



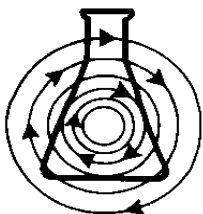
Guide to Operations

Tissue Culture Roller Drum Models TC-7 & TC-8

MANUAL NO: M1053-0050

Revision L

December 19, 2006



NEW BRUNSWICK SCIENTIFIC CO., INC.

BOX 4005 • 44 TALMADGE ROAD • EDISON, NJ 08818-4005

Telephone: 1-732-287-1200 • 1-800-631-5417

Fax: 732-287-4222 • Telex: 4753012 NBSCO

Internet: <http://www.nbsc.com> • E-mail: bioinfo@nbsc.com

INTERNATIONAL OFFICES:

BELGIUM

New Brunswick Scientific NV-SA
Stationsstraat 180/4
3110 Rotselaar
België/Belgique
Tel: 32 (0)16 56 28 31
Fax: 32 (0)16 57 27 53
E-mail: sales@nbsnv-sa.be

CHINA

New Brunswick Scientific Co., Inc.
A903, 904 Yin Hai Building
No. 250, Cao Xi Road
Shanghai 200235, P.R. China
Tel: 86 21 6484 5955 or 5966
Fax: 86 21 6484 5933
E-mail: nbschc@online.sh.cn

FRANCE

New Brunswick Scientific SARL
12-14, Rond Point des Champs Elysées
75008 Paris
France
Tel: 33 (0)1 5353 1511
Fax: 33 (0)1 5353 1557
E-mail: sales@nbssarl.fr

GERMANY

New Brunswick Scientific GmbH
In Der Au 14
D-72622 Nürtingen
Deutschland
Tel: 49 (0)7022 932490
Fax: 49 (0)7022 32486
E-mail: sales@nbsgmbh.de

THE NETHERLANDS

New Brunswick Scientific BV
Kerkenbos 1101, 6546 BC Nijmegen
P.O Box 6826, 6503 GH Nijmegen
Nederland
Tel: 31 (0)24 3717 600
Fax: 31 (0)24 3717 640
E-mail: sales@nbsbv.nl

UNITED KINGDOM

New Brunswick Scientific (UK) Ltd.
17 Alban Park
St. Albans, Herts. AL4 0JJ
United Kingdom
Tel: 44 (0)1727 853855 or 0800 581331
Fax: 44 (0)1727 835666
E-mail: bioinfo@nbsuk.co.uk
Web: www.nbsuk.co.uk

**CAUTION!**

This equipment *must* be operated as described in this manual. If operational guidelines are not followed, equipment damage and personal injury *can* occur.

Please read the entire User's Guide before attempting to use this unit.

Do not use this equipment in a hazardous atmosphere or with hazardous materials for which the equipment was not designed.

New Brunswick Scientific Co., Inc. (NBS) is not responsible for any damage to this equipment that may result from the use of an accessory not manufactured by NBS.

Copyright Notice

New Brunswick Scientific Company, Inc.
Box 4005 44 Talmadge Road
Edison, New Jersey 08818-4005

© Copyright 2006 New Brunswick Scientific Co., Inc.

All Rights Reserved.

Reproduction, adaptation, or translation without prior written permission from

New Brunswick Scientific is prohibited.

Disclaimer Notice

New Brunswick Scientific Co., Inc. reserves the right to change information in this document without notice. Updates to information in this document reflect our commitment to continuing product development and improvement.

Manual Conventions



NOTE:

Notes contain essential information that deserves special attention.



CAUTION!

Caution messages appear before procedures which, if caution is not observed, could result in damage to the equipment.



WARNING!

Warning messages alert you to specific procedures or practices which, if not followed correctly, could result in serious personal injury.

Bold

Text in boldface type emphasizes key words or phrases.



This particular *Warning* message, whether found in the manual or on the unit, means **HOT SURFACE**—and therefore represents a potential danger to touch.



CRUSH WARNING!

Crush Warning messages alert you to specific procedures or practices regarding heavy objects which, if not followed correctly, could result in serious personal injury .



Biohazard-related messages.



