



Drucker Diagnostics 6 FLEX Compact Routine PROGRAMMABLE Centrifuge Instruction Manual

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Drucker Diagnostics 6 FLEX Compact Routine PROGRAMMABLE Centrifuge



Product Information

The Horizon centrifuge is available in four models: Horizon 6, Horizon 6 FA, Horizon 12, and Horizon 24. The centrifuge features a variety of settings including cycle time and speed, which can be adjusted to meet specific needs. This product is intended for use in laboratory and medical settings for the separation of materials such as blood, urine, and other bodily fluids. The Horizon centrifuge comes with a warranty.

Product Usage

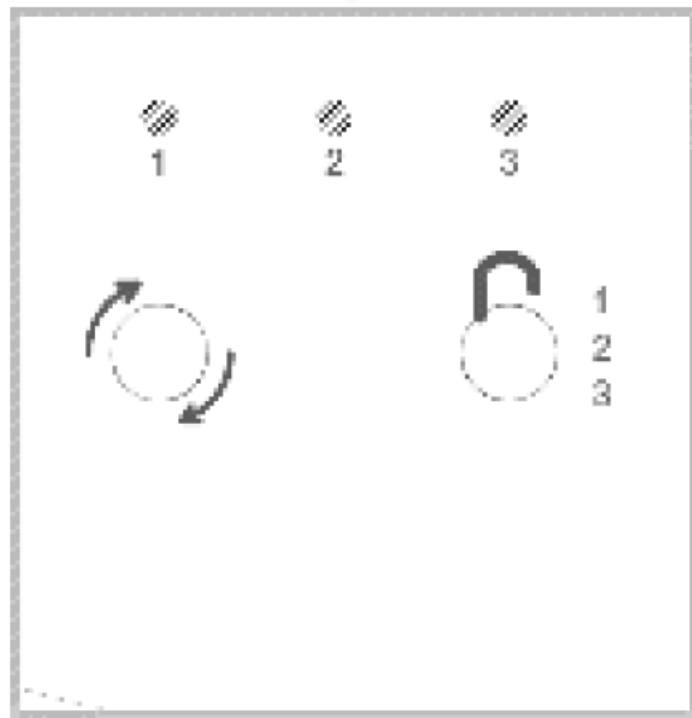
- **Initial Setup:** Follow the instructions provided in the operator's manual to set up the centrifuge. Ensure that the centrifuge is placed on a stable and level surface.
- **Operation:** Load the samples to be separated into the centrifuge rotor. Close the lid of the centrifuge and turn it on. Select the desired settings for cycle time and speed using the control panel.

Quick Start: To quickly start the centrifuge, press and hold the "Start" button for three seconds. The centrifuge will begin operating at the default settings.

Each number represents a preset cycle. Above each cycle number is an LED indicator light. The LED indicator light changes to indicate the cycle currently selected:

1. Chemistry This setting is factory preset for Chemistry tubes
2. Coag (PPP) This setting is factory preset for Coagulation or Platelet Poor Plasma (PPP)
3. Urine This setting is factory preset for urine tubes

Indicator Lights



	Start	Begins running the cycle indicated by the cycle indicator LED light. The lid must be closed.
	Unlock	Allows access into the rotor chamber when rotor is not moving by engaging the unlocking mechanism. Entry is only possible when the rotor is stopped.
	Stop	Pressing the UNLOCK button when the centrifuge rotor is in motion will terminate the run and unlock the lid after the rotor has come to a stop.

	Cycle Selection	The LED light above the numbers indicates the cycle currently selected. To change the selected cycle, open the lid and press the UNLOCK button in succession until the desired cycle is selected. Two seconds after selection, the button reverts to its UNLOCK function.
	Lock Cycle Selection	Open lid. Select desired cycle. Press and hold the UNLOCK button for 5 seconds. Two beeps will confirm that cycle selection is locked.
	Unlock Cycle Selection	To re-enable cycle selection, open lid, then press and hold the UNLOCK button for 5 seconds. Three beeps will confirm that cycle selection is now unlocked.

