# Profiling Systems for the Kern PG 2 and PG 2-AT Stereo Plotting Instruments

## PROFILING SYSTEMS FOR THE KERN PG 2 AND PG 2–AT

## STEREO PLOTTING INSTRUMENTS

The Kern Profiling Systems for the PG 2 and PG 2–AT Stereoplotters are based on mechanical guide mechanisms. They provide an accurate, fast and most convenient means for scanning in predetermined directions as is necessary for the measurement of profiles and cross-sections.

A total of 5 different profile guides are available. Their design is basically the same, but they vary slightly from one another to fit specific stereoplotter-accessory configurations and applications.

The PS 2 and PS 2–E are intended for use with the PG 2 Stereoplotter equipped with either L, SL or SSL pantograph. The PS 2–AT, PS2 -E–AT and PS2–O–AT are used in conjunction with the PG 2-AT Stereoplotter.

### TABLE OF CONTENTS

## KERN PROFILE GUIDE PS 2 – FIG. 1

The PS 2 profile guide has been designed for use with the Kern PG 2–L, PG 2-SL and PG 2–SSL Stereoplotters. To exploit the working ease and speed afforded by the guide, the stereoplotter should be equipped with the ECR model coordinate readout, a 3 axes digitizer and data recorder.

When the PS 2 is used for cross sectioning, the straight edge (1) is manually aligned to the center line of the projected road as plotted on the manuscript and then held in place by weights. The cross slide (2) is moved up or down along the straight edge to the desired cross section, positioned exactly by means of the index (3) and clamped to the straight edge with the clamping lever (4). The pencil holder (6) is inserted into the carriage (5), thus establishing a positive connection between the profiling guide and base carriage through the pantograph. The PG 2 operator can now move the base carriage only in the direction of the cross section. Without having to look away from the stereo model he records the coordinates of all required points on the profile by means of the electronic model coordinate readout system. In this manner a very high production speed is achieved.

After releasing clamp (4) both the base carriage and the cross slide can be moved to the next of a series of parallel cross sections without the need for re-alignment of the system.

If additional profiles are required parallel to the road axis, the carriage (5) can be clamped by means of lever (7), the cross slide is then released and the operator can now move the tracing stand only in the direction parallel to the center line of the main road.

Effective range on the cross slide:

Model PS 2:
800 mm (31.5")

Model PS 2–48:
1050 mm (41.3")

When no electronic model coordinate readout is available or, when fixed intervals on the profiles are required, the user can make up his own, appropriately graduated scale on a strip of mylar and tape it to the cross slide (2). Thus, height and distances can be read visually.

