MOBILE RADIO

MAINTENANCE MANUAL
MARINE HI - LO POWER
138—174 MHz, 25/1 WATT POWER AMPLIFIER
19D424583G1 "M" SERIES MOBILE
19D424583G5 "E" SERIES MOBILE

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DESCRIPTION

The MASTR® II modularized 25 Watt PA assembly for MARINE HI-LO Power Applications contains a 25 Watt PA module, directional coupler, power control circuitry and low pass filter. Two transistors are used to provide 25 Watts or 1 Watt of RF output power. The output power is adjustable from 5 Watts to 25 Watts or 0.5 Watt to 5 Watts and is held constant for normal variations in temperature and voltage.

Supply voltage for the PA is connected through power leads to feedthrough capacitors C297 and C298 on the bottom of the PA assembly. C297, C298, C299, L12, L13 and L201 prevent RF from getting on the power leads. Diode CR295 will cause the main fuse in the fuse assembly to blow if the polarity of the power leads is reversed, providing reverse voltage protection for the radio.

The PA assembly is isolated from vehicle ground to permit operation in positive or negative ground vehicles.

NOTE

In positive ground vehicles, A- is "hot" with respect to vehicle ground. Shorting the transmitter PA printed wiring board ground pattern to the radio case may cause one of the in-line fuses to blow.

Centralized metering jack J205 is provided for use with GE Test Set Model 4EX3A11 or Test Kit 4EX8K12. The Test Set meters Ampl-1 drive (exciter output), power control voltage, and PA current.

CIRCUIT ANALYSIS

25 WATT PA MODULE A202

The exciter output is coupled through and RF cable to PA input jack J201. The RF is coupled through a matching network to the base of Class C amplifier Q1. The network matches the 50-ohm input to the base of Q1 and consists of A202-T1, C5, and C39. R3, C3, R13 and L1 are stabilizing networks in the base circuit of Q1.

Part of the RF input is rectified by CR1 and is applied to voltage divider R1 and R2. The voltage is divided to activate the Power Control circuits and for metering the Ampl-1 drive at J205.

Collector voltage to Q1 is controlled by the Power Control circuit, and is applied to Q1 through collector stabilizing network L4 and R4 and collector feed network L3 and C6. The collector voltage is metered through R7 at J205-3 (Pos. C).

The output of Q1 is coupled to the base of Class C amplifier Q2 through a matching network consisting of C10, C12, C13, C14, L5 and L6. Collector voltage to Q2 is applied through collector stabilizing network L11 and R6 and collector feed network L8 and C15.

The output of the PA is taken from the collector of Q2, matched to 50 ohms, and applied to the Low Pass Filter (FL201) through microstrips A202-W2, A203-W1, FL201-W1, and connector straps W30 and W31.

The collector impedance matching network for A202-Q2 (L9, L10, C19, C20 and C21) matches the output of Q2 to 50 ohm microstrip A202-W2. C22 is a DC blocking capacitor.

WARNING

The RF Power Transistors used in the transmitter contain Beryilium Oxide, a TOXIC substance. If the ceramic, or toher encapsulation is opened, crushed, broken or abraded, the dust may be hazardous if inhaled. Use care in replacing transistors of this type.

POWER CONTROL CIRCUIT

The power control circuit consists of power control IC A202-U1, thermistor RT201, High Power adjust potentiometer A202-R8,

CIRCUIT ANALYSIS

Low Power adjust potentiometer R2101, pass transistor Q215 and the directional coupler. The power control IC senses the presence of drive power from the exciter, the heatsink temperature, power output level, reflected power, and input voltage to provide automatic power leveling across the frequency band.

When the transmitter is keyed, rectified RF from A202-CR1 is applied to pin 10 of U1, turning it on. U1 supplies a reference voltage through pin 4 to power adjust potentiometer A202-R8. The voltage appearing at the arm of R8 is determined not only by adjustment of R8 but also by the meter R2101 when the MARINE HI-LOW switch on the control unit is on the LO position. This voltage is applied to pin 2 of U1, causing U1 to adjust the base voltage of Q215.

