Broadcast Electronics

INSTRUCTION MANUAL

SERIES 1000
TAPE CARTRIDGE MACHINES

BROADCAST ELECTRONICS, INC.

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0170-0875

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LIST OF DRAWINGS AND ILLUSTRATIONS

1.1 General Description and Features

The SPOTMASTER® 1000 tape cartridge machines are designed to meet or exceed the National Association of Broadcasters' standards for tape cartridge recording and reproduction. The SERIES 1000 machines are capable of performing a variety of studio assignments and still stay within the limits of the most conservative budget.

Standard features include the 1 kHz stop cue tone. The use of balanced transformer output assures quality audio signals with a minimum of interference. Quick response--under 80 milloseconds--Start/Stop times and a noise figure of 54 dB, well above NAB standards, make the SERIES 1000 machines a practical piece of studio equipment.

Table top units accept standard A, B and C size cartridges. The dual rack mounted configuration accepts A and B size only.

1.2 Specifications

Noise: 54 dB below +8 dBm output
Frequency Response: ±2 dB, 50 - 15,000 Hz
Distortion: 2% or less at +16 dBm output
Tape Speed: 7.5 ips accurate 0.2% or better
Optional 3.75 ips accurate 0.4% or better
Wow and Flutter: Less than 0.2% RMS (NAB unweighted)
Output: Peak output +16 dBm, continuously adjustable, 600 ohms, transformer balanced
Start and Stop Time: 80 milliseconds minimum
Equalization: NAB standard
Drive: Hysteresis synchronous, indirect
Power: 117 VAC/60 Hz standard
220 VAC/50 Hz optional
117 VAC/50 Hz optional
Cue Tones: 1 kHz stop standard
Dimensions: 5-5/8" high X 8-1/2" wide X 12" deep

Options

Rack Adaptor: Mounts two SERIES 1000 units side by side in 19" rack

1.3 Warranty

Broadcast Electronics, Inc. products are guaranteed to be free from defects in workmanship and material for a

period of one year from the date shipped when subjected to normal usage and service. All warranties are void, A) If equipment has been altered or repaired without specific prior authorization from Broadcast Electronics, Inc., or B) If equipment is operated under environmental conditions or circumstances other than those specifically described in the appropriate literature or instruction manuals provided with each unit.

1.4 Service

The Customer Service Department is at your service to answer questions involving Broadcast Electronics, Inc. products. Technical assistance is available in your area from the local franchised dealer or you can write or call us direct at (301) 588-4983. Our address is on the cover of this manual.

In the event a unit must be returned to us for repair, please make arrangements in advance by contacting the Customer Service Department or your local dealer for return authorization procedures. Equipment being returned should be sent by common carrier, prepaid, insured and well protected as we can assume no liability for inbound damage making necessary repairs the obligation of the shipper.

2.1 Unpacking

Your new SPOTMASTER® 1000 will be ready to go to work as soon as all protective packing material has been removed. The carrier has assumed all responsibility for the safe delivery of this unit to you; therefore, any claim for damage should be made promptly and directly to him.

NOTE

Before connecting the unit to a power source, be sure the clear plastic ty-rap, used to secure the motor to the bottom panel during shipment, has been removed and discarded. In addition, the fuse provided with each unit (attached to the line cord) should be installed in the rear panel fuse holder.

2.2 Audio Output/Input Connections

The unbalanced phone type connectors J-1 (Output) and J-2 (Input - record models only) are located on the rear panel. The mating connectors may be wired for either balanced or unbalanced operation as shown in the diagrams on pages 17 and 18.

The output level is set at the factory for a nominal 0 dBm level and is designed to be connected to a 600 ohm load. If placed in a higher impedance situation, a termination must be provided in the form of a 560 or 620 ohm resistor across the output to ensure proper frequency response. (See diagrams on pages 17 and 18).

The recorder input channel provides a high impedance for high level (-20 to + 10 dBm) line signals. If a 600 ohm transformer coupled device is connected to the input, a 560 or 620 ohm terminating resistor should be installed, as shown in the diagrams on page 16, to insure proper frequency response.

2.3 Microphone Input

The record input is set at the factory for line level recording. If a microphone is to be used, the following terminals within the record module must be jumped--Pin 11 to Pin 12 and Pin 10 to Pin 13.

3.1 Playback

For Playback, begin by turning on the AC power at the switch located on the rear panel. When the STOP lamp on the front panel is illuminated and the tape drive capstan is rotating and pressure roller is in release position, you are ready to insert a cartridge.

Table top mounted units will accept all three sizes of NAB standard cartridges. Because the C size (1200 Series) extends beyond the left side of the machine, it cannot be used if two units are mounted side-by-side in the dual rack adapter.

TO PLACE THE TAPE IN MOTION, depress the START switch on the front panel. Only momentary pressure is required as you observe the STOP switch lamp extinguish and the START switch lamp illuminate.

3.2 Record

To Record, begin by depressing the red REC switch. The lamp in this switch will illuminate indicating the unit is in the recording mode. Changing to the recording mode can be accomplished only after the unit has been taken out of the playback or run mode by depressing the STOP switch.

Before starting the cartridge, preset the record level by playing the material to be recorded or speaking into the microphone. Adjust the front panel LEVEL control so that the VU meter, which is active only in the record mode, indicates a maximum 0 VU (100) on peaks.

When the level is set, re-cue the material to be recorded. Start the SERIES 1000 unit by depressing the START switch. Then start the material to be recorded, allowing a 1/4 to 1/2 second lag between the start of the cartridge and the start of the program material.

The unit will stop automatically when the cartridge reaches the end of its tape, or you can manually halt the recording at any point by depressing the STOP switch. (In either case, the unit will return to the playback mode whenever it is stopped.)

NOTE

In the record mode, the 1 kHz stop tone is placed on the tape whenever the START switch is depressed.

4.1 Routine Cleaning and Adjustments

As you already know from experience, any good piece of equipment will last longer and run better if it is given regular maintenance attention. Your SPOTMASTER® SERIES 1000 tape cartridge machine is no different.

Tape heads and pressure rollers should be cleaned daily using the appropriate head cleaner solution. Traces of lubricant and oxide can be removed from the capstan and pressure rollers with a cloth that has been dipped in alcohol.

Tape heads should be demagnetized and alignment adjusted (see paragraph 4.2) periodically depending on machine use.

4.2 Head Alignment

The alignment of a new head or the realignment of the present head requires two adjustments: tracking height and azimuth. Check the tracking height of the reproduce head first and then the record head. All adjustments will be made first on the reproduce head.

When adjusting the tracking height and azimuth, final turns should be made on the adjusting screws in a CLOCKWISE direction so that the spring under the mounting block is being compressed. A .050 Allen wrench is provided with each unit for these adjustments.

To check the tracking height of the reproduce head, remove the pressure pads from the cartridge so the tape can be observed as it passes the head. The top can be left off the cartridge if the hold-down wire is glued in place, or a section may be cut out of the top in the area of the pressure pads.

With the tracking cartridge in the machine and the tape in motion, observe the path the tape travels across the head. Adjust the tracking height screw until the top edge of the tape just covers the top of the head pole piece and the bottom edge of the tape is in a similar position in reference to the bottom pole piece.

Remove and re-insert the tracking test cartridge and start and stop the tape motion several times. If the tape does not repeat each time, check the tape guides on the head mounting bracket. The guides should be down square against the deck surface.

When tracking height is adjusted, remove the tracking test cartridge and insert a 15 kHz azimuth test tape.

Set the tape in motion and observe the output level on a VU meter. Adjust the reproduce head azimuth adjustment screw for maximum output.

Note that when aligning a newly installed head, it may not be possible to get correct azimuth readings if the brass collar has been tightened too much. This will compress the washer so much that the head and clamping block cannot move.

When the azimuth adjustments are complete, reinsert the tracking cartridge to confirm the tracking height adjustment. If the adjustment has changed, continue to reference the two test cartridges against each other to establish correct head placement.

When the reproduce head adjustments are complete, proceed to adjust the tracking height of the record head. The azimuth of the record head is determined by recording a 12 KHz tone and adjusting the record head for maximum output at the reproduce head.

With the tracking height of the record head set, insert an erased cartridge and put the tape in motion in the record mode. Feed a 12 Hz tone to the record input and adjust the line level control for a program level indication of -10 VU on the front panel VU meter.

Adjust the azimuth adjustment screw for the record head to maximum output using an external VU meter. When the azimuth is set, recheck the height with the tracking cartridge. If the adjustment has changed, continue to reference the two test cartridges against each other to establish correct head placement.

Improper tracking height will reduce separation between the cue and program tracks causing an increase in cross-talk. Improper azimuth will cause high frequency response to decrease.

4.3 Deck Adjustments

Refer to drawing number D-906-2109

4.3.1 Roller Perpendicularity

Manually raise the pressure roller by pushing the push link assembly screw. Apply a slight back pressure to the pressure roller. With a square, Broadcast Electronics' gage block (stock number 836-0004), or by eye, determine if the pressure roller is parallel to the plane of the tape capstan.

If the roller is not parallel to the capstan, remove the two flat head screws on the extreme right and left

in front and the two pan head screws in the rear which secure the tape deck to the chassis. DO NOT REMOVE THE TWO CENTER SCREWS IN FRONT. Raise the tape deck to gain access to the pressure roller latch on the underside of the deck. Loosen the two screws which mount the latch and move it as required toward the front or back of the deck until the roller is parallel to the capstan. Retighten the latch mounting screws when finished.

4.3.2 Push Link Assembly Screw

Check the adjustment of the push link assembly screw by slowly inserting a cartridge in the deck and noting when the pressure roller latch engages. The latch should engage just as the cartridge comes in contact with the cartridge stop.

If the cartridge latches before it comes in contact with the stop, adjust the push link screw CLOCKWISE. If the latch is not engaged with the cartridge against the stop, adjust the push link screw COUNTER-CLOCKWISE.

If the tape creeps when the right hand corner cartridge is pushed, turn the push link screw 1/4" CLOCKWISE. If the tape still creeps, check for excessive gap between the solenoid armature assembly and the solenoid. The gap should be no more than the thickness of a dime.

Optimum adjustment of the push link assembly screw will differ depending on the cartridge manufacturer. If different makes of cartridges are intermixed, each type should be tested and an acceptable compromise setting established.

4.3.3 Pressure Adjustment

Using a 5-1/2 to 10-minute cartridge, start the unit. Insert a 7/64" Allen wrench (stock number 836-0003) through the access opening in the front panel just below the release button and turn COUNTER-CLOCKWISE until the tape stops moving. Now turn the adjustment 3/4" CLOCKWISE or until the tape runs smoothly.

When a flutter meter is available, the pressure should be adjusted for minimum pressure and flutter output when reproducing a standard flutter test tape.

4.4 Tape Drive System Servicing

Refer to drawing number C-906-2105

Remove the screws which secure the deck plate to the chassis (see second paragraph 4.3.1). Raise the deck plate and unplug the motor from the power supply.

NOTE

Release the motor plug locking device before removing the plug.

In the record equipped units, also unplug the record head leads from the phono jacks underneath the deck plate.

With the deck plate on the workbench, remove the sub-assembly and dismount the motor from its mounting plate. Set the motor and mounting hardware aside. To remove the drive pulley from the motor shaft, loosen the set screw. Grasp the top of the motor in the left hand and the rotor in the right. Firmly but gently pull the rotor and shaft out of the stator.

Using a soft, lint-free cloth, clean the motor shaft with a household cleanser (Comet, Bon Ami, etc.) and warm water. Rinse and dry the shaft. Avoid getting water on the rotor. Re-oil the shaft with light-weight, non-detergent oil (stock number 832-0010). Wipe off excess oil with a soft, lint-free cloth.