Settings

Use the control panel to adjust cycle time and speed settings as required. Standard settings are provided in the operator's manual.

STANDARD SETTINGS

		(1) Chemistry	(2) Coag (PPP)	(3) Urine
	RPM	3,600	3,300	1,900
HORIZON 6	Time (Mins)	10	15	5
	G-Force	1,800 xg	1,500 xg	500 xg
	RPM	3,500	3,200	1,800
HORIZON 12	Time (Mins)	10	15	5
	G-Force	1,800 xg	1,500 xg	500 xg
	RPM	3,300	3,000	1,700
HORIZON 24	Time (Mins)	10	15	5
	G-Force	1,800 xg	1,500 xg	500 xg
	RPM	3,900	3,800	2,200
	Time (Mins)	10	15	5
HORIZON 6	Blue Tube Holders 75 & 100 mm tubes	1,600 xg	1,500 xg	500 xg
FA	G-Force			
	Orange Tube			
	Holders 125 mm tubes G-Force	1,850 xg	N/A	600 xg

Balancing Loads: Ensure that loads are balanced within the rotor to prevent damage and ensure optimal performance.

Care and Preventative Maintenance










Refer to the operator's manual for guidance on cleaning, disinfecting, and maintaining the centrifuge. With proper care and maintenance, your centrifuge will provide years of laboratory service. For proper care, the following steps should be taken:

- **Always Spin Balanced Loads:** Make certain that you are always spinning a balanced load, as shown in the previous section. These centrifuges have a unique counter balanced motor mounting design which produces excellent vibration dampening. However, out-of-balance loads may break glass test tubes and may produce unsatisfactory separation results. Proper load balancing will improve sample separation and extend the life of the centrifuge.
- **Motor and Electrical Maintenance:** The motor and electrical components should not need maintenance or servicing for the life of the centrifuge.
- **Tube Holder Replacement:** Replace tube holders after 24 months of use. Inspect tube holders regularly for

cracks. If cracks are discovered, replace immediately.

- **Remove Accessories Before Moving:** All tube holders, samples, and caps must be removed from the rotor chamber before transporting or storing the centrifuge to prevent damage and injury.
- **Troubleshooting:** Refer to the operator's manual for guidance on troubleshooting common issues that may arise during operation.

Symbols

Symbol	Definition	Use
	Caution	Caution to safety hazard. Potential risk of personal injury or damage to the instrument if improperly handled. Consult the manual before proceeding.
	Manufacturer	Manufacturer of record.
	Electrical and electronic products recycling symbol	Recycle only as electronic waste. Do not dispose in normal waste.
	RoHS Compliant	Compliance with RoHS environmental standards.
	CE Mark	Denotes conformity to specific European directives and regulations.
	MET Listing	Denotes conformity to specific safety standards and regulations.
	UK Mark	Denotes conformity to specific UK directives and regulations.
	FDA Listed	Denotes that the product has been properly listed with the FDA.
	ISO Certification	Denotes conformity to quality standards and quality management systems.

MODEL DESCRIPTION

HORIZON is a versatile line of centrifuges designed with 3 settings to process Chemistry, Coag or Platelet Poor Plasma, and Urine specimens in the same unit. The maximum g-force of 2,000 xg makes HORIZON suitable for wide variety of applications. Cycle settings can be customized if desired. This general-purpose laboratory centrifuge may also be used to spin approved containers with biologics, chemicals (non-flammable, non-explosive, non-volatile, and non-highly reactive), and environmental samples.

FEATURES

- Simple 2-Button interface
- Three (3) pre-set cycles are conveniently labeled for your lab's most common applications. Use the default cycles or customize them as needed. An LED light indicates the current selected setting.
- If desired, the control panel can be locked on one preset cycle, ideal for standardization to a single spin.
- Lid lighting indicates the centrifuge's status (ready, running, done), informing the operator when tubes are ready for the analyzer and preventing tubes from being left in the centrifuge longer than necessary.
- A traditional audible alert indicates the completion of the cycle.
- Cool-Flow design prevents overheating of samples by using ambient air to keep specimens at room temperature.
- The tube holders are fiber reinforced for high strength, durability, and years of trouble-free use.
- A clear lid permits safe observation of samples and optical calibration of speed.
- The lid safety system prevents the centrifuge from operating unless the lid is closed and latched.
- The lid safety system only allows entry into the centrifuge after the rotor has completely stopped.
- The high-power brushless motor provides years of operation with no routine maintenance.