The conduction of Q215 sets the collector voltage for driver A202-Q1 thereby controlling the RF drive to the PA. The RF output power varies in direct proportion to the RF drive applied to the PA and can be adjusted from approximately 5 to 25 Watts in the HI Power mode of operation on from 0.5 to 5 Watts in the LO Power mode.

Once the power is set to the desired level, U1 compares the reference voltage appearing at the arm of power adjust control R8 to the actual output power flowing through the directional coupler and adjusts the collector voltage of A202-Q1 accordingly. A203-CR1 rectifies the sensed forward power from the directional coupler and A203-R1 sets the forward power reference voltage applied to pin 1 of U1.

Reflected power is sensed by the directional coupler and rectified by A203-CR2. When the reflected power exceeds a preset level established by A203-R2, a DC voltage proportional to the reflected power is applied to pin 3 of U1. U1 lowers the base voltage of Q215, which in turn lowers the collector voltage of A202-Q1, thereby reducing transmitter output power.

Temperature protection is provided by U1 and thermistor RT201. RT201 is mounted on the heatsink assembly. Under normal operating conditions, the temperature sensing circuit is inactive. When the heatsink temperature reaches approximately 100°C, the resistance of RT201 decreases, decreasing the base voltage of Q215. This in turn reduces the collector voltage applied to A202-Q1, reducing the transmitter output until, at approximately 125°C, the output power is almost zero. As the temperature of the heatsink decreases the output power increases until full power returns at approximately 100°C.

Overvoltage protection for the RF transistors is also provided by U1. Should the supply voltage exceed approximately 18 Volts, U1 will switch off the collector voltage to A202-Q1, turning it off and thereby removing drive to the PA. The IC will hold A202-Q1 off until the supply voltage is reduced to a safe level.

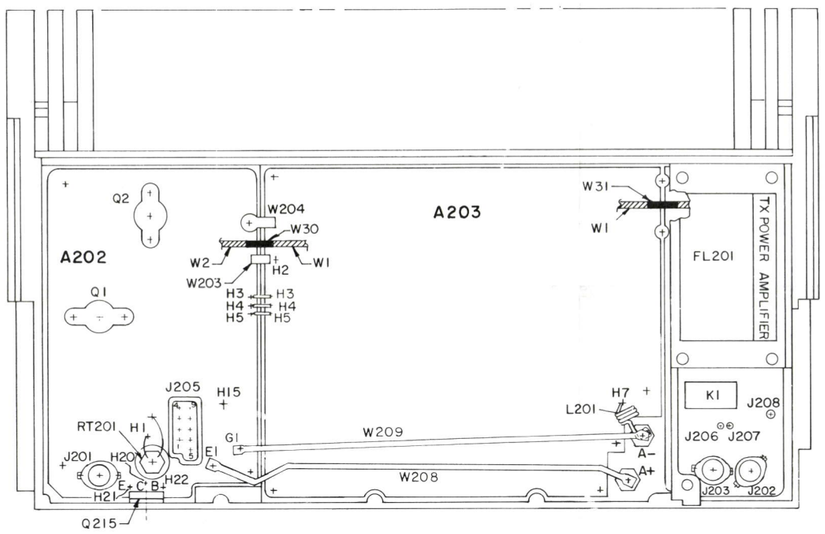
CAUTION

U1 may be damaged if output terminals 12 or 14 are shorted to ground. Use extreme caution when servicing the power control circuit.

