

# **INSTRUCTION MANUAL**

**12C SERIES TURNTABLE  
16C SERIES TURNTABLE**

**April, 1988**

**IM No. 597-0089**

**BROADCAST ELECTRONICS, INC.**



# IMPORTANT INFORMATION

## EQUIPMENT LOST OR DAMAGED IN TRANSIT

When delivering the equipment to you, the truck driver or carrier's agent will present a receipt for your signature. Do not sign it until you have (a) inspected the containers for visible signs of damage and (b) counted the containers and compared with the amount shown on the shipping papers. If a shortage or evidence of damage is noted, insist that notation to that effect be made on the shipping papers before you sign them.

Further, after receiving the equipment, unpack it and inspect thoroughly for concealed damage. If concealed damage is discovered, immediately notify the carrier, confirming the notification in writing, and secure an inspection report. This item should be unpacked and inspected for damage WITHIN 15 DAYS after receipt. Claims for loss or damage will not be honored without proper notification of inspection by the carrier.

## TECHNICAL ASSISTANCE AND REPAIR SERVICE

Technical assistance is available from Broadcast Electronics by letter or prepaid telephone or telegram. Equipment requiring repair or overhaul should be sent by common carrier, prepaid, insured and well protected. Do not mail equipment. We can assume no liability for inbound damage, and necessary repairs become the obligation of the shipper. Prior arrangement is necessary. Contact Customer Service Department for a Return Authorization.

### FOR TECHNICAL ASSISTANCE

Phone (217) 224-9600 Customer Service

## WARRANTY ADJUSTMENT

Broadcast Electronics, Inc. warranty is included in the Terms and Conditions of Sale. In the event of a warranty claim, replacement or repair parts will be supplied F.O.B. factory. At the discretion of Broadcast Electronics, the customer may be required to return the defective part or equipment to Broadcast Electronics, Inc. F.O.B. Quincy, Illinois. Warranty replacements of defective merchandise will be billed to your account. This billing will be cleared by a credit issued upon return of the defective item.

## RETURN, REPAIR AND EXCHANGES

Do not return any merchandise without our written approval and Return Authorization. We will provide special shipping instructions and a code number that will assure proper handling and prompt issuance of credit. Please furnish complete details as to circumstances and reasons when requesting return of merchandise. All returned merchandise must be sent freight prepaid and properly insured by the customer.

## REPLACEMENT PARTS

Replacement and Warranty Parts may be ordered from the address below. Be sure to include equipment model and serial number and part description and part number.

Broadcast Electronics, Inc.  
4100 N. 24th St.; P.O. Box 3606  
Quincy, Illinois 62305  
Tel: (217) 224-9600  
Telex: 25-0142  
Cable: BROADCAST

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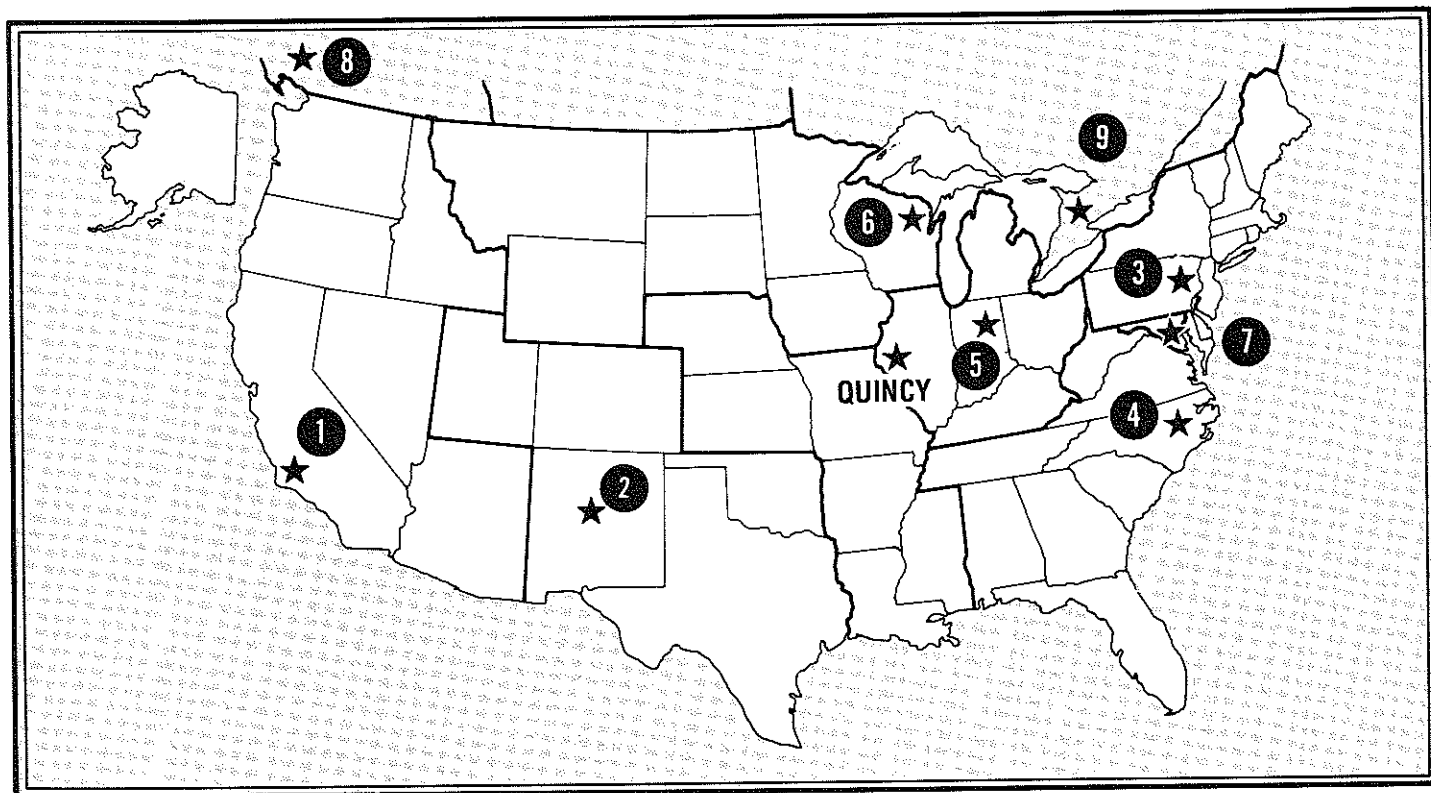
## MODIFICATIONS

Broadcast Electronics, Inc. reserves the right to modify the design and specifications of the equipment in this manual without notice. Any modifications shall not adversely affect performance of the equipment so modified.

# AUTHORIZED SERVICE CENTERS

• Equipped to serve you with Broadcast Electronics parts and repairs—both in and out of warranty

• Regional depots reduce parts delivery time and repair turn-around time



## UNITED STATES

**1. Riggins Electronics**  
3272 E. Willow St.  
Long Beach, CA 90806  
Ph: (213) 598-7007

States Covered:  
Alaska  
Arizona  
California  
Hawaii  
Nevada  
Oregon  
Washington

**2. Dyma Engineering**  
367 Main ST. S.E.  
Box 1535  
Los Lunas, NM 87031  
Ph: (505) 867-6700

States Covered:  
Colorado  
New Mexico  
Oklahoma  
Texas  
Utah

**3. Radio Systems Design**  
5131 West Chester Pike  
Edgmont, PA 19028  
Ph: (215) 356-4700

States Covered:  
Connecticut  
Maine  
Massachusetts  
New Hampshire  
New Jersey  
New York  
Pennsylvania  
Rhode Island  
Vermont

**4. Broadcast Services**  
Rt. #3, Box 45E  
Four Oaks, NC 27524  
Ph: (919) 934-6869

States Covered:  
Alabama  
Florida  
Georgia  
North Carolina  
South Carolina  
Tennessee  
Virginia  
West Virginia