WARRANTY

Every Instrument manufactured by the New Brunswick Scientific Co., Inc. is warranted to be free from defects in material and workmanship. This apparatus, with the exception of glassware, lamps and electrodes (where supplied), is warranted for 1 year against faulty components and assembly and our obligation under this warranty is limited to repairing or replacing the instrument or part thereof, which shall within 1 year following date of shipment prove to be defective after our examination.

This warranty does not extend to any NBS products which have been subjected to misuse, neglect, accident or improper installation or application; nor shall it extend to products which have been repaired or altered outside the NBS factory without prior authorization from the New Brunswick Scientific Co., Inc.

TABLE OF CONTENTS

1	INTRODUCTION.....	9
1.1	SCOPE OF MANUAL	9
1.2	DESCRIPTION OF EQUIPMENT	9
1.3	SPECIFICATIONS	10
2	INSTALLATION	11
2.1	INSPECTION	11
2.2	INSTALLATION.....	11
3	OPERATION.....	12
3.1	REMOVING THE DRUM.....	12
3.2	LOADING THE DRUM	12
3.3	ADJUSTING THE TILT ANGLE.....	12
3.4	REINSTALLING THE DRUM.....	12
3.5	RUNNING THE INSTRUMENT	13
4	MAINTENANCE	14
4.1	CLEANING	14
4.2	PERIODIC INSPECTION	14
4.3	LUBRICATION	14
4.4	REPLACING THE DRIVE BELT	16
4.5	REPLACING THE MOTOR BRUSHES	16
4.6	REPLACING FUSES	16
4.7	MATERIAL RETURN AUTHORIZATION POLICY	16
4.8	REPLACEMENT PARTS	17
5	SCHEMATICS	18
6	INDEX	20

1 INTRODUCTION

1.1 *Scope of Manual*

This Manual contains installation, operating and maintenance instructions, plus a description of the Tissue Culture Roller Drum models TC-7 and TC-8, manufactured by the New Brunswick Scientific Co., Inc., P.O. Box 4005, 44 Talmadge Road, Edison, New Jersey 08818-4005, USA.

1.2 *Description of Equipment*

The Roller Drum is a precision instrument for growing tissue cultures by the roller tube method. Powered by a heavy-duty, totally enclosed ball-bearing motor, the unit is rated for many years of continuous service. It is quiet in operation and ruggedly built to withstand extensive service under incubation temperatures. The powerful drive imparts uniform rotary motion to all tubes, maintaining constant speed with heavy workloads. The instrument has a cast-aluminum base that rests on rubber feet in the rear to absorb vibration. Adjustment of a telescopic elevating screw positions the drum at the desired tilt angle. The base and motor housing have a durable finish.

Various sizes of test tubes, eggs and centrifuge bottles can be accommodated on the Roller Drum. A tumble-tube turntable platform is also available for rotating tubes over their vertical axes. The drums are easily removed and can be used as carrying trays or storage racks.

1.3 Specifications

	Model TC-7	Model TC-8
Speed	6 - 56 RPM	1/5 - 3.5 RPM
Overall Dimensions		
▪ Height	16.5 inches (419 mm)	
▪ Width	14.75 inches (375 mm)	
▪ Depth	14 inches (356 mm)	
Drum Diameter	14 inches (356 mm)	
Motor	Totally enclosed, ball bearing, heavy duty with worm gear reducer	
Electrical Service	115V, 60 Hz AC single phase 230V, 50 Hz, AC, single phase	
Net Weight	16 pounds (7.3 kg)	
Shipping Weight	26 pounds (12 kg)	

2 INSTALLATION

2.1 Inspection

When uncrated, the Roller Drum should be inspected for any damage that may have occurred during transit. Carefully unpack the apparatus and any of the optional equipment ordered with the unit. Report any obvious damage immediately to the carrier and to the New Brunswick Scientific Co., Inc..

2.2 Installation

The Roller Drum Tissue Culture apparatus may be placed on a bench or table, within easy reach of an electrical outlet. Place the Roller Drum in a position that allows sufficient clearance for operation of the apparatus with protruding tubes.

Check the specification plate before making electrical connections, to be sure your electrical service matches the setting of the instrument you received.

Set the power switch OFF, then plug the line cord into a suitable electrical outlet.

