

ProcessMate 5000 Centrifuge

User's Manual



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Introduction

You have selected a reliable, high quality ProcessMate Centrifuge system from EFD, the world leader in fluid dispensing. The ProcessMate system was designed specifically for industrial dispensing, and will provide you with years of trouble-free, productive service.

This User's Guide will help you maximize the usefulness of your ProcessMate Centrifuge system.

Please spend a few minutes to become familiar with the controls and features. Follow our recommended testing procedures. Review the helpful information we have included, which is based on more than 30 years of industrial dispensing experience.

Most questions you will have are answered in this guide. However, if you need assistance, please do not hesitate to contact EFD or your authorized EFD distributor.

In the USA, call 800.556.3484 between 8:30 a.m. and 5:30 p.m. Eastern time.

In Europe, call +44 (0) 1582 666334.

In Asia, call +86 (21) 3866 9006.

In all other areas, call your authorized EFD distributor or +1.401.431.7000.

The Nordson EFD Pledge

Thank You!

You have just purchased the world's finest dispensing productivity tool.

I want you to know that all of us at EFD value your business and will do everything in our power to make you a satisfied customer.

If at any time you are not fully satisfied with our equipment or the support provided by your EFD Product Application Specialist, please contact me personally at 800.556.3484 (US), 401.431.7000 (outside US), or jeff.pembroke@nordsonefd.com.

I guarantee that we will resolve any problems to your satisfaction.

Thanks again for choosing EFD.

Jeff Pembroke

Jeff Pembroke, President

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EFD Product Safety Statement

This statement provides personal and equipment safety notices for EFD dispensing products excluding the Ultra® TT dispensing robot. For the safety statement on the Ultra TT dispensing robot, please see the Ultra TT user's guide.

WARNING

The safety message that follows has a WARNING level hazard.
Failure to comply could result in death or serious injury.



ELECTRIC SHOCK

Risk of electric shock. Disconnect power before removing cover and/or disconnect, lock out, and tag switches before servicing electrical equipment. If you receive even a slight electrical shock, shut down all equipment immediately. Do not restart the equipment until the problem has been identified and corrected.

CAUTION

The safety messages that follow have CAUTION level hazards.
Failure to comply may result in minor or moderate injury.



READ MANUAL

Read manual for proper use of this equipment. Follow all safety instructions. Task and equipment-specific warnings, cautions and instructions are included in equipment documentation where appropriate. Make sure these instructions and all other equipment documents are accessible to persons operating or servicing equipment.



MAXIMUM AIR PRESSURE

Maximum air input pressure 6.9 bar (100 psi). Excessive air input pressure may damage the equipment.



BURST PRESSURE

Maximum air input pressure 6.9 bar (100 psi). Burst pressure 20.7 bar (300 psi). Excessive air input pressure may damage the equipment.



RELEASE PRESSURE

Release pressure before opening. Maximum pressure 2.0 bars (30 psi). Release hydraulic and pneumatic pressure before adjusting or servicing pressurized systems or components.

Halogenated Hydrocarbon Solvent Hazards

Do not use halogenated hydrocarbon solvents in a pressurized system that contains aluminum components. Under pressure, these solvents can react with aluminum and explode, causing injury, death, or property damage. Halogenated hydrocarbon solvents contain one or more of the following elements:

Element	Symbol	Prefix
Fluorine	F	"Fluoro-"
Chlorine	Cl	"Chloro-"
Bromine	Br	"Bromo-"
Iodine	I	"Iodo-"

Check your material MSDS or contact your material supplier for more information. If you must use halogenated hydrocarbon solvents, contact your EFD representative for compatible EFD components.

High Pressure Fluids

High pressure fluids, unless they are safety contained, are extremely hazardous. Always release fluid pressure before adjusting or servicing high pressure equipment. A jet of high pressure fluid can cut like a knife and cause serious bodily injury, amputation, or death. Fluids penetrating the skin can also cause toxic poisoning.

Warning:

Any injury caused by high pressure liquid can be serious.
If you are injured or even suspect an injury:

- Go to an emergency room immediately.
- Tell the doctor that you suspect an injection injury.
- Show the doctor this note.
- Tell the doctor what kind of material you were dispensing.