Re-insert the rotor in the stator. Carefully fit--don't force--the shaft straight through the bottom bearing. Line up the plastic dust cap with the end of the shaft and firmly push the shaft through the cap. If this cap pops loose, simply press it and the corresponding metal cap back into place. By hand, check the rotor for free rotation.

Reinstall the pulley on the motor shaft with the large diameter towards the motor. Position the pulley approximately 3/8" away from the motor and set the motor aside for the moment.

NOTE

Belts must run level when the deck is in operating position.

Clean and lubricate the bearing surface in the motor shield and set it aside.

Remove the shaft retaining plate. With a soft, lint-free cloth, wipe off the thrust bushing and flywheel bearing. Re-lubricate the thrust bushing with Lubriplate or Vaseline. With isopropyl alcohol, clean any dirt from the belt grooves on the flywheel. Remount the shaft retaining plate.

Fit the drive belts on the flywheel and the pulley. Remount the motor with the motor leads oriented as shown on drawing number C-906-2105. The long screws and bushings are used to mount the motor.

Visually check the alignment of the drive belts and pulley with the flywheel. Be sure the belts do not rub on the motor leads.

Remount the sub-assembly on the deck plate. Reconnect the motor plug (and head leads in record units). Remount the deck plate in the chassis.

When AC power is applied to the unit, the drive system should operate smoothly and quietly.

5.1 General Considerations

Before adjusting the electronics, clean the tape head(s) with BE-903 cleaning fluid or isopropyl alcohol. Be sure the reproduce (and record) head(s) are properly aligned.

An NAB standardized test and alignment cartridge is required for proper adjustment of the unit. Two different styles are available from Broadcast Electronics: stock numbers 808-0003 (NAB type 3), monophonic, and 808-0004 (Fidelipac 350 STA), stereophonic. The Fidelipac is particularly recommended for users of stereophonic cartridge machines.

The tones recorded on these test and alignment cartridges are at two levels: NAB standard operating level and 10 dB below NAB level. The operating level segment is required for adjusting output level and in measuring noise and distortion. Frequency response measurements and equalization adjustments are made with the other tones.

5.2 Output Level

Refer to Drawing Number C-914-1390

While reproducing the NAB operating level tone from the test cartridge, adjust R14 on the playback board for the desired output as measured on an external VU meter connected to the output.

5.3 Playback Equalization

Refer to Drawing Number C-914-1394

While reproducing the 50 Hz tone from the test cartridge, adjust R9 on the playback board for -10 VU (10 dB below the output level setting) as measured on an external VU meter connected to the output. Reproduce the 15 kHz test tone and adjust R10 on the playback board for -10 VU on the external VU meter.

5.4 Cue Tone Sensor Level

Refer to Drawing Number C-914-1390

The cue tone sensor is adjusted while reproducing a cue tone test cartridge. During the 1 kHz stop tone, adjust R24 so that the sensor just triggers and stops the unit.

Each time the test cartridge is started, wait 3 seconds before adjusting the stop sensor. The sensor circuitry is disabled for this time.

If a cue tone cartridge is not available, tones from an audio signal generator may be used to adjust the sensor. To do this, begin by disconnecting the AC power and then the blue head leads from the playback board. Connect the signal generator to Pin 3 (ground) and Pin 4 (signal) of the playback board. Do not load a cartridge in the unit but manually raise the pressure roller and operate the controls. Set the generator for 1 kHz with a level of .45 mV and adjust R24.

When the adjustments are complete, disconnect the AC power and reconnect the head leads.

5.5 Program Record Adjustments

Note that the following adjustments are required only in units equipped with the record module. Remove the cover to gain access to the record board. If necessary, adjustments may be performed with the module outside the unit. Always be sure the power is off before removing or inserting modules.

5.5.1 Bias Trap Tuning

Refer to Drawing Number C-914-1393

Connect a high frequency, AC VTVM between the junction of R26 - C15 to ground. Depress the REC switch to place the unit in record. Do not supply any signal to the input. It is not necessary to load a cartridge in the machine. With a non-metallic screwdriver, such as a G.C. Electronics alignment tool, tune L1 for a minimum reading on the VTVM.

5.5.2 Program Bias Level

The bias supplied to the record head is most important in providing optimum frequency response. Bias requirements vary between brands of tape and between series of one brand. If more than one type of tape is in use, check the performance of each type at its optimum bias level against the performance at the optimum bias level for other tapes. Where older and newer tapes are both in use (such as 3M154 and 156), bias just less than the optimum for the newer type usually is an acceptable compromise.

Once the bias trap is tuned, load a bulk-erased cartridge in the unit. Connect an audio signal generator to the rear panel record input. Set the generator for 400 Hz at a level of 0.5 V. Adjust the record level control for -10 VU on the front panel meter. Connect an external VU meter to the OUTPUT. Begin recording. Observe the ex-

ternal meter and adjust R70 on the record module for the peak output.

5.6 VU Meter Calibration

While recording the 400 Hz tone, adjust the record level control until the external meter indicates the output level determined in paragraph 5.2. Now adjust R30 on the record module so that the front panel VU meter indicates 0 VU.

5.7 Record Equalization

Now set the signal generator for 15 kHz. Adjust the generator output for 10 dB below level in the meter calibration step. DO NOT ADJUST THE FRONT PANEL LEVEL CONTROL. While recording the 15 kHz tone, adjust R20 on the record module for -10 VU on the external VU meter (10 dB below the output level established in paragraph 5.2).

6.1 Cue Bias Level

Refer to Drawing Number C-914-1393

Connect a high frequency, high impedance VTVM to terminals 1 and 2 of the record module (the cue record head leads). Depress the REC switch to place the unit in record. Do not load a cartridge in the unit, but depress the START switch. After 3 seconds, adjust R63 on the record module for 5 VRMS as measured on the VTVM.

6.2 Cue Tone Record Levels

Referring to drawing number C-914-1390, connect a VTVM to terminals 3 and 4 of the playback board. Load a bulk-erased cartridge in the deck and depress the REC switch. DO NOT DEPRESS THE START SWITCH. Instead, manually put the tape in motion by pressing the play solenoid armature against the play solenoid by hand. While thus recording a continuous stop tone, adjust R60 on the record module for 0.45 mV on the VTVM.

Release the solenoid and depress the START switch. After 3 seconds, depress the Q1 switch to record continuously the 150 Hz auxiliary cue tone. Adjust R59 on the RECORD module for 0.3 mV on the VTVM.

TROUBLESHOOTING SUGGESTIONS

1. Audio Quality Problems (Playback)

   a. To determine if the cartridge is properly recorded, test any suspect cartridge in another unit, or test the suspect playback unit with an NAB test and alignment cartridge.

   b. Check connections to the output jack for continuity, proper wiring, loading, and grounding.

   c. Check tape head alignment.

   d. Check playback equalization. If the equalization controls cannot properly adjust the output response, replace the playback head.

   e. Check the playback amplifiers (see below).

2. Audio Quality Problems (Record)

   a. Check the input connection for continuity, proper wiring, loading, and grounding. Check the jumpers on the record board for proper sensitivity for the input signal (microphone or line).

   b. Check record head alignment.

   c. Check the record amplifiers (see below).

   d. Check the record bias adjustment.

   e. Check the record equalization

      If bias and equalization controls will not properly adjust the record performance, replace the record head.

3. Cue Tone Problems (Playback)

   a. To determine if the cartridge is properly recorded, test the cartridge in another unit, or test the suspect unit with an NAB test and alignment cartridge.

   b. Clean the playback head.

   c. Check tape head height.

   d. Check the cue tone sensor sensitivity.

   e. Check operation of the manual stop (or start) controls. If remote controls are connected, check these for proper operation when connected and when disconnected.

   f. Check the cue circuit amplifiers (see below).

4. Cue Tone Problems (Record)

   a. Clean the record head.

   b. Check the record head height.

   c. Check the tone record level.

   d. Check operation of the 1 KHz record logic. The 1 KHz generator should run when the unit is in the record mode but tape not in motion. The generator should continue to run for about 1-1/2 seconds after tape motion begins.

   e. Check operation of the 150 Hz generator. This generator should run whenever the unit is in record and the front panel Q1 switch is depressed. When the switch is released, the generator should turn off.

   f. Check the frequency of the cue generator's output.

   g. Check the cue record bias.

5. Checking Integrated Circuit Amplifiers

   a. Check all capacitors for shorting or reversed polarity.

   b. Test integrated circuits by measuring the DC voltage present on the IC input and output pins (with a 20,000 ohms/volt VOM). This should be one half the DC voltage present at the IC DC supply voltage input pin (V+).

6. Tape Speed Problems

   a. Clean pressure roller and capstan. If the pressure roller is worn or cupped, replace the pressure roller.

   b. Check pressure roller perpendicularity and pressure.

   c. Check adjustment of the push link assembly.

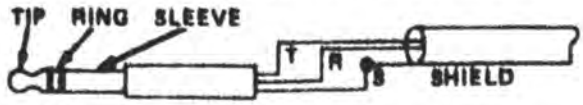
   d. Service the tape drive system.

   e. Check the operation of the play solenoid. This should energize when the START switch is depressed and de-energize when the STOP switch is depressed. (When energized, the solenoid should draw 170 mA at 23 volts.)

   f. Check tape head penetration. Different makes of cartridges require different positions of the head bracket. Follow the recommendations of the cartridge manufacturer.

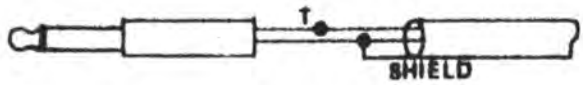
   g. Check the motor and motor capacitor for continuity.

BALANCED USING ¼" STEREO PHONE PLUG (SWITCHCRAFT 267 OR EQUIVALENT)



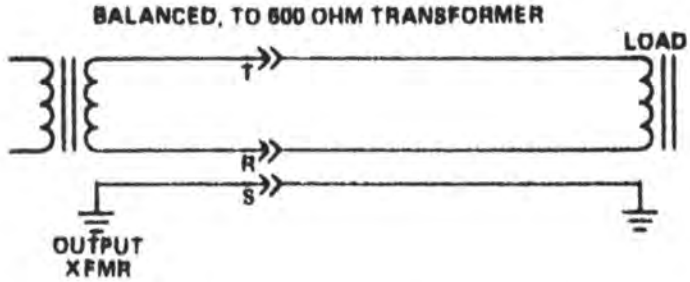
UNBALANCED USING ¼" STEREO PHONE PLUG (SWITCHCRAFT 267 OR EQUIVALENT)

UNBALANCED USING STANDARD ¼" 2 CONDUCTOR PHONE PLUG

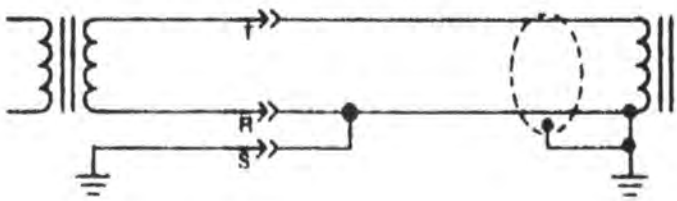


SCHEMATIC CONNECTIONS

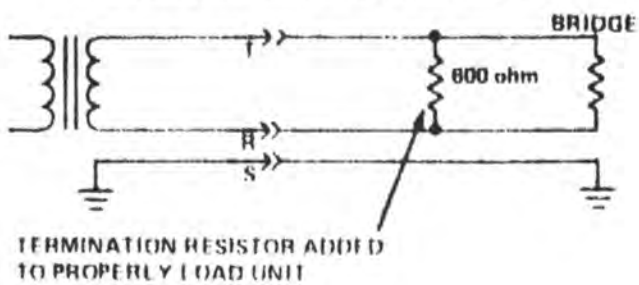
BALANCED, TO 600 OHM TRANSFORMER



UNBALANCED, TO 600 OHM TRANSFORMER



BALANCED, TO HIGH IMPEDANCE BRIDGE



Typical Output Connections

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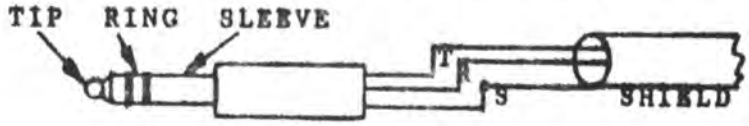

