



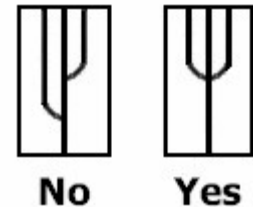
# 545-190 Tilting Level

Establish a precisely level plane

Our **545-190** tilting level combines precision with rugged reliability to execute the most demanding leveling jobs. The telescope has adjustments to maintain the line of sight straight throughout a focusing range of two inches to infinity, allowing the instrument to be located in the tightest of setups. This straightness is maintained at  $\pm 0.001$ " (0.025mm) from two inches to 17 feet (50.8mm to 5.2m) and one arcsecond from 17 feet to infinity. The main telescope tube has a removable section to facilitate conversion for autocollimation, autoprojection, or installation of a right angle eyepiece. The optical micrometer produces repeatable readings with a resolution of 0.001" (0.025mm). This provides a means of easily leveling all types of machinery and equipment, or evaluating the orientation of tables, ways shafts, etc., to accuracies that are difficult to achieve by conventional mechanical methods.



**Precision leveling.** 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 to get you in the ballpark quickly, and a fine thread for those precise adjustments which bring you into perfect level. In addition, a coincidence-type level with 2½X magnification optically "folds" both ends of the precision level vial's bubble together, enabling you to detect the tiniest deviation from level. One arcsecond of tilt is discernible using this "coincidence" vial methodology.



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. This important feature eliminates the need to perform the time-consuming precision plumbing procedure for leveling projects.

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



# 545-190 Tilting Level

## Description (continued)

For rough leveling, the unit has a circular level vial mounted on the base unit. For precise leveling it has a coincidence-type level with a magnified turret viewable from 360°, as well as feather-touch controls for precise setting of the coincidence vial.

**Multiple capabilities.** The eyepiece of the 545-190 may be interchanged with accessories (listed below) to provide autocollimation, autoreflexion, and reticle projection capabilities, just like our transits. The reticle's filar/bifilar pattern makes for easy use with our optical tooling scales, or during collimation or autocollimation procedures.



Filar/bifilar reticle pattern



**Tilting level comes with or without a micrometer.**

Measurements from the optical reference line are taken by using an optical micrometer mounted on the telescope. The 545-190 comes standard with a 190 optical micrometer. To order this instrument without the micrometer, use model number 545-1. You may wish to do this, for example, in order to substitute a metric micrometer or to use a 190 micrometer that you may already have.

## Specifications

**Telescope Length:** 16" (40.6 cm), with 190 micrometer installed

**Magnification:** 20X at 2" from objective; 30X at infinity

**Field of View:** 1 degree

**Image:** Erect

**Optics:** Low reflective, protective coating

**Effective aperture:** 1.34"

**Reticle:** Glass, filar/bi-filar pattern (others available)

**Focusing Range:** 2" (5.1 cm) to infinity

**Bearings:** Ball type with a runout of 0.000025" or less

**Finish:** Polyurethane - grey metallic

**Approximate Weight:** Instrument, 17 pounds (7.7 kg); instrument and case, 30 pounds (13.6 kg); shipping, 32 pounds (14.5 kg)

**Case:** Plastic case with foam cushions to provide all-around support for the instrument

Includes adjusting pins, instruction booklet, and plastic cover.



## 545-190 Tilting Level

### Accessories

- 160-x Series Coordinate Optical Micrometers
- 186 Plastic Autoreflexion Target
- 188 Glass Autoreflexion Target
- 190-x Series Optical Micrometers
- 193 Right Angle Swivel Eyepiece
- 193-L Right Angle Swivel Eyepiece, Illuminated Adapter

The following accessories are also available for use with this product, but must be installed at the factory:

- 191 Combination Reticle Projection, Fixed Right Angle Eyepiece Unit
- 192 Auto-Collimation Unit
- 196-1 Combination Projection, Auto-Collimation, Fixed Right Angle Eyepiece Unit

**545-190**