Medical Alert–Airless Spray Wounds: Note to Physician

Injection in the skin is a serious traumatic injury. It is important to treat the injury surgically as soon as possible. Do not delay treatment to research toxicity. Toxicity is a concern with some exotic coatings injected directly into the bloodstream.

Qualified Personnel

Equipment owners are responsible for making sure that EFD equipment is installed, operated and serviced by qualified personnel. Qualified personnel are those employees or contractors who are trained to safely perform their assigned tasks. They are familiar with all relevant safety rules and regulations and are physically capable of performing their assigned tasks.

Intended Use

Use of EFD equipment in ways other than those described in the documentation supplied with the equipment may result in injury to persons or damage to property. Some examples of unintended use of equipment include:

- Using incompatible materials
- Making unauthorized modifications
- Removing or bypassing safety guards or interlocks
- Using incompatible or damaged parts
- Using unapproved auxiliary equipment
- Operating equipment in excess of maximum ratings
- Operating equipment in an explosive atmosphere

Regulations and Approvals

Make sure all equipment is rated and approved for the environment in which it is used. Any approvals obtained for EFD equipment will be voided if instructions for installation, operation and service are not followed.

Personal Safety

To prevent injury, follow these instructions:

- Do not operate or service equipment unless you are qualified.
- Do not operate equipment unless safety guards, doors or covers are intact and automatic interlocks are operating properly. Do not bypass or disarm any safety devices.
- Keep clear of moving equipment. Before adjusting or servicing moving equipment, shut off the power supply and wait until the equipment comes to a complete stop. Lock out power and secure the equipment to prevent unexpected movement.
- Make sure spray areas and other work areas are adequately ventilated.
- Know where emergency stop buttons, shutoff valves and fire extinguishers are located.
- **Clean** – Apply a small amount of light detergent onto a moist cloth and wipe surface of unit lightly, cleaning any stains or spilled adhesive.
- **Maintain** – Only use clean dry air and regulated power supply to unit. Equipment does not require any other regular maintenance.
- **Test** – Verify operation of features and performance of equipment using the appropriate sections of this user guide. A faulty or defective unit should be returned to EFD or representative for refurbishment.
- Use only replacement parts that are designed for use with original equipment. Contact your EFD representative for information and advice.
- **Caution:** Use EFD filter/muffler (P/N 7016875) or wear adequate ear protection when operating the vacuum in close proximity for a prolonged period of time.

Action in the Event of a Malfunction

If a system or any equipment in a system malfunctions, shut off the system immediately and perform the following steps:

- Disconnect and lock out system electrical power. If using hydraulic and pneumatic shutoff valves, close and relieve pressure.
- Identify the reason for the malfunction and correct it before restarting the system.
- For EFD air-powered dispensers, remove the syringe barrel from the adapter assembly. For EFD electro-mechanical dispensers, slowly unscrew the barrel retainer and remove the barrel from the actuator.

Disposal

Dispose of equipment and materials used in operation and servicing according to local codes.

RoHS标准相关声明 (China RoHS Hazardous Material Declaration)

产品名称 Part Name	有害物质及元素 Toxic or Hazardous Substances and Elements					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr6)	多溴联苯 Polybrominated Biphenyls (PBB)	多溴联苯醚 Polybrominated Diphenyl Ethers (PBDE)
金属转接头 All Brass Fittings	X	0	0	0	0	0
<p>0: 表示该产品所含有的危险成分或有害物质含量依照EIP-A, EIP-B, EIP-C 的标准低于 SJ/T11363-2006 限定要求。 0: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C is below the limit requirement in SJ/T11363-2006.</p> <p>X: 表示该产品所含有的危险成分或有害物质含量依照EIP-A, EIP-B, EIP-C 的标准高于 SJ/T11363-2006 限定要求。 X: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part, according to EIP-A, EIP-B, EIP-C is above the limit requirement in SJ/T11363-2006.</p>						

Important Safety Information

All EFD disposable components, including syringe barrels, cartridges, pistons, tip caps, end caps, and dispense tips, are precision engineered for one-time use. Attempting to clean and re-use components will compromise dispensing accuracy and may increase the risk of personal injury.

