BARNSTEAD THERMOLYNE CORPORATION

Type 50800 Rotomix Variable Speed Rotator

OPERATION MANUAL AND PARTS LIST SERIES 1088

Model #	Voltage	Hertz	Amps	Watts
M50824	100	50/60	0.1	10
M50825	120	50/60	0.1	10
M50820-33	220-240	50/60	0.1	10

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Safety Information

Alert Signals



△ Warning

Warnings alert you to a possibility of personal injury.



Caution

Cautions alert you to possibility of damage to the equipment.



Note

Notes alert you to pertinent facts and conditions.

Your Thermolyne Rotomix variable speed rotator has been designed with function, reliability, and safety in mind. It is your responsibility to install it in conformance with local electrical codes. For safe operation, please pay attention to the alert boxes throughout the manual.

This manual contains important operating and safety information. You must carefully read and understand the contents of this manual prior to the use of this equipment.

Warnings

To avoid electrical shock, always:

- 1. Use a properly grounded electrical outlet of correct voltage and current handling capacity.
- 2. Disconnect from power supply before servicing.

To avoid personal injury:

- Do not use in the presence of flammable or combustible materials; fire or explosion may result. This device contains components which may ignite such materials.
- 2. Use appropriate hand, eye, face and apron protection when rotating labware containing hazardous chemicals.
- 3. Refer servicing to qualified personnel.

Introduction

Your Rotomix variable speed rotator has been designed and engineered as a general purpose laboratory rotator. Intended uses include mixing solutions in various labware vessels, and solutions contained inside printed well slides.

Applications include rotating printed well slides for latex agglutination tests, the gentle mixing of electrophoretic gels and tissue culture media, and the orbital mixing of media to promote fermentation and culture growth.

General Usage

Do not use this product for anything other than its intended usage.

Installation

Remove your Rotomix from the carton. Inspect to ensure that the Rotomix is not damaged. Set rotator on a flat stable surface and plug into an appropriate outlet. Place power switch into the "on" position. The green power indicator light will illuminate. Adjust the speed control across the reference scale range. The platform should rotate in a quiet, smooth orbital motion. Set the speed. Set the timer rocker switch in the "on" position. Adjust red line indicator counterclockwise to the one minute reference mark. The platform rotation should stop after one minute has elapsed and a "cricket" alarm should activate. The alarm may be deactivated by adjusting the timer indicator to the "off" position or placing the timer switch in the "off" mode. You are now ready to operate.

Principles of Operation

The Rotomix 50800 has an electronically controlled DC motor belt drive which powers the rotator drive assembly linked to the rotator platform. Speed is adjusted by varying the DC voltage supplied to the motor.

The rotator platform is supported by three idler bushings and one drive bushing. These bushings are geometrically located to insure a precise 0.80" circular orbit.

The timer circuit is activated by depressing the timer mode switch to the "on" position. The timer may be set to a maximum of 15 minutes. After the set time has elapsed, the timer interrupts the motor drive circuit and activates a cricket alarm. The alarm will continue until the operator moves the red line indicator of the timer to the "off" position. The rotator will run continuously when the timer rocker switch is in the "off" position and only the power rocker switch is activated.

General Specifications

Overall Dimensions (w x h x d): Platform Working Dimensions: Orbital Diameter: RPM (No Load Condition): Maximum Load: Timer Range: Timer Accuracy: 9.625" (24.4 cm) x 4.25" (10.8 cm) x 10.75 (27.3 cm) 8.75" (22.2 cm) x .156" x 8.75" (22.2 cm) 0.80" 60 ± 5 RPM to at least 225 RPM 5 lbs. (2.3 kg) 0-15 min. ±10 sec.

Environmental Conditions

Operating: 4°C -56°C; 20% to 80% relative humidity, non-condensing. Installation Category II (overvoltage) in accordance with IEC 664. Pollution Degree 2 in accordance with IEC 664.

Altitude limit: 2,000 meters.

Storage: -40°C to 70°C; 10% to 90% relative humidity.

