

The TITAN TOOLSCOPE is an optically correct, monocular alignment type Microscope. It can be purchased as a coordinate unit or as separate components. You can make it as simple or sophisticated as you desire. There are 11 different magnifications possible by purchasing an additional 20X Eyepiece complete with reticle as a separate option. The basic unit comes equipped with a 10X Eyepiece. The advantage of the additional 20X eyepiece is that it allows for the same working distance as the 10X eyepiece but doubles the magnification. The unit is available as a standard Microscope in 10X, 20X, 30X or 50X. please specify the magnification desired when ordering. Additional magnifications are possible by ordering separate objective lenses.

We offer you sturdy, well-designed components which enable you to adapt this instrument to your own special needs. The uses for the Toolscope are endless, from Metrology, to mounting in special fixtures on machines, or for alignment purposes. The unit has found many applications in the microelectronics industry to alignment on grinders, small hole drilling applications as a measuring microscope or an inexpensive Toolmakers Microscope. The modular approach allows for complete flexibility in design and usage

The microscope can be purchased as a basic toolscope Microscope, or with a variety of components; mounting Bracket, Ring Illuminator with Transformer, separate X-Y Coordinate Measuring micro-movement stage, stand with built in sub-stage illuminator.

The toolscopes can be converted to Video by two separate means. The MVA-2 Video Adapter incorporates the magnification of the Objective Lens and the 10X Eyepiece. The advantage to this method is that it results in high a Magnification of the overall System. The alternative method is to use the Video Adapter TSTVA-12. In this method, the eyepiece is removed and the Video Adapter is substituted for the eyepiece. This method still utilizes the same Reticle as the eyepiece; but this is a direct 1 to 1 conversion of the Video Image so the 10X Magnification of the eyepiece is lost. It however, lends itself to a shorter length Optical system with only the Magnification of the objective Lens and the Electronic Magnification of the Video System.

This versatility allows you to incorporate the unit into special machine design or as an inexpensive X-Y Coordinate Measuring Microscope. It is adaptable to any variation. We have listed below the choices of 16 magnifications and their corresponding fields of view, working distances, values divisions in thousands of an inch.

TABLE OF MAGNIFICATION VALUES FOR TOOLSCOPE

| WITH 10X EYEPIECE | | | | | | | WITH OPTIONAL 20X EYEPIECE | | | | | | | VIDEO RESOLUTION* | |
|-------------------|----------------------|-------------------------|--|-----------------------------|-------|----------------|----------------------------|----------------------|-------------------------|--|-----------------------------|-------|----------------|-------------------|------------------|
| Mag. | Field of View Inches | Working Distance Inches | Value Each Division in Thousands of Inch | Value of Radi | Res.* | Depth of Field | Mag. | Field of View Inches | Working Distance Inches | Value Each Division in Thousands of Inch | Value of Radi | Res.* | Depth of Field | MVA-2 ADAPTER | TSTVA-12 ADAPTER |
| 3X | 2.46" | 21.625" | .0175" | .35", .70", 1.05" & etc. | 14.3 | 3.7" | 6X | 1.800" | 21.625" | .0175" | .35", .07", 1.05" & etc. | 22.6 | 1.90" | 11.3 | 6.35 |
| 5X | 1.45" | 11.875" | .0105" | .21", .42", .63" & etc. | 20.16 | 1.75" | 10X | 1.000" | 11.875" | .0105" | .21", .42", .63" & etc. | 32 | 1.06" | 25.39 | 11.3 |
| 7.5X | 1.00" | 8.210" | .007" | .14", .28", .42" & etc. | 32 | 1.00" | 15X | .700" | 8.210" | .007" | .14", .28", .42" & etc. | 50.8 | .470" | 45.3 | 17.95 |
| 10X | .760" | 6.496" | .005" | .100", .200" & etc. | 40.3 | .600" | 20X | .508" | 6.496" | .005" | .100", .200" & etc. | 57 | .300" | 50.8 | 22.62 |
| 20X | .340" | 2.874" | .0025" | .050", .100" & etc. | 90.5 | .150" | 40X | .240" | 2.874" | .0025" | .050", .100" & etc. | 144 | .120" | 114 | 45.3 |
| 30X | .230" | 1.300" | .0016" | .032", .064" & etc. | 114 | .100" | 60X | .160" | 1.300" | .0016" | .032", .064" & etc. | 161 | .060" | 144 | 71.8 |
| 40X | .1606" | .600" | .0011" | .011", .022" & etc. | 161 | .050" | 80X | .116" | .600" | .0011" | .011", .022" & etc. | 350 | .020" | 350 | 90.5 |
| 50X | .150" | .518" | .001" | .020", .040" & etc. | 203 | .040" | 100X | .100" | .518" | .001" | .020", .040", & etc. | 400 | .010" | 400 | 114 |
| 100X | .0705" | .255" | .0005" | .010", .020" & etc. | 400 + | .010" | 200X | .045" | .255" | .0005" | .010", .020" & etc. | 500 | .0025" | 500 | 161 |
| 200X | .036" | .060" | .00025" | .005", .010" & etc. | 500 + | .0022" | 400X | .024" | .060" | .00025" | .005", .010" & etc. | 600 | .0013" | 600 | 300 |
| 400X | .018" | .030" | .000125" | .0025", .005" & etc. | 600 + | .001" | 800X | .012" | .030" | .000125" | .0025", .005" & etc. | 700 | .00085" | 700 | 400 |