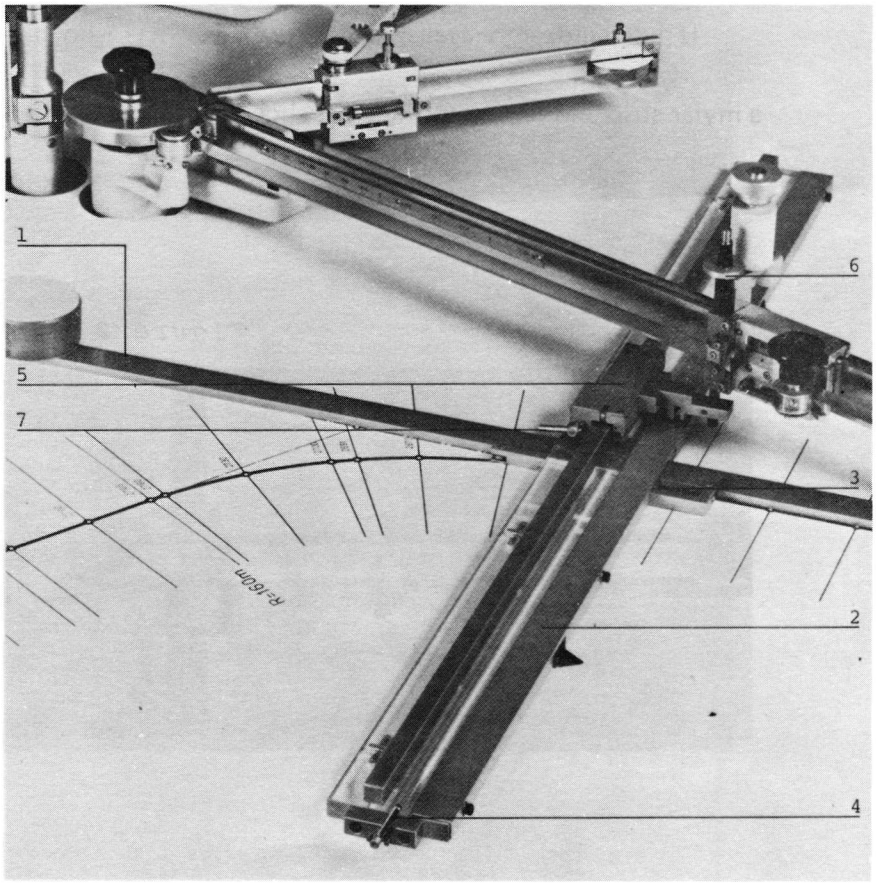



FIG. 1

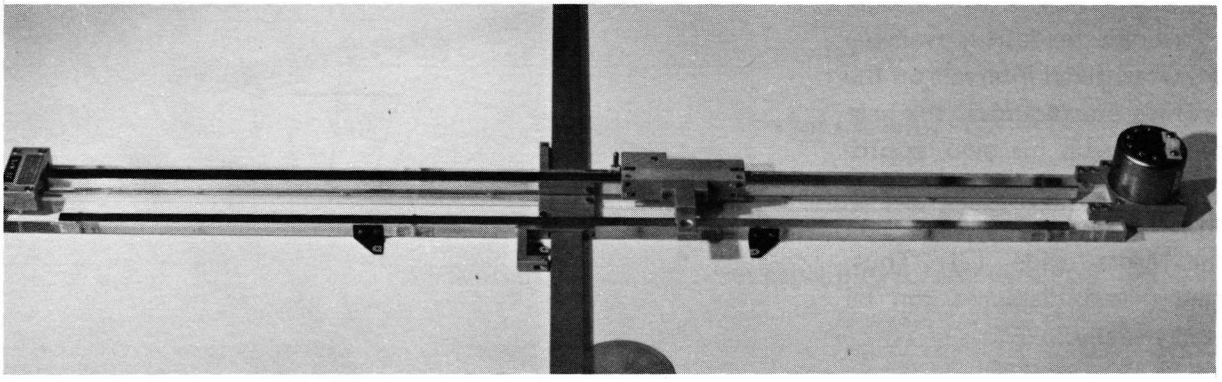
## KERN PROFILE GUIDE PS 2–E – FIG. 2

The PS 2–E profile guide has been designed for use with the Kern PG 2–L, PG 2–SL and PG 2–SSL Stereoplotters. To make use of the high production speed afforded by the PS 2–E, the stereoplotter should be equipped with a Z encoder, a 2 or 3 axes digitizer with scalers and a data recorder.

The PS 2–E guide is installed and used in the same way as the PS 2 described in the foregoing pages. However, as the PS 2–E is equipped with an encoder on the cross-slide, direct distances are obtained, irrespective of the directions in which the profiles run. The electronic scaler of the digitizer is set only once at the ratio manuscript scale to ground scale and is valid for the entire profiling project, with output in meters or feet. The scaler for Z is set at the ratio model scale to ground scale, thus the heights are also recorded as true meters or feet at ground scale.

If no digitizer is available, the user can make up his own appropriately graduated scale on a mylar strip and tape it to the cross-slide. Thus, height and distances are read visually.

