

Measure what you see.

# byko-drive XL Automatic Applicator

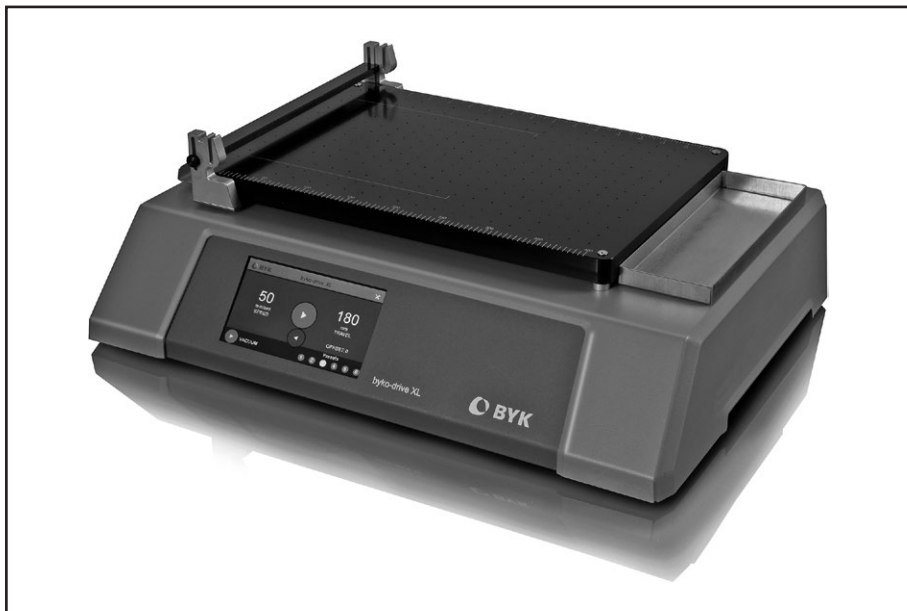


Manual



**byko-drive XL**  
**Automatic Applicator**

**Manual**



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## 1 Safety Information



### **Caution!**

Read Instruction Manual before using this instrument.



### **Warning!**

This manual cannot address all of the safety considerations associated with its use. It is the responsibility of the user to consult this manual and establish appropriate safety practices for use with this equipment and the individual material being tested.



### **Warning!**

The byko-drive XL Automatic Film Applicator is designed and intended for the use described in this manual. Using the Automatic Film Applicator for other purposes for which it was not designed may reduce or eliminate the protection offered by the features of the applicator. Serious injury may result.



### **Warning!**

Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.



### **Warning!**

Ultimate disposal of this product should be handled according to all national laws and regulations.



### **Attention**

The byko-drive XL Automatic Film Applicator works with a moving traverse carriage. No parts of the carriage may be touched or held during operation. Once the Forward key is pressed no work should be carried out within the travel area of the carriage.

### **Please note the following points:**

- During the film application process the applicator is driven from left to right.
- Familiarize yourself with the layout and operation of the controls.
- During movement, pressing anywhere on the screen will immediately stop the carriage at any point of its travel.
- Ensure the operator has no loose clothing or jewelry which could become caught in the moving parts.

**2 Preparations**

Unpack the unit being careful to check all packaging for items. Some accessories may be found in a separate box within the main box. Within the package are the following standard items:

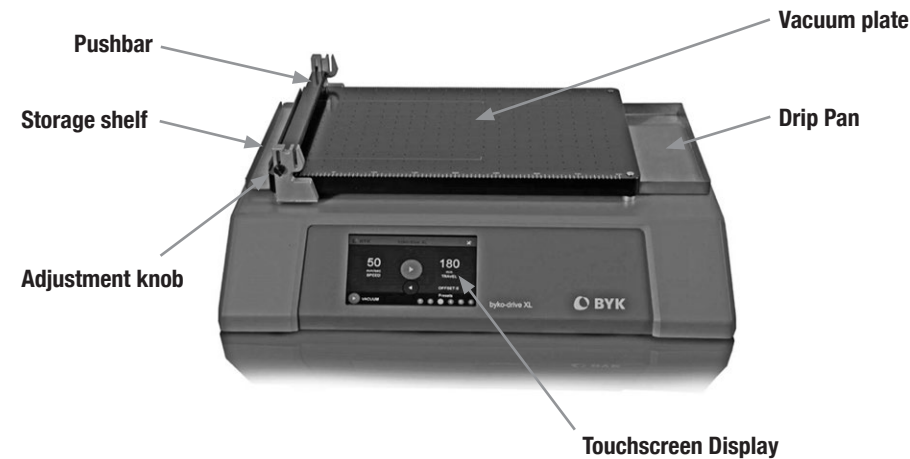
Quantity	Description
1	byko-drive XL Applicator unit
1	Power Supply
1	Power Cord
1	500g Weight
1	Drip Pan

Locate a suitable location free from obstructions and clutter. The byko-drive XL should be at a convenient height for the operator.

Plug the power supply into the DC input jack on the left side, next to the power switch. A power cord appropriate for your area’s power connector is supplied to connect the power supply with AC power. The system will operate on power from 100-240 V~ at 50-60 Hz.

Place the drip pan in the provided indentation on the right of the vacuum plate.

The 500g weight is used to provide additional pressure on an applicator or hold a wire-wound rod in the proper position. If needed, place the weight in the slots of the pusher bar.



### 3 System Description

The byko-drive XL is designed to assist the user in achieving consistent film application by maintaining a consistent speed and drawdown pressure. Manual drawdowns are often inconsistent, especially between operators. This makes test comparisons between samples either difficult or unreliable.

Some of the factors affecting the drawdown are the shear rate and the pressure placed on the applicator tool. The byko-drive XL employs a precise speed control along with a consistent weight to suit the particular material being applied.

The byko-drive XL is compatible with most applicators, both bar and wire types. The applicator is placed in front of the Pushbar so that the applicator is pushed along the test surface once the byko-drive XL is started. With both the speed and weight controlled, a consistent and uniform film is produced.

The byko-drive XL is equipped with either a vacuum plate or a glass plate with clamp. The vacuum plate uses an internal vacuum pump to hold a test sample in place. Two areas of the vacuum plate are used, depending on the size of the drawdown card. The glass plate model uses a spring-loaded clamp to hold the drawdown card.

A wide variation in speeds is available, from 5mm/sec to 500 mm/sec (0.2 inch/sec to 19.7 inch/sec). The micro-controller electronics of the byko-drive XL ensures accurate speed control under all operating conditions.

The start and length of drawdown may be modified by the operator to speed repetitive drawdowns that use smaller sizes test samples.

### 4 Start Up

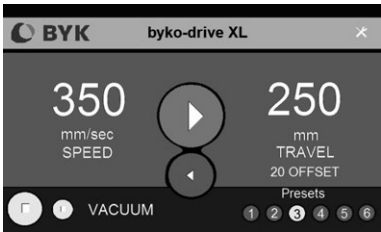
Plug the external power supply into the connector on the rear of the instrument near the power switch. Plug the other end into an appropriate electrical outlet as described in Section 2.

Turn on the power switch. The power switch is located on the rear of the instrument, near the power cord.

The display will turn on and if not already there, the carriage will move to the start point, the instrument is now ready to operate.

5 Operation

All user functions are operated through a touchscreen interface. The Home screen is shown below.



The large button in the center starts the carriage moving with the speed, travel and offset options as indicated on the display. The settings may be changed by pressing the setup icon in the upper right corner.

The vacuum system (on vacuum plate versions only) is toggled on and off by pressing one of the buttons in the lower left corner.