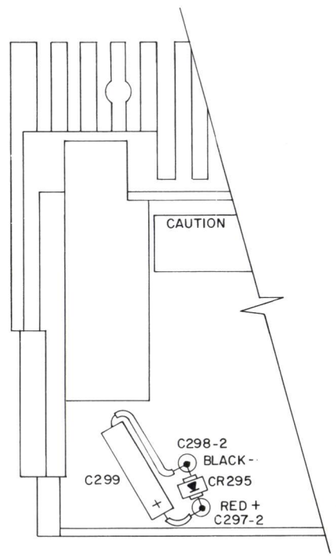
MOBILE RADIO DEPARTMENT
GENERAL ELECTRIC COMPANY • LYNCHBURG, VIRGINIA 24502

GENERAL ELECTRIC

TOP VIEW

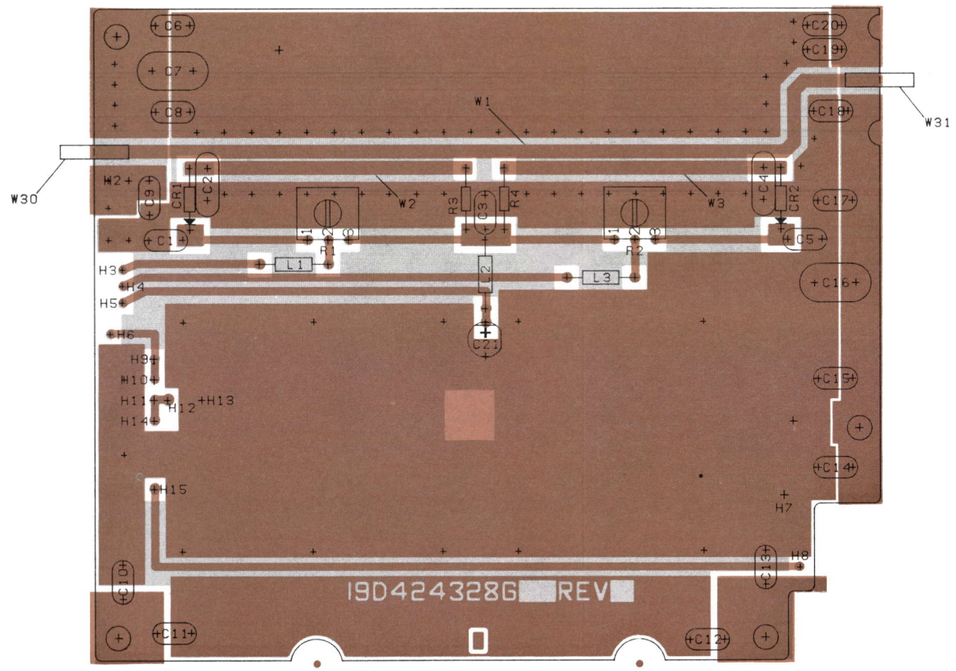


BOTTOM VIEW



(19D430129, Rev. 0)

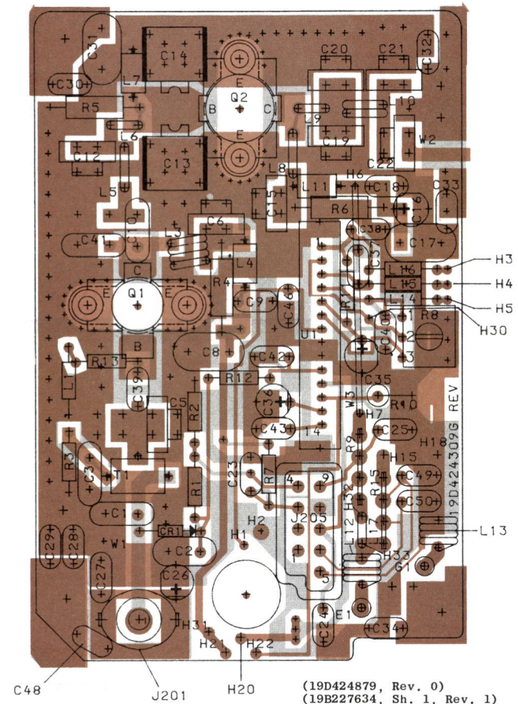
A203 COUPLER BOARD



(19C327843, Rev. 0)
(19B227638, Sh. 1, Rev. 0)
(19B227638, Sh. 2, Rev. 0)