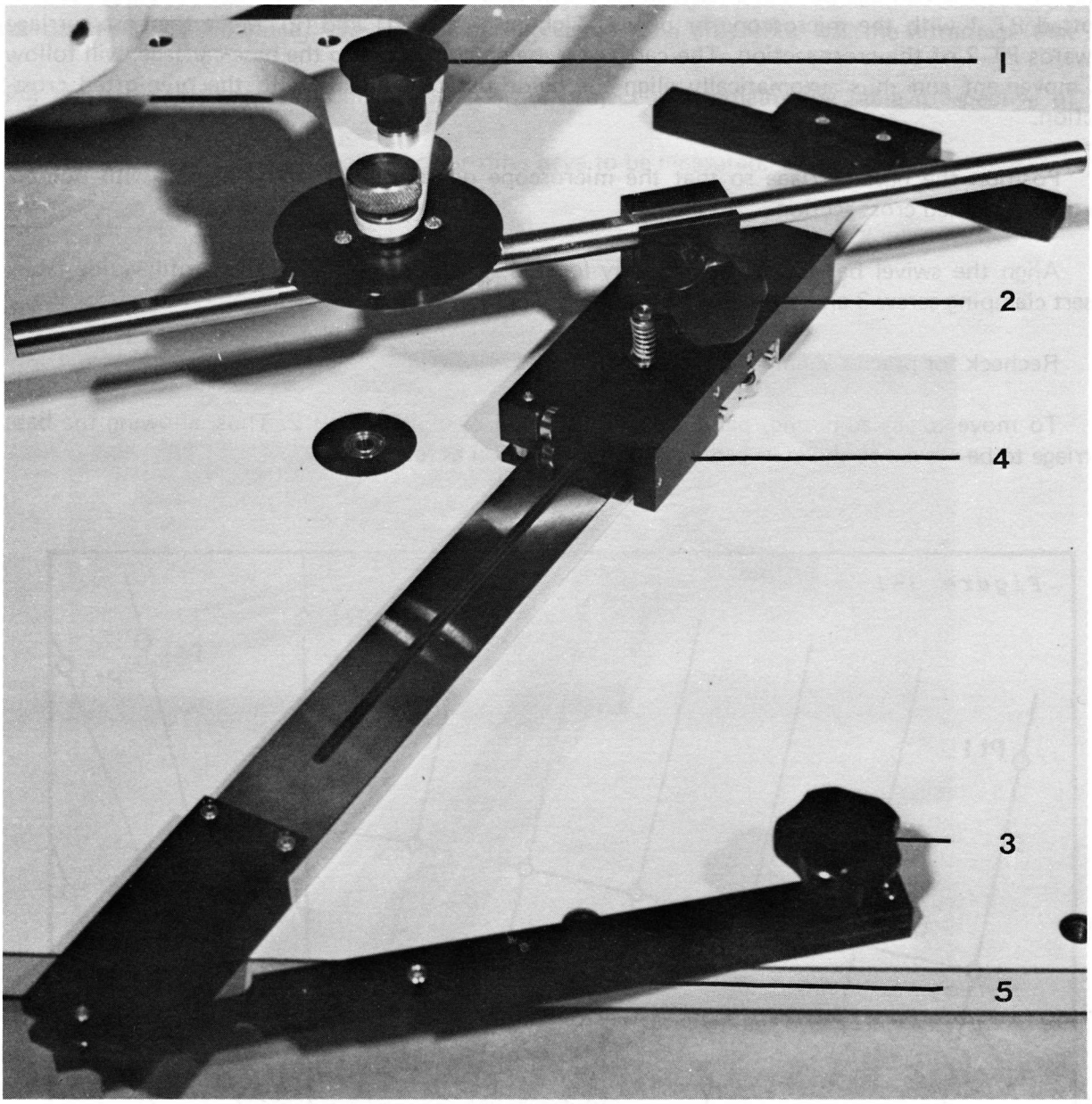
*Figure 2*



## KERN PROFILE GUIDE PS 2–AT – FIG. 3 AND 3–1

The PS 2–AT profile guide has been designed for use with the Kern PG 2–AT Stereoplotter. To use it, the stereoplotter must be equipped with a Z encoder, a 3 axes digitizer and a data recorder.

*Figure 3*



To align the profile guide for cross-section, proceed as follows:

Install the guide as shown in Fig. 3. Leave Knobs (1) and (2) loose and for the moment do not insert the clamping screw (3).

Move the tracing table until the pencil or the scaling microscope is exactly aligned on the extreme end (outside of PT 1) of the cross-section which is preplotted on the manuscript. To facilitate the alignment of the profile guide, always preplot the cross-section somewhat longer than the distance over which measurements must be made.

