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LBO-324/325

40MHz/60MHz OSCILLOSCOPE

SERVICE MANUAL

NOTE

These servicing instructions are for use by qualified personnel only. To avoid electrical shock, do not perform any servicing other than that contained in the service manual unless you are qualified.

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1. SPECIFICATIONS

CRT Display	
Type	95 mm Rectangular, Internal-graticule Scale, Aluminized Screen and Flat Face with illumination lamp [LBO-325] and Percentage scale.
Accelerating Potential	12 kV/2 kV regulated
Effective display area	8 x 10 div. (1 div. = 6.35mm)
Beam Rotator	Adjustment on front panel
Intensity Modulation	Blanked by TTL Level Signal
Graticule Illumination	Adjustment on front panel [LBO-325]
Vertical Amplifier (CH-1 and 2)	
Sensitivity	5 mV/div. to 5 V/div. (all bandwidth), 1 mV/div. to 2 mV/div. (5 MHz: MAG x 5) with variable in 10 steps, 1-2-5 sequence, continuously variable between steps.
Calibration Accuracy	±3% (±5%: MAG x 5)
Bandwidth (-3 dB, ref. 8 div.)	
DC coupled	DC to 40 MHz [60 MHz] (DC to 5MHz: MAG x 5)
AC coupled	10 Hz to 40 MHz [60 MHz]
Rise Time	8.8 ns [5.8 ns] (70 ns: MAG x 5)
[Signal Delay Time	Approx. 20 ns on CRT face]
Input Impedance	1 MΩ ± 1.5%, 30 pF within ± 5pF (Tolerance: within ± 2 pF)
Input Coupling	AC, GND, DC
Maximum Input	400 V (DC + ACp-p)
Display Modes	CH-1, CH-2, CHOP, ALT, ADD
Polarity Invert	CH-2 INVERT
CH-1 Output	Approx. 50 mV/div. into 50Ω (DC to 40 MHz [60 MHz], -3 dB)
Horizontal Amplifier	
Sweep Method	Trigger sweep, Automatic trigger sweep, Continuously delayed sweep, Trigger delayed sweep, and ALT sweep.
A Sweep Time	0.2 μs/div. to 0.2 s/div., 1-2-5 sequence 19 steps with continuous adjuster.
B Sweep Time	0.2 μs/div. to 0.5 ms/div., 1-2-5 sequence 11 steps.
Calibration Accuracy	±3%
Hold-off variable	One sweep or more
Delay Time Jitter	1/10,000
Setting accuracy of delay time position	±3% approx.
Magnifier	10 times ± 5%
Max. Sweep Time	20 ns/div. (MAG x 10 ON)

Synchronization
 Signal Sources
 Coupling
 Slope
 Sensitivity

ALT, CH-1, CH-2, LINE, EXT.
 AC, HF-REJ, TV-V, TV-H
 + or - and VIDEO POL

	Bandwidth	INT.	EXT.
NORM	30 Hz ~ 10 MHz	0.5 div.	0.2 Vp-p
	2 Hz ~ 40 [60] MHz	1.5 div.	0.6 Vp-p
AUTO	30 Hz ~ 10 MHz	0.5 div.	0.2 Vp-p
	30 Hz ~ 40 [60] MHz	1.5 div.	0.6 Vp-p

TV Synchronization

Extracts the synchronizing signal from composite video signal and provides stable synchronization. Slope switch is selected according to polarity of video signals.
 If the main sweep (A TIME) is synchronized to TV-V, under B triggering (B TRIG'D) the magnified sweep (B TIME) is automatically synchronized to TV-H.

X-Y Mode (X = CH-1, Y = CH-2)

Sensitivity

X axis: 5 mV/div. to 5 V/div.

Y axis: 5 mV/div. to 5 V/div.

X axis Bandwidth

DC or 10 Hz to 1 MHz (-3 dB, ref. 8 div.)

X-Y phase

Less than 3° at 100 kHz

Calibrator

Output Voltage

0.5 Vp-p ±2%

Frequency

Approx. 1 kHz, square wave

Power Requirements

Line Voltage

AC100, 120, 200, 220, 240V 50/60 Hz

Power Consumption

25 W

Size and Weight

230 (W) x 75 (H) x 290 (D) mm, 4 kg

Supplied Accessories

Direct/Low capacitance probe LP-16BX [LP-060X]	2
BNC terminal adapter	2
Time lag fuse	1
Instruction manual	1
Carrying case	1
Protective front cover	LBO-325 only 1
Shading hood	1

Optional Accessories

Carrying Case (with Protective front cover)
 Shading hood

2. TEST EQUIPMENT REQUIRED

The following test equipment is required for calibration and servicing of the Model LBO-324/325. The suggested specifications are the minimum necessary for proper calibration of this instrument.

<u>Test Equipment</u>	<u>Minimum Spec</u>
- Multimeter	0 - 200V Accuracy <0.1% High voltage probe
- Oscilloscope	10mV sensitivity 20MHz bandwidth Low capacitance probe
- Amplitude Calibrator	1kHz square wave 1mV-50Vp-p Accuracy <0.5%
- Square Wave Generator	100Hz-10kHz Rise time <10nS
- Time Mark Generator	0.2S-0.02uS Accuracy <0.5%
- Sine Wave Generator	10Hz-40/60MHz
- Capacitance Meter	30pF

3. CALIBRATION PROCEDURE

3.1 General

Calibration should be performed after a 30 minute warm-up period. It should also be confirmed that the unit is connected to the rated power line voltage.

All adjustments should be completed in the given order, because some adjustments interact with others.

During the adjustment procedure, remove the case only when necessary and replace immediately after making an adjustment. This will maintain all circuits at constant operating temperature.

Take utmost precaution to come into contact with the high voltage circuits!

3.2 Initial Control Settings

The initial control settings to be used for each check and adjustment are listed below. Any variations from these settings are stated in the applicable procedure.

Display	
INTEN	As desired
FOCUS	Best focused display
ILLUM	As desired<325 only>

Vertical	
VOLTS/DIV	0.1V (CH-1, 2)
VARIABLE	CAL'D (CH-1, 2)
x5 MAG	OFF (CH-1, 2)
POSITION	Center (CH-1, 2)
V MODE	CH-1
AC-DC-GND	DC (CH-1, 2)
CH-2 INV	OFF

Time base	
A TIME/DIV	0.5mS
B TIME/DIV	0.1mS
VARIABLE	CAL'D
POSITION	Center
HOR DISPLAY	A
DLY TIME MULTI	0.20
A/B TRACE SEP	Center

Trigger	
COUPLING	AC
SOURCE	CH-1
LEVEL	0
NORM/AUTO	AUTO
SLOPE	+
HOLDOFF	NORM

3.3 Power Supply

- Connect the DC voltmeter between test point and chassis.
- Adjust as required, using the adjustment shown in Table 3-1.

Test point	Voltage	Tolerance	Adjustment
P68 pin 3	-8V	-7.8V to -8.2V	VR1(T-3553)
P68 pin 4	+5V	+4.8V to +5.2V	-
P67 pin 3	+8V	+7.6V to +8.4V	-
P68 pin 2	+12V	+11.4V to +12.6V	-
P64 pin 1	+15V*	+13.5V to +16.5V	-
P67 pin 4	+36V	+33V to +39V	-
P68 pin 1	+100V	+95V to +105V	-
TP1(T-3565)	-1900V	-1895V to 1905V	VR2(T-3591)

*: Unregulated

Table 3-1

3.4 Display

(1) Intensity Adjustment

- Set: A TIME/DIV 0.5mS
AC-GND-DC GND
- Set the INTEN control midway between 10 and 11 o'clock positions.
- Adjust VR1(T-3591) so the trace is just visible.

(2) Focus Adjustment

- Set: FOCUS Center
- Apply CAL 0.5Vp-p to CH-1 INPUT connector.
- Adjust VR3(T-3591) and VR1(T-3565) alternately for optimum trace sharpness.

3.5 Vertical Amplifier

(1) DC Balance Adjustment

* The following adjustments are accessible from the hole on the top and bottom of the cabinet. Use insulated adjustment driver.

- Set: VOLTS/DIV 5mV
 VARIABLE CAL'D
 AC-GND-DC GND

- Position the trace to the center horizontal graticule line using the V-POSITION control.

- Pull x5 MAG on.

- If the trace moves 1 division or more, adjust VR3(T-3554) for minimum trace shift between x5 MAG ON and OFF.

- Apply the same procedure for CH-2 by adjusting VR103(T-3554).

(2) Step Attenuator Balance Adjustment

- Set: VOLTS/DIV 10mV
 AC-GND-DC GND

- Position the trace to the center horizontal graticule line using the V-POSITION control.

- Set the VOLTS/DIV switch to 5mV.

- If the trace moves 1 division or more, adjust VR5(T-3554) for minimum trace shift between 5mV and 10mV.

- Apply the same procedure for CH-2 by adjusting VR105(T-3554).

(3) x1 AC Gain Adjustment

- Set: VOLTS/DIV 5mV
 VARIABLE CAL'D
 V MODE CH-1
 AC-GND-DC DC

- Connect the square wave generator to CH-1 INPUT connector and set the frequency to 1kHz, output level for 5 divisions display.

- Adjust VR1(T-3554) for a best flat-top square wave.
- Apply the same procedure for CH-2 by adjusting VR101(T-3554).

(4) x5 AC Gain Adjustment

- Set: VOLTS/DIV 5mV
 x5 MAG ON

- Connect the square wave generator to CH-1 INPUT connector and set the frequency to 1kHz, output level for 5 divisions display.

- Adjust VR2(T-3554) for a best flat-top square wave.
- Apply the same procedure for CH-2 by adjusting VR102(T-3554).

(5) Sensitivity Adjustment

- Set: VOLTS/DIV 10mV
 VARIABLE CAL'D
 V MODE CH-1
 AC-GND-DC DC

- Connect the amplitude calibrator to CH-1 INPUT connector and set the output level to 50mV.

- Adjust VR1(T-3555) for a 5 divisions display.
- Apply the same procedure for CH-2 by adjusting VR4(T-3555).
- Check accuracy for all settings of VOLTS/DIV switch.

(6) CH-2 INV Balance Adjustment

- Set: V MODE CH-2
 AC-GND-DC GND

- Adjust VR6(T-3555) for a minimum trace shift between CH-2 INV on and off.

(7) Attenuator Phase Compensation

- Set: VOLTS/DIV 20mV
V MODE CH-1
- Connect the square wave generator to CH-1 INPUT connector and set the frequency to 1kHz, output level for 5 divisions display.
- Check the waveform for a flat-top square wave with less than 3% overshoot or roll-off on the leading edge.
- If not, adjust Cc(T-3554) for best flat-top square wave.
- Apply the same procedure for all other VOLTS/DIV and CH-2 according to Table 3-2.

<u>VOLTS/DIV</u>	<u>CH-1</u>	<u>CH-2</u>	
5mV	-	-	
20mV	1/2 Cc	1/2 Cc	
50mV	1/5 Cc	1/5 Cc	Table 3-2
0.1V	1/10 Cc	1/10 Cc	
1V	1/100 Cc	1/100 Cc	

(8) Input Capacitance Adjustment

- Set: VOLTS/DIV 5mV
V MODE CH-1
- Connect the capacitance meter to CH-1 INPUT connector and note the reading of the input capacitance.
- Check the capacitance on all other VOLTS/DIV ranges and if value difference is larger than 1pF between 5mV range and under checking range, adjust Ci(T-3554) for the same reading 2s above noted. Refer to Table 3-3.

NOTE: Do not move the blocking capacitors(C1, C2) at the input circuit to avoid the change of the input capacitance.

- Apply the same procedure for CH-2 according to Table 3-3.

<u>VOLTS/DIV</u>	<u>CH-1</u>	<u>CH-2</u>	
20mV	1/2 Ci	1/2 Ci	
50mV	1/5 Ci	1/5 Ci	Table 3-3
0.1V	1/10 Ci	1/10 Ci	
1V	1/100 Ci	1/100 Ci	

- Repeat (7) and (8) if necessary.

(9) CH-1 OUTPUT Adjustment

- Set: VOLTS/DIV 5mV
 VARIABLE CAL'D
 V MODE CH-1
 AC-GND-DC DC

- Connect the amplitude calibrator to CH-1 INPUT connector and set the output level to 0.1Vp-p.
- Connect the test oscilloscope to CH-1 OUTPUT connector on the rear panel via 50 ohm termination and set the sensitivity to 50mV/DIV.
- Adjust VR21(T-3555) for a display of 5 divisions on the test oscilloscope.
- Remove the amplitude calibrator and test oscilloscope.
- Connect the DC voltmeter to CH-1 OUTPUT connector.
- Set: AC-GND-DC GND
- Adjust VR22(T-3555) for a meter reading of 0V.

(10) Position Centering

- Set: V MODE ALT
 V POSITION Center(CH-1, 2)
 AC-GND-DC GND

- Adjust VR2(T-3555) so that the trace is positioned to the center horizontal graticule line.
- Apply the same procedure for CH-2 by adjusting VR5(T-3555).

(11) ADD Balance Adjustment

- Set: V MODE ALT
 AC-GND-DC GND

- Position the two traces to the center horizontal graticule line using V POSITION controls.
- Depress the ADD button of V MODE switch.
- Adjust VR3(T-3555) for minimum trace shift between ALT and ADD mode.

3.6 Time Base/Horizontal Amplifier

(1) x1 Gain, A TIME/DIV Adjustment

- Set: A TIME/DIV 0.5mS
 VARIABLE CAL'D
- Connect the time mark generator to CH-1 INPUT connector and set the time to 0.5mS.
- Adjust VR4(T-3561) for trace length of 12 divisions as shown in Figure 3-1.

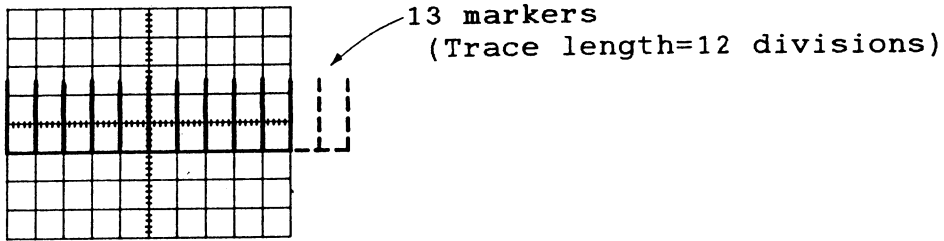


Figure 3-1

- Adjust VR4(T-3560) for 1 marker/division.
- Set: A TIME/DIV 0.5uS
- Set the time mark generator to 0.5uS.
- Adjust VC1(T-3560) for 1 marker/division.
- Check all ranges to verify that the accuracy is within +, - 3%.

(2) x10 MAG, x1 Centering

- Set: HOR DISPLAY ALT
- A TIME/DIV 0.5mS
- B TIME/DIV 0.5uS
- H POSITION Center
- AC-GND-DC GND

- Position the start point of the A sweep at the leftmost vertical graticule line using H POSITION control.
- Position the B sweep(intensified portion on the A sweep) to the 7th vertical graticule line using DLY TIME MULT dial as shown in Figure 3-2.

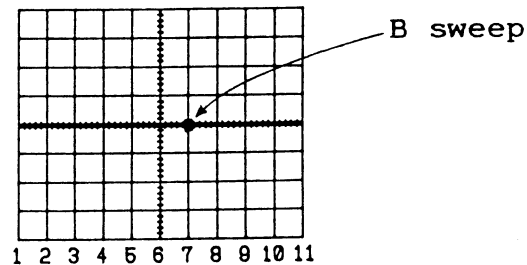


Figure 3-2

- Pull x10 MAG knob on.
 - Position the B sweep to the center vertical graticule line by adjusting VR3(T-3561).
 - Push the x10 MAG off.
 - Position the B sweep to the center vertical graticule line by adjusting VR6(T-3561).
- (3) x10 MAG Gain Adjustment
- Set: A TIME/DIV 1mS
x10 MAG ON
 - Connect the time mark generator to CH-1 INPUT connector and set the time to 0.1mS.
 - Adjust VR5(T-3561) for 1 marker/division.
- (4) x10 MAG Time Adjustment
- Set: A TIME/DIV 0.2uS
x10 MAG ON
 - Connect the time mark generator to CH-1 INPUT connector and set the time to 0.1uS.

- Position the start point of the trace to the leftmost vertical graticule line.
- Adjust VC1 and VC2(T-3561) for the best sweep linearity.

(5) B TIME/DIV Adjustment

- Set: HOR DISPLAY B
- A TIME/DIV 0.1mS
- B TIME/DIV 50uS
- VARIABLE CAL'D
- DLY TIME MULT 0.20

- Connect the time mark generator to CH-1 INPUT connector and set the time to 50uS.
- Adjust VR2(T-3560) for 1 marker/division.

(6) Start and End Adjustment of DLY TIME MULT Dial

- Set: HOR DISPLAY ALT
- A TIME/DIV 0.5mS
- B TIME/DIV 0.5uS
- DLY TIME MULT 0.20

- Position the start point of A sweep to the leftmost vertical graticule line using H POSITION control.
- Position the B sweep(intensified portion on the A sweep) to the 0.2 division right of the leftmost vertical graticule line by adjusting VR7(T-3560).
- Set: DLY TIME MULT 10.0
- Position the B sweep to the rightmost vertical graticule line by adjusting VR6(T-3560).

3.7 Trigger

(1) Trigger Balance Adjustment(CH-1, CH-2 and EXT)

- Set: VOLTS/DIV 10mV
- V MODE CH-1
- AC-GND-DC AC
- TRIG COUPLING AC
- TRIG SOURCE CH-1
- TRIG LEVEL 0

- Connect the oscilloscope to TP1(T-3559). Use low capacitance probe.

- Adjust VR1(T-3559) for a voltage reading of 0Vdc within 50mV.
- Apply the same procedure for CH-2 and EXT TRIG by adjusting VR2 and VR3(T-3559).

(2) TRIG LEVEL Adjustment

- Set: VOLTS/DIV 10mV
V MODE CH-1
AC-GND-DC AC
TRIG COUPLING AC
TRIG LEVEL Center

- Connect the sine wave generator to CH-1 INPUT connector and set the frequency to 1kHz, output level for 0.5 division display.
- Adjust VR3(T-3558) to obtain a stable display.

(3) TRIG SLOPE Adjustment

- Setup: Same as (2)
- Adjust VR1(T-3588) to obtain a stable display when SLOPE button is switched between + and -.

3.8 X-Y Operation

(1) X Gain Adjustment

- V MODE X-Y
X VOLTS/DIV 20mV
AC-GND-DC GND

- Connect the amplitude calibrator to X INPUT connector and set the output level to 0.1Vp-p.
- Adjust VR1(T-3561) for a horizontal deflection of 5 divisions.

(2) X Position Centering

- Set: X POSITION Center
X AC-GND-DC GND

- Adjust VR2(T-3561) so that the dot is positioned at the center vertical graticule line.

3.9 CAL 0.5Vp-p Adjustment

(1) Amplitude Adjustment

- Connect the test oscilloscope* to CAL tip on the front panel.

- Adjust VR4(T-3564) for an output voltage of 0.5Vp-p.

NOTE 1: * Vertical sensitivity must be calibrated within 1% or better.

- 2: Do not touch the adjustment VR4 except the precision peak-voltage measuring device such as well-calibrated oscilloscope is provided.

4. TROUBLESHOOTING PROCEDURE

4.1 Troubleshooting Aid-1

Confirm that the any equipment used with the LBO-324/325 is operating correctly.

Check all control settings, because an incorrect setting can make a good unit appear defective. For instance, if the waveform is not stable, TRIG SOURCE switch may be set to external trigger mode instead of internal.

If there is any question about the function, refer to the INSTRUCTION MANUAL for a correct operation.

Check all circuit for visual defects such as broken component, loose connection of a connector, open wire, poor soldering etc.

Some troubles can be solved with proper adjustment. For instance, if the trace moves upward or downward by rotating V-VARIABLE control, it can be corrected by adjusting DC BAL adjustment.

Check the voltage and waveform as shown in the Schematic Diagram to locate the defective circuit. Start with the power supply.

Typical voltage and waveform are obtained under the same conditions as "3.2 Initial Control Settings"

Take utmost precaution to come into contact with the high voltage circuits!

4.2 Troubleshooting Aid-2

The oscilloscope consists of three major sections which are the high voltage power supply, vertical amplifier and time base/horizontal amplifier. In general, if one of these is defective, the trace will not appear on the CRT.

Therefore, the most effective procedure is to check these three sections one by one.

The high voltage power supply produces -1900Vdc to accelerate the electron beam from the electron gun to the face plate of the CRT. If the -1900Vdc is too low (absolute value in this case), the trace will either not appear or be dim.

The vertical amplifier consists of a pre-amplifier and a final amplifier, all of which are DC coupled balanced circuits. If some portion of the vertical amplifier becomes unbalanced by a defective component, the trace will be deflected upward or downward off the face of the CRT. Therefore, it is best to check the state of amplifier balancing when the trace does not appear on the CRT.

The time base generator/horizontal amplifier drives the spot from left to right on the CRT. The trigger pickoff circuit samples a part of input signal at the pre-amplifier, and applies it to the trigger generator. The trigger generator produces a trigger pulse to start the sweep generator. The sawtooth waveform, generated by the trigger pulse at sweep generator, is applied to the horizontal amplifier and then to the horizontal deflection plates to sweep the spot on the CRT.

4.3 Troubleshooting Aid-3

(1) Overall operation not satisfactory or no trace visible with same conditions as Paragraph "3.2 Initial control settings".

a. Power supply

Check all DC power supplies within tolerance according to Table 3-1.

Yes: See step "b".

No: Troubleshoot the each supply.

-8V, +8V: IC4, Q4-7 and associated circuit.

+5V: IC3 and associated circuit.

+12V: IC2, Q11, 12 and associated circuit.

+15V: D7, F1 and associated circuit.

+36V: IC1, Q8-10 and associated circuit.

+100V: IC1, Q1-3 and associated circuit.

-1900V: Check waveform at collector of Q1(T-3591) for 50kHz sine wave, and troubleshoot the high voltage generator(Q1 T-3591), feed-back amplifier(Q2-4 T-3591) and associated circuit.

**** NOTE:** When remove the High Voltage Block from the main frame, connect the ground line between the block and the main frame before turn power switch on. Take utmost precaution to come into contact with the high voltage circuit!

Check all DC voltages are present on the connector board (T-3641). Refer to schematic diagram 1-1/12(Connection diagram) and 12/12(connector board). If the no voltage is present, check connectors for loose connection.

b. Vertical amplifier

Connect the pin 1 and 4 of P82(T-3556) with short clip lead. Trace appears.

Yes: Connect pin 1 and 3 of P83(T-3556) with short clip lead. Trace appears.

Yes- Check vertical pre-amplifier, input amplifier. Continue the same procedure to the input stage to check the amplifier balancing

No- Troubleshoot the vertical final amplifier.

No: See step "c".

c. Horizontal amplifier

Set TIME/DIV switch to X-Y position. Dot appears.

Yes: Troubleshoot the sawtooth generator. See step "(3) a".

No: Connect the pin 1 and 3 of P76 to check the amplifier balancing. Dot appears.

Yes- Troubleshoot the horizontal amplifier.

No- See step "d".

d. Unblanking circuit

Check that unblanking pulse is present at the TP8(T-3553).

Yes: Adjust VR1(T-3591). Refer to paragraph "3.4(1)".

No: Trace the unblanking signal to time base generator.

(2) Vertical amplifier

a. No waveform appears on the CRT.

Apply the CAL 0.5V to CH-1 and/or CH-2 INPUT connector and set the VOLTS/DIV control to 0.1V, then trace the square wave from the input stage to the output stage to locate the defective circuit. Refer to the schematic diagram 5/12-7/12.

Check that the square wave comes out at pin 1 and 2 of P25(T-3555).

Yes: Troubleshoot delay line<325 only>, final amplifier and associated circuit.

No : Check waveform at P11 and 12(T-3555) for CH-1, P13 and 14(T-3555) for CH-2. If no square wave is present, troubleshoot the input amplifier, attenuator.

b. Sensitivity out of tolerance

Adjust VR1(T-3555) for CH-1, VR4 for CH-2. Refer to paragraph "3.5(5)".

- c. V MODE switch works incorrect
 Troubleshoot channel select gate, MODE switch and the control circuit.
 CH-1: S3(T-3557), IC1, Q11(T-3555) and associated circuit.
 CH-2: S3(T-3557), IC1, Q22(T-3555) and associated circuit.
 CHOP: Check waveform at pin 3 and 6 of IC1(T-3555) for switching signal.
 Yes: Channel select gate.
 No: S3(T-3557), multivibrator(IC4 T-3555) and control circuit.
 ALT: S3(T-3557), IC5(T-3555) and associated circuit.
- d. CH-2 INV does not work
 Check Q27, 28(T-3555) and control circuit.
- e. x5 MAG mode works incorrect.
 Check S2(T-3554) for CH-1, S102(T-3554) for CH-2 and associated circuit.
 Adjust VR2(T-3554) for CH-1, VR102(T-3554) for CH-2 if necessary. Refer to paragraph "3.5 (4)".

(3) Time base/Horizontal amplifier

- a. No trace appears on A sweep mode(only dot is appeared)
 Check that the sawtooth wave comes out at P51(T-3560).
 Yes: Check the sensitivity of the horizontal amplifier with X-Y operation. Adjust VR1(T-3561) if necessary. Refer to paragraph "3.8(1)."
 No: Check that the A trigger signal is present at P44(T-3560).
 Yes: Troubleshoot A sweep generator, A sweep gate.
 No: Troubleshoot trigger pulse shaper. trigger source select amplifier. See step "(4)".
- b. No trace appears on B sweep mode(only dot is appeared)
 Check that the sawtooth comes out at P50(T-3560).
 Yes: Horizontal display selector(IC1 T-3561).
 No: Check that the B trigger signal is present at P45(T-3560)
 Yes- Troubleshoot A, B sweep generator, B sweep gate comparator.
 No: Troubleshoot trigger pulse shaper. trigger source select amplifier. See step "(4)".

- c. Sweep time out of tolerance
 - Adjust VR4 and VC1(T-3560) for A sweep time. Refer to paragraph "3.6(1)"
 - Adjust VR2(T-3560) for B sweep. Refer to paragraph "3.6(5)".
- d. Sweep delay function works incorrect.
 - Confirm that the A, B sweep works correctly.
 - Check the voltage at center pin of the potentiometer is from +2V to -2V when rotate the DLY TIME MULT dial to both extremes.
- e. x10 MAG mode works incorrect
 - Check Q7-10(T-3561) and associated circuit.

(4) Trigger

- a. Display is unstable
 - The trigger signal must be applied from trigger pickoff circuit to sweep generator. Check the waveform at following points to locate the defective circuit.
 - P33(T-3559) for CH-1, P34(T-3559) for CH-2.
 - Yes- See next step.
 - No- Trigger pickoff amplifier(Q61-63, 65 T-3555)for CH-1, Q67-71(T-3555) for CH-2.
 - TP1(T-3559).
 - Yes- See next step.
 - No- See step "c".
 - P44(T-3560) for A trigger pulse, P45(T-3560) for B trigger pulse.
 - Yes- Sweep generator
 - No- A trigger pulse shaper(Q1-15 T-3558) and associated circuit.
 - B trigger pulse shaper(IC3 T-3558) and associated circuit.
- b. TRIG COUPLING works incorrect
 - AC: Confirm that the trigger circuit works correctly.
 - HF REJ/TV V: Check IC1(T-3558), Q6(T-3559) and associated circuit.
 - TV H: Q16-21(T-3558) and associated circuit.
 - SLOPE: Q3-6(T-3558) and associated circuit.

c. TRIG SOURCE works incorrect

CH-1: Q1-3, 5, 7, 13(T-3559) and control circuit.
CH-2: Q10-12,14(T-3559) and control circuit.
LINE: Q20, 22(T-3559) and associated circuit.
EXT: Q15-19, 21, 23(T-3559) and control circuit.
Adjust EXT TRIG BAL VR3(T-3559). Refer to
paragraph "3.7(1)".

