



BRUNSON INSTRUMENT COMPANY

ISO 9001: 2000 Certified

Optical Tooling Products for Industrial Alignment

ENDURING QUALITY. Brunson Optical Tooling is the cost-effective solution to industrial alignment tasks. With decades of design innovation and manufacturing excellence dedicated to crafting the best equipment available, you can be sure that the Brunson equipment you select will perform to your satisfaction for many years to come.

HIGH PERFORMANCE, NOT “HIGH TECH.” While other alignment tool scenarios offer an “advanced technology” or computerized approach to industrial alignment, there are several reasons why the tried-and-true Brunson Optical Tooling approach is a consistent choice by industry experts: there is no software to upgrade, no computer Operating System (OS) configurations to get in the way. The principles of alignment developed through the use of optical telescopes and geometrical relationships remain as valid today as ever. You won’t have to upgrade a computer – or worse, try to keep an older one in operation – to maintain the alignment that your industrial processes require for efficient operation.

BUY IT TODAY, USE IT FOREVER. The high cost and relatively short life expectancy of computerized equipment can increase your maintenance budget and reduce the profitability of your operations. With Optical Tooling from Brunson, once you buy it, you’re done. And with a full-service calibration and repair department alongside the ISO 9001:2000-certified manufacturing operations, you can be certain your Brunson Optical Tooling alignment equipment will always be ready when you need it.

NOT JUST A SUPPLIER, A BUSINESS PARTNER. Brunson doesn’t just sell equipment... we also offer the training necessary to put it to use. We can also provide alignment and metrology consulting to get the maximum benefit from your purchase. With Brunson on your team, you can count on achieving your goal, whether it’s operational waste reduction, labor savings, improved equipment life, or reduced maintenance downtime for increased throughput.



HELPING THE WORLD MEASURE™ SINCE 1927



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2022



2062



381-1



C47280



2240



1241



508



Alignment Telescopes

2022 & 2024 Series Alignment Telescopes

The 2022 is designed specifically to measure deviations from a reference line, and secondarily, to provide an extremely straight optical reference line for alignment applications. It has two built-in optical micrometers which measure at right angles to each other. They allow measurement of lateral shifts perpendicularly from the line of sight, in both the horizontal and vertical directions. The 2022 has a built-in autoreflection target on its objective lens and an autocollimation illumination unit. The 2024 is the metric version of the 2022 alignment telescope.

2062 Alignment Telescope

The 2062 alignment telescope is designed to hold an optical reference line for other instruments, for use as a boresight telescope, or to evaluate equipment on its own using the principles of autocollimation. All standard spherical adapters and optical squares will fit the 2062. The instrument comes with a built-in autoreflection target on its objective lens as well as an autocollimation illumination unit.

381 Series Alignment Telescopes

The 381 comes in three variations; the 381 and the 381-S both have straight eyepieces, but the 381-S has a special reticle. The 381-1 has a right-angle eyepiece which swivels to any axial orientation. The instrument contains an autoreflection target concentric to the line of sight within $\pm 0.001"$. This target has paired-line spacings of 0.012", 0.036" and 0.110" for use at all distances up to 100 feet. (The target pattern also has a centered 0.092" radius circle target.) The target is illuminated from the rear by a low-voltage autocollimation light source.

C47280 Alignment Telescope

The C47280 is similar to the 2062, and is used for establishing and/or holding optical reference lines. The barrel length, magnification, and field of view of this instrument are different than other alignment telescopes. The barrel length of the C47280 is specifically designed as 10" long. The instrument has no built-in micrometers. It has a built-in autoreflection target and comes with an autocollimation illumination unit.

Eyepieces for Alignment Telescopes

2240 Combination Eyepiece

The 2240 eyepiece consists of a right angle eyepiece plus an illumination unit which can be used either to project an image of the reticle onto a target or for autocollimation. The eyepiece unit can be converted in the field as required, to form a straight-through vision system or a right-angle system.

