



Drucker Diagnostics DASH Apex 4 Compact STAT Centrifuge Instruction Manual

[Home](#) » [Drucker Diagnostics](#) » Drucker Diagnostics DASH Apex 4 Compact STAT Centrifuge Instruction Manual



Contents

- 1 [Drucker Diagnostics DASH Apex 4 Compact STAT Centrifuge](#)
- 2 [Product Usage Instructions](#)
- 3 [MODEL DESCRIPTION](#)
- 4 [FEATURES](#)
- 5 [INITIAL SETUP](#)
- 6 [QUICK START](#)
- 7 [SETTINGS OPERATION](#)
- 8 [ROTOR REMOVAL AND INSTALLATION](#)
- 9 [CARE AND PREVENTATIVE MAINTENANCE](#)
- 10 [CLEANING AND DISINFECTION](#)
- 11 [CALIBRATION TESTING](#)
- 12 [GENERAL SPECIFICATIONS](#)
- 13 [CALCULATING THE G-FORCE](#)
- 14 [REPLACEMENT PARTS](#)
- 15 [FAQS](#)
- 16 [Documents / Resources](#)
 - 16.1 [References](#)
- 17 [Related Posts](#)





Specifications

- **Manufacturer:** Drucker Diagnostics
- **Compliance:** RoHS, CE Mark, UK Mark, MET Listing, FDA Listed, ISO Certification
- **Intended Use:** Centrifuge for laboratory applications
- **Safety:** Electrical safety protection is provided by proper grounding

Product Usage Instructions

• Operating Guidelines

Ensure only trained personnel operate the centrifuge after reading the manual thoroughly. Follow specimen receptacle manufacturer's instructions and testing organization protocols.

• Cleaning and Maintenance

Always unplug the centrifuge before cleaning or performing maintenance. Inspect for any cracks or physical damage before each use. Discontinue use if any damage is found.

- **Safety Precautions** Avoid using flammable, explosive, or reactive materials in the centrifuge. Do not transport or store the centrifuge with tube holders inside for safety and machine durability. Follow universal precautions when handling items contaminated with blood or bodily fluids.









• Electrical Safety

Connect the centrifuge to the earth's ground using the provided line cord and grounded power receptacle to prevent electrical hazards.

• Component Usage

Do not modify rotor hardware without authorization. Only use components provided by Drucker Diagnostics to ensure compliance and safety.

Symbols

Symbol	Definition	Use
	Caution	Caution to a 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 of normal waste.
	RoHS Compliant	Compliance with RoHS environmental standards.
	CE Mark	Denotes conformity to specific European directives and regulations.
	UK Mark	Denotes conformity to specific UK directives and regulations.
	MET Listing	Denotes conformity to specific safety standards and regulations.
FDA LISTED	FDA Listed	Denotes that the product has been properly listed with the FDA.
	ISO Certification	Denotes conformity to quality standards and quality management systems.

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 receptable manufacturer's specific instructions for use, in addition to any other protocols established by the testing organization.

WARNING:

- 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. If 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 that have a vigorous chemical reaction is prohibited.

- Unplug the centrifuge before cleaning or performing maintenance.
- Inspect the centrifuge for cracks or physical damage to the cabinet, lid, rotor, or tube holders. Damage may result in unsafe operation. Discontinue use until repairs have been performed.
- The use of flammable or explosive materials as well as those materials that have a vigorous chemical reaction is prohibited.
- For the safety and durability of the machine, never transport or store the centrifuge with tube holders inside the machine.
- “Universal precautions”¹ should be followed in handling all items contaminated with blood or other bodily fluids.
- This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used by 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.
- Operation of this equipment in a manner not specified by the manufacturer may impair the protection provided by the equipment.
- Electrical Safety protection is provided by properly connecting the centrifuge to the earth’s ground. Use only the manufacturer-provided line cord and ensure that it is connected to a properly grounded power receptacle. Failure to do so will result in an electrical hazard.
- Do not make modifications to or remove any hardware from the rotor without prior authorization from Drucker Diagnostics.
- Only use Drucker Diagnostics components in this centrifuge. Due to the lack of the possibility of human exposure, all Drucker centrifuges and accessories sold by Drucker Diagnostics, Inc. are compliant without any special labeling required by the California Safe Drinking Water and Toxic Enforcement Act (Proposition 65).¹ Recommendations for Prevention of HIV Transmission in Health Care Settings. MMWR 1987; 36 (Supplement #2S)

MODEL DESCRIPTION

DASH is a versatile line of centrifuges designed for STAT sample processing. Minimize lab error, reduce the turnaround time, and streamline training with simple controls, powerful performance, and unique LED lid lighting. 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

- The first three (3) cycles are conveniently pre-set and labeled for your lab’s most common applications.
- A traditional audible alert indicates the completion of the cycle.
- CoolFlow design prevents overheating of samples by using ambient air to keep specimens at room temperature.
- A 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.

