

# MASTR *Executive II* MAINTENANCE MANUAL BASE STATION DC REMOTE CONTROL 19D423480G1-G5

**SPECIFICATIONS** \*

LINE TERMINATING IMPEDANCE

LINE LOOP IMPEDANCE

AUDIO LINE OUTPUT FREQUENCY RESPONSE DISTORTION

TEMPERATURE RANGE

600 ohms

11,000 ohms (8000 Line and 3000 Matching) Maximum

-20 dBm to +11 dBm

±3 dB from 300 to 3000 HZ

Less than 3%

-30°C to +60°C (-22°F to +140°F) DATAFILE FOLDER

- DF 4102

These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.



## **TABLE OF CONTENTS**

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DESCRIPTION	1
DC CONTROL FUNCTIONS	1
TELEPHONE LINE CHARACTERISTICS	1
ADJUSTMENTS	2
CIRCUIT ANALYSIS Remote Control Board 19D423480G1 Remote Control Board 19D423480G2 Remote Control Boards 19D423480G3-G5 Channel Guard Monitor Two-Frequency Receive	4 4 5 5 6
DC REMOTE CONTROL BOARD VOLTAGE READINGS	7-8
DC REMOTE CONTROL SYSTEM DIAGRAM	9
OUTLINE DIAGRAM DC Remote Control Board 19D423480	10
SCHEMATIC DIAGRAMS DC Remote Control Board 19D423480G1 DC Remote Control Board 19D423480G2 DC Remote Control Boards 19D423480G3 & G4 DC Remote Control Board 19D423480G5	11 14-15 18-19 22-23
PARTS LIST & PRODUCTION CHANGES	
DC Remote Control Board 19D423480G1 DC Remote Control Board 19D423480G2 DC Remote Control Board 19D423480G3 & G4 DC Remote Control Board 19D423480G5	12 13 17 21
SERVICE SHEET Telephone Line Surge Protection (Option 9905)	24

---- WARNING -

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

## DESCRIPTION

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The General Electric MASTR Executive II Desk Top and Wall Mount stations use DC Remote Control boards to interface with a remote control console in remote and local/ remote station combinations. The boards provide up to five remotely controlled functions by the application of different current levels and polarities to select each function. The Desk Top Local/Remote station utilizes the 19D423480G1 or 19D423480G5 DC Remote Control Board for remote transmit and Channel Guard monitor functions. DC Remote Control Boards 19D423480G1-G5 may all be used with the Wall Mount Remote Control station.

Three negative current levels and two positive current levels may be applied to the telephone line at the remote control console:  $\pm 6$  mA;  $\pm 11$  mA; -2.5 mA.

## **DC CONTROL FUNCTIONS**

These control currents are provided by the General Electric MASTR Controller and Deskon II. For functions provided by the TCC or Deskon units (6 mA for Channel Guard Monitor and 15 mA for transmit control) Option 9924 should be used. This option deletes the 19D423480G5 board and substitutes the 19D423480G3 board with modifications. Refer to the Schematic Diagram for modification instructions.

## TELEPHONE LINE CHARACTERISTICS

The key link in a remote control installation is the telephone pair between the Controller and the base station. To obtain the most satisfactory service over this link, some general knowledge of the capabilities of such lines is required. A telephone pair is simply a pair of wires, normally ranging from AWG #19 to AWG #26 in size. These wires, furnished by the local telephone company, pass through overhead cables, underground cables, through junction points, and switchboards. To the user, however, they may be considered a simple pair of wires. Equipment that is designed to operate with such a pair should have nominal impedance of 600 ohms. A telephone pair will normally have a maximum length of about 12 miles before amplification is added by the telephone company to make up for line losses. There is an inherent loss in any telephone line installation due to the series inductance and resistance and the shunt capacitance of the wires.

This loss is a direct function of the length of the line, and varies with the wire size used. As an example, with AWG #19 wire, a distance of six miles may be covered before one-half the input voltage of a 1,000 Hz tone is lost. With AWG #26 wire, only two and one-quarter miles may be covered before one-half the input voltage is lost. Line losses as high as 30 dB can be tolerated in operating a transmitter from the Remote but such high losses should be avoided whenever possible. Although the telephone pair is fairly well balanced, some noise will be induced into the line, especially if an unshielded run has to be made in a flourescentlighted building.

The DC resistance of any telephone pair will affect the control circuits between the Controller and the base station. Current regulators incorporated in the Remote Control minimize these variations after initial adjustment. The Remote operates with a total control line loop resistance as great as 11,000 ohms. There is a possibility, however, that stray currents, due to leakage, noise, faults, earth currents, etc., may cause faulty operation.

DC CONTROL		CONTROL CURRENT IN MILLIAMPERES						
BOARD	FUNCTION	-11	-6	-2.5	0	+6	+11	
19D423480G1	l Freq. Transmit l Freq. Receive				Receive	Transmit		
19D423480G2	l or 2 Freq. Transmit 2 Freq. Receive		Receive F2		Receive Fl	Transmit Fl	Transmit F2	
19D423480G3	l or 2 Freq. Transmit l Freq. Receive/CG Monitor			CG Disable	Receive with CG	Transmit Fl	Transmit F2	
19D423480G4	l or 2 Freq. Transmit 2 Freq. Receive/CG Monitor	Receive F2 CG Disable	Receive F2 with CG	Receive Fl CG Disable	Receive Fl with CG	Transmit Fl	Transmit ∙ F2	
19D423480G5	l Freq. Transmit l Freq. Receive/CG Monitor			Receive CG Disable	Receive with CG	Transmit	-	

#### LBI 30134

#### TELEPHONE LINE CHARACTERISTICS

Three types of telephone line connections are commonly used. Before choosing one of these types, consider the cost and performance of each, as one type may be available at a much lower rate. Also, some telephone companies offer no choice. The following chart contains information to assist in selecting the control method and type of telephone line to be used in DC control applications. Refer to Figure 1.

METHOD	DESCRIPTION	ADVANTAGES OR DISADVANTAGES
	One metallic pair: for both audio and control voltages with control voltage connected from line to line.	Economical; dependable where earth cur- rents may be large; slight keying clicks will be heard in paralleled Remote Con- trol Units. In most applications, pre- ferred over Method No. 2.
2	One metallic pair: for both audio and control voltages with control voltages connected from line to ground.	Economical; earth ground currents may result in interference with control func- tions; keying click minimized. Good earth to ground required at station and all control points.
3	Two telephone pairs; one for audio voltage and one for con- trol voltage (metallic pair).	Provides best performance; keying clicks will not be heard. Requires 2 pair.

#### TELEPHONE LINE CONNECTIONS

The station is normally shipped with jumpers connected on the Remote Control Board as described in Method 1. If Method 2 or 3 is to be used, connect the jumpers as shown in the following chart.

CONTROL METHOD	TELEPHONE LINE CONNECTIONS	JUMPER CONNECTIONS
1	Connect telephone lines to TB1-1 and -2.	Jumper H32 to H33 and H34 to H35.
2	Connect telephone lines to TB1-1 and -2. Connect good earth ground to TB1-4.	Move jumper from H34- H35 to H33-H35.
3	Connect audio telephone lines to TB1-1 and -2 and control lines to TB1-3 and -4.	Remove jumpers from H32 to H33 and H34 to H35.

### Proper Grounding Practices (Method 2)

The telephone company specifies that their customer's equipment signal ground should be made using the proper connection to a ground electrode such as a metallic cold water pipe. The ground connection should be made with a single No. 14 AWG or larger copper conductor. The conductor should be short, straight and a continuous piece of wire. Attention should be given to providing the lowest possible resistance at the connection at each end of the ground wire.

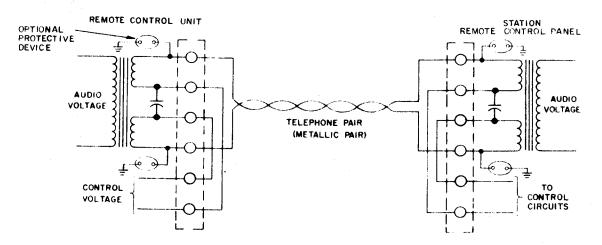
When option line surge protection devices are provided in the customer equipment, it is imperative that the good earth ground be used. If the telephone company also provides protective devices, the customer provided device earth ground connections should be located close to the telephone company earth ground connections but should not use the same ground clamp that the telephone company uses.

If a good earth ground as described above cannot be obtained, Method 2 should not be used. Also, the addition of surge protective devices are of little value without the proper earth ground.

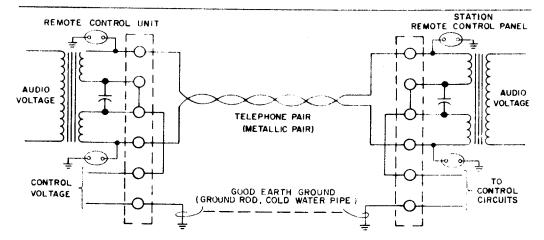
### **REMOTE CONTROL ADJUSTMENTS**

When the station is equipped with a DC Remote Control board, REMOTE TX MOD LEVEL and REC LINE LEVEL controls must be adjusted before placing the station in operation.

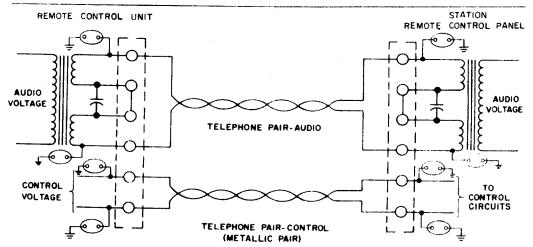
- A. REMOTE TX MOD LEVEL
  - 1. Feed a 1000 Hertz tone at the required level into a microphone jack on the remote control console. Adjust the remote control console line output control for 2.7 Volts











METHOD 3- SEPARATE CONTROL AND AUDIO PAIRS

RC-2556B

## Figure 1 - Telephone Line Connections

LBI 30134

RMS as measured across the audio pair at the remote control console.

- 2. Key the station transmitter from the remote control console and adjust the REMOTE TX MOD LEVEL Control R27 on the DC Remote Control Board for 4.5 kHz system deviation as measured at the station transmitter.
- B. REC LINE LEVEL
  - 1. Connect a signal generator to the station receiver. Adjust the generator to the receiver frequency, modulated at 3 kHz deviation by a 1000 Hertz tone. Disable Channel Guard if present.
  - Adjust the REC LINE LEVEL control R16 on the DC Remote Control Board for a reading of 2.7 Volts RMS as measured at the station audio pairs (TB1-1 and -2 when using separate control and audio pairs; TB1-3 and -4 when using common control and audio pairs).

### **CIRCUIT ANALYSIS**

#### Remote Control Board 19D423480G1

Remote Control Board 19D423480G1 provides single frequency transmit and single frequency receive DC control functions. The board consists of an optocoupler (U5) used for current control and line isolation. The coupler contains a Light Emitting Diode (LED) serving as a light source and a lightsensitive phototransistor serving as a light detector. The light source and detector are both housed in a single package, sealed from outside light. When a DC current of the correct polarity to forward bias the LED is applied to the input of the optocoupler, the LED conducts and emits light. This light is detected by the phototransistor, turning it on and coupling the input signal to he output of the optocoupler.

When zero current is present on the control pair (TB1-3 and -4), the LED in U5 is turned off. The phototransistor in U5 is therefore not conducting, holding Q4 off. This is the receive mode of the control circuit. Applying +6 mA to the control pair will result in the voltage at the base of Q1 being clamped to 6 VDC. The voltage at the emitter of Q1 rises to 0.6 VDC above the base and the transistor is turned off, allowing the LED in U5 to conduct. The phototransistor detects the light and operates. The high at the emitter of the phototransistor turns on Q4. Conduction of Q4 turns on emitterfollower Q5 which, in turn, operates Q6. Conduction of Q6 applies ground to the REMOTE PTT terminal P901-4 to key the station transmitter. Audio circuits provided on the 19D423480G1 Remote Control Board include a high-pass filter, audio-amplifier, a de-emphasis network and a line driver for feeding the receive audio to the telephone lines. A modulation amplifier and level control are provided for controlling the line audio fed to the transmitter modulator. Audio and RUS switches are included for switching the transmit and receive audio paths.

Audio from the station receiver discriminator is coupled to audio amplifier AR1 and deemphasis network C10 and R13. The de-emphasis network provides a 6 dB/octave rolloff. The signal is then amplified by Q15. The REC LINE LEVEL control R16 is connected in the emitter circuit of Q15 and allows feeding the audio to the line amplifier at the proper level.

The audio is coupled to the line amplifier by means of C12. Q19 and Q20 amplify the signal. Q17 and Q18 serve as audio switches controlled by the Receiver Unsquelched Sensor (RUS) circuit. As long as the RUS switch (Q14) is turned off (receiver squelched), CR21 and CR20 are forward biased, allowing Q17 and Q18 to conduct. Conduction of Q17 and Q18 grounds the audio path, preventing the received audio from passing to the line. When the receiver unsquelches, the RUS lead goes high. This turns Q14 on, turning off Q17 and Q18. The audio is now allowed to pass to the line amplifier and line transformer T1. CR22, CR19 and VR4 are provided for line surge protection.

Audio from the Remote Control unit applied to the telephone pair is coupled to the input of the transmitter audio amplifier (Q21 and Q26). The proper audio level for the transmitter modulator is adjusted by REMOTE TX MOD LEVEL control R27.

Transistor Q26 is controlled by the transmit PTT circuit. If Q5 is conducting (the control circuit in the transmit mode), the base of Q26 is high, allowing the transmit audio to pass to P901-1 (TX AUDIO H1). When Q5 is turned off (receive mode), Q26 is held off and prevents the transmit audio from passing to the transmitter modulator.

#### Remote Control Board 19D423480G2

Remote Control Board 19D423480G2 is used for 1- or 2- frequency transmit and 2frequency receive. Three optocouplers are utilized on this board to derive the control functions. If zero current is present on the control pair, all of the LED's in the optocouplers (U3, U4, U5) are turned off. Thus all three of the phototransistors are turned off.

The NAND gates (UIA. UIB, etc.) require two low inputs to provide a high output. All other conditions provide a low output. The high at the collector of the U3 phototransistor is connected to NAND date U2A, pin 1. The high at the collector of the U5 phototransistor is connected to U2A-2. The resultant low at U2A-3 holds Q10 and Q16 off. The high at the collector of Q10 prevents selection of the RECEIVE F2 oscillator. The high at the collector of Q16 operates Q9, applying ground to select the RECEIVE F1 oscillator.

In this board a diode bridge is connected across the control pair, providing line transient protection. One leg of the bridge contains the polarity detector optocoupler U4. With no current applied to the line, the phototransistor in U4 is turned off. The high at its collector is connected to U2C-9. U2C-8 is also high. The resultant low at U2C-10 holds Q7 off, preventing selection of the TRANSMIT Fl oscillator.

The POSITIVE DETECT lead from U4 is also connected to pin 6 of UlB. The high from the collector of the U5 phototransistor is connected to UlA-1. The high from U3 is connected to UlA-2. The low at UlC-10 is connected to UlA-2. The low at UlA-3 is connected to UlO-12. The low at ULA-3 is connected to UlO-12. The low at the emitter of Ql6 is connected to UlO-13. The resultant high is connected to UlB-5. The low output of UlB holds Ql3 off, preventing selection of the TRANSMIT F2 oscillator. CR13 and CR14 are both reverse biased under these conditions, preventing Q4 and Q5 from conducting. This holds Q6 off, preventing transmitter keying.

When a DC control current is first applied to the control pair, the diode bridge directs the current to the current detectors. Optocouplers U4 operates if the line current is positive. When the positive current is first applied to the line, CR9 is reverse blased, keeping Q3 turned off. The LED in U3 is turned on, operating the phototransistor. CR8 is forward blased, turning Q1 on. Optocoupler U5 is thus shorted out. As more line current is applied, the voltage at the base of Q1 will rise and be clamped at 5.4 VDC. When the voltage at the emitter if Q1 rises to within 0.6 VDC of the base, the transistor will turn off and let current flow through the LED in U5, turning on the phototransistor.

Applying +6 mA (TRANSMIT F1) to the control pair results in the conditions just described. The low from the collector of the phototransistor in U5 is applied to U2A-2. The low from the collector of the U3 phototransistor is applied to U2A-1. The resultant high at U2A-3 operates Q16. The low at the collector of Q16 holds Q9 off, preventing selection of the RECEIVE F1 oscillator. The low at the collector of U4 is connected to U1B-6. The low from U5 is connected to U1A-1. U1A-2 is high. The resultant low at U1A-3 is connected to U1D-12. U1D-13, connected to the emitter of Q16, is always low. The high at U1D-11 is connected to U1B-5. The low at U1B-4 holds Q13 off, preventing selection of the TRANSMIT F2 oscillator. The low from the collector of the POSITIVE DETECT phototransistor (U4) is connected to U2C-9. The low at the collector of Q16 is connected to U2C-8. The resultant high at U2C-10 operates Q7, selecting the TRANSMIT F1 oscillator. CR13 is forward biased, turning on Q4 and Q5. Conduction of Q5 operates Q6, keying the station transmitter.

When +11mA (TRANSMIT F2) is applied to the control pair, the voltage on the emitter of Q3 will be higher than the 10.7 volts present on the base. Q3 will thus conduct. Below 11mA, the voltage at the cathrode of VR3 will be higher than the emitter of Q3, preventing the transistor from conducting. When Q3 conducts, the LED in U3 is shorted out. U4 and U5 are operating.