Declaration of Conformity (-33 models only)

Barnstead|Thermolyne hereby declares under its sole responsibility that this product conforms with the technical requirements of the following standards:

EMC: EN 50081-1 Generic Emission Standard; EN 50082-1 Generic Immunity Standard;

Safety: IEC 1010-1-92 Safety requirements for electrical equipment for measurement, control, and laboratory use; Part I: General Requirements per the provisions of the Electromagnetic Compatibility Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, and per the provisions of the Low Voltage Directive 73/23/EEC, as amended by 93/68/EEC.

The authorized representative located within the European Community is:

European Manager Barnstead|Thermolyne Saarbrückener Str. 248 D-38116 Braunschweig Germany

Copies of the Declaration of Conformity are available upon request.

Operation

Observe the timer dial scale. The outer perimeter time markings are referenced for 120/240 volt, 60 hertz timer motor operation. The inner reference marks are for 120/240 volt, 50 hertz timer motor operation. (It is necessary to provide a dual scale as the Rotomix is sold worldwide).

Set the speed control to the desired RPM. Set the timer to the desired elapsed time by turning the knob clockwise past the desired elapsed time reference mark and then counterclockwise until the red line indicator is over the desired elapsed time mark. Place the timer switch in the "on" mode. Mount your load on the working area. Turn the power switch to the "on" position. Upon expiration of the elapsed time, a "cricket" alarm will activate. Turn the power switch to "off" to deactivate the alarm.

Operating Tips

- 1. It is safer to mix reagents and chemicals in small mouth labware to avoid splashing. Test vessel stability to assure vessel will not tip, teeter, walk or slide. Improvised tie downs or trays may be used to hold unstable vessels in position if you prefer.
- The white silicone rubber top is removable. Lift one corner to remove top. The top must remain clean to maintain its friction-gripping quality. Wash with soap and water, dry and reinstall.
- 3. It is recommended that partial loads be centered on top to evenly distribute weight over rotator bearings for longer life.

OPERATION



Caution

If the top platform becomes jammed and cannot rotate, the motor may burn out. Keep the platform free and clear of obstacles.

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Note

Your Rotomix has an internal circuit breaker installed to protect the motor from overload situations. Should your Rotomix stop running, first check to see that the platform is neither jammed nor overloaded. Then set the power switch to the off position, wait thirty (30) seconds for the circuit breaker to reset, and then set the power switch to the on position again. If your Rotomix does not operate after you have turned it off and back on as described, set the power switch to the off position, wait thirty (30) minutes for the circuit breaker to reset, and then set the power switch to the on position again. If the unit still will not start, call Barnstead|Thermolyne customer service at 1-800-553-0039 or your local distributor.

- 4. A drop of light weight household oil should be applied to the rotator bearings where the offset bearing mounts in the case bushing and on the offset bearing washer. These bearings should be oiled every six months for mild intermittent operation and every three months for continuous heavy load operation. Access to the bearings requires removing the silicone top and standing unit on its side.
- 5. When the Rotomix is used within an incubator, the incubator temperature must be stabilized with the rotator on, as the motor generates heat.

Maintenance and Servicing

Marning

To avoid electrical shock, always disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel. Your rotator requires minimal maintenance. Lubrication with a light weight household oil is recommended annually for the platform sleeve bushing and bearing assembly. The pulley drive spindle should be lubricated with a light weight oil every 2-3 years to assure smooth, quiet operation. The drive motor is permanently lubricated.



Note

If a tachometer is not available, count the number of revolutions of the top by allowing the side of the top to bump against your finger as it rotates. The unit will increase its speed a few RPM as the motor warms up.



Note The calibration potentiometer requires very little movement to increase or decrease the

rotation speed.

General Cleaning Instructions

Wipe exterior surfaces with lightly dampened cloth containing mild soap solution.

Speed Verification and

Adjustment

The timer settings may be verified by setting the red line indicator on a specified reference mark, timing the elapsed time with a calibrated elapsed timer.

- 1. With the speed control knob fully counterclockwise and the power and timer switches off, plug the unit into an outlet with the proper voltage.
- Turn the power switch on and check the rotation speed of the top with a tachometer. The rotating speed should be 60 RPM ±5 RPM — if it's not, continue with step 3.
- Locate the calibration potentiometer marked "CALIBRATION" on the back panel. Insert a screwdriver and turn the screwdriver clockwise to increase the RPM and counterclockwise to decrease the RPM.