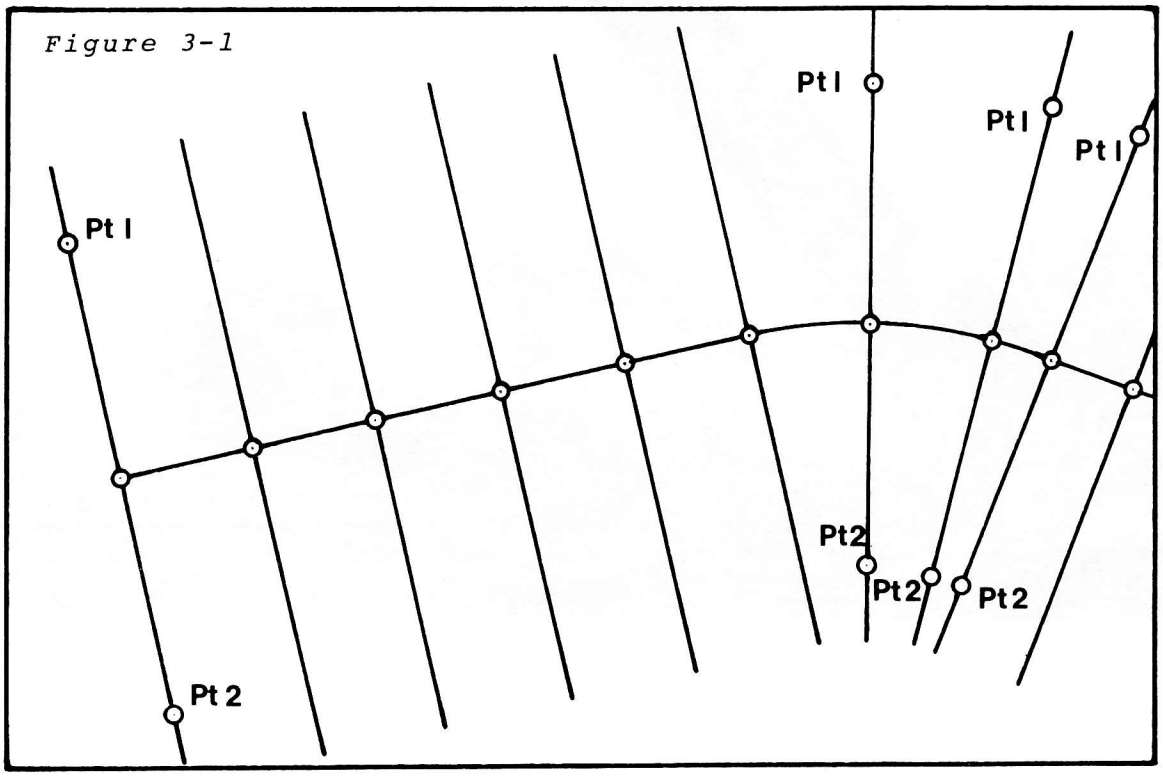
Hold the base carriage with one hand and push the profile guide carriage (4) toward the T bar until the carriage positions itself in its index stop. Hold the base carriage in respect to pre-plotted PT 1 with the microscope or pencil. Tighten Knobs (1) and (2). Move the base carriage towards PT 2 of the cross-section. The carriage 4, being connected to the base carriage, will follow its movement and thus automatically align the guide bar to coincide with the preplotted cross-section.

Position the base carriage so that the microscope or pencil is exactly aligned with point 2 on the preplotted cross-section.

Align the swivel bar (5) with a suitably located thread in the rim of the profile-guide table. Insert clamping screw 3 and tighten it.

Recheck for precise alignment and refine if necessary.

To move to an adjoining, parallel profile, loosen clamping knob 2. Thus, allowing the base carriage to be moved to the next profile in the X direction as required.

