

The Titan Centering Microscopes are designed for job set-up and inspection with vertical milling machines, large jig borers, boring mills, lathes, electrical discharge machines, tape-controlled machines, drill presses. Three Coordinate Measuring Machines.

Titan Centering Microscopes have an upright image, optically correct from left to right so that the operator sees the workpiece with the microscope the same as without it, Mistakes due to transposing or converting are eliminated.

The X & Y & Z Series Centering Microscopes all come with hardened and ground 1/2" diameter shanks so that they are adaptable to all machines through the use of collets. It is suggested if it will be used continuously in one machine that it be fitted with its own collets.

The most minute spindle run-out can be compensated for both the X & Y & Z Series Centering Microscopes the X Series uses the popular (3) master centering screw method where the reticle floats between the centering screws just below eyepiece of the microscope.

The Y & Z Series Centering Microscope have a "Prismatic" centering device where only two screws are needed for especially simple and fast centering to compensate for spindle runout. The prismatic setting on the Y & Z Series has the advantage of not changing the settings of one axis while you are adjusting the other axis, as both settings are entirely independent of each other. Both methods can be quickly mastered. Special instructions come with the units. It is an easy matter to adjust the microscope for perfect centering every time.

- Surface finish can easily be checked with Model X-II and Y-II under 50X magnification.
- The drilling of printed circuit boards through prior location and centering.
- Details too small, or inaccessible to an indicator or edge finder can be easily picked up.
- A vertical mill or jig borer with optical scale or precise lead screws can be turned into a three coordinate measuring machine for checking the accuracy of completed dies, molds, castings and precision parts. These parts are sometimes too big to fit into a comparator or a Tool Maker's Microscope table as these means of measuring the larger parts are too limited to check the job properly.
- The uses of 3 coordinate measuring machines can be greatly enlarged by their usage, Model Y-II specifically designed for this purpose.
- The human element of "feel or touch" is eliminated so all errors resulting from misreading micrometers, verniers and indicators is eliminated by the lack of physical contact between the operator and what he is measuring through the use of microscopes.
- Model Y-I is especially useful for setting up on Electrical Discharge Machines, because of its extra-long focal length and long eyetube, made so the operator has easy access to the instrument over the closed tub or basin of the machine. (With some care the operator can learn to view the workpiece through clean oil, once the angle of distortion is calculated.) This eliminates constant draining between changing electrodes.
- The zero (0) or starting position for use on tape-controlled machinery can easily and quickly be plotted through their usage by sighting through the various positions needed in the work cycle and punching the tape accordingly.
- Model Z-I with low magnification and extremely long focal length is ideally suited for alignment on Boring Mills.
- Model Y-III with High Magnification depth Measurement of Minute Slots and Grooves by the difference in Focus Principal. Sight on the Bottom of the Groove zero an indicator attached to the Vertical Spindle, come to the top of the Groove and read the displacement on the indicator.
- Checking Printed Circuit Boards on Three Coordinate Measuring Machines for Size of Holes and Circuit Patterns.

VIDEO ADAPTER FOR TITAN CENTERING MICROSCOPES:

It is easy to adapt all Titan Centering Microscopes, X, Y and Z Series to Video. It is necessary to remove the Eyepiece and use the Video Adapter instead. These Video Adapters will screw directly into the C Mount of any Video Camera. The Centering Microscope can still be centered to the center of rotation of a spindle. The only difference is that the image is now captured on the screen of the Video Monitor. This maybe especially desirable for Large Coordinate Measuring Machines, Large Jig Borers and any Machine where it is impossible to look in the Eyepiece because of table size or obstructions on the machine.

Further Advantages of Video Adaptation:

- (a) It alleviates eye strain.
- (b) More than one person can view the image at the same time.
- (c) The image can now be frozen, digitized or computerized.
- (d) In some cases, it may be possible to reach higher magnifications through Video.

If desired, Titan Tool can furnish the complete Video System including Camera. It is imperative that the Fibre Optic Ring Illuminator be used if you convert to Video. Models X-I, X-II, Y-I, Y-II and Z-I use RI-34 Fibre Optic Ring Illuminator. Models Y-III and Y-IV use Models RI-17 Fibre Optic Ring Illuminator.

Standard Data for Y and Z models:

Overall Length: 5.00"
Front Prism Housing: .75" x 2.00"
Side Prism Housing: 2.25" x 2.00"
Shank: 0.500" Diameter Hardened & Ground - 2.00" Long.
Length of Objective: 0.75"
Eyetebe: 5.25" long at a 75° angle to the center line of the body.
Image: Right side up, not inverted. Optically correct.

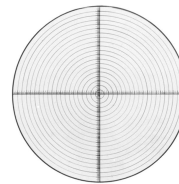
Centering Device: Prismatic type consists of 2 screws, one under the eyetube for correcting misalignment of the X-X axis of the spindle of the machine and one on the right side of the microscope for correcting run-out of the Y-Y axis of the machine. Each screw has its own independent action and is not related to the other screw correcting the other axis. This device greatly simplifies spindle run-out correction. The independent action of each screw does not misalign or change the previous setting of the other screw, as in most centering devices. Weight 1 3/4 lbs.