(5) Others

a. No TRACE ROTATION works

Check Q1, 2(T-3573) and associated circuit

b. No CAL signal comes out

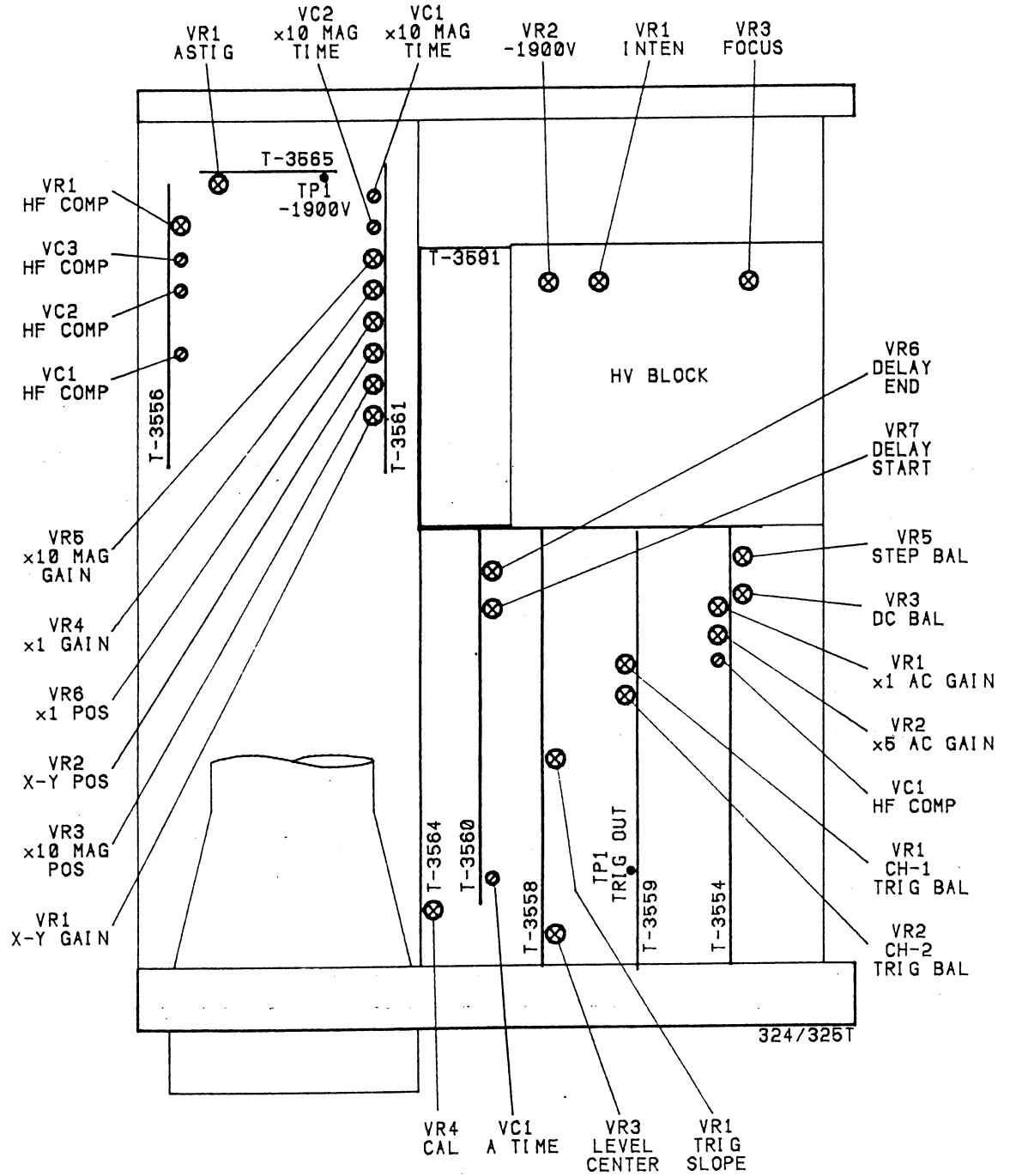
Troubleshoot Q3-5(T-3564) and associated circuit.
Adjust VR4(T-3564) in necessary. Refer to paragraph "3.4
(1).

c. No scale illumination lamp lit<325 only>

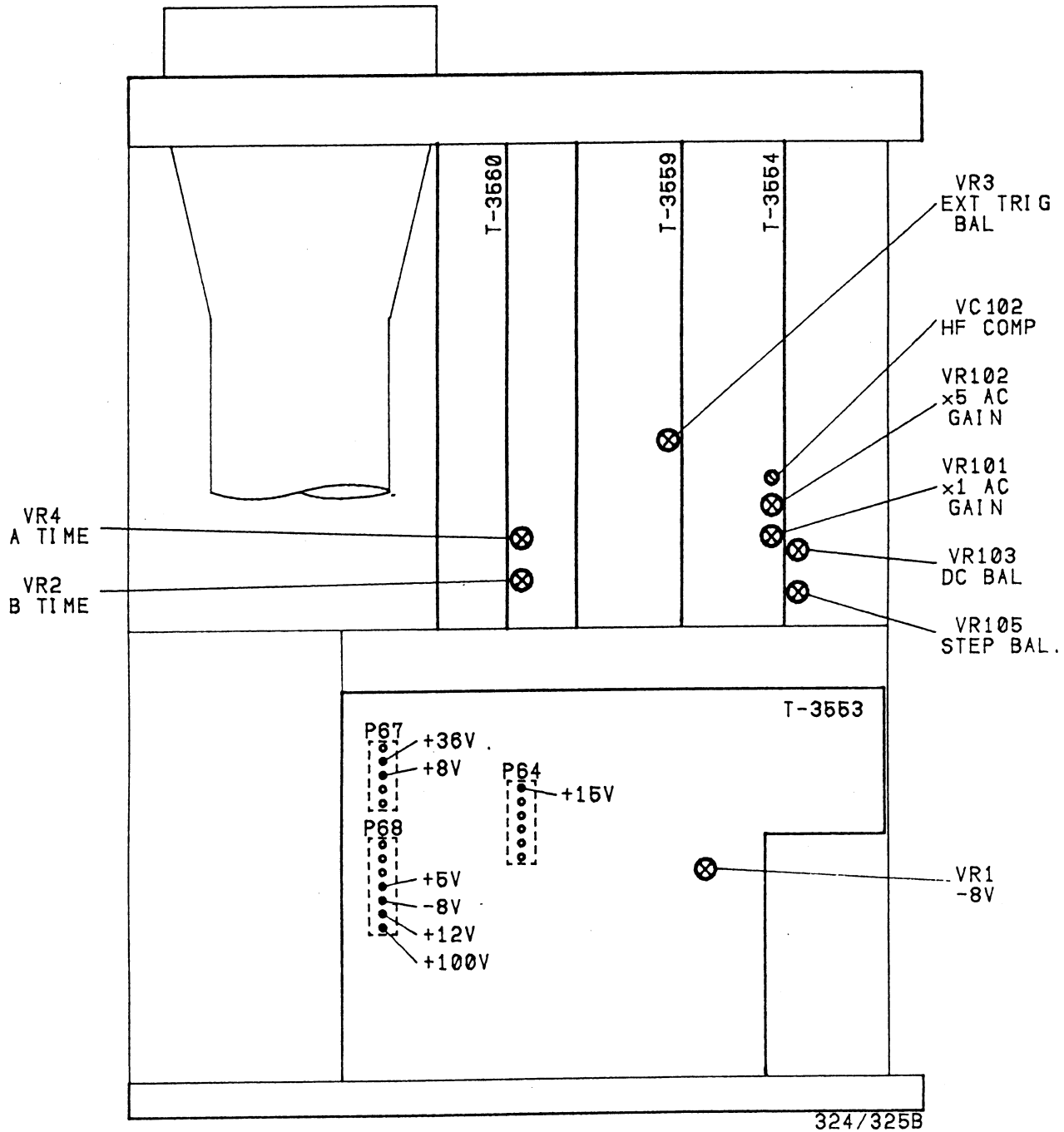
Check continuity of V1-3(T-3564)
Check Q1, 2(T-3564).

6. ADJUSTMENT LOCATIONS

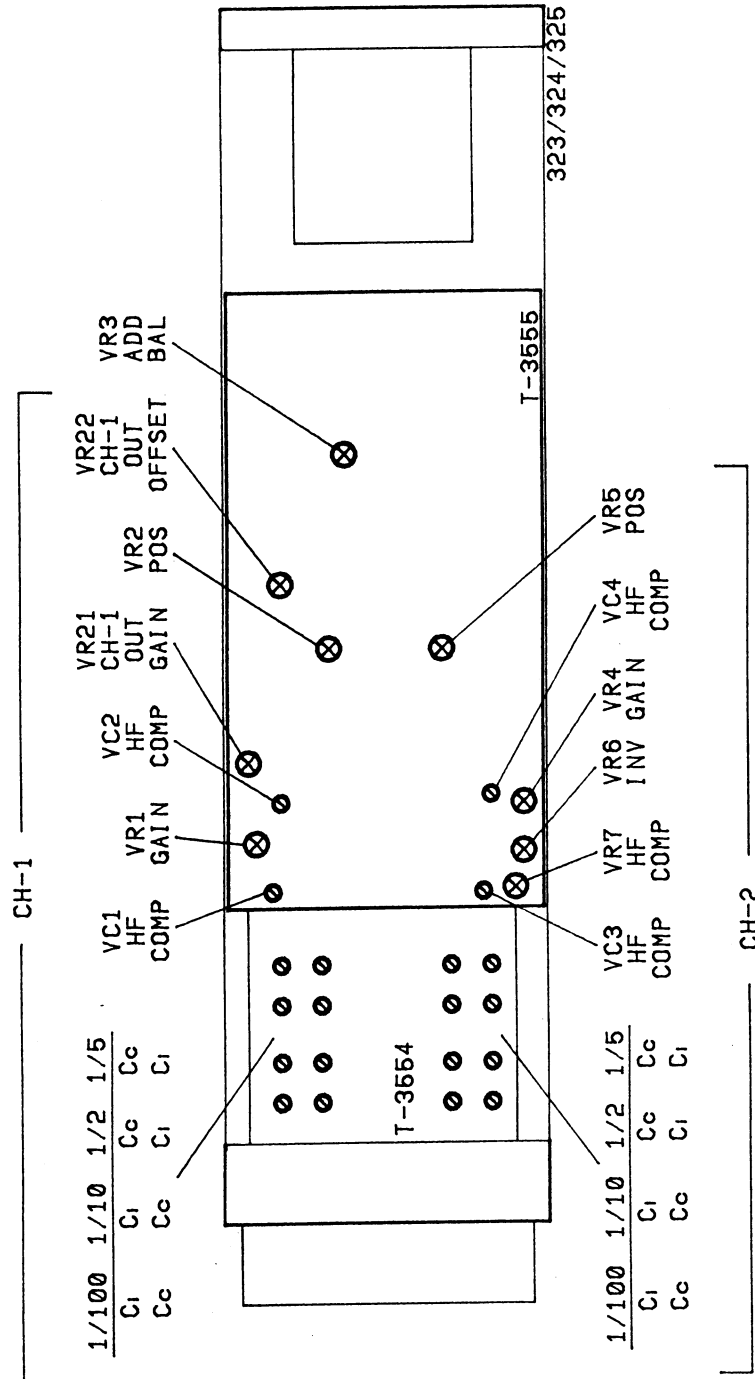
<TOP VIEW>



<BOTTOM VIEW>

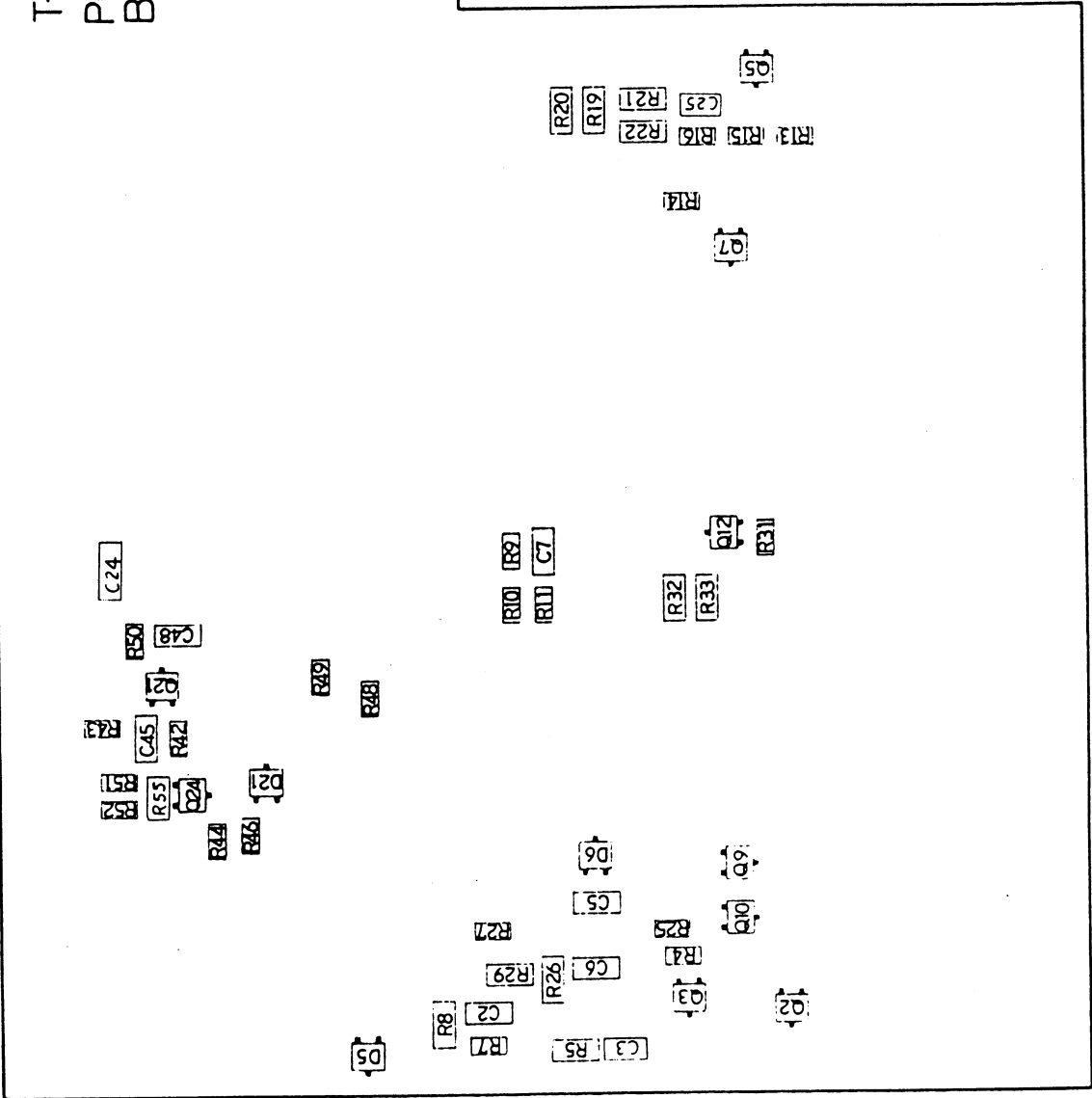
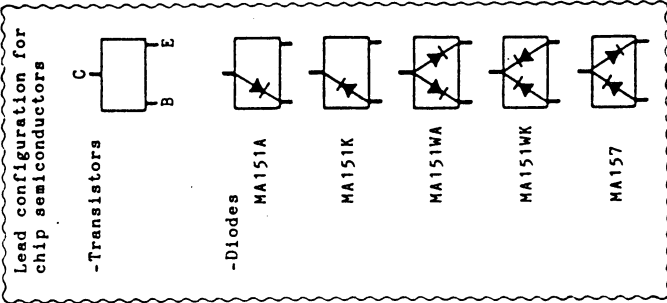


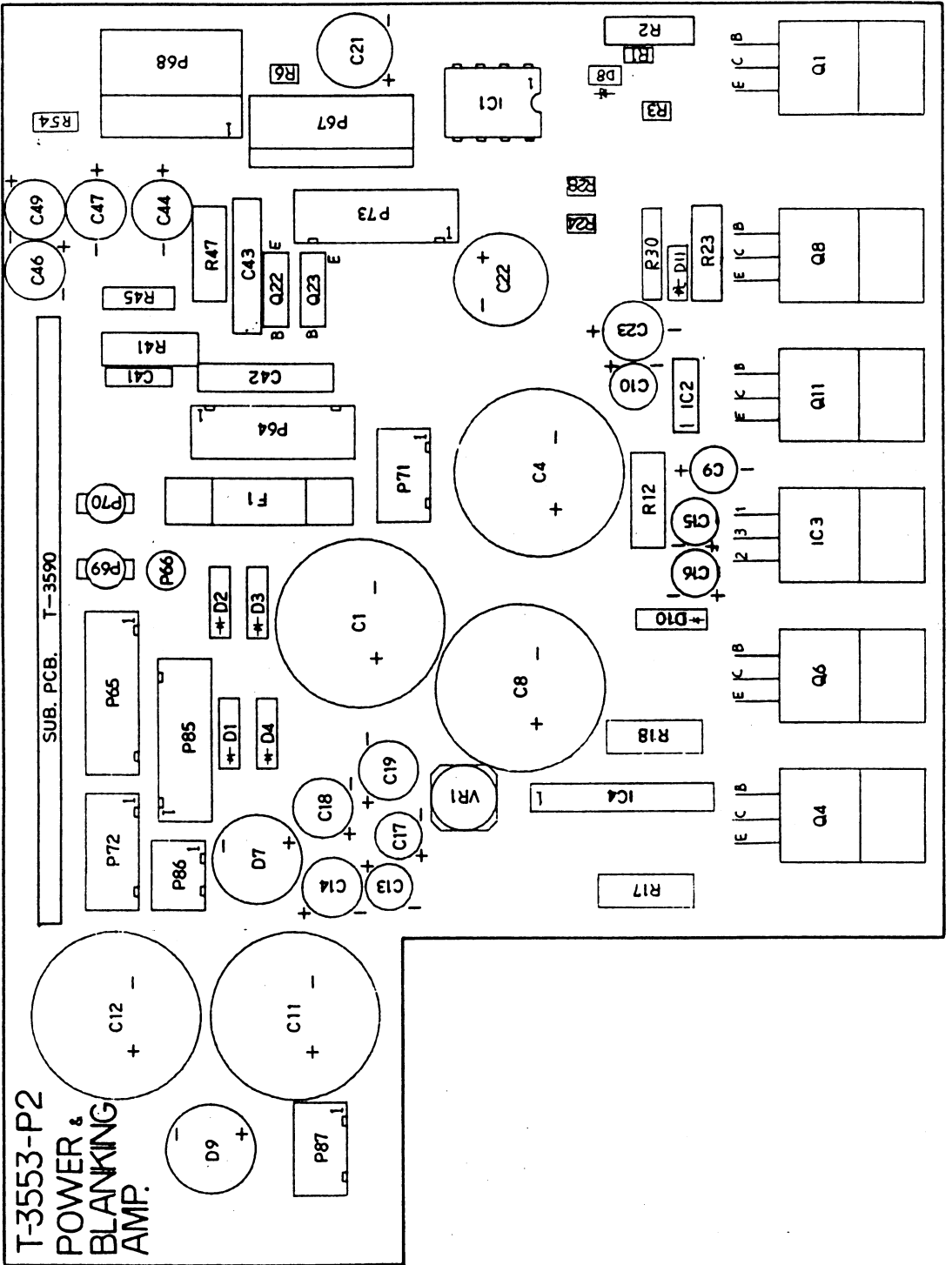
<RIGHT SIDE VIEW>

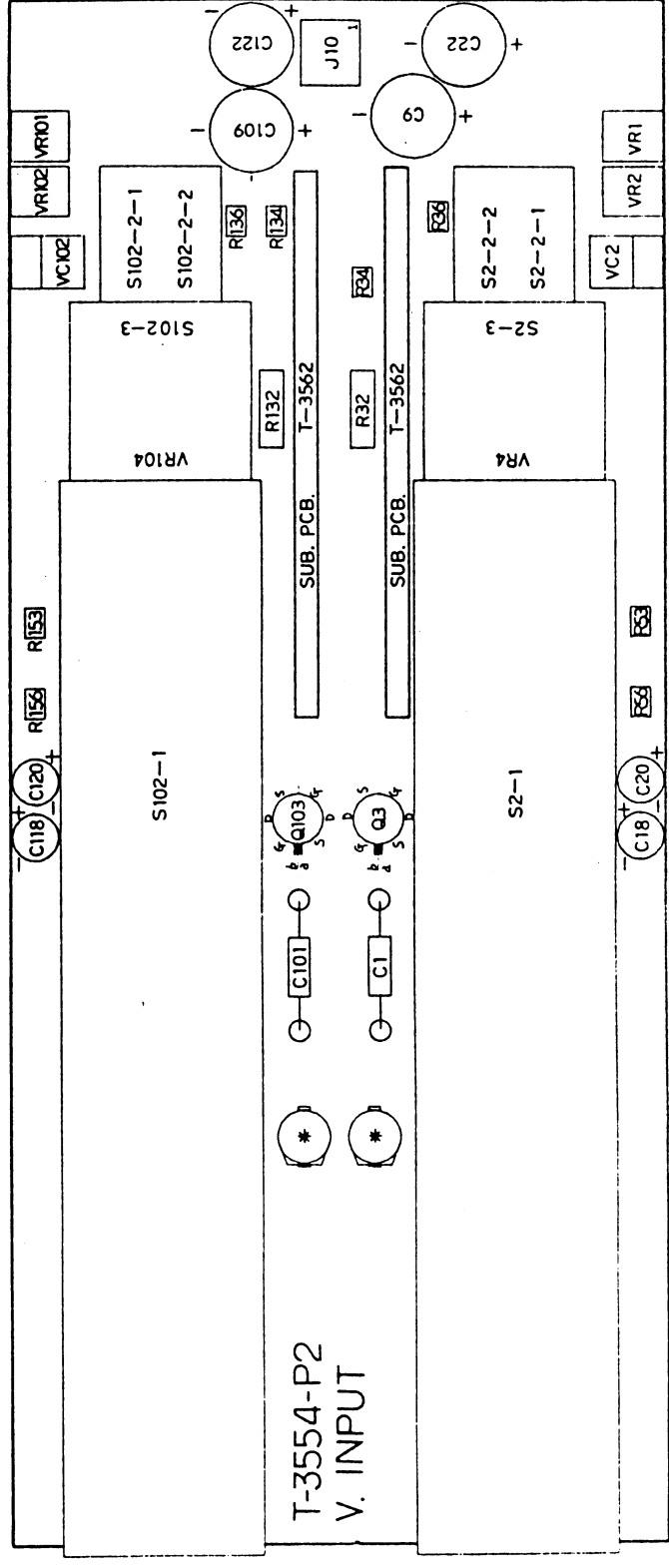
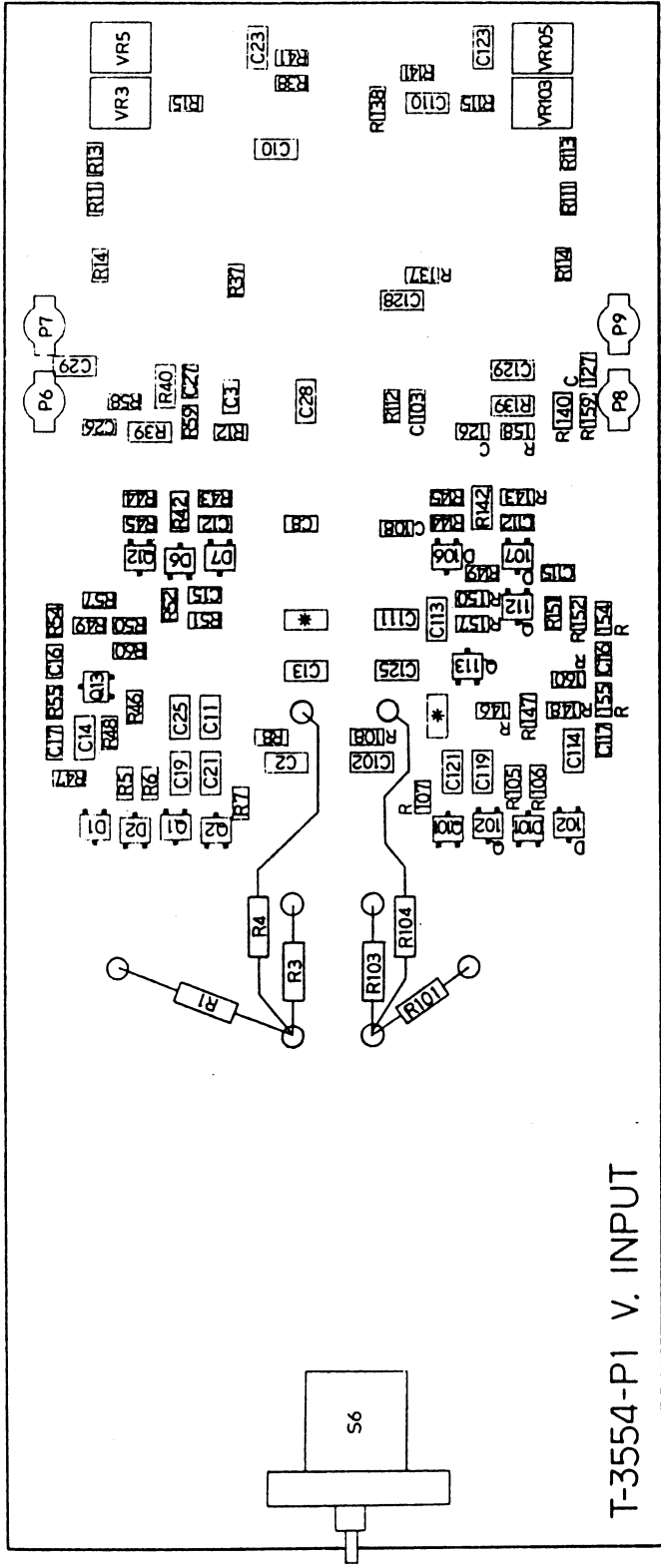


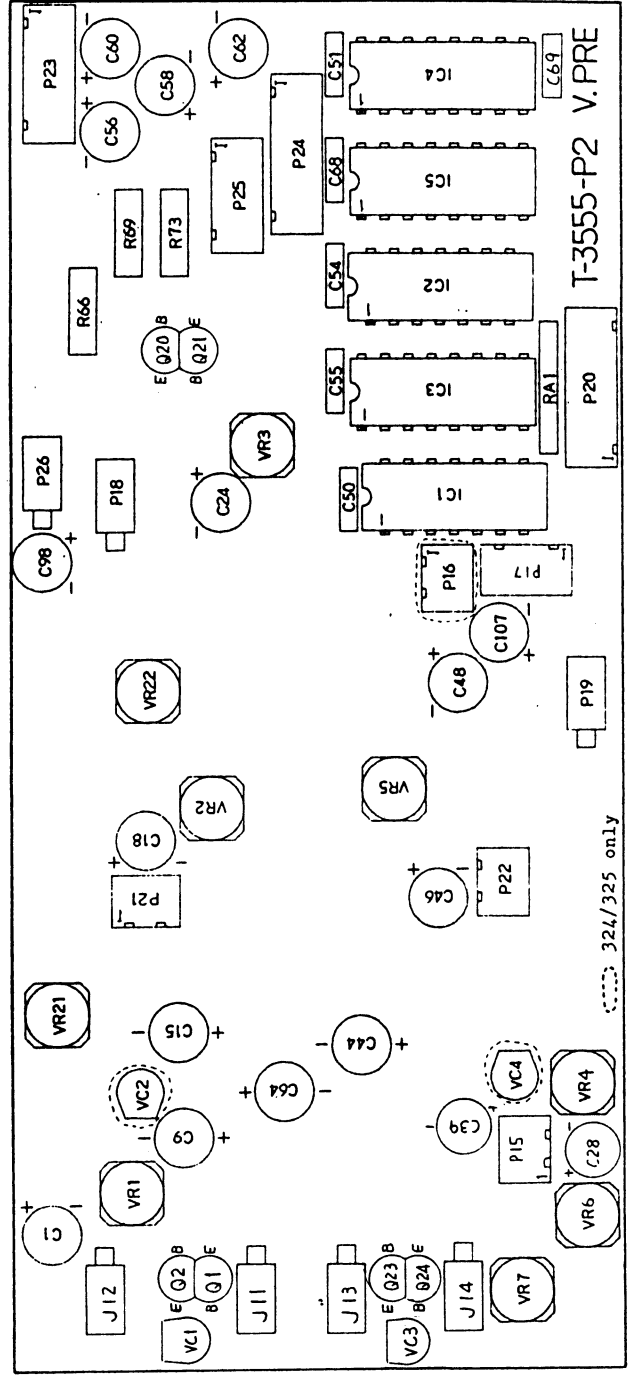
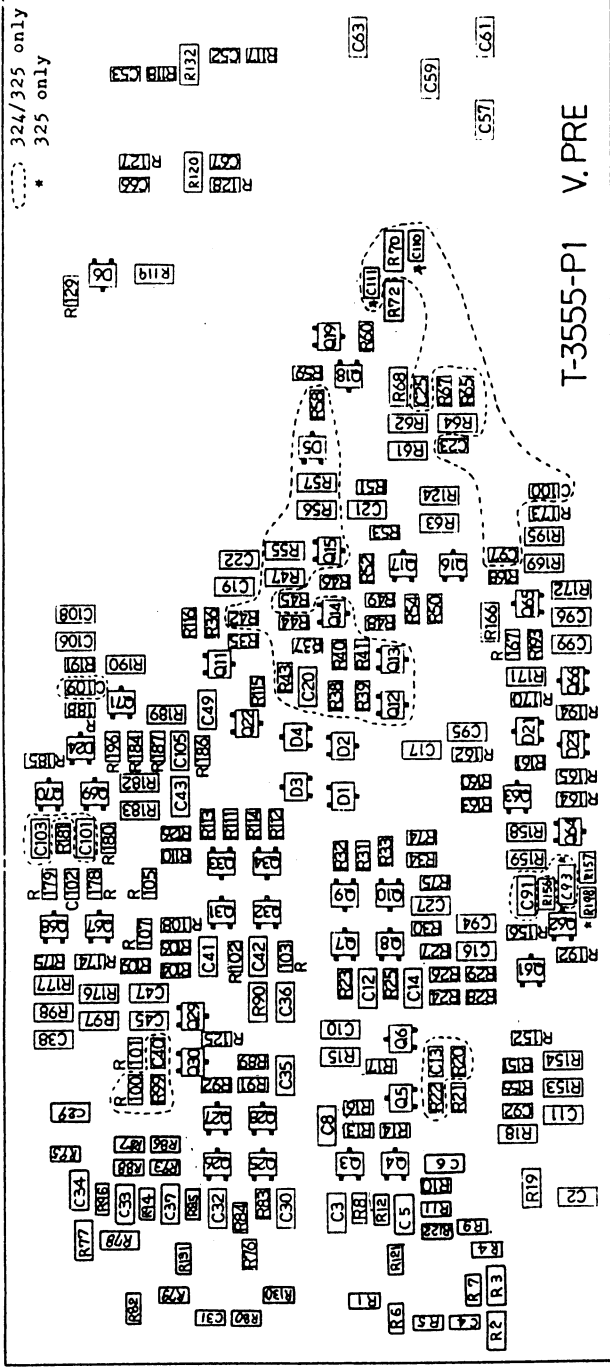
6. PRINTED CIRCUIT BOARD

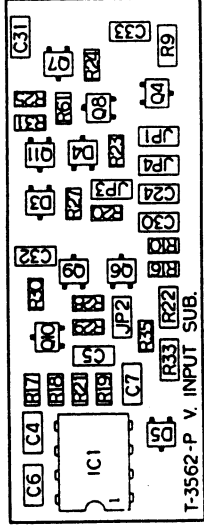
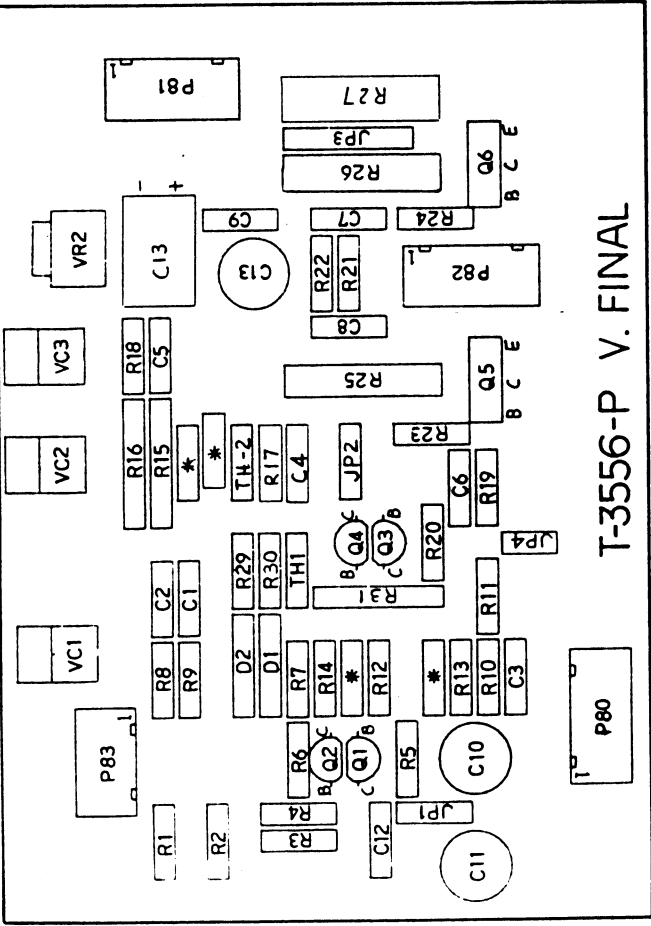
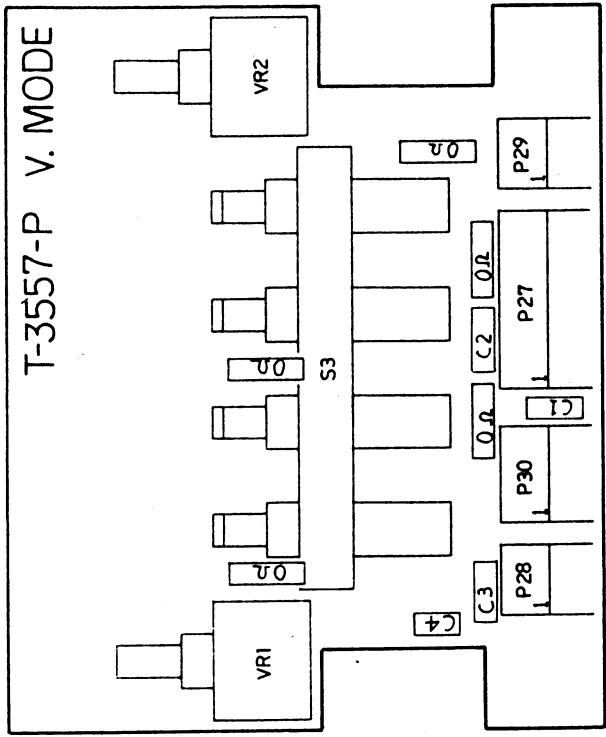
T-3553-P1
POWER &
BLANKING AMP.

