

CONDENSED FEATURES

1. SIMPLE DESIGN BASED ON VERTICAL BEAM OF LIGHT AND HORIZONTAL WORK STAGE.
2. UNIT CONSTRUCTION WHICH PERMITS ASSEMBLY OF JUST THE RIGHT CHOICE OF EQUIPMENT.
3. BOTH FEATURES RESULT IN LOW INITIAL COST AND MAXIMUM OPERATING ECONOMY.
4. THE STANDARD MODEL A SERVES EQUALLY WELL AS OPTICAL COMPARATOR OR UNIVERSAL CONTOUR MEASURING PROJECTOR.
5. A LARGE VARIETY OF INTERCHANGEABLE OPTICS AND ATTACHMENTS FROM WHICH TO CHOOSE.
6. COMPLETE SERVICE ON STANDARD AND SPECIAL COMPARATOR CHARTS.

BENEFIT BY THE SAVINGS WHICH WILDER INSPECTION ECONOMY PROMOTES!

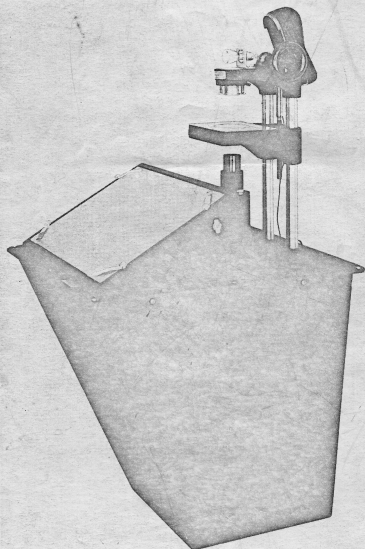


Fig. 1
Model A with basic equipment.

DEVELOPMENT

Inspection by projection has today become routine shop practice for accurate, as well as economical, dimensional control. Historically speaking, the development of the optical comparator dates back to World War I, but its present importance as an indispensable gage in its own right became firmly established only during the second World War. As a result, several of the current optical comparators do not have the advantageous pre-war experimental and developmental background of the WILDER Micro-Projector.

Of great importance, too, is the fact that this exceptionally fine instrument was created by a manufacturer of custom-made instrument parts and assemblies out of urgent necessity for more ECONOMIC inspection methods within his own plant: R. S. WILDER, INC. in Waltham, Mass. This organization has specialized in this field since 1933 and has established an enviable reputation for precision workmanship, close tolerances and reasonable cost. With such a background, is it any wonder that the WILDER Micro-Projector incorporates the splendid flexibility and usefulness recognized by over 4,000 satisfied customers?

INSPECTION ECONOMY

Many present-day inspection operations are only economically possible by optical comparison. Still a belief continues to persist that optical comparator equipment necessitates so substantial an investment that operating economy is thereby jeopardized. This definitely is not true of the WILDER Micro-Projector which provides optical inspection at such low cost that even the most limited budget can afford it. Be sure, therefore, to make the WILDER Micro-Projector a part of your quality control set-up.

UNLIMITED APPLICATION

The WILDER Micro-Projector is recommended for inspecting, checking or measuring tools, gages and finished parts that cannot be gaged conveniently or at all by mechanical or other means of contact. In this sense it will excel on any part with an irregular contour including radii and angles, either flat or circular, such as forming tools, form cutters, gear cutters and hobs, thread chasers and taps, thread gages and threaded parts, template gages, stampings and their dies, drill jigs, phonograph needles, jewel bearings, transistors, as well as a multitude of components that go into assemblies of clock and watch

movements, mechanical, optical or electronic instruments, meters, business machines, piston and jet aircraft engines, guns, ammunition and fire control equipment, hydraulics, electrical relays, rotors, etc.

