NEW NIKON MODEL V16 PROFILE PROJECTOR

There is hardly an application calling for fast, accurate inspection or measurement of small or intricately shaped parts, or surface finish or configuration, which the Nikon V16 Profile Projector cannot effectively handle. Its versatility in fact, makes its use possible in instances where other inspection or gaging methods cannot be employed or relied upon.

Because of its unusual screen brightness, the Nikon V16 can be used in any normally lit room without drawing blinds or dimming lights. Other activities in the same room can continue without interruption.

16-INCH PROTRACTOR SCREEN

The Nikon V16 Profile Projector is equipped with a 16" centerline screen in a ball-bearing protractor with coarse and fine motion controls. The protractor rotates 360°. Calibrations are numbered in both directions, and the vernier scale is graduated to 1 minute of arc. The centerline insert is removable, and can be interchanged with any standard or special-purpose screen.

INTERCHANGEABLE LENSES TO 100X MAGNIFICATION

The standard lenses supplied with the Nikon V16 cover a magnification range from 5X to 100X. Higher magnifications can also be provided on special order. A 3-lens revolving turret supplied as standard equipment, permits rapid changes in magnification.

5X MAGNIFICATION

In providing for inspection at 5X magnification, the Nikon V16 offers a demonstrable advantage over other units. It permits viewing larger areas or parts than is possible with units which are limited to higher magnifications only.

With the 5X lens, for example, the Nikon V16 encompasses an inspection area approximately 3.2 inches in diameter. At 10X magnification, the diameter of the area covered would be exactly half (1.6 inches). In effect, the 16-inch Nikon V16 with the 5X lens covers the same inspection area as a 32-inch Profile Projector with a 10X lens.

SURFACE & CONTOUR INSPECTION

As in the case of other Nikon Profile Projectors, the Model V16 can be used for surface as well as contour inspection and measurement—independently or simultaneously.

The surface illuminator may be used obliquely to emphasize surface texture. Or, for greater measurement accuracy, it may be used horizontally with 45° half-reflecting mirrors on the lenses. This provides shadowless light on the optical axis, and is especially desirable for inspecting and measuring inaccessible cavities. For, it insures that the image shape of the cavity will not be distorted by shadows: appear oval when actually round, etc.

The 20X, 31.25X, 50X, 62.5X, and 100X lenses have built-in half-reflecting mirrors. Attachable accessory mirrors are available for the 5X and 10X lenses.

Full-reflecting mirrors are also available as accessories. These mirrors permit switching from axial to oblique surface illumination without tilting the illuminator.

CONTOUR-LIGHT ZOOM SYSTEM

The Nikon V16 utilizes a unique zoom condenser system for its contour illuminator. By varying the concentration of the light beam to coincide with the inspection area covered by the lens in use, the user achieves a perfect match between light source and lens magnification, and obtains optimum light intensity and uniformity of illumination.

NATURAL IMAGE APPEARANCE

No tint or color cast is introduced by the Nikon V16 illuminators, or the optical system. The image appears in its true, natural colors. This is especially desirable for accurate topographical identification in surface inspection, and it is virtually indispensable where the image is to be photographed.

DETECTING LENS

An unusual feature, exclusive with Nikon! It is virtually impossible to make accurate contour measurements unless the contour-light bulb filament is precisely aligned with the optical system. While the original bulb is pre-aligned in the factory, re-alignment is essential when the bulb is to be replaced. The Detecting Lens makes this a fast, simple procedure. It is supplied as standard equipment.

FAN BLOWERS & BRIGHTNESS CONTROLS

Both illuminators—surface and contour—are equipped with fan blowers to maintain temperatures at low levels with prolonged use. Independent controls are provided for adjusting the light intensity of each illuminator.

PRECISE FOCUSING SYSTEM

The focusing wheel is conveniently located on the right side of the Profile Projector. As it is rotated, the stage carrier travels vertically, up or down, actuated by a precision lead screw and guided in scraped ways with adjustable gibs. Movement of the stage carrier is smooth and precise, capable of critical focus adjustment.

OPTICAL DEPTH MEASUREMENTS

The focusing system is so precise, the resolution of the lenses so fine that accurate depth or height measurements can be made optically without any physical contact with the part. A dial indicator simply measures the distance of stage carrier travel between the two positions at which each plane appears in focus. The Nikon V16 has provision for mounting the dial indicator.