**5. Allied Broadcasting Equipment**  
635 South E. St.  
Richmond, IN 47374  
Ph: (317) 962-8596

States Covered:  
Illinois  
Indiana  
Kentucky  
Michigan  
Ohio

**6. Electronic Industries**  
19 East Irving Ave.  
Oshkosh, WI 54902  
Ph: (414) 235-8930

States Covered:  
Iowa  
Minnesota  
Montana  
North Dakota  
South Dakota  
Wisconsin  
Wyoming

**7. Midwest Telecommunications**  
4720-B Boston Way  
Lanham (Wash., D.C.) MD 20801  
Ph: (301) 577-4903

States Covered:  
District of Columbia  
Delaware  
Maryland

## CANADA

**8. Nortec West, Ltd.**  
325 West Fifth Avenue  
Vancouver V5Y 1J6,  
B.C., Canada  
Ph: (604) 872-8525

Provinces Covered:  
British Columbia  
Yukon Territory  
Alberta  
Manitoba  
NW Territory  
Saskatchewan

**9. J-Mar Electronics, Ltd.**  
6 Banigan Drive  
Toronto M4H 1E9,  
Ontario, Canada  
Ph: (416) 421-9080

Provinces Covered:  
New Brunswick  
Nova Scotia  
Ontario  
Quebec



TECHNICAL MANUAL  
597-0089  
BROADCAST ELECTRONICS  
12C/16C SERIES TURNTABLES



### 12C SERIES TURNTABLE

		STANDARD DOMESTIC PLATTER STOCK NO.	INTERNATIONAL FLAT PLATTER STOCK NO.
<u>3 SPEED, 117V, 60 Hz MODELS</u>			
12C/U	Undrilled	902-0008	902-0032
12C/320	Drilled for BE S-320 Tone Arm	902-0009	902-0033
12C/0	Drilled for Specified Tone Arm	902-0010	902-0034
<u>3 SPEED, 220/240V, 50 Hz MODELS</u>			
12C/U	Undrilled	902-0011	902-0035
12C/320	Drilled for BE S-320 Tone Arm	902-0012	902-0036
12C/0	Drilled for Specified Tone Arm	902-0013	902-0037
<u>3 SPEED, 117V, 50 Hz MODELS</u>			
12C/U	Undrilled	902-0001	
12C/320	Drilled for BE S-320 Tone Arm	902-0002	
12C/0	Drilled for Specified Tone Arm	902-0003	
<u>2 SPEED, 117V, 60 Hz MODELS</u>			
12C2/U	Undrilled	902-0063	902-0038
12C2/320	Drilled for BE S-320 Tone Arm	902-0064	902-0039
12C2/0	Drilled for Specified Tone Arm	902-0065	902-0040
<u>2 SPEED, 117V, 50 Hz MODELS</u>			
12C2/U	Undrilled	902-0066-301	
<u>2 SPEED, 220/240V, 50 Hz MODELS</u>			
12C2/U	Undrilled	902-0066	902-0041
12C2/320	Drilled for BE S-320 Tone Arm	902-0067	902-0042
12C2/0	Drilled for Specified Tone Arm	902-0068	902-0043

### 16C SERIES TURNTABLE

<u>3 SPEED, 117V, 60 Hz MODELS</u>			
16C/U	Undrilled	902-0069	902-0076
16C/260	Drilled for BE S-260 Tone Arm	902-0070	902-0077
16C/0	Drilled for Specified Tone Arm	902-0071	902-0078
<u>3 SPEED, 220/240V 50 Hz MODELS</u>			
16C/U	Undrilled	902-0073	902-0079
16C/260	Drilled for BE S-260 Tone Arm	902-0074	902-0080
16C/0	Drilled for Specified Tone Arm	902-0075	902-0081

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4-1	Wiring Diagram, 12C, 12C-2 Turntables
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WB902-0029  
AD902-0008,  
-0009,  
-0010  
WB902-0072  
AD902-0069,  
-0070,  
-0071,  
-0073,  
-0074,  
-0075

SECTION I  
GENERAL INFORMATION

1-1.      DESCRIPTION.

1-2.      The Broadcast Electronics Model 12C and 16C Series Turntables are durable and dependable professional units. Designed for broadcasting and studio use, these turntables are easy to service and operate.

1-3.      The 12C and 16C are three-speed turntables designed for 33 1/3, 45, or 78 revolutions per minute operation. The 12C2 is a two-speed turntable designed for 33 1/3 or 45 revolutions per minute operation. All turntables feature low wow and flutter and high-torque start. The 12C and 16C models feature start up times of 1/8th and 1/4th of a platter revolution, respectively at all speeds.

1-4.      A heavy-duty hysteresis-synchronous motor drives the inside platter rim through a capstan high-memory idler arrangement. Motor isolation mounts and a statically-balanced motor/counter weight assembly reduces rumble.

1-5.      SPECIFICATIONS.

1-6.      Refer to Table 1-1 for electrical and physical specifications related to the operation of the 12C and 16C turntables.

1-7.      OPTIONS AND ACCESSORIES.

1-8.      The following items are available for use with the Broadcast Electronics Model 12C and 16C Turntables:

- A. S-320 REK-0-Kut 12 inch Tone Arm (BE P/N 950-0061) for 12C models.
- B. S-260 REK-0-Kut 16 inch Tone Arm (BE P/N 950-0062) for 16C models.
- C. EP-1 Equalized Turntable Preamplifier RFI protected, 117/220/240V, 50/60 Hz (BE P/N 903-0020).
- D. EP-2 Equalized Turntable Preamplifier RFI protected with Transformer Output, 117/220/240V, 50/60 Hz (BE P/N 903-0021).

1-9.      A complete listing of accessories is available in the Broadcast Electronics Equipment Price List.



TABLE 1-1. Electrical and Physical Specifications

PARAMETER	SPECIFICATIONS
SPEEDS:	
12C2	33 1/3 and 45 RPM
12C and 16C	33 1/3, 45, and 78 RPM
Regulation	+1% -0%
MOTOR	Synchronous, integrated capstan, outer rim drive with idler
ACCELERATION:	
12C	1/8th platter revolution to full speed
16C	1/4th platter revolution to full speed
WOW AND FLUTTER	Less than 0.1%
RUMBLE	-38 dB
POWER REQUIREMENTS:	
STANDARD	105-125V ac, 60 Hz
OPTIONAL	105-125/220-240V ac, 50 Hz
PLATTER WEIGHT:	
12C	5 lbs (2.27 kg)
16C	9 lbs 8 oz (4.31 kg)
TOTAL WEIGHT:	
12C	20.5 lbs (9.23 kg) unpacked
16C	22 lbs 12 oz (10.32 kg) unpacked
12C DIMENSIONS:	
WIDTH	15 inches (38.1 cm)
LENGTH	15.5 inches (39.37 cm)
DEPTH BELOW FRAME	5 inches (12.7 cm)
16C DIMENSIONS:	
WIDTH	20.13 inches (51.13 cm)
LENGTH	20.25 inches (51.43 cm)
DEPTH BELOW FRAME	5.63 inches (14.3 cm)

## SECTION II

### INSTALLATION

#### 2-1. UNPACKING.

2-2. All equipment becomes the property of the customer when it is delivered to the carrier. Carefully unpack the turntable. Inspect it to determine if any damage was incurred during shipping. All shipping materials should be retained until it is positively determined that the machine sustained no damage. Claims for damaged equipment must be filed immediately.

2-3. Refer to Figure 2-1 and unpack the turntable as follows:

- A. Remove the platter by slowly lifting it straight up from the turntable base. Remove the shaft shipping block, the vial of oil, and the envelope of parts.
- B. A set of four mounting screws, a mounting template, a vial of oil, a remote control plug with three pins, and a 5/64 inch hex wrench are included with each turntable. If the contents are incomplete or if the unit is damaged, notify both the carrier and Broadcast Electronics, Inc.
- C. Remove the shipping block from the shift arm speed selection plate. Set the shift lever in the neutral position (the notch between 33 1/3 and 45 RPM) to prevent the formation of flat spots on the idler.
- D. Remove the three No. 10-32 shipping screws and the shock blocks which have been lodged between the motor hanger and the turntable base. When prepared for operation, the motor should float on the shock mount supports.