INTENDED USE

General purpose laboratory centrifuge, intended for the density-based separation of fluids through centripetal acceleration.

WARRANTY

Drucker Diagnostics warrants that this centrifuge is free from defects in workmanship and parts for 2 years.

CAUTION & WARNING STATEMENTS

- This device is intended to be operated by properly trained personnel who have carefully read the operating manual and are familiar with the function of the device. Users should also comply with the specimen receptacle manufacturer's specific instructions for use, in addition to any other protocols established by the testing organization.
- For the safety of both the operator and service personnel, care should be taken when using this centrifuge if handling substances that are known to be toxic, radioactive or contaminated with pathogenic microorganisms. Use appropriate personal protection equipment (PPE). When Risk Group II materials are used, (as identified in the World Health Organization "Laboratory Bio-Safety Manual"), a Bio-Seal should be employed. In the event that materials of a higher risk group are being used, more than one level of protection must be provided. The use of flammable or explosive materials as well as those materials which have a vigorous chemical reaction is prohibited.
- Unplug the centrifuge before cleaning or performing maintenance.
- Inspect centrifuge for cracks or physical damage to cabinet, lid, rotor, or tube holders. Damage may result in unsafe operation. Discontinue use until repairs have been performed.
- This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with this operator manual, may cause interference to radio communications.
- Operation of this equipment in a residential area may cause interference, in which case the user will be

required to correct the interference at his own expense.

INITIAL SETUP

- Unpack and verify that all the following are included:
 - Centrifuge
 - Power cord
 - Tube holders
 - Quick Start Guide
- Setup the centrifuge on flat and level surface. A bench top clearance height of 21" (54 cm) is required to open the lid.
- The centrifuge should have 6" (15 cm) of clear space around the centrifuge. Proper ventilation is necessary to prevent the overheating of samples as well as premature failure of the centrifuge. Choose an area which allows unencumbered air flow, and where the temperature remains between 16°C and 32°C.
- No hazardous material shall be permitted in the clearance envelope during operation.
- The operator time within the envelope shall be limited to the time necessary for loading, unloading, and centrifuge operation only.
- Plug the power cord into the centrifuge.
- Plug the power cord into an electrical outlet.
- Turn on the power switch on the back of the centrifuge.

BE SURE THE ELECTRICAL OUTLET IS ALWAYS ACCESSIBLE AS THE LINE CORD IS THE MEANS OF EMERGENCY DISCONNECTION!

OPERATION

- Place the tubes into the tube holders. Be sure to follow the rules for balanced loads as listed in the next section.
- The front panel LED is illuminated for the currently selected cycle. The selected cycle determines the run time and speed. To select another cycle, press the UNLOCK button in succession until the desired cycle is selected.
Note: cycle selection is only available with the lid open.
- Close the lid and turn the lid knob clockwise to its complete stop position.
- Pushing the START button on the control panel will start the spin cycle.
- When the cycle is completed, the rotor will slow to a complete stop and the lid light will flash.
- The lid will unlock for 60 seconds allowing entry into the rotor chamber. To unlock after more than 60 seconds have elapsed, press the UNLOCK button. The lid will unlock for another 15 seconds.
- With the lid unlocked, turn the lid knob counterclockwise and open the lid. The lid light will turn off.
- You may now safely remove the samples.

REVIEW CYCLE TIME AND SPEED SETTINGS

Factory programmed cycles are shown on the rear of the centrifuge, on the Factory Set Cycles label. To review current settings, follow this procedure:

- The lid must be open to review the selected cycle time and speed.
- Press and hold the START button until you hear a beep.
- Release the START button. The centrifuge will beep and the LED light will flash once for each minute of run

time in the current cycle. 10 beeps / flashes equal 10 minutes of run time. Run time starts when the rotor reaches 90% of desired speed and stops when the rotor starts decelerating.