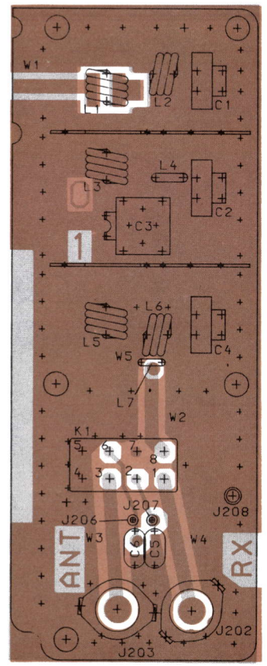
RUNS ON SOLDER SIDE
RUNS ON BOTH SIDES
RUNS ON COMPONENT SIDE

A202 POWER AMPLIFIER



(19D424879, Rev. 0)
(19B227634, Sh. 1, Rev. 1)
(19B227634, Sh. 2, Rev. 1)

LOW PASS FILTER

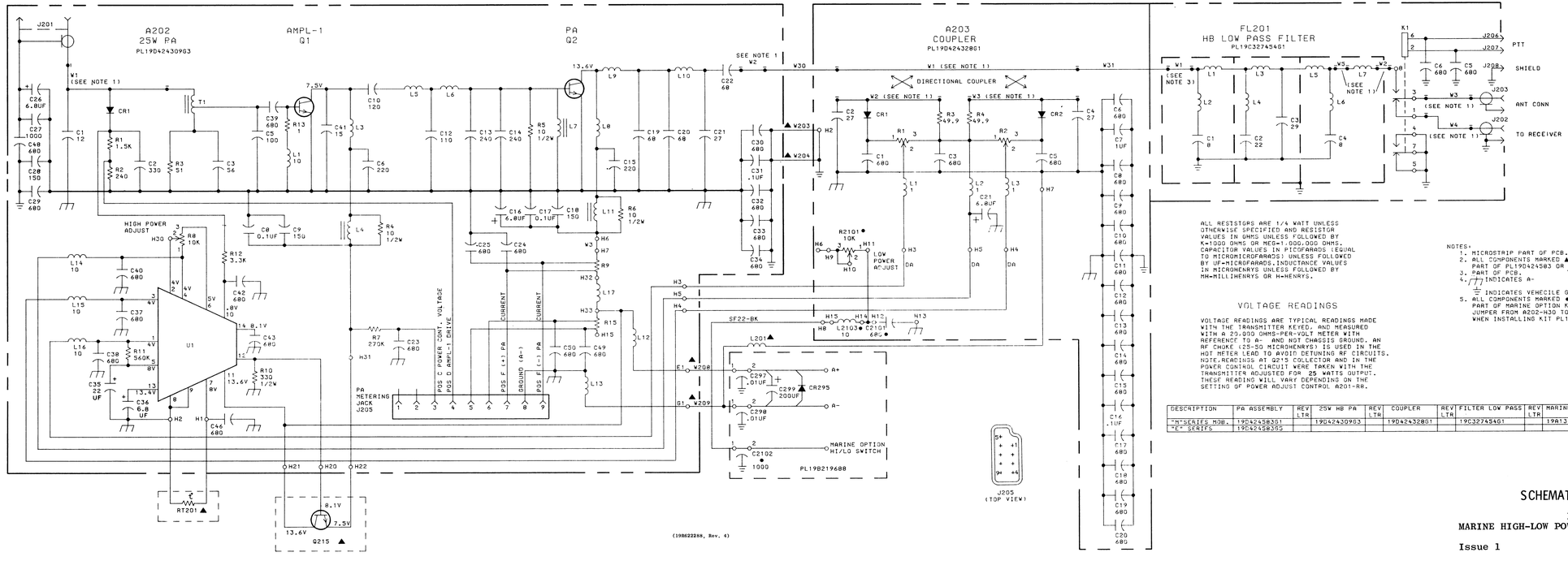


(19C327842, Rev. 1)
(19B227265, Sh. 1, Rev. 1)
(19B227265, Sh. 2, Rev. 0)

OUTLINE DIAGRAMS

138—174 MHz POWER AMPLIFIER ASSEMBLIES
(MARINE HIGH-LOW POWER OPTION)

ANY CHANGE TO THIS DRAWING
MAY AFFECT 19R622290



ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN MICROFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF=MICROFARADS.INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH=MILLIHENRYS OR H=HENRYS.

