



# Cel-Gro Tissue Culture Rotators

Model No.  
1640Q  
1645Q

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# Safety Information

## Alert Signals



### Warning

Warnings alert you to a possibility of personal injury.



### Caution

Cautions alert you to a possibility of damage to the equipment.



### Note

Notes alert you to pertinent facts and conditions.



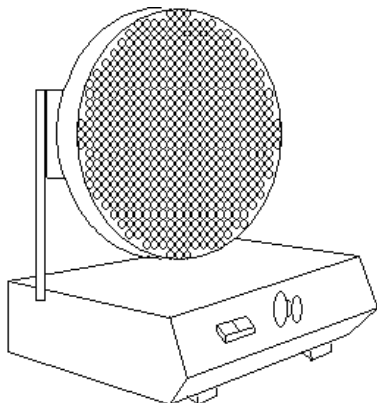
### Hot Surface

Hot surfaces alert you to a possibility of personal injury if you come in contact with a surface during use or for a period of time after use.



### Warning

This rotator is designed to operate at a temperature not to exceed 40°. Operating at temperatures above 40° will damage the unit and/or result in injury to personnel.



Model 1640Q

Models 1640Q and 1645Q provide both small and large laboratories with the versatility to carry out a variety of rotating and mixing operations. Optimum culture results are achieved in such applications as tissue and virus growth, hormone production from selected tissues, sample testing to determine the presence of viruses and cytotoxicity assays.

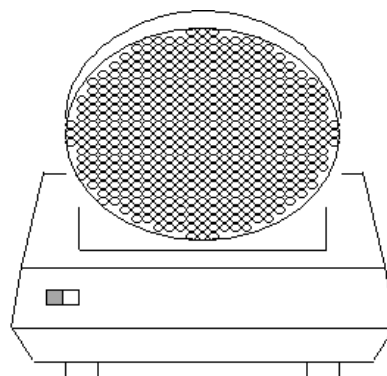
Model 1640Q rotates a single drum that can be adjusted from 5° above horizontal to 90°. The variable-speed feature permits a range of motion from a slow, gentle rotation, 12 rpm, to a progression of more vigorous rotating speeds up to 70 rpm.

Model 1645Q accommodates 1 or 2 drums that can be rotated at a fixed speed of 0.2 rpm. Drums are not fastened to a motor shaft, but are placed on the parallel, motor driven, grooved rollers for instant operation.

Available drums: Model #1647 holds 142, 16 mm tubes; Model #1648 holds 76, 25 mm tubes; and Model #1651 holds 60, 30 mm tubes. Drums must be ordered separately. The drums consist of 3 circular plates (2 are perforated) that are carefully aligned and securely formed into a rigid assembly of heavy-gauge, anodized aluminum.

The rotators can also fit into and be operated in standard incubators for cultivation under controlled temperature conditions. A pilot light indicates when units are operational.

Every unit is finished in a powder coated stainless steel for easy clean up and maintenance.



Model 1645Q

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# Specifications

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## Power Requirements:

1640Q: 120 VAC, 60 Hz, 60 W, 0.5 Amps

1645Q: 120 VAC, 60 Hz, 100 W, 0.8 Amps

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## Tissue Culture Drum Capacity:

1647Q: 142, 16 mm tube capacity

1648Q: 76, 25 mm tube capacity

1651Q: 60, 30 mm tube capacity

Note: Drums are not included, and must be ordered separately.

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## Speed of Rotation:

Model 1640Q: Adjustable from 12 to 70 rpm

Model 1645Q: Fixed 0.2 rpm

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## Angle of Rotation:

Model 1640Q: Adjustable 5° above horizontal to 90°

Model 1645Q: Non-adjustable

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## Dimensions:

Model 1640Q, with drum: 14" W x 22-1/2" H x 15" D (36 x 57x 38 cm)

Model 1645Q: 15-1/2" W x 18" H x 28" D (39 x 46 x 71 cm)

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## Shipping Weight:

Model 1640Q: 19 lbs. (9 kg)

Model 1645Q: 28 lbs. (13 kg)

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## Unit's Environmental Operating Conditions

Pollution Degree:	2
Installation Category:	II
Altitude:	2000 meters MSL (Mean Sea Level)
Humidity:	80% maximum, non-condensing
Electrical Supply:	120VAC
Voltage Tolerance:	±10% of normal rated line
Temperature:	15°C to 40°C
Product Usage:	This product is intended for use indoors <b>only</b>

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# Unpacking and Installation

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## Shipping Carton

The shipping carton should be inspected upon delivery. When received, carefully examine for any shipping damage before unpacking. If damage is discovered, the delivering carrier should both specify and sign for the damage on your copy of the delivery receipt.