MAINTENANCE AND SERVICING



To avoid carbon buildup, set Rotomix at top speed and run for five minutes each week. Your Rotomix will operate within the specified operating range of 60 to at least 225 RPM under a noload condition. You may calibrate the RPM with a specific load using this procedure. However, loads heavier or lighter than your specific load may cause an RPM variation.

The calibration potentiometer will allow you to adjust to speeds lower than 60 RPM or higher than 225 RPM. Calibrating at the low side of the range will reduce the range below 225 RPM. Calibrating at more than 225 RPM will increase the low range to more than 60 RPM.

Troubleshooting Guide

Problem	Possible Causes	Solutions
Clicking noise as platform	 Toothed fastener is too 	 Loosen by evenly prying with
rotates	tight on drive cam.	screwdriver.
	 Bushing is not lubricated. 	 Lubricate with a lightweight
		household oil.
Platform unevenly rotating	•Bushing screw loose.	•Tighten screw.
(wavy motion)	 Toothed fastener is too 	 Tighten toothed fastener.
	loose on drive cam.	
Rotator speed is unstable	•Defective motor.	•Replace motor,
	 Carbon buildup on motor. 	 Run at full speed for one hour.
	•Worn drive pulley.	 Replace drive pulley.
	•Worn drive belt.	 Replace drive belt.
	 Platform drive spindle needs lubrication. 	•Lubricate platform drive spindle.
	 Component on printed circuit board failed. 	•Replaces printed circuit board.
	 Defective speed control. 	 Replace speed control.
	 Setscrew on control knob loose. 	•Tighten control knob and re-calibrate.
	•Pulley setscrew loose.	•Tighten pulley setscrew.
Unit will not rotate (though power light	 Platform bushing is binding, causing platform to stall. 	•Replace bushings and bearings.
illuminates)	 Belt slipping or broken. 	•Replace belt.
	•Timer mode active, but	 Turn timer switch off and replace
	audible alarm has failed.	audible alarm.
	 Internal circuit breaker 	 Reset internal circuit breaker according
	tripped.	to note on page 8.
	 Defective motor, spindle or 	 Replace appropriate part.
	pulley, printed circuit board	
	or speed control.	
	•Pulley setscrews loose.	•Tighten pulley setscrews.
Unit will not rotate (power	•Unit is unplugged, or	 Verify that unit is plugged into a
light does not illuminate)	power supply is bad.	a working power supply.
	•Cord set defective.	•Replace cord set.
	 Cord set spade connector detached. 	•Reattach cord set.
	•Blown fuse.	•Replace fuse.

TROUBLESHOOTING

Timer does not function	•Defective on/off timer switch.	•Replace timer switch.	
	•Defective timer.	•Replace timer.	
	 Spade connector loose. 	 Reattach spade connector. 	
	•Knob setscrew loose.	•Tighten setscrew and re-calibrate	
Audible alarm does not	•Defective alarm.	•Replace alarm.	
activate	•Defective resistor.	 Replace resistor. 	
	 Loose spade connector. 	 Reattach spade connector. 	
	•Defective timer.	•Replace timer.	
Timer does not turn off	•Defective timer.	•Replace timer.	
after elapsed time has expired	•Loose spade connector.	 Reattach spade connector. 	

Disassembling the Rotomix

- 1. Stand unit on its top. Remove the four (4) footscrews located on each corner of the bottom case. Remove screw with star washer on bottom edge; turn unit upright and remove 2 screws on top.
- 2. The top case assembly may be disassembled further by removing the silicon rubber pad. Remove the 3 screws and, with a flat-bladed screwdriver, gently pry off the fastener washer clip that holds the drive cam. The washer clip will most likely be damaged and should be replaced. Lift the platform assembly off the top case.
- 3. All the components are easily accessible for replacement and removal. Removing the timer control knob requires resetting the red line indicator to the point where the alarm activates and tightening the set screws. Check timing with a calibrated elapsed timer.
- 4. Reassembly may be completed by reversing the disassembly procedure. The drive belt must be installed to drive the platform in a counterclockwise motion. Reversing the drive belt will cause the unit to rotate clockwise, resulting in loosening of the bushing screws and causing noisy and potentially jerky operation.

