# Laser Head Specifications

Four laser heads are available for different size, velocity, and interface requirements.

The Agilent 5517 series of laser heads provides choices for all available size and velocity requirements in a consistent interface. The 5517A is the basic laser head. The 5517B offers 25% greater axis velocity in a smaller package. The 5517C offers still higher velocity, 75% higher than the 5517A. The 5517D offers the highest axis velocity and is the same size as the 5517B.

Standard beam diameter is 6 mm. In addition, there are two beam size options available for the 5517C. Option 003 provides a 3-mm beam diameter for use with the Agilent 10719A and 10721A differential interferometers and 10737L/R compact three-axis interferometers. Option 009 provides a 9-mm beam diameter for use with the 10735A and 10736A three-axis interferometers. The larger beam allows these interferometers a larger angular range of measurement.

Finally, the Agilent 5501B laser head is available to replace the previous 5501A laser head in existing applications that require the same polarization, cabling, and electrical power as the 5501A. The 5501B also offers improved accuracy, reliability, and serviceability compared to the previous 5501A.

All laser heads use a proven long-life laser tube with a demonstrated Mean Time Between Failure greater than 50,000 hours of operation, making them the most reliable lasers of their type available.

## Agilent 5501B and 5517A/B/C/D Laser Heads

### Physical Characteristics

**Weight:**
5517A: 5.5 kg (12 lb)
5517B/C/D: 3.4 kg (7.5 lb)
5501B: 3.4 kg (7.5 lb)
**Warm-Up Time:** less than 10 minutes (5 minutes typical)
**Magnetic Field Strength** (Non-Operating): Does not exceed 5.25 milli-Gauss at a distance of 4.6 m (15 ft) from any point on the surface of the packaged Laser Head.
**Clearance required for cabling:**
5517A: 12.0 cm (4.72 in) beyond back of unit
5517B/C/D: 10.16 cm (4.0 in) beyond back of unit
5501B: 7.5 cm (3.0 in) beyond back of unit

### Power

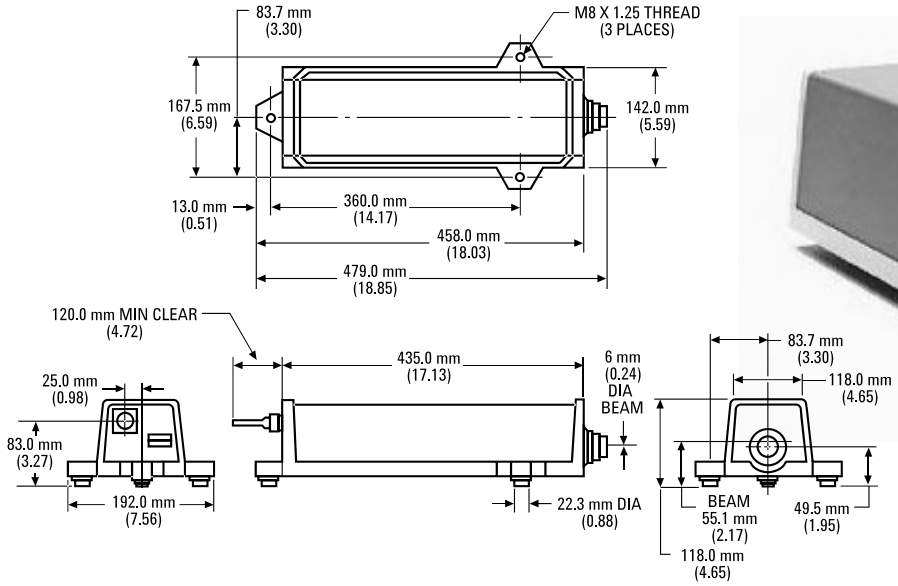
**Power Requirements:**
(5517A)
+15V ±0.3V at 2.5A max
–15V ±0.3V at 0.02A max
(5517B/C/D)
+15V ±0.3V at 2.2A max
–15V ±0.3V at 0.02A max
(5501B)
+15V ±0.3V at 0.79A max
–15V ±0.3V at 0.67A max
**Power Dissipation** (nominal):
Warm-Up: 35W (5517A/B/C/D)
Operation: 23W (5517A/B/C/D)
Maximum: 21.9W (5501B)