INITIAL SETUP

- Unpack and verify that all the following are included:
- Centrifuge
- Power cord
- Power Supply
- Tube Inserts, 13 x 75mm
- Quick Start Guide
- Latch Release Tool
- Set up the centrifuge on a 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 that allows unencumbered airflow, 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 line cord into the centrifuge.
- Plug the line cord into an approved electrical outlet.
- Open the lid.
- Remove the foam insert packaging around the rotor before operating the centrifuge.
- Remove and discard the label that is covering the START Button.

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

QUICK START

The screen display alternates between the name of the currently selected cycle and its parameters. For convenience, the first three (3) cycles are preset for common applications and can be reprogrammed to your validated cycles:

1. 30s STAT Centrifugation at 4,440xg
2. Min STAT Centrifugation at 4,440xg
3. Min STAT Centrifugation at 4,440xg



	Start	Begins running the cycle displayed on the screen. The lid must be closed.
	Unlock	Allows access into the rotor chamber by engaging the unlocking mechanism. Entry is only possible when the rotor is stopped.
	Stop	Pressing the UNLOCK button during operation will terminate the run. Once the rotor has come to a stop, press the UNLOCK button again will open the centrifuge.
	Error / Service Light	The red indicator with an adjacent wrench symbol flashes to signal an error condition or remains continuously illuminated when service is needed.

	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 the desired cycle. Press and hold the UNLOCK button for 5 seconds. Three beeps will confirm that the cycle selection is locked.
	Unlock Cycle Selection	To re-enable cycle selection, open the lid, then press and hold the UNLOCK button for 5 seconds. Three beeps will confirm that cycle selection is now unlocked.

SETTINGS

	(1) 30s	(2) 2 Min	(3) 3 Min
RPM	8,500	8,500	8,500
Time	30 secs	2 mins	3 mins
G-Force	4,440 xg	4,440 xg	4,440 xg

OPERATION

- Place the tubes into the Inserts. 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 by pressing lightly down on the front edge of the lid. An audible “click will indicate the lid is fully closed.
- 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.
- The lock will disengage, and the lid will automatically open.
- You may now safely remove your samples.

ERROR INDICATORS

The combination of the Error / Service Indicator and the cycle LEDs on the front panel specify the error code.
Error / Service Indicator

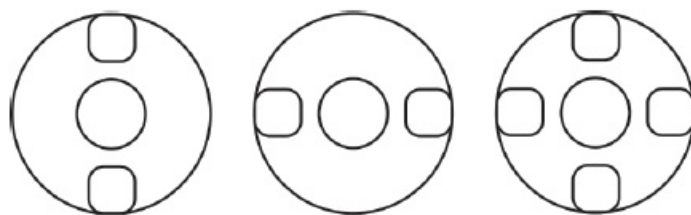
- When the 180s cycle LED and Error/Service Indicator Flash, it indicates the centrifuge is unable to maintain the target rotor speed.
- When the 120s cycle LED and Error/Service Indicator flash, it indicates the cover opened or the cycle changed during operation.
- When the 30s cycle LED and Error/Service Indicator flash, it indicates the centrifuge is unable to reach the target rotor speed.

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 or empty or loaded with equally weighted samples. When loading only 3 tubes, they must be of equal weight.

Tube Centrifuges



ROTOR REMOVAL AND INSTALLATION

TO REMOVE THE ROTOR

1. Unlock the centrifuge by pushing the ‘OPEN / STOP’ button and unlatch and open the lid.

CAUTION: Unplug the centrifuge from the electrical outlet to eliminate the possibility of electrical shock or other injury.

1. Remove the three (3) Screws in the center of the rotor (a tool may be required).
2. The rotor is sitting on a cone-shaped adapter. Pull the rotor up and off of this adapter.

TO INSTALL THE ROTOR

1. Place the rotor back onto the cone-shaped adapter. You may need to turn the rotor slightly to line it up properly.
2. The rotor should slide onto the rotor cone freely.
3. Once a proper fit has been achieved, replace the three (3) screws (a tool may be required).
4. It is recommended that the initial setup procedures be performed to ensure that the rotor has been installed correctly and that no damage has been done to the centrifuge during either the rotor installation or possible rotor chamber cleaning. See page 4 for this procedure.

CARE AND PREVENTATIVE MAINTENANCE

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 counterbalanced 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 highest quality electrical components have been selected for the centrifuges and should not need maintenance or servicing for the life of the centrifuge.

- **Tube Holder Replacement**

It is recommended that the tube holders be replaced after 24 months of use. Inspect tube holders regularly for cracks. If cracks are discovered, replace them 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.

CLEANING AND DISINFECTION

To prolong the life of the centrifuge, cleaning, and disinfection is recommended 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.

Cleaning and Decontamination may be necessary as a safeguard before laboratory centrifuges, rotors, and any accessories are maintained, repaired, or transferred.

- Unplug the centrifuge before cleaning.
- Use appropriate personal protective equipment (PPE).
- Apply Cleaning solutions with a dampened towel or cloth ONLY. Do not spray or pour the cleaning solution

directly onto or into the centrifuge. Do not saturate or submerge the centrifuge in water or other cleaning solutions as this will cause damage, create a safety risk, 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.