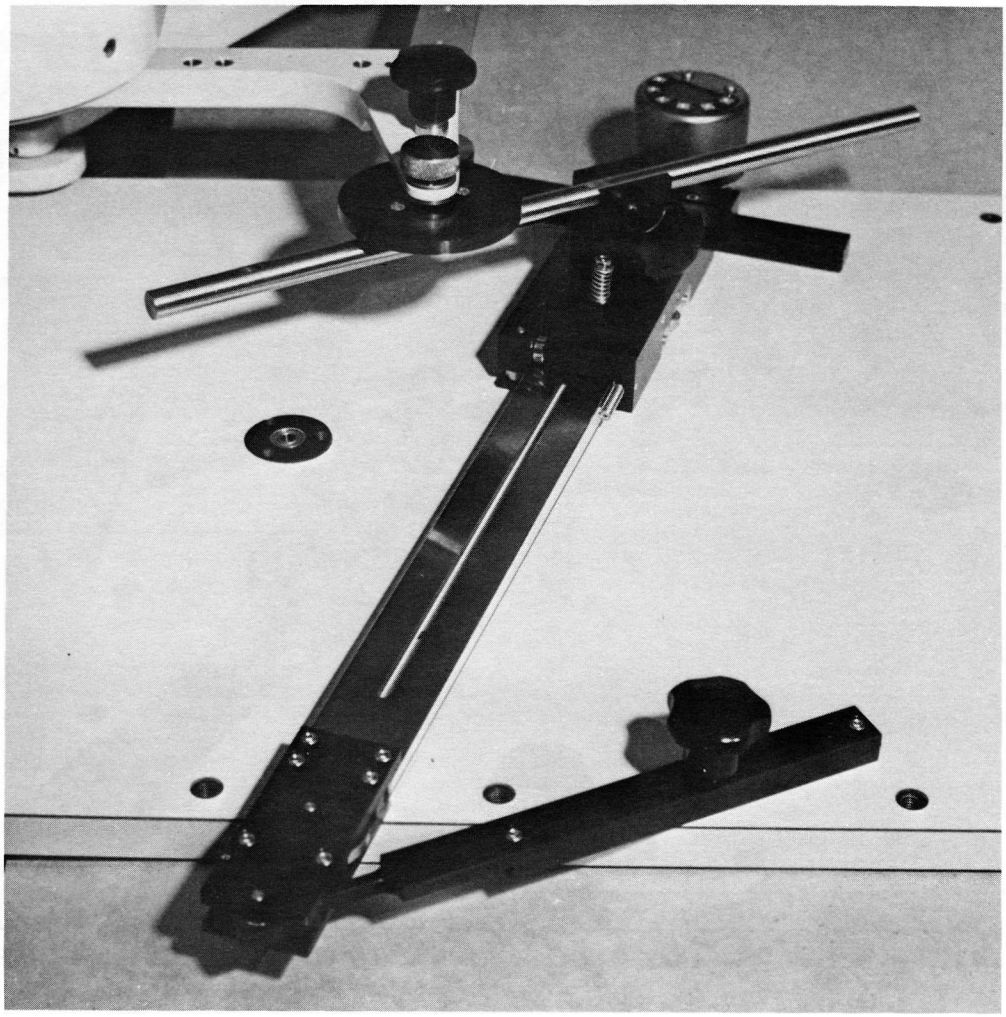


## KERN PROFILE GUIDE PS 2–E–AT – FIG. 4

The PS 2–E–AT has been designed for use with the PG 2–AT. The stereoplotter should be equipped with an X encoder, a 2 or 3 axes digitizer with Z and Y scalers and a data recorder.

The PS 2–E–AT guide is installed and used in the same way as the PS 2–AT described in the foregoing pages. However, as the PS 2–E–AT is equipped with an encoder on the cross-slide, direct distances are obtained. The use of an encoder on the cross-slide has the advantage that scaling needs to be done only once for the entire project and remains the same irrespective of the direction at which the cross-sections or profiles have to be measured.

*Figure 4*



## KERN PROFILE GUIDE PS 2–O–AT – FIG. 5 AND 6

Kern Profile Guide PS 2–O–AT has been designed for use with the PG 2–AT. Specifically, however, for profiling where adjoining parallel profiles at distance of 5, 10 and 15 meters from the center must also be measured. This requirement is often found when profiling for high-tension power lines, pipe lines and similar work.

The PS 2–O–AT is installed and used in the same manner as the PS 2–AT and PS 2–E–AT described in the foregoing pages. To measure adjoining profiles at a given distance left and right of the center profile, a mechanical cross-slide with a micrometer screw is provided.

The functions of the various elements which make up the cross-slide and its uses are shown in Fig. 6.