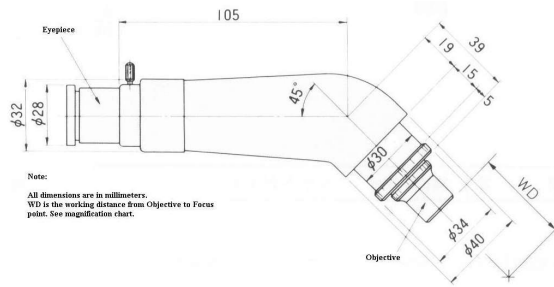
*Resolution line pairs per millimeter

When purchasing the Basic TOOLSCOPE four magnifications are available, 10X, 20X, 30X or 50X. Please specify the magnification you want when placing your order. The other magnifications are arrived at by purchasing extra Objective Lenses. The total magnification is computed by multiplying the value of the 10X eyepiece times the value of the Objective Lens. Please note when initially purchased the toolscope comes with a 10X Eyepiece. The 20X Eyepiece is always extra. EXTRA OBJECTIVE LENSES: .3X, .5X, .75X, 1X, 2X, 3X, 4X, 5X, 10X, 20X and 40X

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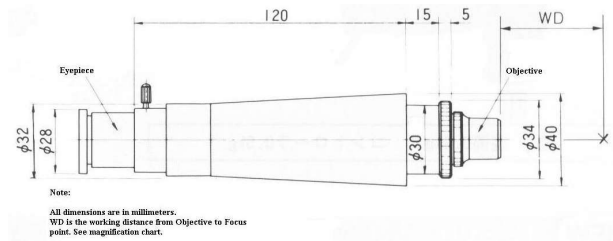
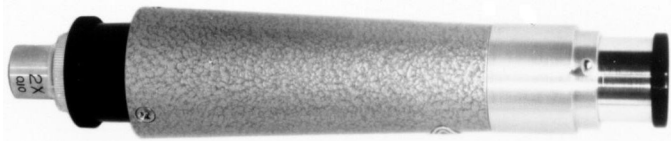
MODEL MTSM



The basic Toolscope Microscope frame is inclined at a 45° angle which makes it convenient for mounting in either horizontal or vertical position. Its small size makes it ideal for special applications where mounting-room is limited. The 10X eyepiece is a wide field color corrected Kellner type which rotates 360° in its mount so that the crosshairs can be aligned in any direction. The image is erect and uninverted. There are 6 concentric and divisions and circles will vary with the magnification if the unit is used for direct measuring (see table). Total weight of the unit is only 8.5 ounces which can be a great advantage for certain applications.

