

**Film Applicator  
Wasag System  
Model 288**

**Quadruple Film  
Applicator  
Model 360**

**Staggered-Gap  
Film Applicator  
acc. to Krause  
Model 421**

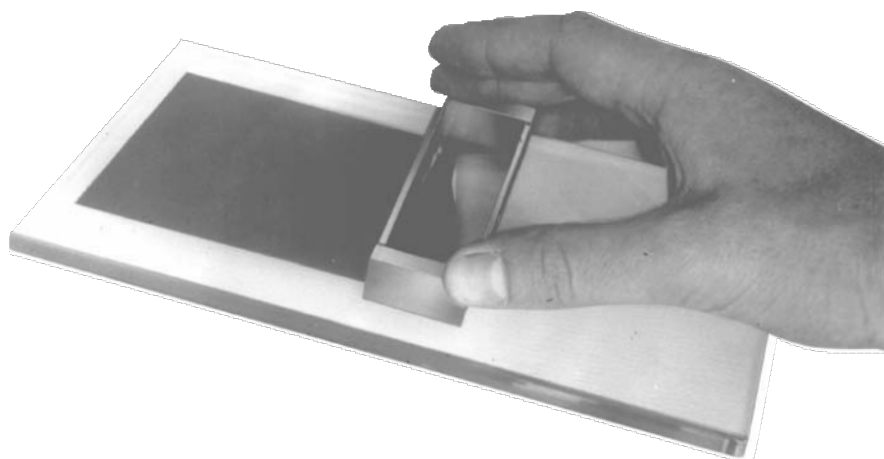
**Film Applicator  
MULTICATOR 411**

**Spiral Film Applicator  
Model 358**

**Film Applicator  
according to BIRD,  
Model 284**

**Film Applicator  
BAKER 286**

## Film Applicators



*Fig. Cover picture Quadruple Film Applicator, Model 360*

testing equipment for quality management

**ERICHSEN**

Every test on surface coating materials requires specimen panels on which the coating film has been applied evenly in a defined thickness.

The most important and commonest method of producing such panels is the film applicator with applicator blade or spiral, which is drawn across the panel by hand or electric motor drive.

ERICHSEN Film Applicators are designed to be convenient and easy to use and to clean.

## Introduction

1. In defining coating thickness, we have to differentiate between

- Theoretical wet film thickness
- Practical wet film thickness and
- Dry film thickness.

The theoretical wet film thickness is the height of the applicator blade above the substrate. However, when the applicator is drawn across the substrate a shearing effect is observed in the film and this is dependent on the flow properties of the coating material and the speed with which the applicator is moved. The effect of this is that the practical wet film thickness is less than the theoretical. (In general, practical wet film thickness = approx. 60 - 70% of theoretical wet film thickness). The resulting dry film thickness depends on the reduction in volume during drying and is generally approx. 40 - 50% of the practical wet film thickness.

2. If the storage space for the coating material on a bar film applicator is wider than the recess through which the coating material flows, the edge zone of the applied film will be thicker by an uncontrolled amount. This comes into contact with the blade guide and so an unknown measurement will be added to the theoretical film thickness. This source of inaccuracy is eliminated on ERICHSEN Film Applicators (see Fig. 1).

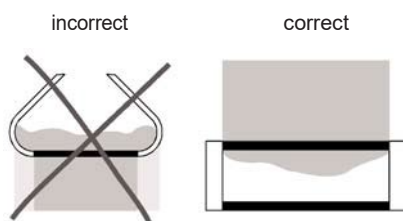


Fig. 1 Film Applicators

## Film Applicator Wasag System, Model 288 and Quadruple Film Applicator, Model 360

These two models are supplied with the blade at a fixed gap height, selected from a range between 15 and 2000 µm.

**Model 288** (Fig. 2) is provided with two and **Model 360** (see figure on front cover) with 4 working edges so that in this way several theoretical film thicknesses can be applied with a single instrument. Both models are corrosion resisting.

All versions of Models 288 and 360 are supplied with a Manufacturer's Certificate M in accordance with DIN 55350-18 that includes among others the following informations:

Gap heights (comparison of setting/actual values), evenness and roughness of the working edge, product identification, test equipments used with calibration status, date, name of inspector.

For checking the film applicators maximum deviations of 5 µm/10 %/ 10 µm are fixed for gap heights in the measuring range below 50 µm/ 50 - 100 µm/over 100 µm. The evenness/roughness should not exceed 3 µm/0.5 µm ( $R_a$ ).