- Pressing the START button again will cause the unit to beep and the LED light to flash once for each 100 rpm in the current cycle. 38 beeps / flashes equal 38 x 100 or 3,800 Revolutions per Minutes (RPM)
- The centrifuge will automatically revert to normal mode at the end.

CHANGING CYCLE TIME AND SPEED SETTINGS

- The lid must be open to change the selected cycle time and speed.
- Select the cycle you wish to change.
- Press and hold the START and UNLOCK buttons together until the LED light flashes.
- Press the START button for each minute of run time.
- Move to speed setting mode by pressing the UNLOCK button.
- Press the START button once for each 100 rpm.
- Press the UNLOCK button to exit setting mode.

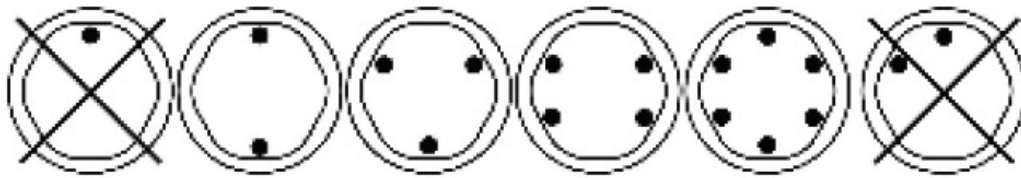
LABELING CYCLES (OPTIONAL LABEL)

Factory programmed cycles are shown on the rear of the centrifuge, on the Factory Set Cycle Label. Your centrifuge arrives with an erasable label above the control panel. This label allows you to identify your cycles by the name you use in your lab (for example: Chem, Coag, blue top, 10 minutes...) or by the cycle parameters (5 minutes @ 1,800 xg). Use a permanent marker to resist cleaning with a bleach solution. Erase with rubbing alcohol. For further protection, the label can be taped over with transparent tape after writing.

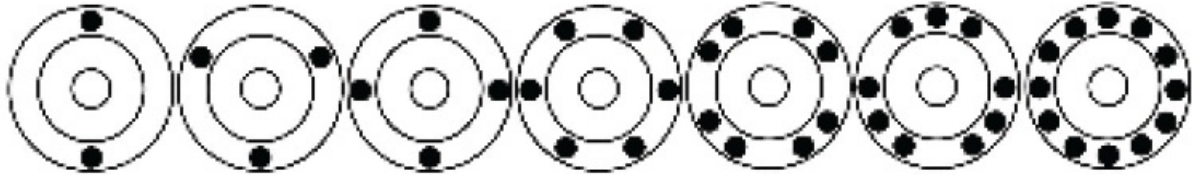
BALANCING LOADS

Your centrifuge must contain a balanced load to work properly. Spinning balanced loads will extend the life of the centrifuge and produce better results. Use the following rules when loading the rotor. If an odd number of samples is to be spun, fill a tube with water to match the weight of the unpaired sample and place it across from this sample. Opposing tube holders must be equally loaded, empty, or loaded with equally weighted samples. When loading only 3 tubes, they must be of equal weight.

6 Tube Centrifuges

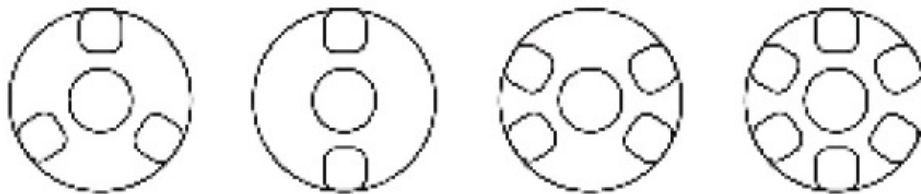


12 Tube Centrifuges

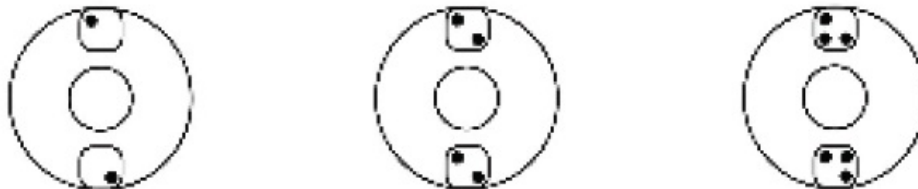


24 Tube Centrifuges

Balanced Rotor Loading



Proper Bucket Loading



Buckets can be placed around the rotor in any of the rotor loading configurations shown. Each bucket must be loaded symmetrically with tubes as above.