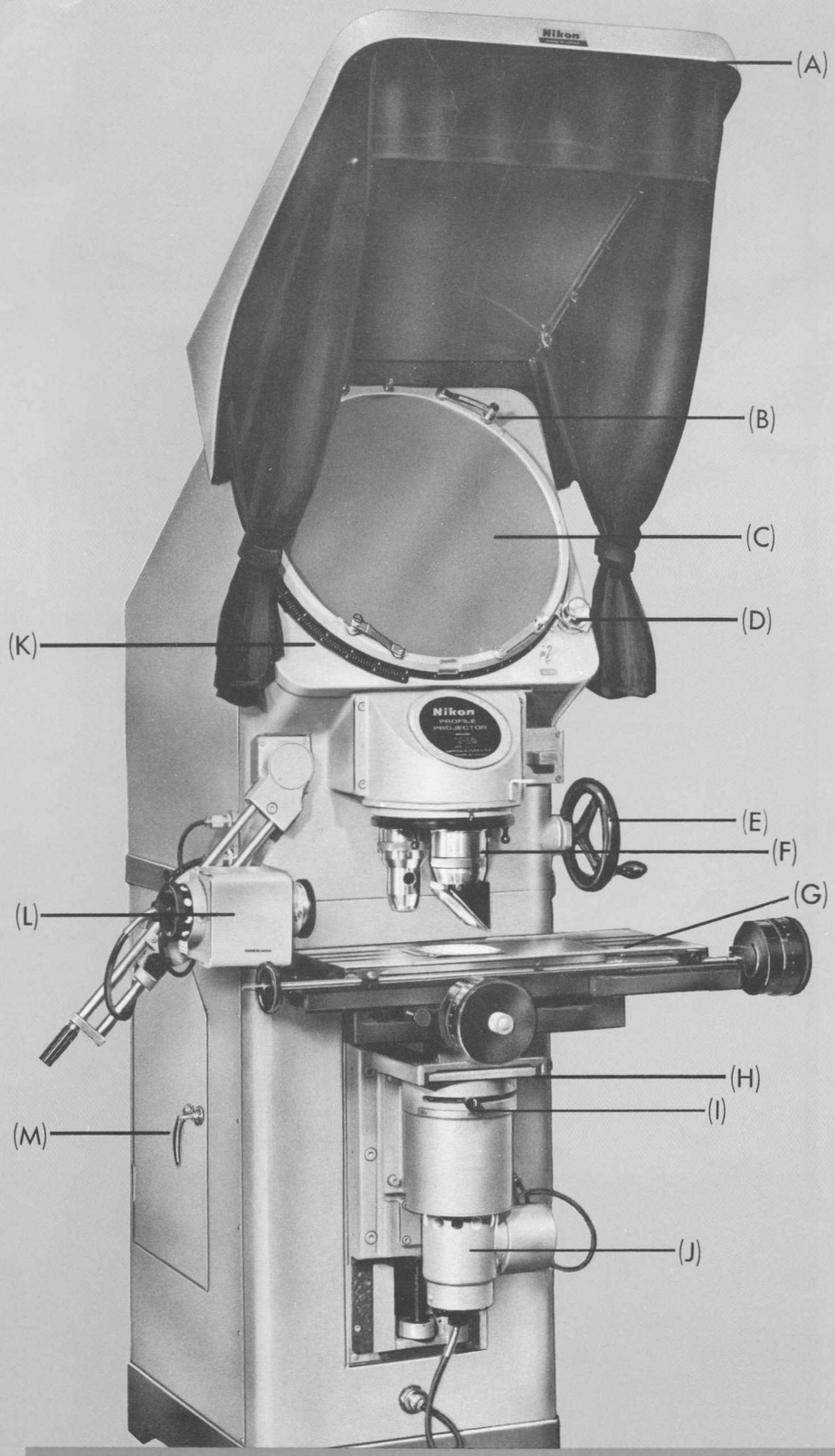
ACCESSORY CABINET

A cabinet, built into the base of the Nikon V16, has adjustable shelves suitable for storing lenses, mirrors, fixtures and other accessories. Two doors make the cabinet accessible from either side of the unit.

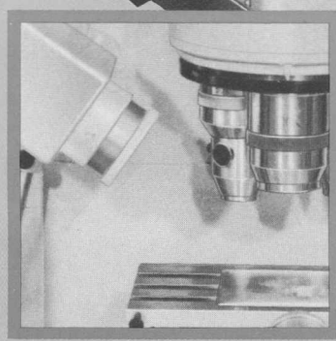
WIDE RANGE OF ACCESSORIES

The Nikon Model V16 Profile Projector accepts a wide variety of accessories for an almost unlimited range of applications. These include micrometer stages and holding fixtures, charts and photo attachments.

