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Fisherbrand Model 12

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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	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.
ISO13485 certified	ISO Certification	Denotes conformity to quality standards and quality management systems.

Model Description

The Model 12 is an electronically controlled horizontal centrifuge with a lid safety interlock system for STAT specimen processing, chemistry, coagulation, and general-purpose laboratory sample separation. The unit is controlled by an electronic push-button timer that has been preset for three (3) different cycles, for precise spin times and ease of use. Samples can be safely viewed through the transparent lid. Entry into the machine is restricted during operation by the safety interlock system. The Model 12 centrifuge features a lighted control panel and an illuminated lid indicator easily seen from a distance that displays the status of the machine.

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

- Patented swing-out horizontal rotor design incorporates a unique test tube holder that produces the ideal horizontally separated samples.
- Cool-Flow air flow design prevents overheating of samples.
- Lid safety switch prevents the centrifuge from operating unless the lid is closed and latched.
- Locking lid allows entry into the centrifuge only after the rotor has completely stopped.
- Illuminated lid communicates the status of the centrifuge (ready, running, done) to technicians far across the room.
- Brushless DC motor: years of operation with no routine maintenance.
- Clear lid for safe observation of samples and optical calibration of speed.
- Electronically controlled timed operation.
- Push-button operation.
- LED lights indicate current cycle setting:
 1. '3 min'
 2. '5 min'
 3. 'Custom'

Intended Use

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

Warranty

The 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).

General Specifications

The rotor and rotor accessories are rated for the maximum rotation frequency shown in the table below. A complete list of accessories is available at www.DruckerDiagnostics.com.

Factory Settings	Model 12		
	RPM	Time	G-Force
Setting 1	5,200	3	4,000
Setting 2	5,200	5	4,000
Setting 3	3,600	7	2,000

Specs	Model 12
Capacity	12 tubes - 3 to 10 mL
Height	9 in. (23 cm)
Width	12.5 in. (32 cm)
Depth	14.75 in. (37 cm)
Weight	34 lbs. (15 kg)
Noise Level	61 dB
Environmental Range	16 - 32 °C
Voltage	100 – 240 VAC
Frequency	50/60 Hz
Power Requirement	415 Watts
Maximum Acceleration Time	35 seconds
Maximum Deceleration Time	40 seconds
Maximum Speed	5,200 RPMs (+/- 100)
Factory Setting Range	1 to 30 minutes, (± 2%)

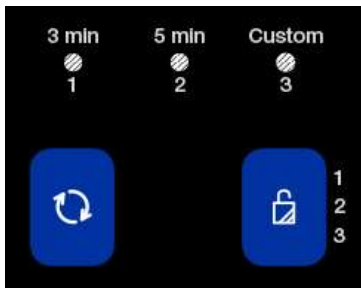
Setup Location

1. Unpack and verify that all the supplied equipment is present.
 - a. Centrifuge
 - b. Power cord
 - c. Tube Holders
 - d. Quick Start Guide
2. Choose a setup location which meets the following criteria:
 - a. A bench top clearance height of 21" (54 cm) required to open the lid.
 - b. The centrifuge should have 6" (15 cm) of clear space around the centrifuge to allow for proper air circulation. 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.
 - c. No person or hazardous material shall be permitted in the clearance envelope during operation.
 - d. The operator time within the envelope shall be limited to the time necessary for loading, unloading and centrifuge operation only.
 - e. No adjustment is necessary for leveling the centrifuge; however, the surface should be flat and level.
 - f. **Be sure the outlet is always within reach as the line cord is the means of emergency disconnection!**



Control Panel

Buttons



START

Begins running the cycle indicated by the cycle indicator light (the lid must be closed).

UNLOCK / CYCLE SELECT

Allows access into the rotor chamber by disengaging the locking mechanism. Entry is only permitted when the rotor is stopped. Pressing this button during operation will terminate the run and unlock the lid after the rotor has come to a stop.

This button also functions as the cycle selector. If the button is pushed a second time (within two seconds of the first push), the next cycle will be selected. The cycle will be changed with each push of the button until a delay of two seconds occurs between pushes. At that point, the button reverts to its stop function.

Indicator Lights

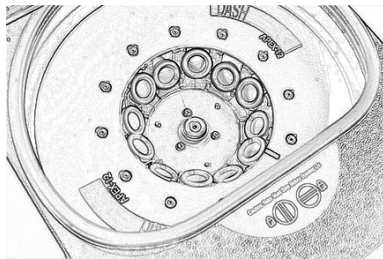
1. **3 min:** This setting is a 3 min spin at 4,000 g.
2. **5 min:** This setting is a 5 min spin at 4,000 g
3. **Custom:** Customization to your labs validated cycle

Initial Setup Procedure

If any problems are found during the initial setup procedure, refer to the troubleshooting section. For further assistance, contact Drucker Diagnostics at 814-692-7661.