VOLTAGE READINGS

VOLTAGE READINGS ARE TYPICAL READINGS MADE WITH THE TRANSMITTER KEYED, AND MEASURED WITH A 20,000 OHMS-PER-VOLT METER WITH REFERENCE TO A- AND NOT CHASSIS GROUND. AN RF CHOKE (25-50 MICROHENRYS) IS USED IN THE HOT METER LEAD TO AVOID DETUNING RF CIRCUITS. NOTE,READINGS AT Q215 COLLECTOR AND IN THE POWER CONTROL CIRCUIT WERE TAKEN WITH THE TRANSMITTER ADJUSTED FOR 25 WATTS OUTPUT. THESE READING WILL VARY DEPENDING ON THE SETTING OF POWER ADJUST CONTROL A201-R8.

NOTES:
1. MICROSTRIP PART OF PCB.
2. ALL COMPONENTS MARKED ▲ ARE PART OF PL19D424583 OR 19D424786.
3. PART OF PCB.
4. ⏚ INDICATES A-
   ⏚ INDICATES VEHECILE GROUND
5. ALL COMPONENTS MARKED ● ARE PART OF MARINE OPTION KIT PL19A137027. JUMPER FROM A202-H30 TO A203-H6 WHEN INSTALLING KIT PL19A137027.

DESCRIPTION	PA ASSEMBLY	REV LTR	25W HB PA	REV LTR	COUPLER	REV LTR	FILTER LOW PASS	REV LTR	MARINE OPTION KIT	REV LTR
"M" SERIES MOB.	19D424583G1		19D424309G3		19D424328G1		19C327454G1		19A137027	
"C" SERIES	19D424580G5									

SCHEMATIC DIAGRAM

138—174 MHz, MARINE HIGH-LOW POWER AMPLIFIER

PARTS LIST

138-174 MHz POWER AMPLIFIER ASSEMBLIES

ISSUE 2

19D424583G1 25 WATT "M" SERIES MARINE
19D424583G2 40 WATT "M" SERIES MOBILE & INT. DUTY STATION
19D424583G3 65 WATT "M" SERIES MOBILE & INT. DUTY STATION
19D424583G4 110 WATT "M" SERIES MOBILE & INT. DUTY STATION
19D424583G5 25 WATT "E" SERIES MARINE
19D424583G6 40 WATT "E" SERIES MOBILE
19D424583G7 65 WATT "E" SERIES MOBILE
19D424583G8 110 WATT "E" SERIES MOBILE

