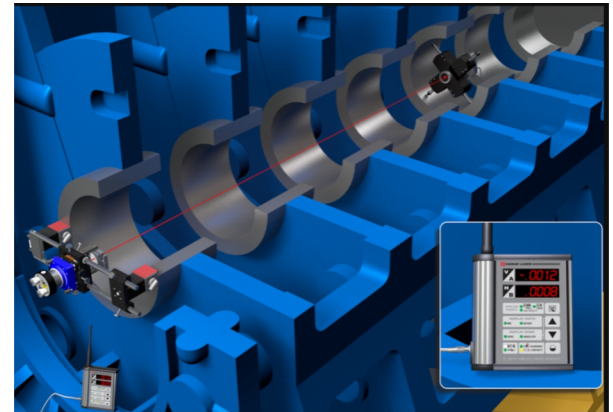
To perform alignments, the laser is mounted in the L-111 Laser Stand and the L-102 Laser Beam Translator is attached. The L-111 has coarse angular adjustment capabilities and the L-102 can translate (move) the laser beam up/down and left-right without changing the angle.

The entire assembly is then mounted near the first reference bore. The A-512/A-514 target/adaptor is placed in the first bore and the L-102 Beam Translator is adjusted to center the laser beam to the target. The target is then moved to the far reference bore and the angular adjustments are used to tilt the laser to the center of the target. This process is repeated until the target reads zero at both locations. The laser is now parallel to the end reference bores and the target can be moved to (or a second target can be placed in) the inner bores for alignment checks.

Target fixturing can consist of a 3-legged, spider-type fixture with a flange adapter (T-225) or a 4-legged, self-centering adapter (A-514).



The L-102 Beam Translator adjusting laser position without changing its angle



Specifications

L-111 Laser Stand

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|---------------------------------------|--|
| Angular Adj. Range: | $\pm 3.0^\circ$ ($\pm .61$ in./ft (± 51.0 mm/m) for Pitch (vertical) and Yaw (horizontal) |
| Vertical Translation Range: | 6.5 in. (165.1 mm) on standard 12 in. (304 mm) posts |
| Angular Resolution: | .0006 in./ft (0.05 mm/m) |
| Laser Mounting Plate: | L-705/L-706: Steel with 0.7495 in. (19.037 mm) mounting hole (L-111) L-708: Steel with 1.2495 in. (31.737 mm) mounting hold (L-111LD) |
| Dimensions (Laser Fixture): | See drawing |
| Dimensions (Posts w/Mag Base): | 14.50 in. (368.3 mm) tall with 2.50 in (63.5 mm) center-to-center post spacing. 3.12 in. (79.3 mm) spacing OD to OD |
| Dimensions (Mag Base): | 3.13 H x 2.75 W x 2.75 L (79.5 H x 70.0 L in. (79.5 H x 70.0 L x 70.0 W mm) |
| Weight (Laser Fixture): | 2.19 lb. 3 oz. (0.99 kg) |
| Weight (Mag Base/Posts): | 9.75 lb. (4.42 kg) |

L-102 Beam Translator

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|--------------------------------------|--|
| Center Adjustment Resolution: | .0001 in. (0.0025 mm) translation |
| Center Adjustment Range: | $\pm .100$ in. (2.5 mm) of translation range |
| Weight: | 1.0 lb. (0.45 kg) |