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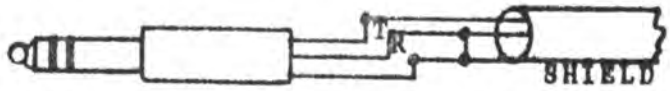
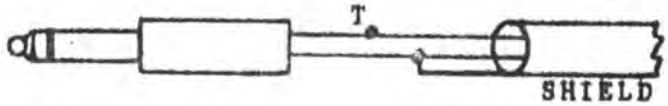
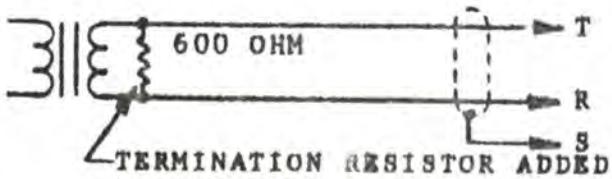


UNBALANCED USING STANDARD ¼" 2 CONDUCTOR PHONE PLUG



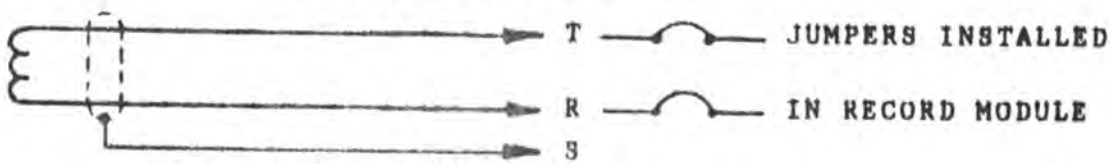
SCHEMATIC CONNECTIONS

BALANCED LINE FROM 600 OHM TRANSFORMER

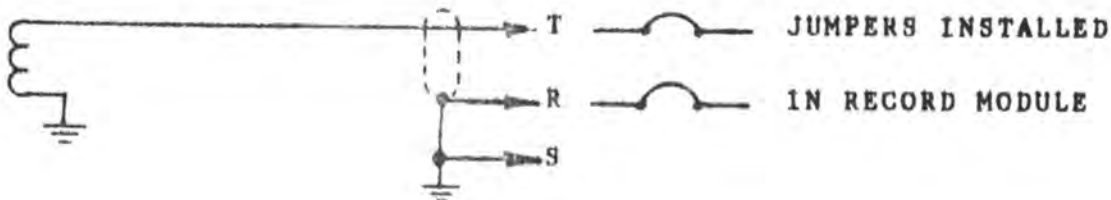


UNBALANCED LINE FROM 600 OHM TRANSFORMER

BALANCED MICROPHONE



UNBALANCED MICROPHONE



TYPICAL INPUT CONNECTIONS

PLAYBACK SECTION

DM1B
DUAL TRACK
PLAYBACK HEAD

PGM

PRE AMP

OUTPUT LEVEL

DRIVER AMP

AUDIO OUTPUT

HF

LF

EQUALIZER

CUE

PRE AMP

EQUALIZER

BOOSTER AMP

STOP CUE MUTE

1KHz SENS

CUE SENSORS

1KHz

STOP SET

+20 V PULSE W/TONE

(GND TO MUTE)

DELAY

START

RUN SET

RUN FLIP FLOP

GND IN RUN

GND IN STOP

STOP

RECORD SECTION

INPUT

INPUT SENS SELECT

PRE AMP

REC LEVEL

BOOSTER AMP

EQUAL-IZER

HF

DRIVER

BIAS TRAP

DM2RB
DUAL TRACK
RECORD
HEAD

PGM

PGM BIAS ADJ

FGM REC ENABLE

VU CAL

DRIVER

VU

RECORD

CANCEL

RECORD FLIP FLOP

GND IN REC

GND IN RUN

REC SET

BIAS CUE CONT

FGM BIAS

+24VDC IN REC

RECORD

CUE REC ENABLE

BIAS OSC CONT

BIAS OSC

CUE BIAS ADJ

CUE BIAS

1KHz REC CONT

DELAY

1KHz

LEVEL ADJ

BIAS TRAP

CUE

CUE TONE GENERATORS

RECORD INTERLOCK

DRIVE SYSTEM & POWER SUPPLY

AC INPUT

FUSE

PWR SW

LOW VOLTAGE POWER SUPPLY

+24 VDC

+30 VDC

PLAY SOLENOID

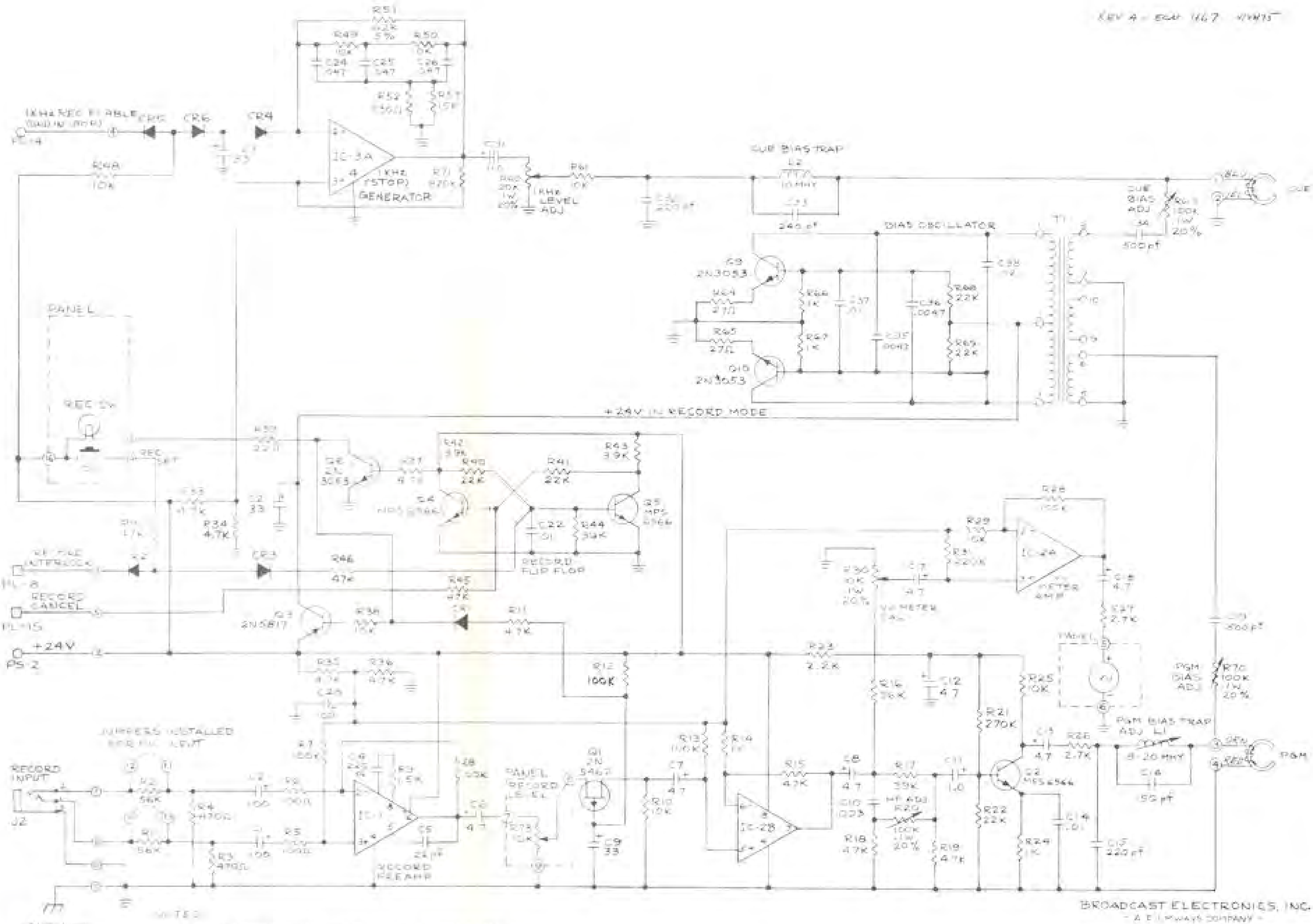
MOT

NOTES:

■ - CONNECTIONS TO +24VDC

2. RECORD PROVIDED ONLY IN 1000 RP

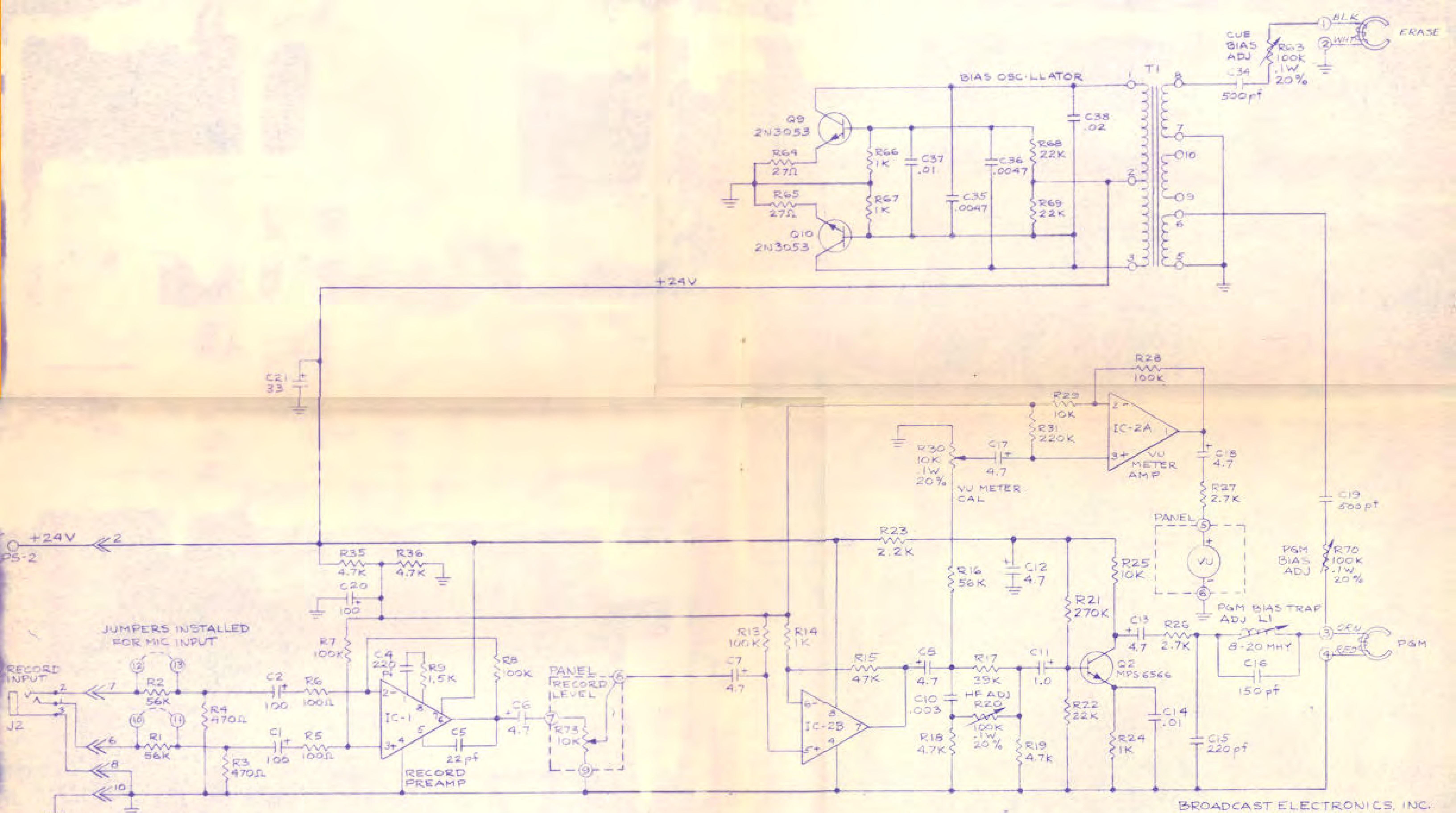
BLOCK DIAGRAM - SERIES 1000


1KHz REC ENABLE (GND IN PGM)
PL-14
R48 10K
IC-3A
1KHz (STOP) GENERATOR
R71 820K
R60 20K 1W 20% 1KHz LEVEL ADJ
R61 10K
R51 8.2K 5%
R49 10K
R50 10K
C24 .047
C25 .047
C26 .047
CUE BIAS TRAP
L2 10 MHY
C33 240 pf
CUE BIAS ADJ
500 pf
20%
CUE
BIAS OSCILLATOR
Q9 2N3053
Q10 2N3053
R64 27Ω
R65 27Ω
R66 1K
R67 1K
R68 22K
R69 22K
T1
+24V IN RECORD MODE
PANEL
REC SW
REC SET
R39 22Ω
Q6 2N3053
R37 4.7K
R42 3.9K
R40 22K
R41 22K
R43 3.9K
Q4 MPS 6566
Q5 MPS 6566
C22 .01
R44 39K
RECORD FLIP FLOP
R34 4.7K
C2 33
RF FIRE INTERLOCK
PL-8
CR3
R46 47K
RECORD CANCEL
PL-15
R45 47K
Q3 2N5817
R38 10K
R11 47K
+24V
PS-2
R35 4.7K
R36 4.7K
R12 100K
R28 100K
R29 10K
R31 220K
IC-2A
METER AMP
R30 10K 1W 20%
VU METER CAL
R27 2.7K
R23 2.2K
R16 56K
C12 47
R25 10K
R21 270K
PGM BIAS ADJ
R70 100K 1W 20%
PGM BIAS TRAP ADJ L1
8-20 MHY
C16 155 pf
PGM
R26 2.7K
JUMPERS INSTALLED FOR MIC LEVEL
RECORD INPUT
J2
R2 56K
R1 56K
R4 470Ω
R3 470Ω
R6 100Ω
R5 100Ω
R7 100K
IC-1
RECORD PREAMP
R8 10K
PANEL RECORD LEVEL
R73 10K
Q1 2N 5457
C9 33
R10 10K
R13 100K
R14 1K
IC-2B
R15 4.7K
R17 39K
R18 4.7K
HF ADJ R20 100K 1W 20%
R19 4.7K
Q2 MPS 6566
R22 22K
R24 1K
C15 220 pf
GND LUG
NOTES:
RESISTORS IN OHMS, 1/4W, 10%, CAPACITORS IN MICROFARADS, UNLESS NOTED OTHERWISE

BROADCAST ELECTRONICS, INC.
- A FILMWAYS COMPANY -

1000 SERIES
RECORD MODULE SCHEMATIC
C-906-1101 REV A

DRAWN 12/29/74 W.L.J.
CHECKED



GND LUG

NOTES:

1. RESISTORS IN OHMS, 1/4W, 10%; CAPACITORS IN MICROFARADS; UNLESS NOTED OTHERWISE.

BROADCAST ELECTRONICS, INC.
- A FILMWAYS COMPANY -

1000 DELAY

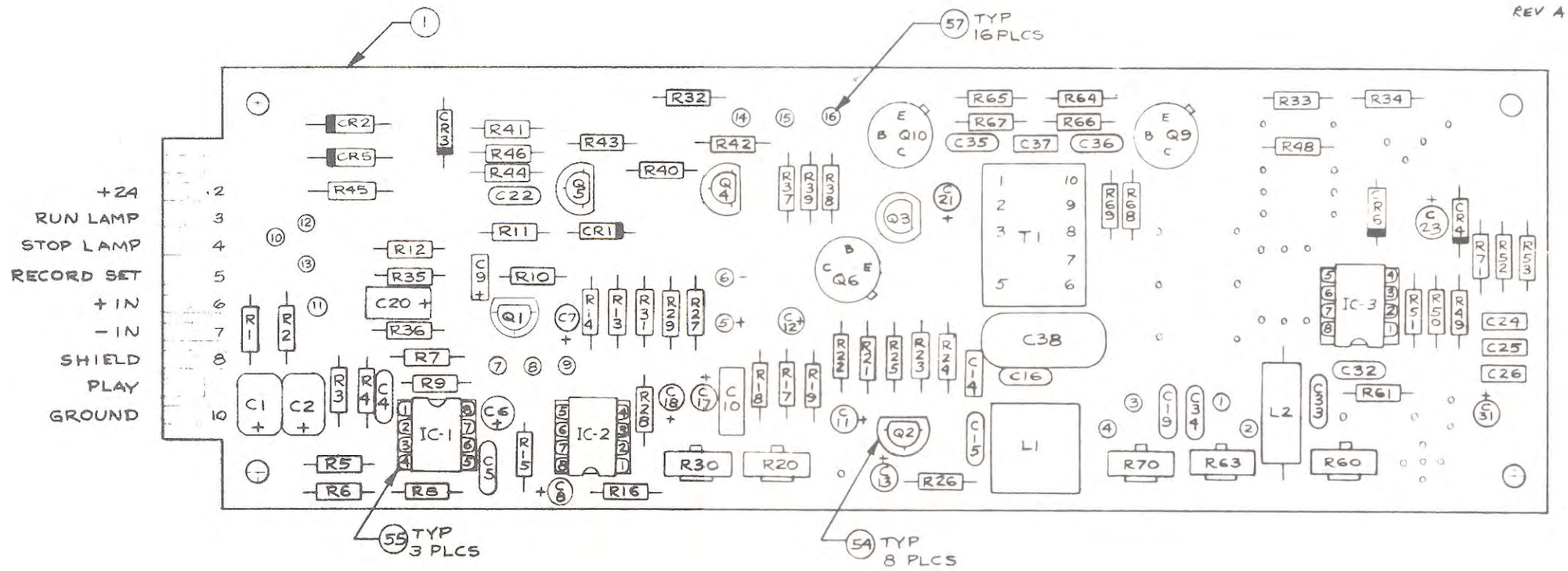
RECORD MODULE SCHEMATIC

C-906-1121

DRAWN: WMJ 7/15/75

CHECKED:

REV A ECN 467 4/22/75



ITEM	PART NUMBER	QTY	DESCRIPTION
59	364-0670	1	CHOKE, 10 MHY (L2)
58	363-9061	1	INDUCTOR, ADJUSTABLE, 8-20 MHY (L1)
57	413-0024	16	TERMINAL, TURRET
56	372-0095	1	TRANSFORMER, BIAS OSCILLATOR (T1)
55	417-0800	3	SOCKET, IC, 8-PIN DIP
54	417-0330	8	SOCKET, TRANSISTOR
53			
52	221-4558	2	RC-4558 DUAL OP-AMP (IC-2, IC-3)
51	221-7091	1	LM-709 CN OP-AMP (8PIN DIP) (IC-1)
50	203-0457V	6	DIODE, IN457 (CR1, CR2, CR3, CR4, CR5, CR6)
49	211-3053	3	TRANSISTOR, 2N3053 (Q6, Q9, Q10)
48	210-3644		TRANSISTOR 2N5817 (Q3)

ITEM	PART NUMBER	QTY	DESCRIPTION
47	211-6566	3	TRANSISTOR, MPS6566 (Q2, Q4, Q5)
46	212-5462	1	FET, 2N5462 (Q1)
45			
44	030-2043		CAPACITOR, .02 MFD, 100 V (C38)
43	030-4733	2	.0047 MFD, 100V (C35, C36)
42	040-2422	1	240 pf, 50V (C33)
41			
40	030-4743A	3	.047 MFD, 100V (C24, C25, C26)
39	041-5023	2	500 pf, 500V (C19, C34)
38	040-1522	1	150 pf, 50V (C16)
37	030-1043	3	.01 MFD, 100V (C14, C22, C37)
36	064-1063	2	1 MFD, 35V (C11, C31)
35	030-3033	1	.003 MFD, 100V (C10)
34	064-3373	3	33 MFD, 35V (C9, C21, C23)
33	064-4763	7	4.7 MFD, 35V (C6, C7, C8, C12, C13, C17, C18)
32	040-2213	1	22 pf, 50V (C5)
31	040-2223	3	220 pf, 50V (C4, C15, C32)
30	063-1083	3	CAPACITOR, 100 MFD, 20V (C1, C2, C20)
29	100-8263	1	RESISTOR, 820KΩ, 1/4W, 10% (R71)
28	176-1054	1	TRIMMER, SIDE ADJ, 10KΩ, .1W, 20% (R30)
27	176-2054	1	TRIMMER, SIDE ADJ, 20KΩ, .1W, 20% R60)
26	176-1064	3	TRIMMER, SIDE ADJ, 100KΩ, .1W, 20% (R20, R63, R70)
25	100-8253	1	RESISTOR, 62KΩ, 1/4W, 5% (R51)
24			
23		1	
22	100-5653	3	56KΩ (R1, R2, R16)
21	100-4753	4	47KΩ (R15, R32, R45, R46)
20	100-4743	8	4.7KΩ (R11, R18, R19, R33, R34, R35, R36, R37)
19	100-4733	2	RESISTOR, 470Ω, 1/4W, (R3, R4)

ITEM	PART NUMBER	QTY	DESCRIPTION
18	100-2743	2	RESISTOR, 2.7KΩ, 1/4W, (R26, R27)
17	100-3953	2	39KΩ (R17, R44)
16	100-3943	2	3.9KΩ (R42, R43)
15	100-3333	1	330Ω (R52)
14	100-2763	1	270KΩ (R21)
13	100-2723	2	27Ω (R64, R65)
12	100-2263	1	220KΩ (R31)
11	100-2253	5	22KΩ (R22, R40, R41, R68, R69)
10	100-2243	1	2.2KΩ (R23)
9	100-2223	1	22Ω (R39)
8	100-1553	1	15KΩ (R53)
7	100-1543	1	1.5KΩ (R9)
5	100-1063	4	100KΩ (R12, R7, R8, R13, R28)
4	100-1053	8	10KΩ (R10, R25, R29, R38, R48, R49, R50, R61)
3	100-1043	4	1KΩ (R14, R24, R66, R67)
2	100-1033	2	RESISTOR, 100Ω, 1/4W, (R5, R6)
1	C-514-1393	1	BLANK P C BOARD
	C-915-1393		RECORD MODULE P C BOARD ASSY
ITEM	PART NUMBER	QTY	DESCRIPTION

PARTS LIST

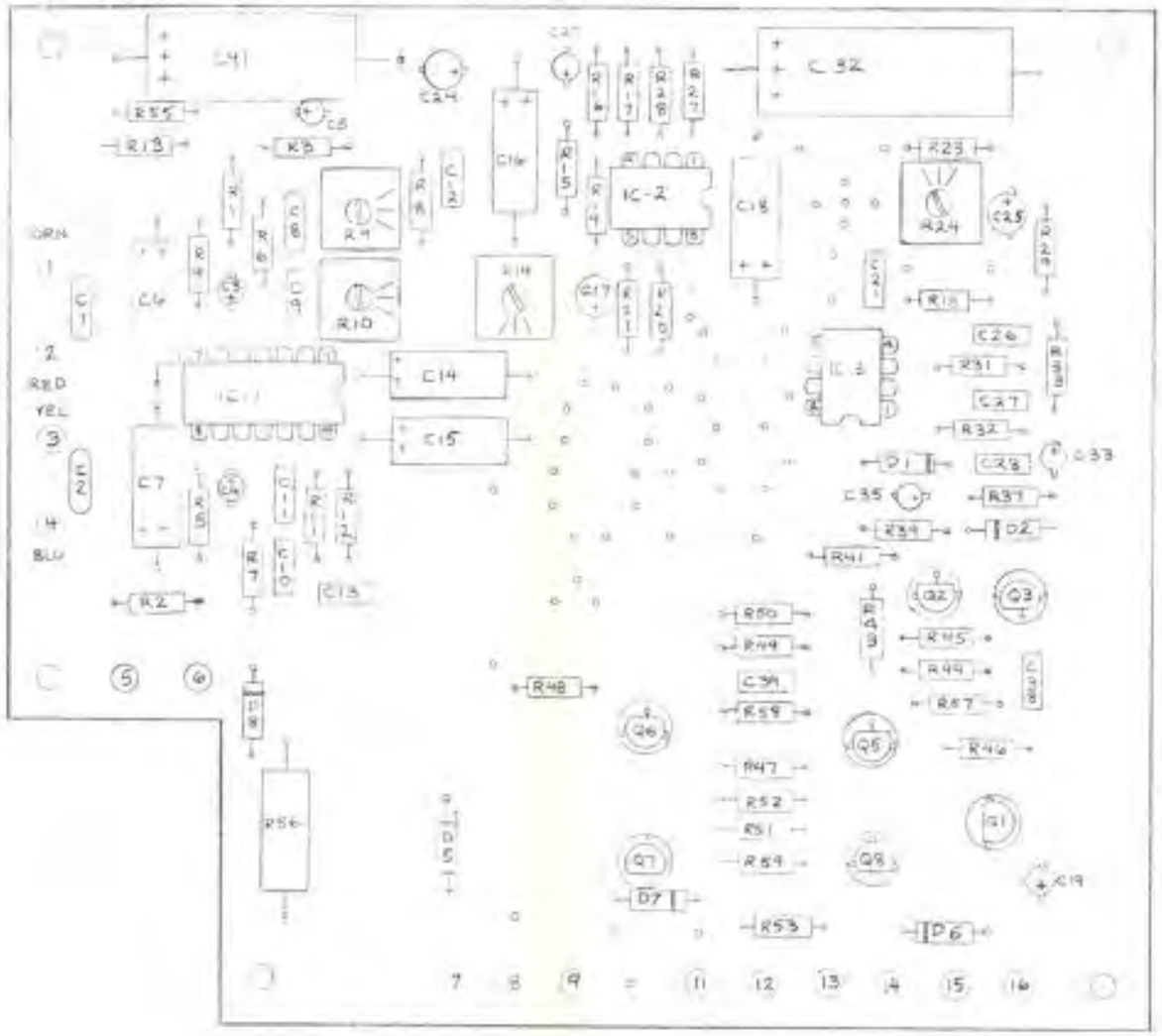
BROADCAST ELECTRONICS, INC.
- A FILMWAYS COMPANY -

1000 SERIES
RECORD MODULE
P C BOARD LAYOUT & PARTS

REV
C-915-1393 A

DRAWN: 12/24/74 W.L.J.
CHECKED:

SCALE: 2:1



ITEM	PART NUMBER	QTY	DESCRIPTION
55	417-0800	2	8-PIN DIP IC SOCKET
54	417-1406	1	14-PIN DIP IC SOCKET
53	221-4558	2	DUAL OP-AMP 4558 (IC-1, IC-2)
52	221-2310	1	DUAL LOW NOISE PREAMP 739 (IC-3)
51	417-0330	2	TRANSISTOR SOCKETS
50	409-0121	5	TRANSISTOR PADS
49	212-5462	1	2N5462 F.E.T. (Q1)

ITEM	PART NUMBER	QTY	DESCRIPTION
48	211-5814	2	TRANSISTOR 2N5814 (Q7, Q8)
47	211-4566	4	TRANSISTOR MPS A56A (Q2, Q3, Q5, Q6)
46	203-4005	3	IN4005 DIODE (D7, D8, D9)
45	201-5457V	3	IN457 DIODE (D1, D2, D6)
44	413-1597	15	TURRET TERMINAL
43			
42	013-4763	1	CAPACITOR, 470 MFD, 25V (C41)
41			
40	030-4743A	1	.047 MFD, 100V (C38)
39	014-1084	1	10 MFD, 40V (C32)
38	030-043	1	CAPACITOR, .01 MFD, 100V (C39)

ITEM	PART NUMBER	QTY	DESCRIPTION
37	014-2471	2	CAPACITOR, 33 MFD, 35V (C24, C26)
36	030-2033	1	.0022 MFD 100V (C21)
35	014-4763	4	4.7 MFD, 35V (C17, C19, C34, C35)
34	030-4733	9	.0047 MFD, 100V (C8, C9, C10, C11, C12, C13, C24, C27, C28)
33	015-5064	6	4.7 MFD, 50V (C6, C7, C14, C15, C16, C18)
32	014-1063	4	1 MFD, 35V (C3, C4, C5, C33)
31	040-2723	2	CAPACITOR, 270 pf, 50V (C1, C2)
30			
29			
28			
27	177-1093	2	TRIMMER, 10K Ω, .1W, 20% (R14, R24)
26	177-5053	1	TRIMMER, 50KΩ, .1W, 20% (R10)
25	177-1073	1	TRIMMER, 1.0 MEGΩ, .1W, 20% (R9)
24	132-5622	1	RESISTOR, 56Ω, 2W, W/W, 5% (R56)
23	100-3953	1	39K Ω, 1/8W, 5% (R58)
22	100-1543	1	1.5K Ω (R55)
21	100-2223	1	22 Ω (R50)
20	100-2743	2	2.7K Ω (R51, R52)
19	100-3943	2	3.9K Ω (R47, R48)
18	100-2073	1	2.0 MEGΩ (R46)
17	100-1033	1	100 Ω (R41)
16	100-6233	1	620 Ω (R37)
15			
14			
13	100-1843	1	1.8K Ω (R29)
12	100-1863	1	180K Ω (R27)
11	100-4743	6	4.7K Ω (R21, R28, R33, R39, R43, R44)
10	100-4753	7	47K Ω (R17, R18, R19, R20, R45, R57, R59)
9	100-2753	3	27K Ω (R15, R16, R23)
8	100-1053	3	10K Ω (R12, R49, R60)
7	100-3363	1	330K Ω (R11)
6	100-1583	1	150K Ω (R8)
5	100-1023	2	10 Ω (R6, R7)
4	100-5233	2	820 Ω (R4, R5)
3	100-5663	4	56K Ω (R3, R13, R31, R32)
2	100-2763	2	RESISTOR, 270K Ω, 1/4W, 10% (R1, R2)
1	514-1390	1	BLANK P.C. BOARD
-	914-1390	X	PLAYBACK/LOGIC P.C. BOARD ASSY.

PARTS LIST

BROADCAST ELECTRONICS INC

1000 SERIES

PLAYBACK/LOGIC P.C. ASSEMBLY

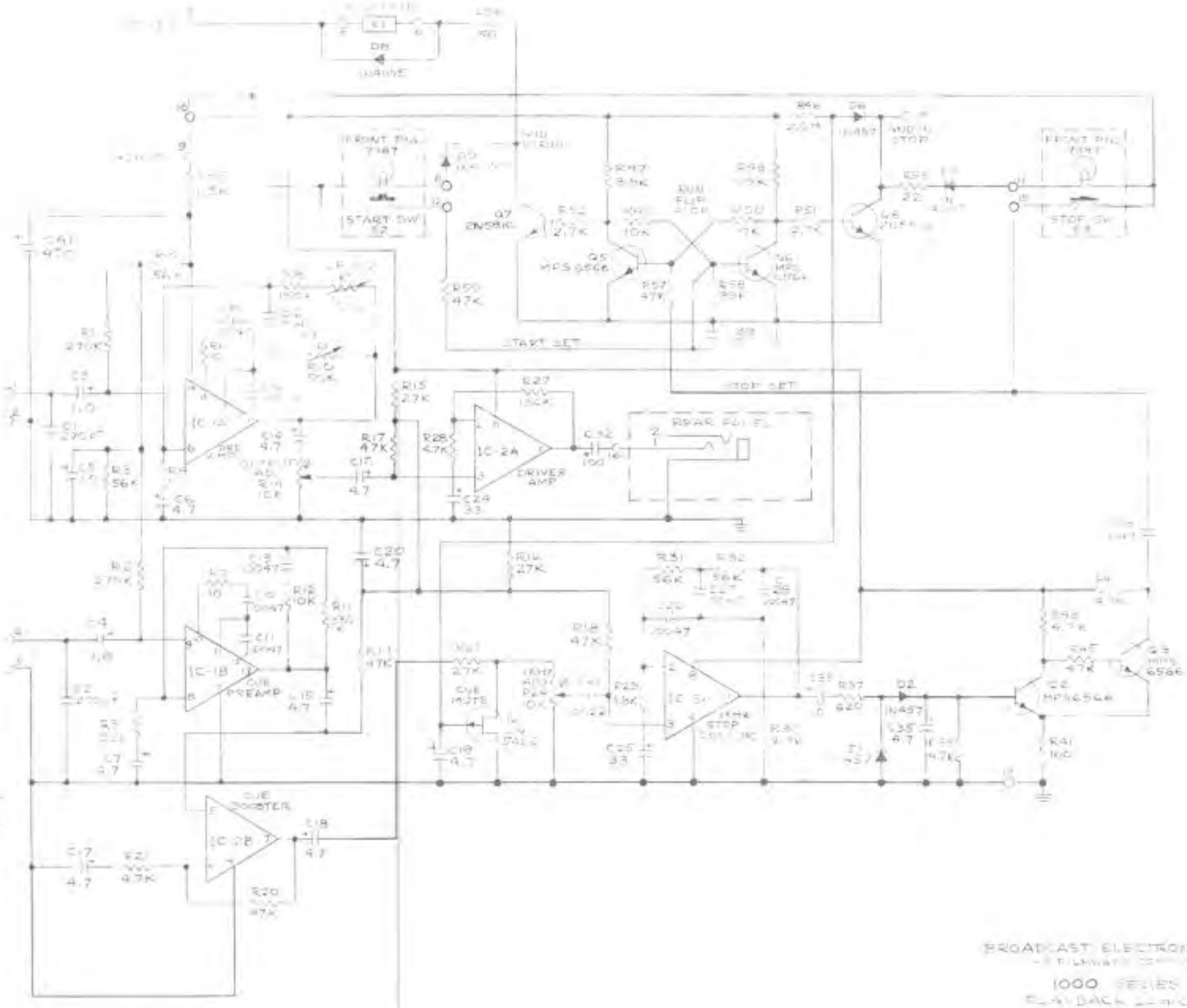
REV

C-915-1390

DRAWN: RJ 11/75 -1

CHECKED:

SCALE: 2:1

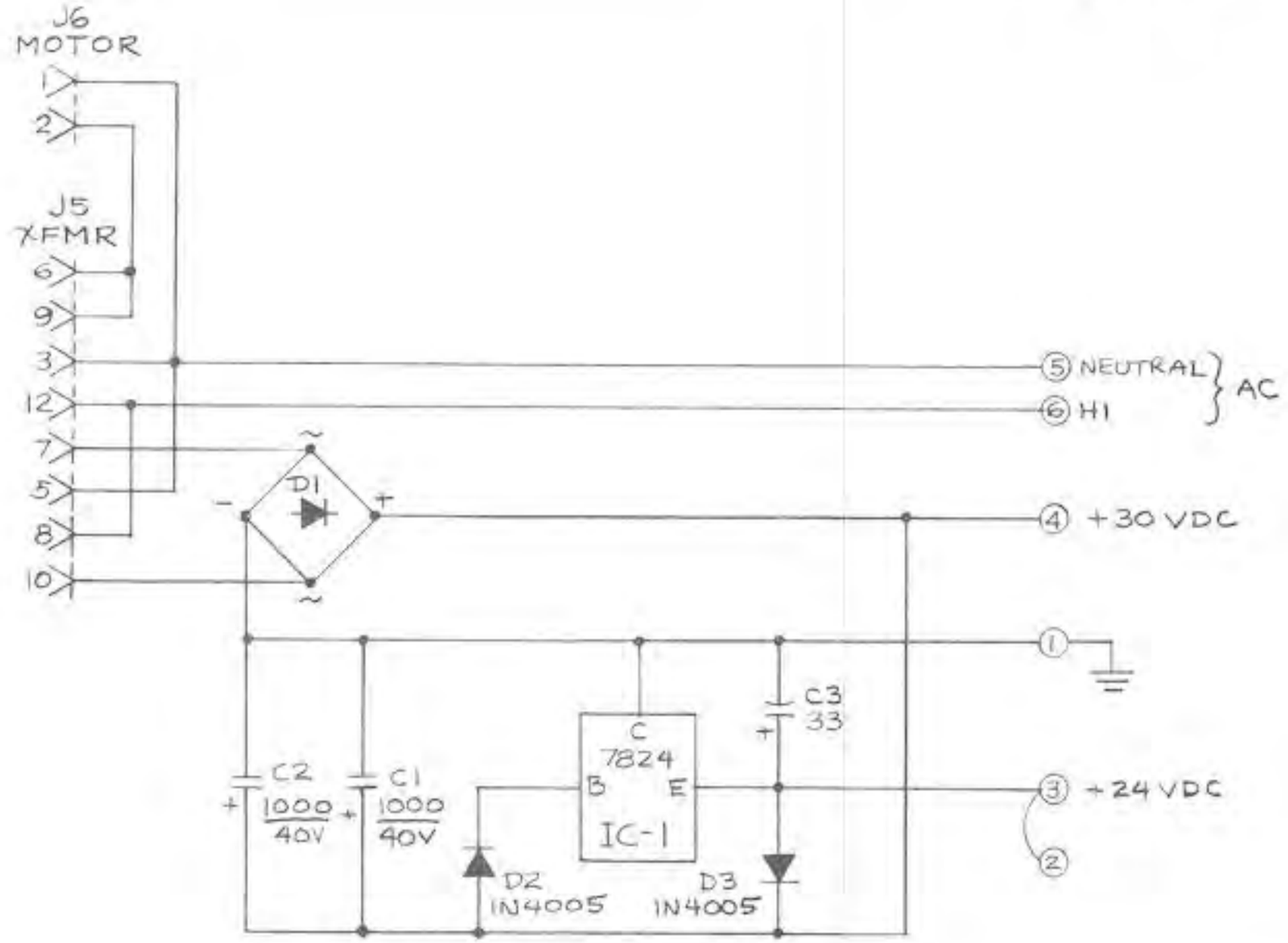


NOTES:

1. RESISTORS IN OHMS, 1/4W; CAPACITORS MFD UNLESS NOTED OTHERWISE.
2. ——

BROADCAST ELECTRONICS INC
1000 SERIES
PLAYBACK LOGIC PCB
SCHEMATIC
C-906-1102

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



ITEM	QTY RQD	PART NUMBER	DESCRIPTION	NOTE

LIST OF MATERIAL

TOLERANCE UNLESS OTHERWISE SPECIFIED
DECIMAL 2 PL ± .01 3PL ± .005
FRACTIONAL ± 1/64
ANGULAR ± 1°
SHARP EDGES TO BEND RADII
FILLET RADII

DRAWN BY MSD DATE 5/22/85
CHECKED BY DATE 5-23-85
PROJECT ENGR DATE
APPROVED BY

MATERIAL —

TREATMENT OR FINISH —

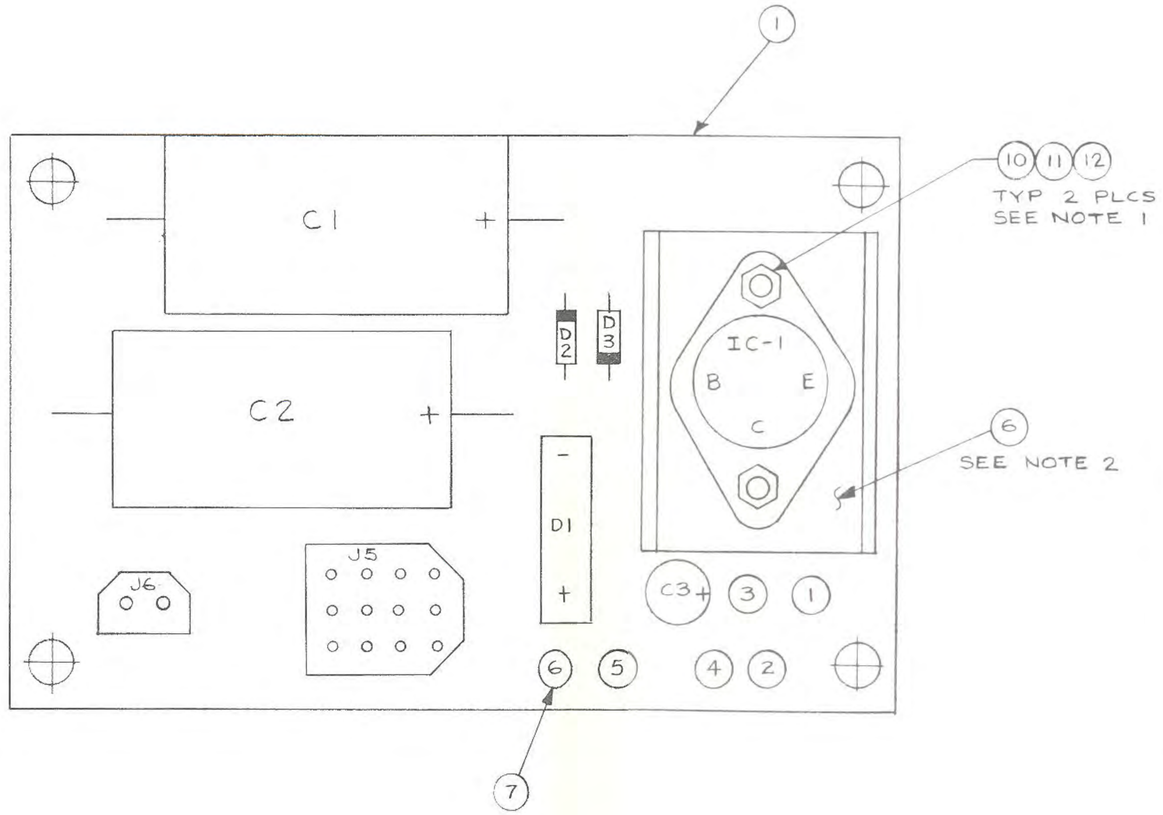
BROADCAST ELECTRONICS INC.
—A FILMWAYS COMPANY—

TITLE POWER SUPPLY PCB SCHEMATIC

B DWG NO 906-2114 REV

1000/2000 SERIES SCALE — SHEET 1 OF 1

REV B ECN # 444 REVISED & REDRAWN 3-10-75



NOTES:

1. REGULATOR TO BE MOUNTED WITH SCREWS FROM BOTTOM OF BOARD.
2. HEAT SINK TO BE PROPERLY ORIENTED WITH REGULATOR PINS.

ITEM	PART NUMBER	QTY	DESCRIPTION
13	239-0003	1	BRIDGE RECTIFIER (D1)
12	———	2	HEX NUT, #6-32
11	———	2	L/WASHER, #6, INT TEETH
10	———	2	PHMS, PHIL, #6-32 X 3/8
9	695-0700	1	2-PIN CONNECTOR AMP (J6)
8	695-1276	1	12-PIN CONNECTOR AMP (J5)
7	413-1597	6	TURRET TERMINAL
6	455-6103	1	HEATSINK
5	064-3373	1	CAPACITOR, 33 MFD, 35 V (C3)
4	014-1094	2	CAPACITOR, 1000 MFD, 50V (C1, C2)
3	203-4005	2	IN4005 DIODE (D2, D3)
2	227-7824	1	24V REGULATOR (IC-1)
1	C-514-1391	1	BLANK P.C. BOARD
	B-914-1391		POWER SUPPLY P.C. BOARD ASSY

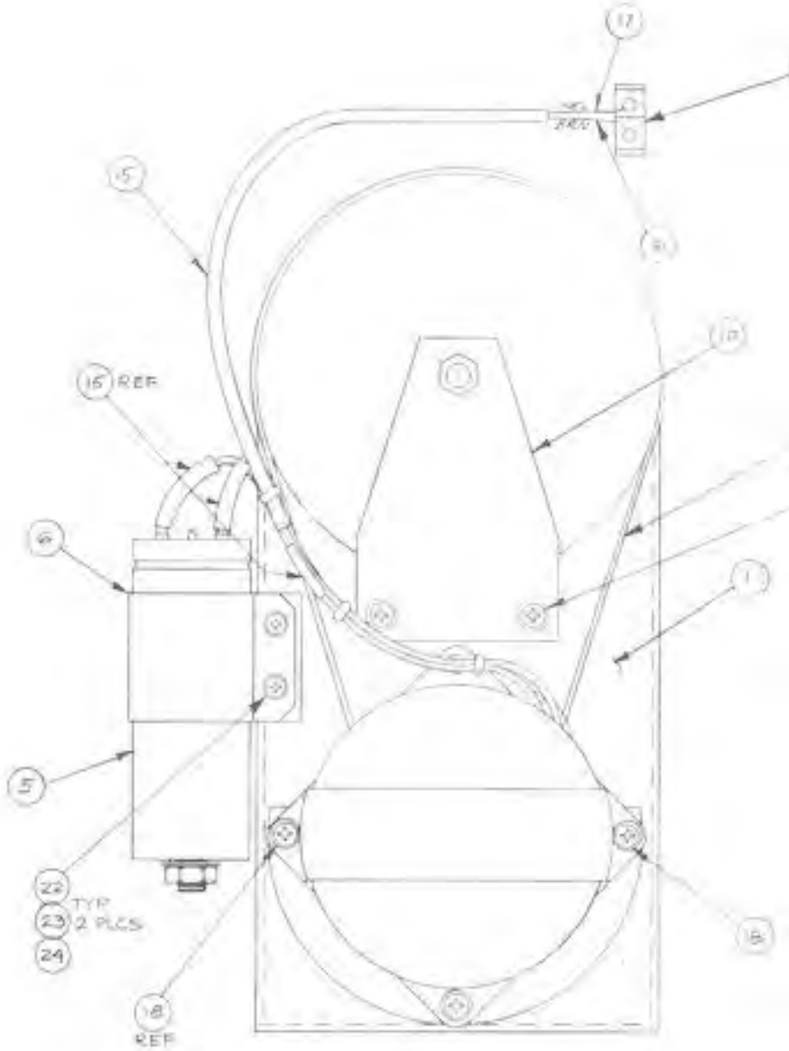
PARTS LIST

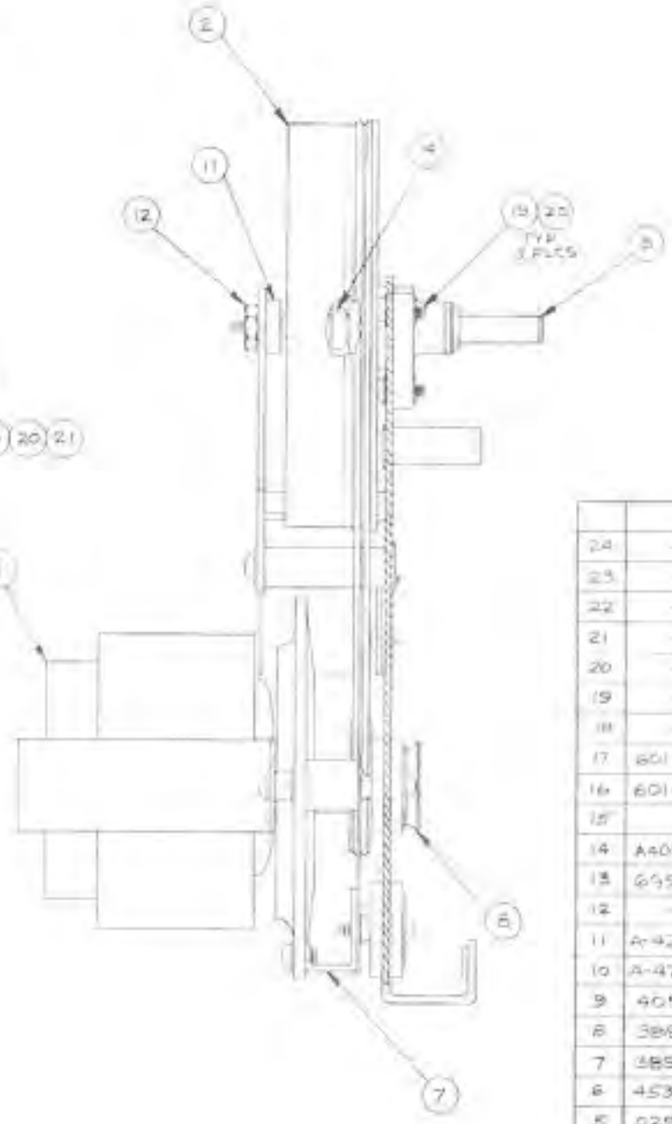
BROADCAST ELECTRONICS INC
- A FILMWAYS COMPANY -

1000/2000 SERIES
POWER SUPPLY PC ASSY
C-914-1391 REV B

DRAWN: 01/29/75 W.L.J. SCALE: 2/1

REV A 09/09/75 ECN 963





ITEM	PART NUMBER	QTY	DESCRIPTION
	C-906-2105		MOTOR MOUNTING SUB ASSY
1	C-530-0003	1	MOTOR MOUNTING SUPPORT PLATE
2	444-0335	1	FLYWHEEL ASSEMBLY
3	B-994-4152	1	FLYWHEEL SHAFT
4	A-384-1052	1	MOTOR
5	029-6064	1	CAPACITOR
6	453-0006	1	CAPACITOR HOLDER
7	389-9156	1	MOTOR MOUNTING KIT
8	389-0100	1	MOTOR PULLEY
9	405-0438	2	"C" RING BELT
10	A-474-0073	1	SHAFT RETAINING PLATE
11	A-420-0074	1	THRUST BUSHING
12	—	1	NUT, HEX, NYLON #10-32
13	695-0701V	1	2-PIN PLUG
14	A407-0032	1	SPACER, FLYWHEEL
15		12"	TUBING
16	601-2201	12"	WIRE, AWG 22, BRN
17	601-2204	14"	WIRE, AWG 22, YEL
18	—	2	PHMS, PHIL #6-32 X 1/2"
19	—	8	PHMS, PHIL #6-32 X 3/8"
20	—	5	LOCK WASHER, INT TEETH #6
21	—	2	FLAT WASHER, #6
22	—	2	PHMS, PHIL #8-40 X 1/4"
23	—	2	LOCK WASHER, INT TEETH #8
24	—	2	FLAT WASHER, #8

PARTS LIST

NOTES:

1. REMOVE SHAFT FROM FLYWHEEL ASSY (ITEM 2) & REPLACE WITH SHAFT (ITEM 3).

BROADCAST ELECTRONICS, INC.
- A FILMWAYS COMPANY -

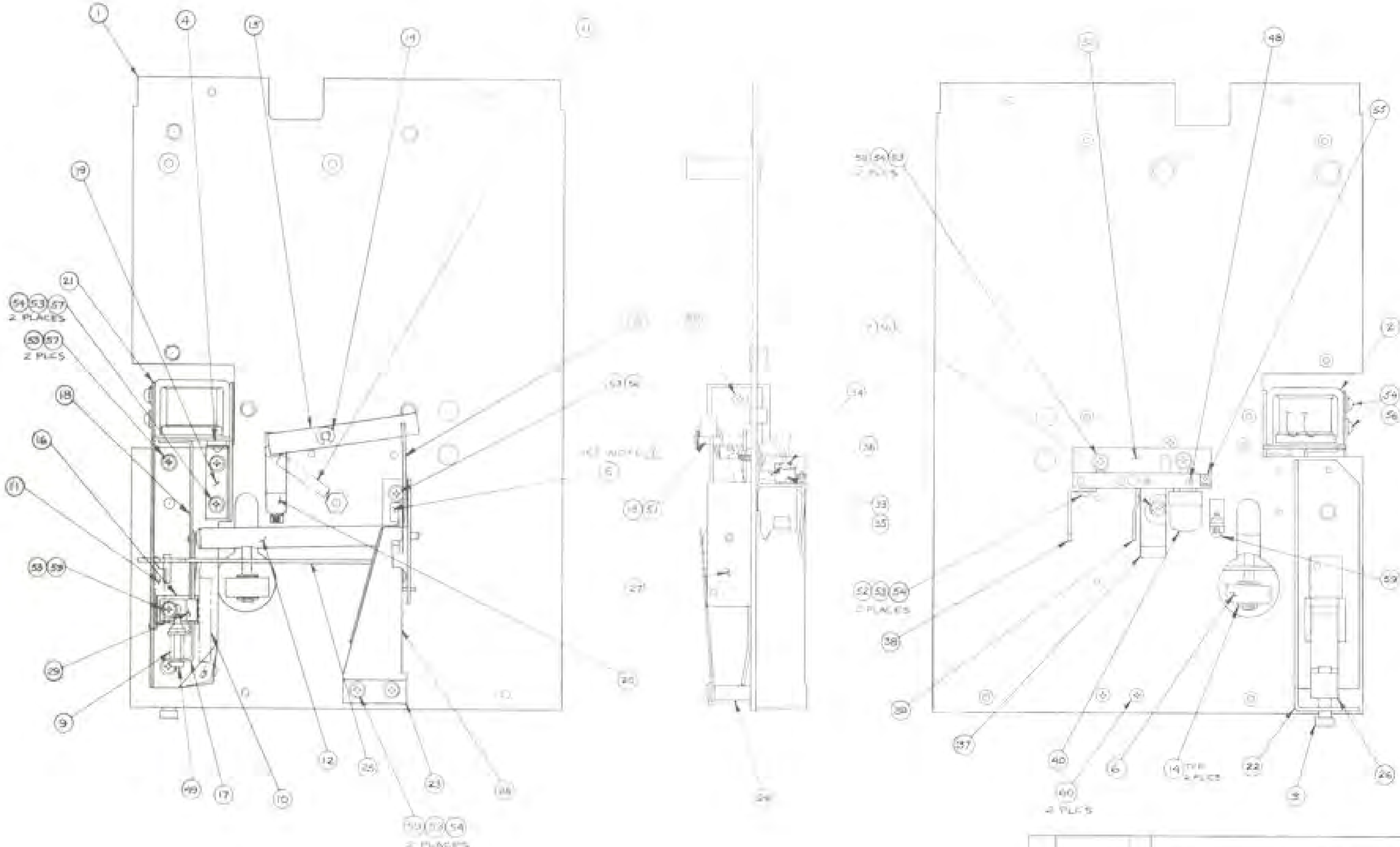
1000/2000 SERIES

MOTOR MOUNTING SUB ASSEMBLY

C-906-2105 REV A

DRAWN: 12/13/74 MSB
CHECKED:

SCALE: FULL



NOTES:

1. APPLY ITEM 5 USING CARTER'S RUBBER CEMENT #846 (OR EQUAL) IN APPROXIMATE POSITION SHOWN.

ITEM	PART NUMBER	QTY	DESCRIPTION
60	——	3	FHMS PHIL #6-32 x 3/16
59	——	4	PHMS PHIL x 3/8
58	——	2	x 5/16
57	——	4	x 1/4
56	——	5	#6-32 x 3/16
55	——	1	FHMS PHIL #4-40 x 3/8
54	——	12	F/WASHER, #6
53	——	8	L/WASHER, #6 INT TEETH
52	——	2	PHMS PHIL #4-40 x 1/4
51	——	1	FHMS PHIL #4-40 x 1/4
50	——	1	HEX NUT #6-32
49	——	1	SOCKET HD MACH SCR #6-32 x 7/8
48	——	2	SET SCREW #4-40 x 1/4

ITEM	PART NUMBER	QTY	DESCRIPTION
47			
46			
45			
44			
43			
42			
41			
40	252-0001	1	HEAD, DMIB
39	B-452-2103	1	L/R COMBINED CARTRIDGE GUIDE
38	B-452-2101	1	LEFT CARTRIDGE GUIDE
37	B-459-0202	1	CARTRIDGE SPRING
36	A-930-0053	1	SPRING, BLOCK
35	A-436-0052	1	CONICAL WASHER
34	A-421-0003	1	CLAMP NUT
33	A-445-0050	1	CLAMP BLOCK
32	B-470-7045	1	HEAD BRACKET
31			
30			
29	A-452-0021	1	GUIDE STRAP
28	A-459-4107	1	LATCH
27	A-459-4097	1	PIVOT ANGLE
26	A-459-4115	1	CLAMP, RELEASE BUTTON
25	A-429-4151	1	RELEASE CRANK
24	A-422-0035	1	LATCH STANDOFF
23	A-459-0048	1	NUT BAR SPACER
22	A-472-0015	1	CARTRIDGE GUIDE
21	C-470-0013	1	SOLENOID BRACKET
20	B-459-0046	1	PUSHLINK ASSEMBLY
19	B-459-0040	1	BUMPER STRAP
18	B-459-0025	1	ARMATURE ASSEMBLY
17	A-459-0022	1	SHAFT, PIVOT STRAP
16	A-459-0020	2	SPACER, GUIDE
15	A-459-0012	1	LEVER, PIVOT ACTUATING
14	454-3318	3	E-RING
13	B-489-0070	1	PIVOT POST
12	B-496-1113	1	SHAFT ASSEMBLY
11	B-932-0045	2	SHAFT RETURN SPRING
10	B-932-0044	1	ARMATURE RETURN SPRING
9	330-0046	1	SPRING
8	A-429-0016	1	WIRE LINK
7	420-0112	1	CARTRIDGE STOP PIN SCREW
6	B-404-0001	1	PRESSURE ROLLER ASSEMBLY
5	403-0042	1	CUSHION, CAM
4	403-0038	1	PLUG BUMPER
3	A-442-4200	1	RELEASE BUTTON
2	B-280-0033	1	SOLENOID ASSEMBLY
1	C-530-0000	1	DECK PLATE
	D-906-2108		DECK PLATE ASSEMBLY

PARTS LIST

BROADCAST ELECTRONICS, INC.
A FILMWAYS COMPANY

1000/2000 SERIES

DECK PLATE ASSEMBLY

D-906-2109

DRAWN: 4/11/74 MSS
CHECKED:

SCALE: 1:1

REMOTE CONNECTOR

REAR VIEW MATING CONNECTOR

CINCH NO.
P-324-CCT
24-PIN MALE

BEI NO.
418-0306

PIN NO.		
1	+	OUTPUT PLAYBACK (LEFT OR MONO)
2	−	
3	SHIELD	
4		
5		
6		
7		
8		
9		
10		STOP CONTROL
11		+ 24 V
12		STOP LAMP
13		START CONTROL
14		GROUND
15		RUN LAMP
16		
17		
18		
19	+	INPUT RECORD (LEFT OR MONO)
20	−	
21	SHIELD	
22		
23		
24		

NOTES:
1. UNBALANCED INPUT OR OUTPUT CONNECT TO (−) TO SHIELD
2 ALL LAMPS 28V, .05A OR LESS.

REAR PANEL CONNECTOR WIRING
1000 SERIES DELAY
DRWG. NO. B 906-2125 11/13/75

Spotmaster

#992

Acceptance Test Results

Customer _____

Model 1000 DL Serial No. 9702 Order No. _____

Actual results of inspection or tests performed on this equipment:

Proper Markings OK
Wiring Neat & clean OK
P C Boards clean OK
All lamps functioning OK
Deck lubricated & aligned OK

Controls operating normally OK
Solder joints clean & tight OK
Mech. Assembly clean & tight OK
VU Meter(s) calibrated OK
Auto Q operating _____

Condition after eight hrs. operation OK

Output level:	L P/B	R P/B	L R/P	R R/P	*
	+8		+8		@ 400Hz/700Hz NAB Std. oper. level
Distortion:			1.8%		

Frequency Response: (400Hz/*700Hz -0 db ref) @ -10 VU

	Play L	Play R	Rec/Play L	Rec/Play R
15K Hz			-1 1/4	
12K Hz			0	
10K Hz			+3/4	
8K Hz			+1 1/4	
*7.5KHz				
5K Hz			+2	
2.5KHz			+1 3/4	
1K Hz			+1 1/4	
600 Hz			+1/2	
*500 Hz				
300 Hz			+2 1/4	
*250 Hz				
150 Hz			-1 1/4	
*100 Hz				
75 Hz			0	
50 Hz			-1 1/4	

Cue Test: Stop _____ @ 6 db
QI _____ QII _____ below NAB Std. tone level

R/P Cue Generators, VU Calibration
1KHz _____ QI _____ QII _____

Flutter & Wow .16%

Playback Amp. noise output -56 (Ref 0 VU NAB level unweighted)

Cross Talk @ 1KHz _____

Erasure @ 1KHz below std. oper. level _____

Tested By: E Hopkins

Date: _____

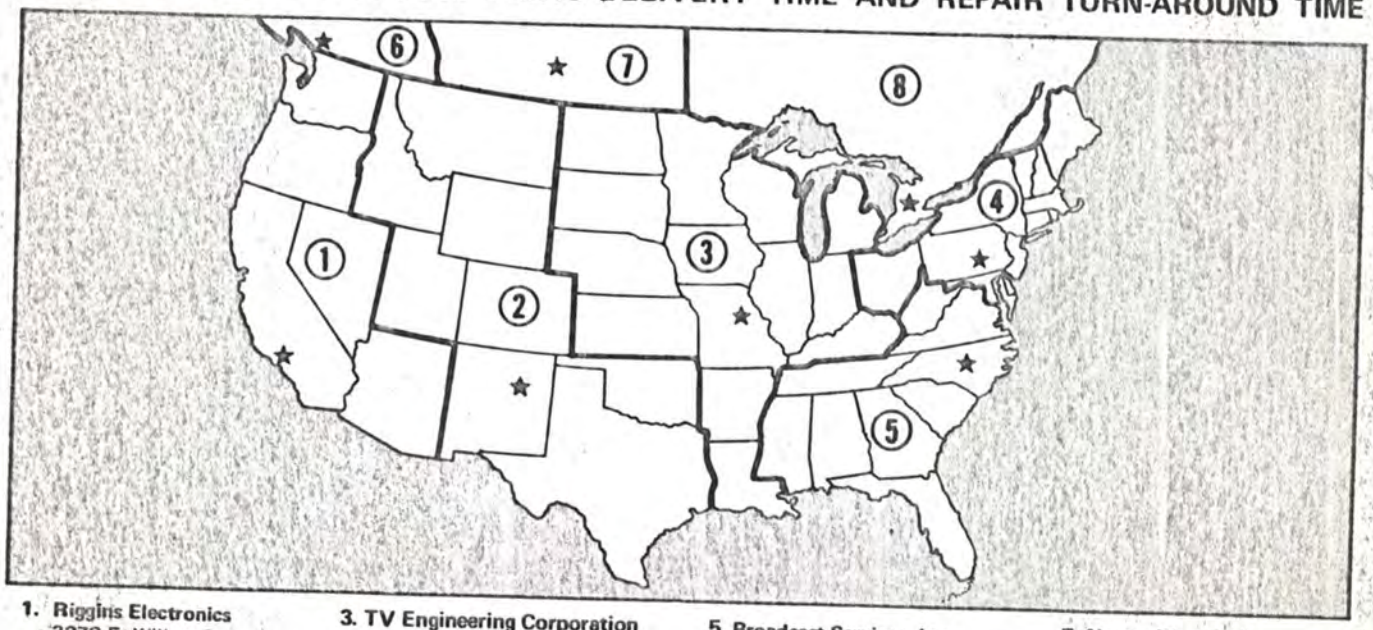
*Frequencies used with Stereophonic units.

Comments _____

E500010-574

Spotmaster® PARTS AND REPAIR DEPOTS

- COMPLETELY EQUIPPED TO SERVE YOU WITH SPOTMASTER PARTS AND REPAIRS – BOTH IN AND OUT OF WARRANTY
- REGIONAL DEPOTS REDUCE PARTS DELIVERY TIME AND REPAIR TURN-AROUND TIME



1. Riggins Electronics
3272 E. Willow St.
Long Beach, CA 90816
Ph: (213) 598-7007
George Riggins
States Covered:
Alaska, Arizona, California, Hawaii, Nevada, Oregon, Washington

2. Dyma Engineering
Route 1, Box 51
Taos, NM 87571
Ph: (505) 758-2686
Carroll Cunningham
States Covered:
Colorado, Idaho, Montana, New Mexico, Oklahoma, Texas, Utah, Wyoming

3. TV Engineering Corporation
519 Rudder Road
Fentoh, MO 63026
Ph: (314) 343-5605
Jack Vines
States Covered:
Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin

4. Communication Medias
1223 Tilghman Street
Allentown, PA 18102
Ph: (215) 437-0607
Bill Davies
States Covered:
Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Washington, D. C.

5. Broadcast Services, Inc.
Micro Road
Micro, NC 27555
Ph: (919) 284-2102
Neal Davis
States Covered:
Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennesee, Virginia, West Virginia

6. Nortec West, Ltd.
325 West Fifth Avenue
Vancouver 10, B.C., Canada
Ph: (604) 872-8525
Bob Whitehouse
Provinces Covered:
British Columbia
Yukon Territory

7. Nortec West, Ltd.
7056B Farrell Road
Calgary, Alta., Canada
Ph: (403) 252-8141
Ron Hill
Provinces Covered:
Alberta
Manitoba
NW Territory
Saskatchewan

8. J-Mar Electronics, Ltd.
6 Banigan Drive
Toronto 17, Ontario, Canada
Ph: (416) 421-9080
Bill Woods
Provinces Covered:
New Brunswick
Nova Scotia
Ontario
Quebec

IMPORTANT

PLEASE TELEPHONE OR WRITE FOR RETURN AUTHORIZATION BEFORE RETURNING EQUIPMENT OR PARTS. THIS WILL EXPEDITE SERVICE.

BROADCAST ELECTRONICS INC. —A FILMWAYS COMPANY—
8810 BROOKVILLE ROAD • SILVER SPRING, MARYLAND, 20910
PHONE 301-588-4983 • TWX 710-825-0432 • CABLE "SPOTMASTER"
WEST COAST SALES OFFICE: 1604 N. CAHUENGA BLVD. • LOS ANGELES, CA. 90028 • 213-465-1755

Broadcast Electronics, Inc.

No effort has been spared in the manufacture of SPOTMASTER equipment to assure long and reliable service. This unit has been thoroughly tested and inspected, and carefully packed to assure its safe arrival at the destination. The following guarantee applies.

Broadcast Electronics, Inc., hereinafter referred to as Seller, agrees to repair or replace, without charge, any equipment which is defective as to design, workmanship or material, and which is returned to Seller at its factory, transportation prepaid, provided

(a) Notice of the claimed defect is given Seller within one(1) year from date of delivery and goods are returned in accordance with Seller's instructions.

(b) Parts not manufactured by Seller or from Seller's design are subject to only such adjustments as Seller may obtain from the supplier thereof.

(c) Equipment shall not be deemed to be defective if, due to misuse, exposure or excessive impurities or moisture in the atmosphere it shall fail to operate in a normal or proper manner.

The guarantee of these paragraphs is void if equipment is altered by others than Seller or its authorized service center.

No other warranties, expressed or implied, shall be applicable.

BROADCAST ELECTRONICS, Inc.
8810 Brookville Road
Silver Spring, Maryland 20910

SPOTMASTER WARRANTY

For validation purposes your SPOTMASTER® Warranty Card must be filled out completely and mailed to BROADCAST ELECTRONICS, INC. within 15 days from the date of purchase.

Please note that not all machines are marked with serial numbers. In these cases, model designation will be sufficient.

To aid our Customer Service Department in understanding your particular broadcasting situation, we ask that you complete the product information portion of the warranty card to help us serve you better.

If you would like information on other SPOTMASTER® products or our latest catalogue and price list, please indicate in the comment section of the warranty card.

Please print clearly or type:

Purchaser's Name_____ Title_____

Firm/Institution_____ Date_____

Address_____

City_____ State_____ Zip_____

Model_____ Serial No._____

Purchased from_____

Where did you get your information about SPOTMASTER® products? ☐Magazines (which)_____

☐Other source (who)_____

Other SPOTMASTER® products you are using_____

_____ What type (brand) of equipment is your new SPOTMASTER® replacing?_____

Comments?_____

Please send ☐Catalogue ☐Price List

SPOTMASTER WARRANTY

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Address_____

City_____ State_____ Zip_____

Model_____ Serial No._____

Purchased from_____

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☐Other source (who)_____

Other SPOTMASTER® products you are using_____

_____ What type (brand) of equipment is your new SPOTMASTER® replacing?_____

Comments?_____

Please send ☐Catalogue ☐Price List