10X Standard Wide Field Kelner type color coated & corrected for chromatic aberrations.

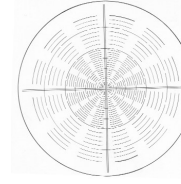
	Model Z-I		Model Y-I		Model Y-II		Model Y-III		Model Y-IV	
	Magnification	Field of View	Magnification	Field of View	Magnification	Field of View	Magnification	Field of View	Magnification	Field of View
Magnification Standard with 10X Eyepiece.	10X	.760"	20X	.382"	50X	.158"	100X	.080"	200X	.038"
Magnification Standard with 20X Eyepiece.	20X	.500"	40X	.250"	100X	.100"	200X	.047"	400X	.015
Working Distance	6.250"		2.598"		1.078"		0.255"		0.060"	
Reticle A - Inch Standard all units	Consists of two pairs of 90° cross lines and 19 concentric circles of .040", .080", .120", .160", .200", .240" diameter and etc., at .040" intervals till the largest circle which is .760" diameter. DIVISIONS: 90° cross lines on the vertical & horizontal axis with .002" divisions.		Consists of two pairs of 90° cross lines and 19 concentric circles of .020", .040", .060", .080", .100", .120" diameter and etc., at .020" intervals till the largest circle which is .380" diameter. DIVISIONS: 90° cross lines on the vertical & horizontal axis with .001" divisions.		Consists of two pairs of 90° cross lines and 19 concentric circles of .008", .016", .024", .032", .040", .048" diameter and etc., at .008" intervals till the largest circle which is .152" diameter. DIVISIONS: 90° cross lines on the vertical & horizontal axis with .0004" divisions.		Consists of two pairs of 90° cross lines and 19 concentric circles of .004", .008", .012", .016", .020", .024" diameter and etc., at .004" intervals till the largest circle which is .076" diameter. DIVISIONS: 90° cross lines on the vertical & horizontal axis with .0002" divisions.		Consists of two pairs of 90° cross lines and 19 concentric circles of .002", .004", .006", .008", .012", .026" diameter and etc., at .002" intervals till the largest circle which is .038" diameter. DIVISIONS: 90° cross lines on the vertical & horizontal axis with .0001" divisions.	
Reticle B- inch Optional	Two parallel Cross Hair lines on the X and Y axis, distance between the lines .0025" thirty concentric circles from the inside out, every 10th and then every 5th, crossing center line. Diameter Values: .01, .02, .03, .04, .05, .06, .07, .08, .09, CL - .10, .22, .24, .26, .28, CL - .30, .32, .34, .36, .38, CL - .40, .44, .48, .52, .56, CL - .64, .68 inches.		Two parallel Cross Hair lines on the X and Y axis, distance between the lines .0025" thirty concentric circles from the inside out, every 10th and then every 5th, crossing center line. Diameter Values: .005, .010, .015, .020, .025, .030, .035, .040, .045, CL - .050, .060, .070, .080, .090, CL - .100, .110, .120, .130, .140, CL - .150, .160, .170, .180, .190, CL - .200, .220, .240, .260, .280, CL - .320, .340 inches.		Two parallel Cross Hair lines on the X and Y axis, distance between the lines .001" thirty concentric circles from the inside out, every 10th and then every 5th, crossing center line. Diameter Values: .002, .004, .006, .008, .010, .012, .014, .016, CL - .020, .024, .028, .032, .036, CL - .040, .048, .052, .056, CL - .060, .064, .068, .072, .076, CL - .080, .088, .096, .104, .112, CL - .120, .128, .136 inches.		Two parallel Cross Hair lines on the X and Y axis, distance between the lines .0005" thirty concentric circles from the inside out, every 10th and then every 5th, crossing center line. Diameter Values: .001, .002, .003, .004, .005, .006, .007, .008, .009, CL - .010, .012, .014, .016, .018, CL - .030, .032, .034, .036, .038, CL - .040, .044, .048, .052, .056, CL - .060, .064, .068 inches. 31 Circles Total.		Two parallel Cross Hair lines on the X and Y axis, distance between the lines .00025" thirty concentric circles, from the inside every 10th and then inside every 5th circle crossing center line. Diameter Values: .0005, .0010, .0015, .0020, .0025, .0030, .0040, .0045, CL - .010, .011, .012, .013, .014, .015, .016, .017, .018, .019, CL - .020, .022, .024, .026, .028, .030, .034 inches.	
Reticle B-Metric Reticle C-Cross Hair Both items are an extra option.	31 Concentric Circles with the second circle and then every tenth crossing the center line. Values increase in .25 mm increments in diameters. Distance between X-Y Cross Hair Lines, .0625 mm.		31 Concentric Circles with the second circle and then every tenth crossing the center line. Values increase in .5 mm increments in diameters. Distance between X-Y Cross Hair Lines, .125 mm.		31 Concentric Circles with the second circle and then every tenth crossing the center line. Values increase in .1 mm increments in diameters. Distance between X-Y Cross Hair Lines, .025 mm.		31 Concentric Circles with the second circle and then every tenth crossing the center line. Values increase in .05 mm increments. Distance between X-Y Cross Hair Lines, .005 mm.		31 Concentric Circles with the second circle and then every tenth crossing the center line. Values increase in .025 mm increments. Distance between X-Y Cross Hair Lines, .0025 mm.	
Uses	The unit has been used especially for Boring Mills, because of its extremely long focal length. It can also be used on Vertical Milling Machines or Jig Borers whenever a long focal length is necessary.		A Centering Microscope especially well suited for use on electrical discharge machines and Bridgeport Type Milling Machines and some Three Coordinate Measuring Machines. It has a larger field of view, longer focal length, longer eyetube, which allows the viewer easier access to the microscope as is combined with an almost horizontal position of the eyetube. The prismatic 2 screw centering method for spindle run out makes for easy and fast set-ups.		The unit has been specially designed for use on the ThreeCoordinate Measuring Machines as "Moore, Sip, Bendix, Boice, Numerex", etc. It has a larger field of view, larger spacing between lines on the reticle, higher magnification and a Prismatic Centering Device for spindle run out which makes for easy and fast setups.		These models are ideal for extremely close measuring. It is ideally suited for Three Coordinate Measuring Machines, or miniature electronic chip measuring, sizing and locating. Readings of .0001" to .00005" are possible. The machine where these are to be used, must be absolutely stable with no vibration due to the high magnifications used.			
Objective Magnification - not interchangeable between models.	1X		2X		5X		10X		20X	
Resolution (In lines per mm)	10 X Eyepiece 40.3 Lines per mm		10 X Eyepiece 80.6 Lines per mm		10 X Eyepiece 203 Lines per mm		10 X Eyepiece 400 Lines per mm		10 X Eyepiece 400+ Lines per mm	
	20 X Eyepiece 60 Lines per mm		20 X Eyepiece 128 Lines per mm		20 X Eyepiece 400 Lines per mm		20 X Eyepiece 400+ Lines per mm		20 X Eyepiece 400+ Lines per mm	