3 OPERATION

3.1 *Removing the Drum*

A spring-loaded ball-bearing (ball-detent) inside the hub holds the drum in position and prevents it from creeping off the shaft while in motion. To remove the drum:

1. Set the power switch OFF.
2. Grasp the drum handle with one hand, holding the motor housing with the other hand, and slide drum off the drive shaft. You may find it helpful to press the thumb of your clasped hand against the tip of the protruding drive shaft for leverage.

3.2 *Loading the Drum*

Load in such a way that the tubes are distributed evenly around the drum. All of the tubes should also be filled to approximately the same level. This will ensure satisfactory operation of the instrument.

3.3 *Adjusting the Tilt Angle*

Two concentric screws are used to set the tilt angle. Adjust the angle using these telescoping screws in front of the unit. Maximum adjustment is 1½ inches.

3.4 *Reinstalling the Drum*

Prior to installing the drum, make sure the power switch is OFF. To install the drum on the drive shaft:

1. Tilt the instrument so the contents of the drum are firmly seated when the drum is installed.
2. Slide the loaded drum onto the drive shaft, using one hand to lift and the other to guide it down along shaft.
3. Push the drum gently against the rear of the shaft and twist right or left until the drum engages the drive pin at the rear of shaft and locks into position.

3.5 *Running the Instrument*

On the front of the instrument, turn the power switch ON, and set the speed using the knob. To stop the machine, turn the power switch OFF.

4 MAINTENANCE

Preventive maintenance is performed to keep equipment in proper working order and will result in longer life for the equipment.

4.1 *Cleaning*

Use a clean cloth moistened with water and mild detergents, if necessary, for cleaning the cabinet. Do not use scrub pads or other abrasives which will mar the finish.

4.2 *Periodic Inspection*

Every three months, perform the following checks and inspections **with the power switch turned OFF and the line cord unplugged**:

1. Remove any accumulated dirt from the unit and underneath the unit.
2. Check that all controls are tight and operate easily.
3. Check carbon brushes in drive motor for wear (*see Section 4.5, Replacing the Motor Brushes*).

Section 4.8 provides a list of recommended replacement parts.

4.3 *Lubrication*

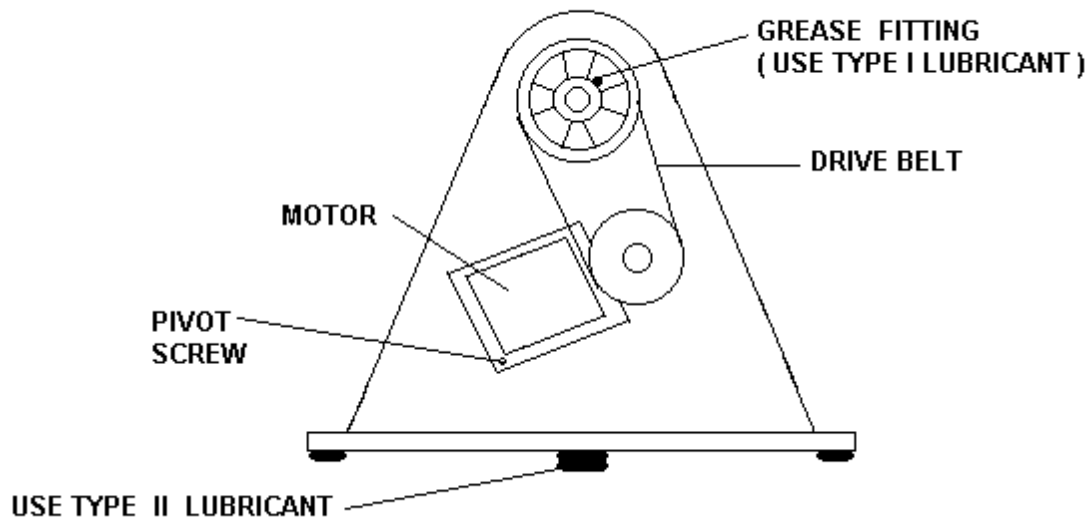
Refer to the Table 1 for the lubrication schedule and to Figure 1 (*on the following page*) for the locations to be lubricated. Table 2 (*on the following page*) provides information regarding the oils and greases that may be used.