SYMBOL	GE PART NO.	DESCRIPTION
A201	19D424309G1	10 Watt Driver. (Used with 19D424583G2, G4, G6 & G8).
A202	19D424309G3	25 Watt Driver/PA. (Used with 19D424583G1, G3, G5, G7).
A203	19D424328G1	Coupler. (Used with 19D424583G1, G5).
A204	19D424872G1	40 Watt Power Amplifier. (Used with 19D424583G2, G6).
A205	19D424872G2	65 Watt Power Amplifier. (Used with 19D424583G3, G7).
A206	19D424266G1	110 Watt Power Amplifier. (Used with 19D424583G4, G8).
		- - - - - - - - - - - FILTERS - - - - - - - - - -
FL201		COMPONENT BOARD 19C327454G1
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	19A116679P8D	Metallized teflon: 8 pf .5 pf, 250 VDCW.
C2	19A116679P22J	Metallized teflon: 22 pf ±5%, 250 VDCW.
C3	19A116795P29J	Metallized teflon: 29 pf ±5%, 250 VDCW.
C4	19A116679P8D	Metallized teflon: 8 pf .5 pf, 250 VDCW.
C5 and C6	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
		- - - - - - - - JACKS AND RECEPTACLES - - - - - -
J202 and J203	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J206 and J207	19A134263P2	Contact, electrical: sim to Selectro 229-1071.
J208	4033513P4	Contact, electrical: sim to Bead Chain L93-3.
		- - - - - - - - - - - RELAYS - - - - - - - - - -
K1	19B209558P1	Hermetic sealed: 180 to 341 ohms coil res, 2 form C contacts, 8.0 to 16.3 VDC; sim to GE 3SAV1760A2.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	19A129569P1	Coil.
L2	19A129570P1	Coil.
L3	19A129569P1	Coil.
L4	19A129575P1	Coil.
L5	19A129569P1	Coil.
L6	19A129570P1	Coil.
L7	19A136907P1	Coil.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 thru W5		(Part of printed board 19D424357P1).
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L201 and L202	19A129562P1	Coil.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - TRANSISTORS - - - - - - - - -
Q215	19A116742P1	Silicon, NPN.
		- - - - - - - - - - μHERMISTORS - - - - - - - -
RT201	19A129379G1	Thermistor: 40K ohms ±20%, color code white; sim to Carborandum Type M0806J-5.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W203	19A136942P1	Strap.
W204	7878455P1	Terminal, lug.
W205	19B227912P1	Jumper.
W206	19B227931G3	Jumper.
W207	19B227931G1	Jumper.
W208	19B227074G1	Jumper.
W209	19B226725G1	Jumper.
W210	19B227934G1	Cable: approx 13 inches long.
W211	19A137006P2	Jumper.
		HEAT SINK ASSEMBLY 19B219688G7 "M" SERIES 19B219688G19 "E" SERIES
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C297 and C298	19A116708P1	Ceramic, feed-thru: 0.01 µf +100% -0%, 500 VDCW; sim to Erie 327050X5W0103P.
C299	19A115680P10	Electrolytic: 200 µf +150% -10%, 18 VDCW; sim to Mallory Type TTX.
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR295	19A116783P1	Rectifier, silicon: 100 VDC blocking, 6 amps.
		- - - - - - - - MISCELLANEOUS - - - - - - - - -
	19D416732G7	Heat sink. ("M" SERIES).
	19D417105G7	Heat sink. ("E" SERIES).
	19A134016P1	Insulator, bushing. (Used with Q215).
	19A116023P3	Insulator, plate. (Used with Q215).
	19C321982P1	Insulator. (Located under A201, A202).
	19C321442P1	Insulator. (Located under A203-A206).
	NP280427	Nameplate. (25, 40, 65 Watt- Located on FL201).
	NP280428	Nameplate. (110 Watt- Located on FL201).
	19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Located between FL201 cover and A203-A206- Quantity 2).
	N404P13C6	Lockwasher, internal tooth: No. 6. (Located between FL201 cover and A203-A206).
	19B201074P320	Tap screw, Phillips POZIDRIV®: No. 6-32 x 1-1/4. (Secures FL201 cover).
	N44P9010C6	Machine screw: No. 4-40 x 5/8. (Secures Q1 & Q2 on A201, A202; Q1 on A204, A205; Q1-Q3 on A206).
	N80P13006C6	Machine screw, phillips head: No. 6-32 x 3/8. (Secures A201-A206 boards).
	N402P5C6	Flatwasher, narrow: No. 4. (Used with Q215 mounting).
	7141225P2	Hex nut: No. 4-40. (Used with Q215 mounting).
	N80P9006C6	Machine screw, phillips head: No. 4-40 x 3/8. (Used with Q215 mounting).
	19A129434P1	Washer, fiber. (Located on terminals of C297 & C298).
	19B219929P1	Support, heat sink.
	19B209209P306	Tap screw, Phillips Pozidriv®: No. 6-32 x 3/8. (Secures support to heat sink- Quantity 3).
	19A129639P1	Cover, heat sink.
	19B201074P305	Tap screw, Phillips POZIDRIV®: No. 6-32 x 5/16. (Secures heat sink cover).