PROJECTION INSPECTION AS A SYSTEM

The WILDER Micro-Projector fits into the accepted quality control pattern because it provides all of the following functions:

- 1) 100% inspection of the finished part by comparison against a master chart.
- 2) Periodic spot checks, preferably near the machine, to determine tool or gage wear before the tolerance limit has been reached.
- 3) Checking the first piece on production runs as a double-check on the correct setting of the machine as in automatic screw machines, gear and pinion hobbors, thread grinding or rolling machines, etc.
- 4) Direct measurements in 2 dimensions by micrometer stage or grid chart, as well as angular measurements by protractor screen.
- 5) Recording of image on screen either by hand tracing or photography on paper.

Summing up the above functions, the WILDER Micro-Projector will take its place equally well in the shop, in the tool-room, in final inspection, in receiving inspection and in gage control laboratory — in other words, wherever quality control is applied.

OPTICAL PRINCIPLE

An accurately magnified image of the work is reproduced on the screen either as a shadow or as a reflected picture (in true color). All gaging or measuring operations are performed on this enlarged image, without any direct contact with the piece itself, from which a very high degree of accuracy results. In the WILDER Micro-Projector, the optical beam between condenser and lens is VERTICAL which has two important advantages:

- 1) The work table is in normal, i.e., horizontal, position, both for staging and measuring, so that flat pieces present no fixturing problem but are simply laid down on the table surface.
- 2) The illuminator is located out of the operator's way, thus eliminating discomfort from lamphouse heat and leaving stage as well as screen readily accessible.

OPTICAL EQUIPMENT

To guarantee precision performance, the lenses in the WILDER Micro-Projector are of the design and make of one of the foremost optical manufacturers. Even in the low powers there is a minimum of distortion in the marginal field. Similarly, the condensing lenses are high grade and of ample diameter to provide a parallel beam of light. To maintain this optimum, the instrument employs a pre-focused 6-8 volt lamp. However, since the best lenses are only as good as the surface of the mirrors which reflect the image against the screen, the WILDER Micro-Projector uses mirrors, whose first surface is finished as an optical flat on special polishing machines, which were designed and built within the WILDER plant exclusively for this operation. The first-surface coating is aluminum oxide

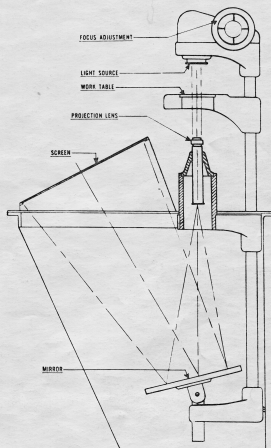


Fig. 2
Sectional diagram of Model A.

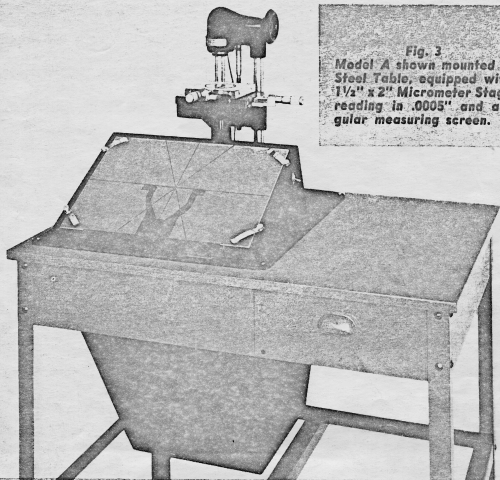
which is non-tarnishing and highly reflective. Both mirror and lenses are permanently calibrated for correct magnification at the factory and do not require subsequent adjustment by the operator.

LOW COST THROUGH SIMPLE DESIGN

The great popularity of the WILDER Micro-Projector is in part due to its reasonable price, at which even the smallest shop can afford Projection Inspection, while large plants are assured of economical budgeting, whenever quantity purchases are involved. It is our sincere conviction that the WILDER Micro-Projector offers the best value at its price and you are invited to test this claim by competitive comparison.