1. Plug the line cord into the power supply.
2. Plug the connector from the power supply into the back of the centrifuge. The side of the connector with the plastic hook will face upward.
NOTE: To remove the connector from the centrifuge, the rear portion of the plastic hook must be depressed to raise the hook and allow the contacts to slide apart.
3. Plug the line cord into the wall outlet.
4. Spin the rotor by hand, check for free and level rotation. If the rotor does not spin freely, refer to the troubleshooting section.
5. Place the test tube holders inside the rotor (as shown below) and verify that they are seated properly.

Model 12



6. Close the lid. Rotate the lid knob clockwise to its complete stop position.
7. Turn the centrifuge on by pushing the 'START' button.
8. The test tube holders will slide up into the horizontal position and the unit will accelerate to full speed.
9. Listen to the sound of the centrifuge. A smooth whirring sound should be heard. If there are any loud or unusual sounds, stop the centrifuge by pushing the 'UNLOCK / CYCLE SELECT' button immediately and refer to the troubleshooting section.
10. While the machine is running, try to turn the latch counterclockwise. Power may be cut to the motor, but you should be unable to fully turn the latch. If it is possible to turn the latch and open the lid while the unit is running, contact Drucker Diagnostics for assistance. Close and latch the lid.
11. Push the 'UNLOCK / CYCLE SELECT' button. The motor should slow to a stop.
12. The lid should remain locked until the rotor has nearly stopped. If the machine unlocks prematurely, contact Drucker Diagnostics for assistance. Once the rotor has stopped, the interlock system will become disengaged for sixty (60) seconds. The colored lid indicator lights will flash until the lid is open.
13. To gain entry into the centrifuge after this period has ended, simply press the 'UNLOCK / CYCLE SELECT' button. The lid will unlock for fifteen (15) additional seconds.

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

Operation

NOTE: Follow the initial setup procedure highlighted in a previous section before initial operation.

1. Connect the line cord into the centrifuge
2. Connect the line cord to the wall outlet.
3. Place the test tube samples into the tube holders. Be sure to follow the rules for balanced loads.
4. Close the lid and turn the lid knob clockwise to its complete stop position.
5. The lit indicator light shows the selected cycle. The selected cycle determines the run time and speed.
6. Turn on the machine by pushing the 'START' button on the control panel.
7. The centrifuge should begin to spin. If a problem is found during a spin that requires the centrifuge to shut down, press the 'UNLOCK / CYCLE SELECT' button!
8. After time has elapsed, the rotor will slow to a complete stop.
9. The locking mechanism will disengage allowing entry into the rotor chamber and the lid indicator light will flash. If this does not happen, refer to the troubleshooting section.
10. Turn the lid knob counterclockwise and open the lid. The lid indicator light will turn off.
11. Remove the samples.
12. If the machine re-locks before the samples are removed, press the 'UNLOCK / CYCLE SELECT' button to unlock the lid for an additional fifteen (15) seconds.

Cycle Customization

Disabling Cycle Selection: The provision to change cycles by repeated presses of the UNLOCK / CYCLE SELECT button can be turned off. Disabling this feature may be desirable in a situation where only one cycle is being used. To turn the selection feature off and lock the cycle at its current setting, press and hold the UNLOCK / CYCLE SELECT button for 5 seconds. Two beeps will sound to indicate cycle selection is no longer available.

To re-enable cycle selection, press and hold the UNLOCK / CYCLE SELECT button again for 5 seconds. Three beeps will sound to indicate that cycle selection is now available.

Reviewing the Run Time and Speed: The run time and speed settings can be reviewed for the currently selected cycle. To review the settings, the lid must be open. Press and hold the START button for at least two seconds. Upon release of the START button, the centrifuge will beep once for each minute of run time in the current cycle. Pressing the START button again will cause the unit to beep once for each 100 rpm in the current cycle. The centrifuge will then revert to normal mode.

Changing the Run Time and Speed: The run time and speed can be changed for the currently selected cycle. To change the time and speed, the lid must be open. Press and hold the START and UNLOCK / CYCLE SELECT buttons together for at least two seconds. The LED light will flash indicating time setting mode. Press the START button for each minute of run time. Press the UNLOCK / CYCLE SELECT button to move to speed setting mode. (The LED light will flash.) Press the START button once for each 100 rpm. Press the UNLOCK / CYCLE SELECT button to exit setting mode.