#### 2-4. INSTALLATION.

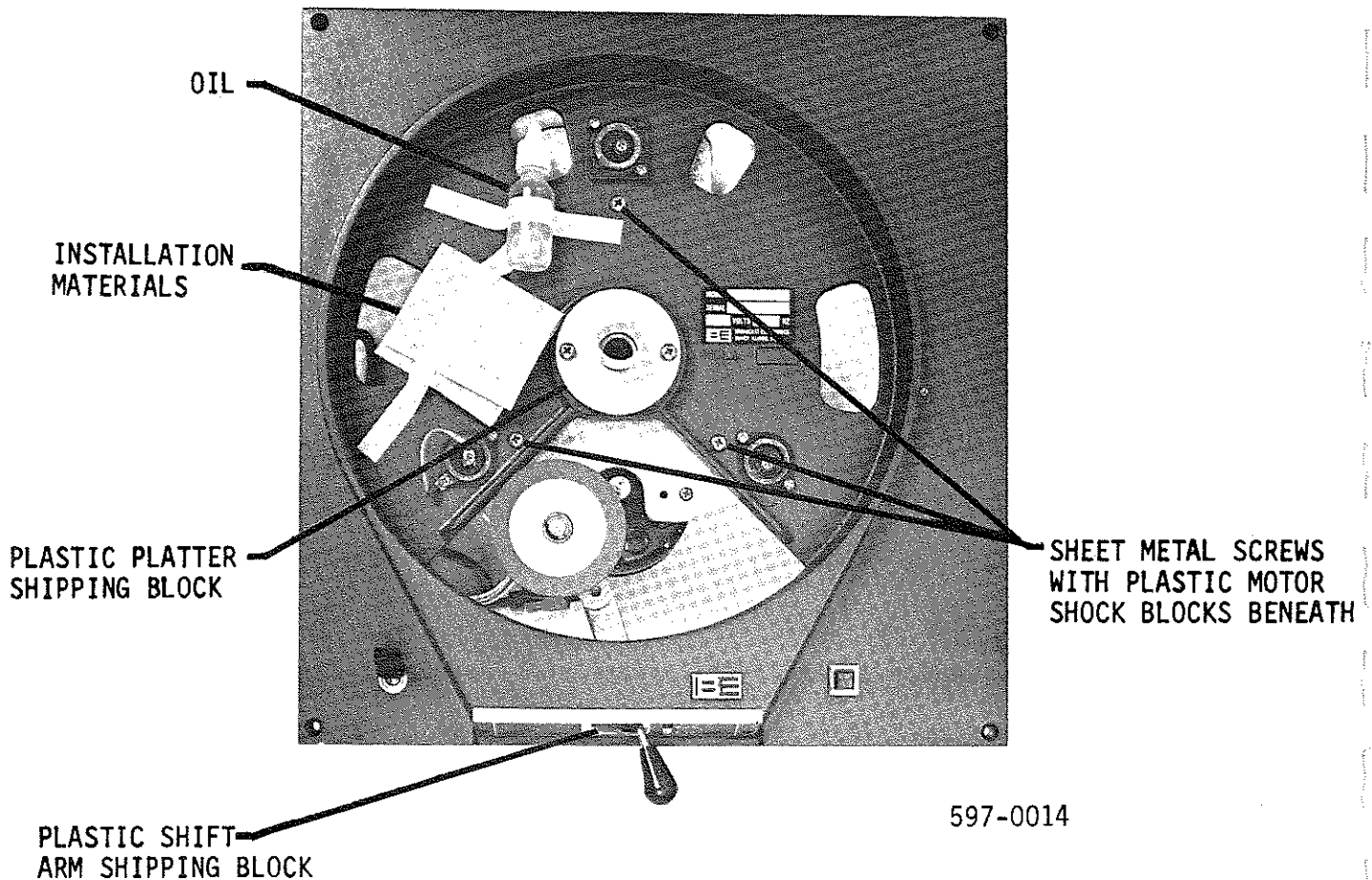
#### 2-5. MOUNTING.

2-6. The turntable should be mounted on a sturdy stand, desk, etc., to provide stability and adequate mass for the turntable-tone arm assembly. It is suggested that the mounting stand be detached from any other furniture in order to provide isolation of the turntable and tone arm from vibrations transmitted through the floor, walls, and other furniture. It is also recommended that a vibration absorbant balast material such as sand or lead-shot be placed in the base of the turntable stand.

**CAUTION**

## PRIOR TO OPERATION

ALL SHIPPING MATERIALS MUST BE REMOVED PRIOR TO OPERATION. RETAIN THESE ITEMS IN CASE THE TURNTABLE MUST BE SHIPPED IN THE FUTURE.



TOP VIEW (PLATTER REMOVED)

REFER TO THE INSTRUCTION MANUAL FOR ALL PROCEDURES TO BE PERFORMED PRIOR TO TURNTABLE OPERATION.

FIGURE 2-1. UNPACKING INSTRUCTIONS: 12C AND 16C SERIES TURNTABLES

2-7. LUBRICATION.

WARNING

DO NOT USE THE OIL SHIPPED WITH THE TURNTABLE NEAR HEAT OR FLAME. REFER TO SECTION V, APPENDIX FOR SAFETY INFORMATION.

WARNING

2-8. Apply a light coat of oil (supplied) to the shaft of the platter. Fill the platter shaft well with enough oil to cover the ball-bearing at the bottom of the well. Lower the platter into the well.

2-9. The oil level in the well should be checked using the following procedure. Connect the unit to an appropriate ac power source. Select any speed and operate the power switch to on. Allow the platter to run for several minutes. Turn the turntable off and remove the platter. The correct amount of oil in the well will produce a light coating of oil in the recessed area at the top of the well shaft. Either an over flow of oil in the recess or no oil at all will require the appropriate corrective action for proper operation.

2-10. REMOTE CONTROL INTERCONNECTIONS.

2-11. To facilitate remote control start, a remote control receptacle has been installed (refer to diagram B902-0029 for the 12C or B902-0072 for the 16C) and a matching plug has been provided for customer use. Connect a switch of proper current and voltage ratings to the remote start plug. To use the remote start switch, connect the plug and receptacle and leave the chassis power switch in the off position (vertical for the 12C, horizontal for the 16C).

2-12. TONE ARM INSTALLATION.

2-13. Any high quality tone arm may be used with the 12C or 16C Series turntables. The turntable base can be drilled for many types of tone arms at the factory. Most professional tone arms provide a mounting template for installation. Manufacturer's instructions should be carefully followed when mounting a tone arm on a turntable that has not been factory drilled.

2-14. OPTIONAL EQUIPMENT INSTALLATION.

2-15. S-320/S-260 TONE ARMS. The interconnections between the S-320 tone arm and the 12C turntable or the S-260 tone arm and the 16C turntable are described in the S-320/S-260 instruction manual (597-0017).

2-16. EP-1/EP-2 TURNTABLE PREAMPLIFIER. The interconnections between the EP-1 or the EP-2 turntable preamplifier and the tone arm are described in the EP-1/EP-2 instruction manual (597-0083).

### SECTION III OPERATION

#### 3-1. OPERATION PROCEDURE.

CAUTION THE POWER SWITCH SHOULD BE IN THE OFF POSITION (VERTICAL FOR THE 12C OR HORIZONTAL FOR THE 16C) AND THE SPEED CONTROL SHIFT ARM IN THE NEUTRAL POSITION (BETWEEN 33 1/3 AND 45 RPM) WHENEVER THE TURNTABLE IS NOT IN OPERATION.

CAUTION

CAUTION

3-2. To use the turntable, place a record on the platter and cue the tone arm. Back the record approximately 1/8th of a revolution. Place the speed control shift arm in the desired slot. Operate the power switch to on. The platter will be up to speed within 1/8th of a revolution for the 12C or 1/4th of a revolution for the 16C.

3-3. Return the power switch to the off position and the speed control shift arm to neutral when finished.

### SECTION IV MAINTENANCE

#### 4-1. INTRODUCTION.

4-2. This section provides general maintenance information, mechanical and electrical adjustment procedures, component replacement procedures, and parts lists and diagrams for Model 12C and 16C turntables.

