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TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LIST
[INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS]

PLUG-IN DIGITAL VOLTMETER PL-1344/U
[HEWLETT-PACKARD MODEL 5265A]
[SERIAL PREFIX 914]

HEADQUARTERS, DEPARTMENT OF THE ARMY
JULY 1974

TECHNICAL MANUAL

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This technical manual is an authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 310-3, military publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

LIST OF ILLUSTRATIONS

Page

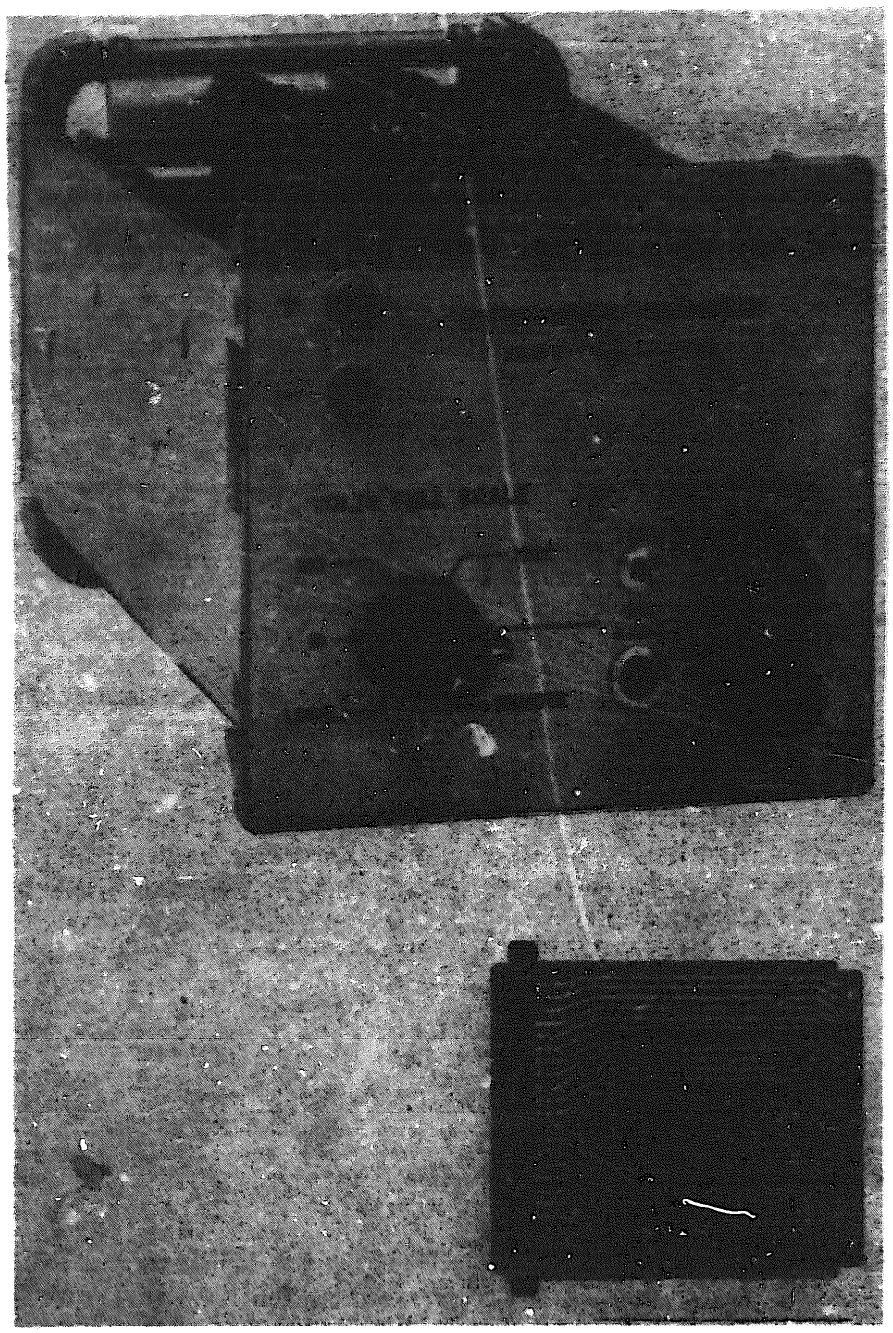

Figure 1-1. Plug-In Digital Voltmeter PL-1344/U and extender board Text

CHAPTER 1

INTRODUCTION

1-1. Scope

This manual describes Plug-In Digital Voltmeter PL-1344/U (Hewlett-Packard Model 5255A). It includes installation and operation instructions, and covers operator's, organizational, direct support, and general support maintenance.

1-2. Indexes of Publications

a. **Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to this equipment.**

b. **Refer to the latest issue of DA Pam 310-7 to determine if there are current, applicable modification work orders (MWO's) pertaining to this equipment.**

1-3. Forms and Records

a. Report of Maintenance and Unsatisfactory Equipment. **Use equipment forms and records in accordance with instruction in TM 38-750.**

b. Report of Packaging and Handling Deficiencies. **Fill out and forward DD Form 6 (Report of Packaging and Handling Deficiencies) as prescribed in AR 700-58/NAVSUP PUB 459/AFM 75-34/and MCO P4030.29, and DSAR 4145.8.**

c. Discrepancy in Shipment Report (DISREP) (SF 361). **Fill out and forward Discrepancy in Shipment Report (DISREP)** (SF 361) as **prescribed in AR 55-38/NAVSUPINST 4610.33/AFM 75-18/MCO P4610.19A, and DSAR 4500.15.**

d. Reporting of Equipment Manual Improvements. **Reports of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications) and forwarded direct to Commander, U.S. Army Electronics Command, ATTN: AMSEL-MA-CT, Fort Monmouth, NJ 07703.**

1-4. Description

The PL-1344/U Plug-In Digital Voltmeter (Hewlett-Packard Model 5265A) converts the HP Models 5245/M, 5246L, or 5248L/M electronic counters to an accurate dc digital voltmeter. Three ranges, 10, 100, and 1,000 V are provided. The accuracy of the digital voltmeter is ±0.1 percent of the displayed reading plus ± 0.01 percent of the full range value for operating temperatures between 0° C and +50° C. Accuracy is maintained for overrange voltages of 5 percent on all ranges. The LOCAL-REMOTE switch permits remote selection of **the digital voltmeter mode** or operation from the **voltmeter** controls. The polarity of the input dc **voltage is** automatically sensed and displayed. The PL-1344/U is a v&age-to-time interval converter which uses a linear voltage ramp and voltage coincidence circuits to define a time interval. Since the ramp is linear with respect **to** time, the time interval is directly proportional **to input voltage, and is measured by counting a 10-MHz signal from** the counter time base. A 22-**pin printed circuit e**xtender board is supplied.

1-5. Technical Characteristics

Voltage range	Six-digit presentation of 10.000, 100.000, and 1.000.00 volts full scale with 5% overrange capability.
Registration	On electronic counter.
Reads in	DC volts with decimal point positioned by range switch: automatic polarity indicator.
Accuracy (0 to 50°C)	0.1% of reading above 1/10 full scale: +0.01% of full scale below l/10 full scale (within 24 hours and 100C. temperature change since front panel calibration adjustments and within 6 months of internal Zener reference calibration).
Internal calibration reference	Zener diode.
Sample rate	5 per second to 1 per 5 seconds. with storage between samples and Hold for sampling on Command.
Range selection	Manual.
Programming	DVM mode or counter functions may be selected remotely (remote operation requires H65-5245M or H65-5245L).
Input resistance	10.2 megohms to dc on all ranges.
Input filter	AC rejection: 30 dB at 60 Hz, increasing at 12 dB **per** octave.
	Response time: to a step function input. less than 450 msec to achieve 99.95% of final value.

Digital output	Measurement, polarity, and decimal point are supplied in BCD form.

1-6. Items Comprising an Operable Equipment

FSN	Item	Qty	Measurements (in.) Height	Width	Depth	Weight (lb)
6625-957-0511	Plug-In Digital Voltmeter PL-1344/U (HP Model 5265A).	1	6	6	8	21/2
6625-922-3616	22 pin extender board.	1				

CHAPTER 2

INSTALLATION

2-1. Unpacking

Unpack the unstrument carefully. Do not penetrate the carton with sharp tools or the instrument may be damaged. After the instrument is unpacked, inspect it for damage (scratches, dents, broken knobs, etc). If the instrument is damaged or fails to meet specifications (performance check para 5-3), refer to the instructions in paragraph 1-3*a*.

2-2. Storage and Reshipment

a. Environment. Conditions during storage and shipment should be as follows:

(1) Maximum temperature 167° F (75° C).

(2) Minimum temperature -40° F (-40° C).

b. Packaging. Use the best packaging methods available to protect the instrument during shipment or storage. The following procedure is a general guide for packing an instrument for shipping:

(1) If possible, use the original container designed for the instrument. Otherwise, use a strong carton (350 lb/sq inch bursting strength) or wooden box to house the instrument.

(2) Wrap the instrument in heavy paper or plastic before placing in the shipping container.

(3) Use plenty of packing material around all sides of the instrument and protect the front panel with cardboard strips.

(4) Seal the package with strong tape or metal bands. Mark with "Delicate Instrument."

2-3. Installation

Use the following procedure to install the PL-1344/U in the compartment provided at the right side of the counter front panel:

a. Remove the ac power from the counter by rotating the SAMPLE RATE control fully counterclockwise to POWER OFF.

b. Loosen the locking screw on the side of the plug-in compartment by turning it fully counterclockwise.

c. Remove the blank filler panel or plug-in unit installed.

d. Slide the PL-1344/U into the compartment. Make certain the plug-in is properly aligned and tighten the locking screw.

NOTE

When installing the PL-1344/U into HP Model 5245L/M with serial prefix 335 or below, or HP Model 5246L or 5248L/M with serial prefix 328 and below, a modification kit must be installed.

2-4. Cooling

The PL-1344/U is cooled by the ventilation of the counter in which it is installed. Refer to the operating and service manual of the counter for cooling system maintenance instructions.

2-5. Power Requirements

All voltages required to operate the PL-1344/U are supplied by the circuits of the counter in which the plug-in is installed.

2-6. Electrical Connections

The INPUT terminals on the front panel of the plug-in provide the only connection for voltages to be measured. All other connections are completed through the 50-pin jack at the rear of the plug-in unit.

CHAPTER 3

OPERATING INSTRUCTIONS

3-1. General

(fig. 3-1)

The PL-1344/U digital voltmeter provides dc voltage measurement capabilities for Hewlett-Packard electronic counters. De voltages as high as 1,000 volts can be measured on one of the three ranges (10, 100, 1,000). The VOLTS FULL SCALE switch selects the range. LOCAL or REMOTE operation is selected with the center red knob on the VOLTS FULL SCALE switch. Input dc voltage polarity is automatically indicated by the + or - neon. The overrange capability of the voltmeter is +5% of the full range voltage.

Table 3-1. Controls and Indicators

Name	Reference designation	Function
INPUT	1	Accepts dc voltages in the range of 0 to 1,000 volts.
VOLTS FULL SCALE switch	2	Selects correct range for the input dc voltages.
LOCAL-REMOTE switch	3	Provides for local operation from the instrument or remote operation for remote programming of the voltmeter function.
ZERO ADJUST	4	Zeros the voltmeter for 000000.00 in the voltmeter zero adjustment procedure.
CAL 8,000	5	Used in the CAL 8,000 adjustment.
Polarity indicators	6	Automatically indicate polarity of input dc voltage.

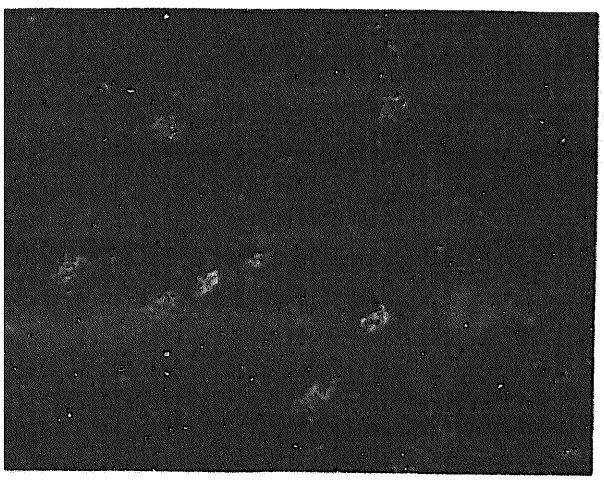

Figure 3-1. Controls and indications

3-2. Operating Procedure

(fig. 3-2)

NOTE

The numbers in figure 3-2 refer to steps in the operating procedure.

a. Use the following procedure for a dc voltage measurement with the PL-1344/U. Do not exceed the 5 percent overrange specification.

(1) Apply power to the counter and voltmeter by turning the SAMPLE RATE control clockwise to midposition. Allow a 10-minute warmup.

(2) Set the SENSITIVITY switch to a position other than CHECK.

(3) Set the TIME BASE switch to a position other than EXT, or .01 μs (5248L/M).

(4) Set the FUNCTION switch to REMOTE OR TIME INTERVAL.

(5) Set the VOLTS FULL SCALE switch to 1000.

(6) Set the LOCAL-REMOTE switch to LOCAL.

(7) Set the ZERO control for display of 000000.00 and observe that the polarity indicators alternately flash. Short the INPUT terminals.

(8) Set the VOLTS FULL SCALE switch to CAL 8,000, and adjust the CAL 8,000 control for a 0008.0000 display, ±5 counts. Remove the short.

(9) Set the VOLTS FULL SCALE switch to 1000 and apply dc voltage at the INPUT terminals. (If the display indicates between 100 volts and 10 volts, switch the voltmeter to the 100 range. If the display indicates less than 10 volts, switch the voltmeter to the 10 range.) Observe the voltage magnitude on the counter display and the voltage polarity as indicated by the polarity indicators.

NOTE

Do not measure floating voltage. The common connector is chassis ground.

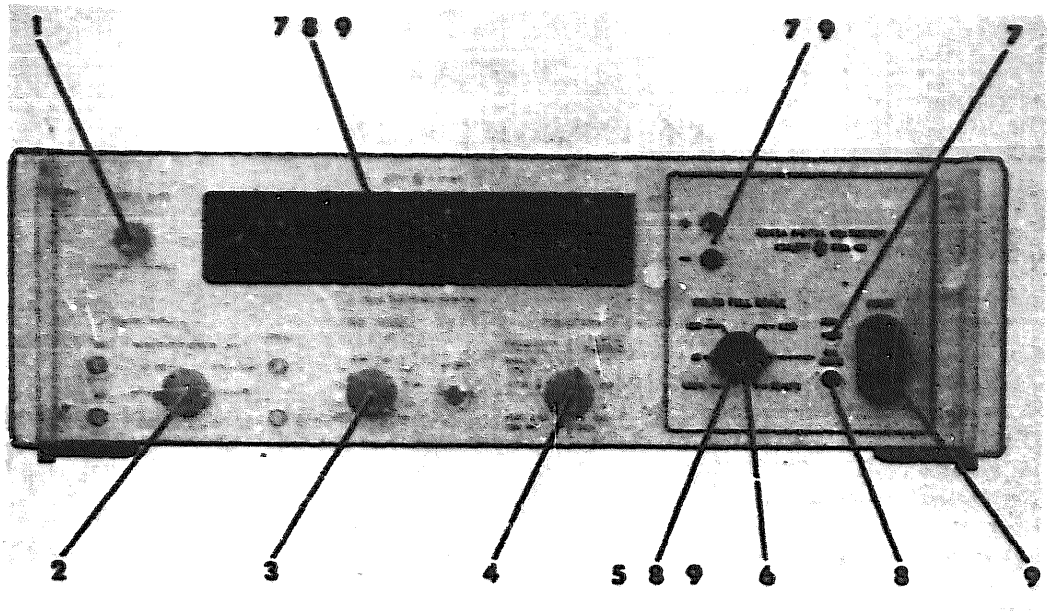

Figure 3-2. Steps in operating procedure

b. **If the desired readings in *a*(7), (8), and (9) above are not obtained, refer to the associated troubleshooting procedure in chapter 5. After the trouble has been remedied, perform the procedure given in *a* above.**

3-3. Remote Operation (Special)

For those counters with the remote feature with the counter and voltmeter in the remote condition, the voltmeter can be turned on by connecting pin 25 to pin 26, and connecting pin 30 to pin 31 at the lower 36 pin connector on the rear panel of the counter.

3-4. Calibration

For maximum operating accuracy, check ZERO and CAL 8.000 and set, if necessary. Set the VOLTS FULL SCALE switch to 1000 and adjust the ZERO control for 000000.00 and alternately flashing polarity indicators. Set the VOLTS FULL SCALE switch to CAL 8.000 and adjust the front panel screwdriver adjustment for 0008.0000, ±5 counts on the counter display.

NOTE

The internal reference must be recalibrated every 6 months.

CHAPTER 4
PRINCIPLES OF OPERATION

4-1. Introduction

a. The PL-1344/U provides measurements of dc voltages to 1,000 volts when inserted in the compartment provided in Model 5245L/M, 5246L, or 5248L/M Electronic Counters. The plug-in digital voltmeter permits measurements on one of three voltage ranges (10, 100, 1,000 volts), provides manual selection of local or remote programming, and automatically indicates polarity of the applied input dc voltage. Figure 4-1 is a simplified block diagram of the PL-1344/U.

b. The PL-1344/U generates two pulses related to the input dc voltage. These pulses are applied to the Counter circuits to control the count and digital display. The pulses act as start and stop pulses to open and close the Counter main gate. While the gate is held open by the PL-1344/U circuits, the counter binaries totalize the Counter 10-MHz pulses. The display corresponds to the input dc voltage level. Figure 4-2 illustrates the timing sequence for the ditigal voltmeter.

c. The polarity of the input voltage is automatically indicated. The polarity indicated is determined by the order in which the two pulses are generated. If the input voltage is positive, the pulse from the ground comparator circuits is generated last and the + indicator lights. If the input voltage is negative, the pulse from the input comparator circuits is generated last and the - indicator lights.

4-2. General Description

The input dc voltage is fed through attenuator assembly A1 to the digital voltmeter VOLTS FULL SCALE switch. From the switch the attenduated dc is applied to input comparator assembly A4 via master board assembly A3. The comparator circuits compare the attenuated input dc voltage with the negative-going ramp voltage generated by the circuits of ramp generator assembly A6. When the ramp voltage reaches the same level as the input dc voltage, the input comparator generates a pulse. The output of ramp assembly A6 is applied not only to the input comparator, but also to the ground comparator circuits (assembly A5). When the ramp voltage passes zero reference (ground), the ground comparator circuits generate a pulse. These two pulses (input comparator and ground comparator) are applied to the polarity sensor and also to the gate flip-flop in the counter gate control assembly. During the interval between the two comparator pulses, the Counter assemblies totalize the counter 10-MHz pulses and present this information to the display circuits for the readout.

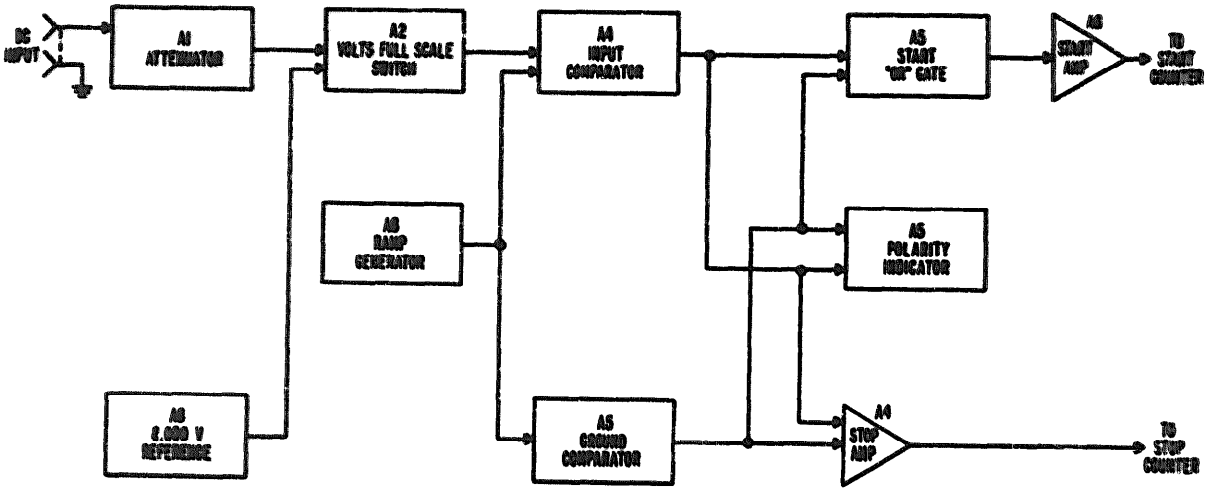

Figure 4-1. Simplified block diagram.

4-3. **Attenuator A1**

The attenuator circuits (fig. FO-3) reduce the input signal for the range selected and prevent overloading the input comparator. The amount of attenuation inserted is controlled by the VOLTS FULL SCALE switch. Attenuator resistance, capacitor A1C1 and comparator input capacitance form an rc filter for ac rejection. Ac signals are rejected 30 dB or more at 60 Hz.

4-4. **VOLTS FULL SCALE and LOCAL-REMOTE Switch [P/O A2]**

a. The VOLTS FULL SCALE switch (fig. FO-3) provides three ranges (10, 100, and 1,000 volts) for voltage measurements and a fourth position for applying an 8,000-volt reference to the input comparator circuits. The switch also controls the Counter display decimal lights. When the switch is set to CAL 8.000, the decimal point selected indicates the 10-volt range. Diode CR1 isolates the Counter decimal point control circuits from the voltmeter decimal point control circuits. When the Counter FUNCTION switch is not at REMOTE-TIME INT, the Counter decimal point control circuits control the decimal point, and the plug-in circuits are isolated.

b. The LOCAL-REMOTE switch controls the -15 volts enabling and the +170 volts for the decimal point neons in the Counter display and the polarity neons in the digital voltmeter. In the LOCAL position, the -15 volts enabling is supplied from the Counter via pin 16 of plug-in jack J6, through the LOCAL-REMOTE switch, to pin 19 of input assembly A4, ground assembly A5, and ramp assembly A6. The +170 volts is supplied from the Counter via pin 10 of J6 and the LOCAL-REMOTE switch A2S1 to the Counter decimal point neon and pin 4 of A5 and A6. When the LOCAL-REMOTE switch is at REMOTE, the -15 volt-enabling and +170-volt circuits are completed by switches at the remote location.

4-5. **Master Board Assembly A3**

The master board printed circuit assembly (fig. FO-3) contains the three 22-pin connectors for assemblies A4, A5, and A6, 50-pin plug P6 (mates with Counter jack J6), and terminals for external wiring. It provides the necessary printed circuit interconnections. Components mounted on this board provide filtering for the lines to and from the Counter.

4-6. **Ramp Generator and Start Output Assembly A6**

Ramp generator assembly A6 (fig. FO-6) includes the timing multivibrator, ramp generator, start amplifier, holdoff multivibrator, and calibration reference voltage circuits. These circuits receive comparison pulses from the input and ground comparator circuits and incorporate them into the generation of the main ramp, -6.6-volt ramp, and Counter start pulses. An output called the timing control is also generated to control the Counter circuits which admit information from the plug-in unit for counting and display. A dc voltage output from A6 provides a reference voltage for calibration of the digital voltmeter.

a. Timing Multivibrator.

(1) The timing multivibrator (Q1, Q2, Q3, fig. FO-6) is a free-running multivibrator (Q1, Q2) with a class B output (Q2, Q3). It controls the ramp start, the Counter 10-MHz gate, the ground trigger, the input trigger, and the holdoff multivibrator. The timing multivibrator operates at approximately 7 Hz per second; thus, a dc voltage comparison can be made seven times each second. The Counter SAMPLE RATE control determines the number of times each second the digital voltmeter information is accepted by the Counter circuits.

(2) The timing multivibrator begins the input dc voltage comparison (sampling cycle) when it switches to the Q1 off and Q2 on state. The negative transition at Q2 collector forward-biases CR3, reverse-biases CR4, causes ramp capacitor C1 to charge negatively, and ramp generation begins. This same negative signal at Q2 collector is coupled through C19 and CR1 and turns on the 10-MHz counted frequency gate in the Counter until the timing multivibrator changes state. Diode CR1 isolates the timing multivibrator from the Counter circuits when the Counter is not being used for dc voltage measurements. The negative signal at Q2 collector is also applied to the base circuit of A6Q7 (holdoff multivibrator) and to the ground and input trigger circuits to reset the comparator trigger transistors.

b. Ramp Generator.

(1) The ramp generator circuit (fig. FO-6) generates the negative-slope main ramp. Transistors Q4, Q5, Q6, Q10, and their associated components comprise the ramp generator. The main ramp is controlled by the state of transistors Q2 and Q3 in the timing multivibrator and starts when the timing multivibrator switches to the Q2 conducting state. Diode CR3 is forward-biased and CR4 becomes reverse-biased. This effectively switches the positive constant current (+170 volts through R36) from ramp capacitor C1 to -15 volts enabling through Q2. The negative constant current through CR6, R41, R2, R3, and R4 charges ramp capacitor C1 and begins the ramp generation. Transistors Q4, Q5, and Q6 comprise

a current amplifier to increase the linearity of the ramp. C1 continues to charge negatively until its voltage reaches the level of the voltage at CR3 cathode (-12 volts). Diode CR4 now becomes forward-biased, clamps C1 voltage at -12 volts, and the ramp negative slope ends. The ramp stays clamped until the timing multivibrator again changes state to start ramp positive recharge.

(2) Current for recharging C1 to +12 volts is supplied through R36 and CR4. Q10 acts as a current source to maintain linearity of the ramp with constant current through CR6. CAL 8.000 (R3) and the Ramp Slope (A6R41) controls permit adjustment of the ramp slope to calibrate the digital voltmeter to the internal reference voltage or an external reference voltage. The external reference voltage source must be accurate to .01 % or better. Breakdown diode CR6 also establishes the level of a second ramp at a level of 6.6 volts lower than the main ramp voltage. The main ramp is supplied to both the input and ground comparator coincidence diodes and the -6.6-volt ramp is supplied to only the input comparator coincidence diode.

c. Start Amplifier. Pulses from the start OR gate on assembly A5 are amplified and inverted by the start amplifier and supplied to the Counter via pin 21 of J6. These pulses are the start pulses and they cause the Counter gate to be opened and allow the Counter circuits to start totalizing the 10-MHz counted frequency. The LC combination of L1, L2, and L3 and C12 through C15 acts as a delay line to delay the start pulse about 0.5 microsecond to correspond with the stop pulse delay. Start pulses are also supplied to the holdoff multivibrator. The input signal to start amplifier Q9 is the algebraic sum of the delayed positive start OR gate pulses and the negative differentiated square wave from stop AND gate amplifier A4Q9 and A4Q10. When the two start OR gate pulses occur within about 0.5 microsecond of each other, the stop AND gate pulse keeps Q9 biased off and prevents a start output to the Counter.

d. Holdoff Multivibrator.

(1) Holdoff multivibrator (Q7 and Q8, fig. FO-6) insures that start pulses initiated by the timing multivibrator will trigger the Counter circuits only if the Counter is not triggered during the time of the negative main ramp. When there is no input dc voltage to the digital voltmeter, the timing multivibrator triggers the holdoff multivibrator and a start pulse is sent to the Counter only after the 10-MHz Counter frequency has been gated off. The readout display then indicates zero.

(2) When an input dc voltage is applied to the digital voltmeter, the holdoff multivibrator operates as follows:

(*a*) A negative voltage from the timing multivibrator at the beginning of the main ramp causes Q7 to turn on.

(*b*) A start pulse from start amplifier Q9 turns on Q8 and Q7 turns off. This completes the cycle until the timing multivibrator begins another comparison cycle.

(3) When no input dc voltage is applied to the digital voltmeter, the holdoff multivibrator operates as follows:

(*a*) A negative pulse from the timing multivibrator turns on Q7 as in (2) above.

(*b*) The holdoff multivibrator is switched by the timing multivibrator at the beginning of the positive ramp slope interval, since no start pulses have arrived at the holdoff multivibrator during the negative main ramp interval.

(*c*) The square wave output of the holdoff multivibrator is differentiated by C9 and applied to Q9 base circuit. A start pulse to the Counter results and the Counter gate binary will be turned on for a few microseconds. However, the timing multivibrator has already caused the Counter-10 MHz frequency to be gated off. The Counter gate will be open for a few microseconds, but the decade assemblies will not totalize any count and will remain at zero. This zero count is transferred to the display and the Counter indicates zero.

e. Calibrate Reference Voltage. The calibrate reference voltage provides a self-check reference accurate to ±0.05 % for calibrating the digital voltmeter. This calibration voltage is dervied from breakdown diode CR5 and the precision divider consisting of R7, R8, R9, R12, and R14. Breakdown diode CR15, transistor Q11, and R17 act as a shunt regulator to control the constant current through R7 and prevent 20-volt supply changes from affecting the calibration voltage. When VOLTS FULL SCALE switch S2 is at CAL 8.000, the calibration voltage is supplied to input comparator assembly A4. REF 8.000 potentiometer R12 adjusts the internal calibration voltage.

NOTE

REF 8.000 control R12 should be adjusted only when an external voltage reference accurate to ±0.01 % is available.