CLEANING AND DISINFECTION

To prolong the life of the centrifuge, clean and disinfect every six months or whenever there is a spillage or tube breakage. Contaminants must be removed immediately or corrosion and premature degradation of components can occur. Before using any cleaning or decontamination methods other than those recommended by the manufacturer, users should verify with the manufacturer that the proposed method will not damage the equipment.

- Unplug the centrifuge before cleaning.
- Use appropriate personal protective equipment (PPE).
- Apply cleaning solutions with a towel or cloth. Do not submerge the centrifuge in water or other cleaning solutions as this will cause damage and void the warranty.
- ONLY isopropyl alcohol or a 10% (5500 PPM) bleach solution should be used to disinfect the centrifuge and its accessories.
- All surfaces must be dried immediately after cleaning and disinfecting. TBQ GERMICIDAL PRODUCTS ARE

NOT RECOMMENDED AS THEY MAY CAUSE DAMAGE TO THE CENTRIFUGE. WIPE OFF THOROUGHLY AFTER USE TO PREVENT VOIDING THE WARRANTY.

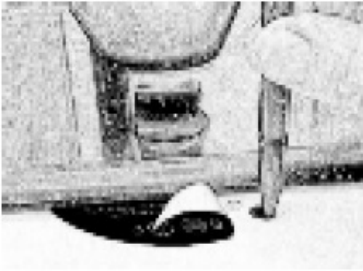
- Fully/partially halogenated hydrocarbons, ketones, esters, ethers, benzyls, ethyl benzenes, and all other chemicals not prescribed by the manufacturer shall not be used as they may cause damage to the rotor chamber, rotor, tube holders, accessories and centrifuge exterior and void the warranty.

TROUBLESHOOTING

NOTE: The latch must be turned completely clockwise to its stop position for the centrifuge to operate.

The centrifuge does not run	<ul style="list-style-type: none">o Verify that the centrifuge is powered. One of the LED lights should be on.o Make sure the lid latch is turned completely clockwise to its stop position.o If the centrifuge still does not run, contact Customer Service.
The rotor does not spin freely	<ul style="list-style-type: none">o Make sure nothing has fallen into the rotor chamber, following the procedure above.o If nothing obstructs the rotor, the rotor may be damaged. Contact Customer Service for further assistance.

<p>The centrifuge makes a rattling noise when running</p>	<ul style="list-style-type: none"> o Stop the centrifuge. Open the lid. o Wearing PPE, remove tubes and tube holders/buckets and look for fallen objects or debris. Carefully reach inside the rotor chamber with a tool to remove them. o Inspect the rotor, tube holders or buckets for damage. o If the tube holders or buckets have any damage, even slight, safely dispose of them and replace them. o If the rotor appears damaged, contact Customer Service for further assistance.
<p>Excessive noise or vibration when the centrifuge is running</p>	<ul style="list-style-type: none"> o Verify that all four centrifuge feet are properly seated on a flat surface. o Ensure that the load is balanced according to instructions in the “Balancing Loads” section of this manual. o Make sure that nothing has fallen into the rotor chamber.
<p>The centrifuge stops and beeps continuously</p>	<p>The load is not balanced. Press the UNLOCK button, open the lid, and balance the load as recommended elsewhere in this manual.</p> <p>Confirm that all tube holders are properly loaded into the centrifuge rotor.</p>
<p>The centrifuge will not switch between settings</p>	<p>Ensure the lid is open. If the lid is open and cycle selection is still locked, press and hold the UNLOCK button for 5 seconds.</p>

<p>The cycle time and speed are not set to the desired value</p>	<p>Check the setting by following the instructions in the section on Changing Cycle Settings. If the preset is not the desired length, follow the procedure on the same page to change the preset time.</p>
<p>The centrifuge does not unlock after a run is completed</p>	<ul style="list-style-type: none"> o Wait until the rotor has come to a complete stop. If the lid knob still cannot be rotated, press the UNLOCK button and try again. o If no LED light is on, the unit is not powered and the lid will not unlock by conventional means. Remove the latch label and use a pen to manually disengage the locking mechanism. Pull the mechanism towards the control panel and then unlatch and open the lid.  <ul style="list-style-type: none"> o If the unit is damaged, contact Customer Service for assistance.
<p>The lid does not open</p>	<ul style="list-style-type: none"> o Ensure that the lid knob is turned fully counterclockwise. o If the knob cannot be turned counterclockwise, turn it fully clockwise, press UNLOCK, and turn counterclockwise. o If the lid remains locked after this and will not unlock, the electronics may have been damaged. Contact customer service for assistance.

Clicking noise during braking gets loud	o Make sure that the screw in the center of the rotor is tight.
Lid does not stay up	o Tighten the center screw on the lid hinge.

GENERAL SPECIFICATIONS

HORIZON 6	HORIZON 12	HORIZON 24	HORIZON 6 FA
6 tubes – 3 to 10 mL	12 tubes – 3 to 10 mL	24 tubes – 3 to 10 mL,	6 tubes – 3 to 15 mL
		12 tubes – 3 to 15 mL,	
		6 tubes – 50 mL	
14 in x 12 in x 9 in (36 cm x 30 cm x 23 cm)	15 in x 13 in x 9 in (38 cm x 33 cm x 23 cm)	17 in x 15 in x 9 in (43 cm x 38 cm x 23 cm)	14 in x 12 in x 9 in (36 cm x 30 cm x 23 cm)
12 lbs. (5.4 kg)	34 lbs. (15 kg)	39 lbs. (17 kg)	12 lbs. (5.4 kg)
64 dB A	56 dB A	59 dB A	64 dB A
16 – 32 degree C	16 – 32 degree C	16 – 32 degree C	16 – 32 degree C
95 -253 VAC	95 -253 VAC	95 -253 VAC	95 -253 VAC
50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
220 Watts	280 Watts	280 Watts	220 Watts
½ H.P. Brushless	½ H.P. Brushless DC	½ H.P. Brushless DC	½ H.P. Brushless
2,000 xg	2,000 xg	2,000 xg	1,600 xg / 1,850 xg
3,800 RPM (+/- 100)	3,700 RPM (+/- 100)	3,400 RPM (+/- 100)	3,900 RPM (+/- 100)
1 to 30 minutes (+/- 2%)	1 to 30 minutes (+/- 2%)	1 to 30 minutes (+/- 2%)	1 to 30 minutes (+/- 2%)

CALCULATING THE G-FORCE

The I.F.U.s of tube manufacturers recommend cycles at a minimum G-Force, which can be calculated if you know the RPM and the radius. Use the formula below or go to www.druckerdiagnostics.com/g-force-calculator/.

In Centimeters:

- $\text{RCF or G-force} = 0.00001118 \times$
- $\text{Rotor Radius (cm)} \times (\text{RPM})^2$

In Inches:

- $\text{RCF or G-force} = 0.0000284 \times$
- $\text{Rotor Radius (in)} \times (\text{RPM})^2$

	HORIZON 6	HORIZON 12	HORIZON 24	HORIZON 6 FA	
				Blue Tube (75 & 100 mm)	Orange Tube (125 mm)
Radius	5 in (12.7 cm)	5.25 in (13.3 cm)	6 in (15.3 cm)	3.75 in (9.5 cm)	4.25 in (11 cm)