The six Presets buttons allow saving of six different setup combinations. The settings are first changed within the Setup screen and then saved by pressing and holding the Presets button where you would like to store the settings. There are six setups stored from the factory, press each of the buttons to review the settings before changing them. The factory stored settings are as follows:

- 1. Speed - 100mm/sec, Length - 380mm, Offset - 0mm
- 2. Speed - 500mm/sec, Length - 180mm, Offset - 200mm
- 3. Speed - 10mm/sec, Length - 250mm, Offset - 0mm
- 4. Speed - 1.0 in/sec, Length - 15.0 in, Offset - 0 in
- 5. Speed - 19.0 in/sec, Length - 7.0 in, Offset - 7.7 in
- 6. Speed - 10.0 in/sec, Length - 10.0 in, Offset - 0 in



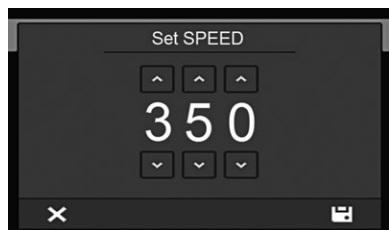
**The Setup screen**

Press the tool icon in the upper right corner of the Home screen to access the Setup screen. Note the current settings. Press the band you wish to change and it will turn blue. Press once more to access the screen to change the setting. Note that once you start making changes to the settings, the Preset you are

changing will change from yellow to blue with a white ring. This is to remind you of the preset that is being changed. You do not have to save the changes if you want to make a temporary change. If not saved, the changes made will be lost if the unit is turned off or another preset is selected. To save the changes, press and hold the



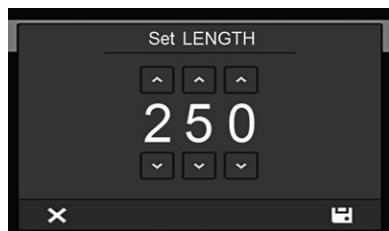
button where you would like to store the settings for at least 3 seconds. When you release the button it will be yellow and the settings will be stored and able to be recalled on the run screen by pressing the appropriate Preset button.



### ***The Set Speed screen***

Adjusts the speed that the carriage will move. Press the appropriate up or down arrow to adjust each digit. The first press will turn the button blue and subsequent press will increase or decrease the number. The instrument may be set to operate between 5 and 500 mm per second. Once the desired speed is set, press

the Save icon in the lower right of the screen to return to the Setup screen. The X in the lower left will exit the screen with no changes saved.

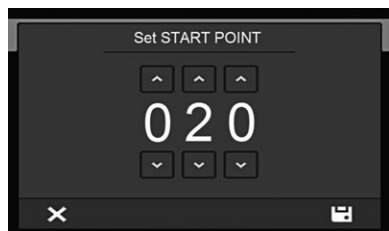


### ***The Set Length screen***

Adjusts the length of carriage travel. This is the length the carriage will move from the Start Point. Press the appropriate up or down arrow to adjust each digit. The first press will turn the button blue and subsequent press will increase or decrease the number. The instrument may be set to operate between

0 and 380 mm. Note that the maximum travel TOTAL is 380mm. If you set a start point at somewhere other than 0 the length will be reduced by the start point setting. An example would be if you set the start point to 30mm, the maximum drawdown length would be 350mm ( $380-30=350$ ). Once the desired length is set, press the Save icon in the lower right of the screen to return to the Setup screen. The X in the lower left will exit the screen with no changes saved.

Please notice the scales engraved on the vacuum plate and/or glass plate support. These scales are provided to help with setting the length and start point locations.

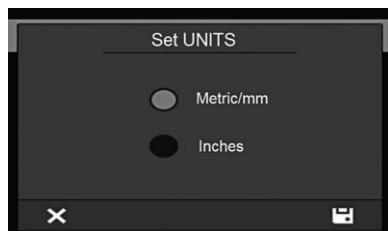


### ***The Set Start Point screen***

Adjusts the place the carriage will begin the drawdown. Press the appropriate up or down arrow to adjust each digit. The first press will turn the button blue and subsequent press will increase or decrease the number. The instrument may be set to start from 0 and 370 mm. Note that the maximum travel TOTAL is

380mm. If you set a start point at somewhere other than 0 the length will be reduced by the start point setting. An example would be if you set the start point to 30mm,

the maximum drawdown length would be 350mm ( $380-30=350$ ). Once the desired start point is set, press the Save icon in the lower right of the screen to return to the Setup screen. The X in the lower left will exit the screen with no changes saved. Please notice the scales engraved on the vacuum plate and/or glass plate support. These scales are provided to help with setting the length and start point locations.