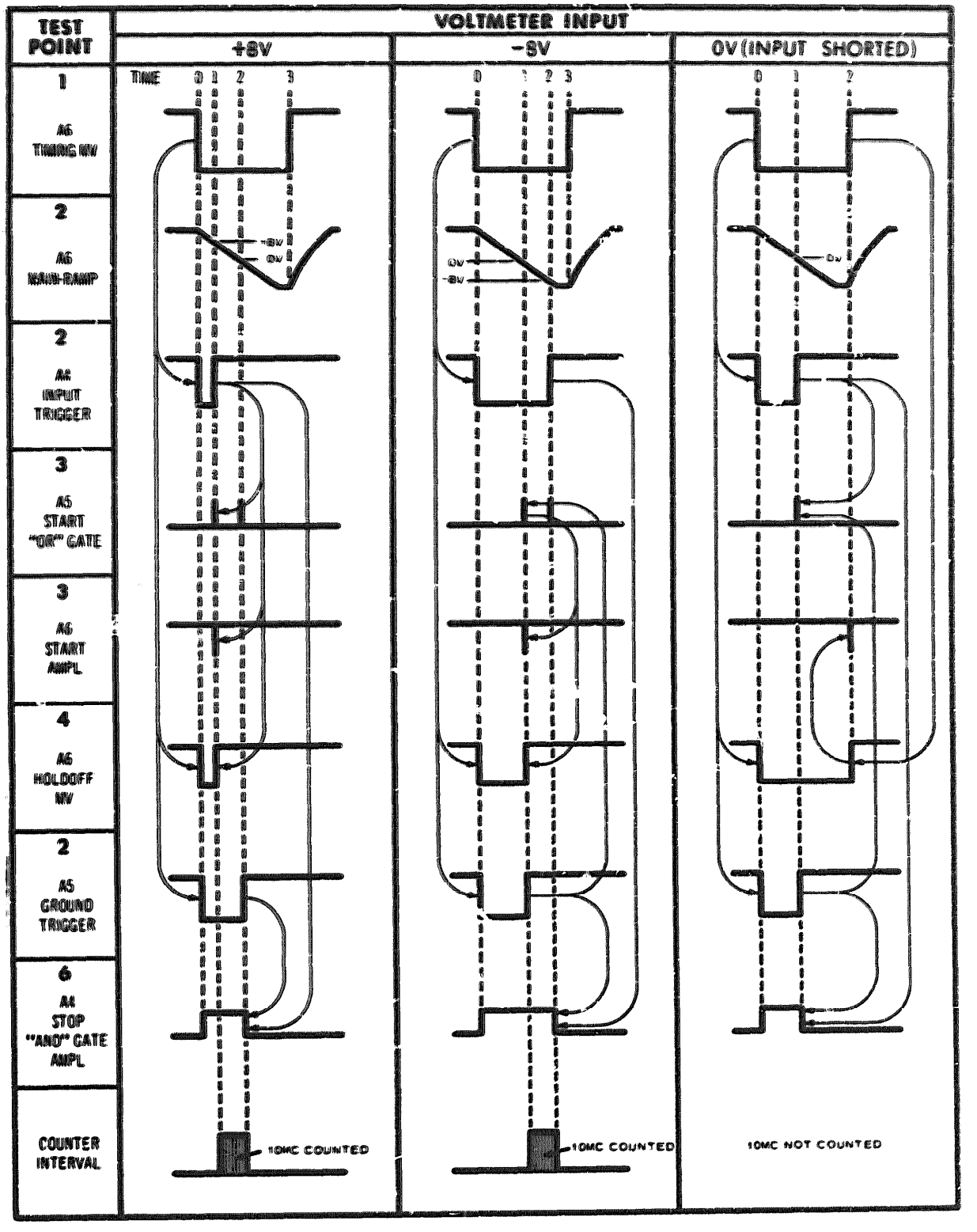

Figure 4-2. ***Timing sequence for positive, negative, and 0-volt input.***

4-7. Ground Comparator and Polarity Sensor A5

a. General.

(1) Assembly A5 (fig. FO-5) contains the circuits for the ground comparator diode pair, ground amplifier, ground trigger, polarity sensor, and the start OR gate. These circuits receive the main ramp from assembly A6 and pulses from the input trigger (A4Q6 and *A4Q7* The ground comparator circuit2 also generate start pulses which are supplied to start amplifier A6Q9, the square wave to stop amplifier A4Q9 and A4Q10, and control the digital voltmeter + and - indicators. As discussed in paragraph 4-1c, the polarity of the input dc voltage determines whether the ground or input comparison pulse is generated last.

(2) The ground comparator circuits generate the ground comparison pulse while comparing the main negative slope ramp voltage with ground (zero). The diode pair (CR1A and CR1B) is the heart of this comparing action. At the start of the comparison cycle, the main ramp is applied to CR1 anode. Current is supplied through R4 to CR1A from the time the ramp starts until the diode pair is reverse-biased at the end of the ground voltage comparison. When the main ramp voltage reaches the level of the ground reference, diode CR1B conducts and allows the ramp to be coupled through C2 to the ground amplifier. The ramp is then amplified by Q1, Q2, and Q3 and results in a positive pulse at Q3 collector. This pulse turns off ground trigger Q4 and Q5 turns on. Square wave B at Q5 collector is applied through R24 and CR2 to the common cathode of diode pair CR1A and CR1B to reverse-bias this pair. Square wave B is also applied through CR5 and C22 to start OR gate diode CR9. The square wave from input trigger A4Q7 at pin 14 is applied to start OR gate diode CR10 through C16. The OR gate output is applied via pin 20 to start amplifier A6Q9 which provides the start signal to the Counter. Square wave A at Q4 collector is applied via pin 11 to input amplifier A4Q5.

b. *Polarity* Sensor. The polarity sensor (fig. FO-5) controls the circuits which permit a polarity indicator to light. The + and - indicators (DS1 and DS2) are controlled by the output of the polarity sensor differential amplifier Q6 and Q7. *The* trigger circuit receives two pulses and is switched only during the negative slope interval of the main ramp. Since the complete timing cycle (from ramp start to ramp start) is longer than the ramp negative slope interval, the integrated outputs of the polarity trigger transistors will provide two unbalanced inputs to the differential amplifier. This permits the differential amplifier to distinguish between the two different states of the polarity trigger and thus cause the correct polarity neon to light.

c. *Polarity* Trigger. During the negative slope interval of the main ramp, Q8 receives a positive from the input trigger and Q9 receives a positive pulse from the ground trigger. These positive pulses turn off the transistor to which they are applied and this causes the opposite trigger transistor to turn on. The state of the polarity trigger after the last voltage comparison pulse is thus determined by the last pulse received from the comparator trigger transistors.

d. Differential Amplifier. Transistors Q6 and Q7 operate as a differential amplifier to enable the correct polarity neon on the digital voltmeter front panel. When a positive input dc voltage is being measured, the positive pulse from the ground trigger arrives last at Q9 base. This causes Q9 to turn off and apply a more negative voltage to the base of differential amplifier transistor Q6. Voltage at the collector of Q6 becomes more positive and the + indicator is enabled. When the input dc voltage is negative, the operation is similar and Q7 enables the - indicator.

e. Zero Input Dc *Voltage.* When the input dc voltage is zero (no input), ground and input comparator trigger circuits generate comparison pulses at the same time. These pulses are applied to the base circuits of polarity trigger transistors Q8 and Q9. The polarity trigger acts as a binary and changes state once for each pair of pulses. Therefore, during each ramp decay or voltage comparison cycle, the polarity trigger changes state and differential amplifier Q6 and Q7 alternately enables + and - indicators DS1 and DS2. These indicators alternately flash when the digital voltmeter is correctly calibrated and the input is zero.

f. Minus 35-Volt Circuit. Minus 35 volts is generated by voltage divider R49 and R50 in series with 130 volts from the Counter. This -35 volts is supplied to the junction of the polarity indicators and to the recharge circuit of input comparator A4.

4-8. Input Comparator and Stop Output A4

Assembly A4 (fig. FO-4) contains the circuits for the input comparator diode pair, input amplifier, input trigger, recharge circuit, and the stop AND gate amplifier. These circuits receive the input dc voltage from J1, the main ramp, and the -6.6-volt ramp from ramp generator A6Q4 through A6Q6, A6Q10, the ground square wave from A5Q5, and act on these signals to generate an output square

wave. This square wave is supplied to the primary sensor and start OR gate on assembly A5, start amplifier on assembly A6, and to the Counter gate binary through pin 22 of J6.

a. Input Amplifier.

(1) The input amplifier circuits generate the input pulse while comparing the input dc voltage with the main negative slope ramp voltage (begins at +12 volts and ends at -12 volts). Diode pair CR3A and CR3B is the heart of this comparing action. At the start of the cycle (determined by the timing multivibrator), the main ramp is applied to the anode of CR3A. A second ramp, identical with the slope of the first but 6.6 volts lower, supplies a constant current through R31 to CR3 cathode from the time the main ramp starts until CR3 is reverse-biased at the end of the input voltage comparison. The input dc voltage is applied through R1 and R2 to the anode of CR3B. When the main ramp voltage reaches the level of the input dc voltage, diode CR3B conducts and allows the main ramp to be coupled through C3 to the input amplifier. The ramp is then amplified by Q2 through Q5, and a positive pulse results at Q6 collector. This pulse turns off input trigger transistor Q6, and Q7 turns on. The resulting positive-going transistion of Q7 collector is supplied via diode CR13 to the polarity sensor and the start OR gate on assembly A5 and also through R51 to stop AND gate amplifier Q9.

(2) Transistors Q1 and Q2 are connected as a differential amplifier and act to prevent signals and pulses on the input dc voltage from triggering the input amplifier. Each base of the differential amplifier is driven from a high-pass voltage divider network. Both networks have identical frequency and voltage properties and receive equal signals from the input. The networks are driven from the junction of R1 and C1. For ac signals, the base circuit of Q1 is driven through R3, C2, and R7 in parallel with R6. The base of Q2 is driven through R2, C3, and R18 in series with R17.

b. Recharge Circuit.

(1) The recharge circuit (fig. 4–3), acts to restore the charge removed from the input circuit during input comparison pulse generation which maintains a high input impedance. The simplified circuit of figure 4–3 illustrates the equivalent circuit for the recharge action. Capacitor C17 is the recharge capacitor, and C3, together with stray circuit capacity is the capacitance to be charged.

(2) When the timing multivibrator starts the comparison cycle, C17 is charged to 3 volts, recharge amplifier Q8 is off, and capacitor C3 is charged. As shown in figure 4–3, C17 is connected between -15 and -12 volts. When the main ramp voltage reaches the level of the input dc voltage, diode CR3B conducts, C3 discharges through CR3B and initiates a negative pulse at Q2 base. The output of the input amplifier at Q5 collector is

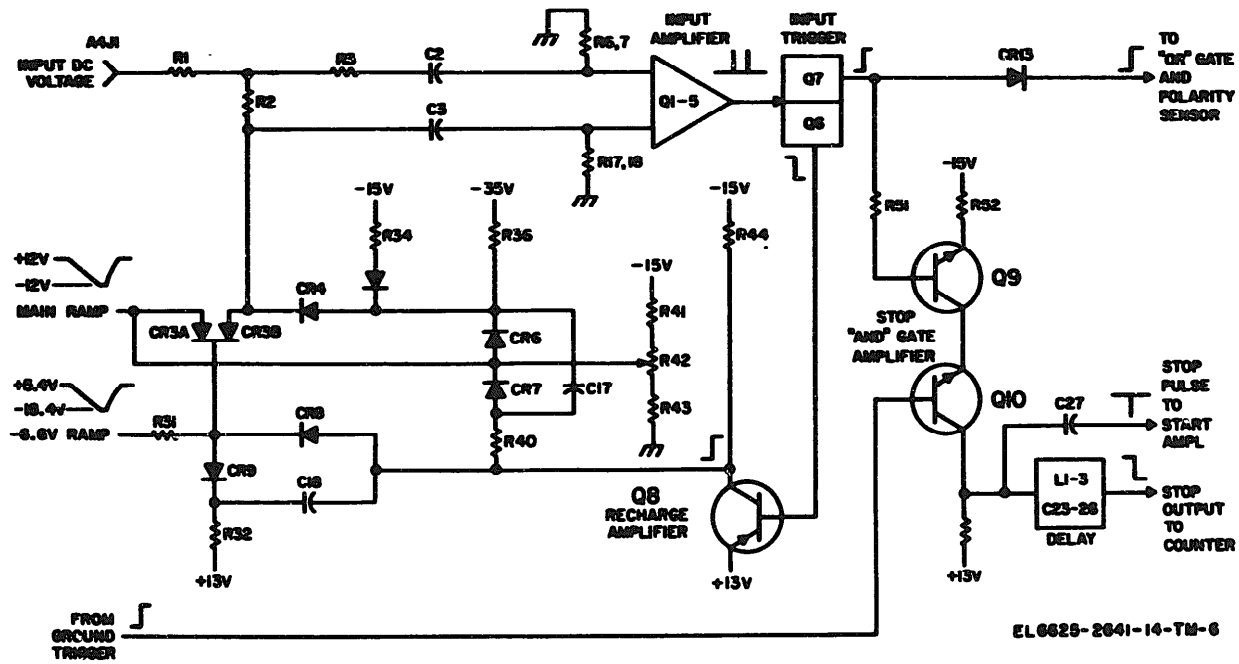

Figure 4-3. Recharge circuits, schematic diagram.

a positive pulse which turns off Q6, saturates Q8 and reverse-biases CR3B to end the input voltage comparison. After Q6 turns off, the charge lost from C3 must be restored. Transistor Q8 saturating causes CR7 to be forward-biased, which connects the R40 end of C17 to the main ramp voltage. Since the other end of C17 is 3 volts more positive, C17 discharges through CR4 and restores the charge on C3. The exact charge on C17 can be adjusted by R42 (recharge) and R41.

c. Stop "AND" Gate Amplifier. Stop AND gate amplifier Q9 and Q10 (fig. 4–3) is a transistorized AND gate which closes the Counter gate after both comparators have fired. A stop square wave output results when both Q9 and Q10 conduct. Q9 is enabled by the positive-going input trigger square wave from Q7 collector. Q10 is enabled by the positive-going ground trigger square wave from A5Q6 collector. Since both Q9 and Q10 are in series, current through both transistors occurs only when both are enabled. Therefore, the stop output occurs only when the second or last positive-going square wave enables the second transistor. The stop pulse is applied through C27 to the base circuit of start amplifier A6Q9 to hold it off during the stop pulse. The stop square wave at pin 18 is supplied to the Counter via pin 22 of J6 and causes the gate flip-flop to close the Counter gate. (Note that the stop pulse to the Counter passes through the delay line consisting of L1, L2, and L3, and C23 through C26. This delay corresponds to the start pulse delay.) This gate closing terminates the totalizing action of the Counter binaries and the displayed count corresponds to the digital voltmeter input dc voltage.

4-9. Overvoltage

a. Positive Overvoltage.

(1) The PL–1344/U accuracy is maintained for input dc voltages 5 percent greater than the range selected. For input dc voltages which are more than 5 percent over the range selected, the correct polarity is indicated and the Counter display number is greater than the range value. For example, when the 10V range is selected and +13 volts is applied, the + polarity indicator lights and the Counter display might be 0013.2800. This display number is greater than 10.5 (10 volts, +5 percent overvoltage), and the 100V range should be selected for an accurate measurement.

(2) When an input dc voltage greater than the range selected is applied, the normal input voltage comparison cannot occur. With an overvoltage condition, capacitor A4C18 discharges through diodes A4CR9 and A4CR3B, and capacitor A4C3 after the timing multivibrator has started the sampling cycle. This results in an input comparison pulse 1 millisecond after the start of the cycle and simulates a normal comparison with a positive input voltage. The ground comparison pulse is generated in the normal manner, the polarity sensor enables the + polarity indicator, and the Counter display number is larger than the range selected.

(3) Diode A4CR9 is forward-biased by the input dc voltage through A4R1, A4R2, and A4CR3B. This permits A4C18 to supply a negative pulse through A4CR9, A4CR3B, and A4C3 to the input amplifier. This negative pulse results from Q8 being turned off by the input trigger at the beginning of the sampling cycle. The sequence discussed in (2) above results. Resistor A4R32 isolates the A4C18, A4CR9 junction from the +13-volt supply. Resistors A2R1 and A4R32 attenuate the input dc voltages to protect the voltmeter circuits.

b. Negative Overvoltage. When a negative overvoltage is applied, the - polarity indicator lights and the Counter display number is greater than the range selected. The ground comparison pulse is generated in the normal manner. The input comparison pulse is generated when the timing multivibrator changes states after the negative ramp slope interval and causes the input trigger to change states. Resistor A4R34 isolates A4CR5, A4R33 junction from the -15-volt supply. Resistors A2R1 and A4R34 attenuate the input dc voltage to protect the voltmeter circuits.

CHAPTER 5

GENERAL MAINTENANCE CHECKS, TROUBLESHOOTING AND ADJUSTMENTS

Section I. PERFORMANCE CHECKS

5-1. General

This section includes procedures for making in-cabinet performance checks that can be made with the PL-1344/U installed in Model 5243L or 5245L Electronic Counters. The waveforms, block, and schematic diagrams in figures 5-2 and FO-2 through FO-6 give additional information.

5-2. Tools and Equipment

a. Special Tools. **The tools** required are listed **in table 5–1.**

Table 5-1. Tools Required

Tool	*FSN*
Tool Kit. Electronic Equipment TK-100/G	**5180-605-0079**

b. Test Equipment. The test equipment required for general support maintenance is listed in table 5-2. The listed equipment or suitable equivalents will be used in the testing procedures. Table 5-3 lists additional equipment.

Table 5-2, Test Equipment Required

Equipment	*FSN*	*Qty rqd*	*Applicble literature*
Digital Readout, Electronic Counter AN/USM-207A	**6625-044-3228**	**1**	**TM 11-6625-700-10**
DC Voltmeter HP 412A		**1**	
Test Sec. Electrical Meter TS-682/GSM1	**6625-669-0747**	**1**	
Oscilloscope, AN/USM-182A	**6625-133-1196**	**1**	**TM 11-6625-555-15**
Digital Recorder, HP-562A		**1**	
Multimeter TS-352B/U	**6625-553-0142**	**1**	**TM 11-6625-366-15**

Table 5-3. Additional Equipment Required

Equipment	FSN	Qty rqd
Extender Cable, HP-1050B		1
Test Lead, black Pomona 24-B black	**4931-739-4433**	1
Test Lead, red Pomona 24-B red	**662-957-9299**	1
Extender board, 5060-0630		1
10:1 probe, HP AC-21A		1
Output cable assembly HP 11055E		1
Cable assembly. HP 562A-16C		1

5-3. In-Cabinet Performance

The following performance checks (para 5-4 through 5-9) verify proper operation of all circuits in the PL-1344/U and can be used as follows:

a. As part of an incoming inspection check of instrument specifications.

b. Periodically to anticipate troubles and insure reliability of the **PL-1344/U.**

c. As part of a troubleshooting procedure **to** isolate trouble.

d. After any repairs or adjustments before returning the instrument to regular service. If any of the in-cabinet performance checks indicate unsatisfactory operation, refer to paragraph 5-10 and tables 5-5 (troubleshooting) and 5-7 (adjustments).

5-4. Voltmeter Zero

a. **Turn off the ac line** voltage with the Counter SAMPLE RATE control and install the PL-1344/U in the compartment provided in the right side of the Counter.

b. Tighten the plug-in locking screws to insure electrical contact and turn on the ac line voltage with the Counter SAMPLE RATE control.

c. Set the Counter controls as follows:

(1) FUNCTION.....TIME INT.

(2) SENSITIVITY.....not in CHECK.

d. Set the voltmeter controls as follows:

(1) VOLTS FULL SCALE switch.. . . . . 10.

(2) LOCAL-REMOTE switch . . . . . LOCAL.

e. Allow 10 minutes warmup time before attempting adjustments.

f. If, after the lo-minute warmup, the Counter display is not 0000.0000 and the voltmeter + and indicators are not alternately flashing, adjust the voltmeter ZERO control for this display. (A change in the display of greater than ±1 mv after warmup and adjustment can indicate a faulty ground comparator diode or input comparator diode A4CR3.)

5-5. CAL 8.000

a. Set the voltmeter VOLTS FULL SCALE switch to CAL 8.000.

b. Adjust the CAL 8.000 control for a 0008.0000 display on the Counter. (The voltmeter + indicator should be lit .)

5-6. Linearity and Ramp Rage

The following steps outline a procedure for checking the accuracy of PL-1344/U. Check the Counter display against the precision dc source voltages listed in table 5-4. All Counter readings should be within the voltage tolerances listed. Proceed as follows:

a. Perform the voltmeter zero check in paragraph 5-4.

b. Perform the CAL 8.000 check in paragraph ***5-5.***

c. Set the VOLTS FULL SCALE switch to 10.

d. From the precision dc source, apply voltages to INPUT as specified in table 5-4 for the IO-volt range. The Counter display should agree with the input dc voltage, plus or minus the variations ***listed.***

e. Set the VOLTS FULL SCALE switch to 100.

f. Apply 100 volts ***to*** the INPUT terminals. The Counter display should be 00100.000, plus or minus 0.110 volt.

g. Set the VOLTS FULL SCALE switch to 1000.

h. Apply 1,000 volts to the INPUT terminals. The Counter display should be 001000.00, plus or minus 1.10 volt.

Table 5-4. Input Voltage and Permissible Error

Linearity check [10V range]			*Range check*	
Applied voltage ± volts	*Permissible error ± volts*	*Range*	*Applied voltage ± volts*	*Permissible error ± volts*
0.0050	0.0010	10	10.0000	0.0110
0.0300	0.0010	100	100.000	0.110
0.1000	0.0011	1000	1000.00	1.10
0.5000	0.0015			
1.0000	0.0020			
3.0000	0.0040			
5.0000	0.0060			
10.0000	0.0110			

5-7. Overrange and Overvoltage Checks

a. **Set the Counter controls as follows:**

(1) FUNCTION.....TIME INT.
(2) SENSITIVITY.....*not* in CHECK.
(3) SAMPLE RATE .....full ccw (power on).
(4) STORAGE (rear panel) switch .....ON.

b. **Set the voltmeter switch as follows:**

(1) VOLTS FULL SCALE switch .....10.
(2) LOCAL-REMOTE switch.....LOCAL.

c. **Allow the Counter and plug-in to warm up for 10 minutes.**

d. **Apply** +10.500 volts to **the INPUT terminals from** the precision dc vo **ltage source. The Counter displ**ay should indica **te 0010.500 plus or** minus .011 volt. The voltmeter + indicator should be lit.

e. Repeat ***d*** above for -10.500 volts plus or minus .011 volt. The voltmeter - indicator should be lit. This completes the overrange check.

f. For the overvoltage check, apply ***+20*** volts to the INPUT terminals with the voltmeter set to 10.

g. The Counter display should indicate between 0012.0000 and 0013.0000 with the voltmeter + indicator lit.

A. Repeat g above for -20-volt input.

i. The Counter display should indicate between 0018.0000 and 0024.0000 with the voltmeter - indicator lit.

5-8. Remote Operation

a. **Set the Counter controls as follows:**

(1) FUNCTION.....TIME INT.
(2) SENSITIVITY.....not in CHECK.
(3) SAMPLE RATE .....full ccw (poweron).
(4) STORAGE (rear panel switch) .....ON.

b. Set the voltmeter controls as follows:

(1) VOLTS FULL SCALE switch .....CAL ***8.000.***
(2) LOCAL-REMOTE switch .... REMOTE.

c. Observe that:

(1) The Counter GATE light does not flash.
(2) The Counter decimal lights are off.
(3) The voltmeter polarity lights are off.

d. Connect the Counter REMOTE CONTROL jack (rear panel) pins as follows:

(1) Connect a jumper between pins 25 and ***26.***
(2) Connect a jumper between pins 30 and 31.

e. Observe that:

(1) The Counter GATE light flashes.
(2) The voltmeter + indicator is lit.
(3) The Counter display is 0008.0000.

5-9. Recorder Output

a. With the ac power off, install the PL-1344/U in the HP Model 5243L, or 5245L Electronic Counter.

b. Use the 562A-16C 50-conductor cable and connect the RECORDER jack (Counter rear panel) to the Digital Recorder input.

c. Set the Counter FUNCTION switch to T**IME IN**T and the SENSITIVITY switch not in C**HECK.**

d. Turn on the power to the Counter and Digital Recorder.

e Set the voltmeter switches to LOCAL and 10. Apply +10.000 volts to the voltmeter INPUT from the precision dc source. Observe that the voltmeter + indicator is lit. The Counter display

is 0010.0000, and the Recorder printout is 4 0100000. (The 4 indicates that the decimal point should be positioned four places from the right for the correct number.)

f. Repeat *e* above with -10.000-volt input. Observe that the voltmeter - indicator is lit. The Counter display is 0010.0000 and the Recorder printout is 4 -0100000. (The minus sign is added to the Recorder printout and indicates a negative input dc voltage.)

g. Repeat *e* above. Observe that the Recorder printout indicates the correct polarity of the input dc voltage.

Section II. TROUBLESHOOTING

5-10. General

Table 5–5 (troubleshooting) and table 5–6 (Dc voltages) are included to assist in evaluating problems that may be encountered. The discussion of an item does not indicate frequency of repair, but rather is additional information.

CAUTION

Accidental short circuits between adjacent points will damage semiconductors in both the voltmeter and Counter circuits. Always remove the ac power when replacing components.

5-11. Trouble Isolation

Isolate circuit troubles to a defective stage or component using table 5–5 (troubleshooting) in the order listed and also perform waveform and voltage measurements. Table 5–7 lists the adjustments for the various circuits.

Table 5-5. Troubleshooting

Symptom: Voltmeter plug-in does not operate with input dc voltage.
Check:
a. Counter controls: FUNCTION switch to TIME INT; SENSITIVITY switch not in CHECK; SAMPLE RATE maximum ccw (power on).
b. Voltmeter controls: LOCAL-REMOTE switch to LOCAL.
Symptom: Counter GATE light does not flash, incorrect or zero display for any input dc voltage.
Check:
a. A6 test point 1 (timing MV waveform). If timing MV is inoperative, remove A6Q3 and install a 4,700-ohm resistor between A6Q3 emitter and collector holes on the board. If a square wave is now present, replace A6Q3. If no square wave is present, check A6Q1, A6Q2, and associated components.
b. A6 test point 2 (main ramp waveform). Observe ramp linearity, amplitude, and period.
c. A4 test point 1 (input amplifier pulse). Observe negative pulse. If no pulse, adjust the voltage at A4R16, A4R18, and A4R22 junction to +0.9 volt by adding a resistor between this junction and +13 or -15 volts. Measure dc voltages per table 5–6 (Dc voltages).
d. A4 test point 2 (input trigger square wave). Observe square wave.
e. A5 test point 1 (ground amplifier pulse). Observe negative pulse. If no pulse, adjust the voltage at the junction of A5R10, A5R13, and A5R15 to -0.14 volt by adding a resistor between this junction and +13 volts or -15 volts. Measure dc voltages per table 5–6 (Dc voltages).
f. A5 test point 2 (ground trigger square wave). Observe square wave.
g. A5 test point 3 (start OR gate). With input dc voltage to the PL–1344/U, observe two positive pulses whose separation depends upon the amplitude of the input voltage.
h. A6 test point 3 (start pulse). Observe the positive start pulse to the Counter.
i. A4 test point 6 (Counter stop). Observe a square wave whose negative trailing edge stops the Counter.
Symptom: Counter display will not indicate zero, GATE light stops flashing when the Counter indicates zero. The Counter display alternates between zero and correct reading.
Check: Holdoff MV (A6Q7, A6Q8). Observe waveforms at A6 test points 1, 3, 4, and 5.

Table 5-6. DC Voltages

A4 input comparator		*A5 ground comparator*		*A4 input comparator*		*A5 ground comparator*	
Checkpoint	*Measured voltage*	*Checkpoint*	*Measured voltage*	*Checkpoint*	*Measured voltage*	*Checkpoint*	*Measured voltage*
Base Q2	+0.85 to +0.95			Base Q4	-0.40 to -0.45	Base Q2	-0.31 to -0.35
Base Q1	+0.85 to +0.95			Base Q5	-0.73 to -0.77	Base Q3	-0.55 to -0.65
Base Q3	-0.22 to -0.25	Base Q1	-0.12 to -0.15	Test point 1	-9.5 to -10.5	Test point 1	-11.5 to -12.8

Section III. ADJUSTMENTS

5-12. General

The following adjustment procedures should be performed only when it has been definitely established that the voltmeter is out of adjustment as determined by symptoms during operation or by the in-cabinet performance checks. Refer to paragraph 5–10 and table 5–5 for troubleshooting information. With power off and

before any adjustments are made, connect the voltmeter to the Counter with the 50-conductor cable (10506B). Set the voltmeter switches to 10 and LOCAL. Set the Counter FUNCTION switch to TIME INT and the SENSITIVITY switch *not* in CHECK. Turn the SAMPLE RATE control to POWER ON and allow the Counter and voltmeter to warm up for at least 10 minutes before any adjustments are attempted.

5-13. Zero and Recharge Checks

The zero and recharge adjustments outlined below should always be performed before any other adjustments are attempted.

a. Voltmeter Zero. Adjust voltmeter zero with R1 (ZERO) and A5R3 (Zero Set). If the display cannot be zeroed and the controls are at the end of their ranges, check the -15 volts dc from the Counter.

(1) Allow the Counter and voltmeter to warm up for at least 10 minutes.

(2) Connect a short circuit across the voltmeter INPUT terminals.

(3) Set ZERO control R1 to the mechanical center of its range.

(4) Adjust Zero Set control A5R3 for a Counter display of 0000.0000. The voltmeter polarity indicators should be flashing alternately.

b. Recharge Circuit.

(1) Allow the Counter and voltmeter to warm up for at least 10 minutes.

(2) Disconnect the wire and plug from jack A4J1 on input comparator assembly A4.

(3) Set the Model 412A dc voltmeter to the 1-mv range and connect the dc probe to input jack A4J1.

(4) Adjust Recharge control A4R12 for a Model 412A indication of less than ±0.02 mv.

NOTE

When Recharge control A4R12 will not adjust the voltage to less than 0.02 mv, the probable source of trouble is either diode A6CR3 or A6CR4 leaky. Check these diodes as follows:

(1) Set the voltmeter switch to REMOTE.

(2) Disconnect the wire and plug from A4J1.

(3) Connect A6 test point 2 (main ramp voltage) to A4 test point 7 (+13 volts).

(4) Set the Model 412A DC Voltmeter to the 1-mv range and connect the dc probe to A4J1. The voltage should be less than ±0.2 mv. A voltage more positive than +0.2 mv indicates a leaky A6CR3, and a voltage more negative than -0.2 mv indicates a leaky A6CR4. If neither diode is at fault, refer to paragraph 4-8*b*.

Table 5-7. Adjustments

Problem	Check or adjust	Para ref
Voltmeter ZERO control out of range.	R1 and A5R3	5 13*a*
Voltmeter CAL 8.000 control out of range.	R3 and A6R12	5 14
Voltmeter 100 or 1000 range high or low.	100 range: A1R7	5 15*a*
	1000 range: A1R8	5 15*b*

5-14. Ramp Slope, Ref 8.000 and CAL 8.000

These controls should be adjusted every 6 months to insure voltmeter accuracy. The controls interact; adjust in the following sequence:

a. Allow the Counter and voltmeter to warm up for at least 10 minutes.

b. Remove the short circuit from the voltmeter INPUT terminals.

c. Connect the wire and plug to jack A4J1 (removed in paragraph 5-13*b*(2)).

d. Apply +10.000 volts to the voltmeter INPUT terminals from the precision dc source.

e. Set Ramp Slope A6R41 for a display of 0010.0000 on the Counter.

f. Set the voltmeter VOLTS FULL SCALE switch to CAL 8.000 and adjust Ref 8.000 A6R12 for 008.0000 display on the Counter.

g. Return the voltmeter switch to 10V and adjust Ramp Slope for a 0010.0000 display. Repeat *f* above and this subparagraph until the Counter displays are correct. CAL 8.000 control R3 can be used for minor adjustments to correct the 0008.0000 display aft *f* above and this subparagraph have been repeated several times. (If *e* and *f* above are extremely difficult, shield A6Q4 and A6CR6 (inside plastic tubing on ramp board) from external temperature variations.)