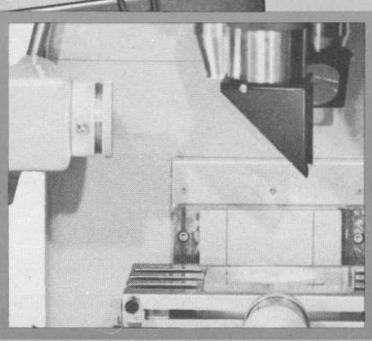
provides the extreme screen brightness, image definition and magnification accuracy characteristic of Nikon optics



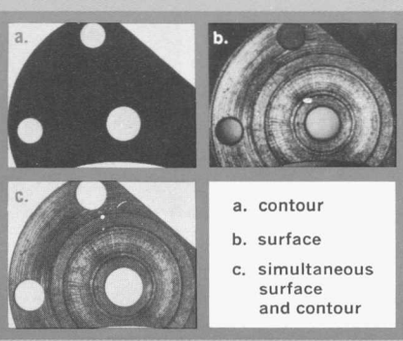
(A) CURTAIN HOOD
(B) CHART CLIP
(C) 16″ CENTERLINE SCREEN
(D) FINE PROTRACTOR CONTROL
(E) FOCUSING WHEEL
(F) 3-LENS TURRET
(G) MICROMETER STAGE
(H) STAGE CARRIER
(I) ZOOM CONDENSER CONTROL
(J) CONTOUR ILLUMINATOR WITH FAN BLOWER
(K) PROTRACTOR VERNIER
(L) SURFACE ILLUMINATOR WITH FAN BLOWER
(M) ACCESSORY CABINET



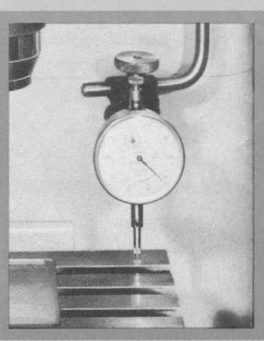
SURFACE ILLUMINATOR TILTED
for oblique lighting



SURFACE ILLUMINATOR HORIZONTAL
using 45° half reflecting mirror
for on-axis illumination



TYPES OF ILLUMINATION



DEPTH OR HEIGHT
MEASUREMENT
with dial indicator

HIGH SPEED, HIGH RESOLUTION NIKON LENSES Available in following standard magnifications: 5X, 10X, 20X, 31.25X, 50X, 62.5X and 100X. Other magnifications, on special order. 5X and 10X lenses accept attachable half-reflecting mirrors for shadowless surface illumination. All others have mirrors built-in.

16-INCH PROTRACTOR SCREEN (Standard Equipment) Ball-bearing movement with coarse and fine motion. Vernier readings to 1 minute of arc—numbered in both directions. Has locking device. Centerline ground-glass insert is readily removable and may be easily interchanged with standard radius, grid or other combinations. Special inserts, to specification, supplied on order.

CROSS-TRAVELING MICROMETER STAGES

a. 1 x 4 INCH Provides 1″ transverse travel, and 4″ longitudinal with gage blocks. Travels in ground and hardened, ball-bearing V's. Each micrometer provides 1″ travel, and permits direct readings to .0001″—numbered clockwise and counterclockwise. Slip-on, hardened ball-point tips provide positive contact with gage blocks for greater accuracy, and without marring gage block surface. Attachable, stainless steel, longitudinal zero-set bar with 4″ scanning facility, optional. Stage plate measures 5 x 9″, and has 3 standard fixture slots. Glass insert is 2 x 5¼″. Large overlay plate (5 x 16″) for large specimens, available.

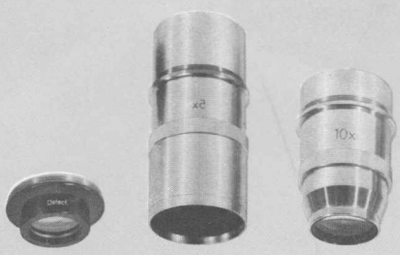
b. 2 x 4 INCH Provides 2″ transverse and 4″ longitudinal travel in ground and hardened, ball-bearing V's. Gage blocks usuable in both directions. Each micrometer provides one inch of travel, and permits direct reading to .0001″. Each also has built-in, ingeniously designed zero setting and positioning device that provides ¼″ stage movement without altering micrometer setting. Stage plate measures 6 x 11″, and has 3 standard fixture slots. Glass insert is 5 x 5½″.

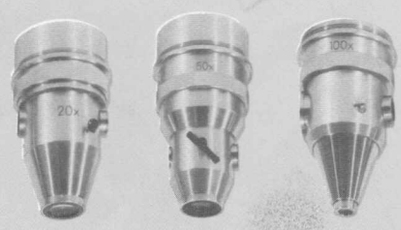
c. 2 x 6 INCH Provides 2″ transverse and 6″ longitudinal travel in ground and hardened, ball-bearing V's. Each micrometer has 1″ of travel, and gives direct readings to .0001″—numbered clockwise and counterclockwise. Stage also has V grooves for accurate placement of end bars. Attachable stainless steel, longitudinal, zero-set bar with 6-inch scanning facility (optional). Transverse, zero-set device with 1-inch travel, (also optional). Meehanite stage plate measures 8 x 20″. Has hard-chrome plated surface and 3 standard fixture slots. Glass insert measures 10¼ x 5⅛″.