1241 Combination Eyepiece

The 1241 combination eyepiece is interchangeable with the standard eyepiece of the K+E type telescope found on certain instruments. The eyepiece unit can be converted in the field as required to form a straight-through vision system or a right angle system.

Instrument Lighting

508 Instrument Light Source

The 508 Instrument Light Source comes with two power sources in a single kit for maximum flexibility: a 110v-220v compatible AC power supply for those who want a corded solution; and a DC power source that lasts for hours using common dry-cell batteries, for when extension cords are too much hassle or a safety concern. The light source uses a power-saving LED to provide illumination needed for precision alignment tasks.

Telescope Mounts and Bases

Brunson offers a variety of mounts and bases to fit alignment telescopes in many applications and uses. For a complete listing, see the Brunson website, or call to speak with an Optical Tooling application specialist for more information.



5160



89



88-6



560-2

Micrometers

160, 160-M Coordinate Micrometers

The 160 series coordinate optical micrometer allows monitoring of two dimensions simultaneously. It has two optical flats mounted in an aluminum housing so that their axes of rotation are at 90 degrees ± 15 arcseconds, and converts any transit or level into an alignment telescope. Each micrometer translates the line of sight with an accuracy of ± 0.0005 " (or ± 0.01 mm). The cast aluminum housing fits the telescope barrel of all Brunson optical tooling transits and levels, and is available in both English and metric units.

190 Series Optical Micrometers

The 190 optical micrometer translates the line of sight laterally with an accuracy of ± 0.0005 " using an optical flat. The cast aluminum housing has a 1.655" opening to fit the telescope barrel of all Brunson optical tooling transits and levels. Adapters allow this micrometer to be used with a variety of theodolites.

The **15206 Micrometer Adapter** allows a 190 or 160 series micrometer to be mounted on any instrument with a barrel diameter of 2.25" (most alignment telescopes).

Telescopic Transit Square

76-RH190 Transit Square

The 76-RH190 transit combines the traditional main telescope with a fixed-focus cross telescope mounted in the horizontal axis of the instrument. This second telescope is fixed at infinity focus to make collimation or autocollimation with another instrument or a mirror quick and easy. This capability means that the 76-RH190 can be quickly made perpendicular to an optical reference line.

By simply shifting from the main eyepiece to the cross-axis eyepiece, an operator can establish or verify his/her position relative to the basic reference line in seconds. This effectively requires only one technician, where previously two were required.

Precision Sight Level

545-190 Tilting Level

The 545-190 gives you the ability to establish a line of sight which is extremely level. The two-speed telescope tilting screw has a coarse thread for major adjustments, and a fine thread for precise adjustments to perfect level. One arcsecond of tilt is discernible using the coincidence-type level with $2\frac{1}{2}X$ magnification. The horizontal axis pivots directly over the vertical axis, making the change in plane height less than 0.0001" for tilts up to 5 arc minutes either above or below horizontal.

The model 545-190 uses base components and leveling vials similar in design to the model 76-RH transit, allowing this instrument to sweep precise horizontal planes.

Eyepiece Adapters

196-1 Combination Eyepiece Unit

The 196-1 has a rotating filter disc providing five options: "see-through" capability, reticle projection, green-filtered light, beam splitter with no coating, and beam splitter with partial coating. A built-in diffuser may be engaged for even light distribution over the entire field of view when autocollimating, collimating, or colineating. By removing the light source, the 196-1 operates as a fixed right angle eyepiece.

193-L Illuminated Right Angle Swivel Eyepiece Adapter

The 193-L changes an instrument eyepiece into a right angle configuration and swivels 360 degrees. This allows viewing from any angle, use of the instrument in obstructed or tight setups, and shots near zenith (straight up). The 193-L adapter also allows for autocollimation through illumination of a reticle pattern on several of our transits and one of our levels. With it, you can collimate and colineate two instruments, or illuminate a model 188 autoreflexion target mounted on the end of a telescope barrel.