#### 4-3. FIRST LEVEL MAINTENANCE.

4-4. First level maintenance consists of routine cleaning and preventive maintenance procedures which help maintain high performance levels.

4-5. CLEANING.

4-6. The driving surface of the idler and the inside rim of the platter must be kept free of oil and other contaminating substances. Oil on the idler will affect starting torque and will cause undue wear of the idler.

4-7. Clean the capstan, idler, and the inside of the platter rim with a suitable solvent. During the first few weeks of operation, this cleaning should be done every few days. After this initial period, the cleaning need only be done monthly. If the idler or platter rim becomes contaminated with oil, clean both items thoroughly with hot water and detergent.

4-8. LUBRICATION.

WARNING

DO NOT USE THE OIL SHIPPED WITH THE TURNTABLE NEAR HEAT OR FLAME. REFER TO SECTION V, APPENDIX FOR SAFETY INFORMATION.

WARNING

4-9. DRIVE MOTORS. Two brands of motors are used with the 12C and 16C series turntables. Both are equipped with sintered bronze bearings which do not require frequent lubrication. If the motor is equipped with oil cup resevoirs, two or three drops of SAE 30 weight oil should be forced into the resevoirs after 2000 or more hours of operation.

4-10. PLATTER SHAFT, SHAFT WELL, AND SHAFT BEARING. The platter shaft, the shaft well, and the well bearing should be cleaned and re-lubricated every three months. Do this more frequently if the turntable is used continuously.

4-11. Remove the platter and wipe off any oily residue. Wrap a clean, absorbent, lintless cloth around a wooden dowel and clean the bearing well. It is not necessary to use a solvent under normal conditions.

4-12. Check the bearing, the shaft, and the well for scratches and scoring. If any scratches are noticed, it is important to double check that all oil and dirt is removed before relubrication. Refer to paragraph 2-7 for the lubrication procedure using a lightweight oil (such as 3-in-1 oil).

4-13. MOTOR SHOCK MOUNTS. The life of these mounts can be extended by periodically lubricating them with a small amount of petroleum jelly. This lubrication will help prevent them from becoming brittle and losing their ability to absorb motor vibrations.

4-14. SECOND LEVEL MAINTENANCE.

4-15. Second level maintenance consists of procedures required to restore the unit to proper operation after a fault has occurred.

4-16. ADJUSTMENTS.

4-17. SPEED CONTROL. Each turntable speed slot has an adjustable stop screw. This screw limits the travel of the speed change shift arm to control pressure between the motor capstan and the platter rim. Best results are realized with the least possible pressure that gives adequate driving power. Too much pressure causes idler wear, incorrect speed, and vibrations.

NOTE

THESE STOP SCREWS ARE FACTORY ADJUSTED FOR PROPER START AND RUN TORQUE. BEFORE ADJUST-

NOTE

ING THESE SCREWS, BE SURE THAT THE IDLER WHEEL AND INSIDE PLATTER RIM ARE CLEAN, AS

NOTE

OIL ON THESE SURFACES COULD CAUSE PROBLEMS SIMILAR IN NATURE TO MALADJUSTED STOP SCREWS.

4-18. To adjust a stop screw, insert the supplied 5/64 inch hex wrench through the appropriate opening in the shift plate. With the turntable operating at the speed to be adjusted, turn the stop screw clockwise until the motor ceases driving the platter.

4-19. Slowly back the screw out (counterclockwise) until the platter just begins to turn. Continue in a counterclockwise direction for an additional 1 1/4 turn to provide the optimum start and run torque adjustment.

WARNING

DISCONNECT AC POWER BEFORE PERFORMING THE FOLLOWING MAINTENANCE PROCEDURES.

4-20. IDLER WHEEL HEIGHT. The idler wheel should be aligned so that, when engaged, it rides in the middle of the capstan step for the speed chosen. As the motor shock mounts age, the motor may sag causing the capstan to slip out of alignment. This can be corrected to some extent by changing the number of washers beneath the idler wheel.

4-21. Carefully remove the platter and set it off to one side. Using a pair of needlenose pliers, push the C-clip off of the idler arm. Remove and retain the fiber washer and the idler wheel. The washers beneath the idler may be added to or reduced in number, as required, to obtain correct idler wheel-capstan alignment. There should always be at least one washer below the idler to prevent metal from rubbing against metal.

4-22. If a sufficient adjustment in the number of washers can not be made, fiber washers can also be added to or subtracted from the shift arm (refer to assembly drawing D902-0008 for the 12C or D902-0069 for the 16C).

4-23. After a satisfactory alignment has been made, replace the idler wheel, the fiber washer, and slide the C-clip back onto the idler arm.

4-24. COMPONENT REPLACEMENT.

4-25. IDLER WHEEL REPLACEMENT. If the idler wheel becomes hardened, glazed, or begins to crumble, it will require replacement. Follow the procedure in paragraph 4-21 to remove the old idler wheel.

4-26. Set the new idler wheel on the shaft and check for correct idler wheel-capstan alignment (refer to paragraph 4-20). If the idler and the capstan do not line up correctly, adjust the number of washers beneath the idler wheel as required. Refer to paragraph 4-23 to complete the procedure.

4-27. MOTOR SHOCK MOUNT REPLACEMENT. If the shock mounts have become brittle, if rumble increases, or if the motor sags excessively or to one side, the motor shock mounts must be replaced.

4-28. Disconnect ac power. Remove the platter and plug the shaft well with a clean lint-free cloth to prevent the oil and the bearing from spilling out during the procedure. Set the turntable on a table or some other surface so that the motor and hanger casting are supported and will not fall as the shock mounts are replaced.

4-29. Remove the center screw from each shock mount while supporting the motor hanger and motor from below. Removal of the center screw frees the motor hanger from the base of the turntable. Set the motor hanger assembly aside. Finally, remove the two outside screws from each shock mount. This allows the shock mounts to be removed from the turntable base.

NOTE

THE FRONT AND THE REAR SHOCK MOUNTS ARE NOT INTERCHANGEABLE. THE SQUARE SHOCK MOUNT BELONGS AT THE REAR OF THE TURNTABLE BASE.

NOTE

4-30. Mount the replacement shock mounts on the turntable base using the outside screws first. Attach the grounding strap to the left front mount. Line the motor hanger up and replace the middle screw of each mount, supporting the weight of the motor and hanger assembly until all the center screws are in place.

4-31. Replace the turntable in its stand. Remove the cloth from the shaft well and check the oil level as described in paragraph 2-12. Check the idler wheel-capstan alignment and make any necessary adjustments as described in paragraph 4-20.

4-32. MOTOR REPLACEMENT. Disconnect ac power. Remove the turntable platter. To prevent spillage, plug the shaft well with a clean, lint-free cloth. The idler wheel should be removed to prevent damage (refer to paragraph 4-21). Move the turntable base to a surface where support can be provided for the motor.



4-33. Remove the motor mounting screws from the hanger, providing support as the screws are removed. Unwire the motor as shown in diagram B902-0029 for the 12C or B902-0072 for the 16C. Mount the new motor in the appropriate holes, tightening the mounting screws alternately and slowly to assure even mounting. Rewire the motor according to the wiring diagram (B902-0029 for the 12C or B902-0072 for the 16C).

4-34. Replace the turntable in its stand. Replace the idler wheel and check for proper alignment and make any necessary adjustments (refer to paragraph 4-20). Remove the cloth from the shaft well and check for the proper oil level (refer to paragraph 2-7) before returning the turntable to service.

4-35. POWER SWITCH REPLACEMENT. Disconnect ac power. Unscrew the black knob from the switch. Remove the locking nut from the base of the switch. Pull the switch through the hole in the base of the turntable, remove the clear tubing and the wires shown in the wiring diagram (B902-0029 for the 12C or B902-0072 for the 16C). Replace with a new switch and metal oxide varistor. Replace the locking nut and the black knob. Rewire per the wiring diagram and install clear tubing over wiring.

4-36. PARTS LISTS.

4-37. The following tables are part lists and descriptions required for maintenance of the Broadcast Electronics 12C/16C Series Turntables.

