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Operator's Manual

Models 615B, 615L
Laboratory Centrifuge

DESCRIPTION:

Intended Use:

The Drucker model 615 is a dual speed, high-performance laboratory centrifuge designed for the separation of laboratory fluid samples. Maximum speed with a full load of (6) 15mL test tubes is 3,500 RPM at the high speed setting.

Versions of the Model 615 include:

615B: 3,500 RPM (1,500 RCF) with a lid safety switch

615L: 3,500 RPM (1,500 RCF) with a lid safety interlock system

Supplied Equipment:

The following items are supplied with each model 615 centrifuge:

1. One (1) six-place fixed angle rotor.
2. 15mL, (125mm) test tube holders
3. Cushion adapters for 10mL (100mm) test tubes
4. One (1) operator's manual.

Optional Accessories:

- Eight-place fixed angle rotor
- 10mL (100mm) test tube holders
- 75mm test tube holders

Features:

Important features of the Model 614 centrifuge include the following:

- Dual speed operation, (3,500 RPM and 1750 RPM), for multiple applications
- Electric AC Braking, (Model 615L Only)
- Lid safety switch that cuts power to the motor if the lid is opened during operation.
- The model 615L has a "0" RPM lid safety interlock system that prevents the lid from being opened until the rotating head reaches approximately "0" RPM.
- Brushless, AC motor.
- Two part molded inner housing of glass filled polymer for superior strength and sound absorption.
- Cool-Flow® air flow design that prevents overheating of samples.
- Heavy gauge steel cabinet construction for safety and durability.
- Clear Polycarbonate lid for safe observation of samples and optical calibration of speed.
- Standard (6) place rotor with Xenoy test tube holders for 3.5mL to 15mL test tubes; (8) place rotor is optional.
- Timed operation from 1 to 30 minutes.

SPECIFICATIONS:

General specifications for the Model 615 Centrifuge

Max. Speed	3,500 RPM
Max. Force (RCF)	1,520 x g
Low Speed	1,750 RPM
Low Speed Force (RCF)	380 x g
Maximum capacity six-place	90 ml. (6 x 15 ml)
Maximum capacity eight-place	120 ml. (8 x 15 ml)
Overall Dimensions:	
Height with Lid Closed	8.5 in. (21.59 cm.)
Height with Cover Open	15.75 in. (40.0 cm.)
Width	10.5 in. (26.67 cm.)
Depth	12.25 in. (31.12 cm.)
Centrifuge Motor	1/30 P.S.C. AC Motor
Protection Breaker	4 Amp. Resetable
Timer	Mechanical; 1 to 30 minutes
Max. Power Requirements	120 Watts
Voltage	120 Volts
Frequency	60 Hz
Weight (Including Rotor and (6) tube shields)	23 lbs. (10.43 kg)

REPLACEMENT PARTS:

Part No.	Description
7724079	Foot, rubber
7760002	Power cord
7751069	Switch, lid safety
7722029	Timer, mechanical, 30 minutes
7724145	Knob, timer
7714102	Pawl, latch, lid
7714103	Knob, latch, lid
7712313	Lid, clear
7724071	Hinge, friction
7732206	Seal, lid gasket
7786047	Rotor, 1936 six-place polymer
7786041	Rotor, 1938 eight-place aluminum
7735044	115V A.C. Dual Speed Motor
7745016	Locking solenoid ("L" versions)
7717069	PC board, lid lock ("L" versions)
7713015	8404 tube shield, Xenoy; 5mL
7713017	8410 tube shield, Xenoy, 10mL
7788002	Shield insert, for 3.5mL and 5mL test tubes
7788001	Shield insert, for 7mL test tubes
1525	Test Tube Cushions for 10mL test tubes

Care And Preventative Maintenance (cont'd):

4. Clean The Inside Of The Centrifuge: The 615 centrifuge is designed with a removable rotor chamber cover to permit servicing and cleaning of the inside of the rotor chamber. Every six months, or whenever there is a tube breakage that allows samples to enter the rotor chamber area, it is advisable to remove this cover and clean the inside of the centrifuge. The model 615 has electrical wires running from the inside of the top of the centrifuge down to the base. To clean the centrifuge proceed as follows:

- a) Unplug the centrifuge and close and latch the lid.
- b) Remove the six screws attaching the cabinet to the base and lay the cabinet on its side adjacent to the centrifuge base (take precaution not to over extend the electrical wires).
- c) With your hand, or with the use of a blunt object, remove the snap-on plastic ring at the top of the rotation chamber.
- d) Remove the rotor by unscrewing the locking nut on the motor shaft.
- e) Disinfect and clean the inside of the centrifuge. To reassemble, first replace the rotor taking care to line the motor pin up with the slot on the underside the rotor. Snap the plastic ring back on the rotation chamber and place the six test tube shields back in the rotor. Finally, place the cabinet over the base and reattach it to the base with the six screws.

CAUTION: For cleaning, Do Not Fully Submerge the centrifuge In Water or use an excessive amount of cleaning solution as this may cause permanent damage to the electrical components.

5. Motor and Electrical Maintenance: The motor of the 615 is a brushless induction type; It should not need servicing for the life of the centrifuge. The electrical components are selected for high reliability and should not need service. If any of these parts should fail they must be repaired or replaced by a qualified service technician.