Always wear appropriate protective equipment and clothing suitable for your dispensing application.

- Do not exceed maximum operating pressure of 100 psi (7.0kg/cm²).
- Do not heat syringe barrels or cartridges to a temperature greater than 100°F (38°C).
- Dispose of components according to local regulations after one-time use.
- Do not clean components with strong solvents (e.g. MEK, Acetone, THF).
- Cartridge retainer systems and barrel loaders should be cleaned with mild detergents only.
- To prevent fluid waste, use EFD SmoothFlow™ pistons.

Classifications and Specifications

The ProcessMate PM500 Centrifuge is classified under “Class I” equipment.

CE Marking

The manufacturer hereby declares the conformity with the actual required safety standards in according with 93/42 EEC and 93/68/EEC

Standards

- The equipment complies with EC Electromagnetic Compatibility requirement of EN60601-1: 1990 +A13: 1996. Part 1: General requirement for SAFETY. EMI filter is designed in conformity with 89/336 EEC-EMC Directive. The equipment complies EN standard.
- ISO9001, ISO13485
- GMP (Good Manufacturing Practice)
- FDA (USA)

Specifications

Part Number	7015542
RoHS compliant	Yes
Overall dimension	320 x 400 x 310mm approx.
New weight	16.0 kg (35.2 lbs) approx.
Speed range	0 – 5000 rpm adjustable, LED display
Timer	2-digits, 99 min. LED display
Chamber	Stainless steel
Motor	80 W
Speed control	Microprocessor
Imbalance detection	Yes, alarm & brake
Errors detection	Yes (4 errors detection)
Brake	Automatic braking system
Safety Interlocking lid	Yes
Lid open override device	Yes, manual
Safety shutout device	Yes
Over heat alarm	Yes
Emergency STOP	Yes
Power source	Multi-voltage 100V ~ 240V, 50/60Hz
Quality Standard	ISO9001, ISO13485, CE, GMP

Unpacking Unit

Unpacking

1. Make sure the packaging is laid out in the correct orientation before opening the box.
2. Remove all packaging material around the PM5000 Centrifuge unit before attempting to remove unit from box.
3. Carefully remove The PM5000 Centrifuge unit from the box.
4. Check unit for damage before discarding shipping packaging and box.
5. Should any damage be detected, please call your local representative of EFD Technical Services for assistance.

Caution

1. Be careful not to drop the PM5000 Centrifuge, or place / rest the unit upside down. Unit is heavy and you may require assistance in lifting the PM5000 Centrifuge unit.
2. Do not place the PM5000 Centrifuge in the high draft are, direct sunlight or near equipment emitting heat and / or electromagnetic conduction.
3. Conditions for transportation & storage:

Temperature	10°C – 40°C
Humidity	40% — 90%
4. Check the specification label located on back of this equipment, the power source must conform to your local codes.

Set-up

Placement Surface

The PM5000 weighs approximately 35.2 Lbs. / 16 Kg, and will be spinning at high speeds. Select a level, sturdy and stable surface to place the PM5000 Centrifuge unit before use.

Power Source

The ProcessMate PM5000 is a multi voltage unit with a built in power converter. The unit is capable and will operate in the ranges of 100 – 240 VAC 50/60 HZ. Locate the power cord shipped with the unit, plug one end into the unit and the other to a suitable power source. Make sure the ground pin on the power cord is connected to ground on the power source.

Preparation

Before using this centrifuge, the following steps should be checked to make sure the PM5000 is ready and safe for use in a production setting :

1. Plug power cord in a grounded outlet.
2. Turn Power Switch to ON position.
The power lamp ON/OFF, Speed Indicator and Timer must be illuminated.
3. Press LID OPEN switch then push Lid Release knob on the right hand of the housing to place contents into the centrifuge.
4. Inspect and check if rotor is screwed on securely.
5. Shut lid and set timer by pressing the corresponding keypads “▲” “▲” to set centrifuge spinning time. Timer is adjustable from 0 – 99 minutes, and timer will count down displaying remaining time left of spin cycle.
6. Adjust the RPM by turning the control knob. Once the start button is presses, the RPM may not be altered or changed unless the spin cycle has timed out or has been reset.