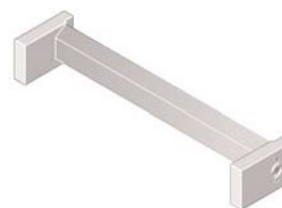


Fig. 2 Film Applicator System Wasag, Model 288

### Ordering Information Model 288

Order No.	Film width	Dimensions (W x H x D)
00440131	80 mm	105 x 40 x 38 mm
00440231	120 mm	145 x 40 x 38 mm
00440331	180 mm	205 x 40 x 38 mm
00440431	230 mm	254 x 56 x 38 mm

The instruments have gaps in the range 15 µm to 2000 µm on the two sides - please specify when ordering.

### Ordering Information Model 360

With 4 different gap heights of 30, 60, 90 and 120 µm, supplied with case

Order No.	Film width	Dimensions (W x H x D)
00460131	13 mm	27 x 16 x 30 mm
00460231	40 mm	54 x 16 x 30 mm
00460331	60 mm	74 x 16 x 30 mm
00460431	90 mm	104 x 16 x 30 mm

ditto, but with other gap heights (from 15 µm to 2000 µm available - please specify when ordering).

00460531	13 mm	27 x 16 x 30 mm
00460631	40 mm	54 x 16 x 30 mm
00460731	60 mm	74 x 16 x 30 mm
00460831	90 mm	104 x 16 x 30 mm

With side guide plates (see Fig. 3), with 4 different gap heights of 30, 60, 90 and 120 µm - please specify when ordering, with case

Order No.	Film width
00540131	13 mm
00540231	40 mm
00540331	60 mm
00540431	90 mm

ditto, but with other gap heights available (from 15 µm to 2000 µm - please specify when ordering)

00540531	13 mm
00540631	40 mm
00540731	60 mm
00540831	90 mm

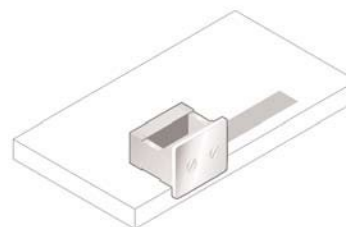


Fig. 3 Quadruple Film Applicator, Model 360, with side guide plate

## Spiral Film Applicator, Model 358

Cards, plastic foils, leather, textiles and other flexible substrates frequently have uneven surfaces or bulging shapes. The use of a scraper type applicator can lead to uneven film thicknesses.

The solution to this problem is the spiral applicator. When the applicator is drawn across the substrate, the substrate is pressed down and held flat.

The grooves formed between the windings of the applicator have the effect of producing a wet film of defined thickness (Fig. 5). The theoretical film thickness is controlled by the gaps between the windings of the spiral. The roller with the spiral is held in a bracket with handle (Fig. 4). The instrument is corrosion resisting.



Fig. 4 Spiral Film Applicator, Model 358

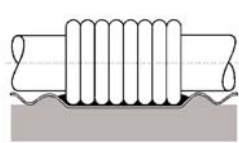


Fig. 5 Detail view of the turns of a spiral

Ordering Information Model 358		
Complete set consisting of holding bracket and 4 spiral rollers for film thicknesses to be specified with order (available sizes 10, 15, 20, 30, 40, 50, 60, 80, 100, 120, 150 and 200 µm), complete with case.		
Order No.	Complete set with 4 spirals	Dimensions (W x H x D)
00450131	80 mm wide	20 x 85 x 124 mm
00450231	150 mm wide	20 x 85 x 194 mm
00450331	220 mm wide	20 x 85 x 264 mm

Accessories/Spare Parts		
Order No.	Product Name	
00680033	Single spiral roller	80 mm wide
00690033	Single spiral roller	150 mm wide
00700033	Single spiral roller	220 mm wide
04310132	Holding bracket for spiral	80 mm wide
04310232	Holding bracket for spiral	150 mm wide
04310332	Holding bracket for spiral	220 mm wide

Film Applicator MULTICATOR 411

A frequent requirement is to produce a specimen panel with an accurately defined dry film thickness. For the reasons gone into earlier it is necessary to conduct trials to find the corresponding theoretical wet film thickness. It is of course possible to do this by using a series of applicator blades with different gap heights. A simpler and more economical way is, however, to employ an applicator with adjustable gap height. The infinitely adjustable film applicator Model 411 can be used to apply wet films with a theoretical film thickness of between 1 and 1000 µm.

The storage space is limited by spring strips and the desired gap height is set on a micrometer screw (Fig.6). The instrument is corrosion resisting.