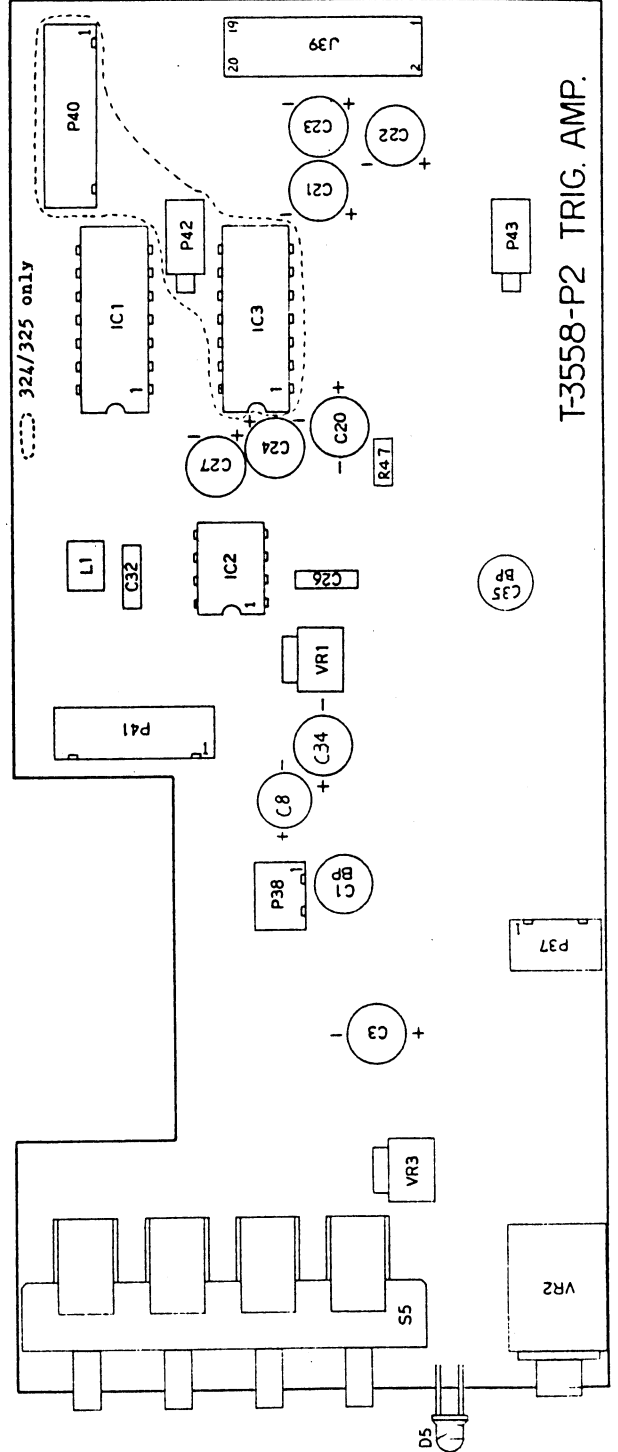
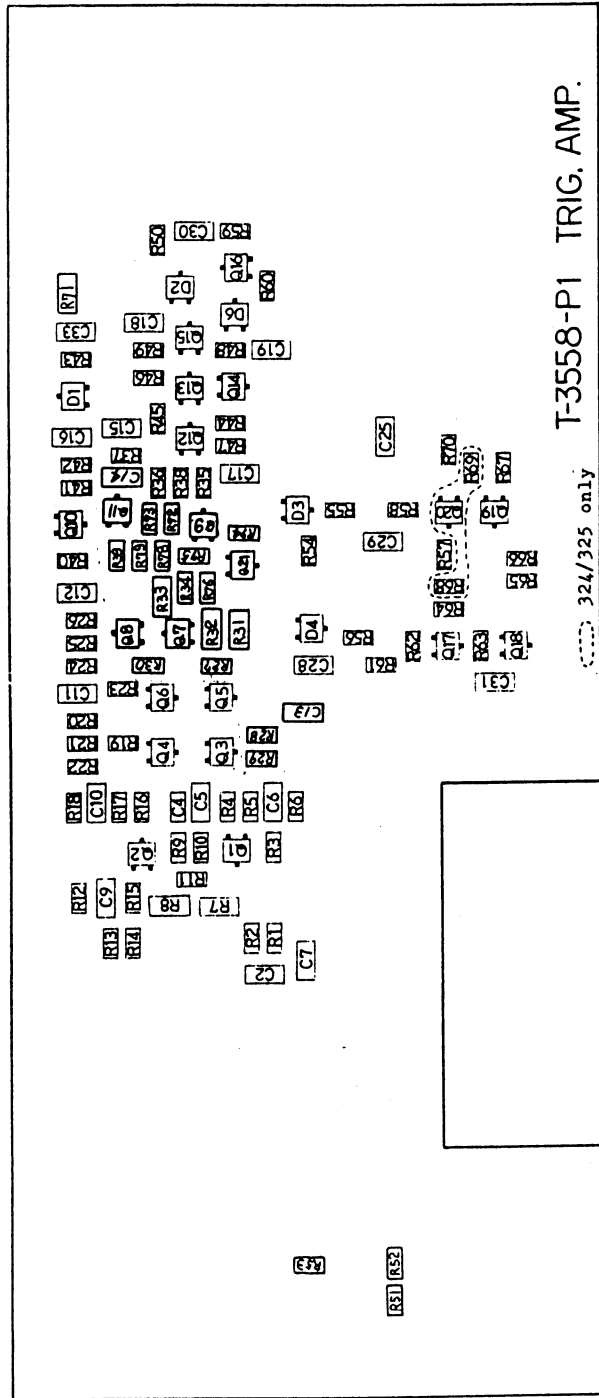


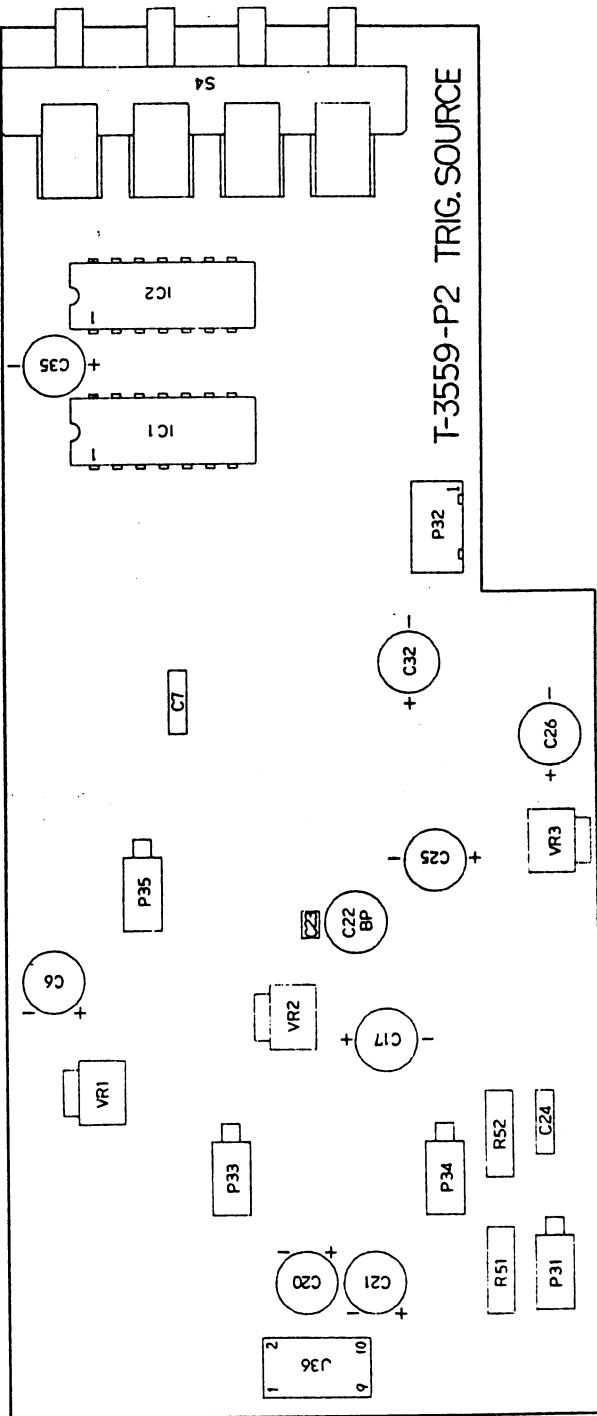
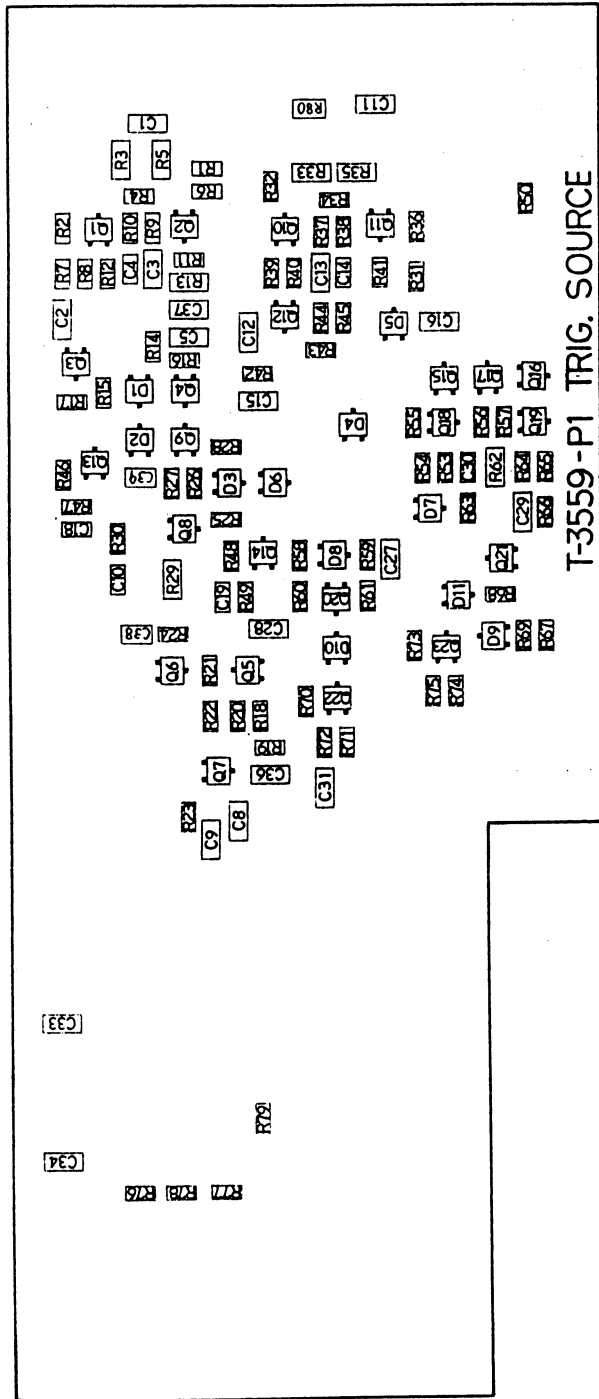


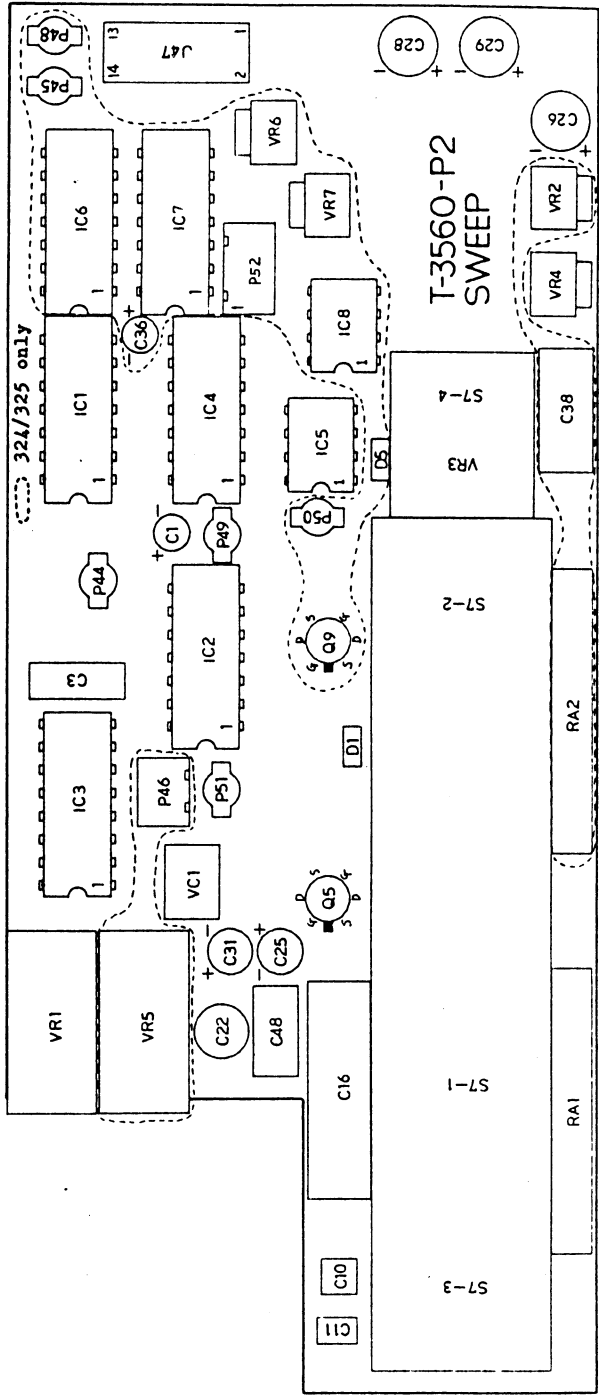
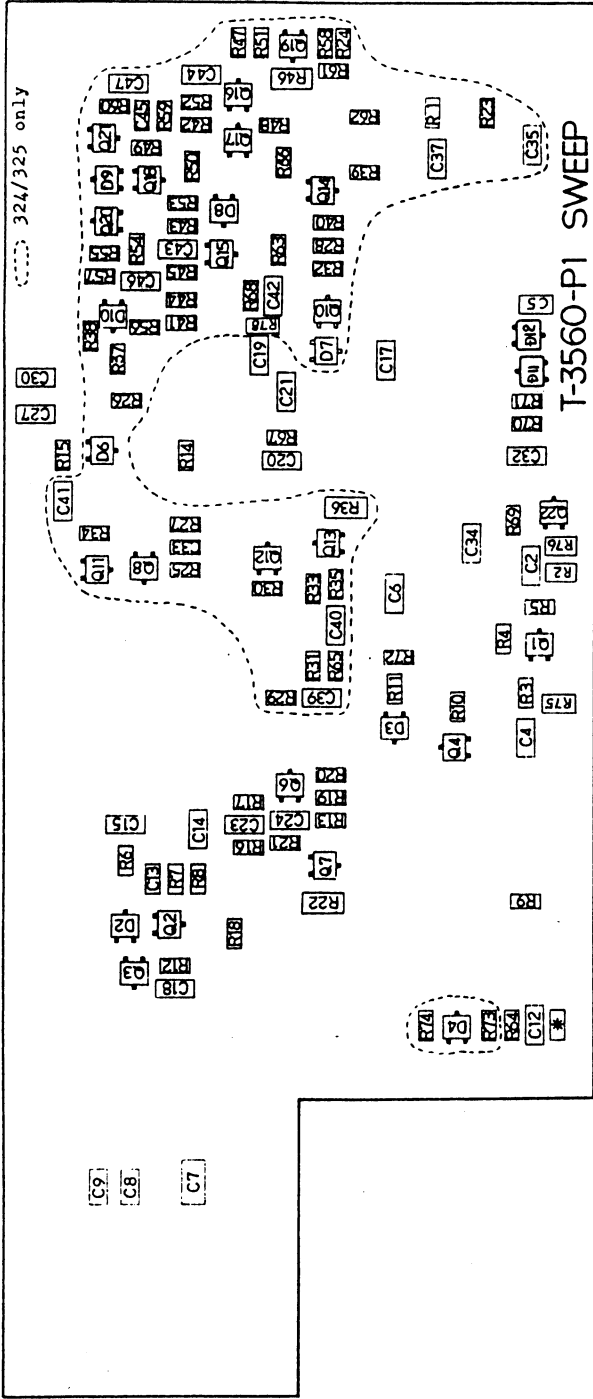


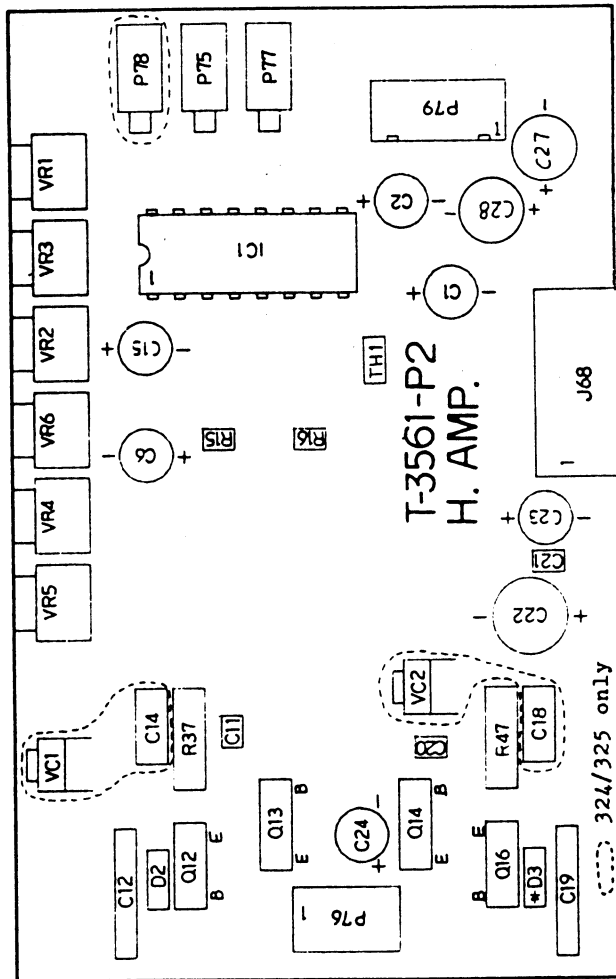
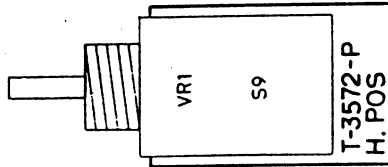
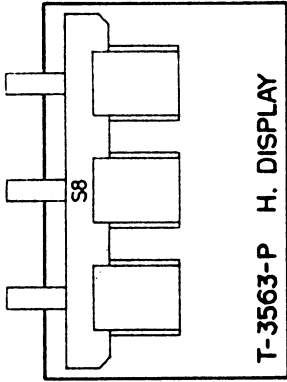
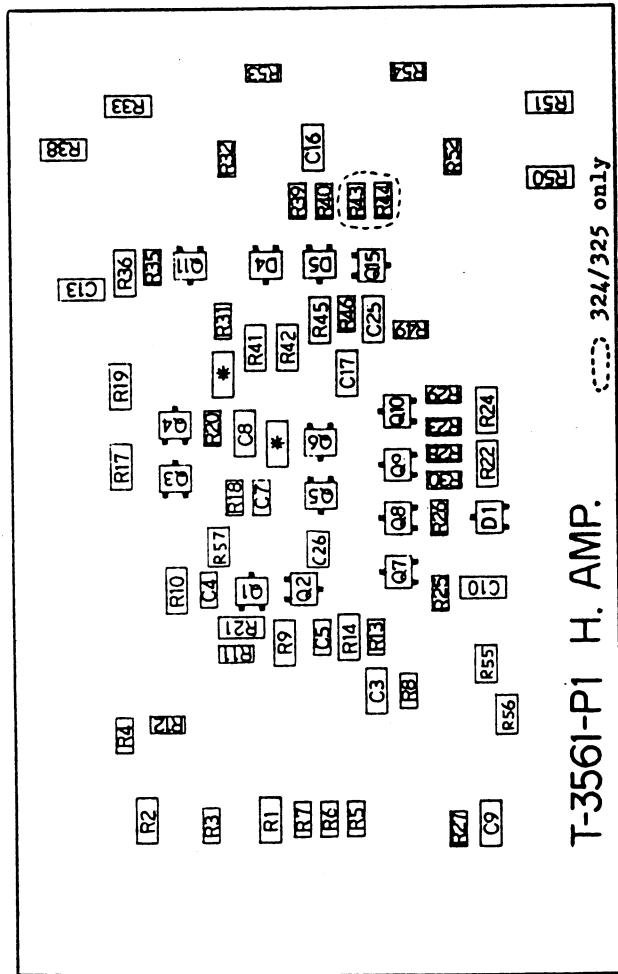


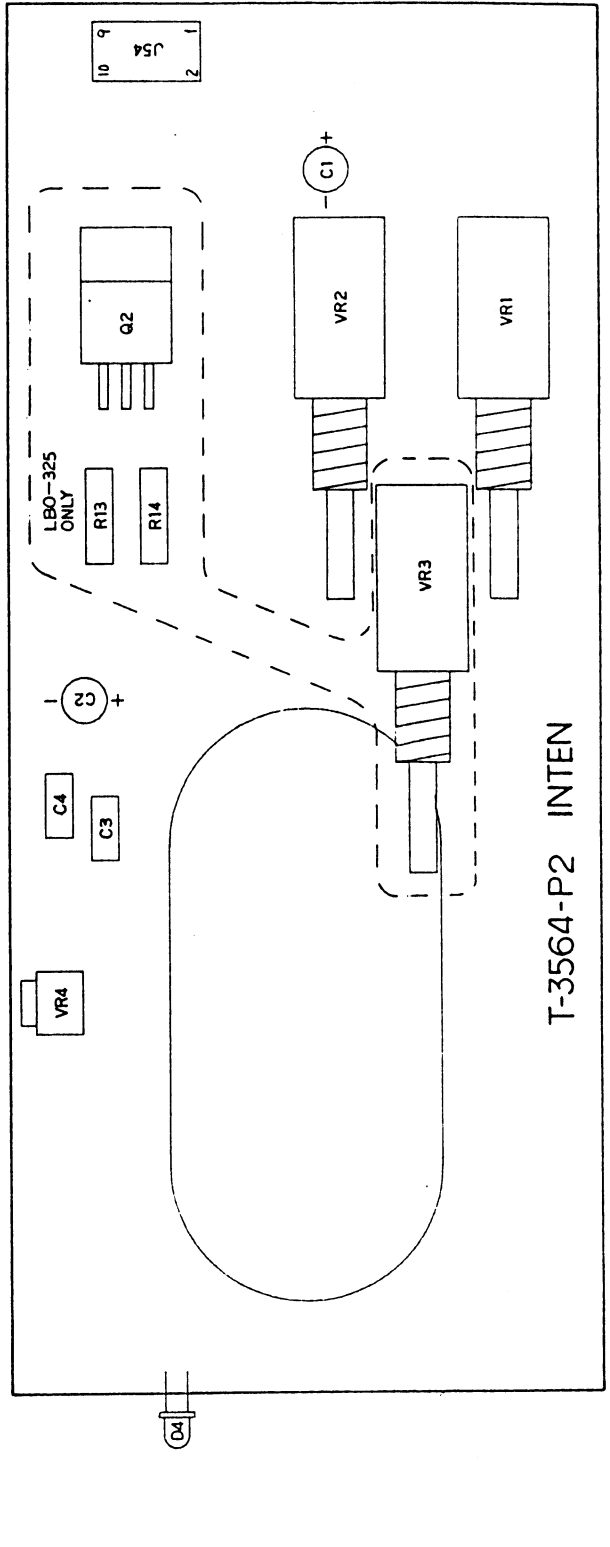
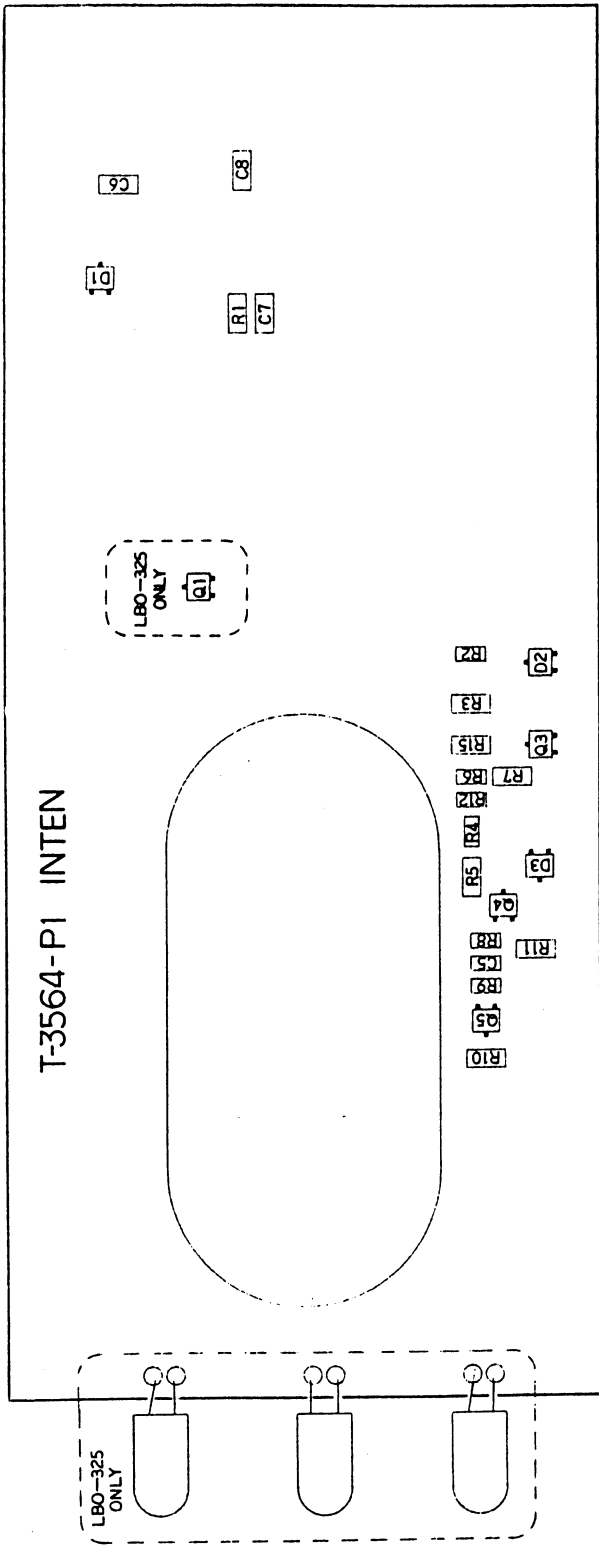


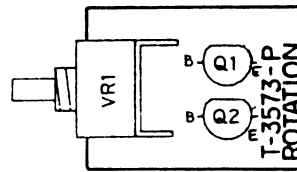
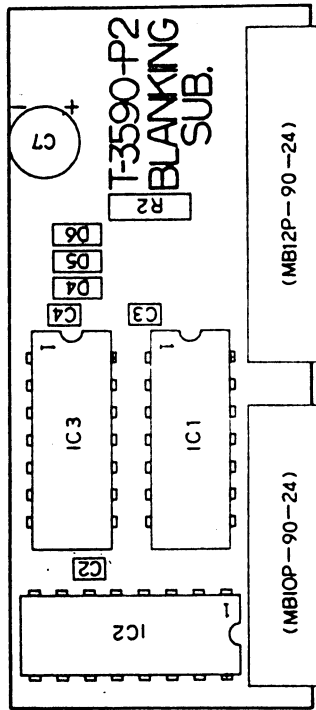
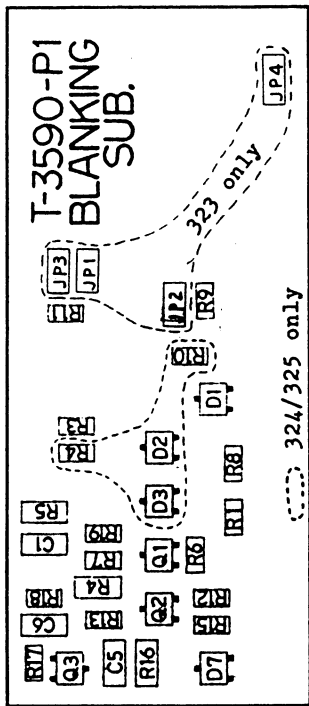
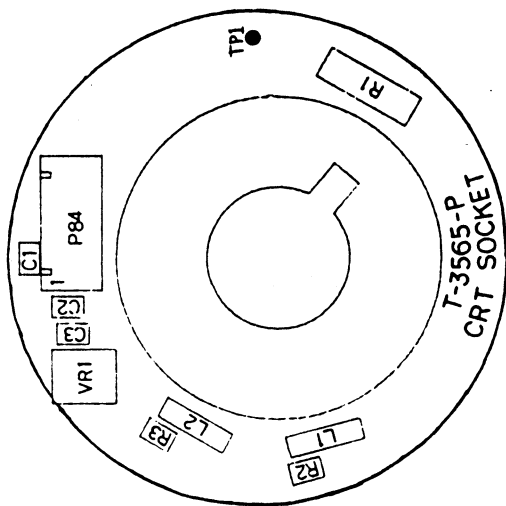


