

614B







Operator's Manual



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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
	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 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. 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.



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. 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.



WARNING: 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.



The use of flammable or explosive materials as well as those materials which have a vigorous chemical reaction is prohibited.



For your safety and durability of the machine, never transport or store centrifuge with tube holders inside the machine.



WARNING: "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 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.



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 earth 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.



WARNING: Do not make modifications to or remove any hardware from rotor without prior authorization from Drucker Diagnostics.



WARNING: 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 #25)

MODEL DESCRIPTION

The Model 614B is a continuous duty centrifuge designed for the small lab or doctor's office for the purposes of separating laboratory fluids. The unit is controlled by a mechanical timer settable from 1 to 30 minutes. Samples can be safely viewed through the transparent lid. In the event that the lid is opened during a run, the power to the motor is disconnected.

This general-purpose laboratory centrifuge may also be used to spin approved containers with biologics, chemical (non-flammable, non-explosive, non-volatile, and non-highly reactive), and environmental samples.

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.

SUPPLIED EQUIPMENT

One (1) six-place fixed-angle rotor	P/N 7786047
Six (6) 125 mm tube holders	P/N 7713032
Six (6) 75/100 mm tube holders	P/N 7713079

The rotor and accessories are rated for a rotation frequency of 3,500 RPM.
For optional accessories, see page 10 of this manual.

FEATURES

- Fixed-angle rotor for spinning 75 mm, 100 mm and 125 mm test tubes in specially designed tube holders
- Cool-Flow air flow design that prevents overheating of samples
- Heavy gauge steel construction for safety and durability
- Lid safety switch that prevents the centrifuge from operating unless the lid is closed and latched
- Removable rotor for easy cleaning
- Brushless A/C motor
- Clear lid for safe observation of samples and optical calibration of speed.

GENERAL SPECIFICATIONS

Nominal Speed (125 mm holders):	3,250 (\pm 100) RPM
Nominal RCF (125 mm holders):	1,300 (\pm 80) xg
Nominal Speed (75/100 mm holders):	3,350 (\pm 100) RPM
Nominal RCF (75/100 mm holders):	1,155 (\pm 70) xg
Maximum capacity:	90 mL (6 x 15 mL)
Overall Dimensions (H x W x D):	9 in. x 12 in. x 14 in.
Centrifuge Motor:	1/30 HP, AC
Nominal Acceleration Time:	45 seconds
Protection Breaker:	4 Amp. re-settable
Timer:	Mechanical, 1 to 30 minutes
Weight	11 lbs
Environmental Conditions	
Set-up Site	Indoor 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

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

SETUP LOCATION

1. Unpack the centrifuge and verify that all of the supplied equipment is present.
2. Choose a setup location which meets the following criteria:
 - a. A clearance height of 20" (50.8cm) is required to open the lid.
 - b. The clearance envelope is the space around the centrifuge which is required for safety. Choose a setup location which will allow for a clearance envelope of at least 24" x 24" (60.96cm x 60.96cm), (with the centrifuge at the center). No person or 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.
 - c. Proper ventilation is necessary to prevent the overheating of samples as well as premature failure of the centrifuge. Choose an area which will allow unencumbered air flow.
 - d. The centrifuge is designed to secure to the operating surface by four suction feet. No adjustment is necessary for leveling the centrifuge; however, the surface should be flat and level.
 - e. Be sure the outlet is always within reach as the line cord is the means of emergency disconnection!

INITIAL SETUP PROCEDURE

If any problems are found during the initial setup procedure, refer to the troubleshooting section on page 8.

1. Plug the centrifuge in to an approved electrical outlet. For electrical safety, the unit must always be properly grounded.
2. Turn the latch counter-clockwise and open the lid.
3. Spin the rotor by hand; check for free and level rotation.
4. Close the lid. Rotate the lid knob clockwise to its complete stop position.
5. Turn the centrifuge on by turning the timer to 10 minutes.
6. Listen to the centrifuge. A smooth whirring sound should be heard.

After the centrifuge has passed this procedure, it is ready for operation.

OPERATION

NOTE: Follow the initial setup procedure on page 6 before initial operation.

1. Plug the centrifuge into an approved 115 Volt A.C., 60 Hz. outlet.
2. Turn the latch counterclockwise and open the lid.
3. Insert cushions (if needed) into the tube holders for the tube size you are using.
4. Place the test tube samples into the tube holders. Be sure to follow the rules for balanced loads (page 6).
5. Close the lid and turn the lid knob clockwise to its complete stop position.
6. Turn on the machine by turning the timer to the desired run time. The centrifuge should begin to spin.
7. Once the timer reaches zero (0), power will be cut to the motor and the rotor will coast to a stop. Do not open the lid until the rotor has come to a complete stop.
8. Turn the lid knob counterclockwise and open the lid.
9. Remove the samples.
10. The centrifuge is immediately ready for operation.

SPINNING BALANCED LOADS

Your centrifuge must contain a balanced load in order to work properly.

Use the following rules when loading the rotor.

Spinning balanced loads will extend the life of the machine and produce better results.

1. Opposing tube holders must be identical and must contain the same cushion, or none at all.
2. Opposing tube holders must be empty or loaded with equally weighted samples.
3. 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.

