Available Accessories:

1” Tube cushion
p/n 1525

0.25” Tube cushion
p/n 9150

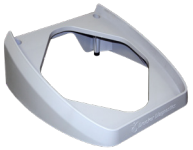
13 x 75 mm Insert
p/n 7713064

13 x 100 mm Insert
p/n 7713066

Shield caps
p/n 7713011

0.5 to 1 mL Tube Adapter
p/n 7713068

1.5 to 2 mL Tube Adapter
p/n 7713065



SmartView™ Platform
p/n 00-079-009-001

WARRANTY:

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

Made in the USA by
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Innovative Solutions for a Healthier World
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Drucker Diagnostics
Innovative Solutions for a Healthier World

Operator’s Manual

Model 614M • 12VDC Mobile Laboratory Centrifuge

P/N 03-0-0002-0105 Rev. C

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WARNING: Use universal precautions when handling laboratory specimens. All human specimens of blood, blood compounds, or bo–dily fluids are potentially biohazardous and may contain hepatitis B virus, hepatitis C virus, human immunodeficiency virus or other disease causing agents. For the safety of both the operator and service personnel, care should be taken when handling substances that are known to be toxic, radioactive, or contaminated with pathogenic microorganisms when using this centrifuge. When Risk Group II materials are used (As identified in the World Health Organization "Laboratory Bio-Safety Manual") the use of a Bio-Seal should be employed. More than one level of protection must be provided in the case of materials of a higher group. The use of flammable or explosive materials as well as those materials which chemically react vigorously is prohibited. Any use of the equipment in a manner not specified in these instructions may impair the level protection provided by the equipment.

Model Description:

The Model 614M is a 12VDC continuous-duty, electronically-controlled fixed-angle centrifuge intended for mobile applications where the Vehicle has a 12VDC power supply (cigarette lighter). 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.

For warranty information, turn to page 12.

Intended Use:

This is a general purpose laboratory centrifuge intended for safe and rapid density based separation of fluids, including physiologic fluids, in approved specimen receptables, for qualitative or quantitative test procedures. This device is intended to be operated by properly trained personnel who have carefully read and understood the Operating Manual.

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.

Supplied Equipment:

The following items come standard with each Model 614M centrifuge:

The rotor and rotor accessories are rated for a rotation frequency of 4,000 RPM.

1. One (1) six-place fixed-angle rotor p/n 7786047
2. Six (6) 125 mm tube holders p/n 7713032
3. Six (6) 75/100 mm tube holders p/n 7713079

Calibration and Earth Ground Testing:

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

Transportation:

During transportation, accessories can become dislodged from the rotor and fall into the rotor chamber where they can remain unnoticed.
Before transporting the centrifuge in a vehicle; make certain that the centrifuge is secured sufficiently to prevent shifting sliding or rolling, and that there are no tube holders or accessories in the rotor or rotor chamber.

Notes on Repaired Centrifuges:

For verification of the safe state of the centrifuge following factory service or repair, refer to the date on the calibration label (located on the back of the centrifuge). This is the date that the repaired centrifuge was last factory tested and calibrated. For additional servicing information and technical support, contact Drucker Diagnostics or your authorized distributer.

Disposal:

This device is labeled with the WEEE symbol (a crossed out "waste bin"). The final user should not discard this product along with other household waste. It should be collected and treated separately.

Replacement Parts:

Part No.	Description
7724037	Foot, rubber
7751068	Switch, lid safety
7786047	Rotor, six-place, fixed angle
7760016	Power Cord
7735054	Motor
7751079	Fuse
7714101	Pawl, latch, lid
7714103	Knob, latch, lid
7724071	Hinge, friction
7732018	Seal, lid gasket
7713079	Shield for 75/100 mm tubes
7713032	125 mm tube holders
02-002-1-0011	Lid Assembly

Safety:

- The centrifuge should be placed on a stable, flat surface.
- Before using the centrifuge, check the rotor. Do not operate the centrifuge if the rotor is loose, or does not rotate freely.
- Rotors and accessories that show evidence of damage or corrosion or are to be taken out of service.
- The centrifuge must be taken out of service if safety related damages are found in the rotor chamber.
- Do not open the lid until the rotor has come to a complete stop.
- For use only on smooth level surfaces, or approved centrifuge stands.
- Do not move the centrifuge while it is plugged in or running.
- Do not operate the centrifuge in a moving automobile.