PHOTO ATTACHMENT Simple camera back permits color and black-and-white photos to be taken of screen image without darkening room. Fits comparator in place of screen. Uses optical system of comparator. Has own ground-glass panel for focusing and for framing area of specimen to be photographed. All film sizes to 5 x 7″ (4 x5″ can be supplied with Polaroid #500 Filmholder).

V-BLOCK Hardened V-block with base and clamp. Precisely ground. Supplied in matched, pairs. Clamp holds specimen or centers—fixed or retractable. 1″ riser blocks also available.

Available accessories, not shown, include: tilting center fixture, goniometer, fixturing vise, dial indicator assemblies, scales and charts.





LENSES

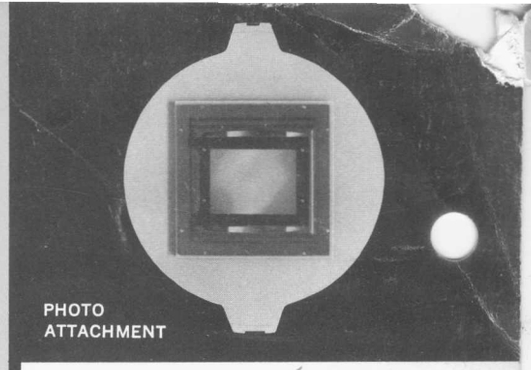
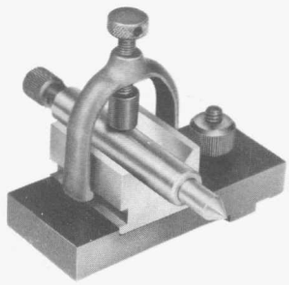
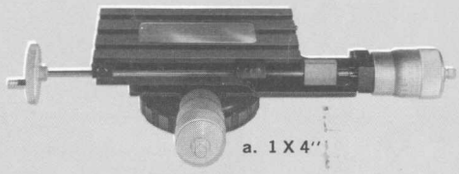


PHOTO ATTACHMENT

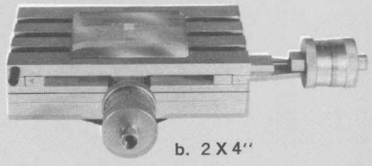


V-BLOCK ASSEMBLY

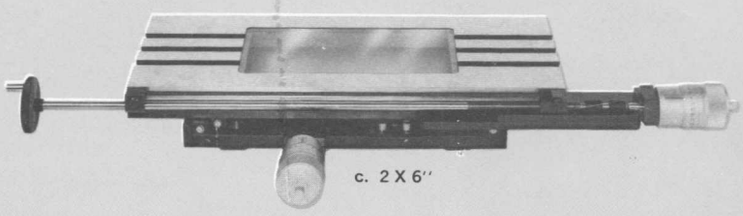
CROSS TRAVELING MICROMETER STAGES



a. 1 X 4″



b. 2 X 4″



c. 2 X 6″

NIKON Model V16 SPECIFICATIONS

STANDARD MAGNIFICATION RANGE ..... 5X to 100 X
(other magnifications on special order)

SCREEN DIMENSIONS
Overall Diameter ..... 16″
Effective Diameter ..... 15¾″

STAGE CARRIER TRAVEL (vertical) ..... 7″

LENS COVERAGE

Magnification	Working Distance	Inspection Area Diameter
5X*	5.31″	3.2″
10X*	3.21″	1.6″
20X	2.55″	.8″
31.25X	1.65″	.51″
50X	2.07″	.32″
62.5X	1.65″	.26″
100X	1.00″	.16″

*Accept 45° half-reflecting mirrors.
All others have mirrors built in.

PHYSICAL DIMENSIONS
Overall Height ..... 65″
Height from Floor to Horizontal Centerline on Screen ..... 53″
Width ..... 20″
Depth ..... 31″
Weight (net) ..... approx. 340 lbs.
(shipping) ..... approx. 470 lbs.

ILLUMINATOR SYSTEM ..... Surface and Contour (convection and forced draft maintain lamp temperatures at safe levels for prolonged use)

LIGHT SOURCES Clear, concentrated filament lamps
Surface and Contour ... each 15 volts, 150 watt

POWER REQUIREMENTS
350 watts, 100-120 volts, 56-60 cycles AC

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