*Figure 5*

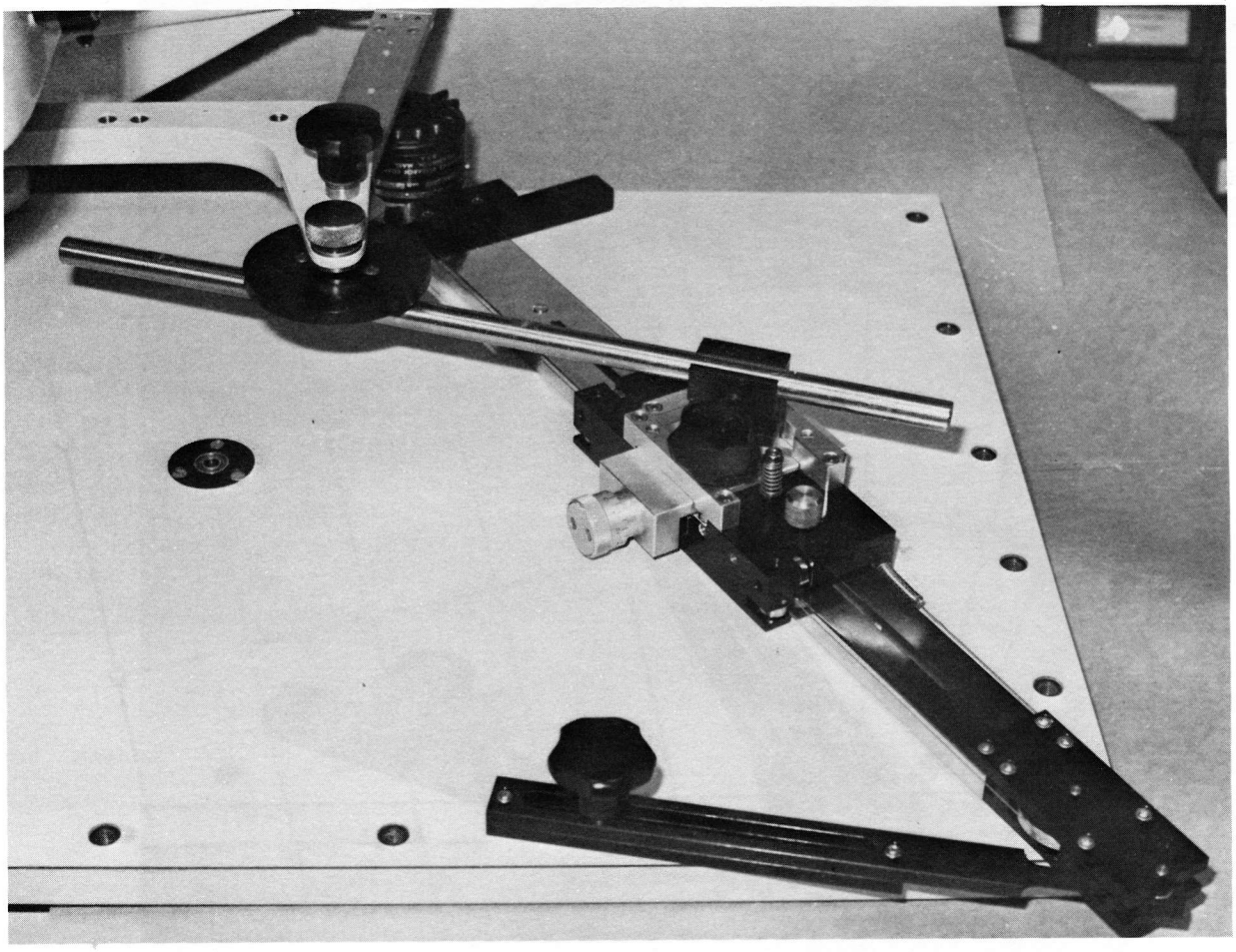
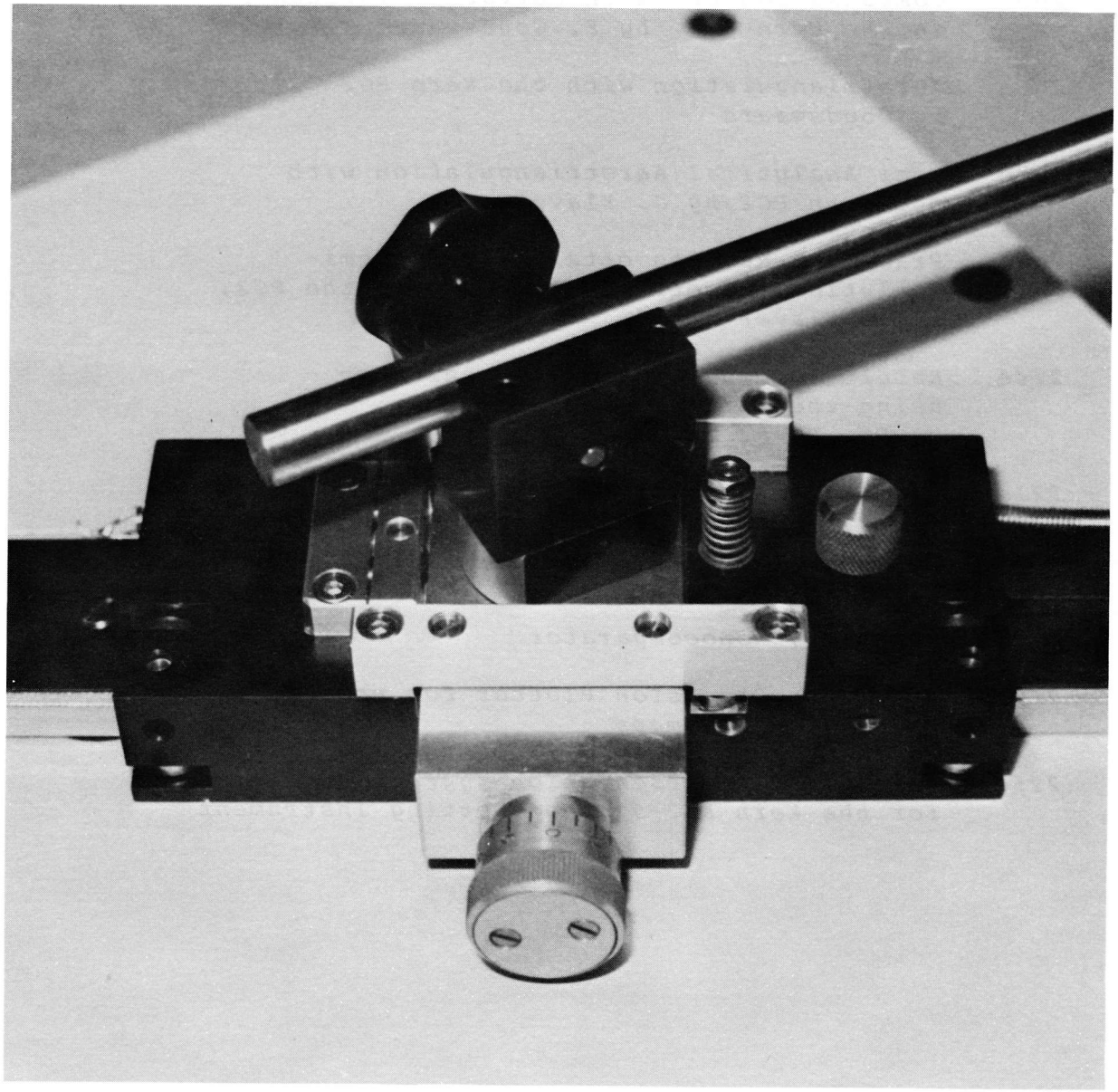


*Figure 6*



## LITERATURE AVAILABLE ON REQUEST

*203e* *Kern PG2 Stereo Plotting Instrument*

*226e* *Kern PG2-AT Semi Automatic Stereoplotter System Kern DC2 Interacting Graphic System*

*205e* *Compensation of Earth Curvature Influence in the Kern PG2 by F. Goudswaard*

*206e* *Aerotriangulation with the Kern PG2 by Goudswaard*

*207e* *Semi Analytical Aerotriangulation with the Kern PG2 by J. Klaver*

*208e* *Practical Results obtained from Semi-Analytical Aerotriangulation with the PG2, by J. Klaver*

*214e* *Results of Analytical Triangulation using the Kern PG2 Stereoplotter by Dr. P. R. J. Boniface*

*221e* *Electronic Readout Kern ER1*

*222e* *Kern PS2, Profiling System for the Kern PG2 Stereo Plotting Instrument*

*211e* *Kern MK2, Monocomparator*

*219e* *Kern PG3, Precision Plotter for production of large-scale maps*

*225e* *Kern DO2 Dual Observation System for the Kern PG2 Stereo Plotting Instrument*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