160



15206

190



76-RH190



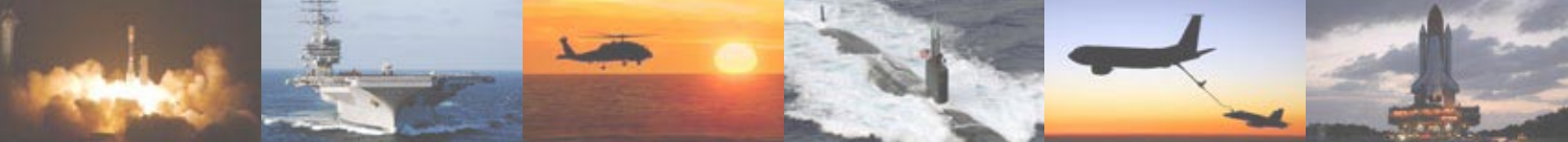
545-190



196-1



193-L



187-S

Level Vials

187-S Stride Level

The 187-S is designed for quick, precise leveling of alignment telescopes and collimators to one arcsecond. It can also be used to level any cylindrical surface between 1¼" and 3" in diameter. Both ends of the bubble are viewed simultaneously via prisms and a magnification system. This "coincidence" or "split" bubble presentation provides the most accurate reading of the bubble position. The top-mounted turret assembly rotates 360°, allowing viewing from all sides. An elastic strap is included to secure the level to the instrument



187

187 Box Level

The 187 provides a fast, accurate method to level any flat surface, establishing a true horizontal plane to within one arcsecond. Both ends of the bubble are viewed simultaneously via prisms and a magnification system. The top-mounted turret assembly rotates 360°, allowing viewing from all sides. A 1 arcsecond tilt produces an observable break in the split-bubble image.



B46632

235-3

235-6

235-5

Mounting Adapters

Brunson offers a variety of mounting adapters for many instruments and applications. For a complete listing, see the Brunson website, or call to speak with an Optical Tooling application specialist for more information.



802

Lateral Adjustment

802, 802-3 Precision Lateral Slides

Our 802 has 2" (5 cm) travel for horizontal alignment to known points. Precision roller bearings permit accurate translation of a precision plumbed instrument, minimizing the need for readjustment. The 802-3 compound lateral slide is constructed using two orthogonally-mounted 802 slides; it allows a full 2" of travel in both the X and Y directions.



802-3

Both slides have a clear vertical aperture designed to allow plummet sightings. Both models have a standard external 3½" x 8 instrument thread mount on top. A dovetail on the bottom seats into the 800 lift or the 235-16 adapter, rotating 360 degrees until secured by two set-screws.



800

800-MOD

Vertical Adjustment

800 Precision Lift

The 800 Precision Lift provides precise control of vertical motion throughout approximately ½" (13 mm) range. It is generally used for fine vertical positioning after the instrument height has been roughly established with a stand column. A large diameter, fine-motion screw allows minute height adjustments of previously leveled instruments. Internal guide-ways also minimize any azimuth (rotational) shifting. The 2.825 x 20 external thread fits into the intermediate tubes on many of our stands. A recessed dovetail socket allows mounting of slides or other configured products on top, with socket head set screws to hold them in place.

800-MOD Precision Lift & Adapter

An 800 precision lift, a 235-12 adapter (dovetail bottom, 3-1/2" x 8 thread top), and a 15084 precision lift adapter. This assembly allows users to equip Brunson or old-style K+E (Cubic Precision) stands with precision lift capability.

HELPING THE WORLD MEASURE™

AUTHORIZED DEALER:

Brunson Instrument Company

8000 East 23rd Street
Kansas City, MO 64129 USA

USA Toll-Free: 877-MEASURE

Tel: +1 816-483-3187

Fax: +1 816-241-1945

Email: sales@brunson.us



WWW.BRUNSON.US