Lid Safety Switch:
The 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 switch that is mounted underneath the cabinet top. This “lid safety switch” prevents the centrifuge from operating while the lid is open.

Overcurrent Protection:
The centrifuge provides protection from overcurrents with a fused power cord. In the event of an overcurrent condition, the fuse will blow - cutting power to the centrifuge, while protecting the internal electronics.

Technical Specifications:

General Specifications for the Model 614M Centrifuge

Voltage: ..... 13.8V DC
Power: ..... 100 Watts
Maximum load: ..... 6 x 15mL
Maximum Sample Density: ..... 1.15 grams / mL
Nominal Speed (125 mm holders): ..... 3,750 (± 175) RPM
Nominal RCF (125 mm holders): ..... 1,700 xg
Nominal Speed (75/100 mm holders): . 3,850 (± 175) RPM
Nominal RCF (75/100 mm holders): .... 1,450 xg
Environmental Conditions for Use:
- For In-vehicle / Indoors only
- Ambient temperature: ..... 2°C - 35°C
- Humidity: ..... 90% Max

Noise: ..... ≤ 65 dB(A)
Dimensions:
- Height: ..... 8.75 in (22 cm)
- Width: ..... 11.75 in (30 cm)
- Depth: ..... 14.00 in (35 cm)

Weight: ..... Approximately 12 lbs. (5.4 kg)

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)

Initial Setup Procedure:

***If any problems are found during the initial setup procedure, refer to the troubleshooting section on page 9. For further assistance, contact Drucker Diagnostics at* 814-342-6205 or 814-692-7661.**

1. Plug the power cord into the automobile’s 12V accessory outlet.
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.

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Troubleshooting:

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

1.	**Problem:**	**The rotor does not spin freely.**
	Solutions:	– 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.
2.	**Problem:**	**Excessive noise when the centrifuge is running.**
	Solutions:	– 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.
3.	**Problem:**	**The centrifuge does not run.**
	Solutions:	– Check the electrical outlet. – Make sure the lid latch is turned completely clockwise to its stop position. When the lid is closed properly, the latch light on the control panel will illuminate. – Check the fuse in the end of the power cord. If the filament is broken, the fuse has blown and must be replaced with a fuse of the same type and rating. Contact Drucker Diagnostics for further assistance.

For servicing information or additional technical support, contact Drucker Diagnostics at 814-342-6205 or 814-692-7661.

4. **Motor and Electrical Maintenance:** The Model 614M motor should not need servicing for the life of the centrifuge. The electrical components are selected for high reliability and should not need 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.

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.

a) Unplug the centrifuge before cleaning.
b) Autoclaving of any component of the centrifuge is prohibited.
c) 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.
d) 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.
e) All surfaces must be dried immediately after cleaning and disinfecting.
f) TBQ Germicidal products shall not be used, as they will cause damage to the centrifuge and void the warranty.
g) 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.
h) It may be necessary to remove the rotor and clean the rotor chamber. Refer to the Installation and removal of the rotor section of this manual.

Operation:

NOTE: Follow the initial setup procedure on page 3 before initial operation.

