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instruction book

Collins 980N-1 Altimeter Test Set

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List of Effective Pages

*The asterisk indicates pages changed, added, or deleted by the current change.

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CAUTION

The material in this manual is subject to change. Before attempting any maintenance operation on the equipment covered in this manual, verify that you have complete and up-to-date publications by referring to the applicable Publications and Service Bulletin Indexes.

section 1
general description

1.1 PURPOSE OF INSTRUCTION BOOK

This instruction book provides information necessary to install, operate, and maintain the 980N-1 Altimeter Test Set.

1.2 PURPOSE OF EQUIPMENT

The 980N-1 Altimeter Test Set (figure 1-1, CPN 522-4610-001) is used primarily to isolate faults in the AL-101 or AL-101A Radio Altimeter System and to perform routine flight-line maintenance tests on the system, while it is installed in the aircraft. It also has limited capabilities for operationally bench-testing the 860F-1 Radio Altimeter and 339H-1( ) Radio Altitude Indicator.

The 980N-1 Altimeter Test Set (figure 1-1, CPN 522-4610-001 with SB 4, CPN 522-4610-003 and CPN 522-4610-004), in addition to the above, provides a varying altitude rate signal to the radio altimeter system necessary to test the Ground Proximity Warning System (GPWS), and provides automatic descent rates for autoland tests.

1.3 EQUIPMENT COVERED

Table 1-1 lists the equipment covered by this instruction book.

1.4 EQUIPMENT REQUIRED BUT NOT SUPPLIED

The 980N-1 requires no additional special equipment for testing the AL-101 or AL-101A systems. However, a locally fabricated test adapter is recommended to perform test procedures on the 980N-1. (See table 7-1, and figures 7-21 through 7-23 for details.)

1.5 EQUIPMENT SPECIFICATIONS

Table 1-2 lists the specifications for the 980N-1 Altimeter Test Set.

1.6 PHYSICAL DESCRIPTION

1.6.1 Mechanical Description

The 980N-1 Altimeter Test Set (figure 1-2) is a portable, unpressurized unit enclosed in a 2-piece, drawn-aluminum case. The top cover is hinged and detachable. Operating controls and indicators are mounted on the front panel, which is attached to the bottom section by six screws. A cable assembly, terminated in a mating connector, provides connections to the 980N-1 from the 860F-1 front panel connector, J9. Provisions for mounting the 339H-1( ) indicator on the front panel include the mating connector and

Table 1-1. Equipment Covered.

EQUIPMENT	DESCRIPTION	COLLINS PART NUMBER
980N-1 Altimeter Test Set	AL-101 or AL-101A Radio Altimeter System Test Set.	522-4610-001 (Serno 351 and below)
980N-1 Altimeter Test Set	Functionally equivalent as CPN 522-4610-001 (serno 351 and below) and includes COM/ARM switch.	522-4610-001 (Serno 352 and above)
980N-1 Altimeter Test Set	Functionally equivalent as CPN 522-4610-001 (serno 352 and above) and includes COM/ARM switch and varying altitude rate signal generator.	522-4610-003
980N-1 Altimeter Test Set	Same as 980N-1, CPN 522-4610-003, with 150 and 300 foot per minute altitude rate signals instead of the 6000 and 7000 foot per minute.	522-4610-004

Table 1-2. Equipment Specifications.

CHARACTERISTICS	SPECIFICATIONS
Physical	
Height	292.1 mm (11.5 in)
Width	279.4 mm (11.0 in)
Depth	203.2 mm (8.0 in)
Weight	CPN 522-4610-001 4.989 kg (11.0 lb) maximum (not including 339H-1( ) indicator) CPN 522-4610-003, CPN 522-4610-004 5.896 kg (13.0 lb) maximum (not including 339H-1( ) indicator)
Finish	Exterior: gray, textured epoxy Instrument panel: gray enamel
Environmental	
Temperature range, operating	-29 to +49 °C (-20 to +120 °F)
Temperature range, storage	-45 to +71 °C (-50 to +160 °F)
Humidity range	Up to 48 hours exposure to 0 to 95% humidity at +50 °C (+122 °F)
Shock	3 shocks at 15 g and 1 shock at 25 g (shock duration: 11 ±1 ms)
Electrical	
Power input (supplied by 860F-1)	Reference voltage: +30 V dc ±0.1%, -30 V dc ±0.1% Flag voltage: +27 V dc ±10% Ac voltage: 26 V ac ±10%, 400 Hz ±5%
Altitude simulation	
Precision crystal	Altitude: 480 ±0.1 ft
Controlled oscillator	Frequencies: 20-ft AID, 19.885 kHz; 40-ft AID, 20.285 kHz; 57-ft AID, 20.625 kHz
Variable voltage controlled oscillator (dial controlled)	Frequency: 600 Hz to 130 kHz Stability: ±2% (short-term) Output level: 1.7 V rms at 600 Hz with 6-dB/octave reduction above 600 Hz
Altitude rate generator (CPN 522-4610-001 with SB 4, and CPN 522-4610-003)	Altitude/frequency: 500 ft/21 085 ±20 Hz, 800 ft/33 085 ±20 Hz, 1100 ft/45 085 ±20 Hz, 1400 ft/57 085 ±20 Hz, 1700 ft/69 085 ±20 Hz, 2000 ft/81 085 ±20 Hz, 2300 ft/93 085 ±20 Hz, 2600/ft 105 085 ±20 Hz Altitude rate: 500 ft/min, 1000 ft/min, 2000 ft/min, 3000 ft/min, 4000 ft/min, 5000 ft/min, 6000 ft/min, 7000 ft/min
Altitude rate generator (CPN 522-4610-001 with SB 4 and SB 5, CPN 522-4610-003 with SB 5 and 522-4610-004)	Altitude rate: 150 ft/min, 300 ft/min, 500 ft/min, 1000 ft/min, 2000 ft/min, 3000 ft/min, 4000 ft/min, 5000 ft/min

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Record of Revisions

RETAIN THIS RECORD IN THE FRONT OF MANUAL.
ON RECEIPT OF REVISIONS, INSERT REVISED PAGES IN THE MANUAL, AND ENTER DATE INSERTED AND INITIALS.

REV NO	REVISION DATE	INSERTION DATE/BY	SB NUMBER INCLUDED	REV NO	REVISION DATE	INSERTION DATE/BY	SB NUMBER INCLUDED
1st Ed	1 May 67		None				
1	1 Oct 73		1, 2				
2nd Ed	15 May 78		3, 4				
1	5 Aug 85		5, 6				

SERVICE BULLETIN LIST

SERVICE BULLETIN NO	SUBJECT	MANUAL REVISION NUMBER	MANUAL REVISION DATE
1	Provide capability for detecting antenna and cable leakage.	1	Oct 1/73
2	Modify wiring related to 860F-1 testing.	1	Oct 1/73
3	Add vswr note to instruction plate.	2nd Ed	May 15/78
4	Provide variable altitude rate signal to altimeter.	2nd Ed	May 15/78
5	Provide two new slew rates for units with automatic slew.	1	Aug 5/85
6	Add vswr note to instruction plate.	1	Aug 5/85

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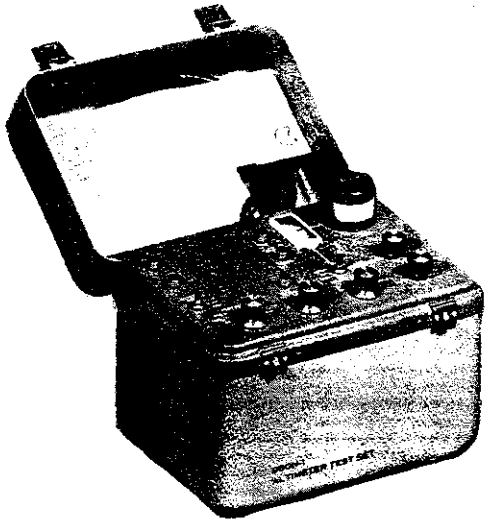
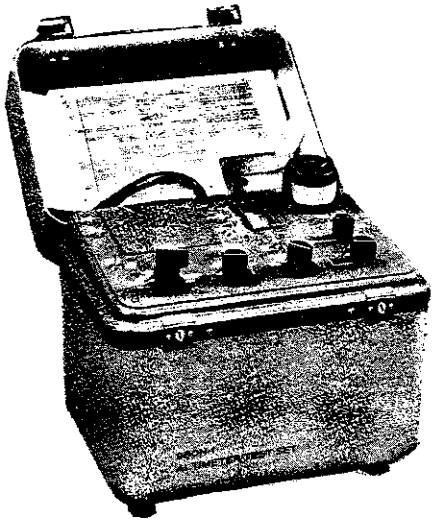


CPN 522-4610-001 (SN 351 AND BELOW)



CPN 522-4610-001 (SN 352 AND ABOVE)

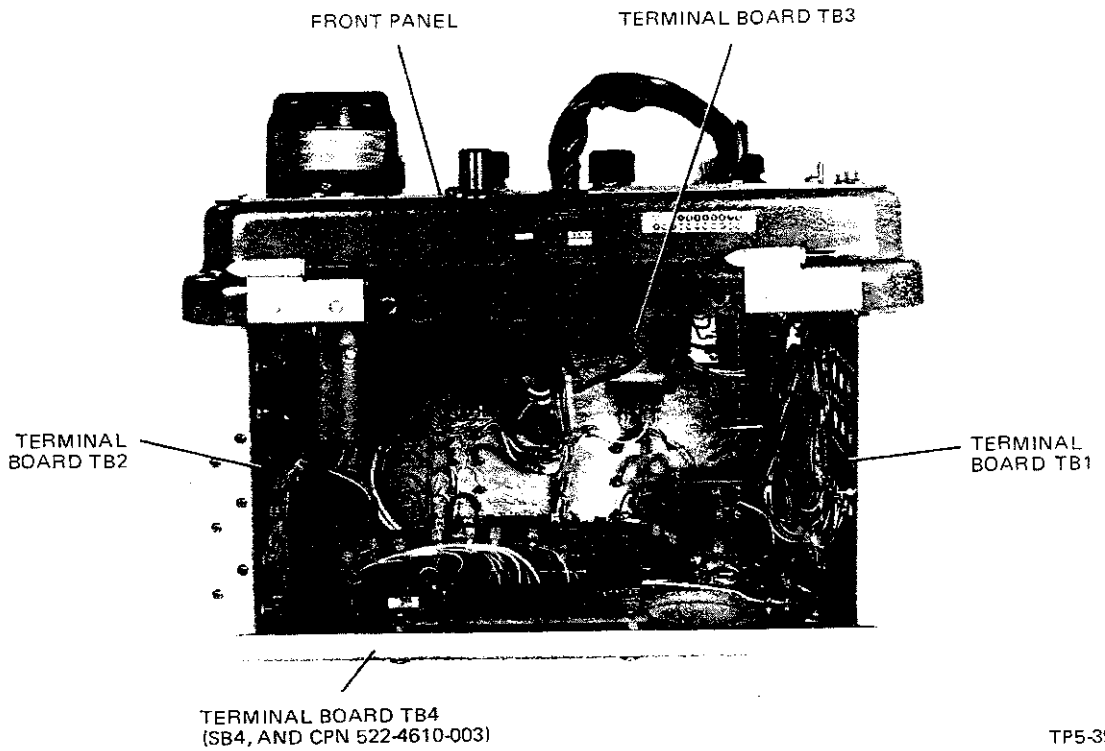
CPN 522-4610-001 (SN 352 AND ABOVE WITH SB4),
CPN 522-4610-003 AND CPN 522-4610-004

TP5-4307-017

980N-1 Altimeter Test Set
Figure 1-1

Table 1-2. Equipment Specifications (Cont).

CHARACTERISTICS	SPECIFICATIONS
Altitude measurement	
Accuracy	±2 ft or ±2%, whichever is greater
Microammeter	
Accuracy	±2% of full-scale deflection
Sensitivity (for full-scale deflection)	High: ±1.2 V dc Medium: ±6 V dc Low: ±30 V dc
Trip accuracy	±2% of output voltage, or ±2 ft, whichever is greater
Vswr measurement	
Accuracy	±10%
Duty cycle	CPN 522-4610-001: Continuous up to 1-hr maximum (limitation due to increased power requirements on 860F-1 power supply) CPN 522-4610-003; and CPN 522-4610-004: Continuous up to 30-min maximum (limitation due to increased power requirements on 860F-1 power supply)
Strapping options	CPN 522-4610-001 (serno 351 and below): Either +27 V dc or ground connected to A/P warn arm or trip common terminals CPN 522-4610-001 (serno 352 and above), CPN 522-4610-003 and CPN 522-4610-004: Provide COM/ARM switch for selecting +27 V dc or ground for A/P WARN and TRIP lamps
Operating position	Upright and reasonably level



980N-1 Altimeter Test Set, Major Assemblies
Figure 1-2

all necessary inputs. A plate covers the recess when the indicator is removed. A swing-out light is mounted to the front panel (not shown) on CPN 522-4610-001 (serno 351 and below). A light, with rotatable hood, is mounted on the front panel on CPN 522-4610-001 (serno 352 and above), CPN 522-4610-003, and 522-4610-004.

1.6.2 Electrical Description

Electrical components mounted on the front panel of the 980N-1 include switches, lamps, a meter, and a digital readout device with an associated precision potentiometer. Within the 980N-1 are oscillator and amplifier terminal board TB1, vswr amplifier and power supply terminal board TB2, terminal board TB3, and rate generator terminal board TB4 (SB 4, CPN 522-4610-003, and CPN 522-4610-004).

Terminal board TB1 provides a continuously variable 0- to 2500-ft simulated altitude signal, and a simulated precision altitude signal equivalent to 480 ft. Terminal board TB2 functions as a vswr amplifier and detector used to check the transmit and receive antenna cables of the AL-101 system, and provides an internal +30 V dc generated from the 26 V-ac input to operate the indicator lamps, oscillators, and amplifier circuits. Terminal board TB3 provides the necessary interconnect between input signals and voltages to the rest of the 980N-1 circuits. Terminal board TB4 (SB 4, CPN 522-4610-003, and CPN 522-4610-004) provides one of eight selectable initial altitude signals (500 to 2600 ft), and one of eight selectable descent rate signals (500 to 7000 ft/min CPN 522-4610-003 and 150 to 5000 ft/min SB 5 and CPN 523-4610-004) necessary for checking the slewing action of the 860F-1 and GPWS.

Connections to the 860F-1 are made through the pendant cable stored in the 980N-1 top cover.

section 2
installation

2.1 UNPACKING AND EQUIPMENT INSPECTION

Remove all packing material, and carefully remove the 980N-1 Altimeter Test Set from shipping carton. Carefully inspect for possible shipping damage. If damage exists, return unit to shipping carton along with all packing material and file damage claim with transportation agency. If no damage exists, retain carton for equipment storage purposes.

2.2 CONNECTIONS

For flight-line maintenance or bench performance testing, connect the 980N-1 cable assembly to the 860F-1 front panel connector.

For 339H-1( ) testing, connect the unit to the 860F-1 front panel connector, remove the indicator recess cover, mate the connector attached to the recess cover with the 339H-1( ) rear connector, place the 339H-1( ) into the recess, and secure the unit to the 980N-1 front panel as shown in figure 4-1.

The 339H-2 does not fit in the 980N-1; therefore, all indicator readings must be taken on the installed indicators in the cockpit.

In multisystem installations, it is important that only the system under test be energized for certain tests.

section 3
operation

3.1 GENERAL

The 980N-1 provides a simulated altitude signal to the 860F-1 by means of a voltage-controlled oscillator with a frequency range from 600 Hz to 130 kHz. A null detector (meter) and followup potentiometer are used to measure the 860F-1 precision output voltages. A rate generator assembly (SB 4, CPN 522-4610-003, and CPN 522-4610-004) provides one of eight manually selected initial altitudes (500, 800, 1100, 1400, 1700, 2000, 2300, and 2600 ft), and one of eight manually selected descent or slew rates (500, 1000, 2000, 3000, 4000, 5000, 6000, and 7000 ft/min, SB 4 and CPN 522-4610-003 or 150, 300, 500, 1000, 2000, 3000, 4000, and 5000, SB 5 and CPN 522-4610-004) used for checking the slewing action of the GPWS and the 860F-1. Indicator lamps provide a visual check of the 860F-1 altitude trips, autopilot warn contacts, flag voltage, and 339H-1( ) flag and MDA trip operation. In addition, the 980N-1 includes a grounding switch for self-testing the AL-101 system, plus a means of checking the vswr of both the receive and transmit antenna cables. A built-in, self-test feature checks the operation of the 980N-1. The 980N-1 receives all operating power from the 860F-1.

In most AL-101 Radio Altimeter System installations, the 339H-1( ) Radio Altitude Indicator and 860F-1 Radio Altimeter are remotely located. For this reason, provisions are included for mounting the 339H-1( ) on the 980N-1 front panel as shown in figure 4-1. This eliminates the need for frequent trips between the aircraft radio rack and the cockpit control panel. It also provides a convenient means of isolating a malfunction to either the 339H-1( ) or the associated wiring. For example, if the 339H-1( ) indications do not agree with those on the 980N-1, the malfunction is known to be in the 339H-1( ); if the 339H-1( ) operates properly in the 980N-1 but does not when installed in the aircraft control panel, the

malfunction is known to be in the wiring from the 860F-1 to the 339H-1( ).

The AL-101A Radio Altimeter System uses the 339H-2 Radio Altitude Indicator, which does not fit on the 980N-1 front panel.

There is only one strapping requirement in the 980N-1 (CPN 522-4610-001, serno 351 and below). If, in the altimeter system under test, the trip common terminal is at ground, strap the 980N-1 TB1 terminal C to J. If the trip common terminal is at +27 V dc, strap TB1 terminal C to F. If the A/P warn arm terminal is at ground, strap the 980N-1 TB1 terminals A to G and B to H. If the A/P warn arm terminal is at +27 V dc, strap TB1 terminals A to D and B to E.

The 980N-1 (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and CPN 522-4610-004) provides a COM/ARM switch that eliminates the need for strapping the trip common and A/P warn arm terminals. If the trip common or A/P warn arm teriminal is at ground, set the COM/ARM switch to GND position. If the trip common or A/P warn arm teriminal is at +27 V dc, set the COM/ARM switch to the +27 position.

It is also necessary to know what AID value is being used in the altimeter system under test. This value (20, 40, or 57) must be used in setting the AID/ALT SELECT switch in the 480FT range. In the test procedures that follow this paragraph, this value must be inserted at the points indicated by 480FT( ).

3.2 OPERATING INSTRUCTIONS

3.2.1 General

An abbreviated set of operating instructions are printed on the inside of the 980N-1 top cover. A similar but more detailed set is shown in table 3-1. The same instructions are included in the AL-101 and AL-101A Radio Altimeter System Maintenance Manuals. It is recommended that the material in the principles of operation section of this manual be studied before attempting to operate the 980N-1 Altimeter Test Set. This material, together with a knowledge of the altimeter system, provides the operator with information needed to interpret the test results.

3.2.2 AL-101 Radio Altimeter System Testing and Troubleshooting Procedures

The procedures to be used to test and/or troubleshoot the AL-101 or AL-101A Radio Altimeter System are shown on table 3-1. The first information provided is in the form of 5 notes: (1), (2), (3), (4), and (5). These notes are referenced by number throughout the testing procedures. For example, note (1) describes the procedures to be followed to zero the meter. This note is referenced in steps 7 through 16 where it is necessary to zero the meter. Note (2) contains information on the operation of the TRIP lamp. This note is referenced in those steps where a TRIP lamp indication is required.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set

Notes

(1) To zero meter:	Always begin with METER SENS switch in LOW position. To measure the 860F-1 altitude output voltage, adjust the ALTITUDE control to the desired input frequency (or the desired operating point as in step 10), then adjust the ALTITUDE STANDARD to zero the meter (pointer on midscale mark) with the METER SENS switch first in LOW, then MED (for increased accuracy), then HIGH (for best accuracy). To test the system at some specific input frequency, adjust the ALTITUDE STANDARD to the desired altitude as indicated by the digital readout, then adjust the ALTITUDE control to zero the meter with the METER SENS first in LOW, then MED, and finally in HIGH position.
(2) TRIP lamp operation:	When the TRIP lamp is lit, this indicates that the trip contacts corresponding to the ALTITUDE TRIP SELECT switch position are closed. If A5CR67 has been removed from the 860F-1, the TRIP lamp will not operate in AL-101 SELF TEST regardless of the ALTITUDE TRIP SELECT switch position. Refer to the applicable section in the AL-101 or AL-101A Radio Altimeter Maintenance Manual for additional information. The COM/ARM switch (S11) on the 980N-1 (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and CPN 522-4610-004) must be set to the proper position (+27 or GND) for TRIP lamp operation.
(3) MDA lamp operation:	When the MDA lamp is lit, this indicates that a closed circuit exists between the 339H-1( ) MDA or the 339H-2 DH trip output terminals. An internal ground is provided in 980N-1 SELF TEST to light the lamp. For all other tests except VSWR, the MDA lamp indication is dependent on the 339H-1( ) MDA or 339H-2 DH index position with respect to the pointer or reference. (The MDA lamp is not energized in VSWR test.)
(4) A/P WARN and A/P NO WARN lamp operation:	The A/P WARN and A/P NO WARN lamps are never lit simultaneously except in 980N-1 SELF TEST. Otherwise, the A/P NO WARN lamp is lit (and the A/P WARN lamp is out) for all simulated altitudes below 2500 feet. Above 2500 feet and in AL-101 or AL-101A self-test, both lamp conditions are reversed. A reversed condition below 2500 feet indicates a warn condition in the 860F-1. The COM/ARM switch (S11) on the 980N-1 (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and CPN 522-4610-004) must be set to the proper position (+27 or GND) for A/P WARN and A/P NO WARN lamp operation.
(5) Self-test altitudes:	The altitude indication obtained in AL-101 SELF TEST is dependent on the type of 860F-1 used in the system. Refer to figure 4A, in the AL-101 Radio Altimeter System Maintenance Manual (or figure 4 in the AL-101A Radio Altimeter System Maintenance Manual) for specific information.
(6) 339H-2 indicators:	Reference to 339H-1( ) indicators also includes 339H-2, unless noted otherwise.
(7) 980N-1 test set operation:	a. 980N-1 test set (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003 and CPN 522-4610-004) contains a COM/ARM switch that connects the TRIP and A/P WARN lamps to ground or +27 V dc, depending on the altimeter system under test. This switch must be set to the proper position for TRIP, A/P WARN, and A/P NO WARN lamp operation, and to GND for 980N-1 SELF TEST operation. b. 980N-1 test set (CPN 522-4610-001 with SB 4 CPN 522-4610-003, and CPN 522-4610-004) contains MODE, ALTITUDE, ALTITUDE 100 FEET, and RATE 1000 FT/MIN switches for altitude slew operation. The MODE switch must be set to the MAN position for manual test set operation.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
1	Not required for minimum performance test.	Remove the 339H-1( ) from its instrument panel position, and install it in the recess provided in the 980N-1. Ensure that the connectors are mated properly. The 339H-2 does not mount in the 980N-1 test set, but remains mounted in the aircraft.			
2	Preliminary.	Remove the 980N-1 cable assembly from its storage position in the top cover, and mate the terminating connector with the 860F-1 front panel connector. For 339H-2 only, set DH INDEX on 0 feet.			
		Note			
		Before applying power, be certain that the strapping options in the 980N-1 correspond to those of the 860F-1 under test. On 980N-1 CPN 522-4610-001, serno 352 and above, CPN 522-4610-003 and CPN 522-4610-004, the COM/ARM switch must be set to the proper GND or +27 position. Refer to paragraph 3.1 in this section for specific information. Test only one system (energized) at a time.			
3	Preliminary.	With the TEST SELECT switch on the 980N-1 in the OFF position, apply power to the AL-101 system and allow 15 minutes for warmup. (The warmup period, obviously, is not necessary if the equipment has been operating immediately before this test is to be performed.) If remote switching is used, be certain the remote switch is on. After warmup, observe 860F-1 fault indicators and replace system components as required.			
4	980N-1 self-test.	TEST SELECT: 980N-1 SELF TEST; COM/ARM: GND (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.) ALTITUDE STANDARD: adjust for meter movement.	All lamps are lit, and meter pointer moves with ALTITUDE STANDARD adjustment.	Pointer indicates ramp altitude; and refer to note (3).	980N-1
5	AL-101 self-test.	TEST SELECT: AL-101 SELF TEST ALTITUDE TRIP SELECT: 1 ALTITUDE STANDARD: zero meter; and refer to note (1). COM/ARM: GND or +27 (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.)	A/P WARN lamp: lit; and refer to note (3). Digital readout: 860F-1: 002, 004, 012, 014, 0038 to 0042 860F-1: 003, 006, 011, 013 0098 to 0102 860F-1: 005 0148 to 0152	Flag in view; and refer to notes (3) and (5).	860F-1 or 339H-1( )

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
6	Auxiliary altitude output test at 480 feet.	TEST SELECT: AUX/IND ALTITUDE; COM/ARM: GND or +27 (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.) AID/ALT SELECT: 480FT( ); ALTITUDE STANDARD: zero meter; and refer to note (1).	Digital readout: 0470 to 0490 FLAG lamp: lit; MDA lamp: refer to note (3).	Flag out of view; MDA lamp (if used): refer to note (3); Pointer: 480 feet.	860F-1 or 339H-1( ) as applicable
7	Auxiliary altitude output test at selected altitudes.	TEST SELECT: AUX/IND ALTITUDE; COM/ARM: GND or +27 (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.) AID/ALT SELECT: VARIABLE; ALTITUDE STANDARD: 600 ALTITUDE control: zero meter, and refer to note (1). For 339H-2: ALTITUDE control: Adjust ccw until 001; MDA lamp on, DH lamp on. Others, audio tone. 006; Adjust cw then ccw. ALTITUDE STANDARD: zero meter.	For 339H-2: Digital readout; 001; 0291 to 0309. Others, 0346 to 0354 005; 485 to 515 006; 400 ft, DH on, off readout: 010 to 015.	339H-2 DH CONT: Index on 300 ft. All indicate same altitude as digital readouts. Flag out of view. MDA lamp; refer to note (3).	860F-1 or 339H-1( ) or 339H-2 as applicable.
8	Autopilot altitude output test at 480 feet.	TEST SELECT: A/P ALTITUDE AND TRIPS; COM/ARM: GND or +27 (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.) AID/ALT SELECT: 480FT( ); ALTITUDE STANDARD: zero meter, and refer to note (1).	Digital readout: 0470 to 0490 FLAG lamp: lit; A/P NO WARN lamp: lit; MDA lamp: refer to note (3).	Flag out of view; MDA lamp (if used): refer to note (3); Pointer: 480 feet.	860F-1 if step 6 result was correct, 339H-1( ) if pointer indication and digital readout do not agree

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
9	Autopilot altitude output test at selected altitudes. (This step can be omitted if step 10 is to be performed.)	TEST SELECT: A/P ALTITUDE AND TRIPS; COM/ARM: GND or +27 (Refer to note (7)a.) MODE: MAN (Refer to note (7)b.) AID/ALT SELECT: VARIABLE; ALTITUDE (control): Adjust to selected test altitude(s); ALTITUDE STANDARD: Adjust to zero meter, refer to note (1).	Digital readout: selected altitude(s); TRIP lamp: refer to note (2); MDA lamp: refer to note (3); A/P WARN and A/P NO WARN lamps: refer to note (4).	Pointer: indicates same altitude as digital readout; on 980N-1; Flag out of view; MDA lamp: refer to note (3).	860F-1 or 339H-1( ) as applicable

Note

In step 10, the altitude trip operating points are checked. The operating points indicated in each test refer to equipment as it is shipped from the factory. If the operating points have been readjusted, then those new values must be used. Refer to the applicable section in the AL-101 or AL-101A Radio Altimeter System Maintenance Manual for more specific information.

The procedure to be followed in performing the tests is as follows:

(1) For 339H-2, set DH control for DH index 0 ft.

(2) Set the TEST SELECT switch to A/P ALTITUDE AND TRIPS (this position is maintained).

(3) Set the AID/ALT SELECT switch to VARIABLE (this position is maintained).

(4) Set the COM/ARM switch to GND or +27 (this position is maintained).

(5) Set the MODE switch to MAN (this position is maintained).

(6) Set the ALTITUDE TRIP SELECT switch to the position indicated in the applicable 980N-1 switch or operating control positions column (the position changes for each test).

(7) Adjust the ALTITUDE control until the TRIP lamp goes off, then return until the lamp just goes on again.

(8) Adjust the ALTITUDE STANDARD to zero the meter as outlined in note (1).

(9) Note that the ALTITUDE STANDARD digital readout indicates the trip operating point (either as indicated for each test or as readjusted).

(10) Proceed to the next test, and repeat steps (4) through (7).

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
10.	Altitude trip operating point check.	ALTITUDE TRIP SELECT: 1; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 1 operating point.	Pointer: indicates same altitude as digital readout on 980N-1.	860F-1 or 339H-1( ) as applicable
		ALTITUDE TRIP SELECT: 2; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 2 operating point.		
		ALTITUDE TRIP SELECT: 5; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 5 operating point.		
		ALTITUDE TRIP SELECT: 6; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 6 operating point.		
		ALTITUDE TRIP SELECT: 7; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 7 operating point.		
		ALTITUDE TRIP SELECT: 8; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 8 operating point.		

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
11	Vswr test - introduction.	In this step the vswr on the receive and transmit antenna cables is tested. Addition of two (or more) vswr's is usually meaningless; in this test, however, addition provides a convenient means of evaluating the results. The sum of the vswr's on both cables (that is, the result of step 11B plus the result of step 11C) must be no greater than 4.8 nor less than 2.8, and a total vswr between 4.0 and 4.8 is questionable. For individual cables, the nominal vswr is 1.7; in no case can a vswr greater than 3.0 nor less than 1.4 be tolerated, and an individual vswr between 2.4 and 3.0 is questionable. For example: A vswr of 2.1 on each cable, which results in a total of 4.2, is acceptable even though it is greater than 4.0. However, one vswr of 2.5 and the other 1.7, which still results in a total of 4.2, should be corrected.			
	Vswr test - most probable cause of abnormal indication.	Any deviation from the nominal 1.7 is an indication of one or more of the following conditions: a. Improper antenna-cable-connector installation, either at the 860F-1 rear connector, or at the antenna, or both. b. Poor cable condition; poor shielding, jacket worn so that shielding is exposed, sharp bends in cable so that shielding buckles, cracked or broken dielectric within the cable. c. Damaged antenna. d. Improper tuning stub adjustment in the 860F-1. (The cables used in bench testing/aligning the 860F-1 must be in good condition in order to properly adjust the vswr tuning stubs.)			
		Note **In multisystem installations, it is important that only the system under test be energized when making vswr tests. For test sets incorporating Service Bulletin No 1, set NORMAL-LEAKAGE switch S6 to NORMAL for tests 11 through 11C.** 860F-1 equipment, with Service Bulletin No 22 installed, will not necessarily indicate a 1.4 minimum vswr on the 980N-1. Disregard the lower vswr limit when Service Bulletin No 22 is installed. (See 980N-1 Service Bulletin No 3.)			

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing page 3-8, Section 3

This Addendum supersedes Addendum 4.

Subject: Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set

Add the following to the NOTE:

VSWR test does not apply to the 860F-4.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
11A	VSWR test - meter calibration.	TEST SELECT: VSWR; RCVR-SET-XMTR: SET; SET ∞ : adjust for ∞ indication on vswr scale.	Meter (pointer): ∞	Not applicable	Not applicable
11B	VSWR test - receive antenna cable.	TEST SELECT: VSWR; RCVR-SET-XMTR: RCVR (hold).	Refer to introduction, step 11.		
	Flex cable slightly.		Meter (pointer): indication should not change.		
11C	VSWR test - transmit antenna cable.	TEST SELECT: VSWR; RCVR-SET-XMTR: XMTR (hold).	Refer to introduction, step 11.		
	Flex cable slightly.		Meter (pointer): indication should not change.		
11D	Rf leakage of 860F-1. (Make accurate vswr measurement before leakage measurement.) Replace one antenna with a load (Narda 757-20 Attenuator or equivalent).	TEST SELECT: VSWR; RCVR-SET-XMTR: XMTR (hold). NORMAL/LEAKAGE: LEAKAGE.	A vswr indication of 1.7 or greater indicates excessive leakage.		

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
12	Final.	Return TEST SELECT switch to OFF position. Turn off all aircraft power to AL-101 system. Remove 339H-1( ) from 980N-1 front panel (if step 1 was performed), and reinstall in aircraft instrument panel. Disconnect 980N-1 from 860F-1 front panel connector. Roll up cable assembly, and store in 980N-1 top cover. Place connector cover on 860F-1 front panel connector.			
13	System self-test.	Reapply power to AL-101 system. Press and hold self-test switch on 339H-1( ) or elsewhere on instrument panel. Note that 339H-1( ) pointer indicates correct self-test altitude, flag is in view (unless logic strapping has been changed in 860F-1), and MDA indication is according to note (3). Release self-test switch, and note that pointer returns to taxi altitude indication (less than 0 foot), flag goes out of view, and MDA indication is according to note (3). For AL-101A systems, depress 860F-1 RESET switch and note unlighted X-CONN fault indicator.			
14		Turn off all power to AL-101 or AL-101A system, and remove test equipment from aircraft.			