<u>TABLE NO.</u>	<u>DESCRIPTION</u>
4-1	12C/12C2 TURNTABLE PARTS LIST
4-2	12C FLAT PLATTER TURNTABLE PARTS LIST
4-3	16C TURNTABLE PARTS LIST
4-4	16C FLAT PLATTER TURNTABLE PARTS LIST

4-38. DRAWINGS.

4-39. The following drawings are contained in this section as aids to maintenance:

<u>FIGURE NO.</u>	<u>DESCRIPTION</u>	<u>NUMBER</u>
4-1	WIRING DIAGRAM, 12C, 12C-2 TURNTABLES	B902-0029
4-2	12C TURNTABLE ASSEMBLY DRAWING	D902-0008/ -0009/-0010
4-3	WIRING DIAGRAM, 16C TURNTABLES	B902-0072
4-4	16C TURNTABLE ASSEMBLY DRAWING	D902-0069/ -0070/-0071/ -0073/-0074/ -0075

TABLE 4-1. 12C/12C2 TURNTABLE PARTS LIST - 902-0001/-0002/-0003/-0008/  
-0009/-0010/-0011/-0012/-0013/0063/-0064/-0065/-0066/-0066-301/-0067/-0068  
(Sheet 1 of 2)

ITEM NO.	DESCRIPTION	PART NO.	QTY.
1	12 Inch Platter and Pin Assembly	444-0126	1
2	Felt, 12 inch, Black	407-0109	1
ITEMS 1 and 2 AVAILABLE IN REPLACEMENT KIT 830-0025			
3	Well, Platter Pin	443-0035	1
4	Ball Bearing, Well, 7/16 inch	442-4202	1
5	Idler Wheel, Rubber	404-0002-1	1
6	Retainer, C-clip	454-0052	3
7	Washer, Fiber (5/8 X 3/8 X 1/32)	423-8010	1
8	Washer, Fiber (5/8 X 3/8 X 1/16)	423-8009	4
ITEMS 5 THROUGH 8 AVAILABLE IN REPLACEMENT KIT 830-0047			
9	Idler Arm	473-0025	1
10	Retainer, Snap Ring	454-0051	2
ITEMS 6 THROUGH 10 AVAILABLE IN REPLACEMENT KIT 830-0216			
11	Shock Mount, Motor (front)	400-0007	2
12	Shock Mount, Motor (rear)	400-0008	1
13	Clip, Wire Harness	421-1103	2
14(J1)	Connector, 3-Pin (to Remote Control)	418-1031	1
15(P1)	Plug, 3-Pin (to Remote Control)	418-2032	1
16	Pins (for J1)	417-1103	3
17	Pins (for P1)	417-2103	3
18			
a.	Hanger, Motor (used on all 60 Hz models)	474-0215	1
b.	Hanger, Motor (used on all 50 Hz models)	474-0215-001	1
19(M1)			
110V/60 Hz MOTOR ASSEMBLY			
a.	Motor, 110V/60 Hz, Hysteresis Synchronous, 1800 RPM, 5 oz/in (with 1.5 uF capacitor)	384-0001-2	1
220V/50 Hz MOTOR ASSEMBLY			
b.	Motor, 220V/50 Hz, Hysteresis Synchronous, 1500 RPM, 5 oz/in (with 2 uF capacitor)	387-0060	1
110V/50 Hz MOTOR ASSEMBLY			
c.	Motor, 220V/50 Hz, Hysteresis Synchronous, 1500 RPM, 5 oz/in (with 2 uF capacitor)	378-0060	1
d.	Transformer, Step-Up Primary: 110/125V, 50/60 Hz Secondary: 220/250V, 50/60 Hz	378-1555	1
20(C1)	Capacitor, Ceramic Disc, 0.03 uF, 600V	000-1051	1
ITEMS 6, 7, 8, AND 11 THROUGH 20, AS WELL AS MOUNTING HARDWARE, ARE AVAILABLE IN REPLACEMENT KIT 972-0005 (110V/60 Hz) 972-0006 (110V/50 Hz) 972-0003 (220V/50 Hz)			
21 a.	Shift Plate Extrusion, 3 Speed (order with Item 22a)	465-0013-1	1
b.	Shift Plate Extrusion, 2 Speed (order with Item 22b)	465-0020	1
22 a.	Overlay for 3 Speed Extrusion Plate	596-0006	1
b.	Overlay for 2 Speed Extrusion Plate	596-0010	1
23	Shift Stud	440-0800	1
24	Knob, Shift Arm	481-0617	1

TABLE 4-1. 12C/12C2 TURNTABLE PARTS LIST - 902-0001/-0002/-0003/-0008/  
-0009/-0010/-0011/-0012/-0013/-0063/-0064/-0065/-0066/-0066-301/-0067/-0068  
(Sheet 2 of 2)

ITEM NO.	DESCRIPTION	PART NO.	QTY.
ITEMS 6, 7, 8, AND 11 THROUGH 20, AS WELL AS MOUNTING HARDWARE, ARE AVAILABLE IN REPLACEMENT KIT 972-0005 (110V/60 Hz) 972-0006 (110V/50 Hz) 972-0003 (220V/50 Hz) (Cont'd)			
25	Shift Arm	464-0010-2	1
26	Spring, Compression (Shift Arm)	430-5003	1
27(S1)	Switch, Power, SPST, Locking, N/O, 300W Maximum, 3 Amperes	340-0032	1
28	Knob, Power Switch	481-0616	1
29	Tubing, Clear (for switch wiring)	690-0075	1
30(DS1)			
a.	Indicator Lamp, Red, with clip, 125V ac (110V Models)	320-0003	1
b.	Indicator Lamp, Red, with clip, 250V ac (220V Models)	320-0006	1
31	Spring, Extension	430-5002	1
32	Shield, Electrical Connection	467-0099	1

TABLE 4-2. 12C FLAT PLATTER TURNTABLE PARTS LIST  
902-0032/-0033/-0034/-0035/-0036/-0037/-0038/-0039/-0040/-0041/-0042/-0043

REF. DES.	DESCRIPTION	PART NO.	QTY.
DELETE FROM TABLE 4-1			
----	12 Inch Platter and Pin Assembly	444-0126	1
ADD			
----	12 Inch Flat Platter and Pin Assembly	444-0130	1

TABLE 4-3. 16C TURNTABLE PARTS LIST - 902-0069/-0070/-0071/-0073/-0074/-0075  
(Sheet 1 of 2)

REF. DES.	DESCRIPTION	PART NO.	QTY.
C1	Capacitor, Ceramic Disc, 0.03 uF, 600V	000-1051	1
----	Idler Arm Assembly	473-0025	1
S1	Switch, Power, SPST, Locking N/O, 300W Maximum, 3 Amperes	340-0032	1
DS1			
a.	Indicator Lamp, Red, with clip, 125V ac (110V Models)	320-0003	1
b.	Indicator Lamp, Red, with clip, 250V ac (220V Models)	320-0006	1
----	Felt, 16 inch, Black	407-0112	1
----	Idler Wheel, Rubber	404-0002-1	1
----	Retainer, C-clip	454-0052	1
----	Washer, Fiber, 5/8 X 3/8 X 1/16	423-8009	4
----	Washer, Fiber, 5/8 X 3/8 X 1/32	423-8010	2
----	Shock Mount, Motor (Front)	400-0007	2
----	Shock Mount, Motor (Rear)	400-0008	1
----	Allen Wrench	836-0010	1
ABOVE ITEMS ARE AVAILABLE IN REPLACEMENT KIT - 972-0008			
----	16 Inch Platter and Pin Assembly	444-0127	1
----	Well, Platter Pin	443-0035	1
----	Ball Bearing, Well, 7/16 inch	442-4202	1
----	Retainer, Snap Ring	454-0051	2
J1	Connector, 3-Pin (To Remote Control)	418-1031	1

TABLE 4-3. 16C TURNTABLE PARTS LIST - 902-0069/-0070/-0071/-0073/-0074/-0075  
(Sheet 2 of 2)

