PROFILE PROJECTOR

Make: Carlzeiss Zena Measuring Projector MP 320

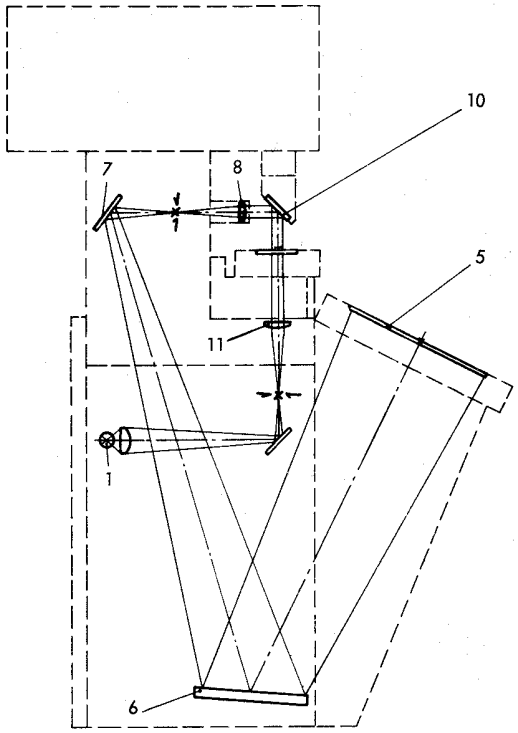
Introduction

The Measuring Projector is used for (i) measuring and checking the sizes and shapes of small and medium size components in batch production (ii) measuring and observing the profile of small work pieces, templates, form cutters, threads, gears and similar elements. In addition to this, the profile of a test object can be compared with a transparent drawing for determining the deviations between the required and actual shapes.

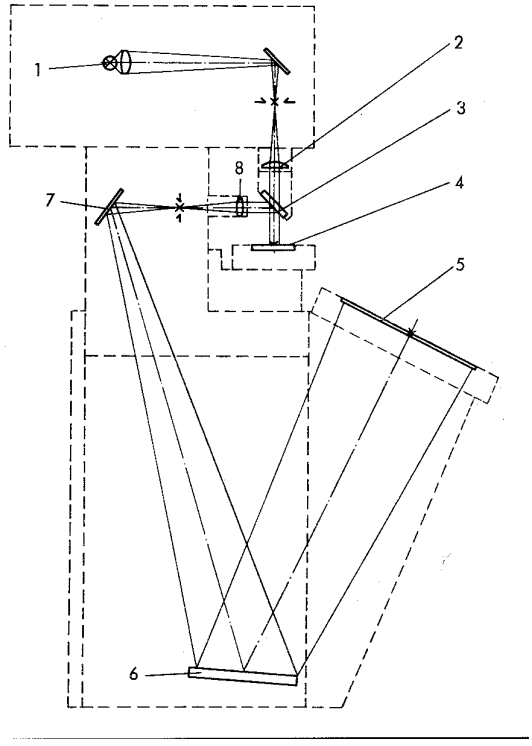
The Profile Projector makes use of an optically enlarged image of the test object projected on a ground glass screen. So the measurements of the object with the use of complicated jigs and fixtures can be avoided. One main advantage of the optical method is that any deformation of the work piece is avoided, since measuring or checking is non-contacting.

Principle:

There are two ways in which the object can be illuminated:



1. Transmitted Light

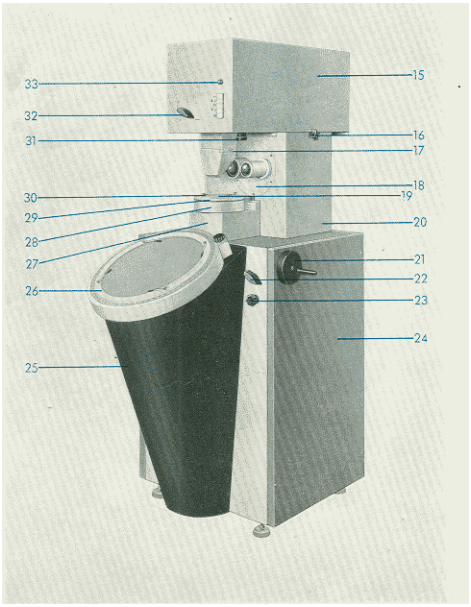


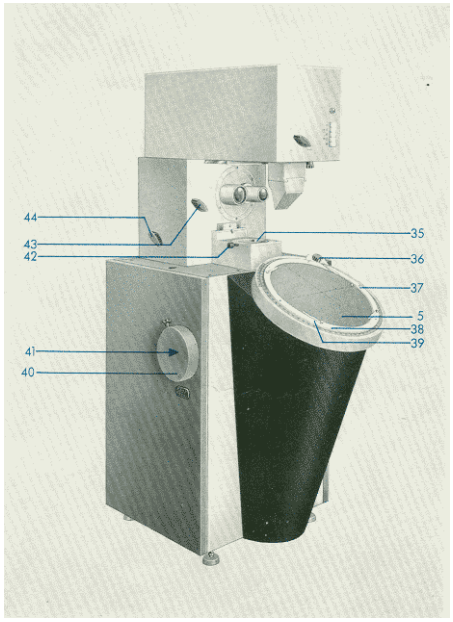
2. Incident Light.

1. Transmitted Light: The object to be checked is brought into the path of the rays of an illuminating device and the thus generated shadow image projected

on to a ground glass screen. Light from lamp 1 passes through the lower condenser 11 and into the mirror 10. This mirror reflects the light into objective 8 which which images the shadow image via two mirrors 6 & 7 on ground glass screen 5.

2. Incident Light: The lighting fixture for emits intense light to the surface to be checked whose enlarged image is projected through an optical system to a groundglass screen. Light from lamp 1 passes through the upper condenser 2, the interchangeable mirror 3 with semipermeable layer, and to the surface of object 4. The reflected image passes via mirror 3 into objective 8 and is projected via mirrors 6 & 7 to the groundglass screen.





Focusing the image:
Turn handwheel 21 to lift or lower the object table until the outlines of the tested object are sharply focused on the groundglass screen. Depth of focus and brightness can be regulated by opening or closing the condenser stop with setting knob 31.

Double image method:
The double image prism serves for quickly locating objects such as centers of bores. To move in the double image prism turn switchknob 43 clockwise up to stop. Move in the red-green filter by same manipulation with switchknob 44. Move out in reversed order: first switch off the red-green filter and after that the double image prism.

Measurements are made with the Coordinate Measuring Table. Align the crosshairs of groundglass parallel to the measuring directions x and y by turning the groundglass screen.