DASH COAG

Operator's Manual

Drucker Diagnostics

This page intentionally left blank.

Table of Contents

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	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.
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.

MODEL DESCRIPTION

The DASH Coag centrifuge is engineered to reduce turnaround time (TAT) and simplify coag processing in the STAT laboratory. Produce error-free samples in as little as 3 minutes with the DASH Coag's simple set-and-lock controls, preset cycle settings, and an LED lid lighting indicator system.

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) easily selectable 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), keeping your TAT down (patent pending).
- A traditional audible alert indicates the completion of the cycle.
- Cool–Flow air flow design prevents overheating of samples by maintaining room temperature.
- Carbon fibers are used to reinforce the tube holders and provide high strength and durability.
- A clear lid permits safe observation of samples and optical calibration of speed.
- The lid safety system only allows entry into the centrifuge after the rotor has completely stopped.
- The lid safety system prevents the centrifuge from operating unless the lid is closed and latched.
- The high-power brushless DC 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 AND 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. Refer to the clinical laboratory method specified by the specimen receptacle manufacturer or established by the medical technology for the products applications.

⚠ 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.

⚠ 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).

INITIAL SETUP

- Unpack and verify that all the following are included:
    - Centrifuge
    - Power cord
    - Quick Start Insert 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 line cord into an approved electrical outlet.

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

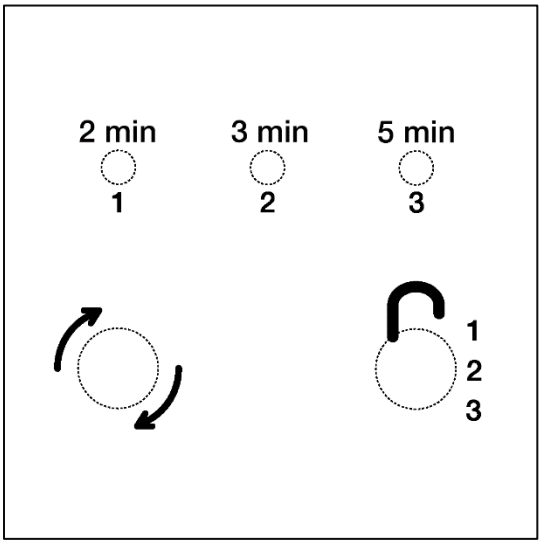
OPERATION

- Place the tubes into the tube holders. Be sure to follow the rules for balanced loads as listed on page 7.
- Close the lid and turn the lid knob clockwise to its complete stop position.
- The LED light is on for the cycle currently selected. The selected cycle determines the run time and speed. To change the selected cycle, press the UNLOCK button in rapid succession until the desired cycle is selected. Two seconds after selection, the button reverts to its UNLOCK function.
- Pushing the START button on the control panel starts the spin cycle.
- When the cycle is completed, the rotor will slow to a complete stop and the lid light will flash.
- The locking mechanism will disengage 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.
- Turn the lid knob counterclockwise and open the lid. The lid light will turn off.
- You may now safely remove the samples.

QUICK START

The LED indicator light is on for the cycle currently selected:

2 min	This setting is factory preset for 2 minutes at 6,600 RPM/4,400 xg
3 min	This setting is factory preset for 3 minutes at 6,600 RPM/4,400 xg
5 min	This setting is factory preset for 5 minutes at 5,200 RPM/2,700 xg



	Start	Begins running the cycle indicated by the cycle indicator LED light. The lid must be closed.
	Unlock	Allows access into the rotor chamber by disengaging the locking mechanism. Entry is only possible when the rotor is stopped.
	Stop	Pressing the UNLOCK button during operation will terminate the run and unlock the lid after the rotor has come to a stop.

	Cycle Selection	The LED light is on for the cycle currently selected. To change the selected cycle, 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	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, press and hold the UNLOCK button for 5 seconds. Three beeps will confirm that cycle selection is now unlocked.

SETTINGS

	Setting 1	Setting 2	Setting 3
RPM	6,600	6,600	5,200
Time	2 min	3 min	5 min
G-Force	4,400 xg	4,400 xg	2,700 xg
Brake Setting*	5	5	5

*Braking cannot be adjusted on the Dash Coag.

REVIEW CYCLE TIME AND SPEED SETTINGS

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

- Open the lid. The lid must remain open until cycle confirmation is complete.
- 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 LED light to flash once for each 100 revolutions per minute (RPM) in the current cycle. 10 beeps / flashes equal 10 x 100 or 1,000 RPM.
- The centrifuge will automatically revert to normal mode at the end.

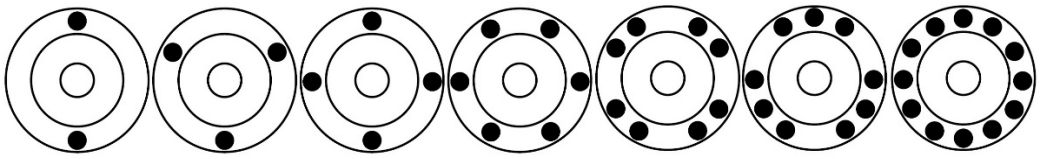
CHANGING CYCLE TIME AND SPEED SETTINGS

- Open the lid. The lid must be open throughout setting adjustment.
- 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.