A high is connected to U2A-1 from U3. A low is connected to U2A-2 from U5. The resulting low holds Q1O and Q16 off, preventing selection of the RECEIVE F2 oscillator. The high from U3 is also applied to U1C-9. The low at U1C-10 is connected to U1A-2. The low from U5 is connected to U1A-1. The resulting high at U1A-3 is connected to U1O-12. The low from the emitter of Q16 is connected to U1O-13. The resulting low at U1O-11 connects to U1B-5. U1B-6 is low. U1B-4 is thus high, operating Q13 and selecting the TRANSMIT F2 oscillator. U2C-9 is low; U2C-8 is high. This results in a low at U2C-10, preventing Q7 from conducting and selecting the TRANSMIT F1 oscillator. CR14 is forward biased, operating Q4, Q5 and Q6 to key the transmitter.

The audio amplifier circuits on this board operate in the same manner as described for the 19D423480Gl board. When PTT is selected, conduction of Q5 operates Q27. Conduction of Q27 operates Q28, applying +10 VDC to the base of Q26 to allow the transmit audio to pass to P901-1 (TX AUDIO H1).

#### DC Remote Control Boards 19D423480G3-G5

DC Remote Control Board 19D423480G3 provides up to two-frequency transmit and single-frequency receive with Channel Guard Monitor. The 19D423480G4 Board provides up to two-frequency transmit and twofrequency receive with Channel Guard Monitor. The 19D423480G5 Board provides single-frequency transmit and receive with Channel Guard Monitor.

#### Channel-Guard Monitor

The 19D423480G3-G5 boards function in the same manner as described for the 19D-423480G1 and G2 boards when selecting the transmit and receive oscillators. When the Channel Guard disable control current of -25 mA is applied to the control pair, Q1 is allowed to conduct but Q2 is turned off. Thus optocoupler U3 is operated and

optocouplers U4 and U5 are turned off. The high at the collector of the U5 phototransistor is connected to U2A-2 and U2D-12. Pin 13 of U2D is low. The low at U2D-11 is applied to U2B-5. The low at the collector of the U3 phototransistor is connected to U2B-6. The resultant high at U2B-4 operates Q12, applying ground to the CG MONITOR lead P901-11. With Channel Guard disabled, the station receiver now operates only on noise squelch so that all transmissions on the receiver frequency will be heard.

#### Two-Frequency Receive

The 19D423480G3 Board permits twofrequency receive selection with Channel Guard Monitor. With -2.5 mA applied to the control pair, the low from the collector of the U3 phototransistor is connected to U2A-1, U1C-9 and U2B-6. The high from the collector of the U5 phototransistor is connected to U2A-2, U1A-1 and U2D-12. The low output of U2A holds Q10 and Q16 off. The low output of U1A keeps Q8 and Q11 from conducting. The high at the collector of Q16 operates Q9, selecting the RECEIVE F1 oscillator. The high at U2B-4 operates Q12, disabling Channel Guard. When -6 mA (RECEIVE F2) is applied to the control pair, U3 and U5 are operated but U4 is turned off. This results in conduction of Q16, holding Q9 off and preventing selection of the RECEIVE F1 oscillator. The high at U2A-3 operates Q10, selecting the RECEIVE F2 oscillator. The output of U2B (pin 4) is low, preventing Q12 from operating. Thus Channel Guard is functioning.

When -11mA (RECEIVE F2, CG MONITOR) is applied to the control pair, Ql and Q2 are turned off and Q3 is turned on. Thus U5 is operating and U3 and U4 are turned off. The low at the collector of the phototransistor in U5 is applied to U2A-2, U1A-1 and U2D-12. The high at the collector of the phototransistor in U3 is connected to U2A-1, U1C-9 and U2B-6. The low at U2A-3 holds Ql0 and Q16 off. The high at U1A-3 operates Q8 and Q11. Conduction of Q8 prevents Q9 from conducting and thus prevents selection of RECEIVE F1. Conduction of Q11 selects RECEIVE F2.

The output of U2B is low, reverse biasing CR16. The high at U1A-3 forward biases CR15, operating Q12 and disabling Channel Guard.

MOBILE RADIO DEPARTMENT GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502



# DC REMOTE CONTROL BOARD 19D423480G1 DC VOLTAGE READINGS

# DC REMOTE CONTROL BOARD 19D423480G2 DC VOLTAGE READINGS

All readings are typical readings made with a 20,000 ohms-per-Volt meter. All readings are typical readings made with a 20,000 ohms-per-Volt meter.

METERING POINT	REFERENCE	CONTROL (1	CURRENI MA)
		0	+6
AR1-2 -3 -6	Ground	4.42V 4.42V 4.42V 4.42V	$4.42 \\ 4.42 \\ 4.42 \\ 4.42$
Q4-E		.04V	8.70V
B		OV	9.20V
C		9.4V	9.40V
Q5-E		0V	8.0V
B		.04V	8.7V
C		9.4V	9.4V
Q6-E		0V	.96V
B		0V	1.51V
C		10.0V	.08V
Q14-E		0V	OV
B		.63V	.64V
C		.04V	.05V
Q15-E		3.85V	3.85V
B		4.45V	4.48V
C		9.0V	9.0V
Q17-Е		0V	0V
В		.08V	.13V
С		.02V	.03V
Q18-E		0V	OV
B		.16V	.17V
C		4.45V	4.45V
Q19-E		1.51V	1.51V
B		2.09V	2.09V
C		9.0V	9.0V
Q20-Е		.96V	.96V
В		1.52V	1.52V
С		7.60V	7.60V
Q21-E		.91V	.92V
B		1.49V	1.50V
C		4.50V	4.75V
Q26-E		OV	4.8V
B		OV	5.4V
C		4.50	4.75V
U5-4		0V	9.3V
5		9.4V	9.4V
Q1-E B C	Pin 4 (Control -)	OV OV OV	7.7V 5.6V 8.8V
U5-1		OV	8.8V
2		OV	7.7V

METERING POINT	REFERENCE	C	ONTROL CU	JRRENT (!	MA)
		-6	0	+6	+11
AR1-2 3 6	Ground		4.85V 4.82V 4.82V 4.82V		
Q4-E B C		.04V OV 10.0V	.03V OV 10.0V	3.45V 4.0V 10.0V	5.4V 6.0V 10.0V
Q5-E B C		0V .04V 10.0V	0V 0V 10.0V	2.8V 3.45V 10.0V	4.8V 5.4V 10.0V
<b>Q6-</b> E B C		0V 0V 10.0V	0V 0V 10.0V	OV .73V .14V	0V .74V .10V
<b>Q7-</b> Е В С		0V 0V 8.5V	OV OV 8.5V	0V .69V .10V	OV .14V 8.5V
<b>Q9-Е</b> В С		0V 0V 8.7V	OV .65V .10V	OV OV 8.7V	OV .69V .12V
<b>Q10-Е</b> В С		0V .68V .08V	0V 0V 8.40V	0V .69V .10V	0V 0V 8.5V
Q13-E B C		0V 0V 8.5V	0V 0V 8.40V	0V 0V 8.5V	0V .68V .10V
Q14-E B C			0V .64V .04V		
Q15-E B C			4.10V 4.70V 9.65V		
Q16-E B C		0V .62V .02V	0V 0V 6.5V	0V .62V .02V	0V 0V 6.45V
Q17-E B C			0V .13V .03V		
Q18-E B C			0V .18V 4.70V		
Q19-Е В С			1.55V 2.10V 9.65V		
Q20-E B C			.95V 1.55V 8.3V		
Q21-E B C			1.05V 1.60V 4.70V		

METERING POINT	REFERENCE		CONTROL CURRENT (MA)				
		-6	0	+6	+11		
Q26-Е	Ground	5.4V	0V	5.4V	5.4V		
В		6.0V	0V	6.0V	6.0V		
С		5.4V	4.7V	5.4V	5.4V		
Q27-E		OV	OV	OV	07		
B		.12V	.12V	.14V	.167		
C		.85V	.76V	.80V	.847		
Q28-E		10.0V	10.0V	10.0V	10.0V		
B		9.3V	9.2V	9.3V	9.3V		
C		10.0V	9.95V	10.0V	10.0V		
U5-4		0V	0V	0V	OV		
5		.12V	10.0V	.13V	OV		
U3-4		0V	OV	0V	0V		
5		.12V	10.0V	.14V	9.9V		
U4-4		0V	0V	0V	OV		
5		10.0V	10.0V	.13V	OV		
U1-1 2 3 4 5 6 8 9 10 11 12 13		0V 10.0V 0V 0V 10.0V 9.7V 0V 0V 0V 10.0V 10.0V 0V 0V	9.8V OV OV 10.0V 9.7V OV 9.7V OV 10.0V OV 0V	0V 10.0V 0V 10.0V 0V 0V 0V 10.0V 10.0V 0V	OV OV 10.0V 10.0V OV OV 0.0V 10.0V OV 10.0V OV		
U2-1 2 3 4 5 6 8 9 10 11 12 13		0V 0V 9.6V 0V 10.0V 0V 9.7V 0V 10.0V 0V 0V	9.7V 9.7V OV OV 9.7V 6.4V 9.7V OV OV 9.7V OV	OV OV 9.5V OV 10.0V OV OV 0V 9.7V 10.0V OV	9.8V OV OV 10.0V 9.8V 6.4V OV 10.0V 0V 10.0V SV		
Q1-E B C	Pin 4 (Control -)	-9.8V -9.2V -8.7V	OV OV OV	7.5V 6.2V 8.6V	11.0V 6.5V 12.0V		
Q3-E		-7.7V	OV	9.6V	12.2V		
B		-6.5V	OV	9.0V	11.3V		
C		-8.7V	OV	8.6V	12.2V		
U5-1		-8.8V	OV	8.6V	12.2V		
2		-9.8V	OV	7.5V	11.0V		
U3-1		-7.7V	OV	9.6V	12.2V		
2		-8.7V	OV	8.6V	12.10		
U4-1		-17V	OV	18.4V	26.8V		
2		-5.V	OV	17.3V	25.7V		

# DC REMOTE CONTROL BOARD 19D423480G3 DC VOLTAGE READINGS

## All readings are typical readings made with a 20,000 ohms-per-Volt meter.

METERING POINT	REFERENCE	C	ONTROL C	URRENT ()	MA)
		-2.5	0	+6	+11
AR1-2 3 6	Ground		4.9V 4.9V 4.9V		
Q4-E B C		0V 0V 10.0V	0V 0V 10.0V	3.42V 3.98V 10.0V	5.6V 6.2V 10.0V
Q5–E B C		0V 0V 10.0V	OV OV 10.0V	2.75V 3.42V 10.0V	4.9V 5.6V 10.0V
Q6-E B C		0V 0V 10.0V	OV OV 10.0V	0V .70V .02V	OV .74V .09V
Q7-E B C		0V 0V 8.6V	OV OV 8.6V	0V .69V .09V	0V .47V 8.6V
Q9-E B C		OV .66V .10V	OV .65V .10V	0V 0V 8.7V	0V .67V .12V
Q12-E B C		OV .68V .10V	OV OV 8.5V	0V 0V 8.5V	0V .32V 8.6V
Q13-E B C		0V 0V 8.6V	OV OV 8.6V	0V 0V 8.5V	0V .70V .12V
Q14-E B C			0V .63V .04V		
Q15-E B C			4.05V 4.65V 9.60V		
Q16-E B C		0V 0V 6.4V	OV OV 6.4V	OV .62 .02V	OV OV 6.4V
Q17-E B C			OV OV OV		
Q18-E B C			0V 0V 4.6V		
Q19-E B C			1.60V 2.15V 9.6V		
Q20-E B C			1.0V 1.6V 8.3V		

METERING POINT	REFERENCE	C	CONTROL CURRENT (MA)				
		-2.5	0	+6	+11		
Q21-E B C	Ground		1.0V 1.55V 4.75V				
Q22-E B C			2.95V 3.45V 8.1V				
Q23-E B C			8.7V 8.1V 4.17V				
Q24–E B C			4.62V 5.20V 9.0V				
Q25-E B C			9.6V 9.0V 4.85V				
Q26-E B C		0V 0V 4.75V	0V 0V 4.75V	5.4V 6.0V 5.4V	5.4V 6.0V 5.4V		
Q27-E B C		0V 0V 9.4V	0V 0V 9.4V	0V .60V 0V	0V .61V .04V		
Q28-E B C		10.0V 9.4V OV	10.0V 9.4V OV	10.0V 9.3V 10.0V	10.0V 9.3V 10.0V		
U5-4 5		0V 10.0V	0V 10.0V	OV OV	OV OV		
U3-4 5		OV OV	0V 10.0V	OV OV	0V 10.0V		
U4-4 5		0V 10.0V	0V 10.0V	OV OV	0V .16V		
U1-1 2 3 4 5 6 8 9 10 11 12 13		9.8V 10.0V 0V 0V 10.0V 9.8V 0V 0V 0V 10.0V 10.0V 10.0V 0V 0V	9.8V OV OV 0V 10.0V 9.7V OV 9.8V OV 10.0V OV OV	0V 10.0V 0V 0V 10.0V 0V 0V 10.0V 10.0V 10.0V 0V	0V 0V 9.9V 9.9V 0V 0V 0V 9.8V 0V 0V 9.9V 0V		
U2-1 2 3 4 5 6 8 9 10 11 12 13		0V 9.8V 0V 10.0V 0V 6.4V 9.8V 0V 0V 9.8V 0V 9.8V 5V	9.8V 9.7V OV OV 9.8V 6.8V 9.7V OV OV 9.7V OV 9.7V .6V	0V 0V 10.0V 0V 10.0V 0V 0V 0V 10.0V 10.0V 10.0V 5V	9.8V OV OV 0V 10.0V 9.8V 6.4V OV 5V 10.0V OV 5V		

METERING POINT	REFERENCE	CONTROL CURRENT (MA)			
		-2.5	0	+6	+11
Q1–E B C	Pin (Control -)	-4.45V -3.75V -4.35V	OV OV OV	6.8V 6.2V 7.9V	10.9V 6.4V 12.0V
Q2-E		-4.35V	OV	7.9V	12.0V
B		-3.8V	OV	3.7V	4.2V
C		-3.35V	OV	9.0V	12.0V
Q3-E		-3.35V	OV	9.0V	12.1V
B		37V	OV	8.3V	11.3V
C		-4.35V	OV	7.9V	12.0V
U5-1		-4.37V	ov	7.9V	12.0V
2		-4.45V	ov	6.8V	10.9V
U3-1		-3.35V	OV	9.0V	12.1V
2		-4.35V	OV	7.8V	12.0V
U4-1		-8.2V	OV	16.8V	24.7V
2		-5.2V	OV	15.8V	23.7V

# DC REMOTE CONTROL BOARD VOLTAGE READINGS

#### DC REMOTE CONTROL BOARD 19D423480G4 DC VOLTAGE READINGS

All readings are typical readings made with a 20,000 ohms-per-Volt meter.