Warning:

The maximum RPM depends on the rotor, size of Syringe barrels and weight of contents.

7. Press STOP switch to verify that the spin cycle may be canceled.
8. While in spin cycle, press LID OPEN key and Lid release button to see if the lid can be opened while in operation. The safety feature on the PM5000 should not allow you to open the lid until the rotor comes to a complete stop.
9. Switch off the power to verify that power can be shut off in case of emergency.

If the above procedures work as detailed, the centrifuge is operating as designed and ready for production use.

Note:

IF the ERROR sign of Err-5 is displayed on screen at any time, the cause is usually due to an “imbalance rotor”. Check contents within the centrifuge and make sure the syringe barrels are equally loaded and filled.

Operation

The unit incorporates many safety features to protect and minimize users the risk of personal injury. Follow the following operational steps to safely operate PM5000 Centrifuge unit.

1. Turn On Power

Locate the front control panel. Turn the power switch on the PM5000 to the “On” position. The switch will light up green when the unit is powered up.

2. Open Lid

To open lid, press Green “LID OPEN” button. When you hear a “click” sound, proceed to push on the Lid Release knob located on the right hand side of the PM5000 Centrifuge Cabinet. You will not hear a “clicking” sound and will not be able to depress the Lid Release knob if;

- a. The centrifuge is still in use and / or the rotor is still spinning.
- b. If there is no power to the unit.

3. Placing syringe barrel

The PM5000 Centrifuge can accommodate up to 4 syringe barrels. Before placing syringes into the centrifuge, make sure the syringes are fill to the same levels of fluid and use correct size sleeves to secure the barrels onto the rotor. Make sure the centrifuge is either filled with 2 or 4 syringes before operating. Failure to fill to same levels, spinning without the correct sleeves or placing odd numbers of syringes i.e. 1 or 3 syringes will result in damage to syringes and unbalanced spin causing the unit to go into an error mode.

4. Shut Lid

Shut Lid and make sure the barrels are protruding and coming in contact with the inner side of the lid.

Set speed – Using the speed regulator knob set the speed on speed indicator display to desired speed. The speed cannot be adjusted or altered once the unit is in operation. To change speed, simply press the Red “stop” button, allow the rotor to come to a complete stop, reset speed, reset time and restart spin.

Important Note:

If set RPM exceed the maximum speed for rotor & contents the ERROR Err-8 will display and unit will shut down the spin cycle. Remove or reduce weight of contents, open and shut Lid, and re-initiate spin cycle.

5. Set Time

The PM5000 Centrifuge has a time adjustment from 1 to 99 minutes in increments of 1 minute. Use the “▲” UP Arrows to set minutes of operation.

6. Start

Once time and speed is set simply press the start  button to start the PM5000 Centrifuge. The Centrifuge will spin at the speed and duration of the set parameters. Upon completion the unit will automatically apply a brake on the rotor to slow down and stop the rotor within the centrifuge. Once the rotor is at a complete stop, a audible buzzer will alarm notifying the user the spin cycle has completed.

- The Centrifuge takes approximately 15 – 20 seconds to accelerate to set speed.
- After the set time has elapsed, the PM5000 will automatically activate the automatic braking system to slow down and stop rotation of the rotor. The set values of TIME and RPM will reset back to 0, and 3 audible “beep” alarm will alert you of the completion of the spin cycle.
- Press LID OPEN button and Lid release knob to open the lid and safely remove contents.



Note: Always remember to press “LID OPEN” button & Push Lid Release Knob to open lid.

Warning

Do not use flammable and dangerous chemical solution in centrifuge.

Caution

Inspect all components prior to installing this centrifuge.

Error Codes

Err-1 Rotor is unable to rotate. (Defective drive motor or malfunctioning PCB)

Err-3 An attempt to open LID while rotor is still spinning.