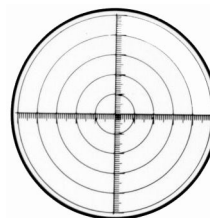
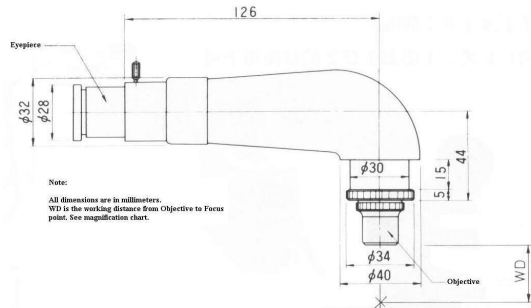
MODEL MTSI

The model is identical to Model MTSM except the eyetube is straight in line. All of the optical data is the same. This unit can be ideally used in the vertical or horizontal position or inclined at any angle. Image is optically correct.



MODEL MTSF

This model is identical to Model MTSM except the eyetube is at a 90° angle instead of 45° angle. All of the optical data is the same. This unit can be ideally used in the vertical or horizontal position.



Reticle for all Toolscopes & TSTVA-12 Video Adapter

TOOLSCOPE MOUNTING

MODEL M-A-1



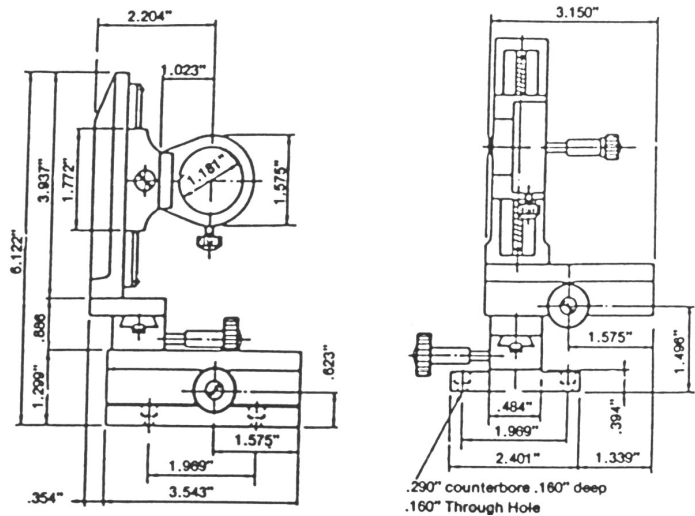
By purchasing the Toolscope with the Mounting Bracket, you have the advantage of a rack and pinion with fine adjustment, and you can also fasten it onto any 1.00" diameter post. The M-A-1 Mounting bracket also enables you to rotate the Microscope frame 360° in its circular holder for viewing in any position. The Mounting Bracket is 3.54" long in the back for rigidity, with a 1.00" mounting hole. The fine adjustment allows 2.93" travel: 1.25" above and 1.68" below zero position. The center distance of the post mounting hole to the microscope frame mounting hole is 5.62". This allows a large work area, free from obstructions for special apparatus.

Model TS-O is an ideal fixture for mounting and adjusting the 3 Toolscope models for various applications. Movements are as follows: X Axis - 3.15" Rack and Pinion. Y Axis - 2.68" Rack and Pinion. Z Axis - 2.72" Rack and Pinion. Four drilled and counterbored holes are provided for easy mounting.