METERING POINT	REFERENCE	CONTROL CURRENT (MA)					
		-11	-6	-2.5	0	+6	+11
AR1-2 3 6	Ground				4.7V 4.7V 4.7V		
Q4-E		OV	OV	OV	0V	3.5V	5.5V
B		OV	OV	OV	0V	4.05V	6.0V
C		10.0V	10.0V	10.0V	10.0V	10.0V	10.0V
Q5-E		OV	0V	OV	0V	2.82V	4.9V
B		OV	0V	OV	0V	3.5V	5.5V
C		10.0V	10.0V	10.0V	10.0V	10.0V	10.0V
Q6-E		0V	0V	0V	0V	OV	OV
B		0V	0V	0V	0V	.73V	.74V
C		10.0V	10.0V	10.0V	10.0V	.12V	.10V
Q7-E		0V	OV	OV	0V	0V	0V
B		0V	OV	OV	0V	.68V	.35V
C		8.7V	8.6V	8.7V	8.6V	.09V	8.7V
Q8-E		0V	OV	0V	0V	OV	0V
B		.63V	OV	0V	0V	OV	.64V
C		.02V	OV	.68V	.68V	OV	.03V
Q9-E		OV	OV	0V	0V	OV	0V
B		OV	OV	.69V	.68V	OV	.03V
C		8.8V	8.8V	0V	.08V	8.8V	8.8V
Q10-E		OV	0V	0V	0V	0V	OV
B		OV	.69V	0V	0V	.69V	OV
C		OV	0V	8.8V	8.6V	.09V	.10V
Q11-E		0V	OV	OV	OV	0V	0V
B		.68V	OV	OV	OV	0V	.70V
C		.09V	OV	8.7V	8.6V	.09V	.10V
Q12-E		OV	0V	0V	0V	0V	0V
B		.69V	0V	.69V	0V	.15V	.26V
C		.09V	8.6V	.10V	8.6V	8.6V	8.8V
Q13-E B C					0V 0V 8.6V		
Q14-E B C					0V .64V .04V		
Q15-E B C			Sector And Sector And Sector And		4.15V 4.75V 9.70V		
Q16-E		0V	0V	OV	OV	0V	0V
B		0V	.63V	OV	OV	.64V	0V
C		6.2V	0V	6.5V	6.4V	.02V	6.2V
Q17-E B C					OV OV OV		
Q18-E B C					0V .18V 4.72V		

METERING POINT	REFERENCE	CONTROL CURRENT (MA)					
		-11	-6	-2.5	0	+6	+11
Q19-E B C	Ground				1.67V 2.20V 9.60V		
Q20-E B C					1.05V 1.65V 8.30V		
Q21-E B C					1.11V 1.65V 4.12V		
Q22-Е В С					2.95V 3.48V 8.2V		
Q23-E B C					8.7V 8.1V 4.1V		
Q24-E B C					4.6V 5.2V 8.9V		
Q25-E B C					9.6V 8.9V 4.85V		
Q26-E B C		0V 0V 4.2V	OV OV 4.1V	0V 0V 4.15V	0V 0V 4.12V	5.2V 5.7V 5.2V	5.2V 5.8V 5.2V
Q27-E B C		0V 0V 9.5V	0V 0V 9.5V	0V 0V 9.6V	OV OV 9.4V	0V .64V .06V	0V .62V .05V
Q28-E B C		10.0V 9.5V OV	10.0V 9.5V OV	10.0V 9.6V OV	10.0V 9.4V OV	10.0V 9.4V 10.0V	10.0V 9.4V 10.0V
U5-4 5	الله المراجع على الله عنه الله المراجع على الله المراجع الله الله الله الله الله الله الله الل	OV OV	OV OV	OV 10.0V	0V 10.0V	OV OV	OV OV
U3-4 5		0V 10.0V	OV OV	OV OV	0V 10.0V	ov ov	0V 10.0V
U4-4 5	and a start with the second	0V 10.0V	0V 10.0V	0V 10.0V	0V 10.0V	ov ov	OV OV
U1-1 2 3 4 5 6 8 9 10 11 12 13		0V 0V 9.6V 0V 9.8V 0V 9.8V 0V 9.9V 0V 9.6V 0V 0V	0V 10.0V 0V 0V 10.0V 9.8V 0V 0V 10.0V 10.0V 10.0V 0V 0V	10.0V 0V 0V 10.0V 9.9V 0V 0V 10.0V 10.0V 10.0V 0V	9.8V OV OV 0V 9.8V OV 9.8V OV 9.8V OV 10.0V OV	0V 10.0V 0V 0V 10.0V 0V 0V 10.0V 10.0V 0V	0V 0V 9.6V 10.0V 0V 0V 0V 9.9V 0V 0V 9.6V 0V

# DC REMOTE CONTROL BOARD VOLTAGE READINGS

#### DC REMOTE CONTROL BOARD 19D423480G5 DC VOLTAGE READINGS

### All readings are typical readings made with a 20,000 ohms-per-Volt meter.

METERING POINT	REFERENCE	CONTROL CURRENT (MA)					
		-11	-6	-2.5	0	+6	+11
U2-1 2 3 4 5 6	Ground	9.9V OV OV OV 8.3V 9.9V	OV OV 9.7V OV 9.0V OV	OV 10.0V OV 10.0V OV OV	9.8V 9.8V OV OV OV 9.8V	OV OV 9.7V 4.2V 4.7V OV	9.9V OV OV 7.9V 9.9V
8 9 10 11 12 13		6.2V 9.8V 0V 9.0V 0V .5V	0V 9.8V 0V 9.0V 9.0V 0V .5V	6.5V 9.9V OV OV 10.0V 4.4V	6.4V 9.8V OV OV 9.8V .65V	0V 0V 10.0V 4.7V 0V .50V	6.3V OV OV 8.0V OV .5V
Q1-E B C	Pin (Control -)	-13.2V -12.6V -12.1V	-9.0V -8.4V -7.9V	-4.53V -3.85V -4.48V	OV OV OV	7.0V 6.2V 8.0V	11.1V 6.4V 12.3V
Q2-E		-12.1V	-7.9V	-4.48V	OV	8.0V	12.3V
B		-11.6V	-7.3V	-3.90V	OV	3.7V	4.5V
C		-12.1V	-6.8V	-3.43V	OV	9.1V	12.3V
Q3-E		-12.1V	-6.8V	-3.45V	OV	9.0V	12.3V
B		-12.9V	-4.8V	38V	OV	8.4V	11.5V
C		-12.1V	-7.9V	-4.48V	OV	8.0V	12.2V
Q29-1		-12.2V	-7.9V	-4.47V	OV	8.0V	4.1V
2		-13.2V	-8.9V	-4.52V	OV	6.9V	3.7V
Q30-1		-12.1V	-6.8V	-3.43V	OV	9.0V	4.1V
2		-12.1V	-7.9V	-4.47V	OV	8.0V	4.1V
Q31-1		-24.5V	-16.0V	-8.4V	OV	17V	25.4V
2		70V	45V	40V	OV	15.7V	24.0V

METERING POINT	REFERENCE	CONT	ROL CURRI	ENT (MA)
		-2.5	0	+6
AR1-2 3 6	Ground		4.75V 4.75V 4.75V 4.75V	
Q4-E B C		0V 0V 10.0V	0V 0V 10.0V	9.1V 9.6V 10.0V
Q5-E B C		0V 0V 10.0V	0V 0V 10.0V	8.3V 9.1V 10.0V
Q6-E B C		0V 0V 10.0V	OV OV 10.0V	0V .80V 10.00V
Q12-E B C		0V .69V .08V	OV OV 8.6V	0V 0V 8.7V
Q14-E B C			OV .64V OV	
Q15-E B C		9.80V	4.15V 4.72V 9.80V	
Q16-E B C		0V 0V 10.0V	0V 0V 10.0V	OV .63V OV
Q17-Е В С			OV CV OV	
Q18-E B C			0V 0V 4.7V	
Q19-E B C			1.50V 2.05V 9.80V	
Q20-E B C			.96V 1.50V 8.30V	
Q21-E B C			1.04V 1.55V 4.45V	
Q22-E B C			2.98V 3.50V 8.20V	
Q23-E B C			4.20V 8.20V 8.80V	
Q24-E B C			4.65V 5.20V 9.00V	

METERING POINT	
1	
Q25-E B	
С Q26-Е	
B C	
U5-4 5 U3-4	
03-4 5  U4-4	
U2-1	
02-1 2 3 4 5 6 8 9 10 11 12 13	
Q1-E B C	
Q2-E B C	
U5-1 2	
U3-1 2	
U4-1 2	

### LOGIC CIRCUIT TRUTH TABLE

Voltage measurements at the test points referenced to ground in the following tables are approximately equal to 10 VDC for the "1" state and zero voltage for the "0" state. The logic functions associated with each control line current vary with the individual Remote Board used. Not all functions are present on every board.

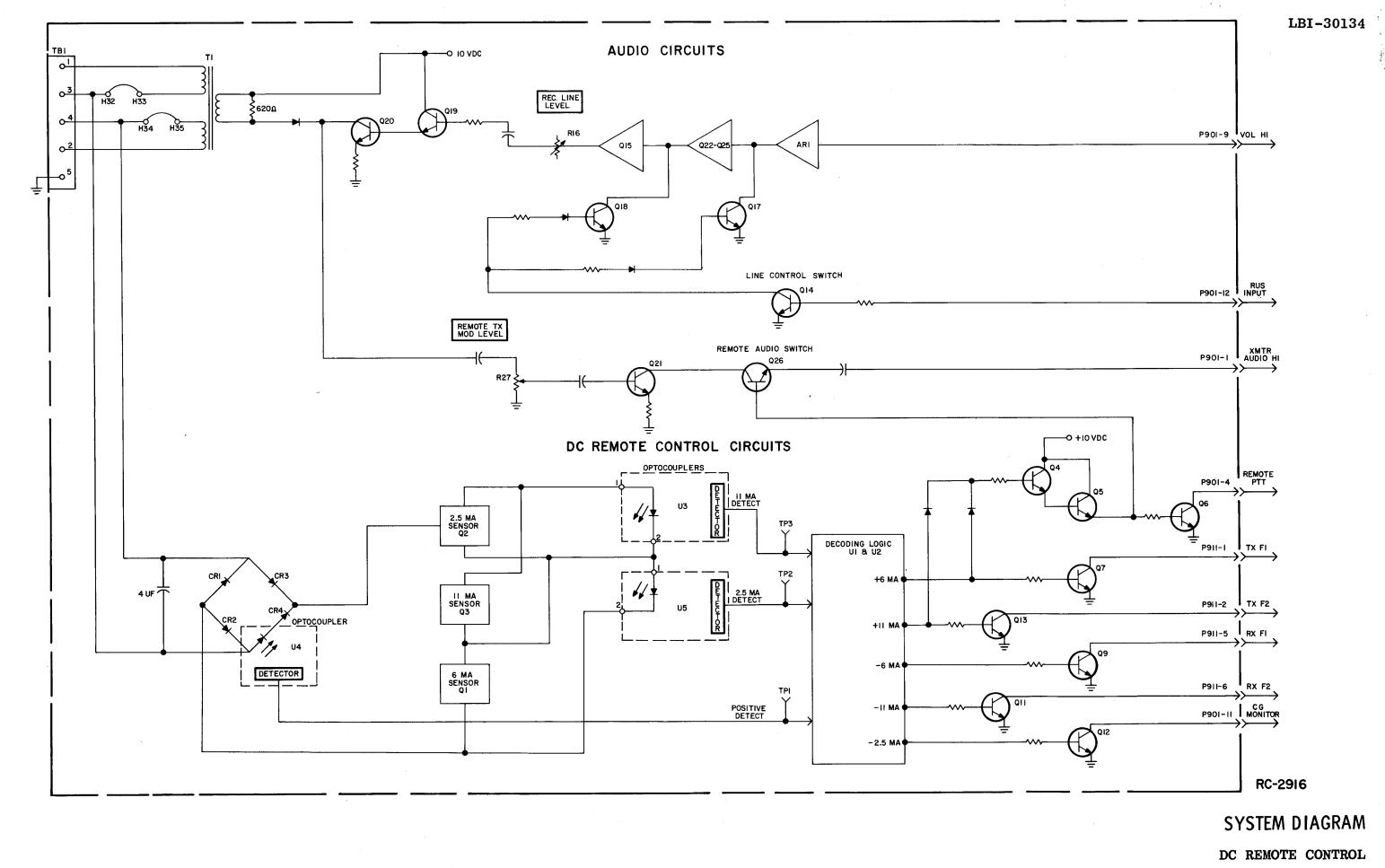
#### REMOTE CONTROL BOARDS 19D423480G1-G5

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REFERENCE	CONT	ROL CURRE	NT (MA)
	-2.5	0	+6
		9.70V 9.00V 4.90V	
	0V	0V	4.8V
	0V	0V	5.4V
	4.45V	4.45V	4.8V
	0V	0V	OV
	10.0V	10.0V	OV
	OV	OV	OV
	OV	10.0V	OV
	0V	0V	OV
	10.0V	10.0V	OV
Ground	0V	9.9V	0V
	9.8V	9.8V	0V
	0V	OV	9.9V
	10.0V	OV	2.25V
	0V	9.9V	6.8V
	10.0V	10.0V	0V
	9.8V	9.9V	0V
	0V	10.0V	0V
	0V	9.8V	0V
	9.8V	OV	10.0V
	0V	0V	6.4V
	9.8V	9.9V	0V
	.5V	.5V	.5V
Pin (Control -)	-4.6V -3.85V -4.5V	OV OV OV	7.4V 6.2V 8.5V
	-4.5V	OV	8.4V
	-3.9V	OV	3.7V
	-3.45V	OV	9.6V
	-4.5V	OV	8.5V
	-4.5V	OV	7.4V
	-3.45V	OV	9.5V
	-4.45V	OV	8.4V
	-8.4V	OV	18V
	40V	OV	16.5V

Control Line	TEST POINT			
Current	TP1	TP2	TP3	
+11 mA	"0"	"0"	"1"	
+6 mA	"0"	"0"	"0"	
0 mA	"1"	ייניי	"1"	
-2.5 mA	"1"	"1"	"0"	
-6 mA	"1"	"0"	"0"	
-11 mA	"1"	"0"	"1"	



Issue 1

R73/R75 TP3 +H3 (+ C8 +) +K + R63 + PL19D423480G H3181 + R59 REV H22 H22 77+ At H28 H28 0 H29 世21年20年2 234281 H61 H60 30431 (+ 05 ++ 26 42 + R82 慄 J U4 HASA H3! CR3 H 1 CR6 R8 RA - (H) (H) CR798 C1 CR5+ H5 1H5 147 CR2 H HS0 H47 H448 R79 + R21 + - C 46 45 44 R17 9 + [R64]+ 102 0 Τ1 WR4 VR4 2 100 R 107 -4 all a (in the second s -10-R80 (+) -4 HT HIS T RIG - (B)-100

(19B227033, Sh. 1, Rev. 2) (19B227033, Sh. 2, Rev. 2)

JUMPERS FOR REMOTE BOARDS:

FROM

НЭ

H32 H34 H48

H5C

GROUP 1

то

WIRE

DA DA

DA

DA

(19D423987, Rev. 3)

H34 H48

H50

LEAD IDENTIFICATION FOR 01-05, 07-016, 019, 021-028



IN-LINE TOP VIEW NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

# **OUTLINE DIAGRAM**

10

DC REMOTE CONTROL BOARDS 19D423480G1-G5

H1	H2	DA
НЗ	H4	DA
H7	H8	DA
H10	H11	DA
H32	H33	DA
H44	H45	DA
H34	H35	DA
H46	H47	DA
H48	H49	. DA
H50	H51	DA
H60	H6,1	DA
	GROUP 2	
FROM	то	WIRE

Has H35

H49

	GROUP 3&4	
FROM	то	WIRE
НЭ	. H10	DA
H32	H33	DA
H34	H35	DA
H48	H49	DA
1150	1154	
H50	H51	DA
H50	GROUP 5	
FROM	GROUP 5 TO	WIRE
	GROUP 5	

H35

H49

DA

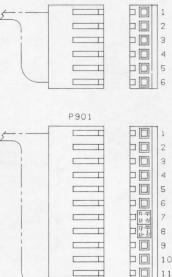
FROM	TO	WIRE		
P901-1	H27	CONDUCTOR	7145310P1	
P901-2	H26	SHIELD		
P901-3	H21	SF24-BK		
P901-4	H22	SF24-0		
P901-5	H25	SF24-R		
P901-6				
P901-7				
P901-8				
P901-9	H19	CONDUCTOR	7145310P1	
P901-10	H20	SHIELD		
P901-11	H23	SF2-	4-G	
P901-12	H24	SF2-	4-BL	

FROM	ТО	WIRE
P911-1	НЗО	SF24-W
P911-2	H31	SF24-BF
P911-3		
P911-4		
P911-5	H28	SF24-V
P911-6	H29	SF24-Y

- RUNS ON SOLDER SIDE RUNS ON BOTH SIDES

RUNS ON COMPONENT SIDE

	1	1
ROM	ТО	WIRE
9	· H10	DA
32	H33	DA
34	H35	DA
48	H49	DA
50	H51	DA



P911 

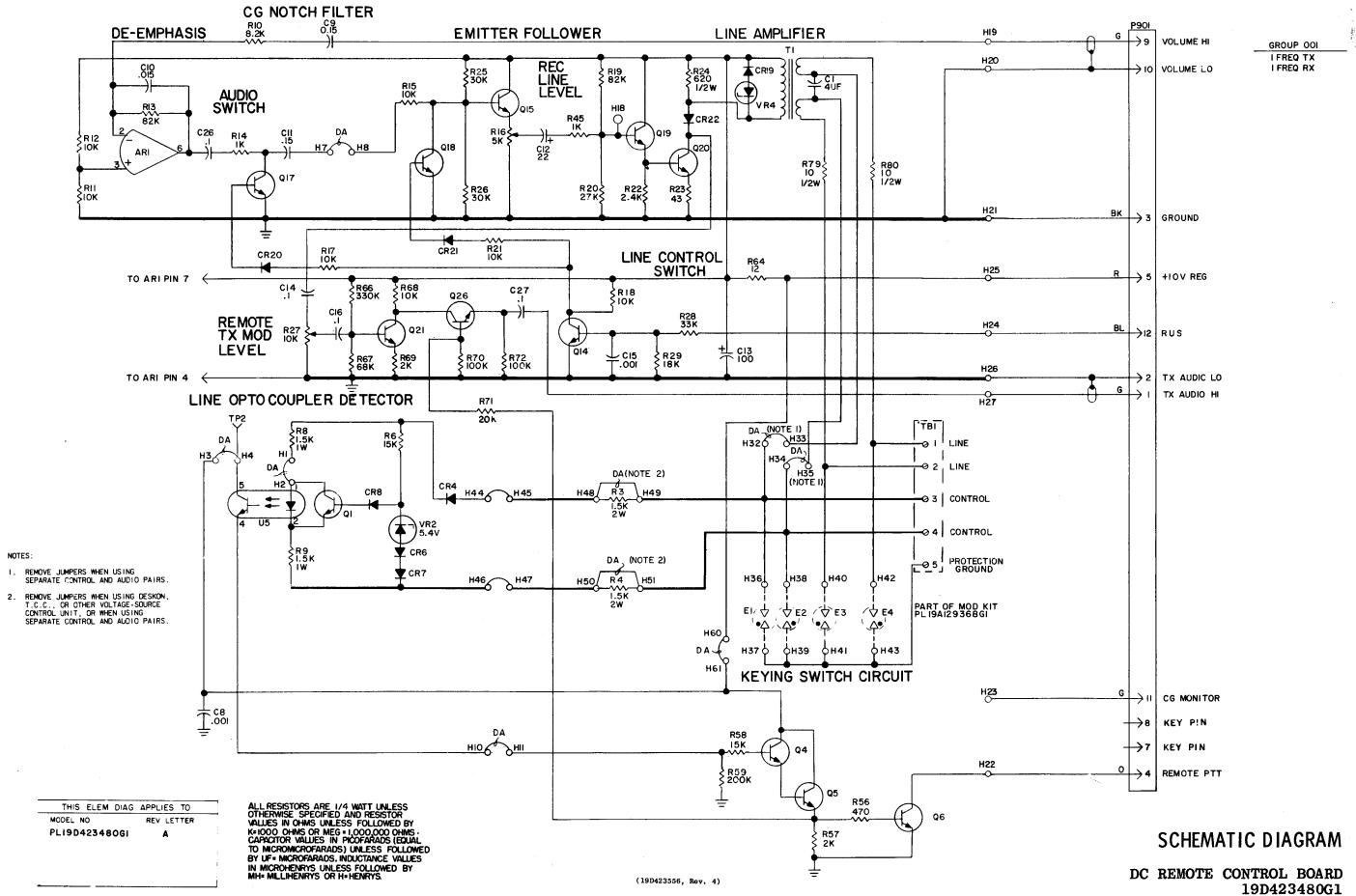


TRIANGULAR TOP VIEW

NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.