The low cost of the instrument is based on the simplicity of its design. To provide rigidity, the housing is of all-welded construction around a steel and cast chassis within which are mounted the optical elements and the stage as individual pre-assembled units. The final assembly takes place in specially developed jigs, into which the housings are lowered from an overhead track. With every step in the production and assembly process planned for efficiency and economy, important savings are made and passed on to the customer.

Fig. 3
Model A shown mounted in
Steel Table, equipped with
1 1/2" x 2" Micrometer Stage
reading in .0005" and an-
gular measuring screen.



TWO MODELS AND WHY

In general practice, Contour Projectors are intended to perform two distinctly different functions:

- 1) Compare the enlarged image on the screen against a drawing or chart made to the same magnification ratio, which is a comparison or gaging process pure and simple;
- 2) Take actual measurements on the enlarged image in two dimensions by micrometer screws or on a grid chart and for angular dimensions by protractor.

The Standard WILDER Micro-Projector Model A, due to its universal features, will serve both purposes equally well. However, where 100% inspection of quantities of the same part is concerned, we offer a single-purpose instrument in the WILDER Small Parts Comparator Model C. Both instruments incorporate the basic principles of design as outlined above, but differ in certain details as described herein.



Fig. 4
Model C with special
crank focusing stage.

STANDARD *Wilder* MICRO-PROJECTOR MODEL A

LENSES

An assortment of 6 standard lenses is available from which to choose. Each lens is individually calibrated for the instrument for correct magnification and, under ordinary operating conditions, there is no need for re-setting or re-checking at any time. All lenses are assembled in quick-changing cast-iron mounts, whereby they seat self-centered in the master socket. Proper magnification on the screen is obtained when the image appears in sharp focus. It is good practice, when ordering a Model A instrument, to start with not less than 2 magnifications: a lower one for maximum field and a higher one for increased power. (Additional lenses in other magnifications are available upon special inquiry.)

MIRROR

Since the Model A uses only one mirror, it is of generous size, namely 8" in diameter. As mentioned elsewhere, its first surface is finished to optical flat quality and then aluminized by vapor film. Its proper position in relation to beam of light and screen is fixed at the factory.

LAMPHOUSE

Condenser assembly

This is located on top of the instrument. A louvered cover permits the heat of the lamp to escape upward and away from the operator without special blower installation. For replacement of the 6 volt pre-centered lamp, the cover is readily removable. Within the lamphouse the focusing gears are located within their bearing blocks, with an outside handwheel on the driving shaft. The front opening of the housing carries the condenser assembly (2" in diameter), which is vertically adjustable to correspond to the various magnifications. A built-in transformer reduces the 110 volt line current to the required 6 volt output.

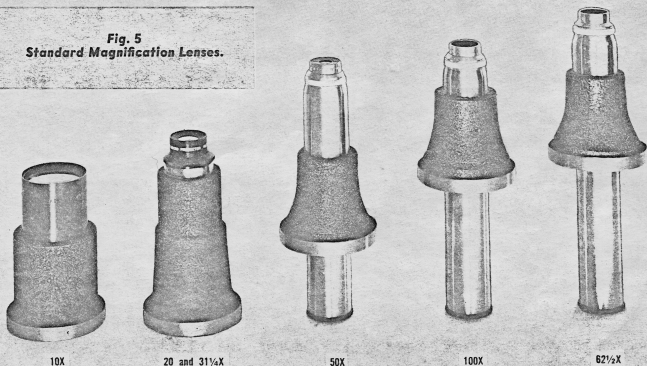
WORK STAGE

This is a well-ribbed casting with a work area of 5" x 7". The center opening accommodates a 3" stage glass and the surface is provided with 4 tapped holes for mounting special fixtures easily. The work stage slides by long bearings on two parallel 1" rods which are carefully ground. The vertical (focusing) travel is controlled by a handwheel through a leadscrew which is centered between the two vertical rods for smooth action. These rods, together with the castings of the lamphouse, the lens socket bracket and the mirror base, form the optical chassis, a design which combines proper alignment with manufacturing economy.

