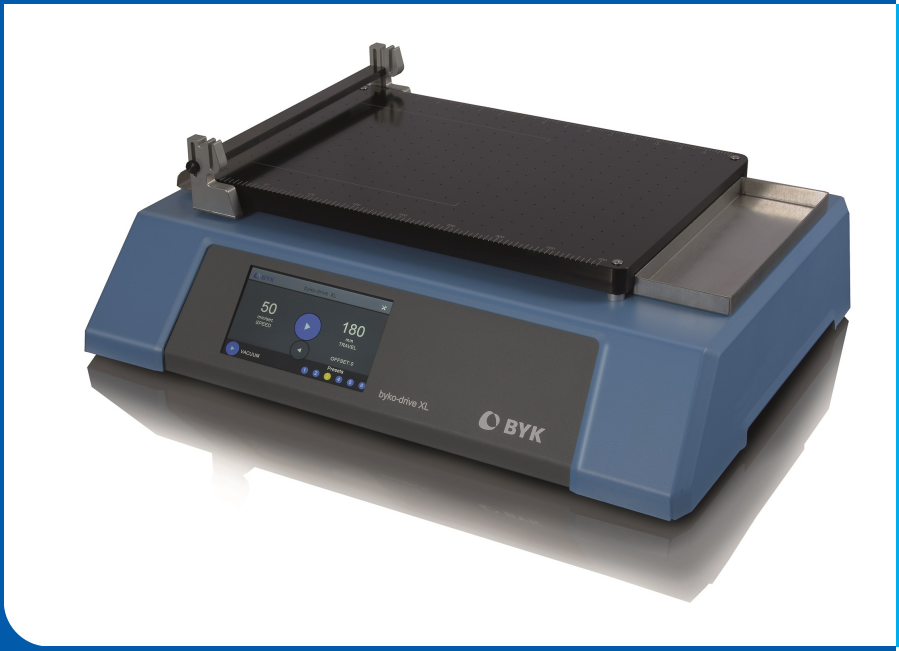
BYK



byko-drive XL

Automatic Film Applicator

Operating Manual

A member of ALTANA

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1 Introduction

Dear customer,

thank you for having decided for a BYK-Gardner product. BYK-Gardner is committed to providing you with quality products and services. We offer complete system solutions to solve your problems in areas of color, appearance and physical properties. As the basis of our world-wide business, we strongly believe in total customer satisfaction.

Therefore, in addition to our products, we offer many VALUE-ADDED services:

- Technical Sales Force
- Technical and Application Support
- Application and Technical Seminars
- Repair and Certification Service

BYK-Gardner is part of Altana AG and a direct subsidiary of BYK-Chemie GmbH, a leading supplier of additives for coatings and plastics. Together, we offer complete and unique solutions for you, our customer

Thank your for your trust and confidence. If there is anything we can do better to serve your needs, do not hesitate to let us know.

Your BYK-Gardner Team

- https://www.byk-instruments.com

1.1 About this Document

This instruction manual is an important part of this instrument. It contains essential information about setting up, placing in service and use. If you pass the device on to another user, please ensure that the instruction manual is included with the instrument. The manual must be studied carefully before working with the equipment. Please contact your regional service office if you have any questions or require additional information about the device:

- https://www.byk-instruments.com/contact-infos

The technology and fittings are based on state-of-the art optic and electronic technology. New developments and innovations are constantly being integrated into the equipment. Thus, the diagrams, dimensions, and technical data used in this manual may have changed as a result of adapting the device to new information and improvements.

1.2 Safety Information

1.2.1 Safety Instructions



CAUTION!

Read this instruction manual completely before using the 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.

1.2.2 General Information

Please note the following points for handling the device:

- Please unpack the device carefully.
- Retain the packaging in case you want to ship the device at a later date.
- It is a stationary device - it must not be transported or moved during operation.

1.2.3 Operation Information

Please note the following points for operating the device:

- 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.

1.3 Copyright Information

No portion of the software, documentation or other accompanying materials may be translated, modified, reproduced, copied or other-wise duplicated (with the exception of a backup copy), or distributed to a third party, without prior written authorization from BYK-Gardner.

In any cases, this requires the prior written consent of BYK-Gardner.

BYK-Gardner offers no guarantee that the software will function without error or that the functions incorporated therein can be executed on all applications and combinations selected by you.

No liability other than as provided by law as assumed for direct or indirect damage sustained in association with the use of the instrument, the software or documentation.

BYK-Gardner reserves the right to update the software and written documentation without prior notice.