NOTES:

### LBI-30134

#### PARTS LIST

LBI-30123

DC REMOTE CONTROL BOARD 19D423480G1

SYMBOL	GE PART NO.	DESCRIPTION
ARI	19A116297P2	Integrated circuit, Linear: with TO99 Package, operational amplifier.
C1	7486445P5	 Electrolytic, non polarized: 4 μf +100% -10%,
C8	5494481P111	150 YDCW.
		Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C9	19A116080P108	Polyester: 0.15 µf ±10%, 50 VDCW.
C10	19A116080P102	Polyester: 0.015 µf ±10%, 50 VDCW.
211 212	19A116080P8 5496267P10	Polyester: 0.15 $\mu$ f ±20%, 50 VDCW. Tantalum: 22 $\mu$ f ±20%, 15 VDCW; sim to Sprague Type 150D.
C13	19A115680P7	Electrolytic: 100 µf +150% -10%, 15 VDCW; sim to Mallory Type TTX.
214	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
:15	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
:16	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
26	19A116080P7	Polyester: 0.1 µf ±20%, 50 VDCW.
27	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
		DIODES AND RECTIFIERS
R4	4037822P2	Silicon.
16 1d 17	19A115250P1	Silicon.
R8	4037822P2	Silicon.
19	4037822P2	Silicon.
20 d 21	19A115250P1	Silicon.
122	403782222	Silicon.
		PROTECTIVE DEVICES
ru	19A116683P1	Protector, telephone: sim to Reliable SR-Z350.
901		Connector. Includes:
	19A116659P21	Shell.
	19A116781P5	Contact, electrical: wire range No. 16-20 AWG; sim to Molex 08-50-0106. (Quantity 2).
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 7).
	198209519P1	Polarity tab.
		TRANSISTORS
1	19A115910P1	Silicon, NPN; sim to Type 2N3904.
4 nd 5	19A115910P1	Silicon, NPN; sim to Type 2N3904.
6	19A115300P2	Silicon, NPN; sim to Type 2N3053.
14	19A115910P1	Silicon, NPN; sim to Type 2N3904.
15	19A116774P1	Silicon, NPN; sim to Type 2N5210.
17 nd 18	19A129184P1	Silicon, NPN.

SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
Q19	19A116774P1	Silicon, NPN; sim to Type 2N5210.			TEST POINTS
Q20	19A115300P4	Silicon, NPN.	TPl	19 <b>B2</b> 11379P1	Spring (Test Point).
Q21	19A116774P1	Silicon, NPN; sim to Type 2N5210.			
Q26	19A116774P1	Silicon, NPN; sim to Type 2N5210.	υ5	19A116908P1	
			05	19411090851	Optoelectronic coupler: Dual In Line 6 Pin Mini Dip Package; sim to TI T1L112.
R3 and R4	3R79P152K	Composition: 1500 ohms $\pm 10\%$ , 2 w.			
R6	3R152P153K	Composition: 15,000 ohms ±10%, 1/4 w.	VR2	4036887 <b>P</b> 5	Silicon, Zener.
R8 and R9	3R78P152J	Composition: 1500 ohms ±5%, 1 w.	VR4	19A116325P4	Silicon, Zener; sim to 1N5349.
R10	3R152P822J	Composition: 8200 ohms ±5%, 1/4 w.			HARNESS ASSEMBLY
R11 and R12	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.			19 <b>D423480G7</b> (Includes <b>P901</b> )
R13	3R152P823J	Composition: $82,000$ ohms $\pm 5\%$ , $1/4$ w.			
R14	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.		4036555P1	
R15	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.		403055521	Insulator, washer: nylon. (Used with Q6, Q20).
R16	19 <b>B2</b> 09358 <b>P</b> 5	Variable, carbon film: approx 200 to 5000 ohms		4029851P15 19C307038P11	Clip loop. (Used with P901). Nut, push on. (Used with P901 clip loop).
R17	3R152P103J	±20%, 0.25 w; sim to CTS Type U-201. Composition: 10,000 ohms ±5%, 1/4 w.		19B201074P304	Tap screw, Phillips POZIDEIV <sup>®</sup> : No. 6-32 x 1/4. (Secures TB1-1 thru TB1-4).
and R18				19B201074P305	Tap screw, Phillips POZIDRIV <sup>®</sup> : No. 6-32 x 5/16.
R19	3R152P823J	Composition: 82,000 ohms $\pm 5\%$ , 1/4 w.			(Secures TB1-5 and strain relief).
R20	3R152P273J	Composition: 27,000 ohms $\pm 5\%$ , 1/4 w.		19A121457P1	Cable clamp. (Part of strain relief for TB1).
R21	3R152P103J	Composition: 10,000 chms $\pm 5\%$ , 1/4 w.		19 <b>B</b> 219835P1	Support, V shaped. (Part of strain relief for TB1).
R22	3R152P242J	Composition: 2400 ohms $\pm 5\%$ , 1/4 w.		19B201074P208	Tap screw, Phillips POZIDRIV <sup>®</sup> : No. 4-40 x 1/2. (Secures wires at TBl strain relief).
R23 R24	3R152P430J 3R77P621J	Composition: 43 ohms ±5%, 1/4 w. Composition: 620 ohms ±5%, 1/2 w.			
R25	3R152P303J	Composition: 30,000 chms 15%, 1/2 w.	f	· · · · · · · · · · · · · · · · · · ·	
and R26					
R27	19B209358P6	Variable, carbon film: approx 300 to 10,000 ohms $\pm 20\%$ , 0.25 w; sim to CTS Type U-201.			
R28	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.		PRO	DUCTION CHANGES
R29	3R152P183J	Composition: 18,000 ohms $\pm 5\%$ , 1/4 w.			
R45	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.	Changes are ide	in the equipment ntified by a "Revis	to improve performance or to simplify circuits sion Letter", which is stamped after the model
R56	3R152P471J	Composition: 470 ohms $\pm 5\%$ , 1/4 w.	number previou	of the unit. The s revisions. Refer	ion Letter", which is stamped after the model revision stamped on the unit includes all to the Parts List for descriptions of parts
R57 R58	3R152P202J 3R152P153J	Composition: 2000 ohms ±5%, 1/4 w. Composition: 15,000 ohms ±5%, 1/4 w.	allecte	d by these revision	15,
R59	3R152P204J	Composition: 0.20 megohm ±5%, 1/4 w.	REV. A	- To prevent plug i	rom local or remote control being mated to stem audio squelch board. Added a polarizing
R64	3R152P120J	Composition: 12 ohmus $\pm 5\%$ , 1/4 w.		tab 19B209519P1	it P901-7.
R66	3R152P334J	Composition: 0.33 megohm ±5%, 1/4 w.			
R67	3R152P683J	Composition: 68,000 ohms ±5%, 1/4 w.			
R68	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.			
R69	3R152P202J	Composition: 2000 ohms ±5%, 1/4 w.	1		
R70	3R152P104J	Composition: 0.10 megohm ±5%, 1/4 w.			
R71	3R152P203J	Composition: 20,000 ohms $\pm 5\%$ , 1/4 w.			
R72	3R152P104J	Composition: 0.10 megohm ±5%, 1/4 w.			
R79 and R80	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.			
Tl	19A116736P1	Audio freq: 300 to 6000 Hz, Pri: 30 ohms ±15% DC res, Sec 1: 15 ohms ±15% DC res, Sec 2: 15 ohms ±15% DC res.			
TBL	19A11666793	Plate nut. (Quanity 5).			

# PARTS LIST

DC REMOTE CONTROL BOARD 19D423480G1

Issue 2







#### PARTS LIST

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LBI-30122A

DC REMOTE CONTROL BOARD 19D423480G2

SYMBOL	GE PART NO.	DESCRIPTION
R1	19A116297P2	Integrated circuit, Linear: with TO99 Package, operational amplifier.
L	7486445P5	Electrolytic, non polarized: 4 µf +100% -10%, 150 VDCW.
2	19A116080P9	Polyester: 0.22 µf ±20%, 50 VDCW.
3 nd 4	19A116080P7	Polyester: 0.1 $\mu$ f ±20%, 50 VDCW.
25 Ind 26	5494481P111	Ceramic disc: 1000 pf $\pm 20\%$ , 1000 VDCW; sim to RMC Type JF Discap.
C8	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C9	19A116080P108	Polyester: 0.15 µf ±10%, 50 VDCW.
-10	19A116080P102	Polyester: 0.015 µf ±10%, 50 VDCW.
1	19A116080P8	Polyester: 0.15 $\mu$ f ±20%, 50 VDCW.
2	5496267P10	Tantalum: 22 $\mu f$ $\pm 20\%,$ 15 VDCW; sim to Sprague Type 150D.
13	19A115680P7	Electrolytic: 100 µf +150% -10%, 15 VDCW; sim to Mallory Type TTX.
.4	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
5	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
16	19A116080P107	Polyester: 0.1 $\mu$ f ±10%, 50 VDCW.
6	19A116080P7	Polyester: 0.1 $\mu$ f ±20%, 50 VDCW.
	19A116080P107	Polyester: 0.1 $\mu$ f ±10%, 50 VDCW.
3	5496267P18	Tantalum: 6.8 μf ±20%, 35 VDCW; sim to Sprague
•	5496267P10	Type 150D. Tantalum: 22 μf ±20%, 15 VDCW; sim to Sprague Type 150D.
l ru	4037822P2	DIODES AND RECTIFIERS
14 15	19A115250P1	Silicon.
hru R7		
18 1d 19	4037822P2	Silicon.
R12 hru	19A115250P1	Silicon.
14	1000000000	8474
119 120	4037822P2 19A115250P1	Silicon. Silicon.
20 d 21	ISRIISZOUPI	
22	4037822P2	Silicon.
23 d 24	19A115250P1	Silicon.
-		~ ~ PROTECTIVE DEVICES
ru	19A116683P1	Protector, telephone: sim to Relimble SR-2350.
4		
901		Connector. Includes:
	19A116659P21	Shell.
	19A116781P5	Contact, electrical: wire range No. 16-20 AWG;
		sim to Molex 08-50-0106. (Quantity 2).

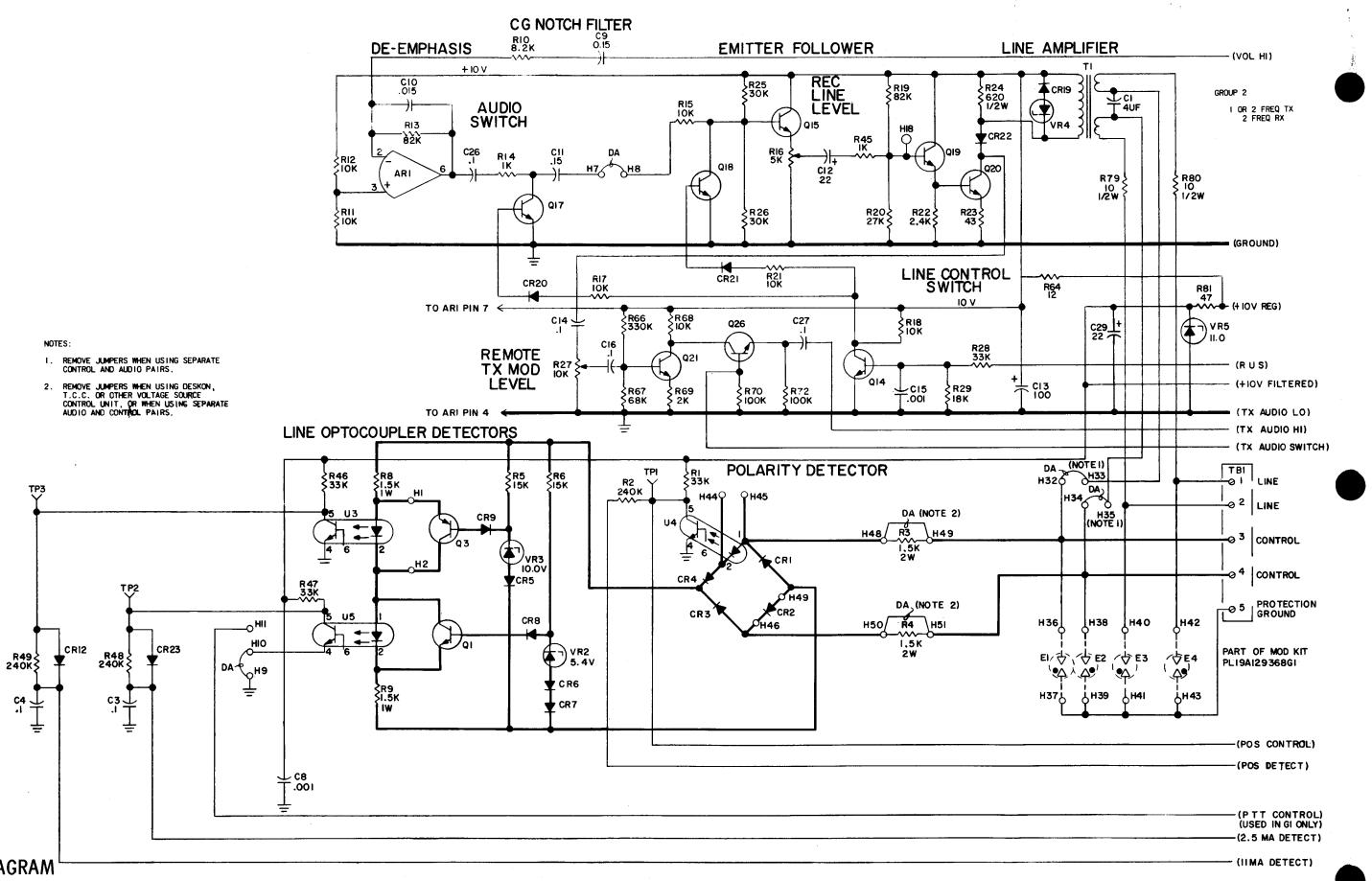
SYMBOL	ge part no.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 7).	R27	19B209358P6	Variable, carbon film: approx 300 to 10,000 ohms			
	19B209519P1	Polarity tab.	R28	3R152P333J	$\pm 20\%$ , 0.25 w; sim to CTS Type U-201.			HARNESS ASSEMBLY
<b>DOI1</b>	19820951521				Composition: 33,000 chms $\pm 5\%$ , 1/4 w.			19D423480G6 (Includes P911)
P911	101110050010	Connector. Includes:	R29	3R152P183J	Composition: 18,000 ohms $\pm 5\%$ , 1/4 w.			
	19A116659P19	Shell.	R45	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.			
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 4).	R46 and R47	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.		4036555P1	
			R48	3R152P244J	Composition: $0.24$ megohm $\pm 5\%$ , $1/4$ w.		4030555P1 4029851P14	Insulator, washer: nylon. (Used with Q6, Q20). Clip loop. (Used with P911).
Q1	19A115910P1	Silicon, NPN; sim to Type 2N3904.	and R49	SHIDAFATTO	Composition. 0.24 megoim 10%, 1/4 W.		19C307038P11	Nut, push on. (Used with P911 clip loop).
	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R50	3R152P333J			19B201074P304	
Q3		, ,			Composition: 33,000 ohms ±5%, 1/4 w.		1982010749304	Tap screw, Phillips POZIDRIV <sup>7</sup> : No. 6-32 x 1/4. (Secures TB1-1 thru TB1-4).
Q4 and	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R51	3R152P203J	Composition: 20,000 ohms $\pm 5\%$ , 1/4 w.		19B201074P305	Tap screw, Phillips POZIDRIV <sup>®</sup> : No. 6-32 x 5/16.
Q5	19A115300P2	Silicon, NPN; sim to Type 2N3053.	R52 and B52	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , $1/4$ w.		10410145701	(Secures TB1-5 and strain relief).
Q6			R53				19A121457P1	Cable clamp. (Part of strain relief for TB1).
Q7	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R55	3R152P153J	Composition: 15,000 ohms $\pm 5\%$ , 1/4 w.		19B219835P1	Support, V shaped. (Part of strain relief for TB1).
Q9 and	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R56	3R152P471J	Composition: 470 ohms $\pm 5\%$ , $1/4$ w.		19B201074P208	Tap screw, Phillips POZIDRIV <sup>*</sup> : No. 4-40 $\pi$ 1/2.
Q10			R57	3R152P202J	Composition: 2000 ohms $\pm 5\%$ , 1/4 w.	1		(Secures wires at TBl strain relief).
Q13 and	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R58	3R152P153J	Composition: 15,000 ohms $\pm 5\%$ , 1/4 w.		19A116155P1	Insulator, disc. (Used with AR1).
Q14			R59	3R152P204J	Composition: 0.20 megohm $\pm 5\%$ , 1/4 w.			
Q15 and	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R63	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.	• • • • •		
Q16			R64	3R152P120J	Composition: 12 ohms $\pm 5\%$ , 1/4 w.			
Q17	19A129184P1	Silicon, NPN.	R66	3R152P334J	Composition: 0.33 megohm $\pm 5\%$ , 1/4 w.			
and Q18			R67	3R152P683J	Composition: 68,000 ohms ±5%, 1/4 w.			
Q19	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R68	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.			
Q20	19A115300P4	Silicon, NPN.	R69	3R152P202J	Composition: 2000 ohms ±5%, 1/4 w.	-		
Q21	19A116774Pl	Silicon, NPN; sim to Type 2N5210.	R70	3R152P104J	Composition: 0.10 megohm $\pm 5\%$ , 1/4 w.			
Q26	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R72	3R152P104J	Composition: 0.10 megohm ±5%, 1/4 w.			
Q27	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R73	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.			
Q28	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R74	3R152P153J	Composition: $15,000$ ohms $\pm 5\%$ , $1/4$ w.			
420	1541100001			3R152P473J	Composition: $47,000$ ohms $\pm 5\%$ , $1/4$ w.			
		RESISTORS	R76		Composition: 20,000 chans 15%, 1/4 w.			
R1	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.	R77 and	3R152P203J				
R2	3R152P244J	Composition: 0.24 megohm $\pm 5\%$ , 1/4 w.	R78					
R3	3R79P152K	Composition: 1500 ohms $\pm 10\%$ , 2 w.	R79 and	3R77P100J	Composition: 10 ohms $\pm 5\%$ , $1/2$ w.			
and R4			R80					
R5	3R152P153K	Composition: 15,000 ohms ±10%, 1/4 w.	R81	3R152P470J	Composition: 47 ohms $\pm 5\%$ , 1/4 w.			
and R6			R82	3R152P471J	Composition: 470 ohms ±5%, 1/4 w.			
R8	3R78P152J	Composition: 1500 ohms ±5%, 1 w.						
and R9			ті	19A116736P1	Audio freq: 300 to 6000 Hz,			
R10	3R152P822J	Composition: 8200 ohms $\pm 5\%$ , 1/4 w.			Pri: 30 ohms ±15% DC res, Sec 1: 15 ohms ±15% DC res,			
R11	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.			Sec 2: 15 ohms ±15% DC res.		PRO	ODUCTION CHANGES
and R12	-					Change	s in the equipment	t to improve performance or to simplify circuits
R12 R13	3R152P823J	Composition: 82,000 ohms ±5%, 1/4 w.	TB1	19A116667P3	Plate nut. (Quanity 5).	are id number	lentified by a "Re of the unit. Th	evision Letter", which is stamped after the model ne revision stamped on the unit includes all
R13 R14	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.				previo	ous revisions. Re ed by these revis	fer to the Parts List for descriptions of parts
R14 R15	3R152P102J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.						·•
1	38152P1035 19B209358P5	Variable, carbon film; approx 200 to 5000 ohms	TP1	19B211379P1	Spring (Test Point).	REV. A	- To prevent plu	g from local or remote control being mated to
R16	19840933669	$\pm 20\%$ , 0.25 w; sim to CTS Type U-201.	thru TP3				wrong jack on tab 19B209519I	system audio squelch board. Added a polarizing - Pl at P901-7.
R17	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.			INTEGRATED CIRCUITS			
and R18			U1	19A134097P302	Digital: Quad 2-Input Nor Gate; sim to Vendor			
R19	3R152P823J	Composition: 82,000 ohms $\pm 5\%$ , $1/4$ w.	and U2		Type CD4001.			
R20	3R152P273J	Composition: 27,000 ohms $\pm 5\%$ , $1/4$ w.	<b>U</b> 3	19A116908P1	Optoelectronic coupler: Dual In Line 6 Pin Mini			
R21	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	thru U5		Dip Package; sim to TI T1L112.			
R21 R22	3R152P242J	Composition: 2400 ohms $\pm 5\%$ , 1/4 w.			VOLTAGE REGULATORS			
R22 R23	3R152P2420	Composition: 43 ohms $\pm 5\%$ , 1/4 w.	VR2	4036887P5	Silicon, Zener.			
R23 R24	3R77P621J	Composition: 620 ohms $\pm 5\%$ , $1/2$ w.	VR2 VR3	4036887P3	Silicon, Zener.			
	3R77P621J 3R152P303J	Composition: 30,000 ohms $\pm 5\%$ , $1/4$ w.		4036887P11 19A116325P4	Silicon, Zener; sim to 1N5349.			
R25 and	3K192P303J	Composition, 50,000 01mmo 20,0, 1/ x #1	VR4		,			PARTS LIST
R26			VR5	4036887P8	Silicon, Zener.			
								DC REMOTE CONTROL BOARD
								DC REMOTE CONTROL BOARD 19D423480G2
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\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