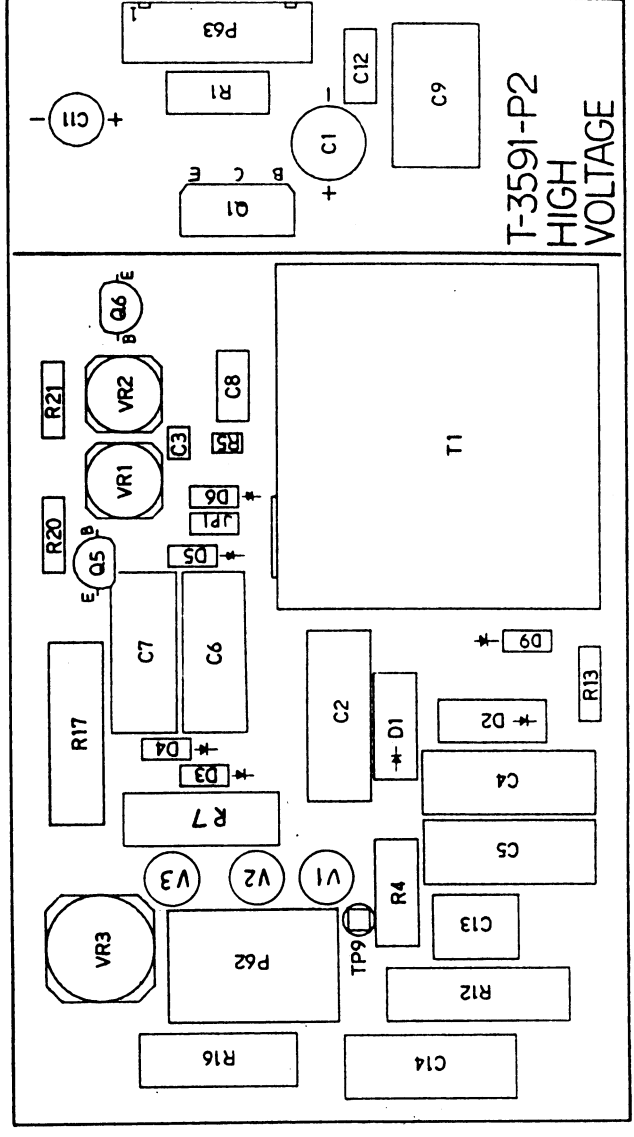
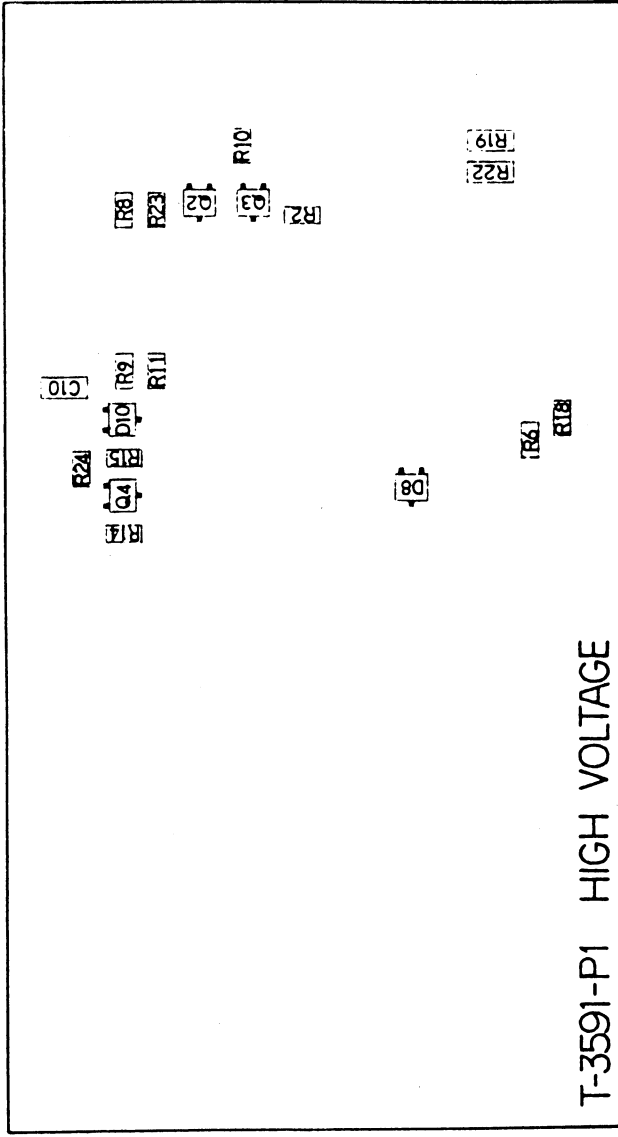




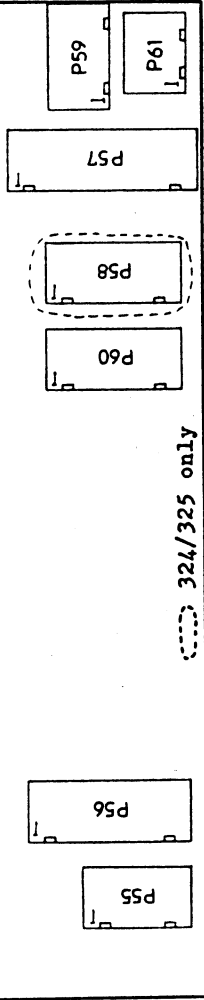






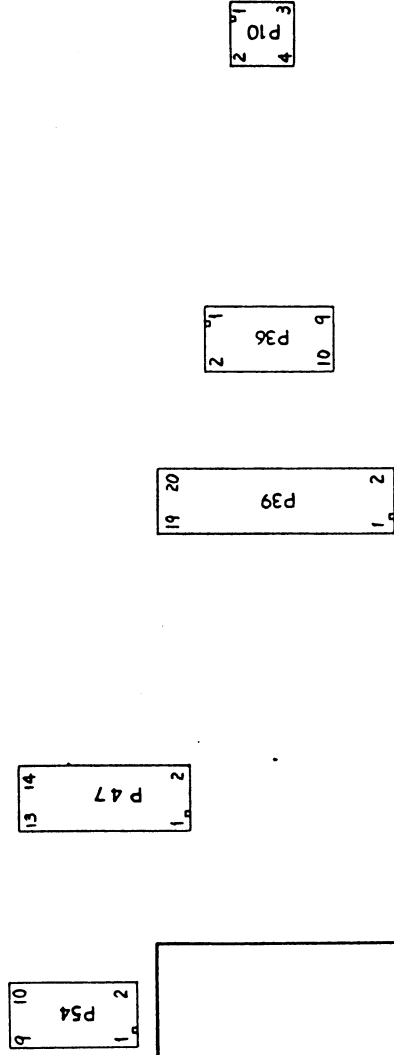


T-3641-P1 CONNECTOR

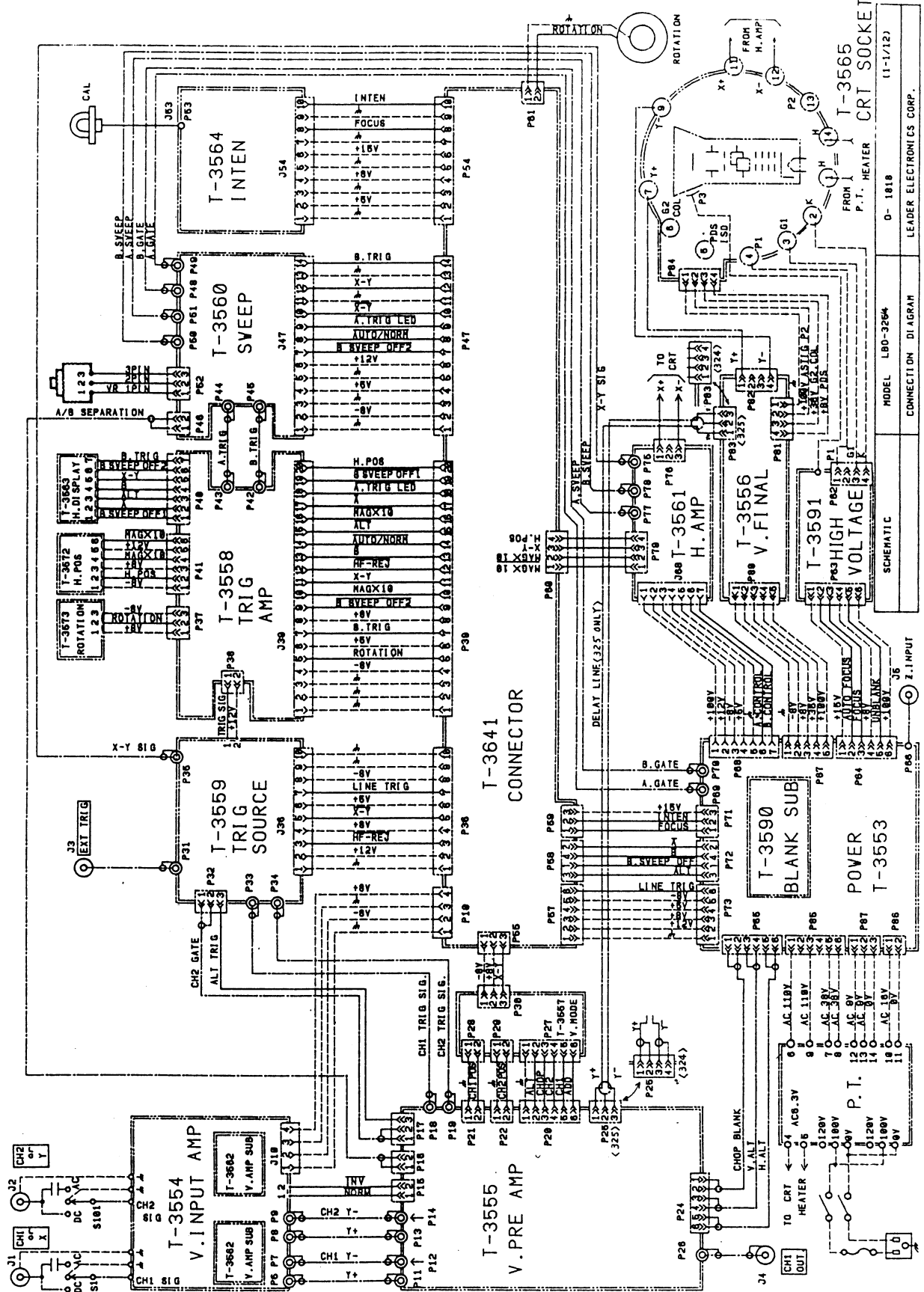


324/325 only

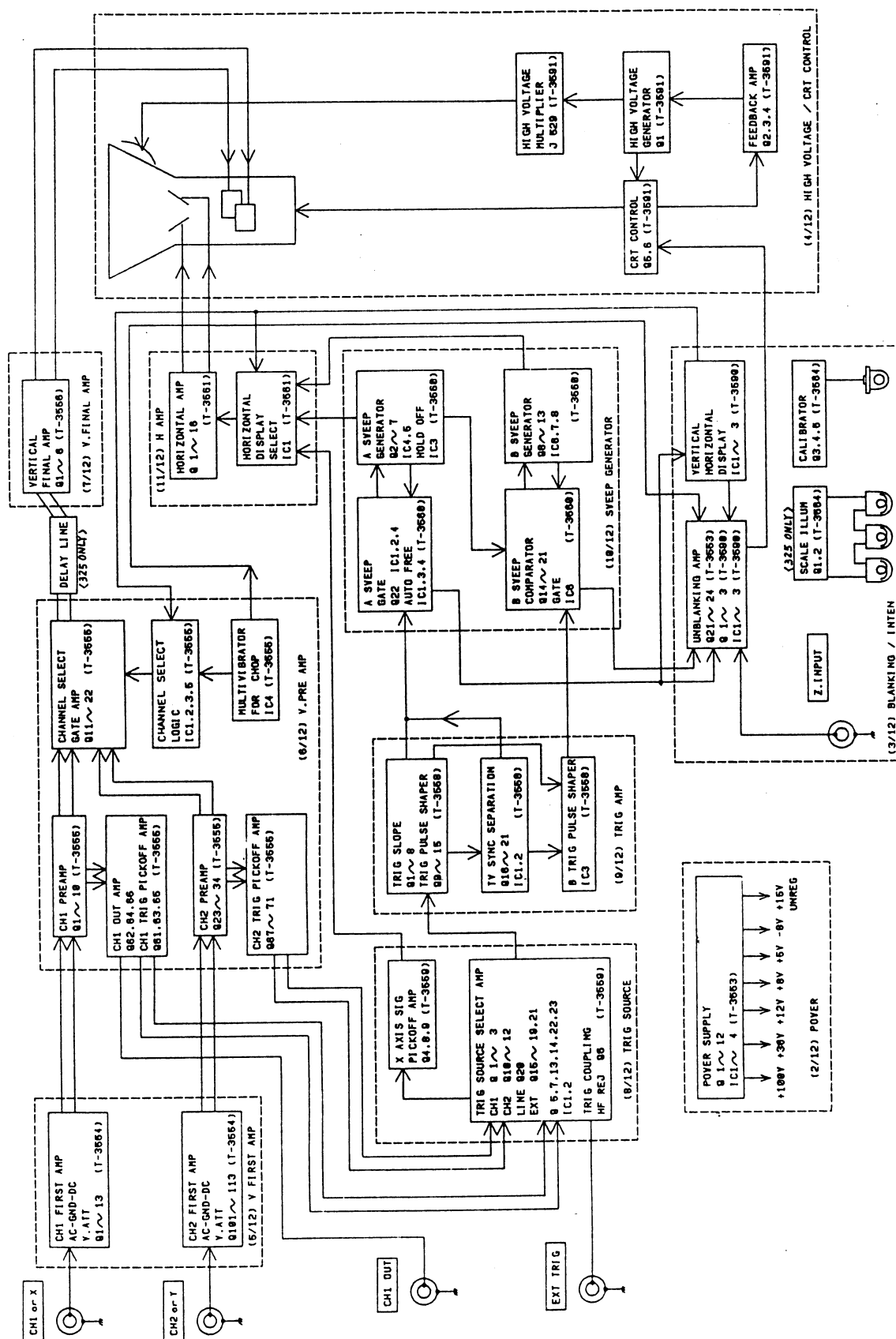
T-3641-P2 CONNECTOR



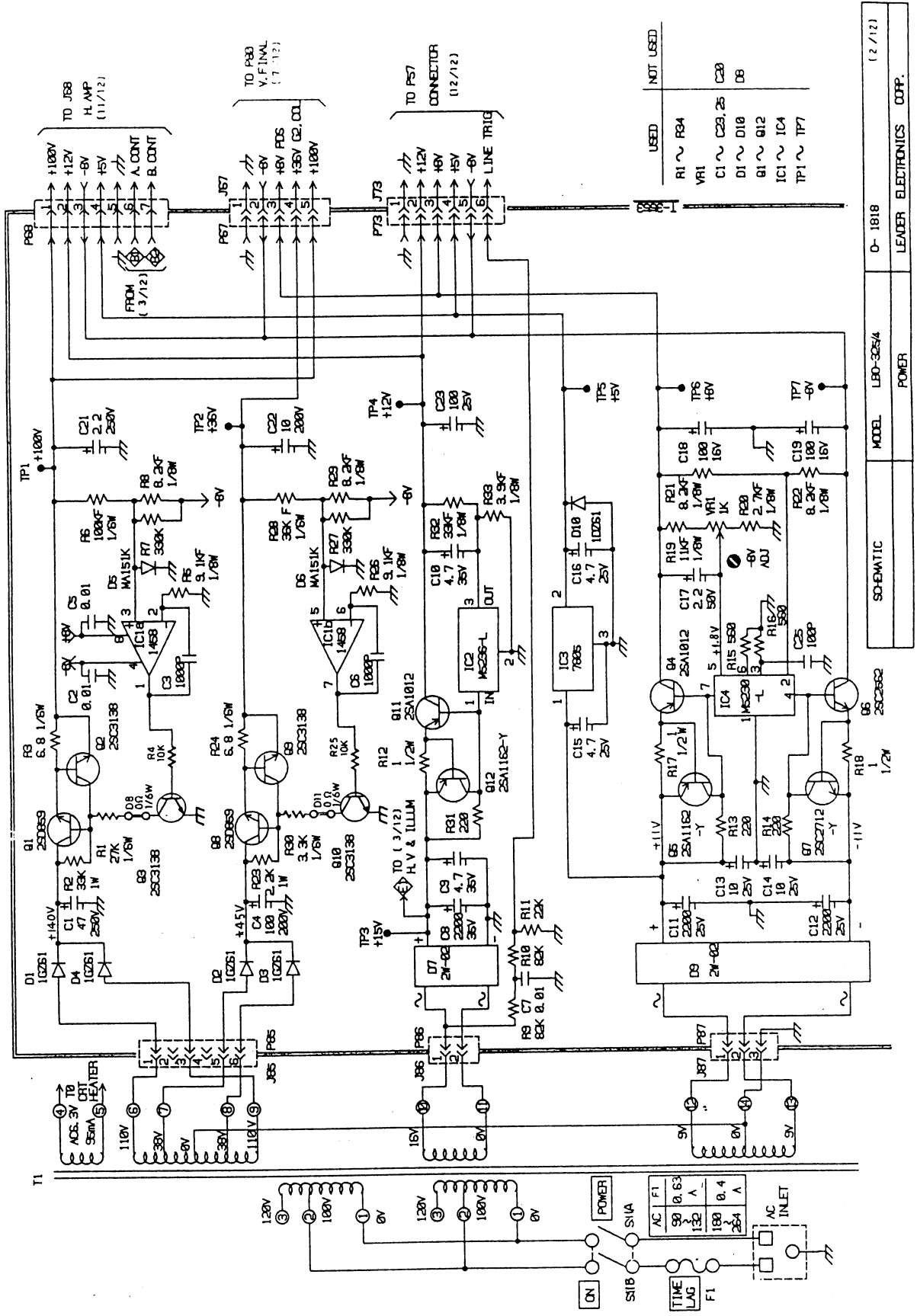
7. BLOCK DIAGRAM/SCHEMATIC DIAGRAM



SCHEMATIC
 MODEL L80-3264
 CONNECTION DIAGRAM
 LEADER ELECTRONICS CORP.
 0-1819
 (11-1712)

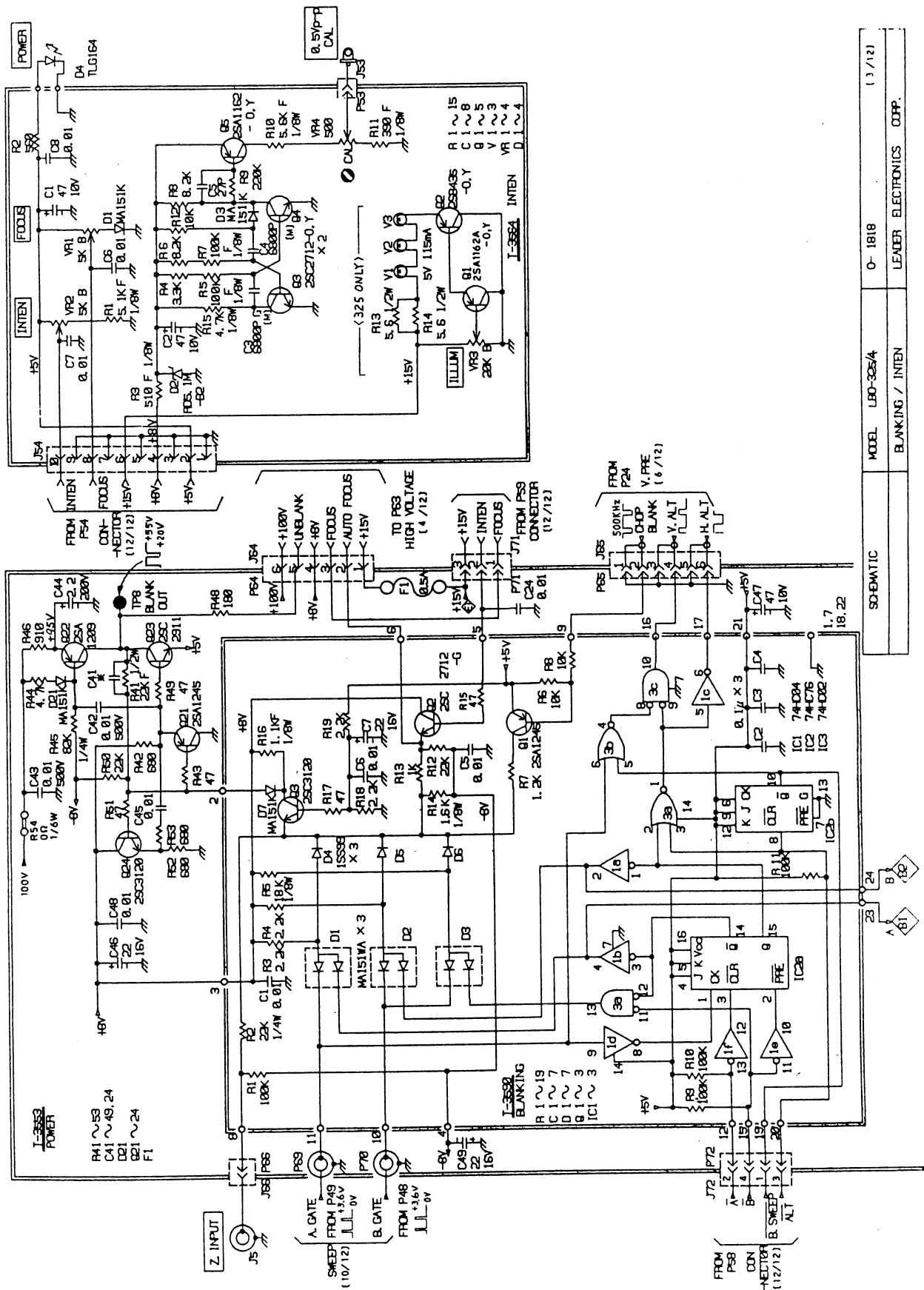


SCHEMATIC	MODEL LBO-3264	0-1818	(1-2/12)
	BLOCK DIAGRAM	LEADER ELECTRONICS CORP.	

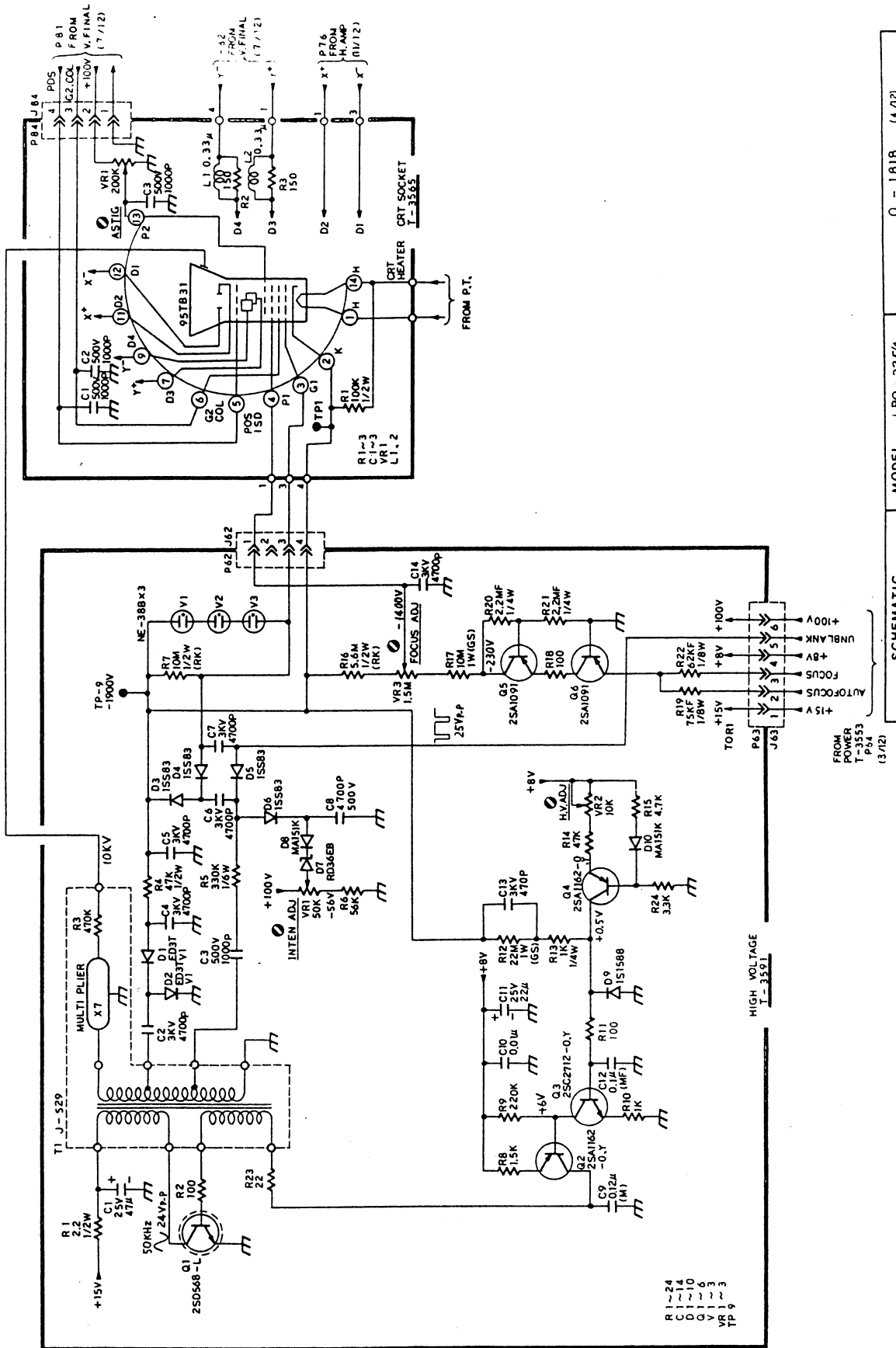


USED	NOT USED
R1 ~ R4	
VRI	
C1 ~ C28, 28	C30
D1 ~ D10	D8
81 ~ 812	
IC1 ~ IC4	
TP1 ~ TP7	

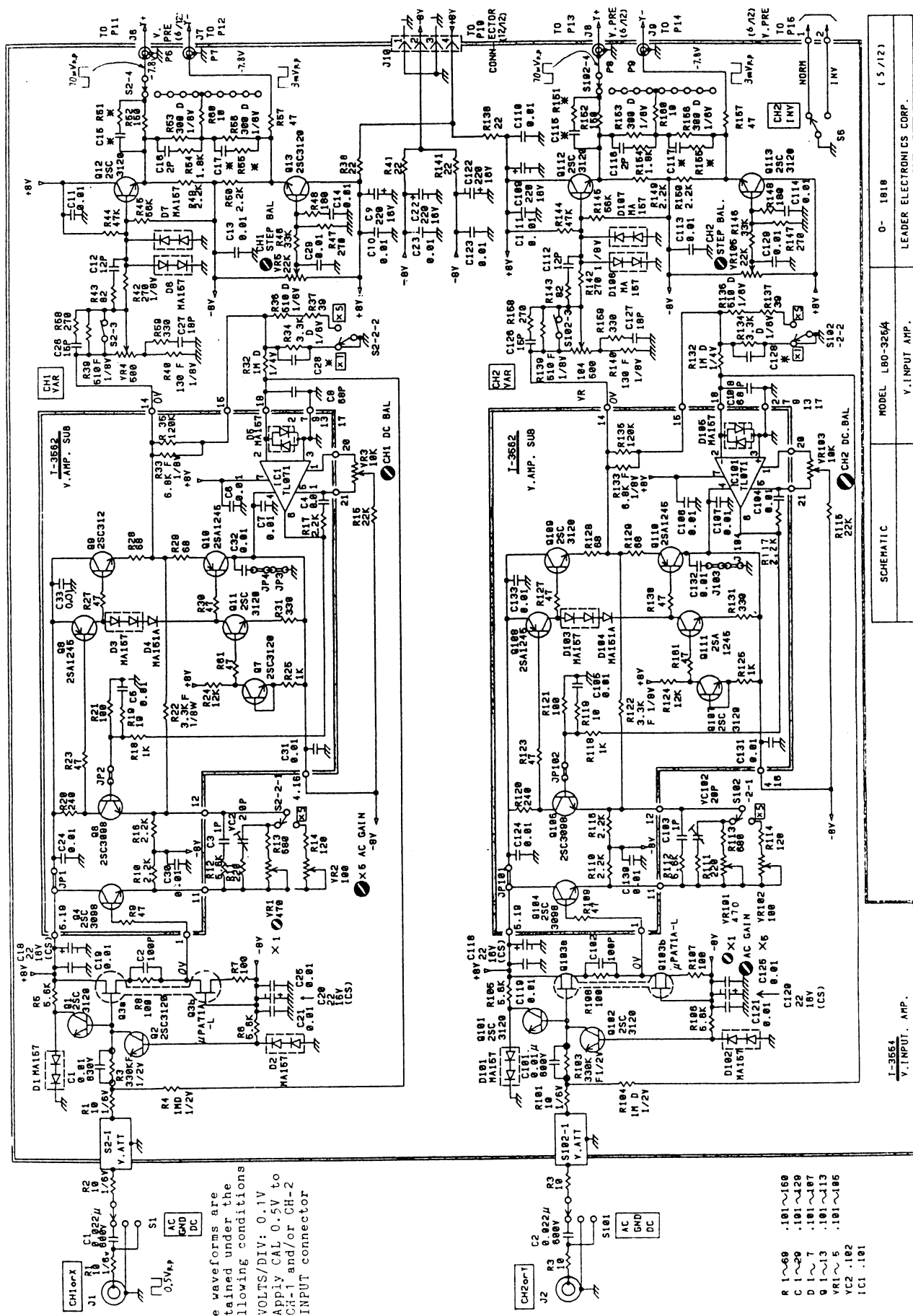
SO-EMATIC	MODEL	LBO-324/4	D-1818	LEADER ELECTRONICS CORP.
		POWER		



SCHEMATIC	MODEL LBO-324/4	0-1818	(13/12)
	BLANKING / INTEN	LEADER ELECTRONICS CORP.	



SCHEMATIC	MODEL LBO-325/A	0-1818 (4/72)
	HIGH VOLTAGE	LEADER ELECTRONICS CORP.