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1.4 EU Declaration of Conformity

We,

BYK-Gardner GmbH

Lausitzer Strasse 8

D-82538 Geretsried

herewith declare, that the product

byko-drive XL Automatic Film Applicator

complies with the requirements of the following EU directives:

- 2014/30/EU - Electromagnetic Compatibility
- 2014/35/EU - Low Voltage

The following harmonized standards were applied:

- EN 61010-1:2010
- EN 61326-1:2013

Geretsried, January 2, 2017



Frank R. Wagner

Managing Director

1.5 US Declaration of Conformity

We,

BYK-Gardner USA

9104 Guilford Road

Columbia, MD 21046 USA

herewith declare, that the product

byko-drive XL Automatic Film Applicator

comply with the requirements of the following directives for Electromagnetic Compatibility (EC) of the European Union (EU):

- 2014/30/EU - Electromagnetic Compatibility Regulations
- 2014/35/EU - Low Voltage

The following harmonized standards were applied:

- EN 61010-1:2010
- EN 61326-1:2013

Columbia, January 2, 2017

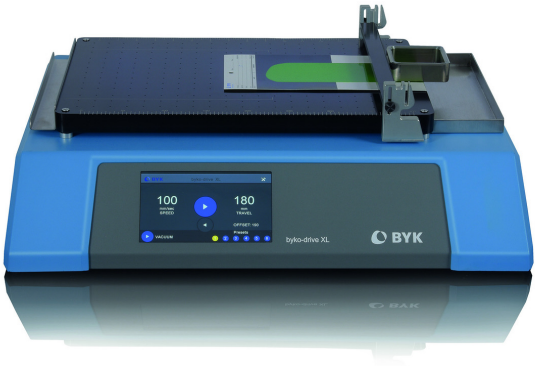


Michael J. Gogoel

V.P. General Manager

2 System Description

The **byko-drive XL** is an automatic film applicator. It 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 5 mm/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.

NOTICE

The vacuum plate and the glass plate can be exchanged, see "Maintenance and Repair [▶ 17]".

3 System Preparation

3.1 Delivery Content

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	Applicator unit **byko-drive XL** with: • Vacuum plate or • Glass plate
1	Power supply
1	Power cord
1	Weight 500 g
1	Drip pan
1	Safety instructions
1	Short instructions

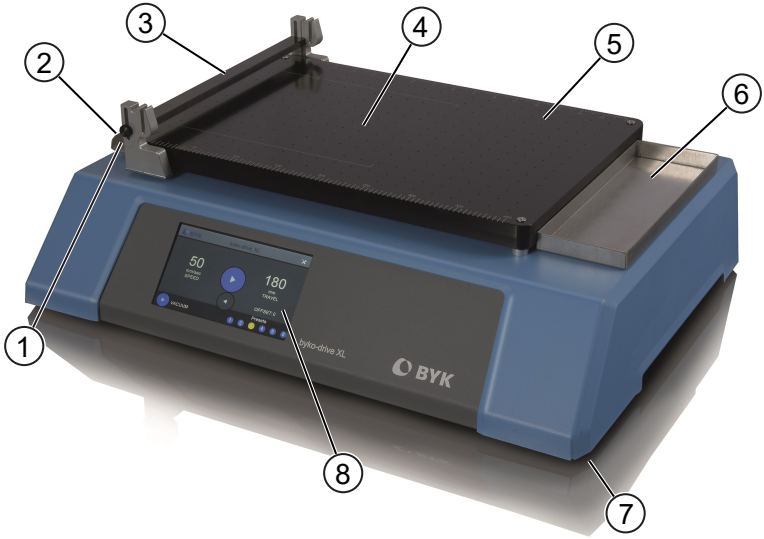
Locate a suitable location free from obstructions and clutter. The **byko-drive XL** should be at a convenient height for the operator.

Plug the power supply into the DC input jack on the rear 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 500 g weight is used to provide additional pressure on an applicator or hold a wire-wound rod is the proper position. If needed, place the weight in the slots of the pusher bar.

3.2 Control Elements



1	Adjustment knob	2	Storage shelf
3	Push-bar	4	Vacuum plate - small area
5	Vacuum plate - large area	6	Drip pan
7	Adjustable feet (underneath)	8	Color touch screen display

NOTICE

The device is heavy - transports are to be done with the help of a second person. Retain the packaging in case you want to ship the device at a later date.

4 System Operation

4.1 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 System Preparation [▶ 9].