5-15. Attenuator

a. 100V Range.

(1) Allow the Counter and voltmeter to warm up for at least 10 minutes.

(2) Perform the ZERO and CAL 8.000 adjustments outlined in paragraphs 5–4 and 5–5.

(3) Set the voltmeter switches to 100 and LOCAL.

(4) Apply +100.00 volts to the voltmeter INPUT.

(5) If the Counter display is not 00100.000, adjust attenuator 100V ADJ potentiometer A1R7 for this display.

b. 1000V Range.

(1) Allow the Counter and voltmeter to warm up for at least 10 minutes.

(2) Perform the ZERO and CAL 8.000 ad-

justments outlined in paragraphs 5-4 and 5-5.

(3) Set the voltmeter switches to 1000 and LOCAL.

(4) Apply +1000.0 volts to the voltmeter INPUT.

(5) If the Counter display is not 001000.00, adjust attenuator 1000V ADJ potentiometer A1R8 for this display.

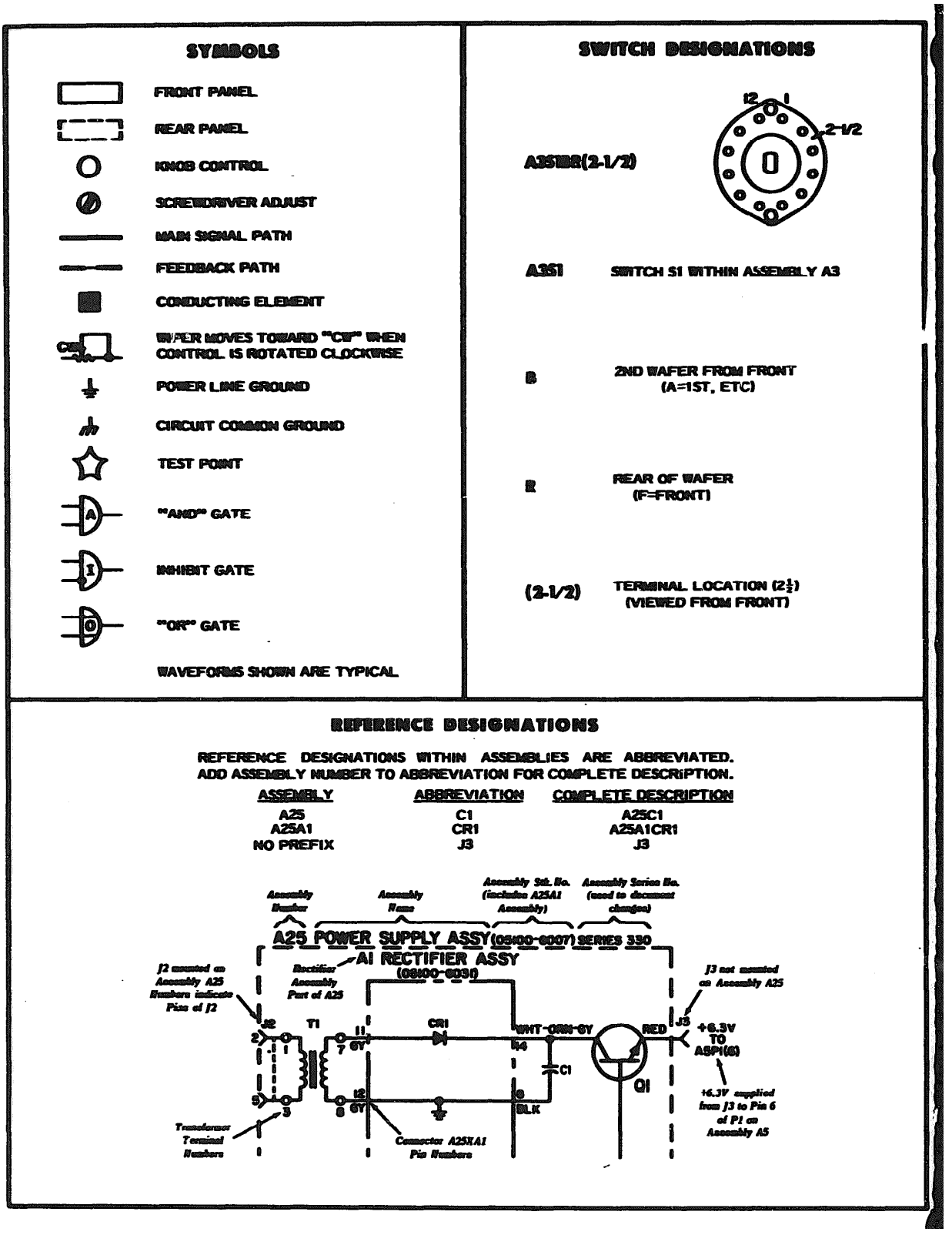

Figure 5-1. Schematic diagram notes.

TEST POINT	WAVEFORM
A4	
1	-3V, -6V, 50μS, 150μS
2	+10V, -12V
3	+13V, -15V
4	40 MS, +12V, -12V
5	+6V, -10V
6	+2V, -4V
A5	
1	-5V, -11V, 60μS
2	+10V, -6V
3	+10V, -6V, 2μS, 1μS

TEST POINT	WAVEFORM
4	+6V, -6V, 10 MS
5,6	+6V, -6V, 10 MS
7	-5V, -16V
8	+1V, 0V
A6	
1	+12V, -12V, 35 MS
2	+12V, -12V, 40 MS
3	1μS, +2V, -3V
4	+13V, -16V

NOTE

TO FIND TEST POINTS SEE FIGURES 5-4, 5-9, 5-11 AND 5-13

Figure 5-2. Waveforms

CHAPTER 6

OPERATOR'S MAINTENANCE INSTRUCTIONS

6-1. Scope OF Operator's Maintenance

The maintenance duties assigned to the operator of Plug-In Digital Voltmeter PL-1344/U are listed below, with a reference to the paragraphs covering the specific maintenance function.

***a.* Operator's daily preventive maintenance checks and services** (para *6-4* and *6-5).*

***b.* Cleaning (para 6-6).**

6-2. Items Required for Maintenance

Only the following items are required for maintenance:

***a.* Trichloroethane (FSN 6810-664-0273).**

b. Cleaning cloth (FSN 8305-267-3015).

W A R N I N G

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic, dangerous gases.

6-3. Preventive Maintenance

Preventive maintenance is the systematic care, servicing, and inspection of equipment to prevent the occurrence of trouble, to reduce downtime, **and to assure that** the equipment is serviceable.

a Systematic Care. The procedures **given in** paragraphs 6-5 and 6-6 cover routine systematic care and cleaning essential to proper upkeep and operation of the equipment.

b. Preventive Maintenance Checks and Services. The preventive maintenance checks and services chart (para 6-5) outlines functions to be performed at specific intervals. These checks and services are to maintain Army electronic equipment in a combat serviceable condition: that is, in good general (physical) condition. and in good operating condition. To assist operators in maintaining combat serviceability, the chart indicates what to check, how to check, and the normal conditions; the ***References*** column lists the illustrations, paragraphs, or manuals that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, higher category maintenance or repair is required. Records and reports of these checks and services must be made in accordance with the requirements set forth in TM 38-750.

6-4. Preventive Maintenance Checks and Service Periods

Daily checks and services must be performed on the PL-1344/U. The daily preventive maintenance checks and services chart given in paragraph 6-5 specifies the checks which must be performed daily.

6-5. Operator's Preventive Maintenance checks and Service Chart

Sequence No.	*Item to be inspected*	*Procedure*	*Reference*
1	**Exterior surfaces**	**Clean the exterior surfaces of the Plug-in Digital Voltmeter PL-1344/U.**	**(Para 6-6).**
2	**Installation**	**Check to see that the equipment is properly installed.**	**(Para 2-3).**
3	**controls**	**Check to see that the VOLTS FULL SCALE switch knob is secure and that the switch moves without binding.**	**(Fig. 1-l).**
4	**Operation**	**Check the equipment for proper operation.**	**(Para 3-2).**

6-6. Cleaning

Inspect the exterior of the plug-in digital voltmeter. **The exterior** surfaces should be free of dirt **and fungus.**

***a.* Remove loose dirt with a** clean, soft cloth.

W A R N I N G

The fumes of trichloroethane are toxic. Provide thorough ventilation whenever it is used. DO NOT use near an open flame. Trichloroethane is not flammable, but exposure of the fumes to an open flame converts the fumes to highly toxic dangerous gases.

b. Remove grease, fungus, and ground-g dirt from the plug-in digital voltmeter with a cloth dampened (not wet) with trichloroethane.

CHAPTER 7

ORGANIZATIONAL, DIRECT SUPPORT and GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

7-1. Scope of Organizational, Direct Support and General Support

a. **Organizational maintenance** consists of the following:

(1) Quarterly preventive maintenance (para 7-3 and 7-4).

(2) Touchup painting (para 7-5).

b. DS and GS maintenance consists of replacing parts not authorized at the organizational category. Refer to appendix B for specific maintenance functions.

7-2. Tools, Materials and Test Equipment Required

The tools, materials, and test equipment requi
for organizational maintenance are as follows:

a. ***Tools.*** Tool Kit, Electronic Equipment TK-100/g.

b. Materials.

(1) Trichloroethane (FSN 6810-664-0273).

(2) Cleaning cloth (FSN 8305-267-3015).

c. ***Test Equipment.*** The required test **equipment is listed in appendix C.**

7-3. Quarterly Preventive Maintenance

Quarterly preventive maintenance checks and services on the plug-in digital voltmeter are required. All deficiencies or shortcomings will be recorded in accordance with the requirements of TM 38-750. Perform all the checks and services listed in the organizational quarterly preventive maintenance checks and services chart (para 7-4) in the sequence listed.

7-4. Organizational Quarterly Preventive Maintenance checks and Service Charts

Sequence No.	*Item to be* impacted	*Procedure*	*Reference*
1	Completeness	Check to see that the equipment is complete.	(Para 1-6).
2	Installation	Check to see that the equipment is properly installed.	(Para 2-3).
3	Cleanliness	Check to see that the equipment is clean.	(Para 6-6).
4	Preservation	Check all surfaces for evidence of rust, fungus, or corrosion. Spot-paint bare spots.	(Para 7-5. TB 746-10, and TB SIG 355-3.
5	Publications	Check to see that all publications are complete, serviceable, and current.	DA Pam 310-4).
6	Modifications	Check DA Pam 316-7 to determine if new, applicable MWO's have been published. All URGENT MWO's must be applied immediately. All NORMAL MWO's must be scheduled.	(DA Pam 310-7 and TM 38-740).

7-5. Touchup Painting

When the finish on the metal parts of the equipment has been badly scarred or damaged, **ligh**tly sand the parts with fine sandpaper. Use **#00** or #000 sandpaper (FSN 5350-271-7939) and trichloroethane to clean the surface down to the bare metal. Brush two thin coats of paint on the bare metal. Refer to applicable cleaning and refinishing practices specified in TB 746-10.

7-6. Servicing Etched Circuit Boards

The PL-1344/U has three plug-in etched circuit boards and one printed circuit board which provides interconnections. To remove a plug-in circuit board, grasp the edge opposite the plug and pull with a slight rocking movement. Use caution when removing the board to avoid damaging the mounted components. The etched circuit boards are a plated-through type with components on one side and **the** circuitry on the opposite side. The electrical **c**onnection between sides of the board is made by a layer of metal plated through the component holes.

a. When working on these boards, use a pencil-type soldering iron with a 25-watt capacity. If only ac-operated soldering irons are available, use an isolating transformer. Do not use a soldering gun: damaging voltages can be induced in components.

b. Components can be removed by placing the soldering iron on the component lead on either side of the board and pulling up on the lead. If a component is obviously dam**ag**ed or faulty, clip the leads close to the component and then remove the leads.

c. When soldering transistor leads, solder

quickly; where wiring permits, use a heat sink (such as long-node pliers) between the solder joint and the transistor. Excessive heat can lift the circuit from the board and cause damage to the components.

d. The component lead hole should be cleaned before inserting a new lead. Heat the solder in the hole, quickly remove the soldering iron and insert a pointed nonmetallic **object** such as a toothpick.

e. Shape the component leads, insert them in the holes, reheat with the iron. and add solder a necessary to obtain a good electrical connection

f. Clean excess flux from the connection a adjoining area.

g. Respray area with an antihumidity com pound.

CAUTION

Follow the procedures set forth in TB SIG 222 when replacing components on printed circuit boards.

APPENDIX A

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (Types 7, 8, and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	U.S. Army Equipment Index of Current Modification Work Orders.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB SIG 355-l	Depot Inspection Standard for Repaired Signal Equipment.
TB SIG 355-2	Depot Inspection Standard for Refinishing Repaired **Signal** Equipment.
TB SIG 355-3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 9-213	Painting Instructions for Field Use.
TM 11-6625-366-15	Operator's, Organizational, DS, GS, and Depot Maintenance Manual: Multimeter TS-352B/U.
TM 11-6625-555-15	Operator, Organizational, DS, GS, and Depot Maintenance Manual: Oscilloscope AW/USM-182A.
TM 11-6625-1548-15	Organizational, DS, GS, and Depot Maintenance Manual: Counter, Electronic, Digital CP-772/U Hewlett-Packard Model 5245L.
TM 38-750	The Army Maintenance Management Systems (TAMMS).

APPENDIX B

MAINTENANCE ALLOCATION

Section 1. INTRODUCTION

B-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

B-2. Maintenance Functions

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine serviceability of an item by comparing its physical, mechanical, and **electrical charac**teristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gages, meters, etc. This is accomplished with external test equipment and does not include operation of the equipment and operator type tests using internal meters or indicating devices.

c. Service. To clean, to preserve, to charge, and to add fuel, lubricants, cooling agents, and air. If it is desired that elements, suck as painting and lubricating, be defined separately, they may be so listed.

d. Adjust. To rectify to the extent necessary to bring into proper operating range.

e. Align. To adjust two or more components or assemblies of an electrical or mechanical system so that their functions are properly synchronized. This does not include setting the frequency control knob of radio receivers or transmitters to the desired frequency.

f. ***Calibrate.*** To determine the corrections to be made in the readings of instruments or test equipment used in precise measurements Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, **to detec**t and adjust any discrepancy in the ac**curacy of the instru**ment being compared with the **certified standard.**

g. Install. **To set** up for use in an operational environment such as an encampment, site, or vehicle.

A. Replace. To replace unserviceable items with serviceable like item.

i. Repair. To restore an item to serviceable condition through correction of a specific failure of unserviceable condition. This function includes, but is not limited to welding, grinding, riveting, straightening,, and replacement of parts other than the trial and error replacement of running spare type items such as fuses, lamps, or electron tubes.

j. Overhaul. Normally, the highest degree of maintenance performed by the Army in order to minimize time work in process is consistent with quality and economy of operation. It consists of that maintenance necessary to restore an item to completely serviceable condition as prescribed by maintenance standards in technical publications for each item of equipment. Overhaul normally does not return an item to like new, zero mileage, or zero hour condition.

k. ***Rebuild.*** The highest degree of materiel maintenance. It consists of restoring equipment as nearly as possible to new condition in **ac**cordance with original manufacturing standards. Rebuild is performed only when required by operational considerations or other paramount factors and then only at the depot maintenance category. Rebuild reduces to zero the hours or miles the equipment, or component thereof, has been in use.

l. Symbols. The uppercase letter placed in the appropriate column indicates the lowest level **at** which that particular maintenance function is to be performed.

B-3. Explanation of Format

a. **Column** 1, ***Group Number.*** Column **1** lists group numbers, the purpose of which is to identify components, assemblies, subassemblies and modules with the next higher assembly.

b. Column 2, Functional Group. Column 2 lists the noun names of components, assemblies, subassemblies and modules on which maintenance is au authorized.

c. Column 3, Maintenance Functions. Column 3 lists the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to

perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	Maintenance category
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

d. Column 4, Tools and Test Equipment. Column 4 specifies, by code, those tools and test equipment required to perform the designated function. The numbers appearing in this column refer to specific tools and test equipment which are identified in table I.

e. Column 5, Remarks. Self-explanatory.

B-4. Explanation of Format of Table 1, Tool and Test Equipment Requirements.

The column in Table I, Tool and Test Equipment Requirements are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number of the specific tool or test equipment.

e. Tool Number. Not used.

SECTION II. MAINTENANCE ALLOCATION CHART (PLUG-IN DIGITAL VOLTMETER PL-1344\U)

MAINTENANCE ALLOCATION CHART

GROUP NUMBER	COMPONENT ASSEMBLY NOMENCLATURE	MAINTENANCE FUNCTIONS										TOOLS AND EQUIPMENT	REMARKS
		INSPECT	TEST	SERVICE	ADJUST	ALIGN	CALIBRATE	INSTALL	REPLACE	REPAIR	OVERHAUL	REBUILD	
1	PLUG-IN DIGITAL VOLTMETER PL-1344/U	O	H		H					H			1 thru 5, 7 thru 12 1 thru 14 14
1A	INPUT COMPARATOR AND STOP OUTPUT ASSEMBLY A4	H	H		H				H	H			14 1 thru 14 1 thru 14 14 14
1B	GROUND COMPARATOR AND POLARITY SENSOR ASSEMBLY A5	H	H		H				H	H			14 1 thru 14 1 thru 14 14 14
1C	RAMP GENERATOR AND START OUTPUT ASSEMBLY A6	H	H		H				H	H			14 1 thru 14 1 thru 14 14 14

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS (PLUG-IN DIGITAL VOLTMETER PL-1344/U)

TOOL AND TEST EQUIPMENT REQUIREMENTS					
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE RECOMMENDED IN MANUAL	NOMENCLATURE MILITARY EQUIVALENT	FEDERAL STOCK NUMBER	TOOL NUMBER
		PLUG-IN DIGITAL VOLTMETER PL-1344/U (CONT'D)			
1	H	ELECTRONIC COUNTER, HP 5245L	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207A	6625-044-3228	
2	H	EXTENDER CABLE, HP 10506B			
3	H	DC VOLTMETER, HP 412A			
4	H	PRECISION DC VOLTAGE SOURCE, HP 740A	TEST SET, ELECTRICAL METER TS-682/GSM1	6625-669-0747	
5	H	OSCILLOSCOPE, HP 160B	OSCILLOSCOPE AN/USM-182A	6625-133-1196	
6	H	DIGITAL RECORDER, HP 562A			
7	H	MULTIMETER	MULTIMETER TS-352B/U	6625-553-0142	
8	H	TEST LEAD, BLACK, POMONA 24-B BLACK	TEST LEAD	4931-739-443	
9	H	TEST LEAD, RED, POMONA 24-B RED	TEST LEAD	6625-957-9299	
10	H	EXTENDER BOARD, HP 5060-0630			
11	H	10:1 Robe, HP AC-21A			
12	H	OUTPUT CABLE ASSEMBLY, HP 11055B			
13	H	CABLE ASSEMBLY, HP 562A-16c			
14	H	TOOL KIT, ELECTRONIC	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-605-0079	

APPENDIX C

ORGANIZATIONAL, DIRECT SUPPORT, AND GENERAL SUPPORT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS LIST

(INCLUDING DEPOT MAINTENANCE REPAIR PARTS AND SPECIAL TOOLS)

Section I. INTRODUCTION

C-1. Scope

This appendix lists repair parts required for the performance of organizational, direct support, general support and depot maintenance of the PL-1344/U.

NOTE

No special tools, test, and support equipment required.

c-2. General

This repair parts list is divided into the following **sections:**

a. Organizational Maintenance Repair Parts List—Section II. **A list of repair parts authorized for the performance of maintenance at the organizational level.**

b. Repair Parts for Direct Support, General Support, and Depot Maintenance—Section III. **A list of repair parts authorized for the performance of maintenance at the direct** support, general **support, and depot level.**

c. Federal Stock Number Cross Reference— Section IV. A list of Federal stock numbers in **ascending numerical sequence, cross-referenced to the figure number, reference designator, and item sequence number.**

d. Manufacturer Part Number Cross Reference—Section V. **A list of reference numbers (manufacturer's pa**rt number) appearing in **ascending alphan**umeric sequence, cross-**referenced to the Federal supply code for manufacturers, figure number, reference designator, and item sequence number.**

e. Reference Designator Cross Reference—Section VI. **A list of reference designators cross-referenced to item sequence numbers.**

C-3. Explanation of Column

The following provides an explanation of the **columns in the tabular lists:**

a. Source, Maintenance, and Recoverability Codes (SMR) and Item Sequence Number (ISN) Column. **The first line in this column lists the applicable SMR codes for the part. Listed in ascending order, directly below the SMR code, is the item sequence number assigned to the repair part.**

(1) Source code indicates the selection **statue** and source for the listed item. Source codes are:

Code	*Explanation*
P-	Repair parts which are stocked in or supplied from the GSA/DSA, or Army supply system, and authorized for use at indicated maintenance categories.
P2-	Repair parts which are procured and stocked for insurance purposes because the combat or military essentiality of the end item dictates that a minimum quantity be available in the supply system.
P-	Assigned to items which are NSA design controlled: unique repair parts, special tools, test, measuring and diagnostic equipment, which are stocked and supplied by the Army CO**MSEC** logistic system, and which are not subject to the provision of AR 380-41.
P10-	Assigned to items which are NSA design controlled: special tools, test, measuring and diagnostic equipment for COMSEC support, which are accountable under the provisions of AR 380-41, and which are stocked and supplied by the Army CO**MSEC logistic** system.
M-	**Repair** parts which are not procured or stocked, but are to be manufactured at indicated maintenance levels.
A-	Assemblies which are not procured or stocked as such, but are made up of two or more units. Such component units carry individual stock numbers and descriptions, are procured and stocked separately, and can be assembled to form the required assembly at indicated maintenance cat**egories.**
X-	Parts and assemblies which are not procured or stocked and the

mortality of which normally is below that of the applicable end item or component. The failure of such part or assembly should result in retirement of the end item from the supply system.

X1—Repair parts which are not procured or stocked. The requirement for such items will be filled by use of the next higher assembly or component.

X2—Repair parts which are not stocked. The indicated maintenance category requiring such repair parts will attempt to obtain same through cannibalization. Where such repair parts are not obtainable through cannibalization, requirements will be requisitioned, with accompanying justification, through normal supply channels.

G—Major assemblies that are procured with PEMA funds for initial issue only as exchange assemblies at DSU and GSU level. These assemblies will not be stocked above DS and GS level or returned to depot supply level.

(2) Maintenance code indicates the lowest category of maintenance authorized to install the listed item. The maintenance level codes are:

Code	Maintenance category
C	Operator/crew
O	Organizational maintenance
F	Direct support maintenance
H	General support maintenance
D	Depot maintenance

(3) Recoverability code indicates whether unserviceable items should be returned for recovery or salvage. Items not coded are expendable. Recoverability codes are:

code	Explanation
R	Repair parts and assemblies that are economically repairable at DSU and GSU activities and are normally furnished by supply on an exchange basis.
S	Repair parts and assemblies which are economically repairable at DSU and GSU activities and which normally are furnished by supply on an exchange basis. When items are determined by GSU to be uneconomically repairable, they will be evacuated to a depot for evaluation and analysis before final disposition.
T	High dollar value recoverable repair parts which are subject to special handling and are issued on an exchange basis. Such repair parts normally are repaired or overhauled at depot maintenance activities.
U	Repair parts specifically selected for salvage by reclamation units because of precious metal content, critical materials, or high dollar value reusable casing or casting.

b. Federal Stock Number. Indicates the Federal stock number assigned to the item and will be used for requisitioning purposes.

c. *Indent Code.* This column indicates the breakdown of each given part or assembly. Components, assemblies, and subassemblies are listed in topdown order; that is, the assemblies which are part of a component are listed immediately below that component, and the subassemblies which are part of an assembly are listed immediately below that assembly. An asterisk indicates attaching hardware.

d. Description. Indicates the Federal item name and any additional description of the item required. A part number or other reference number is followed by the applicable five-digit Federal supply code for manufacturers in parentheses. For subsequent appearances of the same item, the words "same as" followed by the item sequence number assigned to the item when it first appeared in the list will follow the item name, e.g., "RESISTOR, FIXED, COMPOSITION: SAME AS A298."

e. Usable on Code. Not used.

f. Unit of Measure (U/M). A two-character alphabetic abbreviation indicating the amount or quantity of the item upon which the allowances are based, e.g., ft., ea., pr., etc.

g. Quantity Included in Unit. Indicates the quantity of the item used in the PL-1344/U. Subsequent appearances of the same item in the same assembly are indicated by the letters "REF".

h. Allowances- (15 Day *Organizational Maintenance, 30-Day DS/GS Maintenance, 1 Year Per Equipment (Contingency) and Depot Maintenance).* Items authorized for requisition as required are identified by an asterisk in the allowance column.

i. Illustrations.

(1) *Figure number.* Indicates the figure number of the illustration in which the item is shown.

(2) ***Reference designator or item number.*** Indicates the reference designator used to identify the item in the illustration. The suffix "SEL" indicates the item is ***a*** selected value.

C-4. Location of Repair Parts

a. **This appendix** contains three cross-reference **indexes (sec IV, V,** and VI) to be used to locate a repair part when either the Federal stock number, reference number (manufacturer's part number), **figure** number, or reference designator is known. **The first column in each** cross-reference index is **prepared, as applicable,** in numerical or alpha-**numeric sequence. The la**st column of each cross-**reference index lists th**e item sequence number **assigned to the part.**

b. Refer to the appropriate cross-reference index (para C-2c, ***d,*** e) and note the item sequence number in the last column: then refer to the repair parts list to locate the item sequence number which is listed in ascending order in column **1** of the repair parts list.

C-5. Federal Supply Code for Manufactures

The Federal Supply Code for Manufacturer (FSCM) is used as an element in item identification to designate manufacturer, distributor, or Government agency, etc. and is identified in **SB 708–42.**

C-6. Abbreviations

(Not applicable)

(Next printed page is C-5)

(1) SOURCE CODE / MAINT. CODE / REC. CODE	(2) FEDERAL STOCK NUMBER	(3b) INSERT CODE	(3a) DESCRIPTION	(2b) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	(6) 16 DAY ORGANIZATIONAL MAINT. ALW. (a) 1-5	(b) 6-20	(c) 21-50	(d) 51-100	(7) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
ISN			REF. NUMBER (MFR. PART NO.) MFR. CODE									
X101	66-25-957-0511	A	PLUG IN DIGITAL VOLTMETER PL-1344/U (THIS ITEM IS NONEXPENDABLE)		EA	1					C-1	
P O X102	6625-922-3617	B	BOARD,EXTENDER 22 PIN, PHENOLIC 5060-0630 (28480)		EA	1	*	*	*	*	C-2	MP10
P O X492		B	KNOB BLACK PLASTIC 0370-0099 (28480)		EA	1	*	*	*	*	C-3	MP3
P O X493		B	KNOB PHENOLIC, 0.500 DIA X 0.550 IN. LG 0370-0102 (28480)		EA	1	*	*	*	*	C-3	MP4
P O X494		B	LAMP,GLOW CLEAR INDICATOR 1450-0049 (28480)		EA	2	*	*	*	*	C-3	DS1
P O X495		B	LAMP,GLOW SAME AS X494 1450-0049 (28480)		REF	REF	*	*	*	*	C-3	DS2

(1) SOURCE CODE / MAINT CODE / REC. CODE / ISN	(2) FEDERAL STOCK NUMBER	(3a) INDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) / MFR. CODE	USE ON CODE	UNIT OF MEASURE	QTY. INCL. IN UNIT	(6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	1 YR ALW PER 100 EQUIP CONTGCY PL	DEPOT MAINT. ALW. PER 100 EQUIP.	ILLUSTRATIONS (a) FIGURE NUMBER	ILLUSTRATIONS (b) REF. / ITEM NUMBER
X101	6625-957-0511	A	PTTG IN DIGITAL VOLTMETER PL-13[illegible]/U (THIS ITEM IS NONEXPENDABLE)		EA	1									C-1	
P O X102	6625-922-3617	B	BOARD,EXTENDER 22 PIN, PHENOLIC 5060-0630 (28480)		EA	1	*	*	*	*	*	*	*	*	C-2	MP10
X2 H X103		B	BRACKET,ANGLE AL, BRIGHT DIP 05265-0003 (28480)		EA	1										MP12
P H X104	5365-38-9204	B	BUSHING BRASS, NICKEL PLATED 1410-0114 (28480)		EA	1				*	*	*	*	*	C-2	MP6
P H X105	5895-061-2906	B	BUSHING,SLEEVE BRS, NI PL, 3/8-32 X 0.438 IN. LG 1410-0052 (28480)		EA	1				*	*	*	*	*	C-2	MP5
P H X106		B	CAPACITOR,FIXED,PLASTIC DIEL 1000000PF, 10 PCT, 50VWDC 114P1059R5S15 (56289)		EA	1				*	*	*	*	*	C-3	C1
P H S X107		B	CIRCUIT CARD ASSEMBLY 05265-6008 (28480)		EA	1				*	*	*	*	*	C-3	A3
P H X108	5310-934-9748	*	NUT,PLAIN,HEXAGON MS35649-244 (96906)		EA	15				*	*	*	*	*		H4
P H X109	5305-244-2847	*	SCREW,MACHINE 6-32X1/4 LG 6-32X1-4PHWLW (73734)		EA	4				*	*	*	*	*		H4
P H X110		C	CAPACITOR,FIXED,ELECTROLYTIC 100 UF, P75M10 PCT, 15 VDCW 30D107G015DC2 (56289)		EA	1				*	*	*	*	*	C-4	A3C15
P H X111	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI CK22AX471L (81349)		EA	9				*	*	*	*	*	C-4	A3C1
P H X112	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C2
P H X113	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C3

(1) SOURCE CODE / MAINT CODE / REC CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) INHERENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) / MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTACT PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H X114	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C4
P H X115	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C5
P H X116	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C6
P H X117	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-4	A3C16
P H X118	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI 0.01 UF, 20 PCT, 100 VDCW 0150-0093 (28480)		EA	16				*	*	*	*	*	C-4	A3C7
P H X119	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C8
P H X120	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C9
P H X121	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C10
P H X122	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C11
P H X123	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C12
P H X124	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-4	A3C14
P H X125	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC 4700000 PF, 10 PCT, 35 VDCW 1500475X9035B2 (56289)		EA	8				*	*	*	*	*	C-4	A3C13
P H X126	5950-845-6927	C	COIL,RADIO FREQUENCY IRON CORE, 240 IND MH PORM 5 PCT, 145 DC MA 1537-9[illegible] (99800)		EA	2				*	*	*	*	*	C-4	A3L3