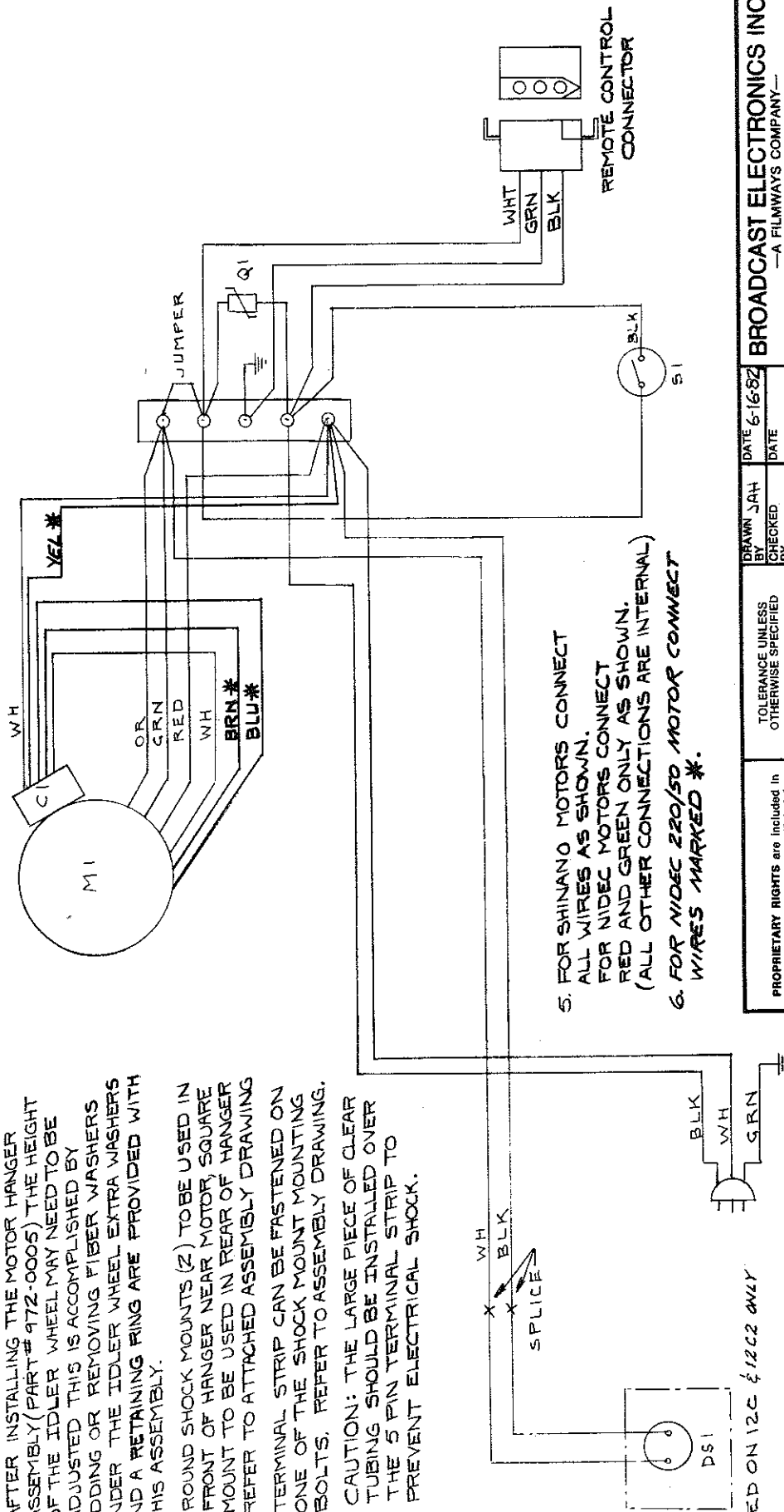
REF. DES.	DESCRIPTION	PART NO.	QTY.
ABOVE ITEMS ARE AVAILABLE IN REPLACEMENT KIT - 972-0008 (Cont'd)			
M1			
a.	Motor, 110V/60 Hz, Hysteresis Synchronous, 1800 RPM, 5 oz/in (with 1.5 uF capacitor)	384-0001-2	1
b.	Motor, 220V/50 Hz, Hysteresis Synchronous, 1500 RPM, 5 oz/in (with 2 uF capacitor)	387-0060	1
a.	Hanger, Motor (for use with 110V Models)	474-0215	1
b.	Hanger, Motor (for use with 220V Models)	474-0215-001	1
P1	Plug, 3-Pin (To Remote Control)	418-2032	1
----	Pins (for J1)	417-1103	3
----	Pins (for P1)	417-2103	3
----	Shift Stud	440-0806	1
----	Knob, Shift Stud	481-0617	1
----	Shift Arm	464-0010-2	1
----	Spring, Compression (Shift Arm)	430-5003	1
----	Knob, Power Switch	481-0616	1
----	Tubing, Clear (for Switch Wiring)	690-0075	1
----	Spring, Extension	430-5002	1
----	Shield, Electrical Connection	467-0099	1

TABLE 4-4. 16C FLAT PLATTER TURNTABLE PARTS LIST  
902-0076/-0077/-0078/-0079/-0080/-0081

REF. DES.	DESCRIPTION	PART NO.	QTY.
DELETE FROM TABLE 4-3			
----	16 Inch Platter and Pin Assembly	444-0127	1
ADD			
----	16 Inch Flat Platter and Pin Assembly	444-0132	1

# NOTES:

1. AFTER INSTALLING THE MOTOR HANGER ASSEMBLY (PART # 972-0005) THE HEIGHT OF THE IDLER WHEEL MAY NEED TO BE ADJUSTED. THIS IS ACCOMPLISHED BY ADDING OR REMOVING FIBER WASHERS UNDER THE IDLER WHEEL EXTRA WASHERS AND A RETAINING RING ARE PROVIDED WITH THIS ASSEMBLY.
2. ROUND SHOCK MOUNTS (2) TO BE USED IN FRONT OF HANGER NEAR MOTOR, SQUARE MOUNT TO BE USED IN REAR OF HANGER REFER TO ATTACHED ASSEMBLY DRAWING
3. TERMINAL STRIP CAN BE FASTENED ON ONE OF THE SHOCK MOUNT MOUNTING BOLTS. REFER TO ASSEMBLY DRAWING.
4. CAUTION: THE LARGE PIECE OF CLEAR TUBING SHOULD BE INSTALLED OVER THE 5 PIN TERMINAL STRIP TO PREVENT ELECTRICAL SHOCK.



5. FOR SHINANO MOTORS CONNECT ALL WIRES AS SHOWN.  
FOR NIDEC MOTORS CONNECT RED AND GREEN ONLY AS SHOWN.  
(ALL OTHER CONNECTIONS ARE INTERNAL)