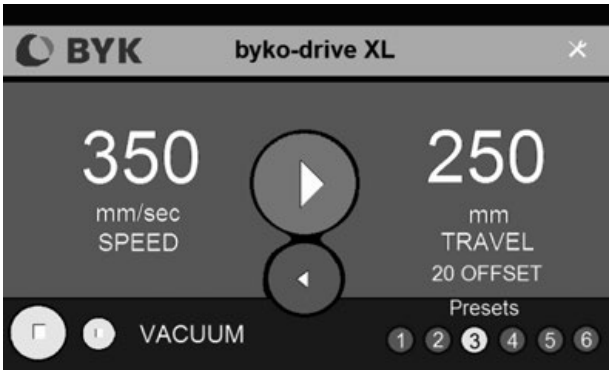
Turn on the power switch. The power switch is located on the rear of the instrument, near the power cord.

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.

4.2 User Interface

All user functions are operated through a touchscreen interface.

4.2.1 Home Screen



The large **Play** 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 - 100 mm/sec, Length - 380 mm, Offset - 0mm
2. Speed - 500 mm/sec, Length - 180 mm, Offset - 200mm
3. Speed - 10 mm/sec, Length - 250 mm, 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

System Setup



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.

4.2.2 Set Speed



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.

4.2.3 Set Length



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 400 mm. Note that the maximum travel TOTAL is 400 mm. 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 30 mm, the maximum drawdown length would be 370 mm (400 - 30 = 370). 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.

4.2.4 Set Start Point



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 380 mm. Note that the maximum travel TOTAL is 400 mm. 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 30 mm, the maximum drawdown length would be 370 mm (400 - 30 = 370). 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.

4.2.5 Set Units



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.

4.2.6 Set Language



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.

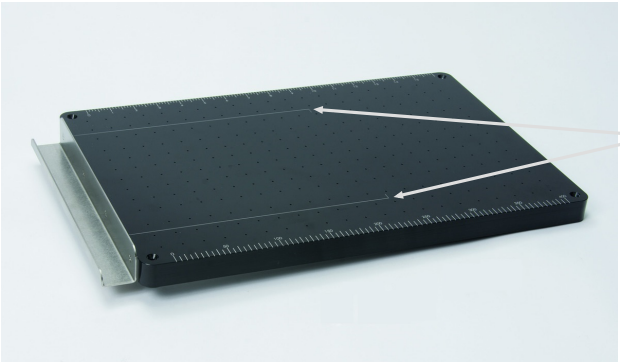
4.2.7 Set Brightness



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.

4.3 Film Application

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 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 **Push-bar**. Note that the **Push-bar** 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 **Push-bar** 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 **Push-bar**.

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.

* Post-it® Brand is a registered trademark of 3M.

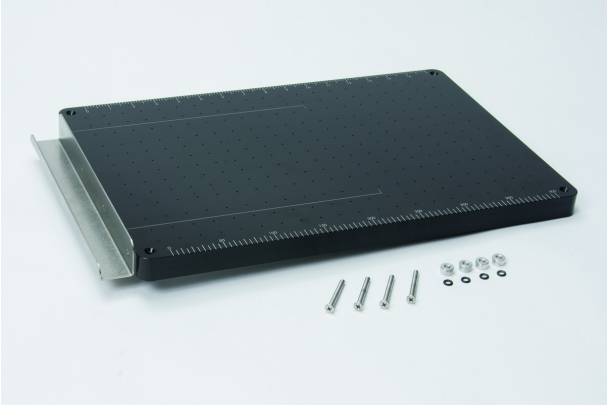
5 Maintenance and Repair

5.1 Exchanging Glass Plate with Vacuum Plate

The factory installed glass plate may be replaced in the field with an optional vacuum plate (accessory #2133).

Notice

The optional vacuum plate can be installed 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 - see "Accessory Parts".

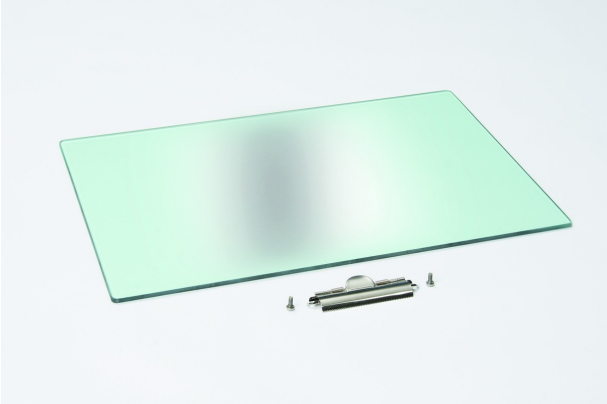


To exchange the plates follow these instructions:

1. Remove the glass by lifting on the right-hand edge. It will release with firm, even force.
2. Remove the weight and the push-bar.
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 push-bar.
9. Set the removed plate and glass aside. Be sure to protect the glass from breakage.

5.2 Exchanging Vacuum Plate with Glass Plate

The factory installed vacuum plate may be replaced in the field with an optional glass plate (accessory #2134).