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LBI-30134

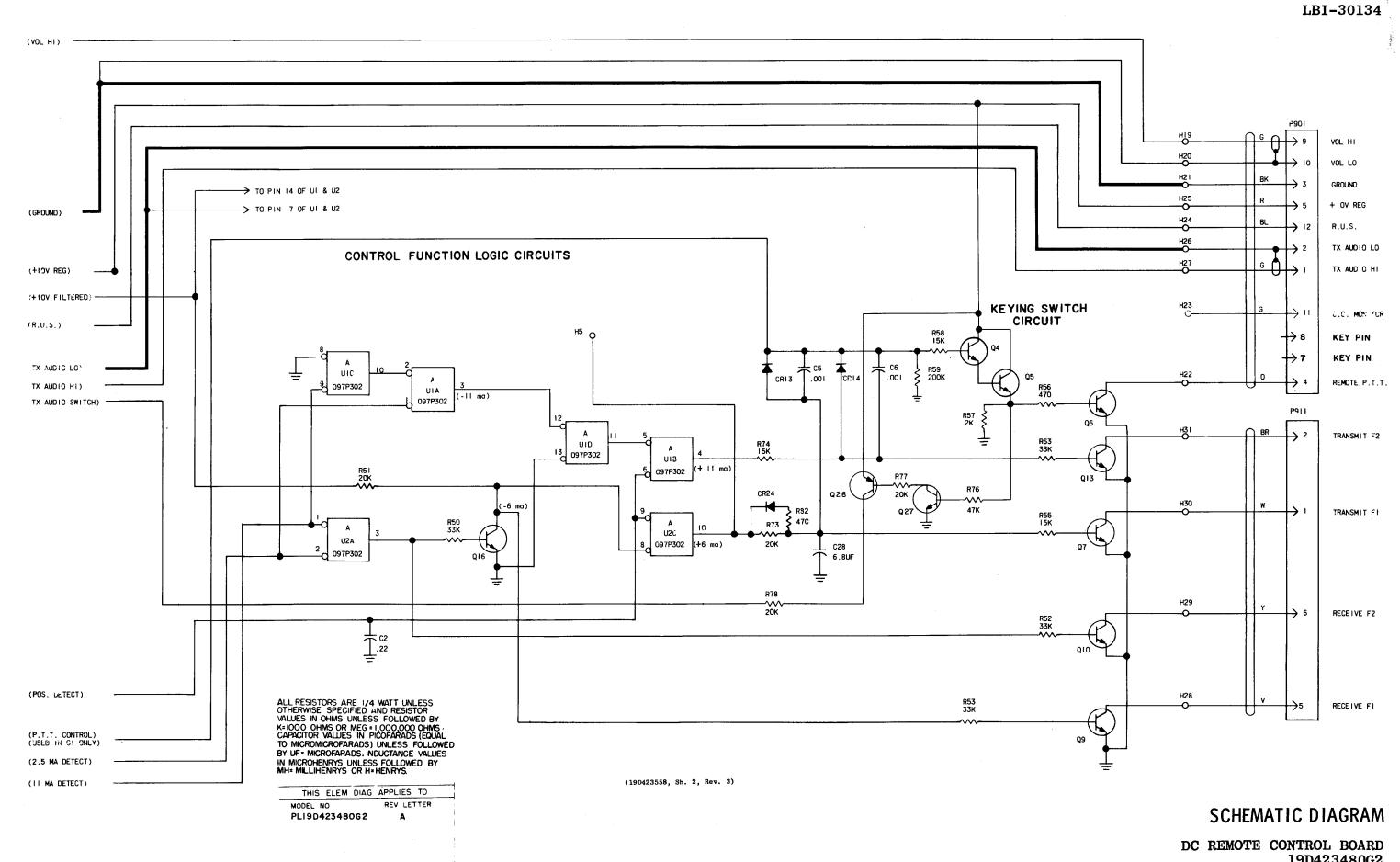


# SCHEMATIC DIAGRAM

### DC REMOTE CONTROL BOARD 19D423480G2

(19D423558, Sh. 1, Rev. 3)

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19D423480G2

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Issue 2

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### PARTS LIST

#### LBI-30121A DC REMOTE CONTROL BOARD 19D423480G3 2 FREQ TX, 1 FREQ/CG MON. 19D423480G4 2 FREQ TX, 2 FREQ/CG MON.

SYMBOL	GE PART NO.	DESCRIPTION	P901
ARl	19A116297P2	Integrated circuit, Linear: with TO99 Package, operational amplifier.	
		CAPACITORS	
Cl	7486445P5	Electrolytic, non polarized: 4 $\mu$ f +100% -10%, 150 VDCW.	
C2	19A116080P9	Polyester: 0.22 $\mu$ f $\pm 20\%$ , 50 VDCW.	P911
C3 and C4	19A116080P7	Polyester: 0.1 µf ±20%, 50 VDCW.	
C5 thru C8	5494481P111	Ceramic disc: 1000 pf $\pm 20\%,$ 1000 VDCW; sim to RMC Type JF Discap.	
С9	19A116080P108	Polyester: 0.15 $\mu f$ ±10%, 50 VDCW.	Q1 and
C10	19A116080P102	Polyester: 0.015 $\mu$ f ±10%, 50 VDCW.	Q2
C11	19A116080P8	Polyester: 0.15 $\mu f$ ±20%, 50 VDCW.	Q3
C12	5 <b>4</b> 96267 <b>P</b> 10	Tantalum: 22 $\mu f$ $\pm 20\%,$ 15 VDCW; sim to Sprague Type 150D.	Q4 and Q5
C13	19A115680P7	Electrolytic: 100 $\mu f$ +150% -10%, 15 VDCW; sim to Mallory Type TTX.	Q6
C14	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.	Q7
C15	5494481P111	Ceramic disc: 1000 pf $\pm 20\%,$ 1000 VDCW; sim to RMC Type JF Discap.	Q8 thru Q11
C16	19A116080P107	Polyester: 0.1 $\mu$ f ±10%, 50 VDCW.	Q12
C17	19C300075P47001G	Polyester: 7000 pf $\pm 2\%,$ 100 VDCW; sim to GE Type 61F.	thru Q14
C18	19C300075P10002G	Polyester: 100,000 pf $\pm 2\%,$ 100 VDCW; sim to GE Type 61F.	Q15 and Q16
C19	19C300075P47001G	Polyester: 7000 pf $\pm 2\%$ , 100 VDCW; sim to GE Type 61F.	Q17 and
C20	19A116080P101	Polyester: 0.01 $\mu$ f ±10%, 50 VDCW.	Q18
C21	19A116080P205	Polyester: 0.047 $\mu$ f ±5%, 50 VDCW.	Q19
C22	5496267P14	Tantalum: 15 $\mu f$ $\pm 20\%,$ 20 VDCW; sim to Sprague Type 150D.	Q20 Q21
C23	19A116080P205	Polyester: 0.047 $\mu$ f ±5%, 50 VDCW.	and Q22
C24	19A116080P103	Polyester: 0.022 $\mu$ f ±10%, 50 VDCW.	Q23
C25	19A116080P4	Polyester: 0.033 $\mu$ f ±20%, 50 VDCW.	Q24
C26	19A116080P7	Polyester: 0.1 $\mu$ f ±20%, 50 VDCW.	Q25
C27	19A116080P107	Polyester: 0.1 $\mu$ f ±10%, 50 VDCW.	Q26
C28	5496267P18	Tantalum: 6.8 $\mu f \pm 20\%$ , 35 VDCW; sim to Sprague Type 150D.	Q27 Q28
C29	5496267P10	Tantalum: 22 µf $\pm 20\%$ , 15 VDCW; sim to Sprague Type 150D.	\$20
		DIODES AND RECTIFIERS	Rl
CR1 thru CR4	4037822P2	Silicon.	R2
CR5 thru CR7	19A115250P1	Silicon.	R3 and R4
CR8 and CR9	4037822P2	Silicon.	R5 thru R7
CR10	19A115250P1	Silicon.	R8 and
CR11	4037822P2	Silicon.	R9
CR12 thru	19A115250P1	Silicon.	R10 R11 and
CR18	4037822P2	Silicon.	R12
CR19 CR20	4037822P2 19A115250P1	Silicon.	
and CR21	13411020071		
CR22	4037822P2	Silicon.	

SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION
CR23	194115250P1	Silicon.	R13	3R152P823J	Composition: 82,000 ohms ±5%, 1/4 w.	R66	3R152P334J	Composition: 0.33 megohm $\pm 5\%$ , 1/4 w.
and CR24			R14	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.	R67	3R152P683J	Composition: 68,000 ohms ±5%, 1/4 w.
		PROTECTIVE DEVICES	R15	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	R68	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.
E1	19A116683P1	Protector, telephone: sim to Reliable SR-Z350.	R16	19B209358P5	Variable, carbon film; approx 200 to 5000 ohms	R69	3R152P202J	Composition: 2000 ohms $\pm 5\%$ , 1/4 w.
thru E4					$\pm 20\%$ , 0.25 w; sim to CTS Type U-201.	R70	3R152P104J	Composition: 0.10 megohm $\pm 5\%$ , 1/4 w.
		PLUGS	R17 and	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	R72	3R152P104J	Composition: 0.10 megohm $\pm 5\%$ , 1/4 w.
P901		Connector. Includes:	R18			R73	3R152P203J	Composition: 20,000 ohms $\pm 5\%$ , $1/4$ w.
	19A116659P21	Shell.	R19	3R152P823J	Composition: 82,000 ohms $\pm 5\%$ , $1/4$ w.	R74	3R152P153J	Composition: 15,000 ohms ±5%, 1/4 w.
	19A116781P5	Contact, electrical: wire range No. 16-20 AWG;	R20	3R152P273J	Composition: 27,000 ohms $\pm 5\%$ , $1/4$ w.	R76	3R152P473J	Composition: 47,000 ohms $\pm 5\%$ , 1/4 w.
		sim to Molex 08-50-0106. (Quantity 2).	R21	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	R77	3R152P203J	Composition: 20,000 ohms $\pm 5\%$ , $1/4$ w.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108. (Quantity 7).	R22	3R152P242J	Composition: 2400 ohms $\pm 5\%$ , 1/4 w.	and R78		
	19B209519P1	Polarity tab.	R23	3R152P430J	Composition: 43 ohms $\pm 5\%$ , $1/4$ w.	R79	3R77P100J	Composition: 10 ohms $\pm 5\%$ , $1/2$ w.
P911		Connector. Includes:	R24	3R77P621J	Composition: 620 ohms $\pm 5\%$ , 1/2 w.	and R80		
	19A116659P19	Shell.	R25 and	3R152P303J	Composition: 30,000 ohms $\pm 5\%$ , $1/4$ w.	R81	3R152P470J	Composition: 47 ohms $\pm 5\%$ , $1/4$ w.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG;	R26			R82	3R152P471J	Composition: 470 ohms $\pm 5\%$ , 1/4 w.
		sim to Molex 08-50-0108. (Quantity 4).	R27	19B209358P6	Variable, carbon film: approx 300 to 10,000 ohms $\pm 20\%$ , 0.25 w; sim to CTS Type U-201.			TRANSFORMERS
		TRANSISTORS	R28	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.	Tl	19A116736P1	Audio freq: 300 to 6000 Hz,
Q1 and	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R29	3R152P183J	Composition: 18,000 ohms $\pm 5\%$ , 1/4 w.			Pri: 30 ohms ±15% DC res, Sec 1: 15 ohms ±15% DC res,
Q2			R30 and	19C314256P21692	Metal film: 16,900 ohms $\pm 1\%$ , 1/4 w.			Sec 2: 15 ohms ±15% DC res.
Q3	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R31					TERM INAL BOARDS
Q4 and	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R32	19C314256P29091	Metal film: 9090 ohms $\pm 1\%$ , $1/4$ w.	TB1	19A116667P3	Plate nut. (Quanity 5).
Q5			R33	19C314256P22152	Metal film: 21,500 ohms ±1%, 1/4 w.			
Q6	19A115300P2	Silicon, NPN; sim to Type 2N3053.	R34	19C314256P21472	Metal film: 14,700 ohms ±1%, 1/4 w.			TEST POINTS
Q7	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R35	19C314256P21471	Metal film: 1470 ohms $\pm 1\%$ , 1/4 w.	TP1 thru	19B211379P1	Spring (Test Point).
Q8 thru	19A115910P1	Silicon, NPN; sim to Type 2N3904. (Used in G4 only).	R36	19C314256P23481	Metal film: 3480 ohms $\pm 1\%$ , 1/4 w.	TP3		
Q11			R37	19C314256P21001	Metal film: 1000 ohms $\pm 1\%$ , 1/4 w.			INTEGRATED CIRCUITS
Q12 thru	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R38	19C314256P22151	Metal film: 2150 ohms $\pm 1\%$ , 1/4 w.	U1 and	19A134097P302	Digital: Quad 2-Input Nor Gate; sim to Vendor Type CD4001.
Q14	1		R39	19C314256P21543	Metal film: 154,000 ohms $\pm 1\%$ , 1/4 w.	U2		
Q15 and	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R40	19C314256P21303	Metal film: 130,000 ohuns ±1%, 1/4 w.	J3 thru	19A116908P1	Optoelectronic coupler: Dual In Line 6 Pin Mini Dip Package; sim to TI TLL112.
Q16			R41	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	U5		VOLTAGE REGULATORS
Q17 and	19A129184P1	Silicon, NPN.	R42	19C314256P24641	Metal film: 4640 ohms $\pm 1\%$ , 1/4 w.			
Q18			R43	19C314256P22550	Metal film: 255 ohms $\pm 1\%$ , $1/4$ w.	VRl	4036887P3	Silicon, Zener.
Q19	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R44	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	VR2	4036887P5	Silicon, Zener.
Q20	19A115300P4	Silicon, NPN.	R45	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.	VR3	4036887P11	Silicon, Zener. Silicon, Zener; sim to 1N5349.
Q21 and	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R46 and	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.	VR4	19A116325P4 4036887P8	Silicon, Zener.
Q22			R47			VR5	403688798	Silleon, Zener.
Q23	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R48 and	3R152P244J	Composition: 0.24 megohm $\pm 5\%$ , 1/4 w.			
Q24	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R49					HARNESS ASSEMBLY 19D423480G6
Q25	19A115852P1	Silicon, PNP; sim to Type 2N3906. Silicon, NPN; sim to Type 2N5210.	R50	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.			(Includes P911)
Q26	19A116774P1	Silicon, NPN; sim to Type 2N3210. Silicon, NPN; sim to Type 2N3904.	R51	3R152P203J 3R152P333J	Composition: 20,000 ohms ±5%, 1/4 w. Composition: 33,000 ohms ±5%, 1/4 w. (Used in			
Q27	19A115910P1 19A115852P1	Silicon, NPN; Sim to Type 2N3904. Silicon, PNP; sim to Type 2N3906.	R52 thru R54	3R102P3333	Composition: 33,000 ohms 15%, 1/4 w. (Used in G4 only).			MISCELLANEOUS
Q28	19411090261		R54 R55	3R152P153J	Composition: $15,000$ ohms $\pm 5\%$ , $1/4$ w.		4036555P1	Insulator, washer: nylon. (Used with Q6, Q20).
		RESISTORS	R55 R56	3R152P153J 3R152P471J	Composition: 15,000 onms $\pm 5\%$ , 1/4 w. Composition: 470 ohms $\pm 5\%$ , 1/4 w.		4029851P14	Clip loop. (Used with P911).
Rl	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , $1/4$ w.	R56 R57	3R152P4713 3R152P202J	Composition: $470$ onms $\pm 5\%$ , $1/4$ w. Composition: 2000 ohms $\pm 5\%$ , $1/4$ w.	1	19C307038P11	Nut, push on. (Used with P911 clip loop).
R2	3R152P244J	Composition: 0.24 megohm $\pm 5\%$ , 1/4 w.	R57 R58	3R152P202J 3R152P153J	Composition: 2000 ohms ±5%, 1/4 w. Composition: 15,000 ohms ±5%, 1/4 w.		19B201074P304	Tap screw, Phillips POZIDRIV <sup>®</sup> : No. 6-32 x 1/4.
R3	3R79P152K	Composition: 1500 ohms ±10%, 2 w.	R58 R59	3R152P1533 3R152P204J	Composition: 15,000 onms 15%, 1/4 w. Composition: 0.20 megohm ±5%, 1/4 w.	1		(Secures TB1-1 thru TB1-4).
and R4			R60	3R152P204J 3R152P333J	Composition: $33,000$ ohms $\pm 5\%$ , $1/4$ w. (Used in		19B201074P305	Tap screw, Phillips POZIDRIV $\tilde{\mathbb{P}}$ : No. 6-32 x 5/16. (Secures TB1-5 and strain relief).
R5 thru	3R152P153K	Composition: 15,000 ohms $\pm 10\%$ , $1/4$ w.			G4 only).		19A121457P1	Cable clamp. (Part of strain relief for TB1).
R7			R61	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.		19B219835P1	Support, V shaped. (Part of strain relief for
R8 and	3R78P152J	Composition: 1500 ohms ±5%, 1 w.	R62	3R152P473J	Composition: 47,000 ohms $\pm 5\%$ , 1/4 w.			TB1). The set of the
R9			R63	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , $1/4$ w.		19B201074P208	Tap screw, Phillips POZIDRIV $\mathfrak{F}$ : No. 4-40 x 1/2. (Secures wires at TBl strain relief).
R10	3R152P822J	Composition: 8200 ohms $\pm 5\%$ , 1/4 w.	R64	3R152P120J	Composition: 12 ohms $\pm 5\%$ , 1/4 w.		19A116155P1	Insulator disc. (Used with AR1).
R11 and	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	R65	3R152P751J	Composition: 750 ohms $\pm 5\%$ , $1/4$ w.			
R12								
							1	
1								
					1			
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\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

## LBI-30134

### **PRODUCTION CHANGES**

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit uncludes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

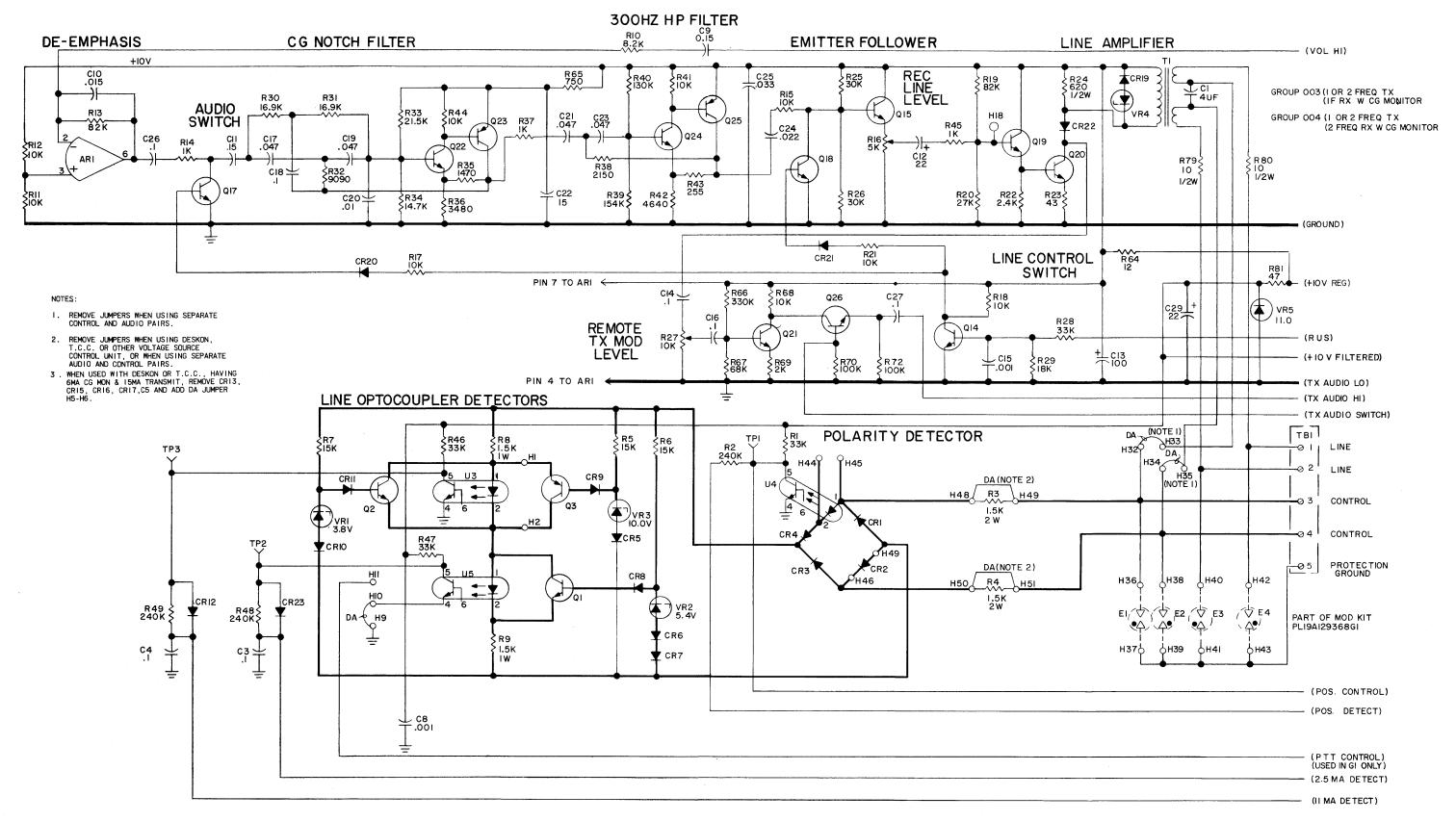
REV. A - To prevent plug from local or remote control being mated to wrong jack on system audio squelch board. Added a polarizing tab 19B209519P1 at P901-7.

# PARTS LIST

DC REMOTE CONTROL BOARD 19D423480G3 & G4

Issue 2

### LBI-30134

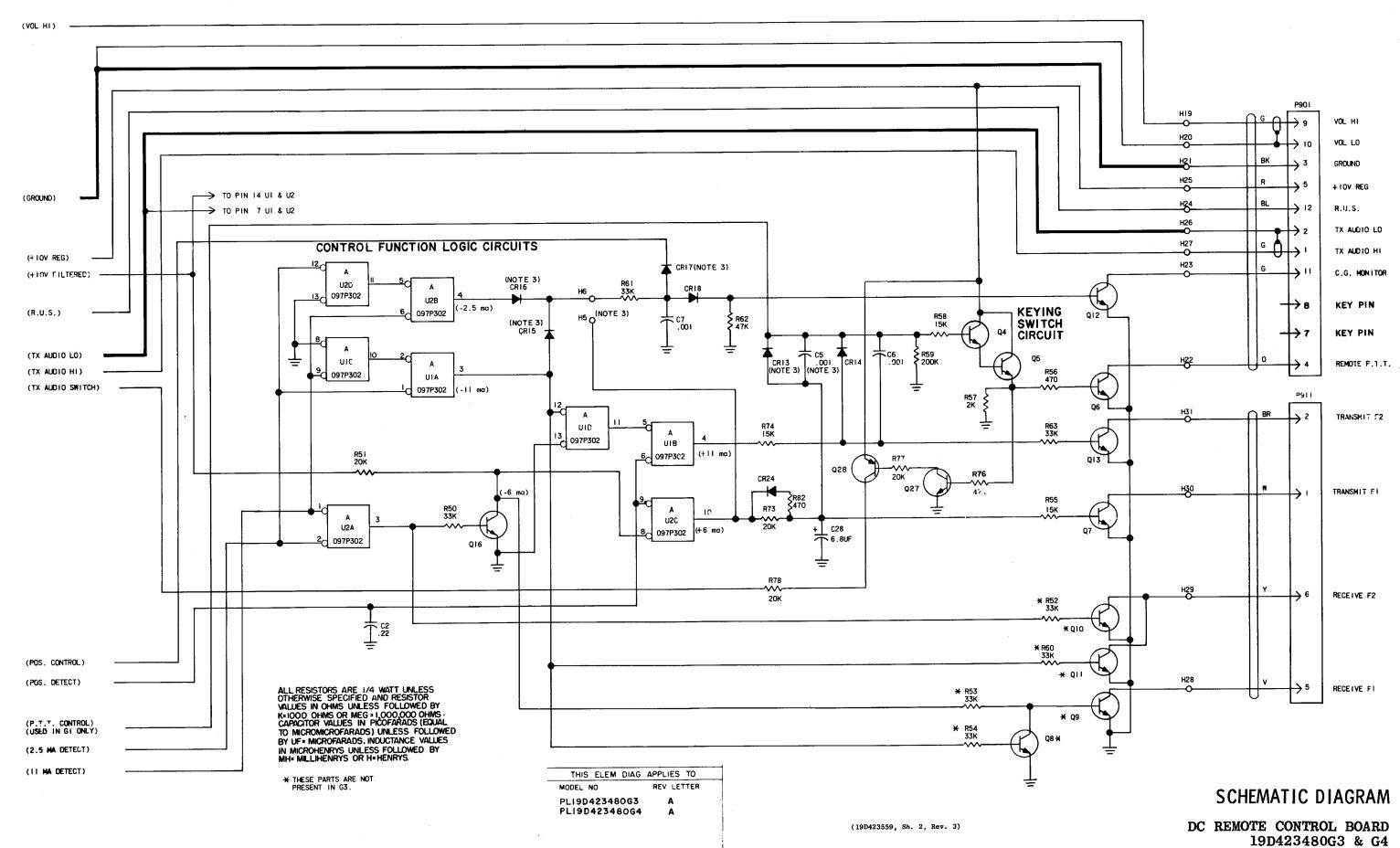


# SCHEMATIC DIAGRAM

DC REMOTE CONTROL BOARD 19D423480G3 & G4

18

(19D423559, Sh. 1, Rev. 3)