6. FOR NIDEC 220/50 MOTOR CONNECT WIRES MARKED \*.

USED ON 12C & 12C2 ONLY

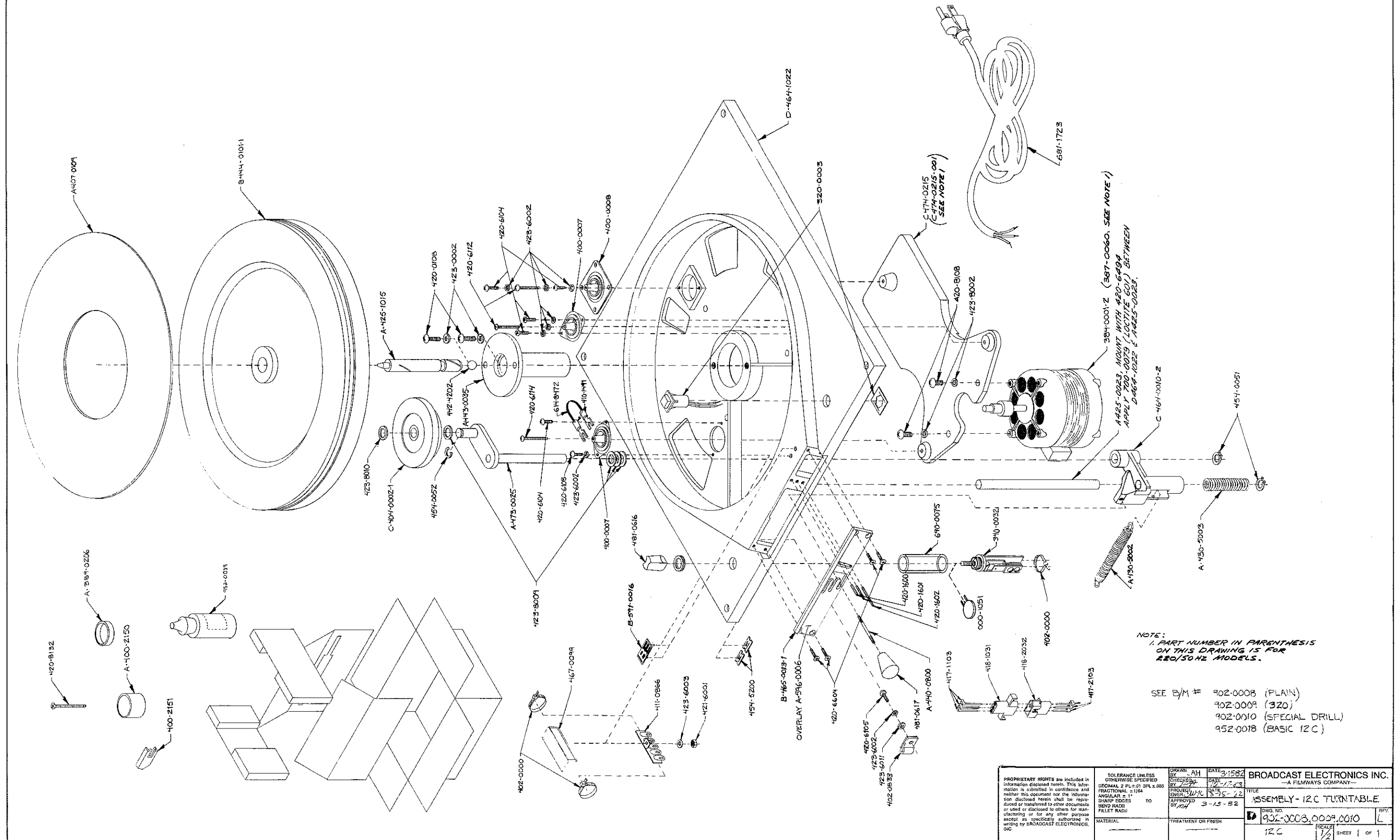
PROPRIETARY RIGHTS are included in information disclosed herein. This information is submitted in confidence and neither this document nor the information disclosed herein shall be reproduced or transferred to other documents or used or disclosed to others for manufacturing or for any other purpose except as specifically authorized in writing by BROADCAST ELECTRONICS, INC.

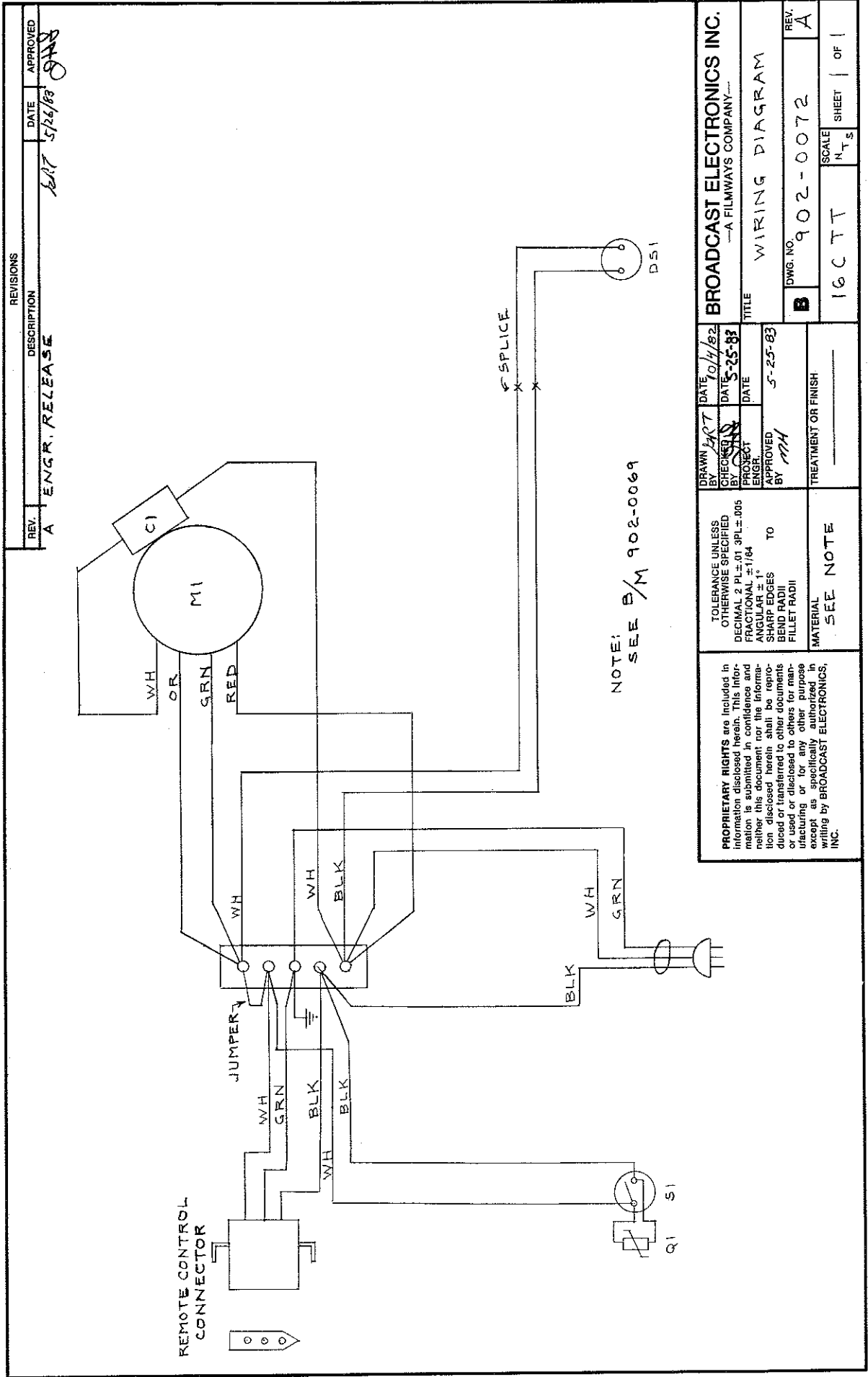
TOLERANCE UNLESS OTHERWISE SPECIFIED  
DECIMAL 2 PL  $\pm .01$  3 PL  $\pm .005$   
FRACTIONAL  $\pm 1/64$   
ANGULAR  $\pm 1^\circ$   
SHARP EDGES  
BEND RADIUS  
FILLET RADIUS  
MATERIAL

DRAWN JAH  
BY  
CHECKED  
BY  
PROJECT JLE  
ENGR. JLE  
APPROVED  
BY  
DATE 6-16-82  
DATE 1-31-83  
TREATMENT OR FINISH

BROADCAST ELECTRONICS INC.  
—A FILMWAYS COMPANY—  
TITLE WIRING DIAGRAM FOR  
RESTYLE 12C, 12C-2  
DWG. NO 902-0029  
REV. D  
SCALE N.T.S.  
SHEET 1 OF 1









SECTION V  
APPENDIX

5-1. INTRODUCTION.

5-2. This appendix provides data required for the OSHA (Occupational Safety and Health Administration) HAZARD COMMUNICATIONS STANDARD 29 CFR 1900.1200. The information presented describes specific safety information regarding the oil used for lubrication in Broadcast Electronics turntables. The information is presented in the following order:

- A. Material Safety Data Sheet.
  - Product: Dectol R.O. Oil, Grade 32
  - Manufactured by: Conoco Inc.
  - Address: P.O. Box 1267, Ponca City, OK 74603



# MATERIAL SAFETY DATA SHEET

## I. MATERIAL IDENTIFICATION

Name: Dectol R.O. Oils 32 46, 68, 100  
Conoco Product Code: 7302/7304/7306/7308  
Synonyms: Petroleum Lubricating and Hydraulic Oil  
Chemical Family: Petroleum Hydrocarbon Oil  
Manufacturer: Conoco Inc.  
Address: P.O. Box 1267, Ponca City, OK 74603

CAS Registry No.: Mixture  
Transportation Emergency No.:  
(800) 424-9300 (Chemtrec)  
Product Information No.:  
(405) 767-6000

## II. HAZARDOUS INGREDIENTS

### HAZARD DATA

Hazard Determination:

Health Effect Properties: None.