Err-5 Imbalance rotor, related to weight distribution of contents.

Err-8 The set RPM is exceeding the maximum speed for rotor and contents.

WARNING

1. To avoid electrical shock, always disconnect from power supply prior to maintenance & Servicing.
2. Only qualified personnel or licensed engineers should attempt any maintenance or servicing the PM5000.
3. Always use a properly grounded electrical outlet of correct voltage rating.
4. Inspect centrifuge unit before use of unit to make sure there are no issues before use.

Opening Lid Manually – Power Failure

Note:

In case of power failure, the lid will remain locked as designed. If the lid needs to be open in this situation manually overriding the safety switch is required.

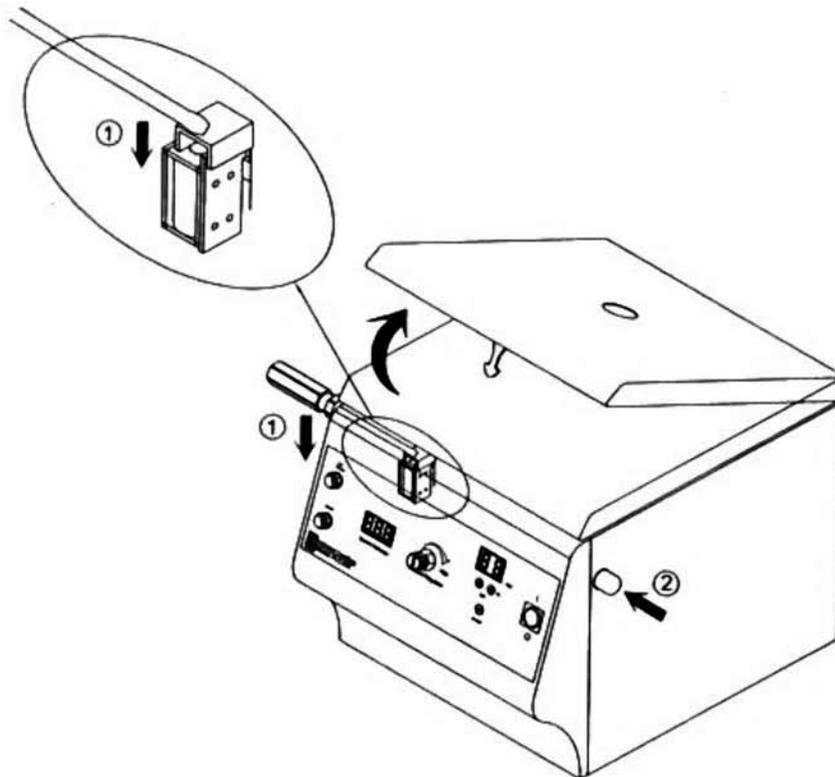
To manually open lid, kindly use the following procedures:

Steps:

1. Remove the hole plug (white) located on the left hand side of the PM5000 enclosure.
2. Insert a screwdriver or any sturdy object into the hole, and press down onto the magnetic interlock assembly as shown in step #1. Simultaneously at this time push on Lid-Release-Bar on the right (#2) to release lid
3. The lid will now open.

Maintenance & Servicing

There are very few serviceable items on the PM5000. Please check with EFD technical Service for servicing to the ProcessMate PM5000.



Nordson EFD One Year Limited Warranty

This Nordson EFD 7015544 is warranted to the original end user for one year from date of purchase. Within the period of this warranty, EFD will repair or replace any defective component, or the entire dispenser at EFD's option, on authorized return of the part or the complete dispenser, prepaid to the factory.

In no event shall any liability or obligation of EFD arising from this warranty exceed the purchase price of the equipment. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith.

EFD makes no warranty whatsoever of merchantability or fitness for a particular purpose. In no event shall EFD be liable for incidental or consequential damages.

To register your warranty in the USA, please call 800.556.3484 within 30 days, or go to www.nordsonefd.com/warranty/dispensers/one/.

For Nordson EFD LLC sales and service in over 30 countries, contact Nordson EFD or go to www.nordsonefd.com

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