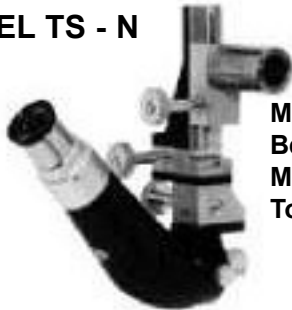
MODEL TS - O



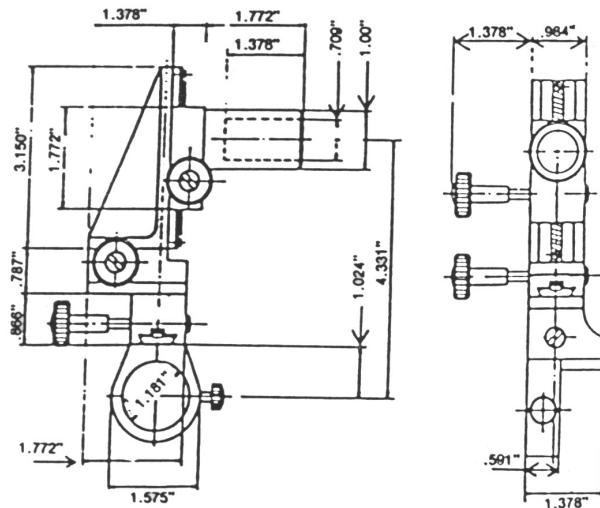
Model TS-O Shown Being Used With Model MTSM Toolscope.



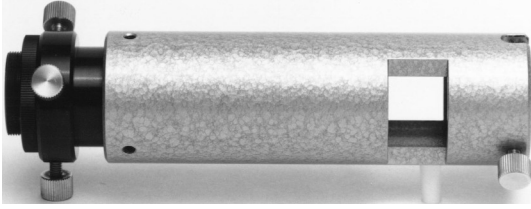
MODEL TS - N



Model TS-N Shown Being Used With Model MTSM Toolscope.



Model TS-N also has 3 Axis Rack and Pinion Adjustment as well as the ability to be mounted on a rotary clamp on its 1.00" Diameter Post. Movements are as follows: X Axis - 1.18" Rack and Pinion. Y Axis - 0.870" Rack and Pinion. Z Axis - 2.64" Rack and Pinion. An ideal rotary mount well suited for Models MTSM, MTSF and MTSI Toolscopes.



MODEL MVA-2 VIDEO ADAPTER

The MVA-2 Video Adapter fits directly over the eyepiece of the Toolscope. The other end screws directly into the Video Camera with a C-Mount 1-32 thread. It will capture the basic image of the Toolscope together with the Reticle Image. It is desirable not to use too high a Toolscope Magnification; otherwise, the image becomes quite sensitive and hard to focus. If this unit is used, it becomes very important to use as much illumination as possible; otherwise, the image will be too dark. We strongly suggest the RI-17 Fibre Optic Ring Light & the FOI-150 Fiberoptic Illuminator

MODEL TSTVA-12 VIDEO ADATER

The TSTVA-12 Video Adapter replaces the eyepiece. It has a focusing ring that allows for line adjustment for a crisp, sharp image. The top end of the unit has a C-Mount thread that fits directly into the camera. The bottom fits directly into the 23mm optical tube of the Toolscope. The reticle allows for Alignment or Measuring once the reticle is calibrated. A special extra 2XL adapter can be purchased that will double the TSTVA-12 Magnification.



AME-5M ANGEL MEASURING EYEPIECE

The Titan Protractor Eyepiece Measures over 360° to an accuracy of 5' (minutes) by the use of Rotary Vernier and a simple Cross Hair Eyepiece. The white scale on a black background is easy to read and enlarged by a 10X magnifier. This unit can be used on the Models MTSM, MTSF & MTSI. This Eyepiece can be invaluable for checking Cutting Tool Geometry and Angular Measurement. It will fit all 23mm optical tubes.



The Model TR.L1 from Titan Tool Supply is a specialized 16-LED ring illuminator accessory designed to help end-users meet the stringent requirements of industrial microscopy applications in its delivery of specific features to help streamline end-user workflows. The Model TR.L1 is designed for seamless compatibility with Titan Tool Supply CS Centering Microscopes, Modular Toolsopes, and comparable industry models, and with features that include:

HOMOGENEOUS ILLUMINATION Provides optimal conditions for precision work by ensuring consistent lighting across the entire work area. This feature is particularly advantageous in applications where accurate visual assessments and measurements are critical.