### ***The Set Units screen***

Changes the units in which the system operates. Press the button to the left of the desired units to turn it blue. Units for Length, Start Point and Speed will display in the units selected. Once the desired units are selected, press the Save icon in the lower right of the screen to return to the Setup screen.

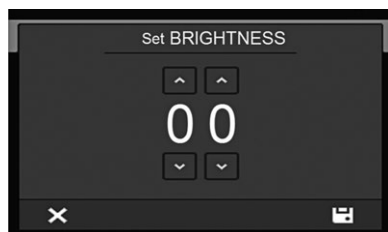
The X in the lower left will exit the screen with no changes saved.



### ***The Set Language screen***

Changes the language for all screens. Press the appropriate up or down arrow to adjust each digit. Press the button to the left of the desired language to turn it blue. Once the desired language is selected, press the Save icon in the lower right of the screen to return to the Setup screen.

The X in the lower left will exit the screen with no changes saved.



### ***The Set Brightness screen***

Adjusts the brightness of the screen. Press the appropriate up or down arrow to adjust each digit. The first press will turn the button blue and subsequent press will increase or decrease the number. The brightness may be set between 0 and 10. Once the desired brightness is set, press the Save icon in the

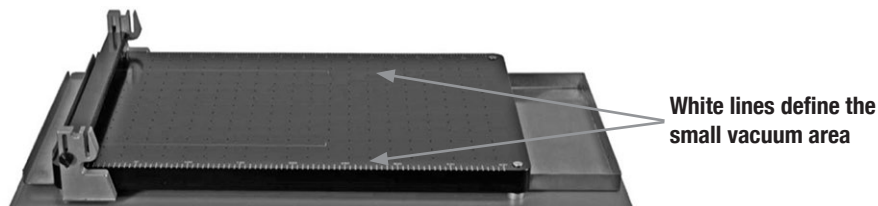
lower right of the screen to return to the Setup screen.

The X in the lower left will exit the screen with no changes saved.

## ***To Make a Drawdown***

There are two different plates available to hold the drawdown substrates. For vacuum plate models the chart or substrate is held in place with vacuum. There are two sizes of vacuum areas, a small area defined by the white marks on the plate or a large area that encompasses the entire surface. The two sizes are activated by the

Vacuum button in the lower left corner of the display. The large button activates the entire plate, the small button uses just the area enclosed by the white line.



Determine which size is needed by placing one of your charts on the plate and verify the chart covers all or most of the holes in the desired area. If any holes are uncovered they must be covered with paper or tape to allow the vacuum pump to properly secure the chart. Post-it® brand Labeling & Cover-up Tape has been shown to work effectively for this purpose and can easily be removed without leaving residue on the vacuum plate.

Place a test chart or other substrate material on the vacuum plate. Press the appropriate icon in the lower left corner of the screen to turn on the vacuum pump. (For models with the glass plate, simply place the substrate on the glass, under the sample clamp)

Once the substrate is held in place, position an appropriate Bird applicator, wire rod, square applicator or other applicator bar in front of the Pushbar. Note that the Pushbar is adjustable to the height needed for different applicators. Adjust the height by loosening the two thumbscrews and move the bar to the appropriate height for your applicator. To keep wire rods from rotating and when additional weight is needed for other applicators, set the Weight into the slots of the Pushbar allowing the rubber strips to hold the applicator in place. Most rods may be accommodated, as longer rods will extend through the notch provided in the pushbar.