Table 1: TV-7 & TC-8 Lubrication Schedule

Item	Schedule	Type & Amount of Lubricant
Grease	Every 3 months	Type I, until full
Screw	Every 12 months	Type II, to cover threads

Table 2: Lubricants

Type	Manufacturer & Description	Acceptable Equivalents
I	Master Lubricants Co. (Philadelphia, Pennsylvania, USA) M6 High Heat & Low Cold Test Specification: Melt Point 380°C, Penetration 269-290 Water Soluble	Any standard high quality bearing grease, No. 2 NBS part number H-239 (1-pound can)
II	Electrofilm Inc. (North Hollywood, California, USA) Electro Moly No. 44 Specification: Molybdenum disulfide and mineral oil	Military Specification MIL – M – 7866 A.S.G.

Figure 1: Lubrication Points

4.4 Replacing the Drive Belt

This procedure is for both the TC-7 & TC-8 models, with reference to Figure 1:

1. Turn the power switch OFF and unplug the line cord from the electrical outlet.
2. Remove the cover.
3. Loosen the screw on the guide block, then move the motor to loosen the belt.
4. Remove and replace the belt with a new one.
5. Move the motor back into position to tighten the belt and retighten the guide block screw.
6. Reinstall the cover, taking care not to pull or trap any wires.
7. Plug the line cord back into the electrical outlet.

4.5 Replacing the Motor Brushes

The brushes must be replaced when they are worn to less than $\frac{1}{4}$ inch in length. The normal brush length is $\frac{5}{8}$ inch.

This procedure is for both the TC-7 & TC-8 models:

1. Turn the power switch OFF and unplug the line cord from the electrical outlet.
2. Remove the cover.
3. Remove the brushes by unscrewing retaining caps.
4. Replace the brushes with new ones, and reinstall the retaining caps.
5. Reinstall the cover, taking care not to pull or trap any wires.
6. Plug the line cord back into the electrical outlet.

4.6 Replacing Fuses

To replace a fuse, unscrew the fuse cover from the front panel of the instrument (under the ON/OFF switch). There is only one fuse on 115-120V units, while there are two fuses on 220-249V units (*see Figure 2*).

4.7 Material Return Authorization Policy

Should you find it necessary to return your TC-7 or TC-8 to New Brunswick Scientific for service, first call NBS Customer Service to obtain a Return Authorization Number. This number must appear on the outside of the carton when you ship it to us.

4.8 Replacement Parts

<i>Description</i>	<i>TC-7</i>	<i>TC-8</i>	<i>Qty/Unit</i>
Cord Set	EC-185	EC-185	1
Switch	ES-111	ES-107	1
Capacitor	-	-	1
Motor	P0480-0522	P0480-0191	1
Transformer (230V, 60/50 Hz)	ET-120	ET-120	1
Rubber Feet	R-112	R-112	2
Needle Bearing	P0180-0040	P0180-0040	2
Gears for M-121	-	-	1
Shaft	M1053-0151	M1053-0151	1
Spur Gear (Driven)	-	-	1
Motor Gear (Driven)	-	-	1
Motor & Gear Assembly	-	-	1
Motor Brushes	P0380-1210	P0380-1210	1
Rectifier Module	G77-180	G77-180	1
Variable Transformer	ET-118	ET-118	1
Upper Telescoping Screw	M1053-0210	M1053-0210	1
Lower Telescoping Screw	M1053-0220	M1053-0220	1
Belt ¹	R-320	R-324	1
Pulley (OK45)	-	-	1
Pulley (OK15)	-	-	1
Pulley (OK25)	S-122x1/2	-	1
Pulley	P0180-5191	M1053-5100	1
Pulley (OK50)	-	S-165x1/2	1
Lubrication	H-239	H-239	1 can
Fuse, 115V, 100V	EF-104	EF-104	1
Fuse, 230V, 250V	P0380-3150	P0380-3150	2
Belt ²	R-322	-	1