Replacement Parts



Warning

To avoid electrical shock, always disconnect from power supply before maintenance and servicing. Refer servicing to qualified personnel. Replace fuses with same type and rating.

Model Type: Product Name:	M50800 Rotomix Variable Speed Rotator
Series Number:	1088
<u>Part # (Qty)</u>	Description
CR1088X1	Cord set, 100/120V
CR1088X3	Cord set, 240V
CR1088X4	Cord set and strain relief, 220-240V
MTX87	DC motor
PYX16	Drive pulley, Sm
BLX14	Drive belt
PYX15	Drive pulley, Lg
BR482X1	Drive spindle, Nylon
SF508X1	Drive spindle shaft (slotted at one end)
BRX40	Top case drive bushing (for drive spindle)
FCX41	Fasteners, locking washer (mounts on drive spindle, don't overtighten)
FWX92	Washer, Nylon (mounts on top of bushings)
PT508X1	Black silicon platform cover (optional)
PT766X1	White silicon platform cover
PC766X1A	Printed circuit board (all components mounted) 100V, 120V, 240V
RSX294	Potentiometer (speed control)
SQX7	Audible alarm
SWX138	Power switch, 240V
SWX137	Power switch, 100/120V
SWX165	Timer mode switch
TM1088X1A	Timer
FTX3B	Feet, with screws
SRX16	Cord set strain relief, 100/120V
FCX86	Used to secure bushings to top case
RSX322	Calibration pot (on rear of unit)
FZX35	Fuse, 250 Volt, 0.5 Amp, Type T (M50820-33 only)
BR717X1	Idler spindle
BRX41	Top case bushing (for Idler spindle)

Wiring Diagram



Ordering Procedures

Please refer to the Specification Plate for the complete model number, serial number, and series number when requesting service, replacement parts or in any correspondence concerning this unit.

All parts listed herein may be ordered from the **Barnstead Thermolyne** dealer from whom you purchased this unit or can be obtained promptly from the factory. When service or replacement parts are needed we ask that you check first with your dealer. If the dealer cannot handle your request, then contact our Customer Service Department at 319-556-2241 or 800-553-0039.

Prior to returning any materials to **Barnstead Thermolyne Corp.**, please contact our Customer Service Department for a "Return Goods Authorization" number (RGA). Material Returned without an RGA number will be returned.

One Year Limited Warranty

Barnstead Thermolyne Corporation warrants that if a product manufactured by

Barnstead Thermolyne and sold by it within the continental United States or Canada proves to be defective in material or construction, it will provide you, without charge, for a period of ninety (90) days, the labor, and a period of one (1) year, the parts, necessary to remedy any such defect. Outside the continental United States and Canada, the warranty provides, for one (1) year, the parts necessary to remedy any such defect. The warranty period shall commence either six (6) months following the date the product is sold by Barnstead Thermolyne or on the date it is purchased by the original retail consumer, whichever date occurs first.

All warranty inspections and repairs must be performed by and parts obtained from an authorized Barnstead Thermolyne dealer or Barnstead Thermolyne (at its own discretion). Heating elements, however, because of their susceptibility to overheating and contamination, must be returned to our factory, and if, upon inspection, it is concluded that failure is not due to excessive high temperature or contamination, warranty replacement will be provided by **Barnstead** [Thermolyne. The name of the authorized

Barnstead|Thermolyne dealer nearest you may be obtained by calling 1-800-446-6060 or writing to:

Barnstead|Thermolyne P.O. Box 797

2555 Kerper Boulevard Dubuque, IA 52004-0797 USA FAX: (319) 589-0516

E-MAIL ADDRESS: mkt@barnsteadthermolyne.com

Barnstead Thermolyne's sole obligation with respect to its product shall be to repair or (at its own discretion) replace the product. Under no circumstances shall it be liable for incidental or consequential damage.

THE WARRANTY STATED HEREIN IS THE SOLE WARRANTY APPLICABLE TO Barnstead Thermolyne PRODUCTS. Barnstead Thermolyne EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR USE.

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