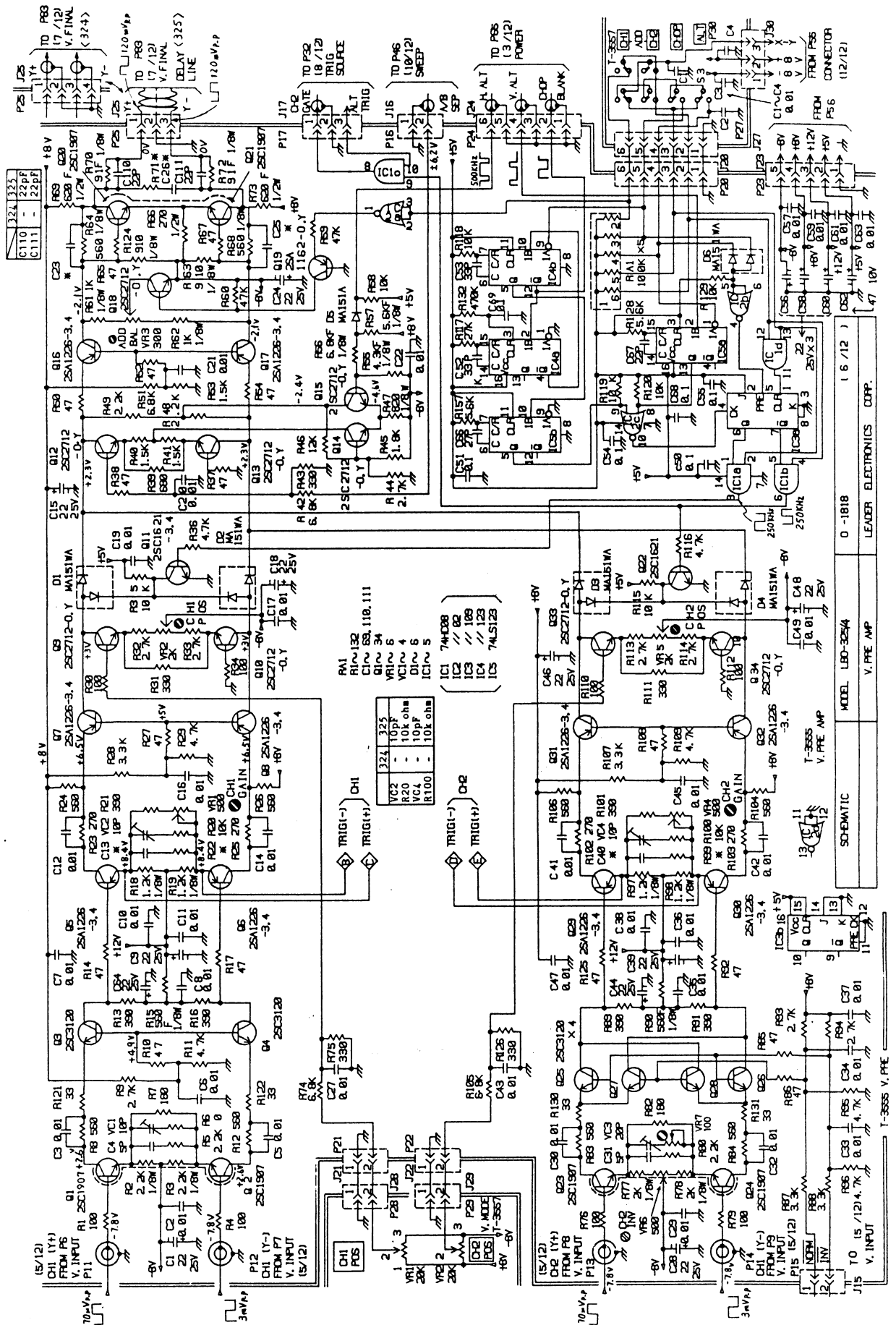


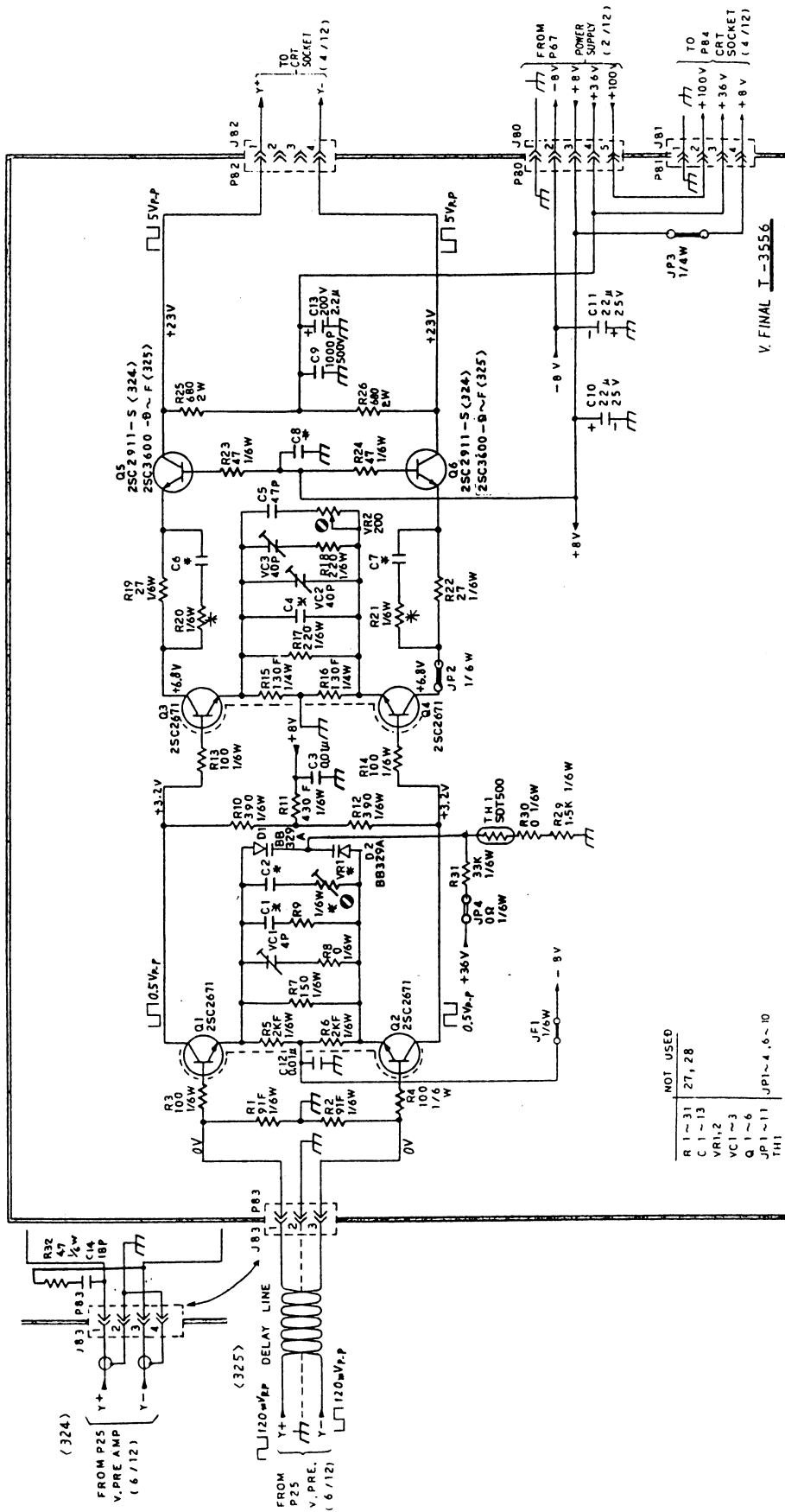
The waveforms are obtained under the following conditions
 -VOLTS/DIV: 0.1V
 -Apply CAL 0.5V to CH-1 and/or CH-2 INPUT connector

SCHEMATIC	MODEL L80-3264	0-1818	(5/12)
	Y. INPUT. AMP.	LEADER ELECTRONICS CORP.	

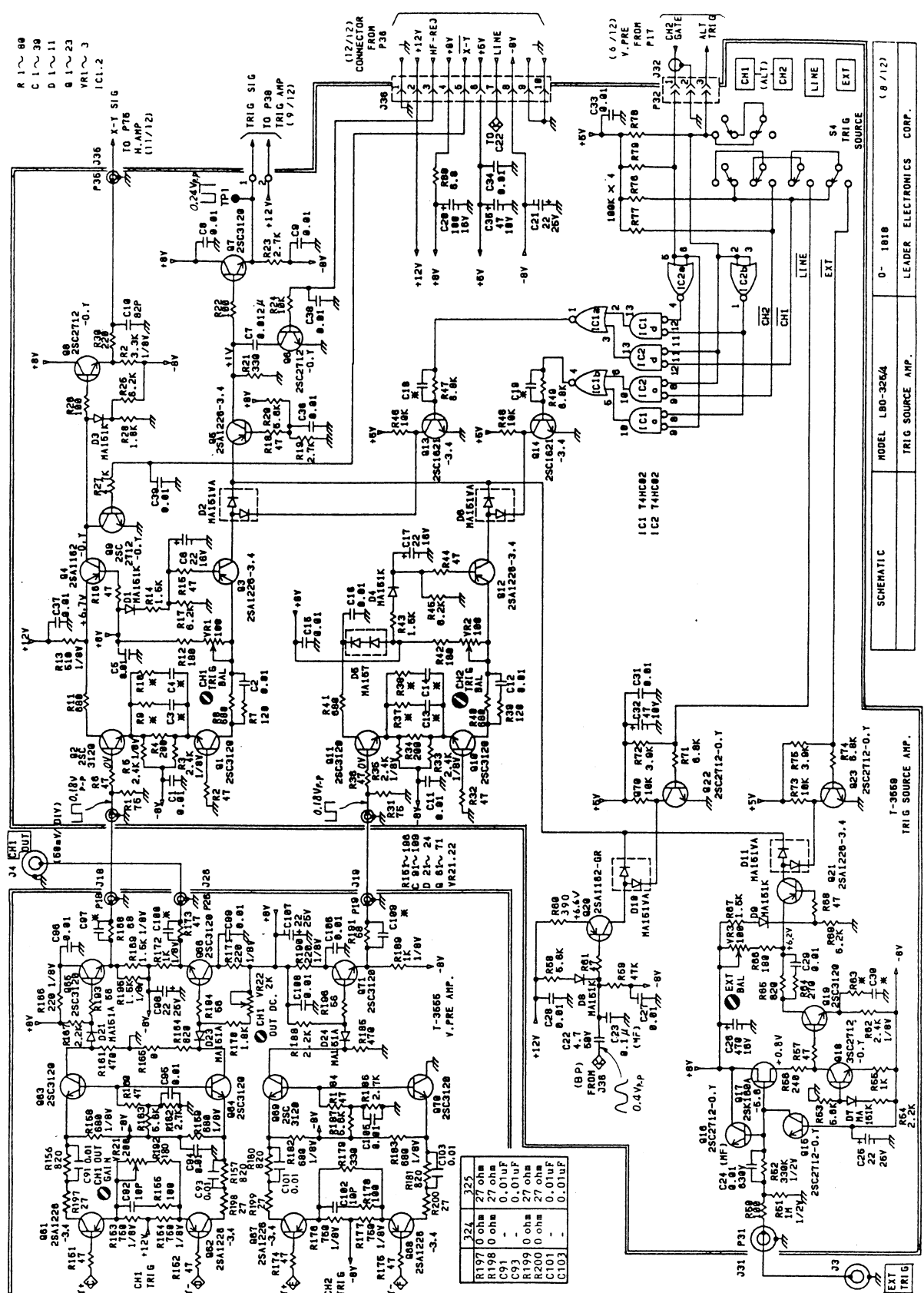
L-3554	Y. INPUT. AMP.
--------	----------------

- R 1~60 .101~150
- C 1~20 .101~20
- D 1~7 .101~107
- Q 1~13 .101~113
- VR1~5 .101~105
- VC2 .102
- IC1 .101





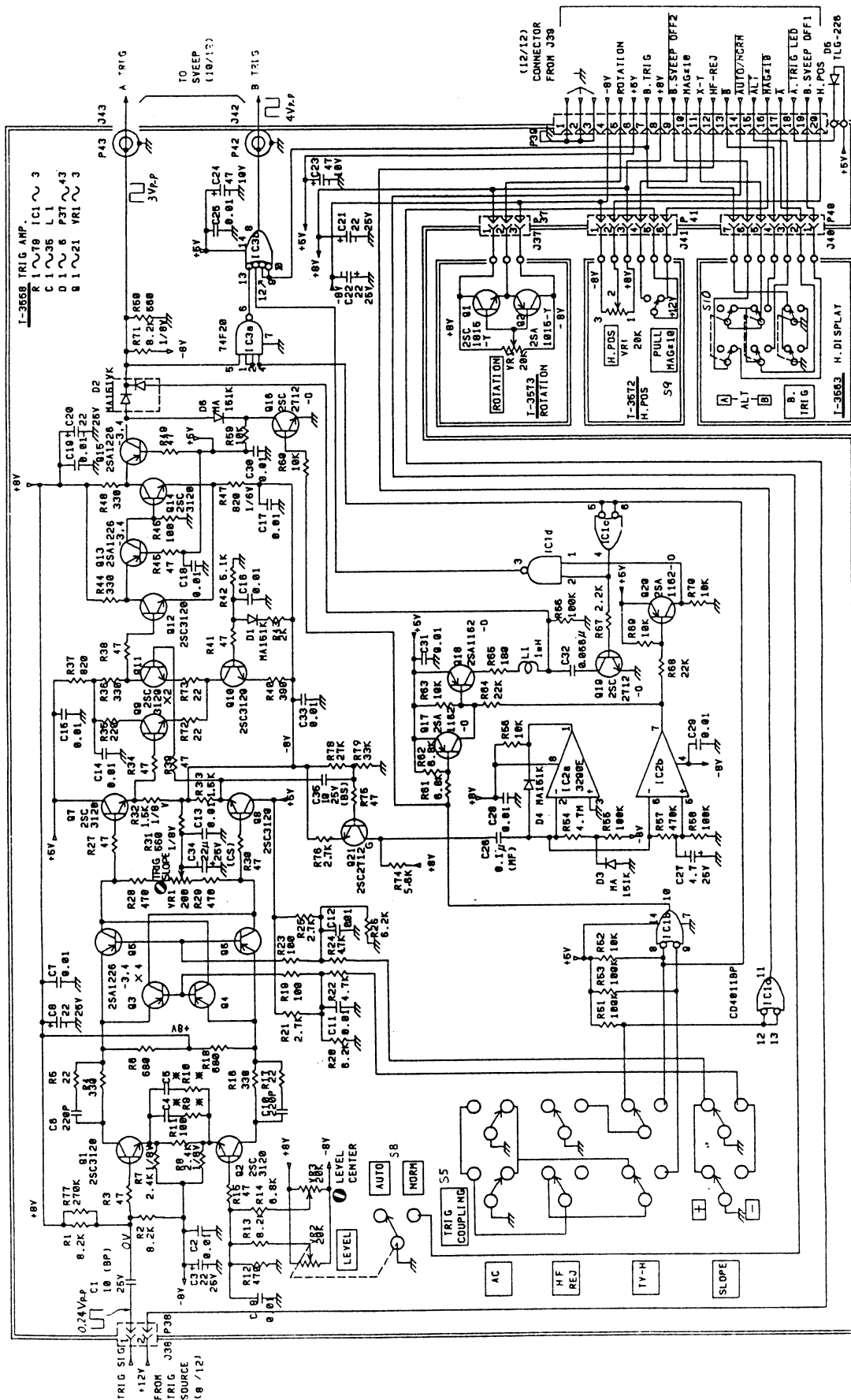
SCHEMATIC MODEL LBO-3254 V. FINAL AMP Q-1818 LEADER ELECTRONICS CORP. (7/12)



R 1 ~ 80
 C 1 ~ 38
 D 1 ~ 11
 8 1 ~ 23
 VR 1 ~ 3
 ICL.2

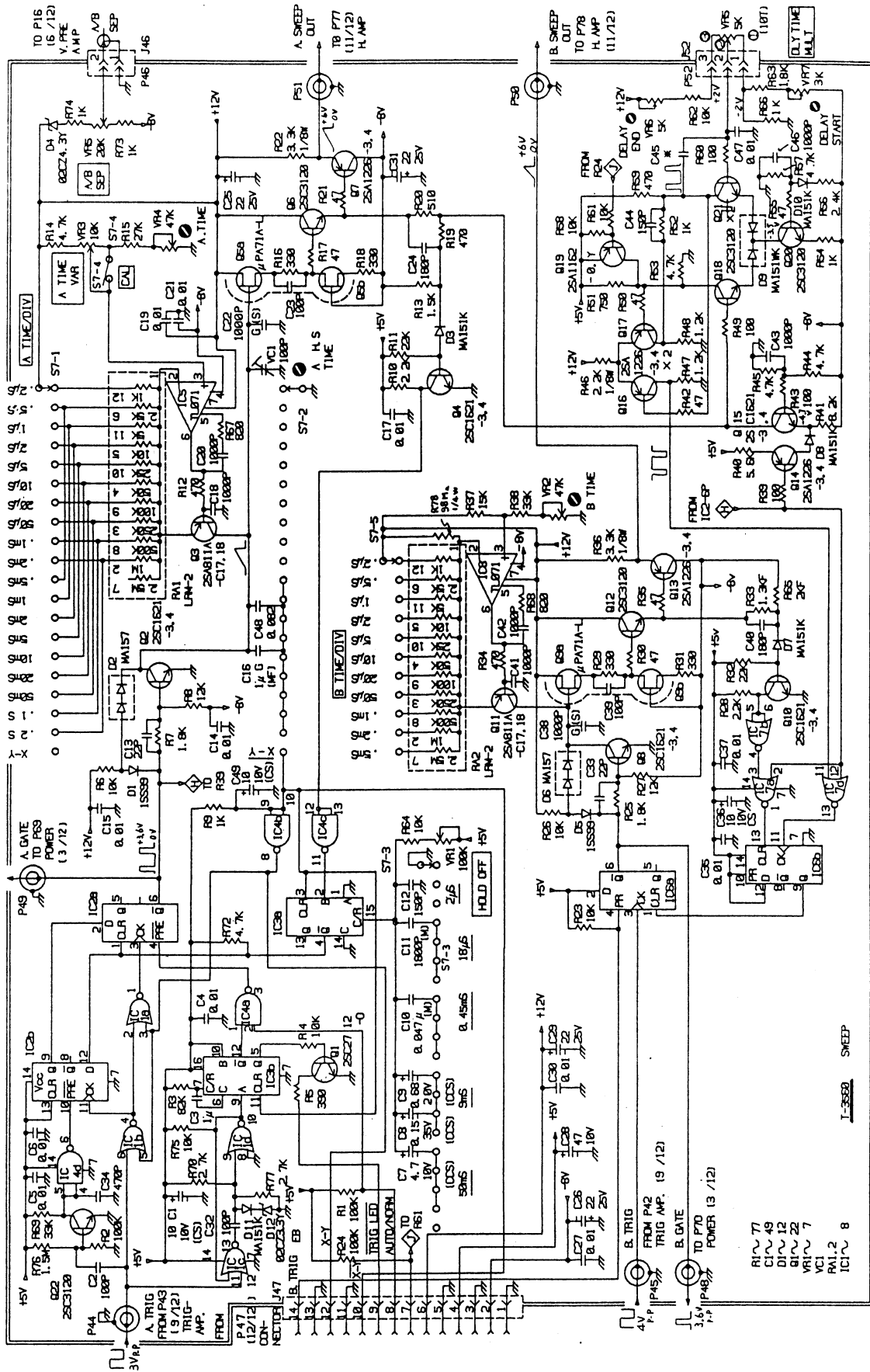
R197	0 ohm	324
R198	0 ohm	325
C91	-	0.01uF
C93	-	0.01uF
R200	0 ohm	27 ohm
C101	-	0.01uF
C103	-	0.01uF

MODEL LBO-326/4
 TRIG SOURCE AMP.
 SCHEMATIC
 LEADER ELECTRONICS CORP.
 0-1818
 1.8/12



MODEL	LBO-325/4	O-1918	19 / 12)
		LEADER	ELECTRONICS COP.

SCHEMATIC			

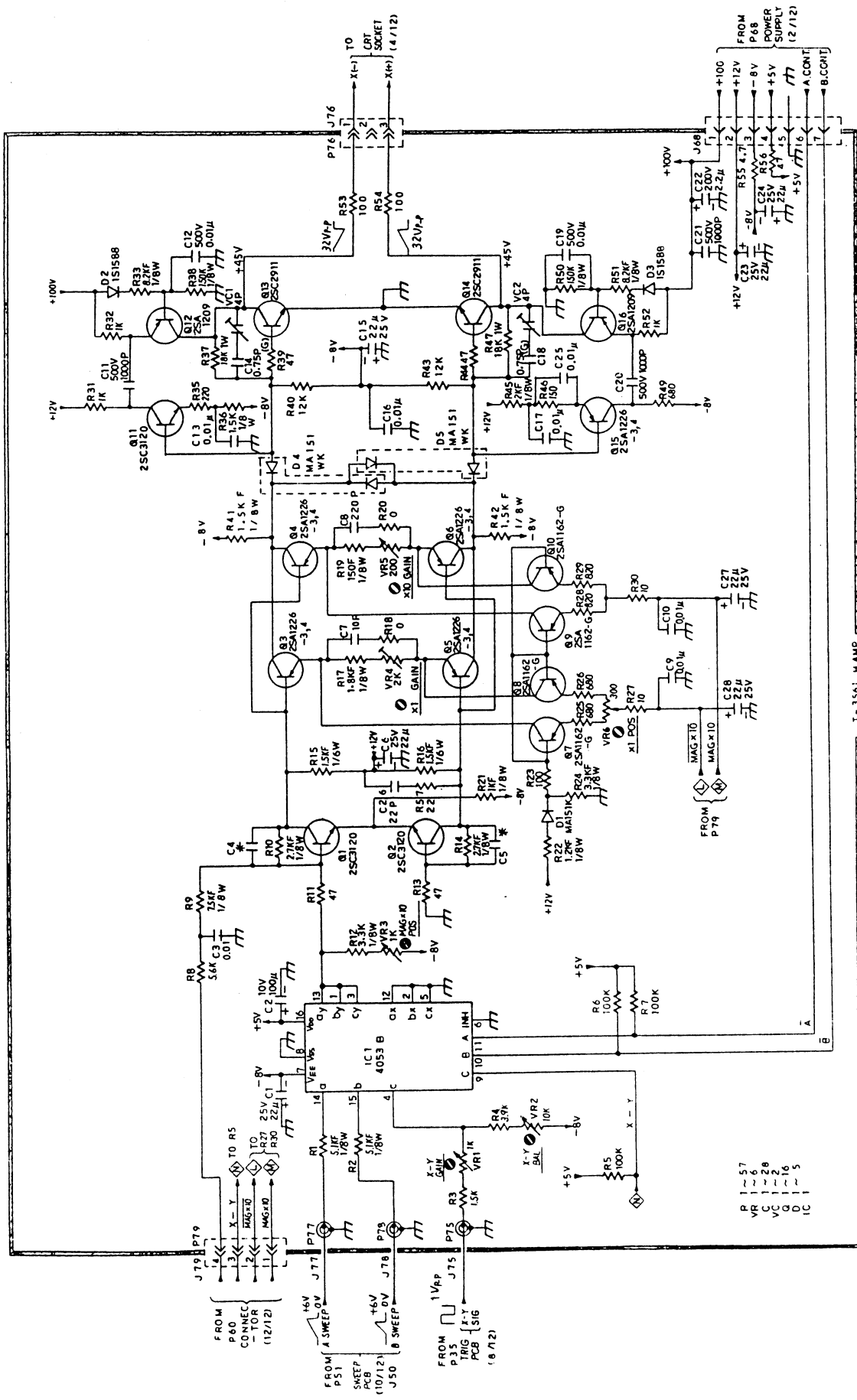


SCHEMATIC	MODEL L80-325/4	0 - 1818	LEADER ELECTRONICS	COFF.



- IC1: 74F00
- IC2: 74F74
- IC3: 74HC123
- IC4: 74HC86
- IC5: 11071
- IC6: 74F74
- IC7: 74HC123
- IC8: 11071

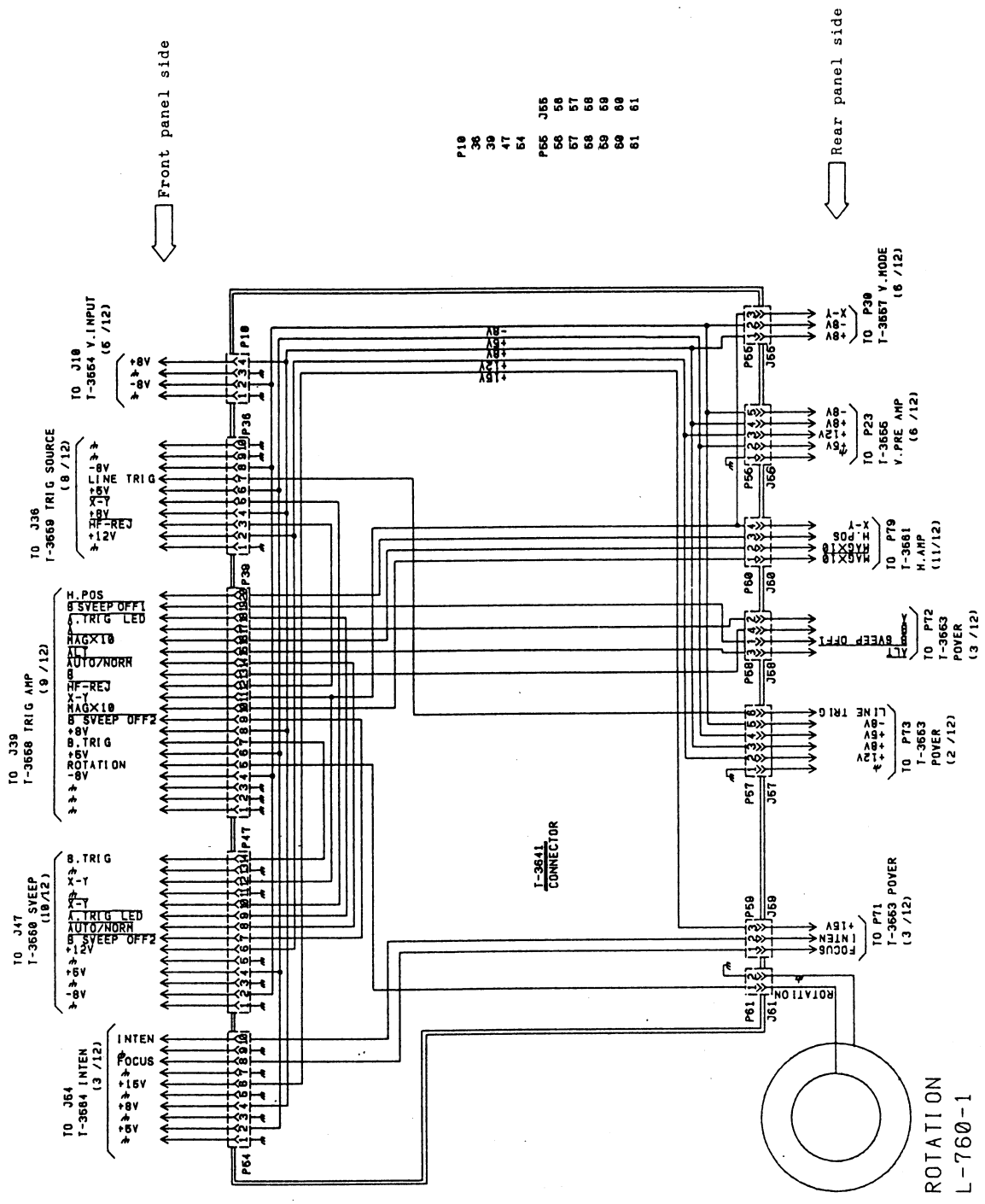
I-3552 SWEEP



I-3561 H.A.M.P

SCHEMATIC	MODEL LBO-325/4	O-1818	(1/12)
	11 AMP	LEADER ELECTRONICS CORP.	

- R 1-57
- VR 1-6
- VC 1-28
- D 1-2
- G 1-16
- IC 1-3



- P19
- 36
- 39
- 41
- 54
- P55 J55
- 58
- 59
- 57
- 58
- 58
- 59
- 59
- 60
- 61

SCHEMATIC	MODEL LBO-325/4
CONNECTOR	CONNECTOR
	0-1818 (12/12)
	LEADER ELECTRONICS CORP.