	Model X-I		Model X-II	
	Magnification	Field of View	Magnification	Field of View
Magnification with 10X Eyepiece	20X	.270"	50X	.105"
Magnification with 20X Eyepiece	40X	.220"	100X	.090"
Working Distance	2.086" 2X Objective		0.8267" 5X Objective	
Reticle Pattern	Consists of two pairs of 90° cross lines, five concentric circles of .050", .100", .150", .200" and .250" diameters.		Consists of two pairs of 90° cross lines, five concentric circles of .020", .040", .060", .080" and .100" diameters.	
Divisions	90° cross lines on the vertical and horizontal axis, with .0025" divisions.		90° cross lines on the vertical and horizontal axis, with .001" divisions.	
Resolution (In lines per mm)	10X Eyepiece 36 Lines per mm		10X Eyepiece 71.8 Lines per mm	
	20X Eyepiece 50.8 Lines per mm		20X Eyepiece 102 Lines per mm	

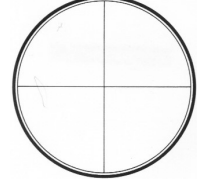
Z & Y Series Centering Microscope



Y Series Reticle A
Standard



Y Series Reticle B
Inch or Metric

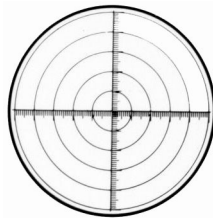


Y Series Reticle C
Cross hair



X Series Centering Microscope -

Correction for SpindleRunout by the triangulation method (3 screws moving the reticle opposite to the spindle runout) Directions with unit.



X Series Reticle

SHANK: 3" long, 1/2" diameter, hardened and ground.

EYETUBE: 3 1/2" long at 45° angle to the center of the body.

IMAGE: Optically correct. Right side up not inverted.

EYEPIECE: Color coated and achromatic Kelnor type.

Ordering Information

Model Number	Description
Z-I	10X Centering Microscope
Y-I	20X Centering Microscope
Y-II	50X Centering Microscope
Y-III	100X Centering Microscope
Y-IV	200X Centering Microscope
X-I	20X Centering Microscope
X-II	50X Centering Microscope

Optional Extras

YY-20	20X Eyepiece Z & Y Series
YY-TSTVA	Video Adapter Z & Y Series
RET-B Inch	Reticle B Inch Z & Y Series
Ret-B Metric	Reticle B Metric Z & Y Series
Ret-C	Reticle C Cross Hair Z & Y Series
XX-20	20X Eyepiece X Series
XX-TSTVA	Video Adapter X Series
CMI/CMT	Used for Z-I, Y-I, Y-II, X-I & X-II
EL-17	Bulbs for CMI Illuminator per each
RI-17	Fiber Optic Ring Y-III & Y-IV
RI-34	Fiber Optic Ring Z-I, Y-I, Y-II, X-I & X-II

CMI/CMT Illuminator & Transformer

Uses 6 EL-17 Bulbs

110 Volt Power Supply with North American Plug Type



www.TitanToolSupply.com • Phone: 716-873-9907