Not applicable.

Physical Effect Properties:

Product/Mixture: None.

Not applicable.

## III. PHYSICAL DATA

Appearance and Odor: Light brown liquid; mild petroleum hydrocarbon odor.

Boiling Point (Deg.F)	650-1200	Specific Gravity (H <sub>2</sub> O=1)	0.87
Vapor Pressure (mmHg)	Nil	% Volatile (by volume)	Nil
Vapor Density (Air=1)	Not applicable	Evaporation Rate ( =1)	Nil
Solubility in Water	Insoluble		

## IV. REACTIVITY DATA

Stable: X

Unstable:

Hazardous Decomposition Products: Normal combustion forms carbon dioxide.  
Incomplete combustion may produce carbon monoxide.

Conditions To Avoid: Strong oxidizing materials, heat, flame.

Hazardous Polymerization: Will not occur.

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**V. FIRE AND EXPLOSION HAZARD DATA**

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Flash Point (Method used): 290F (PMCC) Autoignition Temperature: 680F  
Handle and store in accordance with NFPA procedure for Class III B Combustible Liquid.

Extinguishing Media: Use water spray, dry chemical, foam, or carbon dioxide.

Special Fire Fighting Procedures: Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water spray may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection.

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National Fire Protection Agency (NFPA) CLASSIFICATION			HAZARD RATING		
Health <u>0</u>	Fire <u>1</u>	Reactivity <u>0</u>	Least - 0	Slight - 1	Moderate - 2
				High - 3	Extreme - 4

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**VI. TRANSPORTATION AND STORAGE**

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DOT HAZARD CLASS: Not Applicable

Precautions To Be Taken In Handling And Storing: Product is Class III B Combustible . Liquid per NFPA Code No. 30-1984.. Store and handle accordingly.

Shipping Paper Description: Not D.O.T. Regulated.

Placard: Not D.O.T. Regulated.

Label: Not D.O.T. Regulated.

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**VII. HEALTH HAZARD INFORMATION**

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PEL Not Established      TLV Not Established  
Ceiling Value Not Established      AEL Not Established

Primary Route of Exposure/Entry: Skin.

Signs and Symptoms of Exposure/Medical Conditions Aggravated By Exposure:  
No adverse health effect has been identified specifically for this product. Health effect information from animal and human studies has been included on related materials, even though health experts may disagree as to the significance of this data.

Mouse skin painting studies have shown that highly solvent-refined petroleum distillates having a boiling point below 700F, and which are similar to ingredients in this product, have not caused skin tumors. Studies of petroleum workers have not shown a significant increased incidence of skin tumors.

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**VII. HEALTH HAZARD INFORMATION (continued)**

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The product may cause irritation to eyes, lungs, or skin after prolonged or repeated exposure.

Listed as Carcinogen or Potential Carcinogen by: NTP No IARC No OSHA No

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**VIII. EMERGENCY AND FIRST AID PROCEDURES**

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Eyes: Immediately wash with fresh water for at least 15 minutes and get medical attention.

Skin: Remove contaminated clothing as soon as possible. Wash exposed skin thoroughly with soap and water. If irritation persists, consult a physician.

Launder contaminated clothing before reuse. Extremely contaminated leather shoes should be discarded.

If exposed to hot oil, immediately cool with cold water. Do not attempt to remove oil but continue to cool exposed areas with cold packs and seek medical assistance immediately.

Ingestion: If this material is swallowed, do not induce vomiting. If vomiting begins, lower victim's head in an effort to prevent vomitus from entering lungs. Immediately consult a physician. Do not attempt to give liquid to an unconscious person.

Inhalation: If overexposure occurs, remove individual to fresh air. If breathing stops, administer artificial respiration.

Note to Physicians: Gastric lavage by qualified medical personnel may be considered, depending on quantity of material ingested.

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**IX. SPILL, LEAK AND DISPOSAL PROCEDURES**

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RCRA HAZARDOUS WASTE: Yes        No X

In Case Of Spill Or Leak: Contain spill immediately in smallest area possible. Recover as much of the product itself as possible by such methods as vacuuming, followed by soaking up residual fluids by use of absorbent materials. Remove contaminated items including soils and place in proper container for disposal. Avoid washing, draining or directing material to storm or sanitary sewers.

Waste Disposal Method: Recycle as much of the recoverable product as possible. Dispose of nonrecyclable material by such methods as controlled incineration, complying with federal, state and local regulations.

August 5, 1985

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**X. PRECAUTIONARY MEASURES**

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Respiratory Protection: None required except under unusual circumstances such as described in Section V.

Ventilation: Normal shop ventilation.

Protective Gloves: Impervious.

Eye Protection: Safety glasses with side shields.

Other Protective Equipment: Coveralls.

The above data is based on tests and experience which Conoco believes reliable and are supplied for informational purposes only. CONOCO DISCLAIMS ANY LIABILITY FOR DAMAGE OR INJURY WHICH RESULTS FROM THE USE OF THE ABOVE DATA AND NOTHING CONTAINED THEREIN SHALL CONSTITUTE A GUARANTEE, WARRANTY (INCLUDING WARRANTY OF MERCHANTABILITY) OR REPRESENTATION (INCLUDING FREEDOM FROM PATENT LIABILITY) BY CONOCO WITH RESPECT TO THE DATA, THE PRODUCT DESCRIBED, OR THEIR USE FOR ANY SPECIFIC PURPOSE, EVEN IF THAT PURPOSE IS KNOWN TO CONOCO.

August 5, 1985

## PRODUCT WARRANTY

LIMITED ONE YEAR

While this warranty gives you specific legal rights, which terminate one (1) year (6 months on turntable motors) from the date of shipment, you may also have other rights which vary from state to state.

Broadcast Electronics, Inc. ("BE"), 4100 North 24th Street, P. O. Box 3606, Quincy, Illinois 62305, hereby warrants cartridge machines, consoles, transmitters and other new Equipment manufactured by BE against any defects in material or workmanship at the time of delivery thereof, that develop under normal use within a period of one (1) year (6 months for turntable motors) from the date of shipment. Other manufacturers' Equipment, if any, shall carry only such manufacturers' standard warranty. This warranty extends to the original user and any subsequent purchaser during the warranty period. BE's sole responsibility with respect to any Equipment or parts not conforming to this warranty is to replace such equipment or parts upon the return thereof F.O.B. BE's factory or authorized repair depot within the period aforesaid.

In the event of replacement pursuant to the foregoing warranty, only the unexpired portion of the warranty from the time of the original purchase will remain in effect for any such replacement. However, the warranty period will be extended for the length of time that the original user is without the services of the Equipment due to its being serviced pursuant to this warranty. The terms of the foregoing warranty shall be null and void if the Equipment has been altered or repaired without specific written authorization of BE, or if Equipment is operated under environmental conditions or circumstances other than those specifically described in BE's product literature or instruction manual which accompany the Equipment purchased. BE shall not be liable for any expense of any nature whatsoever incurred by the original user without prior written consent of BE.

BE shall not be liable to the original user for any and all incidental or consequential damages for breach of either expressed or implied warranties. However, some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. All express and implied warranties shall terminate at the conclusion of the period set forth herein.

Except as set forth herein, and except as to title, there are no warranties, or any affirmations of fact or promises by BE, with reference to the Equipment, or to merchantability, fitness for a particular application, signal coverage, infringement, or otherwise, which extend beyond the description of the Equipment in BE's product literature or instruction manual which accompany the Equipment. Any card which is enclosed with the Equipment will be used by BE for survey purposes only.

**BROADCAST ELECTRONICS, INC.**  
4100 North 24th Street, P. O. Box 3606, Quincy, Illinois 62305