8. PARTS LIST

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
***	LBO-324/325	MAIN FRAME ***			
-VARIABLE RESISTOR-					
VR1	1940047014	WIRE WOUND	5K OHM 1.5%	3W	"DLY TIME MULT"
-CAPACITORS-					
C1	2180223002	PLASTIC FILM	0.022uF	10%	630V
C2	2180223002	PLASTIC FILM	0.022uF	10%	630V
-CRT-					
	3710053001	CRT	95TB31		
-TRANSFORMER-					
T1	3800531002	TRANSFORMER	J-531		
-COIL-					
L1	3900760014	ROTATOR COIL	L-750-1		
-SWITCHES-					
S1	4050043009	TOGGLE	9A-2101 "CH-1 AC-GND-DC"		
S11	4020138009	PUSH	ESB-70702V "POWER"		
S101	4050043009	TOGGLE	9A-2101 "CH-2 AC-GND-DC"		
-FUSE-					
F1	4363745000	TIME LAG	ST4 400mA	"180V-264V"	
F1	4363755003	TIME LAG	ST4 630mA	"90V-132V"	
-MISCELLANEOUS-					
	4325005004	INLET	NC-173		
	4371009003	FUSE HOLDER	FH-032(6.35X31.8)		
***	LBO-324/325	POWER	T-3553 ***		
-RESISTORS-					
R1	1000273004	CARBON FILM	27K OHM	5%	1/6W
R2	1580333002	METAL OXIDE	33K OHM	5%	1/4W
R3	1000689005	CARBON FILM	6.8 OHM	5%	1/6W
P4	1650103507	METAL GLAZE	CHIP	10K OHM	5%
R5	1669101302	METAL GLAZE	CHIP	9.1 OHM	1%
R6	1461003005	METAL FILM	100K OHM	1%	1/8W
R7	1650334506	METAL GLAZE	CHIP	330K OHM	5%
R8	1668201303	METAL GLAZE	CHIP	8.2K OHM	1%
R9	1650823501	METAL GLAZE	CHIP	82K OHM	5%
R10	1650823501	METAL GLAZE	CHIP	82K OHM	5%
R11	1650223507	METAL GLAZE	CHIP	22K OHM	5%
R12	1020109005	CARBON FILM	1 OHM	5%	1/2W
R13	1650221503	METAL GLAZE	CHIP	220 OHM	5%
R14	1650221503	METAL GLAZE	CHIP	220 OHM	5%
R15	1650561507	METAL GLAZE	CHIP	560 OHM	5%
R16	1650561507	METAL GLAZE	CHIP	560 OHM	5%
R17	1020109005	CARBON FILM	1 OHM	5%	1/2W
R18	1020109005	CARBON FILM	1 OHM	5%	1/2W
R19	1661102306	METAL GLAZE	CHIP	11K OHM	1%
P20	1662701304	METAL GLAZE	CHIP	2.7K OHM	1%
P21	1668201303	METAL GLAZE	CHIP	8.2K OHM	1%
P22	1668201303	METAL GLAZE	CHIP	8.2K OHM	1%

No.	LDR PT No.	DESCRIPTION	Y. INPUT	LDR PT No.	DESCRIPTION
*** LB0-324/325 T-3554 ***					
-RESISTORS-					
R1	1000100003	CARBON FILM		1000100003	CARBON FILM
R3	1333030000	METAL FILM		1333030000	METAL FILM
R4	1371000008	METAL FILM		1371000008	METAL FILM
R5	1650562509	METAL GLAZE		1650562509	METAL GLAZE
R6	1650562509	METAL GLAZE		1650562509	METAL GLAZE
R7	1650101503	METAL GLAZE		1650101503	METAL GLAZE
R8	1650101503	METAL GLAZE		1650101503	METAL GLAZE
R12	1650221503	METAL GLAZE		1650221503	METAL GLAZE
R13	1650681507	METAL GLAZE		1650681507	METAL GLAZE
R14	1650121509	METAL GLAZE		1650121509	METAL GLAZE
R15	1650223507	METAL GLAZE		1650223507	METAL GLAZE
R32	1361000047	METAL FILM		1361000047	METAL FILM
R34	1453301008	METAL FILM		1453301008	METAL FILM
R36	1455100000	METAL FILM		1455100000	METAL FILM
R37	1650390506	METAL GLAZE		1650390506	METAL GLAZE
R38	1650220501	METAL GLAZE		1650220501	METAL GLAZE
R39	1665100306	METAL GLAZE		1665100306	METAL GLAZE
R40	1661300300	METAL GLAZE		1661300300	METAL GLAZE
R41	1650220501	METAL GLAZE		1650220501	METAL GLAZE
R42	1660271505	METAL GLAZE		1660271505	METAL GLAZE
R43	1650820505	METAL GLAZE		1650820505	METAL GLAZE
R44	1650473500	METAL GLAZE		1650473500	METAL GLAZE
R45	1650563501	METAL GLAZE		1650563501	METAL GLAZE
R46	1650333504	METAL GLAZE		1650333504	METAL GLAZE
R47	1650271508	METAL GLAZE		1650271508	METAL GLAZE
R48	1650181507	METAL GLAZE		1650181507	METAL GLAZE
R49	1650222505	METAL GLAZE		1650222505	METAL GLAZE
R50	1650222505	METAL GLAZE		1650222505	METAL GLAZE
R52	1650151508	METAL FILM		1650151508	METAL FILM
R53	1453000004	METAL FILM		1453000004	METAL FILM
R54	1650182509	METAL GLAZE		1650182509	METAL GLAZE
R56	1453000004	METAL FILM		1453000004	METAL FILM
R57	1650470504	METAL GLAZE		1650470504	METAL GLAZE
R58	1650271508	METAL GLAZE		1650271508	METAL GLAZE
R59	1650331500	METAL GLAZE		1650331500	METAL GLAZE
R101	1000100003	CARBON FILM		1000100003	CARBON FILM
R103	1333030000	METAL FILM		1333030000	METAL FILM
R104	1371000008	METAL FILM		1371000008	METAL FILM
R105	1650562509	METAL GLAZE		1650562509	METAL GLAZE
R106	1650562509	METAL GLAZE		1650562509	METAL GLAZE
R107	1650101503	METAL GLAZE		1650101503	METAL GLAZE
R108	1650101503	METAL GLAZE		1650101503	METAL GLAZE
R111	1650221503	METAL GLAZE		1650221503	METAL GLAZE
R112	1650562509	METAL GLAZE		1650562509	METAL GLAZE
R113	1650681507	METAL GLAZE		1650681507	METAL GLAZE
R114	1650121509	METAL GLAZE		1650121509	METAL GLAZE
R115	1650223507	METAL GLAZE		1650223507	METAL GLAZE
R132	1361000047	METAL FILM		1361000047	METAL FILM
R134	1453301008	METAL FILM		1453301008	METAL FILM
R136	1455100000	METAL FILM		1455100000	METAL FILM
R137	1650390506	METAL GLAZE		1650390506	METAL GLAZE
R138	1650220501	METAL GLAZE		1650220501	METAL GLAZE
R139	1665100306	METAL GLAZE		1665100306	METAL GLAZE
R140	1661300300	METAL GLAZE		1661300300	METAL GLAZE

No.	LDR PT No.	DESCRIPTION	Y. INPUT	LDR PT No.	DESCRIPTION
(T-3553 CONT'D)					
C46	2343220002	ELECTROLYTIC	22UF	20%	16V
C47	2342470003	ELECTROLYTIC	47UF	20%	10V
C48	2680103002	CERAMIC CHIP	0.01UF	10%	50V
C49	2343220002	ELECTROLYTIC	22UF	20%	16V
-TRANSISTORS-					
Q1	3040859000	NPN CHIP	2SC859-Q		
Q2	3033138005	NPN CHIP	2SC3138		
Q3	3033138005	NPN CHIP	2SC3138		
Q4	3011012007	PNP	2SA1012		
Q5	3011162015	PNP CHIP	2SA1162-0 or Y		
Q6	3032563002	NPN CHIP	2SC2562-Y		
Q7	3032712005	NPN CHIP	2SC2712-0 or Y		
Q8	3040859000	NPN	2SD859-Q		
Q9	3033138005	NPN CHIP	2SC3138		
Q10	3033138005	NPN CHIP	2SC3138		
Q11	3011012007	PNP	2SA1012		
Q12	3011162015	PNP CHIP	2SA1162-0 or Y		
Q21	3011245000	PNP CHIP	2SA1245		
Q22	3011209006	PNP	2SA1209-S		
Q23	3032911001	NPN	2SC2911-S		
Q24	3033120006	NPN CHIP	2SC3120		
-DIODES-					
D1	3110020008	RECTIFIER	1GZ61		
D2	3110020008	RECTIFIER	1GZ61		
D3	3110020008	RECTIFIER	1GZ61		
D4	3110020008	RECTIFIER	1GZ61		
D5	3113004008	DETECTOR CHIP	MA151K		
D6	3113004008	DETECTOR CHIP	MA151K		
D7	3110061002	BRIDGE RECTIFIER	2W02		
D9	3110061002	BRIDGE RECTIFIER	2W02		
D10	3110019003	RECTIFIER	1DZ61		
D21	3113004008	DETECTOR CHIP	MA151K		
-INTEGRATED CIRCUITS-					
IC1	3211458021	OP AMP	MC1458CP1		
IC2	3228001007	REGULATOR	M5236L		
IC3	3217805004	REGULATOR	HA17805P	+5V	
IC4	3220161001	REGULATOR	M5230L		
-FUSE-					
F1	4363150009	NORMAL BLOW	8ER 500mA		
-PC BOARD-					
	5903553024		T-3553B		
-MISCELLANEOUS-					
	4371008001	FUSE CLIP	S-N5053		

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
(T-3554)	CONT'D)		(T-3554)	CONT'D)	
R141	1650220501	METAL GLAZE CHIP	C112	2681120604	CERAMIC CHIP
R142	1650271505	METAL GLAZE CHIP	C113	2680103002	CERAMIC CHIP
R143	1650820505	METAL GLAZE CHIP	C114	2680103002	CERAMIC CHIP
R144	1650473500	METAL GLAZE CHIP	C116	2681209105	CERAMIC CHIP
R145	1650563501	METAL GLAZE CHIP	C118	2440220002	ELECTROLYTIC
R146	1650333504	METAL GLAZE CHIP	C119	2680103002	CERAMIC CHIP
R147	1650271508	METAL GLAZE CHIP	C120	2440220002	ELECTROLYTIC
R148	1650181507	METAL GLAZE CHIP	C121	2680103002	CERAMIC CHIP
R149	1650222505	METAL GLAZE CHIP	C122	2230221102	ELECTROLYTIC
R150	1650222505	METAL GLAZE CHIP	C123	2680103002	CERAMIC CHIP
R152	1650151508	METAL GLAZE CHIP	C125	2680103002	CERAMIC CHIP
R153	1453000004	METAL FILM	C126	2681180603	CERAMIC CHIP
R154	1650182509	METAL GLAZE CHIP	C127	2681180602	CERAMIC CHIP
R155	1453000004	METAL FILM	C129	2680103002	CERAMIC CHIP
R157	1650470504	METAL GLAZE CHIP			
R158	1650271508	METAL GLAZE CHIP			
R159	1650331500	METAL GLAZE CHIP			

-VARIABLE RESISTORS-					
VR1	1711007048	METAL GLAZE	470 OHM	25%	1/5W
VR2	1711007002	METAL GLAZE	100 OHM	25%	1/5W
VR3	1711007121	METAL GLAZE	10K OHM	25%	1/5W
VR5	1711007149	METAL GLAZE	22K OHM	25%	1/5W
VR101	1711007048	METAL GLAZE	470 OHM	25%	1/5W
VR102	1711007002	METAL GLAZE	100 OHM	25%	1/5W
VR103	1711007121	METAL GLAZE	10K OHM	25%	1/5W
VR105	1711007149	METAL GLAZE	22K OHM	25%	1/5W

-CAPACITORS-					
C1	2180103020	PLASTIC FILM	0.01uF	10%	630V
C2	2682101606	CERAMIC CHIP	100pF	10%	50V
C3	2681109101	CERAMIC CHIP	1pF	0.25pF	50V
C8	2681680602	CERAMIC CHIP	68pF	10%	50V
C9	2230221102	ELECTROLYTIC	220uF	20%	16V
C10	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C11	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C12	2681120604	CERAMIC CHIP	12pF	10%	50V
C13	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C14	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C16	2681209105	CERAMIC CHIP	2pF	0.25pF	50V
C18	2440220002	ELECTROLYTIC	22uF	20%	16V
C19	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C20	2440220002	ELECTROLYTIC	22uF	20%	16V
C21	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C22	2230221102	ELECTROLYTIC	220uF	20%	16V
C23	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C25	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C26	2681150603	CERAMIC CHIP	15pF	10%	50V
C27	2681180602	CERAMIC CHIP	18pF	10%	50V
C29	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C101	2180103020	PLASTIC FILM	0.01uF	10%	630V
C102	2682101606	CERAMIC CHIP	100pF	10%	50V
C103	2681109101	CERAMIC CHIP	1pF	0.25pF	50V
C109	2681680602	CERAMIC CHIP	68pF	10%	50V
C110	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C111	2680103002	CERAMIC CHIP	0.01uF	10%	50V

-TRANSISTORS-					
Q1	3033120006	NPN CHIP			29C3120
Q2	3033120006	NPN CHIP			29C3120
Q3	3090026008	FET DUAL			UPA71A-L
Q12	3033120006	NPN CHIP			29C3120
Q13	3033120006	NPN CHIP			29C3120
Q101	3033120006	NPN CHIP			29C3120
Q102	3033120006	NPN CHIP			29C3120
Q103	3090026008	FET DUAL			UPA71A-L
Q112	3033120006	NPN CHIP			29C3120
Q113	3033120006	NPN CHIP			29C3120

-DIODES-					
D1	3113003006	DETECTOR DUAL CHIP			MA157
D2	3113003006	DETECTOR DUAL CHIP			MA157
D5	3113003006	DETECTOR DUAL CHIP			MA157
D7	3113003006	DETECTOR DUAL CHIP			MA157
D101	3113003006	DETECTOR DUAL CHIP			MA157
D102	3113003006	DETECTOR DUAL CHIP			MA157
D106	3113003006	DETECTOR DUAL CHIP			MA157
D107	3113003006	DETECTOR DUAL CHIP			MA157

-SWITCHES-					
S2	4000541000	ROTARY	Q-541	"CH-1 VOLTS/DIV"	
S6	4000542002	PUSH	Q-542	"CH-2 INV"	
S102	4000541000	ROTARY	Q-541	"CH-2 VOLTS/DIV"	
-PC BOARD-					
	5903554026				T-3554B

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
			(T-3555		
			CONT'D)		
R59	1650103507	METAL GLAZE	R59	1650103507	METAL GLAZE
R60	1650473500	METAL GLAZE	R60	1650473500	METAL GLAZE
R61	1660102502	METAL GLAZE	R61	1660102502	METAL GLAZE
R62	1660102502	METAL GLAZE	R62	1660102502	METAL GLAZE
R63	1660911505	METAL GLAZE	R63	1660911505	METAL GLAZE
R64	1660561504	METAL GLAZE	R64	1660561504	METAL GLAZE
R65	1650470504	METAL GLAZE	R65	1650470504	METAL GLAZE
R66	1020271004	CARBON FILM	R66	1020271004	CARBON FILM
R67	1650470504	METAL GLAZE	R67	1650470504	METAL GLAZE
R68	1660561504	METAL GLAZE	R68	1660561504	METAL GLAZE
R69	1336200008	METAL FILM	R69	1336200008	METAL FILM
R70	1669109308	METAL GLAZE	R70	1669109308	METAL GLAZE
R71	1669109308	METAL GLAZE	R71	1669109308	METAL GLAZE
R72	1336200008	METAL FILM	R72	1336200008	METAL FILM
R73	1336200008	METAL FILM	R73	1336200008	METAL FILM
R74	1650682509	METAL GLAZE	R74	1650682509	METAL GLAZE
R75	1650331500	METAL GLAZE	R75	1650331500	METAL GLAZE
R76	1650101503	METAL GLAZE	R76	1650101503	METAL GLAZE
R77	1660202506	METAL GLAZE	R77	1660202506	METAL GLAZE
R78	1660202506	METAL GLAZE	R78	1660202506	METAL GLAZE
R79	1650101503	METAL GLAZE	R79	1650101503	METAL GLAZE
R80	1650222505	METAL GLAZE	R80	1650222505	METAL GLAZE
R81	1650181507	METAL GLAZE	R81	1650181507	METAL GLAZE
R82	1650181507	METAL GLAZE	R82	1650181507	METAL GLAZE
R83	1650561507	METAL GLAZE	R83	1650561507	METAL GLAZE
R84	1650561507	METAL GLAZE	R84	1650561507	METAL GLAZE
R85	1650470504	METAL GLAZE	R85	1650470504	METAL GLAZE
R86	1650470504	METAL GLAZE	R86	1650470504	METAL GLAZE
R87	1650332502	METAL GLAZE	R87	1650332502	METAL GLAZE
R88	1650332502	METAL GLAZE	R88	1650332502	METAL GLAZE
R89	1650391508	METAL GLAZE	R89	1650391508	METAL GLAZE
R90	1665600306	METAL GLAZE	R90	1665600306	METAL GLAZE
R91	1650391508	METAL GLAZE	R91	1650391508	METAL GLAZE
R92	1650470504	METAL GLAZE	R92	1650470504	METAL GLAZE
R93	1650272500	METAL GLAZE	R93	1650272500	METAL GLAZE
R94	1650272500	METAL GLAZE	R94	1650272500	METAL GLAZE
R95	1650472508	METAL GLAZE	R95	1650472508	METAL GLAZE
R96	1650472508	METAL GLAZE	R96	1650472508	METAL GLAZE
R97	1660122508	METAL GLAZE	R97	1660122508	METAL GLAZE
R98	1660122508	METAL GLAZE	R98	1660122508	METAL GLAZE
R99	1650391508	METAL GLAZE	R99	1650391508	METAL GLAZE
R100	1650271508	METAL GLAZE	R100	1650271508	METAL GLAZE
R101	1650271508	METAL GLAZE	R101	1650271508	METAL GLAZE
R102	1650271508	METAL GLAZE	R102	1650271508	METAL GLAZE
R103	1650271508	METAL GLAZE	R103	1650271508	METAL GLAZE
R104	1650561507	METAL GLAZE	R104	1650561507	METAL GLAZE
R105	1650682509	METAL GLAZE	R105	1650682509	METAL GLAZE
R106	1650561507	METAL GLAZE	R106	1650561507	METAL GLAZE
R107	1650332502	METAL GLAZE	R107	1650332502	METAL GLAZE
R108	1650470504	METAL GLAZE	R108	1650470504	METAL GLAZE
R109	1650472508	METAL GLAZE	R109	1650472508	METAL GLAZE
R110	1650101503	METAL GLAZE	R110	1650101503	METAL GLAZE
R111	1650331500	METAL GLAZE	R111	1650331500	METAL GLAZE
R112	1650101503	METAL GLAZE	R112	1650101503	METAL GLAZE
R113	1650372500	METAL GLAZE	R113	1650372500	METAL GLAZE
R114	1650372500	METAL GLAZE	R114	1650372500	METAL GLAZE
R115	1650103507	METAL GLAZE	R115	1650103507	METAL GLAZE
R116	1650472508	METAL GLAZE	R116	1650472508	METAL GLAZE
R117	1650273502	METAL GLAZE	R117	1650273502	METAL GLAZE
R118	1650103507	METAL GLAZE	R118	1650103507	METAL GLAZE

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
			T-3555		

R1	1650101503	METAL GLAZE	R1	1650101503	METAL GLAZE
R2	1660222502	METAL GLAZE	R2	1660222502	METAL GLAZE
R3	1660222502	METAL GLAZE	R3	1660222502	METAL GLAZE
R4	1650101503	METAL GLAZE	R4	1650101503	METAL GLAZE
R5	1650222505	METAL GLAZE	R5	1650222505	METAL GLAZE
R6	1650000002	METAL GLAZE	R6	1650000002	METAL GLAZE
R7	1650181507	METAL GLAZE	R7	1650181507	METAL GLAZE
R8	1650561507	METAL GLAZE	R8	1650561507	METAL GLAZE
R9	1650272500	METAL GLAZE	R9	1650272500	METAL GLAZE
R10	1650470504	METAL GLAZE	R10	1650470504	METAL GLAZE
R11	1650472508	METAL GLAZE	R11	1650472508	METAL GLAZE
R12	1650561507	METAL GLAZE	R12	1650561507	METAL GLAZE
R13	1650391508	METAL GLAZE	R13	1650391508	METAL GLAZE
R14	1650470504	METAL GLAZE	R14	1650470504	METAL GLAZE
R15	1665600306	METAL GLAZE	R15	1665600306	METAL GLAZE
R16	1650391508	METAL GLAZE	R16	1650391508	METAL GLAZE
R17	1650470504	METAL GLAZE	R17	1650470504	METAL GLAZE
R18	1660122508	METAL GLAZE	R18	1660122508	METAL GLAZE
R19	1660122508	METAL GLAZE	R19	1660122508	METAL GLAZE
R20	1650391508	METAL GLAZE	R20	1650391508	METAL GLAZE
R21	1650271508	METAL GLAZE	R21	1650271508	METAL GLAZE
R22	1650271508	METAL GLAZE	R22	1650271508	METAL GLAZE
R23	1650561507	METAL GLAZE	R23	1650561507	METAL GLAZE
R24	1650271508	METAL GLAZE	R24	1650271508	METAL GLAZE
R25	1650561507	METAL GLAZE	R25	1650561507	METAL GLAZE
R26	1650470504	METAL GLAZE	R26	1650470504	METAL GLAZE
R27	1650470504	METAL GLAZE	R27	1650470504	METAL GLAZE
R28	1650332502	METAL GLAZE	R28	1650332502	METAL GLAZE
R29	1650472508	METAL GLAZE	R29	1650472508	METAL GLAZE
R30	1650101503	METAL GLAZE	R30	1650101503	METAL GLAZE
R31	1650331500	METAL GLAZE	R31	1650331500	METAL GLAZE
R32	1650272500	METAL GLAZE	R32	1650272500	METAL GLAZE
R33	1650272500	METAL GLAZE	R33	1650272500	METAL GLAZE
R34	1650101503	METAL GLAZE	R34	1650101503	METAL GLAZE
R35	1650103507	METAL GLAZE	R35	1650103507	METAL GLAZE
R36	1650472508	METAL GLAZE	R36	1650472508	METAL GLAZE
R37	1650470504	METAL GLAZE	R37	1650470504	METAL GLAZE
R38	1650470504	METAL GLAZE	R38	1650470504	METAL GLAZE
R39	1650681507	METAL GLAZE	R39	1650681507	METAL GLAZE
R40	1650152500	METAL GLAZE	R40	1650152500	METAL GLAZE
R41	1650152500	METAL GLAZE	R41	1650152500	METAL GLAZE
R42	1650682509	METAL GLAZE	R42	1650682509	METAL GLAZE
R43	1650331500	METAL GLAZE	R43	1650331500	METAL GLAZE
R44	1650272500	METAL GLAZE	R44	1650272500	METAL GLAZE
R45	1650182509	METAL GLAZE	R45	1650182509	METAL GLAZE
R46	1650123503	METAL GLAZE	R46	1650123503	METAL GLAZE
R47	1660821504	METAL GLAZE	R47	1660821504	METAL GLAZE
R48	1650222505	METAL GLAZE	R48	1650222505	METAL GLAZE
R49	1650222505	METAL GLAZE	R49	1650222505	METAL GLAZE
R50	1650470504	METAL GLAZE	R50	1650470504	METAL GLAZE
R51	1650682509	METAL GLAZE	R51	1650682509	METAL GLAZE
R52	1650470504	METAL GLAZE	R52	1650470504	METAL GLAZE
R53	1650152500	METAL GLAZE	R53	1650152500	METAL GLAZE
R54	1650470504	METAL GLAZE	R54	1650470504	METAL GLAZE
R55	1664301300	METAL GLAZE	R55	1664301300	METAL GLAZE
R56	1665601302	METAL GLAZE	R56	1665601302	METAL GLAZE
R57	1665601309	METAL GLAZE	R57	1665601309	METAL GLAZE

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
	(T-3555	CONT'D)			
R195	1650103507	METAL GLAZE CHIP	1.5K OHM	5%	1/8W
R196	1650560505	METAL GLAZE CHIP	56 OHM	5%	1/10W
R197	1650270506	METAL GLAZE CHIP	27 OHM	5%	1/10W
	-VARIABLE RESISTORS-				
VR1	1711004033	CERMET	500 OHM	20%	1/3W
VR2	1711004051	CERMET	2K OHM	20%	1/3W
VR3	1711004024	CERMET	300 OHM	20%	1/3W
VR4	1711004033	CERMET	500 OHM	20%	1/3W
VR5	1711004051	CERMET	2K OHM	20%	1/3W
VR6	1711004033	CERMET	500 OHM	20%	1/3W
VR7	1711004006	CERMET	100 OHM	20%	1/3W
VR21	1711004015	CERMET	200 OHM	20%	1/3W
VR22	1711004051	CERMET	2K OHM	20%	1/3W
	-CAPACITORS-				
C1	2344220008	ELECTROLYTIC	22uF	20%	25V
C2	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C3	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C4	2681509107	CERAMIC CHIP	5pF	0.25pF	50V
C5	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C6	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C7	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C8	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C9	2344220008	ELECTROLYTIC	22uF	20%	25V
C10	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C11	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C12	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C13	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C14	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C15	2344220008	ELECTROLYTIC	22uF	20%	25V
C16	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C17	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C18	2344220008	ELECTROLYTIC	22uF	20%	25V
C19	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C20	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C21	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C22	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C23	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C24	2344220008	ELECTROLYTIC	22uF	20%	25V
C25	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C26	2344220008	ELECTROLYTIC	22uF	20%	25V
C27	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C28	2344220008	ELECTROLYTIC	22uF	20%	25V
C29	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C30	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C31	2681509107	CERAMIC CHIP	5pF	0.25pF	50V
C32	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C33	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C34	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C35	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C36	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C37	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C38	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C39	2344220008	ELECTROLYTIC	22uF	20%	25V
C40	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C41	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C42	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C43	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C44	2344220008	ELECTROLYTIC	22uF	20%	25V
C45	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C46	2344220008	ELECTROLYTIC	22uF	20%	25V

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
	(T-3555	CONT'D)			
R119	1650103507	METAL GLAZE CHIP	10K OHM	5%	1/10W
R120	1650103507	METAL GLAZE CHIP	10K OHM	5%	1/10W
R121	1650330508	METAL GLAZE CHIP	33 OHM	5%	1/10W
R122	1650330508	METAL GLAZE CHIP	33 OHM	5%	1/10W
R123	1650911505	METAL GLAZE CHIP	910 OHM	5%	1/8W
R124	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R125	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R126	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W
R127	1650562509	METAL GLAZE CHIP	5.6K OHM	5%	1/10W
R128	1650562509	METAL GLAZE CHIP	5.6K OHM	5%	1/10W
R129	1650103507	METAL GLAZE CHIP	10K OHM	5%	1/10W
R130	1650330508	METAL GLAZE CHIP	33 OHM	5%	1/10W
R131	1650330508	METAL GLAZE CHIP	33 OHM	5%	1/10W
R132	1650474502	METAL GLAZE CHIP	470K OHM	5%	1/10W
R151	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R152	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R153	1660751509	METAL GLAZE CHIP	750 OHM	5%	1/8W
R154	1660751509	METAL GLAZE CHIP	750 OHM	5%	1/8W
R155	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R156	1650821507	METAL GLAZE CHIP	820 OHM	5%	1/10W
R157	1650821507	METAL GLAZE CHIP	820 OHM	5%	1/10W
R158	1660681504	METAL GLAZE CHIP	680 OHM	5%	1/8W
R159	1660681504	METAL GLAZE CHIP	680 OHM	5%	1/8W
R160	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R161	1650471506	METAL GLAZE CHIP	470 OHM	5%	1/10W
R162	1650272500	METAL GLAZE CHIP	2.7K OHM	5%	1/10W
R163	1650562509	METAL GLAZE CHIP	5.6K OHM	5%	1/10W
R164	1650821507	METAL GLAZE CHIP	820 OHM	5%	1/10W
R165	1650000002	METAL GLAZE CHIP	0 OHM	5%	1/10W
R166	1660221500	METAL GLAZE CHIP	220 OHM	5%	1/8W
R167	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R168	1650680505	METAL GLAZE CHIP	680 OHM	5%	1/10W
R169	1660152507	METAL GLAZE CHIP	1.5K OHM	5%	1/8W
R170	1650182509	METAL GLAZE CHIP	1.8K OHM	5%	1/8W
R171	1660221500	METAL GLAZE CHIP	220 OHM	5%	1/8W
R172	1660102502	METAL GLAZE CHIP	1K OHM	5%	1/10W
R173	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R174	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R175	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R176	1660751509	METAL GLAZE CHIP	750 OHM	5%	1/8W
R177	1660751509	METAL GLAZE CHIP	750 OHM	5%	1/8W
R178	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R179	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W
R180	1650821507	METAL GLAZE CHIP	820 OHM	5%	1/10W
R181	1650821507	METAL GLAZE CHIP	820 OHM	5%	1/10W
R182	1660681504	METAL GLAZE CHIP	680 OHM	5%	1/8W
R183	1660681504	METAL GLAZE CHIP	680 OHM	5%	1/8W
R184	1650471506	METAL GLAZE CHIP	470 OHM	5%	1/10W
R185	1650471506	METAL GLAZE CHIP	470 OHM	5%	1/10W
R186	1650272500	METAL GLAZE CHIP	2.7K OHM	5%	1/10W
R187	1650562509	METAL GLAZE CHIP	5.6K OHM	5%	1/10W
R188	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R189	1660221500	METAL GLAZE CHIP	220 OHM	5%	1/8W
R190	1650680505	METAL GLAZE CHIP	680 OHM	5%	1/10W
R191	1650680505	METAL GLAZE CHIP	680 OHM	5%	1/10W
R192	1650181507	METAL GLAZE CHIP	1.8K OHM	5%	1/10W
R193	1650560505	METAL GLAZE CHIP	56 OHM	5%	1/10W
P194	1650560505	METAL GLAZE CHIP	56 OHM	5%	1/10W