PARTS LIST

A202
138-174 MHz, 25 WATT DRIVER/PA
19D424309G3

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1B	7489162P7	Silver mica: 12 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C2	7489162P39	Silver mica: 330 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C3	7489162P21	Silver mica: 56 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C5B	19A116679P100J	Silver mica: 100 pf ±5%, 250 VDCW.
C6	19A116679P220J	Silver mica: 220 pf ±5%, 250 VDCW.
C8	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C9	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C10B	7489162P29	Silver mica: 120 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C12	19A116679P110J	Silver mica: 110 pf ±5%, 250 VDCW.
C13B	19A116952P240	Silver mica: 240 pf ±5%, 250 VDCW; sim to Underwood Type J1HF.
C14B	19A116952P240	Silver mica: 240 pf ±5%, 250 VDCW; sim to Underwood Type J1HF.
C15	19A116679P220J	Silver mica: 220 pf ±5%, 250 VDCW.
C16	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C17	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C18	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C19	19A116679P68J	Silver mica: 68 pf ±5%, 250 VDCW.
C20B	19A116679P68J	Silver mica: 68 pf ±5%, 250 VDCW.
C21B	19A116679P27J	Silver mica: 27 pf ±5%, 250 VDCW.
C22B	19A116679P68J	Silver mica: 68 pf ±5%, 250 VDCW.
C23 thru C25	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C26	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C27	19A116655P19	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C28	19A116655P8	Ceramic disc: 150 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C29 and C30	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C31	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C32 thru C34	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C35	19A134202P6	Tantalum: 22 µf ±20%, 15 VDCW.
C36	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
C37 thru C40	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C41	7489162P8	Silver mica: 15 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C42 and C43	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C46	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C48 thru C50	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1	19A115250P1	Silicon, fast recovery, 225 mA, 50 PIV.
		- - - - - - - - - - TERMINALS - - - - - - - - - -
E1	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
G1	19A134263P1	Contact, electrical: sim to Selectro 229-1082-00-0-590.
		- - - - - - - - - JACKS AND RECEPTACLES - - - - -
J201	19A130924G1	Connector, receptacle: coaxial, jack type; sim to Cinch 14H11613.
J205	19B219374G1	Connector: 9 contacts.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	19B209420P125	Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4.
L3A	19A136530P1	Coil.
L4	19A129773G1	Coil.
L5B	19A136532P1	Coil.
L6	19A129575P1	Coil.
L7	19A129773G1	Coil.
L8B	19A136531P1	Coil.
L9B	19A129575P1	Coil.
L10B	19A136533P1	Coil.
L11	19A129773G1	Coil.
L12 and L13	19A129569P1	Coil.
L14 thru L16	19B209420P125	Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4.
L17	19A129575P1	Coil.
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q1	19A134340P1	Silicon, NPN.
Q2B	19A134340P2	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	3R152P152J	Composition: 1.5K ohms ±5%, 1/4 w.
R2	3R152P241J	Composition: 240 ohms ±5%, 1/4 w.
R3	3R152P510J	Composition: 51 ohms ±5%, 1/4 w.
R4 thru R6	3R77P100J	Composition: 10 ohms ±5%, 1/2 w.
R7	3R152P274J	Composition: 270K ohms ±5%, 1/4 w.
R8A	19A116559P106	Variable, cermet: 10K ohms ±20%, 0.5 w; sim to CTS Series 360.
R9	19C320212P2	Shunt resistor.
R10	3R77P331J	Composition: 330 ohms ±5%, 1/2 w.
R11	3R152P564J	Composition: 560K ohms ±5%, 1/4 w.
R12	3R152P332J	Composition: 3.3K ohms ±5%, 1/4 w.
R13	19A116216P1R0K	Deposited carbon: 1.0 ohms ±10%, 1/4 w; sim to Amperex Type B803104 Style CR25.
R15	19C320212P2	Shunt resistor.
		- - - - - - - - - - TRANSFORMERS - - - - - - - - -
T1	19A129564G1	Coil.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U1	19D429709G1	IC, Power Control.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1 and W2		(Part of printed board 19D424308P1).
W3	19B227912P1	Jumper.
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	19A136950P1	Strap. (Solders to W2).