Apply an appropriate amount of coating immediately in front of the applicator. Press the forward button and the application will begin.

At the end of the travel, the Applicator will stop automatically. Remove the applicator for cleaning and press the Reverse button. Once the carriage has returned to the start position, turn off the vacuum and remove the coated substrate.

### 6 Maintenance and Repair

#### ***Cleaning and Routine Maintenance***

Care should be taken to avoid letting coating materials into the vacuum plate holes. If cleaning is needed the holes can be cleaned with a solvent appropriate for the coating material and a wooden toothpick. Metal tools should be avoided as they may damage the aluminum vacuum plate.

Clean the rest of the instrument with a mild commercial cleaning solution or plain soapy water. Avoid solvents on the cover and the keyboard area as they may be discolored or otherwise damaged by strong solvents.

#### ***Exchanging the Vacuum Plate with the Glass Plate accessory #2134***

The factory installed vacuum plate may be replaced in the field with an optional glass plate.

To exchange the plates follow these instructions:

1. Remove the weight and the pushbar.
2. There are 4 screws, one at each corner of the plate. Remove these screws. These same screws will be used with the new plate.
3. When removing a vacuum plate carefully lift the left side of the vacuum plate up. You will see the vacuum tubing. Remove this tubing by carefully pulling down on the tubing.
4. Lift off the plate. Note the position of the 4 aluminum spacers.
5. Set the glass plate support on the spacers.
6. Install the 4 screws to hold the plate. Start each screw in the threads, then tighten all four.
7. For the glass plate support, make sure the corner pads are clean of dirt and dust, then place the glass in position under the paper clamp.
8. Reinstall the weight and the pushbar.
9. Set the other plate aside. A removed vacuum plate has 2 brass fittings that extend below the plate. Store the plate in such a way as to protect the fittings.

#### ***Exchanging the Glass Plate with the Vacuum Plate accessory #2133***

**NOTE:** The user may install the optional vacuum plate on a byko-drive XL that has a glass plate installed from the factory. However the factory built glass plate instrument does not have a built-in vacuum system. Installing a vacuum plate on a factory glass plate unit requires an external vacuum source.

1. Remove the glass by lifting on the right-hand edge. It will release with firm, even force.
2. Remove the weight and the pushbar.
3. There are 4 screws, one at each corner of the glass plate support. Remove these screws. These same screws will be used with the new plate.
4. Lift off the glass plate support. Note the position of the 4 aluminum spacers.

5. The vacuum plate accessory comes with 2 vacuum fittings and a “T” fitting. You may choose to use 2 separate vacuum sources to enable the 2 vacuum zones on the plate or use the “T” to combine the 2 into one fitting to allow the use of a single vacuum source.
6. Set the glass plate support on the spacers.
7. Install the 4 screws to hold the plate. Start each screw in the threads, then tighten all four.
8. Reinstall the weight and the pushbar.
9. Set the removed plate and glass aside. Be sure to protect the glass from breakage.

### 7 Service and Spare Parts

For all service and spare parts requirements, please contact your local BYK-Gardner office.

### 8 Components

#### Ordering Information

Catalog Number	Description
2131	byko-drive XL Automatic Film Applicator w/Vacuum Plate
2132	byko-drive XL Automatic Film Applicator w/Glass Plate
2133	Vacuum Plate accessory (replaces glass plate)
2134	Glass Plate accessory (replaces vacuum plate)
2135	Push bar weight, 500g (one is included with instrument)
2136	Push bar weight, 1000g
2137	Drip pan, XL

### 9 Technical Data

Weight	41 pounds	18.6 kg
Height	7.80 inches	198 mm
Width	24.38 inches	619 mm
Depth	17.81 inches	452 mm
Temperature-Storage	0° – 150° F	-18° – 66° C
Temperature-Operating	35° - 100° F	1° - 38° C
Power	Power supply input:	100-240V ~ 50-60 Hz
	Power supply output:	24V --- 3.75 Amp

All technical data is subject to change.

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