SCREEN

To facilitate comparison against over-lay charts, tracing of contours, measurement by comparator scales or protractor, as well as study by one or more observers, the screen is located directly in front of the operator and comfortably inclined. Standard screens are offered in a choice of 3 as follows: clear glass, ground glass and matt plastic. All screens interchange readily and always maintain exact magnification. The ground glass and the matt plastic screens contain the angular reference lines.

Fig. 5
Standard Magnification Lenses.



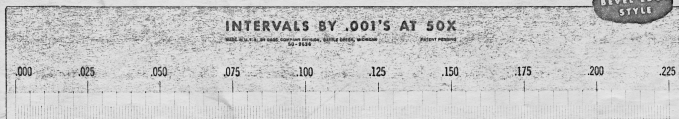


Fig. 6
Plastic Comparator Scale.

MEASURING SCREENS

Measurements may be quickly and accurately made by employing measuring screens or comparator scales on the projector, dispensing with the more expensive micrometer cross-slide stage with which WILDER Micro-Projectors are also equipped.

A measuring screen (often called a grid chart) is frequently supplied to replace the glass screen with which the projector is equipped, or it may be used superimposed on top of the glass if so desired. It will provide direct measurements vertically and horizontally to correspond with X and Y coordinates or blueprint information.

Such charts are available in most standard magnifications (see figure 7) and are extremely accurate for this type of measurement.

Comparator scales (see figure 6) may be employed directly on the viewing glass of the projector to measure on any axis or in any direction the resulting image, providing equally satisfactory readings. Such scales, available at all standard magnifications, are also indispensable for those who prefer to construct their own projector layouts.

STANDARD COMPARATOR CHARTS

A wide range and variety of Gage Company Deep-Etch Precision Plastic Comparator Charts are available for the furnishing of radii, angles, fillet-radii, Unified-American, American National, Dryseal and American National Standard Pipe Thread Forms, at all regular magnifications. These are completely covered by a separate publication, Catalog-Price List No. 55-820, available upon request and supplied with each projector.

For specially constructed comparator charts, please refer to page 11.

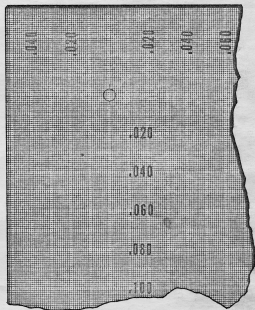


Fig. 7
Typical Grid Measuring Chart.

Wilder MICRO-PROJECTOR MODEL A AS UNIVERSAL CONTOUR MEASURING PROJECTOR

Due to its flexibility and unit construction, the WILDER Micro-Projector Model A can be equipped as a FULLY UNIVERSAL CONTOUR MEASURING PROJECTOR at any time simply by adding some or all of the following extra attachments to the basic instrument. Even with the Universal equipment, it still represents the most economical investment by any standard of comparison, a fact which should make it especially attractive for the small and medium-sized shop.

PROTRACTOR

WITH 5' VERNIER
DISC

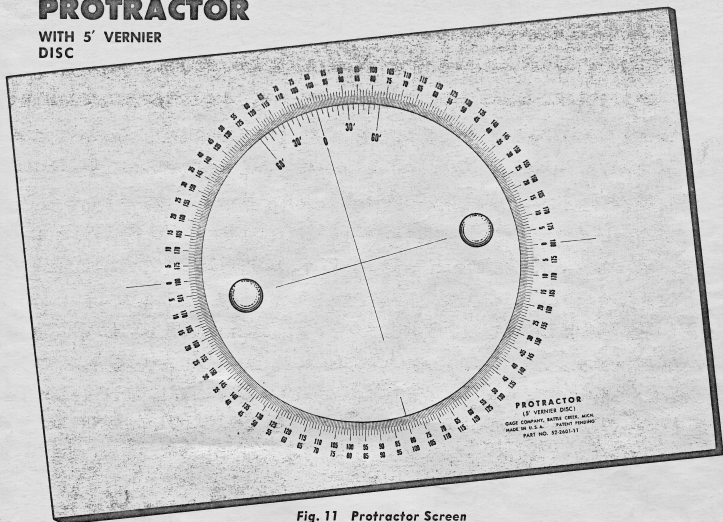
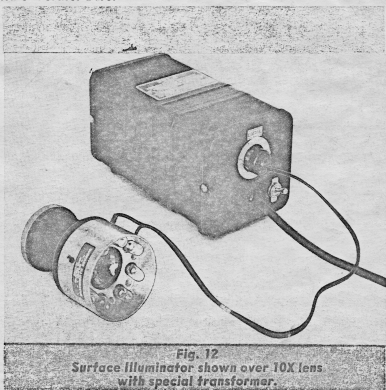


