TM 11-6625-2639-14

TECHNICAL MANUAL

OPERATOR'S, 0RGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
INCLUDING REPAIR PARTS AND SPECIAL TOOLS LISTS
(INCLUDING DEPOT MAINTENANCE REPAIR PARTS
AND SPECIAL TOOLS)

BRIDGE, CAPACITANCE, INDUCTANCE, AND RESISTANCE ZM-71/U

HEAQUARTERS, DEPARTMENT OF THE ARMY
NOVEMBER 1974

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TECHNICAL MANUAL
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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, *11 November 1974*

Operates, Organizational, Direct Support, and General Support Maintenance Manual Including Repair Parts and Special Tools lists (Including Depot Maintenance Repair Parts and Special Tools)

BRIDGE, CAPACITANCE, INDUCTANCE, AND RESISTANCE ZM-71/U

Current as of July 1974

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***This technical manual is an authentication of the manufacturer'a commercial literature and does not conform with the format or 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 quiipment.**

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MODEL 4260A

POWER CORD

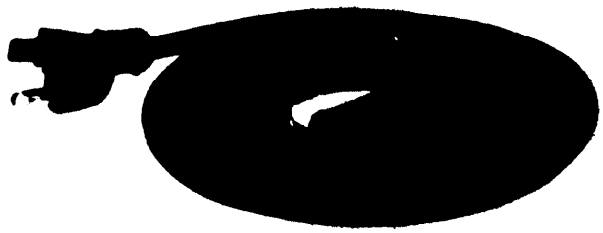

Figure 1-1. Model 4260A and Accessory

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SECTION A

INTRODUCTION

A-1. Scope

a. This manual describes Bridge, Capacitance, Inductance, and Resistance ZM-71/U, hereinafter called Model 4260A Universal Bridge. This manual covers the installation, operation, organizational, direct support and general support maintenance of the ZM-71/U.

b. Throughout this manual, where appropriate, references are made to other publications which contain information applicable to the operation and maintenance of the ZM-71/U. A complete listing of applicable referenced publications is provided in appendix A.

c. The maintenance allocation appears in appendix B and the repair parts and special tools list appears in appendix C.

A-2. Indexes of Publications

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

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

A-3. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by 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 (Army)/NAVSUP PUB 378 (Navy)/AFR 71-4 (Air Force)/MCO P4030.29 (Marine Corps), 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 (Army/NAVSUPINST 4610.33 (NAVY)/AFM 75-18 (Air Force)/MCO P4610.19A (Marine Corp), and DSAR 4500.15.

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

A-4. Administrative Storage

For procedure, forms and records, and inspection required during administrative storage of this equipment, refer to TM 740-90-1.

NOTE

This manual is an authentication of the manufacturer's commercial literature and does not conform with the format and content specified in AR 310-1, Military Publications. This technical manual does, however, contain available information that is essential to the operation and maintenance of the equipment.

SECTION I
GENERAL INFORMATION

1-1. DESCRIPTION.

1-2. The YHP Model 4260A Universal Bridge (Figure 1-1) makes fast, easy measurements of resistance (R), capacitance (C), inductance (L), capacitor dissipation factor (D), or inductance quality factor (Q). The instrument includes five bridge circuits, selected by the FUNCTION switch, as well as the detector and 1 kHz oscillator necessary for dc and ac measurements. For measurements at frequencies other than 1 kHz, an external oscillator must be used.

1-3. Front panel controls select the measurement function and range, with R, L, and C values displayed with four-digit resolution on an in-line, digital counter. Q and D values are displayed on a dial with a red hairline indicating the measured value. The autobalance circuit and an easy-to-read meter reduce the time required for measuring low Q or high D components. Correct decimal point location is automatic and direction lights indicate which way the CRL control should be rotated for the measurement

1-4. TERMINOLOGY.

1-5. The definitions of the following terms apply as they are used throughout this manual.

a. RESIDUAL (inductance or capacitance): distributed inductance or capacitance always present at UNKNOWN terminals.

b. DISSIPATION FACTOR (D): loss factor for capacitors (equal to reciprocal of Q).

c. QUALITY FACTOR (Q): figure of merit for inductors (equal to reciprocal of D).

d. Cs: represents equivalent circuit of capacitor in series with resistor.

e. Cp: represents equivalent circuit of capacitor in parallel with resistor.

f. Ls: represents equivalent circuit of inductor in series with resistor.

g. Lp: represents equivalent circuit of inductor in parallel with resistor.

h. AUTO NULL: eliminates DQ manual control; direction for null is automatically indicated for Cp and Ls measurements.

1-6. INSTRUMENT IDENTIFICATION .

1-7. Hewlett-Packard uses a two-section, eight-digit serial number (000-00000). The first three digits (serial prefix) identify a series of instruments; the last five digits identify a particular instrument in that series. If the serial prefix on the rear panel of your instrument does not agree with the serial prefix on the title page of this manual, there are differences between your instrument and the one described in this manual which are explained in the insert sheet supplied with the manual. If the insert sheet is missing, the information can b e supplied b y your nearest Hewlett-Packard field office (addresses are listed at the back of this manual).

1-8. APPLICATIONS.

1-9. The Model 4260A makes quick, easy measurements of R, L, C, D, or Q characteristics of passive electronic components. R, L, and C measurements are made with 3- or 4-digit resolution. With external null voltmeter, accurate measurements are possible for milliohms or megohms. The instrument is readily portable (accessory carrying handle, HP 11057A, can be easily attached without screws).

1-10. SPECIFICATIONS.

1-11. Table 1-1 lists all technical specifications for the Model 4260A Universal Bridge, Figure 3-4 shows DQ range versus frequency characteristics.

1-12. AUXILIARY EQUIPMENT REQUIRED.

1-13. External dc null millivoltmeter (such as the HP Model 413A) is recommended for accurate R measurements below 100 ohms and above 10 kilohms. External generator (such as HP Model 200 CD) with 2 volt output and 600 ohms output impedance is required for 20 Hz to 20 kHz measurements. External tuned null detector with 90 dB gain and input impedance greater than 10 kilohms or oscilloscope with 100 μ V/cm sensitivity is recommended for the measurement with external generator.

Table 1-1. Specifications

CAPACITANCE MEASUREMENT

CAPACITANCE
Range: 1 pF to 1000 μF, in 7 ranges.
Accuracy:
±(1% + 1 Digit), from 1 nF to 100 μF.
±(2% + 1 Digit), from 1 pF to 1000 μF.
Residual capacitance ≈ 2 pF.

DISSIPATION FACTOR
Range:
LOW D - - - D (of series C): 0.001 to 0.12.
HIGH D - - - D (of parallel C): 0.05 to 50.
Accuracy:
LOW D - - - D (of series C): ±(5% + 0.002) or ONE DIAL DIVISION, whichever is greater.
HIGH D - - - 1/D (of parallel C): ±(5% + 0.05) or ONE DIAL DIVISION of LOW Q dial, whichever is greater.
(C greater than 100 pF.)

INDUCTANCE MEASUREMENT

INDUCTANCE
Range: 1 μH to 1000 H, in 7 ranges.
Accuracy:
±(1% + 1 Digit), from 1 mH to 100 H.
±(2% + 1 Digit), from 1 μH to 1000 H.
Residual inductance ≦ 1 μH.

QUALITY FACTOR
Range:
LOW Q - - - Q (of series L): 0.02 to 20.
HIGH Q - - - Q (of parallel L): 8 to 1000.
Accuracy:
LOW Q - - - Q (of series L): ±(5% + 0.05) or ONE DIAL DIVISION, whichever is greater.
HIGH Q - - - 1/Q (of parallel L): ±(5% + 0.002) or ONE DIAL DIVISION of LOW D dial, whichever is greater.
(L greater than 100 μH.)

RESISTANCE MEASUREMENT

RESISTANCE
Range: 10 milliohms to 10 megohms, in 7 ranges.
Accuracy:
±(1% + 1 Digit), from 10 ohms to 1 megohm.
±(2% + 1 Digit), from 10 milliohms to 10 ohms and 1 megohm to 10 megohms.
Residual resistance ≈ 3 milliohms.
Resistance measurements at DC only.

ELECTRONIC AUTO NULL

Eliminates need for DQ adjustments in parallel C and series L measurements at 1 kHz.
Accuracy (when D ≦ 1, Q ≧ 1 and CL measurements are made in 3 and 4 figures) equals [normal operating condition ±0.5%].

AUTOMATIC NULL DIRECTION INDICATOR

Direction of the CRL control rotation required for the bridge null is automatically indicated by the front panel indicator lights.

OSCILLATOR AND DETECTOR

INTERNAL OSCILLATOR: 1 kHz ±2%, 100 mV rms ±20%.

INTERNAL DC SUPPLY: Less than 40 volts at nominal AC line voltage.

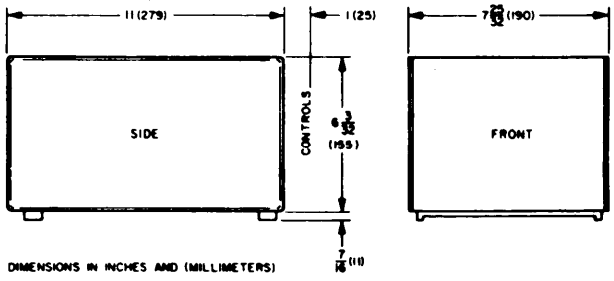
INTERNAL DETECTOR: Tuned amplifier at 1 kHz; functions as a preamplifier for measurements with external generator.

EXTERNAL OSCILLATOR: 20 Hz to 20 kHz measurements of capacitance, inductance, dissipation factor and quality factor are possible with external oscillator (range will be a function of applied frequency).

GENERAL

POWER SUPPLY: 115 or 230 volts ±10%, 50 or 60 Hz, approx. 7 watts.

DIMENSIONS:



WEIGHT:
Net, 11 lbs. (5 kg).
Shipping, 15 lbs. (6, 8 kg).

ACCESSORY SUPPLIED: 7 ft. power cable with NEMA plug.

EQUIPMENT AVAILABLE:

18-pin printed circuit extender board 5060-2041
15-pin printed circuit extender board 5060-0049
DC Null Voltmeter, HP Model 413A
20 Hz to 20 kHz Oscillator, HP Model 200CD
Oscilloscope, HP Model 140A

SECTION II
INSTALLATION

2-1. INTRODUCTION.

2-2. This section of the manual contains information for unpacking, inspection, repackaging, storage, and installation of the Model 4260A

2-3. UNPACKING AND INSPECTION.

2-4. If the shipping carton is damaged, ask that the carrier's agent be present when the instrument is unpacked. Inspect the instrument for damage (scratches, dents, broken knobs, etc.) If the instrument is damaged or fails to meet specifications (Performance Check, Paragraph 5-9), notify the carrier and the nearest Hewlett-Packard field office (see list at back of this manual). Retain the shipping carton and the padding material for the carrier's inspection. The field office will arrange for the repair or replacement of your instrument without waiting for the claim against the carrier to be settled.

2-50 STORAGE AND SHIPMENT.

2-6. PACKAGING. To protect valuable electronic equipment during storage or shipment always use the best packaging methods available. Your Hewlett-Packard field office can provide packing material such as that used for original factory packaging. Contract packaging companies in many cities can provide dependable custom packaging on short notice. Here are two recommended packaging methods:

a. RUBBERIZED HAIR. Cover painted surfaces of instrument with protective wrapping paper. Pack instrument securely in strong corrugated container (350 lb/sq in. bursting test) with 2-inch rubberized hair pads placed along all surf aces of the instrument. Insert fillers between pads and container to ensure a snug fit. Mark the box "Delicate Instrument" and seal with strong tab or metal bands.

b. EXCELSIOR. Cover painted surfaces of instrument with protective wrapping paper. Pack instrument in strong corrugated container (350 lb/sq in. bursting test) with a layer of excelsior about 6 inches thick packed firmly against all surfaces of the instrument. Mark the box "Delicate Instrument" and seal with strong tape or metal bands.

2-7. ENVIRONMENT. Temperature during storage and shipment should be limited as follows:

a. Minimum temperature -40°C (-40°F).

b. Maximum temperature +75°C (+167°F).

2-8. The Model 4260A is equipped with plastic feet and tilt stand for bench operation as shipped from the factory. When the instrument is to be rack mounted, a combining case (Paragraph 2-9) or adapter frame (Paragraph 2-10) is required. These items are available through your Hewlett-Packard Sales/Service office. These two methods for rack mounting are outlined in the following paragraphs:

2-9. COMBINING CASE. The combining case (HP 1052A) shown in Figure 2-2 is a modular unit which accepts sub-module units such as the 1/2 module, Model 4260A. The combining case can be used as a bench instrument or it can be rack mounted. A rack mounting kit (HP No. 5060-0776) is supplied with the instrument. When only half the case is used, a blank filler panel (HP No. 5060-0794) is available to enclose the unused half.

2-10. ADAPTER FRAME. The adapter frame (HP No. 5060-0797) in Figure 2-1 is a rack frame that accepts any combination of sub-module units; it can only be rack mounted. Install instruments in the adapter frame as follows:

a. Place adapter frame on edge of bench and stack sub-module units (steps 1 and 2) in frame. Place spacer clamp between units (step 3).

b. Insert two end spacer clamps (step 4) and push units into frame.

c. Insert screws on either side of frame (step 5) and tighten until units are tight in frame.

d. The complete assembly is now ready for rack mounting.

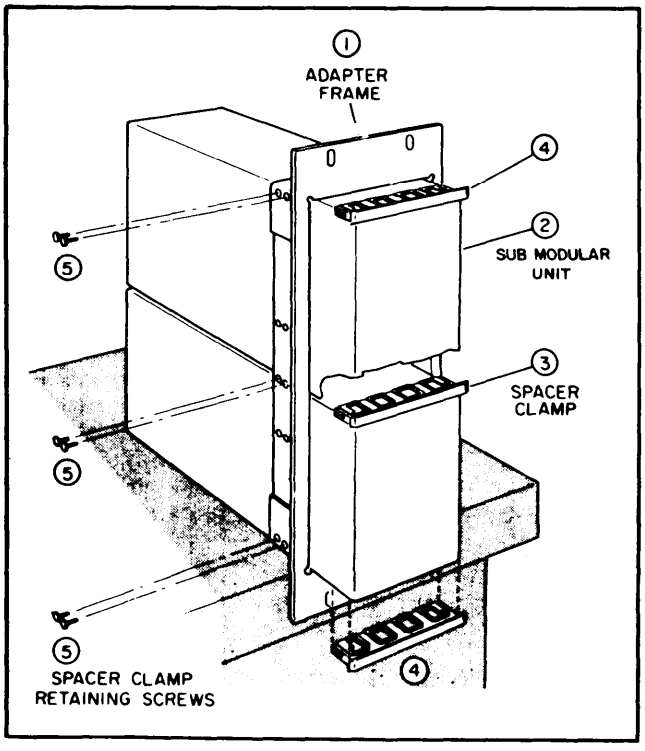


Figure 2-1. Adapter Frame

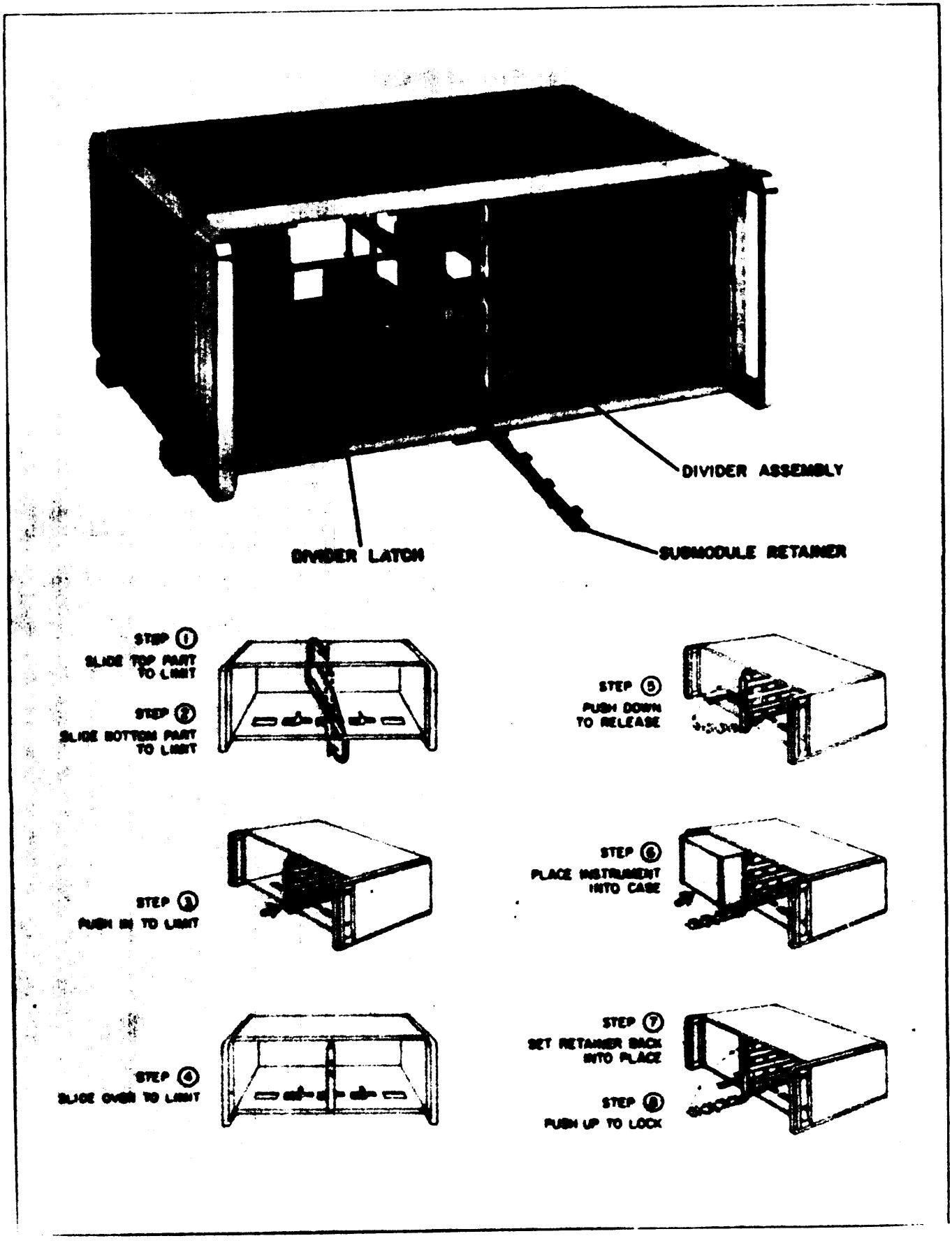


Figure 2-2. Combining Case

2-11. OPERATION FROM 115 OR 230 VOLTS.

2-12. The Model 4260A can be operated from either 115- or 230-volt (± 10%) 50 to 60 Hz power lines. A slide switch on the rear panel permits quick conversion for operation from either voltage. Insert a narrow blade screwdriver in the switch slot and slide the switch to expose "115" marking for 115-volt operation or "230" marking for 230-volt operation. The instruments are supplied with a 0.1 ampere fuse for either 115- or 230-volt operation.

CAUTION

Do not change the 115/230 switch setting during operation.

2-13. 3-CONDUCTOR POWER CABLE.

2-14. The Model 4260A is equipped with detachable 3-wire power cable. Proceed as follows for installation:

a. Connect flat plug (3-conductor female connector) to AC line jack at rear of instrument.

b. Connect plug (2-blade male with round grounding pin) to 3-wire (grounded) power outlet. Exposed portions of instrument are grounded through the round pin on the plug for safety; when only the 2-blade outlet is available, use connector adapter (HP Stock No. 1251-0048), then connect short wire from side of adapter to ground.

SECTION III

OPERATION

3-1. INTRODUCTION.

3-2. This section outlines operation of the Universal Bridge. An operating procedure is given for each measurement function. All front and rear controls, connectors, and indicators are briefly explained in Figure 3-1.

3-3. TURN-ON PROCEDURE.

3-4. Before applying power to the instrument, set controls as follows:

a. Set FUNCTION control for type of measurement to be made and RANGE switch near mid-range.

b. Set SENSITIVITY control near full counterclockwise to reduce meter sensitivity.

c. Set CRL control to 1030.

d. Set red VERNIER DQ knob full counterclockwise to CAL.

e. Set rear-panel 115/230 volt switch to expose numbers which correspond to the line voltage used.

f. Set rear-panel OSCILLATOR switch to INT 1 KC, Three rear shorting straps should be in place (see Paragraph 3-42 for special measurements).

g. If meter pointer is not mechanically centered, center as follows:

(1) Turn instrument off. Wait 30 seconds for all capacitors to discharge.

(2) Remove two screws which hold top cover to rear panel and slide cover toward rear.

(3) Locate the black zero adjust screw at top center of meter. Rotate screw clockwise until meter pointer is to left of zero and begin moving right toward zero.

(4) Continue to rotate screw clockwise; stop when pointer is on zero. If the pointer overshoots zero, repeat steps (3) and (4).

(5) When pointer is exactly on zero, rotate screw approximately 15 d e g r e e s counterclockwise. This is enough to free the adjustment screw from the meter suspension. If pointer moves during the step, repeat steps (4) and (5).

h. Apply power to instrument by connecting ac power cord and setting LINE switch to ON, One of the decimal point lights in the CRL counter will light to indicate power is applied to the instrument. Allow 30 seconds for the instrument to stabilize. The 4260A is now ready to use. The following paragraphs outline procedures for standard R, L, and C measurements.

3-5. USE OF THE DQ VERNIER.

3-6. The DQ VERNIER control provides fine electrical adjusting during D or Q measurements. The DQ dial setting does not change as the DQ VERNIER is changed. For any setting of the DQ VERNIER, DQ dial accuracy is maintained as outlined in Specifications. The DQ vernier is useful for large D or small Q measurements. Using the DQ vernier for a bridge null prevents false nulls caused by lack of resolution with the DQ control. DQ VERNIER ranges are:

0 (CAL) to 0. 001 in LOW D range
0 (CAL) to 0.016 (of l/D) in HIGH D range
0 (CAL) to 0.016 in LOW Q range
0 (CAL) to 0.001 (of l/Q) in HIGH Q range

3-7. DC RESISTANCE MEASUREMENTS.

3-8. POWER CONSIDERATIONS.

3-9. Power applied to the unknown resistor will vary depending upon the unknown value, the RANGE switch position, and the CRL control setting. Maximum open circuit voltage across the UNKNOWN terminals is 40 Vdc. Short-circuit current through the UNKNOWN terminals is 25 milliamperes m a x i m u m. Voltage across the unknown resistor can be measured with a high input impedance Voltmeter such as the HP 410C, 412A, or 413A (see Paragraph 3-15). Current through the unknown resistor can be measured with a clip-on milliammeter such as the HP 428B (see Paragraph 3-15).

3-10. MEASUREMENTS.

3-11. Resistance values between 100 ohms and 10 kilohms can be measured quickly with 1% accuracy by using only front-panel controls. For measurements of values between 10 milliohms and 100 ohms or between 10 kilohms and 10 megohms, an external null meter such as the HP 413A is desirable for better sensitivity during the measurements. These two types of measurements are outlined as separate procedures in the following paragraphs.

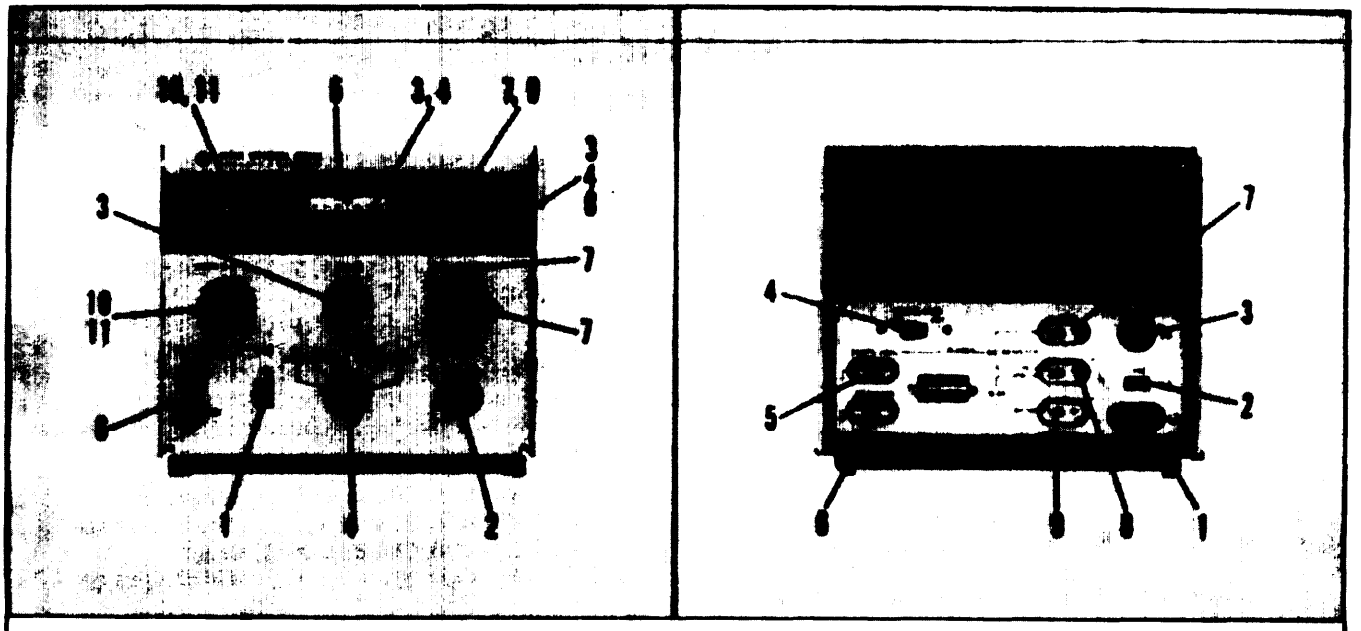
3-12. 100 OHM to 10 K OHM MEASUREMENTS.

a. Perform the turn-on procedure outlined in Paragraph 3-3.

b. Set FUNCTION switch to R position.

c. Connect the resistor to be measured to the UNKNOWN terminals.

d. Set RANGE switch for meter indication near center and increase meter sensitivity by rotating SENSITIVITY control clockwise. If meter indication is right of center, turn CRL control CCW. If left, turn CRL control CW. Adjust CRL control for meter center indication while increasing SENSITIVITY control to maximum sensitivity (full cw).



FRONT PANEL

1. LINE Switch: applies ac line voltage to instrument.
2. SENSITIVITY: controls meter sensitivity; cw for max.
3. RANGE switch: selects measurement range. Mechanically controls equivalent circuit and units displayed in window below meter and also pointer for DQ dial.
4. FUNCTION switch: selects type of measurement. Mechanically controls units value displayed in window below meter. Changes decimal point placement in numerical display.
5. Null Meter: indicates null at center scale. For R measurements, meter deflects either left or right. For C or L measurements, meter deflects right only until nulled.
6. UNKNOWN terminals: connect component to be measured between these two binding posts. Connect directly or use very short leads.
7. CRL control: adjusts bridge balance for meter null during measurements. Mechanically connected to numerical counter which indicates R, L, or C measured value. Direction lights just above control indicate rotation direction for null on meter (for Cp AUTO or Ls AUTO functions only).
8. Decimal Point Lights: one of three lights (selected by FUNCTION and RANGE switch positions) indicates correct decimal point. Light on indicates ac line voltage is applied to the instrument.
9. Numerical Counter: displays value of R, L, or C. Mechanically driven by CRL control. Range is from 0000 to 1030.
10. DQ Control: outer black knob rotates DQ dial for D or Q measurements. Red center knob is a vernier; does not rotate dial. DQ scale is calibrated with vernier full counterclockwise.
11. DQ Dial: indicates Dissipation Factor (D) or Quality Factor (Q). Mechanically rotated by DQ control. Dial scales are: LOW D: .001 to .12; HIGH D, .05 to 50, LOW Q: 02 to 20; HIGH Q: 8 to 1000.

REAR PANEL

1. AC LINE Connector: connects to flat plug on power cable.
2. LINE Voltage Switch: permits operation from either 115 Vac or 230 Vac.
3. LINE fuse: 0.1 ampere provides overload protection.
4. OSCILLATOR INT-EXT switch: selects internal oscillator or external oscillator and controls error signal amplifier frequency response. For INT setting, error signal amplifier is tuned to 1 kHz; for EXT, amplifier response is flat between 20 Hz and 20 kHz.
5. External Oscillator Terminals: connect external oscillator to these terminals.
6. DETECTOR Output Terminals: error signal amplifier output supplied to external tuned amplifier or oscilloscope.
7. DQ RESISTOR Cs Lp Terminals: connect variable resistor for special low frequency D (Cs function) or Q (Lp function) measurements. Terminals normally connected together with shorting strap.
8. DQ RESISTOR Cp Ls / BIAS CAPACITOR Terminals: Connect variable resistor for special low frequency D (Cp function) or Q (Ls function) measurements. For C or L measurements with dc bias, connect a capacitor. Terminals normally connected together with shorting strap.
9. BIAS BATTERY Terminals: connect battery (6 Vdc max) for C or L measurements with dc bias. Terminals normally shorted together with shorting strap.

Figure 3-1. Front and Rear Panel Controls, Indicators and Connectors

e. Read measured resistance value on CRL counter. (Observe decimal point location and units displayed in window below meter.)

Note

For maximum resolution, final CRL counter display should be greater than 0100.

3-13. MILLIOHMS AND MEGOHMS MEASUREMENTS. For measurements between 10 milliohms and 100 ohms or between 10 kilohms and 10 megohms, a sensitive dc null voltmeter such as the HP 413A should be used. Refer to Paragraph 3-15 for voltage and current measurements for the unknown R. Connect the null voltmeter and make resistance measurements as follows:

a. Remove the shorting strap on the voltmeter rear panel ground terminals to avoid ground loops.

b. Perform the turn-on procedure outlined in Paragraph 3-3.

c. Connect the voltmeter input ground or low terminal to the rear-panel detector ground terminal on the Universal Bridge. Connect UNKNOWN LOW terminal to the other Voltmeter input terminal.

d. Set FUNCTION switch to R.

e. Connect the resistor to be measured to the UNKNOWN terminals.

f. Set RANGE switch for meter indication near the center and increase meter sensitivity by rotating SENSITIVITY control clockwise. If meter indication is right of center, turn CRL control CCW. If left, turn CRL control CW. Adjust CRL control for meter center indication while increasing SENSITIVITY control to maximum sensitivity (full CW).

g. Read measured resistance value on CRL counter. (Observe decimal point location and units displayed in window below meter.)

CAUTION FOR LOW RESISTANCE MEASUREMENTS

For best connection to the bridge, leads should be inserted into the binding posts, and the binding posts should be screwed tightly to reduce contact resistance. Short heavy leads can be used. Lead resistance should be measured with the free ends connected together. Subtract the lead resistance from the bridge reading.

3-14. The fastest procedure for R measurements is as follows:

a. Set FUNCTION switch to R position.

b. Connect the resistor to the UNKNOWN terminals.

c. Turn CRL control cw to 1030.

d. Increase SENSITIVITY for deflection (right or left) on the null meter.

e. Rotate the RANGE switch until the meter pointer passes the null. If meter deflection is right, perform step f. If meter deflection is left, turn RANGE switch one step cw. Adjust SENSITIVITY control for right deflection.

f. Turn CRL control ccw to obtain a null on the meter; set SENSITIVITY control full CW, adjust for the null with CRL control.

g. Read the final resistance on CRL counter along with the units display.

3-15. VOLTAGE AND CURRENT FOR UNKNOWN R. When voltage and current values for the unknown are to be measured, a dc voltmeter such as the HP 413A should be used with a current meter such as the HP 428B clip-on milliammeter. Make voltage and current measurements as follows:

a. Make the resistance measurements as outlined in Paragraph 3-12 or 3-13 and leave the Model 4260A set up for the null.

b. Remove the shorting strap on the voltmeter rear panel ground terminals to avoid ground loops.

c. Connect the voltmeter input ground or low terminal to the rear-panel detector ground terminal on the Universal Bridge. Connect the UNKNOWN high terminal to the other voltmeter input terminal.

d. Read voltage across the unknown R on the voltmeter.

e. For current through the unknown R, clip the milliammeter probe to one of the unknown leads and read unknown current.

3-16. CAPACITANCE MEASUREMENTS.

3-17. INTRODUCTION.

3-18. Capacitance measurements are normally made at a frequency of 1 kHz from the internal oscillator. For C measurements at frequencies between 20 Hz and 20 kHz, an external oscillator can be connected, as outlined in Paragraph 3-42, Special Measurements. Direction lights indicate the correct rotation direction for Cp AUTO measurements. The measured C value is displayed on the CRL counter with correct decimal point location, units and equivalent circuit also displayed. Dissipation factor (D) can be measured after the bridge is balanced for the capacitance measurement. The measured D value is displayed on the DQ dial.

3-19. RESIDUAL CAPACITANCE.

3-20. The residual capacitance of the UNKNOWN terminals can be measured with nothing connected to these terminals. Its value is typically 2 pf or less. When small capacitance measurements are made, this residual capacitance should be subtracted from the measured value. If external leads are used to connect the unknown, the residual capacitance measurement should include the lead capacitance. Errors caused by residual and lead capacitances are listed in Table 3-1.

Table 3-1. Correction Terms for Residual Load Errors
(Add to Measured Value as Indicated)

Measured Quantity	Series Resistance R_o	Series Inductance L_o	Parallel Capacitance C_o
C_s	No error	$-4\pi^2 f^2 L_o C_x^2$	$-C_o (1 - D_x^2)$
D of Cs	$-2\pi f R_o C_x$	$-4\pi^2 f^2 L_o C_x D_x$	$+ D_x (1 + D_x^2) C_o/C_x$
Cp	$+4\pi f R_o C_x^2 D_x$	$-4\pi^2 f^2 L_o C_x^2 (1 - D_x^2)$	$-C_o$
D of Cp	$-2\pi f R_o C_x (1 + D_x^2)$	$-4\pi^2 f^2 L_o C_x D_x (1 + D_x^2)$	$+ D_x C_o/C_x$
R	$-R_o$	No error	No error
Ls	No error	$-L_o$	$-4\pi^2 f^2 C_o L_x^2 (1 - \frac{1}{Q_x^2})$
Q of Ls	$+ Q_x^2 \frac{R_o}{2\pi f L_x}$	$-\frac{L_o}{L_x} Q_x$	$+4\pi^2 f^2 C_o L_x (Q_x + \frac{1}{Q_x})$
Lp	$-\frac{R_o}{\pi f Q_x}$	$- L_o (1 - \frac{1}{Q_x^2})$	$-4\pi^2 f^2 C_o L_x^2$
Q of Lp	$+\frac{R_o}{2\pi f L_x} (1 + Q_x^2)$	$-\frac{L_o}{L_x} (Q_x + \frac{1}{Q_x})$	$+4\pi^2 f^2 C_o L_x Q_x$

where
f is frequency
C_x is unknown capacitance
D_x is unknown D
L_x is unknown inductance
Q_x is unknown Q

3-21. Cs AND Cp MEASUREMENT DIFFERENCES.

3-22. The measured value of capacitance depends on whether a series or parallel equivalent circuit is used for the measurement. The relationship between a series capacitance (Cs) circuit and a parallel capacitance (Cp) circuit is as follows: $Cs = (1 + D^2) Cp$, where D is the measured D value. The difference between Cs and Cp is large when D is greater than 0.1 but Cs is within 1% of Cp if D is 0.1 or less.

3-23. MEASUREMENT PROCEDURE.

a. Perform the turn-on procedure outlined in Paragraph 3-3.

b. Check to insure that the 3 DQ RESISTOR and BIAS terminal pairs on the rear panel are shorted with their respective shorting straps.

c. Rotate the SENSITIVITY control full ccw.

d. Set FUNCTION switch to Cp AUTO position.

e. Connect the capacitor to be measured to the UNKNOWN terminals. "WARNING"-Discharge capacitor to be tested before connecting to UNKOWN terminals.

f. If the right direction indicator is lit, rotate CRL control clockwise. If the left direction indicator is lit, rotate CRL control counterclockwise. Rotate SENSITIVTY control clockwise to give near full scale meter deflection.

g. If the CRL control is fully cw and the right direction indicator remains lit, turn RANGE switch ccw until left direction indicator lights. Adjust CRL control for meter null and rotate SENSITIVITY control cw as null is approached.

h. When null (bridge balance) is achieved below 0100 on the CRL indicator, set RANGE switch to the next position cw and rotate CRL control for null indication. (This is possible for all measurements above 100 pf.) Capacitance is indicated on the CRL counter.

i. To measure D for the unknown capacitor, set FUNCTION switch to Cp HIGH D position.

j. Adjust DQ control for minimum meter indication. (The CRL control can be adjusted slightly for best null.)

k. When a null indication is impossible in the Cp HIGH D position, set FUNCTION switch to Cs LOW D.

Adjust DQ control for minimum meter indication. The D of the unknown capacitor is read from the D scale indicated by the red pointer in the DQ window.

3-24. The fastest procedure for C measurements is as follows:

a. Set FUNCTION switch to Cp AUTO position.

b. Connect capacitor to unknown terminals.

c. Turn the CRL control cw to 1030.

d. Rotate RANGE switch until a crossover point of the indicator lights is obtained. (Left indicator lights instead of right one and vice versa.) If you cannot obtain a crossover, see step e note.

e. If left indicator lights, adjust SENSITIVITY control for a right deflection of the null meter pointer. If the right indicator lights, turn RANGE switch one step ccw and adjust SENSITIVITY control for a right deflection of the null meter pointer. Note: if the right indicator stays lit regardless of the RANGE switch position, the unknown value of the capacitor must be beyond the highest range of the bridge (> 1000 µf). If the left indicator stays lit regardless of the RANGE switch position, the unknown value of the capacitor must be below 1000 pF.

f. Rotate the CRL control ccw until a crossover of the indicator lights is obtained.

g. Set SENSITIVITY full cw and adjust for null with CRL control.

h. Read final capacitor value on the CRL counter and units display.

3-25. VOLTAGE ACROSS UNKNOWN C.

3-26. When voltage across the unknown C is to be measured, a vacuum tube voltmeter such as an HP 400D, 400H, or 400L should be used. The procedure is as follows:

a. Make the capacitance measurement as outlined in Paragraph 3-23, and leave the instrument set up at null.

b. Isolate the Voltmeter from power line ground by using a two-prong power cord adapter and leaving the adapter pigtail lead disconnected from ground.

c. Connect the Voltmeter input ground terminal to the 4260A rear panel detector ground terminal.

d. Connect the other voltmeter input terminal to the 4260A UNKNOWN terminal (not the LOW terminal). Read the voltage across the unknown Con the voltmeter.

3-27. INFLUENCE OF D IN Cp AUTO MEASUREMENT.

3-28. The accuracy that is specified for Cp AUTO measurement is obtained when D is less than 1. When D is greater than 1, accuracy of Cp AUTO measurement is reduced due to the reactance of the variable resistance circuit of the AUTO null. Typical data is shown in Figure 3-2.

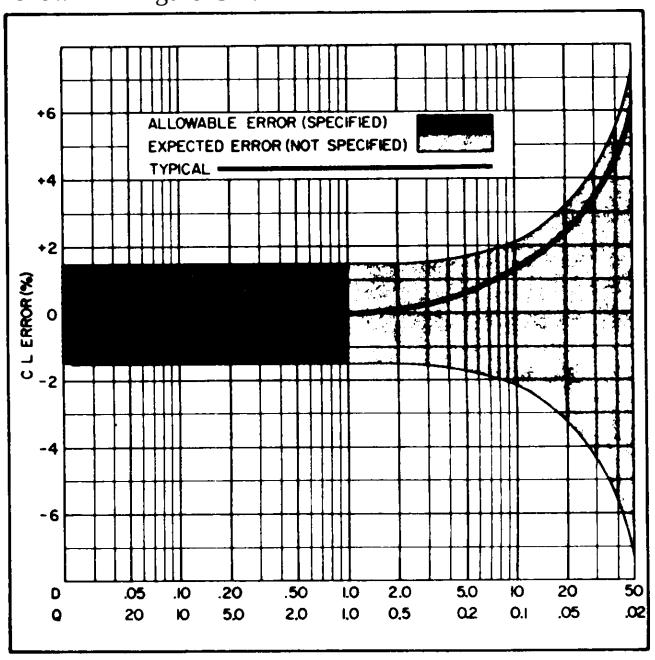


Figure 3-2. Capacitance and Inductance Errors in AUTO vs D & Q

3-29. INDUCTANCE MEASUREMENTS.

3-30. INTRODUCTION.

3-31. Inductance measurements are normally made at frequency of 1 kHz from the internal oscillator. For L measurements at frequencies between 20 Hz and 20 kHz, an external oscillator can be connected, as outlined in Paragraph 3-42, Special Measurements. Direction lights indicate the correct rotation direction for Ls AUTO measurements. The measured L value is displayed on the CRL counter with correct decimal point location, units, and equivalent circuit also displayed. Quality factor (Q) can be measured after the bridge is balanced for the inductance measurement. The measured Q value is displayed on the DQ dial.

3-32. RESIDUAL INDUCTANCE.

3-33. Residual inductance of the UNKNOWN terminals can be measured with heavy short wire connected to these terminals. Its value is typically 1 µ h or less. When small inductance measurements are made, this residual inductance should be subtracted from the measured value. If external leads are used to connect the unknown, the residual inductance measurement should include the lead inductance. Errors caused by residual and lead inductances are listed in Table 3-1.

3-34. Ls AND Lp MEASUREMENT DIFFERENCES.

3-35. The measured value of inductance depends on whether a series or parallel equivalent circuit is used for the measurement. The relationship between a series inductance (Ls) circuit and a parallel inductance (Lp) circuit is as follows:

$$Ls = \frac{1}{1 + \frac{1}{Q^2}} Lp,$$

where Q is the measured Q value. The difference between Ls and Lp is large when Q is smaller than 10, but Ls is within 1% of Lp if Q is 10 or greater.

3-36. MEASUREMENT PROCEDURE.

a. Perform the turn-on procedure outlined in Paragraph 3-3.

b. Check to insure that the 3 DQ RESISTOR and BIAS terminal pairs on the rear panel are shorted with their respective shorting straps.

c. Rotate the SENSITIVITY control full ccw.

d. Set FUNCTION switch to Ls AUTO position.

e. Connect the inductor to be measured to the UNKNOWN terminals.

f. If the right direction indicator is lit, rotate CRL control clockwise. If the left direction indicator is lit, rotate CRL control counterclockwise. Rotate SENSITIVITY control clockwise to give near full scale meter deflection.

g. If the CRL control is fully cw and the right direction indicator remains lit, turn RANGE switch cw until left direction indicator lights. Adjust CRL control for meter null and rotate SENSITIVITY control cw as null is approached.

h. When null (bridge balance) is achieved below 0100 on the CRL counter, set RANGE switch to next position ccw and rotate CRL control for null indication. (This is possible for all measurements above 100 µH.) Inductance value is indicated on the CRL counter.

i. To measure Q for the unknown inductor, set the FUNCTION switch to Ls LOW Q position.

j. Adjust DQ control for minimum meter indication. (The CRL control can be adjusted slightly for best null.)

k. When a null indication is impossible in the Ls LOW Q position, set FUNCTION switch to Lp HIGH Q. Adjust DQ control for minimum meter indication. The Q of the unknown indicator is read from the Q scale indicated by the red pointer in the DQ window.

3-37. The fastest procedure for L measurements is as follows:

a. Set FUNCTION switch to Ls AUTO position.

b. Connect inductor to unknown terminals.

c. Turn CRL control cw to 1030.

d. Rotate RANGE switch until a crossover point of the indicator lights is obtained. (Left indicator lights instead of right one and vice versa.) If you cannot obtain a crossover, see step e note.

e. If the left indicator lights, adjust SENSITIVITY control for right deflection of the null meter pointer. If the right indicator lights, turn RANGE switch one step cw and adjust SENSITIVITY control for right deflection of the null meter pointer. Note: if the right indicator stays lit regardless of the RANGE position, the unknown value of the inductor must be beyond the highest range of the bridge (> 1000 H). If the left indicator stays lit regardless of the RANGE position, the unknown value of the inductor must be below 1000 microhenries.

f. Rotate CRL control ccw until a crossover of the indicator lights is obtained.

g. Set SENSITIVITY full cw and adjust for null with the CRL control.

h. Read final inductor value on the CRL counter and units display.

3-38. VOLTAGE ACROSS UNKNOWN L.

3-39. When voltage across the unknown L is to be measured, a vacuum tube voltmeter such as an HP 400D, 400H, or 400L should be used along with a capacitive voltage divider (HP 11041A). The procedure is as follows:

a. Make the inductance measurement as outlined in Paragraph 3-36, and leave the instrument set up at null.

b. Isolate the Voltmeter from power line ground by using a two-prong power cord adapter and leaving the adapter pigtail lead disconnected from ground.

c. Connect the Voltmeter divider ground lead to the 4260A rear panel detector ground terminal.

d. Connect the Voltmeter divider probe to the UNKNOWN terminal (not the LOW terminal). Read the voltage across the unknown L on the Voltmeter.

3-40. INFLUENCE OF Q IN Ls AUTO MEASUREMENT.

3-41. The accuracy specified for Ls AUTO measurement is obtained when Q is more than 1. When Q is smaller than 1, accuracy of the Ls AUTO measurement is reduced due to the reactance of the variable resistance circuit of the AUTO NULL. Typical data is shown in Figure 3-2.

3-42. SPECIAL MEASUREMENTS.

3-43. 20 Hz TO 20 kHz MEASUREMENTS.

3-44. Since the 4260A internal oscillator frequency is fixed at 1 kHz, an external generator must be connected for measurements at frequencies between 20 Hz and 20 kHZ. For such measurements, an audio oscillator with 600 ohms output impedance (Hp 208A, 204B, or 200CD) and a voltmeter (HP 403B or 400D, 400H, 400L) are recommended.

3-45. If the presence of a non-linear unknown causes appreciable distortion in the 4260A detector, the best null indication may not give the correct value for the

measured unknown. Also, if electromagnetic or static induction from the ac line or other source affects the unknown, a satisfactory null indication will be difficult. In these cases, a tuned null detector or selective amplifier with 90 dB gain and input impedance above 10K ohms is recommended.

Note

The electronic auto null circuit and direction indicator lights do not operate for measurements with an external oscillator.

3-46. OPERATION WITH EXTERNAL GENERATOR.

CAUTION

DO NOT APPLY MORE THAN 2 VOLTS RMS AT THE EXT. OSCILLATOR TERMINALS.

3-47. For impedance measurements at frequencies other than 1 kHz (between 20 Hz and 20 kHz), connect the external oscillator and associated equipment as shown in Figure 3-3 and proceed.

a. Check to insure that the DQ RESISTOR Cs Lp and Cp Ls terminals and BIAS terminals on the instrument rear panel are shorted by their shorting straps.

b. Set external oscillator output voltage to minimum and connect to EXT. OSCILLATOR terminals (see Figure 3-3).

c. For the most accurate and sensitive measurements, a tuned null detector such as the HP 302A is recommended. However, an oscilloscope with 100 microvolt/cm such as the HP 140A with 1400A plug-in can be used. Connect the 4260A UNKNOWN LOW terminal to the null detector high input terminal. Connect the detector low or ground terminal to the 4260A rear-panel detector ground terminal.

Note

Bridge null can be obtained using a tuned null detector with less than 90 dB gain connected to the DETECTOR terminals. (The DETECTOR terminals are connected to the output of the internal pre-amplifier.) For most accurate and sensitive measurements, the method shown in Figure 3-3 is recommended.

d. Set the 4260A INT-EXT OSCILLATOR switch to EXT.

e. Set the FUNCTION switch to Cs LOW D or Cp HIGH D for capacitance measurements, or to Ls LOW Q or Lp HIGH Q for inductance measurements.

f, Connect the unknown component to the UNKNOWN terminals.

g. Adjust the SENSITIVITY control for near full scale deflection and set RANGE switch for minimum on meter.

h. Adjust CRL and DQ controls for minimum meter indication. SENSITIVITY control can be adjusted cw as bridge balance is approached.

i. Read capacitance or inductance of the unknown on the CRL counter. Correct decimal point, units, and equivalent circuit are also displayed. The D or Q of the unknown is computed as follows:

For LOW D (D of series C): $D_f = \frac{D_r(f)}{1\ kHz}$ where D_f is the D value at applied frequency f (kHz), D_r is the D reading on the D scale.

For HIGH D (D of parallel C): $= D_r \left(\frac{1\ kHz}{f}\right)$.

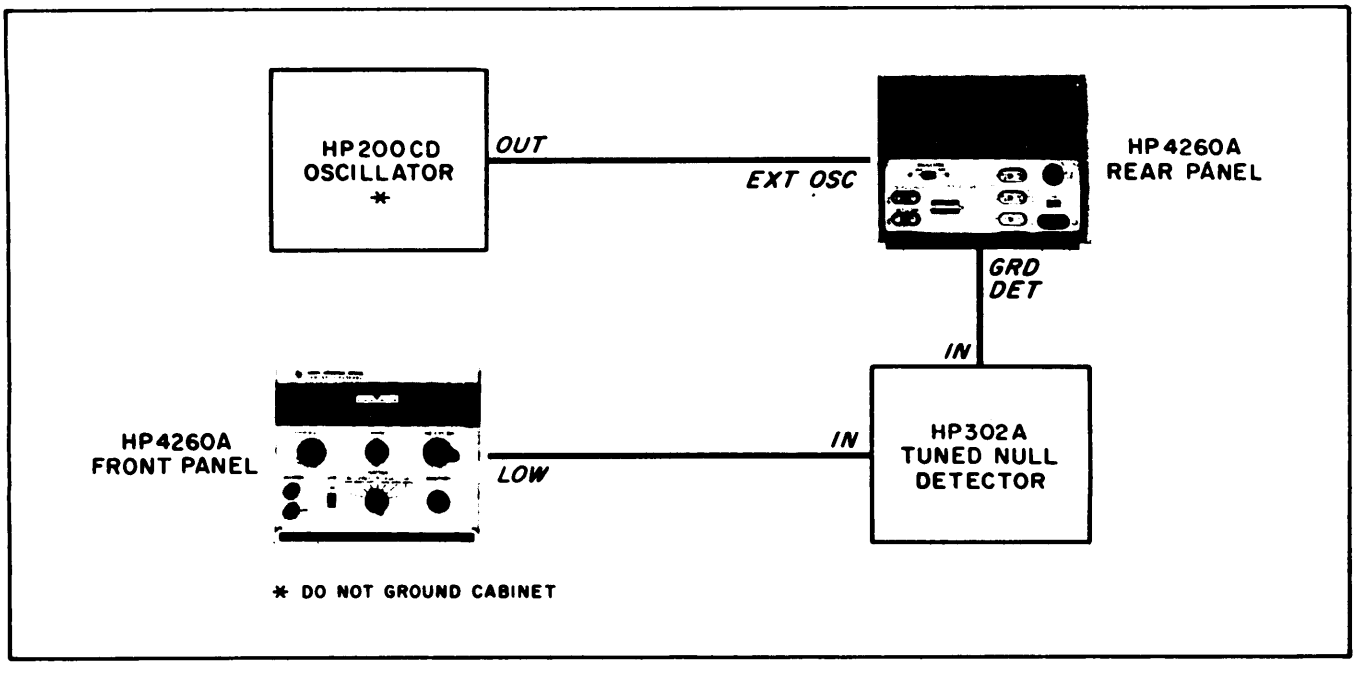


Figure 3-3. Operation with External Generator

For LOW Q (Q of series L): $Q_f = Q_r \frac{f}{1\ kHz}$

where Q_f is the Q value at applied frequency f (kHz) and Q_r is the Q reading on the Q male.

For HIGH Q (Q of parallel L): $Q_f = Q_r \frac{1\ kHz}{f}$

3-48. INFLUENCE OF RESIDUAL AND LEAD IMPEDANCES.

3-49. At frequencies above 1 kHz, errors resulting from residual bridge impedances and lead impedances become significant. Table 3-1 lists the correction terms for these errors.

3-50. D AND Q MEASUREMENTS.

3-51. GENERAL. Measured D or Q values are a function of the frequency applied during measurement. Figure 3-4 illustrates the possible values of D or Q for minimum error at various frequencies. D or Q values which fall in the overlap area of Figure 3-4 can be measured with the FUNCTION switch set for any D or Q measurement except AUTO. However, below 650 Hz there is a group of D or Q values (shaded area of Figure 3-4) which can be measured by adding an external DQ resistor, This DQ resistor addition is outlined in the following paragraph.

3-52. EXTENDING THE D AND Q RANGES. An external resistor added at the instrument rear-panel DQ RESISTOR terminals will extend the D and Q ranges. To avoid error, Cp HIGH D and Ls LOW Q should not be extended below a value of 0.1 at the frequency of measurement. The DQ resistor should be added as follows:

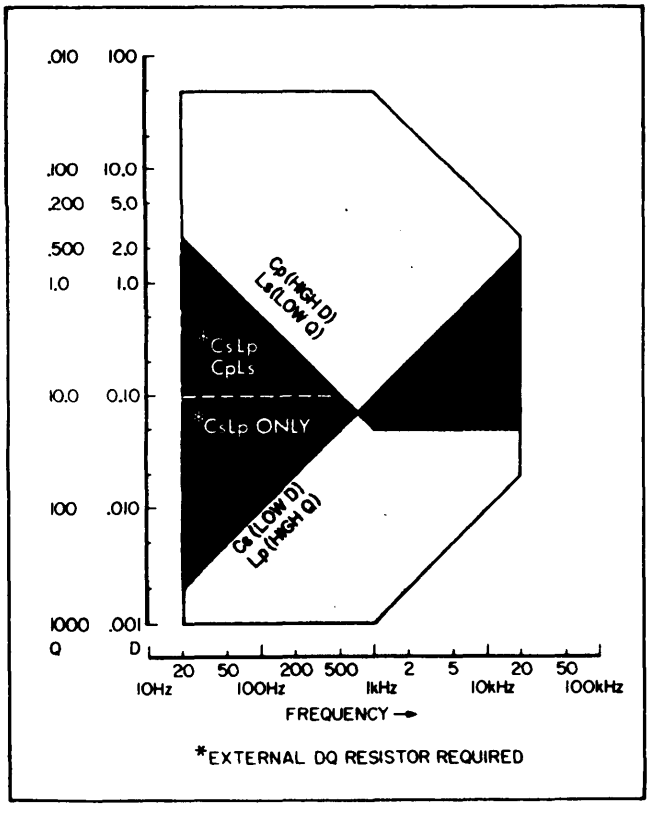


Figure 3-4. DQ Range vs Frequency

a, For Cs LOW D or Lp HIGH Q measurements, remove the shorting strap from the rear-panel DQ RESISTOR Cs Lp terminals.

b. The external resistor should be selected as follows:

1) maximum current: 6 milliamperes, resistance range: 0 to 300K ohms.

2) use a metal film or carbon film resistor.

Note

The resistance of the external resistor used can be measured with the 4260A after the D or Q measurement is completed.

c. Connect the external resistor to the DQ resistor terminals from which the shorting strap was removed in step a.

d. With the external DQ resistor and oscillator connected, balance the bridge with the RANGE switch, CRL, and DQ controls. Read the value of the unknown from the CRL counter and decimal point, units, and equivalent circuit as displayed.

3-53. The D or Q or the unknown is given as follows: for LOW D (D of Cs), $D = (1.256R + D_r) f$ where D_f is the D value at applied frequency f (kHz); D_r is the D reading on the D scale; and R is the external resistor value in K ohms. For HIGH D (D of Cp),

$$D_f = \frac{1}{(1.256\ R + \frac{1}{D_r}) f}$$

For LOW Q (Q of Ls), $Q_f = (1.256\ R + Q_r)\ f$; where Q_f is the Q value at applied frequency f (kHz); Q_r is the Q reading on the Q scale; and R is the external resistor value in K ohms. For HIGH Q (Q of Lp),

$$Q_f = \frac{1}{(1.256R + \frac{1}{Q_r}) f}$$

3-54. C MEASUREMENTS WITH DC BIAS.

3-55. GENERAL. A dc bias voltage (6 vdc maximum) can be applied to capacitors such as electrolytic types during the C measurement. Figure 3-5 schematically illustrates the dc bias application. Operating procedure for de-biased measurements is described below and pictorially shown in Figure 3-5. The following equipment will be required:

1. 6 Vdc battery or dry cell.
2. electrolytic capacitor (aluminum or tantalum) designated C_y) 6 Vdcw, more than 100 µ F at 1 kHz or more than (100 kHz/f) µ F.
3. dc voltmeter, VTVM not required.
4. electrolytic capacitor (aluminum or tantalum) alesignated (CL) 6 Vdcw, more than ($20\frac{2}{x}$) µF for less than 1% error measurements. D_x is the D value of the unknown.

With the FUNCTION switch set to Cp HIGH D, the capacitance of CL required depends upon the unknown D and desired accuracy. The error introduced by CL is:

$$\text{measured } C = C_x \left(1 - \frac{C_t}{C_L} D_x^2\right) \text{ and}$$

$$\text{measured } D = D_x \left(1 + \frac{C_t}{C_L} D_x^2\right),$$

where C_t = 0.2 µF and C_x or D_x is the correct C or D value of the unknown.

3-56. PROCEDURE.

a. Connect the measurement setup as shown in Figure 3-5. All instrument cabinets except 4260A must be isolated from power line ground.

b. Connect the unknown C to the UNKNOWN terminals.

CAUTION

The LOW UNKNOWN terminal is at dc positive potential. DO NOT APPLY A DC BIAS VOLTAGE GREATER THAN 6 VDC OR A DC BIAS CURRENT GREATER THAN 10 MILLIAMPERES.

c. Set FUNCTION switch to Cp AUTO position for measurements with the internal 1 kHz generator. Adjust RANGE switch and CRL control for bridge balance (meter null). Read the measured C value on the CRL counter.

3-57. L MEASUREMENTS WITH DC BIAS.

3-58. GENERAL. A dc bias voltage (6 Vdc maximum) can be applied to an unknown inductor during the L measurement. Figure 3-6 schematically illustrates the dc bias application. Operating procedure for dc-biased measurements is described below and pictorially shown in Figure 3-6. The following equipment will be required:

1. 6 Vdc battery or dry cell.

2. electrolytic capacitor (designated C_y), aluminum or tantalum, 6 Vdcw, more than 10 µF at 1 kHz or more than (100 kHz/f) µF.

3. dc milliammeter, VTVM not recommended, or clip-on milliammeter HP 428B.

4. electrolytic capacitor (designated CL), aluminum or tantalum, 6 vdcw, more than $(20/Q_x^2)$ µF for less than 1% error measurements. Q_x is the Q of the unknown L.

With the FUNCTION switch set to Lp HIGH Q, the capacitance of CL depends upon the unknown Q and desired accuracy. The error introduced by CL is:

$$\text{measured } L = L_x \left(1 - \frac{C_t}{C_L Q_x^2}\right)$$

$$\text{measured } Q = Q_x \left(1 - \frac{C_t}{C_L Q_x^2}\right), \text{ where } L_x \text{ or } Q_x \text{ is}$$

the correct L or Q value of the unknown.

3-59. PROCEDURE.

a. Connect the measurement setup as shown in Figure 3-6. Ground only the 4260A cabinet to power line ground.

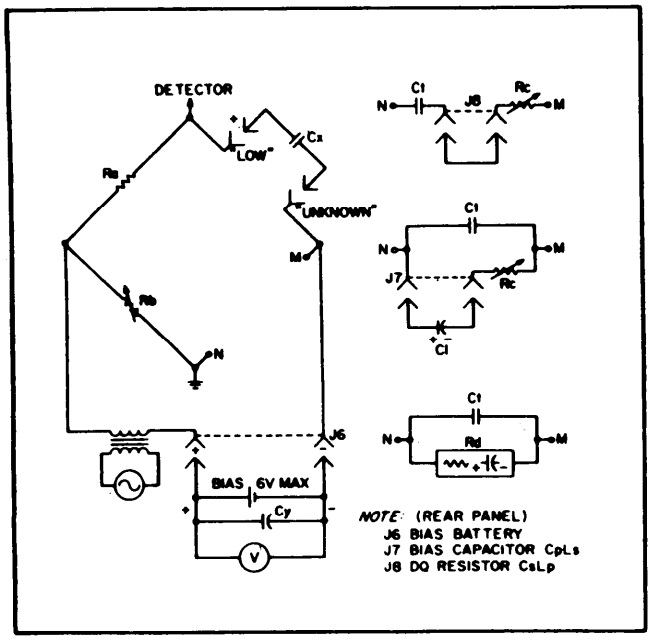


Figure 3-5. Dc Biased Capacitance Measurement

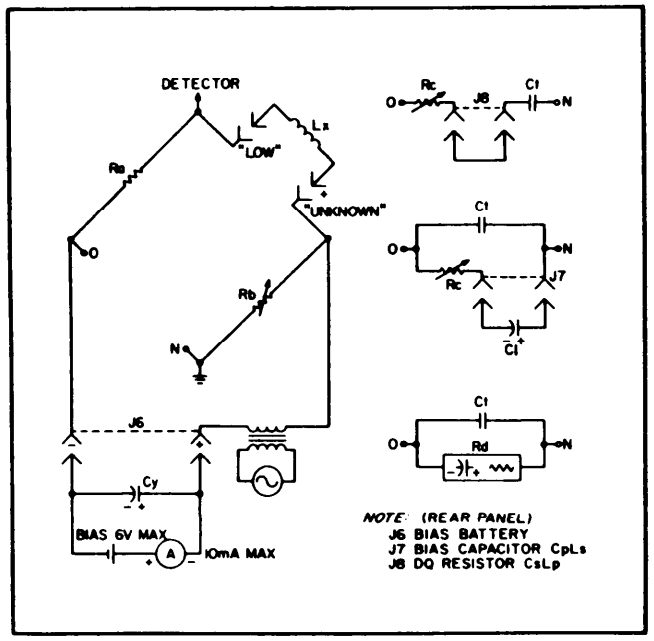


Figure 3-6. Dc Biased Inductance Measurement

b. Connect the unknown L to the UNKNOWN terminals.

CAUTION

DO NOT APPLY A DC BIAS VOLTAGE GREATER THAN 6 VDC OR A DC BIAS CURRENT GREATER THAN 10 MA.

c. Set FUNCTION switch to Ls AUTO position for measurements with the internal 1 kHz generator. Adjust RANGE switch and CRL control for bridge balance (meter null). Read the measured L value on the CRL counter.

3-60. RESISTANCE MEASUREMENT AT 1 kHz.

3-61. To make AC resistance measurement at 1 kHz refer to Figure 3-1, and perform the following steps:

a. Remove shorting strap across DQ RESISTOR (CsLp) terminals on rear panel.

b. Connect accurate 500 ohm metal film resistor (+1% or less) between right CsLp terminal and CpLs terminal immediately below. DO NOT REMOVE STRAP ON CpLs TERMINAL.

c. Set DQ knobs full counter clockwise,

d. Set FUNCTION switch to Lp HIGH Q.

e. Make measurement using RANGE switch and CRL dial.

f. Multiply inductance reading in Henries by 10,000 to convert to ohms. For example, 1 millihenry is 10 ohms.

SECTION IV
THEORY OF OPERATION

4-1. INTRODUCTION.

4-2. This section includes circuit operation details for the Universal Bridge. A general description of operation is given first, with details of the various circuits following. Each assembly in the instrument is discussed in the order of its assembly designation (A100, A200, etc.) as listed in Table 4-1.

Table 4-1. Assembly Designations

A100 Range and Function Switch	04260-7021
A200 Power Supply and 1 kHz Oscillator	04260-7022
A300 Reference Voltage	04260-7023
A400 Detector	04260-7024
A600 Decimal Point and Direction Indicator	04260-7026

4-3. DESCRIPTION.

4-4. GENERAL.

4-5. For capacitance and inductance measurements with the FUNCTION switch set to Cp AUTO or Ls AUTO, a 1 kHz signal drives the bridge and balance is achieved by selecting the proper range and adjusting only the CRL control. This is possible because a voltage-controlled resistor is substituted for one resistor in the bridge circuit. Thus, simultaneous adjustment of more than one control is eliminated.

4-6. BLOCK DIAGRAM.

4-7. Figure 7-2 illustrates the bridge and auto null circuits. The auto null circuits are used when the FUNCTION switch is set to Cp AUTO or Ls AUTO position. As seen in Figure 7-2, the phase detector receives two signals: 1) an error voltage from the detector amplifier which is proportional to bridge unbalance, and 2) a reference voltage derived from the 1 kHz signal source. The phase detector output voltage is therefore proportional to bridge unbalance. This proportional voltage is applied through a dc amplifier to the voltage-controlled resistor circuit. This controlled value is the resistance of the one arm of the bridge. As the CRL control is rotated to achieve bridge balance, the voltage-controlled resistor value electronically follows the CRL control. Thus, when bridge balance is achieved, no error voltage is present and the null meter indicates zero.

4-8. In generating the reference signal input to the phase detector, two voltages are applied to the reference phase comparator. The comparator voltage output has a phase relationship, θ, with respect to the driving signal. The phase multiplier translates this relationship to 2 θ since 2 θ is the most effective angle for maximum sensitivity in the circuit. This 2 θ information is applied to the reference voltage generator and a 1 kHz square wave results which is displaced in phase by 2 θ from the driving voltage. The generated 2 θ reference signal is then applied to the phase detector for comparison with the bridge error voltage.

4-9. BASIC BRIDGE FOR RESISTANCE MEASUREMENTS.

4-10. Figure 4-1A shows the basic bridge circuit used to measure resistance. A four-arm bridge circuit is formed by resistors Ra, Rx, Rs, and Rb. Rx is the fixed unknown R to be measured; Ra is determined by the value of Rx; Rs is a fixed value; and Rb is variable to adjust for bridge balance. In actual use, the Model 4260A bridge circuit is adjusted for a null indication on the meter with the CRL control and the unknown resistance is read directly from the display with correct units and decimal point placement.

4-11. BASIC CIRCUITS FOR CAPACITANCE MEASUREMENTS.

4-12. Figure 4-lB illustrates the basic bridge circuit for parallel capacitance (Cp HIGH D) measurements at 1 kHz. Figure 4-lC illustrates a basic bridge circuit for series capacitance (Cs LOW D) measurements. For parallel capacitance measurements with the FUNCTION control set to Cp AUTO, the basic bridge circuit is shown in Figure 4-lD.

4-13. BASIC CIRCUITS FOR INDUCTANCE MEASUREMENTS.

4-14. Figure 4-lE illustrates the basic bridge circuit for series inductance (LOW Q) measurements at 1 kHz. Figure 4-1F illustrates the basic bridge circuit for parallel inductance (HIGH Q) measurements at 1 kHz. For series inductance measurements with the FUNCTION switch set to Ls AUTO, the basic bridge circuit is shown in Figure 4-lG.

4-15. RANGE AND FUNCTION SWITCH A100.
(Schematic Diagram, Figure 7-3 ①)

4-16. Assembly A100 consists of RANGE switch S101, FUNCTION switch S102, and a printed circuit board for lead and component connections. The RANGE and FUNCTION switches route signals in the instrument for proper operation. RANGE switch S101 selects the resistor which forms one arm of the bridge circuit for balancing during a measurement. The selected resistor correctly attenuates the applied signal. Capacitors C101 through C105 provide frequency compensation for certain ranges when ac voltages are applied during L or C measurements.

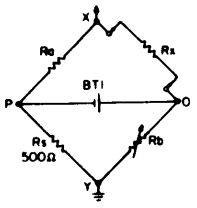
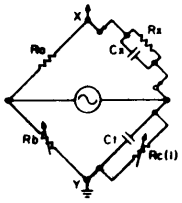
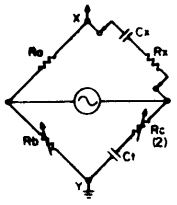
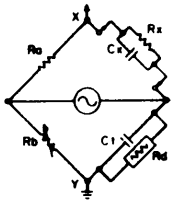
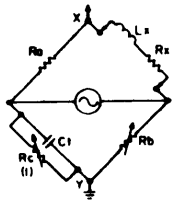
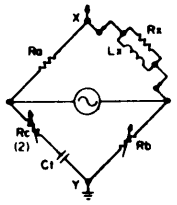
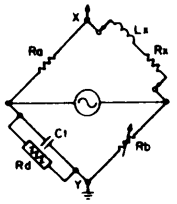
A	 Dc Resistance R Rx = RaRb/Rs	A dc voltage from battery BT1 is applied between bridge points 0 and P. Variable resistors Ra and Rb are adjusted for a zero or null reading on the indicator. With a null condition, voltage drops across bridge arms XP and YP are equal and the bridge is said to be balanced. Thus, the value of unknown Rx can be determined from the basic relationship: $\frac{Rx}{Ra} = \frac{Rb}{Rs}$, or Rx = RaRb/Rs.
B	 Parallel Capacitance Cp (HIGH D: 0.05 to 50 at 1 kHz) Cx = Ct Rb/Ra $Dx = \frac{1}{2\pi f Cx Rx} = \frac{1}{2\pi f Ct Rc}$ f = frequency	This circuit is similar to the basic R circuit, but note that capacitor Ct is inserted in parallel with Rc (DQ control). Rx, in parallel with unknown capacitor Cx, represents the inherent resistance of any capacitor. A 1 kHz signal replaces the dc voltage used in R measurements. The relationships for this equivalent bridge circuit are given in B.
C	 Series Capacitance Cs (LOW D: 0.001~0.12 at 1 kHz) Cx = Ct Rb/Ra Dx = 2πf Cx Rx = 2πf Ct Rc f = frequency	In this mode, Ct is in series with Rc (DQ control) and loss resistance Rx is in series with unknown capacitor Cx.
D	 Parallel Capacitance Cp AUTO Cx = Ct Rb/Ra	This circuit is similar to the circuit of B except that Rc is replaced by Rd. Rd represents a voltage-adjustable resistor which electronically adjusts this bridge arm resistance and eliminates the need for simultaneous bridge adjustment with more than one control. Thus, with the Model 4260A, the capacitance measurement can be made quickly with only the CRL control.
E	 Series Inductance Ls (LOW Q: 0.02 to 20 at 1 kHz) Lx = Ct Ra Rb Qx = 2πf Lx, Rx = 2πf Ct Rc f = frequency	Unknown inductance Lx has a series resistor Rx which represents the resistance of the coil windings and loss of inductor.
F	 Parallel Inductance Lp (HIGH Q: 8 ~ 1000 at 1 kHz) Lx = Ct Ra Rb $Qx = \frac{Rx}{2\pi f Lx} = \frac{1}{2\pi f Ct Rc}$ f = frequency	This circuit is similar to the series inductance equivalent circuit, except that loss resistance Rx is in parallel with Lx and Ct is in **series** with Rc (DQ control).
G	 Series Inductance Ls AUTO Lx = Ct Ra Rb	This circuit is similar to E except that Rc is replaced by Rd. Rd represents a voltage-adjustable resistor which electronically adjusts this bridge arm resistance and eliminates the need for simultaneous bridge adjustments with more than one control. Thus, with the Model 4260A, the inductance measurement can be made quickly with only the CRL control.

Figure 4-1. Basic Bridge Circuits

4-17. FUNCTION switch S102 routes signals to and from various functional circuits in the instrument. When set to R position, 40 Vdc is routed through S102 and RANGE switch S101 to the unknown R. For L measurements, the bridge arm connections to the DQ and CRL controls are reversed from that for C measurements. This technique maintains the same phase relationship for the bridge error signal and the reference voltage for the AUTO null circuit. The CRL direction indicator lights are also energized for Cp AUTO or Ls AUTO position of the FUNCTION switch. R110 and R111 are fixed bridge resistors selected by FUNCTION switch S102.

4-18. POWER SUPPLY AND 1 kHz OSCILLATOR A200

(Schematic Diagram, Figure 7-4 ①)

4-19. Assembly A200 includes four power supply sections which generate operating dc voltages and also a 1 kHz oscillator circuit. The +13 Vdc and -12 Vdc outputs are regulated and the +40 Vdc and +110 Vdc outputs are not. The oscillator circuit generates the 1 kHz signal for driving the instrument bridge circuit during L or C measurements.

4-20. PQWER SUPPLY.

4-21. PRIMARY POWER. As shown in the schematic of Figure 7-4 ①, either 115 Vac or 230 Vac is applied through fuse F1 and LINE switch S1 to T1 primary. Rear-panel 115/230 switch S2 connects T1 primaries in parallel for 115 Vac operation or in series for 230 Vac operation.

4-22. +13 VDC SUPPLY. The regulated +13 Vdc supply consists of full-wave rectifier CR201, CR202 whose output is smoothed by C201, regulated by Q201, Q202, Q203, and further filtered by C203. Breakdown diode CR203 provides a 12.7 volt reference at Q203 emitter. Output voltage variations are sensed at Q203 base, amplified, and supplied to driver Q202 base. Q202 then controls regulator Q201 to oppose the output voltage change. Resistor R204 across Q201 collector-emitter provides protection for Q201 when the +13 Vdc output is overloaded.

4-23. -12 VDC SUPPLY. The regulated -12 Vdc supply consists of half-wave rectifier CR204 whose output is smoothed by C204, regulated by Q204, and further filtered by C205. Breakdown diode CR205 provides a 12.7 volt reference at Q204 base. When the output voltage starts to change, this change is sensed by regulator Q204 which changes its dynamic resistance to oppose the voltage change.

4-24. +40 VDC SUPPLY. The unregulated +40 Vdc supply consists of half-wave rectifier CR206 whose output is filtered by the RC combination of R207 and C206. Series resistor R207 limits the output voltage to the UNKNOWN terminals during R measurements.

4-25. +110 VDC SUPPLY. The unregulated +110 Vdc supply consists of half-wave rectifier CR207 whose output is filtered by C207. This +110 Vdc is supplied via pin P, FUNCTION switch S102, and RANGE switch S101 to the decimal point and direction indicator neons.

4-26. 1 kHz OSCILLATOR.

4-27. Transistors Q205, Q206, and associated components form a 1 kHz oscillator circuit. Emitter follower Q207 provides the buffered 1 kHz output to transformer T2 to drive the bridge circuit for L and C measurements. The oscillator is an RC type with positive feedback from Q206 collector to Q205 base to maintain oscillations. Operating frequency is primarily determined by C209, C210, R208, R209, and R210. Variable resistor R210 permits frequency adjustment. R213 is the output level control. Plus 13 Vdc is supplied from pin D via OSCILLATOR INT-EXT switch S3 to pin U. Thus, the oscillator circuit is energized only when S3 is set to INT. Capacitors C208 and C214 filter 1 kHz from the +13 Vdc line.

4-28. REFERENCE VOLTAGE ASSEMBLY A300.

(Schematic Diagram, Figure 7-5 ①).

4-29. INTRODUCTION.

4-30. The circuits of assembly A300 receive the 1 kHz signal from bridge transformer T2 and generate a negative output pulse. The duration of this pulse is equal to twice the phase angle (θ) between the bridge driving signal from T2 and the 1 kHz sigml across one arm of the bridge circuit. This 2 θ pulse duration. thus represents a phase relationship in part of the bridge circuit and is used to detect the error signal component in phase with the reference voltage of the phase detector. Detector output drives the voltage-controlled resistor automatically for bridge balance. This automatic action occurs when the FUNCTION switch is set to Cp AUTO or Ls AUTO. The 2 θ relationship is used because it provides maximum null resolution and stability for the loop circuit.

4-31. REFERENCE PHASE CIRCUITS.

4-32. The reference phase circuits reconstruct the bridge driving signal from T2 and compose a 1 kHz square wave which is in phase with this driving source. This reference square wave is applied to the phase comparator. The reference phase circuits include high-impedance amplifier No. 1 (Q305, Q306), differential amplifier (Q303, Q304), and limiting amplifier Q307.

4-33. The 1 kHz signal from T2(4) and switch assembly A100 is applied at A300(9). From pin 9 the signal is ac coupled through C307 to Q306 base. Q306 and Q305 amplify the signal current and apply it to differential amplifier transistor Q304. Capacitor C305 is selected to provide positive feedback to Q306. This compensates input capacitance of the amplifier and stray capacitance of CRL resistor R3. The other input to the differential amplifier is from Q301 emitter, which is the other signal from the bridge circuit. Thus the differentially summed output at Q303 collector is a reconstructed sine wave in phase with the bridge driving signal. From Q303 collector, the sine wave is ac coupled through C309 to Q307 base. Diodes CR301, CR302 limit peaks, so the output from Q307 collector is a squared wave. This squared wave is ac coupled through C317 to the phase comparator circuit.

4-34. VARIABLE PHASE CIRCUITS.

4-35. The variable phase circuits receive an ac voltage from one arm of the bridge circuit and supply a square wave which is out of phase with the bridge driving signal at T2. The variable phase circuits include high- impedance amplifier No. 2 (Q301, Q302) and limiting amplifiers Q308 and Q309.

4-36. The 1 kHz signal from T2(3) and switch assembly A100 is applied at A300(7). From pin 7 the signal is ac coupled through C301 to Q301 base. Q301 and Q302 amplify the signal and supply it to limiter amplifier Q308. (From Q301 emitter, the signal is also supplied to Q303 base in the reference phase circuit.) Diodes CR303, CR304 limit signal peaks, so Q309 input is a clipped sine wave. Limiting amplifier Q309 and diodes CR305, CR306 further limit peaks, so Q309 output is a square wave. This square wave is the second input to the phase comparator circuit.

4-37. PHASE COMPARATOR.

4-38. Phase comparator Q310, Q311 receives two square wave inputs: 1) one from the reference phase circuits which is in phase with the bridge driving signal, and 2) a second from the variable phase circuits which has a phase relationship θ with the bridge driving signal. The phase comparator output at Q311 collector is a negative pulse whose duration is equal to phase angle θ

4-39. The phase comparator acts as an AND gate; that is, when the variable -phase square wave input at Q31O base is positive-going and the reference square wave at Q311 base is negative-going, a negative pulse results at Q311 collector. This negative pulse is θ wide; its duration is equal to the phase difference between the two phase comparator inputs.

4-40. MILLER INTEGRATOR.

4-41. The Miller integrator circuit receives the negative pulse from the phase comparator and generates a positive "A" shaped waveform. The duration of the "A" shaped pulse is twice that of the input negative pulse. C318 is the integrating capacitor.

4-42. SWITCH.

4-43. Transistor switch Q313 makes a square wave from the "A" shaped input pulse. The square wave output duration is equal to the input pulse duration. Q313 is normally off. When the input pulse starts, Q313 saturates and remains on until the input pulse returns to its base line value. The switched output is supplied at pin 15 to drive the one-shot multivibrator on detector assembly A400.

4-44. DETECTOR ASSEMBLY A400

(schematic Diagram, Figure 7-6 ①)

4-45. INTRODUCTION.

4-46. Assembly A400 circuits receive the bridge unbalance information and the 2 θ pulse from reference voltage assembly A300. These inputs are used to automatically adjust a variable resistance circuit which replaces a resistance in one arm of the bridge for Cp AUTO or Ls AUTO functions. In addition, these inputs are used to control the direction indicator lights. The right or left direction light is on, depending on which way the CRL control must be rotated to balance the bridge. Detector circuits include the error signal amplifier, phase detector, one- shot multivibrator, differential amplifier, Miller integrator, variable resistance circuit, and CRL direction light control.

4-47. ERROR SIGNAL AMPLIFIER.

4-48. This 80 dB amplifier includes transistors Q401 through Q405 and associated components. Input at pin 1 is a 1 kHz sine wave (if internal oscillator is used; otherwise frequency of external oscillator) whose amplitude represents the amount of bridge unbalance (error signal). Sine wave outputs from Q404 drive part of the phase detector and also the meter circuit. An output from Q405 emitter (phase-shifted 90° leading) drives that part of the phase detector which controls the direction indicator light circuit. Thus, when an unknown L or C is connected across the UNKNOWN terminals, the bridge circuit is unbalanced and an error signal results. This causes a meter reading, a direction light to be on, and also controlled value for the variable resistance.

4-49. The error signal is applied at pin 1 and amplified by Q401, Q402, and Q403. Diodes CR402 through CR405 provide limiting at Q402 to obtain logarithmic amplifier characteristics. Also, when oscillator switch S3 is set to INT (pins 6 and 7 shorted), negative feedback occurs from Q404 emitter to Q403 base through a twin T filter. The T filter provides minimum negative feedback at 1 kHz, which peaks the amplifier at this frequency and it effectively becomes a tuned amplifier with overall loop gain maximum. Breakdown diode CR401 in Q403 emitter establishes the dc operating point for this transistor. Q404 is an emitter follower which supplies the amplified error signal to part of the phase detector. Phase-shifting network R420 and C412 cause the output voltage waveform at Q405 emitter to lead the error signal by 90°. Diodes CR406 through CR409 are a full-wave rectifier to provide a dc for the meter which is proportional to bridge unbalance.

4-50. ONE SHOT MULTIVIBRATOR.

4-51. The one-shot multivibrator (OS MV) receives the negative pulse via pin 12 from switching amplifier Q313 and generates 1 kHz square waves. Complementary square waves from both collectors of the OS MV are applied to phase detector diodes CR412 and CR413.

4-52. The quiescent state of the OS MV is Q406 off, Q407 on. RC combination C416, C417, R425 differentiates the positive-going trailing edge of the negative input pulse. The resulting positive pulse at Q406 base turns this transistor on. RC combination R428, C418 determines how long the Q407 off, Q406 on con- – dition exists. Diodes CR410, CR411 provide a speed-up action for the OS MV when it changes states so that the square wave edges are sharpened.

4-53. PHASE DETECTOR.

4-54. The phase detector circuit receives square waves from the OS MV and sine wave from the error signal amplifier. Avarying dc output results at R435, R436 junction which is proportional to bridge unbalante. The phase detector is actually two phase detecting circuits: one for the variable resistance circuit, and a second for the CRL direction light control circuit.

4-55. The error signal sinewave from Q404 emitter is applied through C411 to CR412, CR413 junction. The complementary square waves from the OS MV are applied through R433 and R434 to the other ends of these diodes. When Q406 collector is positive (+4. 4 volts), and Q407 collector is zero, diodes CR412 and CR413 conduct. Error signal amplifier output voltage appears at R435, R436 junction without attenuation. When Q406 collector voltage is zero and Q407 collector is +4.4 volts, CR412 and CR413 are cut off; error signal amplifier output voltage does not appear at R435, R436 and this junction is the same voltage level as the average voltage level of +2.2 volts. The voltage level at R430, R431 junction is the average level of +2. 2 volts. Thus the differential output between R435, R436 junction and R430, R431 junction is the synchronized rectified output of the error signal. This output is supplied to Q408 for proportional control of the variable resistance circuit.

4-56. Operation of the CR414, CR415 light control section of the phase detector is similar, except that the error signal sine wave is phase-shifted 90° ahead by R420, C412, Q405 combination. When the bridge is unbalanced with the CRL counter too low, an error signal is applied and the dc output to the light control differential amplifier is more positive. With the CRL counter too high, output is less positive.

4-57. DIFFERENTIAL AMPLIFIER AND MILLER INTEGRATOR.

4-58. This circuit uses the phase detector output to control the variable resistance circuit. The Miller integrator provides stability for the overall feedback loop near null or bridge balance when most sensitivity is required. The differential amplifier output at Q408 collector is a dc level which changes with the phase detector input at Q408 base. Integrator circuit Q410 and C420 amplifies Q408 output and stabilizes control of the variable resistance circuit. Near null or bridge balance point, noise and random variations are minimized by the integrator circuit.

4-59. VARIABLE RESISTANCE CIRCUIT.

4-60. The variable resistance circuit includes +6 Vdc regulator Q415, phase splitter Q411, and emitter followers Q412, Q413, Q414. Diodes CR419, CR420 are the heart of the variable resistance circuit, with their bias state controlling their resistance. In Cp or Ls AUTO position, this controlled resistance becomes the R value which replaces the DQ control in one arm of the bridge (see Block Diagram, Figure 7-2).

4-61. Phase splitter Q411 conduction controls CR419, CR420 bias through emitter followers Q412, Q413, and Q414. When Q411 base voltage decreases, current through R446 and R447 decreases; base voltage levels of Q412 and Q413 increase, and the forward current through CR419, CR420 increases. This causes the effective resistance of the diodes to become smaller. When Q411 input voltage causes Q411 to be cut off, current begins to flow through CR416, CR417, and CR418; base voltage level of Q412 and Q413 cannot increase. At this time, diodes CR419, CR420 have the minimum resistance for the bridge arm. When Q411 base voltage increases, Q411 turns on and Q411 collector to emitter voltage becomes small. Diodes CR419, CR420 are cut off and their effective resistance becomes several hundred megohms. Thus, the variable resistance circuit changes its resistance as controlled by bridge balance information from the phase detector.

4-62. DIFFERENTIAL AMPLIFIER AND LAMP DRIVER.

4-63. This circuit uses information from the phase detector circuit (Paragraph 4-56) to light the correct CRL direction lamp. Figure 4-2 is a simplified diagram of the light control circuit. The error dc level at Q416 base is added with the reference level at Q417 base by the differential amplifier to give a resulting dc level at driver Q418 base. When the CRL control is set too low for bridge balance, Q416 is turned on; this causes Q418 to be off with its collector voltage rising to near +110 volts, and right CRL light V602 is energized through R456. With the CRL control too high, Q416 is off, Q418 is on, and left CRL light V601 is energized through R457, Q418, and R455.

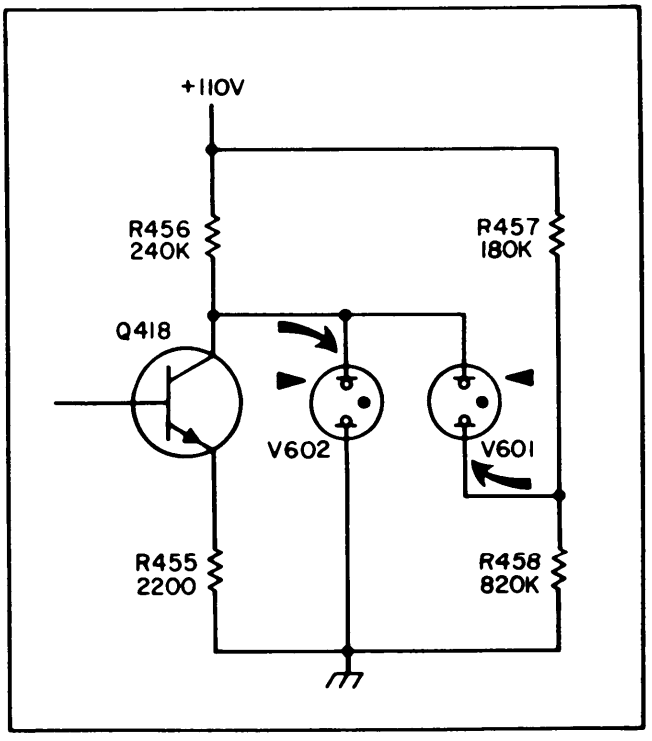


Figure 4-2. CRL Light Control

4-64. CHASSIS ASSEMBLY A500.

4-65. Chassis assembly A500 consists of the main mounting plate (top deck and rear panel) and those parts that are perrnanently riveted on it. These parts are identified as: J1, ac power input jack; J2, 18-pin connector for printed circuit assembly A200; J3, 15-pin connector for printed circuit assembly A300; J4, 15-pin connector for printed circuit assembly A400; and S2, 115/230 volt ac power slide switch.

4-66. DECIMAL POINT AND DIRECTION INDICATOR LAMP A600

(Schematic Diagram. Figure 7-3 ②)

4-67. This assembly includes decimal point neons V603, V604, V605, series resistor R601 and CRL direction neons V601, V602. Decimal point lights are controlled by the position of the RANGE and FUNCTION switches. CRL direction light control is explained in Paragraph 4-63.

SECTION V
MAINTENANCE

5-1. INTRODUCTION.

5-2. This section provides maintenance and adjustment information for the Model 4260A. The section contains four areas of information as follows:

a. performance checks are included in Table 5-2 to verify operation of instrument circuits;

b. troubleshooting and repair information is intended to aid systematic troubleshooting and repair;

c. adjustment procedures are given in the order recommended f o r use; these adjustments include checks of critical components in the bridge circuit and also selection procedures for factory- selected components;

d. operation checks of printed circuit assemblies.

5-3. TEST EQUIPMENT.

5-4. Recommended test equipment for performing the checks and adjustments outlined in this section is listed in tabular form with the procedure to be performed. Test instruments other than those listed can be used if their specifications equal or. exceed the listed characteristics.

5-5. INSTRUMENT COVER REMOVAL.

5-6. To remove top or bottom cover, remove two screws at rear of cover, slide cover toward rear of instrument, and lift cover off. Slide covers are removed by taking out four screws in each cover and lifting cover off.

WARNING

115 or 230 volt ac terminals are exposed when bottom or side covers are removed. E x e r c i s e caution during troubleshooting, adjustments, or repair. To avoid damage, disconnect power during adjustment or repair.

5-7. ASSEMBLY IDENTIFICATION.

5-8. Table 4-1 lists the assemblies in the Universal Bridge. Assemblies are identified by assembly number: for example, A200.

5-9. PERFORMANCE CHECK.

5-10. Performance checks outlined in Table 5-2 can be used as an operating check for the instrument. These checks can also be used:

a. as part of an incoming inspection check of instrument specifications;

b. periodically, for instruments used in systems where reliability is of utmost importance;

c. as part of a troubleshooting procedure to locate operation problems, and

d. after any repairs or adjustments, before returning instrument to regular service.

Table 5-1. Performance Check Test Equipment

Recommended Unit	Model or Part Number
C: 1 μF ±0.2%, sil mica	YHP CS-1
C: 0.1 μF ±0.2%, sil mica	YHP CS-0.1
C: 0.01 μF ±0.2%, sil mica	YHP CS-0.01
C: 1000 pF ±0.2%, air	YHP CS-1000A
C: 100 pF ±0.2%, air	YHP CS-100A
C: 10 pF ±2.5%, 500 WV, cer	0160-0488
C: 1 pF ±10%, 500 WV, mica	0150-0029
L: 1 mH ±0.5%	YHP SI-1
L: 10 mH ±0.2%	YHP SI-10
L: 100 mH ±0.2%	YHP SI-100
These resistors can be used for resistance (R) and dissipation factor (D) checks. One per cent resistors are used with capacitors for D checks and 1/2% (or better) are used for resistance checks.	
carb flm, 10 M, 1/4% 1W	0760-0025
met flm, 1 M 1/2%, 1/2W	0757-0017
met flm, 99K, 1/2%, 1/2 W	0757-0010
carb flm, 29.9K 1%, 1/2W	0727-0185
carb flm, 15K 1%, 1/2W	0727-0168
met flm, 10K 1/2%, 1/4W	0698-4203
ww 7.5K 1/4%, 1/8W	0811-0046
met flm, 5K 1/4%, 1/8W	0698-3237
carb flm, 3K, 1%, 1/2W	0727-0124
ww, 2K, 1/2%, 1/2W	0811-0285
carb flm, 1.5K, 1%, 1/2W	0727-0110
carb flm, 1K, 1/2%, 1/2W	0727-0451
carb flm, 300 Ω, 1%, 1/2W	0727-0065
met flm, 150 Ω, 1%, 1/8W	0757-0284
met flm, 100 Ω, 1/4%, 1/2W	0757-1012
carb flm, 33 Ω, 1%, 1/2W	0727-0965
carb flm, 30 Ω, 1%, 1/2W	0727-0991
ww, 9 ohms, 1/2%, 1/2W	0811-0294
carb flm, 7.5 Ω, 1%, 1/2W	0727-0705
ww, 1.1 Ω, 1/2%, 1/2W	0811-0284
DC Null Voltmeter Range: 1 mV to 300 Vrms Input R: 1 megohm	HP 413A
AC Voltmeter Range: 1 mV to 10 V Input Impedance: 1 megohm	HP 403B
Electronic Counter Sensitivity: 50 mV Freq: Dc to 100 kHz Display: 4 digits minimum	HP 5245L with HP 5261A Plug-In

Table 5-2. Performance Checks

1. CAPACITANCE MEASUREMENT.

C Range: 1 pf to 1000 μF; C Accuracy: ±(1% + 1 digit), 1 nF to 100 μF
D Range: 0.001 to 0.12 for LOW D: 0.05 to 50 for HIGH D
D Accuracy: LOW D --D: ±(5% + 0.002) or 1 dial division, whichever is greater
HIGH D --1/D: ±(5% + 0.05) or 1 dial division of LOW Q dial, whichever is greater.

a. Connect equipment as shown in Figure 5-1.

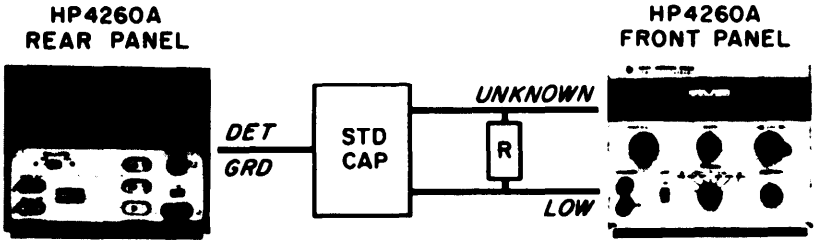


Figure 5-1. Capacitance and D Accuracy Check

b. For this check, locate the following components:

Standard Capacitor	Connect Resistor for Standard D	Function	C Readings	D Readings	C Readings in Cp-AUTO
1 μF	-	Cs	0989 - 1011 nF	less than 0.002	0984 - 1016 nF
0.1 μF	-	Cs	098.9 - 101.1 nF	less than 0.002	098.4 - 101.6 nF
0.1 μF	series 7.5 Ω	Cs	098.9 - 101.1 nF	0.0024 - 0.007	098.4 - 101.6 nF
0.1 μF	series 30 Ω	Cs	098.9 - 101.1 nF	0.0159 - 0.022	098.4 - 101.6 nF
0.1 μF	series 150 Ω	Cs	098.9 - 101.1 nF	0.088 - 0.099	097.5 - 100.7 nF
0.1 μF	parallel 30K Ω	Cp	098.9 - 101.1 nF	0.056 - 0.05	098.4 - 101.6 nF
0.1 μF	parallel 15K Ω	Cp	098.9 - 101.1 nF	0.112 - 0.1	098.4 - 101.6 nF
0.1 μF	parallel 3K Ω	Cp	098.9 - 101.1 nF	0.575 - 0.49	098.4 - 101.6 nF
0.1 μF	parallel 1.5 K	Cp	098.9 - 101.1 nF	1.2 - 0.95	098.4 - 101.6 nF
0.1 μF	parallel 300 Ω	Cp	098.9 - 101.1 nF	10 - 4	-
0.1 μF	parallel 33 Ω	Cp	098.9 - 101.1 nF	more than 20	-
0.01 μF	-	Cs	09.89 - 10.11 nF	less than 0.002	09.84 - 10.16 nF
1000 pF	-	Cs	0979 - 1021 pF	less than 0.002	0974 - 1026 pF
100 pF	-	Cs	0097 - 0103 pF*	less than 0.002	0097 - 0103 pF*
10 pF	-	Cs	0009 - 0011 pF*	-	0009 - 0011 pF*
1 pF	-	Cs	0000 - 0002 pF*	-	0000 - 0002 pF*

*For calibration, subtract residual capacitance from measured value.

c. Set FUNCTION switch to Cp AUTO.

d. Connect 1 μF standard capacitor to UNKNOWN terminals.

e. Set CRL counter to 1000. Set RANGE switch on nF range to light right decimal point light.

Table 5-2. Performance Checks (cont'd)

f. Rotate CRL control for meter null at center and observe that CRL direction lights change at null position.

g. Set FUNCTION switch to Cs LOW D and adjust DQ dial for meter null. (Slight adjustment of CRL control may give best null.) Read the measured C and D values. These values should be within the values listed above for the standard capacitors.

h. Repeat the procedure for the other standard capacitors listed and connect resistors as indicated.

2. INDUCTANCE MEASUREMENT

L Range: 1 μH to 1000 H
L Accuracy: ± (1% + 1 digit) from 1 mH to 100 H

a. For this check, locate the following inductors:

Standard Inductor	L Readings in Ls-Low Q	L Readings in Ls - AUTO
1 mH	0979 - 1021 μH	0974 - 1026 μH
10 mH	09.89 - 10.11 mH	09.84 - 10.16 mH
100 mH	098.9 - 101.1 mH	098.4 - 101.6 mH

Note: Lp: L readings in Lp-High Q should be as follows:

$$Lp = Ls\ (1 + 1/Q^2)$$

where Ls = L readings in Ls-Low Q
Q = Q readings in Ls-Low Q or Lp-High Q

b. Set FUNCTION switch to Ls AUTO.

c. Connect 1 mH standard inductor to UNKNOWN terminals.

d. Set CRL counter to 1000. Set RANGE switch on μH range to light right decimal point light.

e. Rotate CRL control for meter null at center and observe that CRL direction lights change at null position.

f. Set FUNCTION switch to Lp LOW D or Ls HIGH D and adjust DQ dial for meter null. (Slight adjustment of CRL control may give best null.) Read the measured L and Q values. These values should be within the values listed above for the standard inductors.

g. Repeat the procedure for the other standard inductors listed.

3. DC RESISTANCE MEASUREMENT.

Range: 10 milliohms to 10 megohms
Accuracy: ± (1% + 1 digit) from 10 ohms to 1 megohm
± (2% + 1 digit) from 10 milliohms to 10 ohms and 1 megohm to 10 megohms
Residual Resistance: approximately 3 milliohms or less

a. Use an external voltmeter such as the HP 413A DC Null Voltmeter for maximum resolution of the bridge balance point. Remove the shorting strap on the Voltmeter rear panel to isolate the Voltmeter from power line ground. Connect the Voltmeter low or ground input terminal to the 4260A rear-panel DETECTOR ground terminal. Connect the other Voltmeter input terminal to the UNKNOWN LOW terminal on the 4260A.

b. Set the FUNCTION switch to R.

c. Set RANGE switch full cw.

d. Rotate CRL control to 1000.

e. Connect 10 megohm standard resistor to UNKNOWN terminals.

f. Adjust CRL control for null on voltmeter and increase SENSITIVITY control cw for maximum resolution. Read measured R value from CRL counter and decimal point displayed.

g. Repeat the procedure for the other standard resistors.

Table 5-2. Performance Checks (con't)

h. Remove resistor from UNKNOWN terminals. With a short, heavy piece of wire, short UNKNOWN terminals. Set RANGE switch full ccw. Measure residual resistance by adjusting CRL control for null indication on Voltmeter. Residual resistance should be less than 1 digit.

Standard Resistors	Model 4260A Readings
Resistor, 10 M Ω ± 0.5%, 1/4W, metal film	09.79 - 10.21 M Ω
Resistor, 1 M Ω ±0.5%, 1/4W, metal film	0989 - 1011 K Ω
Resistor, 100K Ω ±0.5%, 1/4W, metal film	098.9 - 101.1 K Ω
Resistor, 10K Ω ±0.5%, 1/4W, metal film or WW	09.89 - 10.11 K Ω
Resistor, 7.5K Ω ±0.5%, 1/4W, metal film or WW	07.42 - 07.58 K Ω
Resistor, 5K Ω ±0.5%, 1/4W, metal film or WW	04.94 - 05.06 K Ω
Resistor, 2K Ω ± 0.5%, 1/4W, metal film or WW	01.97 - 02.03 K Ω
Resistor, 1K Ω ±0.5%, 1/4W, metal film or WW	0989 - 1011 Ω
Resistor, 100 Ω ±0.5%, 1/4W, WW	098.9 - 101.1 Ω
Resistor, 10 Ω, ±0.5%, 1/4W, WW	09.79 - 10.21 Ω
Resistor, 1 Ω, ±0.5%, 1/4W, WW	00.97 - 01.03 Ω

i. To measure the maximum dc voltage at the UNKNOWN terminals for R measurements, connect only a Voltmeter to these terminals.

j. Set FUNCTION to R, RANGE full ccw, and rotate CRL to 1030.

k. Voltmeter should indicate between 30 and 40 Vdc for 115 or 230 volts ac power.

4. INTERNAL OSCILLATOR: Frequency: 1 kHz ± 2%
Voltage: 100 mV rms ± 20%

a. Connect equipment as shown in Figure 5-2.

b. Set FUNCTION switch to Ls LOW Q position.

c. Rotate CRL control to 1030.

d. Rotate DQ control full ccw.

e. Read frequency displayed on counter and voltage indicated on voltmeter. Counter should display between 980 Hz and 1020 Hz and meter should indicate between 80 and 120 millivolts rms.

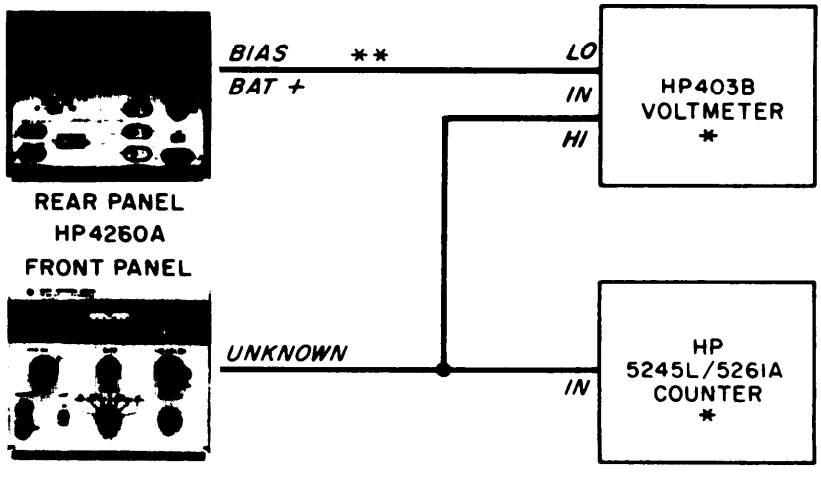


Figure 5-2. Internal Oscillator Check

Hewlett-Packard Model 4260A
Instrument Serial No. ___ - _____

Tests Performed by _____
Date _____

PERFORMANCE CHECK TEST CARD

Description	Check
1. Capacitance Measurement	Accuracy ± (1% + 1 digit) ☐ LOW D ± (5% + 0.002) ☐ HIGH D ± (5% + 0.05) ☐
2. Inductance Measurement	Accuracy ± (1% + 1 digit) ☐
3. Dc Resistance Measurement	Accuracy 10 ohms to 1 megohm ± (1% + 1 digit) ☐ Accuracy 10 milliohms to 10 megohms ± (2% + 1 digit) ☐
4. Internal Oscillator	Frequency 980 Hz ☐ 1020 Hz Voltage 80 mV rms ☐ 120 mV rms

5-11. TROUBLESHOOTING.

5-12. The best approach to isolating trouble is to first ensure that the trouble is not a result of conditions external to the 4260A; then obtain all possible information from the controls and indicators and logically apply this information to locate the defective unit or component. Figure 3-1 (Controls and Indicators, front panel, Controls and Connectors, rear panel), and component location figures and schematic diagrams can be used to understand operation and locate parts. Table 5-3 lists test equipment required for troubleshooting. Table 5-4 (Troubleshooting) lists possible trouble symptoms and checks for their cause. Table 5-5 shows decimal point and units indication logic. Troubleshooting of printed circuit assemblies is simplified if a suspected assembly is replaced with an operating assembly. Printed circuit operation checks are outlined in Paragraphs 5-39 through 5-51 .

5-13. As a general check procedure, the following questions are a guide for isolating trouble:

a. Are external instruments operating and connected correctly ?

b. Is the unknown component connected correctly?

c. Are rear-panel shorting straps in place?

5-14. REPAIR.

5-15. COVER AND FRONT PANEL REMOVAL.

5-16. Instrument covers are removed by taking out screws in each cover. To remove front panel, remove all front-panel knobs and side covers. In Figure 5-3 10 cat e the four screws “A” which hold the side frames; loosen these screws. Carefully pull front panel towards front while holding side frames apart to release panel. Loosen deck side screws also.

5-17. PRINTED CIRCUIT COMPONENT REPLACEMENT

5-18. To replace c o m p o n e n t s on printed circuit boards, the following procedure is recommended:

a. Clip leads of defective component and remove.

b. With toothpick and soldering iron, clean component mounting holes.

c. Insert replacement component leads into holes. Use heat and solder sparingly and solder leads in place.

d. Refer to Paragraphs 5-39 through 5-51 for operation checks of printed circuit assemblies.

5-19. CRL COUNTER AND R3 REPLACEMENT.

5-20. CRL COUNTER. To remove this counter, remove two screws “B” in Figure 5-3 and lift out counter. Refer to Paragraph 5-27 (CRL ADJUSTMENTS) before installing counter.

5-21. CRL RESISTOR R3. For R3 replacement, remove CRL knob and four screws “C” in Figure 5-3. Install replacement R3. Adjustment is required; refer to Paragraph 5-27 (CRL ADJUSTMENTS).

5-22. DQ DIAL AND R5 REPLACEMENT.

5-23. The DQ dial and resistor R5 are installed as a calibrated unit and therefore not separately replaceable. Contact the nearest Hewlett-Packard Sales/ Service Office for service assistance (see lists at the back of this manual).

5-24. ADJUSTMENTS.

5-25. 1 kHz OSCILLATOR LEVEL & FREQUENCY. With 4260A top cover removed, connect oscilloscope and electronic counter to pin T of J2. Adjust R213 for level between 4.5 and 6.7 volts peak-to-peak, with positive peak clipped not more than 100 microseconds. Adjust frequency with R210 for 995 to 1005 Hz. Repeat level and frequency adjustments until both are within these values.

5-26. ERROR SIGNAL PHASE AND GAIN. To check phase and gain of the error signal amplifier on detector assembly A400, the test setup of Figure 5-4 is required.

a. Disconnect the shielded cable from pin 1 of J4.

b. Connect the equipment as shown in Figure 5-4.

c. Set 4260A LINE switch to ON.

d. Adjust the oscillator output voltage to 1 volt peak-to-peak on the oscilloscope. Set oscillator frequency to 1000 Hz, ± 1 Hz.

e. Alternately adjust R415 and R417 so that oscillator output voltage and J4 pin 7 voltage are in phase and J4 pin 7 voltage level is between O. 9 and 1.1 volt peak-to-peak.

f. Turnoff 4260A LINE switch and disconnect equipment. Connect shielded cable to J4 pin 1. This completes the adjustment.

5-27. CRL COUNTER ADJUSTMENT.

a. Remove power cable from the 4260A to unground the instrument.

b. Disconnect shielded cable from CRL resistor R3.

c. Set CRL counter to 0001.

d. Loosen screws “B” in Figure 5-3 and separate counter gear from gear train.

e. With a 1% meter or another 4260A with external null meter, adjust resistance of R3 to be 5.0 ohms.

f. Set CRL counter to 0001 and engage counter with gear train.

g. Tighten screws loosened in step d and check to ensure that CRL control operates gear train easily without slippage. If too stiff, loosen screws and readjust.

h. Connect shielded cable to R3. This completes the adjustment.

Table 5-3. Test Equipment Required for Troubleshooting

Item	Description	HP Model
Dc Voltmeter	Range: 1 mV to 300 Vdc Input R: 1 megohm	413A
Oscillator	Frequency: 20 Hz to 20 kHz Output Level: 2 volts rms max.	200CD
Oscilloscope	Vertical Sensitivity: 50 mV/cm	175A with 1780A Horizontal and 1750B Dual Trace Vert. Ampl. Plug-ins.
Standard Components	See Table 5-1, Performance Check Test Equipment	

Table 5-4. Trouble Symptoms and Possible Causes

Symptom	Normal Operation	Possible Cause	Check
No lamps light	One of the decimal point indicator lamps should light when the 4260A is turned on.	Fuse blown Defective lamps +110V supply Switch contacts	Fuse Lamps Power supply - CR207 S101, S102
No meter deflection for R measurements	Meter should deflect either right or left when S102 set to R position.	Defective meter circuit 40V dc supply Switch contacts Bridge circuit	Meter, CR1, CR2 Power supply - CR206 S101, S102 R3, R110
No meter deflection for C & L measurements	Meter should deflect right when S102 set to Cs, Cp, Cp AUTO, Ls AUTO, Ls or Lp position.	1 kHz oscillator Error signal amplifier Switch contacts Bridge circuit	Oscillator - Q205 to Q207 Amplifier - Q401 to Q405 S101, S102, S3 C1, R3 to R5
Noisy null or no bridge null obtained for R measurements	Bridge null should be obtained when S102 is set to R position	Switch contacts Bridge circuit	S101, S102 R3, R101 to R110 C101 to C105
Noisy null or no bridge null obtained for C and L measurements (without AUTO)	Bridge null should be obtained when S102 set to Cs, Cp, Ls or Lp position.	Switch contacts Bridge circuit Error signal amplifier oscillation High impedance amplifier oscillation	S101, S102, S3 C1, R3 to R5, R101 to R109, R111, C101 to C105 Amplifier - Q401 to Q405 Amplifier - Q301,Q302, Q305, Q306
Noisy null or no bridge null obtained for C AUTO and L AUTO measurements	Bridge null should be obtained when S102 set to Cp AUTO or Ls AUTO position.	Switch contacts Auto null circuits	S102 Check voltages and waveforms to determine faulty circuit
Abnormal operation on direction indicator. Auto null obtained properly.	Direction indicator light should shift from left to right or from right to left in the vicinity of bridge null.	Switch contacts Neon lamp driver Differential amplifier Phase detector Error signal amplifier	S103, S3 Q418 Q416, Q417 CR414, CR415 Q405
Display out of specifications (not AUTO measurements)	CRL and DQ readings within specifications.	Switch contacts Bridge circuit Low impedance of high impedance amplifier	S101, S102 R3 to R6, R101 to R111, C1 to C4, C101 to C105 Amplifier - Q301,Q302 Amplifier - Q305, Q306
Display in AUTO measurements out of specifications	CL readings in AUTO measurements within specifications.	Variable resistance circuit.	Q411 to Q414, CR416 to CR420, C421, L401

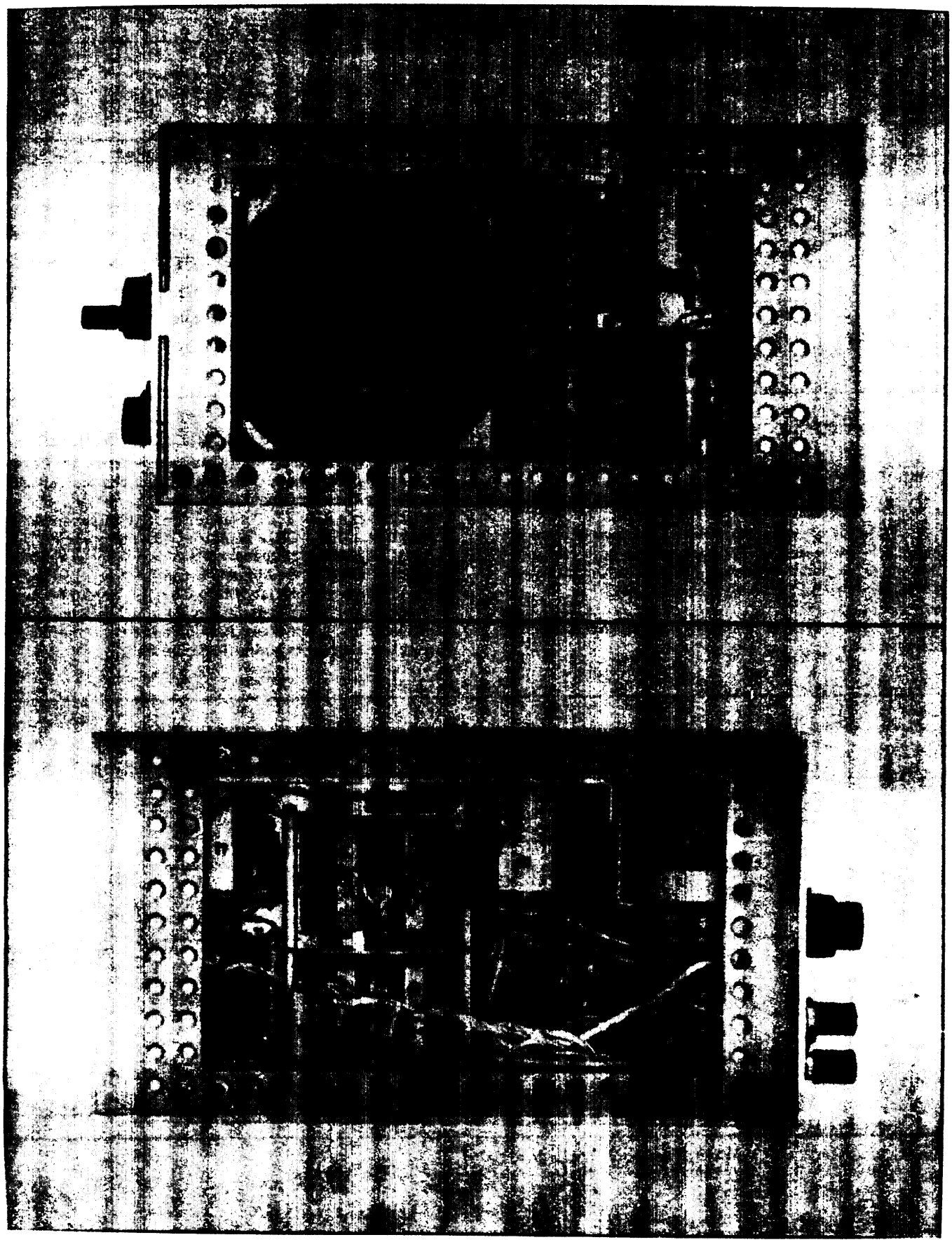


Figure 5-3. Right and Left Side Internal Component Location

02337-1

Table 5-5. Decimal Point and Units Indication Logic

Function S102 / Range S101	Cs LOW D (ccw)			Cp HIGH D		Cp AUTO		R			Ls AUTO		Ls LOW Q		Lp HIGH Q (cw)	
	Decimal Lights			Units	Decimal Lights			Units	Decimal Lights			Units	Decimal Lights			Units
1 (ccw)	OFF	OFF	ON	μF	ON	OFF	OFF	Ω	OFF	OFF	ON	μH				
2	OFF	ON	OFF	μF	OFF	ON	OFF	Ω	ON	OFF	OFF	mH				
3	ON	OFF	OFF	μF	OFF	OFF	ON	Ω	OFF	ON	OFF	mH				
4	OFF	OFF	ON	nF	ON	OFF	OFF	kΩ	OFF	OFF	ON	mH				
5	OFF	ON	OFF	nF	OFF	ON	OFF	kΩ	ON	OFF	OFF	H				
6	ON	OFF	OFF	nF	OFF	OFF	ON	kΩ	OFF	ON	OFF	H				
7 (cw)	OFF	OFF	ON	pF	ON	OFF	OFF	MΩ	OFF	OFF	ON	H				

5-28. DQ DIAL MECHANICAL ZERO.

a. With instrument power off and top cover removed, rotate DQ control full ccw.

b. Loosen two allen drive setscrews on R5 pulley.

c. Rotate DQ control ccw until the black line on the right off -scale end of DQ dial aligns with red index line on front panel window. Dual wire-wound resistor R5A, B should also be full CCW.

d. Tighten two setscrews. This completes the adjustment.

5-29. BRIDGE CIRCUIT" COMPONENT CHECKS.

5-30. INTRODUCTION. The procedures in Paragraphs 5-31 through 5-38 outline checks and adjustments for the components in the bridge circuit. These include f i x e d 0.2 μF capacitor C1, compensating capacitor C305, CRL resistor R3, trimmers C103, C104, C3, and accuracy of resistors in the RANGE switch. The test equipment setup is shown in Figure 5-5. These checks and adjustments should be performed in the order listed when a comprehensive overall instrument checkout is desired. Test equipment for these checks is listed in Table 5-6.

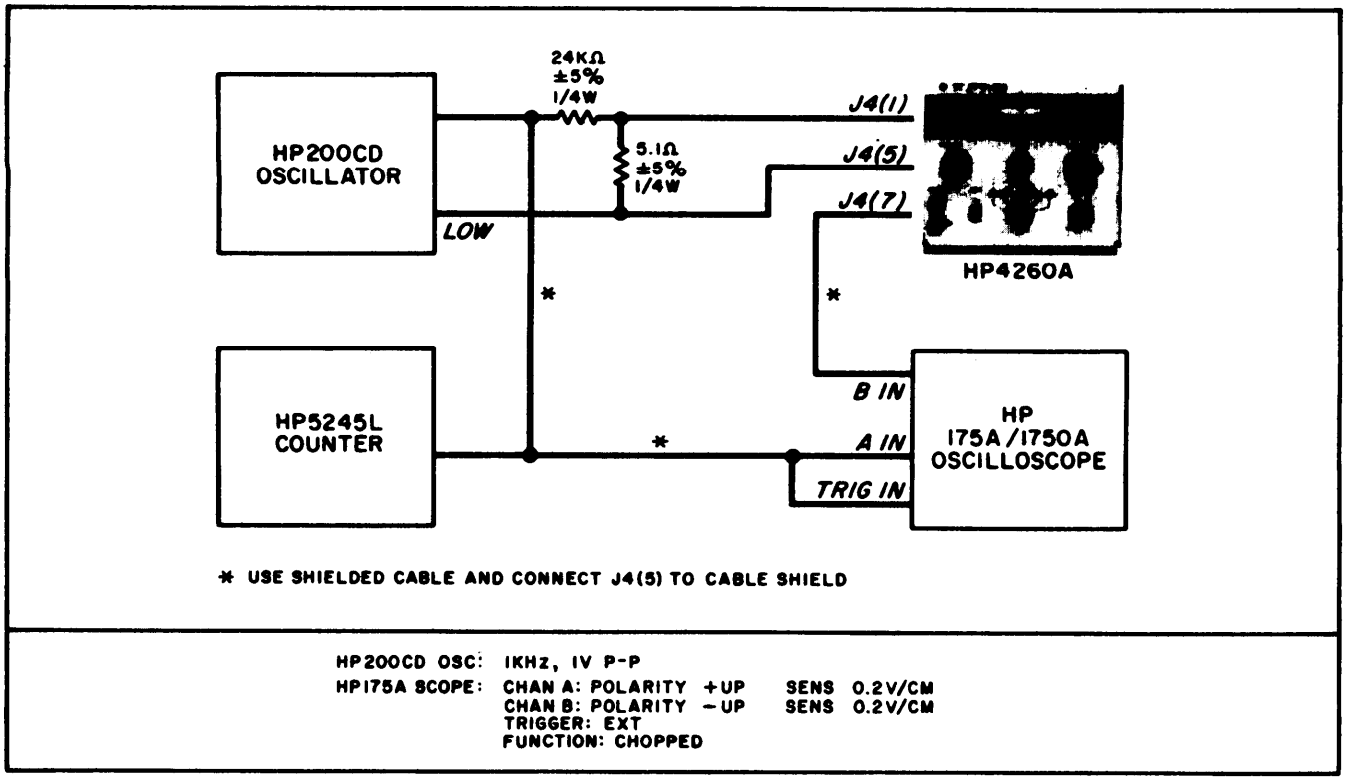


Figure 5-4. Error Signal Amplifier Phase and Gain Test Setup

Table 5-6. Test Equipment for Bridge Circuit Checks.

ITEM	DESCRIPTION	MODEL OR PART NO.
Oscillator	Frequency: 20 Hz to 20 kHz Output Level: 2 volts rms	200CD
Oscilloscope	Vertical Sensitivity: 100 μv/cm	140 A with 1400A Diff. Ampl. plug in
Standard C	0.1 microfarad, ±0.1%	YHP CS-0.1
Silvered Mica C	0.01 microfarad, ±0.2%	YHP CS-0.01
Silvered Mica C	1000 picofarads, ±1%	YHP CS-1000A
Standard L	1 millihenry, ±0.1%	General Radio 1482-E
Resistance Bridge	Range: 10 ohms to 10K ohms Accuracy: ±1%	HP 4260A
Resistors	fxd, comp, 16 ohms, ±5%, 1/2 W fxd, comp, 16K ohms, ±5%, 1/4 W fxd, comp, 33 ohms, ±5%, 1/4 W fxd, comp, 160K ohms, ±5%, 1/4 W fxd, comp, 330 ohms, ±5%, 1/4 W fxd, comp, 1.6 Meg, ±5%, 1/4 W fxd, comp, 3.3K ohms, ±5%, 1/4 W Met film, 15.9K ohms, ±0.5%; use 14K ohms, ±0.25% and 1.91K ohms, ±1%	0686-1605 0683-1635 0683-3305 0683-1645 0683-3315 0683-1655 0683-3325 0698-3371 0698-4631

5-31. C1 CHECK. To check fixed bridge capacitor Cl, connect the instruments as shown in Figure 5-5.

a. Connect a standard 0.1 μF capacitor such as the YHP Model CS-0.1 and a 16 ohm 5% 1/4 watt resistor (HP #0686-1605) in series across the UNKNOWN terminals. The guard terminal of the standard capacitor should be connected to the rear-panel ground terminal of the DETECTOR jack.

b. Set FUNCTION switch to Cs LOW D.

c. Set RANGE switch to display XXX. X nF.

d. Set rear-panel INT-EXT switch to EXT and set oscillator to 1 kHz.

e. Balance the bridge and read the measured C value. C value should be: standard value ± 0.3%; for example 099.7 to 100.3 nF.

5-32. C305 SELECTION. Capacitor C305 compensates for amplifier stray input capacity and the capacity of the CRL control. The procedure for selecting the correct value for C305 is as follows:

a. Connect the test setup as shown in Figure 5-5.

b. Connect a standard capacitor such as the YHP Model CS-0.1 μF and a 16K ohm ±5% 1/4 watt resistor in parallel to the UNKNOWN terminals.

c. Set FUNCTION switch to Cp HIGH D.

d. Set RANGE switch for XXX. X nF display.

e. Set rear-panel INT-EXT switch to EXT and set oscillator to 1 kHz.

f. Balance the bridge and read measured C value. Measured C = _ _ _ . _ nF.

g. Disconnect the parallel 16K ohms resistor from the UNKNOWN terminals. Connect a 33 ohms 5% 1/4 watt resistor in parallel with the standard capacitor.

h. Change oscillator frequency to 20 kHz.

i. Balance the bridge and read measured C value. Measured C = _ _ _ . _ nF.

j. Calculate the difference between 1 kHz value and 20 kHz value (steps f and i). Difference should be within ± 0.2 nF. If not within this tolerance, change value of C305 and repeat.

5-33. CRL RESISTANCE (R3) AT 500 OHMS. For maximum accuracy during measurements, CRL resistor R3 should introduce no errors. C305 selection provides high frequency compensation at the high resistance end of R3. The R3 check at 500 ohms is an additional check to ensure that R3 resistance is correct.

a. Connect test equipment setup as shown in Figure 5-5.

b. Connect the 0.01 μF silvered mica capacitor with a 160K ohms ±5% 1/4 watt resistor in parallel to the UNKNOWN terminals.

c. Set FUNCTION switch to Cp HIGH D.

d. Set RANGE switch for XXX. XnF display.

e. Set INT-EXT switch on rear panel to EXT.

f. Set Oscillator frequency to 1 kHz.

g. Balance the bridge and read the measured C value. Measured C = _ _ _ . _ nF.

h. Disconnect parallel 160K resistor and connect a 330 ohm ±5% 1/4 watt resistor in parallel with the standard silvered mica capacitor.

i. Change oscillator frequency to 20 kHz.

j. Balance the bridge and read measured C value. Measured C = _ _ _ . _ nF. Capacitance difference between value obtained in steps g and j should be within a half digit on the CRL counter.

5-34. C103 CHECK AND ADJUSTMENT. Trimmer capacitor C 103 is inside switch assembly A100. The adjustment can be done through the access hole in the switch assembly.

a. Connect test equipment as shown in Figure 5-5.

b. Connect the 0.01 µF silvered mica capacitor with a parallel 160K ohms ± 5% 1/4 watt resistor to the UNKNOWN terminals.

c. Set FUNCTION switch to Cp HIGH D.

d. Set RANGE switch for XX. XX nF display.

e. Set oscillator INT-EXT switch to EXT. and adjust oscillator frequency to 1 kHz.

f. Balance the bridge and read measured C value. Measured C = _ _ . _ _ nF.

g. Disconnect the 160K ohms resistor and connect a 330 ohms ± 5% 1/4 watt resistor in parallel with the silvered mica capacitor.

h. Change oscillator frequency to 20 kHz.

i. Balance the bridge and read measured C value. Measured C = _ _ . _ _ nF. Difference between C values of steps f and i should be made minimum by adjusting C103.

j. Adjust C103 slightly and repeat procedure. C103 adjustment is correct when difference between the two measured C values is minimum.

5-35. C104 CHECK AND ADJUSTMENT. Trimmer capacitor C104 is inside switch assembly A100. The adjustment can be done through the access hole in the switch assembly.

a. Connect test equipment setup as shown in Figure 5-5.

b. Connect the 1000 pF silvered mica capacitor with a 1.6 megohm ± 5% 1/4 watt resistor in parallel to the UNKNOWN terminals.

c. Set FUNCTION switch to Cp HIGH D.

d. Set RANGE switch for XXXX. pF display.

e. Set oscillator INT-EXT switch to EXT. and set oscillator frequency to 1000 Hz.

f. Balance the bridge and read measured C value. Measured C = _ _ _ _. pF.

g. Disconnect the 1.6 megohm resistor and connect a 3300 ohm ± 5% 1/4 watt resistor in parallel with the 1000 pF capacitor.

h. Change oscillator frequency to 20 kHz.

i. Balance the bridge and read measured C value. Measured C = _ _ _ _ . pF. Difference between C values for steps f and i should be made minimum by adjusting C104.

j. Adjust C104 slightly and repeat procedure. Adjustment is correct when difference between the two measured C values is minimum. This completes C104 adjustment.

5-36. C3 ADJUSTMENT. Trimmer capacitor C3 is adjusted to compensate for transformer T2 capacitance. The procedure is as follows:

a. Connect test equipment setup as shown in Figure 5-5.

b. Connect the 0.01 µF ± 0.2% with a parallel 15.9 K ohms ± 0.5% 1/4 watt resistor to the UNKNOWN terminals.

c. Set FUNCTION switch to Cp HIGH D.

d. Set RANGE switch for XX.XX nF display.

e. Set oscillator INT-EXT switch to EXT.

f. Set oscillator frequency to 1000 Hz ± 5 Hz.

g. Balance the bridge and read measured D value. D reading should be 1 ± 0.05.

h. Remove ac power from the 4260A.

i. Remove shorting strap across Cp Ls DQ RESISTOR terminals on rear panel. With another 4260A measure the dc resistance between the ungrounded Cp Ls DQ RESISTOR terminal and the white-black lead end of Cl.

j. Adjust DQ control so that the second 4260A measures 812 ohms. Disconnect measuring 4260A and connect shorting strap across Cp Ls DQ RESISTOR terminals.

k. Apply ac power to 4260A

l. Without moving DC) control, balance the bridge by adjusting CRL control and C3. Adjustment is correct when bridge null is obtained.

5-37. FIRST RANGE CHECK (FULL CCW). The following procedure checks 1 ohm resistor R101 inside the RANGE switch.

a. Connect test setup as shown in Figure 5-5.

b. Connect a standard 1 mH inductor such as a General Radio 1482E. The inductor high terminal is connected to the unmarked UNKNOWN terminal and the inductor low and guard terminals should be connected to the UNKNOWN LOW terminal. The inductor case should be isolated from ground.

c. Set FUNCTION switch to Ls LOW Q.

d. Set RANGE switch for XXXX. µH .

e. Set oscillator INT-EXT switch to EXT and set oscillator frequency to 1 kHz.

f. Balance the bridge and read the measured L value. Measured L value = _ _ _ _ . µH.

g. Install a 330 ohm ±5% 1/4 watt resistor in series between the inductor high terminal and the unmarked UNKNOWN.

h. Set oscillator frequency to 20 kHz.

i. Balance the bridge and read measured L value. Measured L value = _ _ _ _. µH. Inductance difference between L values obtained in steps f and i should be within ± 0005 µH. If not within 0005, measure the resistance between UNKOWN LOW terminal and terminal 40 (see Page 7-9) as follows:

1) Remove instrument top, bottom, and right side covers. Remove two screws in printed circuit hold-down cover and lift off.

2) Remove all three printed circuit assemblies.

3) Set FUNCTION switch to Lp LOW Q.

4) Remove shorting strap from BIAS BATTERY terminals.

5) Measure the dc resistance between UNKNOWN LOW terminal and terminal 40 (Page 7-9). If this value is 1 ohm ± 0.5%, select C101 for L difference readings within 0005 as discussed in step i. If the R value is not 1 ohm ± 0.5%, check contacts of S101 and S102.

5-38. SECOND RANGE CHECK. The following procedure checks 10 ohm resistor R102 inside RANGE switch A100.

a. Connect test setup as shown in Figure 5-5.

b. Connect a standard 1 mH inductor such as a General Radio 1482E. The inductor high terminal is connected to the unmarked UNKNOWN terminal and the inductor low and guard terminals should be connected to the UNKNOWN LOW terminal. The inductor case should be isolated from ground.

c. Set FUNCTION switch to Ls LOW Q.

d. Set RANGE switch for XX.XX mH display.

e. Set oscillator INT-EXT switch to EXT and adjust oscillator frequency to 1 kHz.

f. Balance the bridge and read the measured L value. Measured L value = _ _ . _ mH.

g. Disconnect the standard inductor from the UNKNOWN unmarked terminal and connect a 330 ohm 5% 1/4 watt resistor in series.

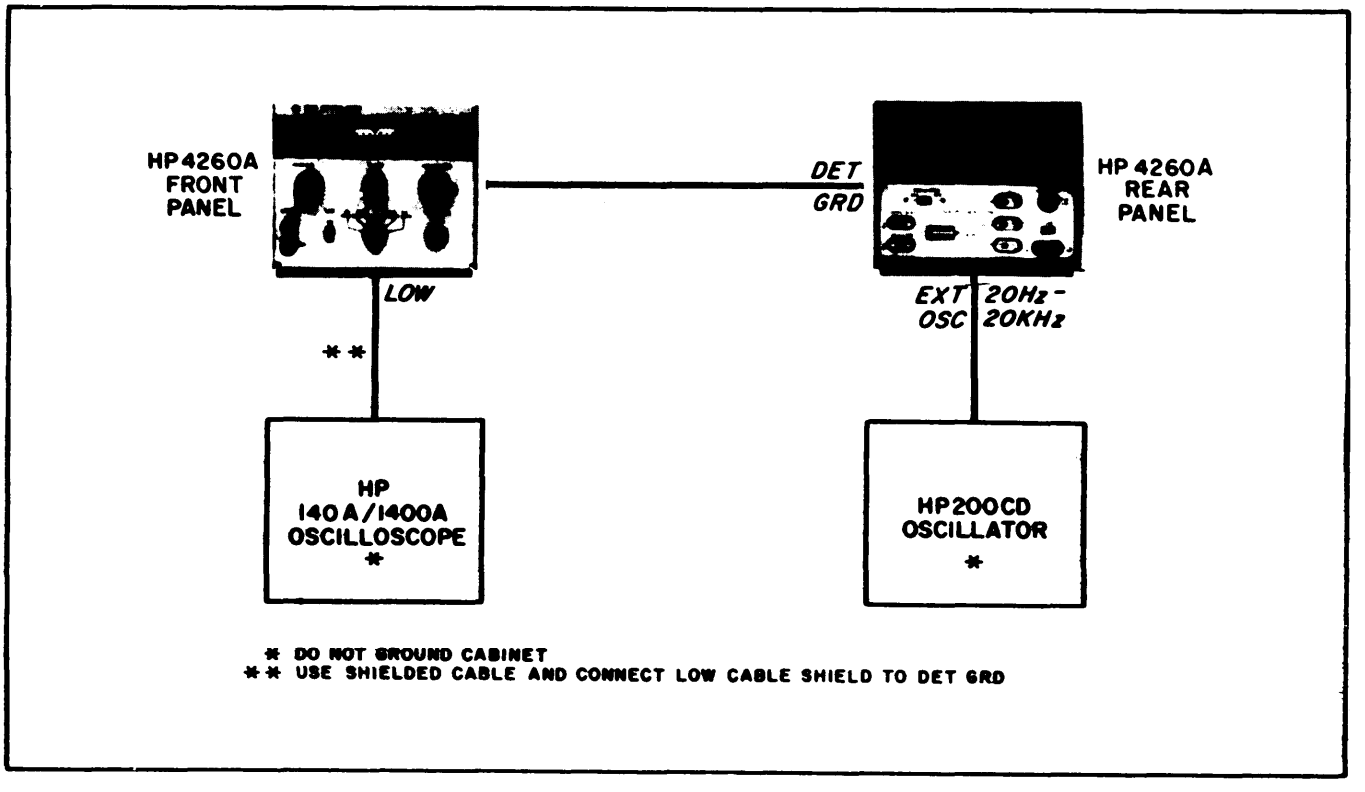


Figure 5-5. Test Setup for Adjustments

h. Set oscillator frequency to 20kHz.

i. Balance the bridge and read measured L va.lue. Measured L value = _ _ . _ _ mH. Inductance difference between measured L values in steps f and i should be within half a digit. If not within half a digit on the CRL counter, the measured dc resistance of R102 should be 10 ohms ± 0.5% (see Paragraph 5-37, step i).

5-39. OPERATION CHECKS OF PRINTED CIRCUIT ASSEMBLIES.

5-40. The f o l l o w i n g paragraphs outline operating checks for printed circuit assemblies A200, A300, and A400.

5-41. POWER SUPPLY AND 1 KHZ OSCILLATOR ASSEMBLY A200.

5-42. POWER SUPPLY.

a. With LINE switch ON, connect dc voltmeter to J2 pin D (test point 1). Voltmeter should indicate between +12.0 and +13.5 Vdc.

b. Connect dc voltmeter to J2 pin F (test point 2). Voltmeter should indicate between -11.0 and -12.5 Vdc.

c. Connect dc voltmeter to J2 pin P (test point 3). Voltmeter should indicate between +95 and +115 Vdc.

5-43. 1 kHz OSCILLATOR.

a. With LINE switch ON, set rear-panel oscillator switch to INT.

b. Connect oscilloscope to J2 pin T (test point 4). Voltage level should be between 4.5 and 6.7 volts peak-to-peak. Waveform is shown in Figure 7.4 ③ .

c. Connect electronic counter to J2 Pin T. Counted frequency should be between 995 and 1005 Hz.

5-44. REFERENCE VOLTAGE ASSEMBLY A300.

5-45. Operation checks of this assembly are best made by waveforms. Test points 5 through 16, Figure ③ , inicate waveforms for these circuits to be used with the following procedures. Remove power.

a. Disconnect white-green-blue wire from J4, pin 10, and connect this wire to terminal 3 of DQ resistor R5A.

b. Set FUNCTION switch to Cp AUTO position.

c. Set RANGE switch to display = XXX.X nF.

d. Connect a 100 nF (0.1 µF) ± 5% capacitor (HP 0170-0001) and a 27K ohm ± 5% resistor (0689-2735) in parallel across the UNKNOWN terminals.

e. Remove detector assembly A400 and install 15-pin extender board (HP 5060-0049) in A400 jack J4. Observe correct orientation and insert A400 in extender board. Connect oscilloscope to test point 19 (R430, R431 junction).

f. Apply power to 4260A and adjust CRL and DQ controls for minimum amplitude of waveform at test point 19 (bridge balanced). CRL counter should read between 095.0 nF and 105.0 nF and D reading should be between 0.053 and 0.065 on HIGH D scale.

g. With the bridge balanced, the waveforms of Fig. 7-5 ③ or test points 5 through 16 should now result: Turn power-off and remove reference voltage assembly A300 from J3 and install a 15-pin extender board in J3. Observe correct orientation and insert A300 in 15-pin extender.

h. Apply power, connect oscilloscope to test points 5 through 16 and compare each waveform with those shown in Figure 7-5 ③ .

5-46. DETECTOR ASSEMBLY A400.

5-47. Conditions for observing waveforms at test points on A400 are the same as outlined in Paragraph 5-45, steps a through f.

5-48 PHASE DETECTOR CIRCUIT. Waveforms (Figure 7-6 ③) for test points 17 and 18 indicate normal operation. The difference between dc voltages at test points 19 and 20, or 19 and 21 is less than 10 millivolts. These voltages must be measured using a dc voltmeter with an input impedance greater than 10 megohms.

5-49. ERROR SIGNAL AMPLIFIER CIRCUIT. Waveforms for test points 22 and 23 are shown in Figure 7-6 ③ . The changes at these test points when the CRL control is increased or decreased 0.2% from bridge balance point are shown as 22a, b and 23a, b. These waveforms indicate that error signal amplifier gain is normal and phase relationship is correct.

5-50. VARIABLE RESISTANCE CIRCUIT. Connect resistance network as shown in Figure 5-6. Dc voltage at test point 24 should be between +5.3 and +6.1 volts. Dc voltage or waveform changes at test points 25 through 30 are shown Fig. 7-6 ③ for a CRL control change of +0.2% or -0.2% from bridge balance point.

5-51. NEON LAMP DRIVER. Dc voltage changes at test points 32 and 33 are shown in Fig. 7-6 ③ or a CRL control change of +0.2% or -0.2% from bridge balance point.

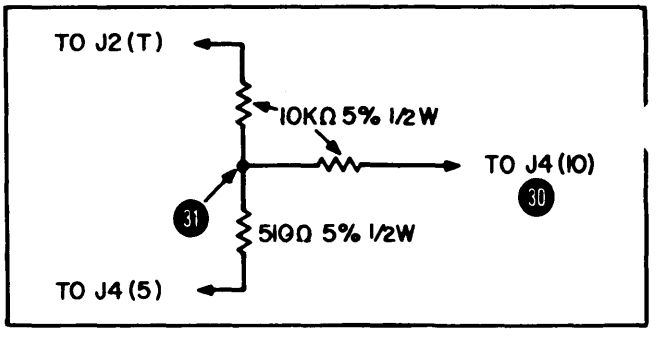


Figure 5-6. Resistance Network for Checks

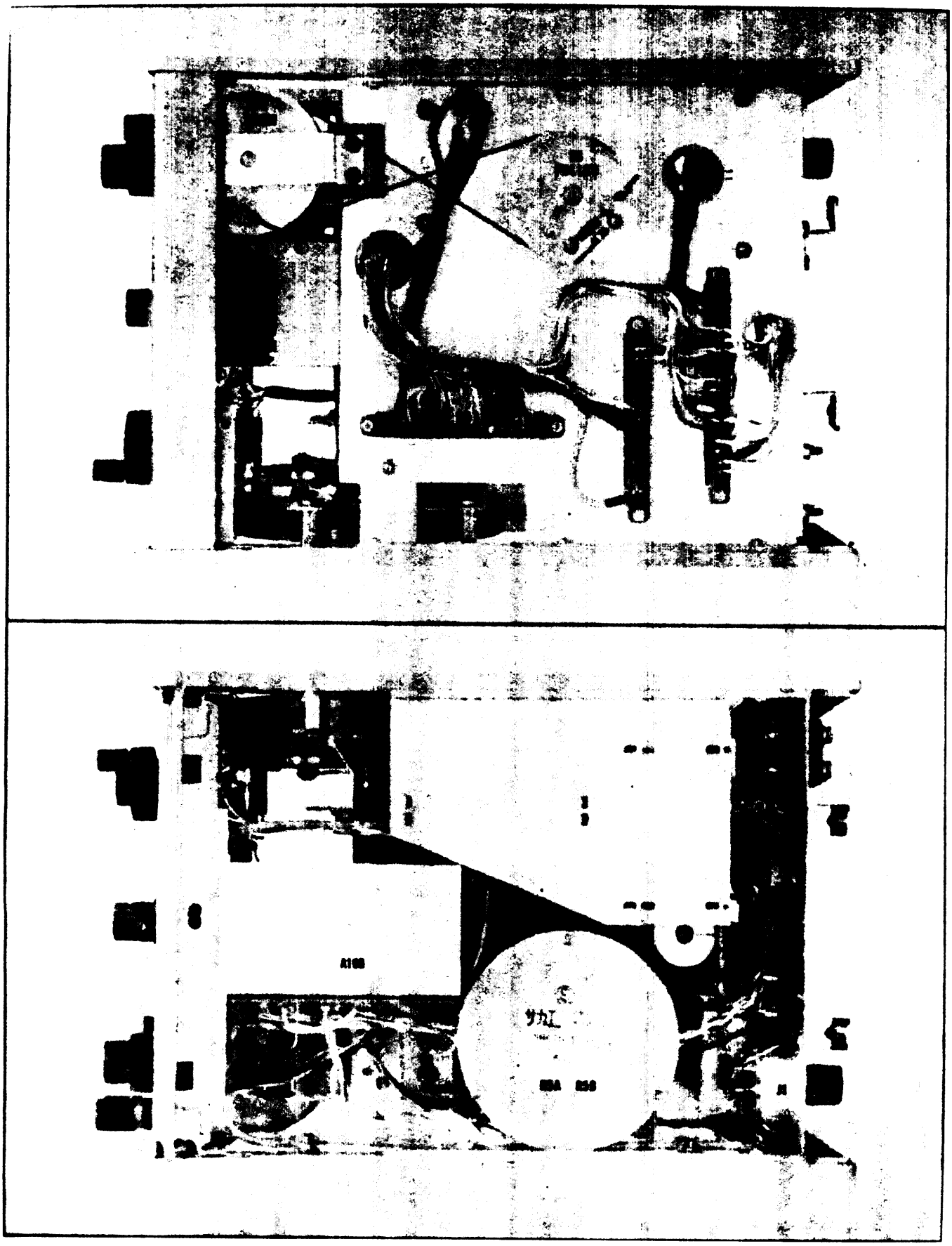


Figure 5-7. Top and Bottom Internal Component Location

SECTION VI

PREVENTIVE MAINTENANCE

6-1. SCOPE OF MAINTENANCE

a. The maintenance duties assigned to the operator of the ZM-71/U are listed below together with a reference to the paragraphs covering the specific maintenance functions. The duties assigned do not require tools or test equipment other than those issued with the equipment.

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

(2) Operator's weekly preventive maintenance checks and services (para 6-5).

(3) Cleaning (para 6-7).

b. The maintenance duties assigned to the organizational maintenance repairmen of the equipment are listed below, together with a reference to the paragraphs covering the specific functions. The duties assigned do not require tools or test equipment other than those issued with the equipment.

(1) Organizational monthly preventive maintenance checks and services (para 6-6).

(2) Rustproofing and paint (para 6-8).

6-2. PREVENTIVE MAINTENANCE

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

a. Systematic Care. The procedures given in paragraphs 6-4 through 6-7 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 charts (para 6-4 and 6-5) outline functions to be performed at specific intervals. These checks and services are designed to maintain Army 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 charts indicate what to check, how to check, and the normal conditions; the References column lists the paragraphs that contain detailed repair or replacement procedures. If the defect cannot be remedied by the operator, a higher category of maintenance or repair is required. Records and reports of these checks and services must be made in accordance with instructions given in TM 38-750.

6-3. PREVENTIVE MAINTENANCE CHECKS AND SERVICES PERIODS

Preventive maintenance checks and services of the ZM-71/U are required daily, weekly, and monthly.

a. Paragraph 6-4 specifies the checks and services that must be accomplished daily, or under the special conditions listed below:

(1) Before the equipment is taken on a mission.

(2) When the equipment is initially installed.

(3) When the equipment is reinstalled after removal for any reason.

(4) At least once a week, if the equipment is maintained in standby condition.

b. Paragraphs 6-5 and 6-6 specify additional checks and services that must be performed weekly and monthly. Perform the maintenance functions indicated in the monthly preventive maintenance checks and services chart (para 6-6) once each month. A month is defined as approximately 30 calendar days of 8-hour-per-day operation. If the equipment is operated 16 hours a day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. Equipment maintained in a standby (ready for immediate operation) condition must have monthly preventive maintenance checks and services. Equipment is limited storage (requires service before operation) does not require monthly preventive maintenance.

6-4. OPERATORS DAILY PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Sequence No.	Item to be inspected	Procedure	References
1	ZM-71-71/U	Check equipment for completeness and general condition.	
2	Exterior surfaces	Clean exterior surface of equipment.	Para 6-7.
3	External receptacles	Inspect external receptacles for breakage and for firm seating.	
4	Meter glass	Inspect front panel glass window for damaged housing, broken glass, physical damage, dust, or moisture.	
5	Knobs, controls, and switches	During operation (Item 6), check knobs, controls, and switches for proper mechanical action. Action must be positive, without backlash, binding, or scraping.	
6	Operation	During operation, be alert for any abnormal indications.	

6-5. OPERATOR'S WEEKLY PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Sequence No.	Item to be inspected	Procedure	References
1	Cables	Inspect external cables for cuts, cracked, or gouged jackets, fraying, or kinks.	
2	Hardware	Inspect all exterior hardware for looseness and damage. The model ZM-71/U cover, carrying handle, hinges, and all bolts and screws must be tight and not damaged.	
3	Preservation	Inspect equipment to determine that it is free of bare spots, rust, and corrosion. If these conditions exist, refer to a higher category maintenance for repair.	Para 6-7 and 6-8

6-6. ORGANIZATIONAL MONTHLY PREVENTIVE MAINTENANCE CHECKS AND SERVICES

Sequence No.	Item to be inspected	Procedure	References
1	Publications	Check to see that publications are complete, serviceable, and current.	DA Pam 310-4
2	Modification work orders	Check to see that all URGENT MWO's have been applied and that all NORMAL MWO's have been scheduled.	DA Pam 310-7
3	Completeness	Check equipment for completeness and general condition.	
4	Cleanliness	Clean exterior surfaces of equipment.	Para 6-7.
5	Preservation	Inspect equipment to determine that it is free of bare spots, rust, and corrosion.	Para 6-7 and 6-8.
6	External receptacles	Inspect external receptacles for breakage and for firm seating.	
7	Meter glass	Inspect front panel glass window for damaged housing, broken glass, physical damage, dust, or moisture.	
8	Cables	Inspect external cables for cuts, cracked, or gouged jackets, fraying, or kinks.	
9	Hardware	Inspect all exterior hardware for looseness and damage. The Model ZM-71/U cover, carrying handle, and all bolts and screws must be tight and not damaged.	
10	Operation	During operation, be alert for any abnormal indications.	

6-7. CLEANING

Inspect the exterior of the ZM-71/U. The exterior surface must be free of dust. dirt, grease, and fungus.

a. Remove dust and loose dirt with a clean, soft cloth.

WARNING

Prolonged breathing of cleaning compound is dangerous; provide adequate ventilation. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on the hands.

b. Remove grease, fungus, and ground-in dirt from the cases; use a cloth dampened (not wet) with Cleaning Compound (Federal stock No. 7930-395-9542).

c. Remove dust or dirt from plugs and jacks with a brush.

CAUTION

Do not press on the meter face (glass) when cleaning; the meter may become damaged.

d. Clean the front panel, meter, and control knobs; use a soft, clean cloth. If necessary, dampen the cloth with water; mild soap may be used for more effective cleaning.

6-8. RUSTPROOFING AND PAINTING

a. Rustproofing. When the finish on the ZM–71/U has become badly scarred or damaged, rust and corrosion can be prevented by touching up the bare surfaces. Use No. 000 sandpaper to clean the surface down to the bare metal. Obtain a bright, smooth finish.

b. Painting. Remove rust and corrosion from metal surfaces by lightly sanding them with fine sandpaper. Brush two thin coats of paint on the bare metal to protect it from further corrosion. Refer to the applicable cleaning and refinishing practices specified in TB 746-10.

6-9. LUBRICATION INSTRUCTIONS

a. Gasoline should not be used as a cleaning fluid for any purpose. When the equipment is overhauled or repairs are made, clean the parts with cleaning compound.

b. Do not use excessive amounts of Lubricating Oil, Instrument (OAI) (FSN 9150-664-6518) and do not allow connections to become greasy.

c. Be sure that lubricants and points to be lubricated are free from sand, grit, or dirt. Use cleaning compound to clean all parts. Before lubrication, clean all surfaces to be lubricated; use a lint-free cloth dampened with cleaning compound. Keep cleaning compound off surrounding parts.

d. Lubrication intervals designated are for daily 8-hour periods of operations. For longer periods of operation, intervals should be shortened.

SECTION VII
CIRCUIT DIAGRAMS

7-1. INTRODUCTION

7-2. This section includes the following

a. General Notes for Schematic Diagrams (fig. 7-1).

b. Block diagram (fig. 7-2).

c. Schematic diagrams and part location illustrations. Waveforms and voltages at indicated test points are also included.

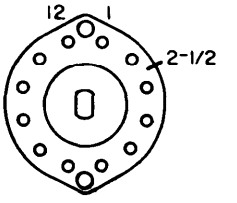
7-3. The block diagram or schematic diagrams can be unfolded and used with any other portion of the manual.

SYMBOLS

- FRONT PANEL
- REAR PANEL
- KNOB CONTROL
- SCREWDRIVER ADJUST
- MAIN SIGNAL PATH
- FEEDBACK PATH
- CONDUCTING ELEMENT
- WIPER MOVES TOWARD "CW" WHEN CONTROL IS ROTATED CLOCKWISE
- POWER LINE GROUND
- CIRCUIT COMMON GROUND
- TEST POINT
- "AND" GATE
- INHIBIT GATE
- "OR" GATE
- WAVEFORMS SHOWN ARE TYPICAL

SWITCH DESIGNATIONS

A3S1BR(2-1/2)



A3S1	SWITCH S1 WITHIN ASSEMBLY A3
B	2ND WAFER FROM FRONT (A=1ST, ETC)
R	REAR OF WAFER (F=FRONT)
(2-1/2)	TERMINAL LOCATION (2½) (VIEWED FROM FRONT)

REFERENCE DESIGNATIONS

REFERENCE DESIGNATIONS WITHIN ASSEMBLIES ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.

ASSEMBLY	ABBREVIATION	COMPLETE DESCRIPTION
A25	C1	A25C1
A25A1	CR1	A25A1CR1
NO PREFIX	J3	J3

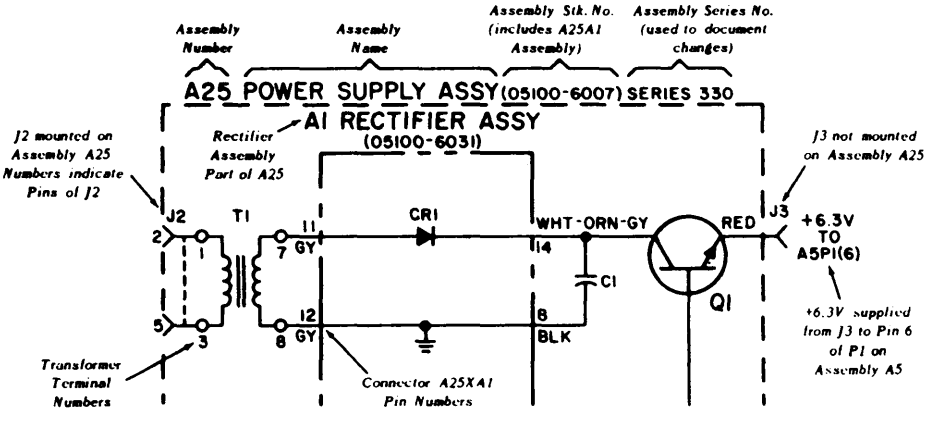


Figure 7-1. Schematic Diagram Notes.

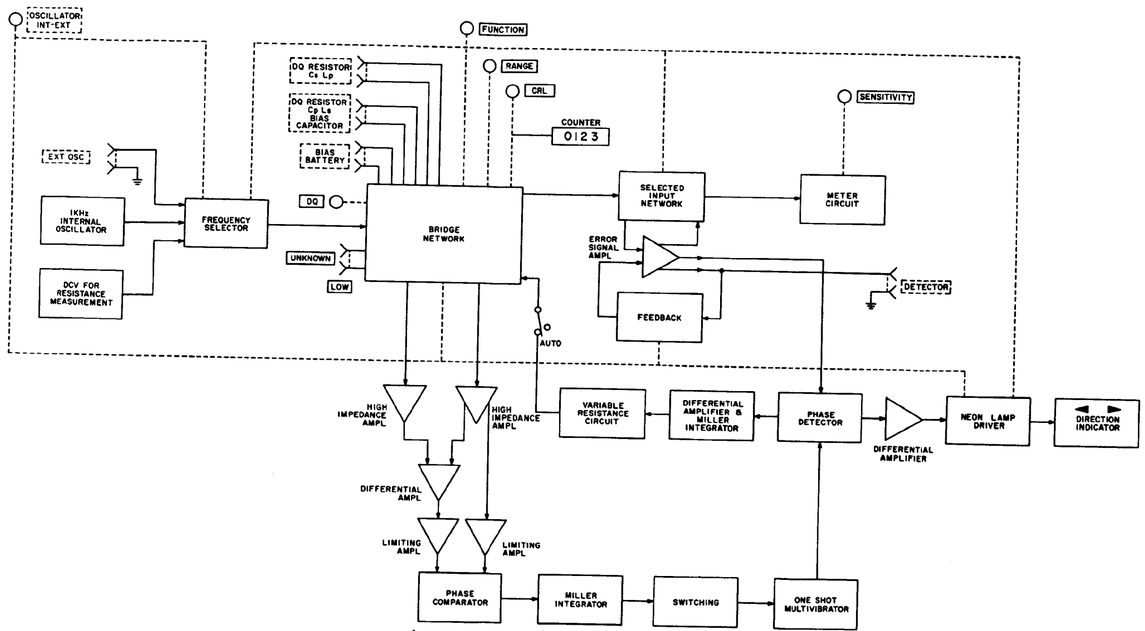


Figure 7-2. Overall Block Diagram.

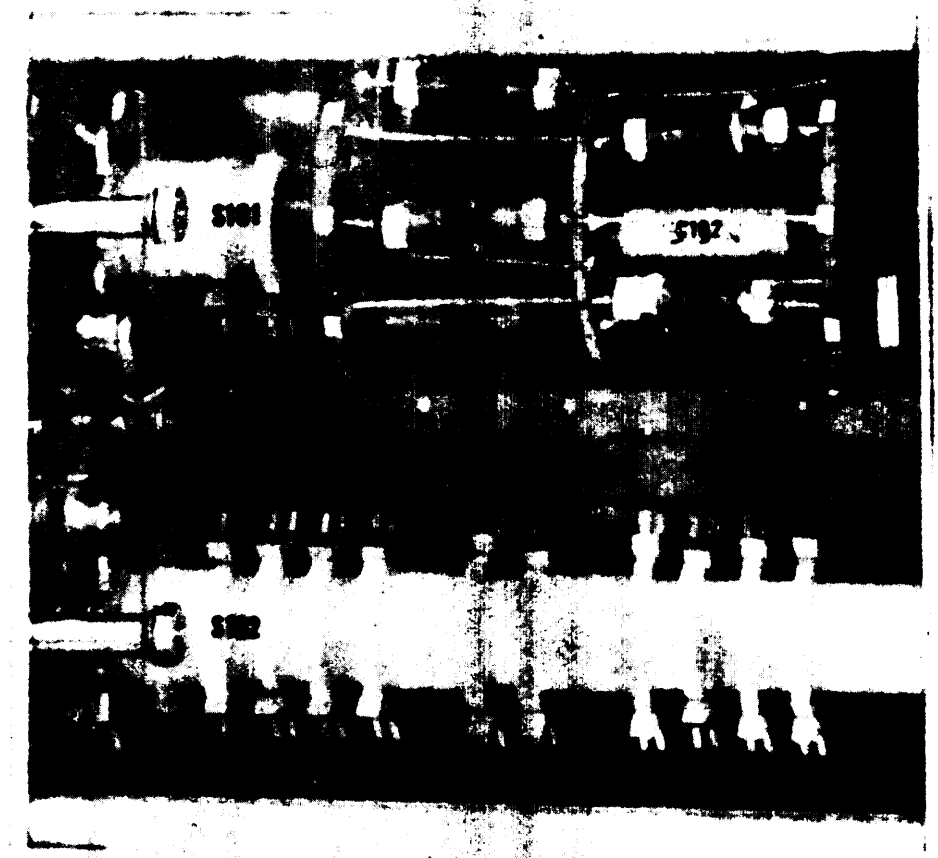


Figure 7-3 ① Range and Function Switch S101 Component Location Diagram.

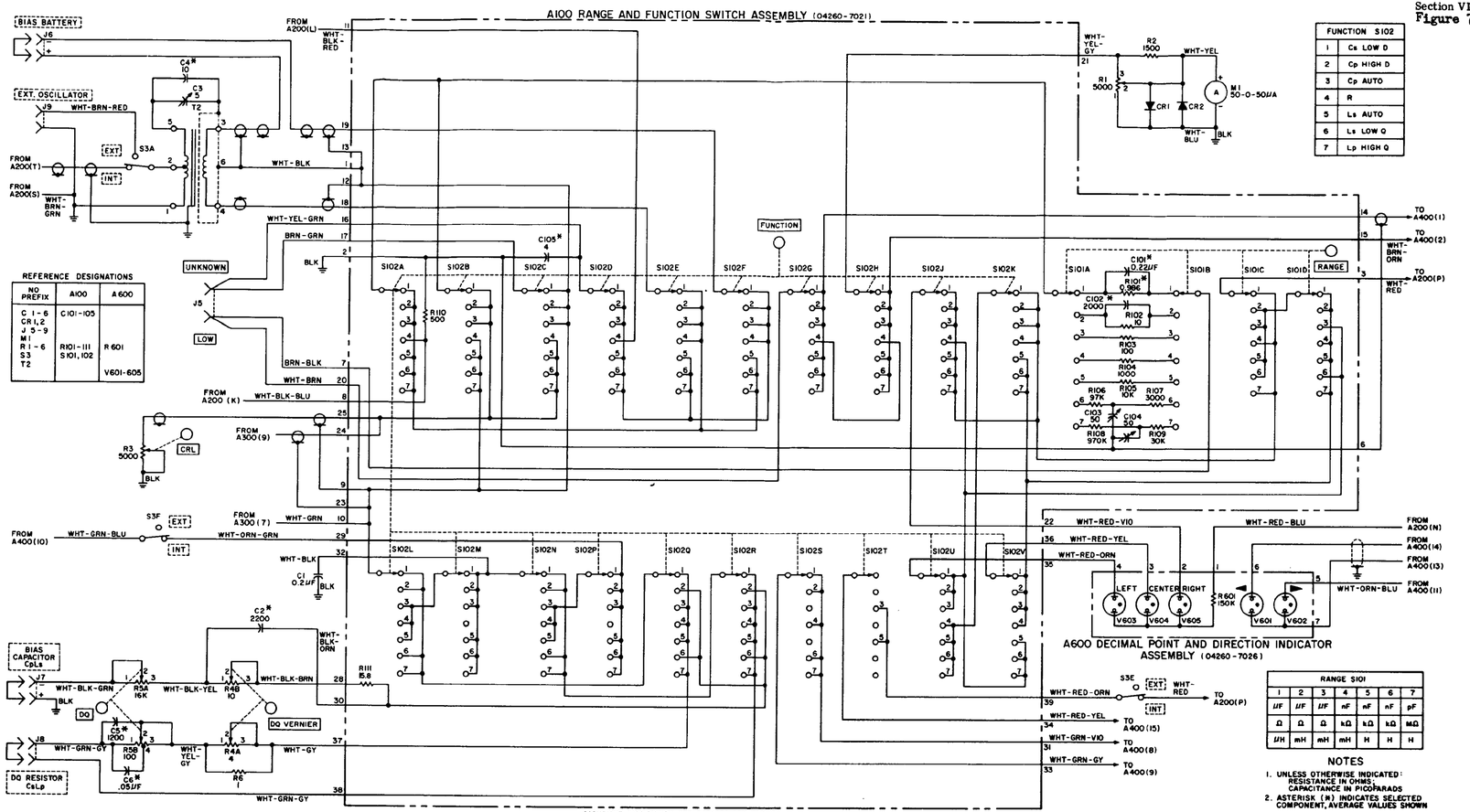


Figure 7-3②. Range and Function Switch A100, Decimal Point and Direction Light A600, Schematic Diagram.

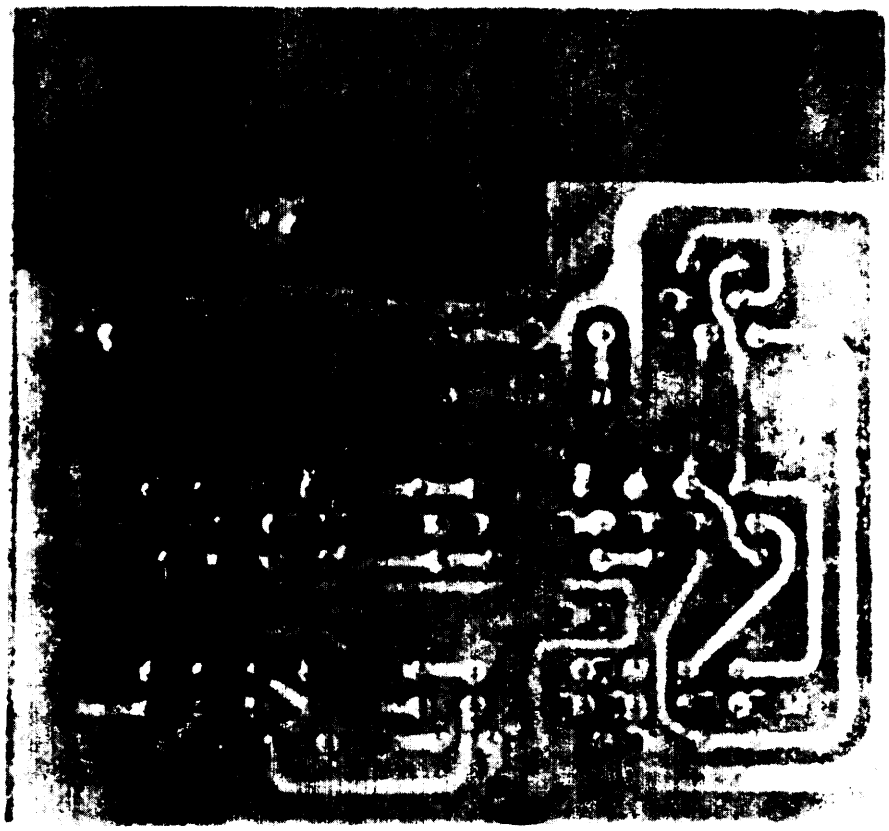
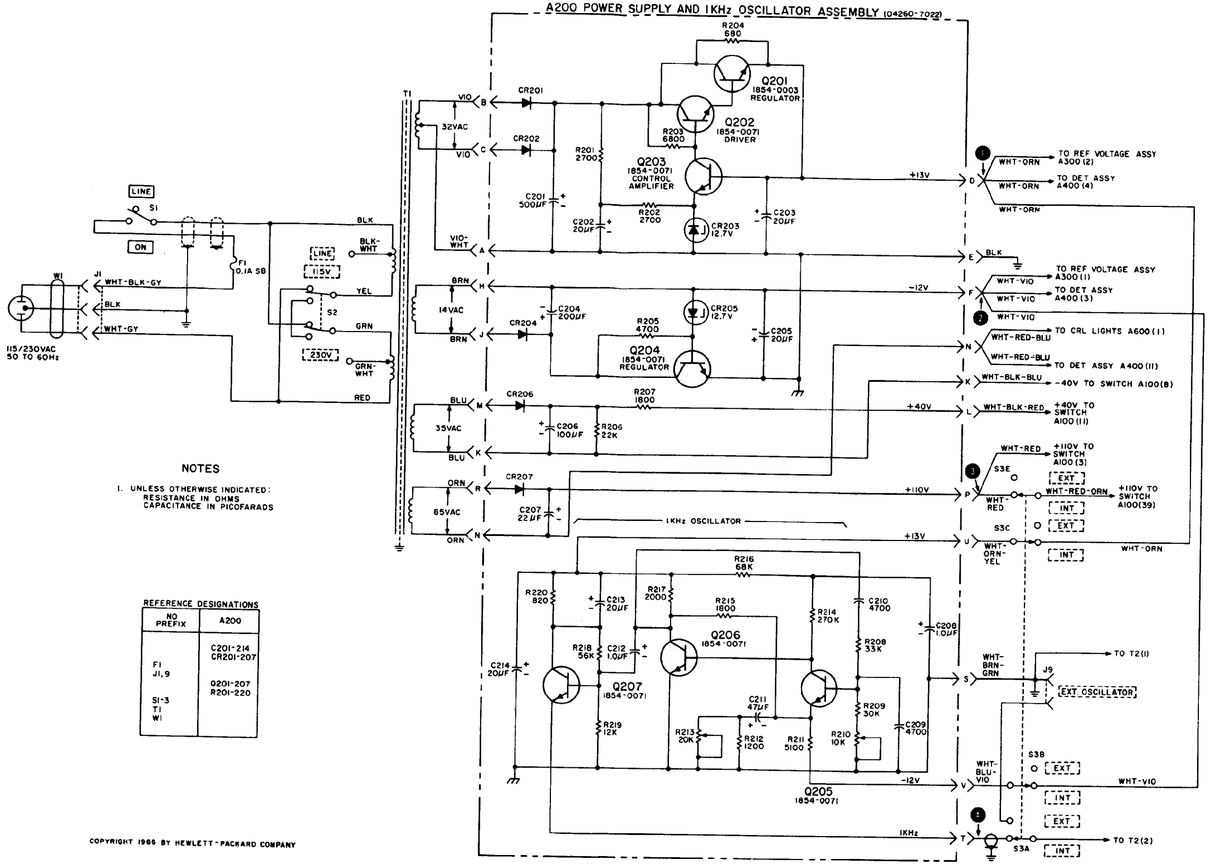


Figure 7-3③. Range and Function Switch A100, PCB Terminal Location.



NOTES

1. UNLESS OTHERWISE INDICATED:
   RESISTANCE IN OHMS
   CAPACITANCE IN PICOFARADS

REFERENCE DESIGNATIONS

NO PREFIX	A200
F1 J1, 9 S1-3 T1 W1	C201-214 CR201-207 Q201-207 R201-220

Figure 7-4①. Power Supply and 1kHz Oscillator A200, Schematic Diagram.

① +12 TO +13.5VDC

② -11 TO -12.5VDC

③ +95 TO +115VDC

SWEEP SPEED
200μs/cm

AMPLITUDE
1V/cm

Figure 7-4③. Typical Waveform for Test Point 4 (1 kHz Oscillator A200).

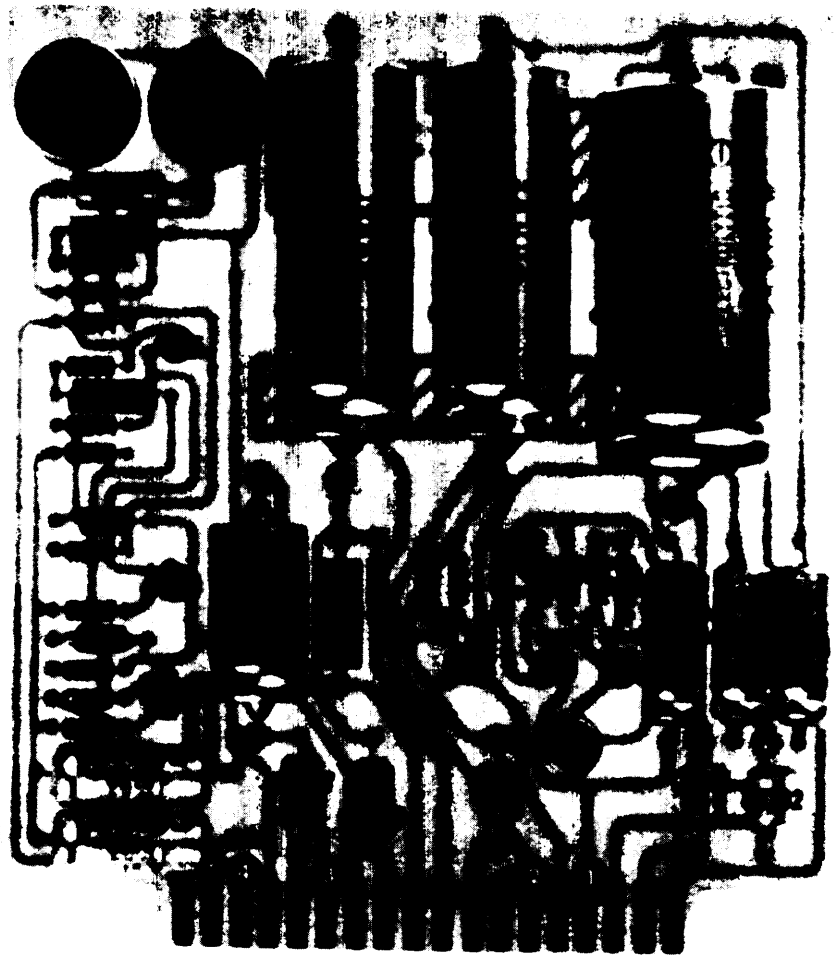
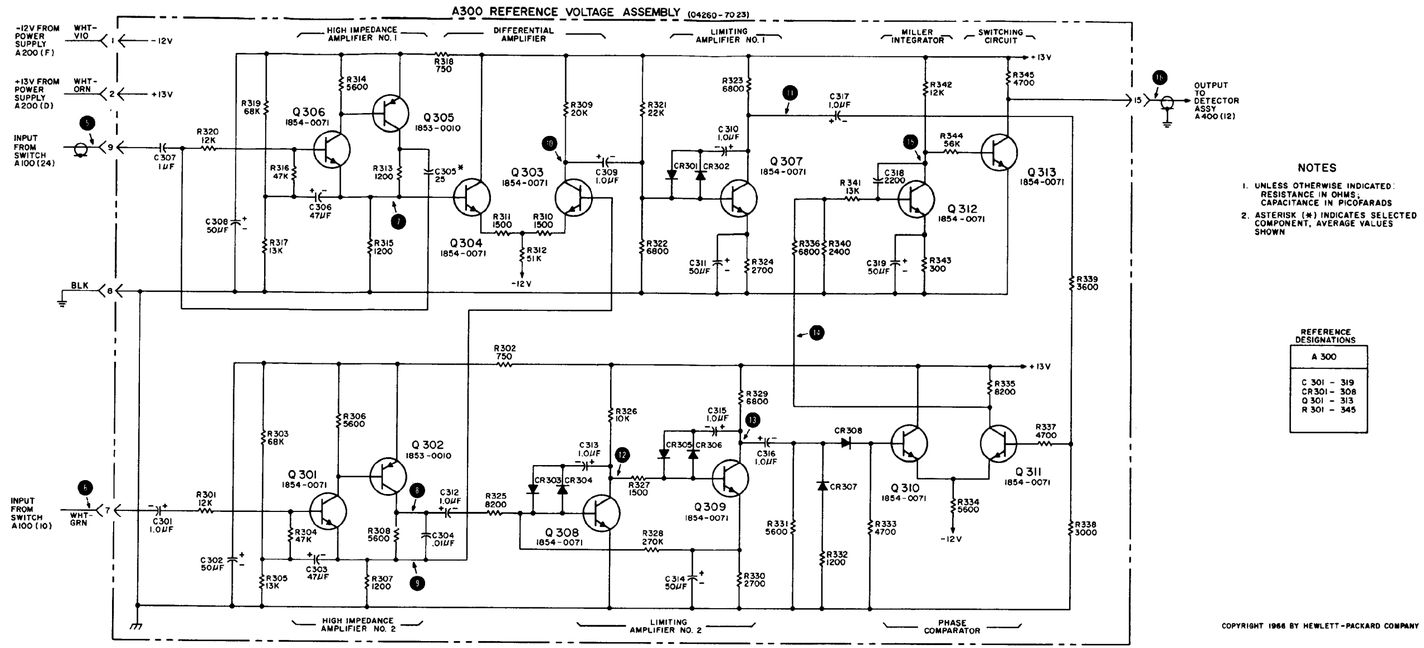


Figure 7-4②. Power Supply and 1 kHz Oscillator A200, Printed Circuit Assembly, Component and Test Point Location.



NOTES

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

REFERENCE DESIGNATIONS

A 300
C 301 - 319
CR 301 - 308
Q 301 - 313
R 301 - 345

Figure 7-5①. Reference Voltage Assembly A300, Schematic Diagram.

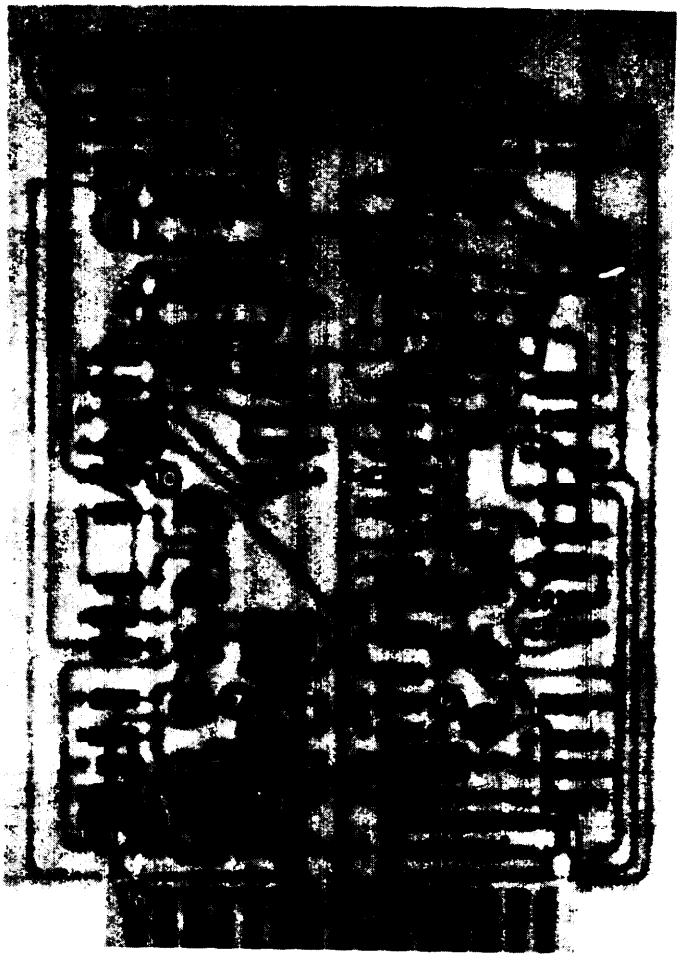
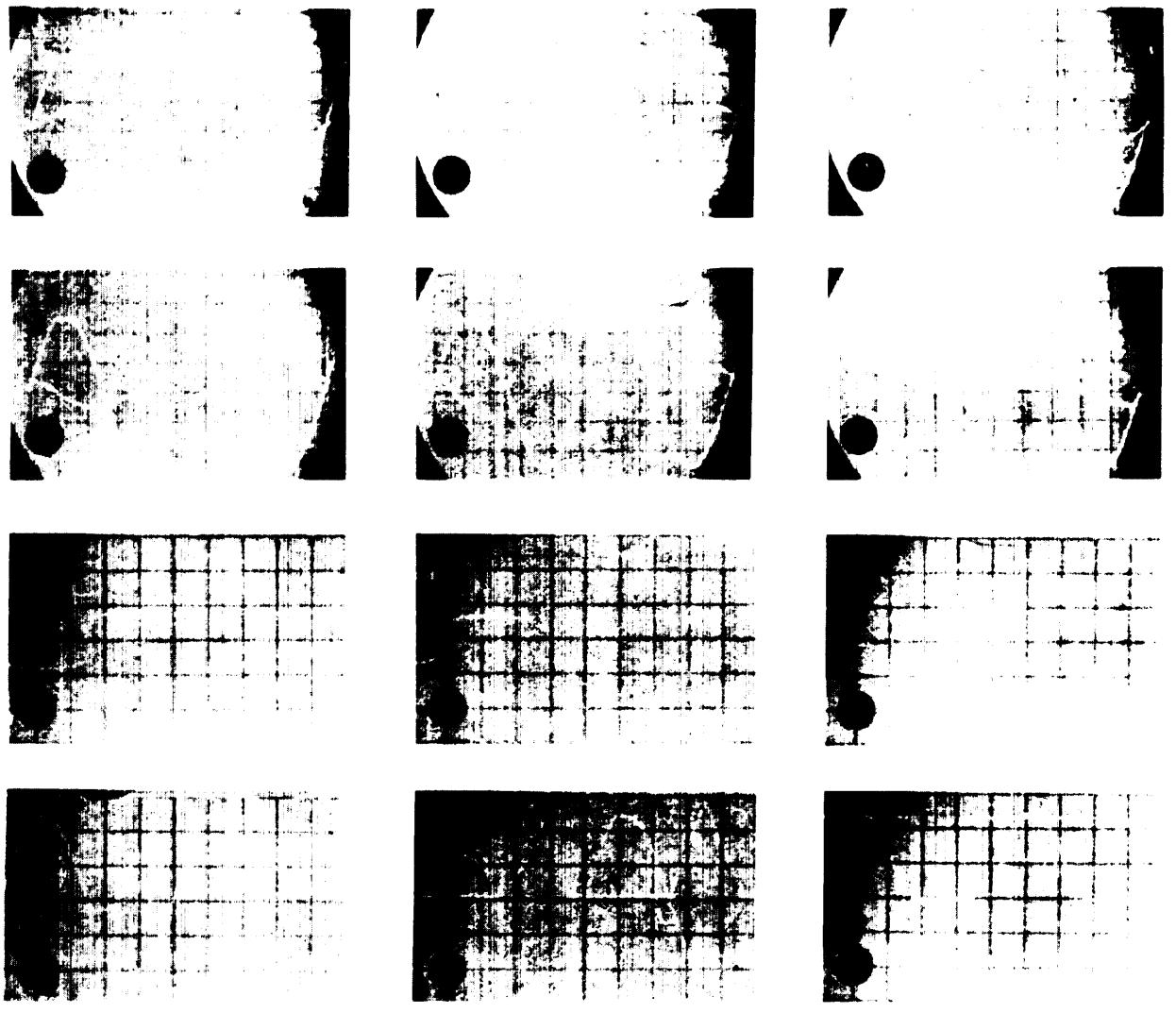


Figure 7-5②. Reference Voltage Assembly A300, Printed Circuit Assembly, Component and Test Point Location.



TEST POINTS	OSCILLOSCOPE SETTINGS	
	VERTICAL	HORIZONTAL
5 7 8	20 mV/cm (use 10:1 probe)	200 µs/cm
6	2 mV/cm (use 10:1 probe)	
9 10	20 mV/cm	
11 12 13	0.5 V/cm	
14 15	2V/cm	
16	5V/cm	

Figure 7-5③. Typical Waveforms for Test Points 5 through 16, Reference Voltage Assembly A300.
See page 5-12 for measurement procedure.

02337-3

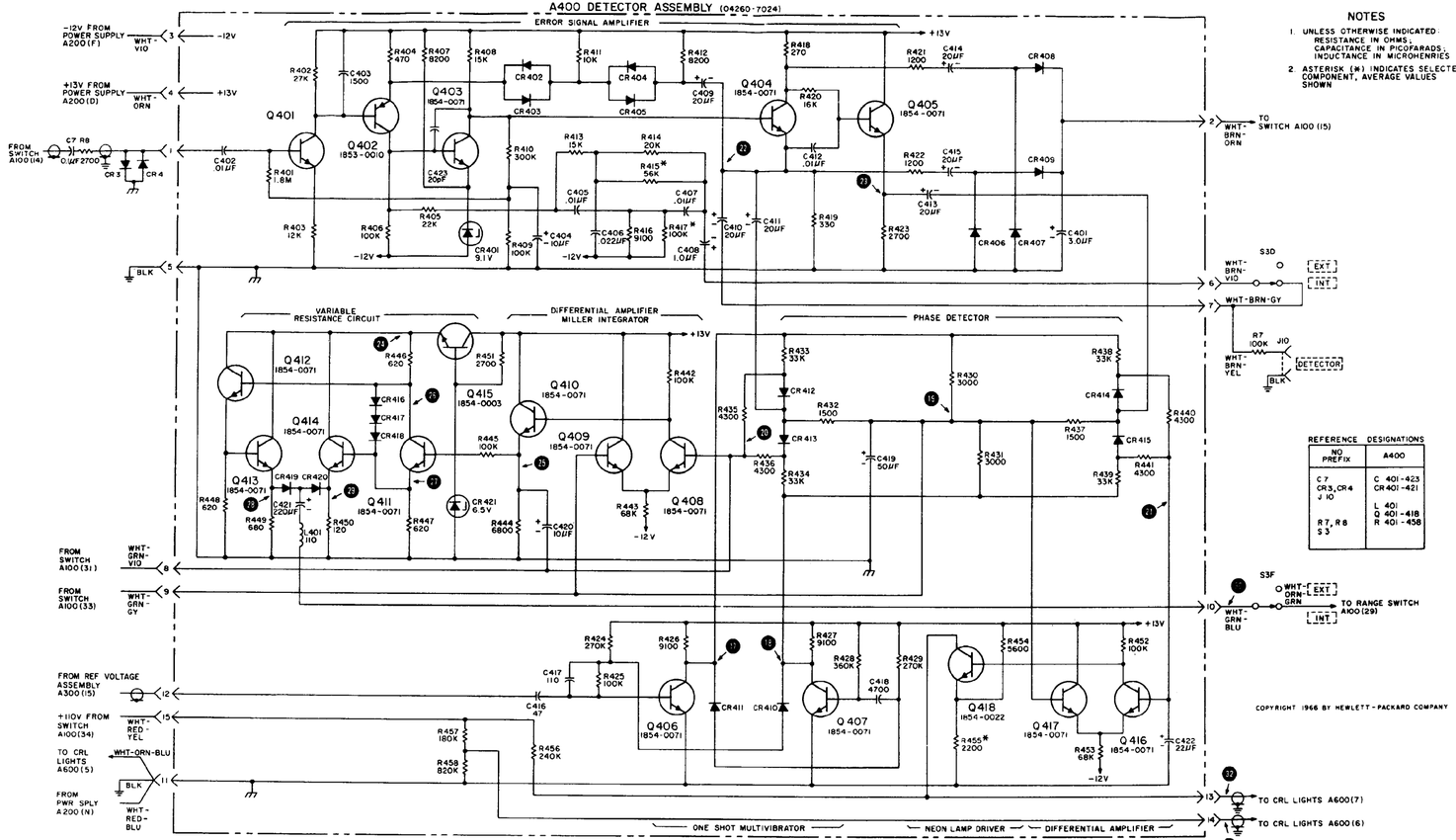


Figure 7-6 (1). Detector Assembly A400, Schematic Diagram.

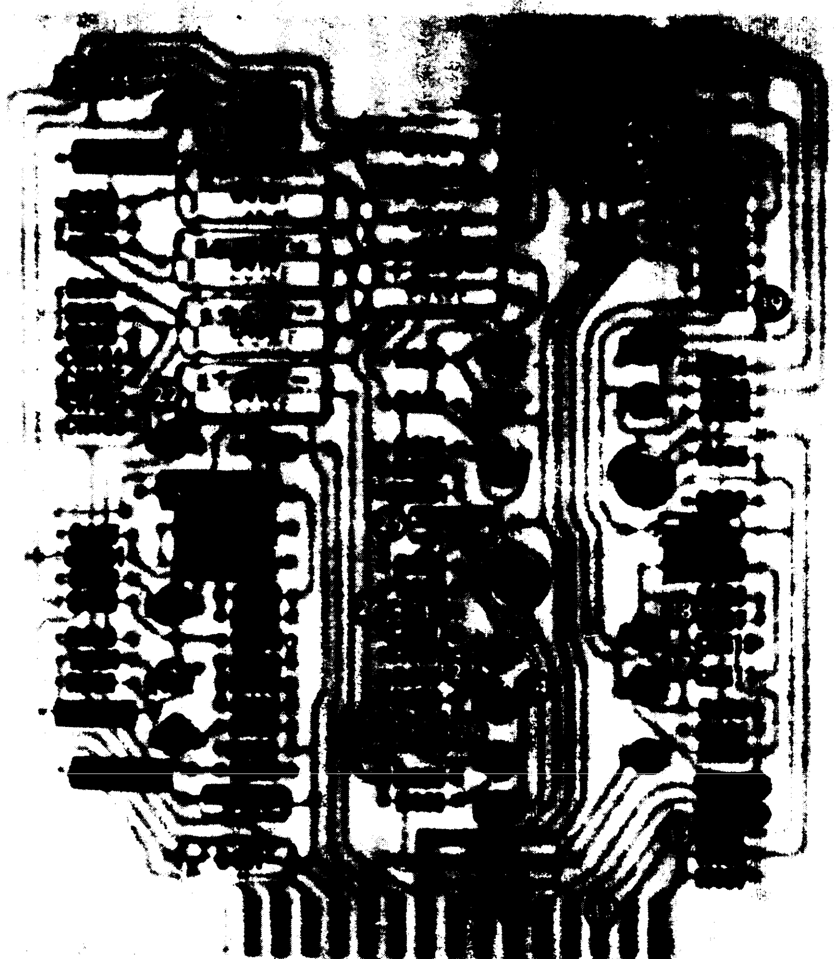
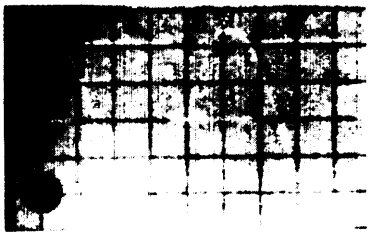
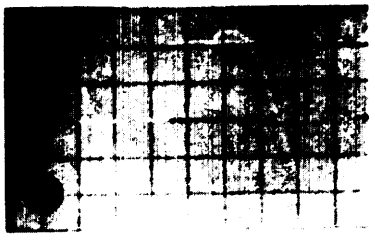


Figure 7-6②. Detector Assembly A100, Printed Circuit Assembly Component and Test Point Location.

02337-1

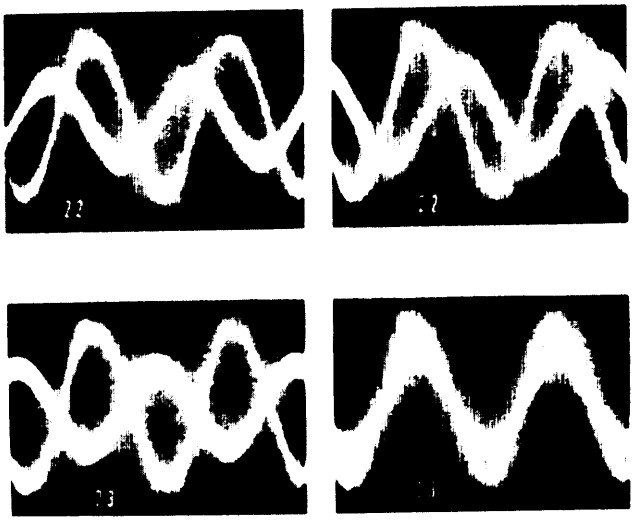


(17) AND (18)
OSCILLOSCOPE*:
VERT = 2V/cm
HORIZ = 200μs/cm

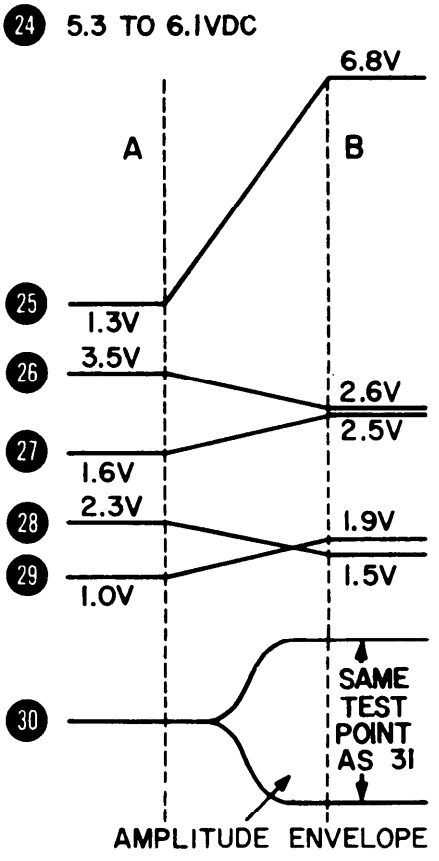


(28) AND (29)
+1.3V TO -0.4V BIAS RANGE FOR CR419 AND CR420

DC VOLTAGE DIFFERENCE BETWEEN (19) AND (20) OR (19) AND (21) IS LESS THAN 10mV WHEN BRIDGE IS BALANCED



(22) AND (23)
A. CRL DIAL 0.2% HIGH FROM BALANCE
B. POLARITY REVERSED WITH CRL DIAL 0.2% LOW
OSCILLOSCOPE*: VERT = .1V/cm HORIZ = 200μs/cm



(31) SEE PARAGRAPH 5-50

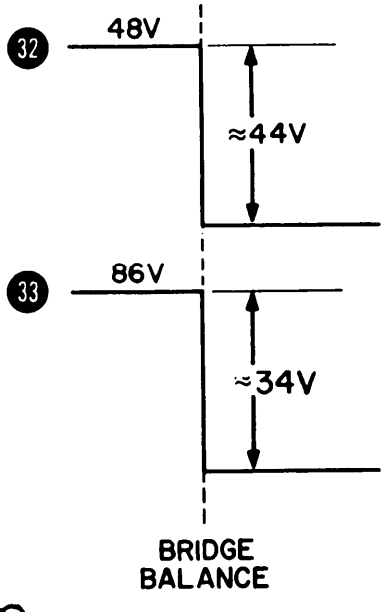


Figure 7-6 (3). Typical Waveforms or voltage changes for test points 17 through 33. (Detector Assembly A400).

See page 5-12 for measurement procedure.

APPENDIX A

REFERENCES

The following publications contain information applicable to the operation and maintenance of Bridge, Capacitance, Inductance, and Resistance ZM-71/U:

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 Modification Work Orders.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB SIG 222	Solder and Soldering.
TB 746-10	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 740-90-1	Administrative Storage of Equipment.

APPENDIX B

MAINTENANCE ALLOCATIONS

Section I. 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 characteristics with established standards.

b. Test. To verify serviceability and to detect incipient electrical or mechanical failure by use of special equipment such as gauges, 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, such 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 measurement. Consists of the comparison of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared with the certified standard.

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

h. Replace. To replace unserviceable items with serviceable like items.

i. Repair. To restore an item to serviceable condition through correction of a specific failure or 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 accordance 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.

6-3. 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 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 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 I (Tool and Test Equipment Requirements)

The columns in table I 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 maintenance allocation chart. The numbers indicate 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.

(Next printed page is B-3)

SECTION II. MAINTENANCE ALLOCATION CHART

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	BRIDGE, CAPACITANCE-RESISTANCE-INDUCTANCE ZM-71/U	O	H		H	H				H			1 thru 24 1 thru 24 1 thru 24 24	
1A	CIRCUIT CARD ASSEMBLY A200 (HP 04260-7022)	H	H			H			H	H			24 1, 3, 4, 22 1, 3, 22,24 24 24	
1B	CIRCUIT CARD ASSEMBLY A300 (HP 04260-7023)	H	H		H				H	H			24 1, 6, 19, 21, 24 2, 3, 6, 10, 12,21,23,24 24 24	
1C	CIRCUIT CARD ASSEMBLY A400 (HP 04260-7024)	H	H			H			H	H			24 1, 4, 6, 19,21,24 1, 3, 21,24 24 24	

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOL AND TEST EQUIPMENT REQUIREMENTS					
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE RECOMMENDED IN MANUAL	NOMENCLATURE MILITARY EQUIVALENT	FEDERAL STOCK NUMBER	TOOL NUMBER
		BRIDGE, CAPACITANCE-RESISTANCE-INDUCTANCE ZM-71/U (CONT'D)			
1	H	OSCILLOSCOPE, HP175A/HP1750B	OSCILLOSCOPE AN/USM-281A	6625-228-2201	
2	H	WAVE ANALYZER, HP302A	SPECTRUM ANALYZER TS-1830/U	6625-806-5929	
3	H	ELECTRONIC COUNTER, HP5245L	COUNTER, ELECTRONIC, DIGITAL READOUT AN/USM-207A	6625-044-3288	
4	H	DC VOLTMETER, HP413A			
5	H	UNIVERSAL BRIDGE, YHP4260A	BRIDGE, CLR AN/URM-90	6625-553-7482	
6	H	STANDARD CAPACITOR, YHP CS-0.1			
7	H	STANDARD CAPACITOR, YHP CS-0.01			
8	H	STANDARD CAPACITOR, YHP CS-1000A			
9	H	STANDARD INDUCTOR, GENERAL RADIO 1482-E			
10	H	RESISTOR, HP #0686-1605			
11	H	RESISTOR, HP #0683-1635			
12	H	RESISTOR, HP #0683-3305			
13	H	RESISTOR, HP #0683-1645			
14	H	RESISTOR, HP #0683-3315			
15	H	RESISTOR, HP #0683-1655			
16	H	RESISTOR, HP #0683-3325			
17	H	RESISTOR, HP #0698-3371			
18	H	RESISTOR, HP #0698-4631			
19	H	RESISTOR, HP #0689-2735			
20	H	CAPACITOR, HP #0170-0001			

TABLE I. TOOL AND TEST EQUIPMENT REQUIREMENTS (CONTINUED)

TOOL AND TEST EQUIPMENT REQUIREMENTS					
TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE RECOMMENDED IN MANUAL	NOMENCLATURE MILITARY EQUIVALENT	FEDERAL STOCK NUMBER	TOOL NUMBER
		BRIDGE, CAPACITANCE-RESISTANCE-INDUCTANCE ZM-71/U (CONT'D)			
21	H	EXTENDER BOARD, HP 5060-0049 (2 REQUIRED)			
22	H	EXTENDER BOARD, HP 5060-2041			
23	H	OSCILLATOR, HP 200CD	GENERATOR, SIGNAL AN/USM-205	6625-783-9672	
24	H	TOOL KIT, TK-100G	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 1. -INTRODUCTION

C-1. Scope

This appendix lists repair parts required for the performance of organizational, direct support, general support, and depot maintenance of Bridge, Capacitance-Resistance-Inductance ZM-71/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 or 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-ReferenceSection 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 (manufacturers' part numbers) in ascending alphanumeric 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 Columns

The following provides an explanation 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 status 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.
P9	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 COMSEC logistic system, and which are not subject to the provisions 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 COMSEC 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

Code	Explanation
	carry individual stock numbers and descriptions, are procured and stocked separately, and can be assembled to form the required assembly at indicated maintenance categories.
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.
Xl	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	Explanation
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 casings or castings.

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 Bridge, Capacitance-Resistance-Inductance ZM-71/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 (see 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 alphanumeric sequence. The last column of each cross-reference index lists the 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 Manufacturers

The Federal supply code for manufacturers (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 — 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	(6) 15 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
G O S BAAB	6625-236-1536	A	BRIDGE,CAP-RES-INDUCT ZM-71/U		EA	1						
			4260A (28480)									
P O BASC	5920-356-2185	B	FUSE,CARTRIDGE		EA	1	*	*	*	*	C-3	F1
			MDL1-10 (71400)									
P O BASG		B	KNOB		EA	1	*	*	*	*	C-9	MP4
			0370-0267 (28480)									
P O BASH	5355-767-9444	B	KNOB		EA	2	*	*	*	*	C-9	MP2
			0370-0077 (28480)									
P O BASJ	5355-767-9444	B	KNOB SAME AS BASH 0370-0077 (28480)		EA	REF	*	*	*	*	C-9	MP3
P O BASK		B	KNOB		EA	1	*	*	*	*	C-9	MP5
			0370-0272 (28480)									
P O BASL	5355-579-2318	B	KNOB		EA	1	*	*	*	*	C-9	MP1
			0370-0050 (28480)									
P O BASM	5355-411-2591	B	KNOB		EA	1	*	*	*	*	C-9	MP6
			0370-0275 (28480)									
P O BASN		B	KNOB		EA	1	*	*	*	*	C-9	MP3
			0370-0256 (28480)									
P O BASV		C	LAMP,GLOW		EA	3	*	*	*	*	C-9	DSV603
			NE2E1 (08806)									
P O BASW		C	LAMP,GLOW SAME AS BASV NE2E1 (08806)		EA	REF	*	*	*	*	C-9	DSV604
P O BASX		C	LAMP,GLOW SAME AS BASV NE2E1 (08806)		EA	REF	*	*	*	*	C-9	DSV605
P O BASY		C	LAMP,GLOW		EA	2	*	*	*	*	C-9	DSV601
			NE98 (08806)									

CTS 980 6/71

(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	(6) 15 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
P O BASZ		C	LAMP,GLOW SAME AS BASY NE98 (08806)		EA	REF	*	*	*	*	C-9	DSV602

(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
G O S BAAB	6625-236-1536	A	BRIDGE,CAP-RES-INDUCT ZM-71/U		EA	1										
			4260A (28480)													
P H BAAC	6625-495-2306	B	AMMETER		EA	1				*	*	*	*	*	C-1	M1
			1120-0761 (28480)													
P H BAAD	5305-054-5635	*	SCREW,MACHINE		EA	2				*	*	*	*	*		H2
			MS51957-1 (81349)													
P H BAAE	5310-595-6211	*	WASHER,FLAT		00	7				*	*	*	*	*		H2
			MS15795-803 (96906)													
P H BAAF	5310-655-9505	*	WASHER,LOCK		EA	7				*	*	*	*	*		H2
			MS35340-40 (96906)													
X2 H BAAG		B	BRACKET,MOUNTING		EA	1										MP11
			04260-1086 (28480)													
P H BAAH	5305-054-6650	*	SCREW,MACHINE		EA	31				*	*	*	*	*		H4
			MS51957-26 (96906)													
P H BAAJ	5310-209-1366	*	WASHER,LOCK		EA	55				*	*	*	*	*		H4
			MS35335-58 (96906)													
X2 H BAAK		B	BRACKET,MOUNTING		EA	1										MP10
			04260-1082 (28480)													
P H BAAL	5305-054-5647	*	SCREW,MACHINE		EA	6				*	*	*	*	*		H2
			MS51957-13 (96906)													
P H BAAM	5310-595-6211	*	WASHER,FLAT SAME AS BAAE MS15795-803 (96906)		00	REF				*	*	*	*	*		H2
P H BAAN	5310-531-9514	*	WASHER,FLAT		EA	2				*	*	*	*	*		H2
			AN960C6 (88044)													
P H BAAP	6625-818-5973	B	BUSHING,SLEEVE		EA	1				*	*	*	*	*	C-1	MP37
			1410-0033 (28480)													

(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H BAAQ	6150-949-9348	B	CABLE ASSEMBLY,POWER 17258 (70903)		EA	1				*	*	*	*	*	C-1	W300
X2 H BAAR		B	CABLE,MECHANISM 04260-8542 (28480)		EA	1										MP3?
P H BAAS	5910-451-3249	B	CAPACITOR,FIXED,MICA DI 0160-1540 (28480)		EA	1				*	*	*	*	*	C-2	C1
P H BAAT	5305-054-6650	*	SCREW,MACHINE SAME AS BAAH MS51957-26 (96906)		EA	REF				*	*	*	*	*		H2
P H BAAU	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		H2
P H BAAV	5910-892-7675	B	CAPACITOR,FIXED,CERAMIC DI CC20SH100F (81349)		EA	2				*	*	*	*	*	C-3	C4SEL
P H BAAW		B	CAPACITOR,FIXED,CERAMIC DI CC20SH020K (81349)		EA	1				*	*	*	*	*	C-3	C4BSEL
P H BAAX		B	CAPACITOR,FIXED,MICA DI 0160-1513 (28480)		EA	1				*	*	*	*	*	C-2	C2SEL
P H BAAY		B	CAPACITOR,FIXED,CERAMIC DI CC20CH150F (81349)		EA	1				*	*	*	*	*	C-3	C4ASEL
P H BAAZ	5910-451-3250	B	CAPACITOR,FIXED,MICA DI 0160-1510 (28480)		EA	1				*	*	*	*	*	C-2	C5
P H BABA		B	CAPACITOR,FIXED,CERAMIC DI CC20SH050K (81349)		EA	2				*	*	*	*	*	C-3	C4CSEL
P H BABB		B	CAPACITOR,FIXED,PAPER 0160-1303 (28480)		EA	1				*	*	*	*	*	C-2	C7
P H BABC	5910-451-5163	B	CAPACITOR,FIXED,PAPER 0160-1227 (28480)		EA	1				*	*	*	*	*	C-2	C6

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(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	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 BABD		B	CAPACITOR,FIXED,MICA DI 0160-1515 (28480)		EA	1				*	*	*	*	*	C-2	C2ASEL
P H BABE	5910-451-5162	B	CAPACITOR,VARIABLE,CERAMIC DI 0121-0205 (28480)		EA	1				*	*	*	*	*	C-3	C3
X2 H BABF	6625-412-1207	B	CHASSIS,ELECTRICAL EQUIPMENT 5060-0703 (28480)		EA	2										MP44
P H BABG	5305-958-5453	*	SCREW,MACHINE MS35190-236 (96906)		EA	20				*	*	*	*	*		H8
P H BABH	5310-579-3875	*	WASHER,LOCK MS35336-11 (96906)		EA	19				*	*	*	*	*		H8
X2 H BABJ		B	CHASSIS,ELECTRICAL EQUIPMENT 04260-7053 (28480)		EA	1										MP17
X2 H BABK		*	SCREW,MACHINE 0570-0394 (28480)		EA	3										H3
P H BABL	5310-595-6211	*	WASHER,FLAT SAME AS BAAE MS15795-803 (96906)		00	REF				*	*	*	*	*		H3
P H BABM	5310-655-9505	*	WASHER,LOCK SAME AS BAAF MS35340-40 (96906)		EA	REF				*	*	*	*	*		H3
X2 H BABN	6625-412-1207	B	CHASSIS,ELECTRICAL EQUIPMENT SAME AS BABF 5060-0703 (28480)		EA	REF										MP45
P H BABP	5310-934-9761	*	NUT,PLAIN,HEXAGON MS35649-264 (96906)		EA	4				*	*	*	*	*		H1
P H BABQ	5305-958-5453	*	SCREW,MACHINE SAME AS BABG MS35190-236 (96906)		EA	REF				*	*	*	*	*		H11
P H BABR	5305-958-5453	*	SCREW,MACHINE SAME AS BABG MS35190-236 (96906)		EA	REF				*	*	*	*	*		H1

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(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	21-50	51-100	(7) GS: 1-20	21-50	51-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTIGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BABS	5310-579-3875	*	WASHER,LOCK SAME AS BABH MS35336-11 (96906)		EA	REF				*	*	*	*	*		M11
P H BABT	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		M1
P H S BABU	6625-139-0498	B	CIRCUIT CARD ASSEMBLY 04260-7022 (28480)		EA	1				*	*	*	*	*	C-4	A200
P H BABV	5910-451-3240	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0964 (28480)		EA	1				*	*	*	*	*	C-5	A200C206
P H BABW		C	CAPACITOR,FIXED,PLASTIC DI 0160-1610 (28480)		EA	2				*	*	*	*	*	C-5	A200C209
P H BABX		C	CAPACITOR,FIXED,PLASTIC DI SAME AS BABW 0160-1610 (28480)		EA	REF				*	*	*	*	*	C-5	A200C210
P H BABY	5910-451-5157	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-1026 (28480)		EA	3				*	*	*	*	*	C-5	A200C211
P H BABZ	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0756 (28480)		EA	11				*	*	*	*	*	C-5	A200C202
P H BACA	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-5	A200C203
P H BACB	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-5	A200C205
P H BACC	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-5	A200C213
P H BACD	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-5	A200C214
P H BACE	5910-451-5142	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0967 (28480)		EA	1				*	*	*	*	*	C-5	A200C201

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(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BACF	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-1029 (28480)		EA	10				*	*	*	*	*	C-5	A200C208
P H BACG	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-5	A200C212
P H BACH	5910-451-5155	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0965 (28480)		EA	1				*	*	*	*	*	C-5	A200C204
P H BACJ	5910-451-5156	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0981 (28480)		EA	1				*	*	*	*	*	C-5	A200C207
P H BACK	5961-871-9538	C	HEATSINK 1205-0033 (28480)		EA	1				*	*	*	*	*	C-5	A200MP1
X2 H BACL		C	PRINTED WIRING BOARD 04260-8702 (28480)		EA	1										A200PW1
P H BACM	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION RCR07G682JS (81349)		EA	6				*	*	*	*	*	C-5	A200R203
P H BACN	5905-114-0708	C	RESISTOR,FIXED,COMPOSITION RCR07G202JS (81349)		EA	2				*	*	*	*	*	C-5	A200R217
P H BACP	5905-889-0230	C	RESISTOR,FIXED,FILM RN55D1821F (81349)		EA	1				*	*	*	*	*	C-5	A200R215
P H BACQ	5905-106-1278	C	RESISTOR,FIXED,COMPOSITION RCR07G123JS (81349)		EA	5				*	*	*	*	*	C-5	A200R219
P H BACR	5905-494-4622	C	RESISTOR,FIXED,COMPOSITION RCR32G182JS (81349)		EA	1				*	*	*	*	*	C-5	A200R207
P H BACS	5905-116-8556	C	RESISTOR,FIXED,COMPOSITION RCR07G223JS (81349)		EA	3				*	*	*	*	*	C-5	A200R206
P H BACT	5905-733-1381	C	RESISTOR,FIXED,FILM RN55D3012F (81349)		EA	1				*	*	*	*	*	C-5	A200R209

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(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	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 BACII	5905-135-6046	C	RESISTOR,FIXED,COMPOSITION			EA	2				*	*	*	*	*	C-5	A200R204
			RCR07G681JS	(81349)													
P H BACV	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION			EA	7				*	*	*	*	*	C-5	A200R216
			RCR07G683JS	(81349)													
P H BACW	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION			EA	4				*	*	*	*	*	C-5	A200R214
			RCR07G274JS	(81349)													
P H BACX	5905-783-5073	C	RESISTOR,FIXED,FILM			EA	1				*	*	*	*	*	C-5	A200R211
			RN55D4991F	(81349)													
P H BACY	5905-106-1357	C	RESISTOR,FIXED,COMPOSITION			EA	5				*	*	*	*	*	C-5	A200R218
			RCR07G563JS	(81349)													
P H BACZ	5905-880-6736	C	RESISTOR,FIXED,FILM			EA	1				*	*	*	*	*	C-5	A200R212
			RN55D1211F	(81349)													
P H BADA	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION			EA	8				*	*	*	*	*	C-5	A200R201
			RCR07G272JS	(81349)													
P H BADB	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA			EA	REF				*	*	*	*	*	C-5	A200R202
			RCR07G272JS	(81349)													
P H BADC	5905-965-9116	C	RESISTOR,FIXED,FILM			EA	1				*	*	*	*	*	C-5	A200R209
			RN55D3322F	(81349)													
P H BADD	5905-119-8768	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-5	A200R220
			RCR07G821JS	(81349)													
P H BADE	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION			EA	4				*	*	*	*	*	C-5	A200R205
			RCR07G472JS	(81349)													
P H BADF	5905-229-1972	C	RESISTOR,VARIABLE			EA	1				*	*	*	*	*	C-5	A200R213
			2100-1762	(28480)													
P H BADG	5905-407-0067	C	RESISTOR,VARIABLE			EA	1				*	*	*	*	*	C-5	A200R210
			2100-1761	(28480)													

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P H BADH	5961-060-8638	C	SEMICONDUCTOR DEVICE,DIODE 1901-0026	(28480)		EA	1				*	*	*	*	*	C-5	A200CR206
P H BADJ	5961-951-1505	C	SEMICONDUCTOR DEVICE,DIODE 1901-0028	(28480)		EA	1				*	*	*	*	*	C-5	A200CR207
P H BADK	5961-718-7329	C	SEMICONDUCTOR DEVICE,DIODE 1902-0031	(28480)		EA	2				*	*	*	*	*	C-5	A200CR203
P H BADL	5961-718-7329	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BADK 1902-0031	(28480)		EA	REF				*	*	*	*	*	C-5	A200CR205
P H BADM	5961-709-0520	C	SEMICONDUCTOR DEVICE,DIODE 1901-0045	(28480)		EA	3				*	*	*	*	*	C-5	A200CR201
P H BADN	5961-709-0520	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BADM 1901-0045	(28480)		EA	REF				*	*	*	*	*	C-5	A200CR202
P H BADP	5961-709-0520	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BADM 1901-0045	(28480)		EA	REF				*	*	*	*	*	C-5	A200CR204
X2 H BADQ		C	SUPPORT,CAPACITOR 5040-3304	(28480)		EA	1										A200MP2
P H BADR	5961-990-5369	C	TRANSISTOR 1854-0003	(28480)		EA	2				*	*	*	*	*	C-5	A200Q201
P H BADS	5961-928-3161	C	TRANSISTOR 1854-0071	(28480)		EA	'31				*	*	*	*	*	C-5	A200Q202
P H BADT	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071	(28480)		EA	REF				*	*	*	*	*	C-5	A200Q203
P H BADU	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071	(28480)		EA	REF				*	*	*	*	*	C-5	A200Q204
P H BADV	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071	(28480)		EA	REF				*	*	*	*	*	C-5	A200Q205

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(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 CONTGCY PL	(9) DEPOT MAINT ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BADW	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-5	A200Q206
P H BADX	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-5	A200Q207
P H S BADY	6625-139-0499	B	CIRCUIT CARD ASSEMBLY 04260-7023 (28480)		EA	1				*	*	*	*	*	C-4	A300
P H BAD7	5910-472-4848	C	CAPACITOR,FIXED,PLASTIC DI 0160-1271 (28480)		EA	5				*	*	*	*	*	C-6	A300C304
P H BAEA		C	CAPACITOR,FIXED,CERAMIC DI CC20SH270K (81349)		EA	1				*	*	*	*	*	C-6	A300C305FSEL
P H BA5B	5910-451-3241	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0962 (28480)		EA	1				*	*	*	*	*	C-6	A300C301
P H BAEC	5910-543-0821	C	CAPACITOR,FIXED,CERAMIC DI CC20CH150K (81349)		EA	1				*	*	*	*	*	C-6	A300C305BSEL
P H BAED	5910-451-3242	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0773 (28480)		EA	2				*	*	*	*	*	C-6	A300C302
P H BAEE	5910-451-3242	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BAED 0180-0773 (28480)		EA	REF				*	*	*	*	*	C-6	A300C308
P H BAEF		C	CAPACITOR,FIXED,CERAMIC DI CC20SH0900 (81349)		EA	1				*	*	*	*	*	C-6	A300C305JSEL
P H BAEG	5910-451-5157	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABY 0180-1026 (28480)		EA	REF				*	*	*	*	*	C-6	A300C303
P H BAEH	5910-451-5157	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABY 0180-1026 (28480)		EA	REF				*	*	*	*	*	C-6	A300C306
P H BAEJ	5910-892-7675	C	CAPACITOR,FIXED,CERAMIC DI SAME AS BAAV CC20SH100F (81349)		EA	REF				*	*	*	*	*	C-6	A300C305SEL

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P H BAEK	5910-451-3244	C	CAPACITOR,FIXED,PLASTIC DI 0160-1543 (28480)		EA	1				*	*	*	*	*	C-6	A300C318
P H BAEL		C	CAPACITOR,FIXED,CERAMIC DI CC20SH360K (81349)		EA	1				*	*	*	*	*	C-6	A300C305HSEL
P H BAEM	5910-451-5158	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0978 (28480)		EA	1				*	*	*	*	*	C-6	A300C307
P H BAEN		C	CAPACITOR,FIXED,CERAMIC DI CC20SH200K (81349)		EA	2				*	*	*	*	*	C-6	A300C305OSEL
P H BAEP	5910-451-3243	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0945 (28480)		EA	4				*	*	*	*	*	C-6	A300C311
P H BAEQ	5910-451-3243	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BAEP 0180-0945 (28480)		EA	REF				*	*	*	*	*	C-6	A300C314
P H BAER	5910-451-3243	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BAEP 0180-0945 (28480)		EA	REF				*	*	*	*	*	C-6	A300C319
P H BAFS	5910-853-6495	C	CAPACITOR,FIXED,CERAMIC DI CC20SH300K (81349)		EA	1				*	*	*	*	*	C-6	A300C305LSEL
P H BAFT	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-6	A300C309
P H BAEU	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-6	A300C310
P H BAEV	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-6	A300C312
P H BAEW	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-6	A300C313
P H BAEX	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-6	A300C315

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(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	(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 BAEY	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029	(28480)		EA	REF				*	*	*	*	*	C-6	A300C316
P H BAEZ	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029	(28480)		EA	REF				*	*	*	*	*	C-6	A300C317
P H BAFA	5910-726-8696	C	CAPACITOR,FIXED,CERAMIC DI CC20CH120K	(81349)		EA	1				*	*	*	*	*	C-6	A300C305ASEL
P H BAFB		C	CAPACITOR,FIXED,CERAMIC DI CC20SH330K	(81349)		EA	1				*	*	*	*	*	C-6	A300C305GSEL
P H BAFC		C	CAPACITOR,FIXED,CERAMIC DI CC20SH180K	(81349)		EA	1				*	*	*	*	*	C-6	A300C305CSEL
P H BAFD		C	CAPACITOR,FIXED,CERAMIC DI CC20SH080D	(81349)		EA	1				*	*	*	*	*	C-6	A300C305KSEL
P H BAFE		C	CAPACITOR,FIXED,CERAMIC DI CC20SH250K	(81349)		EA	1				*	*	*	*	*	C-6	A300C305ESEL
P H BAFF		C	CAPACITOR,FIXED,CERAMIC DI CC20SH220K	(81349)		EA	1				*	*	*	*	*	C-6	A300C305ISEL
P H BAFG	5910-067-5697	C	CAPACITOR,FIXED,MICA DI CM05ED270G03	(81349)		EA	1				*	*	*	*	*	C-6	A300C305MSEL
X2 H BAFH		C	PRINTED WIRING BOARD 04260-8703	(28480)		EA	1										A300PW1
P H BAFJ	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS BACM RCR07G682JS	(81349)		EA	REF				*	*	*	*	*	C-6	A300R322
P H BAFK	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS BACM RCR07G682JS	(81349)		EA	REF				*	*	*	*	*	C-6	A300R323
P H BAFL	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS BACM RCR07G682JS	(81349)		EA	REF				*	*	*	*	*	C-6	A300R329

(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	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 BAFM		C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-6	A300R339
			RCR07G322JS	(81349)													
P H BAFN	5905-102-5703	C	RESISTOR,FIXED,FILM			EA	2				*	*	*	*	*	C-6	A300R305
			RNR60C1302F	(81349)													
P H BAFP	5905-102-5703	C	RESISTOR,FIXED,FILM SAME AS BAFN			EA	REF				*	*	*	*	*	C-6	A300R317
			RNR60C1302F	(81349)													
P H BAFQ	5905-106-9356	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-6	A300R309
			RCR07G203JS	(81349)													
P H BAFR	5905-102-8021	C	RESISTOR,FIXED,FILM			EA	2				*	*	*	*	*	C-6	A300R313
			RNR60C1201D	(81349)													
P H BAFS	5905-102-8021	C	RESISTOR,FIXED,FILM SAME AS BAFR			EA	REF				*	*	*	*	*	C-6	A300R315
			RNR60C1201D	(81349)													
P H BAFT	5905-106-1278	C	RESISTOR,FIXED,COMPOSITION SAME AS BACQ			EA	REF				*	*	*	*	*	C-6	A300R301
			RCR07G123JS	(81349)													
P H BAFU	5905-106-1278	C	RESISTOR,FIXED,COMPOSITION SAME AS BACQ			EA	REF				*	*	*	*	*	C-6	A300R320
			RCR07G123JS	(81349)													
P H BAFV	5905-194-0365	C	RESISTOR,FIXED,FILM			EA	2				*	*	*	*	*	C-6	A300R303
			RNR60C6812D	(81349)													
P H BAFW	5905-194-0365	C	RESISTOR,FIXED,FILM SAME AS BAFV			EA	REF				*	*	*	*	*	C-6	A300R319
			RNR60C6812D	(81349)													
P H BAFX	5905-106-1278	C	RESISTOR,FIXED,COMPOSITION SAME AS BACQ			EA	REF				*	*	*	*	*	C-6	A300R342
			RCR07G123JS	(81349)													
P H BAFY	5905-104-8358	C	RESISTOR,FIXED,COMPOSITION			EA	4				*	*	*	*	*	C-6	A300R325
			RCR07G822JS	(81349)													
P H BAFZ	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS BACM			EA	REF				*	*	*	*	*	C-6	A300R336
			RCR07G682JS	(81349)													

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(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H RAGA	5905-110-0865	C	RESISTOR,FIXED,FILM			EA	2				*	*	*	*	*	C-6	A300R310
			RNR60C1501F	(81349)													
P H RAGB	5905-110-0865	C	RESISTOR,FIXED,FILM SAME AS BAGA			EA	REF				*	*	*	*	*	C-6	A300R311
			RNR60C1501F	(81349)													
P H RAGC	5905-111-4750	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-6	A300R343
			RCR07G301JS	(81349)													
P H BAGD	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION SAME AS BACW			EA	REF				*	*	*	*	*	C-6	A300R328
			RCR07G274JS	(81349)													
P H BAGE	5905-131-1255	C	RESISTOR,FIXED,COMPOSITION			EA	4				*	*	*	*	*	C-6	A300R307
			RCR07G122JS	(81349)													
P H BAGF	5905-131-1255	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGE			EA	REF				*	*	*	*	*	C-6	A300R332
			RCR07G122JS	(81349)													
P H BAGG	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION			EA	6				*	*	*	*	*	C-6	A300R306
			RCR07G562JS	(81349)													
P H BAGH	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGG			EA	REF				*	*	*	*	*	C-6	A300R308
			RCR07G562JS	(81349)													
P H BAGJ	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGG			EA	REF				*	*	*	*	*	C-6	A300R314
			RCR07G562JS	(81349)													
P H BAGK	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGG			EA	REF				*	*	*	*	*	C-6	A300R334
			RCR07G562JS	(81349)													
P H BAGL	5905-136-8406	C	RESISTOR,FIXED,COMPOSITION			EA	2				*	*	*	*	*	C-6	A300R340
			RCR07G242JS	(81349)													
P H BAGM	5905-116-8556	C	RESISTOR,FIXED,COMPOSITION SAME AS BACS			EA	REF				*	*	*	*	*	C-6	A300R321
			RCR07G223JS	(81349)													
P H BAGN	5905-104-8365	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-6	A300R341
			RCR07G133JS	(81349)													

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(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAGP	5905-104-8358	C	RESISTOR,FIXED,COMPOSITION SAME AS BAFY RCR07G822JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R335
P H BAGQ	5905-131-9729	C	RESISTOR,FIXED,COMPOSITION RCR07G302JS (81349)		EA	2				*	*	*	*	*	C-6	A300R338
P H BAGR	5905-141-0717	C	RESISTOR,FIXED,COMPOSITION RCR07G473JS (81349)		EA	3				*	*	*	*	*	C-6	A300R304
P H BAGS	5905-141-0717	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGR RCR07G473JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R316
P H BAGT	5905-136-3890	C	RESISTOR,FIXED,COMPOSITION RCR07G513JS (81349)		EA	2				*	*	*	*	*	C-6	A300R312
P H BAGU	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION RCR07G152JS (81349)		EA	5				*	*	*	*	*	C-6	A300R327
P H BAGV	5905-126-6696	C	RESISTOR,FIXED,COMPOSITION RCR07G751JS (81349)		EA	2				*	*	*	*	*	C-6	A300R302
P H BAGW	5905-126-6696	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGV RCR07G751JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R318
P H BAGX	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION SAME AS BADE RCR07G472JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R333
P H BAGY	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION SAME AS BADE RCR07G472JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R337
P H BAGZ	5905-114-0711	C	RESISTOR,FIXED,COMPOSITION SAME AS BADE RCR07G472JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R345
P H BAHA	5905-106-1357	C	RESISTOR,FIXED,COMPOSITION SAME AS BACY RCR07G563JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R344
P H BAHB	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA RCR07G272JS (81349)		EA	REF				*	*	*	*	*	C-6	A300R324

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(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. CONTOCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H BAHC	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA RCR07G272JS	(81349)		EA	REF				*	*	*	*	*	C-6	A300R330
P H BAHD	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION RCR07G103JS	(81349)		EA	2				*	*	*	*	*	C-6	A300R326
P H BAHE	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGG RCR07G562JS	(81349)		EA	REF				*	*	*	*	*	C-6	A300R331
P H BAHF	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE FDG1088	(13715)		EA	17				*	*	*	*	*	C-6	A300CR301
P H BAHG	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-6	A300CR302
P H BAHH	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-6	A300CR303
P H BAHJ	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-6	A300CR304
P H BAHK	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-6	A300CR305
P H BAHL	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-6	A300CR306
P H BAHM	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE D2361	(93332)		EA	14				*	*	*	*	*	C-6	A300CR307
P H BAHN	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-6	A300CR308
P H BAHP	5961-931-6998	C	TRANSISTOR 1853-0010	(28480)		EA	3				*	*	*	*	*	C-6	A300Q302
P H BAHQ	5961-931-6998	C	TRANSISTOR SAME AS BAHP 1853-0010	(28480)		EA	REF				*	*	*	*	*	C-6	A300Q305

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(1) SOURCE CODE / MAINT. CODE / REC. CODE — ISN	(2) FEDERAL STOCK NUMBER	(3a) IMDENT 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 CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAHR	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q301
P H BAHS	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q303
P H BAHT	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q304
P H BAHU	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q306
P H BAHV	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q307
P H BAHW	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q308
P H BAHX	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q309
P H BAHY	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q310
P H BAHZ	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q311
P H BAJA	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q312
P H BAJB	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-6	A300Q313
P H S BAJC	6625-139-0500	B	CIRCUIT CARD ASSEMBLY 04260-7024 (28480)		EA	1				*	*	*	*	*	C-4	A400
P H BAJD	5910-451-3247	C	CAPACITOR,FIXED,PLASTIC DI 0160-1545 (28480)		EA	1				*	*	*	*	*	C-7	A400C406

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(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAJE		C	CAPACITOR,FIXED,CERAMIC DI SAME AS BAEN CC20SH200K (81349)		EA	REF				*	*	*	*	*	C-7	A400C423
P H BAJF	5910-451-3248	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0966 (28480)		EA	1				*	*	*	*	*	C-7	A400C421
P H BAJG	5910-954-5505	C	CAPACITOR,FIXED,MICA DI CM05FD111G03 (81349)		EA	1				*	*	*	*	*	C-7	A400C417
P H BAJH	5910-451-3243	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BAEP 0180-0945 (28480)		EA	REF				*	*	*	*	*	C-7	A400C419
P H BAJJ	5910-451-3246	C	CAPACITOR,FIXED,PLASTIC DI 0160-1542 (28480)		EA	1				*	*	*	*	*	C-7	A400C403
P H BAJK	5910-455-0114	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BACF 0180-1029 (28480)		EA	REF				*	*	*	*	*	C-7	A400C408
P H BAJL	5910-490-0397	C	CAPACITOR,FIXED,MICA DI CM05ED470J03 (81349)		EA	1				*	*	*	*	*	C-7	A400C416
P H BAJM	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C409
P H BAJN	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C410
P H BAJP	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C411
P H BAJQ	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C413
P H BAJR	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C414
P H BAJS	5910-451-3239	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BABZ 0180-0756 (28480)		EA	REF				*	*	*	*	*	C-7	A400C415

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(1) SOURCE CODE / MAINT. CODE / REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) AMDENT 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 CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAJT	5910-472-4848	C	CAPACITOR,FIXED,PLASTIC DI SAME AS BADZ 0160-1271 (28480)		EA	REF				*	*	*	*	*	C-7	A400C402
P H BAJU	5910-472-4848	C	CAPACITOR,FIXED,PLASTIC DI SAME AS BADZ 0160-1271 (28480)		EA	REF				*	*	*	*	*	C-7	A400C405
P H BAJV	5910-472-4848	C	CAPACITOR,FIXED,PLASTIC DI SAME AS BADZ 0160-1271 (28480)		EA	REF				*	*	*	*	*	C-7	A400C407
P H BAJW	5910-472-4848	C	CAPACITOR,FIXED,PLASTIC DI SAME AS BADZ 0160-1271 (28480)		EA	REF				*	*	*	*	*	C-7	A400C412
P H BAJX	5910-451-5160	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-1025 (28480)		EA	1				*	*	*	*	*	C-7	A400C422
P H BAJY	5910-451-8613	C	CAPACITOR,FIXED,PLASTIC DI 0160-1544 (28480)		EA	1				*	*	*	*	*	C-7	A400C418
P H BAJZ		C	CAPACITOR,FIXED,ELECTROLYTIC 0180-0949 (28480)		EA	1				*	*	*	*	*	C-7	A400C401
P H BAKA	5910-451-5159	C	CAPACITOR,FIXED,ELECTROLYTIC 0180-1032 (28480)		EA	2				*	*	*	*	*	C-7	A400C404
P H BAKB	5910-451-5159	C	CAPACITOR,FIXED,ELECTROLYTIC SAME AS BAKA 0180-1032 (28480)		EA	REF				*	*	*	*	*	C-7	A400C420
P H BAKC	5950-451-1384	C	CHOKE,RADIO FREQUENCY 9100-0729 (28480)		EA	1				*	*	*	*	*	C-7	A400L401
X2 H BAKD		C	PRINTED WIRING BOARD 04260-8704 (28480)		EA	1										A400PW1
P H BAKE	5905-116-8555	C	RESISTOR,FIXED,COMPOSITION RCR07G153JS (81349)		EA	1				*	*	*	*	*	C-7	A400R408
P H BAKF	5905-114-5339	C	RESISTOR,FIXED,COMPOSITION RCR07G154JS (81349)		EA	2				*	*	*	*	*	C-7	A400R442CSEL

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(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. CONTRACT PL	(9) DEPOT MAINT ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAKG	5905-114-5339	C	RESISTOR,FIXED,COMPOSITION SAME AS BAKF RCR07G154JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R452CSEL
P H BAKH	5905-917-9189	C	RESISTOR,FIXED,FILM RNR60C1602D (81349)		EA	1				*	*	*	*	*	C-7	A400R420
P H BAKJ	5905-106-1278	C	RESISTOR,FIXED,COMPOSITION SAME AS BACQ RCR07G123JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R403
P H BAKK	5905-225-2059	C	RESISTOR,FIXED,FILM RNR60C3011F (81349)		EA	2				*	*	*	*	*	C-7	A400R430
P H BAKL	5905-225-2059	C	RESISTOR,FIXED,FILM SAME AS BAKK RNR60C3011F (81349)		EA	REF				*	*	*	*	*	C-7	A400R431
P H BAKM		C	RESISTOR,FIXED,COMPOSITION 0698-3576 (28480)		EA	3				*	*	*	*	*	C-7	A400R4178SEL
P H BAKN		C	RESISTOR,FIXED,COMPOSITION SAME AS BAKM 0698-3576 (28480)		EA	REF				*	*	*	*	*	C-7	A400R4420SEL
P H BAKP		C	RESISTOR,FIXED,COMPOSITION SAME AS BAKM 0698-3576 (28480)		EA	REF				*	*	*	*	*	C-7	A400R4520SEL
P H BAKQ	5905-225-2063	C	RESISTOR,FIXED,FILM RNR60C3322F (81349)		EA	4				*	*	*	*	*	C-7	A400R433
P H BAKR	5905-225-2063	C	RESISTOR,FIXED,FILM SAME AS BAKQ RNR60C3322F (81349)		EA	REF				*	*	*	*	*	C-7	A400R434
P H BAKS	5905-225-2063	C	RESISTOR,FIXED,FILM SAME AS BAKQ RNR60C3322F (81349)		EA	REF				*	*	*	*	*	C-7	A400R438
P H BAKT	5905-225-2063	C	RESISTOR,FIXED,FILM SAME AS BAKQ RNR60C3322F (81349)		EA	REF				*	*	*	*	*	C-7	A400R439
P H BAKU	5905-119-8812	C	RESISTOR,FIXED,COMPOSITION RCR07G121JS (81349)		EA	1				*	*	*	*	*	C-7	A400R450

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(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. CONTOCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BAKV	5905-110-7622	C	RESISTOR,FIXED,COMPOSITION SAME AS BACM RCR07G682JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R444
P H BAKW	5905-485-4648	C	RESISTOR,FIXED,COMPOSITION RCR07G244JS (81349)		EA	1				*	*	*	*	*	C-7	A400R456
P H BAKX	5905-981-5340	C	RESISTOR,FIXED,FILM RNR60C2002F (81349)		EA	1				*	*	*	*	*	C-7	A400R414
P H BAKY	5905-111-1681	C	RESISTOR,FIXED,COMPOSITION RCR07G134JS (81349)		EA	2				*	*	*	*	*	C-7	A400R4428SEL
P H BAKZ	5905-111-1681	C	RESISTOR,FIXED,COMPOSITION SAME AS BAKY RCR07G134JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R4528SEL
P H BALA	5905-481-8280	C	RESISTOR,FIXED,FILM RLR07C912GS (81349)		EA	3				*	*	*	*	*	C-7	A400R416
P H BALB	5905-481-8280	C	RESISTOR,FIXED,FILM SAME AS BALA RLR07C912GS (81349)		EA	REF				*	*	*	*	*	C-7	A400R426
P H BALC	5905-481-8280	C	RESISTOR,FIXED,FILM SAME AS BALA RLR07C912GS (81349)		EA	REF				*	*	*	*	*	C-7	A400R427
P H BALD	5905-104-8360	C	RESISTOR,FIXED,COMPOSITION RCR07G623JS (81349)		EA	4				*	*	*	*	*	C-7	A400R415CSEL
P H BALE	5905-104-8360	C	RESISTOR,FIXED,COMPOSITION SAME AS BALD RCR07G623JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R417GSEL
P H BALF	5905-104-8360	C	RESISTOR,FIXED,COMPOSITION SAME AS BALD RCR07G623JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R442FSEL
P H BALG	5905-104-8360	C	RESISTOR,FIXED,COMPOSITION SAME AS BALD RCR07G623JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R452FSEL
P H BALH	5905-116-8556	C	RESISTOR,FIXED,COMPOSITION SAME AS BACS RCR07G223JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R405

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(1) SOURCE CODE / MAINT. CODE / REC. CODE ISN	(2) FEDERAL STOCK NUMBER	(3a) IDENT CODE	(3b) DESCRIPTION REF. NUMBER (MFR. PART NO.)	MFR. CODE	(3d) USE ON CODE	(4) UNIT OF MEASURE	(5) QTY. INCL. IN UNIT	30 DAY MAINT. ALW. (6) DS 1-80	(6) DS 21-80	(6) DS 81-100	(7) GS 1-80	(7) GS 21-80	(7) GS 81-100	(8) 1 YR. ALW. PER 100 EQUIP. CONTRACT PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(b) REF. / ITEM NUMBER
P H BALJ	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION			EA	8				*	*	*	*	*	C-7	A400R406
			RCR07G104JS	(81349)													
P H BALK	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R409
			RCR07G104JS	(81349)													
P H BALL	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R417SEL
			RCR07G104JS	(81349)													
P H BALM	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R425
			RCR07G104JS	(81349)													
P H BALN	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R442SEL
			RCR07G104JS	(81349)													
P H BALP	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R445
			RCR07G104JS	(81349)													
P H BALQ	5905-110-0388	C	RESISTOR,FIXED,COMPOSITION SAME AS BALJ			EA	REF				*	*	*	*	*	C-7	A400R452
			RCR07G104JS	(81349)													
P H BALR	5905-102-5704	C	RESISTOR,FIXED,FILM			EA	4				*	*	*	*	*	C-7	A400R435
			RNR60C4321F	(81349)													
P H BALS	5905-102-5704	C	RESISTOR,FIXED,FILM SAME AS BALR			EA	REF				*	*	*	*	*	C-7	A400R436
			RNR60C4321F	(81349)													
P H BALT	5905-102-5704	C	RESISTOR,FIXED,FILM SAME AS BALR			EA	REF				*	*	*	*	*	C-7	A400R440
			RNR60C4321F	(81349)													
P H BALU	5905-102-5704	C	RESISTOR,FIXED,FILM SAME AS BALR			EA	REF				*	*	*	*	*	C-7	A400R441
			RNR60C4321F	(81349)													
P H BALV	5905-126-6710	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-7	A400R401
			RCR07G185JS	(81349)													
P H BALW	5905-104-8358	C	RESISTOR,FIXED,COMPOSITION SAME AS BAFY			EA	REF				*	*	*	*	*	C-7	A400R407
			RCR07G822JS	(81349)													

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P H BALX	5905-104-8358	C	RESISTOR,FIXED,COMPOSITION SAME AS BAFY RCR07G822JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R412
P H BALY	5905-400-4528	C	RESISTOR,FIXED,COMPOSITION RCR07G124JS	(81349)		EA	3				*	*	*	*	*	C-7	A400R417ASEL
P H BALZ	5905-400-4528	C	RESISTOR,FIXED,COMPOSITION SAME AS BALY RCR07G124JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R442ASEL
P H BAMA	5905-400-4528	C	RESISTOR,FIXED,COMPOSITION SAME AS BALY RCR07G124JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R452ASEL
P H BAMB	5905-935-8480	C	RESISTOR,FIXED,FILM RNR60C1502F	(81349)		EA	1				*	*	*	*	*	C-7	A400R413
P H BAMC	5905-136-3890	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGT RCR07G513JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R415ASEL
P H BAMD	5905-131-1255	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGE RCR07G122JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R421
P H BAME	5905-131-1255	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGE RCR07G122JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R422
P H BAMF	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION SAME AS BACW RCR07G274JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R424
P H BAMG	5905-120-9152	C	RESISTOR,FIXED,COMPOSITION SAME AS BACW RCR07G274JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R429
P H BAMH	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGU RCR07G152JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R432
P H BAMJ	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGU RCR07G152JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R437
P H BAMK	5905-106-1356	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGU RCR07G152JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R455SEL

SECTION III REPAIR PARTS FOR DIRECT SUPPORT, GENERAL SUPPORT AND DEPOT MAINTENANCE ZM-71/U

(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	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 BAML	5905-435-6374	C	RESISTOR,FIXED,COMPOSITION			EA	3				*	*	*	*	*	C-7	A400R417ESEL
			RCR07G823JS	(81349)													
P H BAMM	5905-435-6374	C	RESISTOR,FIXED,COMPOSITION SAME AS BAML			EA	REF				*	*	*	*	*	C-7	A400R442ISEL
			RCR07G823JS	(81349)													
P H BAMN	5905-435-6374	C	RESISTOR,FIXED,COMPOSITION SAME AS BAML			EA	REF				*	*	*	*	*	C-7	A400R452ISEL
			RCR07G823JS	(81349)													
P H BAMP	5905-114-5343	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-7	A400R4558SEL
			RCR07G182JS	(81349)													
P H BAMQ	5905-120-9154	C	RESISTOR,FIXED,COMPOSITION			EA	1				*	*	*	*	*	C-7	A400R404
			RCR07G471JS	(81349)													
P H BAMR	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA			EA	REF				*	*	*	*	*	C-7	A400R423
			RCR07G272JS	(81349)													
P H BAMS	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA			EA	REF				*	*	*	*	*	C-7	A400R451
			RCR07G272JS	(81349)													
P H BAMT	5905-111-4727	C	RESISTOR,FIXED,COMPOSITION SAME AS BADA			EA	REF				*	*	*	*	*	C-7	A400R455FSEL
			RCR07G272JS	(81349)													
P H BAMU	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV			EA	REF				*	*	*	*	*	C-7	A400R4150SEL
			RCR07G683JS	(81349)													
P H BAMV	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV			EA	REF				*	*	*	*	*	C-7	A400R417CSEL
			RCR07G683JS	(81349)													
P H BAMW	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV			EA	REF				*	*	*	*	*	C-7	A400R442GSEL
			RCR07G683JS	(81349)													
P H BAMX	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV			EA	REF				*	*	*	*	*	C-7	A400R443
			RCR07G683JS	(81349)													
P H BAMY	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV			EA	REF				*	*	*	*	*	C-7	A400R452GSEL
			RCR07G683JS	(81349)													

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P H RAM7	5905-119-3505	C	RESISTOR,FIXED,COMPOSITION SAME AS BACV RCR07G683JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R453
P H BANA	5905-105-7764	C	RESISTOR,FIXED,COMPOSITION RCR07G222JS (81349)		EA	1				*	*	*	*	*	C-7	A400R455OSEL
P H BANB	5905-106-1357	C	RESISTOR,FIXED,COMPOSITION SAME AS BACY RCR07G563JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R4158SEL
P H BANC	5905-106-1357	C	RESISTOR,FIXED,COMPOSITION SAME AS BACY RCR07G563JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R442ESEL
P H BAND	5905-106-1357	C	RESISTOR,FIXED,COMPOSITION SAME AS BACY RCR07G563JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R452ESEL
P H BANE	5905-136-7104	C	RESISTOR,FIXED,COMPOSITION RCR07G304JS (81349)		EA	1				*	*	*	*	*	C-7	A400R410
P H BANF	5905-115-2262	C	RESISTOR,FIXED,COMPOSITION RCR07G913JS (81349)		EA	3				*	*	*	*	*	C-7	A400R417FSEL
P H BANG	5905-115-2262	C	RESISTOR,FIXED,COMPOSITION SAME AS BANF RCR07G913JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R442JSEL
P H BANH	5905-115-2262	C	RESISTOR,FIXED,COMPOSITION SAME AS BANF RCR07G913JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R452JSEL
P H BANJ	5905-106-1248	C	RESISTOR,FIXED,COMPOSITION RCR07G162JS (81349)		EA	1				*	*	*	*	*	C-7	A400R455ASEL
P H BANK	5905-141-0741	C	RESISTOR,FIXED,COMPOSITION RCR07G364JS (81349)		EA	1				*	*	*	*	*	C-7	A400R428
P H BANL	5905-119-3503	C	RESISTOR,FIXED,COMPOSITION RCR07G271JS (81349)		EA	1				*	*	*	*	*	C-7	A400R418
P H BANM	5905-135-6046	C	RESISTOR,FIXED,COMPOSITION SAME AS BACU RCR07G681JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R449

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P H BANN	5905-114-0708	C	RESISTOR,FIXED,COMPOSITION SAME AS BACN RCR07G202JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R455CSEL
P H BANP	5905-141-0744	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGG RCR07G562JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R454
P H BANQ	5905-131-9729	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGO RCR07G302JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R455GSEL
P H BANR	5905-244-6934	C	RESISTOR,FIXED,COMPOSITION RCR07G824JS	(81349)		EA	1				*	*	*	*	*	C-7	A400R458
P H BANS	5905-114-5344	C	RESISTOR,FIXED,COMPOSITION RCR07G1R4JS	(81349)		EA	1				*	*	*	*	*	C-7	A400R457
P H BANT	5905-141-0717	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGR RCR07G473JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R415SEL
P H BANU	5905-119-3504	C	RESISTOR,FIXED,COMPOSITION RCR07G273JS	(81349)		EA	1				*	*	*	*	*	C-7	A400R402
P H BANV	5905-121-9938	C	RESISTOR,FIXED,COMPOSITION RCR07G753JS	(81349)		EA	4				*	*	*	*	*	C-7	A400R415ESEL
P H BANW	5905-121-9938	C	RESISTOR,FIXED,COMPOSITION SAME AS BANV RCR07G753JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R417DSEL
P H BANX	5905-121-9938	C	RESISTOR,FIXED,COMPOSITION SAME AS BANV RCR07G753JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R442HSEL
P H BANY	5905-121-9938	C	RESISTOR,FIXED,COMPOSITION SAME AS BANV RCR07G753JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R452HSEL
P H BANZ	5905-136-8406	C	RESISTOR,FIXED,COMPOSITION SAME AS BAGL RCR07G242JS	(81349)		EA	REF				*	*	*	*	*	C-7	A400R455ESEL
P H BAPA	5905-136-3891	C	RESISTOR,FIXED,COMPOSITION RCR07G621JS	(81349)		EA	3				*	*	*	*	*	C-7	A400R446

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P H BAPB	5905-136-3891	C	RESISTOR,FIXED,COMPOSITION SAME AS BAPA RCR07G621JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R447
P H BAPC	5905-136-3891	C	RESISTOR,FIXED,COMPOSITION SAME AS BAPA RCR07G621JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R448
P H BAPD	5905-114-0710	C	RESISTOR,FIXED,COMPOSITION RCR07G331JS (81349)		EA	1				*	*	*	*	*	C-7	A400R419
P H BAPE	5905-106-3666	C	RESISTOR,FIXED,COMPOSITION SAME AS BAHD RCR07G103JS (81349)		EA	REF				*	*	*	*	*	C-7	A400R411
P H BAPF	5961-957-0427	C	SEMICONDUCTOR DEVICE,DIODE 1902-0037 (28480)		EA	1				*	*	*	*	*	C-7	A400CR401
P H BAPG	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR402
P H BAPH	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR403
P H BAPJ	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR404
P H BAPK	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR405
P H BAPL	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR416
P H BAPM	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR417
P H BAPN	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR418
P H BAPP	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-7	A400CR419

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P H BAPQ	5961-928-7939	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088	(13715)		EA	REF				*	*	*	*	*	C-7	A400CR420
P H BAPR	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR406
P H BAPS	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR407
P H BAPT	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR408
P H BAPU	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR409
P H BAPV	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR410
P H BAPW	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR411
P H BAPX	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR412
P H BAPY	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR413
P H BAPZ	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR414
P H BAQA	5961-772-6727	C	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361	(93332)		EA	REF				*	*	*	*	*	C-7	A400CR415
P H BAQB	5961-774-7313	C	SEMICONDUCTOR DEVICE,DIODE 1902-0097	(28480)		EA	1				*	*	*	*	*	C-7	A400CR421
P H BAQC	5961-931-6998	C	TRANSISTOR SAME AS BAHP 1853-0010	(28480)		EA	REF				*	*	*	*	*	C-7	A400Q402

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P H BAQD	5961-931-0152	C	TRANSISTOR 2N3391 (03508)		EA	1				*	*	*	*	*	C-7	A400Q401
P H BAQE	5961-990-5369	C	TRANSISTOR SAME AS BADR 1854-0003 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q415
P H BAQF	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q403
P H BAQG	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q404
P H BAQH	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q405
P H BAQJ	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q406
P H BAQK	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q407
P H BAQL	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q408
P H BAQM	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q409
P H BAQN	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q410
P H BAQP	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q411
P H BAQQ	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q412
P H BAQR	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A400Q413

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P H BAQS	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A4000414
P H BAQT	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A4000416
P H BAQU	5961-928-3161	C	TRANSISTOR SAME AS BADS 1854-0071 (28480)		EA	REF				*	*	*	*	*	C-7	A4000417
P H BAQV	5961-925-6462	C	TRANSISTOR ST1657 (03877)		EA	1				*	*	*	*	*	C-7	A4000418
P H BAQW	5340-399-7270	B	CLAMP,LOOP B11304 (05690)		EA	2				*	*	*	*	*	C-1	MP35
P H BAQX	5340-399-7270	B	CLAMP,LOOP SAME AS BAQW B11304 (05690)		EA	REF				*	*	*	*	*	C-1	MP36
P H BAQY	5310-934-9759	*	NUT,PLAIN,HEXAGON MS35649-284 (96906)		EA	2				*	*	*	*	*		H1
P H BAQZ	5305-054-6671	*	SCREW,MACHINE MS51957-46 (96906)		EA	2				*	*	*	*	*		H1
P H BARA	5310-880-5978	*	WASHER,FLAT MS15795-807 (96906)		EA	2				*	*	*	*	*		H1
P H BARB	5310-614-3552	*	WASHER,LOCK MS35335-59 (96906)		EA	2				*	*	*	*	*		H1
P H BARC	5340-995-6333	B	CLAMP,LOOP 3-16-4 (95987)		EA	1				*	*	*	*	*	C-1	MP34
X2 H BARD		B	COVER,BOTTOM 5000-8583 (28480)		EA	1										MP41
P H BARE	5305-969-6495	*	SCREW,MACHINE MS24693C25 (96906)		EA	2				*	*	*	*	*		H2

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X2 H BARF		B	COVER,SIDE		EA	2										MP39
			5000-8565 (28480)													
X2 H BARG		B	COVER,SIDE SAME AS BARF		EA	REF										MP40
			5000-8565 (28480)													
P H BARH	5305-066-7326	*	SCREW,MACHINE		EA	8				*	*	*	*	*		H4
			MS24693C24 (96906)													
X2 H BARJ		B	COVER,TOP		EA	1										MP48
			5060-8573 (28480)													
X2 H BARK		B	DIAL,SCALE		EA	1										MP18SEL
			04260-8521 (28480)													
X2 H BARL		B	DIAL,SCALE		EA	1										MP26SEL
			04260-8529 (28480)													
X2 H BARM		B	DIAL,SCALE		EA	1										MP22SEL
			04260-8525 (28480)													
X2 H BARN		B	DIAL,SCALE		EA	1										MP30SEL
			04260-8534 (28480)													
X2 H BARP		B	DIAL,SCALE		EA	1										MP20SEL
			04260-8523 (28480)													
X2 H BARQ		B	DIAL,SCALE		EA	1										MP28SEL
			04260-8532 (28480)													
X2 H BARR		B	DIAL,SCALE		EA	1										MP24SEL
			04260-8527 (28480)													
X2 H BARS		B	DIAL,SCALE		EA	1										MP32SEL
			04260-8536 (28480)													
X2 H BART		B	DIAL,SCALE		EA	1										MP19SEL
			04260-8522 (28480)													

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X2 H BARU		B	DIAL,SCALE 04260-8531 (28480)		EA	1										MP27SEL
X2 H BARV		B	DIAL,SCALE 04260-8526 (28480)		EA	1										MP23SEL
X2 H BARW		B	DIAL,SCALE 04260-8535 (28480)		EA	1										MP31SEL
X2 H BARX		B	DIAL,SCALE 04260-8524 (28480)		EA	1										MP21SEL
X2 H BARY		B	DIAL,SCALE 04260-8533 (28480)		EA	1										MP29SEL
X2 H BARZ		B	DIAL,SCALE 04260-8528 (28480)		EA	1										MP25SEL
P H BASA	5920-881-4636	B	FUSEHOLDER 342014 (75915)		EA	1				*	*	*	*	*	C-3	XF1
P H BASC	5920-356-2185	B	FUSE,CARTRIDGE MDL1-10 (71400)		EA	1	*	*	*	*	*	*	*	*	C-3	F1
P H BASD	6625-232-0934	B	HANDLE,BAIL 1490-0032 (28480)		EA	1				*	*	*	*	*	C-8	MP38
P H BASE	5340-978-7859	B	HINGE, CABINET 5040-0700 (28480)		EA	2				*	*	*	*	*	C-8	MP42
P H BASF	5340-978-7859	B	HINGE, CABINET SAME AS BASE 5040-0700 (28480)		EA	REF				*	*	*	*	*	C-8	MP43
P H BASG		B	KNOB 0370-0267 (28480)		EA	1	*	*	*	*	*	*	*	*	C-9	MP4
P H BASH	5355-767-9444	B	KNOB 0370-0077 (28480)		EA	2	*	*	*	*	*	*	*	*	C-9	MP2

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P O BASJ	5355-767-9444	B	KNOB SAME AS BASH 0370-0077	(28480)		EA	REF	*	*	*	*	*	*	*	*	C-9	MP3
P O BASK		B	KNOB 0370-0272	(28480)		EA	1	*	*	*	*	*	*	*	*	C-9	MP5
P O BASL	5355-579-2318	B	KNOB 0370-0050	(28480)		EA	1	*	*	*	*	*	*	*	*	C-9	MP1
P O BASM	5355-411-2591	B	KNOB 0370-0275	(28480)		EA	1	*	*	*	*	*	*	*	*	C-9	MP6
P O BASN		B	KNOB 0370-0256	(28480)		EA	1	*	*	*	*	*	*	*	*	C-9	MP3
P H S BASP	6625-139-0516	B	LAMP ASSEMBLY, INCANDESCENT 04260-7026	(28480)		EA	1				*	*	*	*	*	C-9	DS
P H BASQ	5305-054-5651	*	SCREW, MACHINE MS51957-17	(96906)		EA	2				*	*	*	*	*		H2
P H BASR	5310-550-3715	*	WASHER, LOCK MS35333-70	(96906)		EA	6				*	*	*	*	*		H4
P H BASS		C	LAMPHOLDER 04260-5020	(28480)		EA	1				*	*	*	*	*	C-9	DSXDS600
P H BAST	5310-934-9748	*	NUT, PLAIN, HEXAGON MS35649-244	(96906)		EA	7				*	*	*	*	*		H1
P H BASU	5305-054-5648	*	SCREW, MACHINE MS51957-14	(96906)		EA	1				*	*	*	*	*		H1
P O BASV		C	LAMP, GLOW NE2E1	(08806)		EA	3	*	*	*	*	*	*	*	*	C-9	DSV603
P O BASW		C	LAMP, GLOW SAME AS BASV NE2E1	(08806)		EA	REF	*	*	*	*	*	*	*	*	C-9	DSV604

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P O BASX		C	LAMP,GLOW SAME AS BASV NE2E1	(88806)		EA	REF	*	*	*	*	*	*	*	*	C-9	DSV605
P O BASV		C	LAMP,GLOW NE98	(88806)		EA	2	*	*	*	*	*	*	*	*	C-9	DSV601
P O BASZ		C	LAMP,GLOW SAME AS BASV NE98	(88806)		EA	REF	*	*	*	*	*	*	*	*	C-9	DSV602
X2 H BATA		C	PRINTED WIRING BOARD 04260-8706	(28480)		EA	1										DSPW1
P H BATB		C	RESISTOR,FIXED,COMPOSITION RCR20G823JS	(81349)		EA	1				*	*	*	*	*	C-9	DSR601
X2 H BATC		B	LENS,FINDER 04260-5024	(28480)		EA	1										MP13
X2 H BATD		B	LINK,TERMINAL,CONNECTOR 04260-1049	(28480)		EA	3										MP7
X2 H BATE		B	LINK,TERMINAL,CONNECTOR SAME AS BATD 04260-1049	(28480)		EA	REF										MP8
X2 H BATF		B	LINK,TERMINAL,CONNECTOR SAME AS BATD 04260-1049	(28480)		EA	REF										MP9
X2 H BATG		B	MOUNTING BLOCK 5060-0728	(28240)		EA	2										MP46
X2 H BATH		B	MOUNTING BLOCK SAME AS BATG 5060-0728	(28240)		EA	REF										MP47
X2 H BATJ		B	NUT,SHEET SPRING C11351-632-248	(78553)		EA	4										H4
X2 H BATK		B	PANEL,FRONT 04260-1140	(28480)		EA	1										MP12

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X? H BATL		*	SCREW,MACHINE 0570-0212 (28480)		EA	2										H2
X? H BATM		B	PULLEY,GROOVED 04260-5059 (28480)		EA	1										MP16
P H BATN	5305-719-5339	*	SETSCREW MS51963-22 (96906)		EA	3				*	*	*	*	*		H2
P H BATP		B	RESISTOR ASSEMBLY,VARIABLE 04260-7028 (28480)		EA	1				*	*	*	*	*	C-4	R3
X1 H BATO		C	CASE,RESISTOR ASSEMBLY 04260-5025 (28480)		EA	1										R3MP3
X1 H BATR		C	CONTACT,ELECTRICAL 04260-1047 (28480)		EA	1										R3E3
X1 H BATS		C	COVER,RESISTOR ASSEMBLY 04260-5026 (28480)		EA	1										R3MP4
X1 H BATT		*	SCREW,MACHINE MS24693C1 (96906)		EA	3										H1
X1 H BATU		*	SCREW,MACHINE SAME AS BATT MS24693C1 (96906)		EA	REF										H2
X1 H BATV		C	GEAR ASSEMBLY 04260-7027 (28480)		EA	1										R3A1
X1 H BATW		*	SCREW,SHOULDER 04260-3041 (28480)		EA	7										H7
X1 H BATX		D	BRACKET,ANGLE 04260-1071 (28480)		EA	1										R3A1MP4
X1 H BATY		*	SCREW,MACHINE MS51957-27 (96906)		EA	4										H3

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P H BATZ	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58	(969061)		EA	REF				*	*	*	*	*		H3
X1 H BAUA		D	BRACKET,DOUBLE ANGLE 04260-1064	(28480)		EA	1										R3A1MP3
X1 H BAUB		*	SCREW,MACHINE MS51959-12	(969061)		EA	4										H2
X1 H BAUC		D	COUNTER,ROTARY 4D32424-400AC	(18911)		EA	1										R3A1MP23
X1 H BAUD		D	DISK,DRIVE 04260-1043	(28480)		EA	1										R3A1MP2
X1 H BAUF		D	FRAME,ANGLE 04260-1042	(28480)		EA	1										R3A1MP1
X1 H BAUF		*	SCREW,MACHINE SAME AS BAUB MS51959-12	(969061)		EA	REF										H2
X1 H BAUG		*	SCREW,MACHINE MS35206-218	(969061)		00	5										H5
P H BAUH	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58	(969061)		EA	REF				*	*	*	*	*		H5
X1 H BAUJ		D	GEAR,SPUR 04260-3036	(28480)		EA	1										R3A1MP9
X1 H BAUK		D	GEAR,SPUR 04260-3115	(28480)		EA	3										R3A1MP17
X1 H BAUL		D	GEAR,SPUR SAME AS BAUK 04260-3115	(28480)		EA	REF										R3A1MP18
X1 H BAUM		D	GEAR,SPUR SAME AS BAUK 04260-3115	(28480)		EA	REF										R3A1MP19

(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	(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
X1 H BAUN		D	GEAR, SPUR		EA	1										R3A1MP8
			04260-3035 (28480)													
X1 H BAUP		D	HUB, BODY		EA	1										R3A1MP7
			04260-3033 (28480)													
X1 H BAUQ		*	WASHER, CONVEX		EA	2										H1
			04260-1031 (28480)													
X1 H BAUR		*	WASHER, FLAT		EA	1										H1
			04260-1030 (28480)													
X1 H BAUS		*	WASHER, FLAT		EA	3										H1
			04260-1029 (28480)													
X1 H BAUT		D	HUB, BODY		EA	1										R3A1MP5
			04260-3031 (28480)													
X1 H BAUU		D	RING, RETAINING		EA	5										R3A1MP21
			5133-14SMD (79136)													
X1 H BAUV		D	RING, RETAINING SAME AS BAUU 5133-14SMD (79136)		EA	REF										R3A1MP25
X1 H BAUW		D	RING, RETAINING		EA	1										R3A1MP22
			0510-0054 (28480)													
X1 H BAUX		D	SHAFT, SHOULDER		EA	1										R3A1MP11
			04260-3038 (28480)													
X1 H BAUY		D	SHAFT, SHOULDER		EA	1										R3A1MP10
			04260-3037 (28480)													
X1 H BAUZ		D	SHAFT, STRAIGHT		EA	1										R3A1MP6
			04260-3032 (28480)													
X1 H BAVA		D	SPACER, SLEEVE		EA	5										R3A1MP12
			04260-3039 (28480)													

(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 CONTGCY PL	(9) DEPOT MAINT ALW PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF / ITEM NUMBER
X1 H BAVB		D	SPACER,SLEEVE SAME AS BAVA 04260-3039	(28480)		EA	REF										R3A1MP13
X1 H BAVC		D	SPACER,SLEEVE SAME AS BAVA 04260-3039	(28480)		EA	REF										R3A1MP14
X1 H BAVD		D	SPACER,SLEEVE SAME AS BAVA 04260-3039	(28480)		EA	REF										R3A1MP15
X1 H BAVE		D	SPACER,SLEEVE SAME AS BAVA 04260-3039	(28480)		EA	REF										R3A1MP16
X1 H BAVF		D	SPRING,HELICAL,COMPRESSION 04260-8546	(28480)		EA	1										R3A1MP20
X1 H BAVG		*	WASHER,THRUST 3050-0201	(28480)		EA	2										H2
X1 H BAVH		D	SPRING,HELICAL,TENSION 1460-0305	(28480)		EA	2										R3A1MP24
X1 H BAVJ		C	GEAR ASSEMBLY,SPUR 04260-7110	(28480)		EA	1										R3MP5SEL
X1 H BAVK		C	GEAR ASSEMBLY,SPUR 04260-7111	(28480)		EA	1										R3MP6SEL
X1 H BAVL		C	GEAR ASSEMBLY,SPUR 04260-7112	(28480)		EA	1										R3MP7SEL
X1 H BAVM		C	GEAR ASSEMBLY,SPUR 04260-7113	(28480)		EA	1										R3MP8SEL
X1 H BAVN		C	GEAR ASSEMBLY,SPUR 04260-7114	(28480)		EA	1										R3MP9SEL
X1 H BAVP		C	GEAR ASSEMBLY,SPUR 04260-7115	(28480)		EA	1										R3MP10SEL

(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	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
X1 H BAVQ		C	GEAR ASSEMBLY, SPUR			EA	1										R3MP11SEL
			04260-7116	(28480)													
X1 H BAVR		C	GEAR ASSEMBLY, SPUR			EA	1										R3MP12SEL
			04260-7117	(28480)													
X1 H BAVS		C	GEAR ASSEMBLY, SPUR			EA	1										R3MP13SEL
			04260-7118	(28480)													
X1 H BAVT		C	GEAR ASSEMBLY, SPUR			EA	1										R3MP14SEL
			04260-7119	(28480)													
X1 H BAVU		C	GEAR ASSEMBLY, SPUR			EA	1										R3MP15SEL
			04260-7120	(28480)													
X1 H BAVV		*	SETSCREW			EA	2										H2
			MS51963-1	(96906)													
X1 H BAVW		C	RING, MOUNTING			EA	1										R3MP1
			04260-1044	(28480)													
X1 H BAVX		C	RING, RETAINING SAME AS BAUU			EA	REF										R3MP16
			5133-14SMD	(79136)													
X1 H BAVY		C	RING, SPRING			EA	1										R3MP2
			04260-1048	(28480)													
X1 H BAVZ		C	SPRING, HELICAL, TENSION SAME AS BAVH			EA	REF										R3MP17
			1460-0305	(28480)													
X1 H BAWA		C	SWEEPER ASSEMBLY			EA	1										R3A2
			04260-7029	(28480)													
X1 H BAWB		D	ARM, CONTACT			EA	1										R3A2MP1
			04260-1045	(28480)													
X1 H BAWC		D	CONTACT, ELECTRICAL			EA	1										R3A2E2
			3100-1118	(28480)													

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X1 H BAWD		D	CONTACT,ELECTRICAL 04260-1046 (28480)		EA	1										R3A2E1
X1 H BAWE		D	HUB,BODY 04260-3043 (28480)		EA	1										R3A2MP3
X1 H BAWF		D	SHAFT,STRAIGHT 04260-3042 (28480)		EA	1										R3A2MP2
P H BAWG		B	RESISTOR,VARIABLE 2100-1170 (28480)		EA	1				*	*	*	*	*	C-2	R5
P H BAWH	5905-106-1356	B	RESISTOR,FIXED,COMPOSITION SAME AS BAGU RCR07G152JS (81349)		EA	REF				*	*	*	*	*	C-8	R2
P H BAWJ	5905-451-8612	B	RESISTOR,FIXED,FILM CCAT0-4142F (07716)		EA	1				*	*	*	*	*	C-2	R111
P H BAWK	5905-110-0388	B	RESISTOR,FIXED,COMPOSITION SAME AS BALJ RCR07G104JS (81349)		EA	REF				*	*	*	*	*	C-8	R7
P H BAWL	5905-111-4727	B	RESISTOR,FIXED,COMPOSITION SAME AS BADA RCR07G272JS (81349)		EA	REF				*	*	*	*	*	C-2	R8
P H BAWM	5905-451-8616	B	RESISTOR,FIXED,FILM 0698-1373 (28480)		EA	1				*	*	*	*	*	C-8	R6
P H BAWN	5905-451-8611	B	RESISTOR,FIXED,FILM MEC79-5000B (75042)		EA	1				*	*	*	*	*	C-2	R110
P H BAWP	5905-451-5164	B	RESISTOR,VARIABLE 2100-1172 (28480)		EA	1				*	*	*	*	*	C-8	R1
P H BAWQ		B	SCALE ASSEMBLY 04260-7030 (28480)		EA	1				*	*	*	*	*	C-1	A1
P H BAWR	5310-531-9514	*	WASHER,FLAT SAME AS BAAN AN960C6 (88044)		EA	1				*	*	*	*	*		H1

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P H BAWS	5305-054-5647	*	SCREW,MACHINE SAME AS BAAL MS51957-13	(96906)		EA	REF				*	*	*	*	*		H2
P H BAWT	5305-054-6650	*	SCREW,MACHINE SAME AS BAAH MS51957-26	(96906)		EA	REF				*	*	*	*	*		H1
P H BAWU	5310-058-3599	*	WASHER,LOCK MS35335-57	(96906)		EA	7				*	*	*	*	*		H2
X1 H BAWV		C	BEARING,BALL,ANNULAR 1410-0321	(28480)		EA	2										A1MP10
X1 H BAWW		C	BEARING,BALL,ANNULAR SAME AS BAWV 1410-0321	(28480)		EA	REF										A1MP11
X1 H BAWX		C	BRACKET,ANGLE 04260-1026	(28480)		EA	1										A1MP1
P H BAWY	5305-054-5647	*	SCREW,MACHINE SAME AS BAAL MS51957-13	(96906)		EA	REF				*	*	*	*	*		H2
P H BAWZ	5310-058-3599	*	WASHER,LOCK SAME AS BAWU MS35335-57	(96906)		EA	REF				*	*	*	*	*		H2
X1 H BAXA		C	BRACKET,ANGLE 04260-1027	(28480)		EA	1										A1MP2
X1 H BAXB		C	BRACKET,ANGLE 04260-1032	(28480)		EA	1										A1MP3
X1 H BAXC		C	DRUM,SWITCH 04260-5058	(28480)		EA	1										A1MP7
X1 H BAXD		C	HUB,BODY 04260-3026	(28480)		EA	1										A1MP6
X1 H BAXE		*	WASHER,CONVEX SAME AS BAUQ 04260-1031	(28480)		EA	REF										H1

(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	(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
X1 H BAXF		*	WASHER,FLAT 04260-1078 (28480)		EA	1										H1
X1 H BAXG		*	WASHER,FLAT SAME AS BAUS 04260-1029 (28480)		EA	REF										H2
X1 H BAXH		C	PIN,SPRING 04260-1076 (28480)		EA	1										A1MP12
X1 H BAXJ		*	WASHER,FLAT 2190-0210 (28480)		EA	1										H1
X1 H BAXK		C	PLATE,DRUM 04260-1077 (28480)		EA	1										A1MP4
X1 H BAXL		C	RESISTOR,VARIABLE 2100-1171 (28480)		EA	1										A1R4
X1 H BAXM		C	RING,RETAINING 5133-25SMD (79136)		EA	1										A1MP9
X1 H BAXN		C	RING,RETAINING SAME AS BAUU 5133-14SMD (79136)		EA	REF										A1MP8
X1 H BAXP		C	SHAFT,SHOULDER 04260-3025 (28480)		EA	1										A1MP5
P H BAXQ	5305-054-6650	B	SCREW,MACHINE SAME AS BAAH MS51957-26 (96906)		EA	REF				*	*	*	*	*		H2
P H BAXR	5961-928-7939	B	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-1	CR3
P H BAXS	5961-928-7939	B	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHF FDG1088 (13715)		EA	REF				*	*	*	*	*	C-1	CR4
P H BAXT	5961-772-6727	B	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361 (93332)		EA	REF				*	*	*	*	*	C-8	CR1

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P H BAXU	5961-772-6727	B	SEMICONDUCTOR DEVICE,DIODE SAME AS BAHM D2361 (93332)		EA	REF				*	*	*	*	*	C-8	CR2
P H S BAXV	6625-139-0497	B	SWITCH ASSEMBLY,ROTARY 04260-7021 (28480)		EA	1				*	*	*	*	*	C-8	A100
P H BAXW	6625-432-5216	C	ARM,SWITCH ACTUATOR 04260-1067 (28480)		EA	2				*	*	*	*	*	C-10	A100MP8
P H BAXX	6625-432-5216	C	ARM,SWITCH ACTUATOR SAME AS BAXW 04260-1067 (28480)		EA	REF				*	*	*	*	*	C-10	A100MP9
X2 H BAXY		C	BRACKET,ANGLE 04260-1022 (28480)		EA	1										A100MP4
X2 H BAXZ		C	BRACKET,POINTER 04260-1079 (28480)		EA	1										A100MP13
X2 H BAYA		C	CAM CONTROL 04260-1070 (28480)		EA	1										A100MP12
X2 H BAYB		*	PIN,STRAIGHT,HEADLESS 0510-0397 (28480)		EA	2										H1
X2 H BAYC		C	CAM CONTROL 04260-1069 (28480)		EA	1										A100MP11
X2 H BAYD		*	PIN,STRAIGHT,HEADLESS SAME AS BAYB 0510-0397 (28480)		EA	REF										H1
X2 H BAYE		C	CAM CONTROL 04260-5052 (28480)		EA	1										A100MP29
X2 H BAYF		*	PIN,SPRING 1480-0008 (28480)		EA	4										H2
X2 H BAYG		C	CAM CONTROL 04260-5053 (28480)		EA	1										A100MP30

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X2 H BAYH		C	CAM CONTROL			EA	1										A100MP15
			04260-3028	(28480)													
P H BAYJ	5910-728-2194	C	CAPACITOR,FIXED,CERAMIC DI			EA	2				*	*	*	*	*	C-10	A100C103
			0121-0039	(28480)													
P H BAYK	5910-728-2194	C	CAPACITOR,FIXED,CERAMIC DI SAME AS BAYJ			EA	REF				*	*	*	*	*	C-10	A100C104
			0121-0039	(28480)													
P H BAYL		C	CAPACITOR,FIXED,CERAMIC DI			EA	1				*	*	*	*	*	C-10	A100C105ASEL
			CC20SH030C	(81349)													
P H BAYM		C	CAPACITOR,FIXED,PLASTIC DI			EA	1				*	*	*	*	*	C-10	A100C101SEL
			0160-1264	(28480)													
P H BAYN		C	CAPACITOR,FIXED,PAPER			EA	1				*	*	*	*	*	C-10	A100C102SEL
			0160-1160	(28480)													
P H BAYP		C	CAPACITOR,FIXED,PLASTIC DI			EA	1				*	*	*	*	*	C-10	A100C1010SEL
			0160-1548	(28480)													
P H BAYQ	5910-583-1589	C	CAPACITOR,FIXED,CERAMIC DI			EA	1				*	*	*	*	*	C-10	A100C105SEL
			CC20CH040C	(81349)													
P H BAYR		C	CAPACITOR,FIXED,PLASTIC DI			EA	1				*	*	*	*	*	C-10	A100C1018SEL
			0160-1546	(28480)													
P H BAYS		C	CAPACITOR,FIXED,PAPER			EA	1				*	*	*	*	*	C-10	A100C102ASEL
			0160-1161	(28480)													
P H BAYT		C	CAPACITOR,FIXED,PLASTIC DI			EA	1				*	*	*	*	*	C-10	A100C101ESEL
			0160-1551	(28480)													
P H BAYU		C	CAPACITOR,FIXED,CERAMIC DI SAME AS BABA			EA	REF				*	*	*	*	*	C-10	A100C1058SEL
			CC20SH050K	(81349)													
P H BAYV		C	CAPACITOR,FIXED,PLASTIC DI			EA	1				*	*	*	*	*	C-10	A100C101ASEL
			0160-1333	(28480)													

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P H BAYW		C	CAPACITOR,FIXED,PLASTIC DI 0160-1547 (28480)		EA	1				*	*	*	*	*	C-10	A100C101CSEL
X2 H BAYX		C	CHASSIS,ELECTRICAL EQUIPMENT 04260-1020 (28480)		EA	1										A100MP3
X2 H BAYY		*	SCREW,MACHINE 0624-0077 (28480)		EA	3										H3
P H BAYZ	5310-058-3599	*	WASHER,LOCK SAME AS BAWU MS35335-57 (96906)		EA	REF				*	*	*	*	*		H3
P H BAZA		C	CONTACT ASSEMBLY,ELECTRICAL 04260-5057 (28480)		EA	1				*	*	*	*	*		A100E26
P H BAZB	5310-997-3078	*	NUT,PLAIN,HEXAGON 2260-0002 (28480)		EA	6				*	*	*	*	*		H6
X2 H BAZC		*	SCREW,MACHINE 0570-0705 (28480)		EA	4										H4
P H BAZD		C	CONTACT ASSEMBLY,ELECTRICAL 04260-5049 (28480)		EA	2				*	*	*	*	*		A100E14
P H BAZE		C	CONTACT ASSEMBLY,ELECTRICAL SAME AS BAZD 04260-5049 (28480)		EA	REF				*	*	*	*	*		A100E15
P H BAZF		C	CONTACT ASSEMBLY,ELECTRICAL 04260-5056 (28480)		EA	1				*	*	*	*	*		A100E25
P H BAZG		C	CONTACT ASSEMBLY,ELECTRICAL 04260-5050 (28480)		EA	2				*	*	*	*	*		A100E16
P H BAZH		C	CONTACT ASSEMBLY,ELECTRICAL SAME AS BAZG 04260-5050 (28480)		EA	REF				*	*	*	*	*		A100E17
P H BAZJ		C	CONTACT,ELECTRICAL 04260-1055 (28480)		EA	2				*	*	*	*	*		A100E1

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P H BAZK		C	CONTACT,ELECTRICAL SAME AS BAZJ 04260-1055 (28480)		EA	REF				*	*	*	*	*		A100E2
P H BAZL		C	CONTACT,ELECTRICAL 04260-1073 (28480)		EA	2				*	*	*	*	*		A100E3
P H BAZM		C	CONTACT,ELECTRICAL SAME AS BAZL 04260-1073 (28480)		EA	REF				*	*	*	*	*		A100E4
P H BAZN		C	CONTACT,ELECTRICAL 04260-1074 (28480)		EA	4				*	*	*	*	*		A100E5
P H BAZP		C	CONTACT,ELECTRICAL SAME AS BAZN 04260-1074 (28480)		EA	REF				*	*	*	*	*		A100E6
P H BAZQ		C	CONTACT,ELECTRICAL SAME AS BAZN 04260-1074 (28480)		EA	REF				*	*	*	*	*		A100E7
P H BAZR		C	CONTACT,ELECTRICAL SAME AS BAZN 04260-1074 (28480)		EA	REF				*	*	*	*	*		A100E8
P H BAZS		C	CONTACT ASSEMBLY 04260-7045 (28480)		EA	2				*	*	*	*	*		A100E27
P H BAZT		C	CONTACT ASSEMBLY SAME AS BAZS 04260-7045 (28480)		EA	REF				*	*	*	*	*		A100E28
X2 H BAZU		*	PIN,SPRING SAME AS BAYF 1480-0008 (28480)		EA	REF										H1
P H BAZV	5310-930-2722	*	WASHER,LOCK 5000-0206 (28480)		EA	2				*	*	*	*	*		H1
X2 H BAZW		C	COVER,ELECTRICAL SWITCH 04260-1060 (28480)		EA	1										A100MP6
P H BAZX	5305-054-5644	*	SCREW,MACHINE MS51957-11 (96906)		EA	2				*	*	*	*	*		H2

(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. CONTGCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H BAZY	5310-550-3715	*	WASHER,LOCK SAME AS BASR MS35333-70	(96906)		EA	REF				*	*	*	*	*		H2
X2 H BAZZ		C	DIAL,SCALE 04260-5061	(28480)		EA	1										A100MP31
X2 H BBAA		C	DIAL,SCALE 04260-5062	(28480)		EA	1										A100MP33
X2 H BBAB		C	HUB,BODY 04260-3045	(28480)		EA	2										A100MP16
X2 H BBAC		C	HUB,BODY SAME AS BBAB 04260-3045	(28480)		EA	REF										A100MP17
X2 H BBAD		C	HUB,BODY 04260-3027	(28480)		EA	1										A100MP14
X2 H BBAE		C	HUB,BODY 04260-3046	(28480)		EA	2										A100MP18
X2 H BBAF		C	HUB,BODY SAME AS BBAE 04260-3046	(28480)		EA	REF										A100MP19
X2 H BBAG		C	INSULATOR,BUSHING 04260-5022	(28480)		EA	2										A100E11
X2 H BBAH		C	INSULATOR,BUSHING SAME AS BBAG 04260-5022	(28480)		EA	REF										A100E12
X2 H BBAJ		C	INSULATOR,BUSHING 04260-5021	(28480)		EA	2										A100E9
X2 H BBAK		C	INSULATOR,BUSHING SAME AS BBAJ 04260-5021	(28480)		EA	REF										A100E10
X2 H BBAL		C	INSULATOR,PLATE 04260-5054	(28480)		EA	3										A100E22

(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. COMTRCY PL	(9) DEPOT MAINT. ALW. PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
X2 H BBAM		C	INSULATOR,PLATE SAME AS BBAL 04260-5054	(28480)		EA	REF										A100E23
X2 H BBAN		C	INSULATOR,PLATE SAME AS BBAL 04260-5054	(28480)		EA	REF										A100E24
P H BBAP	5305-054-5653	*	SCREW,MACHINE MS51957-19	(96906)		EA	3				*	*	*	*	*		H1
X2 H BBAQ		C	INSULATOR,PLATE 04260-5043	(28480)		EA	1										A100E13
X2 H BBAR		C	INSULATOR,SPREADER 04260-5051	(28480)		EA	4										A100E18
X2 H BBAS		C	INSULATOR,SPREADER SAME AS BBAR 04260-5051	(28480)		EA	REF										A100E19
X2 H BBAT		C	INSULATOR,SPREADER SAME AS BBAR 04260-5051	(28480)		EA	REF										A100E20
X2 H BBAU		C	INSULATOR,SPREADER SAME AS BBAR 04260-5051	(28480)		EA	REF										A100E21
X2 H BBAV		C	PIN,GROOVED,HEADLESS 04260-3020	(28480)		EA	2										A100H2
X2 H BBAW		C	PIN,SPRING 1480-0085	(28480)		EA	1										A100H1
X2 H BBAX		C	PIN,TAPERED,PLAIN 0510-0328	(28480)		EA	1										A100H1
X2 H BBAY		C	PLATE,ELECTRICAL SHIELD 04260-1065	(28480)		EA	1										A100MP7
X2 H BBAZ		C	PLATE,RETAINER 04260-1058	(28480)		EA	1										A100MP5

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P H BBBA	5305-770-2533	*	SCREW,MACHINE			EA	10				*	*	*	*	*		H10
			MS51959-13	(96906)													
X2 H BBBB		C	PLATE,RETAINER			EA	1										A100MP10
			04260-1068	(28480)													
X2 H BBBC		C	POST,BINDING			EA	2										A100MP36
			1510-0011	(28480)													
X2 H BBBD		C	POST,BINDING SAME AS BBBC			EA	REF										A100MP37
			1510-0011	(28480)													
P H BBBE	5310-934-9765	*	NUT,PLAIN,HEXAGON			EA	2				*	*	*	*	*		H1
			MS35650-304	(96906)													
P H BBBF	5310-167-0834	*	WASHER,FLAT			EA	2				*	*	*	*	*		H1
			AN960-10L	(88044)													
P H BBBG	5310-045-3296	*	WASHER,LOCK			EA	2				*	*	*	*	*		H1
			MS35338-43	(96906)													
X2 H BBBH		C	PRINTED WIRING BOARD			EA	1										A100PW2
			04260-8707	(28480)													
X2 H BBBJ		C	PRINTED WIRING BOARD			EA	1										A100PW1
			04260-8701	(28480)													
P H BBBK	5905-451-5152	C	RESISTOR,FIXED,WIRE WOUND			EA	1				*	*	*	*	*	C-10	A100R102
			04255-8604	(28480)													
P H BBBL		C	RESISTOR,FIXED,WIRE WOUND			EA	1				*	*	*	*	*	C-10	A100R101
			04260-8604	(28480)													
P H BBBM		C	RESISTOR,FIXED,FILM			EA	1				*	*	*	*	*	C-10	A100R109
			MEBT0-3002F	(75042)													
P H BBBN		C	RESISTOR,FIXED,FILM			EA	1				*	*	*	*	*	C-10	A100R104
			MECT9-1001B	(75042)													

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P H BBAP		C	RESISTOR,FIXED,FILM MEBT0-9702F (75042)		EA	1				*	*	*	*	*	C-10	A100R106
P H BBAQ		C	RESISTOR,FIXED,FILM MECT9-1002B (75042)		EA	1				*	*	*	*	*	C-10	A100R105
P H BBBR		C	RESISTOR,FIXED,FILM MEBT0-3001F (75042)		EA	1				*	*	*	*	*	C-10	A100R107
P H BBBS		C	RESISTOR,FIXED,FILM MECT9-1000B (75042)		EA	1				*	*	*	*	*	C-10	A100R103
P H BBBT		C	RESISTOR,FIXED,FILM MEBT9-9703F (75042)		EA	1				*	*	*	*	*	C-10	A100R108
X1 H BBAU		C	RING,RETAINING SAME AS BAUU 5133-14SMD (79136)		EA	REF										A100MP35
P H BBBV	6625-432-5217	C	ROLLER,LINEAR-ROTARY MOUNTING 04260-3056 (28480)		EA	2				*	*	*	*	*	C-10	A100MP26
P H BBBW	6625-432-5217	C	ROLLER,LINEAR-ROTARY MOUNTING SAME AS BBBV 04260-3056 (28480)		EA	REF				*	*	*	*	*	C-10	A100MP27
P H BBBX	5305-727-8831	C	SCREW,MACHINE MS51959-19 (96906)		EA	2				*	*	*	*	*		A100H2
X2 H BBBY		C	SCREW,TIP 04260-3052 (28480)		EA	2										A100MP24
X2 H BBBZ		C	SCREW,TIP SAME AS BBBY 04260-3052 (28480)		EA	REF										A100MP25
P H BBCA	5305-719-5339	C	SETSCREW SAME AS BATN MS51963-22 (96906)		EA	REF				*	*	*	*	*		A100H1
X2 H BBCB		C	SHAFT,SHOULDER 04260-3057 (28480)		EA	1										A100MP28

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X2 H BBCC		C	SHAFT,STRAIGHT			EA	2										A100MP22
			04260-3050	(28480)													
X2 H BBCD		C	SHAFT,STRAIGHT SAME AS BBCC			EA	REF										A100MP23
			04260-3050	(28480)													
X2 H BBCE		C	SPACER,SLEEVE			EA	2										A100MP1
			0380-0033	(28480)													
X2 H BBCF		C	SPACER,SLEEVE SAME AS BBCE			EA	REF										A100MP2
			0380-0033	(28480)													
P H BBCG	5310-934-9761	*	NUT,PLAIN,HEXAGON SAME AS BABP			EA	REF				*	*	*	*	*		H1
			MS35649-264	(96906)													
P H BBCH	5310-655-9505	*	WASHER,LOCK SAME AS BAAF			EA	REF				*	*	*	*	*		H1
			MS35340-40	(96906)													
X2 H BBCJ		C	SPACER,SLEEVE			EA	2										A100MP20
			04260-3047	(28480)													
X2 H BBCK		C	SPACER,SLEEVE SAME AS BBCJ			EA	REF										A100MP21
			04260-3047	(28480)													
X2 H BBCL		C	SPRING,HELICAL,TORSION			EA	1										A100MP34
			04260-8547	(28480)													
X2 H BBCM		C	SPRING,HELICAL,TORSION			EA	1										A100MP33
			04260-8543	(28480)													
P H BBCN	5930-451-5168	C	SWITCH,SLIDE			EA	1				*	*	*	*	*	C-10	A100S1
			3101-0206	(28480)													
P H BBCP	5930-451-5169	B	SWITCH,SLIDE			EA	1				*	*	*	*	*	C-3	S3
			3101-0244	(28480)													
X2 H BBCQ		B	TERMINAL BOARD			EA	5										TB4
			04260-5028	(28480)													

(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 21-60	(6) DS 61-100	(7) GS 1-20	(7) GS 21-60	(7) GS 61-100	(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
X2 H BBCR		B	TERMINAL BOARD SAME AS BBCQ 04260-5028 (28480)		EA	REF										T85
X2 H BBCS		B	TERMINAL BOARD SAME AS BBCQ 04260-5028 (28480)		EA	REF										T86
X2 H BBCT		B	TERMINAL BOARD SAME AS BBCQ 04260-5028 (28480)		EA	REF										T87
X2 H BBCU		B	TERMINAL BOARD SAME AS BBCQ 04260-5028 (28480)		EA	REF										T88
X2 H BBCV		B	TERMINAL BOARD 332-14-02-002 (71785)		EA	1										T81
* H BBCW	5310-934-9761	*	NUT,PLAIN,HEXAGON SAME AS BARP MS35649-264 (96906)		EA	REF				*	*	*	*	*		H1
X1 H BBCX		*	SCREW,MACHINE SAME AS BATY MS51957-27 (96906)		EA	REF										H1
P H BBCY	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		H2
P H BBCZ	5940-578-4866	B	TERMINAL BOARD 332-14-05-035 (71785)		EA	2				*	*	*	*	*	C-2	T82
P H BBDA	5940-578-4866	B	TERMINAL BOARD SAME AS BBCZ 332-14-05-035 (71785)		EA	REF				*	*	*	*	*	C-3	T83
P H BBDB	5305-054-6650	*	SCREW,MACHINE SAME AS BAAH MS51957-26 (96906)		EA	REF				*	*	*	*	*		H2
P H BBDC	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		H2
P H BBDD	5940-989-1618	B	TERMINAL LUG 1912 (73734)		EA	5				*	*	*	*	*	C-1	E1

(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	(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 BBDE	5940-989-1618	B	TERMINAL LUG SAME AS BBDD 1912 (73734)		EA	REF				*	*	*	*	*	C-1	E2
P H BBDF	5940-989-1618	B	TERMINAL LUG SAME AS BBDD 1912 (73734)		EA	REF				*	*	*	*	*	C-1	E3
P H BBDG	5940-989-1618	B	TERMINAL LUG SAME AS BBDD 1912 (73734)		EA	REF				*	*	*	*	*	C-1	E4
P H BBDH	5305-054-6650	*	SCREW,MACHINE SAME AS BAAH MS51957-26 (96906)		EA	REF				*	*	*	*	*		H4
P H BBDJ	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		H8
P H BBDK	5950-451-3196	B	TRANSFORMER,POWER 04260-8602 (28480)		EA	1				*	*	*	*	*	C-2	T1
P H BBDL	5305-054-6650	*	SCREW,MACHINE SAME AS BAAH MS51957-26 (96906)		EA	REF				*	*	*	*	*		H2
P H BBDM	5310-209-1366	*	WASHER,LOCK SAME AS BAAJ MS35335-58 (96906)		EA	REF				*	*	*	*	*		H2
P H BBDN	5950-451-3197	B	TRANSFORMER,POWER 04260-8603 (28480)		EA	1				*	*	*	*	*	C-4	T2
X1 H BBDP		C	BOBBIN,CORE 9170-0230 (28480)		EA	1										T2E2
X1 H BBDQ		C	CORE,ELECTRO-MECHANICAL 9170-0271 (28480)		EA	1										T2E3
X1 H BBDR		C	COVER,TRANSFORMER 0510-0356 (28480)		EA	2										T2MP1
X1 H BBDS		C	COVER,TRANSFORMER SAME AS BBDR 0510-0356 (28480)		EA	REF										T2MP2

(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. CONTGCY PL	(9) DEPOT MAINT. ALW PER 100 EQUIP.	(10) ILLUSTRATIONS (a) FIGURE NUMBER	(10) ILLUSTRATIONS (b) REF. / ITEM NUMBER
P H BBDT	5310-934-9748	*	NUT, PLAIN, HEXAGON SAME AS BAST MS35649-244 (96906)		EA	REF				*	*	*	*	*		H3
P H BBDU	5305-400-8531	*	SCREW, MACHINE MS51957-121 (96906)		EA	2				*	*	*	*	*		H1
P H BBDV	5305-054-5656	*	SCREW, MACHINE MS51957-22 (96906)		EA	2				*	*	*	*	*		H1
P H BBDW	5310-926-5876	*	WASHER, LOCK MS35338-154 (96906)		EA	6				*	*	*	*	*		H3
P H BBDX	5940-989-1618	C	TERMINAL LUG SAME AS BBDD 1912 (73734)		EA	REF				*	*	*	*	*		T2E1
X2 H BBDY		B	WINDOW, OBSERVATION 04260-5030 (28480)		EA	1										MP15
X2 H BBDZ		B	WINDOW, OBSERVATION 04260-5027 (28480)		EA	1										MP14

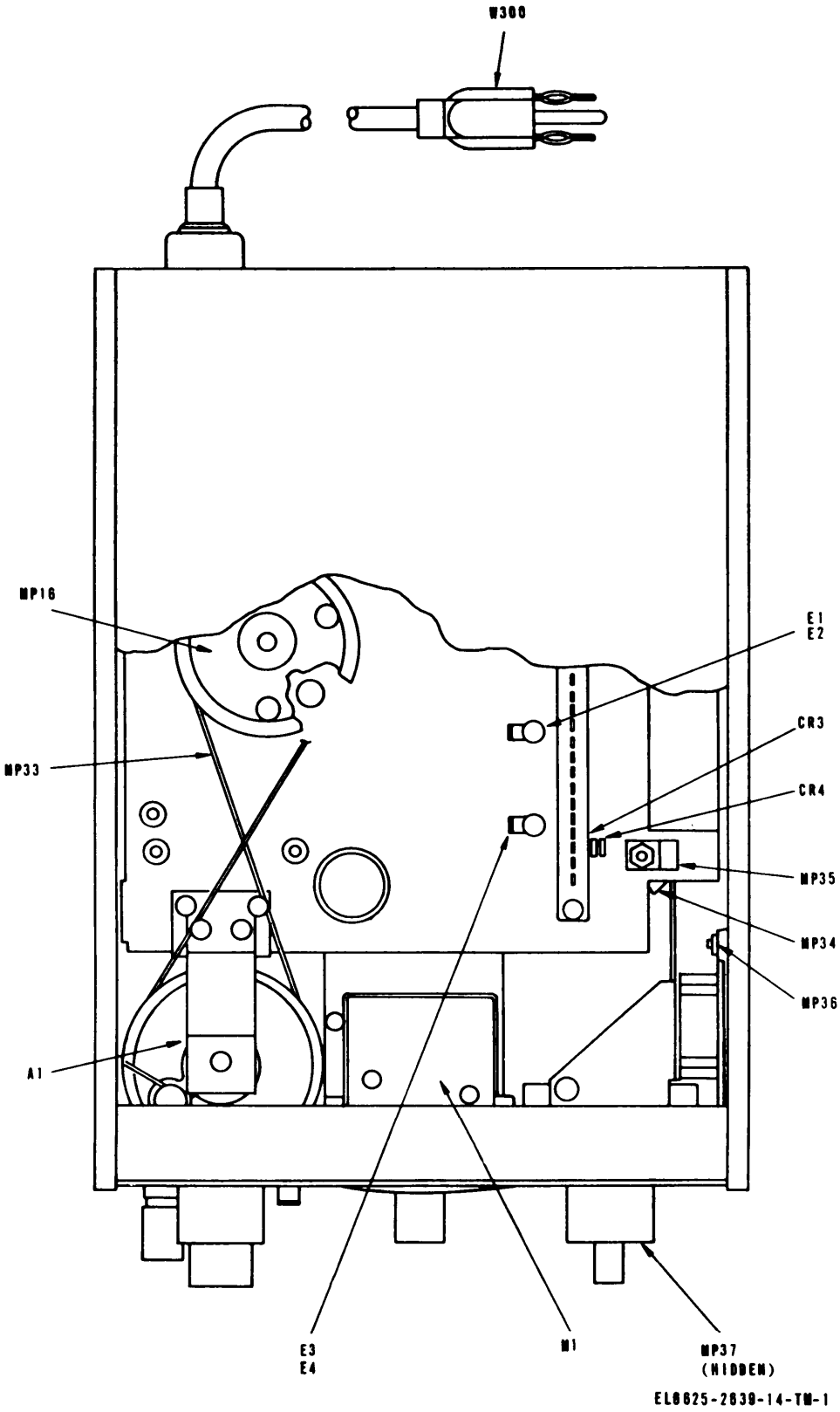

Figure C-1. Universal Bridge, top-view cutaway.

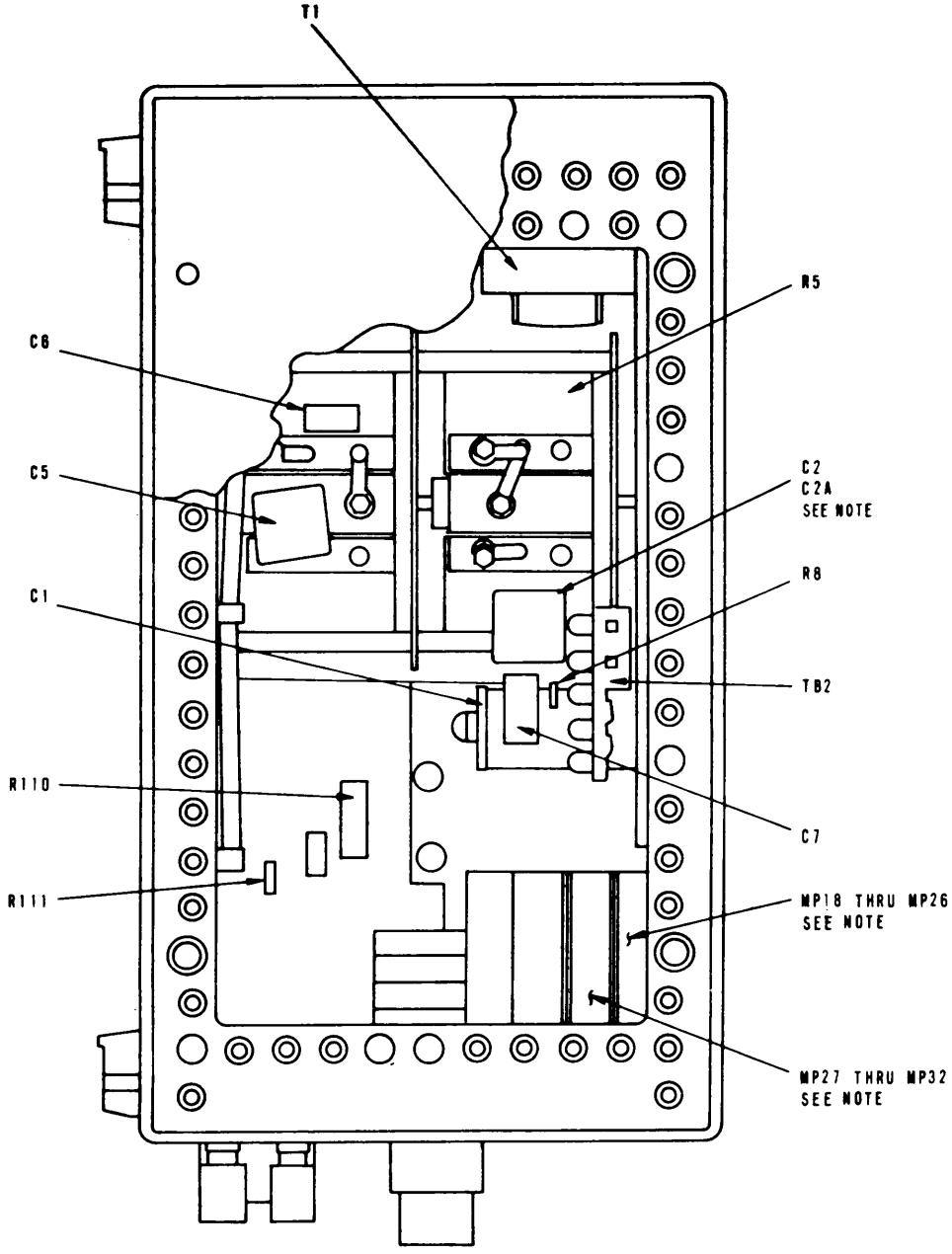

Figure C-2. Universal bridge, left-side cutawap.

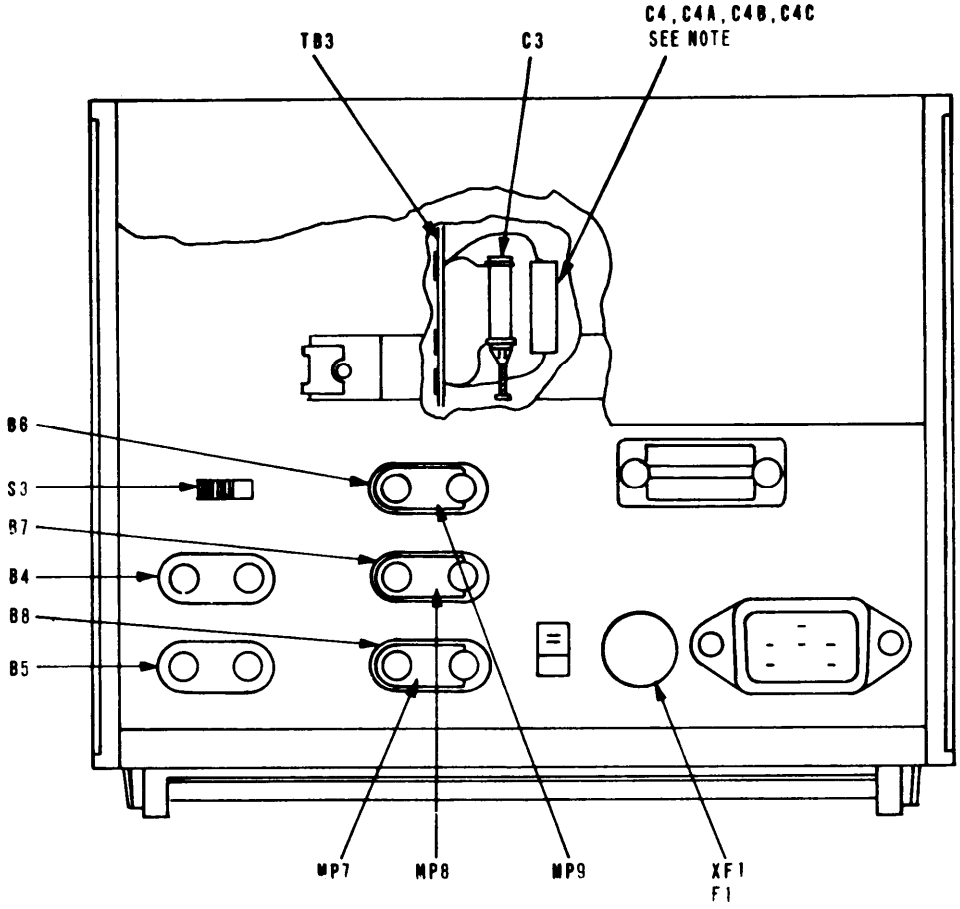

Figure C-3. Universal bridge, rear cutaway.

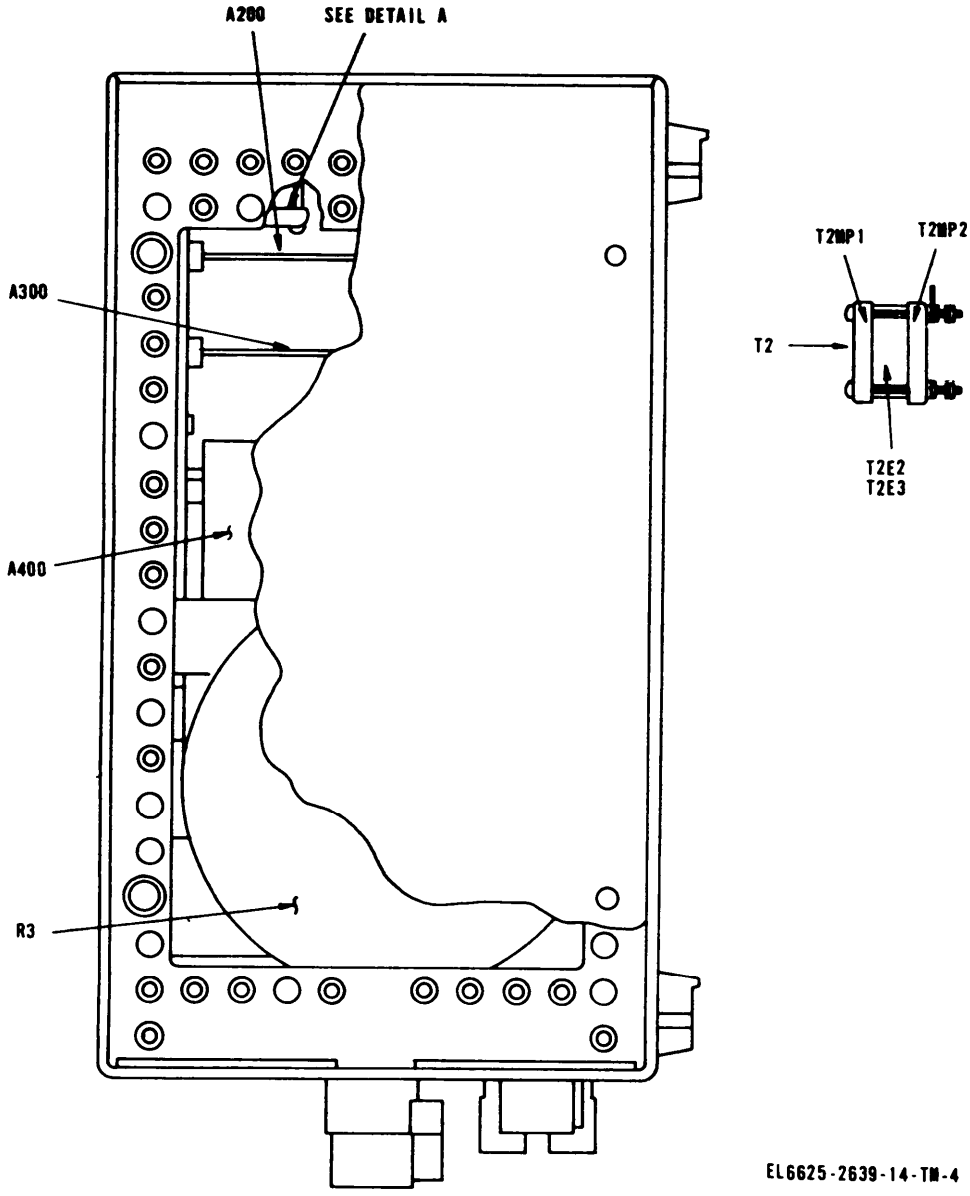

Figure C-4. Universal bridge, right-side cutaway.

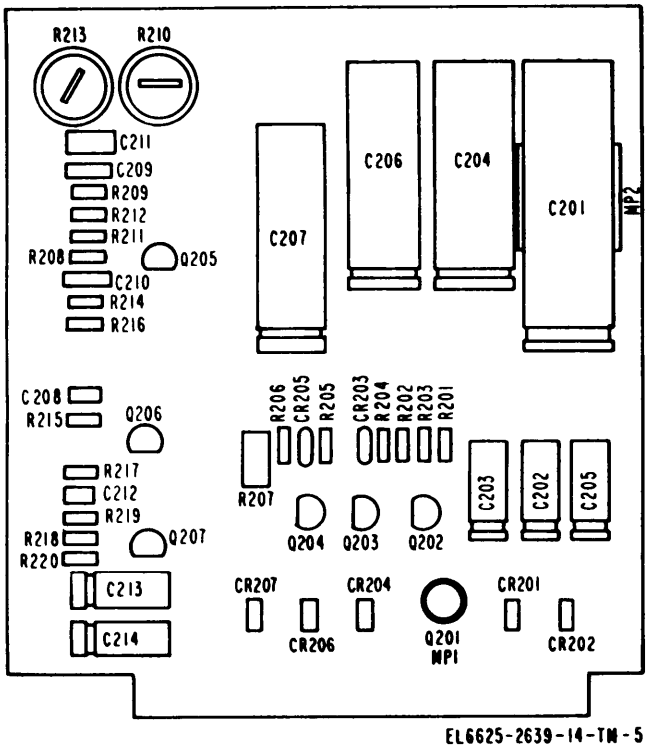

Figure C-5. Power Supply and 1-kHz oscillator A200, component layout.

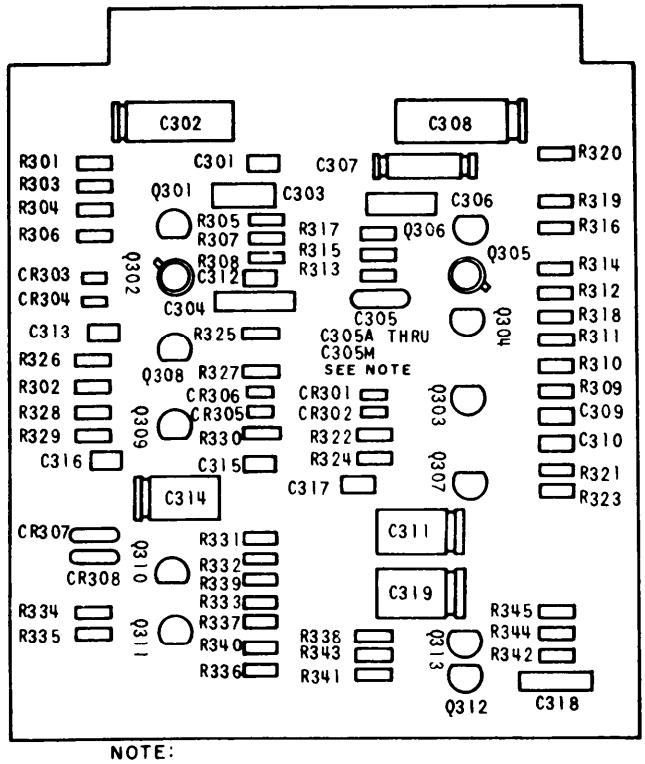

Figure C-6. Reference voltage assembly A300, component layout.

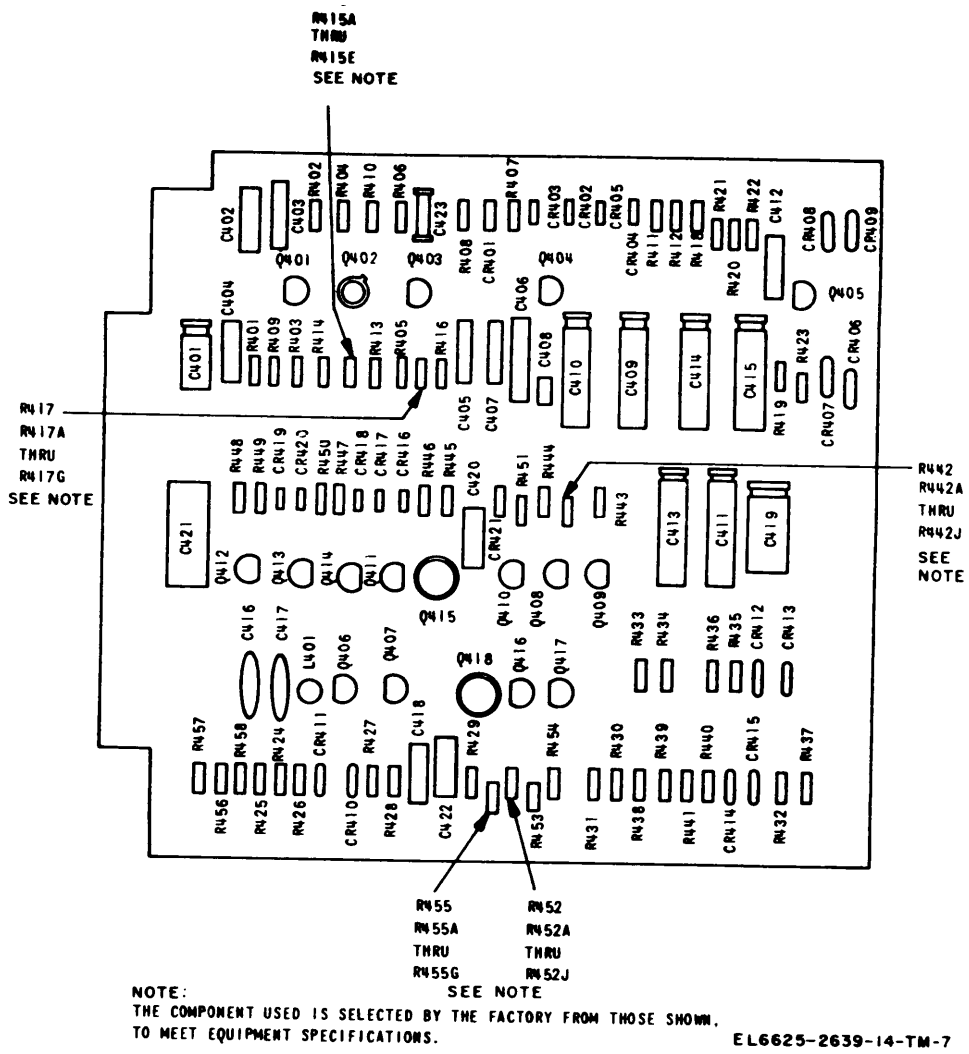

Figure C-7. Detector assembly A400, component layout.

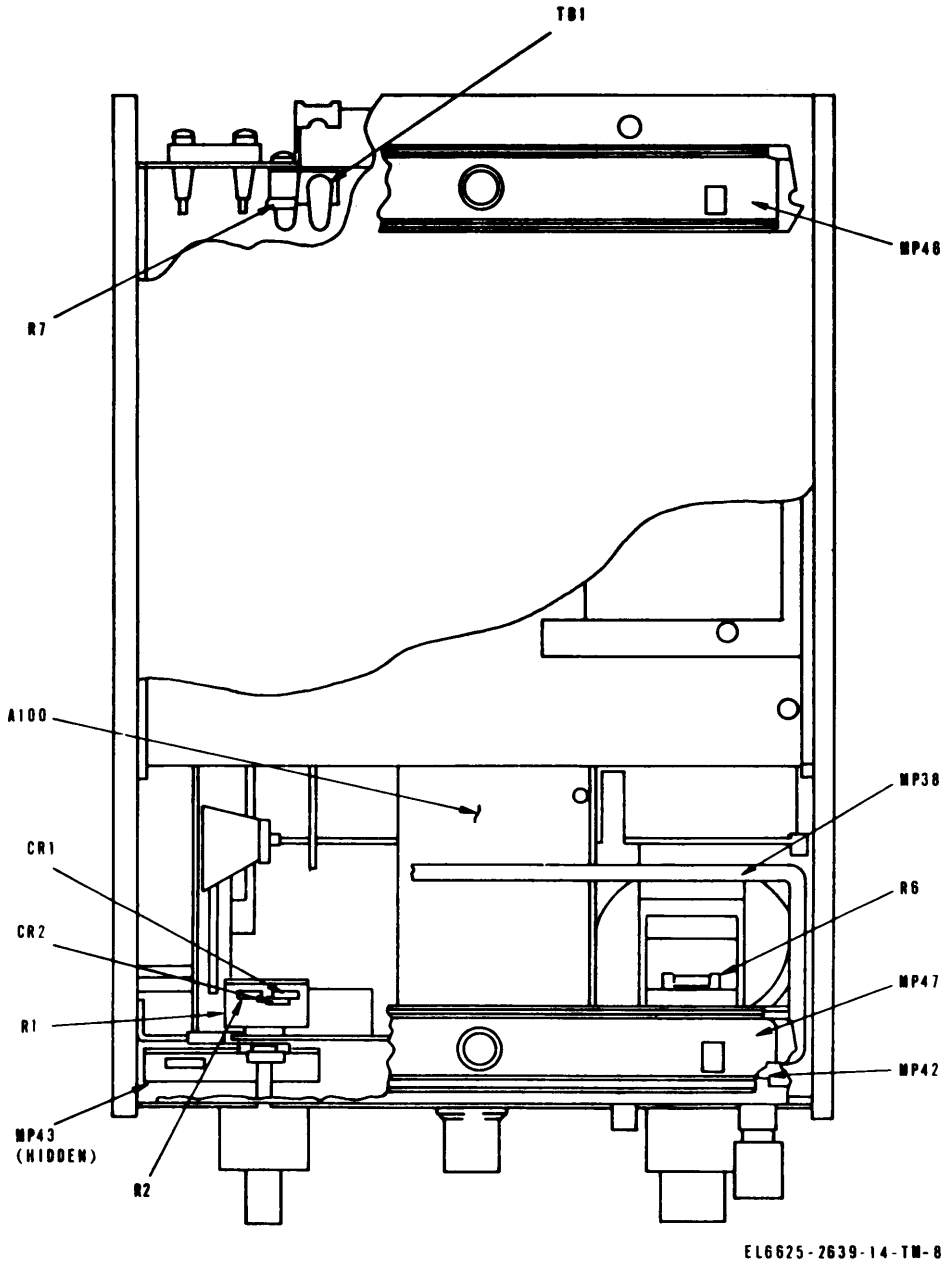

Figure C-8. Universal bridge, bottom cutaway.

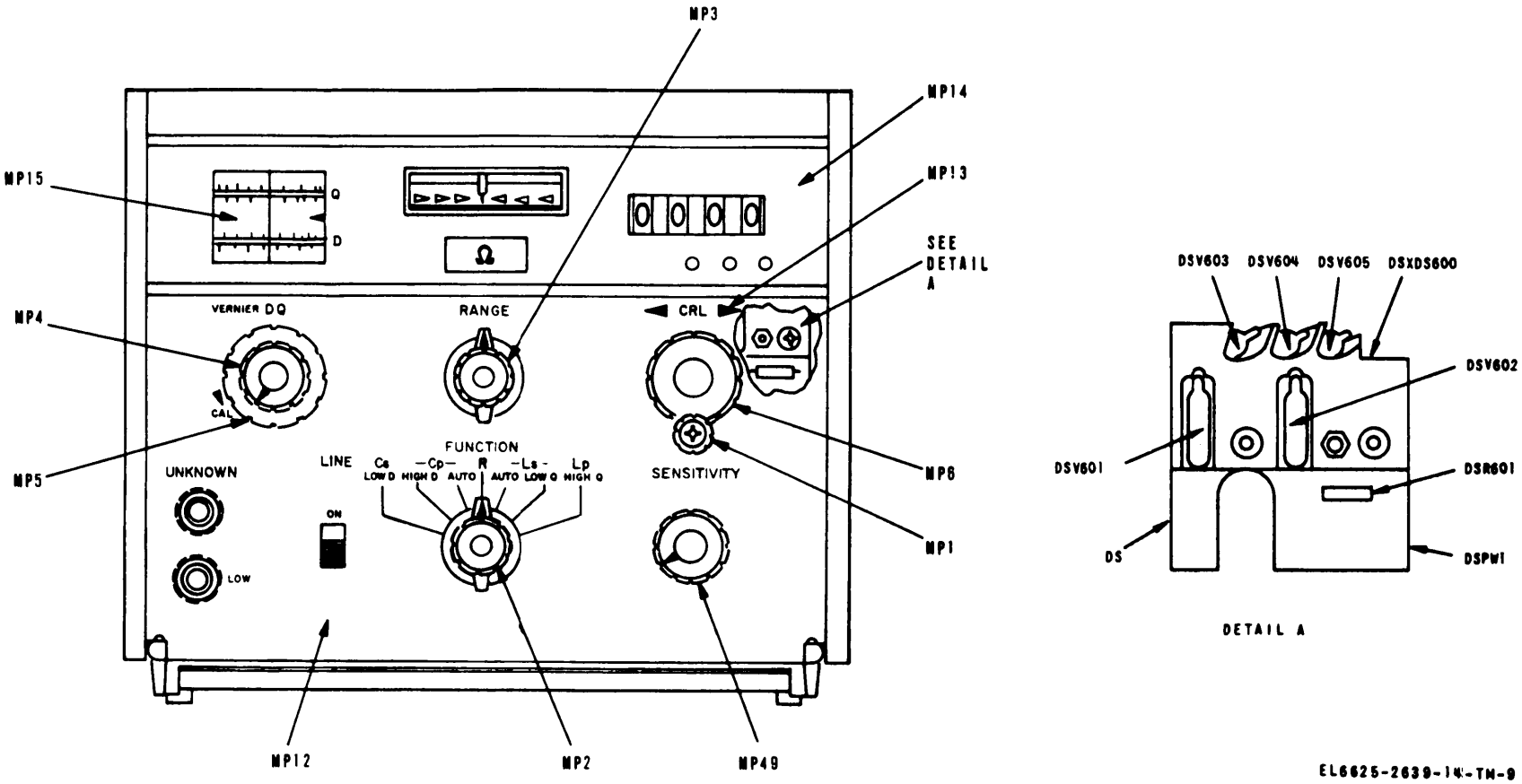

Figure C-9. Universal bridge, front panel.

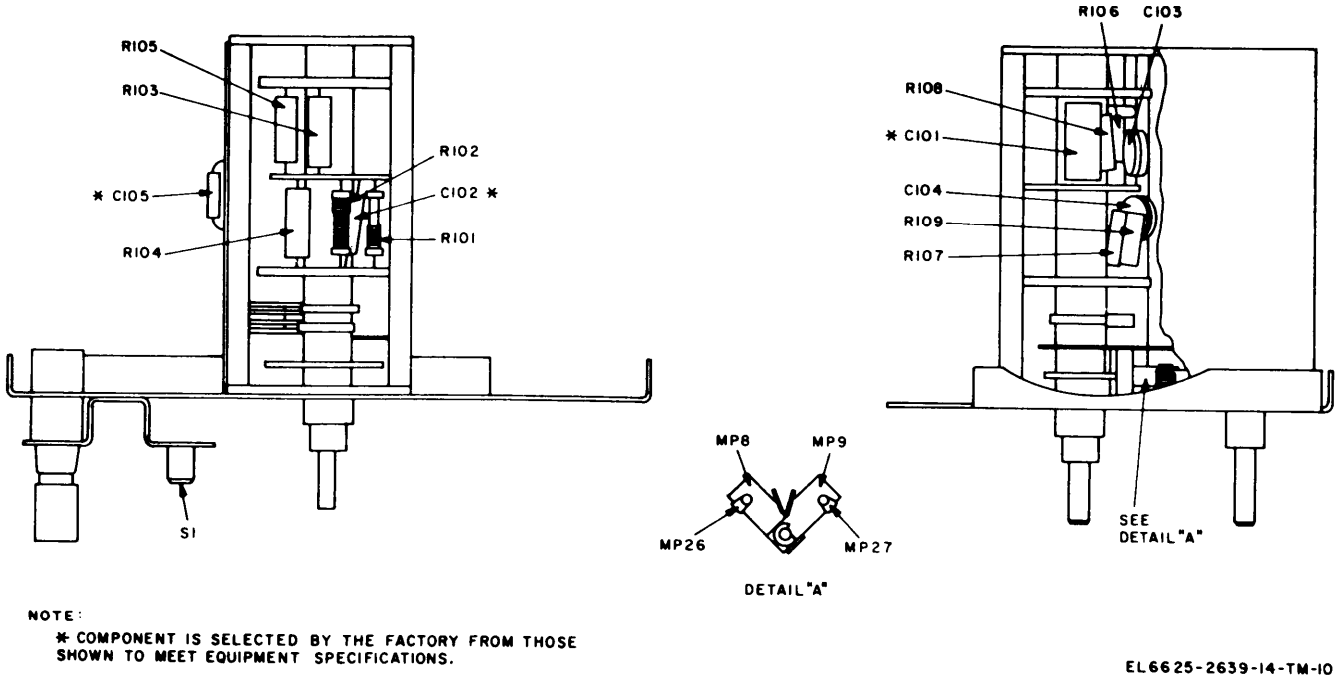

Figure C-10. Rotary switch assembly A100, component location.

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN	FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5305-054-5635		H2	BAAD	5310-614-3552		H1	BARB
5305-054-5644		H2	BAZX	5310-655-9505		H1	BBCH
5305-054-5647		H2	BAAL	5310-655-9505		H2	BAAF
5305-054-5647		H2	BAWS	5310-655-9505		H3	BABM
5305-054-5647		H2	BAWY	5310-880-5978		H1	BARA
5305-054-5648		H1	BASU	5310-926-5876		H3	BBDW
5305-054-5651		H2	BASQ	5310-930-2722		H1	BAZV
5305-054-5653		H1	BBAP	5310-934-9748		H1	BAST
5305-054-5656		H1	BBDV	5310-934-9748		H3	BBDT
5305-054-6650		H1	BAWT	5310-934-9759		H1	BAQY
5305-054-6650		H2	BAAT	5310-934-9761		H1	BABP
5305-054-6650		H2	BAXQ	5310-934-9761		H1	BBCG
5305-054-6650		H2	BBDB	5310-934-9761		H1	BBCW
5305-054-6650		H2	BBDL	5310-934-9765		H1	BBBE
5305-054-6650		H4	BAAH	5310-997-3078		H6	BAZB
5305-054-6650		H4	BBDH	5340-399-7270	C-1	MP35	BAQW
5305-054-6671		H1	BAQZ	5340-399-7270	C-1	MP36	BAQX
5305-066-7326		H4	BARH	5340-978-7859	C-8	MP42	BASE
5305-400-8531		H1	BBDU	5340-978-7859	C-8	MP43	BASF
5305-719-5339		A100H1	BBCA	5340-995-6333	C-1	MP34	BARC
5305-719-5339		H2	BATN	5355-411-2591	C-9	MP6	BASM
5305-727-8831		A100H2	BBBX	5355-579-2318	C-9	MP1	BASL
5305-770-2533		H10	BBBA	5355-767-9444	C-9	MP2	BASH
5305-958-5453		H1	BABR	5355-767-9444	C-9	MP3	BASJ
5305-958-5453		H8	BABG	5905-102-5703	C-6	A300R305	BAFN
5305-958-5453		H11	BABQ	5905-102-5703	C-6	A300R317	BAFP
5305-969-6495		H2	BARE	5905-102-5704	C-7	A400R435	BALR
5310-045-3296		H1	BBBG	5905-102-5704	C-7	A400R436	BALS
5310-058-3599		H2	BAWU	5905-102-5704	C-7	A400R440	BALT
5310-058-3599		H2	BAWZ	5905-102-5704	C-7	A400R441	BALU
5310-058-3599		H3	BAYZ	5905-102-8021	C-6	A300R313	BAFR
5310-167-0834		H1	BBBF	5905-102-8021	C-6	A300R315	BAFS
5310-209-1366		H1	BABT	5905-104-8358	C-6	A300R325	BAFY
5310-209-1366		H2	BAAU	5905-104-8358	C-6	A300R335	BAGP
5310-209-1366		H2	BBCY	5905-104-8358	C-7	A400R407	BALW
5310-209-1366		H2	BBDC	5905-104-8358	C-7	A400R412	BALX
5310-209-1366		H2	BBDM	5905-104-8360	C-7	A400R415CSEL	BALD
5310-209-1366		H3	BATZ	5905-104-8360	C-7	A400R417GSEL	BALE
5310-209-1366		H4	BAAJ	5905-104-8360	C-7	A400R442FSEL	BALF
5310-209-1366		H5	BAUH	5905-104-8360	C-7	A400R452FSEL	BALG
5310-209-1366		H8	BBDJ	5905-104-8365	C-6	A300R341	BAGN
5310-531-9514		H1	BAWR	5905-105-7764	C-7	A400R455DSEL	BANA
5310-531-9514		H2	BAAN	5905-106-1248	C-7	A400R455ASEL	BANJ
5310-550-3715		H2	BAZY	5905-106-1278	C-5	A200R219	BACQ
5310-550-3715		H4	BASR	5905-106-1278	C-6	A300R301	BAFT
5310-579-3875		H8	BABH	5905-106-1278	C-6	A300R320	BAFU
5310-579-3875		H11	BABS	5905-106-1278	C-6	A300R342	BAFX
5310-595-6211		H2	BAAE	5905-106-1278	C-7	A400R403	BAKJ
5310-595-6211		H2	BAAM	5905-106-1356	C-6	A300R327	BAGU
5310-595-6211		H3	BABL	5905-106-1356	C-7	A400R432	BAMH

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN	FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5905-106-1356	C-7	A400R437	BAMJ	5905-115-2262	C-7	A400R442JSEL	BANG
5905-106-1356	C-7	A400R455SEL	BAMK	5905-115-2262	C-7	A400R452JSEL	BANH
5905-106-1356	C-8	R2	BAWH	5905-116-8555	C-7	A400R408	BAKE
5905-106-1357	C-5	A200R218	BACY	5905-116-8556	C-5	A200R206	BACS
5905-106-1357	C-6	A300R344	BAHA	5905-116-8556	C-6	A300R321	BAGM
5905-106-1357	C-7	A400R415BSEL	BANB	5905-116-8556	C-7	A400R405	BALH
5905-106-1357	C-7	A400R442ESEL	BANC	5905-119-3503	C-7	A400R418	BANL
5905-106-1357	C-7	A400R452ESEL	BAND	5905-119-3504	C-7	A400R402	BANU
5905-106-3666	C-6	A300R326	BAHD	5905-119-3505	C-5	A200R216	BACV
5905-106-3666	C-7	A400R411	BAPE	5905-119-3505	C-7	A400R415DSEL	BAMU
5905-106-9356	C-6	A300R309	BAFQ	5905-119-3505	C-7	A400R417CSEL	BAMV
5905-110-0388	C-7	A400R406	BALJ	5905-119-3505	C-7	A400R442GSEL	BAMW
5905-110-0388	C-7	A400R409	BALK	5905-119-3505	C-7	A400R443	BAMX
5905-110-0388	C-7	A400R417SEL	BALL	5905-119-3505	C-7	A400R452GSEL	BAMY
5905-110-0388	C-7	A400R425	BALM	5905-119-3505	C-7	A400R453	BAMZ
5905-110-0388	C-7	A400R442SEL	BALN	5905-119-8768	C-5	A200R220	BADD
5905-110-0388	C-7	A400R445	BALP	5905-119-8812	C-7	A400R450	BAKU
5905-110-0388	C-7	A400R452	BALQ	5905-120-9152	C-5	A200R214	BACW
5905-110-0388	C-8	R7	BAWK	5905-120-9152	C-6	A300R328	BAGD
5905-110-0865	C-6	A300R310	BAGA	5905-120-9152	C-7	A400R424	BAMF
5905-110-0865	C-6	A300R311	BAGB	5905-120-9152	C-7	A400R429	BAMG
5905-110-7622	C-5	A200R203	BACM	5905-120-9154	C-7	A400R404	BAMQ
5905-110-7622	C-6	A300R322	BAFJ	5905-121-9938	C-7	A400R415ESEL	BANV
5905-110-7622	C-6	A300R323	BAFK	5905-121-9938	C-7	A400R417DSEL	BANW
5905-110-7622	C-6	A300R329	BAFL	5905-121-9938	C-7	A400R442HSEL	BANX
5905-110-7622	C-6	A300R336	BAFZ	5905-121-9938	C-7	A400R452HSEL	BANY
5905-110-7622	C-7	A400R444	BAKV	5905-126-6696	C-6	A300R302	BAGV
5905-111-1681	C-7	A400R442BSEL	BAKY	5905-126-6696	C-6	A300R318	BAGW
5905-111-1681	C-7	A400R452BSEL	BAKZ	5905-126-6710	C-7	A400R401	BALV
5905-111-4727	C-5	A200R201	BADA	5905-131-1255	C-6	A300R307	BAGE
5905-111-4727	C-5	A200R202	BADB	5905-131-1255	C-6	A300R332	BAGF
5905-111-4727	C-6	A300R324	BAHB	5905-131-1255	C-7	A400R421	BAMD
5905-111-4727	C-6	A300R330	BAHC	5905-131-1255	C-7	A400R422	BAME
5905-111-4727	C-7	A400R423	BAMR	5905-131-9729	C-6	A300R338	BAGQ
5905-111-4727	C-7	A400R451	BAMS	5905-131-9729	C-7	A400R455GSEL	BANQ
5905-111-4727	C-7	A400R455FSEL	BAMT	5905-135-6046	C-5	A200R204	BACU
5905-111-4727	C-2	R8	BAWL	5905-135-6046	C-7	A400R449	BANM
5905-111-4750	C-6	A300R343	BAGC	5905-136-3890	C-6	A300R312	BAGT
5905-114-0708	C-5	A200R217	BACN	5905-136-3890	C-7	A400R415ASEL	BAMC
5905-114-0708	C-7	A400R455CSEL	BANN	5905-136-3891	C-7	A400R446	BAPA
5905-114-0710	C-7	A400R419	BAPD	5905-136-3891	C-7	A400R447	BAPB
5905-114-0711	C-5	A200R205	BADE	5905-136-3891	C-7	A400R448	BAPC
5905-114-0711	C-6	A300R333	BAGX	5905-136-7104	C-7	A400R410	BANE
5905-114-0711	C-6	A300R337	BAGY	5905-136-8406	C-6	A300R340	BAGL
5905-114-0711	C-6	A300R345	BAGZ	5905-136-8406	C-7	A400R455ESEL	BANZ
5905-114-5339	C-7	A400R442CSEL	BAKF	5905-141-0717	C-6	A300R304	BAGR
5905-114-5339	C-7	A400R452CSEL	BAKG	5905-141-0717	C-6	A300R316	BAGS
5905-114-5343	C-7	A400R455BSEL	BAMP	5905-141-0717	C-7	A400R415SEL	BANT
5905-114-5344	C-7	A400R457	BANS	5905-141-0741	C-7	A400R428	BANK
5905-115-2262	C-7	A400R417FSEL	BANF	5905-141-0744	C-6	A300R306	BAGG

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5905-141-0744	C-6	A300R308	BAGH
5905-141-0744	C-6	A300R314	BAGJ
5905-141-0744	C-6	A300R331	BAHE
5905-141-0744	C-6	A300R334	BAGK
5905-141-0744	C-7	A400R454	BANP
5905-194-0365	C-6	A300R303	BAFV
5905-194-0365	C-6	A300R319	BAFW
5905-225-2059	C-7	A400R430	BAKK
5905-225-2059	C-7	A400R431	BAKL
5905-225-2063	C-7	A400R433	BAKQ
5905-225-2063	C-7	A400R434	BAKR
5905-225-2063	C-7	A400R438	BAKS
5905-225-2063	C-7	A400R439	BAKT
5905-229-1972	C-5	A200R213	BADF
5905-244-6934	C-7	A400R458	BANR
5905-400-4528	C-7	A400R417ASEL	BALY
5905-400-4528	C-7	A400R442ASEL	BALZ
5905-400-4528	C-7	A400R452ASEL	BAMA
5905-407-0067	C-5	A200R210	BADG
5905-435-6374	C-7	A400R417ESEL	BAML
5905-435-6374	C-7	A400R442ISEL	BAMM
5905-435-6374	C-7	A400R452ISEL	BAMN
5905-451-5152	C-10	A100R102	BBBK
5905-451-5164	C-8	R1	BAWP
5905-451-8611	C-2	R110	BAWN
5905-451-8612	C-2	R111	BAWJ
5905-451-8616	C-8	R6	BAWM
5905-481-8280	C-7	A400R416	BALA
5905-481-8280	C-7	A400R426	BALB
5905-481-8280	C-7	A400R427	BALC
5905-485-4648	C-7	A400R456	BAKW
5905-494-4622	C-5	A200R207	BACR
5905-733-1381	C-5	A200R209	BACT
5905-783-5073	C-5	A200R211	BACX
5905-880-6736	C-5	A200R212	BACZ
5905-889-0230	C-5	A200R215	BACP
5905-917-9189	C-7	A400R420	BAKH
5905-935-8480	C-7	A400R413	BAMB
5905-965-9116	C-5	A200R209	BADC
5905-981-5340	C-7	A400R414	BAKX
5910-067-5697	C-6	A300C305MSEL	BAFG
5910-451-3239	C-5	A200C202	BABZ
5910-451-3239	C-5	A200C203	BACA
5910-451-3239	C-5	A200C205	BACB
5910-451-3239	C-5	A200C213	BACC
5910-451-3239	C-5	A200C214	BACD
5910-451-3239	C-7	A400C409	BAJM
5910-451-3239	C-7	A400C410	BAJN
5910-451-3239	C-7	A400C411	BAJP
5910-451-3239	C-7	A400C413	BAJQ
5910-451-3239	C-7	A400C414	BAJR
5910-451-3239	C-7	A400C415	BAJS
5910-451-3240	C-5	A200C206	BABV
5910-451-3241	C-6	A300C301	BAEB
5910-451-3242	C-6	A300C302	BAED
5910-451-3242	C-6	A300C308	BAEE
5910-451-3243	C-6	A300C311	BAEP
5910-451-3243	C-6	A300C314	BAEQ
5910-451-3243	C-6	A300C319	BAER
5910-451-3243	C-7	A400C419	BAJH
5910-451-3244	C-6	A300C318	BAEK
5910-451-3246	C-7	A400C403	BAJJ
5910-451-3247	C-7	A400C406	BAJD
5910-451-3248	C-7	A400C421	BAJF
5910-451-3249	C-2	C1	BAAS
5910-451-3250	C-2	C5	BAAZ
5910-451-5142	C-5	A200C201	BACE
5910-451-5155	C-5	A200C204	BACH
5910-451-5156	C-5	A200C207	BACJ
5910-451-5157	C-5	A200C211	BABY
5910-451-5157	C-6	A300C303	BAEG
5910-451-5157	C-6	A300C306	BAEH
5910-451-5158	C-6	A300C307	BAEM
5910-451-5159	C-7	A400C404	BAKA
5910-451-5159	C-7	A400C420	BAKB
5910-451-5160	C-7	A400C422	BAJX
5910-451-5162	C-3	C3	BABE
5910-451-5163	C-2	C6	BABC
5910-451-8613	C-7	A400C418	BAJY
5910-455-0114	C-5	A200C208	BACF
5910-455-0114	C-5	A200C212	BACG
5910-455-0114	C-6	A300C309	BAET
5910-455-0114	C-6	A300C310	BAEU
5910-455-0114	C-6	A300C312	BAEV
5910-455-0114	C-6	A300C313	BAEW
5910-455-0114	C-6	A300C315	BAEX
5910-455-0114	C-6	A300C316	BAEY
5910-455-0114	C-6	A300C317	BAEZ
5910-455-0114	C-7	A400C408	BAJK
5910-472-4848	C-6	A300C304	BADZ
5910-472-4848	C-7	A400C402	BAJT
5910-472-4848	C-7	A400C405	BAJU
5910-472-4848	C-7	A400C407	BAJV
5910-472-4848	C-7	A400C412	BAJW
5910-490-0397	C-7	A400C416	BAJL
5910-543-0821	C-6	A300C305BSEL	BAEC
5910-583-1589	C-10	A100C105SEL	BAYQ
5910-726-8696	C-6	A300C305ASEL	BAFA
5910-728-2194	C-10	A100C103	BAYJ
5910-728-2194	C-10	A100C104	BAYK

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN	FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5910-853-6495	C-6	A300C305LSEL	BAES	5961-928-3161	C-6	A300Q306	BAHU
5910-892-7675	C-6	A300C305SEL	BAEJ	5961-928-3161	C-6	A300Q307	BAHV
5910-892-7675	C-3	C4SEL	BAAV	5961-928-3161	C-6	A300Q308	BAHW
5910-954-5505	C-7	A400C417	BAJG	5961-928-3161	C-6	A300Q309	BAHX
5920-356-2185	C-3	F1	BASC	5961-928-3161	C-6	A300Q310	BAHY
5920-881-4636	C-3	XF1	BASA	5961-928-3161	C-6	A300Q311	BAHZ
5930-451-5168	C-10	A100S1	BBCN	5961-928-3161	C-6	A300Q312	BAJA
5930-451-5169	C-3	S3	BBCP	5961-928-3161	C-6	A300Q313	BAJB
5940-578-4866	C-2	TB2	BBCZ	5961-928-3161	C-7	A400Q403	BAQF
5940-578-4866	C-3	TB3	BBDA	5961-928-3161	C-7	A400Q404	BAQG
5940-989-1618	C-1	E1	BBDD	5961-928-3161	C-7	A400Q405	BAQH
5940-989-1618	C-1	E2	BBDE	5961-928-3161	C-7	A400Q406	BAQJ
5940-989-1618	C-1	E3	BBDF	5961-928-3161	C-7	A400Q407	BAQK
5940-989-1618	C-1	E4	BBDG	5961-928-3161	C-7	A400Q408	BAQL
5940-989-1618		T2E1	BBDX	5961-928-3161	C-7	A400Q409	BAQM
5950-451-1384	C-7	A400L401	BAKC	5961-928-3161	C-7	A400Q410	BAQN
5950-451-3196	C-2	T1	BBDK	5961-928-3161	C-7	A400Q411	BAQP
5950-451-3197	C-4	T2	BBDN	5961-928-3161	C-7	A400Q412	BAQQ
5961-060-8638	C-5	A200CR206	BADH	5961-928-3161	C-7	A400Q413	BAQR
5961-709-0520	C-5	A200CR201	BADM	5961-928-3161	C-7	A400Q414	BAQS
5961-709-0520	C-5	A200CR202	BADN	5961-928-3161	C-7	A400Q416	BAQT
5961-709-0520	C-5	A200CR204	BADP	5961-928-3161	C-7	A400Q417	BAQU
5961-718-7329	C-5	A200CR203	BADK	5961-928-7939	C-6	A300CR301	BAHF
5961-718-7329	C-5	A200CR205	BADL	5961-928-7939	C-6	A300CR302	BAHG
5961-772-6727	C-6	A300CR307	BAHM	5961-928-7939	C-6	A300CR303	BAHH
5961-772-6727	C-6	A300CR308	BAHN	5961-928-7939	C-6	A300CR304	BAHJ
5961-772-6727	C-7	A400CR406	BAPR	5961-928-7939	C-6	A300CR305	BAHK
5961-772-6727	C-7	A400CR407	BAPS	5961-928-7939	C-6	A300CR306	BAHL
5961-772-6727	C-7	A400CR408	BAPT	5961-928-7939	C-7	A400CR402	BAPG
5961-772-6727	C-7	A400CR409	BAPU	5961-928-7939	C-7	A400CR403	BAPH
5961-772-6727	C-7	A400CR410	BAPV	5961-928-7939	C-7	A400CR404	BAPJ
5961-772-6727	C-7	A400CR411	BAPW	5961-928-7939	C-7	A400CR405	BAPK
5961-772-6727	C-7	A400CR412	BAPX	5961-928-7939	C-7	A400CR416	BAPL
5961-772-6727	C-7	A400CR413	BAPY	5961-928-7939	C-7	A400CR417	BAPM
5961-772-6727	C-7	A400CR414	BAPZ	5961-928-7939	C-7	A400CR418	BAPN
5961-772-6727	C-7	A400CR415	BAQA	5961-928-7939	C-7	A400CR419	BAPP
5961-772-6727	C-8	CR1	BAXT	5961-928-7939	C-7	A400CR420	BAPQ
5961-772-6727	C-8	CR2	BAXU	5961-928-7939	C-1	CR3	BAXR
5961-774-7313	C-7	A400CR421	BAQB	5961-928-7939	C-1	CR4	BAXS
5961-871-9538	C-5	A200MP1	BACK	5961-931-0152	C-7	A400Q401	BAQD
5961-925-6462	C-7	A400Q418	BAQV	5961-931-6998	C-6	A300Q302	BAHP
5961-928-3161	C-5	A200Q202	BADS	5961-931-6998	C-6	A300Q305	BAHQ
5961-928-3161	C-5	A200Q203	BADT	5961-931-6998	C-7	A400Q402	BAQC
5961-928-3161	C-5	A200Q204	BADU	5961-951-1505	C-5	A200CR207	BADJ
5961-928-3161	C-5	A200Q205	BADV	5961-957-0427	C-7	A400CR401	BAPF
5961-928-3161	C-5	A200Q206	BADW	5961-990-5369	C-5	A200Q201	BADR
5961-928-3161	C-5	A200Q207	BADX	5961-990-5369	C-7	A400Q415	BAQE
5961-928-3161	C-6	A300Q301	BAHR	6150-949-9348	C-1	W300	BAAQ
5961-928-3161	C-6	A300Q303	BAHS	6625-139-0497	C-8	A100	BAXV
5961-928-3161	C-6	A300Q304	BAHT	6625-139-0498	C-4	A200	BABU

FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN	FEDERAL STOCK NO.	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
6625-139-0499	C-4	A300	BADY				
6625-139-0500	C-4	A400	BAJC				
6625-139-0516	C-9	DS	BASP				
6625-232-0934	C-8	MP38	BASD				
6625-236-1536			BAAB				
6625-412-1207		MP44	BABF				
6625-412-1207		MP45	BABN				
6625-432-5216	C-10	A100MP8	BAXW				
6625-432-5216	C-10	A100MP9	BAXX				
6625-432-5217	C-10	A100MP26	BBBV				
6625-432-5217	C-10	A100MP27	BBBW				
6625-495-2306	C-1	M1	BAAC				
6625-818-5973	C-1	MP37	BAAP				

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
CC20CH150F	81349	C-3	C4ASEL	BAAY
CC20SH020K	81349	C-3	C4BSEL	BAAW
CC20SH030C	81349	C-10	A100C105ASEL	BAYL
CC20SH050K	81349	C-10	A100C105BSEL	BAYU
CC20SH050K	81349	C-3	C4CSEL	BABA
CC20SH080D	81349	C-6	A300C305KSEL	BAFD
CC20SH090D	81349	C-6	A300C305JSEL	BAEF
CC20SH180K	81349	C-6	A300C305CSEL	BAFC
CC20SH200K	81349	C-6	A300C305DSEL	BAEN
CC20SH200K	81349	C-7	A400C423	BAJE
CC20SH220K	81349	C-6	A300C305ISEL	BAFF
CC20SH250K	81349	C-6	A300C305ESEL	BAFE
CC20SH270K	81349	C-6	A300C305FSEL	BAEA
CC20SH330K	81349	C-6	A300C305GSEL	BAFB
CC20SH360K	81349	C-6	A300C305HSEL	BAEL
C11351-632-248	78553		H4	BATJ
MEBT0-3001F	75042	C-10	A100R107	BBBR
MEBT0-3002F	75042	C-10	A100R109	BBBM
MEBT0-9702F	75042	C-10	A100R106	BBBP
MEBT9-9703F	75042	C-10	A100R108	BBBT
MECT9-1000B	75042	C-10	A100R103	BBBS
MECT9-1001B	75042	C-10	A100R104	BBBN
MECT9-1002B	75042	C-10	A100R105	BBBQ
MS24693C1	96906		H1	BATT
MS24693C1	96906		H2	BATU
MS35206-218	96906		H5	BAUG
MS51957-27	96906		H1	BBCX
MS51957-27	96906		H3	BATY
MS51959-12	96906		H2	BAUB
MS51959-12	96906		H2	BAUF
MS51963-1	96906		H2	BAVV
NE2E1	08806	C-9	DSV603	BASV
NE2E1	08806	C-9	DSV604	BASW
NE2E1	08806	C-9	DSV605	BASX
NE98	08806	C-9	DSV601	BASY
NE98	08806	C-9	DSV602	BASZ
RCR07G322JS	81349	C-6	A300R339	BAFM
RCR20G823JS	81349	C-9	DSR601	BATB
0160-1160	28480	C-10	A100C102SEL	BAYN
0160-1161	28480	C-10	A100C102ASEL	BAYS
0160-1264	28480	C-10	A100C101SEL	BAYM
0160-1303	28480	C-2	C7	BABB
0160-1333	28480	C-10	A100C101ASEL	BAYV
0160-1513	28480	C-2	C2SEL	BAAX
0160-1515	28480	C-2	C2ASEL	BABD
0160-1546	28480	C-10	A100C101BSEL	BAYR
0160-1547	28480	C-10	A100C101CSEL	BAYW
0160-1548	28480	C-10	A100C101DSEL	BAYP
0160-1551	28480	C-10	A100C101ESEL	BAYT
0160-1610	28480	C-5	A200C209	BABW

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
0160-1610	28480	C-5	A200C210	BABX
0180-0949	28480	C-7	A400C401	BAJZ
0370-0256	28480	C-9	MP3	BASN
0370-0267	28480	C-9	MP4	BASG
0370-0272	28480	C-9	MP5	BASK
0380-0033	28480		A100MP1	BBCE
0380-0033	28480		A100MP2	BBCF
04260-1020	28480		A100MP3	BAYX
04260-1022	28480		A100MP4	BAXY
04260-1026	28480		A1MP1	BAWX
04260-1027	28480		A1MP2	BAXA
04260-1029	28480		H1	BAUS
04260-1029	28480		H2	BAXG
04260-1030	28480		H1	BAUR
04260-1031	28480		H1	BAUQ
04260-1031	28480		H1	BAXE
04260-1032	28480		A1MP3	BAXB
04260-1042	28480		R3A1MP1	BAUE
04260-1043	28480		R3A1MP2	BAUD
04260-1044	28480		R3MP1	BAVW
04260-1045	28480		R3A2MP1	BAWB
04260-1046	28480		R3A2E1	BAWD
04260-1047	28480		R3E3	BATR
04260-1048	28480		R3MP2	BAVY
04260-1049	28480		MP7	BATD
04260-1049	28480		MP8	BATE
04260-1049	28480		MP9	BATF
04260-1055	28480		A100E1	BAZJ
04260-1055	28480		A100E2	BAZK
04260-1058	28480		A100MP5	BBAZ
04260-1060	28480		A100MP6	BAZW
04260-1064	28480		R3A1MP3	BAUA
04260-1065	28480		A100MP7	BBAY
04260-1068	28480		A100MP10	BBBB
04260-1069	28480		A100MP11	BAYC
04260-1070	28480		A100MP12	BAYA
04260-1071	28480		R3A1MP4	BATX
04260-1073	28480		A100E3	BAZL
04260-1073	28480		A100E4	BAZM
04260-1074	28480		A100E5	BAZN
04260-1074	28480		A100E6	BAZP
04260-1074	28480		A100E7	BAZQ
04260-1074	28480		A100E8	BAZR
04260-1076	28480		A1MP12	BAXH
04260-1077	28480		A1MP4	BAXK
04260-1078	28480		H1	BAXF
04260-1079	28480		A100MP13	BAXZ
04260-1082	28480		MP10	BAAK
04260-1086	28480		MP11	BAAG
04260-1140	28480		MP12	BATK

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
04260-3020	28480		A100H2	BBAV
04260-3025	28480		A1MP5	BAXP
04260-3026	28480		A1MP6	BAXD
04260-3027	28480		A100MP14	BBAD
04260-3028	28480		A100MP15	BAYH
04260-3031	28480		R3A1MP5	BAUT
04260-3032	28480		R3A1MP6	BAUZ
04260-3033	28480		R3A1MP7	BAUP
04260-3035	28480		R3A1MP8	BAUN
04260-3036	28480		R3A1MP9	BAUJ
04260-3037	28480		R3A1MP10	BAUY
04260-3038	28480		R3A1MP11	BAUX
04260-3039	28480		R3A1MP12	BAVA
04260-3039	28480		R3A1MP13	BAVB
04260-3039	28480		R3A1MP14	BAVC
04260-3039	28480		R3A1MP15	BAVD
04260-3039	28480		R3A1MP16	BAVE
04260-3041	28480		H7	BATW
04260-3042	28480		R3A2MP2	BAWF
04260-3043	28480		R3A2MP3	BAWE
04260-3045	28480		A100MP16	BBAB
04260-3045	28480		A100MP17	BBAC
04260-3046	28480		A100MP18	BBAE
04260-3046	28480		A100MP19	BBAF
04260-3047	28480		A100MP20	BBCJ
04260-3047	28480		A100MP21	BBCK
04260-3050	28480		A100MP22	BBCC
04260-3050	28480		A100MP23	BBCD
04260-3052	28480		A100MP24	BBBY
04260-3052	28480		A100MP25	BBBZ
04260-3057	28480		A100MP28	BBCB
04260-3115	28480		R3A1MP17	BAUK
04260-3115	28480		R3A1MP18	BAUL
04260-3115	28480		R3A1MP19	BAUM
04260-5020	28480	C-9	DSXDS600	BASS
04260-5021	28480		A100E9	BBAJ
04260-5021	28480		A100E10	BBAK
04260-5022	28480		A100E11	BBAG
04260-5022	28480		A100E12	BBAH
04260-5024	28480		MP13	BATC
04260-5025	28480		R3MP3	BATQ
04260-5026	28480		R3MP4	BATS
04260-5027	28480		MP14	BBDZ
04260-5028	28480		TB4	BBCQ
04260-5028	28480		TB5	BBCR
04260-5028	28480		TB6	BBCS
04260-5028	28480		TB7	BBCT
04260-5028	28480		TB8	BBCU
04260-5030	28480		MP15	BBDY
04260-5043	28480		A100E13	BBAQ

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
04260-5049	28480		A100E14	BAZD
04260-5049	28480		A100E15	BAZE
04260-5050	28480		A100E16	BAZG
04260-5050	28480		A100E17	BAZH
04260-5051	28480		A100E18	BBAR
04260-5051	28480		A100E19	BBAS
04260-5051	28480		A100E20	BBAT
04260-5051	28480		A100E21	BBAU
04260-5052	28480		A100MP29	BAYE
04260-5053	28480		A100MP30	BAYG
04260-5054	28480		A100E22	BBAL
04260-5054	28480		A100E23	BBAM
04260-5054	28480		A100E24	BBAN
04260-5056	28480		A100E25	BAZF
04260-5057	28480		A100E26	BAZA
04260-5058	28480		A1MP7	BAXC
04260-5059	28480		MP16	BATM
04260-5061	28480		A100MP31	BAZZ
04260-5062	28480		A100MP33	BBAA
04260-7027	28480		R3A1	BATV
04260-7028	28480	C-4	R3	BATP
04260-7029	28480		R3A2	BAWA
04260-7030	28480	C-1	A1	BAWQ
04260-7045	28480		A100E27	BAZS
04260-7045	28480		A100E28	BAZT
04260-7053	28480		MP17	BABJ
04260-7110	28480		R3MP5SEL	BAVJ
04260-7111	28480		R3MP6SEL	BAVK
04260-7112	28480		R3MP7SEL	BAVL
04260-7113	28480		R3MP8SEL	BAVM
04260-7114	28480		R3MP9SEL	BAVN
04260-7115	28480		R3MP10SEL	BAVP
04260-7116	28480		R3MP11SEL	BAVQ
04260-7117	28480		R3MP12SEL	BAVR
04260-7118	28480		R3MP13SEL	BAVS
04260-7119	28480		R3MP14SEL	BAVT
04260-7120	28480		R3MP15SEL	BAVU
04260-8521	28480		MP18SEL	BARK
04260-8522	28480		MP19SEL	BART
04260-8523	28480		MP20SEL	BARP
04260-8524	28480		MP21SEL	BARX
04260-8525	28480		MP22SEL	BARM
04260-8526	28480		MP23SEL	BARV
04260-8527	28480		MP24SEL	BARR
04260-8528	28480		MP25SEL	BARZ
04260-8529	28480		MP26SEL	BARL
04260-8531	28480		MP27SEL	BARU
04260-8532	28480		MP28SEL	BARQ
04260-8533	28480		MP29SEL	BARY
04260-8534	28480		MP30SEL	BARN

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
04260-8535	28480		MP31SEL	BARW
04260-8536	28480		MP32SEL	BARS
04260-8542	28480		MP33	BAAR
04260-8543	28480		A100MP33	BBCM
04260-8546	28480		R3A1MP20	BAVF
04260-8547	28480		A100MP34	BBCL
04260-8604	28480	C-10	A100R101	BBBL
04260-8701	28480		A100PW1	BBBJ
04260-8702	28480		A200PW1	BACL
04260-8703	28480		A300PW1	BAFH
04260-8704	28480		A400PW1	BAKD
04260-8706	28480		DSPW1	BATA
04260-8707	28480		A100PW2	BBBH
0510-0054	28480		R3A1MP22	BAUW
0510-0328	28480		A100H1	BBAX
0510-0356	28480		T2MP1	BBDR
0510-0356	28480		T2MP2	BBDS
0510-0397	28480		H1	BAYB
0510-0397	28480		H1	BAYD
0570-0212	28480		H2	BATL
0570-0394	28480		H3	BABK
0570-0705	28480		H4	BAZC
0624-0077	28480		H3	BAYY
0698-3576	28480	C-7	A400R4178SEL	BAKM
0698-3576	28480	C-7	A400R442DSEL	BAKN
0698-3576	28480	C-7	A400R452DSEL	BAKP
1410-0321	28480		A1MP10	BAWV
1410-0321	28480		A1MP11	BAWW
1460-0305	28480		R3A1MP24	BAVH
1460-0305	28480		R3MP17	BAVZ
1480-0008	28480		H1	BAZU
1480-0008	28480		H2	BAYF
1480-0085	28480		A100H1	BBAW
1510-0011	28480		A100MP36	BBBC
1510-0011	28480		A100MP37	BBBD
2100-1170	28480	C-2	R5	BAWG
2100-1171	28480		A1R4	BAXL
2190-0210	28480		H1	BAXJ
3050-0201	28480		H2	BAVG
3100-1118	28480		R3A2E2	BAWC
332-14-02-002	71785		T81	BBCV
4D32424-400AC	18911		R3A1MP23	BAUC
5000-8565	28480		MP39	BARF
5000-8565	28480		MP40	BARG
5000-8583	28480		MP41	BARD
5040-3304	28480		A200MP2	BADQ
5060-0728	28240		MP46	BATG
5060-0728	28240		MP47	BATH
5060-8573	28480		MP48	BARJ
5133-14SMD	79136		A1MP8	BAXN

MANUFACTURER PART NUMBER	FED MFR CODE	FIGURE NUMBER	REFERENCE DESIGNATOR	ISN
5133-14SMD	79136		A100MP35	BBBU
5133-14SMD	79136		R3A1MP21	BAUU
5133-14SMD	79136		R3A1MP25	BAUV
5133-14SMD	79136		R3MP16	BAVX
5133-25SMD	79136		A1MP9	BAXM
9170-0230	28480		T2E2	BBDP
9170-0271	28480		T2E3	BBDQ

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A1	BAWQ
A1MP1	BAWX
A1MP2	BAXA
A1MP3	BAXB
A1MP4	BAXK
A1MP5	BAXP
A1MP6	BAXD
A1MP7	BAXC
A1MP8	BAXN
A1MP9	BAXM
A1MP10	BAWV
A1MP11	BAWW
A1MP12	BAXH
A1R4	BAXL
A100	BAXV
A100C101ASEL	BAYV
A100C101BSEL	BAYR
A100C101CSEL	BAYW
A100C101DSEL	BAYP
A100C101ESEL	BAYT
A100C101SEL	BAYM
A100C102ASEL	BAYS
A100C102SEL	BAYN
A100C103	BAYJ
A100C104	BAYK
A100C105ASEL	BAYL
A100C105BSEL	BAYU
A100C105SEL	BAYQ
A100E1	BAZJ
A100E2	BAZK
A100E3	BAZL
A100E4	BAZM
A100E5	BAZN
A100E6	BAZP
A100E7	BAZQ
A100E8	BAZR
A100E9	BBAJ
A100E10	BBAK
A100E11	BBAG
A100E12	BBAH
A100E13	BBAQ
A100E14	BAZD
A100E15	BAZE
A100E16	BAZG
A100E17	BAZH
A100E18	BBAR
A100E19	BBAS
A100E20	BBAT
A100E21	BBAU
A100E22	BBAL
A100E23	BBAM
A100E24	BBAN
A100E25	BAZF
A100E26	BAZA
A100E27	BAZS
A100E28	BAZT
A100H1	BBAW
A100H1	BBAX
A100H1	BBCA
A100H2	BBAV
A100H2	BBBX
A100MP1	BBCE
A100MP2	BBCF
A100MP3	BAYX
A100MP4	BAXY
A100MP5	BBAZ
A100MP6	BAZW
A100MP7	BBAY
A100MP8	BAXW
A100MP9	BAXX
A100MP10	BBBB
A100MP11	BAYC
A100MP12	BAYA
A100MP13	BAXZ
A100MP14	BBAD
A100MP15	BAYH
A100MP16	BBAB
A100MP17	BBAC
A100MP18	BBAE
A100MP19	BBAF
A100MP20	BBCJ
A100MP21	BBCK
A100MP22	BBCC
A100MP23	BBCD
A100MP24	BBBY
A100MP25	BBBZ
A100MP26	BBBV
A100MP27	BBBW
A100MP28	BBCB
A100MP29	BAYE
A100MP30	BAYG
A100MP31	BAZZ
A100MP33	BBAA
A100MP33	BBCM
A100MP34	BBCL
A100MP35	BBBU
A100MP36	BBBC
A100MP37	BBBD
A100PW1	BBBJ
A100PW2	BBBH

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A100R101	BBBL	A200R209	BADC
A100R102	BBBK	A200R210	BADG
A100R103	BBBS	A200R211	BACX
A100R104	BBBN	A200R212	BACZ
A100R105	BBBQ	A200R213	BADF
A100R106	BBBP	A200R214	BACW
A100R107	BBBR	A200R215	BACP
A100R108	BBBT	A200R216	BACV
A100R109	BBBM	A200R217	BACN
A100S1	BBCN	A200R218	BACY
A200	BABU	A200R219	BACQ
A200C201	BACE	A200R220	BADD
A200C202	BABZ	A300	BADY
A200C203	BACA	A300C301	BAEB
A200C204	BACH	A300C302	BAED
A200C205	BACB	A300C303	BAEG
A200C206	BABV	A300C304	BADZ
A200C207	BACJ	A300C305ASEL	BAFA
A200C208	BACF	A300C305BSEL	BAEC
A200C209	BABW	A300C305CSEL	BAFC
A200C210	BABX	A300C305DSEL	BAEN
A200C211	BABY	A300C305ESEL	BAFE
A200C212	BACG	A300C305FSEL	BAEA
A200C213	BACC	A300C305GSEL	BAFB
A200C214	BACD	A300C305HSEL	BAEL
A200CR201	BADM	A300C305ISEL	BAFF
A200CR202	BADN	A300C305JSEL	BAEF
A200CR203	BADK	A300C305KSEL	BAFD
A200CR204	BADP	A300C305LSEL	BAES
A200CR205	BADL	A300C305MSEL	BAFG
A200CR206	BADH	A300C305SEL	BAEJ
A200CR207	BADJ	A300C306	BAEH
A200MP1	BACK	A300C307	BAEM
A200MP2	BADQ	A300C308	BAEE
A200PW1	BACL	A300C309	BAET
A200Q201	BADR	A300C310	BAEU
A200Q202	BADS	A300C311	BAEP
A200Q203	BADT	A300C312	BAEV
A200Q204	BADU	A300C313	BAEW
A200Q205	BADV	A300C314	BAEQ
A200Q206	BADW	A300C315	BAEX
A200Q207	BADX	A300C316	BAEY
A200R201	BADA	A300C317	BAEZ
A200R202	BADB	A300C318	BAEK
A200R203	BACM	A300C319	BAER
A200R204	BACU	A300CR301	BAHF
A200R205	BADE	A300CR302	BAHG
A200R206	BACS	A300CR303	BAHH
A200R207	BACR	A300CR304	BAHJ
A200R209	BACT	A300CR305	BAHK

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A300CR306	BAHL	A300R334	BAGK
A300CR307	BAHM	A300R335	BAGP
A300CR308	BAHN	A300R336	BAFZ
A300PW1	BAFH	A300R337	BAGY
A300Q301	BAHR	A300R338	BAGQ
A300Q302	BAHP	A300R339	BAFM
A300Q303	BAHS	A300R340	BAGL
A300Q304	BAHT	A300R341	BAGN
A300Q305	BAHQ	A300R342	BAFX
A300Q306	BAHU	A300R343	BAGC
A300Q307	BAHV	A300R344	BAHA
A300Q308	BAHW	A300R345	BAGZ
A300Q309	BAHX	A400	BAJC
A300Q310	BAHY	A400C401	BAJZ
A300Q311	BAHZ	A400C402	BAJT
A300Q312	BAJA	A400C403	BAJJ
A300Q313	BAJB	A400C404	BAKA
A300R301	BAFT	A400C405	BAJU
A300R302	BAGV	A400C406	BAJD
A300R303	BAFV	A400C407	BAJV
A300R304	BAGR	A400C408	BAJK
A300R305	BAFN	A400C409	BAJM
A300R306	BAGG	A400C410	BAJN
A300R307	BAGE	A400C411	BAJP
A300R308	BAGH	A400C412	BAJW
A300R309	BAFQ	A400C413	BAJQ
A300R310	BAGA	A400C414	BAJR
A300R311	BAGB	A400C415	BAJS
A300R312	BAGT	A400C416	BAJL
A300R313	BAFR	A400C417	BAJG
A300R314	BAGJ	A400C418	BAJY
A300R315	BAFS	A400C419	BAJH
A300R316	BAGS	A400C420	BAKB
A300R317	BAFP	A400C421	BAJF
A300R318	BAGW	A400C422	BAJX
A300R319	BAFW	A400C423	BAJE
A300R320	BAFU	A400CR401	BAPF
A300R321	BAGM	A400CR402	BAPG
A300R322	BAFJ	A400CR403	BAPH
A300R323	BAFK	A400CR404	BAPJ
A300R324	BAHB	A400CR405	BAPK
A300R325	BAFY	A400CR406	BAPR
A300R326	BAHD	A400CR407	BAPS
A300R327	BAGU	A400CR408	BAPT
A300R328	BAGD	A400CR409	BAPU
A300R329	BAFL	A400CR410	BAPV
A300R330	BAHC	A400CR411	BAPW
A300R331	BAHE	A400CR412	BAPX
A300R332	BAGF	A400CR413	BAPY
A300R333	BAGX	A400CR414	BAPZ

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A400CR415	BAQA	A400R417CSEL	BAMV
A400CR416	BAPL	A400R417DSEL	BANW
A400CR417	BAPM	A400R417ESEL	BAML
A400CR418	BAPN	A400R417FSEL	BANF
A400CR419	BAPP	A400R417GSEL	BALE
A400CR420	BAPQ	A400R417SEL	BALL
A400CR421	BAQB	A400R418	BANL
A400L401	BAKC	A400R419	BAPD
A400PW1	BAKD	A400R420	BAKH
A400Q401	BAQD	A400R421	BAMD
A400Q402	BAQC	A400R422	BAME
A400Q403	BAQF	A400R423	BAMR
A400Q404	BAQG	A400R424	BAMF
A400Q405	BAQH	A400R425	BALM
A400Q406	BAQJ	A400R426	BALB
A400Q407	BAQK	A400R427	BALC
A400Q408	BAQL	A400R428	BANK
A400Q409	BAQM	A400R429	BAMG
A400Q410	BAQN	A400R430	BAKK
A400Q411	BAQP	A400R431	BAKL
A400Q412	BAQQ	A400R432	BAMH
A400Q413	BAQR	A400R433	BAKQ
A400Q414	BAQS	A400R434	BAKR
A400Q415	BAQE	A400R435	BALR
A400Q416	BAQT	A400R436	BALS
A400Q417	BAQU	A400R437	BAMJ
A400Q418	BAQV	A400R438	BAKS
A400R401	BALV	A400R439	BAKT
A400R402	BANU	A400R440	BALT
A400R403	BAKJ	A400R441	BALU
A400R404	BAMQ	A400R442ASEL	BALZ
A400R405	BALH	A400R442BSEL	BAKY
A400R406	BALJ	A400R442CSEL	BAKF
A400R407	BALW	A400R442DSEL	BAKN
A400R408	BAKE	A400R442ESEL	BANC
A400R409	BALK	A400R442FSEL	BALF
A400R410	BANE	A400R442GSEL	BAMW
A400R411	BAPE	A400R442HSEL	BANX
A400R412	BALX	A400R442ISEL	BAMM
A400R413	BAMB	A400R442JSEL	BANG
A400R414	BAKX	A400R442SEL	BALN
A400R415ASEL	BAMC	A400R443	BAMX
A400R415BSEL	BANB	A400R444	BAKV
A400R415CSEL	BALD	A400R445	BALP
A400R415DSEL	BAMU	A400R446	BAPA
A400R415ESEL	BANV	A400R447	BAPB
A400R415SEL	BANT	A400R448	BAPC
A400R416	BALA	A400R449	BANM
A400R417ASEL	BALY	A400R450	BAKU
A400R417BSEL	BAKM	A400R451	BAMS

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.	REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
A400R452	BALO	E3	BBDF
A400R452ASEL	BAMA	E4	BBDG
A400R452BSEL	BAKZ	F1	BASC
A400R452CSEL	BAKG	M1	BAAC
A400R452DSEL	BAKP	MP1	BASL
A400R452ESEL	BAND	MP2	BASH
A400R452FSEL	BALG	MP3	BASJ
A400R452GSEL	BAMY	MP3	BASN
A400R452HSEL	BANY	MP4	BASG
A400R452ISEL	BAMN	MP5	BASK
A400R452JSEL	BANH	MP6	BASM
A400R453	BAMZ	MP7	BATD
A400R454	BANP	MP8	BATE
A400R455ASEL	BANJ	MP9	BATF
A400R455BSEL	BAMP	MP10	BAAK
A400R455CSEL	BANN	MP11	BAAG
A400R455DSEL	BANA	MP12	BATK
A400R455ESEL	BANZ	MP13	BATC
A400R455FSEL	BAMT	MP14	BBDZ
A400R455GSEL	BANQ	MP15	BBDY
A400R455SEL	BAMK	MP16	BATM
A400R456	BAKW	MP17	BABJ
A400R457	BANS	MP18SEL	BARK
A400R458	BANR	MP19SEL	BART
C1	BAAS	MP20SEL	BARP
C2ASEL	BABD	MP21SEL	BARX
C2SEL	BAAX	MP22SEL	BARM
C3	BABE	MP23SEL	BARV
C4ASEL	BAAY	MP24SEL	BARR
C4BSEL	BAAW	MP25SEL	BARZ
C4CSEL	BABA	MP26SEL	BARL
C4SEL	BAAV	MP27SEL	BARU
C5	BAAZ	MP28SEL	BARQ
C6	BABC	MP29SEL	BARY
C7	BABB	MP30SEL	BARN
CR1	BAXT	MP31SEL	BARW
CR2	BAXU	MP32SEL	BARS
CR3	BAXR	MP33	BAAR
CR4	BAXS	MP34	BARC
DS	BASP	MP35	BAQW
DSPW1	BATA	MP36	BAQX
DSR601	BATB	MP37	BAAP
DSV601	BASY	MP38	BASD
DSV602	BASZ	MP39	BARF
DSV603	BASV	MP40	BARG
DSV604	BASW	MP41	BARD
DSV605	BASX	MP42	BASE
DSXDS600	BASS	MP43	BASF
E1	BBDD	MP44	BABF
E2	BBDE	MP45	BABN

REFERENCE DESIGNATOR	ITEM SEQUENCE NO.
MP46	BATG
MP47	BATH
MP48	BARJ
R1	BAWP
R2	BAWH
R3	BATP
R3A1	BATV
R3A1MP1	BAUE
R3A1MP2	BAUD
R3A1MP3	BAUA
R3A1MP4	BATX
R3A1MP5	BAUT
R3A1MP6	BAUZ
R3A1MP7	BAUP
R3A1MP8	BAUN
R3A1MP9	BAUJ
R3A1MP10	BAUY
R3A1MP11	BAUX
R3A1MP12	BAVA
R3A1MP13	BAVB
R3A1MP14	BAVC
R3A1MP15	BAVD
R3A1MP16	BAVE
R3A1MP17	BAUK
R3A1MP18	BAUL
R3A1MP19	BAUM
R3A1MP20	BAVF
R3A1MP21	BAUU
R3A1MP22	BAUW
R3A1MP23	BAUC
R3A1MP24	BAVH
R3A1MP25	BAUV
R3A2	BAWA
R3A2E1	BAWD
R3A2E2	BAWC
R3A2MP1	BAWB
R3A2MP2	BAWF
R3A2MP3	BAWE
R3E3	BATR
R3MP1	BAVW
R3MP2	BAVY
R3MP3	BATQ
R3MP4	BATS
R3MP5SEL	BAVJ
R3MP6SEL	BAVK
R3MP7SEL	BAVL
R3MP8SEL	BAVM
R3MP9SEL	BAVN
R3MP10SEL	BAVP
R3MP11SEL	BAVQ
R3MP12SEL	BAVR
R3MP13SEL	BAVS
R3MP14SEL	BAVT
R3MP15SEL	BAVU
R3MP16	BAVX
R3MP17	BAVZ
R5	BAWG
R6	BAWM
R7	BAWK
R8	BAWL
R110	BAWN
R111	BAWJ
S3	BBCP
T1	BBDK
T2	BBDN
T2E1	BBDX
T2E2	BBDP
T2E3	BBDQ
T2MP1	BBDR
T2MP2	BBDS
TB1	BBCV
TB2	BBCZ
TB3	BBDA
TB4	BBCQ
TB5	BBCR
TB6	BBCS
TB7	BBCT
TB8	BBCU
W300	BAAQ
XF1	BASA

By Order of the Secretary of the Army:

FRED C. WEYAND
General, United States Army
Vice Chief of Staff

Official:

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

Distribution:

Active Army:
- CNGB (1)
- USASA (2)
- AMC (1)
- ARADCOM (1)
- OS Maj Cored (3)
- USARPAC (2)
- TECOM (2)
- USACC (5)
- USACC Sig Gp Okinawa (10)
- USASTRATCOM-T (2)
- USACC Sig Gp Taiwan (10)
- USACCPAC (2)
- USACC Sig Bale, Korea (2)
- Eighth USA (3)
- I Corps (2)
- USAINTCS (3)
- USASESS (5)
- HISA (Ft Monmouth) (43)
- Depots (1) except
  - SAAD (20)
  - TOAD (14)
  - LBAD (5)
- USA Dep (PAC) (2)
- Sig Sec USA Dep (PAC) (2)
- Sig ep (PAC) (2)
- MAAG, Republic of China (2)
- Taiwan Defense Cored (5)
- USACSA (3)
- Sig FLDMS (PAC) (1)
- JUSMAG, Korea (1)
- USA Ascom Depot (2)
- USA Camp Carroll Depot (2)
- Units org under fol TOE (1 cy each):
  - 11-302
  - 29-134
  - 29-136

NG: None.
USAR: None.
For explanation of abbreviations used, see AR 310-50.

* U.S. GOVERNMENT PRINTING OFFICE : 1994 O - 300-769 (12300)