
PURPOSE OF THE TRIBRACH

The tribrach enables surveying equipment to be levelled and centred over a benchmark. To achieve accurate measurements, the tribrach must ensure a firm connection between the tripod head and mounted instrument.

The stability of the tripod and tribrach is the primary influence on the reliability of measurements. The critical factor for accuracy is the provision of a stable platform for the instrument; if the base is unstable the measurements will be unreliable.

TORSIONAL STIFFNESS

The top plate of the tribrach moves relative to the base plate when subjected to forces, usually when the mounted instrument is rotated. This force is most pronounced in motorised instruments, due to high acceleration and deceleration. When the instrument rotates, the tribrach plate also rotates slightly. The accuracy with which the tribrach returns to its original position, once the instrument has stopped rotating, is known as the hysteresis value.

Since the hysteresis of the tribrach has a direct influence on the angular accuracy of the instrument, the correct tribrach must be used to achieve instrument specifications. The hysteresis value of the tribrach should always exceed the horizontal angle specification of the instrument.

LEICA GEOSYSTEMS TRIBRACHS

Leica Geosystems tribrachs are designed to operate reliably even in extreme temperature, humid and dusty conditions. In all situations, the maintenance-free foot screws ensure a movement that is always smooth and free of play.

The support area of the tribrach is matched precisely to the base circumference of Leica Geosystems equipment. This provides extremely accurate forced centring.

The optical plummet is of a robust construction, which virtually eliminates the need for adjustment during the lifetime of the tribrach. The optical plummet provides a positioning accuracy of 0.5mm at a set-up height of 1.5m

Even after a long operating life, the quality and precision characteristics are maintained.

Leica Geosystems offers two types of tribrachs, the Professional and Basic series. The difference in specification between the two series is the hysteresis value.

PROFESSIONAL SERIES

The foot screw assembly of the Professional range is of a high quality providing an extremely stable support plate. After production, each tribrach is laboriously measured to determine its hysteresis. Only those tribrachs that are within specifications are supplied by Leica Geosystems.

The hysteresis of the Professional tribrach is guaranteed to a maximum of 1" (3cc). Therefore these tribrachs should be used with all applications where the required accuracy exceeds 3".

BASIC SERIES

The Basic series tribrachs have been designed for standard construction applications. The foot screws have a larger diameter which permits fine adjustment even when wearing work gloves.

These tribrachs are light-weight and able to withstand extended periods of exposure to extreme environmental conditions. Therefore they are also recommended for the support of GPS base station antennas and monitoring targets.

The Basic series tribrachs have a hysteresis to a maximum of 3" (10cc). These tribrachs should therefore only be used with instruments of angular accuracy of 5" or less.

TRIBRACHS OF OTHER BRANDS

The hysteresis of the tribrach has a direct influence on the instrument. If a tribrach is used where the hysteresis value is not known, the specifications of the TPS can not be guaranteed.

We receive regular support cases regarding poor angular accuracies. Invariably this points to the use of a cheaper, less exacting brand of tribrach.

The angular specifications of Leica Geosystems TPS are defined when used together with the GDF121/21 tribrach. Since the tribrach is a component of the TPS, the environmental and accuracy specifications of the system are only valid if the appropriate Leica Geosystems tribrach is fitted.