Installation and Operation

Performance / Calibration:

Maximum speed depends on the incoming line voltage and the load being spun. A line voltage of 115 Volts is required to achieve the speeds described in this manual. If the unit is running 10% slower than specified, it should be returned to your dealer or The Drucker Company for repair.

Accessories: Each **615 centrifuge** comes standard with a six-place, 45 degree angle rotor, (6) #8404 test tube shields and (6) #1525 rubber test tube cushions for 10mL test tubes. Tube cushions are not required for 15mL test tubes. Optionally, an eight place rotor and 10mL test tube holders are also available.

Environmental Conditions: The 615 centrifuge is not intended for outside use or for use in extreme environmental conditions. Any use other than the manufacturer's suggested usage may impair the protection provided by the unit.

Installation and Set up:

External Packaging and Inspection: Carefully examine the centrifuge and document any damage that can be attributed to mishandling. A signed inspection report should be furnished by the shipping company.

The Drucker Company is **Not Responsible** for transit damage.

Setup Procedure: Unpack the centrifuge and inspect for obvious damage; place the centrifuge on a hard, stable surface. **Note:** A bench top clearance height of 23 inches (min.) is required to open the centrifuge lid.

Failure to provide adequate space for ventilation can cause damage to the samples plus overheating and premature failure to the centrifuge.

- 1 Unlatch and open the lid; remove any protective shipping material, literature, tube cushion packages, etc., that may have been shipped inside the centrifuge.
- 2 Spin the rotor by hand; check for free and level rotation. If the rotor spins evenly, continue on to step 3.
- 3 Close and latch the lid. Verify that the timer is "OFF". Plug the line cord into an approved electrical outlet. Be sure the outlet is always within reach as the line cord is the means of emergency disconnection.
- 4 Turn power on to the unit by setting the time to (5) minutes. The rotor should start spinning smoothly with no excessive noise.
- 5 Listen to the sound of the centrifuge; a smooth whirring sound should be heard. If there are any loud and unusual sounds, stop the centrifuge immediately. **Do not proceed!** Call your Authorized Dealer or the Drucker Company.

Safety:

Model 615 Lid Safety Switch: During operation, 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 top 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. *Unless contact is made by the pawl with this safety switch, the centrifuge will not start or continue in operation.* If an attempt is made to open the lid while the centrifuge is in operation power will be cut to the motor.

Model 615L Lid Safety Lock System: In addition to the Lid Safety Switch, the model 615L has a true lid locking system. As the motor starts spinning, a locking solenoid activates and prevents the lid from being opened. A red diode on the top-front of the cabinet illuminates indicating that the lid is "Locked". *The solenoid will keep the lid locked until the motor has reached approximately "0" RPM.*

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 will lose power, *but the lid will still remain locked until the motor has reached "0" RPM.* 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.

Model 615L Emergency Lid Removal:

If, for any reason, the safety lid interlock system should fail and the lid cannot be opened after the motor has stopped spinning, the centrifuge samples may be removed by:

- 1 Remove the four (4) screws that attach the lid to the hinges.
- 2 Lift the lid clear of the hinges and pull so that the pawl clears the underside of the cabinet.
- 3 Remove the lid.
- 4 Remove the samples.
- 5 Call the Drucker Company for repair or replacement.

Model 615L Lid Lock Safety Check:

- 1 Verify that the Timer is in the "OFF" position. Open the lid and spin the rotor by hand.
- 2 The Red LED on the top of the cabinet should illuminate and a low "click" sound should be heard. When the rotor stops spinning the Red LED should go out and the "click" sound should repeat.
- 3 With the centrifuge turned on and the rotor spinning, try to open the lid by rotating the lid knob counter-clockwise. The knob will rotate slightly and you should hear motor losing power but you should not be able to completely rotate the lid knob or open the lid.
- 4 Rotate the knob clock-wise back to its stop position. You should hear the motor resuming operation.
- 5 If the centrifuge successfully passes steps 1-4 of this section it is ready for operation. If there are any problems **Do not proceed!** Call your Authorized Dealer or the Drucker Company.

Temperature Control:

The model 615 centrifuge has a unique molded-in air channel that circulates ambient room air through the rotation chamber to cool the samples. This air is then exhausted out through the base to cool the motor.

Care And Preventative Maintenance:

With proper care and maintenance The Drucker **615** 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 615 draws air in through a space in the bottom front of the cabinet and exhausts this air through holes in the base. The centrifuge should be placed on a hard smooth surface for good air circulation.
2. **Always Spin Only Balanced Loads:** Make certain that all tube shields are filled with equal weight sample or equivalent weight water filled tubes. The **615** has a unique counter balanced motor mounting design which, along with its all steel construction and rubber suction feet, produces excellent vibration dampening. However, out-of-balance loads may break glass test tubes and may produce unsatisfactory separation results. Proper sample balancing will improve sample separation and extend the life of the centrifuge.
3. **Keep the Tube Shields Clean:** Small glass fragments left in the tube shield after a tube breakage may adhere to the next test tube inserted in that shield; When this tube is handled, these fragments may puncture protective gloves and lacerate the operator's fingers or hand. Fragments left may also provide stress points on subsequent tubes and result in additional breakage. If a tube breakage occurs carefully remove the tube shield; properly dispose of the sample and tube fragments; thoroughly clean both the inside and outside of the tube shield; insert a new tube cushion (if necessary) and replace the tube shield in the rotor.