PARTS LIST

A203
COUPLER BOARD
19D424328G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C2	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C3	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C4	7489162P13	Silver mica: 27 pf ±5%, 500 VDCW; sim to Electro Motive Type DM-15.
C5 and C6	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C7	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C8 thru C15	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C16	19A116080P107	Polyester: 0.1 µf ±10%, 50 VDCW.
C17 thru C20	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C21	19A134202P15	Tantalum: 6.8 µf ±20%, 35 VDCW.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 and CR2	19A116052P2	Hot carrier: Forward drop .410 volts max.
		- - - - - - - - - - - INDUCTORS - - - - - - - - -
L1 thru L3	19B209420P113	Coil, RF: 1.00 µh ±10%, 0.74 ohms DC res max; sim to Jeffers 4426-6K.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1 and R2	19A116559P101	Variable, cermet: 1K ohms ±20%, 0.5 w; sim to CTS Series 360.
R3 and R4	19C314256P24999	Metal film: 49.9 ohms ±1%, 1/4 w.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1 thru W3		(Part of printed board 19D424327P1).
W30 and W31	19A136950P1	Strap.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

CONTROL UNIT MODIFICATION KIT
19A130302G2

SYMBOL	GE PART NO.	DESCRIPTION
		SWITCH ASSEMBLY 19A130300G2
		- - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1701	19A134354P5	Diode, optoelectronic: red; sim to Hew Packard 5082-4693.
		- - - - - - - - - - - PLUGS - - - - - - - - - - -
P1707	19A127042P2	Terminal, solderless: sim to Malco 12093-10.
P1725	4029840P2	Contact, electrical: sim to Amp 42827-2.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1701	3R77P511J	Composition: 510 ohms ±5%, 1/2 w.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1701	19A116622P4	Push: DPDT, 2 position, 3 amp at VAC or 0.5 amp VDC at 125 v; sim to Switchcraft 11K1087.
		HARNESS ASSEMBLY 19A130302G3 (Includes P1707 & P1725)
		- - - - - - - - - MISCELLANEOUS - - - - - - - -
	NP270753P11	Nameplate. (VOLUME-POWER ON-HI LOW-SQUELCH).
	19A116807P1	Clip, spring tension. (Secures CR1701).
	19B201074P204	Tap screw, Phillips POZIDRIV®: No. 4-40 x 1/4. (Secures front end of S1701).
	N117P9004C6	Tap screw, phillips: No. 4-40 x 1/4. (Secures rear end of S1701).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

PA MODIFICATION KIT
19A137027G1

SYMBOL	GE PART NO.	DESCRIPTION
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C2101	19A116655P18	Ceramic disc: 680 pf ±10%, 1000 VDCW; sim to RMC Type JF Discap.
C2102	19B209503P3	Ceramic, feed-thru: 1000 pf +100% -10%, 100 VDCW; sim to Erie Style 2425-002.
		- - - - - - - - - - INDUCTORS - - - - - - - - -
L2103	19B209420P125	Coil, RF: 10.0 µh ±10%, 3.10 ohms DC res max; sim to Jeffers 4446-4.
		- - - - - - - - - - RESISTORS - - - - - - - - -
R2101	19A116559P106	Variable, cermet: 10K ohms ±20%, 0.5 w; sim to CTS Series 360.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	N403P16C6	Lockwasher, external tooth: No. 8.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES