



Film Casting Knife

Manual Film Applicator

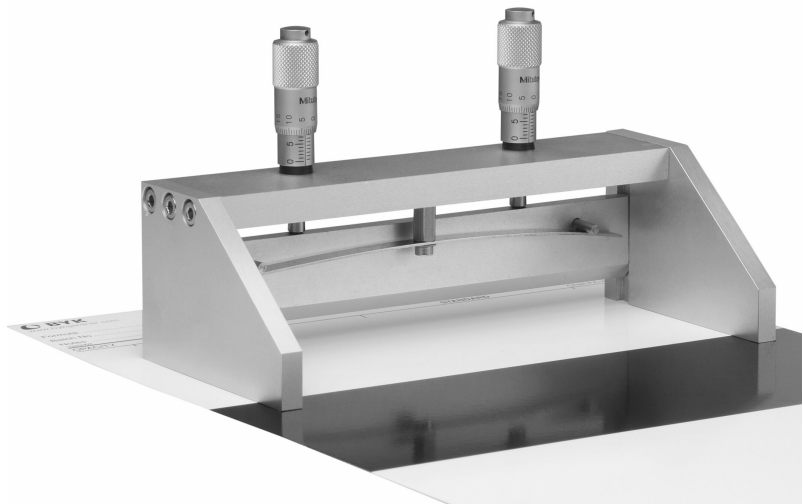
Operating Manual

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1 Overview

Film Casting Knife



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2 Description

This instrument consists of an applicator blade supported by two end plates which help to contain the sample as it is applied. The blade itself is adjusted to the desired height by means of two micrometers located on top of the applicator. A leaf spring between the micrometers and blade assures constant pressure and thus contributes to obtaining accurate and reproducible drawdowns.

The BYK-Gardner Film Casting Knife is available with micrometers calibrated in English or metric units, as follows:

1. **English units:** The minimum division is one (1) mil or 0.001 inch, and the resolution to which it can be positioned is approximately one-half of a division, or 0.5 mils (0.0005 inch).
2. **Metric units:** The minimum division is ten (10) microns, and the resolution to which it can be positioned is approximately one - half of a division or 5 microns.

3 General

The BYK-Gardner Film Casting Knife is an adjustable clearance film applicator designed to create a uniform film thickness on a flat substrate. Being adjustable, it may reduce the need for a variety of fixed clearance applicators. The clearance may be set from 0 to 150 mils (0 - 3800 microns). The bottom edge of the drawdown blade produces a wet film thickness of approximately one-half the gap clearance. The BYK-Gardner Film Casting Knife is available in selected widths between 2 and 12 inches (5.1 - 30.5 cm).

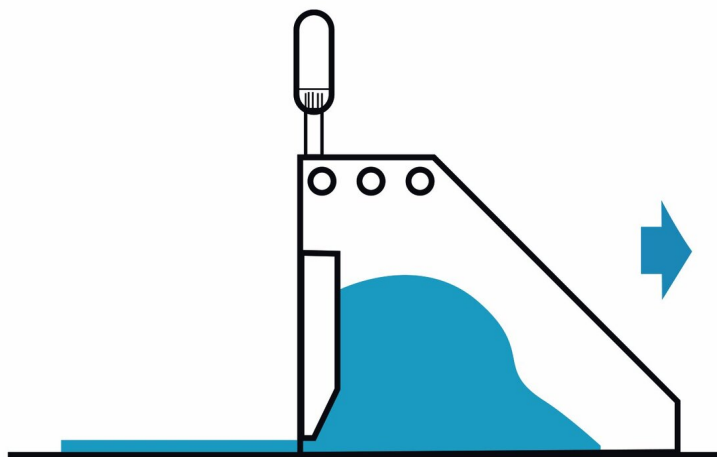
4 Operation

Place the BYK-Gardner Film Casting Knife on a test surface which is perfectly flat. Adjust the blade on the knife to the desired gap; this should be twice the required amount of wet film thickness.

Pour a small amount of the test sample in front of the applicator between the end plates. Move the instrument across the surface at a slow and uniform rate until the fluid has all been applied and/or any surplus has been drawn off the panel at the end of the film path.

The exact ratio of the wet film thickness to the gap clearance of any applicator depends on the material being used, the viscosity and texture of the fluid, the force applied to the applicator, the speed of the drawdown and the geometry of the edge which draws the fluid.

The actual wet film applied should be measured using an Interchemical Wet Film Thickness Gage (see BYK-Gardner catalog section on Film Thickness), and the clearance readjusted until the wet film is exactly the desired thickness.



5 Maintenance

After each use, clean the instrument immediately with an appropriate solvent. The channels in which the ends of the blade move must be kept free of test sample material at all times.

Avoid getting any solvent or substrate on the micrometer heads. Always dry the instrument off with a towel after cleaning. If the instrument is not used for a long amount of time, it is recommended to apply a thin film of oil to protect the instrument from corrosion.

Occasionally, the micrometer assemblies may require repositioning to compensate for wear or misalignment. To accomplish this adjustment, the assembly must be lowered or raised. This is facilitated by loosening (not removing) two recessed set screws for each micrometer.

To make the necessary adjustment:

1. Place the film casting knife on a flat surface.
2. Adjust the micrometers to read zero "0".
3. Slightly loosen the set screws.
4. Manually lower, i.e., push down and hold, the blade to the surface.
5. Push the micrometer assembly down in contact with the "pivot point" on top of the blade.
6. Tighten the set screws.



WARNING - DO NOT EXERT TOO MUCH PRESSURE ON THESE SCREWS

The set screw has a nylon or brass tip, this tip may be damaged and in turn damage the micrometer if too much pressure is used. By following these procedures, the BYK-Gardner Film Casting Knife should give you many years of reliable service.

Notes

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