To exchange the plates follow these instructions:

1. Remove the weight and the push-bar.
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 push-bar.
9. Set the other plate aside. A removed vacuum plate has 2 brass fittings that extend below the plate. Store the plate is such a way as to protect the fittings.

5.3 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.

5.4 Service and Spare Parts

For all service and spare parts requirements, please contact your local BYK-Gardner office. You can find your nearest service point on our webpage:

- https://www.byk-instruments.com/contact-infos

5.5 Ordering Information

For the **byko-drive XL** the following components can be ordered separately.

Basic Device

Catalog No.	Description
2131	Automatic film applicator **byko-drive XL** with vacuum plate
2132	Automatic film applicator **byko-drive XL** with glass plate

Accessory Parts

Catalog No.	Description
2133	Vacuum plate XL (replaces glass plate)
2134	Glass plate XL (replaces vacuum plate)
2135	Push-bar weight - 500 g XL (one is included with instrument)
2136	Push-bar weight - 1000 g XL
2137	Drip pan XL
2138	Screen protector
3875	Vacuum pump, 230 V - UK plug *
3877	Vacuum pump, 230 V - Schuko plug *
3879	Vacuum pump, 115 V *

* Required if replacing glass plate (2134) by vacuum plate (2133).

6 Technical Data

6.1 Instrument

Drawdown speed	2 - 500 mm / sec (0.8 - 19.7 in / sec)
Drawdown length	25 - 400 mm (1 - 15.7 in)
Starting point offset	0 - 380 mm (0 - 15 in)
Units	Metric (mm) / Inch (in)
Languages	Chinese, English, French, German, Italian, Japanese, Russian, Spanish
Display brightness	0 - 10
Presets	1 - 6
Temperature range	1° C to 38° C (35° F to 100° F) for operation -18° C to 66° C (0° F to 150° F) for storage
Relative humidity	Up to 85% non-condensing at 35° C (95° F)
Operation altitude	Up to 2000 m (6561 ft)
Dimensions (LxWxH)	619 x 452 x 198 mm (24.38 x 17.81 x 7.8 in)
Weight	18.6 kg (41 lbs)
Power supply device	Input: 24 V ⎓ ; max. 3.75 A
External power supply	Input: 100 - 240 V ~ ; 50 - 60 Hz ; max. 1.3 A Output: 24 V ⎓ ; max. 3.75 A

6.2 Documentation

Document Type	Document No.	No. of Languages
Safety Instructions	285 024 578	24
Short Instructions	285 024 579	8
Operating Manual	285 024 577 E	English
Download Link	https://www.byk-instruments.com/p/2131	

Technical data are subject to change without notice.

7 Service Points



Global service centers with ISO / IEC 17025 accredited laboratories

Headquarter

BYK-Gardner GmbH

Lausitzer Strasse 8, 82538 Geretsried, Germany

Service Point USA c/o BYK-Gardner USA 9104 Guilford Road, Suite H, Columbia, MD 21046, USA	**Service Point Austria, Hungary, Slovenia** c/o Friedrich W. Bloch GmbH Wagramerstrasse 201, 1210 Vienna, Austria	**Service Point France** c/o Eckart France S.A.S. 27 Allée du Chargement, 59650 Villeneuve d'Ascq, France
Service Point Spain c/o Actega Artística S.A.U. Calle Balmes 8, Suite: 3º 2ª, 08291 Ripollet, Spain	**Service Point China** c/o BYK (Tongling) Co. Ltd. Shanghai Branch Block 6A, Building A, No 88 Hong Cao Road, Xuhui District, Shanghai 200233, P.R. China	**Service Point India** c/o IMCD India Private Limited 1101-03, B-Wing, ONE BKC, Bandra Kurla Complex, Bandra East, Mumbai, MH. Pin.: 400 051. India
Service Point Japan c/o Tetsutani Co. Ltd. Chuo-ku, Osaka, Tokui cho 2-2-2, Japan	**Service Point South Latin America** c/o MAST Comercial e Importadora LTDA Rua Itaporanga, 340-B, Bairro Paraiso, Santo André - SP, 09190-640, Brazil	

Complete list: https://www.byk-instruments.com/global-service-centers
Authorized agents: https://www.byk-instruments.com/contact-infos

Notes

Notes

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Download your manuals from:
https://www.byk-instruments.com/p/2131

BYK-Gardner GmbH
Lausitzer Strasse 8
82538 Geretsried
Germany

Tel +49 08171 3493-0
Fax +49 08171 3493-140

info.byk.gardner@altana.com
www.byk-instruments.com

BYK

285 024 577 E 2407