TCP-III Centering Projector

The Model TCP-III Titan Optical Centering Projector can be fastened directly into the spindle of a machine. Its weight is evenly balanced and is as as light as possible to use in small cantilever type measuring machines. The projector can be centered directly to the mechanical axis of any spindle with two small X-Y adjustment screws located in the rear so that it will forever project a clean sharp image regardless of other lighting conditions.

The Model TCP-III has an optically correct image, not inverted, and the projected image on the screen is remagnified by a 2X magnifier permanently fastened over the screen.

A Fibre Optic Illumination system eliminates the heat factor and shadow pockets so common with high-intensity light bulbs. The fibre
bundle is light in weight and five feet long so that the light source can be mounted away from the machine and spindle.

The mechanical centering device located in the rear of the unit allows for simple centering which will always repeat the same point regardless of the rotation of the spindle, for rotating spindle machines.

A 360° rotatable screen with 1° divisions, cross hairs and measuring circles will allow for pickup of any edge or point whether parallel, or at an angle to the X-Y Table of the machine or projector. The direct readability of the rotatable screen to 1° increments allows for excellent angle measuring if finer divisions are necessary. It can be used in conjunction with the rotary table. The rotatable chart also has 12 additional circles whose value change with magnification but can be used for checking radii diameters and curves.

The unit is so constructed that if special overlays are desired, simple four screw removal of the magnifier allows for direct fastening of overlays over the basic screen.

The projector comes with basic 20X magnification, but a 10X adapter is provided in the basic purchase price so that a 10X and 20X are part of the basic unit. Optional 30X objectives can be purchased separately.

Some types of workpieces are extremely difficult to illuminate as they either scatter light rays or reflect only a minimum of the light back to the optical system; for these reasons we have our FOI-250 Illuminator with about 50% more light output then our FOI-150 Illuminator. We recommend this unit when working with black workpieces, drawings on Mylar and some types of plastics.

Unusually long working distances and the Fibre Optic Illumination System enables you to measure and check deeper, smaller and narrower holes than is possible with a mechanical probe.

The resolution of the unit is such that readings are easily possible, .0003” at 20X and .0001” at 30X. The lens system of the TCP-III is unequal in any small projector and makes an excellent addition to the readout system on Three Coordinate Measuring Machines and Jig Bores.

The unit being light in weight with a 1/2” diameter straight shank can be fastened directly in the spindle of any Three Coordinate Measuring Machine, Jig Borer or Vertical Milling Machine.

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OPTICAL DATA

MAGNIFICATION	WORKING DISTANCE	FIELD OF VIEW	VALUES OF 12 CONCENTRIC CIRCLES IN INCHES
10X	2.165" (55 mm)	.3196" (8 mm)	.02", .04", .06" increases at .02" intervals to .240"
20X	1.339" (34 mm)	.15748" (4 mm)	.01", .02", .03", increases at .01" intervals to .120"
30X	.807" (20.5 mm)	.1023" (2.6 mm)	.006", .0126", .0192", increases at .0066" intervals to .080"

MAGNIFICATION: 20X Standard. Changeable with adapter provided free of charge with unit.
SCREEN SIZE: 3.375" (85.73 mm) **IMAGE:** Optically Correct

OPTICAL AND MECHANICAL DATA

BASIC SCREEN OVERLAY AND RETICLE PATTERN: The primary screen has an indicating line located at the 0° position. Over this is a rotatable screen that has a broken line pattern. These lines are 0-180° at right angles to this pattern 90-90°. The broken line pattern allows for fine discrimination of hairlines or edges on the workpiece. The 1° divisions over 360° permit angle measurement and checking of special cutters. The broken pattern circle chart allows for diameter and radius checking.

IMAGE MAGNIFIER: The basic image is re-magnified by a 2X lens located over the rotatable screen. This allows for better discrimination of the image from the workpiece and the cross-hair and degree divisions.

MECHANICAL DATA: Weight: 4.75 lbs. (2.16 Kilo)-Projector Length: (front to rear): 9.5" (24.13mm)
3/4 lbs.-Fibre Bundle Shank Length: 3.00" (76.2mm)
Height (vertical minus objective lens and shank): 7.00" (177.8mm)

APPLICATIONS

JIG BORERS• To pick up edges, small undercuts, circles, radii, diametesr. These machines can be converted to measuring machines with this Projector, instead of using a Centering microscope: the large Moore, Sip Hauser, and various tape-controlled milling machines.

THREE COORDINATE MEASURING MACHINES• Same as above. Also to pick up points on printed circuit boards when a mechanical probe cannot be used. Ideal for machines such as Moore, Brown & Sharp, Sheffield, Div. Warner & Swasey Co., Dea, Numerex, Starret, Helmel Eng.

ELECTRICAL DISCHARGE MACHINES• Allows point to point checking of a work-piece when the impression is still shallow in depth to be sure of accurate alignment of the electrode to the workpiece.

DRILL PRESSES• The workpiece can be aligned accurately to the drill and the image is cast upon a screen.

SPECIAL PRINTED CIRCUIT BOARD MACHINES• For continuous operation, this is less awkward than bending over the machine when using a microscope.

LAYOUT MACHINES• To check the accuracy of charts and drawings before converting to tape.

N.C.MILLING MACHINES• Setting workpieces in relation to spindle. Checking workpieces.

Ordering Information

Model Number		Price
TCP-III	Centering Projector	$295.00
Optional Extras		
TCP-30XOBJ	30X Objective for TCP-III	$95.00
FOI-250	250W Illuminator	$595.00
Q2250	Bulb for FOI-150	$27.90

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