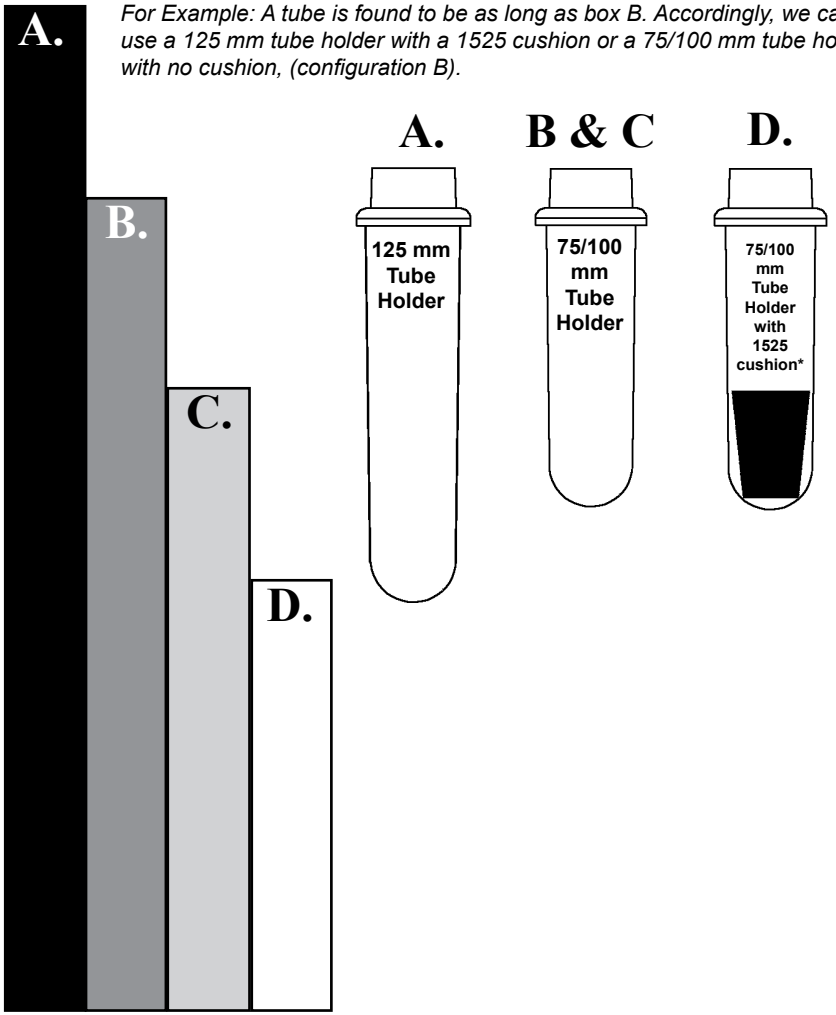
a) If any problems are found during the initial setup procedure, refer to the troubleshooting section.
b) Plug the power cord into the automobile's 12V accessory outlet.
c) Turn the latch counterclockwise and open the lid.
d) Spin the rotor by hand; check for smooth rotation free from excessive wobble.
e) Place six test tube holders (supplied) of the same type inside the rotor (as shown to the right), and verify that they are seated properly.
f) Close the lid. Rotate the lid knob clockwise to its stop position.
g) Start a centrifugation cycle by rotating the timer knob.
h) Listen to the sound of the centrifuge. A smooth whirring sound should be heard.

Tube Holder Configurations:

The fixed-angle rotor that came with your Model 614M is capable of spinning test tubes up to 17 mm x 125 mm. Use the following chart and drawing to determine which tube holder and cushion combination should be used with your application.

DIRECTIONS:

1. Compare the tube to be spun with the four boxes shown below.
2. Find the box that most closely matches the tube's length. **NOTE:** The tube length with its stopper or cap must be shorter then the chosen box or the tube will not fit properly in the tube holder.
3. Match the letter from the chosen box with one of the configurations shown.



For Example: A tube is found to be as long as box B. Accordingly, we can use a 125 mm tube holder with a 1525 cushion or a 75/100 mm tube holder with no cushion, (configuration B).

** This part is available as an accessory. Contact Drucker Diagnostics for assistance.*

Installation and Removal of the Rotor:

a) The rotor is secured with a single nut, visible with the lid open. The nut is located in the center of the rotor.
b) Use a 1/2" nut driver to loosen the nut (turn counter-clockwise).
c) Lift the rotor straight up and out of the rotor chamber.
To install the rotor, reverse steps A and B above.
d) Take care to align the hub splines with the rotor hub.
e) Tighten the rotor nut by hand with a ½" nut driver until snug. One full thread showing above the nut is a good indicator of proper installation.

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 614M 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 614M has been designed to provide 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.Use the following rules when loading the rotor.

a) Centrifuging balanced loads will extend the life of the centrifuge and produce better results.
b) Opposing tube holders must be identical and must contain the same cushion or none at all.
c) Opposing tube holders must be empty or loaded with equally weighted samples.
d) 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.

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.