Open the carton carefully making certain that all parts are accounted for before packaging materials are discarded. After unpacking, if damage is found promptly report it to the carrier and request a damage inspection promptly.

**IMPORTANT:** Failure to request an inspection of damage within a few days after receipt of shipment absolves the carrier from any liability for damage. You must call for a damage inspection promptly.

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## Location

Place the rotator on a bench in a convenient location or inside an incubator.



### Note

Leave unit disconnected when not in use.

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## Electrical Requirements

120 VAC models require a 120 VAC, 50/60 Hz power source. They are supplied with a 3-wire line cord and should be plugged into an outlet designed for 3-prong plugs. If an extension cord is used, it also should be the 3-wire grounded type. For an outlet designed to accept 2-prong plugs (ungrounded), it is required that a qualified electrician replace the outlet with a new grounded type.

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# Operation



## Warning

Do not use in the presence of flammable or combustible materials or explosive gases. Do not use in the presence of pressurized or sealed containers – fire or explosion may result, causing death or severe injury.

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## Startup and Operation

1. Make sure that on/off power switch is in the OFF position. In addition, for Model 1640Q, rotate the speed control dial all the way to the LEFT or the completely counterclockwise position. Model 1645Q incorporate a fixed rotation.
2. When loading test tubes in the rotating drum, space tubes as evenly as possible throughout the drum area-this will insure an even rotational speed and reduce wear on the drive assembly. Make sure that test tubes are inserted to the back of the drum and that they are capped so that no spilling of the contents can occur.
3. To attach the rotating drum for Model 1640Q, slide or insert the center hole of the drum onto the stainless steel shaft that extends from the center of drum mounting unit. Thread the drum-retaining knob onto the shaft until drum is securely in place. Model 1645Q requires the drums be placed side by side on the parallel, grooved rollers.
4. For Model 1640Q, the angle of rotation can be adjusted by loosening the bolts on the sides of the drum-mounting unit. Adjust to the desired angle and securely retighten the bolts on both sides. For Model 1645Q, turning the leveling foot on the base of the unit can change the angle of rotation to a maximum of approximately 15° from the horizontal.
5. Turn ON the unit by depressing the on/off power switch.
6. For Model 1640Q, it is suggested that the speed of rotation be adjusted slowly to the desired setting to insure that drum is secure and rotating properly in a counter-clockwise rotation, and that test tubes are securely capped preventing loss of any of their contents.



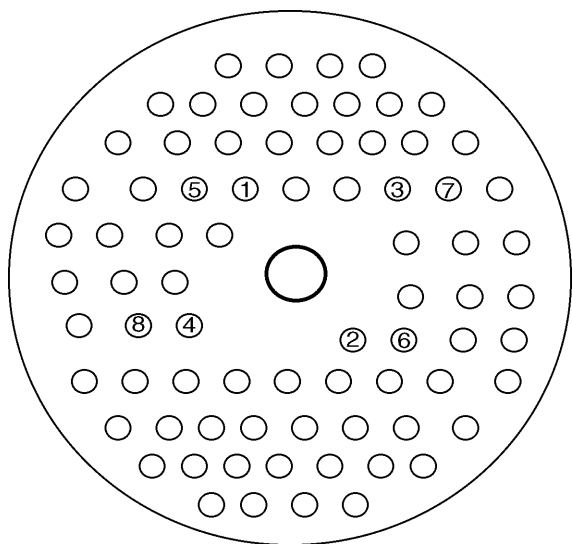
**Note**

After continued and extended operation, it is possible for the drum to exhibit uneven or erratic rotation. This does not necessarily indicate equipment malfunction and a cause for returning the unit to the manufacturer. Instead, it can indicate stretching or loosening of the timing belt. This condition can be remedied by tightening the timing belt.

## Loading and Unloading the Drum: Maintaining Drum Balance

Because the rotator is a finely balanced unit, loading and unloading the drum with culture tubes or other containers needs to maintain the overall balance of the drum, especially when it is moving.

Starting from the center and working to the outside edge of the drum, insert or remove tubes that are diametrically opposed—that is, from the top, bottom, left, right. In this way container weight is distributed evenly, allowing optimum drum rotation.



*Drum, Front Facing*



**Caution**

Failure to load or unload the drum as listed above may result in uneven drum rotation or possible stalling of the drum.