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Issue 2

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LBI-30134

#### PARTS LIST

# LBI-30120

# DC REMOTE CONTROL BOARD 19D423480G5

Operational amplifier.         Operational amplifier.           C1         7486445P5         Electrolytic, non polarized: 4 µf +100% -10%, 150 VECW.           C2         19A116080P9         Polyester: 0.22 µf ±20%, 50 VECW.           C3         19A116080P7         Polyester: 0.1 µf ±20%, 50 VECW.           C4         5494481P111         Ceramic disc: 1000 pf ±20%, 1000 VECW; sim to REC Type JF Discap.           C54         5494481P111         Ceramic disc: 1000 pf ±20%, 1000 VECW; sim to REC Type JF Discap.           C55         19A116080P108         Polyester: 0.15 µf ±10%, 50 VECW.           C10         19A116080P102         Polyester: 0.15 µf ±10%, 50 VECW.           C11         19A116080P102         Polyester: 0.15 µf ±10%, 50 VECW.           C12         3496267P10         Tantalum: 22 µf ±20%, 15 VECW; sim to Sprague Type 1500.           C13         19A116080P107         Polyester: 0.1 µf ±10%, 50 VECW.           C14         19A116080P107         Polyester: 0.1 µf ±10%, 50 VECW.           C15         5494481P111         Ceramic disc: 1000 pf ±2%, 100 VECW; sim to GE Type 61F.           C16         19A116080P107         Polyester: 0.1 µf ±10%, 50 VECW.           C17         19C300075P47001C         Polyester: 100,000 pf ±2%, 100 VECW; sim to GE Type 61F.           C18         19A116080P101         Polyester: 0.01 µf ±10%, 50 VEC	SYMBOL	GE PART NO.	DESCRIPTION
7480445P5       Biscrolytic, non polarized: 4 µf +1005 -105, 150 VDCW.         19A116080P9       Polysster: 0.22 µf ±205, 50 VDCW.         73       19A116080P7       Polysster: 0.1 µf ±205, 50 VDCW.         74       5494481P111       Ceramic disc: 1000 pf ±205, 1000 VDCW; sim to RMC Type JF Discap.         75       19A116080P102       Polysster: 0.15 µf ±105, 50 VDCW.         751       19A116080P102       Polysster: 0.15 µf ±105, 50 VDCW.         751       19A116080P102       Polysster: 0.15 µf ±105, 50 VDCW.         751       19A116080P107       Polysster: 0.15 µf ±105, 50 VDCW.         751       19A116080P107       Tantalum: 22 µf ±205, 15 VDCW; sim to Sprague Type JF Discap.         753       19A116080P107       Polysster: 0.1 µf ±105, 50 VDCW.         754       19A116080P107       Polysster: 0.1 µf ±105, 100 VDCW; sim to Ge Type 617.         755       5494481P111       Ceramic disc: 1000 pf ±25, 100 VDCW; sim to Ge Type 617.         756       19A116080P107       Polysster: 0.1 µf ±105, 50 VDCW.         757       19C300075947001C       Polysster: 0.01 µf ±105, 50 VDCW.         758       19A116080P101       Polysster: 0.0047 µf ±55, 50 VDCW.         759       19A116080P103       Polysster: 0.01 µf ±105, 50 VDCW.         759       19A116080P103       Polysster: 0.032 µf ±057, 50 VDCW.	ARI	19A116297P2	Integrated circuit, Linear: with TO89 Package, operational amplifier.
150 YDCW.         150 YDCW.         150 YDCW.         150 YDCW.           19A1160800P9         Polyester: 0.22 µf ±20%, 50 YDCW.           24         19A1160800P7         Polyester: 0.1 µf ±20%, 50 YDCW.           25         19A1160800P108         Polyester: 0.15 µf ±10%, 50 YDCW.           258         19A1160800P102         Polyester: 0.15 µf ±10%, 50 YDCW.           259         19A1160800P80         Polyester: 0.15 µf ±10%, 50 YDCW.           251         19A1160800P80         Polyester: 0.15 µf ±20%, 15 VDCW; sim to Sprague Type 1500.           251         19A1160800P107         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 1500.           253         19A1160800P107         Polyester: 0.1 µf ±10%, 50 VDCW.           254         19A1160800P107         Polyester: 0.1 µf ±10%, 50 VDCW.           255         5494481P111         Caramic disc: 1000 pf ±20%, 1000 VDCW; sim to WBC Type 617.           256         19A1160800P107         Polyester: 0.1 µf ±10%, 50 VDCW.           257         19C300075P470010         Polyester: 0.0.000 pf ±2%, 100 VDCW; sim to GE Type 617.           258         19A1160800P101         Polyester: 0.0.000 pf ±2%, 100 VDCW; sim to GE Type 617.           259         19A116080P205         Polyester: 0.0.047 µf ±5%, 50 VDCW.           251         19A116080P103         Polyester: 0.0.024 µf ±20%, 50 VDC			CAPACITORS
Interfere         Interfere <thinterfere< th="">         Interfere         <thinterfere< th="">         Interfere         <thinter< th="">         Inter         Interfere</thinter<></thinterfere<></thinterfere<>	C1	7486445P5	Electrolytic, non polarized: 4 $\mu$ f +100% -10%, 150 VDCW.
and       Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to         REC Type JF Discap.       Rec Type JF Discap.         C29       19A116080P108       Polyester: 0.15 µf ±10%, 50 VDCW.         C10       19A116080P102       Polyester: 0.15 µf ±10%, 50 VDCW.         C11       19A116080P102       Polyester: 0.15 µf ±10%, 50 VDCW.         C12       S496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 1500.         C13       19A116080P107       Fleetrolytic: 100 µf ±10%, 50 VDCW.         C14       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         C15       S494481P111       Ceramic disc: 1000 pf ±2%, 100 VDCW; sim to REC Type 417         C16       19A116080P107       Polyester: 10.0,000 pf ±2%, 100 VDCW; sim to REC Type 617.         C17       19C300075P47001C       Polyester: 100,000 pf ±2%, 100 VDCW; sim to GE Type 617.         C18       19C300075P47001C       Polyester: 0.01 µf ±10%, 50 VDCW.         C19       19C300075P47001C       Polyester: 0.047 µf ±5%, 50 VDCW.         C214       19A116080P101       Polyester: 0.047 µf ±5%, 50 VDCW.         C215       19A116080P102       Polyester: 0.047 µf ±5%, 50 VDCW.         C216       19A116080P103       Polyester: 0.047 µf ±5%, 50 VDCW.         C217       19A116080P103       Polyester: 0.033 µf ±20%, 50 VDCW.	C2	19A116080P9	Polyester: 0.22 µf ±20%, 50 VDCW.
Bit         Type JP Discap.         Discap.         Discap.           Bit         Type JP Discap.         Discap.         Discap.         Discap.           Bit         Polyster:         0.15 µf ±10%, 50 VDCW.           Dislies         Polyster:         0.15 µf ±20%, 50 VDCW.           Dislies         Polyster:         0.15 µf ±20%, 50 VDCW.           Dislies         Polyster:         0.15 µf ±10%, 50 VDCW.           Dislies         Polyster:         0.15 µf ±10%, 50 VDCW.           Dislies         Dislies         Dislies         Dislies           Dislies         Polyster:         0.1 µf ±10%, 50 VDCW.         Dislies           Dislies         Dislies         Dislies         Dislies         Dislies           Dislies         Dislies         Dislies         Dislies<	C3 and C4	19A116080P7	Polyester: 0.1 µf ±20%, 50 VDCW.
19A116080P102       Polyester: 0.015 µf 105, 50 VDCW.         19A116080P8       Polyester: 0.15 µf 105, 50 VDCW.         121       19A116080P8         19A116080P8       Polyester: 0.15 µf 1205, 50 VDCW.         121       19A116080P8         19A116080P8       Polyester: 0.15 µf 1205, 50 VDCW.         121       19A116080P107         19A116080P107       Polyester: 0.1 µf 105, 50 VDCW.         121       19A116080P107         19A116080P107       Polyester: 0.1 µf 105, 50 VDCW.         121       19A116080P107         19C300075P470016       Polyester: 0.1 µf 105, 50 VDCW.         121       19C300075P470016         19C300075P470016       Polyester: 100,000 pf 125, 100 VDCW; sim to GE Type 61F.         1218       19C300075P470016         19C300075P470016       Polyester: 0.01 µf 1105, 50 VDCW.         122       19A116080P101         Polyester: 0.01 µf 1105, 50 VDCW.         123       19A116080P205         Polyester: 0.01 µf 1205, 50 VDCW.         124       19A116080P205         Polyester: 0.021 µf 1105, 50 VDCW.         123       19A116080P103         Polyester: 0.03 µf 1205, 50 VDCW.         124       19A116080P103         Polyester: 0.1 µf 1205, 50 VDCW.     <	C7 and C8	5494481P111	
211       19A11608078       Polyester: 0.15 µf ±20%, 50 VDCW.         212       5466267710       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague         713       19A11568077       Electrolytic: 100 µf +150%, 50 VDCW.         714       19A116080707       Polyester: 0.1 µf ±10%, 50 VDCW.         715       5464481711       Ceramic disc: 1000 µf +20%, 1000 VDCW; sim to BMC Type dJP Discap.         716       19A1160807107       Polyester: 0.1 µf ±10%, 50 VDCW.         717       19C3000757470017       Polyester: 0.1 µf ±10%, 50 VDCW.         718       19C3000757470016       Polyester: 100,000 pf ±2%, 100 VDCW; sim to GE Type 617.         719       19C3000757470016       Polyester: 0.01 µf ±10%, 50 VDCW.         721       19C3000757470017       Polyester: 0.01 µf ±10%, 50 VDCW.         721       19A116080705       Polyester: 0.01 µf ±10%, 50 VDCW.         721       19A116080705       Polyester: 0.047 µf ±5%, 50 VDCW.         722       5466287714       Tantalum: 15 µf ±20%, 50 VDCW.         723       19A116080705       Polyester: 0.047 µf ±5%, 50 VDCW.         724       19A116080707       Polyester: 0.1047 µf ±5%, 50 VDCW.         723       19A11608074       Polyester: 0.1047 µf ±2%, 50 VDCW.         724       19A11608077       Polyester: 0.1047 µf ±3%, 50 VDCW.	C9	19A116080P108	Polyester: 0.15 µf ±10%, 50 VDCW.
212       5496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.         213       19A115680P7       Electrolytic: 100 µf +150% -10%, 15 VDCW; sim to Ballory Type TTX.         214       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         215       5494481P111       Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to BMC Type dF Discap.         216       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         217       19C300075P47001G       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 617.         218       19C300075P47001G       Polyester: 0.01 µf ±10%, 50 VDCW.         219       19C300075P47001G       Polyester: 0.01 µf ±10%, 50 VDCW.         218       19C300075P47001G       Polyester: 0.01 µf ±10%, 50 VDCW.         219       19C300075P47001G       Polyester: 0.01 µf ±10%, 50 VDCW.         220       19A116080P101       Polyester: 0.047 µf ±5%, 50 VDCW.         221       19A116080P105       Polyester: 0.047 µf ±5%, 50 VDCW.         222       5496287P14       Tantalum: 15 µf ±20%, 50 VDCW.         223       19A116080P105       Polyester: 0.1 µf ±5%, 50 VDCW.         224       19A116080P107       Polyester: 0.1 µf ±2%, 50 VDCW.         225       19A116080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         226       19A116080P107       Polyes	c10	19A116080P102	Polyester: 0.015 µf ±10%, 50 VDCW.
Type 150D.       Type 150D.       Type 150D.       Type 150D.         13       19A115680P7       Electrolytic: 100 µf +150% -10%, 15 VDCW; sim to Mallory Type TTX.         14       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         15       5494481P111       Cermaic disc: 1000 pf ±20%, 1000 VDCW; sim to EMC Type JF Discap.         16       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         17       19C300075P100026       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         18       19C300075P100026       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         19       19C300075P100026       Polyester: 0.01 µf ±10%, 50 VDCW.         19       19C300075P470016       Polyester: 0.01 µf ±10%, 50 VDCW.         20       19A116080P101       Polyester: 0.047 µf ±5%, 50 VDCW.         21       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         22       5496267P14       Tantalum: 15 µf ±20%, 20 VDCW.         23       19A116080P205       Polyester: 0.033 µf ±20%, 50 VDCW.         24       19A116080P4       Polyester: 0.1 µf ±10%, 50 VDCW.         25       19A116080P4       Polyester: 0.1 µf ±20%, 50 VDCW.         26       19A116080P4       Polyester: 0.1 µf ±10%, 50 VDCW.         27       19A116080P107       Polyester: 0.1 µf ±	:11	19A116080P8	Polyester: 0.15 µf ±20%, 50 VDCW.
to Mallory Type TTX.         to Mallory Type TTX.           14         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           15         5494481P111         Cermmic disc: 1000 pf ±20%, 1000 VDCW; sim to NWC Type JF Discap.           16         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           17         19C300075P47001G         Polyester: 0.1 µf ±10%, 50 VDCW; sim to GE Type 61F.           18         19C300075P47001G         Polyester: 100,000 pf ±2%, 100 VDCW; sim to GE Type 61F.           19         19C300075P47001G         Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.           20         19All6080P101         Polyester: 0.01 µf ±10%, 50 VDCW.           21         19All6080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           22         5496287P14         Tamtalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.           23         19All6080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           24         19All6080P205         Polyester: 0.033 µf ±20%, 50 VDCW.           25         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           26         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           27         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           28         19All6080P107         Polyester: 0.1 µf ±10%, 50 VDCW.	:12	5496267P10	Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.
215       5494481P111       Ceramic disc: 100 pf ±20%, 1000 VDCW; sim to NMC Type JF Discap.         216       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         217       19C300075P47001G       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         218       19C300075P47001G       Polyester: 100,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         219       19C300075P47001G       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         220       19A116080P101       Polyester: 0.01 µf ±10%, 50 VDCW.         221       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         222       5496287P14       Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.         223       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         224       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         225       19A116080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         226       19A116080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         227       18A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         239       5496287P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.         240       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         251       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW; sim to Sprague Type 150D.	C13	19A115680P7	Electrolytic: 100 uf +150% -10%, 15 VDCW: sim
REC Type JF Discap.         Discap.           216         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           217         19C300075P470010         Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.           218         19C300075P470010         Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.           219         19C300075P470010         Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.           219         19A116080P205         Polyester: 0.01 µf ±10%, 50 VDCW.           221         19A116080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           222         5496267P14         Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.           223         19A116080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           224         19A116080P103         Polyester: 0.022 µf ±10%, 50 VDCW.           225         19A116080P103         Polyester: 0.1 µf ±20%, 50 VDCW.           226         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           237         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           248         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           259         5496267P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.           270         19A115250P1         Silicon.           884         4037622	C14	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
17       19C300075P47001c       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         18       19C300075P47001c       Polyester: 100,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         19       19C300075P47001c       Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.         20       19A116000P101       Polyester: 0.01 µf ±10%, 50 VDCW.         21       19A116000P205       Polyester: 0.047 µf ±5%, 50 VDCW.         22       5496267P14       Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 150D.         23       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         24       19A116080P103       Polyester: 0.047 µf ±5%, 50 VDCW.         25       19A116080P103       Polyester: 0.022 µf ±10%, 50 VDCW.         26       19A116080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         27       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         28       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         29       5496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.          19A116080P107       Silicon.         84       19A115250P1       Silicon.         84       19A115250P1       Silicon.         84       4037822P2       Silicon.         811       4037822P2       Silicon	15	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
19C300075P47001c       Polyester: 47,000 pf ±2%, 100 VDCW; sim to         18       19C300075P47001c       Polyester: 100,000 pf ±2%, 100 VDCW; sim to         19       19C300075P47001c       Polyester: 47,000 pf ±2%, 100 VDCW; sim to         19       19C300075P47001c       Polyester: 47,000 pf ±2%, 100 VDCW; sim to         20       19A116080P101       Polyester: 47,000 pf ±2%, 100 VDCW; sim to         21       19A116080P205       Polyester: 0.01 µf ±10%, 50 VDCW.         22       5496267P14       Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague         23       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         24       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         25       19A116080P103       Polyester: 0.022 µf ±10%, 50 VDCW.         26       19A116080P104       Polyester: 0.1 µf ±20%, 50 VDCW.         27       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         28       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         29       5496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague         19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW; sim to Sprague         19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW; sim to Sprague         19A116080P108       Silicon.         84       19A115250P1       Silicon. </td <td>16</td> <td>19A116080P107</td> <td></td>	16	19A116080P107	
18       19C300075P100026       Polyester: 100,000 pf ±2%, 100 VDCW; sim to         19       19C300075P470016       Polyester: 47,000 pf ±2%, 100 VDCW; sim to         20       19A116080P101       Polyester: 0.01 µf ±10%, 50 VDCW.         21       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         22       5496267P14       Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague         23       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         24       19A116080P103       Polyester: 0.047 µf ±5%, 50 VDCW.         25       19A116080P103       Polyester: 0.022 µf ±10%, 50 VDCW.         26       19A116080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         26       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         27       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         28       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         29       5496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague         20       DIODES AND RECTIFIERS       Silicon.         20       4037822P2       Silicon.         21       9A115250P1       Silicon.         21       9A115250P1       Silicon.         21       9A115250P1       Silicon.         21       19A11	17	19C300075P47001G	Polyester: 47,000 pf ±2%, 100 VDCW: sim to
GE         Type 61P.           20         19A116080P101         Polyester: 0.01 µf ±10%, 50 VDCW.           21         19A116080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           22         5496267P14         Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague Type 180D.           23         19A116080P205         Polyester: 0.047 µf ±5%, 50 VDCW.           24         19A116080P205         Polyester: 0.022 µf ±10%, 50 VDCW.           25         19A116080P103         Polyester: 0.033 µf ±20%, 50 VDCW.           26         19A116080P4         Polyester: 0.1 µf ±20%, 50 VDCW.           27         19A116080P7         Polyester: 0.1 µf ±10%, 50 VDCW.           28         19A116060P107         Polyester: 0.1 µf ±10%, 50 VDCW.           29         5496267P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.           20         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           29         5496267P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.           20          DIODES AND EECTIFIERS           20         4037822P2         Silicon.           20         4037822P2         Silicon.           21         9A115250P1         Silicon.           219A115250P1         Silicon.	18	19C300075P10002Ģ	Polyester: 100,000 pf ±2%, 100 VDCW; sim to
19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         22       5496287P14       Tantalum: 15 µf ±20%, 20 VDCW; sim to Sprague         23       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         24       19A116080P103       Polyester: 0.047 µf ±5%, 50 VDCW.         25       19A116080P4       Polyester: 0.022 µf ±10%, 50 VDCW.         25       19A116080P7       Polyester: 0.1 µf ±20%, 50 VDCW.         26       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         27       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         28       19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         29       5496267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague         20       Type 150D.       DIODES AND RECTIFIERS         20       4037822P2       Silicon.         21       19A115250P1       Silicon.         210       19A115250P1       Silicon.         211       4037822P2       Silicon.         212       19A115250P1       Silicon.         213       19A115250P1       Silicon.         214       19A115250P1       Silicon.	19	19C300075P47001G	Polyester: 47,000 pf ±2%, 100 VDCW; sim to GE Type 61F.
22         5496287914         Tantalum: Type 150D.         15 μf ±20%, 20 VDCW; sim to Sprague           23         19A116080P205         Polyester: 0.047 μf ±5%, 50 VDCW.           24         19A116080P103         Polyester: 0.022 μf ±10%, 50 VDCW.           25         19A116080P4         Polyester: 0.033 µf ±20%, 50 VDCW.           26         19A116080P7         Polyester: 0.1 µf ±20%, 50 VDCW.           27         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           28         19A116080P107         Polyester: 0.1 µf ±10%, 50 VDCW.           29         5496267P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague           29         5496267P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague           20         19A115050P1         Silicon.           20         19A115250P1         Silicon.           20         4037822P2         Silicon.           21         19A115250P1         Silicon. <td>20</td> <td>19A116080P101</td> <td>Polyester: 0.01 µf ±10%, 50 VDCW.</td>	20	19A116080P101	Polyester: 0.01 µf ±10%, 50 VDCW.
Type 150D.       Type 150D.         13       19A116080P205       Polyester: 0.047 µf ±5%, 50 VDCW.         19A116080P103       Polyester: 0.022 µf ±10%, 50 VDCW.         19A116080P4       Polyester: 0.033 µf ±20%, 50 VDCW.         19A116080P7       Polyester: 0.1 µf ±20%, 50 VDCW.         19A116080P107       Polyester: 0.1 µf ±10%, 50 VDCW.         19A116080P107       Polyester: 0.1 µf ±20%, 15 VDCW; sim to Sprague Type 150D.          DIODES AND RECTIFIERS         1       4037822P2         511icon.       Silicon.         10       19A115250P1       Silicon.         11       4037822P2       Silicon.         12       19A115250P1       Silicon.         13       19A115250P1       Silicon.         14       19A115250P1       Silicon.	1	19A116080P205	Polyester: 0.047 µf ±5%, 50 VDCW.
4       19Al16080P103       Polyester: 0.022 µf ±10%, 50 VDCW.         5       19Al16080P4       Polyester: 0.033 µf ±20%, 50 VDCW.         6       19Al16080P7       Polyester: 0.1 µf ±20%, 50 VDCW.         7       19Al16080P107       Polyester: 0.1 µf ±20%, 50 VDCW.         9       5498267P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.          DIODES AND EECTIFIERS         1       4037822P2       Silicon.         6       19Al15250P1       Silicon.         10       19Al15250P1       Silicon.         11       4037822P2       Silicon.         12       19Al15250P1       Silicon.         13       19Al15250P1       Silicon.         14       19Al15250P1       Silicon.         15       19Al15250P1       Silicon.	2	5496267P14	
19All6060P4       Polyester: 0.033 μf ±20%, 50 VDCW.         19All6060P4       Polyester: 0.1 μf ±20%, 50 VDCW.         19All6060P107       Polyester: 0.1 μf ±20%, 50 VDCW.         19All6060P107       Polyester: 0.1 μf ±10%, 50 VDCW.         19All6060P10       Tantalum: 22 μf ±20%, 15 VDCW; sim to Sprague Type 150D.        DIODES AND EECTIFIERS          14       4037822P2       Silicon.         10       19All5250P1       Silicon.         11       4037822P2       Silicon.         12       19All5250P1       Silicon.         16       19All5250P1       Silicon.	13	19A116080P205	Polyester: 0.047 µf ±5%, 50 VDCW.
Herican         Herican         Herican         Herican           19A116080P7         Polyester:         0.1 μf ±20%, 50 VDCW.           19A116080P107         Polyester:         0.1 μf ±20%, 50 VDCW.           19A116080P107         Polyester:         0.1 μf ±20%, 50 VDCW.           19A116080P107         Polyester:         0.1 μf ±10%, 50 VDCW.           19A116080P107         Polyester:         0.1 μf ±10%, 50 VDCW.           19A116080P107         Polyester:         0.1 μf ±10%, 50 VDCW.           19A116080P107         Tantalum:         22 μf ±20%, 15 VDCW; sim to Sprague           1Fu         4037822P2         Silicon.           14         19A115250P1         Silicon.           110         19A115250P1         Silicon.           111         4037822P2         Silicon.           112         19A115250P1         Silicon.           113         19A115250P1         Silicon.           114         19A115250P1         Silicon.	14	19A116080P103	Polyester: 0.022 µf ±10%, 50 VDCW.
19A116060P107       Polyester: 0.1 µf ±10%, 50 VDCW.         19       5496287P10       Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.         10       4037822P2       Silicon.         11       4037822P2       Silicon.         18       4037822P2       Silicon.         11       4037822P2       Silicon.         12       19A115250P1       Silicon.         13       19A115250P1       Silicon.         14       4037822P2       Silicon.         15       19A115250P1       Silicon.         16       19A115250P1       Silicon.         17       19A115250P1       Silicon.	15	19A116080P4	Polyester: 0.033 µf ±20%, 50 VDCW.
N9         5496287P10         Tantalum: 22 µf ±20%, 15 VDCW; sim to Sprague Type 150D.           11         4037822P2         Silicon.           16         19A115250P1         Silicon.           110         19A115250P1         Silicon.           111         4037822P2         Silicon.           111         4037822P2         Silicon.           111         4037822P2         Silicon.           112         19A115250P1         Silicon.           113         19A115250P1         Silicon.           114         19A115250P1         Silicon.           115         19A115250P1         Silicon.           116         19A115250P1         Silicon.           117         Silicon.         Silicon.	6	19A116080P7	Polyester: 0.1 µf ±20%, 50 VDCW.
Type 150D.        DIODES AND RECTIFIERS         11         4037822P2         511icon.         4         8         4037822P2         511icon.         10         19A115250P1         511icon.         10         19A115250P1         511icon.         11         4037822P2         511icon.         12         19A115250P1         511icon.         16         19A115250P1         511icon.         16         19A115250P1         511icon.	7	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
1     4037822P2     Silicon.       Fu     4037822P2     Silicon.       6     19A115250P1     Silicon.       10     19A115250P1     Silicon.       11     4037822P2     Silicon.       12     19A115250P1     Silicon.       16     19A115250P1     Silicon.       16     19A115250P1     Silicon.	9	5496267P10	
hru         Ball			DIODES AND RECTIFIERS
nd R7 R8 4037822P2 Silicon. R10 19A115250P1 Silicon. R11 4037822P2 Silicon. R12 19A115250P1 Silicon. R16 19A115250P1 Silicon.	hru	4037822P2	Silicon.
R6         4037822P2         Silicon.           B10         19A115250P1         Silicon.           B11         4037822P2         Silicon.           B12         19A115250P1         Silicon.           B14         19A115250P1         Silicon.           B15         19A115250P1         Silicon.	26 nd 27	19A115250P1	Silicon.
R10         19A115250P1         Silicon.           R11         4037822P2         Silicon.           R12         19A115250P1         Silicon.           R16         19A115250P1         Silicon.	1	4037822P2	Silicon.
112 19A115250P1 Silicon. 116 19A115250P1 Silicon.	10	19A115250P1	
16 19A115250P1 Silicon.		4037822P2	Silicon.
ru la	12	19A115250P1	Silicon.
	ru		