No.	LDR PT No.	DESCRIPTION		LDR PT No.	DESCRIPTION	No.
	(T-3555			CONT'D)		
C47	2680103002	CERAMIC CHIP	0.01uF	3011162015	PNP CHIP	25A1162-0 or Y
C48	2344220008	ELECTROLYTIC	22uF	3031907004	NPN	25C1907
C49	2690103002	CERAMIC CHIP	0.01uF	3031907004	NPN CHIP	25C1907
C50	2090016006	CERAMIC	0.1uF	3031621006	NPN	25C1621-3 or 4
C51	2090016006	CERAMIC	0.1uF	3031907004	NPN	25C1907
C52	2681330605	CERAMIC CHIP	33pF	3031907004	NPN	25C1907
C53	2681330605	CERAMIC CHIP	33pF	303120006	NPN CHIP	25C3120
C54	2090016006	CERAMIC	0.1uF	3033120006	NPN CHIP	25C3120
C55	2090016006	CERAMIC	0.1uF	3033120006	NPN CHIP	25C3120
C56	2344220008	ELECTROLYTIC	22uF	3033120006	NPN CHIP	25C3120
C57	2680103002	CERAMIC CHIP	0.01uF	3011226006	PNP CHIP	25A1226-3 or 4
C58	2344220008	ELECTROLYTIC	22uF	3011226006	PNP CHIP	25A1226-3 or 4
C59	2680103002	CERAMIC CHIP	0.01uF	3011226006	PNP CHIP	25A1226-3 or 4
C60	2344220008	ELECTROLYTIC	22uF	3033120006	NPN CHIP	25C3120
C61	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C62	2344220008	ELECTROLYTIC	47uF	3032712005	NPN CHIP	25C2712-0 or Y
C63	2680103002	CERAMIC CHIP	0.01uF	3032712005	NPN CHIP	25C2712-0 or Y
C64	2344220008	ELECTROLYTIC	22uF	3011226006	PNP CHIP	25A1226-3 or 4
C65	2681220608	CERAMIC CHIP	22pF	3011226006	PNP CHIP	25A1226-3 or 4
C66	2681220608	CERAMIC CHIP	22pF	3033120006	NPN CHIP	25C3120
C67	2681220608	CERAMIC CHIP	22pF	3033120006	NPN CHIP	25C3120
C68	2090016006	CERAMIC	0.1uF	3033120006	NPN CHIP	25C3120
C69	2090016006	CERAMIC	0.1uF	3033120006	NPN CHIP	25C3120
C70	2681100204	CERAMIC CHIP	10pF	3011226006	PNP CHIP	25A1226-3 or 4
C71	2680103002	CERAMIC CHIP	0.01uF	3011226006	PNP CHIP	25A1226-3 or 4
C72	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C73	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C74	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C75	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C76	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C77	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C78	2344220008	ELECTROLYTIC	22uF	3033120006	NPN CHIP	25C3120
C79	2680103002	CERAMIC CHIP	0.01uF	3033120006	NPN CHIP	25C3120
C102	2681100204	CERAMIC CHIP	10pF	3113001002	DETECTOR DUAL CHIP	MA151A
C105	2680103002	CERAMIC CHIP	0.01uF	3113001002	DETECTOR DUAL CHIP	MA151A
C106	2680103002	CERAMIC CHIP	0.01uF	3113001002	DETECTOR DUAL CHIP	MA151A
C107	2344220008	ELECTROLYTIC	22uF	3113001002	DETECTOR DUAL CHIP	MA151A
C108	2680103002	CERAMIC CHIP	0.01uF	3113000000	DETECTOR DUAL CHIP	MA151A
	-VARIABLE CAPACITORS-					
VC1	2910016006	CERAMIC	2.8-10pF	3113000000	DETECTOR CHIP	MA151A
VC3	2910020003	CERAMIC	3.3-19pF	3113000000	DETECTOR CHIP	MA151A
	-TRANSISTORS-					
Q1	3031907004	NPN	25C1907	3113001002	DETECTOR DUAL CHIP	MA151A
Q2	3031907004	NPN	25C1907	3113001002	DETECTOR DUAL CHIP	MA151A
Q3	3033120006	NPN CHIP	25C3120	3113001002	DETECTOR DUAL CHIP	MA151A
Q4	3033120006	NPN CHIP	25C3120	3113001002	DETECTOR DUAL CHIP	MA151A
Q5	3011226006	PNP CHIP	25A1226-3 or 4	3113000000	DETECTOR CHIP	MA151A
Q6	3011226006	PNP CHIP	25A1226-3 or 4	3113001002	DETECTOR DUAL CHIP	MA151A
Q7	3011226006	PNP CHIP	25A1226-3 or 4	3113000000	DETECTOR CHIP	MA151A
Q8	3011226006	PNP CHIP	25A1226-3 or 4	3113001002	DETECTOR DUAL CHIP	MA151A
Q9	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q10	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q11	3031621006	NPN CHIP	25C1621-3 or 4	3113000000	DETECTOR CHIP	MA151A
Q12	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q13	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q14	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q15	3032712005	NPN CHIP	25C2712-0 or Y	3113000000	DETECTOR CHIP	MA151A
Q16	3011226006	PNP CHIP	25A1226-3 or 4	3113000000	DETECTOR CHIP	MA151A
Q17	3011226006	PNP CHIP	25A1226-3 or 4	3113000000	DETECTOR CHIP	MA151A
Q18	3032712005	NPN CHIP	25C2712-0 or Y			
	-INTEGRATED CIRCUITS-					
IC1	3420008009	CMOS	TC74HC08P	3420008009	CMOS	TC74HC08P
IC2	3420002007	CMOS	TC74HC02P	3420002007	CMOS	TC74HC02P
IC3	3420109005	CMOS	MC74HC109P	3420109005	CMOS	MC74HC109P
IC4	3420123119	CMOS	MC74HC123N	3420123119	CMOS	MC74HC123N
IC5	32660123991	TTL	74LS123	32660123991	TTL	74LS123
	-PC BOARD-					
				5903555028		T-35558

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
*** LBO-324/325 V. FINAL AMP T-3556 ***					
-RESISTORS-					
R1	1469109009	METAL FILM	91 OHM	1/6W	1/20W
R2	1469109009	METAL FILM	91 OHM	1/6W	1/20W
R3	1000101005	CARBON FILM	100 OHM	5%	1/20W
R4	1000101005	CARBON FILM	100 OHM	5%	1/20W
R5	1462001007	METAL FILM	2K OHM	1/6W	1/20W
R6	1462001007	METAL FILM	2K OHM	1/6W	1/20W
R7	1000151000	CARBON FILM	150 OHM	5%	1/20W
R8	1000391000	CARBON FILM	390 OHM	5%	1/20W
R9	1464300009	METAL FILM	430 OHM	1/6W	1/20W
R10	1000391000	CARBON FILM	390 OHM	5%	1/20W
R11	1000101005	CARBON FILM	100 OHM	5%	1/20W
R12	1000101005	CARBON FILM	100 OHM	5%	1/20W
R13	1000101005	CARBON FILM	100 OHM	5%	1/20W
R14	1000101005	CARBON FILM	100 OHM	5%	1/20W
R15	1311300008	METAL FILM	130 OHM	1/4W	1/20W
R16	1311300008	METAL FILM	130 OHM	1/4W	1/20W
R17	1462200003	METAL FILM	220 OHM	1/6W	1/20W
R18	1000231005	CARBON FILM	220 OHM	5%	1/20W
R19	1000270008	CARBON FILM	27 OHM	5%	1/6W
R20	1000270008	CARBON FILM	27 OHM	5%	1/6W
R21	1000470006	CARBON FILM	47 OHM	5%	1/6W
R22	1000470006	CARBON FILM	47 OHM	5%	1/6W
R23	1000470006	CARBON FILM	47 OHM	5%	1/6W
R24	1000470006	CARBON FILM	47 OHM	5%	1/6W
R25	1590681002	METAL FILM	680 OHM	5%	2W
R26	1590681002	METAL FILM	680 OHM	5%	2W
R27	1000152002	CARBON FILM	1.5K OHM	5%	1/6W
R28	1000333006	CARBON FILM	33K OHM	5%	1/6W
-VARIABLE RESISTOR-					
VR2	1711005127	CERMET	200 OHM	20%	1/3W
-CAPACITORS-					
C3	2010103005	CERAMIC	0.01uF	50V	50V
C5	2120470016	MICA	47pF	500V	500V
C9	2020102000	CERAMIC	1000pF	50V	50V
C10	2344220008	ELECTROLYTIC	22uF	25V	25V
C11	2344220008	ELECTROLYTIC	22uF	20%	20%
C12	2010103005	CERAMIC	0.01uF	50V	50V
C13	2330074002	ELECTROLYTIC	2.2uF	20%	20%
-VARIABLE CAPACITORS-					
VC1	2910027016	CERAMIC	1.5-5.5pF	250V	250V
VC2	2910050002	CERAMIC	4-40pF	250V	250V
VC3	2910050002	CERAMIC	4-40pF	250V	250V
-TRANSISTORS-					
Q1	3032671007	NPN	2SC2671		
Q2	3032671007	NPN	2SC2671		
Q3	3032671007	NPN	2SC2671		
Q4	3032671007	NPN	2SC2671		
-DIODES-					
D1	3140025009	VARICAP	8B329A		
D2	3140025009	VARICAP	8B329A		

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
-PC BOARD-					
	5903556039	T-3556C			
-MISCELLANEOUS-					
TH1	3550030001	THERMISTOR	SDT500		
*** LBO-324/325 V. MODE T-3557 ***					
-VARIABLE RESISTORS-					
VR1	1816006219	CARBON FILM	20K/20K OHM	20%	1/20W
VR2	1816006219	CARBON FILM	20K/20K OHM	20%	1/20W
-CAPACITORS-					
C1	2010103005	CERAMIC	0.01uF	50V	50V
C2	2010103005	CERAMIC	0.01uF	50V	50V
C3	2010103005	CERAMIC	0.01uF	50V	50V
C4	2010103005	CERAMIC	0.01uF	50V	50V
-SWITCH-					
S1	4000537009	PUSH	Q-537	"V MODE"	
-PC BOARD-					
	5903557022	T-3557B			
*** LBO-324/325 TRIG COUPLING T-3558 ***					
-RESISTORS-					
R1	1650822509	METAL GLAZE CHIP	8.2K OHM	5%	1/10W
R2	1650822509	METAL GLAZE CHIP	8.2K OHM	5%	1/10W
R3	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R4	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W
R5	1650220501	METAL GLAZE CHIP	22 OHM	5%	1/10W
R6	1650681507	METAL GLAZE CHIP	680 OHM	5%	1/10W
R7	1660242508	METAL GLAZE CHIP	2.4K OHM	5%	1/8W
R8	1660242508	METAL GLAZE CHIP	2.4K OHM	5%	1/8W
R11	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R12	1650471506	METAL GLAZE CHIP	470 OHM	5%	1/10W
R13	1650822509	METAL GLAZE CHIP	8.2K OHM	5%	1/10W
R14	1650682509	METAL GLAZE CHIP	6.8K OHM	5%	1/10W
R15	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R16	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W
R17	1650220501	METAL GLAZE CHIP	22 OHM	5%	1/10W
R18	1650681507	METAL GLAZE CHIP	680 OHM	5%	1/10W
R19	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R20	1650622501	METAL GLAZE CHIP	6.2K OHM	5%	1/10W
R21	1650272508	METAL GLAZE CHIP	2.7K OHM	5%	1/10W
R22	1650472508	METAL GLAZE CHIP	4.7K OHM	5%	1/10W
R23	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R24	1650472508	METAL GLAZE CHIP	4.7K OHM	5%	1/10W
R25	1650272508	METAL GLAZE CHIP	2.7K OHM	5%	1/10W
R26	1650622501	METAL GLAZE CHIP	6.2K OHM	5%	1/10W
R27	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W

No.	LDR PT No.	DESCRIPTION
(T-3558 CONT'D)		
-VARIABLE RESISTORS-		
VR1	1711005127	CERMET 200 OHM 20% 1/30
VR2	1911003211	20K OHM 20% 1/20W "LEVEL"
VR3	1711005053	CERMET 20K OHM 20% 1/30
-CAPACITORS-		
C1	2320024000	ELECTROLYTIC BP 10uF 20% 25V
C2	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C3	2344220008	ELECTROLYTIC 22uF 20% 25V
C6	2680231008	CERAMIC CHIP 220pF 10% 50V
C7	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C8	2344220008	ELECTROLYTIC 22uF 20% 25V
C9	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C10	2680231008	CERAMIC CHIP 220pF 10% 50V
C11	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C12	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C13	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C14	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C15	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C16	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C17	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C18	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C19	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C20	2344220008	ELECTROLYTIC 22uF 20% 25V
C21	2344220008	ELECTROLYTIC 22uF 20% 25V
C22	2344220008	ELECTROLYTIC 22uF 20% 25V
C23	2342470009	ELECTROLYTIC 47uF 20% 10V
C24	2342470009	ELECTROLYTIC 47uF 20% 10V
C25	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C26	2610104005	PLASTIC FILM 0.1uF 10% 63V
C27	2344479009	ELECTROLYTIC 4.7uF 20% 25V
C28	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C29	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C30	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C31	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C32	2140563017	PLASTIC FILM 0.056uF 10% 50V
C33	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C34	2344220008	ELECTROLYTIC 22uF 20% 25V
C35	2320024000	ELECTROLYTIC BP 10uF 20% 25V
-TRANSISTORS-		
Q1	3033120006	PNP CHIP 2SC3120
Q2	3033120006	PNP CHIP 2SC3120
Q3	3011226006	PNP CHIP 2SA1226-3 or 4
Q4	3011226006	PNP CHIP 2SA1226-3 or 4
Q5	3011226006	PNP CHIP 2SA1226-3 or 4
Q6	3011226006	PNP CHIP 2SA1226-3 or 4
Q7	3033120006	PNP CHIP 2SC3120
Q8	3033120006	PNP CHIP 2SC3120
Q9	3033120006	PNP CHIP 2SC3120
Q10	3033120006	PNP CHIP 2SC3120
Q11	3033120006	PNP CHIP 2SC3120
Q12	3033120006	PNP CHIP 2SC3120
Q13	3011226006	PNP CHIP 2SA1226-3 or 4
Q14	3033120006	PNP CHIP 2SC3120
Q15	3011226006	PNP CHIP 2SA1226-3 or 4

No.	LDR PT No.	DESCRIPTION
(T-3558 CONT'D)		
R29	1650471506	METAL GLAZE CHIP 470 OHM 5% 1/10W
R29	1650471506	METAL GLAZE CHIP 470 OHM 5% 1/10W
R30	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R31	1660561504	METAL GLAZE CHIP 560 OHM 5% 1/8W
R32	1660152507	METAL GLAZE CHIP 1.5K OHM 5% 1/8W
R33	1660152507	METAL GLAZE CHIP 1.5K OHM 5% 1/8W
R34	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R35	1650221503	METAL GLAZE CHIP 220 OHM 5% 1/10W
R36	1650331500	METAL GLAZE CHIP 330 OHM 5% 1/10W
R37	1650821507	METAL GLAZE CHIP 820 OHM 5% 1/10W
R38	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R39	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R40	1650391508	METAL GLAZE CHIP 390 OHM 5% 1/10W
R41	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R42	1650512504	METAL GLAZE CHIP 5.1K OHM 5% 1/10W
R43	1650202509	METAL GLAZE CHIP 2K OHM 5% 1/10W
R44	1650331500	METAL GLAZE CHIP 330 OHM 5% 1/10W
R45	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R46	1650101503	METAL GLAZE CHIP 100 OHM 5% 1/10W
R47	1000821009	CARBON FILM 820 OHM 5% 1/6W
R48	1650331500	METAL GLAZE CHIP 330 OHM 5% 1/10W
R49	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R50	1650561507	METAL GLAZE CHIP 560 OHM 5% 1/10W
R51	1650104509	METAL GLAZE CHIP 100K OHM 5% 1/10W
R52	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R53	1650104509	METAL GLAZE CHIP 100K OHM 5% 1/10W
R54	1650475504	METAL GLAZE CHIP 4.7K OHM 5% 1/10W
R55	1650104509	METAL GLAZE CHIP 100K OHM 5% 1/10W
R56	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R57	1650474502	METAL GLAZE CHIP 470K OHM 5% 1/10W
R58	1650104509	METAL GLAZE CHIP 100K OHM 5% 1/10W
R59	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R60	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R61	1650682509	METAL GLAZE CHIP 6.8K OHM 5% 1/10W
R62	1650682509	METAL GLAZE CHIP 6.8K OHM 5% 1/10W
R63	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R64	1650223507	METAL GLAZE CHIP 22K OHM 5% 1/10W
R65	1650181507	METAL GLAZE CHIP 180 OHM 5% 1/10W
R66	1650104509	METAL GLAZE CHIP 100K OHM 5% 1/10W
R67	1650222505	METAL GLAZE CHIP 2.2K OHM 5% 1/10W
R68	1650223507	METAL GLAZE CHIP 22K OHM 5% 1/10W
R69	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R70	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R71	1660822506	METAL GLAZE CHIP 8.2K OHM 5% 1/8W
R72	1650220501	METAL GLAZE CHIP 22 OHM 5% 1/10W
R73	1650220501	METAL GLAZE CHIP 22 OHM 5% 1/10W
R74	1650562509	METAL GLAZE CHIP 5.6K OHM 5% 1/10W
R75	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R76	1650272500	METAL GLAZE CHIP 2.7K OHM 5% 1/10W
R77	1650374504	METAL GLAZE CHIP 270K OHM 5% 1/10W
R78	1650273502	METAL GLAZE CHIP 27K OHM 5% 1/10W
R79	1650333504	METAL GLAZE CHIP 33K OHM 5% 1/10W

No.	LDR PT No.	DESCRIPTION	LDR PT No.	DESCRIPTION	No.
	(T-3558		CONT'D)		
016	3032712005	NPN CHIP	2SC2712-0 or Y	METAL GLAZE CHIP	100 OHM
017	3011162015	PNP CHIP	2SA1162-0 or Y	METAL GLAZE CHIP	4.7K OHM
018	3011162015	PNP CHIP	2SA1162-0 or Y	METAL GLAZE CHIP	1.8K OHM
019	3032712005	NPN CHIP	2SC2712-0 or Y	METAL GLAZE CHIP	3.3K OHM
020	3011162015	PNP CHIP	2SA1162-0 or Y	METAL GLAZE CHIP	220 OHM
021	3032712014	NPN CHIP	2SC2712-G	METAL GLAZE CHIP	75 OHM
	-DIODES-			METAL GLAZE CHIP	47 OHM
01	3113004008	DETECTOR CHIP	MA151K	METAL GLAZE CHIP	2.4K OHM
02	3113002004	DETECTOR DUAL CHIP	MA151WK	METAL GLAZE CHIP	200 OHM
03	3113004008	DETECTOR CHIP	MA151K	METAL GLAZE CHIP	2.4K OHM
04	3113004008	DETECTOR CHIP	MA151K	METAL GLAZE CHIP	47 OHM
05	3130031007	LED	TLG-226	METAL GLAZE CHIP	120 OHM
06	3113004008	DETECTOR CHIP	MA151K	METAL GLAZE CHIP	680 OHM
	-INTEGRATED CIRCUITS-			METAL GLAZE CHIP	180 OHM
IC1	3310011021	CMOS	TC4011BP	METAL GLAZE CHIP	1.5K OHM
IC2	3213290003	COMPARATOR	CA3290E	METAL GLAZE CHIP	47 OHM
IC3	3290020002	TTL	74F20 PC	METAL GLAZE CHIP	6.2K OHM
	-COIL-			METAL GLAZE CHIP	10K OHM
LI	3970102006	COIL	1mH	METAL GLAZE CHIP	6.8K OHM
	-SWITCH-			METAL GLAZE CHIP	100 OHM
SS	4000536016	PUSH	Q-536A "TRIG COUPLING"	METAL GLAZE CHIP	1M OHM
	-PC BOARD-			METAL GLAZE CHIP	330K OHM
5	5903558024		T-3558	METAL GLAZE CHIP	5.6K OHM
	*** LBO-324/325	TRIG SOURCE	T-3559 ***	METAL GLAZE CHIP	2.2K OHM
	-RESISTORS-			METAL GLAZE CHIP	1K OHM
R1	1650750500	METAL GLAZE CHIP	75 OHM	METAL GLAZE CHIP	5.6K OHM
R2	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	2.4K OHM
R3	1660242508	METAL GLAZE CHIP	2.4K OHM	METAL GLAZE CHIP	270 OHM
R4	1650201507	METAL GLAZE CHIP	200 OHM	METAL GLAZE CHIP	820 OHM
R5	1660242508	METAL GLAZE CHIP	2.4K OHM	METAL GLAZE CHIP	180 OHM
R6	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	1.5K OHM
R7	1650121509	METAL GLAZE CHIP	120 OHM	METAL GLAZE CHIP	47 OHM
R8	1650681507	METAL GLAZE CHIP	680 OHM	METAL GLAZE CHIP	6.2K OHM
R11	1650681507	METAL GLAZE CHIP	680 OHM	METAL GLAZE CHIP	10K OHM
R12	1650181507	METAL GLAZE CHIP	180 OHM	METAL GLAZE CHIP	6.8K OHM
R13	1665100306	METAL GLAZE CHIP	510 OHM	METAL GLAZE CHIP	3.9K OHM
R14	1650152500	METAL GLAZE CHIP	1.5K OHM	METAL GLAZE CHIP	10K OHM
R15	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	6.8K OHM
R16	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	3.9K OHM
R17	1650622501	METAL GLAZE CHIP	6.2K OHM	METAL GLAZE CHIP	100K OHM
R18	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	100K OHM
R19	1650272500	METAL GLAZE CHIP	2.7K OHM	METAL GLAZE CHIP	100K OHM
R20	1650562509	METAL GLAZE CHIP	5.6K OHM	METAL GLAZE CHIP	100K OHM
R21	1650331500	METAL GLAZE CHIP	330 OHM	METAL GLAZE CHIP	100K OHM
R22	1650101503	METAL GLAZE CHIP	100 OHM	METAL GLAZE CHIP	100K OHM
R23	1650272500	METAL GLAZE CHIP	2.7K OHM	METAL GLAZE CHIP	100K OHM
R24	1650103507	METAL GLAZE CHIP	10K OHM	METAL GLAZE CHIP	100K OHM
R25	1650622501	METAL GLAZE CHIP	6.2K OHM	METAL GLAZE CHIP	6.8 OHM

No.	LDR PT No.	DESCRIPTION	LDR PT No.	DESCRIPTION	No.
	(T-3559		CONT'D)		
R26	1650101503	METAL GLAZE CHIP	100 OHM	METAL GLAZE CHIP	5K
R27	1650472508	METAL GLAZE CHIP	4.7K OHM	METAL GLAZE CHIP	5K
R28	1650182509	METAL GLAZE CHIP	1.8K OHM	METAL GLAZE CHIP	5K
R29	1660332509	METAL GLAZE CHIP	3.3K OHM	METAL GLAZE CHIP	1/8W
R30	1650231503	METAL GLAZE CHIP	220 OHM	METAL GLAZE CHIP	5K
R31	1650750500	METAL GLAZE CHIP	75 OHM	METAL GLAZE CHIP	5K
R32	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R33	1660242508	METAL GLAZE CHIP	2.4K OHM	METAL GLAZE CHIP	1/8W
R34	1650201507	METAL GLAZE CHIP	200 OHM	METAL GLAZE CHIP	5K
R35	1660242508	METAL GLAZE CHIP	2.4K OHM	METAL GLAZE CHIP	1/8W
R36	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R39	1650121509	METAL GLAZE CHIP	120 OHM	METAL GLAZE CHIP	5K
R40	1650681507	METAL GLAZE CHIP	680 OHM	METAL GLAZE CHIP	5K
R41	1650681507	METAL GLAZE CHIP	680 OHM	METAL GLAZE CHIP	5K
R42	1650181507	METAL GLAZE CHIP	180 OHM	METAL GLAZE CHIP	5K
R43	1650152500	METAL GLAZE CHIP	1.5K OHM	METAL GLAZE CHIP	5K
R44	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R45	1650622501	METAL GLAZE CHIP	6.2K OHM	METAL GLAZE CHIP	5K
R46	1650103507	METAL GLAZE CHIP	10K OHM	METAL GLAZE CHIP	5K
R47	1650682509	METAL GLAZE CHIP	6.8K OHM	METAL GLAZE CHIP	5K
R48	1650103507	METAL GLAZE CHIP	10K OHM	METAL GLAZE CHIP	5K
R49	1650682509	METAL GLAZE CHIP	6.8K OHM	METAL GLAZE CHIP	5K
R50	1650101503	METAL GLAZE CHIP	100 OHM	METAL GLAZE CHIP	5K
R51	1020105007	CARBON FILM	1M OHM	METAL GLAZE CHIP	5K
R52	1020334002	CARBON FILM	330K OHM	METAL GLAZE CHIP	5K
R53	1650562509	METAL GLAZE CHIP	5.6K OHM	METAL GLAZE CHIP	1/2W
R54	1650222505	METAL GLAZE CHIP	2.2K OHM	METAL GLAZE CHIP	5K
R55	1650102505	METAL GLAZE CHIP	1K OHM	METAL GLAZE CHIP	5K
R56	1650241509	METAL GLAZE CHIP	240 OHM	METAL GLAZE CHIP	5K
R57	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R58	1650562509	METAL GLAZE CHIP	5.6K OHM	METAL GLAZE CHIP	5K
R59	1650472508	METAL GLAZE CHIP	4.7K OHM	METAL GLAZE CHIP	5K
R60	1650391508	METAL GLAZE CHIP	390 OHM	METAL GLAZE CHIP	5K
R61	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R62	1660242508	METAL GLAZE CHIP	2.4K OHM	METAL GLAZE CHIP	1/8W
R64	1650271508	METAL GLAZE CHIP	270 OHM	METAL GLAZE CHIP	5K
R65	1650821507	METAL GLAZE CHIP	820 OHM	METAL GLAZE CHIP	5K
R66	1650181507	METAL GLAZE CHIP	180 OHM	METAL GLAZE CHIP	5K
R67	1650152500	METAL GLAZE CHIP	1.5K OHM	METAL GLAZE CHIP	5K
R68	1650470504	METAL GLAZE CHIP	47 OHM	METAL GLAZE CHIP	5K
R69	1650622501	METAL GLAZE CHIP	6.2K OHM	METAL GLAZE CHIP	5K
R70	1650103507	METAL GLAZE CHIP	10K OHM	METAL GLAZE CHIP	5K
R71	1650682509	METAL GLAZE CHIP	6.8K OHM	METAL GLAZE CHIP	5K
R72	1650392500	METAL GLAZE CHIP	3.9K OHM	METAL GLAZE CHIP	5K
R73	1650103507	METAL GLAZE CHIP	10K OHM	METAL GLAZE CHIP	5K
R74	1650682509	METAL GLAZE CHIP	6.8K OHM	METAL GLAZE CHIP	5K
R75	1650392500	METAL GLAZE CHIP	3.9K OHM	METAL GLAZE CHIP	5K
R76	1650104509	METAL GLAZE CHIP	100K OHM	METAL GLAZE CHIP	5K
R77	1650104509	METAL GLAZE CHIP	100K OHM	METAL GLAZE CHIP	5K
R78	1650104509	METAL GLAZE CHIP	100K OHM	METAL GLAZE CHIP	5K
R79	1650104509	METAL GLAZE CHIP	100K OHM	METAL GLAZE CHIP	5K
R80	1650689503	METAL GLAZE CHIP	6.8 OHM	METAL GLAZE CHIP	5K

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
(T-3559 CONT'D)					
-VARIABLE RESISTORS-					
VR1	1711005071	CERMET	Q17	3050160004	FET PAIR CHIP
VR2	1711005071	CERMET	Q18	3032712005	NPN CHIP
VR3	1711005071	CERMET	Q19	3033120006	NPN CHIP
			Q20	3011162006	PNP CHIP
			Q21	3011226006	PNP CHIP
			Q22	3032712005	NPN CHIP
			Q23	3032712005	NPN CHIP
-CAPACITORS-					
C1	2680103002	CERAMIC CHIP	D1	3113004008	DETECTOR CHIP
C2	2680103002	CERAMIC CHIP	D2	3113001002	DETECTOR DUAL CHIP
C3	2680103002	CERAMIC CHIP	D3	3113004008	DETECTOR CHIP
C4	2343220002	ELECTROLYTIC	D4	3113004008	DETECTOR CHIP
C5	2140123019	PLASTIC FILM	D5	3113003006	DETECTOR DUAL CHIP
C6	2680103002	CERAMIC CHIP	D6	3113001002	DETECTOR DUAL CHIP
C7	2680103002	CERAMIC CHIP	D7	3113004008	DETECTOR CHIP
C8	2680103002	CERAMIC CHIP	D8	3113004008	DETECTOR CHIP
C9	2680103002	CERAMIC CHIP	D9	3113004008	DETECTOR CHIP
C10	2681820602	CERAMIC CHIP	D10	3113001002	DETECTOR DUAL CHIP
C11	2680103002	CERAMIC CHIP	D11	3113001002	DETECTOR DUAL CHIP
C12	2680103002	CERAMIC CHIP			
C13	2680103002	CERAMIC CHIP			
C14	2680103002	CERAMIC CHIP			
C15	2680103002	CERAMIC CHIP			
C16	2680103002	CERAMIC CHIP			
C17	2343220002	ELECTROLYTIC			
C18	2343220002	ELECTROLYTIC			
C19	2343220002	ELECTROLYTIC			
C20	2344220008	ELECTROLYTIC			
C21	2344220008	ELECTROLYTIC			
C22	2320032009	ELECTROLYTIC BP			
C23	2610104005	PLASTIC FILM			
C24	2180103020	PLASTIC FILM			
C25	2344220008	ELECTROLYTIC			
C26	2230471105	ELECTROLYTIC			
C27	2680103002	CERAMIC CHIP			
C28	2680103002	CERAMIC CHIP			
C29	2680103002	CERAMIC CHIP			
C30	2680103002	CERAMIC CHIP			
C31	2680103002	CERAMIC CHIP			
C32	2342470009	ELECTROLYTIC			
C33	2680103002	CERAMIC CHIP			
C34	2680103002	CERAMIC CHIP			
C35	2342470009	ELECTROLYTIC			
C36	2680103002	CERAMIC CHIP			
C37	2680103002	CERAMIC CHIP			
C38	2680103002	CERAMIC CHIP			
C39	2680103002	CERAMIC CHIP			
-TRANSISTORS-					
Q1	3033120006	NPN CHIP	R1	1650104509	METAL GLAZE CHIP
Q2	3033120006	NPN CHIP	R2	1650104509	METAL GLAZE CHIP
Q3	3011226006	PNP CHIP	R3	1650823501	METAL GLAZE CHIP
Q4	3011162015	PNP CHIP	R4	1650103507	METAL GLAZE CHIP
Q5	3011226006	PNP CHIP	R5	1650391508	METAL GLAZE CHIP
Q6	3032712005	NPN CHIP	R6	1650103507	METAL GLAZE CHIP
Q7	3033120006	NPN CHIP	R7	1650182509	METAL GLAZE CHIP
Q8	3032712005	NPN CHIP	R8	1650123503	METAL GLAZE CHIP
Q9	3032712005	NPN CHIP	R9	1650102505	METAL GLAZE CHIP
Q10	3033120006	NPN CHIP	R10	1650222505	METAL GLAZE CHIP
Q11	3033120006	NPN CHIP	R11	1650223507	METAL GLAZE CHIP
Q12	3011226006	PNP CHIP	R12	1650471506	METAL GLAZE CHIP
Q13	3031621006	NPN CHIP	R13	1650152500	METAL GLAZE CHIP
Q14	3031621006	NPN CHIP	R14	1650472508	METAL GLAZE CHIP
Q15	3032712005	NPN CHIP	R15	1650273502	METAL GLAZE CHIP
Q16	3032712005	NPN CHIP	R16	1650331500	METAL GLAZE CHIP
			R17	1650470504	METAL GLAZE CHIP
			R18	1650331500	METAL GLAZE CHIP
			R19	1650471506	METAL GLAZE CHIP
			R20	1650511502	METAL GLAZE CHIP
			R21	1650470504	METAL GLAZE CHIP

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
(T-3560	CONT'D)	PLASTIC FILM	(T-3560	CONT'D)	
C48	2140823017	ELECTROLYTIC	-SWITCH-	4000543004	ROTARY
C49	2430100005		S7		Q-543 "A.B TIME/DIV"
-VARIABLE CAPACITOR-			-PC BOARD-	5903560021	T-3560B
VC1	2910056004	CERAMIC			
-TRANSISTORS-					
Q1	3032712005	NPN CHIP			
Q2	3031621006	NPN CHIP			
Q3	3010811001	PNP CHIP			
Q4	3031621006	NPN CHIP			
Q5	3090026008	FET DUAL			
Q6	3033120006	NPN CHIP			
Q7	3011226006	PNP CHIP			
Q8	3031621006	NPN CHIP			
Q9	3090026008	FET DUAL			
Q10	3031621006	NPN CHIP			
Q11	3010811001	PNP CHIP			
Q12	3033120006	NPN CHIP			
Q13	3011226006	PNP CHIP			
Q14	3031621006	NPN CHIP			
Q15	3031226006	PNP CHIP			
Q16	3011226006	PNP CHIP			
Q17	3011226006	PNP CHIP			
Q18	3033120006	NPN CHIP			
Q19	301162015	PNP CHIP			
Q20	3033120006	NPN CHIP			
Q21	3033120006	NPN CHIP			
Q22	3033120006	NPN CHIP			
-DIODES-					
D1	3110070003	SCHOTTKY DETECTOR DUAL CHIP			
D2	3113003006	DETECTOR CHIP			
D3	3113004008	DETECTOR CHIP			
D4	3123001009	ZENER CHIP			
D5	3110070003	SCHOTTKY DETECTOR DUAL CHIP			
D6	3113003006	DETECTOR CHIP			
D7	3113004008	DETECTOR CHIP			
D8	3113004008	DETECTOR CHIP			
D9	3113002004	DETECTOR DUAL CHIP			
D10	3113004008	DETECTOR CHIP			
D11	3113004008	DETECTOR CHIP			
D12	3123000007	ZENER CHIP			
-INTEGRATED CIRCUITS-					
IC1	3290002000	TTL			
IC2	3290074005	TTL			
IC3	3420123119	CMOS			
IC4	3420000003	CMOS			
IC5	3220051004	OP AMP			
IC6	3290074005	TTL			
IC7	3420002007	CMOS			
IC8	3220051004	OP AMP			

No.	LDR PT No.	DESCRIPTION	No.	LDR PT No.	DESCRIPTION
(T-3560	CONT'D)	PLASTIC FILM	(T-3560	CONT'D)	
C48	2140823017	ELECTROLYTIC	-SWITCH-	4000543004	ROTARY
C49	2430100005		S7		Q-543 "A.B TIME/DIV"
-VARIABLE CAPACITOR-			-PC BOARD-	5903560021	T-3560B
VC1	2910056004	CERAMIC			
-RESISTORS-					
R1	1655101308	METAL GLAZE CHIP			
R2	1665101308	METAL GLAZE CHIP			
R3	1650152500	METAL GLAZE CHIP			
R4	1650332500	METAL GLAZE CHIP			
R5	1650104509	METAL GLAZE CHIP			
R6	1650104509	METAL GLAZE CHIP			
R7	1650104509	METAL GLAZE CHIP			
R8	1650562509	METAL GLAZE CHIP			
R9	1662701304	METAL GLAZE CHIP			
R10	1659470504	METAL GLAZE CHIP			
R11	1653301307	METAL GLAZE CHIP			
R12	1650470504	METAL GLAZE CHIP			
R13	1662701304	METAL GLAZE CHIP			
R14	1661501001	METAL FILM			
R15	1661501001	METAL FILM			
R16	1661801302	METAL GLAZE CHIP			
R17	1650000002	METAL GLAZE CHIP			
R18	1661500308	METAL GLAZE CHIP			
R19	1650000002	METAL GLAZE CHIP			
R20	1661001308	METAL GLAZE CHIP			
R21	1661201308	METAL GLAZE CHIP			
R22	1650101503	METAL GLAZE CHIP			
R23	1663301304	METAL GLAZE CHIP			
R24	1650681507	METAL GLAZE CHIP			
R25	1650681507	METAL GLAZE CHIP			
R26	1650100501	METAL GLAZE CHIP			
R27	1650821507	METAL GLAZE CHIP			
R28	1650821507	METAL GLAZE CHIP			
R29	1650821507	METAL GLAZE CHIP			
R30	1650100501	METAL GLAZE CHIP			
R31	1650102505	METAL GLAZE CHIP			
R32	1668201303	METAL GLAZE CHIP			
R33	1650221503	METAL GLAZE CHIP			
R34	1660152507	METAL FILM			
R35	1660183009	METAL GLAZE CHIP			
R36	1660152507	METAL FILM			
R37	1660152507	METAL FILM			
R38	1660152507	METAL FILM			
R39	1650470504	METAL GLAZE CHIP			
R40	1650123503	METAL GLAZE CHIP			
R41	1661501300	METAL GLAZE CHIP			
R42	1650123503	METAL GLAZE CHIP			
R43	1650470504	METAL GLAZE CHIP			
R44	1662001306	METAL GLAZE CHIP			
R45	1662001306	METAL GLAZE CHIP			
R46	1650151508	METAL GLAZE CHIP			

No.	LDR PT No.	DESCRIPTION
(T-3561)	CONT'D	
Q6	3011226006	PNP CHIP 2SA1226-3 or 4
Q7	3011162006	PNP CHIP 2SA1162-G
Q8	3011162006	PNP CHIP 2SA1162-G
Q9	3011162006	PNP CHIP 2SA1162-G
Q10	3011162006	PNP CHIP 2SA1162-G
Q11	3033120006	NPN CHIP 2SC3120
Q12	3011209006	PNP 2SA1209-S
Q13	3032911001	NPN 2SC2911-S
Q14	3032911001	NPN 2SC2911-S
Q15	3011226006	PNP CHIP 2SA1226-3 or 4
Q16	3011209006	PNP 2SA1209-S

No.	LDR PT No.	DESCRIPTION
-10DES-		
D1	3113004008	DETECTOR CHIP MA151K
D2	311006004	DETECTOR 1S1588
D3	311006004	DETECTOR 1S1588
D4	3113002004	DETECTOR DUAL CHIP MA151MK
D5	3113002004	DETECTOR DUAL CHIP MA151MK
-INTEGRATED CIRCUIT-		
IC1	3310053009	CMOS TC4053BP
-PC BOARD-		
	5903561023	T-3561B
-MISCELLANEOUS-		
TH1	3550025008	THERMISTOR D-61A

No.	LDR PT No.	DESCRIPTION
*** LBO-324/325 V.I.N.SUB CH-1 T-3562 ***		
-RESISTORS-		
R1	1660000009	METAL GLAZE CHIP 0 OHM 1/8W
R3	1660000009	METAL GLAZE CHIP 0 OHM 1/8W
R4	1660000009	METAL GLAZE CHIP 0 OHM 1/8W
R9	1660470501	METAL GLAZE CHIP 47 OHM 5% 1/10W
R10	1650222505	METAL GLAZE CHIP 2.2K OHM 5% 1/10W
R16	1650222505	METAL GLAZE CHIP 2.2K OHM 5% 1/10W
R17	1650222505	METAL GLAZE CHIP 2.2K OHM 5% 1/10W
R18	1650102505	METAL GLAZE CHIP 1K OHM 5% 1/10W
R19	1650100501	METAL GLAZE CHIP 10 OHM 5% 1/10W
R20	1650241509	METAL GLAZE CHIP 240 OHM 5% 1/10W
R21	1650101503	METAL GLAZE CHIP 100 OHM 5% 1/10W
R22	1663301304	METAL GLAZE CHIP 3.3K OHM 1% 1/8W
R23	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R24	1650123503	METAL GLAZE CHIP 12K OHM 5% 1/10W
R25	1650102505	METAL GLAZE CHIP 1K OHM 5% 1/10W
R27	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R28	1650680505	METAL GLAZE CHIP 68 OHM 5% 1/10W
R29	1650680505	METAL GLAZE CHIP 68 OHM 5% 1/10W
R30	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R31	1650331500	METAL GLAZE CHIP 330 OHM 5% 1/10W
R33	1666801302	METAL GLAZE CHIP 6.8K OHM 1% 1/8W
R35	1650124505	METAL GLAZE CHIP 120K OHM 5% 1/10W
R61	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W

No.	LDR PT No.	DESCRIPTION
(T-3561)	CONT'D	
R47	1580183009	METAL FILM 1W
R49	1650681507	METAL GLAZE CHIP 680 OHM 5% 1/10W
R50	1660154501	METAL GLAZE CHIP 150K OHM 5% 1/8W
R51	1668201303	METAL GLAZE CHIP 8.2K OHM 1% 1/8W
R52	1650102505	METAL GLAZE CHIP 1K OHM 5% 1/10W
R53	1650101503	METAL GLAZE CHIP 100 OHM 5% 1/10W
R54	1650101503	METAL GLAZE CHIP 100 OHM 5% 1/10W
R55	1650479502	METAL GLAZE CHIP 4.7 OHM 5% 1/10W
R56	1650470504	METAL GLAZE CHIP 47 OHM 5% 1/10W
R57	1650230501	METAL GLAZE CHIP 22 OHM 5% 1/10W

No.	LDR PT No.	DESCRIPTION
-VARIABLE RESISTORS-		
VP1	1711005026	1K OHM 20% 1/3W
VP2	1711005044	10K OHM 20% 1/3W
VP3	1711005026	1K OHM 20% 1/3W
VP4	1711005080	2K OHM 20% 1/3W
VP5	1711005127	200 OHM 20% 1/3W
VP6	1711005008	300 OHM 20% 1/3W
-CAPACITORS-		
C1	2344220008	ELECTROLYTIC 22uF 25V
C2	2342101008	ELECTROLYTIC 100uF 20% 25V
C3	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C6	2344220008	ELECTROLYTIC 22uF 25V
C7	2681100204	CERAMIC CHIP 10pF 10% 50V
C8	2680221008	CERAMIC CHIP 220pF 10% 50V
C9	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C10	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C11	2020102000	CERAMIC 1000pF 500V
C12	2020103002	CERAMIC 0.01uF 500V
C13	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C14	2195004007	COMPOSITION 0.75pF 10% 500V
C15	2344220008	ELECTROLYTIC 22uF 25V
C16	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C17	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C18	2195004007	COMPOSITION 0.75pF 10% 500V
C19	2020103002	CERAMIC 0.01uF 500V
C20	2020102000	CERAMIC 1000pF 500V
C21	2020102000	CERAMIC 1000pF 500V
C22	2330074002	ELECTROLYTIC 2.2uF 20% 25V
C23	2344220008	ELECTROLYTIC 22uF 20% 25V
C24	2344220008	ELECTROLYTIC 22uF 20% 25V
C25	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C26	2681220608	CERAMIC CHIP 22pF 10% 50V
C27	2344220008	ELECTROLYTIC 22uF 20% 25V
C28	2344220008	ELECTROLYTIC 22uF 20% 25V

No.	LDR PT No.	DESCRIPTION
-VARIABLE CAPACITORS-		
VC1	2910027016	CERAMIC 1.5-5.5pF 250V
VC2	2910027016	CERAMIC 1.5-5.5pF 250V
-TRANSISTORS-		
O1	3033120006	NPN CHIP 2SC3120
O2	3033120006	NPN CHIP 2SC3120
O3	3011226006	PNP CHIP 2SA1226-3 or 4
O4	3011226006	PNP CHIP 2SA1226-3 or 4
O5	3011226006	PNP CHIP 2SA1226-3 or 4

No.	LDR PT No.	DESCRIPTION			
<T-3562 CONT'D>					
R133	1666801302	METAL GLAZE CHIP	6.8K OHM	1%	1/8W
R135	1650124505	METAL GLAZE CHIP	120K OHM	5%	1/10W
R161	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
-CAPACITORS-					
C104	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C105	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C106	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C107	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C124	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C130	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C131	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C132	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C133	2680103002	CERAMIC CHIP	0.01uF	10%	50V
-TRANSISTORS-					
Q104	3033098009	NPN CHIP	25C3098		
Q106	3033098009	NPN CHIP	25C3098		
Q107	3033120006	NPN CHIP	25A1245		
Q108	3011245000	PNP CHIP	25A1245		
Q109	3033120006	NPN CHIP	25C3120		
Q110	3011245000	PNP CHIP	25A1245		
Q111	3033120006	NPN CHIP	25C3120		
-DIODES-					
D103	3113003006	DETECTOR DUAL CHIP	MA157		
D104	3113000000	DETECTOR CHIP	MA151A		
D105	3113003006	DETECTOR DUAL CHIP	MA157		
-INTEGRATED CIRCUIT-					
IC101	3220051004	OP AMP	TL 071 CP		
-PC BOARD-					
	5903562025		T-3562B		
*** LBO-324/325 V. IN. SUB CH-2 T-3562 ***					
-RESISTORS-					
R101	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R103	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R104	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R109	1660470501	METAL GLAZE CHIP	47 OHM	5%	1/10W
R110	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R116	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R117	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R118	1650102505	METAL GLAZE CHIP	1K OHM	5%	1/10W
R119	1650100501	METAL GLAZE CHIP	10 OHM	5%	1/10W
R120	1650241509	METAL GLAZE CHIP	240 OHM	5%	1/10W
R121	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R122	1663301304	METAL GLAZE CHIP	3.3K OHM	1%	1/8W
R123	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R124	1650123503	METAL GLAZE CHIP	12K OHM	5%	1/10W
R125	1650102505	METAL GLAZE CHIP	1K OHM	5%	1/10W
R127	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R128	1650680505	METAL GLAZE CHIP	68 OHM	5%	1/10W
R129	1650680505	METAL GLAZE CHIP	68 OHM	5%	1/10W
R130	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R131	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W

No.	LDR PT No.	DESCRIPTION			
<T-3562 CONT'D>					
-CAPACITORS-					
C4	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C5	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C6	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C7	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C24	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C30	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C31	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C32	2680103002	CERAMIC CHIP	0.01uF	10%	50V
C33	2680103002	CERAMIC CHIP	0.01uF	10%	50V
-TRANSISTORS-					
Q4	3033098009	NPN CHIP	25C3098		
Q6	3033098009	NPN CHIP	25C3098		
Q7	3033120006	NPN CHIP	25C3120		
Q8	3011245000	PNP CHIP	25A1245		
Q9	3033120006	NPN CHIP	25C3120		
Q10	3011245000	PNP CHIP	25A1245		
Q11	3033120006	NPN CHIP	25C3120		
-DIODES-					
D3	3113003006	DETECTOR DUAL CHIP	MA157		
D4	3113000000	DETECTOR CHIP	MA151A		
D5	3113003006	DETECTOR DUAL CHIP	MA157		
-INTEGRATED CIRCUIT-					
IC1	3220051004	OP AMP	TL 071 CP		
-PC BOARD-					
	5903562025		T-3562B		
*** LBO-324/325 V. IN. SUB CH-2 T-3562 ***					
-RESISTORS-					
R101	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R103	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R104	1660000009	METAL GLAZE CHIP	0 OHM		1/8W
R109	1660470501	METAL GLAZE CHIP	47 OHM	5%	1/10W
R110	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R116	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R117	1650222505	METAL GLAZE CHIP	2.2K OHM	5%	1/10W
R118	1650102505	METAL GLAZE CHIP	1K OHM	5%	1/10W
R119	1650100501	METAL GLAZE CHIP	10 OHM	5%	1/10W
R120	1650241509	METAL GLAZE CHIP	240 OHM	5%	1/10W
R121	1650101503	METAL GLAZE CHIP	100 OHM	5%	1/10W
R122	1663301304	METAL GLAZE CHIP	3.3K OHM	1%	1/8W
R123	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R124	1650123503	METAL GLAZE CHIP	12K OHM	5%	1/10W
R125	1650102505	METAL GLAZE CHIP	1K OHM	5%	1/10W
R127	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R128	1650680505	METAL GLAZE CHIP	68 OHM	5%	1/10W
R129	1650680505	METAL GLAZE CHIP	68 OHM	5%	1/10W
R130	1650470504	METAL GLAZE CHIP	47 OHM	5%	1/10W
R131	1650331500	METAL GLAZE CHIP	330 OHM	5%	1/10W

No.	LDR PT No.	DESCRIPTION	LDR PT No.	DESCRIPTION
(T-3564 CONT'D)				
R8	1650822509	METAL GLAZE CHIP	8.2K OHM	5% 1/10W
P9	1650224509	METAL GLAZE CHIP	220K OHM	5% 1/10W
R10	1665601308	METAL GLAZE CHIP	5.6K OHM	1% 1/8W
P11	1663900306	METAL GLAZE CHIP	390 OHM	1% 1/8W
R12	1650103507	METAL GLAZE CHIP	10K OHM	5% 1/10W
R15	1660472505	METAL GLAZE CHIP	4.7K OHM	5% 1/8W
-VARIABLE RESISTORS-				
VR1	1913001503	CARBON FILM	5K OHM 20%	1/20W "FOCUS"
VR2	1913001503	CARBON FILM	5K OHM 20%	1/20W "IRTEN"
VR4	1711005017	CERMET	500 OHM 20%	1/3W
-CAPACITORS-				
C1	2342470009	ELECTROLYTIC	47uF	20% 10V
C2	2342470009	ELECTROLYTIC	47uF	20% 10V
C3	2192021009	PLASTIC FILM	6800pF	2% 100V
C4	2192021009	PLASTIC FILM	6800pF	2% 100V
C5	2681270503	CERAMIC CHIP	27pF	10% 50V
C6	2680103002	CERAMIC CHIP	0.01uF	10% 50V
C7	2680103002	CERAMIC CHIP	0.01uF	10% 50V
C8	2680103002	CERAMIC CHIP	0.01uF	10% 50V
-TRANSISTORS-				
Q3	3032712005	NPN CHIP	2SC2712-0	or Y
Q4	3032712005	NPN CHIP	2SC2712-0	or Y
Q5	3011162015	PNP CHIP	2SA1162-0	or Y
-DIODES-				
D1	3113004008	DETECTOR CHIP	MA151K	
D2	3120024021	ZENER	RDS.1MB2	5.1V
D3	3113004008	DETECTOR CHIP	MA151K	
D4	3130063000	LED	TLG164	
-PC BOARD-				
	5903564010		T-3564A	

No.	LDR PT No.	DESCRIPTION	LDR PT No.	DESCRIPTION
(T-3565 CONT'D)				
-COILS-				
L1	3930338034	COIL	0.33uH	20%
L2	3930338034	COIL	0.33uH	20%
-PC BOARD-				
	5903565021		T-3565B	
-MISCELLANEOUS-				
	4320018003	CRT SOCKET	NO. 1339	
*** LBO-324/325 H.POS T-3572 ***				
-VARIABLE RESISTOR-				
VR1	1911002219	METAL GLAZE	20K OHM 20%	1/20W "H POS"
-PC BOARD-				
	5903572019		T-3572A	
*** LBO-324/325 ROTATION T-3573 ***				
-VARIABLE RESISTOR-				
VR1	1918001211	CARBON FILM	20K OHM 20%	1/20W "TRACE ROTATION"
-TRANSISTORS-				
Q1	3031815018	NPN	2SC1815-Y	
Q2	3011015012	PNP	2SA1015-Y	
-PC BOARD-				
	5903573011		T-3573A	
*** LBO-324/325 BLANK T-3590 ***				
-RESISTORS-				
R1	1650104509	METAL GLAZE	CHIP	100K OHM 5% 1/10W
R2	1010223006	CARBON FILM	22K OHM	5% 1/4W
R3	1650222505	METAL GLAZE	CHIP	2.2K OHM 5% 1/10W
R4	1650222505	METAL GLAZE	CHIP	2.2K OHM 5% 1/10W
R5	1661802304	METAL GLAZE	CHIP	18K OHM 1% 1/8W
R6	1650103507	METAL GLAZE	CHIP	10K OHM 5% 1/10W
R7	1650122501	METAL GLAZE	CHIP	1.2K OHM 5% 1/10W
R8	1650103507	METAL GLAZE	CHIP	10K OHM 5% 1/10W
R9	1650104509	METAL GLAZE	CHIP	100K OHM 5% 1/10W
R10	1650104509	METAL GLAZE	CHIP	100K OHM 5% 1/10W
R11	1650104509	METAL GLAZE	CHIP	100K OHM 5% 1/10W
R12	1650223507	METAL GLAZE	CHIP	22K OHM 5% 1/10W
R13	1650102505	METAL GLAZE	CHIP	1K OHM 5% 1/10W
R14	1661601304	METAL GLAZE	CHIP	1.6K OHM 1% 1/8W
R15	1650470504	METAL GLAZE	CHIP	47 OHM 5% 1/10W
R16	1661101304	METAL GLAZE	CHIP	1.1K OHM 1% 1/8W
R17	1650470504	METAL GLAZE	CHIP	47 OHM 5% 1/10W

No.	LDR PT No.	DESCRIPTION	5%	1/10W
(T-3590 CONT'D)				
R18	1650222505	METAL GLAZE CHIP	5%	1/10W
R19	1650222505	METAL GLAZE CHIP	5%	1/10W
-CAPACITORS-				
C1	2680103002	CERAMIC CHIP	10%	50V
C2	2090016006	CERAMIC		50V
C3	2090016006	CERAMIC		50V
C4	2090016006	CERAMIC		50V
C5	2680103002	CERAMIC CHIP	10%	50V
C6	2680103002	CERAMIC CHIP	10%	50V
C7	2440220002	ELECTROLYTIC	20%	15V
-TRANSISTORS-				
Q1	3011245000	PNP CHIP		
Q2	3032712014	NPN CHIP		
Q3	3033120006	NPN CHIP		
-DIODES-				
D1	3113001002	DETECTOR DUAL CHIP		
D2	3113001002	DETECTOR DUAL CHIP		
D3	3113001002	DETECTOR DUAL CHIP		
D4	3110070003	SCHOTTKY		
D5	3110070003	SCHOTTKY		
D6	3110070003	SCHOTTKY		
D7	3113004008	DETECTOR CHIP		
-INTEGRATED CIRCUITS-				
IC1	3420004001	CMOS		
IC2	3420076006	CMOS		
IC3	3420002007	CMOS		
-PC BOARD-				
	5903590020	T-3590B		
*** LBD-324/325 HI VOLTAGE T-3591 ***				
-RESISTORS-				
R1	1020229005	CARBON FILM	5%	1/2W
R2	1650101503	METAL GLAZE CHIP	5%	1/10W
R4	1020473006	CARBON FILM	5%	1/2W
R5	1000334008	CARBON FILM	5%	1/2W
R6	1650563501	METAL GLAZE CHIP	5%	1/10W
R7	1130106004	METAL FILM	5%	1/2W
R8	1650152500	METAL GLAZE CHIP	5%	1/10W
R9	1650234509	METAL GLAZE CHIP	5%	1/10W
R10	1650102505	METAL GLAZE CHIP	5%	1/10W
R11	1650101503	METAL GLAZE CHIP	5%	1/10W
R12	1190007004	METAL GLAZE CHIP	5%	1W
R13	1010192004	CARBON FILM	5%	1/4W
R14	1650473500	METAL GLAZE CHIP	5%	1/10W
R15	1650472508	METAL GLAZE CHIP	5%	1/10W
R16	1130565006	METAL FILM	10%	1/2W
R17	1190008006	METAL GLAZE CHIP	5%	1W
R18	1650101503	METAL GLAZE CHIP	5%	1/10W
R19	1667502308	METAL GLAZE CHIP	1%	1/8W

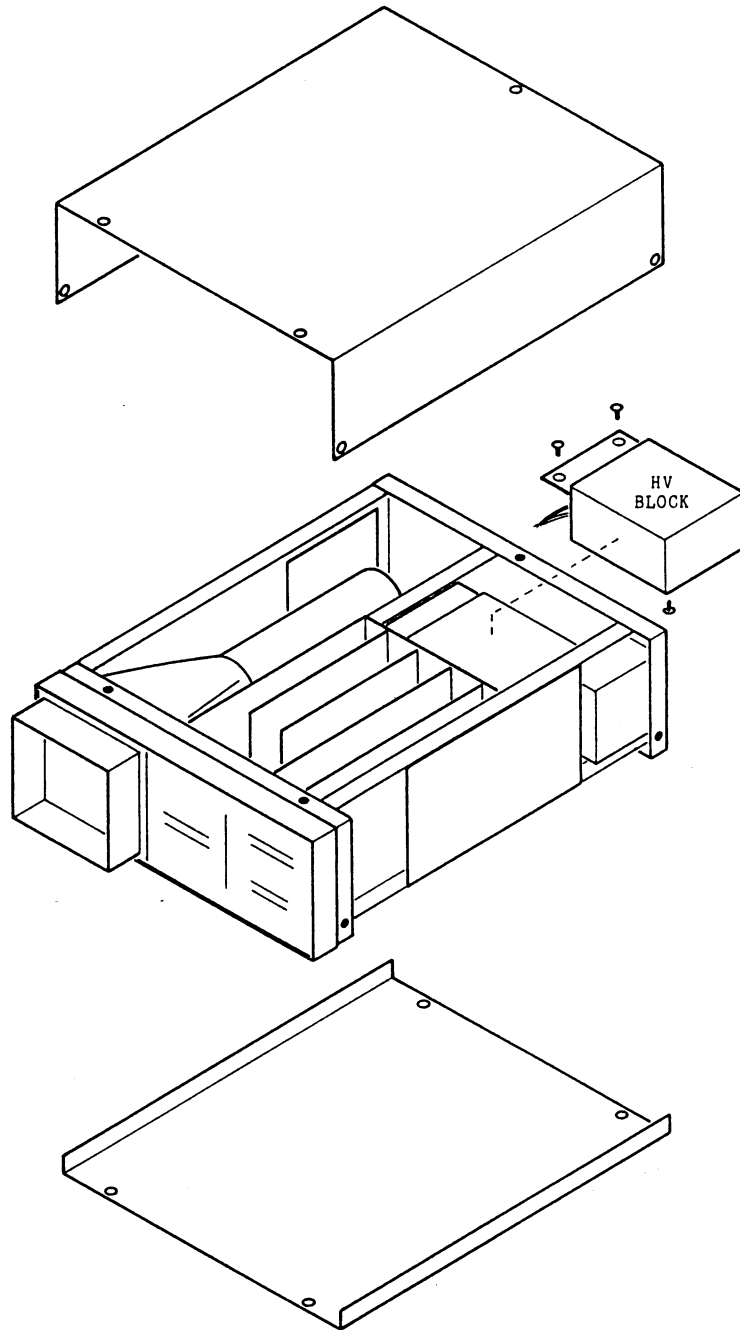
No.	LDR PT No.	DESCRIPTION	5%	1/10W
(T-3591 CONT'D)				
R20	1312204017	METAL FILM	1%	1/8W
R21	1312204017	METAL FILM	1%	1/8W
R22	1666202300	METAL GLAZE CHIP		
R23	1650220501	METAL GLAZE CHIP	5%	1/10W
R24	1650332502	METAL GLAZE CHIP	5%	1/10W
-VARIABLE RESISTORS-				
VR1	1711004097	CERMET		1/3W
VR2	1711004079	CERMET		1/3W
VR3	1712020000	CERMET		1/3W
-CAPACITORS-				
C1	2344470001	ELECTROLYTIC	20%	25V
C2	2090013000	CERAMIC		3KV
C3	2020102000	CERAMIC		500V
C4	2090013000	CERAMIC		3KV
C5	2090013000	CERAMIC		3KV
C6	2090013000	CERAMIC		3KV
C7	2090013000	CERAMIC		3KV
C8	2020472003	CERAMIC		500V
C9	2140124011	PLASTIC FILM	10%	50V
C10	2680103002	CERAMIC CHIP	10%	50V
C11	2240220006	ELECTROLYTIC	20%	25V
C12	2610104005	PLASTIC FILM	10%	63V
C13	2090005010	CERAMIC	10%	3KV
C14	2090013000	CERAMIC		3KV
-TRANSISTORS-				
Q1	30400568009	NPN CHIP		
Q2	3011162015	NPN CHIP		
Q3	3032712005	NPN CHIP		
Q4	3011162015	NPN CHIP		
Q5	3011091009	NPN		
Q6	3011091009	NPN		
-DIODES-				
D1	3110051009	RECTIFIER HV	3KV	
D2	3110051009	RECTIFIER HV	3KV	
D3	3110059005	DETECTOR		
D4	3110059005	DETECTOR		
D5	3110059005	DETECTOR		
D6	3110059005	DETECTOR		
D7	3120066009	ZENER		
D8	3113004008	DETECTOR CHIP	36V	
D9	3110060004	DETECTOR		
D10	3113004008	DETECTOR CHIP		
-TRANSFORMER-				
T1	3800529005	TRANSFORMER		HV
-PC BOARD-				
	5903591022	T-3591B		

No.	LDR PT No.	DESCRIPTION
(T-3555 CONT'D)		
-CAPACITORS-		
C91	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C93	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C101	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C103	2680103002	CERAMIC CHIP 0.01uF 10% 50V
C110	2681220608	CERAMIC CHIP 22pF 10% 50V
C111	2681220608	CERAMIC CHIP 22pF 10% 50V
-VARIABLE CAPACITORS-		
V2	2910018006	CERAMIC 2.8-10pF 250V
V4	2910018006	CERAMIC 2.8-10pF 250V
*** L80-325 ***		
-TRANSISTORS-		
Q5	3033600000	NPN CHIP 2SC3600-D,E,F
Q6	3033600000	NPN CHIP 2SC3600-D,E,F
*** L80-325 ***		
-TRANSISTORS-		
R13	1020569009	CARBON FILM 5.6 OHM 5% 1/2W
R14	1020569009	CARBON FILM 5.6 OHM 5% 1/2W
-VARIABLE RESISTOR-		
VR3	1913001219	CARBON FILM 20K OHM 20% 1/20W "ILLUM"
-TRANSISTORS-		
Q1	3011162015	PNP CHIP 2SA1162-D or Y
Q2	3020435015	PNP 2SB435-Y
-MISCELLANEOUS-		
	4360036003	LAMP T-3.1WT31504
	4360036003	LAMP T-3.1WT31504
	4360036003	LAMP T-3.1WT31504

No.	LDR PT No.	DESCRIPTION
(T-3591 CONT'D)		
-MISCELLANEOUS-		
V1	4360027002	NEON BULB NE-38B
V2	4360027002	NEON BULB NE-38B
V3	4360027002	NEON BULB NE-38B
*** L80-324 ***		
-RESISTORS-		
R197	1650000002	CHIP 0 OHM
R198	1650000002	CHIP 0 OHM
R199	1650000002	CHIP 0 OHM
R200	1650000002	CHIP 0 OHM
*** L80-324 ***		
-RESISTOR-		
R32	1000470006	CARBON FILM 47 OHM 5% 1/6W
-CAPACITOR-		
C14	2120180008	MICA 18pF 10% 500V
-TRANSISTORS-		
Q5	3032911001	NPN 2SC2911-S
Q6	3032911001	NPN 2SC2911-S
*** L80-325 ***		
-MISCELLANEOUS-		
	7600116000	DELAY LINE V-116
*** L80-325 ***		
-RESISTORS-		
R20	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R100	1650103507	METAL GLAZE CHIP 10K OHM 5% 1/10W
R198	1650270506	METAL GLAZE CHIP 27 OHM 5% 1/10W
R199	1650270506	METAL GLAZE CHIP 27 OHM 5% 1/10W
R200	1650270506	METAL GLAZE CHIP 27 OHM 5% 1/10W
R41	1512104000	RESISTOR APPRY 100K OHM*5 1/8W

9. CABINET REMOVAL

- Take seven screws off to remove the Top cover.
- Take four screws off to remove the Bottom cover.



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