REPLACEMENT PARTS

HORIZON 6 AND HORIZON 6 FA

Part No. Description

- 7724037 Horizon 6 & Horizon 6 FA Foot, rubber
- 02-002-1-0064 Horizon 6 & Horizon 6 FA Lid Tray Assembly
- 7786067 Horizon 6 Rotor, six-place, Horizontal
- 7786068 Horizon 6 FA Rotor, six-place, Fixed Angle
- 02-005-1-0005 Motor Assembly
- 7729009 Capacitor, 5uF, 250V A.C.
- 02-006-0-0017 Electronic timing and locking board
- 7751043 Circuit Breaker
- 7760006 Power cord
- 02-004-0-0035 Switch & Power Input Assembly
- 02-002-1-0027 Lid Assembly
- 7724071 Hinge, friction
- 02-002-1-0056 Seal, lid gasket
- 03-0-0003-0332 Open/Close Label
- 7713079 75/100mm Tube Holder, Blue
- 7713044 125mm Tube Holder, Orange (Fixed Angle Only)
- 02-002-1-0068 Lid LED Assembly
- 03-0-0003-0338 Horizon 6 Front Panel Label
- 03-0-0003-0339 Horizon 6 FA Front Panel Label

- 03-1-0001-0090 Button Cover No Emboss
- 03-1-0001-0089 Button Cover Embossed

HORIZON 12 AND HORIZON 24

Part No. Description

- 7724177 Horizon 12 Foot, rubber
- 7725082 Horizon 24 Foot, rubber
- 02-006-1-0013 Horizon 12 & Horizon 24 Locking Lid Tray
- 02-001-0-0009 Horizon 12 Rotor, 12 place Horizontal
- 02-001-0-0008 Horizon 24 Rotor, 24 place Horizontal
- 02-005-1-0012 Motor Assembly
- 02-006-0-0011 Electronic timing and locking board
- 03-1-0005-0193 Power Supply
- 7760006 Power cord
- 02-002-1-0041 Horizon 12 Lid Assembly
- 02-002-1-0037 Horizon 24 Lid Assembly
- 7724071 Hinge, friction
- 02-002-1-0057 Horizon 12 Seal, lid gasket
- 02-002-1-0058 Horizon 24 Seal, lid gasket
- 03-0-0003-0332 Open/Close Label
- 7713079 Horizon 12 75/100mm Tube Holder, Blue
- 7713023 Horizon 24 4pl Carrier Assembly
- 02-002-1-0046 Lid LED Assembly, Blue
- 03-0-0003-0335 Horizon 12 Front Panel Label
- 03-0-0003-0336 Horizon 24 Front Panel Label
- 03-1-0001-0090 Button Cover No Emboss
- 03-1-0001-0089 Button Cover Embossed

Drucker Diagnostics – Customer Service: +1-814-692-7661 – CustomerService@DruckerDiagnostics.com

Product Family: HORIZON Series (HORIZON 6, 6 FA, 12, & 24) Complies with UL61010-1/CSA C22.2 No. 61010-1 and IEC61010-2-020 Protected by U.S. Patents #6,811,531, # 7,422,554, #D718,463, #D734,489, & 10,994,285. Other Patents Pending

To access previous manuals, please click the relevant link below:


HORIZON 6, 6 FA, 12 & 24 Operator's Manual, Rev F

DISPOSAL

INSTRUCTIONS FOR DISPOSAL OF WEEE BY USERS IN THE EUROPEAN UNION This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste disposal service, or where you purchased the product.

This operator’s manual is part number 03-0-0002-0124 Rev. G

Documents / Resources

	<p>Drucker Diagnostics 6 FLEX Compact Routine PROGRAMMABLE Centrifuge [pdf] Instruction Manual</p> <p>6 FLEX Compact Routine PROGRAMMABLE Centrifuge, FLEX Compact Routine PROGRAMMABLE Centrifuge, Compact Routine PROGRAMMABLE Centrifuge, Routine PROGRAMMABLE Centrifuge, PROGRAMMABLE Centrifuge, Centrifuge</p>
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References

- [Clinical Centrifuges & Hematology Instruments | Drucker Diagnostics](#)
- [G-Force Calculator | Drucker Diagnostics](#)