Fig. 11 Protractor Screen with 5' Vernier Disc.

SURFACE ILLUMINATOR (Patented)

On a variety of parts, projection in transmitted light by shadow image is not feasible. This applies wherever a design or contour has to be picked up against an opaque background, as the characters in numbering wheels or stamps, the design in punches, dials or coins, graduations on scales, surface characteristics, etc. All such cases require projection by reflected light and the quality of the image depends on the efficiency of the reflector. The WILDER Surface Illuminator is of a novel type in so far as it consists of a circle of low-voltage lamps that surround the top of the lens within a suitable lamphouse (see Fig. 12). In this way a uniform field of direct illumination without the use of intermediate mirrors as well as a distinct image are obtained in 10X or 20X magnification. The operation of the Surface Illuminator is through a separate constant voltage transformer to provide reflected light singly or in combination with the transmitted light.



STEEL TABLE

While the instrument is completely self-contained for use in any available bench, a special steel table of suitable height is available as extra equipment. It provides additional working space of 14" x 26" which is invaluable for laying work pieces or accessories out of hand. For storing parts, a good-sized drawer with lens rack is also provided (Fig. 3).

SPECIFICATIONS OF MODEL A

Standard magnifications	10X	20X	31 1/2X	50X	62 1/2X	100X
Maximum field of lenses.....	1 3/4"	3/4"	7/16"	5/16"	1/4"	5/32"
Size of screen.....	11 1/4" x 16 3/4"					
Reading of protractor screen.....	5 minutes					
Size occupied by instrument in bench.....	21" x 24"					
Depth below bench.....	20"					
Electrical connection required.....	110 volt A.C.					
Approximate net weight.....	85 lbs.					
Size of standard micrometer cross-slide.....	5" x 5"					
Capacity between centers.....	6 1/2"					
Maximum swing of centers.....	3 3/4"					
Overall dimensions of table surface.....	36" x 26"					
Height of table above floor.....	37"					
Approx. net weight of table.....	60 lbs.					

Wilder SMALL PARTS COMPARATOR MODEL C

100% PARTS INSPECTION

The Standard WILDER Micro-Projector Model A has been used for years in the inspection of mass-produced small parts that must be gaged piece by piece to perform properly within delicate assemblies. However, to insure maximum economy, as well as convenience, there was a definite demand for a simplified and compact comparator, which would be a single-purpose instrument of low cost to justify its installation for long runs on a single piece or a single gaging operation. Thus, the WILDER Small Parts Comparator Model C was conceived and designed to meet this particular problem and the solution brought about the elimination of some conventional features such as multiple or interchangeable lenses, compound work or measuring stages, center supports, etc. Instead, it depends on the use of special holding or staging fixtures in combination with special charts that will provide utmost speed and economy of operation.

Since one Division of the Wilder factory has specialized for over twenty years in custom-made precision instrument parts, it goes without saying that a wealth of rare experience has guided the design of the instrument to a most competent solution. As your application would undoubtedly be along similar lines, you will be the beneficiary of this accumulated skill — without extra cost.



Fig. 13
Model C with standard work stage.