



1.5LTE LOW THERMAL EXPANSION REFERENCE BAR

40% Reduction in Thermal Expansion Over Invar

Our **1.5LTE Low Thermal Expansion Length Reference Bar** provides a stable length artifact for use during laser tracker, articulating arm or scanner jobs. Its unique design minimizes length changes in the bar due to thermal growth. This provides a virtually constant length through a wide working temperature range. Testing has shown that the 1.5LTE has a thermal stability **40% better than Invar**.



Integrated target holders on each end are positioned off-axis and allow the SMR to rotate 360° for easy visibility. A new 3-point mount constrains the bar in the field exactly as it is certified at the factory to assure the highest accuracy possible.

Set the bar anywhere in your measurement volume to confirm instrument accuracy or add reference points to your network. The 1.5LTE must be used in a horizontal orientation on its 3-point mount to maintain factory length certification.

Be aware that the magnets in the target nests may not secure the SMRs when the bar is in other orientations.

The 1.5LTE consists of a single length of invar tubing with two permanently mounted aluminum end caps, each with a 1.5" magnetic SMR nest (SMRs not included). Switching SMR sizes during a measurement session is easy with a 1.5ADP-.5 or 1.5ADP-.875 adapter to locate 0.5" or 0.875" SMRs at exactly the same point as a 1.5" SMR.

This item is available in a 1 meter length (target center to target center), where the reference bar's actual length is within $\pm 1.5\text{mm}$ ($\pm 0.06''$) of 1 meter. The LTE bar is certified with a NIST traceable measurement that includes an expanded uncertainty of $\pm 0.007\text{mm}$ at a 95% confidence interval. Patent No. US 8,141,264.



HOW DOES IT WORK?

The LTE bar maintains a very low coefficient of expansion by virtue of its unique design. Invar, already a very thermally stable material, is used as the main component. Aluminum end caps are permanently mounted to the ends of the invar bar, with an SMR target nest situated inboard from the end of the bar. When the bar lengthens and moves the target nests further apart, the end caps also expand, moving the target nests back together again. The nest locations are precisely calculated to effectively cancel out the length change in the assembly.

SPECIFICATIONS

Length accuracy: Bar length will be within 1.5mm ($\pm 0.06''$) of 1 meter and has an expanded uncertainty of ± 0.007 mm at a 95% confidence interval.

Main body: Single Invar tube with oil and stain resistant PVC jacket

Case: High-impact ABS plastic, with contour-cut foam cushion interior

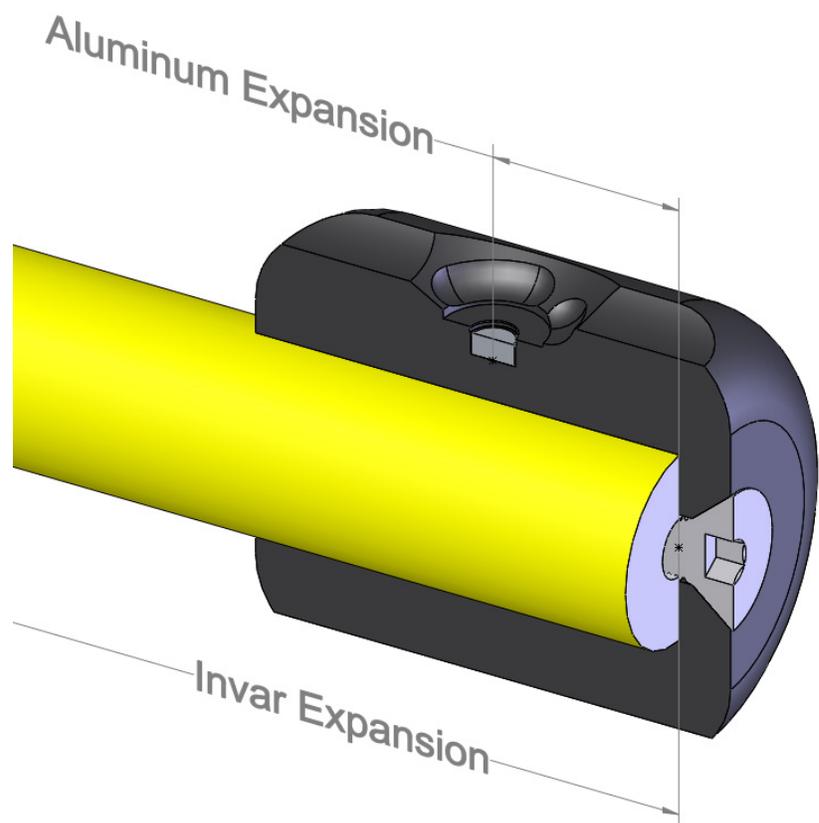
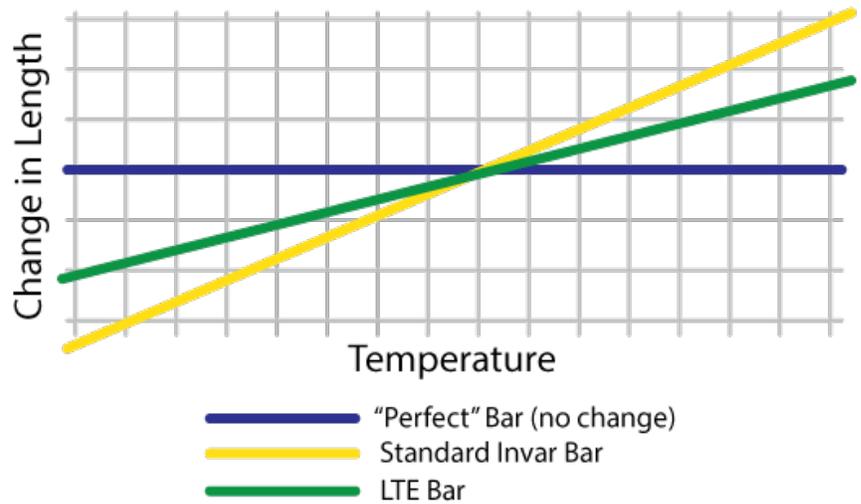
End caps: Permanently mounted black anodized aluminum, with integrated 1.5" SMR target holder

Approx. weight: Bar alone, 3.7 lbs. (1.7 kg);
Bar and case, 9 lbs. (4.1 kg)

MAY BE USED WITH

Any 1.5" diameter SMR

0.5" and 0.875 SMRs with adapters 1.5ADP-.5 and 1.5ADP-.875



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