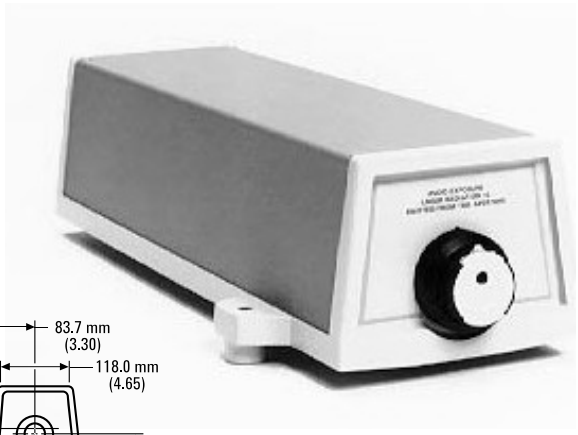
### Laser Characteristics

**Type:** Helium-Neon, Continuous Wave, Two-Frequency
**Minimum Beam Power Output:** 180 µW
**Maximum Beam Power Output:** 1 mW
**Std. Beam Diameter:** 6 mm (0.25 in) typical
5517C Opt 003:3 mm (0.125 in)
5517C Opt 009:9 mm (0.375 in)
**Vacuum Wavelength Accuracy** (3 $\sigma$, lifetime):
±0.1 ppm (±0.02 ppm with factory calibration to MIL-STD 45662)
**Nominal Vacuum Wavelength:**
632.991372 nm (5501B, 5517A/B)
632.991354 nm (5517C/D)
**Vacuum Wavelength Stability** (one hour):
±0.002 ppm typical
**Vacuum Wavelength Stability** (lifetime):
±0.02 ppm typical

**Safety Classification:**
Class 2 Laser Product conforming to U.S. National Center for Devices and Radiological Health Regulations 21 CFR 1040.10 and 1040.11.

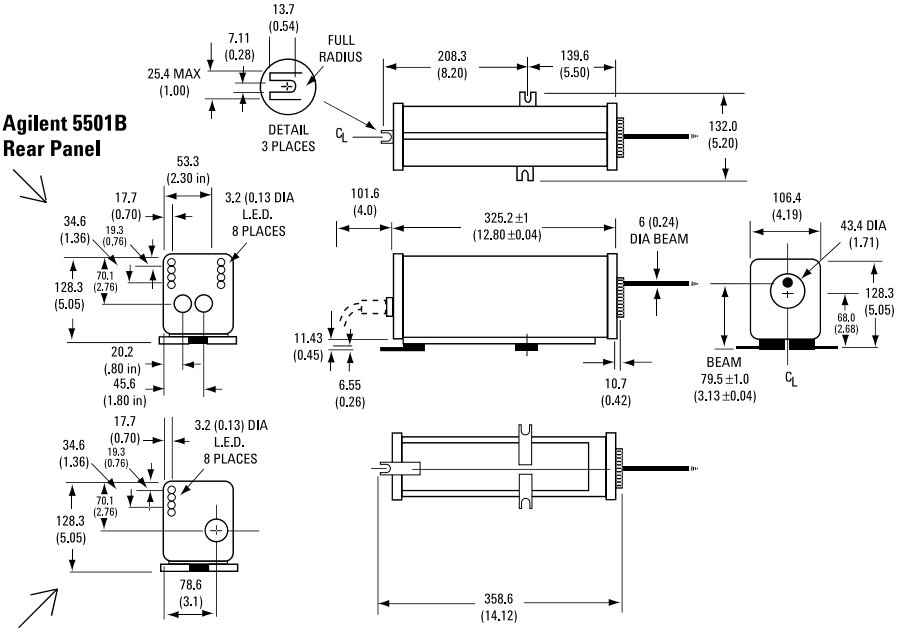
**Reference Frequency:**
5517A: 1.5–2.0 MHz
5517B: 1.9–2.4 MHz
5517C: 2.4–3.0 MHz
5517D: 3.4–4.0 MHz
5501B: 1.5–2.0 MHz



**Agilent 5517A**

**Agilent 5501B Rear Panel**




**Agilent 5517B/C/D Rear Panel**

**Agilent 5501B, 5517B, 5517C, 5517D**

**Note:** Dimensions of all drawings in this product overview are given in millimeters, with corresponding dimensions in inches given in parentheses.