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.



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 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 highest quality electrical components have been selected for the DASH Apex centrifuges and should not need maintenance or servicing for the life of the centrifuge.
- **Remove Accessories Before Moving:** All samples 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.

- 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. REFRAIN FROM USING 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	○ Verify that the centrifuge is powered on. One of the LED lights should be on. ○ Make sure the lid latch is turned completely clockwise to its stop position. ○ If the centrifuge still does not run, contact Customer Service.
The rotor does not spin freely	○ Make sure nothing has fallen into the rotor chamber, following the procedure above. ○ If nothing obstructs the rotor, the rotor may be damaged. Contact Customer Service for further assistance.
The centrifuge makes a rattling noise when running	○ Stop the centrifuge. Open the lid. ○ Wearing PPE, remove tubes and look for fallen objects or debris. Carefully reach inside the rotor chamber with a tool to remove them. ○ Inspect the rotor for damage. ○ If the rotor appears damaged, contact Customer Service for further assistance.
Excessive noise or vibration when the centrifuge is running	○ Verify that all four centrifuge feet are properly seated on a flat surface. ○ Ensure that the load is balanced according to instructions in the "Balancing Loads" section of this manual. ○ Make sure that nothing has fallen into the rotor chamber.
The centrifuge stops and beeps continuously	The load is not balanced. Press the UNLOCK button, open the lid, and balance the load as recommended elsewhere in this manual.
The centrifuge does not unlock after a run is completed	○ 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.  ○ 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. ○ If the unit is damaged, contact your authorized dealer or Drucker Diagnostics.

The cycle time and speed are not set to the desired value	○ Check the setting by following the instructions in the section on Reviewing Cycle Settings. If the preset is not the desired length, follow the procedure on the same page to change the run preset time.
The lid does not open	○ Ensure that the lid knob is turned fully counterclockwise. ○ If the knob cannot be turned counterclockwise, turn it fully clockwise, press UNLOCK, and turn counterclockwise. ○ 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	○ Make sure that the screw in the center of the rotor is tight.
Lid does not stay up	○ Tighten the center screw on the lid hinge.

GENERAL SPECIFICATIONS

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

Tube Capacity	12 tubes, up to 75 mm long (4 mL) *
Dimensions (W x D x H)	8 in x 11 in x 13 in (20 cm x 28 cm x 34 cm)
Weight	12 lbs (5.4 kg)
Sound Level	61 dB A
Environmental Range	16 – 32°C
Voltage	100 – 240VAC
Frequency	50/60 Hz
Power Requirement	225 Watts
Centrifuge Motor	½ H.P. Brushless DC
Max G-Force	4,400 xg
Max Speed	6,600 RPM
Min Cycle Time	1 minute
Max Cycle Time	30 minutes

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

*Maximum sample density is 1.15 grams/mL (water density = 1.0 grams/mL).
Any use other than those specified by the Manufacturer is explicitly prohibited.

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 x
Rotor Radius (cm) x $(RPM)^2$

In Inches:
RCF or G-force = 0.0000284 x
Rotor Radius (in) x $(RPM)^2$

Radius	3.5 in (9 cm)

REPLACEMENT PARTS

Part No.	Description
7724037	Foot, rubber
02-002-1-002802-002-1-0073	Lid Tray Assembly
02-001-0-0017	Coag Rotor Assembly
02-005-1-0014	Motor Assembly
02-006-0-0011	PC Board
7760006	Power cord
03-1-0005-0192	Internal Power Supply
02-002-1-0027	Lid Assembly
7724071	Hinge, friction
02-002-1-0056	Seal, lid gasket
03-0-0003-0313	Open/Close Label
03-1-0007-0059	Pediatric Tube Adapter, Stat Rotor, Printed
03-0-0003-0579	Dash Coag Front Panel Label
03-1-0001-0090	Button Cover No Emboss
03-1-0001-0089	Button Cover Embossed
03-1-0002-0099	Button Protector
03-1-0002-0093	Button Spacer

Complies with UL61010-1/CSA C22.2 No. 61010-1 and IEC61010-2-020

Protected by U.S. Patents #6,811,531, #D718,463, & #D734,489. Other Patents Pending

FDA LISTED

E112532

RoHS
Compliant

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.

Drucker Diagnostics

200 SHADY LANE, SUITE 170 – PHILIPSBURG, PA 16866, USA
+1-866-265-1486 (U.S. ONLY) - +1-814-692-7661
CUSTOMERSERVICE@DRUCKERDIAGNOSTICS.COM
DRUCKERDIAGNOSTICS.COM

ISO13485
certified

This operator's manual is part number 03-0-0002-0195 Rev. D