PERFECT INCIDENT ILLUMINATION The TR.L1 offers a flicker-free light source via optimized, low-loss electronics for a seamless imaging experience with reduced risks of eye strain during extended use. This makes the TR.L1 ideal for industrial image processing applications involving cameras and lenses.

ADJUSTABLE BRIGHTNESS CONTROL Ranging from 0 to 100%, the TR.L1's adjustable brightness control feature allows the end-user to adapt illumination levels to suit specific tasks, thereby ensuring optimal conditions for inspection, analysis, and documentation.

VARIABLE CLAMPING DIAMETER Adjustable with a reducing ring, the variable clamping diameter offers seamless adaptability and integration with existing microscope setups and in-house equipment

ROBUST ALUMINUM HOUSING Designed for maximum durability without compromising functionality, as required to withstand the rigors of continuous industrial use.

360° SHADOW-FREE ILLUMINATION in all Directions Eliminates any obstructive shadows that might interfere with observations, such as in applications where detailed examinations are required.

INTEGRATED BRIGHTNESS CONTROLLER Simplified operation with adjustable brightness controller (0-100%) and onboard memory function, allowing the end-user to retain preferred settings. The 24V DC 1A output power, along with universal power input and global plug compatibility, ensures ease of use in diverse locations.

PRACTICAL DIMENSIONS The TR.L1's ring dimensions, weight, and working distance specifications are carefully designed for practicality in various microscopy setups, providing convenience without compromising functionality.

Ordering Information

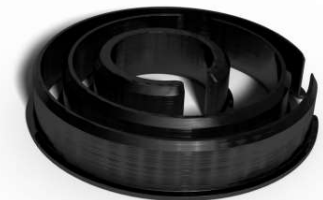
| Model Number | Description |
|--------------|-----------------------------|
| MTSM-10X | 10X Magnification Toolscope |
| MTSM-20X | 20X Magnification Toolscope |
| MTSM-30X | 30X Magnification Toolscope |
| MTSM-50X | 50X Magnification Toolscope |
| | |
| MTSI-10X | 10X Magnification Toolscope |
| MTSI-20X | 20X Magnification Toolscope |
| MTSI-30X | 30X Magnification Toolscope |
| MTSI-50X | 50X Magnification Toolscope |
| | |
| MTSF-10X | 10X Magnification Toolscope |
| MTSF-20X | 20X Magnification Toolscope |
| MTSF-30X | 30X Magnification Toolscope |
| MTSF-50X | 50X Magnification Toolscope |

Optional Extras

| | |
|---------------|----------------------------|
| RI-17 | Fibre Optic Ring Light |
| FOI-150 | Fibre Optic Light Source |
| TR.L1-LED | 16 LED Ring Light |
| TR.L1.18RR | 18mm Reducer Ring |
| AME-5M | Angle Measuring Eyepiece |
| TSTVA-12 | Video Adapter |
| MVA-2 | Video Adapter |
| 2XL Adapter | 2X Remagnifier |
| MSOBJ0.3X | 0.3X Objective Lens |
| MSOBJ0.5X | 0.5X Objective Lens |
| MSOBJ0.75X | 0.75X Objective Lens |
| MSOBJ1X | 1X Objective Lens |
| MSOBJ2X | 2X Objective Lens |
| MSOBJ3X | 3X Objective Lens |
| MSOBJ4X | 4X Objective Lens |
| MSOBJ5X | 5X Objective Lens |
| MSOBJ10X | 10X Objective Lens |
| MSOBJ20X | 20X Objective Lens |
| MSOBJ40X | 40X Objective Lens |
| MTS-10X | 10X Eyepiece with Reticle |
| MTS-20X | 20X Eyepiece with Reticle |
| RET-Crosshair | Simple Cross Hair Reticle |
| RET-TS | Standard Toolscope Reticle |
| M-A-1 | Mounting Bracket |
| TS-O | Toolscope Mounting Fixture |
| TS-N | Toolscope Mounting Fixture |



MODEL TR.L1-LED RING LIGHT



MODEL TR.L1.18RR REDUCER RING