Fig. 6 Film Applicator MULTICATOR 411, with micrometer screw  
Film Applicator MULTICATOR 411, with 2 micrometer screws

Order Information MULTICATOR 411		
with adjustable clearance from 0 - 1000 microns, incl. plastic case		
Order-No.	Film width	Dimensions (W x H x D)
00470131	80 mm	110 x 45 x 83 mm
00470231	150 mm	180 x 45 x 83 mm
00470331	220 mm	254 x 45 x 83 mm
26630131	80 mm	Special version
26630231	150 mm	Special version
26630331	220 mm	Special version

The Film Applicator MULTICATOR 411 (special version) is equipped with two lateral micrometer screws instead of one central screw; specially designed for touch-sensitive substrates.

Staggered-Gap Film Applicator acc. to Krause, Model 421

Purpose and Application

With Model 421 up to 10 parallel film strips of different thickness can be produced in a single application. This film applicator is therefore particularly suitable for investigations into properties that are dependent on film thickness such as

- Hiding Power
  - Colour strength
  - Hardening characteristics
- Adhesion
  - Effect formation
  - Lacquer interference.

When using the Model 421 in conjunction with the COATMASTER 510 it is possible to investigate hardening properties as a function of film thickness, immediately after application. Furthermore, the Staggered-Gap Film Applicator 421 also provides simple means for investigating the relationship between application parameters (height of gap, drawing speed) and the resulting film (wet and dry film thickness).

Ordering Information Model 421/I	
With four drawing edges each for applying 10 films 20 mm wide, 2 mm space between them and 10 to 500 µm high (Fig. 7). Dimensions (W x H x D) 254 x 38 x 56 mm.	
Order No.	Steps in µm
00430131	10 15 20 25 30 35 40 45 50 55
	15 30 45 60 75 90 105 120 135 150
	30 60 90 120 150 180 210 240 270 300
	50 100 150 200 250 300 350 400 450 500

Ordering Information Model 421/II	
As above but for 6 films 35 mm wide, 2 mm space between the films and a gap height from 10 to 400 µm. Dimensions (W x H x D) 254 x 38 x 56 mm.	
Order No.	Steps in µm
00430231	10 20 30 40 50 60
	50 65 80 95 110 125
	100 125 150 175 200 225
	200 240 280 320 360 400



Fig. 7 Staggered-Gap Film Applicator acc. to Krause, **Model 421/I**

The engraved step numbers refer to the bearing face of the invisible drawn down edge.

Recommended Auxiliary Equipment	
Order No.	Name
05710132	Crystal Glass Plate (580 x 285 x 18 mm)
890919341	Wide Clamps (per pair)
00492333	Test Charts - Form 09 (per 125 pcs.)
00460132	Vacuum Suction Plate to ASTM D 823 - with suction holes
00470132	Vacuum Suction Plate, simple type, with 2 continuous suction grooves

## Film Applicator according to BIRD, Model 284

The drawing edges of the standard version of this gap film applicator are ground to 4 different gap heights of 50, 100, 150 and 200 µm each so that it is possible to apply several corresponding theoretical film thicknesses using one instrument only.

The Film Applicator according to BIRD, Model 284 (Fig. 8) is available with 4 different film widths of 50, 75, 100 or 150 mm. It is corrosion resisting.



Fig. 8 Film Applicator according to BIRD, **Model 284**

Ordering Information	
Film Applicator according to BIRD, Model 284	
With 4 different gap heights of: 50, 100, 150 and 200 µm	
Order No.	Film width
02840151	50 mm
02840251	75 mm
02840351	100 mm
02840451	150 mm

## Film Applicator BAKER 286

The 4 gap heights of the Film Applicator **BAKER 286** (Fig. 9) result from the different zero levels ground into the bearing faces of the metal blocks at the end.

The difference in height to the centre cylinder serving as drawing edge, forms the corresponding gap clearance. The standard version is available with 4 different gap heights of 30, 60, 90 and 120 µm and 3 film widths of 60, 75 or 100 mm. The instrument is corrosion resisting.



Fig. 9 Film Applicator **BAKER 286**

Ordering Information BAKER 286	
With 4 different gap heights of: 30, 60, 90 and 120 µm.	
Order No.	Film width
02860351	60 mm
02860451	75 mm
02860551	100 mm

Further applicators for the laboratory included in our programme:

- **COATMASTER 510** (Microprocessor controlled Film Applicator and Drying Test Instrument) or **COATMASTER 510 Basic** (Film Applicator)
- Centrifugal Coating Applicator, **Model 334 Smart**
- **K-HAND-COATER 620**
- **K-CONTROL COATER 623/624**
- **K-MULTICOATER 625 S**

Subject to technical modifications.

Group 8 - TBE 284/286/288/358/360/411/421 - VII/2025