# Maintenance



## Note

Make no attempt to service or repair a Thermo Scientific product under warranty before consulting your Thermo Scientific dealer. After the warranty period, such consultation is still advised, especially when the repair may be technically sophisticated or difficult. If assistance is needed beyond what the distributor can provide, please call Customer Service at 800-553-0039. No merchandise should be returned directly to the factory without obtaining a Return Materials Authorization (RMA) number from Customer Service.



## Warning

Disconnect plug from electrical outlet before attempting any maintenance or repair of this unit.



## Note

To extend the life of the rotator, keep the on/off switch in the OFF position when unit is not in use. Clean the unit occasionally with a damp cloth or immediately if an accidental spill of any kind should occur.



## Note

In the event that the unit is operated for continuous periods of time at elevated temperatures in an incubator, more frequent lubrication is recommended to keep unit operating at optimum levels.



## Note

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

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## Gearmotor and Shaft Bearing Lubrication

1. Turn OFF power to the unit and disconnect from outlet.
2. It is recommended that the gear motor be oiled every 6 months of use.
3. Remove 10 Phillips screws that secure one half of assembly of drum mounting unit. This will permit access to oil holes on motor. A few drops of good quality oil will be sufficient.
4. At the same time, a few drops of oil should be placed on the main drive shaft bearing.

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## Motor Brush Inspection/ Replacement Model 1640Q

The recommended procedure to determine when motor brush replacement is necessary is to conduct periodic inspections of the brushes. This can be done at the same time that the motor and drive shaft bearing are lubricated as described on previous page.

1. Turn OFF power to the unit and disconnect from outlet.
2. Remove Phillips screws that secure one half of assembly of drum mounting unit. This permits access to gear motor.
3. Note that there is a black plastic retaining clip at one end of motor that is connected to a wire lead. Carefully slide the clip out and away from the motor. The spring-loaded brush can then be removed and inspected. If it measures 1/8" (0.32 cm) or less, it is time to replace BOTH brushes.
4. Exercise care when sliding brush-retaining clip on and off bracket by aligning the two accurately. This will avoid breaking either or both of the two plastic parts.

5. Remove 4 nuts that secure motor and drive shaft assembly bracket to drum mounting unit. This permits access to the other brush that is located on the opposite side of the motor.
6. Note that there are quick-connect wire leads attached to brush terminal.
7. Disconnect lead to one brush terminal at a time, remove old brush, carefully insert new brush and reconnect wire to terminal.
8. Repeat procedure for the other brush.
9. Reverse procedure to secure motor and drive shaft assembly bracket to the drum-mounting unit by replacing and securing 4 nuts. Reassemble the drum-mounting unit with the Phillips screws.

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## Power Switch Replacement

1. Turn OFF power to the unit and disconnect from outlet.
2. Turn unit on side and remove 8 screws that hold the bottom panel.
3. Disconnect wires to power switch. Remember the location of the wires.
4. From inside panel, grasp switch on sides with fingers and depress the plastic springs that mount the switch. Maintaining pressure on the springs, work switch out the panel front.
5. Insert new switch in from front until it clicks into place and is flush with panel, connect wires and reverse the remainder of the procedure.

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## Tightening the Timing Belt Model 1645Q

1. Turn OFF power to the unit and disconnect from outlet.
2. Remove Phillips screws that secure one half of assembly of drum mounting unit. This permits access to timing belt.
3. Note 4 screws in slots that secure motor to panel. Loosen screws and slide gear assembly until timing belt is tightened. The vertical movement of the belt should be in the range of 1/8" (0.32 cm) to 1/4" (0.64 cm).
4. Tighten the motor-mounting screws securely.
5. Reassemble drum-mounting unit and tighten screws securely.

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## Replacing the Motor

1. Turn OFF power to the unit and unplug power cord from outlet.
2. Turn unit on its side and remove 8 screws on outer edges of the bottom of the unit. Still on the bottom, remove 2 screws that are next to vent slots. These secure motor cover.
3. Return unit to normal position and slide top housing off to gain access to front housing plate. Note leads to on/off switch. Disconnect the 3 leads. Remove top housing of unit completely.
4. Front housing plate of unit is now accessible. Note 2 screws at either end of housing plate—remove. This releases rest of motor cover. Slide motor cover to back of unit out of the way.
5. Initially LOOSEN the 4 screws that secure motor to front housing plate. Slide screws to center of slots and remove pulley belt. Now remove screws completely.

6. Use a 5/64" Allen wrench (0.19 cm) to remove setscrew from timing belt pulley. This pulley is attached to motor shaft.

Note: Wrench may have to be manipulated to gain access to screw.

7. Remove set screws and two lead wires on the PCB.
8. Remove motor together with PCB.
9. Position the new motor and PCB in place and carefully reverse procedure to install.