(1) SOURCE CODE / MAINT. CODE / REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) INDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTOGY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H X127	5950-711-2692	C	COIL,RADIO FREQUENCY 10 UH 1025-44 (99800)		EA	2				*	*	*	*	*	C-4	A3L1
P H X128	5950-711-2692	C	COIL,RADIO FREQUENCY SAME AS X127 1025-44 (99800)		EA	REF				*	*	*	*	*	C-4	A3L2
P H X129		C	CONNECTOR,RECEPTACLE,ELEC 22 PIN PC 1251-0498 (28480)		EA	3				*	*	*	*	*	C-4	A3XA4
P H X130		C	CONNECTOR,RECEPTACLE,ELEC SAME AS X129 1251-0498 (28480)		EA	REF				*	*	*	*	*	C-4	A3XA5
P H X131		C	CONNECTOR,RECEPTACLE,ELEC SAME AS X129 1251-0498 (28480)		EA	REF				*	*	*	*	*	C-4	A3XA6
X1 H X132		C	PRINTED WIRING BOARD PHENOLIC 05265-2005 (28480)		EA	1										A3MP1
P H X133	5905-120-9154	C	RESISTOR,FIXED,COMPOSITION RCR07G471JS (81349)		EA	4				*	*	*	*	*	C-4	A3R1
P H X134		C	SEMICONDUCTOR DEVICE,DIODE BREAKDOWN 20V, 5 PCT 1902-3237 (28480)		EA	1				*	*	*	*	*	C-4	A3CR1
P H X135		B	CIRCUIT CARD ASSEMBLY 05265-6009 (28480)		EA	1				*	*	*	*	*	C-3	A2
P H X136	5310-934-9748	*	NUT,PLAIN,HEXAGON SAME AS X108 MS35649-244 (96906)		EA	REF				*	*	*	*	*		H2
P H X137	5310-543-2410	*	WASHER,LOCK CAD PL STL, NO. 4 MS35338-40 (96906)		EA	11				*	*	*	*	*		H2
X1 H X139		C	PRINTED WIRING BOARD PHENOLIC 05265-2009 (28480)		EA	1										A2MP1
P H X139	5905-116-8556	C	RESISTOR,FIXED,COMPOSITION 1000000 OHM, 5 PCT, 1/4W RCR07G105JS (81349)		EA	2				*	*	*	*	*	C-5	A2R1

(1) SOURCE CODE / MAINT. CODE / REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) SMR CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) / MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTOGY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H X140	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION 27000 OHM, 5 PCT, 1/4W RCR07G273JS (81349)		EA	9				*	*	*	*	*	C-5	A2R3
P H X141	9995-t OS-7769	C	RESISTOR,FIXED,COMPOSITION 220000 OHM, 5 PCT, 1/4W RCR07G224JS (81349)		EA	4				*	*	*	*	*	C-5	A2R2
P H X142	9961-790-7834	C	SEMICONDUCTOR DEVICE,DIODE 35V, 2 PF, SILICON 1901-0376 (28480)		EA	1				*	*	*	*	*	C-5	A2CR2
P H X143	5961-957-0427	C	SEMICONDUCTOR DEVICE,DIODE SILICON, 9.09 V 1902-0037 (28480)		EA	1				*	*	*	*	*	C-5	A2CR1
P H X144	5961-442-9470	C	TRANSISTOR SILICON, P CHANNEL 1855-0082 (28480)		EA	1				*	*	*	*	*	C-5	A2Q1
P H S X145	6625-021-8987	B	CIRCUIT CARD ASSEMBLY 05265-6004 (28480)		EA	1				*	*	*	*	*	C-3	A1
P H X146	53O5-957-6264	*	SCREW,MACHINE CS, 4-40 NC-2A X 1/2 IN. LG MS35190-225 (96906)		EA	5				*	*	*	*	*		H1
P H X147	5310-543-2410	*	WASHER,LOCK SAME AS X137 MS35338-40 (96906)		EA	REF				*	*	*	*	*		H1
P H X148	5910-728-4975	C	CAPACITOR,FIXED,PLASTIC DIEL 104 PF, 20 PCT, 1000 VDCW 0160-0222 (28480)		EA	1				*	*	*	*	*	C-6	A1C1
X1 H X149		C	PRINTED WIRING BOARD PHENOLIC 05265-2004 (28480)		EA	1										A1MP13
P H X150		C	RESISTOR,FIXED,FILM 800000 OHM, 1/2W, 1 PCT DCS1-2-8000000HM1PCT (91637)		EA	1				*	*	*	*	*	C-6	A1R6
P H X151	5905-882-2842	C	RESISTOR,FIXED,WIRE WOUND 2000000 OHM, 0.2 PCT, 1/4W R857CE200028 (81349)		EA	1				*	*	*	*	*	C-6	A1R1
P H X152		C	RESISTOR,FIXED,WIRE WOUND 895000 OHM, 1/4W, 0.2 PCT KP240-8953C (07088)		EA	1				*	*	*	*	*	C-6	A1R4

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P H X153		C	RESISTOR,FIXED,WIRE WOUND 4000000 OHM, 1/2W, 0.2 PCT KP240-4504C	(07088)		EA	2				*	*	*	*	*	C-6	A1R2
P H X154		C	RESISTOR,FIXED,WIRE WOUND SAME AS X153 KP240-4504C	(07088)		EA	REF				*	*	*	*	*	C-6	A1R3
P H X155		C	RESISTOR,FIXED,WIRE WOUND 99550 OHM, 1/4W, 0.2 PCT EP27-995500HM1-4W0-2	(07088)		EA	1				*	*	*	*	*	C-6	A1R5
P H X156	5905-942-9762	C	RESISTOR,VARIABLE 1000 OHM, 10 PCT, 1W 2100-0354	(28480)		EA	1				*	*	*	*	*	C-6	A1R8
P H X157	5905-728-5164	C	RESISTOR,VARIABLE 10000 OHM, 10 PCT, 1W 2100-0451	(28480)		EA	1				*	*	*	*	*	C-6	A1R7
P H X158	5940-926-8201	C	TERMINAL,LUG 011-6809	(98291)		EA	19				*	*	*	*	*	C-6	A1MP1
P H X159	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP2
P H X160	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP3
P H X161	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP4
P H X162	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP5
P H X163	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP6
P H X164	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP7
P H X165	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-6	A1MP8

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P H X164	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-6	A1MP9
P H X167	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-6	A1MP10
P H X168	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-6	A1MP11
P H X169	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-6	A1MP12
P H S X170	6625-053-8184	B	CIRCUIT CARD ASSEMBLY 05265-6003 (28480)		EA	1				*	*	*	*	*	C-3	A4
P H X171	5910-902-2574	C	CAPACITOR,FIXED,MICA DI 100 PF, 2 PCT, 300 VDCW 0140-0176 (28480)		EA	5				*	*	*	*	*	C-7	A4C22
P H X172	5910-902-2574	C	CAPACITOR,FIXED,MICA DI SAME AS X171 0140-0176 (28480)		EA	REF				*	*	*	*	*	C-7	A4C24
P H X173	5910-902-2574	C	CAPACITOR,FIXED,MICA DI SAME AS X171 0140-0176 (28480)		EA	REF				*	*	*	*	*	C-7	A4C25
P H X174		C	CAPACITOR,FIXED,CERAMIC DI 100000 PF 0150-0121 (28480)		EA	5				*	*	*	*	*	C-7	A4C7
P H X175		C	CAPACITOR,FIXED,CERAMIC DI SAME AS X174 0150-0121 (28480)		EA	REF				*	*	*	*	*	C-7	A4C11
P H X176		C	CAPACITOR,FIXED,CERAMIC DI SAME AS X174 0150-0121 (28480)		EA	REF				*	*	*	*	*	C-7	A4C19
P H X177	5910-912-5115	C	CAPACITOR,FIXED,MICA DI 47 PF, 5 PCT, 500 VDCW 0140-0204 (28480)		EA	4				*	*	*	*	*	C-7	A4C23
P H X178	5910-912-5115	C	CAPACITOR,FIXED,MICA DI SAME AS X177 0140-0204 (28480)		EA	REF				*	*	*	*	*	C-7	A4C26

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P H X179	5910-773-1702	C	CAPACITOR,FIXED,ELECTROLYTIC 100 UF, P75M10 PCT, 12 VDCW 30D1076012CC2 (56289)		EA	1				*	*	*	*	*	C-7	A4C4
P H X180	5910-914-4732	C	CAPACITOR,FIXED,MICA DI 390 PF, 5 PCT, 300 VDCW 0140-0200 (28480)		EA	4				*	*	*	*	*	C-7	A4C12
P H X181	5910-776-4174	C	CAPACITOR,FIXED,MICA DI 800 PF, 1 PCT 0160-0342 (28480)		EA	3				*	*	*	*	*	C-7	A4C28
P H X182	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-7	A4C13
P H X183	5910-803-4373	C	CAPACITOR,FIXED,ELECTROLYTIC 60000000 PF, 20 PCT, 6 VDCW 150D606X000682 (56289)		EA	1				*	*	*	*	*	C-7	A4C8
P H X184	5910-914-2606	C	CAPACITOR,FIXED,MICA DI 110 PF, 5 PCT, 300 VDCW 0140-0194 (28480)		EA	2				*	*	*	*	*	C-7	A4C15
P H X185	5910-993-8308	C	CAPACITOR,FIXED,PAPER 22000 PF, 10 PCT, 200 VDCW 192P22392 (56289)		EA	1				*	*	*	*	*	C-7	A4C3
P H X186	5910-023-2355	C	CAPACITOR,FIXED,MICA DI 80 PF, 2 PCT, 300 VDCW 0140-0215 (28480)		EA	1				*	*	*	*	*	C-7	A4C17
P H X187		C	CAPACITOR,FIXED,PLASTIC DIEL 0.022 UF, 50 WVDC, 20 PCT 601PE2230-50W1 (84411)		EA	2				*	*	*	*	*	C-7	A4C18
P H X188		C	CAPACITOR,FIXED,PLASTIC DIEL SAME AS X187 601PE2230-50W1 (84411)		EA	REP				*	*	*	*	*	C-7	A4C20
P H X189	5910-933-7538	C	CAPACITOR,FIXED,MICA DI 30 PF, 5 PCT, 500 VDCW 0140-0203 (28480)		EA	2				*	*	*	*	*	C-7	A4C10
P H X190	5910-993-8307	C	CAPACITOR,FIXED,PLASTIC DI 0.01 UF, 10 PCT, 200 VDCW 192P10392 (56289)		EA	2				*	*	*	*	*	C-7	A4C1
P H X191	5910-993-8307	C	CAPACITOR,FIXED,PLASTIC DI SAME AS X190 192P10392 (56289)		EA	REF				*	*	*	*	*	C-7	A4C2

(1) SOURCE CODE / MAINT. CODE / RECOV. CODE — ISN	(2) FEDERAL STOCK NUMBER	(3a) INCOMT CODE	(3b) DESCRIPTION — REF. NUMBER (MFR. PART NO.) / MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	1 YR. ALW. PER 100 EQUIP. (8) CONTGCY PL	DEPOT MAINT. ALW. PER 100 EQUIP. (9)	ILLUSTRATIONS (a) FIGURE NUMBER	ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H X192	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-7	A4C16
P H X193	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-7	A4C21
P H X194	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-7	A4C27
P H X195		C	CAPACITOR,FIXED,PLASTIC DIEL 0.01 UF, 50 WVDC, 20 PCT 601PE1030-50W1 (84411)		EA	2				*	*	*	*	*	C-7	A4C6
P H X196	5910-234-9817	C	CAPACITOR,FIXED,CERAMIC DI 0.47 UF, 80 PCT, 25 VDCW 0160-0174 (28480)		EA	4				*	*	*	*	*	C-7	A4C5
P H X197	5910-234-9817	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X196 0160-0174 (28480)		EA	REF				*	*	*	*	*	C-7	A4C14
P H X198		C	CAPACITOR,FIXED,PLASTIC DIEL 0.22 UF, 50 WVDC, 20 PCT 601PE2240-50W3 (84411)		EA	2				*	*	*	*	*	C-7	A4C9
P H X199	5950-427-1802	C	COIL,RADIO FREQUENCY 180 HENRIES, 6.5 OHM DC, 155 MA, DC CURRENT 1537-88 (99800)		EA	6				*	*	*	*	*	C-7	A4L1
P H X200	5950-027-1802	C	COIL,RADIO FREQUENCY SAME AS X199 1537-88 (99800)		EA	REF				*	*	*	*	*	C-7	A4L2
P H X201	5950-027-1802	C	COIL,RADIO FREQUENCY SAME AS X199 1537-88 (99800)		EA	REF				*	*	*	*	*	C-7	A4L3
P H X202		C	CONNECTOR,RECEPTACLE,ELEC 1 CONTACT 69026-1164RED (00373)		EA	1				*	*	*	*	*	C-7	A4J1
X1 H X203		C	PRINTED WIRING BOARD PHENOLIC 05265-2003 (28480)		EA	1										A4MP7
P H X204	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION 1500 OHM, 5 PCT, 1/4W RCR07G152JS (81349)		EA	3				*	*	*	*	*	C-7	A4R56

(1) SOURCE CODE / MAINT. CODE / REC. CODE — IGN	(2) FEDERAL STOCK NUMBER	RECOV CODE	DESCRIPTION — REF. NUMBER (MFR. PART NO.)	MFR. CODE	USE ON CODE	UNIT OF MEASURE	QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	1 YR. ALW. PER 100 EQUIP CONTGCY PL	DEPOT MAINT. ALW. PER 100 EQUIP.	ILLUSTRATIONS (a) FIGURE NUMBER	ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H X205	5905-075-4561	C	RESISTOR,FIXED,FILM 39200 OHM, 1/2W, 1 PCT RNF7C03922F	(19701)		EA	2				*	*	*	*	*	C-7	A4R16
P H X206	5905-110-7620	C	RESISTOR,FIXED,COMPOSITION RCR07G102JS	(81349)		EA	5				*	*	*	*	*	C-7	A4R14
P H X207	5905-110-7620	C	RESISTOR,FIXED,COMPOSITION SAME AS X206 RCR07G102JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R30
P H X208		C	RESISTOR,FIXED,FILM 97600 OHM, 1/2W, 1 PCT RNF7C09762F	(19701)		EA	1				*	*	*	*	*	C-7	A4R2
P H X209	5905-161-1189	C	RESISTOR,FIXED,COMPOSITION 100 OHM, 5 PCT, 1/4W RCR07G101JS	(81349)		EA	3				*	*	*	*	*	C-7	A4R30
P H X210	5905-115-0855	C	RESISTOR,FIXED,COMPOSITION 39000 OHM, 5 PCT, 1/4W RCR07G393JS	(81349)		EA	3				*	*	*	*	*	C-7	A4R55
P H X211	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION 100000 OHM, 5 PCT, 1/4W RCR07G104JS	(81349)		EA	6				*	*	*	*	*	C-7	A4R1
P H X212	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS X211 RCR07G104JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R48
P H X213		C	RESISTOR,FIXED,FILM 2510 OHM, 1/2W, 1 PCT DCS1-2-25100HM1PCT	(91637)		EA	1				*	*	*	*	*	C-7	A4R43
P H X214	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION 10000 OHM, 5 PCT, 1/4W RCR07G103JS	(81349)		EA	12				*	*	*	*	*	C-7	A4R11
P H X215	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R23
P H X216	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R25
P H X217	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R49

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P H X219	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R50
P H X219	5905-111-4721	C	RESISTOR,FIXED,COMPOSITION 2700 OHM, 5 PCT, 1/4W RCR07G272JS	(81349)		EA	4				*	*	*	*	*	C-7	A4R32
P H X220	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS X219 RCR07G272JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R34
P H X221	5905-116-8554	C	RESISTOR,FIXED,COMPOSITION SAME AS X139 RCR07G105JS	(81349)		EA	REF				*	*	*	*	*	C-7	A4R33
P H X222		C	RESISTOR,FIXED,FILM 100 OHM, 1 PCT, 1/2W MF7CD1000F	(19701)		EA	1				*	*	*	*	*	C-7	A4R17
P H X223	5905-104-8358	C	RESISTOR,FIXED,COMPOSITION 8200 OHM, 5 PCT, 1/4W RCR07G822JS	(81349)		EA	1				*	*	*	*	*	C-7	A4R4
P H X224		C	RESISTOR,FIXED,FILM 215000 OHM, 1 PCT, 1/2W MF7CD2153F	(19701)		EA	1				*	*	*	*	*	C-7	A4R3
P H X225	5905-135-3973	C	RESISTOR,FIXED,COMPOSITION 220 OHM, 5 PCT, 1/4W RCR07G221JS	(81349)		EA	2				*	*	*	*	*	C-7	A4R13
P H X226	5905-408-2206	C	RESISTOR,FIXED,FILM 6190 OHM, 1 PCT, 1/2W MF7CD6191F	(19701)		EA	1				*	*	*	*	*	C-7	A4R18
P H X227	5905-111-1679	C	RESISTOR,FIXED,COMPOSITION 5100 OHM, 5 PCT, 1/4W RCR07G512JS	(81349)		EA	1				*	*	*	*	*	C-7	A4R5
P H X228		C	RESISTOR,FIXED,FILM 15000 OHM, 1/2W, 1 PCT DCS1-2-150000HM1PCT	(91637)		EA	1				*	*	*	*	*	C-7	A4R7
P H X229	5905-485-4545	C	RESISTOR,FIXED,COMPOSITION 330000 OHM, 5 PCT, 1/4 W RCR07G334JS	(81349)		EA	1				*	*	*	*	*	C-7	A4R47
P H X230	5905-728-5099	C	RESISTOR,FIXED,FILM 60400 OHM, 1/2W, 1 PCT MF7CD6042F	(19701)		EA	2				*	*	*	*	*	C-7	A4R19

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P H X231		C	RESISTOR,FIXED,COMPOSITION 56000000 OHM, 5 PCT, 1/2W 0687-5661 (28480)		EA	1				*	*	*	*	*	C-7	A4R36
P H X232	5905-456-5251	C	RESISTOR,FIXED,FILM 1.5 MEGOHM, 1 PCT, 1/2W MF7CD1504F (19701)		EA	1				*	*	*	*	*	C-7	A4R31
P H X233	5905-115-3560	C	RESISTOR,FIXED,COMPOSITION 18000 OHM, 5 PCT, 1/4W RCR07G183JS (81349)		EA	2				*	*	*	*	*	C-7	A4R21
P H X234		C	RESISTOR,FIXED,FILM 12100 OHM, 1/2W, 1 PCT MF7CD1212F (19701)		EA	2				*	*	*	*	*	C-7	A4R20
P H X235	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION 4700 OHM, 5 PCT, 1/4W RCR07G472JS (81349)		EA	3				*	*	*	*	*	C-7	A4R52
P H X236	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION SAME AS X235 RCR07G472JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R57
P H X237	5905-126-6663	C	RESISTOR,FIXED,COMPOSITION 3300 OHM, 5 PCT , 1/4W RCR07G332JS (81349)		EA	1				*	*	*	*	*	C-7	A4R59
P H X238	5905-110-1612	C	RESISTOR,FIXED,COMPOSITION 6800 OHM, 5 PCT, 1/4W RCR07G682JS (81349)		EA	5				*	*	*	*	*	C-7	A4R27
P H X239	5905-141-1295	C	RESISTOR,FIXED,COMPOSITION 24000 OHM, 5 PCT, 1/4W RCR07G243JS (81349)		EA	4				*	*	*	*	*	C-7	A4R26
P H X240	5905-141-1295	C	RESISTOR,FIXED,COMPOSITION SAME AS X239 RCR07G243JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R29
P H X241	5905-135-3974	C	RESISTOR,FIXED,COMPOSITION 430 OHM, 5 PCT, 1/4W RCR07G431JS (81349)		EA	1				*	*	*	*	*	C-7	A4R41
P H X242	5905-121-9932	C	RESISTOR,FIXED,COMPOSITION 390 OHM, 5 PCT, 1/4W RCR07G391JS (81349)		EA	3				*	*	*	*	*	C-7	A4R53
P H X243	5905-104-9360	C	RESISTOR,FIXED,COMPOSITION 62000 OHM, 5 PCT, 1/4W RCR07G623JS (81349)		EA	1				*	*	*	*	*	C-7	A4R45

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P H X244	5905-114-5339	C	RESISTOR,FIXED,COMPOSITION 150000 OHM, 5 PCT, 1/4W RCR07G154JS (81349)		EA	3				*	*	*	*	*	C-7	A4R6
P H X245	5905-114-5339	C	RESISTOR,FIXED,COMPOSITION SAME AS X244 RCR07G154JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R60
P H X246	5905-114-5339	C	RESISTOR,FIXED,COMPOSITION SAME AS X244 RCR07G154JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R61
P H X247	5905-105-7767	C	RESISTOR,FIXED,COMPOSITION 470000 OHM, 5 PCT, 1/4W RCR07G474JS (81349)		EA	1				*	*	*	*	*	C-7	A4R35
P H X248	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R22
P H X249	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R24
P H X250	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R44
P H X251	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R51
P H X252	5905-141-1132	C	RESISTOR,FIXED,COMPOSITION 7500 OHM, 5 PCT, 1/4W RCR07G752JS (81349)		EA	4				*	*	*	*	*	C-7	A4R9
P H X253	5905-141-1132	C	RESISTOR,FIXED,COMPOSITION SAME AS X252 RCR07G752JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R58
P H X254	5905-435-1718	C	RESISTOR,FIXED,COMPOSITION 240 OHM, 5 PCT, 1/4W RCR07G241JS (81349)		EA	1				*	*	*	*	*	C-7	A4R100
P H X255	5905-136-8430	C	RESISTOR,FIXED,COMPOSITION 36000 OHM, 5 PCT, 1/4W RCR07G363JS (81349)		EA	2				*	*	*	*	*	C-7	A4R10
P H X256	5905-106-9356	C	RESISTOR,FIXED,COMPOSITION 20000 OHM, 5 PCT, 1/4W RCR07G203JS (81349)		EA	4				*	*	*	*	*	C-7	A4R8

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P H X257	5905-106-9356	C	RESISTOR,FIXED,COMPOSITION SAME AS X256 RCR07G203JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R28
P H X258	5905-106-9356	C	RESISTOR,FIXED,COMPOSITION SAME AS X256 RCR07G203JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R37
P H X259	5905-118-4559	C	RESISTOR,FIXED,COMPOSITION 33000 OHM, 5 PCT, 1/4W RCR07G333JS (81349)		EA	2				*	*	*	*	*	C-7	A4R40
P H X260	5905-118-4559	C	RESISTOR,FIXED,COMPOSITION SAME AS X239 RCR07G333JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R46
P H X261	5905-485-4648	C	RESISTOR,FIXED,COMPOSITION 240000 OHM, 5 PCT, 1/4W RCR07G244JS (81349)		EA	1				*	*	*	*	*	C-7	A4R38
P H X262	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION 3900 OHM, 5 PCT, 1/4W RCR07G392JS (81349)		EA	7				*	*	*	*	*	C-7	A4R15
P H X263	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R54
P H X264	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-7	A4R62
P H X265	5905-105-7518	C	RESISTOR,VARIABLE 250 OHM, 30 PCT, 1/8W 2100-0360 (28480)		EA	1				*	*	*	*	*	C-7	A4R42
P H X266	5961-954-9182	C	SEMICONDOR DEVICE,DIODE GERMANIUM,60 PIV,POINT CONTACT AT 1V - 100MA 1910-0016 (28480)		EA	15				*	*	*	*	*	C-7	A4CR14
P H X267	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SILICON, JUNCTION, SELECTED 1901-0025 (28480)		EA	7				*	*	*	*	*	C-7	A4CR1
P H X268	5061-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR2
P H X269	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR10

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P H X270	5961-929-778	C	SEMICONDUCTOR DEVICE,DIODE SILICON 1901-0047 (28480)		EA	1				*	*	*	*	*	C-7	A4CR12
P H X271	[illegible]	C	SEMICONDUCTOR DEVICE,DIODE AXIAL LEADS, 200V, 100 MA, 13 PF 1901-0033 (28480)		EA	10				*	*	*	*	*	C-7	A4CR5
P H X272	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR6
P H X273	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR7
P H X274	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR11
P H X275	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR13
P H X276	5961-931-7011	C	SEMICONDUCTOR DEVICE,DIODE SILICON 1901-0053 (28480)		EA	2				*	*	*	*	*	C-7	A4CR8
P H X277	5961-931-7011	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X276 1901-0053 (28480)		EA	REF				*	*	*	*	*	C-7	A4CR9
P H X278	5961-836-0027	C	SEMICONDUCTOR DEVICE,DIODE SILICON, 30MV, 1 MA, DUAL 1901-0509 (28480)		EA	1				*	*	*	*	*	C-7	A4CR3AB
P H X279	5961-836-0014	C	SEMICONDUCTOR DEVICE,DIODE SILICON 1901-0054 (28480)		EA	1				*	*	*	*	*	C-7	A4CR4
P H X280	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-7	A4MP1
P H X281	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-7	A4MP2
P H X282	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-7	A4MP3

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P H X283	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-7	A4MP4
P H X284	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809 (98291)		EA	REF				*	*	*	*	*	C-7	A4MP5
P H X285	5961-872-0882	C	TRANSISTOR GERMANIUM, PNP 1850-0040 (28480)		EA	2				*	*	*	*	*	C-7	A4Q8
P H X286	5962-732-7638	C	TRANSISTOR GERMANIUM 6 V 2 MA AT 25 DEG C SMALL SIGNAL 2N2189 (80131)		EA	1				*	*	*	*	*	C-7	A4Q3
P H X287	5961-448-6214	C	TRANSISTOR GERMANIUM, PNP 1850-0062 (28480)		EA	16				*	*	*	*	*	C-7	A4Q1
P H X288	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062 (28480)		EA	REF				*	*	*	*	*	C-7	A4Q2
P H X289	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062 (28480)		EA	REF				*	*	*	*	*	C-7	A4Q4
P H X290	5961-488-6214	C	TRANSISTOR SAME AS X287 1850-0062 (28480)		EA	REF				*	*	*	*	*	C-7	A4Q5
P H X291	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062 (28480)		EA	REF				*	*	*	*	*	C-7	A4Q6
P H X292	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062 (28480)		EA	REF				*	*	*	*	*	C-7	A4Q7
P H X293	5961-866-4810	C	TRANSISTOR SILICON,NPN, 15V 0.4 MA , 15 DEG C 2N708 (80131)		EA	4				*	*	*	*	*	C-7	A4Q9
P H X294	5961-866-4810	C	TRANSISTOR SAME AS X293 2N708 (80131)		EA	REF				*	*	*	*	*	C-7	A4Q10
P H S X295		B	CIRCUIT CARD ASSEMBLY 05265-6010 (28480)		EA	1				*	*	*	*	*	C-3	A5

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P H X296	5910-914-2606	C	CAPACITOR,FIXED,MICA DI SAME AS X184 0140-0194 (28480)		EA	REF				*	*	*	*	*	C-8	A5C13
P H X297	5910-966-2951	C	CAPACITOR,FIXED,MICA DI 39 PF, 5 PCT, 500 VDCW 0140-0175 (28480)		EA	2				*	*	*	*	*	C-8	A5C17
P H X298	5910-866-2951	C	CAPACITOR,FIXED,MICA DI SAME AS X297 0140-0175 (28480)		EA	REF				*	*	*	*	*	C-8	A5C20
P H X299	5910-234-9817	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X196 0160-0174 (28480)		EA	REF				*	*	*	*	*	C-8	A5C4
P H X300	5910-234-9817	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X196 0160-0174 (28480)		EA	REF				*	*	*	*	*	C-8	A5C12
P H X301		C	CAPACITOR,FIXED,CERAMIC DI 1000 PF,+80-20 PCT, 1000 VDCW C067B102E102ZE19 (56289)		EA	1				*	*	*	*	*	C-8	A5C26
P H X302		C	CAPACITOR,FIXED,PLASTIC DIEL SAME AS X198 601PE2240-50W3 (84411)		EA	REF				*	*	*	*	*	C-8	A5C8
P H X303	5910-914-4732	C	CAPACITOR,FIXED,MICA DI SAME AS X180 0140-0200 (28480)		EA	REF				*	*	*	*	*	C-8	A5C10
P H X304	5910-914-4732	C	CAPACITOR,FIXED,MICA DI SAME AS X180 0140-0200 (28480)		EA	REF				*	*	*	*	*	C-8	A5C16
P H X305	5910-914-4732	C	CAPACITOR,FIXED,MICA DI SAME AS X180 0140-0200 (28480)		EA	REF				*	*	*	*	*	C-8	A5C22
P H X306	5910-984-2845	C	CAPACITOR,FIXED,PLASTIC DI 0.1 UF, 5 PCT, 200 VDCW 192P10452 (56289)		EA	1				*	*	*	*	*	C-8	A5C2
P H X307	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-8	A5C1
P H X308	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-8	A5C23

(1) SOURCE CODE / MAINT. CODE / REC. CODE (SMR)	(2) FEDERAL STOCK NUMBER	(3a) IDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) / MFR. CODE	USE ON CODE	UNIT OF MEASURE	QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	1 YR. ALW. PER 100 EQUIP. CONTOCT PL	DEPOT MAINT. ALW. PER 100 EQUIP.	ILLUSTRATIONS (a) FIGURE NUMBER	ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H X309	5910-809-8667	C	CAPACITOR,FIXED,ELECTROLYTIC 3.3 UF, 20 PCT, 35 VDCW 1500335X003582 (56289)		EA	1				*	*	*	*	*	C-8	A5C7
P H X310	5910-774-7294	C	CAPACITOR,FIXED,MICA DI 150 PF, 5 PCT, 300 VDCW 0140-0196 (28480)		EA	2				*	*	*	*	*	C-8	A5C15
P H X311	5910-774-7294	C	CAPACITOR,FIXED,MICA DI SAME AS X310 0140-0196 (28480)		EA	REF				*	*	*	*	*	C-8	A5C21
P H X312	5910-776-4176	C	CAPACITOR,FIXED,MICA DI SAME AS X181 0160-0342 (28480)		EA	REF				*	*	*	*	*	C-8	A5C25
P H X313	5910-835-1200	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X111 CK22AX471L (81349)		EA	REF				*	*	*	*	*	C-8	A5C11
P H X314	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 1500475X903582 (56289)		EA	REF				*	*	*	*	*	C-8	A5C18
P H X315	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 1500475X903582 (56289)		EA	REF				*	*	*	*	*	C-8	A5C19
P H X316	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 1500475X903582 (56289)		EA	REF				*	*	*	*	*	C-8	A5C24
P H X317	5910-933-7538	C	CAPACITOR,FIXED,MICA DI SAME AS X189 0140-0203 (28480)		EA	REF				*	*	*	*	*	C-8	A5C9
P H X318		C	CAPACITOR,FIXED,PLASTIC DIEL SAME AS X195 601PE1030-50W1 (84411)		EA	REF				*	*	*	*	*	C-8	A5C3
P H X319		C	CAPACITOR,FIXED,CERAMIC DI SAME AS X174 0150-0121 (28480)		EA	REF				*	*	*	*	*	C-8	A5C5
P H X320		C	CAPACITOR,FIXED,CERAMIC DI SAME AS X174 0150-0121 (28480)		EA	REF				*	*	*	*	*	C-8	A5C6
XI H X321		C	PRINTED WIRING BOARD PHENOLIC 05265-2010 (28480)		EA	1										A5MP3