1. Use R-320 Belt with NSH-12RH Motor.
2. Use R-322 Belt with 2AAOBEPM-3F P.M. Motor

5 SCHEMATICS

**Figure 2: Wiring Diagram 220-240V 50/60 Hz Wiring Diagram
(Models TC-7 & TC-8)**

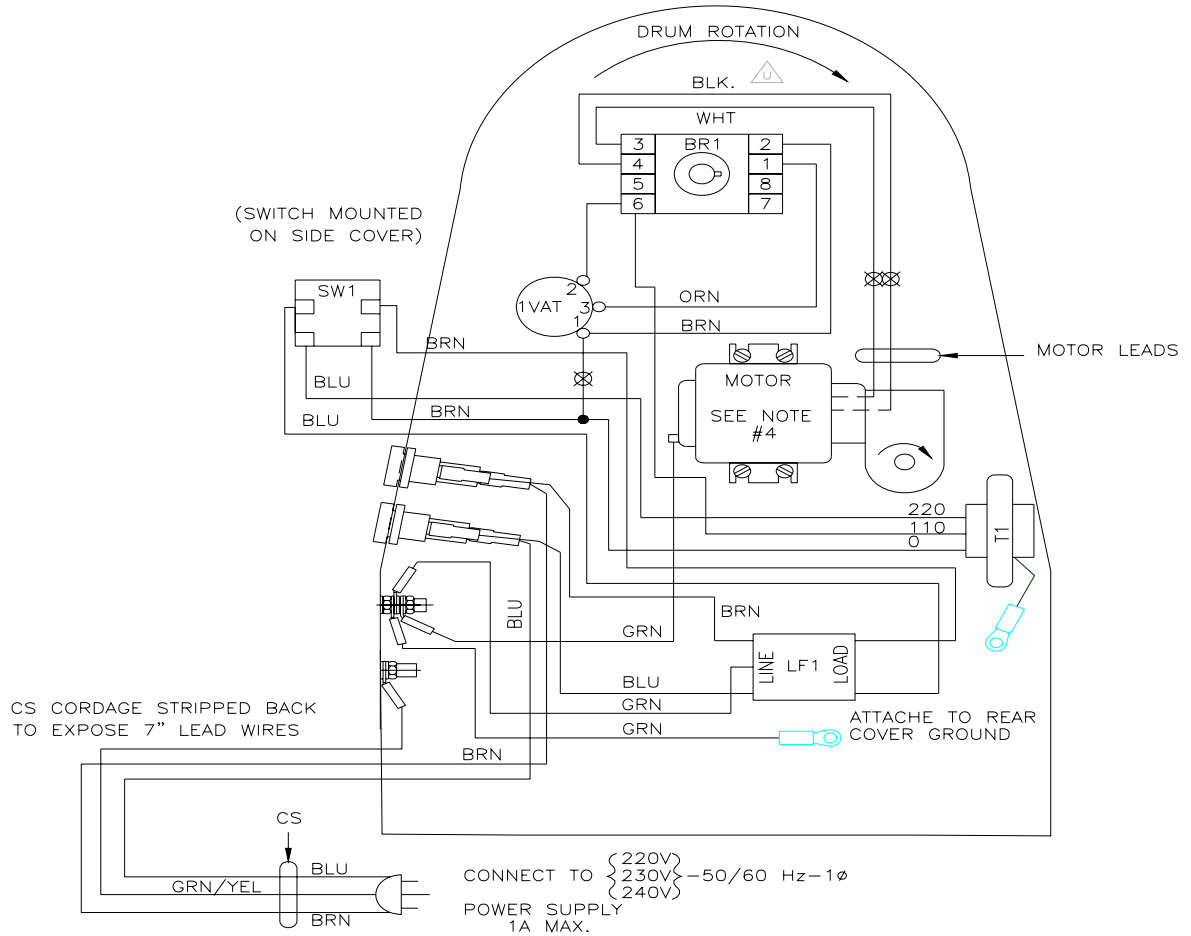
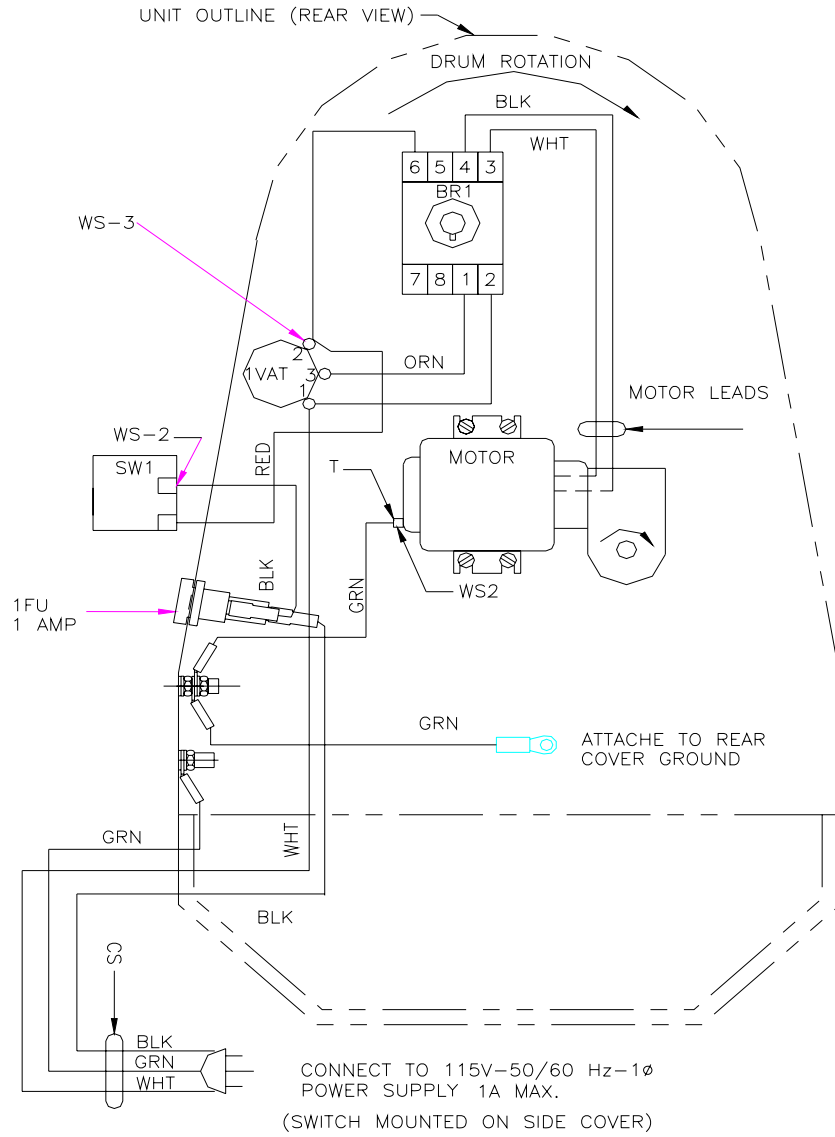