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# Troubleshooting

**Note**

Before attempting any repair,  
disconnect power cord from outlet.

The following is intended as a guide to help in servicing  
this unit, if problems should occur.

<u>Symptom</u>	<u>Possible Causes of Problem</u>
<b>Drum not rotating:</b>	Power cord not connected--connect.  Electric power interruption--push in circuit breaker.  Electric short--check wiring/power cord.  Brushes burned out, Model 1640Q--replace.  Power switch broken--replace.
<b>Drum not responding to speed control, Model 1640Q:</b>	Loose timing belt, Model 1645Q--tighten.  Speed control assembly failed--replace.
<b>Drum(s) rotating erratically:</b>	Drum retaining knob loose, Model 1640Q--tighten.  Drum retaining knob loose, Model 1640Q--tighten.  Pulley(s) loose on shafts--tighten setscrew(s) on pulley(s).  Loose timing belt, Model 1645Q--tighten.  Test tubes loaded unevenly into drum(s)--space tubes evenly.

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# Replacement Parts

DESCRIPTION	PART NUMBER
Circuit Breaker, 1.0 Amp:	330-158-00
Cordset, 120 VAC units:	470-132-00
Cordset, CE certified units:	470-299-00
Drum-Retaining Knob, Model 1640Q:	560-237-00
Feet, Rubber (4):	790-214-00
Motor, Model 1640Q:	370-398-00
PCB, Model 1640Q:	PC1662X1
Motor, Model 1645Q:	370-328-00
RPO Motor Kit:	017-948-01
Bearing Housing Assy:	011-483-00
Speed Control PCB Assy Model 1640Q:	019-086-00
Switch, 120V:	440-359-00
Timing Belt, Model 1645Q:	150-259-00
Timing Belt, Model 1640Q:	150-258-00
Wiring Schematic, 1640Q:	229-097-00
Wiring Schematic, 1645Q:	227-846-00
Fuse, Model 1640Q:	FZX49

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# 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 **Thermo Scientific** 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 563-556-2241 or 800-553-0039.

Prior to returning any materials, please contact our Customer Service Department for a "Return Materials Authorization" number (RMA). Material returned without an RMA number will be refused.

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# One Year Limited Warranty

This Thermo Scientific product is warranted to be free of defects in materials and workmanship for one (1) year from the first to occur of (i) the date the product is sold by the manufacturer or (ii) the date the product is purchased by the original retail customer (the "Commencement Date"). Except as expressly stated above, the MANUFACTURER MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF DESIGN, MERCHANT ABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

An authorized representative of the manufacturer must perform all warranty inspections. In the event of a defect covered by the warranty, we shall, as our sole obligation and exclusive remedy, provide free replacement parts to remedy the defective product. In addition, for products sold within the continental United States or Canada, the manufacturer shall provide free labor to repair the products with the replacement parts, but only for a period of ninety (90) days from the Commencement Date.

The warranty provided hereunder shall be null and void and without further force or effect if there is any (i) repair made to the product by a party other than the manufacturer or its duly authorized service representative, (ii) misuse (including use inconsistent with written operating instructions for the product), mishandling, contamination, overheating, modification or alteration of the product by any customer or third party or (iii) use of replacement parts that are obtained from a party who is not an authorized dealer of Thermo Scientific products.

Heating elements, because of their susceptibility to overheating and contamination, must be returned to the factory and if, upon inspection, it is concluded that failure is due to factors other than excessive high temperature or contamination, the manufacturer will provide warranty replacement. As a condition to the return of any product, or any constituent part thereof, to the factory, it shall be sent prepaid and a prior written authorization from the manufacturer assigning a Return Materials Number to the product or part shall be obtained.

IN NO EVENT SHALL THE MANUFACTURER BE LIABLE TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, OR FOR ANY DAMAGES RESULTING FROM LOSS OF USE OR PROFITS, ANTICIPATED OR OTHERWISE, ARISING OUT OF OR IN CONNECTION WITH THE SALE, USE OR PERFORMANCE OF ANY PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, TORT (INCLUDING NEGLIGENCE), ANY THEORY OF STRICT LIABILITY OR REGULATORY ACTION.

For the name of the authorized Thermo Scientific product dealer nearest you or any additional information, contact us:

North America: USA/Canada +1 866 984 3766 (866-9-THERMO) [www.thermo.com](http://www.thermo.com)

Europe: Austria +43 1 801 40 0, Belgium +32 2 482 30 30, France +33 2 2803 2180, Germany national toll free 08001-536 376,

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