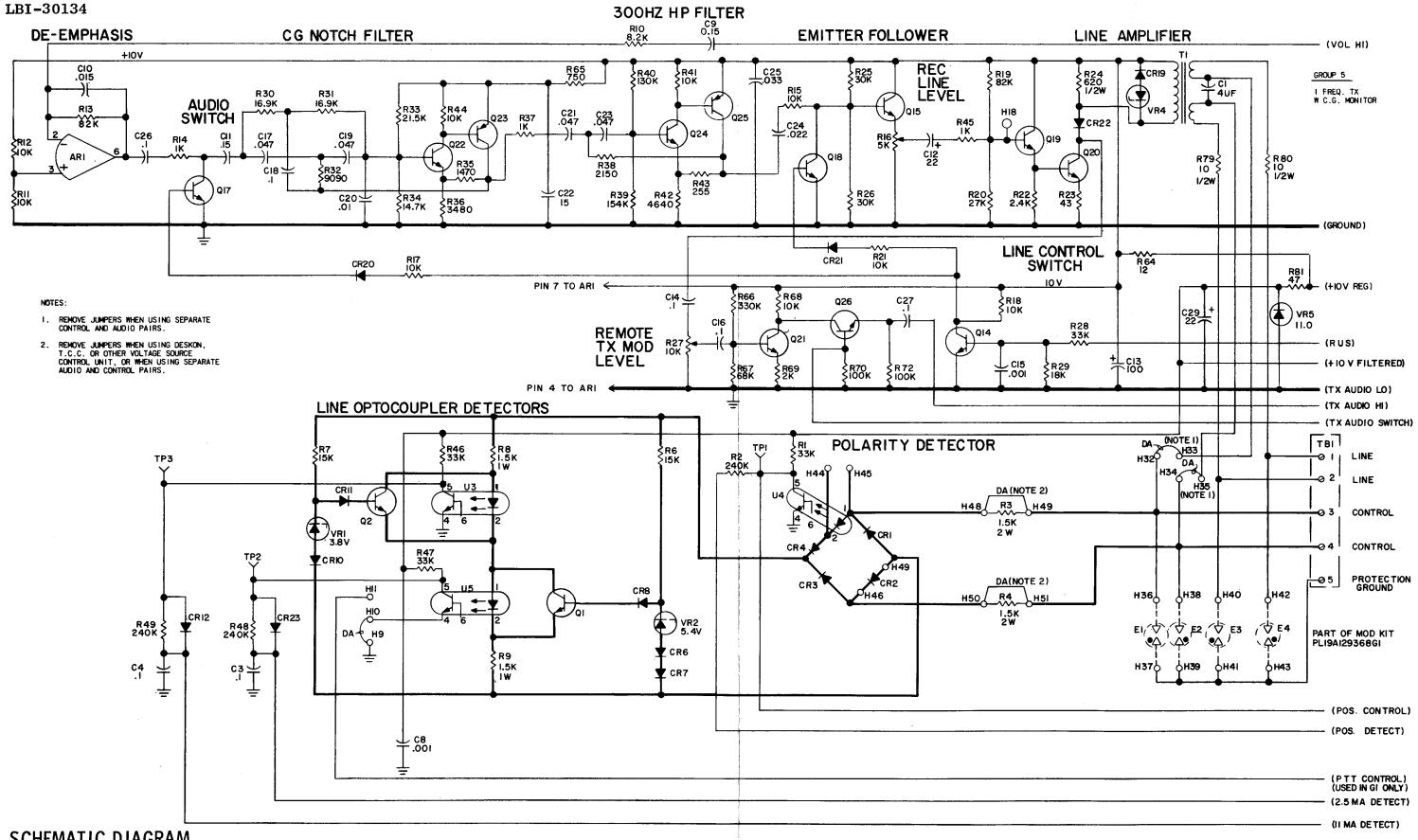
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SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	GE PART NO.	DESCRIPTION	SYMBOL	ge part no.	DESCRIPTION
CR19	4037822P2	Silicon.	R20	3R152P273J	Composition: 27,000 ohms ±5%, 1/4 w.			
CR20 and	19A115250P1	Silicon.	R21	3R152P103J	Composition: 10,000 ohms $\pm 5\%$ , 1/4 w.	TB1	19A116667P3	
CR21			R22	3R152P242J	Composition: 2400 ohms ±5%, 1/4 w.	181	19411000/193	Plate nut. (Quanity 5).
CR22	4037822P2	Silicon.	R23	3R152P430J	Composition: 43 ohms ±5%, 1/4 w.			TEST POINTS
CR23	19A115250P1	Silicon.	R24	3R77P621J	Composition: 620 ohms $\pm 5\%$ , $1/2$ w.	TP1 thru	19 <b>B2</b> 11379P1	Spring (Test Point).
		PLUGS	R25 and	3R152P303J	Composition: 30,000 ohms $\pm 5\%$ , 1/4 w.	TP3		
<b>P901</b>		Connector. Includes:	R26 R27	19B209358P6	Variable, carbon film: approx 300 to 10,000 ohms	U2	19A134097P302	Digital: Quad 2-Input Nor Gate; sim to Vendor
	19A116659P21 19A116781P5	Printed board: sim to Molex 09-50-3121.			$\pm 20\%$ , 0.25 w; sim to CTS Type U-201.	U3	19A116908P1	Type No. CD4001. Optoelectronic coupler: Dual In Line 6 Pin Mini
		Contact, electrical: wire range No. 16-20 AWG; sim to Molex 08-50-0106.	R28 R29	3R152P333J 3R152P183J	Composition: 33,000 ohms ±5%, 1/4 w. Composition: 18,000 ohms ±5%, 1/4 w.	thru US	19411090091	Dip Package; sim to TI TiLil2.
	19A116781P6	Contact, electrical: wire range No. 22-26 AWG; sim to Molex 08-50-0108.	R30	19C314256P21692	Netal film: 16,900 ohms ±1%, 1/4 w.			
	198209519P1	Polarity tab.	and R31			VR1	403688793	Silicon, Zener.
			R32	19C314256P29091	Metal film: 9090 ohms ±1%, 1/4 w.	VR2	4036887 <b>P</b> 5	Silicon, Zener.
Q1	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R33	19C314256P22152	Metal film: 21,500 ohms ±1%, 1/4 w.	VR4	19A116325P4	Silicon, Zener; sim to 1N5349.
and Q2		,	R34	19C314256P21472	Metal film: 14,700 ohms ±1%, 1/4 w.	VR5	4036887 <b>P</b> 8	Silicon, Zener.
Q4	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R35	19C314256P21471	Metal film; 1470 ohmas ±1%, 1/4 w.			
and Q5			R36	19C314256P23481	Metal film: 3480 ohms ±1%, 1/4 w.			HARNESS ASSEMBLY
Q6	19A115300P2	Silicon, NPN; sim to Type 2N3053.	R37	19C314256P21001	Metal film: 1000 ohms ±1%, 1/4 w.			<b>19D423480G7</b> (Includes P901)
Q12	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R38 R39	19C314256P22151	Metal film: 2150 ohms $\pm 1\%$ , 1/4 w.			
Q14	19A115910P1	Silicon, NPN; sim to Type 2N3904.	R40	19C314256P21543	Metal film: 154,000 ohms ±1%, 1/4 w.			MISCELLANEOUS
Q15 and	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R41	3R152P103J	Metal film: 130,000 ohms ±1%, 1/4 w. Composition: 10,000 ohms ±5%, 1/4 w.		4036555P1	Insulator, washer: nylon. (Used with Q6, Q20).
Q16			R42	19C314256P24641	Metal film: 4640 ohms ±1%, 1/4 w.		4029851P13	Clip loop.
Q17 and	19A129184P1	Silicon, NPN.	R43	19C314256P22550	Netal film: 255 ohms ±1%, 1/4 w.		19C307038P11	Nut, push on. (Used with clip loop).
Q18 Q19	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R44	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.		N80P13006C6	Machine screw, phillips head: No. 6-32 x 3/8.
Q20	19A115300P4	Silicon, NPN.	R45	3R152P102J	Composition: 1000 ohms $\pm 5\%$ , 1/4 w.		19B201074P304	Tap screw, Phillips $POZIDRIV^{\otimes}$ : No. 6-32 x 1/4. (Secures TB1-1 thru TB1-4).
Q21	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R46 and	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , $1/4$ w.		198201074P305	Tap screw, Phillips POZIDRIV <sup>®</sup> : No. 6-32 x 5/16.
and Q22			R47				10410145701	(Secures TB1-5).
Q23	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R48 and	3R152P244J	Composition: 0.25 megohm ±5%, 1/4 w.		19A121457P1 19B219835P1	Cable clamp. (Used with 198219835P1 support). Support. (Used with 19A121457P1 cable clamp).
Q24	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R49 R50	3R152P333J			198201074P208	Tap screw, Phillips POZIDEIV <sup>®</sup> : No. 4-40 x 1/2.
Q25	19A115852P1	Silicon, PNP; sim to Type 2N3906.	R51	3R152P203J	Composition: 33,000 ohms ±5%, 1/4 w. Composition: 20,000 ohms ±5%, 1/4 w.			(Used with cable clamp).
Q26	19A116774P1	Silicon, NPN; sim to Type 2N5210.	R56	3R152P471J	Composition: 470 ohms ±5%, 1/4 w.			
			R57	38152P202J	Composition: 2000 ohms ±5%, 1/4 w.			
Rl	3R152P333J	Composition: 33,000 ohms $\pm 5\%$ , 1/4 w.	R58	3R152P153J	Composition: 15,000 ohms ±5%, 1/4 w.	•		•
R2	3R152P244J	Composition: 0.24 megohm ±5%, 1/4 w.	R59	3R152P204J	Composition: 0.20 megohm ±5%, 1/4 w.			
R3 and	3879P152K	Composition: 1500 ohms ±10%, 2 w.	R61	3R152P333J	Composition: 33,000 ohms ±5%, 1/4 w.			
R4			R62	3R152P473J	Composition: 47,000 ohns $\pm 5\%$ , $1/4$ w.		DDC	DUCTION CHANGES
R6 and	3R152P153K	Composition: 15,000 ohms ±10%, 1/4 w.	R64	3R152P120J	Composition: 12 ohms ±5%, 1/4 w.		PRV	
R7 R8	3R78P152J	Composition: 1500 ohms ±5%, 1 w.	R65	3R152P751J	Composition: 750 ohms ±5%, 1/4 w.	Change	in the equipment	t to improve performance or to simplify circuits
and R9	JA / DET U AU	Composition: 1000 comes 10%, 1 W.	R66 R67	3R152P334J 3R152P683J	Composition: 0.33 megohm ±5%, 1/4 w. Composition: 68,000 ohas ±5%, 1/4 w.	number	of the unit. The	vision Letter", which is stamped after the model a revision stamped on the unit includes all for to the Parts List for descriptions of parts
R10	3R152P822J	Ccaposition: 8200 ohms $\pm 5\%$ , $1/4$ w.	R68	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.		ed by these revisions.	
R11	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 v.	R69	3R152P202J	Composition: 2000 chms ±5%, 1/4 w.	D 1747 A	To provent plus	z from local or remote control being mated
and R12			R70	3R152P104J	Composition: 0.10 megohm ±5%, 1/4 w.	MEV. A	to wrong jack	n system audio squelch board. Added a 19B209519Pl at P901-7.
R13	3B152P823J	Composition: 82,000 ohms ±5%, 1/4 w.	R71	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.		polarizing tab	
R14	3R152P102J	Composition: 1000 ohms ±5%, 1/4 w.	R72	3R152P104J	Composition: 0.10 megohm ±5%, 1/4 w.			
R15	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 v.	R75	3R152P512J	Composition: 5100 ohms $\pm 5\%$ , 1/4 w.			
R16	19820935825	Variable, carbon film; approx 200 to 5000 ohms ±20%, 0.25 w; sim to CTS Type U-201.	R79 and	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.			
R17 and	3R152P103J	Composition: 10,000 ohms ±5%, 1/4 w.	R80 R81	9016004007				
R18			#81	3R152P470J	Composition: 47 ohms ±5%, 1/4 w.			
R19	3R152P823J	Composition: 82,000 ohms ±5%, 1/4 w.			TRANSFORMERS			
			п	19A116736P1	Audio freq: 300 to 6000 Hz, Pri: 30 ohms ±15% DC res,			PARTS LIST
					Sec 1: 15 ohms ±15% DC res, Sec 2: 15 ohms ±15% DC res.			
							DC	REMOTE CONTROL BOARD
								19D423480G5

\*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES.

## LBI-30134

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Issue 2



(19D423557, Sh. 1, Rev. 3)

# SCHEMATIC DIAGRAM

DC REMOTE CONTROL BOARD 19D423480G5

Issue 1

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