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P H X322	5905-141-1183	C	RESISTOR,FIXED,COMPOSITION SAME AS X209 RCR07G101JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R23
P H X323	5905-115-8055	C	RESISTOR,FIXED,COMPOSITION SAME AS X210 RCR07G393JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R1
P H X324	5905-115-8055	C	RESISTOR,FIXED,COMPOSITION SAME AS X210 RCR07G393JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R50
P H X325	9905-116-8556	C	RESISTOR,FIXED,COMPOSITION 22000 OHM, 5 PCT, 1/4W RCR07G223JS (81349)		EA	2				*	*	*	*	*	C-8	A5R18
P H X326	5905-728-5095	C	RESISTOR,FIXED,FILM SAME AS X230 MF7CD6042F (19701)		EA	REF				*	*	*	*	*	C-8	A5R16
P H X327	5905-114-0742	C	RESISTOR,FIXED,COMPOSITION 180 OHM, 5 PCT, 1/4W RCR07G181JS (81349)		EA	1				*	*	*	*	*	C-8	A5R42
P H X328	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS X238 RCR07G682JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R26
P H X329	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS X238 RCR07G682JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R53
P H X330	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS X238 RCR07G682JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R54
P H X331	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION 270000 OHM, 5 PCT, 1/4W RCR07G274JS (81349)		EA	2				*	*	*	*	*	C-8	A5R31
P H X332	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION SAME AS X331 RCR07G274JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R40
P H X333		C	RESISTOR,FIXED,FILM SAME AS X234 MFTCD1212F (19701)		EA	REF				*	*	*	*	*	C-8	A5R17
P H X334	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS X211 RCR07G104JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R30

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P H X335	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS X211 RCR07G104JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R48
P H X336	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS X211 RCR07G104JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R55
P H X337	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION 43000 OHM, 5 PCT, 1/4W RCR07G433JS (81349)		EA	6				*	*	*	*	*	C-8	A5R34
P H X338	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION SAME AS X337 RCR07G433JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R35
P H X339	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION SAME AS X337 RCR07G433JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R43
P H X340	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION SAME AS X337 RCR07G433JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R45
P H X341	5905-141-1295	C	RESISTOR,FIXED,COMPOSITION SAME AS X239 RCR07G243JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R22
P H X342	5905-141-1295	C	RESISTOR,FIXED,COMPOSITION SAME AS X239 RCR07G243JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R28
P H X343	5905-994-8540	C	RESISTOR,FIXED,FILM 182000 OHM, 1/2W, 1 PCT MFTCD1823F (19701)		EA	1				*	*	*	*	*	C-8	A5R4
P H X344	5905-1 06-9356	C	RESISTOR,FIXED,COMPOSITION SAME AS X256 RCR07G203JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R27
P H X345	5905-435-6374	C	RESISTOR,FIXED,COMPOSITION 82000 OHM, 5 PCT, 1/4W RCR07G823JS (81349)		EA	1				*	*	*	*	*	C-8	A5R49
P H X346	5905-136-8430	C	RESISTOR,FIXED,COMPOSITION SAME AS X255 RCR07G363JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R6
P H X347	5905-074-4561	C	RESISTOR,FIXED,FILM SAME AS X205 MFTCD3922F (19701)		EA	REF				*	*	*	*	*	C-8	A5R13

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P H X348	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R19
P H X349	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R21
P H X350	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R37
P H X351	5905-106-3660	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R46
P H X352	5905-114-5344	C	RESISTOR,FIXED,COMPOSITION 180000 OHM, 5 PCT, 1/4W RCR07G184JS (81349)		EA	1				*	*	*	*	*	C-8	A5R39
P H X353	5905-105-7765	C	RESISTOR,FIXED,COMPOSITION SAME AS X141 RCR07G224JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R24
P H X354	5905-105-7765	C	RESISTOR,FIXED,COMPOSITION SAME AS X141 RCR07G224JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R25
P H X355	5905-105-7765	C	RESISTOR,FIXED,COMPOSITION SAME AS X141 RCR07G224JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R38
P H X356		C	RESISTOR,FIXED,FILM 1500 OHM, 1/2W, 1 PCT MF7CD1501F (19701)		EA	1				*	*	*	*	*	C-8	A5R14
P H X357	5905-111-4845	C	RESISTOR,FIXED,COMPOSITION 200 OHM, 5 PCT, 1/4W RCR07G201JS (81349)		EA	2				*	*	*	*	*	C-8	A5R8
P H X358	5905-141-1132	C	RESISTOR,FIXED,COMPOSITION SAME AS X252 RCR07G752JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R33
P H X359	5905-141-1132	C	RESISTOR,FIXED,COMPOSITION SAME AS X252 RCR07G752JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R44
P H X360	5905-126-6677	C	RESISTOR,FIXED,COMPOSITION 3300000 OHM, 5 PCT, 1/4W RCR07G335JS (81349)		EA	1				*	*	*	*	*	C-8	A5R52

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P H X361	5905-927-2880	C	RESISTOR,FIXED,FILM 16200 OHM, 1/2W, 1 PCT MF7CD1622F (19701)		EA	1				*	*	*	*	*	C-8	A5R2
P H X362	5905-116-8555	C	RESISTOR,FIXED,COMPOSITION RCR07G153JS (81349)		EA	3				*	*	*	*	*	C-8	A5R7
P H X363	5905-116-8555	C	RESISTOR,FIXED,COMPOSITION SAME AS X362 RCR07G153JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R41
P H X364	5905-120-9154	C	RESISTOR,FIXED,COMPOSITION SAME AS X133 RCR07G471JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R11
P H X365	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R20
P H X366	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R29
P H X367	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R15
P H X368		C	RESISTOR,FIXED,FILM 46400 OHM, 1/2W, 1 PCT MF7CD4641F (19701)		EA	1				*	*	*	*	*	C-8	A5R5
P H X369	5905-135-3973	C	RESISTOR,FIXED,COMPOSITION SAME AS X225 RCR07G221JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R9
P H X370	5905-917-0575	C	RESISTOR,FIXED,FILM 20000 OHM, 1 PCT, 1/2W MF7CD2002F (19701)		EA	1				*	*	*	*	*	C-8	A5R10
P H X371	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R12
P H X372	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R47
P H X373	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R36

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P H X374	5905-141-0743	C	RESISTOR,FIXED,COMPOSITION SAME AS X262 RCR07G392JS (81349)		EA	REF				*	*	*	*	*	C-8	A5R51
P H X375	5905-050-7045	C	RESISTOR,VARIABLE 2000 OHM, 30 PCT, 1/10W 2100-0361 (28480)		EA	1				*	*	*	*	*	C-8	A5R3
P H X376	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR7
P H X377	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR8
P H X378	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR9
P H X379	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR10
P H X380	5961-954-9102	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR11
P H X381	5961-957-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR12
P H X382	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR3
P H X383	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR13
P H X384	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR2
P H X385	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR4
P H X386	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-8	A5CR5

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P H X387	5961-126-5409	C	SEMICONDUCTOR DEVICE,DIODE 30V, 15MA, 300MW, DUAL 1901-0576	(28480)		EA	1				*	*	*	*	*	C-8	A5CR1AB
P H X388	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-8	A5HP1
P H X389	5940-926-8201	C	TERMINAL,LUG SAME AS X158 011-6809	(98291)		EA	REF				*	*	*	*	*	C-8	A5HP2
P H X390	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q1
P H X391	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q2
P H X392	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q3
P H X393	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q4
P H X394	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q5
P H X395	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q8
P H X396	5961-448-6214	C	TRANSISTOR SAME AS X287 1850-0062	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q9
P H X397	5961-817-0660	C	TRANSISTOR SILICON, NPN, 120V, 1 AMP, 60 MHZ, TO 5 CASE 1854-0022	(28480)		EA	3				*	*	*	*	*	C-8	A5Q6
P H X398	5961-917-0660	C	TRANSISTOR SAME AS X397 1854-0022	(28480)		EA	REF				*	*	*	*	*	C-8	A5Q7
P H S X399	6625-021-8971	B	CIRCUIT CARD ASSEMBLY	(28480)		EA	1				*	*	*	*	*	C-3	A6

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P H X400	5910-402-2574	C	CAPACITOR,FIXED,MICA DI SAME AS X171 0140-0176 (28480)		EA	REF				*	*	*	*	*	C-9	A6C13
P H X401	5910-902-2574	C	CAPACITOR,FIXED,MICA DI SAME AS X171 0140-0176 (28480)		EA	REF				*	*	*	*	*	C-9	A6C14
P H X402	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 150D475X9035B2 (56289)		EA	REF				*	*	*	*	*	C-9	A6C1
P H X403	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 150D475X9035B2 (56289)		EA	REF				*	*	*	*	*	C-9	A6C2
P H X404	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 150D475X9035B2 (56289)		EA	REF				*	*	*	*	*	C-9	A6C3
P H X405	5910-752-4172	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS X125 150D475X9035B2 (56289)		EA	REF				*	*	*	*	*	C-9	A6C18
P H X406	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-9	A6C4
P H X407	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-9	A6C5
P H X408	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-9	A6C17
P H X409	5910-542-2010	C	CAPACITOR,FIXED,CERAMIC DI SAME AS X118 0150-0093 (28480)		EA	REF				*	*	*	*	*	C-9	A6C19
P H X410	5910-912-5115	C	CAPACITOR,FIXED,MICA DI SAME AS X177 0140-0204 (28480)		EA	REF				*	*	*	*	*	C-9	A6C12
P H X411	5910-912-5115	C	CAPACITOR,FIXED,MICA DI SAME AS X177 0140-0204 (28480)		EA	REF				*	*	*	*	*	C-9	A6C15
P H X412	5910-776-4176	C	CAPACITOR,FIXED,MICA DI SAME AS X181 0160-0342 (28480)		EA	REF				*	*	*	*	*	C-9	A6C9

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P H X413	5910-492-7544	C	CAPACITOR,FIXED,MICA DI 460 PF, 1 PCT, 300 VDCW 0140-0232 (28480)		EA	2				*	*	*	*	*	C-9	A6C7
P H X414	5910-492-7544	C	CAPACITOR,FIXED,MICA DI SAME AS X413 0140-0232 (28480)		EA	REF				*	*	*	*	*	C-9	A6C8
P H X415	5910-852-2987	C	CAPACITOR,FIXED,CERAMIC DI 2000 PF, 22 PCT, 500 VDCW 0150-0122 (28480)		EA	1				*	*	*	*	*	C-9	A6C11
P H X416	5910-889-4462	C	CAPACITOR,FIXED,PLASTIC DI 47000 PF, 10 PCT, 200 VDCW 192P47392 (56289)		EA	1				*	*	*	*	*	C-9	A6C6
P H X417	5950-845-6927	C	COIL,RADIO FREQUENCY SAME AS X126 1537-92 (99800)		EA	REF				*	*	*	*	*	C-9	A6L4
P H X418	5950-027-1802	C	COIL,RADIO FREQUENCY SAME AS X199 1537-88 (99800)		EA	REF				*	*	*	*	*	C-9	A6L1
P H X419	5950-027-1802	C	COIL,RADIO FREQUENCY SAME AS X199 1537-88 (99800)		EA	REF				*	*	*	*	*	C-9	A6L2
P H X420	5950-027-1802	C	COIL,RADIO FREQUENCY SAME AS X199 1537-88 (99800)		EA	REF				*	*	*	*	*	C-9	A6L3
XI H X421		C	PRINTED WIRING BOARD PHENOLIC 05265-2001 (28480)		EA	1										A6MP1
P H X422	5905-120-9154	C	RESISTOR,FIXED,COMPOSITION SAME AS X133 RCR07G471JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R28
P H X423	5905-120-9154	C	RESISTOR,FIXED,COMPOSITION SAME AS X133 RCR07G471JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R33
P H X424	5905-120-9154	C	RESISTOR,FIXED,WIRE WOUND 370, 740, 1480 OHM 03440-82601 (28480)		EA	1				*	*	*	*	*	C-9	A6MP2
P H X425	5905-115-3560	C D	RESISTOR,FIXED,COMPOSITION SAME AS X233 RCR07G183JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R18

(1) SOURCE CODE / MAINT CODDL / REC CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) INDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.)	MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTACT #L	(9) DEPOT MAINT ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H X426	5905-25-9393	C	RESISTOR,FIXED,FILM 110000 OHM, 1 PCT, 1/4W RN60D1103F	(81349)		EA	2				*	*	*	*	*	C-9	A6R36
P H X427	5905-225-9393	C	RESISTOR,FIXED,FILM SAME AS X426 RN60D1103F	(81349)		EA	REF				*	*	*	*	*	C-9	A6R37
P H X428	5965-t IO-6308	C	RESISTOR,FIXED,COMPOSITION SAME AS X211 RCR07G104JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R38
P H X429	5909-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS X238 RCR07G682JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R24
P H X430	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION SAME AS X140 RCR07G273JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R42
P H X431		C	RESISTOR,FIXED,WIRE WOUND 2150 OHMS, 1/4W, 0.2 PCT EP21-21500HM1-4W0-2P	(07088)		EA	1				*	*	*	*	*	C-9	A6R8
P H X432	5905-l lo-7620	C	RESISTOR,FIXED,COMPOSITION SAME AS X206 RCR07G102JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R11
P H X433	5905-110-7620	C	RESISTOR,FIXED,COMPOSITION SAME AS X206 RCR07G102JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R20
P H X434	5905-t lo-7620	C	RESISTOR,FIXED,COMPOSITION SAME AS X206 RCR07G102JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R21
P H X435	5905-141-0717	C	RESISTOR,FIXED,COMPOSITION 47000 OHM, 5 PCT, 1/4W RCR07G473JS	(81349)		EA	2				*	*	*	*	*	C-9	A6R23
P H X436	5905-l *41-0717*	C	RESISTOR,FIXED,COMPOSITION SAME AS X435 RCR07G473JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R25
P H X437	5905-105-7764	C	RESISTOR,FIXED,COMPOSITION 2200 OHM, 5 PCT, 1/4W RCR07G222JS	(81349)		EA	1				*	*	*	*	*	C-9	A6R39
P H X438		C	RESISTOR,FIXED,WIRE WOUND 25000 OHM, 1/4W, 0.2 PCT EP21-25000HM1-4W0-2	(07088)		EA	1				*	*	*	*	*	C-9	A6R14

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P H X439	5905-116-8555	C	RESISTOR,FIXED,COMPOSITION SAME AS X362 RCR07G153JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R40
P H X440	5905-951-6989	C	RESISTOR,FIXED,FILM 909 OHM, 1 PCT, 1/4W RN60D9090F	(81349)		EA	1				*	*	*	*	*	C-9	A6R7
P H X441	5905-121-9942	C	RESISTOR,FIXED,COMPOSITION SAME AS X242 RCR07G391JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R6
P H X442	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION SAME AS X235 RCR07G472JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R19
P H X443	5905-141-1183	C	RESISTOR,FIXED,COMPOSITION SAME AS X209 RCR07G101JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R32
P H X446	5905-126-6696	C	RESISTOR,FIXED,COMPOSITION 750 OHM, 5 PCT, 1/4W RCR07G751JS	(81349)		EA	1				*	*	*	*	*	C-9	A6R29
P H X445	5905-111-4845	C	RESISTOR,FIXED,COMPOSITION SAME AS X357 RCR07G201JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R16
P H X444	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION 5600 OHM, 5 PCT, 1/4W RCR07G562JS	(81349)		EA	1				*	*	*	*	*	C-9	A6R30
P H X447	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION SAME AS X204 RCR07G152JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R26
P H X449	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION SAME AS X204 RCR07G152JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R43
P H X448	5905-988-2319	C	RESISTOR,FIXED,FILM 15000 OHM, 1 PCT, 1/4W RN60D1502F	(81349)		EA	1				*	*	*	*	*	C-9	A6R44
P H X450	5905-114-0710	C	RESISTOR,FIXED,COMPOSITION 330 OHM, 5 PCT, 1/4W RCR07G331JS	(81349)		EA	1				*	*	*	*	*	C-9	A6R10
P H X451	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS	(81349)		EA	REF				*	*	*	*	*	C-9	A6R4

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P H X452	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R5
P H X453	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS X214 RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R22
P H X454	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS X219 RCR07G272JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R15
P H X455	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS X219 RCR07G272JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R17
P H X456	5905-114-5343	C	RESISTOR,FIXED,COMPOSITION 1800 OHM, 5 PCT, 1/4W RCR07G182JS (81349)		EA	1				*	*	*	*	*	C-9	A6R3
P H X457	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION SAME AS X337 RCR07G433JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R1
P H X458	5905-122-0004	C	RESISTOR,FIXED,COMPOSITION SAME AS X337 RCR07G433JS (81349)		EA	REF				*	*	*	*	*	C-9	A6R2
P H X459		C	RESISTOR,VARIABLE 500 OHM, 10 PCT, 2W 2100-0324 (28480)		EA	1				*	*	*	*	*	C-9	A6R12
P H X460		C	RESISTOR,VARIABLE 2000 OHM, 10 PCT, 1/4W 2100-0392 (28480)		EA	1				*	*	*	*	*	C-9	A6R41
P H X461	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR1
P H X462	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR2
P H X463	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR3
P H X464	5961-954-9102	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR7

(1) SOURCE CODE MAINT. CODE REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3b) INCENT CODE	(3c) DESCRIPTION REF. NUMBER (MFR. PART NO.) MFR. CODE	USE ON CODE	(5) UNIT OF MEASURE	(6) QTY INCL IN UNIT	30 DAY MAINT ALW (6) DS 1-20	DS 21-50	DS 51-100	(7) GS 1-20	GS 21-50	GS 51-100	1 YR ALW PER 100 EQUIP CONTACT PL	DEPOT MAINT ALW PER 100 EQUIP	ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H X465	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR8
P H X466	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR9
P H X467	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR10
P H X468	5961-954-9182	C	SEMICONDOR DEVICE,DIODE SAME AS X266 1910-0016 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR14
P H X469	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR12
P H X470	5961-978-7468	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X267 1901-0025 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR13
P H X471	5961-027-5176	C	SEMICONDUCTOR DEVICE,DIODE BREAKDOWN 6.81V 1902-0052 (28480)		EA	1				*	*	*	*	*	C-9	A6CR15
P H X472	5961-821-0710	C	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-9	A6CR4
P H X473	5961-835-9974	C	SEMICONDUCTOR DEVICE,DIODE BREAKDOWN 9V 1902-0071 (28480)		EA	1				*	*	*	*	*	C-9	A6CR5
P H X474	5961-079-3591	C	SEMICONDUCTOR DEVICE,DIODE 7.5V, PORM 5 PCT, 400 MW 1902-0064 (28480)		EA	1				*	*	*	*	*	C-9	A6CR11
P H X475	5961-872-0882	C	TRANSISTOR SAME AS X285 1850-0040 (28480)		EA	REF				*	*	*	*	*	C-9	A6Q3
P H X476	5961-866-4810	C	TRANSISTOR SAME AS X293 2N708 (80131)		EA	REF				*	*	*	*	*	C-9	A6Q1
P H X477	5961-866-4810	C	TRANSISTOR SAME AS X293 2N708 (80131)		EA	REF				*	*	*	*	*	C-9	A6Q9

(1) SOURCE CODE / MAINT CODE / REC CODE SMR	(2) FEDERAL STOCK NUMBER	(3a) INDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.)	MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	(6) 30 DAY MAINT. ALW. DS 1-20	DS 21-50	DS 51-100	(7) GS 1-20	GS 21-50	GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H X478	5961-852-2869	C	TRANSISTOR			EA	1				*	*	*	*	*	C-9	A6Q4
			1820-0001	(28480)													
P H X479	5961-917-0660	C	TRANSISTOR SAME AS X397			EA	REF				*	*	*	*	*	C-9	A6Q10
			1854-0022	(28480)													
P H X480	*5961-9624213*	C	TRANSISTOR SILICON, PNP, 30V VCEO			EA	1				*	*	*	*	*	C-9	A6Q5
			1853-0001	(28480)													
P H X481	5961-448-6214	C	TRANSISTOR SAME AS X287			EA	REF				*	*	*	*	*	C-9	A6Q7
			1853-0062	(28480)													
P H X482	5961-448-6214	C	TRANSISTOR SAME AS X287			EA	REF				*	*	*	*	*	C-9	A6Q8
			1853-0062	(28480)													
P H X483	5961-448-6214	C	TRANSISTOR SAME AS X287			EA	REF				*	*	*	*	*	C-9	A6Q11
			1853-0062	(28480)													
P H X484	5961-990-5369	C	TRANSISTOR SILICON, NPN, VCEO 28V, 3W			EA	2				*	*	*	*	*	C-9	A6Q2
			1854-0003	(28480)													
P H X485	5961-990-9369	C	TRANSISTOR SAME AS X484			EA	REF				*	*	*	*	*	C-9	A6Q6
			1854-0003	(28480)													
P H X486	5935-777-6395	B	CONNECTOR,RECEPTACLE,ELEC 90 PIN MALE			EA	1				*	*	*	*	*	C-3	P6
			57-189S0-375	(02660)													
P H X487	5303-937-6264	*	SCREW,MACHINE SAME AS X146			EA	REF				*	*	*	*	*		MZ
			MS35190-225	(96906)													
P H X488	589-932-9790	B	GUIDE,PLUG-IN PLASTIC			EA	1				*	*	*	*	*	C-3	MP11
			5262A83A	(28480)													
P H X489	5970-260-7337	B	INSULATOR,PLATE			EA	1				*	*	*	*	*	C-2	MP1
			0340-0086	(28480)													
P H X490	5970-225-8549	B	INSULATOR,PLATE			EA	1				*	*	*	*	*	C-2	MP2
			0340-0090	(28480)													

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P H X491		B	JACK,TIP 69026-1064 (28499)		EA	1				*	*	*	*	*	C-3	P1
P O X492		B	KNOB BLACK PLASTIC 0370-0099 (28480)		EA	1	*	*	*	*	*	*	*	*	C-3	MP3
P O X493		B	KNOB PHENOLIC, 0.500 DIA X 0.550 IN. LG 0370-0102 (28480)		EA	1	*	*	*	*	*	*	*	*	C-3	MP4
P O X494		B	LAMP,GLOW CLEAR INDICATOR 1450-0049 (28480)		EA	2	*	*	*	*	*	*	*	*	C-3	DS1
P O X495		B	LAMP,GLOW SAME AS X494 1450-0049 (28480)		EA	REF	*	*	*	*	*	*	*	*	C-3	DS2
X1 H X496		B	PANEL,FRONT ALUMINUM 05265-2007 (28480)		EA	1										MP18
X1 H X497		B	PLATE,BOTTOM AL ALLOY 05265-0009 (28480)		EA	1										MP17
P H X498	5310-934-9748	*	NUT,PLAIN,HEXAGON SAME AS X108 MS35649-244 (96906)		EA	REF				*	*	*	*	*		H2
P H X499	5305-958-5483	*	SCREW,MACHINE MS35190-221 (96906)		EA	6				*	*	*	*	*		H2
X2 H X500		*	SCREW,MACHINE 4-40X1/4 LG 4-40X1-4RHWLW (73734)		EA	1										H1
X2 H X501		*	SCREW,MACHINE MS35246-22 (96906)		EA	8										H2
P H X502	5310-543-241'	*	WASHER,LOCK SAME AS X137 MS35338-40 (96906)		EA	REF				*	*	*	*	*		H2
M H X503		B	PLATE,INDENTIFICATION 7122-0097 (28480)		EA	1										MP9

(1) SOURCE CODE MAINT. CODE RECOV. CODE	(2) FEDERAL STOCK NUMBER	(3a) DESCRIPTION REF. NUMBER (MFR. PART NO.)	MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
ISN																
X2 H X504		PLATE,SIDE AL, BRIGHT DIP 05265-0007	(28480)		EA	1										MP15
P H X505	5310-934-9748	NUT,PLAIN,HEXAGON SAME AS X108 MS35649-244	(96906)		EA	REF				*	*	*	*	*		H4
P H X506	5305-958-5483	SCREW,MACHINE SAME AS X499 MS35190-221	(96906)		EA	REF				*	*	*	*	*		H2
X2 H X507		SCREW,MACHINE SAME AS X501 MS35246-22	(96906)		EA	REF										H4
P H X508	5310-543-2410	WASHER,LOCK SAME AS X137 MS35338-40	(96906)		EA	REF				*	*	*	*	*		H4
X2 H X509		PLATE,SIDE AL, BRIGHT DIP 05265-0008	(28480)		EA	1										MP16
P H X510	5310-934-9748	NUT,PLAIN,HEXAGON SAME AS X108 MS35649-244	(96906)		EA	REF				*	*	*	*	*		H2
P H X511	5305-958-5483	SCREW,MACHINE SAME AS X499 MS35190-221	(96906)		EA	REF				*	*	*	*	*		H2
X2 H X512		SCREW,MACHINE SAME AS X501 MS35246-22	(96906)		EA	REF										H2
P H X513	5310-543-2410	WASHER,LOCK SAME AS X137 MS35338-40	(96906)		EA	REF				*	*	*	*	*		H2
P H X514	5310-934-9748	NUT,PLAIN,HEXAGON SAME AS X108 MS35649-244	(96906)		EA	REF				*	*	*	*	*		H1
P H X515	5940-815-2612	POST,BINDING BLK, 1 IN. STUD 1510-0006	(28480)		EA	1				*	*	*	*	*	C-2	MP7
P H X516	5940-626-7653	POST,BINDING RED, 1 IN. STUD 1510-0007	(28480)		EA	1				*	*	*	*	*	C-2	MP8

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P H X517	5905-116-8556	B	RESISTOR,FIXED,COMPOSITION SAME AS X325 RCR07G223JS (81349)		EA	REF				*	*	*	*	*	C-2	R5
P H X518	5905-121-9932	B	RESISTOR,FIXED,COMPOSITION SAME AS X242 RCR07G391JS (81349)		EA	REF				*	*	*	*	*	C-2	R2
P H X519		B	RESISTOR,FIXED,WIRE WOUND 5600 OHM, 1/2 PCT, 1/4W 0811-2730 (28480)		EA	1				*	*	*	*	*	C-2	R4
P H X520		B	RESISTOR,FIXED,COMPOSITION 680000 OHM, 5 PCT, 1/2W RCR42G684JS (81349)		EA	1				*	*	*	*	*	C-3	R1
P H X521	5905-849-7363	B	RESISTOR,VARIABLE 500 OHM, 30 PCT, 0.3W 2100-0078 (28480)		EA	1				*	*	*	*	*	C-3	R1
X2 H X522		*	NUT,PLAIN,HEXAGON 1/4-32, NP BRASS 0590-0043 (28480)		EA	1										H1
P H X523	5905-852-2850	B	RESISTOR,VARIABLE 200 OHM, 20 PCT, 1/2W 2100-0436 (28480)		EA	1				*	*	*	*	*	C-3	R3
P H X524	5310-903-8729	*	NUT,PLAIN,HEXAGON BRS, NI PL, 3/8-32 X 0.75 IN, LG 2950-0034 (28480)		EA	1				*	*	*	*	*		H1
P H X525	5305-957-6264	B	SCREW,MACHINE SAME AS X146 MS35190-225 (96906)		EA	REF				*	*	*	*	*		H2
P H X526	5961-821-0710	B	SEMICONDUCTOR DEVICE,DIODE SAME AS X271 1901-0033 (28480)		EA	REF				*	*	*	*	*	C-3	CR1
X2 H X527		B	SHIELD AL, BRIGHT DIP 05265-0006 (28480)		EA	1										MP14
X2 H X528		B	SUPPORT,BOARD AL, BRIGHT DIP 05265-0004 (28480)		EA	1										MP13
X? H X529		*	SCREW,MACHINE 4-40X3/8 LG 4-40X3-8RHWLW (73734)		EA	2										H2

(1) SOURCE CODY MAINT. CODE REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) IDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.) MFR. CODE	(3c) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-20	(6) DS 21-50	(6) DS 51-100	(7) GS 1-20	(7) GS 21-50	(7) GS 51-100	(8) 1 YR. ALW. PER 100 EQUIP CONTOCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H X530	5930-995-8651	B	SWITCH,ROTARY SP, 4 POSN, SIL ALLOY CONT 3100-0747 (28480)		EA	1				*	*	*	*	*	C-3	S1

FEDERAL STOCK ND.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5305-244-2847		H4	X109
5305-957-6264		H1	X146
5305-957-6264		H2	X487
9305-957-6264		H7	X525
5305-958-5483		H2	x499
5305-958-5483		H2	X506
5305-958-5483		H2	x511
5310-543-2410		H1	x147
5310-543-2410		H2	X137
5310-543-2410		H2	x502
5310-543-2410		H7	x513
5310-543-2410		H4	X508
5310-903-8729		H1	X524
5310-934-9748		H1	X514
5310-934-9748		H2	X136
5310-934-9748		H2	x498
5310-934-9748		H2	X510
5310-934-9748		H4	X108
5310-934-9748		H4	X505
5365-438-9204	C-2	MP6	X104
5895-061-2906	C-2	MP5	X105
5895-932-9790	C-3	MP11	X488
5905-050-7045	C-8	A5R3	X375
5905-074-4561	C-7	A4R16	x205
5905-074-4561	C-8	A5R13	x347
5905-104-8358	C-7	A4R4	X223
5905-104-8360	C-7	A4R45	X243
5905-105-2518	C-7	A4R42	X263
5905-105-2764	C-9	A6R39	x437
5905-105-2765	C-5	A2R2	x141
5905-105-2765	C-8	A5R24	x353
5905-105-2769	C-8	A5R25	x354
5905-105-2765	C-8	A5R38	x355
5905-105-7767	C-7	A4R35	X247
5905-106-1356	C-7	A4R36	X204
5905-106-1356	C-9	A6R26	x447
5905-106-1356	C-9	A6R43	X448
5905-106-3666	C-7	A4R11	X214
5905-106-3666	C-7	A4R23	x215
5905-106-3666	C-7	A4R25	X216
5905-106-3666	C-7	A4R49	X217
5905-106-3666	C-7	A4R50	X216
5905-106-3666	C-8	A5R19	X348
5905-106-3666	C-8	A5F21	x349
5905-106-3666	C-8	A5R37	x350
5905-106-3666	C-8	A5R46	x351
5905-106-3666	C-9	46R4	X451
5905-106-3666	C-9	A6R5	x452
5905-106-3666	C-9	A6R22	x453
5905-106-9356	C-7	A4R8	X256
5905-106-9356	C-7	A4R28	X257
5905-106-9356	C-7	A4R37	X258
5905-106-9356	C-8	A5R27	x344
5905-110-0388	C-7	A4R1	X211
5905-110-0388	C-7	A4R48	X212
5905-110-0388	C-8	A5R30	x334
5905-110-0368	C-8	A5R48	X335
5905-110-0388	C-8	A5R55	X336
5905-110-0388	C-9	A6R38	X428
5905-110-7620	C-7	A4R14	X206
5905-110-7620	C-7	A4R39	X207
5905-110-7620	C-9	A6R11	X432
5905-110-7620	C-9	A6R20	x433
5905-110-7620	C-9	A6R21	x434
5905-110-7622	C-7	A4R27	X238
5905-110-7622	C-8	A5R26	X328
5905-110-7622	C-8	A5R53	X329
5905-110-7622	C-8	A5R54	x330
5905-110-7622	C-9	A6R24	X429
5905-111-1679	C-7	A4R5	X227
5905-111-4727	C-7	A4R32	X219
5905-111-4727	C-7	A4R34	X220
5905-111-4727	C-9	A6R15	x454
5905-111-4727	C-9	A6R17	x455
5905-111-4845	C-8	A5R8	X357
5905-111-4845	C-9	A6R16	X445
5905-114-0710	C-9	A6R10	X450
5905-114-0711	C-7	A4R52	X235
5905-114-0711	C-7	A4R57	X236
5905-114-0711	C-9	A6R19	X442
5905-114-0742	C-8	A5R42	X327
5905-114-5339	C-7	A4R6	X244
5905-114-5339	C-7	A4R60	X245
5905-114-5339	C-7	A4R61	X246
5905-114-5343	C-9	A6R3	X456
5905-114-5344	C-8	A5R39	X352
5905-115-3560	C-7	A4R21	X233
5905-115-3560	C-9	A6R18	x425
5905-115-8055	C-7	A4R55	x210
5905-115-8055	C-8	A5R1	X323
5905-115-8055	C-8	A5R50	X324
5905-116-8554	C-5	A2R1	x139
5905-116-8554	C-7	A4R33	X221
5905-116-8555	C-8	A5R7	X362
5905-116-8555	C-8	A5R41	X363
5905-116-8555	C-9	A6R40	x439
5905-116-8556	C-8	A5R18	X325
5905-116-8556	C-2	R5	X517
5905-118-4559	C-7	A4R40	X259
5905-118-4559	C-7	*A4R46*	X260

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5905-119-3504	c-5	A2R3	x140
5905-119-3504	c-7	A4R22	X248
5905-119-3504	c-7	A4R24	X249
5905-119-3504	C-7	A4R44	X250
5905-11-3504	C-7	A4R51	X251
5905-119-3504	C-8	A5R15	X367
5905-119-3504	C-8	A5R20	X365
5905-119-3504	C-8	A5R29	*X366*
5905-119-3504	C-9	A6R42	*x430*
5905-120-9152	C-8	A5R31	X331
5905-120-9152	C-8	A5R40	X332
5905-120-9154	c-4	A3R1	x133
5905-120-9154	C-8	A5R11	X364
5905-120-9154	C-9	A6MP2	X424
5905-120-9154	c-9	A6R28	X422
5905-120-9154	C-9	A6R33	X423
5905-121-9932	C-7	A4R53	X242
5905-121-9932	C-9	A6R6	x441
5905-121-9932	C-2	R2	X518
5905-122-0004	C-8	A5*R34*	x337
5905-122-0004	C-8	A5*R35*	X338
5905-122-0004	C-8	A5R43	x339
5905-122-0004	C-8	A5R45	X340
5905-122-0004	C-9	A6R1	x457
5905-122-0004	C-9	A6R2	X458
5905-126-6677	C-8	A5R52	X360
5905-126-6683	c-7	A4R59	X237
5905-126-6696	c-9	A6R29	x444
5905-135-3973	C-7	A4R13	X225
5905-135-3973	C-8	A5R9	*X369*
5905-135-3974	C-7	A4R41	X241
5905-136-8430	C-7	A4R10	X255
5905-136-8430	c-a	A5R6	*X346*
5905-141-0717	c-9	A6R23	*x435*
5905-141-0717	C-Q	A6R25	*X436*
5905-141-0743	c-7	A4R15	*X262*
5905-141-0743	C-7	A4R54	*X263*
5935-141-0743	c-7	A4R62	*X264*
5905-141-0743	C-8	A5R12	X371
5905-141-0743	C-8	A5R36	x373
5905-141-0743	C-8	A5R47	X372
5905-141-0743	C-8	A5R51	X374
5905-141-0744	C-9	*A6R30*	*X444*
5905-141-1132	C-7	A4R9	X252
5905-141-1132	c-7	*A4R58*	X253
5905-141-1132	C-8	*A5R33*	*X358*
5905-141-1132	C-8	45R44	x359
5905-141-1183	c-7	A4R30	*X209*
5905-141-1183	C-8	*A5R23*	X322
5905-141-1183	c-9	*A6R32*	*x443*
5905-141-1295	C-7	A4R26	X239
595-141-1295	C-7	A4R29	X240
5905-141-1295	C-8	A5R22	X341
5905-141-1295	C-8	A5R28	X342
5905-225-9393	C-9	A6R36	X426
5905-225-9393	C-9	A6R37	X427
5905-408-2206	C-7	A4R18	X226
5905-435-1718	C-7	A4R100	*X254*
5905-435-6374	C-8	A5R49	*X345*
5905-456-5251	C-7	A4R31	*X232*
5905-485-4545	C-7	A4R47	X229
5905-485-4648	C-7	A4R38	X261
5905-728-5099	C-7	A4R19	*X230*
5905-728-5099	C-8	A5R16	*X326*
5905-728-5164	C-6	A1R7	x157
5905-849-7363	C-3	R1	X521
5905-852-2850	C-3	R3	*X523*
5905-882-2842	C-6	A1R1	X151
5905-917-0575	C-8	A5R10	*x370*
5905-927-2880	C-8	A5R2	X361
5905-942-9762	C-6	A1R8	X156
5905-951-6989	C-9	A6R7	*x440*
5905-988-2319	C-9	A6R44	*x449*
5905-994-8540	C-8	A5R4	*x343*
5910-023-2355	C-7	A4C17	X186
5910-234-9817	C-7	*A4C5*	XI96
5910-234-9817	C-7	A4C14	x197
5910-234-9817	C-8	*A5C4*	*X299*
5910-234-9817	C-8	A5C12	*x300*
5910-492-7544	C-9	A6C7	x413
5910-492-7544	C-9	A6C7	X414
5910-542-2010	C-4	*A3C7*	X118
5910-542-2010	C-4	*A3C8*	x119
5910-542-2010	C-4	*A3C9*	x120
5910-542-2010	C-4	A3C10	X121
5910-542-2010	C-4	A3C11	x122
5910-542-2010	C-4	A3C12	XI23
5910-542-2010	C-4	A3C14	XI24
5910-542-2010	C-7	A4C14	XI92
5910-542-2010	C-7	MC21	x193
5910-542-2010	C-7	A4C27	x194
5910-542-2010	C-8	A5C1	x307
5910-542-2010	C-8	A5C23	X308
5910-542-2010	C-9	*A6C4*	X406
5910-542-2010	C-9	A6C5	x407
5910-542-2010	C-9	A6CI7	X408
5910-542-2010	C-9	A6C19	x409
5910-728-4975	C-6	A1C1	X148
5910-752-4172	C-4	A3C13	x125
5910-752-4172	C-8	A5C18	x314

FEDERAL STOCK HO.	FIGURE NUMBER	REFERE DESIG	NCE ATOR	ISN
5910-752-4172	C-8		A5C19	x315
5910-752-4172	C-8		A5C24	X316
5910-752-4172	C-9		A5C1	x402
5910-752-4172	C-9		A6C2	x403
5910-752-4172	c-9		A6C3	x404
5910-752-4172	c-c		A6C18	x405
5910-773-7702	c-7		A4C4	x179
5910-774-7294	C-8		A5C15	x310
5910-774-7294	C-8		A5C21	x311
5910-776-4176	C-7		A4C28	XI81
5910-776-4176	C-8		A5C25	X312
5910-776-4176	c-9		A6C9	X412
5910-903-4373	C-7		A4C8	XI83
5910-809-8667	C-8		A5C7	x309
5910-835-1200	C-4		A3C1	x111
5910-835-1200	C-4		A3C2	x112
5910-535-1200	C-4		A3C3	xi13
5910-835-1200	C-4		A3C4	X114
5910-835-1200	C-4		A3C5	x115
5910-835-1200	c-4		A3C6	X116
5910-835-1200	c-4		A3C16	x117
5910-835-1200	C-7		A4C13	XI82
5910-835-1200	C-8		A5C11	X313
5910-852-2987	c-9		A6C11	x415
5910-866-2951	C-8		A5C17	X297
5910-866-2951	C-8		A5C20	X298
5910-889-4462	c-9		A6C6	X416
5910-902-2574	c-7		A4C22	x171
5910-902-2574	c-7		A4C24	X172
5910-902-2574	c-7		A4C25	X173
5910-902-2574	c-9		A6C13	X400
5910-902-2574	c-9		A6C14	x401
5910-912-5115	t-7		A4C23	X177
5910-912-5115	c-7		A4C26	XI78
5910-912-5115	C-9		A6C12	x410
5910-912-5115	C-9		A6C15	x411
5910-914-2606	C-7		A4C15	XI84
5910-914-2606	C-8		A5C13	X296
5910-914-4732	c-7		A4C12	XI80
5910-914-4732	t-8		A5C10	X303
5910-914-4732	C-8		A5C16	X304
5910-914-4732	C-8		A5C22	x305
5910-933-7538	c-7		A4C10	X189
5910-933-7538	C-8		A5C9	x317
5910-984-2845	C-8		A5C7	X306
5910-993-8307	c-7		A4C1	X190
5910-993-8307	c-7		A4C2	x191
5910-993-8308	c-7		A4C3	x185
5930-995-8651	C-3			x530
5935-777-6395	C-3			X486

FEDERAL STOCK MO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5940-626-7653	C-2	MP8	X516
5940-815-2612	C-2	MP7	X515
5940-926-8201	C-6	A1MP1	X158
5940-926-8201	C-6	AIMO2	x159
5940-926-8201	C-6	A2MP3	X160
5940-926-8203	C-6	A1MP4	X161
5940-926-8201	C-6	AIMP5	X162
5940-926-8201	C-6	A1MP6	X163
5940-926-8201	C-6	AIMP7	X164
5940-926-8201	C-6	A1MP8	X165
5940-926-8201	C-6	A1MP9	X166
5940-926-8201	C-6	A1MP10	X167
5940-926-8201	C-6	A1MP11	1168
5940-926-8201	C-6	A1MP12	X169
5940-926-8201	C-7	A4MP1	X280
5940-926-8201	C-7	A4MP2	X281
5940-926-8201	C-7	A4MP3	X282
5940-926-8201	C-7	A4MP4	X283
5940-926-8201	C-7	A4MP5	X284
5940-926-8201	C-8	A5MP1	X388
5940-926-8201	C-8	A5MP2	X389
5950-027-1802	C-7	A4L1	x199
5950-027-1802	C-7	A4L2	x200
5950-027-1802	C-7	A4L3	x201
5950-027-1802	C-9	A6L1	X418
5950-027-1802	C-9	A6L2	x419
5950-027-1802	C-9	A6L3	X420
5950-711-2692	C-4	A3L1	X127
5950-711-2692	C-4	A3L2	X128
5950-849-6927	C-4	A3L3	X126
5950-845-6927	C-9	A6L4	x417
5961-027-5176	C-9	A6CR15	x471
5961-126-5409	C-8	A5CRIAB	x307
5961-442-9470	C-5	A241	x144
5961-448-6214	C-7	A4Q1	X287
5961-448-6214	C-7	A4Q2	X208
5961-448-6214	C-7	A4Q4	X289
5961-448-6214	C-7	A485	X290
5961-446-6214	C-7	A4Q6	X291
5961-448-6214	C-7	A4Q7	X292
5961-446-6214	C-8	A5Q1	X390
5941-448-6214	C-8	A5Q2	x391
5961-448-6214	C-8	A5Q3	X392
5961-448-6214	C-8	A5Q4	x393
5961-448-6214	C-8	A5Q5	x394
5961-448-6214	C-8	A5Q8	x395
5961-448-6214	C-8	A5Q9	X396
5961-448-6214	C-9	A6Q7	X481
5961-448-6214	C-9	A6Q8	X482
5961-446-6214	C-9	A6Q11	X483

SECTION IV. FEDERAL STOCK NUMBER CROSS REFERENCE

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5961-732-7638	C-7	A4Q3	X286
5961-790-7834	C-5	A2CR2	X142
5961-821-0710	C-7	W4CR5	X271
5961-821-0710	C-7	A4CR6	X272
5961-821-0710	C-7	A4CR7	X273
5961-821-0710	C-7	A4CR11	X274
5961-821-0710	C-7	A4CR13	X275
5961-821-0710	C-8	A5CR2	X384
5961-821-0710	C-8	A5CR4	X385
5961-821-0710	C-8	A5CR5	X396
5961-821-0710	C-9	A6CR4	X472
5961-821-0710	C-3	CR1	X526
5961-835-9974	C-9	A6CR5	x473
5961-836-0014	C-9	A4CR4	X279
5961-836-0027	C-7	A4CR3AB	X278
5961-852-2869	C-9	A604	X478
5961-866-4810	C-7	A409	X293
5961-866-4810	C-7	A4010	X294
5961-866-4810	C-9	A601	X476
5961-866-4810	C-9	A609	x477
5961-872-0882	C-7	A4Q8	X285
5961-872-0882	C-9	A6Q3	x475
5961-879-3091	C-9	A6CR11	x474
5961-917-0660	C-8	A5Q6	x397
5961-917-0660	C-8	A5Q7	X398
5961-917-0660	C-9	A6Q10	x479
5961-929-7778	C-7	A4CR12	X270
5961-931-7011	C-7	A4CR8	X276
5961-931-7011	C-7	A4CR9	X277
5961-954-9182	C-7	A4CR14	X266
5961-964-9182	C-8	A5CR7	X376
5961-954-9182	C-8	A5CR8	X377
5961-954-9182	C-8	A5CR9	X378
5961-954-9182	C-8	A5CR10	x379
5961-954-9182	C-8	A5CR11	X380
5961-954-9182	C-8	A5CR12	X381
5961-954-9182	C-9	A6CP1	X461
5061-954-9182	C-9	A6CP2	X462
5961-954-9182	C-9	A6CR3	X463
5961-954-9182	C-9	A6CP7	X464
5961-954-9182	C-9	A6CR8	X465
5961-954-9182	C-9	A6CR9	X466
5961-954-9182	C-9	A4CR10	X467
5961-954-9182	C-9	A6CR14	X468
5961-957-0427	C-5	A2CR1	x143
5961-962-5213	C-9	A6Q5	X480
5961-978-7468	C-7	A4CR1	X267
5961-978-7468	C-7	A4CR2	X268
5961-978-7468	C-7	A4CR10	X269
5961-918-7468	C-8	A5CR3	X382
5961-976-7468	C-8	A5CR13	X383
5961-978-7468	C-9	A6CR12	X469
5961-978-7468	C-9	A6CR13	X470
5961-990-5369	C-9	A6Q2	X484
5961-990-5369	C-9	A6Q6	X485
5970-225-8549	C-2	MP2	X490
5970-269-7037	C-2	MP1	X489
6625-021-8971	C-3	A6	X399
6625-021-8987	C-3	A1	X145
6625-053-8184	C-3	A4	X170
6625-922-3617	C-2	MP10	X102
6625-957-0511	C-1		X101

SECTION V. MANUFACTURER PART NUMBER CROSS REFERENCE

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
CQ67B102ZE19	56289	C-8	A5C26	x301
DCS1-2-t-l50000MM1PCT	91637	C-7	A4R7	X228
SCS1-2-25100HM1PCT	91637	c-v	A4R43	X213
DFCS1-200000HM1PCT	91637	C-6	A1R6	x150
EP21-21500HM1-4M0-2P	07088	c-9	A6R8	x431
ER21-250000M1-4M0-2	07088	c-9	A6R14	X438
EP27-95500HM1-4M0-2	07088	C-6	A1R5	x155
KP240-4504C	07088	C-6	A1R2	x153
KP240-4504C	07088	C-6	A1R3	x154
KP240-5953C	07088	C-6	A1R4	X152
MF7CD1000	19701	c-7	A4R17	x222
MF7CD1212F	19701	C-7	A4R20	X234
MF7CD1212F	19701	C-6	A5R17	x333
MF7CD1501F	19701	C-8	A5R14	X356
MF7CD2153F	19701	C-7	A4R3	X224
MF7CD464F	19701	C-6	A5R5	X368
MF7CD9762F	19701	C-7	A4R2	X208
MS35245-22	96906		H7	X501
MS35246-22	96906		H2	X512
S35246-22	96906		H4	x507
RCR42G684JS	81349	C-3	R1	x320
0150-0121	28480	C-7	A4C7	x174
0150-0121	28480	C-7	A4C11	x175
0150-0121	28480	C-7	A4C19	X176
0150-0121	28480	C-8	A5C5	x319
0150-0121	28480	C-8	A5C6	X320
0370-0099	28480	C-3	MP3	X492
0370-0102	28480	C-3	MP4	x493
05265-0003	28480		MPI2	X103
05265-0004	28480		MP13	X528
052665-0006	28480		MP14	X527
05256-0007	28480		MP15	X504
05265-0008	28480		MP16	x509
05265-0009	28480		MP17	x497
05265-2001	28480		A6MP1	X421
05265-2003	28480		A4MP7	x203
05265-2004	28480		A1MP13	x149
05265-2005	28480		A3MP1	X132
05265-2007	28480		MP10	X496
05265-2009	28480		A2MP1	X138
05265-2010	28480		A51183	X321
05265-6008	28480	C-3	A3	x107
05265-6009	28480	C-3	A2	x135
05265-6010	28480	C-3	A5	X295
0590-0043	28480		H1	x522
0687-5661	28480	C-7	A4R36	X231
0811-2730	28480	C-2	R4	X519
114P1059R5515	56289	C-3	CJ	X106
1251-0498	58480	C-4	A3XA4	X129
1251-0498	28480	C-4	A3XA5	x130

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
1251-04918	20480	C-4	A3XA6	x131
1450-0049	28480	C-3	DS1	x494
1450-0049	28480	C-3	OS2	x495
1902-3237	28480	C-4	A3CR1	x134
2100-0324	28480	C-9	A6RI2	x459
2100-0392	28480	C-9	A6R41	x460
30D107G015DC2	56289	C-4	A3C15	x110
4-4X1-4RHMLH	73734		H1	x500
4-4QX3-8RWNLN	73734		H2	X529
601PE1030-50W1	84411	C-7	A4C6	x195
601PE1030-50W1	84411	C-8	A5C3	x318
601PE2230-50W1	84411	C-7	*A4C18*	X187
601PE2230-50W1	84411	C-7	A4C20	X188
601PE2240-50W3	84411	C-7	AU9	X196
601PE2240-50W3	84411	C-8	A5C8	X302
69026-I064	28499	C-3	P1	x491
69026-1164RED	00373	C-7	A4J1	X202
7I22-0097	28480		NW	X503

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A1	x145
A1C1	X148
A1M1	X158
A1MP2	X159
A1MP3	X160
A1MP4	X161
A1MP5	X162
A1MP6	X163
A1MP7	X164
A1MP8	X165
A1MP9	x166
A1-10	X167
A1MP11	X168
A1MP12	X169
A1MP13	x149
A1R1	X151
A1R2	x153
A1R3	X154
A1R4	x152
A1R5	x155
A1R6	x150
A1R7	X157
A1R8	X156
A2	x135
A2CR1	x143,
A2CR2	X142
A2MP1	X138
A2Q1	X144
A2R1	x139
A2R2	x141
A2R3	x140
A3	X107
A3C1	x111
A3C2	X112
A3C3	**x113**
A3C4	x114
A3C5	X115
A3C6	X116
A3C7	X118
A3C8	**X119**
A3C9	X120
A3C10	X121
A3C11	x122
A3C12	X123
A3C13	X125
A3C14	x124
A3C15	x110
A3C16	X117
A3CR1	x134
A3L1	X127

REFERENCE DESIGNATOR	ITEMS SEQUENCE NO.
A3L2	X128
A3L3	X126
A3MP1	X132
A3R1	X133
A3XA4	X129
A3XA5	X130
A3XA6	X131
A4	X170
A4C1	X190
AU2	X191
AU3	X185
AU4	X179
A4C5	X196
A4C6	X195
AU7	X174
A4C8	X183
A4C9	X190
A4C10	X189
A4C11	X175
A4C12	X160
A4C13	**X182**
A4C14	X197
A4C15	X184
A4C16	X192
A4C17	X186
A4C18	X187
UC19	X176
A4C20	X188
A4C21	X193
AU22	X171
MC23	**X177**
A4C24	X172
A4C25	X173
A4C26	X178
AU27	X194
A4C28	X181
A4CR1	X267
A4CR2	X268
A4CR3AB	X270
A4CR4	X279
A4CR5	X271
A4CR6	X272
A4CR7	X273
A4CR8	X276
A4CR9	X277
A4CR10	X269
A4CR11	X274
A4CR12	X280
A4CR13	X275
A4CR14	**X266**

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A4J1	x202	**A4R32**	**X219**
A4L1	x199	**A4R33**	**x221**
A4L2	x200	**A4R34**	**x220**
A4L3	x201	**A4R35**	**X247**
A4MP1	x280	**A4R36**	**X231**
A4MP2	X281	**A4R37**	**X258**
A4MP3	X282	**A4R38**	X261
A4MP4	X283	**A4R39**	X207
A4MP5	X204	**A4R40**	X259
A4MP7	X203	A4R41	X241
A4D1	X287	**A4R42**	**X265**
A4D2	X288	**A4R43**	X213
A4Q3	**X286**	**A4R44**	X250
A4Q4	**X289**	**A4R45**	X243
A4Q5	**x290**	**A4R46**	X260
A4Q6	x291	**A4R47**	X229
A4Q7	**X292**	**A4R48**	x212
A4Q8	**x295**	**A4R49**	K217
A4Q9	**X293**	**A4R50**	X218
A4Q10	**X294**	A4R51	X251
A4R1	x211	**A4R52**	X235
A4R2	X208	A4R53	x242
A4Q3	X224	**A4R54**	**X263**
A4R4	X273	**A4R55**	X210
A4R5	X227	**A4R56**	x204
A4R6	x244	**A4R57**	X236
A4R7	X228	A4R58	X253
A4R8	X256	**A4159**	X237
A4R9	x252	A4R60	X245
A4R10	x255	**A4R61**	x246
A4R11	**X214**	**A4R62**	**X264**
A4R13	x225	A4R100	x254
A4R14	**X206**	**AS**	x295
A4R15	**X262**	A5C1	x307
A4R16	x205	**A5C2**	x306
A4R17	x222	**A5C3**	X318
A4R18	**X226**	**AX4**	X299
A4R19	**X230**	**A5C5**	x319
A4R20	**X234**	**A5C6**	X320
A4R21	**X233**	**A5C7**	x309
A4R22	**X248**	***A5C8***	X302
A4R23	**x215**	***A5C9***	x317
A4R24	**X249**	***A5C10***	x303
A4R25	X216	ASCII	x313
A4R26	**X239**	A5C12	X300
A4R27	**X238**	A5C13	X296
A4R28	**X257**	A5C15	x310
A4R29	**X240**	A5C16	x304
A4R30	**X209**	**A5C17**	X297
A4R31	**X232**	A5C18	x314

REFERENCE DESIGNATOR CROSS REFERENCE

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A5C19	x315	A5R19	X348
A5C20	X298	A5R20	X365
A5C21	x311	A5P21	X349
A5C22	X305	A5R22	X341
A5C23	X308	A5R23	X322
A5C24	X316	A5R24	X353
A5C25	X312	A5R25	X354
A5C26	x301	*A5R26*	X328
A5CR1AB	X387	A5R27	X344
A5CR2	X384	A5R28	X342
A5CR3	X382	A5R29	X366
A5CR4	X385	A5R30	X334
A5CR5	X386	A5R31	X331
A5CR7	*X376*	A5R33	X358
A5CR8	x377	A5R34	X337
A5CR9	X378	A5R35	X338
A5CR10	x379	A5R36	X373
A5CR11	X380	A5R37	X350
A5CR12	X381	A5R38	X355
A5CR13	X383	A5R39	X352
A5MP1	X388	A5R40	X332
A5MP2	x389	A5R41	X365
A5MP3	X321	A5R42	X327
A5Q1	x390	A5R43	X339
A5Q2	X391	A5R44	X359
A5Q3	X392	A4R45	X340
A5Q4	x393	*A5R46*	X351
A5Q5	x394	A5R47	X372
A5Q6	x397	A5R48	X335
A5Q7	X398	A5149	X345
A5Q8	x395	A5R50	X324
A5Q9	*X396*	A5R51	X374
A5R1	X323	A5R52	X360
A5R2	*X361*	A5R53	X329
A5R3	x375	A5R54	X330
A5R4	x343	A5R55	X336
A5R5	*X368*	A6	X399
A5R6	x346	A6C1	X402
A5R7	X362	A6C2	X403
A5R8	x357	A6C3	X404
A5R9	*X369*	A6C4	X406
45R10	X370	A6C5	X407
45R11	x364	A6C6	X416
A5R12	x371	A6C7	X413
A5R13	x347	A6C8	X414
A5R14	*X356*	A6C9	X412
A5R15	X367	A6C11	X415
A5R16	*X326*	A6C12	X410
A5RI7	x333	A6C13	X400
A5R18	X325	A6C14	X401

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A6C15	x411	A6R18	x425
A6C17	x400	A6R19	x442
A6C18	x405	A6R20	x433
A6C19	x409	A6R21	x434
A6CR1	X461	A6R22	x453
A6CR2	X462	A6R23	x435
A6CR3	X443	A6R24	x429
A6CR4	X472	A6R25	x436
A6CR5	x473	A6R26	x447
A6CR7	x464	A6R28	x422
A6CR8	*X465*	A6R29	x444
A6CR9	X466	A6R30	x446
A6CR10	*X467*	A6R32	x443
A6CR11	x474	A6R33	x423
A6CR12	X469	A6R36	x426
A6CR13	x470	A6E37	x427
A6CR14	X468	A6R38	x428
A6CR15	X471	A6R39	x437
A6L1	x418	A6R40	x439
A6L2	x419	A6R41	x460
A6L3	X420	A6R42	x430
A6L4	x417	*A6R43*	x448
A6MP1	X421	*A6R44*	x449
A6MP2	X424	C1	x106
A6Q1	*X476*	CR1	x526
A6Q2	x4114	OS1	x494
A6Q3	X475	DS2	x495
A3Q4	x478	MP1	x489
A6Q5	X480	MP2	x490
A6Q6	X485	MP3	x492
A6Q7	X481	MP4	x493
A6Q8	X482	MP5	x105
A6Q9	x477	MP6	x104
A6Q10	x479	MP7	x515
A6Q11	X483	MP8	x516
A6R1	x457	MP9	x503
A6R2	X458	MP10	x102
A6R3	X456	MP11	x488
A6R4	X451	MP12	x103
A6R5	x452	MP13	x528
A6R6	x441	MP14	x527
A6R7	x440	MP15	x504
A6R8	X431	MP16	x509
A6R10	x450	MP17	x497
A6R11	X432	MP18	x496
A6R12	x459	P1	x491
A6R14	X438	P6	x486
A6R15	X454	R1	x520
A6R16	x445	R1	x521
A6R17	X455	R2	x518

SECTION VI. REFERENCE DESIGNATOR CROSS REFERENCE PL-1344/U

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
R3	X523		
R4	X519		
R5	X517		
S1	X530		

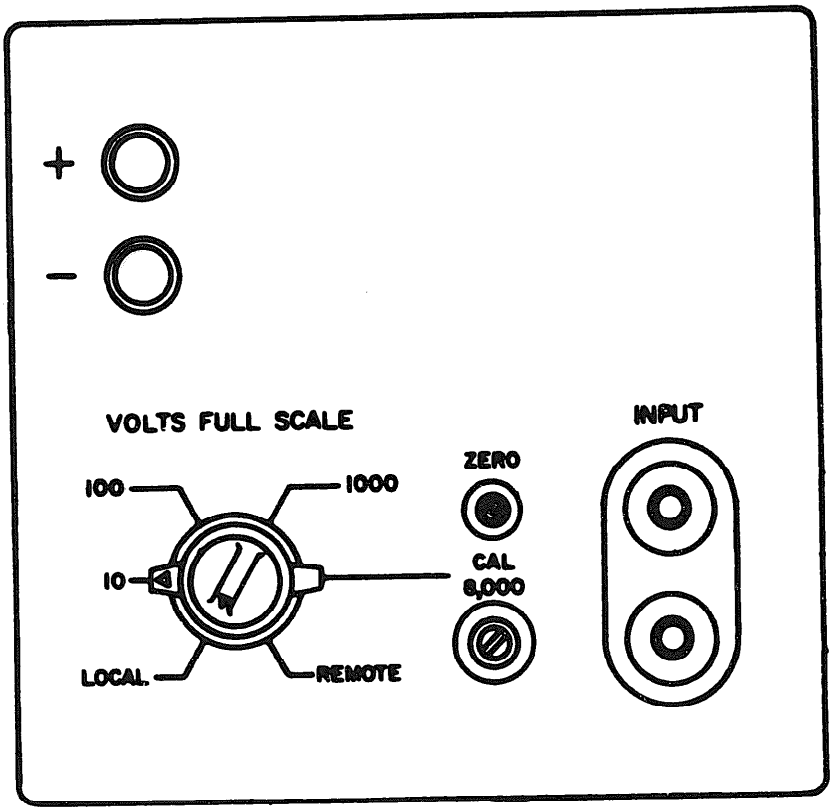

Figure C-1. Digital voltmeter PL 1344/U.

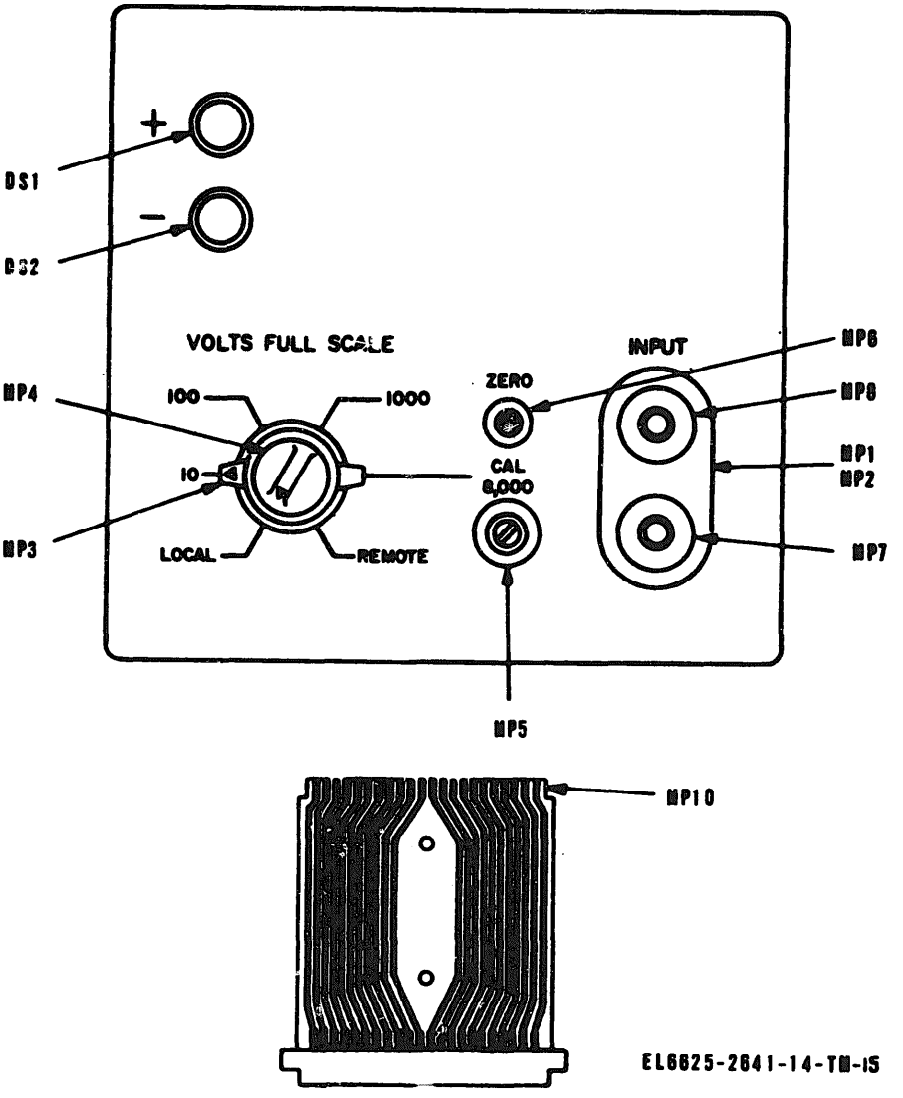

FIGURE C-2. Digital Voltmeter, front view and extender board.

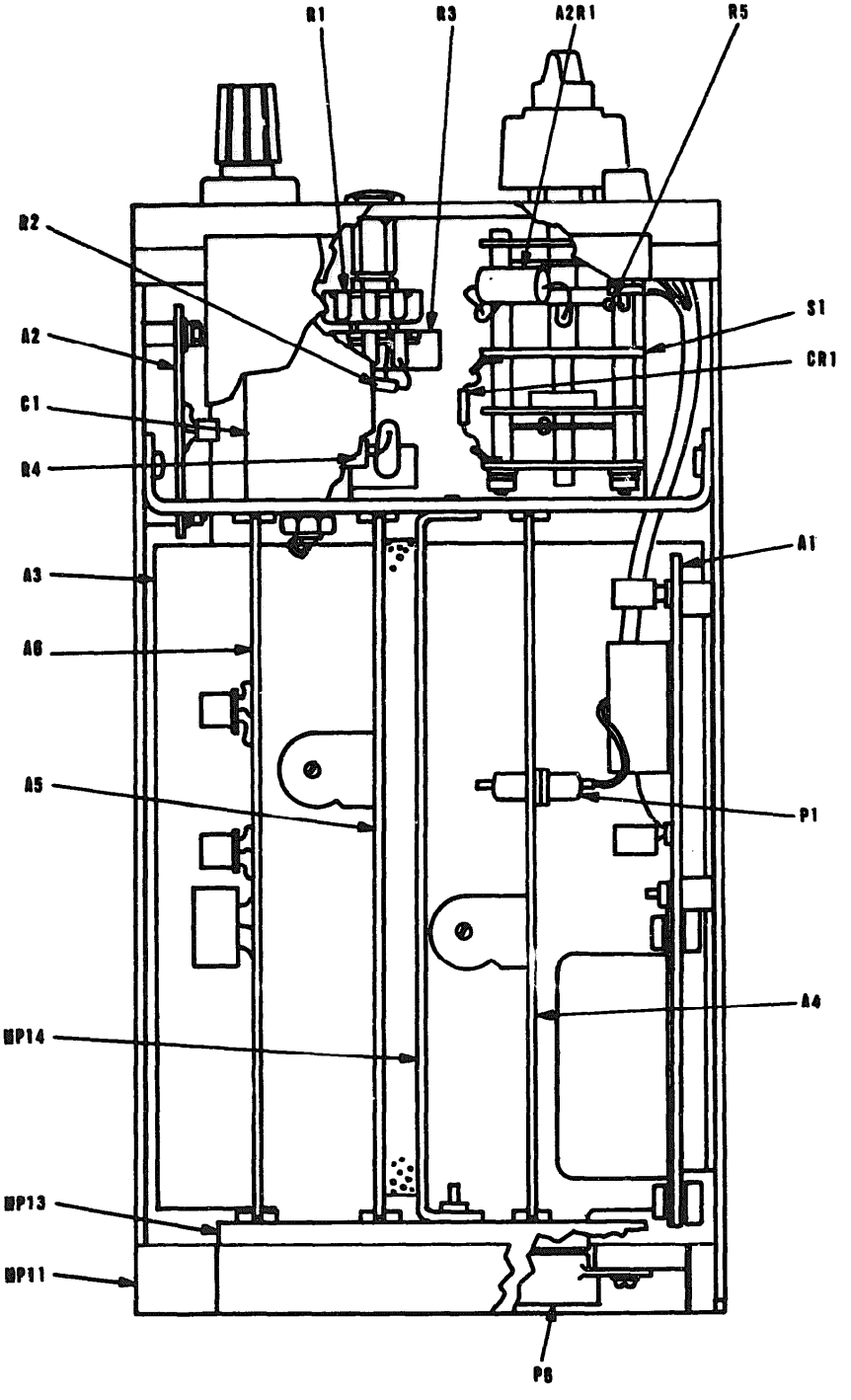

Figure C-3. Digital voltmeter, cutaway top view.

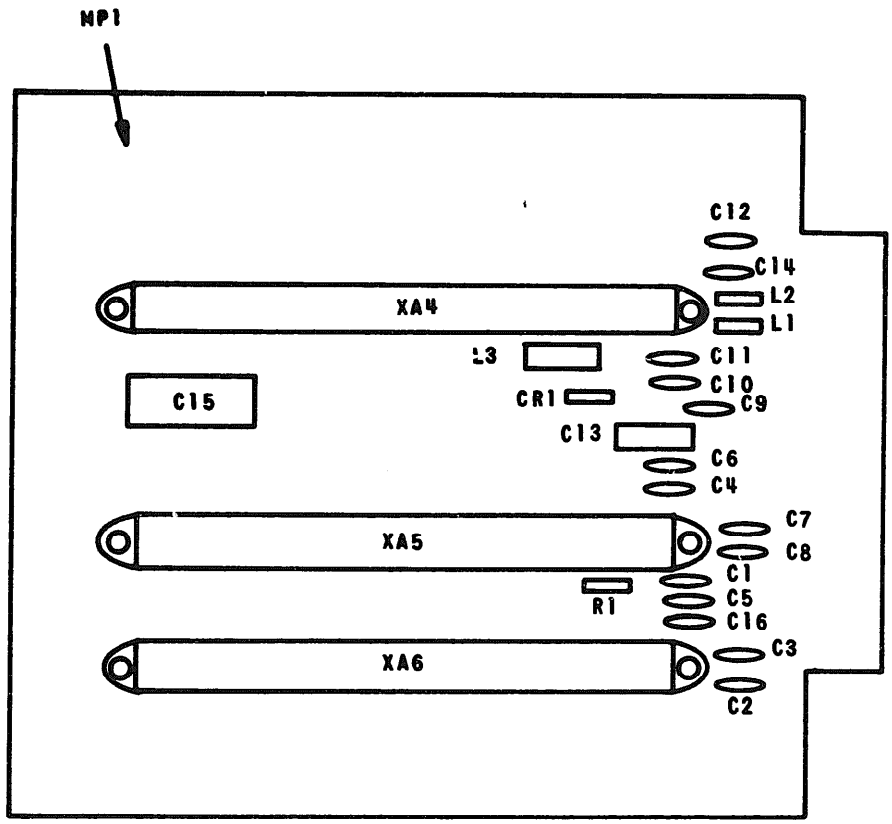

Figure C-4. Circuit card assembly A3.

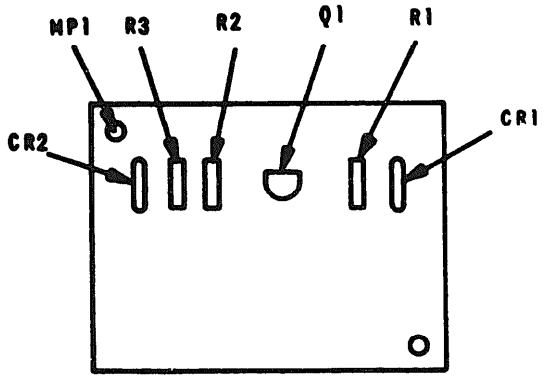

Figure C-5. Circuit card assembly A2.

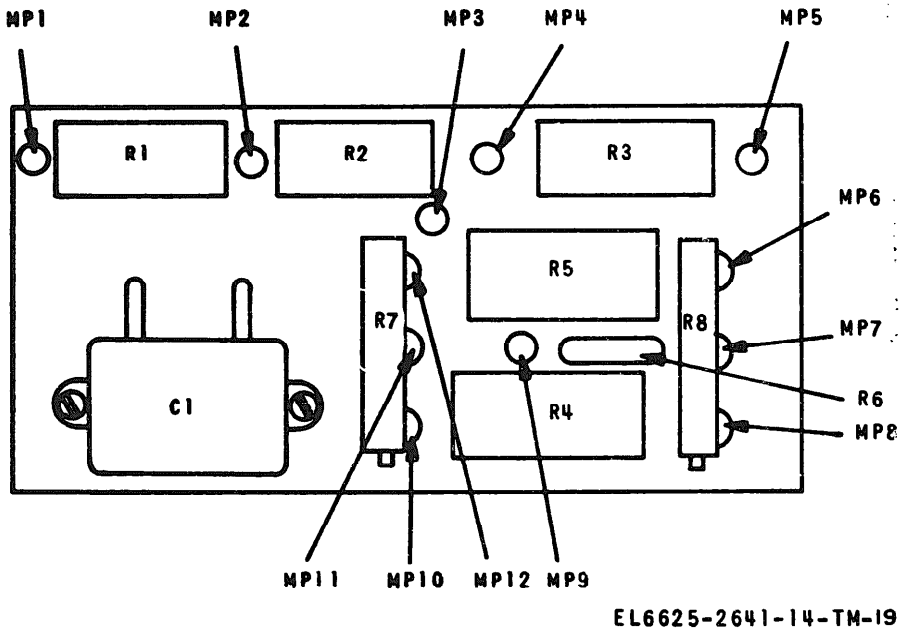

Figure C-6. Circuit card assembly A1.

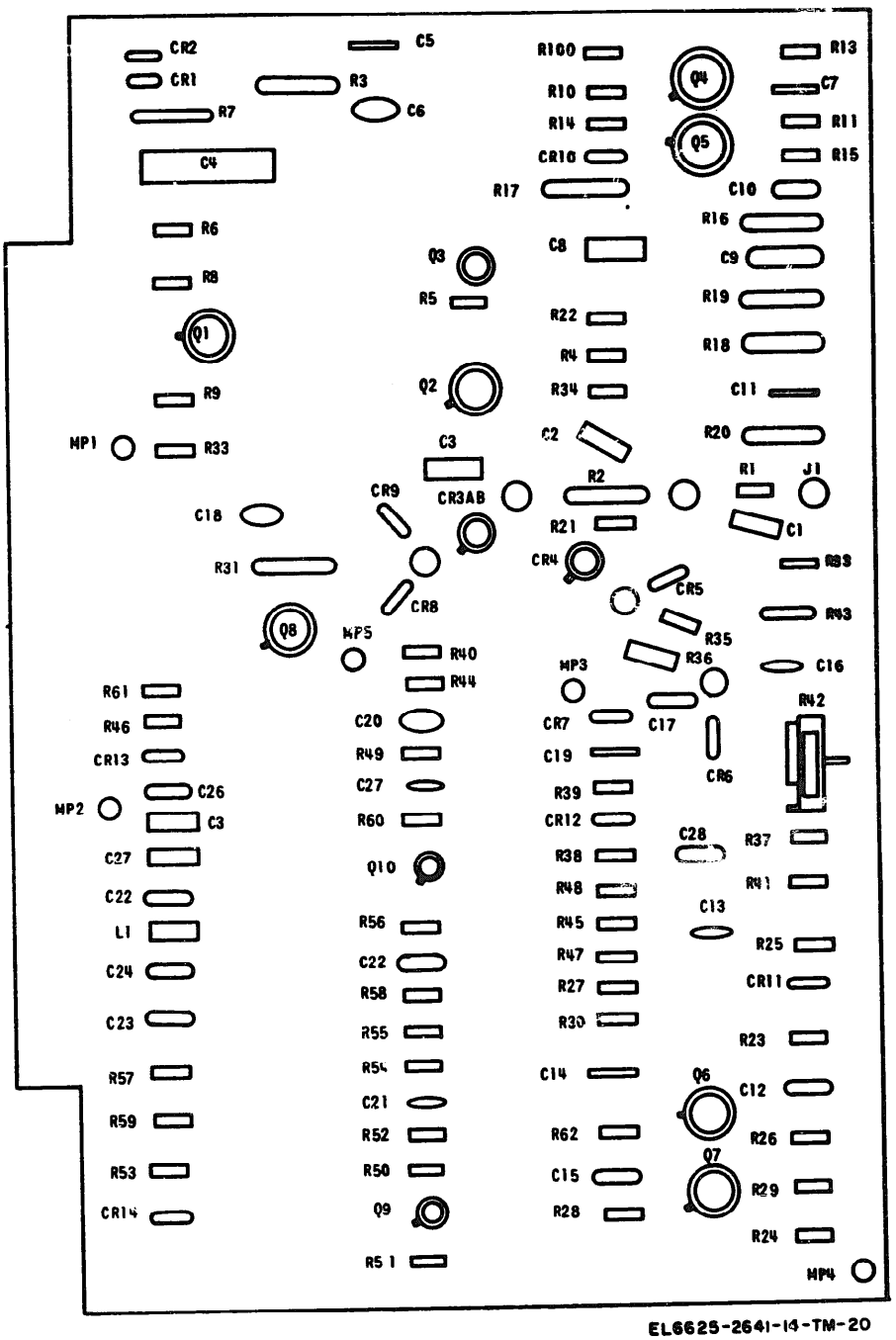

Figure C-7. Circuit card assembly A4

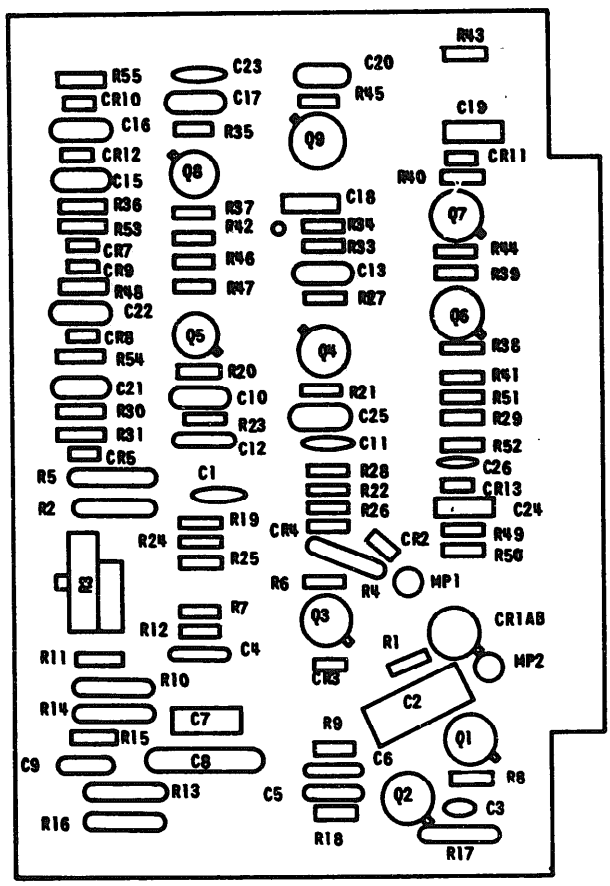

Figure C-8. Circuit cad assembly A5

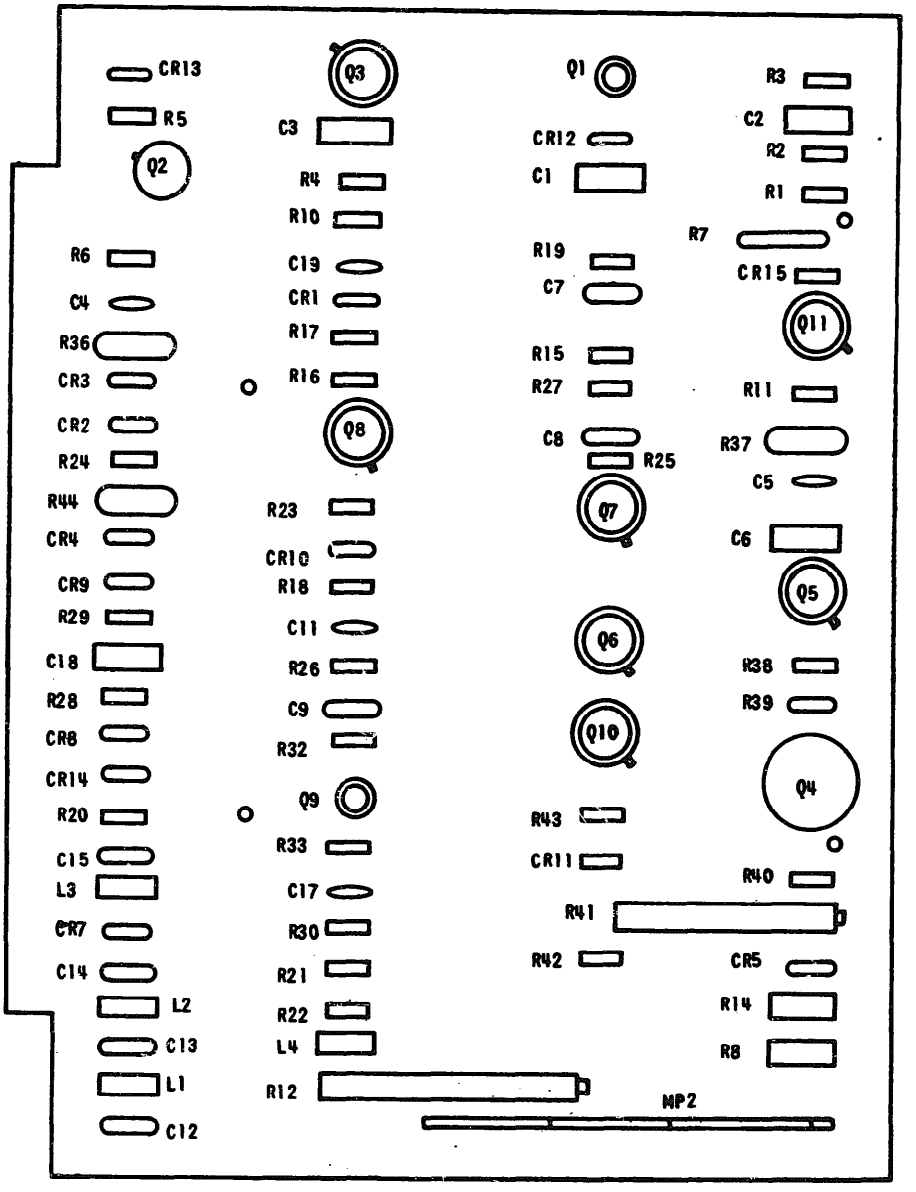

Figure C-9. Circuit card assembly A6.

Order of the Secretary of the Army:

CREIGHTION W. ABRAMS
General, United States Army
Chief of Staff

icial:

VERNE L. BOWERS
***Major** General, United States Army*
The Adjutant General

Contribution:
Active Army:
USASA (2)
CNGB (1)
ACSC-E (2)
USAMB (10)
AMC (1)
TECOM (2)
2d LOGCOMD (5)
ABADCOM (1)
OS Maj Comd (3) except
USARPAC (2)
USACC (5)
USACC-PAC (2)
USACC Sig Gp Okinawa (10)
USACC Sig Gp Taiwan (10)
USACC Sig Gp-T (2)
USACC Sig Bde, Korea (2)
HISA (Ft Monmouth) (5)
Eighth USA (3)
I corps (2)
USASESS (5)
USAINTS (3)
AD (1) except
SAAD (20)
TOAD (14)
LBAL, (5)
USA Dep (pac) (2)
Sig Sec USA Dep (pac) (2)
Sig Dep (pac) (2)
USA Camp Carroll Dep (2)
USA ASCOM Dep (2)
USACSA (3)
MAAG, Republic of China (2)
Sig FLDMS (pac) (1)
JUSMAG, Korea (1)
Units org under fol TOE: 1 ea.
29-134
29-136
RNG: State AG (3).
SAR: None.
- m lanation of abbreviations used, see AR 310-50.

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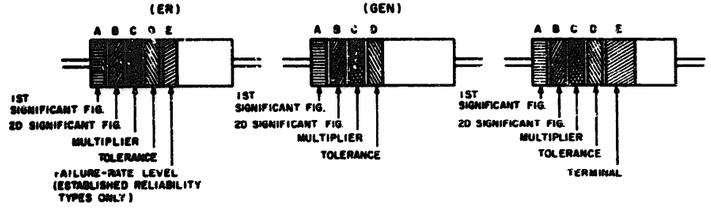


COLOR CODE MARKING FOR COMPOSITION TYPE RESISTORS.

COLOR-CODE MARKING FOR FILM-TYPE RESISTORS.

TABLE I

COLOR CODE FOR COMPOSITION TYPE AND FILM TYPE RESISTORS.

BAND A		BAND B		BAND C		BAND D		BAND E		
COLOR	FIRST SIGNIFICANT FIGURE	COLOR	SECOND SIGNIFICANT FIGURE	COLOR	MULTIPLIER	COLOR	RESISTANCE TOLERANCE (PERCENT)	COLOR	FAILURE RATE LEVEL	TERM.
BLACK	0	BLACK	0	BLACK	1			BROWN	M=1.0	
BROWN	1	BROWN	1	BROWN	10			RED	P=0.1	
RED	2	RED	2	RED	100			ORANGE	R=0.01	
ORANGE	3	ORANGE	3	ORANGE	1,000			YELLOW	S=0.001	
YELLOW	4	YELLOW	4	YELLOW	10,000	SILVER	±10 (COMP. TYPE ONLY)	WHITE		SOLDERABLE
GREEN	5	GREEN	5	GREEN	100,000	GOLD	±5			
BLUE	6	BLUE	6	BLUE	1,000,000	RED	±2 (NOT APPLICABLE TO ESTABLISHED RELIABILITY)			
PURPLE (VIOLET)	7	PURPLE (VIOLET)	7							
GRAY	8	GRAY	8	SILVER	0.01					
WHITE	9	WHITE	9	GOLD	0.1					

BAND A — THE FIRST SIGNIFICANT FIGURE OF THE RESISTANCE VALUE

BAND B — THE SECOND SIGNIFICANT FIGURE OF THE RESISTANCE VALUE.

BAND C — THE MULTIPLIER (THE MULTIPLIER IS THE FACTOR BY WHICH THE TWO SIGNIFICANT FIGURES ARE MULTIPLIED TO YIELD THE NOMINAL RESISTANCE VALUE.)

BAND D — THE RESISTANCE TOLERANCE.

BAND E — WHEN USED ON COMPOSITION RESISTORS, BAND E INDICATES ESTABLISHED RELIABILITY FAILURE-RATE LEVEL (PERCENT FAILURE PER 1,000 HOURS) ON FILM RESISTORS, THIS BAND SHALL BE APPROXIMATELY 1-1/2 TIMES THE WIDTH OF OTHER BANDS, AND INDICATES TYPE OF TERMINAL

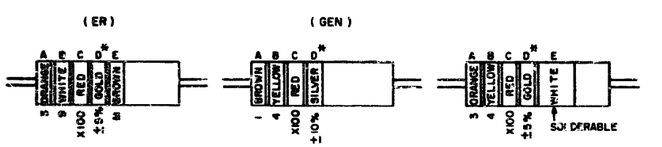
RESISTANCES IDENTIFIED BY NUMBERS AND LETTERS
(THESE ARE NOT COLOR CODED)

SOME RESISTORS ARE IDENTIFIED BY THREE OR FOUR DIGIT ALPHA NUMERIC DESIGNATORS. THE LETTER R IS USED IN PLACE OF A DECIMAL POINT WHEN FRACTIONAL VALUES OF AN OHM ARE EXPRESSED. FOR EXAMPLE:

2R7 = 2.7 OHMS 10R0 = 10.0 OHMS

FOR WIRE-WOUND-TYPE RESISTORS COLOR CODING IS NOT USED. IDENTIFICATION MARKING IS SPECIFIED IN EACH OF THE APPLICABLE SPECIFICATIONS.

EXAMPLES OF COLOR CODING



NOMINAL RESISTANCE 3,900 OHMS
RESISTANCE TOLERANCE ±5%
FAILURE RATE LEVEL M

NOMINAL RESISTANCE 1,400 OHMS
RESISTANCE TOLERANCE ±10%

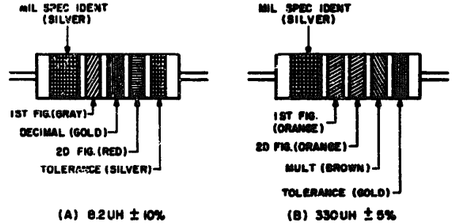
NOMINAL RESISTANCE 3,400 OHMS
RESISTANCE TOLERANCE ±5%
TERMINAL SOLDERABLE

COMPOSITION-TYPE RESISTORS

FILM-TYPE RESISTORS

* IF BAND D IS OMITTED, THE RESISTOR TOLERANCE IS ±20% AND THE RESISTOR IS NOT MIL-STD.

A. COLOR CODE MARKING FOR MILITARY STANDARD RESISTORS



COLOR CODING FOR TUBULAR ENCAPSULATED R.F. CHOKES. AT A, AN EXAMPLE OF OF THE CODING FOR AN 8.2UH CHOKE IS GIVEN. AT B, THE COLOR BANDS FOR

TABLE 2

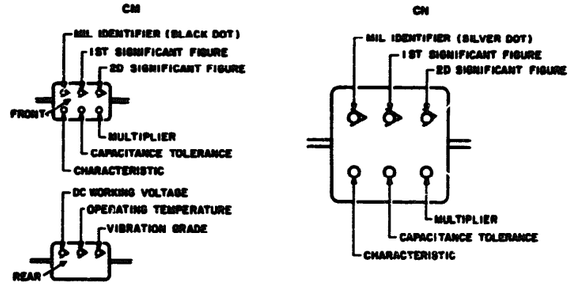
COLOR CODING FOR TUCULAR ENCAPSULATED R.F. CHOKES.

COLOR	SIGNIFICANT FIGURE	MULTIPLIER	INDUCTANCE TOLERANCE (PERCENT)
BLACK	0	1	
BROWN	1	10	1
RED	2	100	2
ORANGE	3	1,000	3
YELLOW	4		
GREEN	5		
BLUE	6		
VIOLET	7		
GRAY	8		
WHITE	9		
NONE			20
SILVER			10
GOLD	DECIMAL POINT		5

MULTIPLIER IS THE FACTOR BY WHICH THE TWO COLOR FIGURES ARE MULTIPLIED TO OBTAIN THE INDUCTANCE VALUE OF THE CHOKE COIL.

B. COLOR CODE MARKING FOR MILITARY STANDARD INDUCTORS.

CAPACITORS, FIXED, VARIOUS-DIELECTRICS, STYLES CM, CN, CY, AND CB.



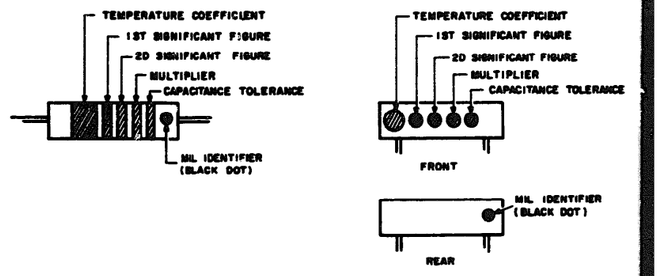
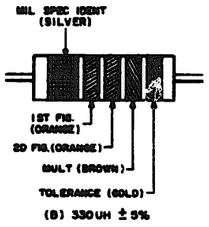


Figure FO-1. Color Code Marking for MIL-STD resistors, inductors, and capacitors.



ULATED R.F. CHOKES. AT A, AN EXAMPLE OF E IS GIVEN. AT B, THE COLOR BANDS FOR VED.

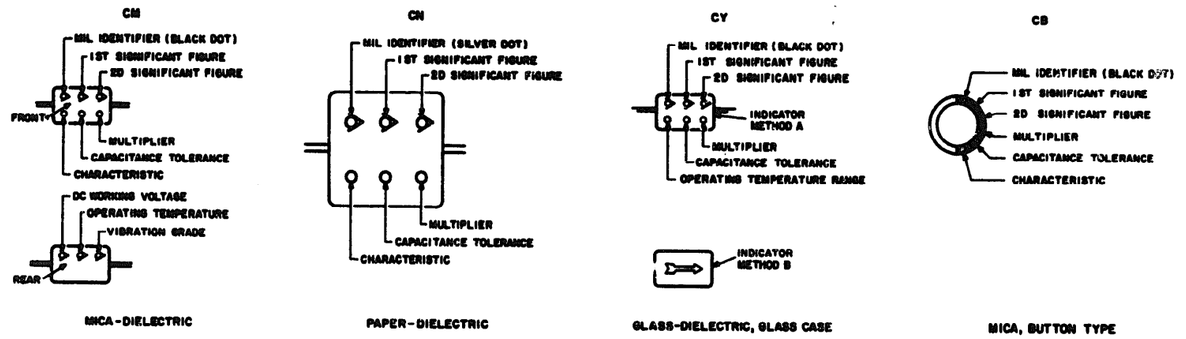
TABLE 2.
CULAR ENCAPSULATED R.F. CHOKES

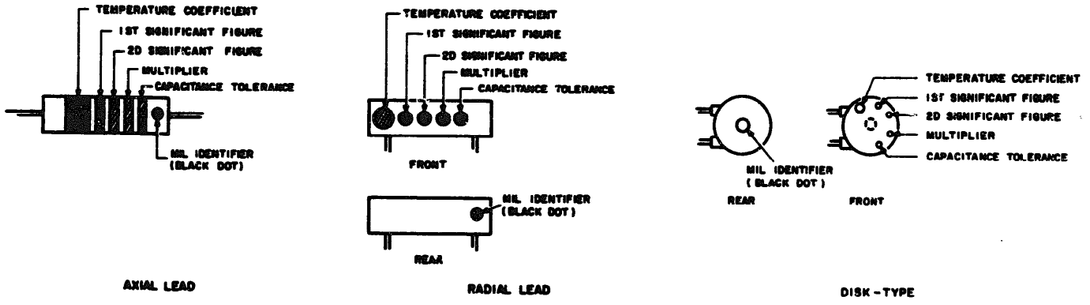
MULTIPLIER	INDUCTANCE TOLERANCE (PERCENT)
1	
10	1
100	2
1,000	3
	20
	10
POINT	5

OR BY WHICH THE TWO COLOR FIGURES AIN THE INDUCTANCE VALUE OF THE

OR MILITARY STANDARD INDUCTORS.

CAPACITORS, FIXED, VARIOUS-DIELECTRICS, STYLES CM, CN, CY, AND CB.





C. COLOR CODE MARKING FOR MILITARY STANDARD CAPACITORS.

Figure FO-1. Color code Marking for MIL-STD resistors, inductors, and capacitors.

TABLE 3- FOR USE WITH STYLES CM, CN ,CY AND CB.

COLOR	MIL ID	1ST SIG FIG.	2D SIG FIG.	MULTIPLIER[1]	CAPACITANCE TOLERANCE				CHARACTERISTIC[2]			DC WORKING VOLTAGE	OPERATING TEMP. RANGE	VIBRATION GRADE
					CM	CN	CY	CB	CM	CN	CB	CM	CY, CM	CM
BLACK	CM, CY, CB	0	0	1			±20%	±20%		A			-55° TO +70°C	10-55 MC
BROWN		1	1	10					B	E	B			
RED		2	2	100	±2%		±2%	±2%	C				-55° TO +85°C	
ORANGE		3	3	1,000		±30%			D		D	300		
YELLOW		4	4	10,000					E				-55° TO +125°C	10-2,000 MC
GREEN		5	5		±5%				F			500		
BLUE		6	6										-55° TO +150°C	
PURPLE (VIOLET)		7	7											
GRAY		8	8											
WHITE		9	9											
GOLD				0.1			±5%	±5%						
SILVER	CN			0.01	±10%	±10%	±10%	±10%						

TABLE 4- TEMPERATURE COMPENSATING, STYLE CC.

COLOR	TEMPERATURE COEFFICIENT[4]	1ST SIG FIG.	2D SIG FIG.	MULTIPLIER[1]	CAPACITANCE TOLERANCE		MIL ID
					CAPACITANCES OVER 10 UUF	CAPACITANCES 10 UUF OR LESS	
BLACK	0	0	0	1		±2.0 UUF	CC
BROWN	-30	1	1	10	±1%		
RED	-80	2	2	100	±2%	±0.25 UUF	
ORANGE	-150	3	3	1,000			
YELLOW	-220	4	4				
GREEN	-330	5	5		±5%	±0.5 UUF	
BLUE	-470	6	6				
PURPLE (VIOLET)	-750	7	7				
GRAY		8	8	0.01*			
WHITE		9	9	0.1*	±10%		
GOLD	+100			0.1		±1.0 UUF	
SILVER				0.01			

1. THE MULTIPLIER IS THE NUMBER BY WHICH THE TWO SIGNIFICANT (SIG) FIGURES ARE MULTIPLIED TO OBTAIN THE CAPACITANCE IN UUF.
2. LETTERS INDICATE THE CHARACTERISTICS DESIGNATED IN APPLICABLE SPECIFICATIONS: MIL-C-5, MIL-C-25D, MIL-C-11272B, AND MIL-C-10950C RESPECTIVELY.
3. LETTERS INDICATE THE TEMPERATURE RANGE AND VOLTAGE-TEMPERATURE LIMITS DESIGNATED IN MIL-C-11015D.
4. TEMPERATURE COEFFICIENT IN PARTS PER MILLION PER DEGREE CENTIGRADE.

* OPTIONAL CODING WHERE METALLIC PIGMENTS ARE UNDESIRABLE.

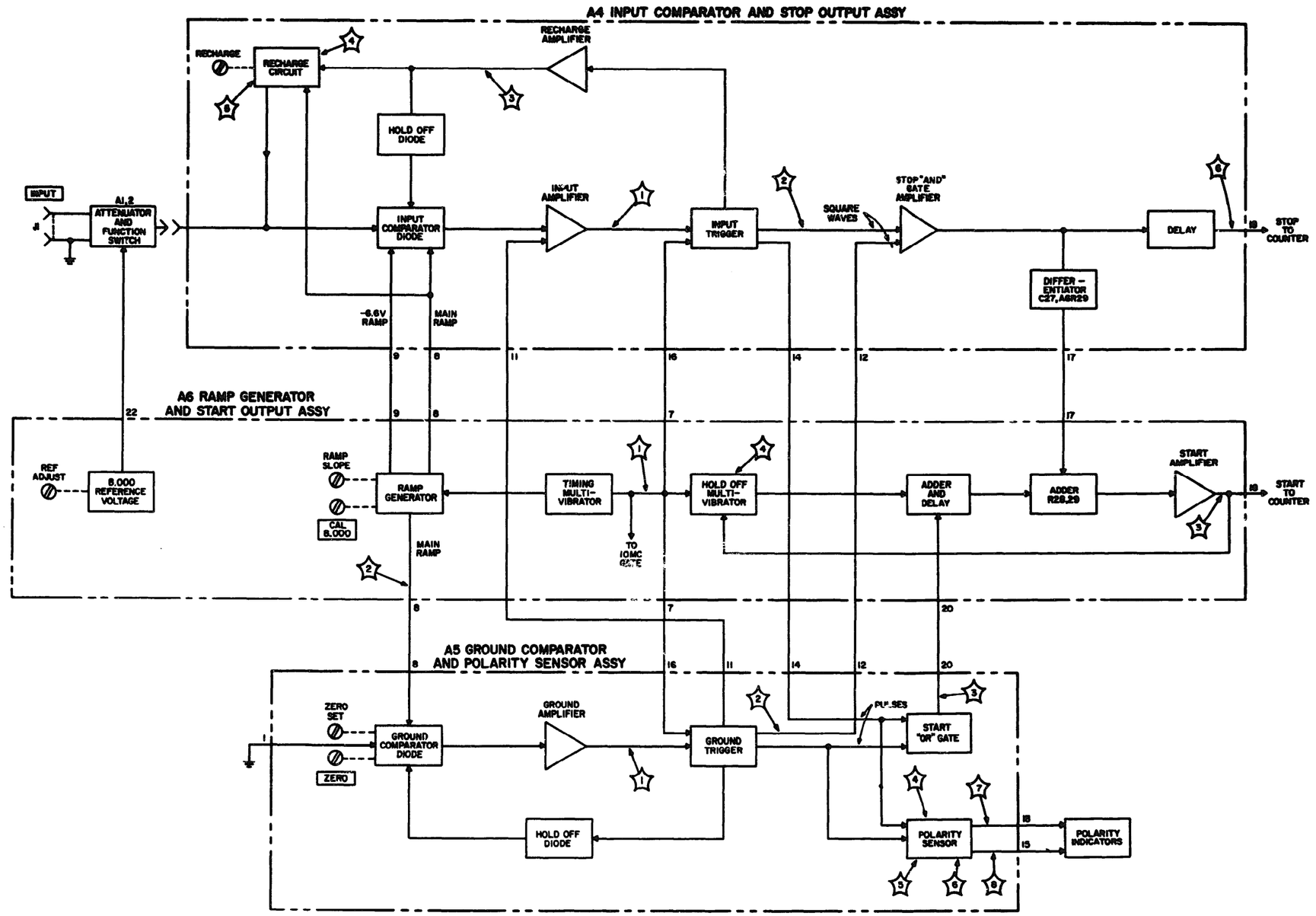
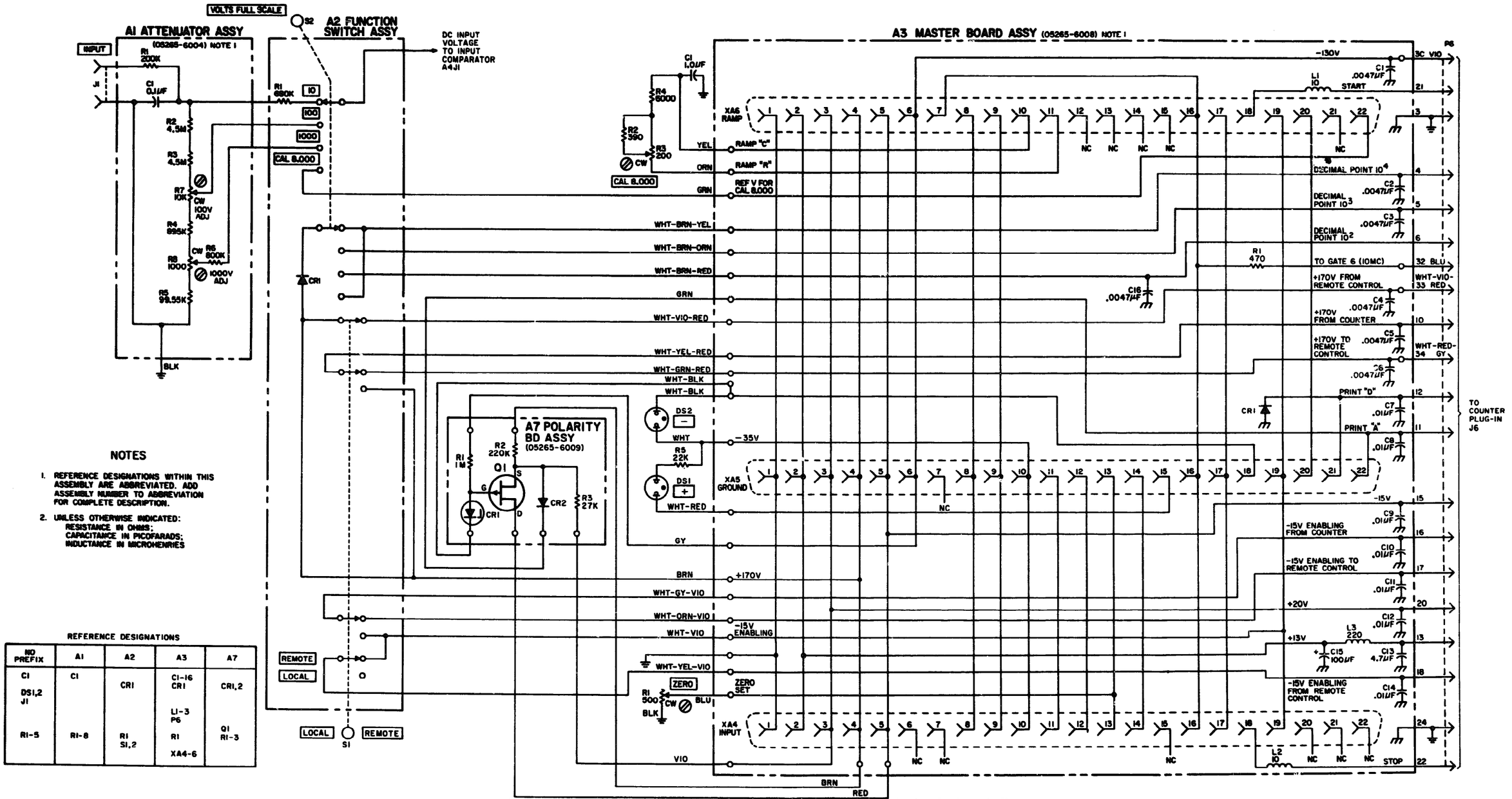


Figure FO-2. Overall block diagram.



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS; INDUCTANCE IN MICROHENRIES

REFERENCE DESIGNATIONS

NO PREFIX	A1	A2	A3	A7
C1	C1	CR1	C1-16	CR1,2
DS1,2			CR1	
J1			L1-3	
			P6	
R1-5	R1-8	R1	R1	Q1
		S1,2		R1-3
			XA4-6	

Figure FO-3. Attenuator, A2 Functions Switch, AS Master Board, and A7 Polarity Board, schematic diagram.

NOTES

1. UNLESS OTHERWISE INDICATED:
   RESISTANCE IN OHMS
   CAPACITANCE IN PICOFARADS
   INDUCTANCE IN MICROHENRIES
2. ASTERISK (*) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFERENCE DESIGNATIONS

A4
C1-28
CR1-14
J1
L1-3
Q1-10
R1-62

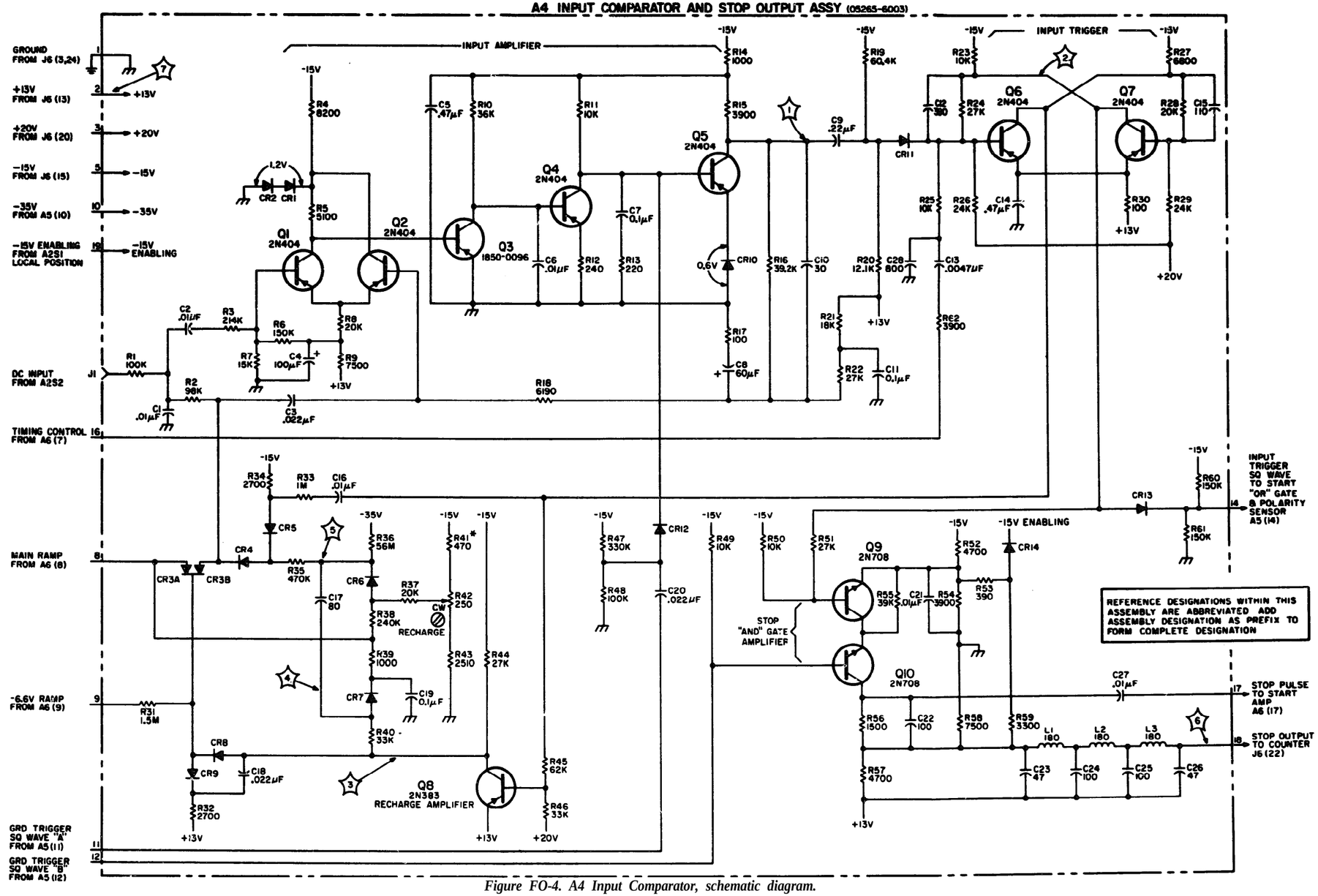


Figure FO-4. A4 Input Comparator, schematic diagram.

NOTES

1. UNLESS OTHERWISE INDICATED:
   RESISTANCE IN OHMS
   CAPACITANE IN PICOFARADS
   INDUCTANCE IN MICROHENRIES
2. (#) INDICATES SELECTED COMPONENT, AVERAGE VALUES SHOWN

REFFERENCE DESIGNATIONS

NO PREFIX	A5
DS1,2	C1-26
	CR1-13
	Q1-9
R1, 5	R1-55

DELETED:
C14,
CR6,
R32

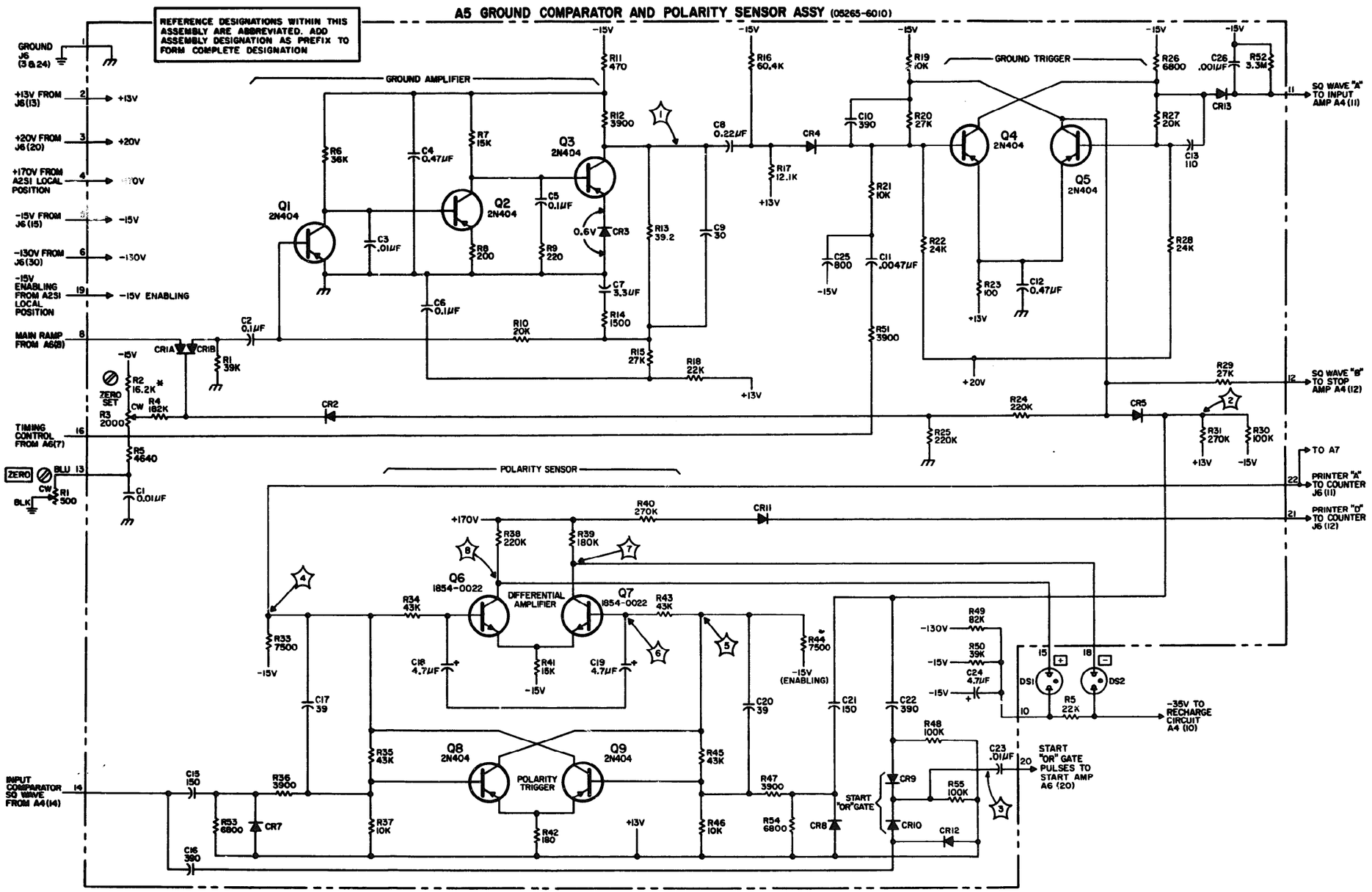


Figure FO-5. A5 *Ground Comparator, schematic diagram.*

NOTES

1. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS CAPACITANCE IN PICOFARADS INDUCTANCE IN MICROHENRIES
2. SHORTING WIRES ON R9A,B,C MAY BE REMOVED AT FACTORY TO OBTAIN CORRECT RANGE FOR A6R12

REFERENCE DESIGNATIONS

NO PREFIX	A6
C1	C1-9, 11-15, 17-19
	CR1-15
	L1-4
	Q1-11
R2-4	R1-12, 14-30, 32, 33, 36-44

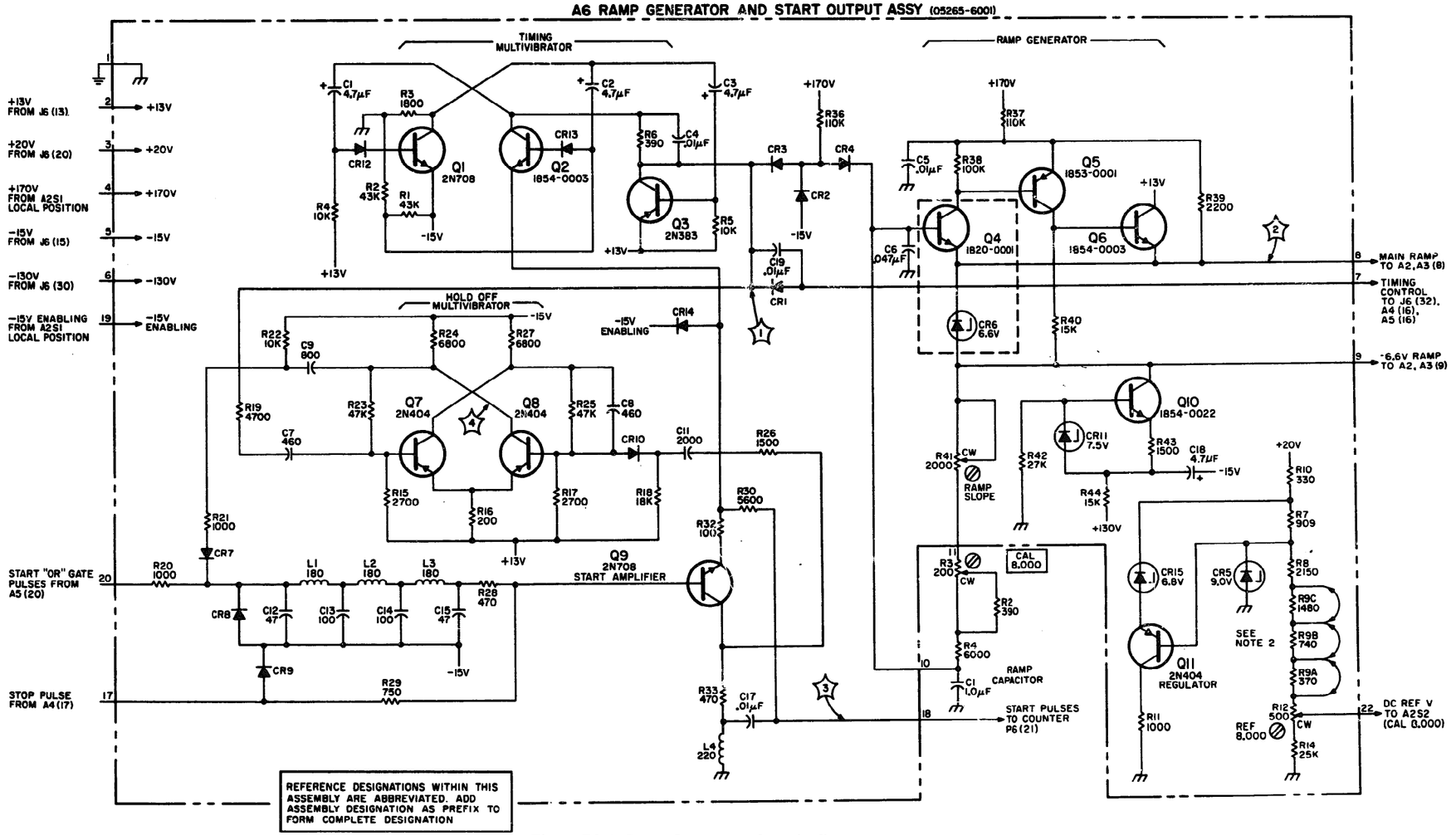
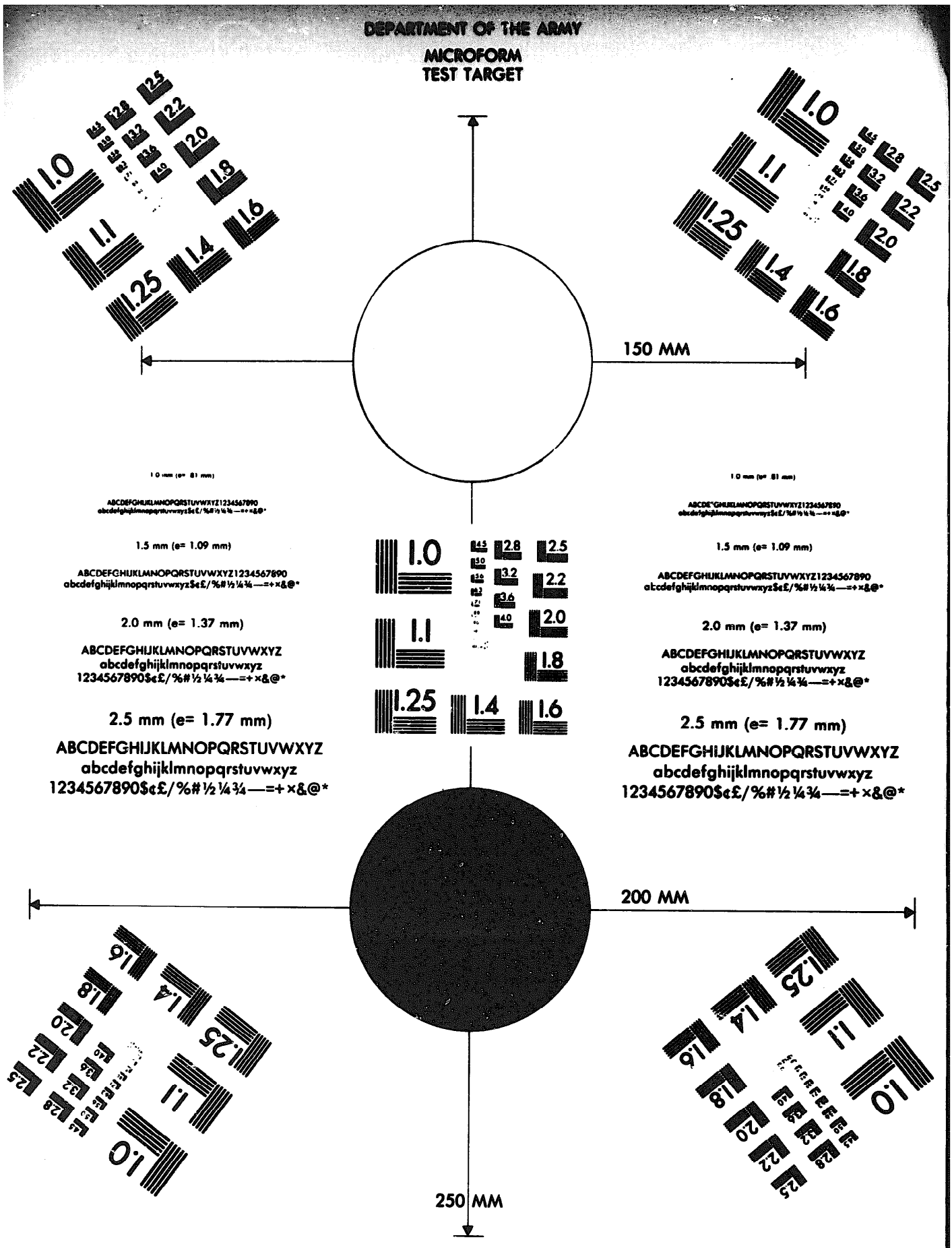


Figure FO-6. Ramp Generator, schematic diagram.

END
01-03-83

DATE


DEPARTMENT OF THE ARMY
MICROFORM
TEST TARGET
150 MM
1.5 mm (e= 1.09 mm)
ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890
abcdefghijklmnopqrstuvwxyz$¢£/%#½¼¾—=+×&@*
2.0 mm (e= 1.37 mm)
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$¢£/%#½¼¾—=+×&@*
2.5 mm (e= 1.77 mm)
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890$¢£/%#½¼¾—=+×&@*
200 MM
250 MM

K4XL's  BAMA

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