Figure 3: Wiring Diagram 115-120V 50/60 Hz Wiring Diagram (Models TC-7 & TC-8)



6 INDEX

- C**
- CAUTION
 - Symbol for, 5
 - Cleaning, 14
 - Copyright Notice, 5
- D**
- Disclaimer Notice, 5
 - Drive Belt
 - Replacing the, 16
 - Drum
 - Installing the, 12
 - Loading the, 12
 - Removing the, 12
- E**
- Electrical Service, 11
- F**
- Fuse
 - Replacing a, 16
- I**
- Inspection, 11
 - for Maintenance, 14
 - Installation, 11
 - International Offices
 - List of, 3
 - Introduction, 9
- L**
- Lubricants, 15
 - Lubrication
 - Schedule for, 14
 - Lubrication Points, 15
- M**
- Maintenance, 14
 - Manual Conventions, 5
 - Motor Brushes
 - Replacing the, 16
- N**
- NOTE
 - Symbol for, 5
- O**
- Operation, 13
 - Overview, 9
- R**
- Replacement Parts, 17
 - Return Authorization, 16
 - Running the Drum Roller, 13
- S**
- Schematics
 - 115V, 19
 - 230V, 18
 - Service Parts, 17
 - Shipping Damage, 11
 - Specifications, 10
- T**
- Table of Contents, 7
 - Tilt Angle
 - Adjusting the, 12
- W**
- WARNING
 - Symbol for, 5
 - Warranty, 6