CALIBRATION TESTING

It is recommended that the top speed be tested every two years for continued safe operation. Contact Customer Service for further information or testing availability.

TROUBLESHOOTING

NOTE

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

If 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 Ensure the lid is closed and latched. An audible alarm consisting of two long beeps will alert you that the Lid is not closed when pressing the START button. To close the lid, press lightly on the front edge of the lid. An audible “click” will indicate the lid is fully closed.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. <p>Wear PPE, remove tubes, and look for fallen objects or debris. Carefully reach inside the rotor chamber with a tool to remove them.</p> <ul style="list-style-type: none"> o Inspect the rotor for damage. 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 4 short beeps repeat 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 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 does not open, 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. Insert the provided tool through the hole located on the side of the centrifuge front panel. Press <p>in through this hole and into the cabinet to engage the</p>

	<p>Emergency unlock. Once the emergency unlock is engaged, the lid will pop open.</p> <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 Press the UNLOCK button to open the lid. o If the lid remains locked after completing the emergency unlock, the electronics may have been damaged. Contact Customer Service for assistance.
<p>Clicking noise during braking gets louder.</p>	<ul style="list-style-type: none"> o Make sure that the screw in the center of the rotor is tight.

GENERAL SPECIFICATIONS

The rotor and accessories are rated for the maximum rotation frequency shown in the table below.

Tube Capacity	4 tubes – 13 x 75mm
Dimensions (H x W x D)	6.87 in x 7 in x 7 in (17 cm x 18 cm x 18 cm)
Weight	4.3 lbs. (1.95 kg)
Sound Level	59 dB A
Centrifuge Motor	Brushless DC
Max g-Force*	4,440 xg
Max Speed	8,500 RPM (+/- 100)
Cycle Time	30 seconds, 2 mins, & 3 mins (+/- 2%)
Acceleration Time	Approximately 20 seconds
Deceleration Time	Approximately 25 seconds
Incoming to Power Supply	
Supply Voltage	100 – 240 (+/- 10%)
Supply Frequency	50 – 60 Hz
Current Consumption	1.3 – 0.6A
Incoming to Centrifuge	
Voltage	24VDC
Current Consumption	3.75A
Environmental Conditions	
Set-up Site	Indoor, dry Use Only
Altitude	Up to 2,000m from Sea Level
Ambient Temperature	5 °C to 40 °C
Humidity	Maximum relative humidity 80% for temperatures up to 31 °C, decreasing linearly to 50% relative humidity at 40 °C
Overvoltage Category	II
Pollution Degree	2

*The rotor and accessories are rated for the maximum rotation frequency shown. Maximum sample density is 1.15 grams/mL, (water density = 1.0 grams/mL)

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:

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

In Inches:

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

REPLACEMENT PARTS

- 03-1-0001-0169 4pl Fixed Angle Rotor
- 02-006-0-0061 PC Board
- 02-006-0-0060 Interface PC Board
- 03-1-0005-0306 Motor Assembly
- 02-002-1-0138 Seal, lid gasket
- 03-1-0005-0320 Line Cord Assembly
- 03-1-0005-0316 Power Supply
- 03-0-0003-0887 Front Panel Label
- 03-0-0003-0889 Lid Label
- 03-0-0003-0888 Read Operator's Manual Label
- 30-000215 Foot, Rubber
- 00-100-100-009 6 Series Soft Button Replacement Kit
- 7713064 Stat Rotor Adapter, 13 x 75mm, Printed
- 03-1-0007-0059K Pediatric Tube Adapter, Stat Rotor, Printed (Pack of 6)
- 30-000212K Latch Release Tool

Use only approved accessories from the original manufacturer. A complete list of accessories is available at www.druckerdiagnostics.com.

This operator's manual is part number 03-0-0002-0310 Rev. B **Product Family:** DASH Series (DASH Micro, Apex 4) 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. Other Patents Pending

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. Designed, built, and supported in the USA.

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FAQS

Q: Can I use the centrifuge for materials with vigorous chemical reactions?

A: No, the use of such materials is prohibited for safety reasons.


Q: What should I do if I find any damage to the centrifuge?

A: Discontinue use immediately and perform necessary repairs before operating the centrifuge again.

Q: How should I handle items contaminated with blood?

A: Follow universal precautions and proper safety protocols for handling such items to prevent any risks.

Documents / Resources

	<p>Drucker Diagnostics DASH Apex 4 Compact STAT Centrifuge [pdf] Instruction Manual DASH Apex 4 Compact STAT Centrifuge, DASH Apex 4, Compact STAT Centrifuge, Centrifuge</p>
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References

- [Clinical Laboratory Centrifuges | Drucker Diagnostics](#)
- [Clinical Laboratory Centrifuges | Drucker Diagnostics](#)
- [Clinical Laboratory Centrifuges | Drucker Diagnostics](#)
- [User Manual](#)

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