ROTOR REMOVAL AND INSTALLATION

TO REMOVE THE ROTOR

1. Open the lid.
CAUTION: Unplug the centrifuge from the electrical outlet to eliminate the possibility of electrical shock or other injury.
2. Remove the test tube holders.
3. Remove the nut in the center of the rotor by turning it counterclockwise (a tool may be required).
4. 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 nut and turn it until it is hand-tight, (a tool may be required).
4. Replace the tube holders and verify that they are seated properly.
5. 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 6 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:

1. **Provide Adequate Ventilation:** For cooling purposes, the Model 614B draws in ambient air through the air intake cover on the top of the lid and exhausts this air in the rear of the base. The centrifuge should be placed on a hard smooth surface for good air circulation.
2. **Always Spin Balanced Loads:** Make certain that you are always spinning a balanced load. The Model 614B has a unique counter balanced motor mounting design which, along with its rubber suction feet, 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. Refer to page 6 on balanced loads for additional information on balancing the load.
3. **Keep the Tube Holders Clean:** NOTE: Always follow the safety guidelines of your laboratory to properly clean up and/or dispose of materials in the event that a substance known to be potentially toxic, radioactive or contaminated with a pathogenic microorganism is spilt in or on the centrifuge. Small glass fragments left in the tube holder after a tube breakage may adhere to the next test tube inserted in that holder. When this tube is handled, these fragments may puncture protective gloves and lacerate the operator's fingers or hand. Remaining fragments may provide stress points on subsequent tubes and result in additional breakage. If a tube breakage occurs, carefully remove the tube holder. Properly dispose of the sample and tube fragments and thoroughly clean both the inside and outside of the tube holder. Insert a new tube cushion (if necessary) and replace the tube holder in the rotor.
4. **Motor and Electrical Maintenance:** The Model 614B uses a brushless permanent split capacitor AC motor. It should not need routine servicing for the life of the centrifuge. The electrical components are selected for high reliability and should not need routine service.
5. **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 immediately.
6. **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.



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

1. Unplug the centrifuge before cleaning.
2. Apply cleaning solutions with a dampened towel or cloth ONLY. Do not spray or pour 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.
3. ONLY isopropyl alcohol, soap and water, or a 10% (5500 PPM) bleach solution should be used for cleaning and disinfection of the centrifuge and accessories.
4. All surfaces must be dried immediately after cleaning and disinfecting.



TBQ Germicidal products shall not be used, as they will cause damage to the centrifuge and void the warranty.

5. The use of 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.
6. It may be necessary to remove the rotor and clean the rotor chamber. Follow the instructions on page 7 to remove and reinstall the rotor.

TROUBLESHOOTING

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

The rotor does not spin freely.	<ul style="list-style-type: none"> ○ Make sure nothing has fallen into the rotor chamber. ○ If there is nothing obstructing the rotor, the rotor may be damaged. contact Drucker Diagnostics for further assistance.
Excessive noise when the machine is running.	<ul style="list-style-type: none"> ○ Check to see that the load is balanced. ○ Make sure that nothing has fallen into the rotor chamber. ○ Make sure that the nut in the center of the rotor is tight. ○ Have a technician test the motor and replace it if necessary.
The centrifuge does not run.	<ul style="list-style-type: none"> ○ Check the electrical outlet. ○ Make sure the lid latch is turned completely clockwise to its stop position. ○ Check the circuit breaker switch at the bottom left of the machine. If the switch is white, the breaker has tripped. Contact Drucker Diagnostics for further assistance. ○ The printed circuit board may be damaged. Have a technician test and replace the circuit board if necessary.

CALIBRATION TESTING

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

SAFETY

The Model 614B complies with US, Canadian, and European Safety standards.

Lid Safety Switch: The Model 614B lid is secured to the top of the cabinet by a latching knob and pawl system. When the knob is rotated clockwise, the pawl grips the underside of the cabinet opening and prevents the lid from opening. A mechanical stop positions the pawl and prevents it from rotating completely. When rotated to the stop position, the pawl makes contact with a micro-switch mounted underneath the cabinet top. The lid safety switch prevents the centrifuge from operating while the lid is open.

Note: After the centrifuge has started spinning, it may be possible to rotate the lid knob enough to cause the pawl to lose contact with the lid safety switch. If this happens, the centrifuge motor may lose power. If the knob is accidentally moved and this situation should occur, rotate the knob fully clockwise to its stop position and the centrifuge will resume operation.

Circuit Breaker: The Model 614B is protected with a 4 Amp circuit breaker located at the rear of the machine mounted to the base. Any electrical short circuit will cause the breaker to cut power to the machine.

REPLACEMENT PARTS

Part No.	Description
7724037K	Foot, rubber (Pack of 4)
02-006-1-0012	614 Lid Tray Assembly
7786047	Rotor, six-place fixed-angle
02-005-1-0007	614 Motor Assembly
7722009K	Timer with Switch (replacement kit)
7751043	Circuit Breaker, 4A
7760002	Power cord
02-002-1-0027	614 Lid Assembly
7724071K	Hinge, Friction (Pack of 2)
7732018	Seal, lid gasket
7713079K	Tube holder, blue, for 75/100mm tubes (Pack of 6)
7713032K	Tube holder, black, for 125mm tubes (Pack of 6)
03-0-0003-0061	Front Panel Label

AVAILABLE ACCESSORIES



1" Tube Cushion (Pack of 6)

p/n 1525K



Shield Caps (Pack of 6)

p/n 7713011K
Only use with p/n 7713031,
7713032, & 7713033



**100mm Tube Holder, Red
(Pack of 6)**

p/n 7713031K



**75mm Tube Holder, Green
(Pack of 6)**

p/n 7713033K

This operator's manual is part number 03-0-0002-0040 Rev M

FDA LISTED



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.



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