Record Custom Cycles

Cycle	Tube Type	RPM	G-Force (RCF)
1			
2			
3			

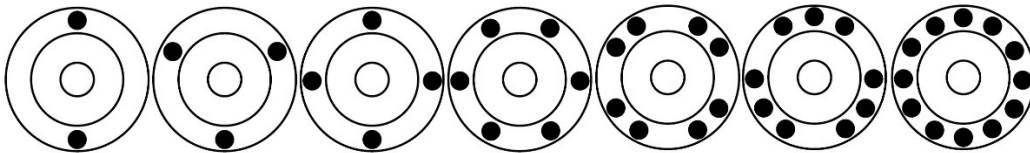
Balanced Loads



Your centrifuge must contain a balanced load 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 number of tubes.
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.

12 Tube Centrifuges




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 12 centrifuges draw 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 and smooth surface for good air circulation.
2. **Always Spin Balanced Loads:** Make certain that you are always spinning a balanced load. The Model 12 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. Refer to the "Balanced Loads" section for additional information.
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 spilled 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 return the tube holder to the rotor.
4. **Motor and Electrical Maintenance:** The Model 12 centrifuges use a brushless DC motor. They 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.
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. Before using any cleaning or decontamination methods other than those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

1. Unplug the centrifuge before cleaning.
2. Use appropriate personal protective equipment (PPE).
3. 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.
4. **ONLY soap and water** should be used to clean the centrifuge and its accessories.
5. **ONLY isopropyl alcohol or a 10% (5500 PPM) bleach solution** should be used to disinfect the centrifuge and its accessories.
6. All surfaces must be dried immediately after cleaning and disinfecting.
-  7. **TBQ Germicidal products shall not be used, as they will cause damage to the centrifuge and void the warranty.**
8. 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.

Troubleshooting

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

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

PROBLEM: The rotor does not spin freely.

SOLUTION:

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.

PROBLEM: Excessive noise when the machine is running.

SOLUTION:

- Check to see that the load is balanced.
- Make sure that nothing has fallen into the rotor chamber.
- Make sure that the screw in the center of the rotor core is tight.

PROBLEM: The centrifuge does not run.

SOLUTION:

- 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.

PROBLEM: The run time is not set to the desired length.

SOLUTION:

Check the run preset by following the instructions in the Cycle Customization section. If the preset is not the desired length, follow the procedure on the same page to change the run preset time.

PROBLEM: The machine does not unlock after a run is completed.

SOLUTION:

- The lid should remain locked until the rotor has nearly come to a complete stop and then unlock for 60 seconds. If additional unlock time is needed, press the 'UNLOCK / CYCLE SELECT' button with the machine plugged in and the rotor stopped.
- If the lid remains locked after this and will not unlock, the electronics may have been damaged. Contact Drucker Diagnostics for assistance.
- To access the rotor chamber, follow the procedure in the "Emergency Rotor Chamber Entry" section.
- Ensure that the lid knob is turned fully counterclockwise. Press 'UNLOCK / CYCLE SELECT'.

Calibration and 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

Lid Safety Switch: The lid on the Model 12 centrifuges 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.

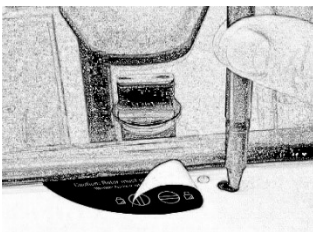
Lid Safety Interlock System: In addition to the Lid Safety Switch, the Model 12 centrifuges have a true “0 RPM” lid locking system. The lid safety interlock system keeps the lid locked at all times, (even during power failure), and requires that the rotor be at rest in order to unlock the lid. The centrifuge will not allow entry into the rotor chamber unless the centrifuge has power, and the rotor is stopped. To open the lid, make sure that the centrifuge is plugged in and, with the rotor stopped, press the ‘UNLOCK / CYCLE SELECT’ button.



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, but the lid will remain locked. Should this situation occur, rotate the knob fully clockwise to its stop position and the centrifuge will resume operation.

Emergency Rotor Chamber Entry

In the event of power failure, it may be impossible to unlock the lid 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.



This operator's manual is part number 03-0-0002-0131 Rev. D
Product Family: The Model 12 Series Complies with IEC/EN 61010-1 and IEC 61010-2-020

FDA LISTED



**RoHS
Compliant**



EMERGO EUROPE
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The Netherlands



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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