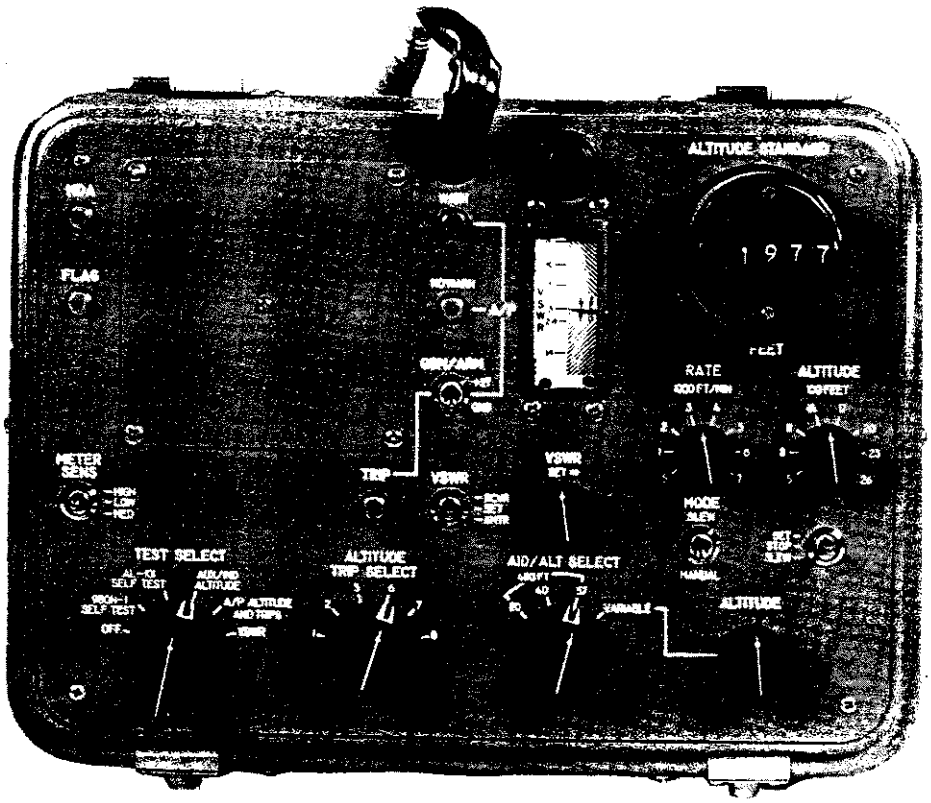
ADDENDUM 5 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing page 4-2A/4-2B, section 4

Subject: 980N-1 (CPN 522-4610-004), Operating Controls and Indicators, Figure 4-4

On the RATE, 1000 FT/MIN switch, change the 6 position to read .15 and the 7 position to read .3.



TP5-4371-017

980N-1 (CPN 522-4610-004), Operating Controls and Indicators
Figure 4-4

4.1.4 METER SENS Switch

The METER SENS switch connects different values of resistance in series with the meter movement. The largest value of resistance is connected when the switch is in the LOW position, with lesser amounts in the MED and HIGH positions.

4.1.5 AID/ALT SELECT Switch

The AID/ALT SELECT switch functions only when the TEST SELECT switch is in either the AUX/IND ALTITUDE or A/P ALTITUDE AND TRIPS position, and the MODE switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) is set to the MAN position. With the AID/ALT SELECT switch in the 480FT range (either 20, 40, or 57), a precision frequency is generated by a crystal-controlled oscillator. This frequency represents an altitude of 480 feet. With the AID/ALT SELECT switch in the VARIABLE position, the vco (voltage-controlled oscillator) generates the altitude frequency and is adjusted by the ALTITUDE control. (Refer to paragraph 4.1.7 for additional information on the vco.)

4.1.6 ALTITUDE Control

The ALTITUDE control is a potentiometer that varies the voltage applied to the vco. The internally generated +30 volts dc is the reference source for the ALTITUDE control.

4.1.7 Frequency Generators

The 980N-1 contains two frequency generators, a crystal-controlled oscillator, and a voltage-controlled oscillator, used to provide the altitude signal to the system under test.

The crystal-controlled oscillator generates one of three frequencies depending on the AID/ALT SELECT switch position (19.885 kHz, 20.285 kHz, or 20.625 kHz). These frequencies represent 480 feet in altitude for 20-, 40-, or 57-foot AID values, respectively. The output from the crystal-controlled oscillator is applied to the 860F-1 only when the AID/ALT SELECT switch is in the 480FT range, and the MODE switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) is set to the MAN position.

The voltage-controlled oscillator generates frequencies from 600 Hz (approximately -20 feet) to 130 kHz (approximately 3000 feet). The frequency is controlled by the ALTITUDE control and is applied to the 860F-1 when the AID/ALT SELECT switch is in the VARIABLE position, and the MODE switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) is set to the MAN position.

4.1.8 TRIP SELECT Switch and TRIP Lamp

4.1.8.1 980N-1 CPN 522-4610-001, Serno 351 and Below

The TRIP lamp and amplifier circuit is energized by the +30 V dc internally generated from the 26-V ac input. The voltage is applied only when the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position, and the MODE switch (SB 4) is set to the MAN position. The amplifier circuit is essentially an on-off switch for the lamp and is used to isolate the trip relay contacts from the lamp current. The specific trip to be tested is selected by the ALTITUDE TRIP SELECT switch. When the 860F-1 trip relay contacts (associated with the trip being tested) close, the trip amplifier circuit enables the trip lamp switching transistor, causing the lamp to light. Special strapping is required and depends on whether the trip common terminal is at ground or +27 V dc. If A5CR67 has been removed from the 860F-1 being tested, the TRIP lamp will not operate in AL-101 SELF TEST for any ALTITUDE TRIP SELECT switch position.

The TRIP lamp is always lit when the TEST SELECT switch is in the 980N-1 SELF TEST position, regardless of the position of the ALTITUDE TRIP SELECT switch.

4.1.8.2 980N-1 CPN 522-4610-001, Serno 352 and Above, CPN 522-4610-003 and CPN 522-4610-004

The TRIP lamp is energized by the +30 V dc internally generated from the 26-V ac input. The voltage is applied only when the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position, and the MODE switch (SB 4, CPN 522-4610-003, and CPN 522-4610-004) is set to the MAN position. The specific trip to be tested is selected by the ALTITUDE TRIP SELECT switch. When the 860F-1 trip relay contacts (associated with the trip being tested) close, the lamp lights. The COM/ARM switch selects GND or +27, depending on whether the trip common terminal is at ground or +27 V dc. If A5CR67 has been removed from the 860F-1 being tested, the TRIP lamp will not operate in AL-101 SELF TEST or any ALTITUDE TRIP SELECT switch position.

The TRIP lamp is always lit when the TEST SELECT switch is in the 980N-1 SELF TEST position,

regardless of the position of the ALTITUDE TRIP SELECT switch, and if the COM/ARM switch is set to GND.

4.1.8.3 TRIP Operation

The following statement applies in testing any trip: when the input frequency corresponds to an altitude greater than the operating point of the trip under test, the TRIP lamp is out; when the simulated altitude is equal to or less than the trip operating point, the lamp is lit.

4.1.9 A/P WARN and A/P NO WARN Lamps

4.1.9.1 980N-1 CPN 522-4610-001, Serno 351 and Below

An amplifier/switching circuit, identical to that of the TRIP lamp, is used for the A/P WARN and A/P NO WARN lamps. Like the trip amplifier circuit, both of these circuits are energized by the internally generated +30-volt dc supply and only when the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position and the MODE switch (SB 4) is set to the MAN position. These lamp circuits operate (by virtue of the 860F-1 A/P warn relay contacts) so that both lamps are never lit simultaneously except when the TEST SELECT switch is in the 980N-1 SELF TEST position.

4.1.9.2 980N-1 CPN 522-4610-001, Serno 352 and Above, CPN 522-4610-003 and CPN 522-4610-004

The A/P WARN and A/P NO WARN lamps are energized by the internally generated +30-V dc supply and only when: the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position; the MODE switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) is set to the MAN position; and the COM/ARM switch is set to GND or +27, depending on the A/P arm reference. These lamps operate (by virtue of the 860F-1 A/P warn relay contacts, and relay K1 in the test set) so that both lamps are never lit simultaneously except when the TEST SELECT switch is in the 980N-1 SELF TEST position, and the COM/ARM switch is set to GND.

4.1.9.3 A/P WARN/NO WARN Operation

In normal operation, the A/P NO WARN lamp is lit and the A/P WARN lamp is out for all test altitudes below approximately 2500 feet. Normally, when the indicated altitude is greater than 2500 feet, the A/P WARN lamp is lit and the A/P NO WARN lamp is out. An A/P WARN lamp lit below 2500 feet indicates a warn condition in the 860F-1.

4.1.10 MDA Lamp

The MDA lamp is energized by the 30-volt dc supply from the 980N-1. An internal ground is provided in 980N-1 SELF TEST to light the MDA lamp. During all other tests except VSWR, the ground is provided through the 339H-1( ) MDA trip output terminals. Consequently, the MDA lamp will not operate in other than 980N-1 SELF TEST if the 399H-1( ) is not installed in the 980N-1. Also, with a normal 30-volt dc input from the 980N-1, any abnormal MDA lamp indication is known to be a result of improper operation of the 339H-1( ) MDA relay and/or relay control circuit.

4.1.11 FLAG Lamp

The FLAG lamp is lit directly by the flag output voltage from the 860F-1 for all tests except 980N-1 SELF TEST. In this test the +30 volts dc (internally generated) is used to light the FLAG lamp. Ordinarily, if the FLAG lamp is out, the 339H-1( ) flag must be in view (unless mechanically restricted); and if the FLAG lamp is lit, the 339H-1( ) flag should be out of view. If both the lamp is lit and the flag is in view, a warn condition is indicated for the 339H-1( ). This can be caused by any one or more of the following:

a. No 26 volts ac to the 339H-1( ) or its flag control circuits.

b. No +30-volt dc supply from the 980N-1 during testing and 860F-1 in normal operation).

c. No flag voltage to the flag solenoid (a wiring problem when the 980N-1 FLAG lamp is lit).

d. Null detector operation (indicating some other malfunction in the 339H-1( ).

In AL-101 SELF TEST, with log strapping as factory installed, the flag voltage is off. Consequently, the FLAG lamp is out and the 339H-1( ) flag is in view.

Also, the flag voltage is off for virtually any type of failure or warn condition in the 860F-1.

4.1.12 SET ∞ Control and RCVR-SET-XMTR Switch

With the TEST SELECT switch in the VSWR position and the RCVR-SET-XMTR switch in the normal-released (SET) position, the SET ∞ control is used to calibrate the meter in preparation for a vswr test. In addition, with the TEST SELECT switch in the VSWR position, the AL-101 system is in self-test, since a ground is applied to self-test terminals J9-j and P1B-24. To individually test the vswr on the transmit and receive antenna cables, the bias current through circulators Z1 and Z2 is controlled as follows:

a. With the RCVR-SET-XMTR switch held in the XMTR position, +27 volts dc is applied to the normally negative side of the transmit circulator Z1, thus blocking current flow through the circulator bias coil. Bias current, however, is maintained through receive circulator Z2. In this condition, the transmitted signal is applied directly to the transmit antenna cable as in normal (other than self-test) operation. A signal (vswr) is reflected back through the transmit circulator, self-test delay line, receive circulator, and into the receiver circuits. The tracking filter output resulting from this signal is used in the 980N-1 as the transmit vswr test signal. If the vswr is correct, a meter indication of 1.7 should be obtained.

b. With the RCVR-SET-XMTR switch in the RCVR position, the +27-volt dc blocking voltage is removed and the receive circulator bias coil is shorted. In this condition, the transmitted signal is coupled from the transmitter output directly into the self-test delay line, bypassing the transmit antenna as is normal for self-test. From the delay line, the signal is coupled through the receive circulator to the receive antenna (no bias current in this circulator). The signal from the receive antenna cable (vswr) is then reflected back through the receive circulator and into the receiver circuits.

The introduction to the vswr tests, step 11 on table 3-1, adequately describes the results that should be obtained, as well as outlining the probable cause of an abnormal result. The vswr tuning stubs in the 860F-1 are factory adjusted to provide a vswr of 1.7:1. Any deviation from this value, in either direction, reflects degradation. The signal resulting from this vswr is used in the 860F-1 vswr monitor circuit. Any vswr less than 1.4 results in a signal too low in amplitude to permit satisfactory monitoring. (860F-1 equipment with SB 22 installed may not indicate the lower 1.4 vswr limit. Refer to 980N-1 SB 3.)

An intermittent poor vswr can occasionally be detected by flexing the cable slightly during test. Any meter movement, while the cable is being flexed, cannot be tolerated.

Cable-connector installation instructions are contained in the removal/installation section of the AL-101 Radio Altimeter Maintenance Manual.

4.1.13 NORMAL LEAKAGE Switch

This switch is added as a customer option when Service Bulletin No 1 is installed. This modification is applicable to all 980N-1 Altimeter Test Sets.

Rf leakage in the AL-101 Radio Altimeter System can be detected by measuring the voltage at test jack J21 in the 860F-1 Radio Altimeter while it is installed and operating. However, this requires removing the dust cover from the 860F-1.

This modification incorporates a leakage test function into the 980N-1 test set. Rf leakage can now be detected by connecting the 980N-1 test set to the 860F-1 front panel connector J9-C. With this modification, rf leakage can be detected without removing the 860F-1 dust cover.

4.1.14 COM/ARM Switch

The COM/ARM toggle switch (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and CPN 522-4610-004) connects the TRIP and A/P WARN lamps to ground or +27 V dc, dependent on the altimeter system under test.

Note

In order for the test set to perform correctly in 980N-1 SELF TEST, the COM/ARM switch must be set to the GND position.

4.1.15 MODE Switch

The MODE toggle switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) selects either manual or slew operation. When set to the MAN position, the rate generator terminal board TB4 is disabled, and the test set operates normally. In the SLEW position, the internal +30 V dc supply is disabled and normal lamp operation (with exception of the panel and flag lamp) is terminated. The rate generator terminal board TB4 is enabled, and the crystal oscillator, VCO, VSWR, and SELF TEST functions are disabled.

Note

If the altimeter system under test utilizes +27 V dc for trip common and A/P warn arm, and the COM/ARM switch is set to the +27 position, normal lamp operation will occur.

4.1.16 ALTITUDE 100 FEET Switch

The ALTITUDE 100 FEET rotary switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) functions only when the MODE switch is set to the SLEW position, and the TEST SELECT switch is in AUX/IND ALTITUDE or A/P ALTITUDE AND TRIPS position. The ALTITUDE 100 FEET switch applies a ground to the input gates on rate generator circuit card TB4A1. The dc voltage output from the rate generator card is equivalent to 500, 800, 1100, 1400, 1700, 2000, 2300, and 2600 feet of radio altitude.

4.1.17 RATE 1000 FT/MIN Switch

The RATE 1000 FT/MIN rotary switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) functions only when the MODE switch is set to the SLEW position, and the TEST SELECT switch is in AUX/IND ALTITUDE or A/P ALTITUDE AND TRIPS position. The RATE 1000 FT/MIN switch applies a ground to the input gates on rate generator circuit card TB4A1. The dc ramp voltage output from the ramp generator card is equivalent to 500, 1000, 2000, 3000, 4000, 5000, 6000* and 7000* FT/MIN descent rate. This dc voltage begins ramping down toward zero (0) when the ALTITUDE toggle switch is set to the SLEW position.

4.1.18 ALTITUDE Switch

The ALTITUDE toggle switch (SB 4, CPN 522-4610-003 and CPN 522-4610-004) controls the start, stop, and reset operations of the rate generator card TB4A1 and functions only when the MODE switch is set to the SLEW position, and the TEST SELECT switch is in AUX/IND ALTITUDE or A/P ALTITUDE AND TRIPS position. When the ALTITUDE switch is set to the SET position and released (momentary action), the initial altitude signal (selected by the ALTITUDE 100 FEET switch) is applied to the altimeter system under test. A descent rate (selected by the RATE switch) is applied to the altimeter system under test when the ALTITUDE switch is set to the SLEW position. The slewing process stops when the slew voltage reaches the equivalent of 0 foot, or when the ALTITUDE switch is set to the STOP position. The descent rate can be changed at any time by rotating the RATE switch to another position.

*150 and 300 FT/MIN with SB 5 and CPN 522-4610-004.

section 5
maintenance

5.1 GENERAL

This section presents all information necessary to maintain the 980N-1 Altimeter Test Set. Included are test equipment listing, testing and alignment procedures, troubleshooting, and repair information. The test procedure is a complete functional test that verifies equipment operation. Adjustment information is provided when applicable.

5.2 TEST EQUIPMENT AND POWER REQUIREMENTS

5.2.1 Test Equipment

Table 5-1 lists the test equipment required to test and troubleshoot the 980N-1 Altimeter Test Set. Equivalent equipment can be substituted provided the specifications of each meet or exceed those of the listed equipment it is to replace.

5.2.2 Power Requirements

The 980N-1 Altimeter Test Set requires 26 ±2 V ac, 400 ±20-Hz input power for operation. (Refer to table 1-2 for additional input voltage requirements.)

5.3 PREVENTIVE MAINTENANCE

Preventive maintenance for the 980N-1 Altimeter Test Set consists of periodic general cleaning and inspection. The frequency of periodic inspection should be established by the local maintenance authority, based on the amount of use and the environment in which the test set is used. It is recommended, however, that the period between inspection should not exceed 6 months.

5.4 TESTING

5.4.1 Introduction

The 980N-1 Altimeter Test Set test procedures are presented in table 5-2. Test procedures qualify the test set as a total equipment and are used as follows:

a. The procedures may be used initially to determine the readiness of the equipment or the need for repair/replacement.
b. The procedures must always be used as a final test procedure after repair/replacement has been completed.

Table 5-1. Test Equipment Required.

EQUIPMENT	MANUFACTURER AND PART NUMBER	CHARACTERISTIC	FUNCTION
Ac vtvm	HP 400D	1 mV to 300 V range, 10 Hz to 4 MHz frequency, ±5% accuracy.	Ac voltage measurements
Vom	Triplett 630	0 to 100 MΩ range, 0 to 6000 V ac and V dc, 0 to 12 A ±2% accuracy	Voltage, current, and resistance measurements
Dc vtvm or Digital voltmeter	Fluke 801B Fluke 8600A (can be used to replace HP 400D, Triplett 630, and Fluke 801B listed above)	±0.05% accuracy, 0- to 30-V dc range 4-1/2-digit display; ACV, DCV, ACI, DCI, R; manual or auto ranging (Accuracy specifications of the three separate meters apply.)	Dc voltage measurements Voltage, current, and resistance measurements

Table 5-1. Test Equipment Required (Cont).

EQUIPMENT	MANUFACTURER AND PART NUMBER	CHARACTERISTIC	FUNCTION
Oscilloscope	Tektronix 543	Dc to 33 MHz range	Waveform analysis
or			
Oscilloscope	Tektronix 465 or 475	Dual trace, portable Bandwidth: Dc to 40 MHz Rise time: 175 ns Horizontal: 0.01 μs to 0.05 s/div Vertical: 2 mv to 5 mv/div, triggerable Input impedance: 1 MΩ	Waveform analysis
Frequency generator audio	HP 200CD	Range: 5 Hz to 150 kHz Output: 0 to 10 V rms Distortion: 0.5% Accuracy: ±2%	Simulates radio altitude signal
Ac ammeter	Any	0 to 3 A, 10% accuracy	Input current check
Frequency counter	HP 5212A	100 mV sensitivity, 2 Hz to 300 kHz range	Frequency measurements
or			
Frequency counter	HP 5245L	8 digit display Range: Dc to 50 MHz Gate time: 1 μs to 10 s Accuracy: ±1 count ± time base accuracy Sensitivity: 100 mV rms Input impedance: 1 MΩ	Frequency measurements and event counter
Variac or 23- to 30-V ac, 400 Hz, power supply	Any	Convert 115 V ac, 400-Hz power to 26 V ac	980N-1 input power source
Dc power supply (2 required)	H-Lab 6242A	+30 V dc, 0.05% accuracy	Provides dc voltage to 980N-1
or			
Dc power supply (2 required)	HP 6289A	0 to 31 V dc, 500 mA	Provides dc voltage to 980N-1
Decade resistance box	Heath DR 1	600- to 1500-Ω range	Aids in selection of test select resistor values
or			
Decade resistance box	Clarostat 240C	Range: 500 to 2 kΩ Current rating: 50 mA per decade Accuracy: ±2%	Aids in selection of test-select resistor values
Test adapter	Locally fabricated	Refer to figures 7-21 thru 7-23 and table 7-1 for details	Provides power and signal inputs to and monitors outputs of the 980N-1 test set
Resistors	Any	560 Ω, ±5%, 3 W; 200 Ω, ±5%, 6 W; 470 Ω, ±5%, 6W	Circuit loads

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
1	Preliminary	Connect equipment as shown in figure 7-23.	A/P WARN: OFF TRIP COMMON: OFF ALT ADJUST: full ccw FLAG ADJUST: full ccw			
		Apply input power to test adapter and adjust for 26.0 ±0.2 V ac.	S1: -30 VDC/ 26 VAC	TEST SELECT: OFF MODE: MAN (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and CPN 522-4610-004) COM/ARM: GND (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and CPN 522-4610-004)		
2 (Cont)	Test adapter power supply checks		S1: -30 VDC/ 26 VAC	TEST SELECT: OFF	Dvm/26.0 ±0.2 V ac	Adjust 26-V ac supply.
					Dvm/-30.00 ±0.01 V dc	Adjust 30-V dc supply no 2.
			S1: +30 VDC/ VSWR		Dvm/+30.00 ±0.01 V dc	Adjust 30-V dc supply no 1.
					Dvm/(no ac reading)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
2 (Cont)			S1: FLAG		Dvm/+27.0 ±3.0 V dc	Adjust R2, on test adapter, for nominal +27 V dc.
			S1: +30 VDC/ VSWR		Dvm/+30.00 ±0.01 V dc	Readjust 30-V dc supply no 1 if necessary.
3 (Cont)	980N-1 power distribution checks	Connect ac ammeter in series with 26-V ac input to J10 on test adapter; connect dvm from TB2-J1 to ground on 980N-1.	S1: -30 VDC/ 26 VAC	TEST SELECT: OFF	Dvm/TB2-J1 to ground/ -0.5 to +0.5 V dc	
				TEST SELECT: 980N-1 SELF-TEST AID/ALT SELECT: VARIABLE	Dvm/TB2-J1 to ground/ +30.00 ±0.01 V dc	Adjust TB2-R32 (coarse) and TB2-R33 (fine).
					Ac ammeter/1.0 A maximum	
		Connect oscilloscope to TB2-J1 on 980N-1.			Oscilloscope/TB2-J1/25 mV p-p maximum	
		Connect a 470-Ω, 6-W resistor from TB2-J1 to ground. Decrease 26-V ac input to test adapter to approx 23.5 V ac. Connect dvm from TB2-J1 to ground on 980N-1.		TEST SELECT: OFF		
				TEST SELECT: 980N-1 SELF-TEST AID/ALT SELECT: VARIABLE	Dvm/TB2-J1 to ground/ +30.00 ±0.05 V dc	
					Ac ammeter/1.5 A maximum.	
					Oscilloscope/TB2-J1/ 50 mV p-p maximum	

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
3 (Cont)		Same as above except increase 26-V ac input to approx 28.6 V ac.			Dvm/TB2-J1 to ground/ +30.00 ±0.05 V dc	
					Ac ammeter/1.5 A maximum	
					Oscilloscope/TB2-J1/ 50 mV p-p maximum	
		Remove 470-Ω 6-W resistor from TB2-J1.		TEST SELECT: OFF		
		Readjust 26-V ac input to test adapter to 26 V ac nominal.				
4	Internal +30-V dc supply check	Connect dvm to TB2-J1 for first test, then to TB3-J3 for second test.	S1: +30 VDC/ VSWR		Dvm/TB2-J1 to ground/ +30.00 ±0.05 V dc	Adjust TB2-R32 (coarse) and TB2-R33 (fine) if necessary.
				TEST SELECT: 980N-1 SELF TEST, AL-101 SELF TEST, A/P ALTITUDE TRIPS (ONLY) AID/ALT SELECT: VARIABLE	Dvm/TB3-J3 to ground/ +30.00 ±0.05 V dc	Observe test results in the three switch positions listed only.
(Cont)		Connect dvm to TB2-J1 (CPN 522-5610-001 with SB 4, CPN 522-4610-003, and CPN 522-4610-004 only.)		MODE: SLEW (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and CPN 522-4610-004 only) TEST SELECT: 980N-1 SELF TEST AID/ALT SELECT VARIABLE	Dvm/TB2-J1 to ground/ 0 V dc	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
4 (Cont)		Connect dvm to TB3-J3. (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and CPN 522-4610-004 only.)		TEST SELECT: AUX/IND ALTITUDE, VSWR (only) AID/ALT SELECT: VARIABLE MODE: MAN (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and 522-4610-004)	Dvm/TB3-J3 to ground/ 0 V dc	
5	External +30-V dc input supply check	Connect dvm to test adapter terminals J2/J3 for first test; then connect to TB3-J1 for second test.	S1: +30 VDC/ VSWR		Dvm/J2-J3 on test adapter/+30.00 ±0.05 V dc	Adjust 30-V dc supply no 1 if necessary.
				TEST SELECT: Step through all positions except OFF.	Dvm TB3-J1 to ground/ +30.00 ±0.05 V dc	The source for this measurement is the same as the above.
		Connect dvm to TB3-J3 and ground.		TEST SELECT: AUX/IND ALTITUDE, VSWR (only) AID/ALT SELECT: VARIABLE	Dvm/TB3-J3 to ground/ 0 V dc	
		Connect dvm to P2-J and ground. (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and 522-4610-004 only.)		TEST SELECT: Step through all positions except OFF.	Dvm/P2-J to ground/ +30.00 ±0.05 V dc	
6 (Cont)	External -30-V dc input supply check	Connect dvm to test adapter terminals J2/J3.	S1: -30 VDC/ 26 VAC	TEST SELECT: OFF	Dvm/J2-J3 on test adapter/-30.00 ±0.05 V dc	

Table 5-2. 980N-1 Altimeter Test Set. Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
6 (Cont)		Connect dvm to TB3-J2 and ground.		TEST SELECT: Step through all positions except OFF.	Dvm/TB3-J2 to ground/ -30.00 +0.05, -0.5 V dc	
		Disconnect P2		TEST SELECT: Step through all positions except OFF.	Dvm/P2-H to ground/ +30.00 +0.05, -0.5 V dc	
7	External 26 V ac check	Connect dvm to P2-A and P2-B.	S1: -30 VDC/ 26 VAC	TEST SELECT: Step through all positions except OFF.	Dvm/P2-A and P2-B/ 26.0 ±0.5 V ac	Recheck 26 V ac input for 26 ±0.2 V ac as loading may vary in each switch position.
8	Circulator control switch check			Set TEST SELECT switch to SELF-TEST VSWR XMTR-SET-RCVR: SET Units with SB 1, NORMAL-LEAKAGE: NORMAL.	DS1 (on test adapter)/out DS2 (on test adapter) out	
				XMTR-SET-RCVR: XMTR	DS1 (on test adapter)/lit DS2 (on test adapter) out	
				XMTR-SET-RCVR: RCVR	DS1 (on test adapter)/lit DS2 (on test adapter) out	
9	Mod warn and modulator disable capability check			TEST SELECT: AUX/IND ALTITUDE and A/P ALTITUDE AND TRIPS (only)	DS1 and DS2 (on test adapter)/lit in both switch positions.	

Table 5-2. 980N-1 Altimeter Test Set. Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
9a		Optional MOD warn and modulator disable capability check		TEST SELECT: OFF 980N-1 SELF TEST AL-101 SELF TEST AUX/IND ALTITUDE A/P ALTITUDE AND TRIPS VSWR	DS1 OFF DS2 OFF DS1 OFF DS2 OFF DS1 OFF DS2 ON DS1 ON DS2 ON DS1 ON DS2 ON DS1 OFF DS2 ON	*Note* Step 9a is an option to step 9.
10	AL-101 SELF TEST function check			TEST SELECT: AL-101 SELF TEST and VSWR (only)	DS2 (on test adapter)/lit	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
11	980N-1 lamp checks	The front panel lamp (DS6) will be on for all TEST SELECT switch positions except OFF.	S4: GRD	TEST SELECT: 980N-1 SELF TEST COM/ARM: GND (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004)	All 980N-1 lamps/lit	
		On CPN 522-4610-001, serno 351 and below: perform only those tests (GND or +27 VDC) applicable to the 980N-1 strapping configuration.	S4: +27 VDC	COM/ARM: +27 (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003 and 522-4610-004)	All 980N-1 lamps/lit	
				TEST SELECT: OFF	All 980N-1 lamps/out	
12 (Cont)	Individual 980N-1 lamp checks A/P WARN and A/P NO WARN lamps	On CPN 522-4610-001, serno 351 and below: perform only those tests (GND or +27 VDC) applicable to the 980N-1 strapping configuration for A/P WARN, A/P NO WARN, and TRIP lamp tests.	S4: +27 VDC	COM/ARM: +27 (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004) TEST SELECT: step through all positions except OFF.	A/P WARN (DS3) and A/P NO WARN (DS4) lamps light when TEST SELECT is in 980N-1 SELF TEST only.	*Note* All lamps should be lit when the test select switch is in the 980N-1 self-test position.
			S3: NC	TEST SELECT: AL-101 SELF TEST	A/P WARN lamp (DS3)/ out, A/P NO WARN lamp (DS4)/lit	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
12 (Cont)			S3: NO		A/P WARN lamp (DS3)/lit, A/P NO WARN lamp (DS4)/out	
			S4: GRD	COM/ARM: GND (CPN 522-4610-001, serno 352 and above, CPN 522-4610--003 and 522-4610-004)	A/P WARN lamp (DS3)/ lit, A/P NO WARN lamp (DS4)/out	
				TEST SELECT: Step through all positions except OFF.	A/P WARN lamp (DS3) lights when TEST SELECT is in AL-101 SELF TEST and A/P ALTITUDE AND TRIPS only.	*Note* All lamps should be lit when the test select switch is in the 980N-1 self-test position.
			S3: NC	TEST SELECT: AL-101 SELF TEST	A/P WARN lamp (DS3)/ out, A/P NO WARN lamp (DS4)/lit	
			S3: OFF			
	FLAG lamp check	Connect dvm to test adapter terminals J2/J3.	S1: FLAG	TEST SELECT: Step through all positions except OFF.	Dvm/J2-J3 on test adapter/+27.0 V dc nominal	*Note* All lamps should be lit when the test select switch is in the 980N-1 self-test position.
					FLAG lamp (DS2)/lit	
	TRIP lamp		S4: +27 VDC	TEST SELECT: AL-101 SELF TEST and A/P ALTITUDE AND TRIPS (only) COM/ARM: +27	TRIP lamp (DS5)/out	
			S2: Depress and hold	ALTITUDE TRIP SELECT: step through all positions.	TRIP lamp (DS5)/lit	
(Cont)			S2: Release			

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
12 (Cont)			S4: GRD	TEST SELECT: AL-101 SELF TEST and A/P ALTITUDE AND TRIPS (only)	TRIP lamp (DS5)/out	
				COM/ARM: GND (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004)		
			S2: Depress and hold	ALTITUDE TRIP SELECT: Step through all positions.	TRIP lamp (DS5)/lit	
				ALTITUDE TRIP SELECT: 1 TEST SELECT: step through all positions except OFF.	TRIP lamp (DS5)/lights in 980N-1 SELF TEST, AL-101 SELF TEST, and A/P ALTITUDE AND TRIPS positions only.	
			S2: Release			
	MDA lamp			TEST SELECT: step through all positions.	MDA lamp (DS1)/lights in 980N SELF TEST only.	
		Jumper 980N-1 connector P2 terminal e to f.		TEST SELECT: step through all positions.	MDA lamp (DS1)/lights in all positions except OFF and VSWR.	Units with 8 decks on TEST SELECT switch: MDA is on in VSWR
		Remove jumper. Reconnect P2				
13 (Cont)	METER SENS control check		S1: ALT R1: Adjust for +30.0 ±0.5 V dc on dvm.	TEST SELECT: AL-101 SELF TEST	Dvm/J2-J3 on test adapter/+30.0 ±0.5 V dc	
				ALTITUDE STANDARD: 0000	980N-1 meter/pointer on scale	

Table 5-2. 980N-1 Altimeter Test Set. Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
13 (Cont)				METER SENS: LOW		
			S1: ALT R1: Adjust for +6.0 ±0.2 V dc on dvm.	Same as above except METER SENS: MED	Dvm/J2-J3 on test adapter/+6.0 ±0.2 V dc	
					980N-1 meter/pointer on scale	
			S1: ALT R1: Adjust for +1.20 ±0.02 V dc on dvm.	Same as above except METER SENS: HIGH	Dvm/J2-J3 on test adapter/+1.2 ±0.02 V dc	
					980N-1 meter/pointer on scale	

Note

In step 14 the accuracy of the ALTITUDE STANDARD digital readout is checked. The sequence of operations to be followed is as follows:

(1) Adjust R1, on the test adapter, for the desired ALT test voltage as indicated on the dvm.

(2) Adjust the ALTITUDE STANDARD control to zero, the 980N-1 meter with the METER SENS switch first in LOW, then MED, and finally HIGH position.

With the 980N-1 meter pointer at zero, the digital readout (indicated "Readout" in the test results column) and the dvm reading should correspond to those values indicated in the test results column (allow ±1 percent in digital readout accuracy).

As a minimum performance test, only those marked (*) need be performed.

14 (Cont)	ALTITUDE STANDARD accuracy check	(*) Ensure the 30-V dc supply to the test adapter terminals J12/J13 is adjusted for +30.00 ±0.01 V dc.	S1: ALT R1: Adjust for +0.400 ±0.010 V dc on dvm.	TEST SELECT: AUX/IND ALTITUDE; ALTITUDE STANDARD: 0000 (feet)	Dvm/J2-J3 on test adapter/+0.400 ±0.010 V dc	Adjust TB2-R41 for a 0 (null) reading on the 980N-1 meter.
					980N-1 meter/pointer on 0	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
14 (Cont)		(*)	R1: Adjust for +26.00 ±0.05 V dc on dvm.	ALTITUDE STANDARD: 2500 (feet)	Dvm/J2-J3 on test adapter/26.17 ±0.05 V dc	Adjust TB2-R39 for a 0 (null) reading on the 980N-1 meter.
					980N-1 meter/pointer on 0	
		Repeat the 0 and 2500 feet adjustments as required.				
			R1: Adjust for +2.40 ±0.03 V dc on dvm.	TEST SELECT: A/P ALTITUDE AND TRIPS ALTITUDE STANDARD: 0100 (feet)	Dvm/J2-J3 on test adapter/+2.40 ±0.03 V dc	
					980N-1 meter/pointer on 0	
			R1: Adjust for +6.40 ±0.08 V dc on dvm.	ALTITUDE STANDARD: 0300 (feet)	Dvm/J2-J3 on test adapter/+6.40 ±0.08 V dc	
					980N-1 meter/pointer on 0	
		(*)	R1: Adjust for +10.0 ±0.1 V dc on dvm.	ALTITUDE STANDARD: 0480 (feet)	Dvm/J2-J3 on test adapter/+10.0 ±0.1 V dc	
					980N-1 meter/pointer on 0	
			R1: Adjust for +10.4 ±0.2 V dc on dvm	ALTITUDE STANDARD: 0500 (feet)	Dvm/J2-J3 on test adapter/+10.4 ±0.2 V dc	
					980N-1 meter/pointer on 0	
(Cont)			R1: Adjust for +14.9 ±0.30 V dc on dvm.	ALTITUDE STANDARD: 0800 (feet)	Dvm/J2-J3 on test adapter/+14.9 ±0.30 V dc	
					980N-1 meter/pointer on 0	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
14 (Cont)			R1: Adjust for +17.15 ±0.30 V dc on dvm.	ALTITUDE STANDARD: 1000 (feet)	Dvm/J2-J3 on test adapter/+17.15 ±0.30 V dc	
					980N-1 meter/pointer on 0	
			R1: Adjust for +20.44 ±0.25 V dc on dvm.	ALTITUDE STANDARD: 1400 (feet)	Dvm/J2-J3 on test adapter/+20.44 ±0.25 V dc	
					980N-1 meter/pointer on 0	
			R1: Adjust for +22.92 ±0.30 V dc on dvm.	ALTITUDE STANDARD: 1800 (feet)	Dvm/J2-J3 on test adapter/+22.92 ±0.30 V dc	
					980N-1 meter/pointer on 0	
			R1: Adjust for +24.90 ±0.25 V dc on dvm.	ALTITUDE STANDARD: 2200 (feet)	Dvm/J2-J3 on test adapter/+24.90 ±0.25 V dc	
					980N-1 meter/pointer on 0	
15	Crystal controlled oscillator precision frequency check	Connect oscilloscope to TB1-J1, referenced to ground. Use 5 V/cm range (approx).	S1: ALT	TEST SELECT: AUX/IND ALTITUDE AID/ALT SELECT: VARIABLE	Oscilloscope/no waveform	Units with transistor TB1Q7 instead of TB1U1 may have waveform in all positions except OFF.
(Cont)		Connect frequency counter to test adapter terminals J6/J7 (or suitable point in circuit to drive counter).		AID/ALT SELECT: 20 (480'FT)	Oscilloscope/TB1-J1: 20.0 ±5.0-V p-p square wave (CPN 522-4610-001, serno 172 and below) 29.0 ±3.0-V p-p square wave (CPN 522-4610-001, serno 173 to 351) 30.0 ±2.0-V p-p square wave (CPN 522-4610-001,	This frequency corresponds to an altitude of 480 ft using 20-ft AID.

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
15 (Cont)					serno 352 and above, and CPN 522-4610-003)	
					Frequency counter/J6-J7 on test adapter/19 885 ±10 Hz	
		Connect oscilloscope to test adapter terminal J4.			Oscilloscope/J4 on test adapter/triangular waveform	
		Connect oscilloscope to TB1-J1, referenced to ground.		Same as above except AID/ALT SELECT: 40 (480 FT)	Oscilloscope/TB1-J1: 20.0 ±5.0-V p-p square wave (CPN 522-4610-001, serno 172 and below) 29.0 ±3.0-V p-p square wave (CPN 522-4610-001, serno 173 to 351) 30.0 ±2.0-V p-p square wave (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, 522-4610-004) Frequency counter/J6-J7 on test adapter/20 285 ±10 Hz	This frequency corresponds to an altitude of 480 ft using 40-ft AID.
(Cont)				Same as above except AID/ALT SELECT: 57 (480 FT)	Oscilloscope/TB1-J1: 20.0 ±5.0-V p-p square wave (CPN 522-4610-001, serno 172 and below) 29.0 ±3.0-V p-p square wave (CPN 522-4610-001, serno 173 to 351)	This frequency corresponds to an altitude of 480 ft using 57-ft AID.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
15 (Cont)					3.0 ±2.0-V p-p square wave (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004)	
					Frequency counter/J6-J7 on test adapter/20 625 ±10 Hz	
				TEST SELECT: A/P ALTITUDE AND TRIPS	Oscilloscope/TB1-J1: 20.0 ±5.0-V p-p square wave (CPN 522-4610-001, serno 172 and below) 29.0 ±3.0-V p-p square wave (CPN 522-4610-001, serno 173 to 351) 30.0 ±2.0-V p-p square wave (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004)	
					Frequency counter/J6-J7 on test adapter/20 625 ±10 Hz.	
				TEST SELECT: Step through other positions except OFF.	Oscilloscope/TB1-J1/no waveform (except for AUX/IND ALTITUDE and A/P ALTITUDE AND TRIPS)	Units with transistor TB1Q7 instead of TB1U1 may have a waveform in all positions except OFF.

Note

There is no calibration involved in the voltage controlled oscillator (vco) except to establish the minimum and maximum frequencies (600 and 132 000 Hz). This is done by selecting a value for TB1-R36 (step 17). The tests in step 16 are identical to step 18; consequently, step 16 need not be performed in a minimum performance test. Additionally, there is no need to perform step 17 (TB1-R36 select) if steps 16 or 18 are within tolerance.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
16	Vco operation check at low frequency	Connect oscilloscope to TB1-J3, and frequency counter to the vertical output terminals to the oscilloscope.	S1: ALT	TEST SELECT: AUX/IND ALTITUDE: AID/ALT SELECT VARIABLE; ALTITUDE control: fully ccw.	Frequency counter/(on oscilloscope)/600 +0 or -50 Hz	The 600-Hz square wave at TB1-J3 will have a slightly rounded top. Select TB1-R36 (step 17).
					Oscilloscope/TB1-J3: 30.0 ±5.0-V p-p square wave (CPN 522-4610-001, serno 351 and below) 23.0 ±2.0-V p-p square wave (CPN 522-4610-001, serno 352 and above, CPN 522-4610-003, and 522-4610-004)	
		Connect oscilloscope to test adpater terminal J4.			Oscilloscope/J4 on test adapter/6.0 ±1.5-V p-p triangular waveform	4.25 ±1.75 V p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
	Vco operation check at high frequency	Connect oscilloscope to TB1-J3 and frequency counter to the vertical input terminals to the oscilloscope.		Same as above except: ALTITUDE control: fully cw	Frequency counter/(on oscilloscope)/132 000 ±10 000 Hz	Select TB1-R36 (step 17).
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	
17	TB1-R36 select	Remove existing TB1-R36 and connect decade resistance box between these same terminals; adjust resistance to 1400 Ω for serno 407 and below (2370 Ω for serno 408 and above). (Allow at least 2 minutes for frequency to stabilize after power turn-on.) Connect frequency counter to oscilloscope as in step 16.	S1: ALT	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE CONTROL: fully cw.	Adjust resistance box to obtain 132 000 +10 kHz or -5 kHz indication on frequency counter.	Select TB1-R36 from the following values nearest the adjusted values, 1270, 1330, 1400, 1470, 1540, or 1620 Ω for serno 407 and below. 1960, 2150, 2370, 2740, 3010 for serno 408 and above. If TB1 R30 and R32 are 4870 Ω and R25 and R27 are 316 Ω, R36 should be 619, 681, 750, 825, 909 or 1000.

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
		Note In step 18 a check is made of vco operation at selected frequencies. For each test, adjust the ALTITUDE control for the desired frequency counter indication; then check the voltage indications on the oscilloscope (vco output at TB1-J3) and the simulated altitude-test set output at P1-N. The difference between the two readings is a function of the rolloff characteristics of the buffer amplifier and low-pass filter (approximately 6 dB/octave above 600 Hz). As a minimum performance test, only those tests so indicated in the special instructions column need be performed. If it is considered desirable to check the operation of the vco starting circuit (TB1-Q18 and Q19), proceed as follows: After each minimum performance test, turn the TEST SELECT switch to the OFF position, wait for 2 to 5 seconds, return the TEST SELECT switch to the AUX/IND ALTITUDE position, and wait for approximately 2 minutes (or until frequency has stabilized). Note that the waveshape, frequency, and voltage indications return to the same values that existed before turnoff.				
18 (Cont)	Vco operation check (Preliminary)	Connect frequency counter to test adapter terminals J6/J7 and oscilloscope to TB1-J3. ***Note*** Do not disturb the ALTITUDE control when TEST SELECT is OFF during starting circuit test.	S1: ALT	For all tests except starting circuit test: TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE control: will be adjusted for desired vco frequency. For starting circuit test, see note above.		

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing page 5-19, Section 5

This Addendum supersedes Addendum 4.

Subject: Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures

At STEP 18, first row, TEST RESULTS column, change 600 +0 or -50 Hz to < 600 Hz.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
18 (Cont)		Minimum performance test		ALTITUDE control: fully ccw.	Frequency counter/(on test adapter)/600 +0 or -50 Hz	The 600-Hz square wave at TB1-J3 will have a slightly rounded top.
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	
		Connect oscilloscope to test adapter terminal J4.			Oscilloscope/J4 on test adapter/6.0 ±1.5-V p-p triangular waveform	4.25 ±1.75 V p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
		Connect oscilloscope to TB1-J3.		ALTITUDE control: Adjust.	Frequency counter/(on test adapter)/10 000 ±150 Hz	
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	
		Connect oscilloscope to test adapter terminal J4.			Oscilloscope/J4 on test adapter/400 ±100-mV p-p triangular waveform	250 to 500 mV p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
		Connect oscilloscope to TB1-J3.		ALTITUDE control: Adjust.	Frequency counter/(on test adapter)/40 000 ±600 Hz	
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	
		Connect oscilloscope to test adapter terminal J4.			Oscilloscope/J4 on test adapter/150 ±50-mV p-p triangular waveform	50 to 150 mV p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
(Cont)		Connect oscilloscope to TB1-J3.		ALTITUDE control: Adjust.	Frequency counter/(on test adapter)/100 000 ±1500 Hz	
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
18 (Cont)		Connect oscilloscope to test adpater terminal J4.			Oscilloscope/J4 on test adapter/100 ±25-mV p-p triangular waveform	25 to 60 mV p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
		Connect oscilloscope to TB1-J3.		ALTITUDE control: Fully cw.	Frequency counter/(on test adapter)/132 000 ±10 000 Hz	
					Oscilloscope/TB1-J3/ 23.0 ±2.0-V p-p square wave	
		Connect oscilloscope to test adapter terminal J4.			Oscilloscope/J4 on test adapter/100 ±25-mV p-p triangular waveform	20 to 60 mV p-p serno 390 and above with 100-Ω load at test adapter P1-N to ground.
19	VSWR meter adjust	Jumper TB2-J4 to ground	S1: +30 VDC/ VSWR	TEST SELECT: VSWR	980N-1 meter/pointer on VSWR scale red line	Adjust TB2-R20.
		Remove jumper				
20 (Cont)	VSWR-SET ∞ control accuracy check	Connect frequency generator to test adapter terminals J8/J9 and adjust for 3000 ±100 Hz at 0.500 ±0.010 V rms as indicated by frequency counter (on test adapter terminals J6/J7) and dvm (on test) adapter terminals J4/J5) respectively.	S1: +30 VDC/ VSWR	TEST SELECT: VSWR for all tests in this step SET ∞ : Adjust for ∞ indication on vswr scale.	980N-1 VSWR meter scale/pointer at ∞ .	
		Maintain frequency but reduce input amplitude to 0.100 ±0.010 V rms.		SET ∞: Adjust for ∞ indication on VSWR scale.	980N-1 VSWR meter scale/pointer at ∞ .	
		Maintain frequency but reduce input amplitude to 0.082 ±0.005 V rms.		DO NOT RE-ADJUST SET ∞ CONTROL.	980N-1 VSWR meter scale/pointer at 10	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
20 (Cont)		Maintain frequency but reduce input amplitude to 0.067 ±0.005 V rms.		DO NOT RE-ADJUST SET ∞ CONTROL.	980N-1 VSWR meter scale/pointer at 5	
		Maintain frequency but reduce input amplitude to 0.050 ±0.005 V rms.		DO NOT RE-ADJUST SET ∞ CONTROL	980N-1 VSWR meter scale/pointer at 3	Minimum performance test
		Maintain frequency but reduce input amplitude to 0.041 ±0.002 V rms.		DO NOT RE-ADJUST SET ∞ CONTROL	980N-1 VSWR meter scale/pointer at 2.4	Minimum performance test
		Maintain frequency but reduce input amplitude to 0.017 ±0.002 V rms.		DO NOT RE-ADJUST SET ∞ CONTROL	980N-1 VSWR meter scale/pointer at 1.4	Minimum performance test
21	VSWR-SET ∞ control calibration (in preparation for vswr detector linearity check)	Maintain frequency counter connection and frequency but adjust amplitude to 0.200 ±0.010 V rms. Connect dvm to 980N-1 TB2-J4.	S1: +30 VDC/ VSWR	TEST SELECT: VSWR SET ∞ : Adjust for indicated voltage at TB2-J4.	Dvm/TB2-J4/+5.000 ±0.010 V dc	
(Cont)	Vswr detector linearity check	Maintain frequency but reduce input amplitude to 0.160 ±0.005 V rms.		DO NOT CHANGE ANY 980N-1 CONTROL SETTINGS.	Dvm/TB2-J4/+4.000 ±0.10 V dc	
		Maintain frequency but reduce input amplitude to 0.120 ±0.005 V rms.			Dvm/TB2-J4/+3.00 ±0.10 V dc	
		Maintain frequency but reduce input amplitude to 0.100 ±0.005 V rms.			Dvm/TB2-J4/+2.50 ±0.10 V dc	
		Maintain frequency but reduce input amplitude to 0.080 ±0.005 V rms.			Dvm/TB2-J4/+2.00 ±0.10 V dc	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
21 (Cont)		Maintain frequency but reduce input amplitude to 0.0395 ±0.003 V rms.			Dvm/TB2-J4/+1.00 ±0.05 V dc	
22 (Cont)	Altitude rate generator checks (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and 522-4610-004) (Preliminary)	Connect frequency counter to TB4-U28, pin 5. (Refer to parts list, figure 6-8, for component location.)	S1: ALT;	TEST SELECT: A/P ALTITUDE AND TRIPS; ALTITUDE: STOP MODE: SLEW; RATE 1000 FT/ MIN: .5		Minimum performance test
	Altitude rate generator check (CPN 522-4610-001 with SB 4, CPN 522-4610-003, and 522-4610--004.			ALTITUDE 100 FEET: 5 (500 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28, pin 5/21 085 ±20 Hz	Minimum performance test
				ALTITUDE 100 FEET: 8 (800 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28, pin 5/33 085 ±20 Hz	
				ALTITUDE 100 FEET: 11 (1100 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28, pin 5/45 085 ±20 Hz	Minimum performance test
				ALTITUDE 100 FEET: 14 (1400 ft) ALTITUDE: SET and release.	Frequency counter/TB4-U28 pin 5/57 085 ±20 Hz	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
22 (Cont)				ALTITUDE 100 FEET: 17 (1700 ft); ALTITUDE: SET and release.	Frequency counter/ TB4-U28 pin 5/69 085 ±20 Hz	
				ALTITUDE 100 FEET: 20 (2000 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28 pin 5/81 085 ±20 Hz	Minimum performance test
				ALTITUDE 100 FEET: 23 (2300 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28 pin 5/93 085 ±20 Hz	
				ALTITUDE 100 FEET: 26 (2600 ft) ALTITUDE: SET and release.	Frequency counter/ TB4-U28 pin 5/105 085 ±20 Hz	Minimum performance test
		Connect frequency counter to TB4-U25 pin 6. Adjust counter to measure the total number of pulses. (Use manual position if available.) (Refer to parts list, figure 6-8, for component location.)		ALTITUDE 100 FEET: 5 (500 ft) RATE 1000 FT/ MIN: .5 (500 ft/ min) ALTITUDE: SET and release.		Minimum performance test
(Cont)		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/123 545 ±4 pulses	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
22 (Cont)				ALTITUDE 100 FEET: 8 (800 ft) RATE 1000 FT/ MIN: 1 (1000 ft/ min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/96 929 ±4 pulses	
				ALTITUDE 100 FEET: 20 (2000 ft) RATE 1000 FT/ MIN: 2 (2000 ft/ min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/118 777 ±4 pulses	
(Cont)				ALTITUDE 100 FEET: 26 (2600 ft) RATE 1000 FT/ MIN: 3 (3000 ft/min) ALTITUDE: SET and release.		

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
22 (Cont)		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/102 622 ±4 pulses	
				RATE 1000 FT/ MIN: 4 (4000 ft/ min) ALTITUDE: SET and release.		Minimum performance test
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/76 967 ±3 pulses	
				RATE 1000 FT/ MIN: 5 (5000 ft/ min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/61 573 ±3 pulses	
	Perform the 6000 and 7000 RATE checks on CPN 522-4610-003 units and 522-4610-001 with SB 4 but not SB 5.			RATE 1000 FT/ MIN: 6 (6000 ft/ min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/51 311 ±3 pulses.	
(Cont)				RATE 1000 FT/ MIN: 7 (7000 ft/ min) ALTITUDE: SET and release.		Minimum performance test

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
22 (Cont)		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/43 981 ±3 pulses.	
	Perform the 150 and 300 RATE checks on CPN 522-4610-004 units and 522-4610-001 with SB 4 and SB 5 and 522-4610-003 with SB 5.			ALTITUDE 100 FEET: 5 (500 ft) RATE 1000 FT/ MIN: .15 (150 ft/min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/ 411 634 ±20 pulses	
				ALTITUDE 100 FEET: 5 (500 ft) RATE 1000 FT/ MIN: .3 (300 ft/ min) ALTITUDE: SET and release.		
		Reset frequency counter.		ALTITUDE: SLEW	Frequency counter/ TB4-U25 pin 6/205 817 ±20 pulses	
(Cont)		Remove frequency counter from TB4-U25 pin 6. Connect oscilloscope to test adapter terminal J4.		ALTITUDE 100 FEET: 5 (500 ft)	Oscilloscope/J4 on test adapter/0.200 ±0.040-V p-p sine wave.	

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
22 (Cont)				RATE 1000 FT/ MIN: .5 (500 ft) ALTITUDE: SET and release.		
				ALTITUDE: SLEW.	Oscilloscope/J4 on test adapter/sine wave increases in amplitude and decreases in frequency. At 500 Hz the amplitude should be 3.5 ±1.5 V p-p.	***Note*** The slewing operation may be stopped at any time to determine frequency by operating the ALTITUDE switch to STOP. Slewing may again be resumed by operating the ALTITUDE switch to SLEW.
		Remove oscilloscope and connect ac vtvm to test adapter terminal J4.		ALTITUDE 100 FEET: 20 (2000 ft) RATE 1000 FT/ MIN: 2 (2000 ft/min), ALTITUDE: Set and release		
		Using stopwatch, measure time for alt output signal to reach 0 volt.		ALTITUDE: SLEW	Ac vtvm/J4 on test adapter/0 volt in 60 ±3 seconds.	

Note

The remaining tests are provided in the event it is considered desirable to perform a continuity check on the wiring. Unless these checks are to be performed, remove all test equipment from the 980N-1, store the cable assembly in its normal storage position in the 980N-1 top cover, reinstall the case on the 980N-1 chassis, and return all equipment to its normal storage location.

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert following page 5-26A/26B, Section 5

This Addendum supersedes Addendum 4.

Subject: Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures

Add the continuity checks on page 4 of this addendum as part of step 23.

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
23 (Cont)		Connect dvm from P2-Z to P1-R. Connect dvm from P2-e to P1-R. Connect dvm from P1-W to P2-Y. Connect dvm from P1-A to P2-A. Connect dvm form P1-h to P2-M Connect dvm from P1-j to P2-a Connect dvm from P1-S to TB3-B6. Connect dvm from P1-T to TB3-C6.			Dvm/P2-Z to P1-R/ less then 2 Ω Dvm/P2-e to P1-R/ less than 2 Ω Dvm/P1-W to P2-Y/ less than 2 Ω Dvm/P1-A to P2-A/ less than 2 Ω Dvm/P1-h to P2-M/ less than 2 Ω Dvm/P1-j to P2-a/ less than 2 Ω Dvm/P1-S to TB3-B6/ less than 2 Ω Dvm/P1-T to TB3-C6/ less than 2 Ω	

Note

This completes all tests on the 980N-1. Reinstall the case on the 980N-1 chassis, and store the cable assembly in its normal storage position in the to cover. Return all test equipment to its normal storage location.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont).

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR/ TEST POINT/RESULT)	SPECIAL COMMENTS OR ADJUSTMENTS
23	Continuity checks	Turn off all power and disconnect all test equipment from the 980N-1. Only the dvm is needed for the remaining tests.	No longer needed.			
(Cont)		Connect dvm from P1-j to P1-R.		TEST SELECT: AL-101 SELF TEST, VSWR.	Dvm/P1-j to P1-R/less than 2 Ω.	
		Connect dvm from P1-U to P1-R.		TEST SELECT: AUX/IND ALTITUDE, A/P ALTITUDE AND TRIPS	Dvm/P1-U to P1-R/less than 2 Ω.	
		Connect dvm from P1-f to P1-R.		TEST SELECT: VSWR.	Dvm/P1-f to P1-R/less than 2 Ω	
		Connect dvm from P2-f to P1-R.		TEST SELECT: 980N-1 SELF TEST	Dvm/P2-f to P1-R/less than 2 Ω	
		Connect dvm from P1-B to P2-B.		TEST SELECT: Step through all positions except OFF.	Dvm/P1-B to P2-B/less than 2 Ω	
		Connect dvm from P1-R to panel ground.		TEST SELECT: OFF	Dvm/P1-R to panel ground/less than 2 Ω	
		Connect dvm from P1-P to P1-R.			Dvm/P1-P to P1-R/less than 2 Ω	
		Connect dvm from P1-X to P1-R			Dvm/P1-X to P1-R/less than 2 Ω	
		Connect dvm from P1-d to P1-R			Dvm/P1-d to P1-R/less than 2 Ω	
		Connect dvm from P2-L to P1-R			Dvm/P2-L to P1-R/less than 2 Ω	

The test adapter, listed in table 5-1, is to be fabricated locally. The adapter provides a convenient means of applying the necessary power and signal inputs to the 980N-1, and monitors the resulting 980N-1 outputs. Figures 7-23 through 725 and table 7-1 contain the information needed to fabricate the test adapter, in addition to showing the test setup to be used when testing the 980N-1

5.4.2 Initial Conditions

a. Connect the 980N-1 and test equipment to the test adapter as shown in figure 7-23.
b. Set test set and test adapter controls as specified in step 1 of table 5-2.

5.4.3 Procedures

Table 5-2 contains the testing and alignment procedures to be used in testing the 980N-1. As a minimum performance test, only the following steps need to be performed:

1 through 7, 11; those portions of step 14 marked (*); and those portions of steps 18, 20, and 22 marked "minimum performance test". Refer to schematic diagrams for reference.

5.5 TROUBLESHOOTING PROCEDURES

To troubleshoot any suspected failures in the 980N-1, refer to the functional block diagram (figures 7-6 through 7-22), and determine the circuit that can be causing the improper indication. Once this has been established, refer to the appropriate schematic diagram (figure 7-1, 7-2, 7-3, or 7-4), and note the inputs to that circuit (primary power and/or signal). Use the block diagrams to trace the power and input signal through the various switch contacts on the equipment. Once it has been established that both primary power and/or signal input is present at the suspected circuit, it becomes a matter of basic solid-state troubleshooting techniques to isolate the problem to one or more discrete components.

In the case where a lamp is involved, it is always best to first check the lamp before carrying out any more complex troubleshooting procedures.

Warning

26-V ac and 30-V dc power are present within the test set. Use caution when working with chassis cover removed.

5.6 DISASSEMBLY/ASSEMBLY

No special instructions are required to disassemble or assemble the test set.

5.7 REPAIR

5.7.1 Introduction

Faulty parts in the 980N-1 Altimeter Test Set usually are detected during testing or troubleshooting procedures. If a new part is to be installed, it should first be inspected and tested.

5.7.2 Repair Tools and Supplies

Refer to table 5-3 and ensure that the tools and supplies needed to perform the repair jobs are available. Equivalent substitutes may be used.

Note

RTV 3140 can be obtained through Rockwell-Collins by using the part number shown in table 5-3. When ordering this part number, the quantity obtained will be an 85.05-g (3-oz) collapsible tube.

RTV 3140 should be stored in a cool place (32.2 °C (90 °F) maximum).

RTV 3140 has a shelf life of 6 months.

Warning

HumiSeal 1B31 has a low flash point and is highly flammable when in a liquid state (until dry). Therefore, HumiSeal 1B31 should be used only in areas approved for use with flammable materials. Do not expose HumiSeal 1B31 to excessive heat or to open flame. Keep container closed when not in use. Use HumiSeal 1B31 only with adquate ventilation. Avoid prolonged breathing of vapors and repeated contact of HumiSeal 1B31 with skin.

Caution

Circuit boards and components may be damaged by application of excessive heat during repair procedures. Do not apply heat at a thru hole for more than 8 seconds. Use a 30-W soldering iron only.

Table 5-3. Repair Supplies.

DESCRIPTION	MANUFACTURER AND TYPE	FUNCTION
*Solder, 0.0508-cm (0.020-in) diameter 60/40 energized rosin core or Solder, 0.0381-cm (0.015-in) diameter, 63/37 energized rosin core	Cen-Tri-Core energized rosin core per QQ-S-51D or Kester 44 Sn 63, 0.015 solder or equivalent	Bond componenets to circuit board.
*197 rosin	Kester 197, Collins part number 005-1153-090	Facilitate soldering.
*Shielded braid	Various, fine mesh of silver-plated braid is recommended	Wick solder from connecting pads in circuit boards.
Wooden toothpicks (round)	Various	Soldering aids (commercial aids may also be used).
Pipe cleaners (white)	Various	Use for scrubbing individual connector pads with Freon solvent.
Cotton-tipped swabs	Various, Q-tips	Apply solvent.
Cleaning solution	Tri-Clean, Collins part number 005-1169-000 or Alcohol, Collins part number 005-0837-000	Remove excess rosin flux.
*Solvent	E. I. du Pont de Nemours & Co., Wilmington, Delware Freon TMC	Remove HumiSeal 1B31 coating from circuit boards.
Lintless tissue	Kimberly-Clark Corporation, Neenah, Wisconsin Kimwipes or equivalent	Remove excess rosin and general cleaning.
*Small brushes	Various -- should have natural bristles (If added stiffness is desired, trim bristles to about 0.6350-cm (1/4-in) length.)	Cleaning circuit board, connecting pads, leads, etc, before and after repairing.
Coating paste (silicon resin) (Refer to note following table 5-3.)	RTV 3140 Silastic, Collins part number 005-1692-010, 85.05 g (3 oz) or Dow Corning Company, Midland, Michigan	Coat and seal repaired areas and components.
Coating solution (acrylic)	Columbia Technical Corp. Woodside, New York HumiSeal 1B31	Coat and seal repaired areas and components.

Table 5-3. Repair Supplies (Cont).

DESCRIPTION	MANUFACTURER AND TYPE	FUNCTION
Planar repair kit	Collins part number 635-6496-001	Tools and materials necessary to repair printed circuit cards.

Note

Items with an asterisk (*) are included in the repair kit. For further information concerning use and contents of the kit, refer to Collins Planar Repair Manual (523-0768039).

5.7.3 Procedures

5.7.3.1 Connectors

Straighten bent pins and damaged shell areas. Replace broken wires, or wires with damaged insulation. If connector insert is broken, replace connector.

5.7.3.2 Cover and Frame

Replace damaged screws, straighten dented or warped sections, and retouch scratched or worn, painted surfaces. Retouch minor damage to silk screening.

5.7.3.3 Repair and Replacement Procedures of Metal Terminal Boards

a. Replacement of Capacitors and Resistors

Replace defective capacitors and resistors. Note orientation and polarity markings (electrolytics) before removing. Clean connections and apply new solder.

b. Replacement of Diodes, Integrated Circuits in Metal Cases, and Transistors

Replace defective diodes, integrated circuits, and transistors. Note placement of tab or lead spacing before removing. Use long-nosed pliers as a heat sink when applying heat to a lead. Clean connections and apply new solder.

c. Replacement of Switches

Replace defective toggle switches. Wafers in wafer-type switches may be replaced separately. Properly identify leads to simplify rewiring. Clean connections and apply new solder.

d. Replacement of Relays and Transformers

Replace defective relays and transformers. Properly identify leads to simplify rewiring. Clean connections and apply new solder.

e. Terminal Board Repair

Replace bent or broken feedthrough and standoff terminals. Straighten dented or warped sections. Replace damaged screws.

5.7.3.4 Wiring

Note

When necessary to disturb the dress of the wires, ensure that the original wire dress is maintained when replacing wires.

Replace damaged wiring with wire of same color code and size. Ensure that no bare wires are touching chassis, other bare wires, or metal cases of other parts. If wire is to be removed from a terminal or component, tag wire to prevent incorrect connections.

5.7.3.5 Repair and Replacement Procedures of Planar Circuit Boards

a. Replacement of Resistors, Capacitors, and Diodes

1. Removal

(a) Before removing diodes or polarized capacitors (electrolytics), note polarity markings and orientation on circuit board.

(b) Soak area surrounding component with solvent using cotton-tipped swab. Resoak as necessary to reduce adhesion between component and board.

(c) Using a small cutting tool (small diagonal cutter), carefully cut both leads of component leaving about 0.1588 cm (1/16 in) of lead protruding from circuit board. Remove component.

(d) Grasp one of the cutoff leads (on component side of board) with small needle-nose pliers. Apply soldering iron with a small amount of flux on tip to circuit board where lead passes through circuit board. Opposite side of board can also be used. If opposite side of board is used for unsoldering, ensure that the correct lead and circuit board point is located. As soon as solder melts, carefully remove cutoff lead from component side. If excessive force is applied, the thru hole may be pulled out of the board with the lead.

(e) Using soldering iron, reheat point on circuit board from which a lead has been removed. When remaining solder melts, apply and actuate solder sucker to remove solder. Repeat for remaining lead. Use solder sucker, as required, until holes in board are clean (as indicated by no solder on the walls, top, or bottom of the holes in the circuit board). A short length of braided shielding wire, that has been dipped in soldering flux, may be held against the circuit board eyelet and heated to remove solder.

Note

Cleaning of the holes (in the circuit board) will be done just prior to installing new component.

(f) If only one lead is to be disconnected to allow for component substitution during troubleshooting, proceed as follows:

(1) With small brush, apply solvent to one lead. Ensure that solvent is applied to circuit board where lead passes through board. Repeat for same lead on opposite side of circuit board.

(2) From component side, grasp lead close to circuit board with small needle-nose pliers.

(3) From opposite side of circuit board, heat point on circuit board where lead passes through board. When solder melts, carefully lift lead upward until lead has cleared circuit board.

(4) Repeat paragraph 5.7.3.5, step a.1.(e) and ensure that all solder is removed from hole.

(5) Replace lead as instructed in procedures in paragraph 5.7.3.5, step a.2.(i).

2. Replacement

(a) Using solvent and tip of pipe cleaner, carefully scrub both sides of circuit board (holes, pads, etc) from which component was removed to remove all traces of post-coating.

Note

Component leads should not be bent or crimped to hold component in position prior to soldering. It is recommended that component leads remain straight when protruding through board. Keeping the leads straight makes component replacement easier and prevents damage to the circuit board when removing components.

(b) Using other similar components mounted on circuit board as guide, bend leads of new component so that component fits freely into holes in circuit board.

(c) If component has polarity markings (electrolytics, diodes), ensure that component is oriented the same as the removed component. Insert new component through holes in circuit board. Ensure that component is flush with circuit board or is in the same position as the removed component. Masking tape may be used to hold replacement component in place for soldering. If this technique is used, ensure that tape does not cover component leads or circuit board eyelets.

(d) Use flux and solder sparingly and solder the component to circuit board from back side (side opposite components) of board. Do not use excessive heat. Ensure that position of component does not change during soldering. When connections have cooled, remove masking tape, if used.

(e) Carefully inspect solder joints to ensure that excess solder has not been used and that no short circuits are in evidence. Solder should fill the circuit board hole

through which the component lead is inserted.

(f) Using small diagonal cutters or end nippers, snip excess leads from components. Cut leads so that remaining height above board matches that of other components (approximately 0.1588 cm (1/16 in)).

(g) If more than one component is being replaced, repeat the above paragraphs for each component (transistors, etc, are covered in the following paragraphs). Mark, or otherwise identify, each component as it is being replaced.

(h) When all components that are to be replaced have been replaced, use a small brush or end of pipe cleaner and solvent to clean new solder joints. Ensure that all flux and solder are removed. Use a round toothpick to aid in removal of heavy deposits of rosin. Solder joints should be smooth, bright, and clean, when properly soldered and cleaned. Proceed to paragraph 5.7.3.5, step d for coating procedures.

(i) Replace single lead (from component on which one lead was lifted for substitution) by inserting lead through hole in circuit board and resoldering to board. Use flux and solder sparingly. When complete, refer to paragraph 5.7.3.5, step d for coating procedures.

b. Replacement of Integrated Circuits in Metal Cases

1. Removal

(a) Note placement of tab or lead spacing before proceeding. With a small brush, apply solvent to the component leads on the back side of the circuit board (side opposite components).

(b) Grasp the component with two fingers, and alternately apply soldering iron with a small amount of flux on tip to each component lead, rocking component as each lead becomes unsoldered. Do not overheat circuit board. Repeat the alternate heating of leads and rocking of component, until component is removed.

Note

A cup-shaped desoldering tip can also be used, with the advantage that all leads are unsoldered simultaneously.

(c) Using soldering iron, reheat, in turn, each point on circuit board from which a lead has been removed. When remaining solder melts, use solder sucker, as required, until holes in board are clean (as indicated by no solder on the walls, top, or bottom of the holes in the circuit board).

2. Replacement

(a) Using solvent and tip of pipe cleaner, carefully scrub both sides of circuit board from which component was removed.

Note

Component leads should not be bent or crimped to hold component in position before soldering. It is recommended that component leads remain straight, when protruding through board. Keeping the leads straight makes component replacement easier and prevents damage to the circuit board, when removing components.

(b) Insert new component into holes on circuit board, ensuring that component orientation (transistor tab, etc) is same as component that was removed. Ensure that component height above (or flush with) circuit board is also same as component that was removed.

(c) Using flux and solder sparingly, solder component to circuit board from back side (side opposite components) of board. Do not use excessive heat. Ensure that position of component does not change during soldering.

(d) Carefully inspect solder joints to ensure that excess solder has not been used and that no short circuits are in evidence. Solder should fill the circuit board hole through which the component lead is inserted.

(e) Using small diagonal cutters or end nippers, snip excess leads from components. Cut leads, so that remaining height above board matches that of other components (approximately 0.1588 cm (1/16 in)).

(f) If more than one component is being replaced, repeat the preceding procedures for each component. Mark, or otherwise identify, each component as it is being replaced.

(g) When all components that are to be replaced have been replaced, use a small brush or end of pipe cleaner and solvent to clean new solder joints. Ensure that all flux and solder are removed. Use a round toothpick to aid in removal of heavy deposits of rosin. Solder joints should be smooth, bright, and clean, when properly soldered and cleaned. Proceed to paragraph 5.7.3.5, step d for coating procedures.

c. Replacement of Dual-In-Line Packages (DIP's)

1. General

The DIP devices are rectangular, multi-lead component parts containing one or more integrated circuits. These devices should not be replaced until all other possible defects are eliminated and repaired, and it is determined that the device definitely is defective.

2. Removal

(a) Carefully clip off the leads close to the DIP on the top (component) side of the board; remove and discard the DIP package. Note device orientation (notch).

Caution

Do not use extreme heat when removing component leads. Extreme heat lifts the circuit pads, the printed circuits, or the plated thru holes from the board.

(b) Using a piece of braid to wick the molten solder, heat each DIP lead individually to transfer heat to the middle of the plated thru hole and remove solder.
(c) Allow the area to cool.
(d) Carefully remove the clipped lead from the cooled plated thru hole from the top (component) side of the board. No more heating should be required, but if it is, use no more heat than necessary.
(e) Clean area with solvent.

3. Replacement

(a) Carefully position device into thru holes on board. Ensure that device orientation is same as old device removed.

Caution

Avoid use of excessive heat.

(b) While holding new device in position, and using flux and solder sparingly, solder the four-corner leads of the device into the holes.
(c) Solder remaining device leads into holes, ensuring that good connections are made with no solder bridges between leads.

Note

Solder each lead carefully. Alternately, solder one lead of one side and the opposite lead of other side to allow board and device leads to cool.

(d) Using small brush or end of pipe cleaner, and solvent, clean new solder joints. Ensure that all flux and solder rosin are removed. Use a round toothpick to aid in removal of heavy deposits of rosin. Solder joints should be smooth, bright, and clean, when properly soldered and cleaned. Proceed to paragraph 5.7.3.5, step d for coating procedures.

d. Protective Coating After Repairing

Note

After cleaning with Freon, it is necessary to bake the boards for 20 minutes at 71 °C (160 °F) or let them sit for 96 hours at room temperature, or the postocating will bubble.

Warning

The following procedures should be performed in an area as discussed in the warning following table 5-3.

Ensure postcoat HumiSeal 1B31 is not applied to external surfaces such as connector pins, test jacks, ground connections, variable capacitor surfaces, variable resistor adjustment screws, etc.

HumiSeal 1B31 must not extend more than 0.1524 cm (0.060 in) up contact pins from board surface.

HumiSeal 1B31 must not extend more than 0.6096 cm (0.240 in) up onto any side of connector housing.

1. Using a small brush, apply a liberal (but not heavy) amount of HumiSeal 1B31 protective coating to replaced component and to both sides of circuit board (mounting pads, holes, and adjacent areas of board). Ensure that complete coverage is obtained and that new coating overlaps existing coating on adjacent areas of board.

Note

Boards coated with HumiSeal 1B31 must receive a full cure cycle of 45 minutes minimum, at 80 to 100 °C. Once dry, HumiSeal 1B31 is not flammable.

Note

HumiSeal 1B31 is somewhat soft when hot. Use care not to damage coating during cool-down period.

2. Set board aside for cooling, about 10 minutes.

5.8 ADJUSTMENT/ALIGNMENT

Refer to table 5-2 for alignment procedures of the 980N-1.

section 6
parts list

6.1 INTRODUCTION

6.1.1 General

The purpose of this parts list, prepared by Collins Air Transport Division of Rockwell International, is for identification, requisition, and issuance of parts.

Parts listed meet critical equipment design specification requirements. Use only part numbers specified in this parts list for replacement of parts.

6.1.2 Group Assembly Parts List

FIG - ITEM Column — Digits preceding the dash refer to figure numbers. Digits following the dash are item numbers assigned in sequence to correspond with item numbers on the illustrations.

PART NO Column — Listed are MIL standard, vendor, or Collins part numbers. Collins part numbering system consists of 10 digits as follows: a 3-digit family number, a 4-digit serial number, and a 3-digit dash number.

INDENT Column — Items are coded 1, 2, 3, etc, to indicate the relationship to the next higher assembly.

DESCRIPTION Column — Lists the noun name, modifier, descriptive information, federal manufacturer's code, reference designation, attaching part (AP), reference to other figures, and effectivities.

Attaching parts are identified by (AP) following the part or parts they attach.

Effectivities are identified by the following methods: MCN (Manufacturer Control Number) 101 and up; CI (Configuration Identifier) 5-digit number; REV (Revision Identifier) dash (-) denotes original, letter A first change, letter B second change, etc. One of the above identifiers is listed on each chassis and/or replaceable assembly. Service Bulletins are identified by SB 1, SB 2, etc.

USABLE ON CODE Column — Part variations within a group of equipment are indicated by a letter code (A, B, C, etc). Absence of a code indicates part applies to all models.

UNITS PER ASSY Column — Quantities specified are per item number. Letters AR denote the selection of parts as required. Letters RF refer to an assembly completely assembled on a preceding figure and illustration.

6.1.3 Numerical Index

PART NUMBER Column — Part numbers are listed in alphanumeric sequence.

FIG - ITEM Column — Digits preceding the dash refer to figure numbers. Digits following the dash are item numbers.

TTL REQ Column — Listed is the total quantity of parts or assemblies covered in the Group Assembly Parts List.

6.1.4 Reference Designation Index

REFERENCE DESIGNATION Column — Reference designations are listed in alphanumeric sequence.

FIG - ITEM Column — Digits preceding the dash refer to figure numbers. Digits following the dash are item numbers.

PART NUMBER Column — Part numbers listed are for items that have reference designations assigned.

6.1.5 How To Use This Parts List

To locate a part number if the assembly in which the part is used is known, turn to the List of Illustrations and find the page number for the assembly in which the part is used. Locate the part and its index number on the illustration and find the index number on the Group Assembly Parts List page to determine its description and part number.

To locate the illustration for a part if the part number is known, refer to the Numerical Index and find the part number. Turn to the Group Assembly Parts List and find the first figure and index number indicated in the Numerical Index for that part. If this figure shows the part in a section or system of the equipment other than the one desired, refer to the other figure numbers listed in the Numerical Index.

To locate the illustration for a part if the reference designation is known, refer to the Reference Designation Index and find the symbol; turn to the Group Assembly Parts List and find the figure and index number indicated in the index.

6.1.6 Manufacturer's Code, Name, and Address

CODE	MANUFACTURER'S NAME AND ADDRESS
01121	Allen-Bradley Co 1201 South 2nd St Milwaukee, WI 53204
01295	Texas Instruments Inc. Components Group 13500 N Central Expressway Dallas, TX 75222
02111	Spectrol Electronics Corp. 17070 E Gale Ave City of Industry, CA 91745
02735	RCA Corp. Solid State Division Route 202 Somerville, NJ 08876
03508	General Electric Co. Semiconductor Products Dept. W. Genesee St. Auburn, NY 13021
03877	Transitron Electronic Corp. 168 Albion St. Wakefield, MA 01880
04009	Arrow-Hart, Inc. 103 Hawthorn St. Hartfore, CT 06106
04454	Litton Industries, Inc. Potentiometer Div. 226 E 3rd St. Mount Vernon, NY 10550
04713	Motorola, Inc. Semiconductor Products Group 5005 E McDowell Rd. Phoenix, AZ 85008
07263	Fairchild Camera and Instrument Corp. Semiconductor Div. 464 Ellis St. Mountain View, CA 94042
07388	Torotel, Inc. 13402 S 71 Hwy. Grandview, MO 64030
07896	Jadaro Machine Products Garland, TX 75040
07933	Raytheon Co. Semiconductor Div., HQ 350 Ellis St. Mountain View, CA 94042
08257	NPC Electronics P.O. Box 1454 Canoga Park, CA 91304
08289	Blinn Delbert, Co., Inc., The P.O. Box 2007 1678 E Mission Blvd. Pomona, CA 91766
08664	Bristol Div. of American Chain and Cable Co., Inc. 40 Bristol St. Waterbury, CT 06720
08717	Sloan Co., The 7704 San Fernando Rd. Sun Valley, CA 91352
08806	General Electric Co. Miniature Lamp Products Dept. Nela Park Cleveland, OH 44112
09353	C and K Components, Inc. 103 Morse St. Watertown, MA 02172
09922	Burndy Corp. Richards Ave. Norwalk, CT 06852
10646	Carborundum Co., The P.O. Box 337 Niagara Falls, NY 14302
12615	U.S. Terminals, Inc. 7504 Camargo Rd. Cincinnati, OH 45243

CODE	MANUFACTURER'S NAME AND ADDRESS
12697	Clarostat Mfg. Co., Inc. Lower Washington St. Dover, NH 03820
12954	Siemens Corp. Components Group P.O. Box 1390 8700 E Thomas Rd. Scottsdale, AZ 85252
13508	Hawkeye Rubber Mfg. Co. 917 Shaver Rd. NE Cedar Rapids, IA 52402
14099	Semtech Corp. 652 Mitchell Rd. Newbury Park, CA 91320
15238	ITT Semiconductors A Div. of International Telephone and Telegraph Corp. P.O. Box 168 500 Broadway Lawrence, MA 01841
15818	Teledyne Semiconductor 1300 Terra Bella Ave. Mountain View, CA 94043
16546	U.S. Capacitor Corp./Centralab Electronics Div. 4561 Colorado Los Angeles, CA 90039
18324	Signetics Corp. 811 E Argues Ave. Sunnyvale, CA 94086
21192	Excelsior Hardware Co. 39 Woodland Ave. Stamford, CT 06904
21242	Americal Electronic Components Corp. 7516 Camargo Rd. Cincinnati, OH 45243
25936	A and M Instrument Inc. 5 Nassau St. Rockville Center, LI, NY 11571
27014	National Semiconductor Corp. 2900 Semiconductor Dr. Santa Clara, CA 95051
27545	Hartford-Universal Co. 1022 Elm St. Rocky Hill, CT 06067
56289	Sprague Electric Co. North Adams, MA 01247
61957	USM Corp. 140 Federal St. Boston, MA 02107
71744	Chicago Miniature Lamp Works 4433 Ravenswood Ave. Chicago, IL 60640
72136	Electro Motive Corp. Subsidiary of International Electronics Corp. P.O. Box 7600 Lauter Ave. Florence, SC 29501
72794	Dzus Fastener Co., Inc. 425 Union Blvd. West Islip, NY 11795
72962	ESNA Div. of Amerace Corp. 2330 Vauxhall Rd. Union, NJ 07083
72982	Erie Technological Products, Inc. 644 W 12th St. Erie, PA 16512
73386	Freed Transformer Co., Inc. 1736 Weirfield St. Brooklyn, NY 11227
74970	Johnson, E.F. Co. 299 10th Ave. SW Waseca, MN 56093
75543	Lavelle Rubber Co. 424 N Wood Chicago, IL 60622
76854	Oak Industries, Inc. Switch Div. S Main St. Crystal Lake, IL 60014
77147	Patton-MacGuyer Co. Div. of Avid Corp. 17 Virginia Ave. Providence, RI 02905

CODE	MANUFACTURER'S NAME AND ADDRESS
77250	Pheoll Mfg. Co. Div. of Allied Products Corp. 5700 W Roosevelt Rd. Chicago, IL 60650
77820	Bendix Corp., The Electrical Components Div. Sherman Ave. Sidney, NY 13838
78189	Illinois Tool Works, Inc. Shakeproof Div. St. Charles Rd. Elgin, IL 60120
79807	Wrought Washer Mfg. Co. 2100 S Bay St. Milwaukee, WI 53207
79963	Zierick Mfg. Co. Radio Circle Mt. Kisco, NY 10549
80223	TRW Electronic Components UTC Transformers 150 Varick St. New York, NY 10013
80294	Bourns, Inc. 1200 Columbia Ave. Riverside, CA 92507
81073	Grayhill, Inc. P.O. Box 373 561 Hillgrove Ave. La Grange, IL 60525
81349	Military Specifications
81483	International Rectifier Corp. 9220 Sunset Blvd. Los Angeles, CA 90069
82567	Reeves Hoffman 400 W North St. Carlisle, PA 17013
88044	Aeronautical Standards Group Department of Navy and Air Force
91506	Augat, Inc. 33 Perry Ave. Attleboro, MA 02703
91637	Dale Electronics, Inc. P.O. Box 609 Columbus, NE 68601
93108	Duralith Corp. 1025 Race Philadelphia, PA 19107
95263	Leecraft Mfg. Co., Inc. 21-16 44th Rd. Long Island City, NY 11101
96906	Military Standards
98291	Sealectro Corp. 225 Hoyt Mamaronick, NY 10544
98978	International Electronic Research Corp. 135 W Magnolia Blvd. Burbank, CA 91502
99378	Atlee Corp. 8 Gill St. Woburn, MA 01801
99942	Central Semiconductor Central Electronics Div. of Globe-Union, Inc. 4501 N. Arden Dr. El Monte, CA 91734

6.1.7 Usable on Codes

The following usable on codes have been assigned in this manual:

USABLE ON CODE	UNIT PART NUMBER	FIG-ITEM
A	768-9005-001	6-2-
B	768-9005-001	6-2-
C	768-9005-001	6-2-

6.1.8 Reference Designation Prefixes

The following prefixes have been assigned in this manual:

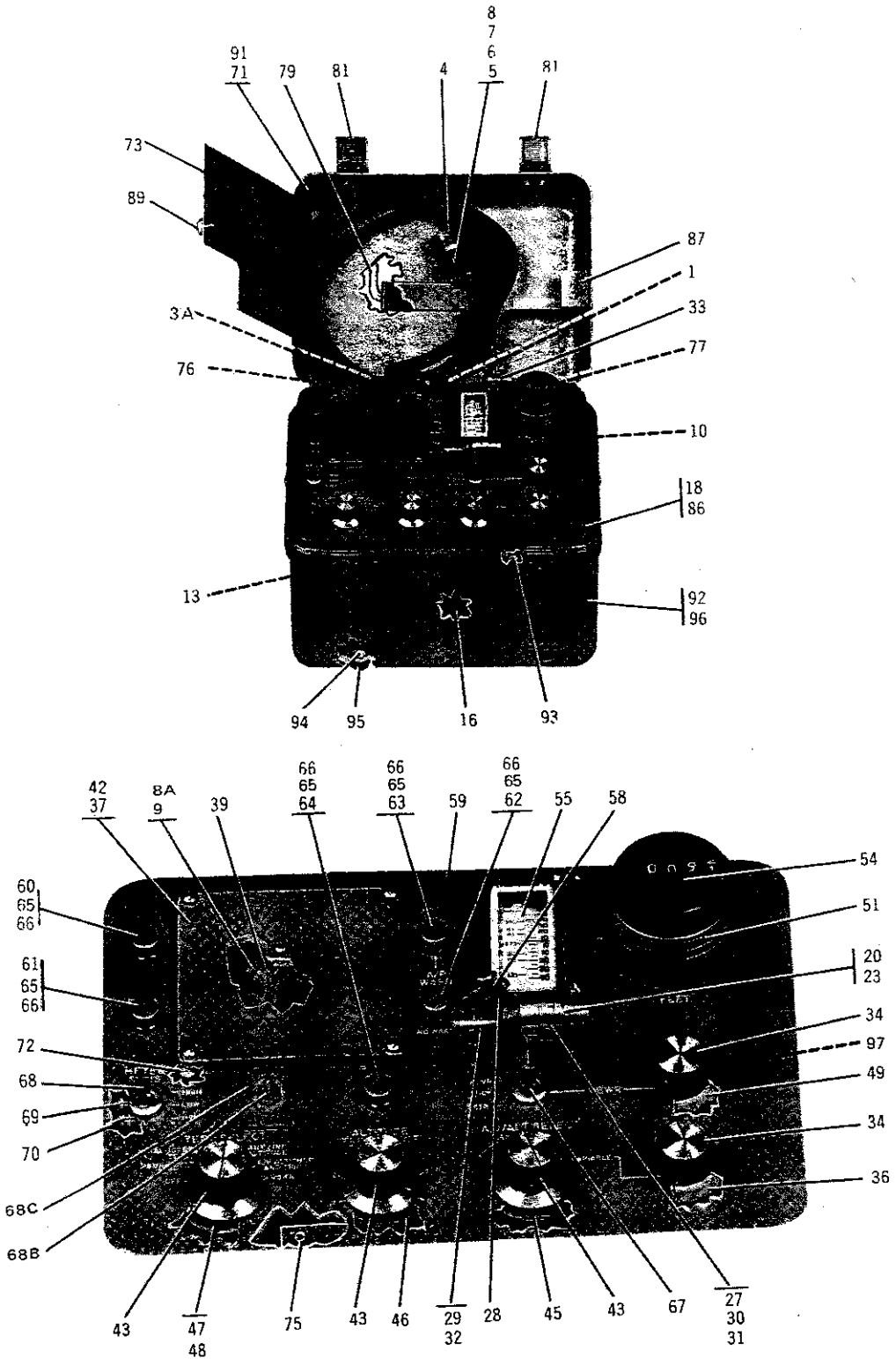
PREFIX	UNIT PART NUMBER	FIG-ITEM
A1	601-4055-001	6-8-
TB1	768-9005-001	6-2-
TB2	768-9009-001	6-3-
TB3	772-0909-001	6-4-
TB3	772-0909-001	6-9-
TB4	629-9350-001	6-7-

6.1.9 Configuration Identifiers

The following CI's/REV LTR's were used in compiling data for this manual:

CI/ REV LTR	UNIT PART NUMBER	FIG-ITEM
73294	522-4610-001	6-1-0
H	777-0193-001	6-1-8A
P	772-0900-001	6-1-18
74503	772-8928-001	6-1-20
74503	772-0908-001	6-1-37
67446	772-0901-001•	6-1-71
74503	772-0903-001	6-1-92
S	768-9005-001	6-2-0
U	768-9009-001	6-3-0
H	772-0909-001	6-4-0
R	522-4610-001	6-5-0
H	777-0193-001	6-5-7
S	772-0900-001	6-5-12
74503	772-0903-001	6-5-64
74503	772-0908-001	6-5-35
H	772-0901-001	6-5-54
B	522-4610-003	6-6-0
H	777-0193-002	6-6-12
B	772-0900-002	6-6-14
74503	772-0903-001	6-6-71
H	772-0901-001	6-6-61
74503	772-0908-001	6-6-57
E	629-9350-001	6-7-0
F	601-4055-001	6-8-0
J	772-0909-001	6-9-0
A	629-9342-001	6-10-0
H	777-0193-001	6-1-8A

6.2 GROUP ASSEMBLY PARTS LIST



980N-1 Altimeter Test Set (Serno 351 and Below)
Figure 6-1

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GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-1 -	522-4610-001	1	TEST SET, ALTIMETER 98ON-1 (SERIAL NUMBERS 351 AND BELOW)		1
1	757-9537-000	2	PLATE, IDENT		1
- 2	68NM26	2	NUT,SLFLKG,HEX, AL, 2-56 (V72962) 333-0327-000 (AP)		2
- 3	P347-1270-000	2	SCREW,MACH, SST, 2-56 X 1/4 (V77250) 347-1270-000 (AP)		2
3A	280-3778-010	2	CHART,INFO (V93108) 280-3778-010 (EFF CI 71445)		1
4	PT06A18-32P	2	CONNECTOR,PLUG, ELEC (V77820) 371-2430-000 P1		1
5	MS3057-12A	2	ADAPTER,CABLE (V96906) 357-8466-000		1
6	MS3420-10	2	BUSHING,CABLE (V96906) 357-8437-000		1
7	MS3420-12	2	BUSHING,CABLE (V96906) 357-8438-000		1
8	MS3420-16	2	BUSHING,CABLE (V96906) 357-8439-000 (EFF TO CI 73294)		1
8A	777-0193-001	2	WIRING HARNESS		1
9	MS3116E18-32SX	3	CONNECTOR,PLUG, ELEC (V96906) 371-2244-000 P2		1
10	768-9005-001	2	TERMINAL BOARD, NO.1 TB1 (SEE FIG 6-2-0)		1
- 11	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
- 12	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
13	768-9009-001	2	TERMINAL BOARD, NO.2 TB2 (SEE FIG 6-3-0)		1
- 14	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
- 15	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
16	772-0909-001	2	TERMINAL BOARD, NO.3 TB3 (SEE FIG 6-4-0)		1
- 17	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		2
18	772-0900-001	2	PANEL,COVER		1
- 19	MS51957-27	2	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		6
20	772-8928-001	3	LIGHT DS6		1
- 21	MS51957-4	3	SCREW,MACH, CD PL STL, 2-56 X 5/16 (V96906) 343-0125-000 (AP)		4
- 22	310-0070-000	3	WASHER,LOCK, SST, 0.097 ID X 0.165 OD (V79807) 310-0070-000 (AP)		4
23	772-8756-001	4	LAMPHOLDER		1
- 24	68-1660-40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0605-000 (AP)		1
- 25	310-6340-000	4	WASHER,FLAT, SST, 0.125 ID X 0.281 OD (V79807) 310-6340-000 (AP)		1
- 26	P342-0053-000	4	SCREW,MACH, SST, 4-40 X 1-1/8 (V77250) 342-0053-000 (AP)		1
27	772-8754-001	4	SPACER		1
28	772-8757-001	4	REFLECTOR,LIGHT		1
29	1822	4	LAMP,INCAND (V08806) 262-0353-000		1
30	772-8755-001	4	SNAP RING		1
31	1-8SSBALL	4	BEARING,BALL (V27545) 309-0019-000		1
32	2-00-1SPEC	4	SOCKET (V95263) 262-2243-010		1
33	772-8758-001	4	LAMP ASSEMBLY		1
34	757-0232-002	3	KNOB		2
- 35	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		4
36	502-244	3	RESISTOR,VAR, LIN PRCN, 10,000 OHMS, 5%, 1.5W (V02111) 381-1845-010 R3		1
37	772-0908-001	3	PLATE,COVER		1
- 38	MS51957-30	3	SCREW,MACH, SST, 6-32 X 1/2 (V96906) 343-0171-000 (AP)		4
39	139-0090-000	4	RETAINER,CAP 139-0090-000		1
- 40	68-1660-40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0605-000 (AP)		1

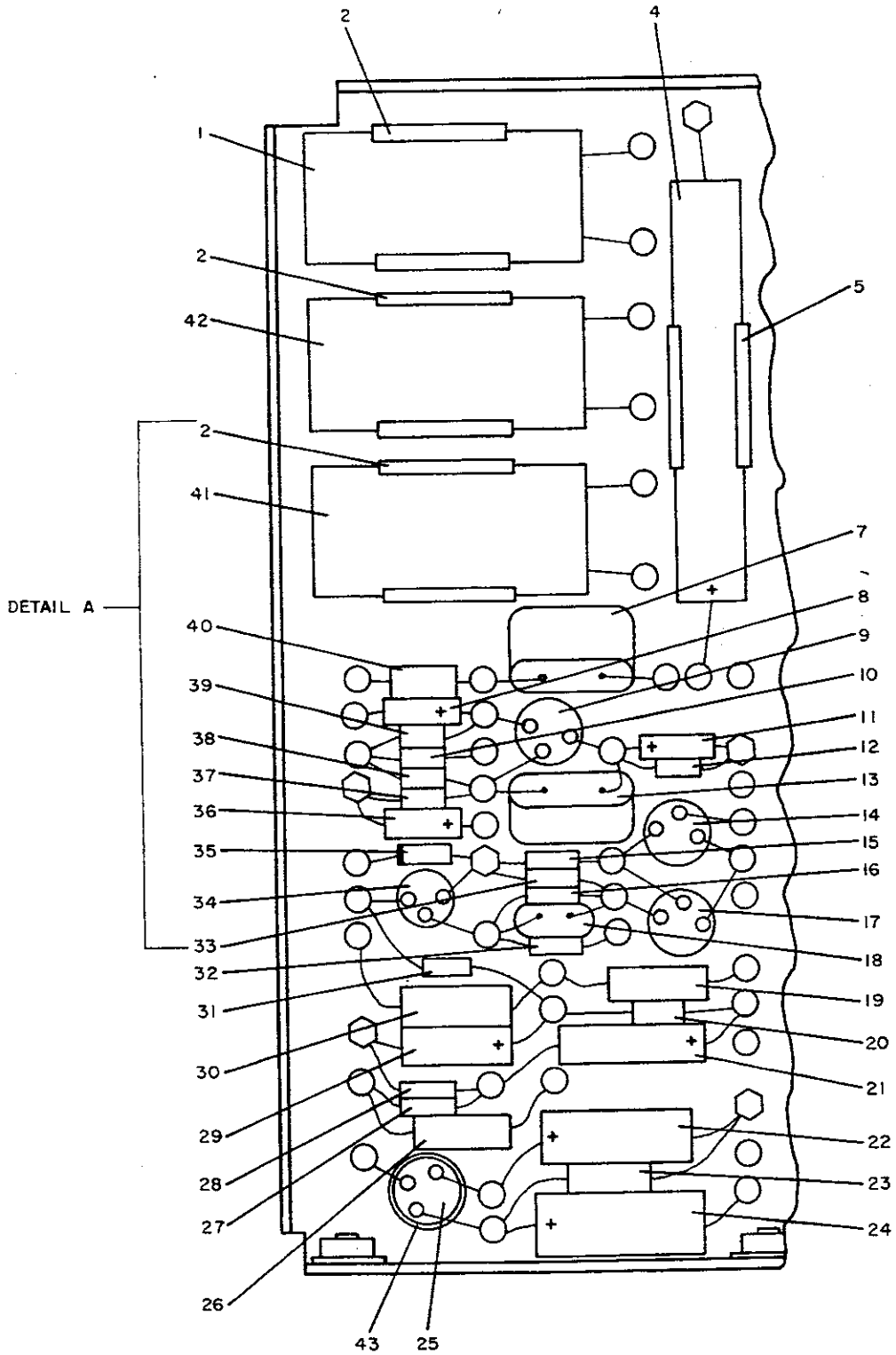
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-1 - 41	P347-0006-000	4	SCREW,MACH, SST, 4-40 X 1/4 (V77250) 347-0006-000 (AP)		4
42	772-0915-001	4	COVER, INDICATOR CUTOUT		1
43	757-0233-002	3	KNOB		3
- 44	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		6
45	2611528K2	3	SWITCH,RTRY (V76854) 259-2591-010 S5		1
46	260097AK1	3	SWITCH,RTRY (V76854) 259-2590-010 S4		1
47	260096CK9	3	SWITCH,RTRY (V76854) 259-2589-010 S3		1
48	403	3	TERMINAL,LUG (V79963) 304-1089-000		2
49	CM36377-030	3	RESISTOR,VAR, 10K, 10%, 2W (V12697) 750-3001-030 R2		1
- 50	P313-0064-000	3	NUT,PLAIN,HEX, SST, 3/8-32 (V77250) 313-0064-000 (AP)		1
51	930-5022	3	RESISTOR,VAR,WW 10K, 5%, 8W (V02111) 377-8001-010 R1		1
- 52	P313-0064-000	3	NUT,PLAIN,HEX, SST, 3/8-32 (V77250) 313-0064-000 (AP)		1
- 53	1720-02	3	WASHER,LOCK, SST, 0.391 ID X 0.507 OD (V78189) 373-0085-000 (AP)		1
54	1304-896-54	3	DIAL,COUNTING (V04454) 015-3162-010		1
55	458-0815-040	3	AMMETER,DC (V25936) 458-0815-040 M1		1
- 56	68NM62	3	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		4
- 57	P343-0177-000	3	SCREW,MACH, SST, 6-32 X 1-1/8 (V77250) 343-0177-000 (AP)		3
- 57A	MS51957-35	3	SCREW,MACH, SST, 6-32 X 1-1/4 (V96906) 343-0178-000 (AP)		1
58	541-6029-002	3	SPACER		4
59	911	3	GROMMET,RBR (V75543) 201-1080-000		1
60	855QA	3	LENS,LIGHT,IND, AMB (V08717) 262-2212-220 DS1		1
61	855QA	3	LENS,LIGHT,IND, AMB (V08717) 262-2212-220 DS2		1
62	855QR	3	LENS,LIGHT,IND, RED (V08717) 262-2212-180 DS3		1
63	855QA	3	LENS,LIGHT,IND, AMB (V08717) 262-2212-220 DS4		1
64	855QA	3	LENS,LIGHT,IND, AMB (V08717) 262-2212-220 DS5		1
65	MS25237-387	3	LAMP,INCAND (V96906) 262-0179-010		5
66	855S1	3	LIGHT INDICATOR (V08717) 262-2212-020		5
67	MS35058-27	3	SWITCH,TGL (V96906) 266-3070-000 S2 (EFF REV LTR P)		1
68	MS35058-27	3	SWITCH,TGL (V96906) 266-3070-000 S1 (EFF REV LTR P)		1
- 68A	83050-190AX	3	NUT,PLAIN,RND (V04009) 266-0130-000 (AP FOR 67 AND 68)(EFF REV LTR P)		2
68B	7201SYZQ	3	SWITCH,TGL (V09353) 266-5321-060 S6 (OPTIONAL-SB-1)		1
68C	791-8534-001	3	PLATE, SWITCH IDENT (OPTIONAL-SB-1)		1
69	RN60D4643F	3	RESISTOR,FXD, FILM, 464K, 1%, 1/4W (V81349) 705-6724-000 R4		1
70	RN60D1103F	3	RESISTOR,FXD, FILM, 110K, 1%, 1/4W (V81349) 705-6694-000 R5		1
71	772-0901-001	3	PANEL, COVER		1
72	F12NCFMA2-62	4	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000		4
73	772-8995-001	4	PLATE, INSTRUCTIVE		1
- 73A	629-9812-001	4	OVERLAY, MYLAR (EFF SB-3, SERIAL NUMBERS 320 AND BELOW)		1
- 74	SE34PL	4	EYELET,MTLC, BRS, 0.091 DIA X 0.093 (V61957) 307-1068-000 (AP)		6
75	M45938-4-5	4	NUT,PL,CLINCH, STL, 6-32 (V81349) 334-1476-000		8
76	772-0906-001	4	HINGE		1
77	772-0905-001	4	HINGE		1
- 78	MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP FOR 76 AND 77)		8

GROUP ASSEMBLY PARTS LIST

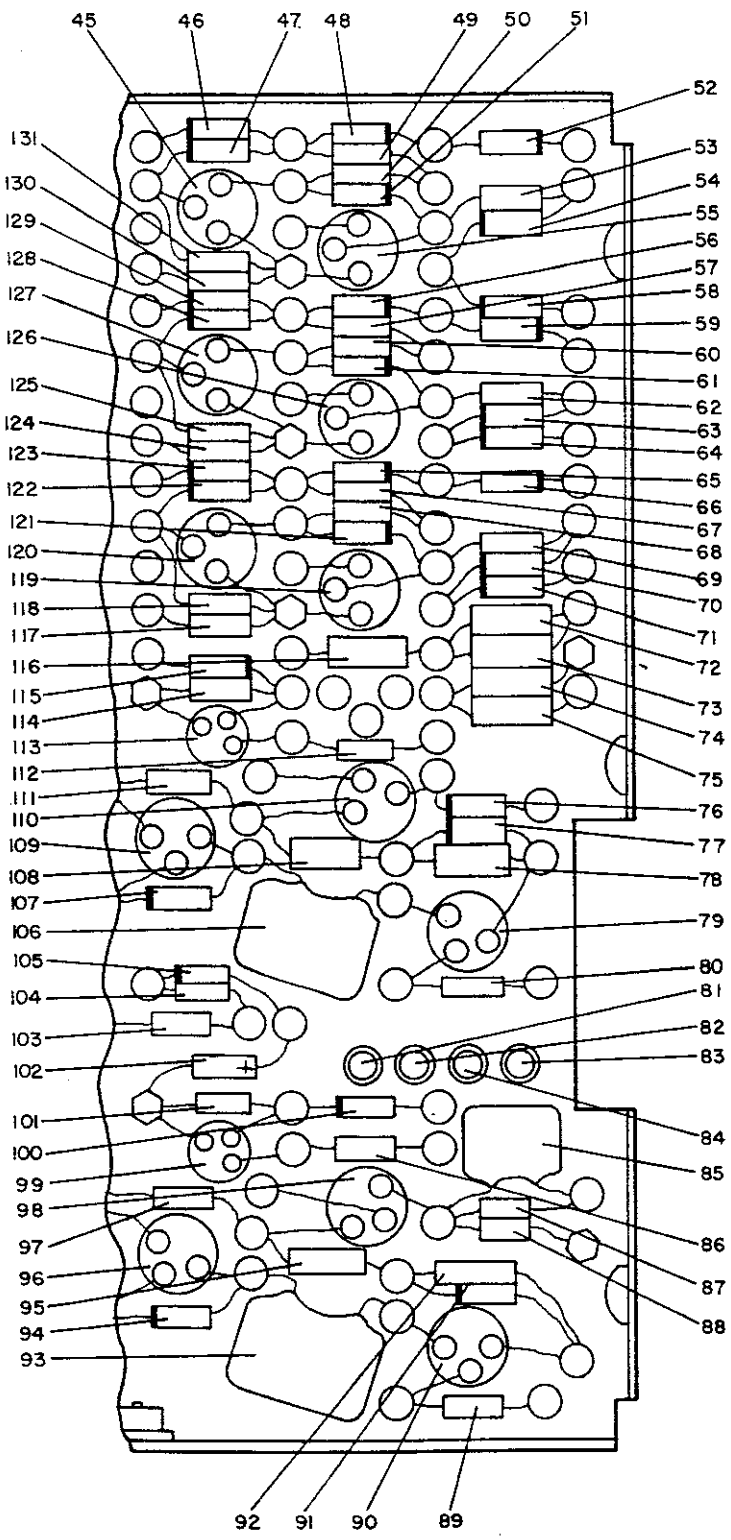
FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-1 79	772-0914-001	4	HANDLE		1
- 80	MS16535-154	4	RIVET,TUBULAR, AL, 0.123 DIA X 0.188 (V96906) 305-1809-000 (AP)		6
81	4402 1-2	4	CATCH,DRAW,PULL (V21192) 015-3167-010		2
- 82	MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
- 83	772-0916-001	4	STOP,COVER (AP)		2
- 84	68NM40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		2
- 85	MS51957-15	4	SCREW,MACH, STL, 4-40 X 3/8 (V96906) 343-0135-000 (AP)		2
86	772-0692-001	4	PANEL, FRONT		1
87	S3-225	4	LOCKSPRING,TURN (V72794) 012-1196-000		1
- 88	MS16535-77	4	RIVET,TUBULAR, AL, 0.089 DIA X 0.156 (V96906) 305-1756-000 (AP)		2
89	BJR3-30-115DEG	4	STUD,TURNLOCK,F (V72794) 012-5010-010		1
- 90	3	4	RING,RETAINING (V72794) 012-9002-000 (AP)		1
91	772-0902-001	4	COVER ASSEMBLY		1
92	772-0903-001	2	CASE		1
93	F12NCFMA2-62	3	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000		6
94	68NM62	3	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000		4
95	200-5021-000	3	BUMPER,RBR (V13508) 200-5021-000		4
96	772-0904-001	3	CASE		1
97	629-9342-001	3	MODIFICATION KIT (OPTIONAL-S8-4) (SEE FIG 6-10-0)		1

GROUP ASSEMBLY PARTS LIST



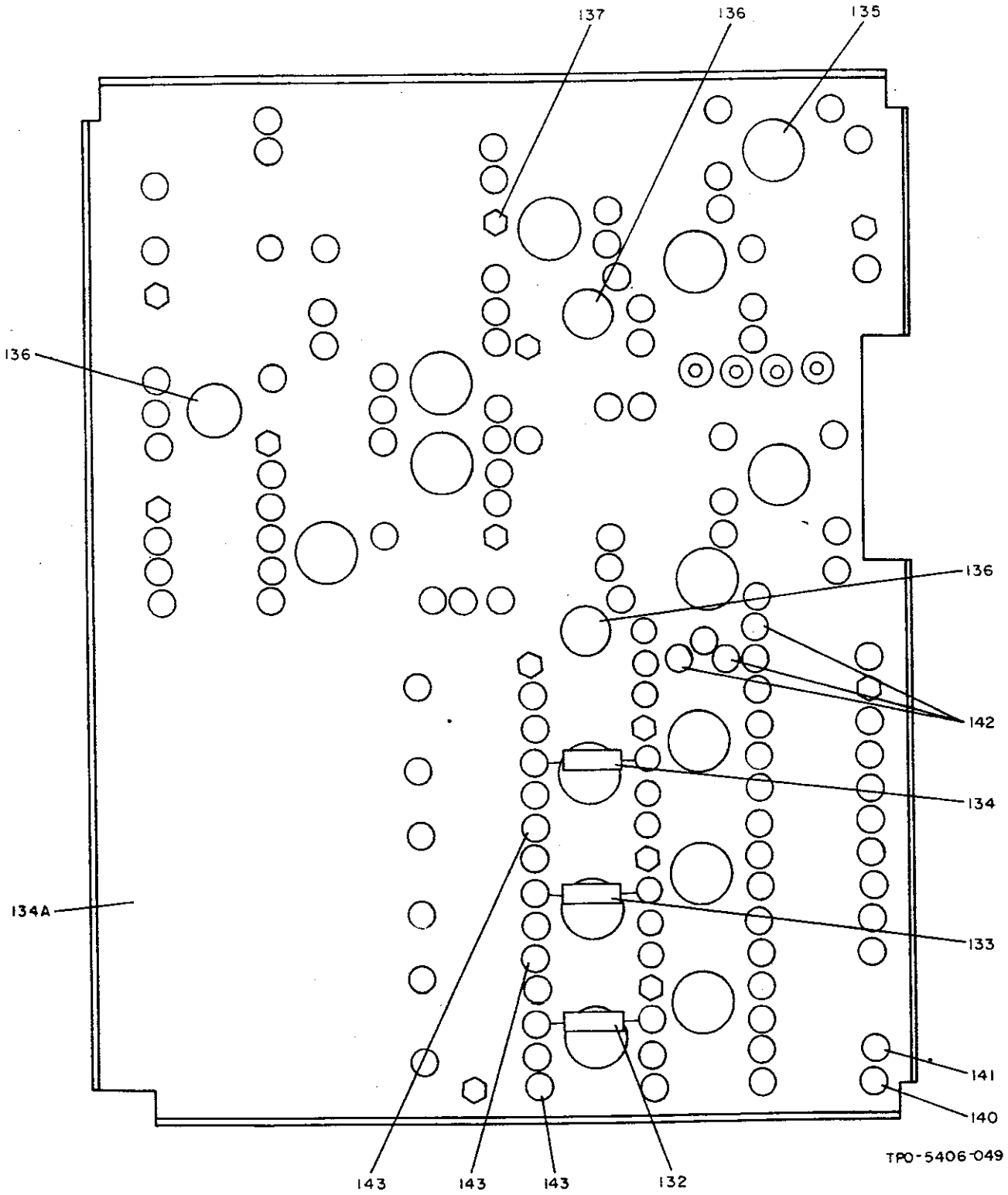
Terminal Board, No 1
Figure 6-2 (Sheet 1 of 4)

GROUP ASSEMBLY PARTS LIST



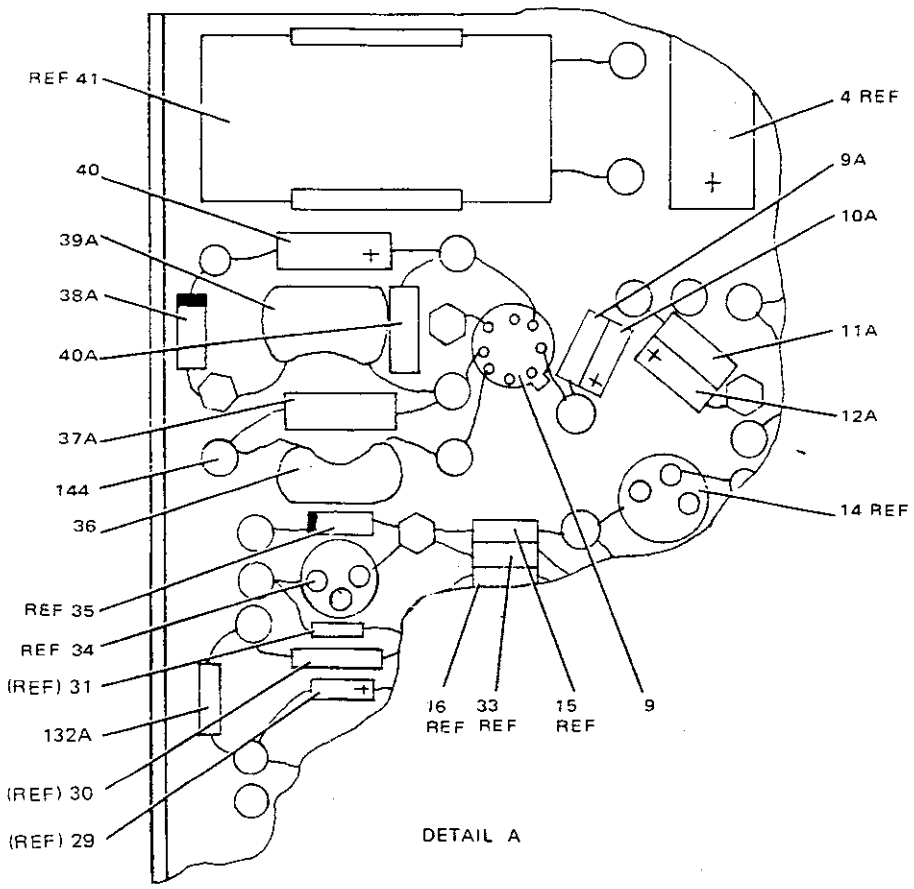
Terminal Board, No 1
Figure 6-2 (Sheet 2)

GROUP ASSEMBLY PARTS LIST



Terminal Board, No 1
Figure 6-2 (Sheet 3)

GROUP ASSEMBLY PARTS LIST



TP0-5406-049

Terminal Board, No 1
Figure 6-2 (Sheet 4)

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2 -	768-9005-001	1	TERMINAL BOARD, NO.1 (EFF TO SERIAL NO. 351) TB1 (SEE FIG 6-1-10 FOR NHA)	A	REF
-	768-9005-001	1	TERMINAL BOARD, NO.1 (EFF SERIAL NO. 352) TB1 (SEE FIG 6-5-9 FOR NHA)	B	REF
-	768-9005-001	1	TERMINAL BOARD, NO.1 (EFF REV LTR R) TB1 (SEE FIG 6-6-4 FOR NHA)	C	REF
1	RH289-7072-010	2	XTAL UNIT,QTZ, 19.88500KHZ (V82567) 289-7072-010 TB1Y1		1
2	100-206-2	3	CLIP,SPR TNSN (V99378) 139-2370-000		3
- 3	MS16535-76	3	RIVET,TUBULAR, AL, 0.089 DIA X 0.125 (V96906) 305-1755-000 (AP)		6
4	600D217G040DL5	2	CAPACITOR,FXD, ELCTLT, 210UF, M10%P75%, 40V (V56289) 183-1277-310 TB1C15		1
5	6002-4A	3	CLIP,COMPONENT (V91506) 139-2321-000		1
- 6	MS16535-76	3	RIVET,TUBULAR, AL, 0.089 DIA X 0.125 (V96906) 305-1755-000 (AP)		2
7	CM06FD472J03	2	CAPACITOR,FXD, MICA DIEL, 4700PF, 5%, 500V (V81349) 912-3052-000 TB1C3 (EFF TO CI 73083)		1
8	150D334X0035A2	2	CAPACITOR,FXD, ELCTLT, 0.33UF, 20%, 35V (V56289) 184-7406-000 TB1C2 (EFF TC CI 73083)		1
9	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q7 (EFF TO CI 73083)		1
9	709HM	2	INTEGRATED CKT (V07263) 351-7141-010 TB1U1 (EFF CI 73083)		1
9A	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R17 (EFF CI 73083)		1
10	RCR07G102KS	2	RESISTOR,FXD, CMPSN, 1K, 10%, 1/4W (V81349) 745-0749-000 TB1R16 (EFF TO CI 73083)		1
10A	150D225X0020A2	2	CAPACITOR,FXD, ELCTLT, 2.2UF, 20%, 20V (V56289) 184-7377-000 TB1C4 (EFF CI 73083)		1
11	150D225X0020A2	2	CAPACITOR,FXD, ELCTLT, 2.2UF, 20%, 20V (V56289) 184-7377-000 TB1C5 (EFF TC CI 73083)		1
11A	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R18 (EFF CI 73083)		1
12	RCR07G272KS	2	RESISTOR,FXD, CMPSN, 2.7K, 10%, 1/4W (V81349) 745-0764-000 TB1R20 (EFF TO CI 73083)		1
12A	150D225X0020A2	2	CAPACITOR,FXD, ELCTLT, 2.2UF, 20%, 20V (V56289) 184-7377-000 TB1C5 (EFF CI 73083)		1
13	CM06FD272J03	2	CAPACITOR,FXD, MICA DIEL, 2700PF, 5%, 500V (V81349) 912-3034-000 TB1C4 (EFF TO CI 73083)		1
14	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q14 (EFF TO REV LTR P)		1
14	618-4921-063	2	TRANSISTOR TB1Q14 (EFF REV LTR P)		1
15	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 TB1R45		1
16	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R39		1
17	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q15 (EFF TO REV LTR P)		1
17	618-4921-063	2	TRANSISTOR TB1Q15 (EFF REV LTR P)		1
18	CM05FD201J03	2	CAPACITOR,FXD, MICA DIEL, 200PF, 5%, 500V (V81349) 912-2837-000 TB1C10		1
19	RW69V471	2	RESISTOR,FXD,WW 470 OHMS, 5%, 3W (V81349) 747-5391-000 TB1R40		1
20	RCR07G471KS	2	RESISTOR,FXD, CMPSN, 470 OHMS, 10%, 1/4W (V81349) 745-0737-000 TB1R44		1
21	150D226X0035R2	2	CAPACITOR,FXD, ELCTLT, 22UF, 20%, 35V (V56289) 184-7695-000 TB1C11		1
22	150D226X0035R2	2	CAPACITOR,FXD, ELCTLT, 22UF, 20%, 35V (V56289) 184-7695-000 TB1C12		1
23	RCR20G101KS	2	RESISTOR,FXD, CMPSN, 100 OHMS, 10%, 1/2W (V81349) 745-1310-000 TB1R49		1
24	150D336X0035S2	2	CAPACITOR,FXD, ELCTLT, 33UF, 20%, 35V (V56289) 184-7696-000 TB1C14		1
25	2N657A	2	TRANSISTOR (V03877) 352-0354-000 TB1Q17		1
26	RW69V221	2	RESISTOR,FXD,WW 220 OHMS, 5%, 3W (V81349) 747-5347-000 TB1R42		1
27	RCR07G273KS	2	RESISTOR,FXD, CMPSN, 27K, 10%, 1/4W (V81349) 745-0800-000 TB1R41		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2 28	RCR07G153KS	2	RESISTOR,FXD, CMPSN, 15K, 10%, 1/4W (V81349) 745-0791-000 TB1R48		1
29	150D155X0035B2	2	CAPACITOR,FXD, ELCTLT, 1.5UF, 20%, 35V (V56289) 184-7688-000 TB1C13		1
30	CL23CJ1R5TN3	2	CAPACITOR,FXD, ELCTLT, 1.5UF, M15%P50%, 50V (V81349) 184-7316-000 TB1C18 (EFF TO CI 70354)		1
30	CL23BL1R5TNE	2	CAPACITOR,FXD, ELCTLT, 1.5UF, M15%P50%, 75V (V81349) 184-8607-000 TB1C18 (EFF CI 70354)		1
31	RCR07G821KS	2	RESISTOR,FXD, CMPSN, 820 OHMS, 10%, 1/4W (V81349) 745-0746-000 TB1R43		1
32	RCR07G474KS	2	RESISTOR,FXD, CMPSN, 0.47MEGO, 10%, 1/4W (V81349) 745-0845-000 TB1R47		1
33	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R46		1
34	2N2540	2	TRANSISTOR (V04713) 352-0509-000 TB1Q16		1
35	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR23 (EFF TO REV LTR R)		1
35	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB1CR23 (EFF REV LTR R)		1
36	150D105X0035A2	2	CAPACITOR,FXD, ELCTLT, 1UF, 20%, 35V (V56289) 184-7398-000 TB1C1 (EFF TC CI 73083)		1
36	CM06FD302J03	2	CAPACITOR,FXD, MICA DIEL, 3000PF, 5%, 500V (V81349) 912-3037-000 TB1C1 (EFF CI 73083 TO REV LTR L)		1
36	CM06FD152J03	2	CAPACITOR,FXD, MICA DIEL, 1500PF, 5%, 500V (V81349) 912-3013-000 TB1C1 (EFF REV LTR L)		1
37	RCR07G223KS	2	RESISTOR,FXD, CMPSN, 22K, 10%, 1/4W (V81349) 745-0797-000 TB1R19 (EFF TO CI 73083)		1
37A	RCR07G223KS	2	RESISTOR,FXD, CMPSN, 22K, 10%, 1/4W (V81349) 745-0797-000 TB1R19 (EFF CI 73083)		1
38	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 TB1R17 (EFF TO CI 73083)		1
38A	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR24 (EFF CI 73083 TO REV LTR R)		1
38A	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB1CR24 (EFF REV LTR R)		1
39	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 TB1R18 (EFF TO CI 73083)		1
39A	CM06FD472J03	2	CAPACITOR,FXD, MICA DIEL, 4700PF, 5%, 500V (V81349) 912-3052-000 TB1C3 (EFF CI 73083)		1
40	MS75089-40	2	COIL,RF, 27000UH (V96906) 240-2715-660 TB1L1 (EFF TO CI 73083)		1
40	150D334X0035A2	2	CAPACITOR,FXD, ELCTLT, 0.33UF, 20%, 35V (V56289) 184-7406-000 TB1C2 (EFF CI 73083)		1
40A	RCR07G105KS	2	RESISTOR,FXD, CMPSN, 1MEGO, 10%, 1/4W (V81349) 745-0857-000 TB1R16 (EFF CI 73083)		1
41	RH289-7072-030	2	XTAL UNIT,QTZ, 20.62500KHZ (V82567) 289-7072-030 TB1Y3		1
42	RH289-7072-020	2	XTAL UNIT,QTZ, 20.28500KHZ (V82567) 289-7072-020 TB1Y2		1
43	TX82P032-037-38	2	HOLDER,SEMICOND (V98978) 352-9884-000		1
- 44	MW375-118	2	INSULATOR,WSHR, MICA, 0.118 ID X 0.375 OD (V08289) 302-0640-080 (AP)		1
45	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q1	A	1
46	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 TB1CR1	A	1
47	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR2	A	1
48	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 TB1CR4	A	1
49	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 TB1R1	A	1
50	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 TB1R2	A	1
51	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR3	A	1
52	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR6	A	1
53	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R4	A	1
54	1N963A	2	SEMICOND DEVICE (V03877) 353-3222-000 TB1VR1 (EFF TO REV LTR N)	A	1
54	1N965B	2	SEMICOND DEVICE (V04713) 353-3176-000 TB1VR1 (EFF REV LTR N)	A	1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2 55	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T81Q2	A	1
56	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 T81CR10	A	1
57	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 T81R6	A	1
58	1N3064*	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR5	A	1
59	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR12	A	1
60	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 T81R7	A	1
61	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR9	A	1
62	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R9	A	1
63	1N963A	2	SEMICOND DEVICE (V03877) 353-3222-000 T81VR2 (EFF TO REV LTR N)	A	1
63	1N965B	2	SEMICOND DEVICE (V04713) 353-3176-000 T81VR2 (EFF REV LTR N)	A	1
64	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR11	A	1
65	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 T81CR16	A	1
66	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR18	A	1
67	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 T81R11	A	1
68	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 T81R12	A	1
69	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R14	A	1
70	1N963A	2	SEMICOND DEVICE (V03877) 353-3222-000 T81VR3 (EFF TO REV LTR N)	A	1
70	1N965B	2	SEMICOND DEVICE (V04713) 353-3176-000 T81VR3 (EFF REV LTR N)	A	1
71	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR17	A	1
72	RN60D2490F	2	RESISTOR,FXD, FILM, 249 OHMS, 1%, 1/4W (V81349) 705-6567-000 T81R31		1
73	0550F5-064	2	RESISTOR,THRM, 125 OHMS, 10%, 1W (V10646) 714-0178-000 T81RT1		1
74	0550F5-064	2	RESISTOR,THRM, 125 OHMS, 10%, 1W (V10646) 714-0178-000 T81RT2		1
75	RN60D2150F	2	RESISTOR,FXD, FILM, 215 OHMS, 1%, 1/4W (V81349) 705-6564-000 T81R36		AR
75	RN60D1331F	2	RESISTOR,FXD, FILM, 1.33K, 1%, 1/4W (V81349) 705-6602-000 T81R36		AR
75	RN60D1401F	2	RESISTOR,FXD, FILM, 1.4K, 1%, 1/4W (V81349) 705-6603-000 T81R36		AR
75	RN60D1471F	2	RESISTOR,FXD, FILM, 1.47K, 1%, 1/4W (V81349) 705-6604-000 T81R36		AR
75	RN60D1541F	2	RESISTOR,FXD, FILM, 1.54K, 1%, 1/4W (V81349) 705-6605-000 T81R36		AR
76	1N4370	2	SEMICOND DEVICE (V12954) 353-3595-010 T81VR4		1
77	1N3026B	2	SEMICOND DEVICE (V99942) 353-3131-000 T81VR6		1
78	RN60D4871F	2	RESISTOR,FXD, FILM, 4.87K, 1%, 1/4W (V81349) 705-6629-000 T81R30 (EFF TO CI 71083)		1
78	RN55D4991F	2	RESISTOR,FXD, FILM, 4.99K, 1%, 1/8W (V81349) 705-1468-270 T81R30 (EFF CI 71083 TO REV LTR R)		1
78	RN55D4991F	2	RESISTOR,FXD, FILM, 4.99K, 1%, 1/8W (V81349) 705-3605-330 T81R30 (EFF REV LTR R)		1
79	2N2905A	2	TRANSISTOR (V07933) 352-0550-000 T81Q9 (EFF TO REV LTR P)		1
79	618-4921-123	2	TRANSISTOR T81Q9 (EFF REV LTR P)		1
80	RCR07G100KS	2	RESISTOR,FXD, CMPSN, 10 OHMS, 10%, 1/4W (V81349) 745-0677-000 T81R33		1
81	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 T81J4		1
82	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 T81J3		1
83	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 T81J1		1
84	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 T81J2		1
85	CM05FD101J03	2	CAPACITOR,FXD, MICA DIEL, 100PF, 5%, 500V (V81349) 912-2816-000 T81C17		1
86	RCR07G153KS	2	RESISTOR,FXD, CMPSN, 15K, 10%, 1/4W (V81349) 745-0791-000 T81R29		1
87	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R52		1

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing page 6-16, Section 6

This Addendum supersedes Addendum 4.

Subject: Parts List, Figure-Item 6-2-75

Replace figure 6-2 item 75 with the following:

75	RN60D1271F	2	RESISTOR, FXD, FILM, 1.27K, 1%, 1/4W (V81349) 705-6601-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1331F	2	RESISTOR, FXD, FILM, 1.33K, 1%, 1/4W (V81349) 705-6602-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1401F	2	RESISTOR, FXD, FILM, 1.40K, 1%, 1/4W (V81349) 705-6603-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1471F	2	RESISTOR, FXD, FILM, 1.47K, 1%, 1/4W (V81349) 705-6604-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1541F	2	RESISTOR, FXD, FILM, 1.54K, 1%, 1/4W (V81349) 705-6605-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1621F	2	RESISTOR, FXD, FILM, 1.62K, 1%, 1/4W (V81349) 705-6606-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D1961F	2	RESISTOR, FXD, FILM, 1.96K, 1%, 1/4W (V81349) 705-6610-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D2151F	2	RESISTOR, FXD, FILM, 2.15K, 1%, 1/4W (V81349) 705-6612-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D2371F	2	RESISTOR, FXD, FILM, 2.37K, 1%, 1/4W (V81349) 705-6614-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D2741F	2	RESISTOR, FXD, FILM, 2.74K, 1%, 1/4W (V81349) 705-6617-000 TB1R36 (EFF S/N 407 AND BELOW)	AR
75	RN60D3011F	2	RESISTOR, FXD, FILM, 3.01K, 1%, 1/4W (V81349) 705-6619-000 TB1R36 (EFF S/N 407 AND BELOW)	AR

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing page 6-17, Section 6

This Addendum supersedes Addendum 4.

Subject: Parts List, Figure-Item 6-2-101 and -114

Add the following new figure items:

101	RCR07G273KS	2	RESISTOR, FXD, CMPSN, 27K, 10%, 1/4W (V81349) 745-0800-000 TB1R38 (EFF REV LTR AA)
114	RCR07G273KS	2	RESISTOR, FXD, CMPSN, 27K, 10%, 1/4W (V81349) 745-0800-000 TB1R37 (EFF REV LTR AA)

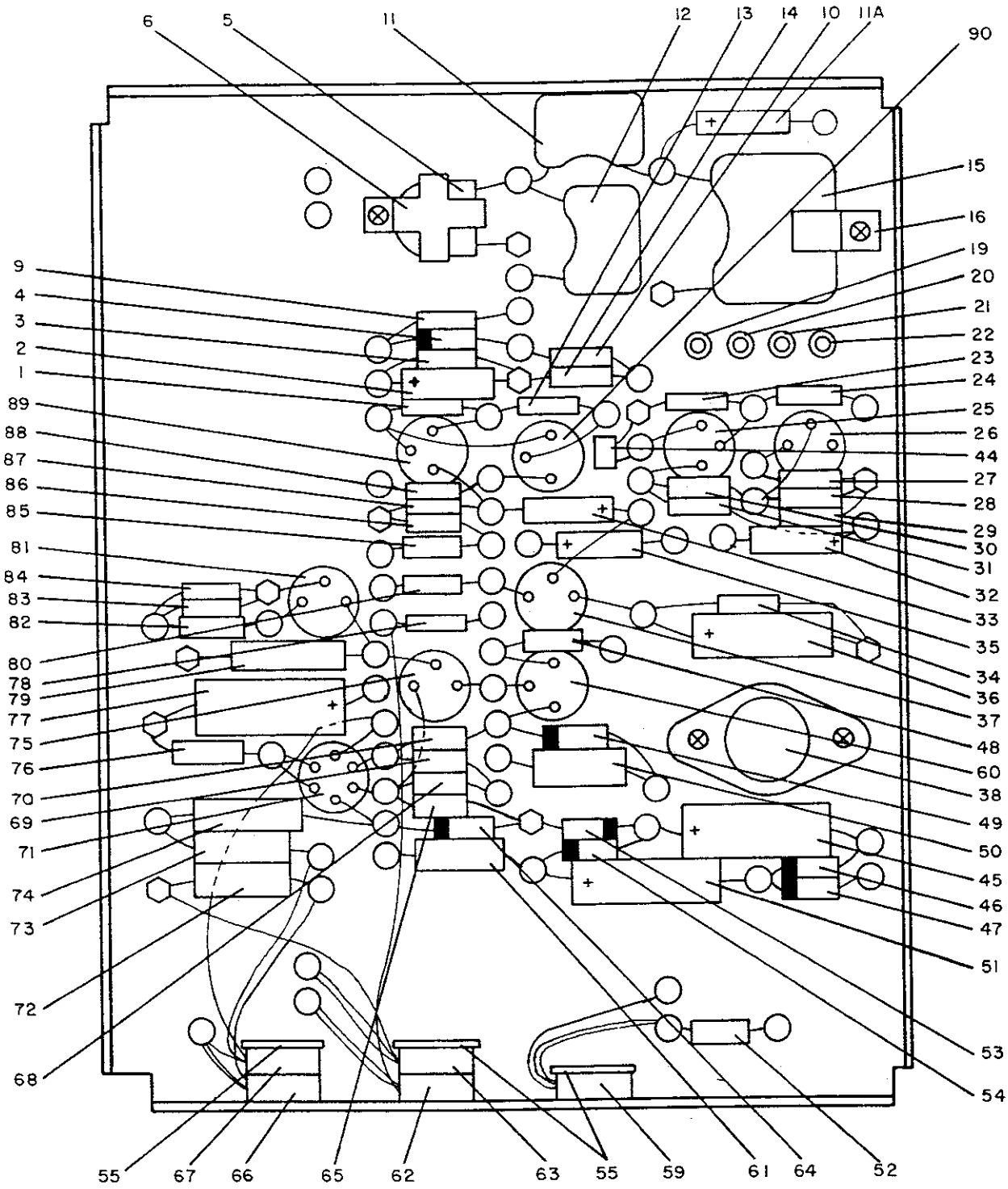
GROUP ASSEMBLY PARTS LIST

FIG - ITEM		PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2	88	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R53		1
	89	RCR07G100KS	2	RESISTOR,FXD, CMPSN, 10 OHMS, 10%, 1/4W (V81349) 745-0677-000 TB1R35		1
	90	2N2905A	2	TRANSISTOR (V07933) 352-0550-000 TB1Q10 (EFF TO REV LTR P)		1
	90	618-4921-123	2	TRANSISTOR TB1C10 (EFF REV LTR P)		1
	91	1N3026B	2	SEMICOND DEVICE (V99942) 353-3131-000 TB1VR7		1
	92	RN60D4871F	2	RESISTOR,FXD, FILM, 4.87K, 1%, 1/4W (V81349) 705-6629-000 TB1R32 (EFF TO CI 73083)		1
	92	RN55D4991F	2	RESISTOR,FXD, FILM, 4.99K, 1%, 1/8W (V81349) 705-1468-270 TB1R32 (EFF CI 73083 TO REV LTR S)		1
	92	RN55D4991F	2	RESISTOR,FXD, FILM, 4.99K, 1%, 1/8W (V81349) 705-3605-330 TB1R32 (EFF REV LTR S)		1
	93	CM06FD332JC3	2	CAPACITOR,FXD, MICA DIEL, 3300PF, 5%, 500V (V81349) 912-3040-000 TB1C9		1
	94	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR20 (EFF TO REV LTR R)		1
	94	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB1CR20 (EFF REV LTR R)		1
	95	RN60D3160F	2	RESISTOR,FXD, FILM, 316 OHMS, 1%, 1/4W (V81349) 705-6572-000 TB1R27 (EFF TO CI 73083)		1
	95	RN60D2150F	2	RESISTOR,FXD, FILM, 215 OHMS, 1%, 1/4W (V81349) 705-6564-000 TB1R27 (EFF CI 73083)		1
	96	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q11 (EFF TO REV LTR P)		1
	96	618-4921-063	2	TRANSISTOR TB1Q11 (EFF REV LTR P)		1
	97	RCR07G101KS	2	RESISTOR,FXD, CMPSN, 100 OHMS, 10%, 1/4W (V81349) 745-0713-000 TB1R28		1
	98	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q18 (EFF TO REV LTR P)		1
	98	618-4921-063	2	TRANSISTOR TB1C18 (EFF REV LTR P)		1
	99	2N2540	2	TRANSISTOR (V04713) 352-0509-000 TB1Q13		1
	100	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR22 (EFF TO REV LTR R)		1
	100	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB1CR22 (EFF REV LTR R)		1
	101	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R38		1
	102	150D105X0035A2	2	CAPACITOR,FXD, ELCTLT, 1UF, 20%, 35V (V56289) 184-7398-000 TB1C16		1
	103	RCR07G330KS	2	RESISTOR,FXD, CMPSN, 33 OHMS, 10%, 1/4W (V81349) 745-0695-000 TB1R50		1
	104	RCR07G223KS	2	RESISTOR,FXD, CMPSN, 22K, 10%, 1/4W (V81349) 745-0797-000 TB1R51		1
	105	1N969B	2	SEMICOND DEVICE (V04713) 353-3180-000 TB1VR5		1
	106	CM06FD332J03	2	CAPACITOR,FXD, MICA DIEL, 3300PF, 5%, 500V (V81349) 912-3040-000 TB1C8		1
	107	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB1CR19 (EFF TO REV LTR R)		1
	107	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB1CR19		1
	108	RN60D3160F	2	RESISTOR,FXD, FILM, 316 OHMS, 1%, 1/4W (V81349) 705-6572-000 TB1R25 (EFF TO CI 73083)		1
	108	RN60D2150F	2	RESISTOR,FXD, FILM, 215 OHMS, 1%, 1/4W (V81349) 705-6564-000 TB1R25 (EFF CI 73083)		1
	109	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB1Q8 (EFF TO REV LTR P)		1
	109	618-4921-063	2	TRANSISTOR TB1Q8 (EFF REV LTR P)		1
	110	2N2905A	2	TRANSISTOR (V07933) 352-0550-000 TB1Q19 (EFF TO REV LTR P)		1
	110	618-4921-123	2	TRANSISTOR TB1C19 (EFF REV LTR P)		1
	111	RCR07G101KS	2	RESISTOR,FXD, CMPSN, 100 OHMS, 10%, 1/4W (V81349) 745-0713-000 TB1R24		1
	112	RCR07G153KS	2	RESISTOR,FXD, CMPSN, 15K, 10%, 1/4W (V81349) 745-0791-000 TB1R23		1
	113	2N2540	2	TRANSISTOR (V04713) 352-0509-000 TB1Q12		1
	114	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 TB1R37		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-2 115	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR21 (EFF TO REV LTR R)		1
115	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 T81CR21 (EFF REV LTR R)		1
116	RN60D3650F	2	RESISTOR,FXD, FILM, 365 OHMS, 1%, 1/4W (V81349) 705-6575-000 T81R26		1
117	RCR07G333KS	2	RESISTOR,FXD, CMPSN, 33K, 10%, 1/4W (V81349) 745-0803-000 T81R15	A	1
118	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R13	A	1
119	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T81Q6	A	1
120	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T81Q5	A	1
121	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR15	A	1
122	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR14	A	1
123	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 T81CR13	A	1
124	RCR07G333KS	2	RESISTOR,FXD, CMPSN, 33K, 10%, 1/4W (V81349) 745-0803-000 T81R10	A	1
125	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R8	A	1
126	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T81Q4	A	1
127	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T81Q3	A	1
128	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 T81CR8	A	1
129	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 T81CR7	A	1
130	RCR07G333KS	2	RESISTOR,FXD, CMPSN, 33K, 10%, 1/4W (V81349) 745-0803-000 T81R5	A	1
131	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T81R3	A	1
132	RCR2CG121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 T81R54	A	1
132A	RCR07G104KS	2	RESISTOR,FXD, CMPSN, 0.10MEGO, 10%, 1/4W (V81349) 745-0821-000 T81R54 (EFF REV LTR S)	B,C	1
133	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 T81R55	A	1
134	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 T81R56	A	1
134A	628-1209-001	2	TERMINAL BOARD		1
135	119-0506-000009	3	HOLDER,XSTR (V98291) 352-9508-000	A	15
135	119-0506-000009	3	HOLDER,XSTR (V98291) 352-9508-000	B,C	9
136	119-0507-000009	3	HOLDER,XSTR (V98291) 352-9509-000		3
137	M426	2	TERMINAL,GROUND (V21242) 306-2204-000	A	13
137	M426	2	TERMINAL,GROUND (V21242) 306-2204-000	B,C	10
-138	P334-0278-000	2	NUT,PLAIN,HEX, NP BRS, 2-56 (V77250) 334-0278-000 (AP)	A	13
-138	P334-0278-000	2	NUT,PLAIN,HEX, NP BRS, 2-56 (V77250) 334-0278-000 (AP)	B,C	10
-139	310-0094-000	2	WASHER,LOCK, CD PL BRZ, 0.088 ID X 0.165 OD (V79807) 310-0094-000 (AP)	A	13
-139	310-0094-000	2	WASHER,LOCK, CD PL BRZ, 0.088 ID X 0.165 OD (V79807) 310-0094-000 (AP)	B,C	10
140	SL304-301WHT	3	TERMINAL,FEEDTH (V12615) 306-1851-000	A	77
140	SL304-301WHT	3	TERMINAL,FEEDTH (V12615) 306-1851-000	B,C	56
141	SL439-433WHT	3	TERMINAL,STDF (V12615) 306-1521-000	A	34
141	SL439-433WHT	3	TERMINAL,STDF (V12615) 306-1521-000	B,C	19
142	DP439-433RED	3	TERMINAL,STDF (V21242) 306-1524-000	A	3
143	SL304-301RED	3	TERMINAL,FEEDTH (V12615) 306-1854-000	A	6
144	M5-540-1	3	TERMINAL,FEEDTH (V12615) 306-2608-010 (EFF CI 73083)		2

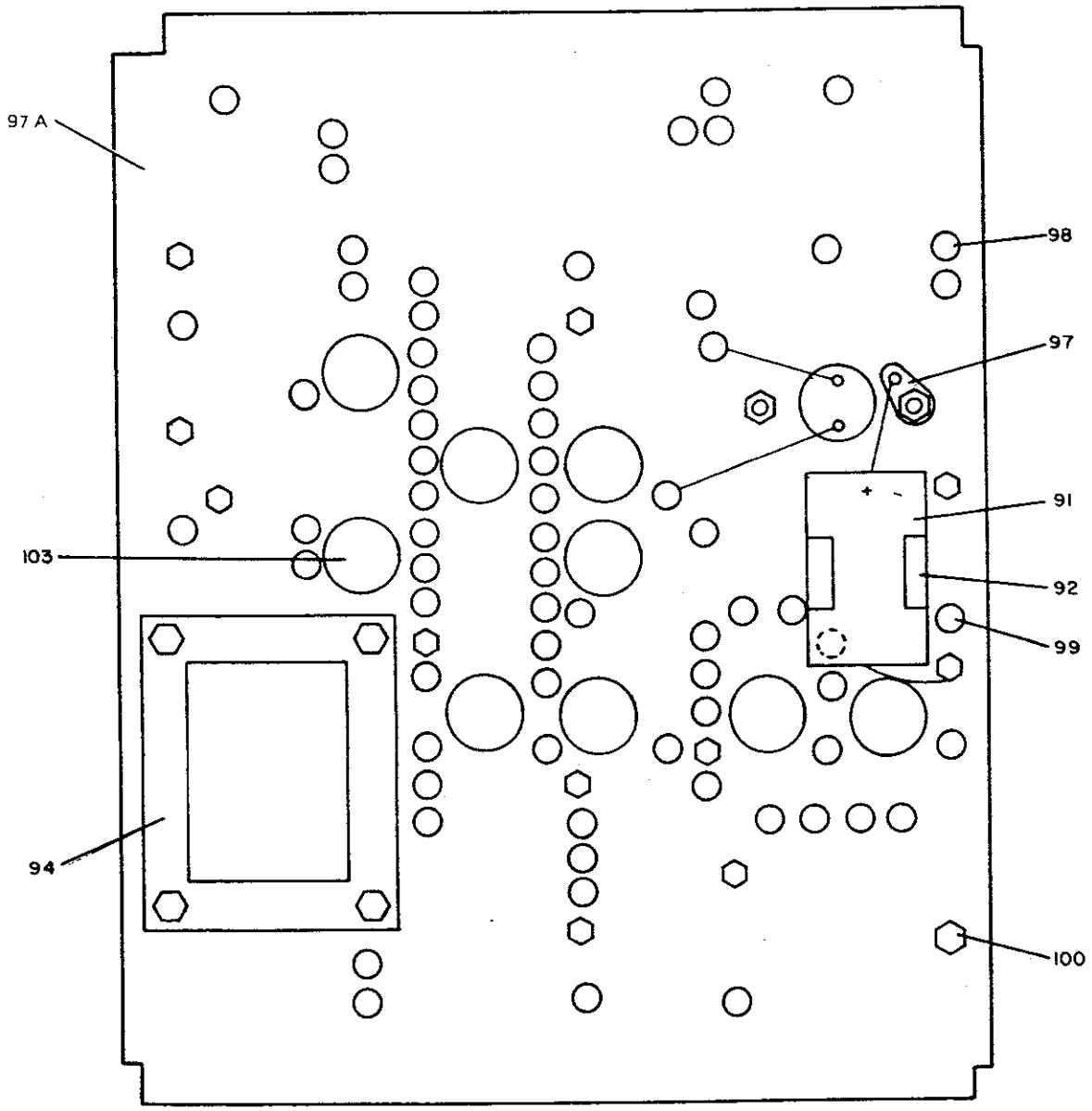
GROUP ASSEMBLY PARTS LIST



TPO 5409 029

Terminal Board, No 2
Figure 6-3 (Sheet 1 of 2)

GROUP ASSEMBLY PARTS LIST



TP0-5409-029

Terminal Board, No 2
Figure 6-3 (Sheet 2)

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 -	768-9009-001	1	TERMINAL BOARD, NO.2 TB2 (SEE FIG 6-1-13,6-5-10 6-6-7 FOR NHA)		REF
1	RCR07G822KS	2	RESISTOR,FXD, CMPSN, 8.2K, 10%, 1/4W (V81349) 745-0782-000 TB2R5		1
2	150D685X0035B2	2	CAPACITOR,FXD, ELCTLT, 6.8UF, 20%, 35V (V56289) 184-7693-000 TB2C6		1
3	RCR07G392KS	2	RESISTOR,FXD, CMPSN, 3.9K, 10%, 1/4W (V81349) 745-0770-000 TB2R16		1
4	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 TB2CR1 (EFF TO CI 71343)		1
4	1N270	2	SEMICOND DEVICE (V08257) 353-2018-000 TB2CR1 (EFF CI 71343)		1
5	DL644	2	REACTOR, 0.4H (V80223) 668-0035-000 TB2L1		1
6	554-2164-003	2	CLIP,SPRING		1
- 7	68NM26	2	NUT,SLFLKG,HEX, AL, 2-56 (V72962) 333-0327-000 (AP)		1
- 7A	310-0044-000	2	WASHER,FLAT, SST, 0.093 ID X 1/4 OD (V79807) 310-0044-000 (AP)		1
- 8	MS51957-4	2	SCREW,MACH, CD PL STL, 2-56 X 5/16 (V96906) 343-0125-000 (AP)		1
9	RN60D1960F	2	RESISTOR,FXD, FILM, 196 OHMS, 1%, 1/4W (V81349) 705-6562-000 TB2R42		1
10	RN60D5621F	2	RESISTOR,FXD, FILM, 5.62K, 1%, 1/4W (V81349) 705-6632-000 TB2R9		1
11	CM06FD472J03	2	CAPACITOR,FXD, MICA DIEL, 4700PF, 5%, 500V (V81349) 912-3052-000 TB2C2		1
11A	151D755X0020X2	2	CAPACITOR,FXD, ELCTLT, 7.5UF, 20%, 20V (V56289) 184-8278-000 TB2C15 (OPTIONAL-SB-1)		1
12	CM06FD472J03	2	CAPACITOR,FXD, MICA DIEL, 4700PF, 5%, 500V (V81349) 912-3052-000 TB2C3		1
13	RCR07G473KS	2	RESISTOR,FXD, CMPSN, 47K, 10%, 1/4W (V81349) 745-0809-000 TB2R4		1
14	RN60D5110F	2	RESISTOR,FXD, FILM, 511 OHMS, 1%, 1/4W (V81349) 705-6582-000 TB1R21		1
15	CM07FD682J03	2	CAPACITOR,FXD, MICA DIEL, 6800PF, 5%, 500V (V81349) 912-2723-000 TB2C1		1
16	554-2150-002	2	RETAINER		1
- 17	68NM26	2	NUT,SLFLKG,HEX, AL, 2-56 (V72962) 333-0327-000 (AP)		1
- 18	MS51957-4	2	SCREW,MACH, CD PL STL, 2-56 X 5/16 (V96906) 343-0125-000 (AP)		1
19	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB2J4		1
20	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB2J3		1
21	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB2J2		1
22	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB2J1		1
23	RCR07G273KS	2	RESISTOR,FXD, CMPSN, 27K, 10%, 1/4W (V81349) 745-0800-000 TB2R10		1
24	RN65C2871F	2	RESISTOR,FXD, FILM, 2.87K, 1%, 1/4W (V81349) 705-4572-000 TB2R1 (EFF TO CI 71343)		1
24	RCR07G273KS	2	RESISTOR,FXD, CMPSN, 27K, 10%, 1/4W (V81349) 745-0800-000 TB2R1 (EFF CI 71343)		1
25	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB2Q1 (EFF TO REV LTR S)		1
25	618-4921-063	2	TRANSISTOR TB2Q1 (EFF REV LTR S)		1
26	2N1711	2	TRANSISTOR (V07263) 352-0400-000 TB2Q2 (EFF TO REV LTR S)		1
26	618-4921-063	2	TRANSISTOR TB2Q2 (EFF REV LTR S)		1
27	RCR07G102KS	2	RESISTOR,FXD, CMPSN, 1K, 10%, 1/4W (V81349) 745-0749-000 TB2R13		1
28	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 TB2R12		1
29	RCR07G183KS	2	RESISTOR,FXD, CMPSN, 18K, 10%, 1/4W (V81349) 745-0794-000 TB2R14		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 30	RCR07G333KS	2	RESISTOR,FXD, CMPSN, 33K, 10%, 1/4W (V81349) 745-0803-000 TB2R2		1
31	RCR07G472KS	2	RESISTOR,FXD, CMPSN, 4.7K, 10%, 1/4W (V81349) 745-0773-000 TB2R3		1
32	150D475X0035B2	2	CAPACITOR,FXD, ELCTLT, 4.7UF, 20%, 35V (V56289) 184-7396-000 TB2C5		1
33	150D685XC035B2	2	CAPACITOR,FXD, ELCTLT, 6.8UF, 20%, 35V (V56289) 184-7693-000 TB2C7		1
34	RN60D2611F	2	RESISTOR,FXD, FILM, 2.61K, 1%, 1/4W (V81349) 705-6616-000 TB2R18		1
35	150D475X0035B2	2	CAPACITOR,FXD, ELCTLT, 4.7UF, 20%, 35V (V56289) 184-7396-000 TB2C4		1
36	150D475X0035B2	2	CAPACITOR,FXD, ELCTLT, 4.7UF, 20%, 35V (V56289) 184-7396-000 TB2C8 (EFF TO CI 71343)		1
36	150D226X9035R2	2	CAPACITOR,FXD, ELCTLT, 22UF, 10%, 35V (V56289) 184-7710-000 TB2C8 (EFF CI 71343)		1
37	2N2905A	2	TRANSISTOR (V07933) 352-0550-000 TB2Q5 (EFF TO REV LTR S)		1
37	618-4921-123	2	TRANSISTOR TB2Q5 (EFF REV LTR S)		1
38	2N3054	2	TRANSISTOR (V02735) 352-0581-010 TB2Q6		1
- 39	MS35649-244	2	NUT,PLAIN,HEX, SST, 4-40 (V96906) 313-0043-000 (AP)		2
- 40	MS35338-135	2	WASHER,LOCK, SST, 0.115 ID X 0.209 OD (V96906) 310-0279-000 (AP)		2
- 41	310-0045-000	2	WASHER,FLAT, SST, 0.125 ID X 0.312 OD (V79807) 310-0045-000 (AP)		2
- 42	302-0646-050	2	WASHER,NM,SHLDR PLSTC, 0.115 ID X 0.290 OD (V07896) 302-0646-050 (AP)		2
- 43	MS51957-16	2	SCREW,MACH, STL, 4-40 X 7/16 (V96906) 343-0136-000 (AP)		2
44	DM5F101J050WV	2	CAPACITOR,FXD, MICA DIEL, 100PF, 5%, 50V (V72136) 912-4141-050 TB2C16 (EFF REV LTR U)		1
45	600D306G040KD5	2	CAPACITOR,FXD, ELCTLT, 30UF, M10%P75%, 40V (V56289) 183-1277-270 TB2C9		1
46	1N4002	2	SEMICOND DEVICE (V04713) 353-6442-020 TB2CR4		1
47	1N4002	2	SEMICOND DEVICE (V04713) 353-6442-020 TB2CR5		1
48	RCR20G390KS	2	RESISTOR,FXD, CMPSN, 39 OHMS, 10%, 1/2W (V81349) 745-1293-000 TB2R23		1
49	1N751A	2	SEMICOND DEVICE (V12954) 353-2710-000 TB2VR1		1
50	RN65D2871F	2	RESISTOR,FXD, FILM, 2.87K, 1%, 1/2W (V81349) 705-7118-000 TB2R28		1
51	600D306G040KD5	2	CAPACITOR,FXD, ELCTLT, 30UF, M10%P75%, 40V (V56289) 183-1277-270 TB2C10		1
52	RN60D1001F	2	RESISTOR,FXD, FILM, 1K, 1%, 1/4W (V81349) 705-6596-000 TB2R38 (EFF TO CI 69047)		1
52	RN60D1211F	2	RESISTOR,FXD, FILM, 1.21K, 1%, 1/4W (V81349) 705-6600-000 TB2R38 (EFF CI 69047)		1
53	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 TB2CR3		1
54	1N645	2	SEMICOND DEVICE (V15238) 353-2607-000 TB2CR2		1
55	756-7045-002	2	STRAP,RETAINING		3
- 56	MS51957-8	2	SCREW,MACH, SST, 2-56 X 5/8 (V96906) 343-0005-000 (AP)		4
- 57	MS51957-70	2	SCREW,MACH, SST, 10-24 X 1-3/4 (V96906) 343-0217-000 (AP)		2
- 58	310-0075-000	2	WASHER,LOCK, BRZ, 0.088 ID X 0.165 OD (V79807) 310-0075-000 (AP)		6
59	RT22C2L501	2	RESISTOR,VAR,NW 500 OHMS, 5%, 3/4W (V81349) 381-1721-090 TB2R39		1
60	2N2905A	2	TRANSISTOR (V07933) 352-0550-000 TB2Q7 (EFF TO REV LTR S)		1
60	618-4921-123	2	TRANSISTOR TB2Q7 (EFF REV LTR S)		1
61	RCR32G182KS	2	RESISTOR,FXD, CMPSN, 1.8K, 10%, 1W (V81349) 745-3363-000 TB2R22		1

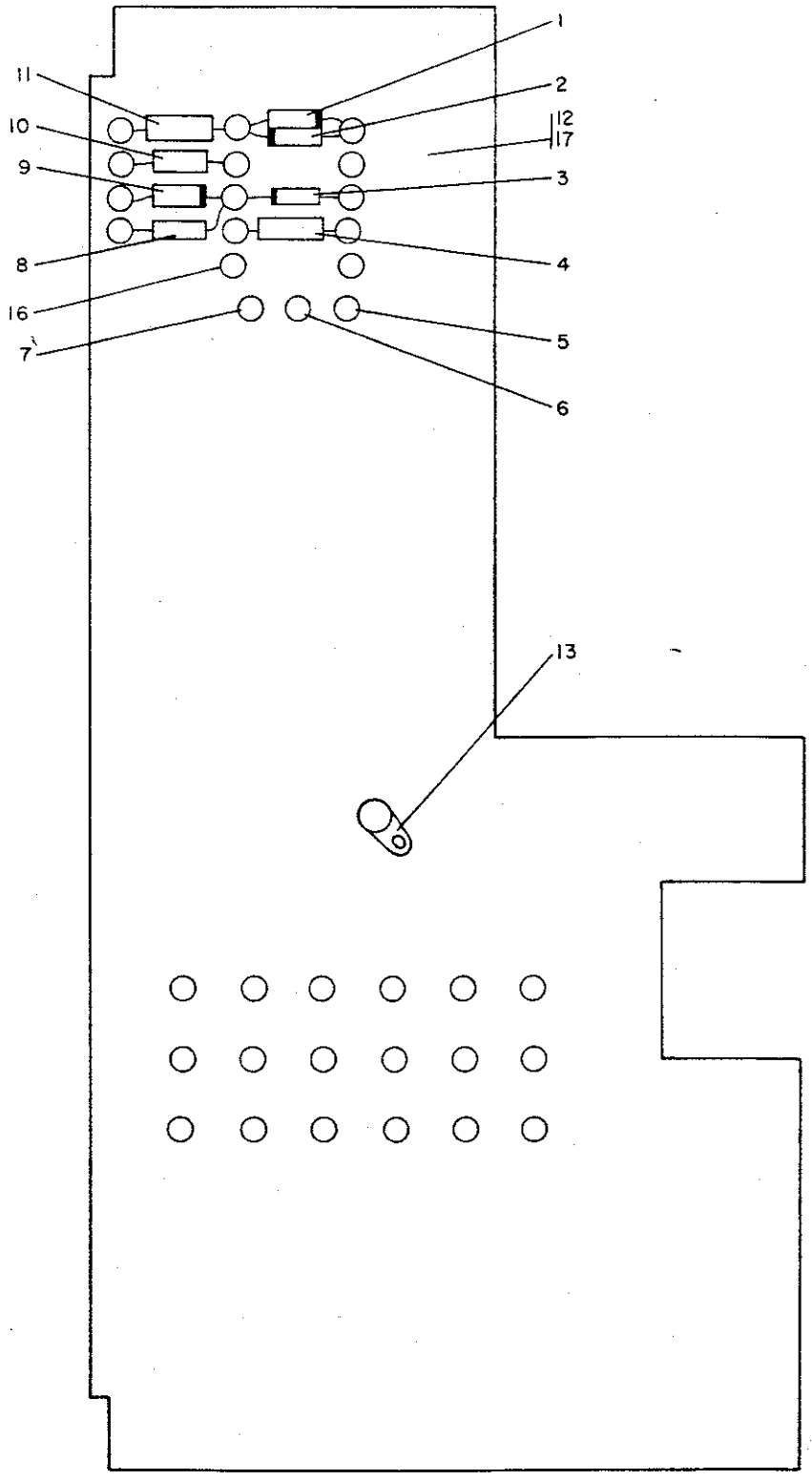
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 62	RT22C2L203	2	RESISTOR,VAR, 20K, 5%, 3/4W (V81349) 381-1721-160 T82R20		1
63	RT22C2L501	2	RESISTOR,VAR,WW 500 OHMS, 5%, 3/4W (V81349) 381-1721-090 T82R41		1
64	1N938A	2	SEMICOND DEVICE (V81483) 353-3158-000 T82VR2		1
65	RN60C1472F	2	RESISTOR,FXD, FILM, 14.7K, 1%, 1/8W (V81349) 705-6301-000 T82R30		1
66	RT22C2L5C0	2	RESISTOR,VAR,WW 50 OHMS, 5%, 3/4W (V81349) 381-1721-180 T82R33		1
67	RT22C2L102	2	RESISTOR,VAR,WW 1K, 5%, 3/4W (V81349) 381-1721-100 T82R32		1
68	RN60C4641F	2	RESISTOR,FXD, FILM, 4.64K, 1%, 1/8W (V81349) 705-6289-000 T82R25		1
69	RN60C4222F	2	RESISTOR,FXD, FILM, 42.2K, 1%, 1/8W (V81349) 705-6312-000 T82R26		1
70	RN60C1213F	2	RESISTOR,FXD, FILM, 121K, 1%, 1/8W (V81349) 705-6324-000 T82R29		1
71	2N2223	2	SEMICOND SET (V15818) 351-0004-010 T82Q8A		1
72	533-102	2	RESISTOR,FXD,WW 1K, 3%, 3W (V91637) 747-9307-000 T82R37		1
73	533-302	2	RESISTOR,FXD,WW 3K, 3%, 3W (V91637) 747-9309-000 T82R27		1
74	RN65C2871F	2	RESISTOR,FXD, FILM, 2.87K, 1%, 1/4W (V81349) 705-4572-000 T82R24		1
75	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T82Q9 (EFF TO REV LTR S)		1
75	618-4921-C63	2	TRANSISTOR T82Q9 (EFF REV LTR S)		1
76	RN60C1472F	2	RESISTOR,FXD, FILM, 14.7K, 1%, 1/8W (V81349) 705-6301-000 T82R31		1
77	CS13BF476M	2	CAPACITOR,FXD, ELCTLT, 47UF, 20%, 35V (V81349) 184-6231-000 T82C13		1
78	RCR07G393KS	2	RESISTOR,FXD, CMPSN, 39K, 10%, 1/4W (V81349) 745-0806-000 T82R19		1
79	96P22301S4	2	CAPACITOR,FXD, PPR DIEL, 0.022UF, 20%, 100V (V56289) 931-2499-000 T82C14		1
80	RN60D5110F	2	RESISTOR,FXD, FILM, 511 OHMS, 1%, 1/4W (V81349) 705-6582-000 T82R8		1
81	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T82Q10 (EFF TO REV LTR S)		1
81	618-4921-063	2	TRANSISTOR T82Q10 (EFF REV LTR S)		1
82	RN60D1470F	2	RESISTOR,FXD, FILM, 147 OHMS, 1%, 1/4W (V81349) 705-6556-000 T82R34		1
83	RS1-2-2R000F	2	RESISTOR,FXD,WW 2 OHMS, 1%, 1/2W (V91637) 747-1989-020 T82R36		1
84	RS1-2-2R000F	2	RESISTOR,FXD,WW 2 OHMS, 1%, 1/2W (V91637) 747-1989-020 T82R35		1
85	RN60D5111F	2	RESISTOR,FXD, FILM, 5.11K, 1%, 1/4W (V81349) 705-6630-000 T82R6		1
86	RCR07G223KS	2	RESISTOR,FXD, CMPSN, 22K, 10%, 1/4W (V81349) 745-0797-000 T82R7		1
87	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 T82R17		1
88	RCR07G681KS	2	RESISTOR,FXD, CMPSN, 680 OHMS, 10%, 1/4W (V81349) 745-0743-000 T82R15		1
89	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T82Q4 (EFF TO REV LTR S)		1
89	618-4921-063	2	TRANSISTOR T82Q4 (EFF REV LTR S		1
90	2N1711	2	TRANSISTOR (V07263) 352-0400-000 T82Q3 (EFF TO REV LTR S)		1
90	618-4921-063	2	TRANSISTOR T82Q3 (EFF REV LTR S)		1
91	601D437G040JE6	2	CAPACITOR,FXD, ELCTLT, 430UF, M10%P75%, 40V (V56289) 183-1282-320 T82C11		1
92	139-0090-000	3	RETAINER,CAP 139-0090-000		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-3 - 93	MS16535-153	3	RIVET,TUBULAR, AL, 0.123 DIA X 0.156 (V96906) 305-1808-000 (AP)		1
94	16864	2	TRANSFORMER,PWR (V07388) 662-0296-010 T82T1		1
- 95	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		4
- 96	MS51957-27	2	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		4
97	4007-4HT	2	TERMINAL,LUG (V77147) 304-0015-000		1
97A	628-1213-001	2	TERMINAL BOARD		1
98	SL304-301WHT	3	TERMINAL,FEEDTH (V12615) 306-1851-000		42
99	SL439-433WHT	3	TERMINAL,STDF (V12615) 306-1521-000		23
100	M426	2	TERMINAL,GROUND (V21242) 306-2204-000		12
-101	P334-0278-000	2	NUT,PLAIN,HEX, NP BRS, 2-56 (V77250) 334-0278-000 (AP)		12
-102	310-0094-000	2	WASHER,LOCK, CD PL BRZ, 0.088 ID X 0.165 OD (V79807) 310-0094-000 (AP)		12
103	119-0506-000009	3	HOLDER,XSTR (V98291) 352-9508-000		9

GROUP ASSEMBLY PARTS LIST

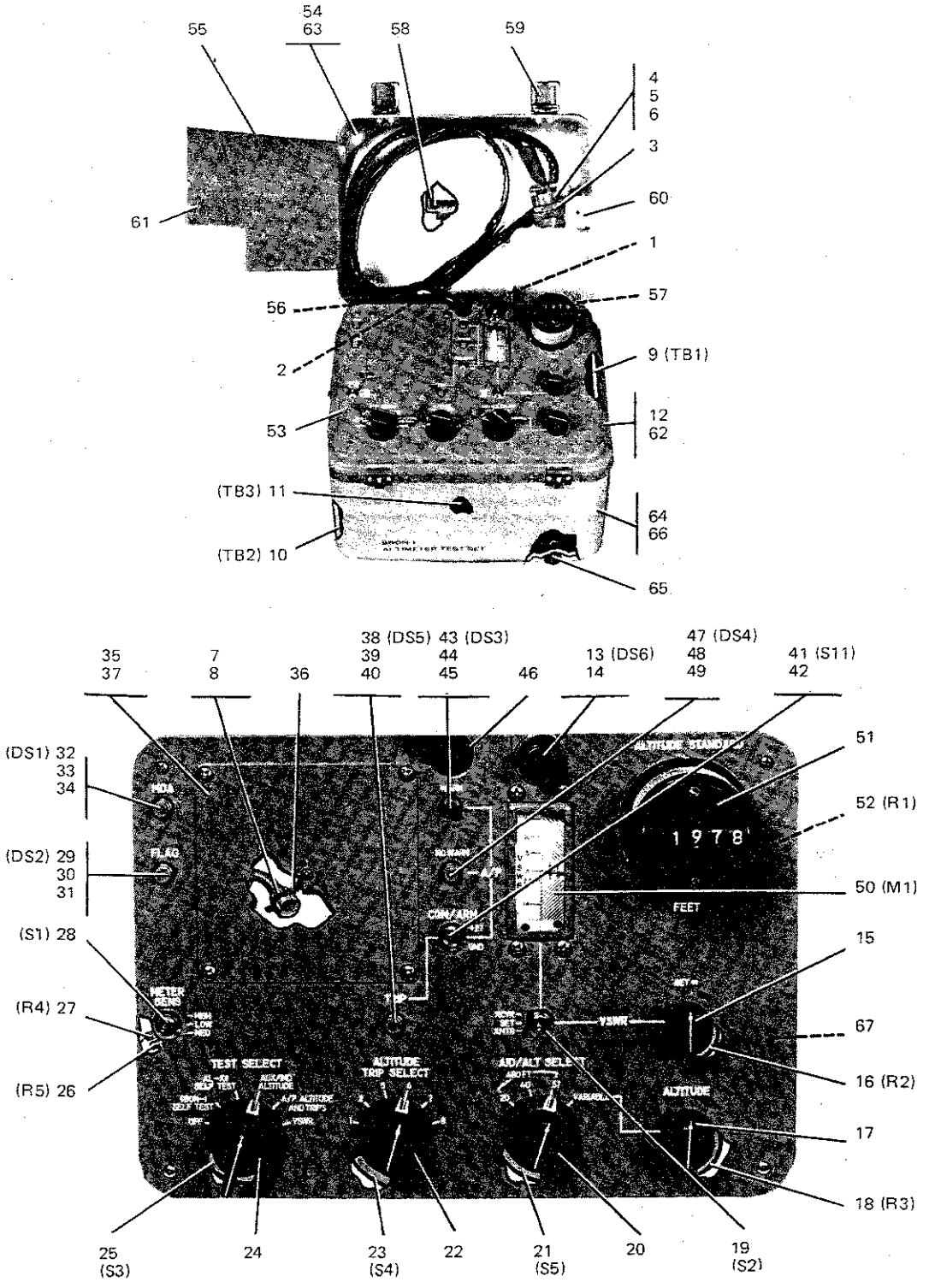


Terminal Board, No 3
Figure 6-4

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-4 -	772-0909-001	1	TERMINAL BOARD, NO.3 (EFF TO SERIAL NO. 351) TB3 (SEE FIG 6-1-16 FOR NHA)		REF
1	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB3CR1		1
2	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB2CR2		1
3	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB3CR5		1
4	RN60D2152F	2	RESISTOR,FXD, FILM, 21.5K, 1%, 1/4W (V81349) 705-6660-000 TB3R2		1
5	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J1		1
6	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J2		1
7	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J3		1
8	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R4		1
9	1N3064	2	SEMICOND DEVICE (V03508) 353-3404-000 TB3CR4		1
10	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R3		1
11	RN60D2871F	2	RESISTOR,FXD, FILM, 2.87K, 1%, 1/4W (V81349) 705-6618-000 TB3R1		1
12	628-1216-001	2	TERMINAL BOARD		1
13	547-5305-002	2	TERMINAL,LUG		1
- 14	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP) (EFF TO REV LTR H)		1
- 14	P313-0045-000	2	NUT,PLAIN,HEX, SST, 6-32 (V77250) 313-0045-000 (AP) (EFF REV LTR H)		1
- 14A	310-0071-000	2	WASHER,LOCK, SST, 0.151 ID X 0.239 OD (V79807) 310-0071-000 (AP)		1
- 15	P343-0618-000	2	SCREW,MACH, CD PL STL, 1/4-20 X 15/32 (V77250) 343-0618-000 (AP)		1
16	SL304-301WHT	3	TERMINAL,FEEDTH (V12615) 306-1851-000		29
17	628-1216-002	3	BOARD		1

GROUP ASSEMBLY PARTS LIST



980N-1 Altimeter Test Set (Serno 352 and Above)
Figure 6-5

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-5 -	522-4610-001	1	TEST SET, ALTIMETER 980N-1 (SERIAL NUMBERS 352 AND ABOVE)		1
1	757-9537-000	2	PLATE,IDENT		1
	68NM26	2	NUT,SLFLKG,HEX, AL, 2-56 (V72962) 333-0327-000 (AP)		2
	P347-1270-000	2	SCREW,MACH, SST, 2-56 X 1/4 (V77250) 347-1270-000 (AP)		2
2	778-0993-001	2	PLATE,MOD		1
3	PT06A18-32P	2	CONNECTOR,PLUG, ELEC (V77820) 371-2430-000 P1		1
4	MS3057-12A	2	ADAPTER,CABLE (V96906) 357-8466-000		1
5	MS3420-10	2	BUSHING,CABLE (V96906) 357-8437-000		1
6	MS3420-12	2	BUSHING,CABLE (V96906) 357-8438-000		1
7	777-0193-001	2	WIRING HARNESS		1
8	MS3116E18-32SX	3	CONNECTOR,PLUG, ELEC (V96906) 371-2244-000 P2		1
9	768-9005-001	2	TERMINAL BOARD, NO.1 TB1 (SEE FIG 6-2-0)		1
	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
10	768-9009-001	2	TERMINAL BOARD, NO.2 TB2 (SEE FIG 6-3-0)		1
	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
11	772-0909-001	2	TERMINAL BOARD, NO.3 TB3 (SEE FIG 6-9-0)		1
	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		2
12	772-0900-001	2	PANEL,FRONT		1
	MS51957-27	2	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		6
	HP6N	2	CLAMP,LOOP (V09922) 150-1543-000 (AP)		1
	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
	310-0046-000	2	WASHER,FLAT, SST, 0.147 ID X 0.312 OD (V79807) 310-0046-000 (AP)		2
	MS51957-26	2	SCREW,MACH, SST, 6-32 X 1/4 (V96906) 343-0167-000 (AP)		2
	HP7N	2	CLAMP,LOOP (V09922) 150-1544-000 (AP)		1
	MS51957-16	2	SCREW,MACH, STL, 4-40 X 7/16 (V96906) 343-0136-000 (AP)		2
13	900-203	3	LIGHT,INST PNL (V71744) 262-1449-010 DS6		1
14	MS25231-1829	3	LAMP,INCAND (V96906) 262-1862-000		1
15	777-0614-001	3	KNOB		1
	MS21342-115	3	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
16	629-9883-001	3	RESISTOR, VARIABLE R2		1
17	757-0228-002	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
18	35405596-103	3	RESISTOR,VAR, 10K, 3%, 2W (V80294) 381-1648-030 R3		1
19	7105SYZQE	3	SWITCH,TGL (V09353) 266-5321-180 S2		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
20	757-0229-010	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
21	44A30-02-2-4N	3	SWITCH,RTRY (V81073) 259-9475-520 S5		1
22	757-0229-010	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
23	44A30-01-1-6N	3	SWITCH,RTRY (V81073) 259-9475-050 S4		1
24	757-0231-008	3	KNOB		1

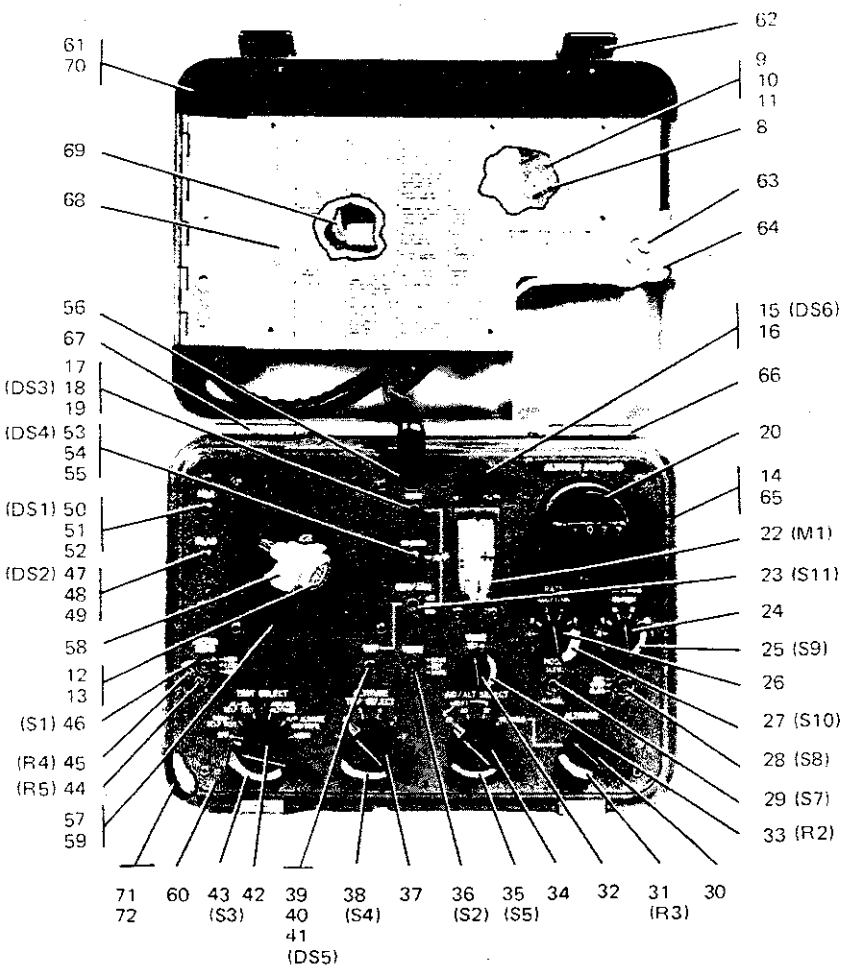
GROUP ASSEMBLY PARTS LIST

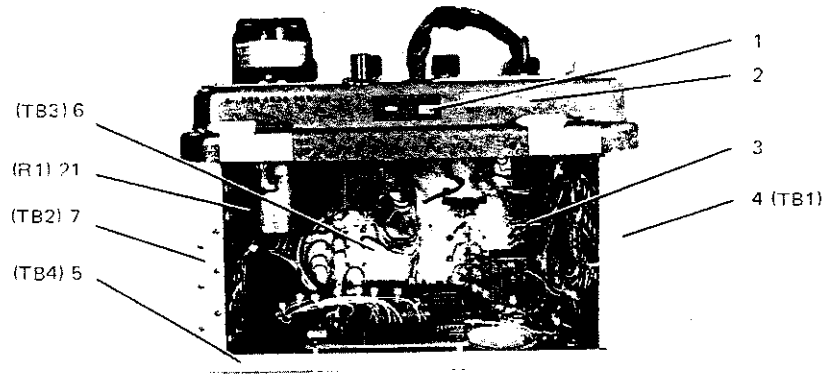
FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-5	328-0013-CC0	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
25	44D30-09-2AJN	3	SWITCH,RTRY (V81073) 259-9594-450 S3		1
	629-9880-001	2	BRACKET,SUPPORT (AP)		1
	MS51957-15	2	SCREW,MACH, STL, 4-40 X 3/8 (V96906) 343-0135-000 (AP)		2
26	RN60D1103F	3	RESISTOR,FXD, FILM, 110K, 1%, 1/4W (V81349) 705-6694-000 R5		1
27	RN60D4643F	3	RESISTOR,FXD, FILM, 464K, 1%, 1/4W (V81349) 705-6724-000 R4		1
28	7105SYZQE	3	SWITCH,TGL (V09353) 266-5321-180 S1		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
29	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS2		1
30	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
31	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
32	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS1		1
33	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
34	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
35	772-0908-001	3	PLATE,COVER		1
	MS51957-30	3	SCREW,MACH, SST, 6-32 X 1/2 (V96906) 343-0171-000 (AP)		4
36	139-0090-000	4	RETAINER,CAP 139-0090-000		1
	68-1660-40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0605-000 (AP)		1
	P347-0006-C00	4	SCREW,MACH, SST, 4-40 X 1/4 (V77250) 347-0006-000 (AP)		1
37	772-0915-001	4	COVER,INDICATOR CUTOUT		1
38	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS5		1
39	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
40	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
41	7101SYZQE	3	SWITCH,TGL (V09353) 266-5321-150 S11		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
42	4012HT	3	TERMINAL,LUG (V77147) 304-2800-000		1
43	102264RL	3	LENS,IND, RED (V08717) 262-1887-000 DS3		1
44	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
45	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
46	911	3	GROMMET,RBR (V75543) 201-1080-000		1
47	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS4		1
48	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
49	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
50	458-0815-040	3	AMMETER,DC (V25936) 458-0815-040 M1		1
	MS51957-28	3	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		3
	MS51957-31	3	SCREW,MACH, SST, 6-32 X 5/8 (V96906) 343-0173-000 (AP)		1
	AN8013D2	3	WASHER,FLAT, AL ALY ANCZ, 0.265 ID X 1.375 OD (V88044) 310-0238-000 (AP)		4
	540-9209-003	3	POST (AP)		4
	MS51957-27	3	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		4
51	1304-896-54	3	DIAL,COUNTING (V04454) 015-3162-010		1
	1720-02	3	WASHER,LOCK, SST, 0.391 ID X 0.507 OD (V78189) 373-0085-000 (AP)		1
52	930-5022	3	RESISTOR,VAR,WW 10K, 5%, 8W (V02111) 377-0001-010 R1		1
53	629-9804-001	3	PLATE,OVERLAY		1
	68NM40	3	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		4
	MS51957-12	3	SCREW,MACH, STL, 4-40 X 3/16 (V96906) 343-0132-000 (AP)		4
	F12NCFMA2-62	4	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000 (AP)		4
54	772-0901-001	3	PANEL,COVER		1

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-5 55	772-8595-001	4	PLATE, INSTRUCTIVE		1
	SE34PL	4	EYELET,MTLC, BRS, 0.091 DIA X 0.093 (V61957) 307-1068-000 (AP)		6
56	772-0906-001	4	HINGE		1
	MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
57	772-0905-001	4	HINGE		1
	MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
58	772-0914-001	4	HANDLE		1
	MS16535-154	4	RIVET,TUBULAR, AL, 0.123 DIA X 0.188 (V96906) 305-1809-000 (AP)		6
59	4402 1-2	4	CATCH,DRAW,PULL (V21192) 015-3167-010		2
	MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
	772-0916-001	4	STOP,COVER (AP)		2
	68NM40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		2
	MS51957-15	4	SCREW,MACH, STL, 4-40 X 3/8 (V96906) 343-0135-000 (AP)		2
60	S3-225	4	LCCKSPRING,TURN (V72794) 012-1196-000		1
	MS16535-77	4	RIVET,TUBULAR, AL, 0.089 DIA X 0.156 (V96906) 305-1756-000 (AP)		2
61	BJR3-30-115DEG	4	STUD,TURNLOCK,F (V72794) 012-5010-010		1
	3	4	RING,RETAINING (V72794) 340-1884-010 (AP)		1
62	629-9882-001	4	PANEL		1
	M45938-4-5	4	NUT,PL,CLINCH, STL, 6-32 (V81349) 334-1476-000 (AP)		8
63	772-0902-001	4	COVER		1
64	772-0903-001	2	CASE		1
	F12NCFMA2-62	3	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000 (AP)		6
65	200-5021-000	3	BUMPER,RBR (V13508) 200-5021-000		4
	68NM62	3	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		4
66	772-0904-001	3	CASE		1
67	629-9342-001	3	MODIFICATION KIT (OPTIONAL-SB-4) (SEE FIG 6-10-0)		1
- 68	7201SYZQ	3	SWITCH,TGL (V09353) 266-5321-060 S6 (OPTIONAL-SB-1)		1
- 69	791-8534-001	3	PLATE,SWITCH IDENT (OPTIONAL-SB-1)		1

GROUP ASSEMBLY PARTS LIST





TP5-4008-017

980N-1 Altimeter Test Set
Figure 6-6

GROUP ASSEMBLY PARTS LIST

	FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
	6-6 -	522-4610-003	1	TEST SET, ALTIMETER 980N-1		1
R		522-4610-004	1	TEST SET, ALTIMETER 980N-1		1
	1	757-9537-000	2	PLATE,IDENT		1
		68NM26	2	NUT,SLFLKG,HEX, AL, 2-56 (V72962) 333-0327-000 (AP)		2
		P347-1270-000	2	SCREW,MACH, SST, 2-56 X 1/4 (V77250) 347-1270-000 (AP)		2
	2	778-0993-001	2	PLATE,MOD		1
	3	629-9880-001	2	BRACKET,SUPPORT		1
		MS51957-15	2	SCREW,MACH, STL, 4-40 X 3/8 (V96906) 343-0135-000 (AP)		2
	4	768-9005-001	2	TERMINAL BOARD, NO.1 TB1 (SEE FIG 6-2-0)		1
		68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
		MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
	5	629-9350-001	2	TERMINAL BOARD, NO.4 TB4 (SEE FIG 6-7-0)		1
		68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		4
		P313-0045-000	2	NUT,PLAIN,HEX, SST, 6-32 (V77250) 313-0045-000 (AP)		2
		MS35338-136	2	WASHER,LOCK, SST, 0.141 ID X 0.250 OD (V96906) 310-0282-000 (AP)		2
		MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		6
	6	772-0909-001	2	TERMINAL BOARD, NO.3 TB3 (SEE FIG 6-9-0)		1
		MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		2
	7	768-9009-001	2	TERMINAL BOARD, NO.2 TB2 (SEE FIG 6-3-0)		1
		68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
		MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		5
	8	PT06A18-32P	2	CONNECTOR,PLUG, ELEC (V77820) 371-2430-000		1
	9	MS3057-12A	2	ADAPTER,CABLE (V96906) 357-8466-000		1
	10	MS3420-10	2	BUSHING,CABLE (V96906) 357-8437-000		1
	11	MS3420-12	2	BUSHING,CABLE (V96906) 357-8438-000		1
	12	777-0193-002	2	WIRING HARNESS		1
	13	MS3116E18-32SX	3	CONNECTOR,PLUG, ELEC (V96906) 371-2244-000 P2		1
	14	772-0900-002	2	PANEL,FRONT		1
		MS51957-27	2	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		6
		HP6N	2	CLAMP,LOOP (V09922) 150-1543-000 (AP)		1
		68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		2
		310-0046-000	2	WASHER,FLAT, SST, 0.147 ID X 0.312 OD (V79807) 310-0046-000 (AP)		2
		MS51957-26	2	SCREW,MACH, SST, 6-32 X 1/4 (V96906) 343-0167-000 (AP)		2
		HP8N	2	CLAMP,LOOP (V09922) 150-1545-000 (AP)		1
		MS51957-16	2	SCREW,MACH, STL, 4-40 X 7/16 (V96906) 343-0136-000 (AP)		2
	15	900-203	3	LIGHT,INST PNL (V71744) 262-1449-010 DS6		1
	16	MS25231-1829	3	LAMP,INCAND (V96906) 262-1862-000		1
	17	102264RL	3	LENS,IND, RED (V08717) 262-1887-000 DS3		1
	18	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
	19	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
	20	1304-896-54	3	DIAL,COUNTING (V04454) 015-3162-010		1
	21	930-5022	3	RESISTOR,VAR,WW 10K, 5%, 8W (V02111) 377-8001-010 R1		1
		P313-0064-000	3	NUT,PLAIN,HEX, SST, 3/8-32 (V77250) 313-0064-000 (AP)		1
		1720-02	3	WASHER,LOCK, SST, 0.391 ID X 0.507 OD (V78189) 373-0085-000 (AP)		1

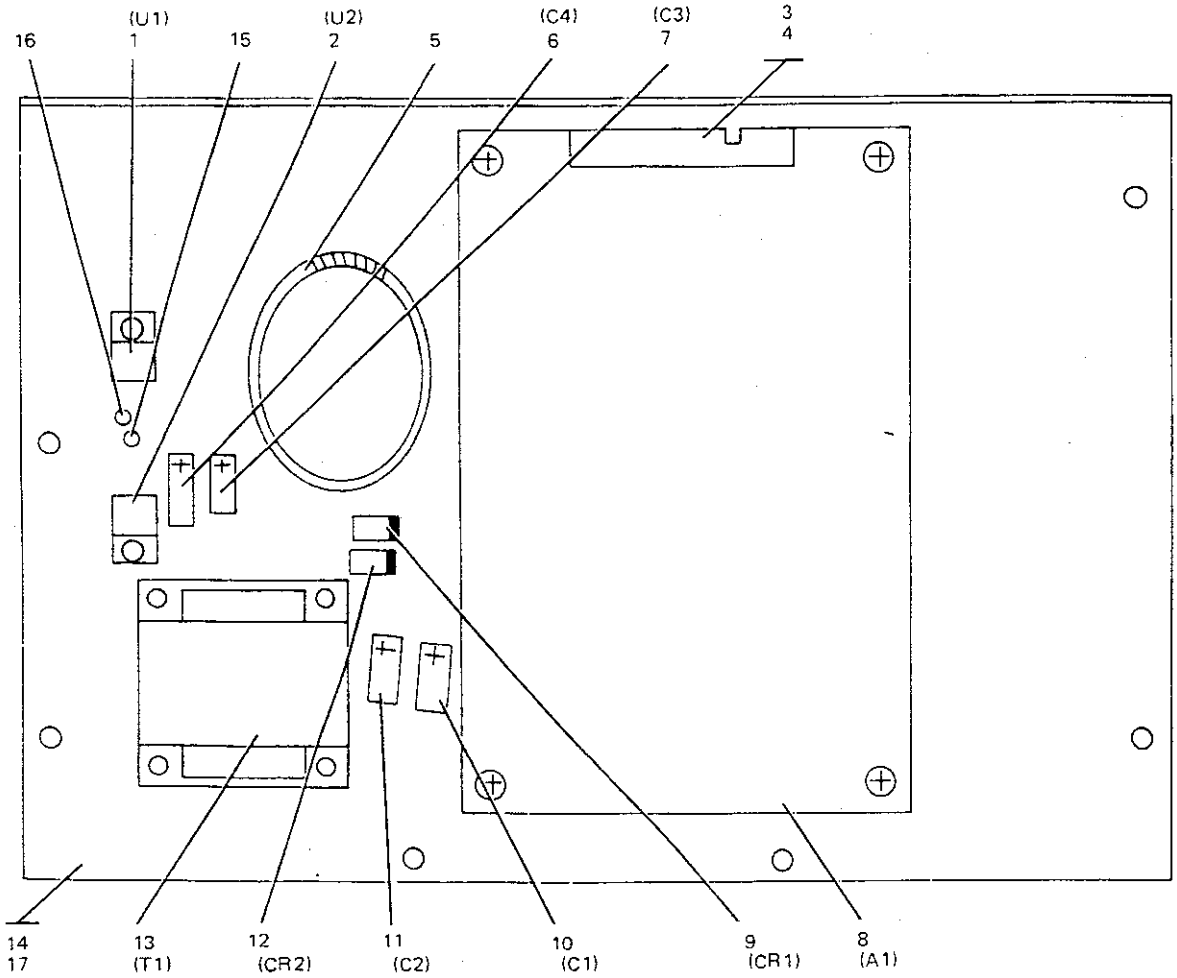
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-6 22	458-0815-040	3	AMMETER,DC (V25936) 458-0815-040 M1		1
	MS51957-28	3	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		3
	MS51957-31	3	SCREW,MACH, SST, 6-32 X 5/8 (V96906) 343-0173-000 (AP)		1
	AN8013D2	3	WASHER,FLAT, AL ALY ANCZ, 0.265 ID X 1.375 OD (V88044) 310-0238-000 (AP)		4
	540-9209-003	3	POST (AP)		4
	MS51957-27	3	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		4
23	7101SYZQE	3	SWITCH,TGL (V09353) 266-5321-150 S11		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
	4012HT	3	TERMINAL,LUG (V77147) 304-2800-000 (AP)		1
24	777-0614-C01	3	KNOB		1
	MS21342-115	3	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
25	629-9351-001	3	SWITCH S9		1
26	777-0614-001	3	KNOB		1
	MS21342-115	3	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
27	629-9351-001	3	SWITCH S10		1
28	7107SYZQE	3	SWITCH,TGL (V09353) 266-5321-190 S8		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
29	7201SYZQE	3	SWITCH,TGL (V09353) 266-5321-200 S7		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
	4012HT	3	TERMINAL,LUG (V77147) 304-2800-000 (AP)		1
30	757-0228-002	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
31	3540S596-1C3	3	RESISTOR,VAR, 10K, 3%, 2W (V80294) 381-1648-030 R3		1
32	777-0614-001	3	KNOB		1
	MS21342-115	3	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
33	629-9883-001	3	RESISTOR, VARIABLE R2		
34	757-0229-010	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
35	44A30-02-2-4N	3	SWITCH,RTRY (V81073) 259-9475-520 S5		1
36	7105SYZQE	3	SWITCH,TGL (V09353) 266-5321-180 S2		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
37	757-0229-010	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
38	44A30-01-1-6N	3	SWITCH,RTRY (V81073) 259-9475-050 S4		1
39	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS5		1
40	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
41	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
42	757-0231-008	3	KNOB		1
	328-0013-000	3	SETSCREW, CD PL STL, 8-32 X 1/4 (V08664) 328-0013-000 (AP)		2
43	44D30-09-2AJN	3	SWITCH,RTRY (V81073) 259-9594-450 S3		1
44	RN60D11C3F	3	RESISTOR,FXD, FILM, 110K, 1%, 1/4W (V81349) 705-6694-000 R5		1
45	RN60D4643F	3	RESISTOR,FXD, FILM, 464K, 1%, 1/4W (V81349) 705-6724-000 R4		1
46	7105SYZQE	3	SWITCH,TGL (V09353) 266-5321-180 S1		1
	7760-01-201	3	DRESS NUT (V09353) 266-5321-840 (AP)		1
47	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS2		1
48	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
49	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
50	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS1		1
51	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1

GROUP ASSEMBLY PARTS LIST

	FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
	6-6 52	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
	53	102264AL	3	LENS,IND, AMB (V08717) 262-1891-000 DS4		1
	54	102SRIH23HI	3	LIGHT,IND (V08717) 262-2185-030		1
	55	CM6839	3	LAMP,INCAND (V71744) 262-1883-020		1
	56	911	3	GROMMET,RBR (V75543) 201-1080-000		1
	57	772-0908-001	3	PLATE,COVER		1
		MS51957-30	3	SCREW,MACH, SST, 6-32 X 1/2 (V96906) 343-0171-000 (AP)		4
	58	139-0090-000	4	RETAINER,CAP 139-0090-000		1
		68-166C-40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0605-000 (AP)		1
		P347-0006-000	4	SCREW,MACH, SST, 4-40 X 1/4 (V77250) 347-0006-000 (AP)		1
	59	772-0915-001	4	COVER,INDICATOR CUTOUT		1
	60	629-9806-001	3	PLATE,OVERLAY		1
		68NM40	3	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		4
		MS51957-12	3	SCREW,MACH, STL, 4-40 X 3/16 (V96906) 343-0132-000 (AP)		4
		F12NCFMA2-62	4	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000 (AP)		4
	61	772-0901-001	3	PANEL,COVER		1
	62	4402 1-2	4	CATCH,DRAW,PULL (V21192) 015-3167-010		2
		MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
		772-0916-001	4	STOP,COVER (AP)		2
		68NM40	4	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		2
		MS51957-15	4	SCREW,MACH, STL, 4-40 X 3/8 (V96906) 343-0135-000 (AP)		2
	63	BJR3-30-115DEG	4	STUD,TURNLOCK,F (V72794) 012-5010-010		1
		3	4	RING,RETAINING (V72794) 340-1884-010 (AP)		1
	64	S3-225	4	LOCKSPRING,TURN (V72794) 012-1196-000		1
		MS16535-77	4	RIVET,TUBULAR, AL, 0.089 DIA X 0.156 (V96906) 305-1756-000 (AP)		2
	65	629-9882-001	4	PANEL		1
		M45938-4-5	4	NUT,PL,CLINCH, STL, 6-32 (V81349) 334-1476-000 (AP)		8
	66	772-0905-001	4	HINGE		1
		MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
	67	772-0906-001	4	HINGE		1
		MS20426AD4-4	4	RIVET,SOLID, AL, 1/8 DIA X 1/4 (V96906) 305-1373-000 (AP)		4
	68	772-8995-001	4	PLATE, INSTRUCTIVE		1
		SE34PL	4	EYELET,TLC, BRS, 0.091 DIA X 0.093 (V61957) 307-1068-000 (AP)		6
	69	772-0914-001	4	HANDLE		1
		MS16535-154	4	RIVET,TUBULAR, AL, 0.123 DIA X 0.188 (V96906) 305-1809-000 (AP)		6
	70	772-0902-001	4	COVER		1
	71	772-0903-001	2	CASE		1
		F12NCFMA2-62	3	NUT,SLFLKG, CD PL STL, 6-32 (V72962) 333-0842-000 (AP)		6
		200-5021-000	3	BUMPER,RBR (V13508) 200-5021-000 (AP)		4
		68NM62	3	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		4
	72	772-0904-001	3	CASE		1
	- 73	7201SYZQ	3	SWITCH,TGL (V09353) 266-5321-060 S6 (OPTIONAL-SB-1)		1
	- 74	791-8534-001	3	PLATE,SWITCH IDENT (OPTIONAL-SB-1)		1
R	- 75	647-4154-001	3	OVERLAY, MYLAR (SB 5)		1
R	- 76	629-9812-002	3	OVERLAY, MYLAR (SB 6)		1

GROUP ASSEMBLY PARTS LIST



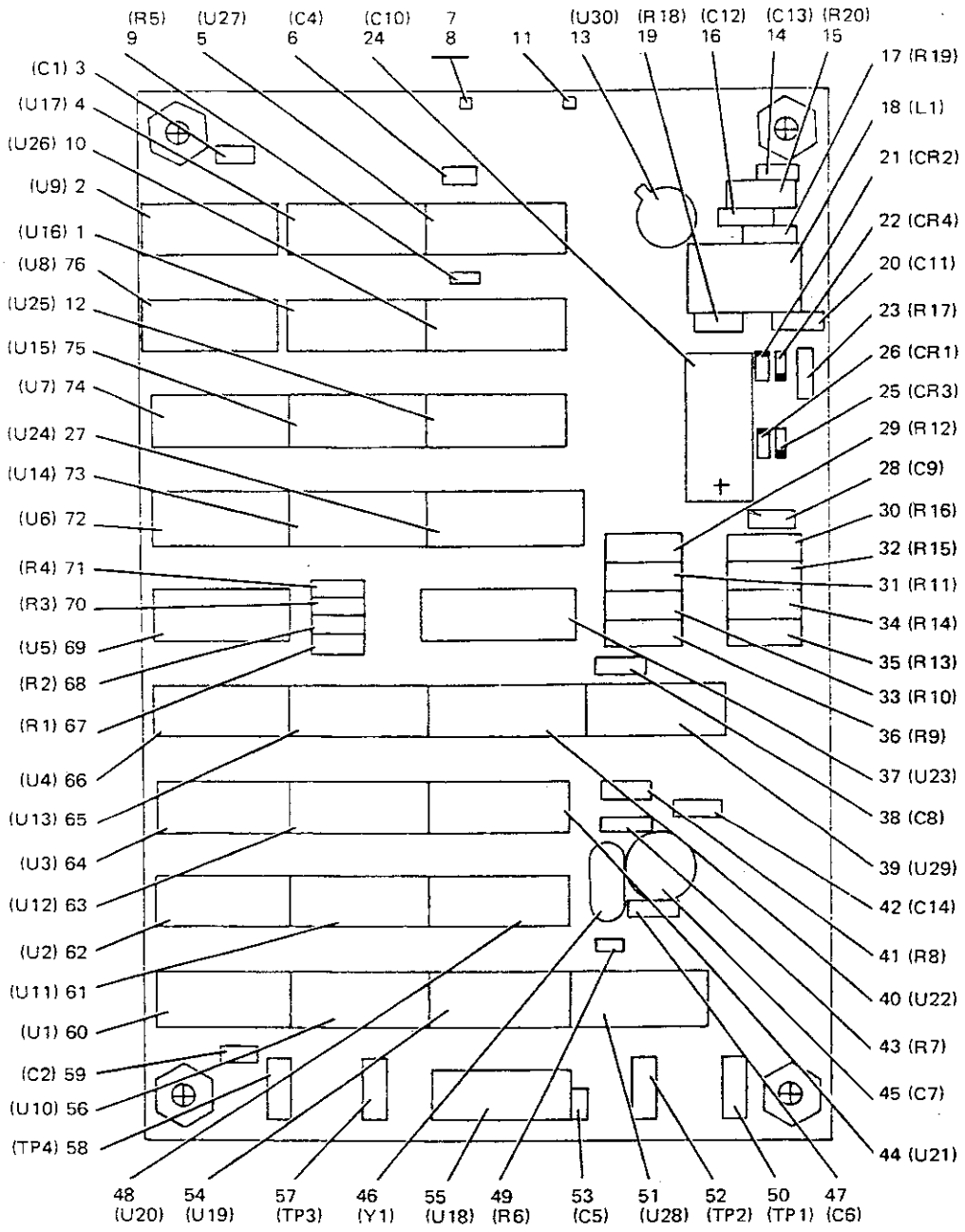
TP5-3903-019

Terminal Board, No 4
Figure 6-7

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-7 -	629-935C-001	1	TERMINAL BOARD, NC.4 TB4 (SEE FIG 6-6-5 AND 6-10-1 FOR NHA)		REF
1	7805UC	2	INTEGRATED CKT (V07263) 351-1120-010 TB4U1		1
	P313-0132-C00	2	NUT,PLAIN,HEX, SST, 4-40 (V77250) 313-0132-000 (AP)		1
	MS35338-135	2	WASHER,LOCK, SST, 0.115 ID X 0.209 OD (V96906) 310-0279-000 (AP)		1
	MS51957-13	2	SCREW,MACH, STL, 4-40 X 1/4 (V96906) 343-0133-000 (AP)		1
2	7805UC	2	INTEGRATED CKT (V07263) 351-1120-010 TB4U2		1
	P313-0132-000	2	NUT,PLAIN,HEX, SST, 4-40 (V77250) 313-0132-000 (AP)		1
	MS35338-135	2	WASHER,LOCK, SST, 0.115 ID X 0.209 OD (V96906) 310-0279-000 (AP)		1
	MS51957-13	2	SCREW,MACH, STL, 4-40 X 1/4 (V96906) 343-0133-000 (AP)		1
3	372-2255-020	2	CONTACT,ELEC 372-2255-020		25
4	629-9036-005	2	CONNECTOR TB4P1		1
	MS3367-4-9	2	CABLE TIE (V96906) 435-1169-000 (AP)		10
5	MS21266-2N	2	PLASTIC CHANNEL (V96906) 150-0175-000		1
6	D27282	2	CAPACITOR,FXD, ELCTLT, 10UF, M10%P100%, 25V (V56289) 183-1364-000 TB4C4		1
7	D27282	2	CAPACITOR,FXD, ELCTLT, 10UF, M10%P100%, 25V (V56289) 183-1364-000 TB4C3		1
8	601-4055-001	2	RATE GENERATOR CIRCUIT CARD TB4A1 (SEE FIG 6-8-0)		1
	540-9168-003	2	POST,HEX (AP)		4
	MS35338-136	2	WASHER,LOCK, SST, 0.141 ID X 0.250 OD (V96906) 310-0282-000 (AP)		4
	310-6340-000	2	WASHER,FLAT, SST, 0.125 ID X 0.281 OD (V79807) 310-6340-000 (AP)		4
	MS51957-13	2	SCREW,MACH, STL, 4-40 X 1/4 (V96906) 343-0133-000 (AP)		8
9	1N5415	2	SEMICOND DEVICE (V14099) 353-6558-010 TB4CR1		1
10	600D227G030DJ5	2	CAPACITOR,FXD, ELCTLT, 220UF, M10%P50%, 30V (V56289) 183-2338-000 TB4C1		1
11	600D227G030DJ5	2	CAPACITOR,FXD, ELCTLT, 220UF, M10%P50%, 30V (V56289) 183-2338-000 TB4C2		1
12	1N5415	2	SEMICOND DEVICE (V14099) 353-6558-010 TB4CR2		1
13	41279	2	TRANSFORMER,PWR (V73386) 672-0255-010 TB4T1		1
	MS51957-27	2	SCREW,MACH, SST, 6-32 X 5/16 (V96906) 343-0168-000 (AP)		4
14	629-9315-001	2	PLATE, TRANSFORMER MOUNTING		1
15	M2-542-1	3	TERMINAL,FEEDTH (V12615) 306-2608-030		3
16	SL441-434WHT	3	TERMINAL,STDF (V12615) 306-2222-100		10
17	629-9315-002	3	PLATE		1

GROUP ASSEMBLY PARTS LIST



TP5-3904-019

Rate Generator Circuit Card (A1)
Figure 6-8

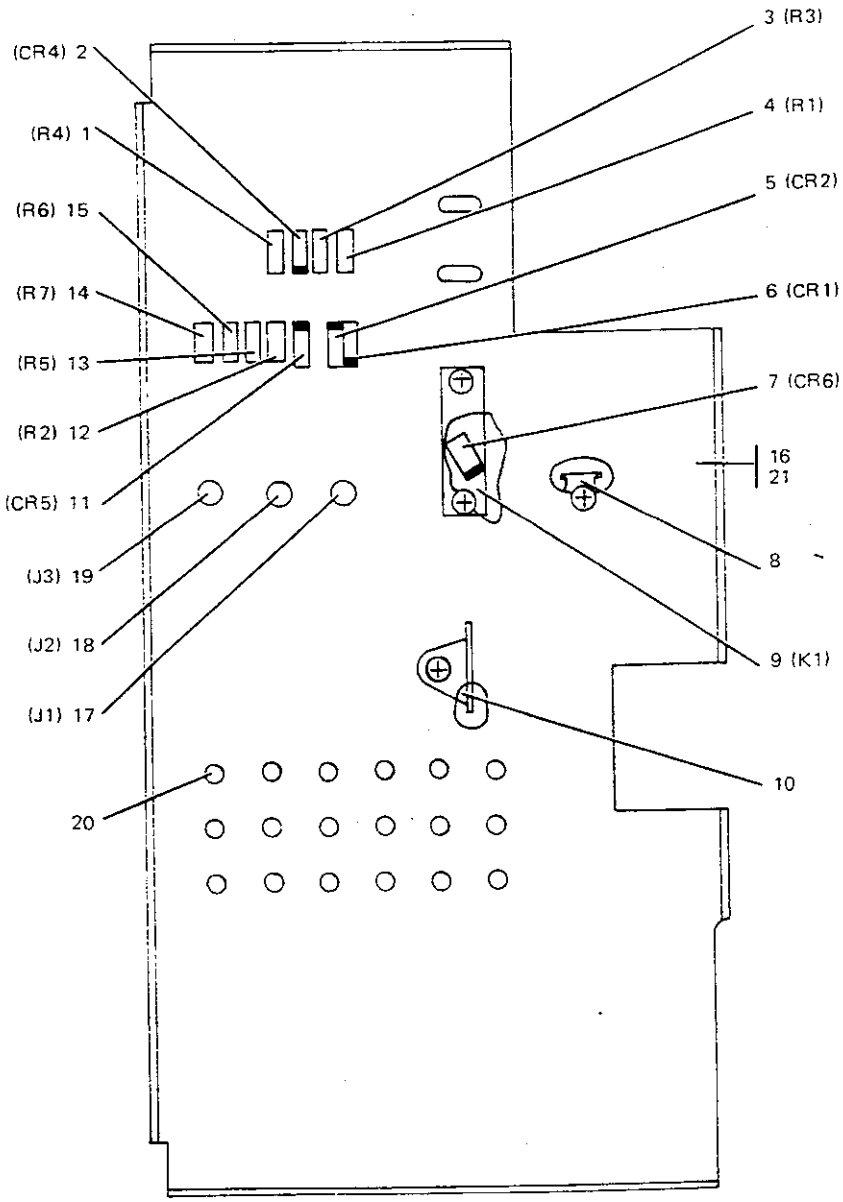
GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-8 -	601-4055-001	1	RATE GENERATOR CIRCUIT CARD A1 (SEE FIG 6-7-8 FOR NHA)		REF
1	5420DM	2	INTEGRATED CKT (V07263) 351-7691-010 A1U16		1
2	314A682	2	RESISTOR NTWK, 6.8K, 2%, 1-1/4W (V01121) 350-4027-110 A1U9		1
3	CK05BX104K	2	CAPACITOR,FXD, CER DIEL, 0.1UF, 10%, 50V (V81349) 913-5019-320 A1C1		1
4	314A682	2	RESISTOR NTWK, 6.8K, 2%, 1-1/4W (V01121) 350-4027-110 A1U17		1
5	SN5474J	2	INTEGRATED CKT (V01295) 351-7606-020 A1U27		1
6	CK05BX104K	2	CAPACITOR,FXD, CER DIEL, 0.1UF, 10%, 50V (V81349) 913-5019-320 A1C4		1
7	372-2601-043	2	CONTACT,ELEC 372-2601-043		27
8	372-2601-045	2	CONTACT,ELEC 372-2601-045		27
9	RCR05G471KS	2	RESISTOR,FXD, CMPSN, 470 OHMS, 10%, 1/8W (V81349) 745-2329-000 A1R5		1
10	SN5402J	2	INTEGRATED CKT (V01295) 351-7678-010 A1U26		1
11	768-5919-003	2	PIN		1
12	SN5474J	2	INTEGRATED CKT (V01295) 351-7606-020 A1U25		1
13	MC1558G	2	INTEGRATED CKT (V04713) 351-1071-020 A1U30		1
14	292P1539R8	2	CAPACITOR,FXD, PLSTC DIEL, 0.015UF, 10%, 80V (V56289) 933-1039-180 A1C13		1
15	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R20		1
16	CK06BX105M	2	CAPACITOR,FXD, CER DIEL, 1UF, 20%, 50V (V81349) 913-5019-840 A1C12		1
17	RN55D5901F	2	RESISTOR,FXD, FILM, 5.9K, 10%, 1/8W (V81349) 705-1033-000 A1R19		1
18	MS14049-1	2	COIL,RF, 470UH (V96906) 240-1640-000 A1L1		1
19	RN55D3320F	2	RESISTOR,FXD, FILM, 332 OHMS, 1%, 1/8W (V81349) 705-0973-000 A1R18		1
20	CK06BX392K	2	CAPACITOR,FXD, CER DIEL, 3900PF, 10%, 200V (V81349) 913-4025-000 A1C11		1
21	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 A1CR2		1
22	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 A1CR4		1
23	RCR07G103KS	2	RESISTOR,FXD, CMPSN, 10K, 10%, 1/4W (V81349) 745-0785-000 A1R17		1
24	D27282	2	CAPACITOR,FXD, ELCTLT, 10UF, M10%P100%, 25V (V56289) 183-1364-000 A1C10		1
25	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 A1CR3		1
26	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 A1CR1		1
27	N74161A	2	INTEGRATED CKT (V18324) 351-7750-010 A1U24		1
28	C22A510M	2	CAPACITOR,FXD, CER DIEL, 51PF, 20%, 100V (V16546) 913-5661-400 A1C9		1
29	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R12		1
30	RNC60H1002FS	2	RESISTOR,FXD, FILM, 10K, 1%, 1/8W (V81349) 724-0648-530 A1R16		1
31	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R11		1
32	RNC60H1002FS	2	RESISTOR,FXD, FILM, 10K, 1%, 1/8W (V81349) 724-0648-530 A1R15		1
33	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R10		1
34	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R14		1
35	RNC60H1002FS	2	RESISTOR,FXD, FILM, 10K, 1%, 1/8W (V81349) 724-0648-530 A1R13		1
36	RNC60H2002FS	2	RESISTOR,FXD, FILM, 20K, 1%, 1/8W (V81349) 724-0648-820 A1R9		1
37	N74161A	2	INTEGRATED CKT (V18324) 351-7750-010 A1U23		1
38	CK06BX105M	2	CAPACITOR,FXD, CER DIEL, 1UF, 20%, 50V (V81349) 913-5019-840 A1C8		1

GROUP ASSEMBLY PARTS LIST

	FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
	6-8 39	DM5486J	2	INTEGRATED CKT (V27014) 351-7757-010 A1U29		1
	40	N74161A	2	INTEGRATED CKT (V18324) 351-7750-010 A1U22		1
	41	RCR07G152KS	2	RESISTOR,FXD, CMPSN, 1.5K, 10%, 1/4W (V81349) 745-0755-000 A1R8		1
	42	DM5E200D100WV	2	CAPACITOR,FXD, MICA DIEL, 20PF, PORM 0.5PF, 100V (V72136) 912-4141-150 A1C14		1
	43	RCR07G102KS	2	RESISTOR,FXD, CMPSN, 1K, 10%, 1/4W (V81349) 745-0749-000 A1R7		1
	44	SN5404J	2	INTEGRATED CKT (V01295) 351-7689-010 A1U21		1
	45	538011E2P094R	2	CAPACITOR,VAR, CER DIEL, 9 TO 35PF, 200V (V72982) 917-1225-000 A1C7		1
	46	CR60AU8-000000MHZ	2	XTAL UNIT,QTZ, 8.000000MHZ (V81349) 289-7163-010 A1Y1		1
	47	DM5C150D300WV	2	CAPACITOR,FXD, MICA DIEL, 15PF, PORM 0.5PF, 300V (V72136) 912-4141-130 A1C6		1
	48	M38510-01702BEB	2	MICROCIRCUIT (V81349) 351-7935-010 A1U20		1
	49	RCR05G471KS	2	RESISTOR,FXD, CMPSN, 470 OHMS, 10%, 1/8W (V81349) 745-2329-000 A1R6		1
	50	105-0751-149	2	JACK,TIP, WHT (V74970) 360-0437-010 A1TP1		1
	51	SN5474J	2	INTEGRATED CKT (V01295) 351-7606-020 A1U28		1
	52	105-0751-149	2	JACK,TIP, WHT (V74970) 360-0437-010 A1TP2		1
	53	CK05BX104K	2	CAPACITOR,FXD, CER DIEL, 0.1UF, 10%, 50V (V81349) 913-5019-320 A1C5		1
	54	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U19		1
	55	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U18		1
	56	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U10		1
	57	105-0751-149	2	JACK,TIP, WHT (V74970) 360-0437-010 A1TP3		1
	58	105-0751-149	2	JACK,TIP, WHT (V74970) 360-0437-010 A1TP4		1
	59	CK05BX104K	2	CAPACITOR,FXD, CER DIEL, 0.1UF, 10%, 50V (V81349) 913-5019-320 A1C2		1
	60	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U1		1
	61	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U11		1
	62	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U2		1
	63	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U12		1
	64	SN5474J	2	INTEGRATED CKT (V01295) 351-7606-020 A1U3		1
	65	DM54164J	2	INTEGRATED CKT (V27014) 351-7490-010 A1U13		1
	66	SN5483AJ	2	INTEGRATED CKT (V01295) 351-7612-010 A1U4		1
	67	RCR07G222KS	2	RESISTOR,FXD, CMPSN, 2.2K, 10%, 1/4W (V81349) 745-0761-000 A1R1		1
	68	RCR07G222KS	2	RESISTOR,FXD, CMPSN, 2.2K, 10%, 1/4W (V81349) 745-0761-000 A1R2		1
	69	SN5483AJ	2	INTEGRATED CKT (V01295) 351-7612-010 A1U5		1
	70	RCR07G222KS	2	RESISTOR,FXD, CMPSN, 2.2K, 10%, 1/4W (V81349) 745-0761-000 A1R3		1
	71	RCR07G222KS	2	RESISTOR,FXD, CMPSN, 2.2K, 10%, 1/4W (V81349) 745-0761-000 A1R4		1
	72	M38510-01702BEB	2	MICROCIRCUIT (V81349) 351-7935-010 A1U6		1
R	73	629-4909-004	2	INTEGRATED CIRCUIT A1U14 (EFF TO SB 5)		1
R	73	629-4909-001	2	INTEGRATED CIRCUIT A1U14 (EFF SB 5)		1
	74	SN54157J	2	INTEGRATED CKT (V01295) 351-1539-010 A1U7		1
	75	5420DM	2	INTEGRATED CKT (V07263) 351-7691-010 A1U15		1
	76	5420DM	2	INTEGRATED CKT (V07263) 351-7691-010 A1U8		1

GROUP ASSEMBLY PARTS LIST



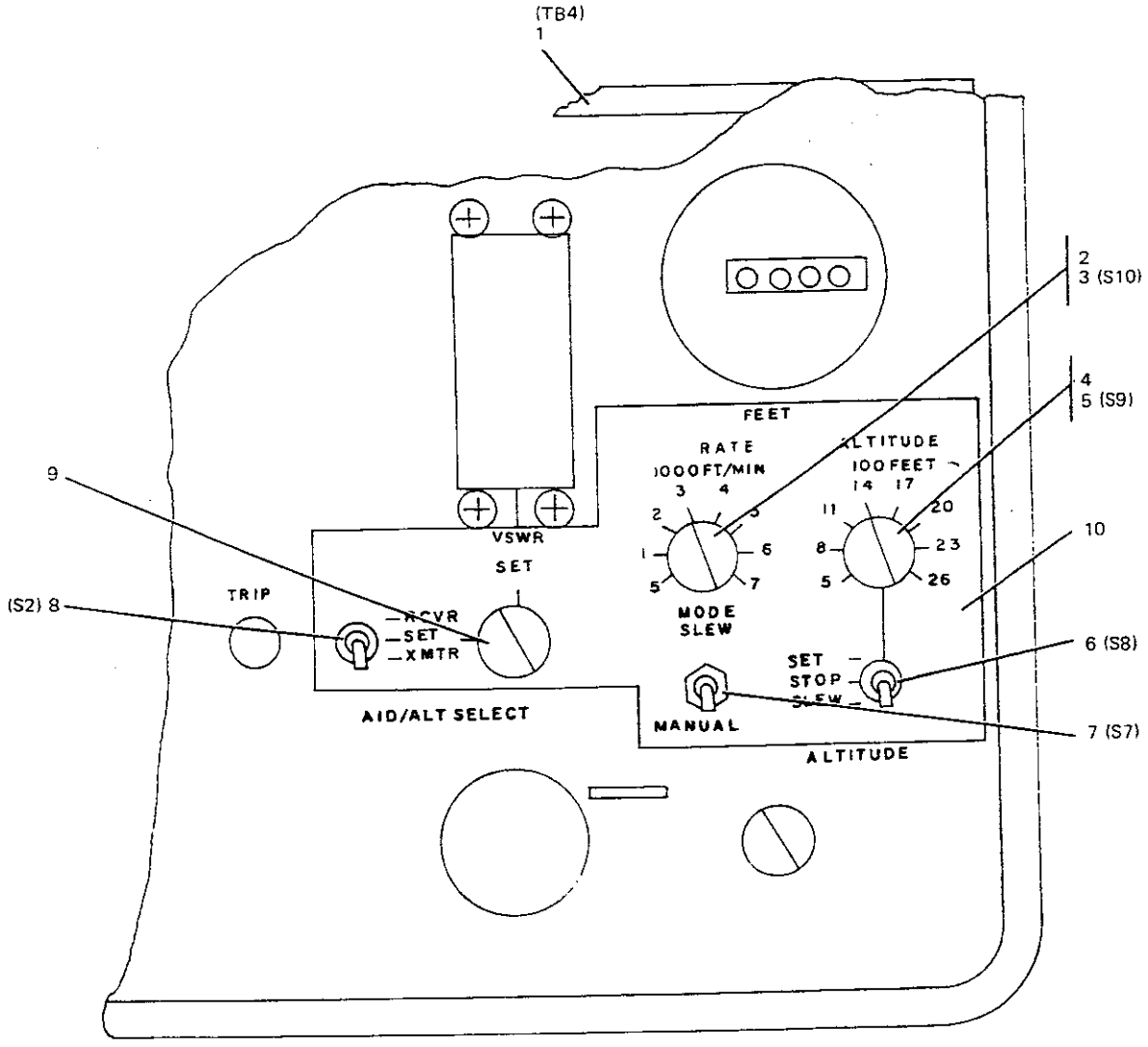
TP5-3868-019

Terminal Board, No 3
Figure 6-9

GROUP ASSEMBLY PARTS LIST

FIG - ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-9 -	772-0909-001	1	TERMINAL BOARD, NO.3 (EFF SERIAL NO. 352) TB3 (SEE FIG 6-5-11 FOR NHA)		REF
-	772-0909-001	1	TERMINAL BOARD, NO.3 (EFF REV LTR J) TB3 (SEE FIG 6-6-6 FOR NHA)		REF
1	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R4		1
2	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB3CR4		1
3	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R3		1
4	RN60D2871F	2	RESISTOR,FXD, FILM, 2.87K, 1%, 1/4W (V81349) 705-6618-000 TB3R1		1
5	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB3CR2		1
6	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB3CR1		1
7	SC5614	2	SEMICOND DEVICE (V14099) 353-6556-010 TB3CR6		1
8	403	2	TERMINAL,LUG (V79963) 304-1089-000		1
	P313-0045-000	2	NUT,PLAIN,HEX, SST, 6-32 (V77250) 313-0045-000 (AP)		1
	310-0071-000	2	WASHER,LOCK, SST, 0.151 ID X 0.239 OD (V79807) 310-0071-000 (AP)		1
	P343-0618-000	2	SCREW,MACH, CD PL STL, 1/4-20 X 15/32 (V77250) 343-0618-000 (AP)		1
9	M5757-9-011	2	RELAY,ARM (V81349) 974-1076-070 TB3K1		1
	68NM40	2	NUT,SLFLKG,HEX, AL, 4-40 (V72962) 333-0347-000 (AP)		2
	MS51957-13	2	SCREW,MACH, STL, 4-40 X 1/4 (V96906) 343-0133-000 (AP)		2
10	547-5305-002	2	TERMINAL,LUG		1
	P313-0045-000	2	NUT,PLAIN,HEX, SST, 6-32 (V77250) 313-0045-000 (AP)		1
	310-0071-000	2	WASHER,LOCK, SST, 0.151 ID X 0.239 OD (V79807) 310-0071-000 (AP)		1
	P343-0618-000	2	SCREW,MACH, CD PL STL, 1/4-20 X 15/32 (V77250) 343-0618-000 (AP)		1
11	1N4454	2	SEMICOND DEVICE (V03508) 353-3644-010 TB3CR5		1
12	RN60D2152F	2	RESISTOR,FXD, FILM, 21.5K, 1%, 1/4W (V81349) 705-6660-000 TB3R2		1
13	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R5		1
14	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R7		1
15	RCR20G121KS	2	RESISTOR,FXD, CMPSN, 120 OHMS, 10%, 1/2W (V81349) 745-1314-000 TB3R6		1
16	628-1216-001	2	TERMINAL BOARD		1
17	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J1		1
18	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J2		1
19	M39024-12-02	3	JACK,TIP, RED (V81349) 360-0139-000 TB3J3		1
20	SL304-301WHT	3	TERMINAL,FEEDTH (V12615) 306-1851-000		35
21	628-1216-002	3	BOARD		1

GROUP ASSEMBLY PARTS LIST



TP5-4087-019

Modification Kit
Figure 6-10

GROUP ASSEMBLY PARTS LIST

FIG – ITEM	PART NO	INDENT	DESCRIPTION	USABLE ON CODE	UNITS PER ASSY
6-10 -	629-9342-001	1	MODIFICATION KIT (SB-4) (SEE FIG 6-1-97 AND 6-5-67 FOR NHA)		REF
1	629-9350-001	2	TERMINAL BOARD, NO.4 TB4 (SEE FIG 6-7-0)		1
	68NM62	2	NUT,SLFLKG,HEX, AL, 6-32 (V72962) 333-0368-000 (AP)		6
	MS51957-28	2	SCREW,MACH, SST, 6-32 X 3/8 (V96906) 343-0169-000 (AP)		6
2	757-0232-009	2	KNOB		1
	MS21342-115	2	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
3	629-9351-001	2	SWITCH S10		1
4	757-0232-009	2	KNOB		1
	MS21342-115	2	SETSCREW, CD PL STL, 4-40 X 1/4 (V96906) 328-0435-000 (AP)		2
5	629-9351-001	2	SWITCH S9		1
6	7107SYZQE	2	SWITCH,TGL (V09353) 266-5321-190 S8		1
7	7201SYZQE	2	SWITCH,TGL (V09353) 266-5321-200 S7		1
	4012HT	2	TERMINAL,LUG (V77147) 304-2800-000 (AP)		1
8	7105SYZQE	2	SWITCH,TGL (V09353) 266-5321-180 S2		1
9	757-0232-001	2	KNOB		1
	328-0473-000	2	SETSCREW, CD PL STL, 8-32 X 3/16 (V08664) 328-0473-000 (AP)		2
10	629-9307-001	2	PLATE,OVERLAY		1

6.3 NUMERICAL INDEX

PART NUMBER	FIG - ITEM	TTL REQ
AN8013D2	6-5-50	4
	6-6-22	4
BJR3-30-115DEG	6-1-89	1
	6-5-61	1
	6-6-63	1
CK05BX104K	6-8-3	1
	6-8-6	1
	6-8-53	1
	6-8-59	1
CK06BX105M	6-8-16	1
	6-8-38	1
CK06BX392K	6-8-20	1
CL23BL1R5TNE	6-2-30	1
CL23CJ1R5TN3	6-2-30	1
CM05FD101J03	6-2-85	1
CM05FD201J03	6-2-18	1
CM06FD152J03	6-2-36	1
CM06FD272J03	6-2-13	1
CM06FD302J03	6-2-36	1
CM06FD332J03	6-2-93	1
	6-2-106	1
CM06FD472J03	6-2-7	1
	6-2-39A	1
	6-3-11	1
	6-3-12	1
CM07FD682J03	6-3-15	1
CM36377-030	6-1-49	1
CM6839	6-5-30	1
	6-5-33	1
	6-5-39	1
	6-5-44	1
	6-5-48	1
	6-6-19	1
	6-6-41	1
	6-6-49	1
	6-6-52	1
	6-6-55	1
CR60AU8-000000MHZ	6-8-46	1
C913BF476M	6-3-77	1
C22A510M	6-8-28	1
DL644	6-3-5	1
DM5C150D300WV	6-8-47	1
DM5B200D100WV	6-8-42	1
DM5F101J050WV	6-3-44	1
DM54164J	6-8-54	1
	6-8-55	1
	6-8-56	1
	6-8-60	1
	6-8-61	1
	6-8-62	1
	6-8-63	1
	6-8-65	1
DM5486J	6-8-39	1
DP439-433RED	6-2-142	3
D27282	6-7-6	1
	6-7-7	1
	6-8-24	1
F12NCFMA2-62	6-1-72	4
	6-1-93	6
	6-5-53	4
	6-5-64	6
	6-6-60	4
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HP6N	6-5-12	1
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HP7N	6-5-12	1
HP8N	6-6-14	1
MCI558G	6-8-13	1
MS14049-1	6-8-18	1
MS16535-153	6-3-93	1
MS16535-154	6-1-80	6
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MS16535-76	6-2-3	6
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MS16535-77	6-1-88	2
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MS20426AD4-4	6-1-78	8
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MS21266-2N	6-7-5	1
MS21342-115	6-5-15	2
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	6-10-4	2
MS25231-1829	6-5-14	1
	6-6-16	1
MS25237-387	6-1-65	5
MS3057-12A	6-1-5	1
	6-5-4	1
	6-6-9	1
MS3116E18-32SX	6-1-9	1
	6-5-8	1
	6-6-13	1
MS3367-4-9	6-7-4	10
MS3420-10	6-1-6	1
	6-5-5	1
	6-6-10	1
MS3420-12	6-1-7	1
	6-5-6	1
	6-6-11	1
MS3420-16	6-1-8	1
MS35058-27	6-1-67	1
	6-1-68	1
MS35338-135	6-3-40	2
	6-7-1	1
	6-7-2	1
MS35338-136	6-6-5	2
	6-7-8	4
MS35649-244	6-3-39	2
MS51957-12	6-5-53	4
	6-6-60	4
MS51957-13	6-7-1	1
	6-7-2	1
	6-7-8	8
	6-9-9	2
MS51957-15	6-1-85	2
	6-5-25	2

NUMERICAL INDEX

PART NUMBER	FIG - ITEM	TTL REQ
MS51957-15	6-5-59	2
	6-6-3	2
	6-6-62	2
MS51957-16	6-3-43	2
	6-5-12	2
	6-6-14	2
MS51957-26	6-5-12	2
	6-6-14	2
MS51957-27	6-1-19	6
	6-3-96	4
	6-5-12	6
	6-5-50	4
	6-6-14	6
	6-6-22	4
	6-7-13	4
MS51957-28	6-1-12	5
	6-1-15	5
	6-1-17	2
	6-5-9	5
	6-5-10	5
	6-5-11	2
	6-5-50	3
	6-6-4	5
	6-6-5	6
	6-6-6	2
	6-6-7	5
	6-6-22	3
	6-10-1	6
MS51957-30	6-1-38	4
	6-5-35	4
	6-6-57	4
MS51957-31	6-5-50	1
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MS51957-35	6-1-57A	1
MS51957-4	6-1-21	4
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	6-3-18	1
MS51957-70	6-3-57	2
MS51957-8	6-3-56	4
MS75089-40	6-2-40	1
MW375-118	6-2-44	1
M2-542-1	6-7-15	3
M38510-01702BEB	6-8-48	1
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M39024-12-02	6-2-81	1
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M426	6-2-137	13
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M45938-4-5	6-1-75	8
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M5-540-1	6-2-144	2
M5757-9-011	6-9-9	1
N74161A	6-8-27	1
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PT06A18-32P	6-1-4	1
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	6-6-58	1
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	6-6-1	2
RCR05G471KS	6-8-9	1
	6-8-49	1
RCR07G100KS	6-2-80	1
	6-2-89	1
RCR07G101KS	6-2-97	1
	6-2-111	1
RCR07G102KS	6-2-10	1
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RCR07G103KS	6-2-9A	1
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RCR07G104KS	6-2-132A	1
RCR07G105KS	6-2-40A	1
RCR07G152KS	6-8-41	1
RCR07G153KS	6-2-28	1
	6-2-86	1
	6-2-112	1
RCR07G183KS	6-3-29	1

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PART NUMBER	FIG - ITEM	TTL REQ
RCR07G222KS	6-8-67	1
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	6-8-71	1
RCR07G223KS	6-2-37	1
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	6-2-104	1
	6-3-86	1
RCR07G272KS	6-2-12	1
RCR07G273KS	6-2-27	1
	6-3-23	1
	6-3-24	1
RCR07G330KS	6-2-103	1
RCR07G333KS	6-2-117	1
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	6-2-130	1
	6-3-30	1
RCR07G392KS	6-3-3	1
RCR07G393KS	6-3-78	1
RCR07G471KS	6-2-20	1
RCR07G472KS	6-2-39	1
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	6-3-28	1
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RCR07G473KS	6-2-15	1
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RCR07G474KS	6-2-32	1
RCR07G681KS	6-3-88	1
RCR07G821KS	6-2-31	1
RCR07G822KS	6-3-1	1
RCR20G1D1KS	6-2-23	1
RCR20G121KS	6-2-132	1
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RCR20G390KS	6-3-48	1
RCR32G182KS	6-3-61	1
RH289-7072-010	6-2-1	1
RH289-7072-020	6-2-42	1
RH289-7072-030	6-2-41	1
RNC60H1002FS	6-8-30	1
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RNC60H2002FS	6-8-15	1
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RN55D3320F	6-8-19	1
RN55D4991F	6-2-78	1
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PART NUMBER	FIG - ITEM	TTL REQ
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RN55D5901F	6-8-17	1
RN60C1213F	6-3-70	1
RN60C1472F	6-3-65	1
	6-3-76	1
RN60C4222F	6-3-69	1
RN60C4641F	6-3-68	1
RN60D1001F	6-3-52	1
RN60D1103F	6-1-70	1
	6-5-26	1
	6-6-44	1
RN60D1211F	6-3-52	1
RN60D1331F	6-2-75	AR
RN60D1401F	6-2-75	AR
RN60D1470F	6-3-82	1
RN60D1471F	6-2-75	AR
RN60D1541F	6-2-75	AR
RN60D1960F	6-3-9	1
RN60D2150F	6-2-75	AR
	6-2-95	1
	6-2-108	1
RN60D2152F	6-4-4	1
	6-9-12	1
RN60D2490F	6-2-72	1
RN60D2611F	6-3-34	1
RN60D2871F	6-4-11	1
	6-9-4	1
RN60D3160F	6-2-95	1
	6-2-108	1
RN60D3650F	6-2-116	1
RN60D4643F	6-1-69	1
	6-5-27	1
	6-6-45	1
RN60D4871F	6-2-78	1
	6-2-92	1
RN60D5110F	6-3-14	1
	6-3-80	1
RN60D5111F	6-3-85	1
RN60D5621F	6-3-10	1
RN65C2871F	6-3-24	1
	6-3-74	1
RN65D2871F	6-3-50	1
RS1-2-2R000F	6-3-83	1
	6-3-84	1
RT22C2L102	6-3-67	1
RT22C2L203	6-3-62	1
RT22C2L500	6-3-66	1
RT22C2L501	6-3-59	1
	6-3-63	1
RW59V221	6-2-26	1
RW69V471	6-2-19	1
SC5614	6-9-7	1
SE34PL	6-1-74	6
	6-5-55	6
	6-6-68	6
SL304-301RED	6-2-143	6
SL304-301WHT	6-2-140	77
	6-2-140	56
	6-3-98	42
	6-4-16	29
	6-9-20	35
SL439-433WHT	6-2-141	34

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PART NUMBER	FIG - ITEM	TTL REQ
SL439-433WHT	6-2-141	19
	6-3-99	23
SL441-434WHT	6-7-16	10
SN5402J	6-8-10	1
SN5404J	6-8-44	1
SN54157J	6-8-74	1
SN5474J	6-8-5	1
	6-8-12	1
	6-8-51	1
	6-8-64	1
SN5483AJ	6-8-66	1
	6-8-69	1
S3-225	6-1-87	1
	6-5-60	1
	6-6-64	1
TX82P032-037-38	6-2-43	1
0550F5-064	6-2-73	1
	6-2-74	1
1-8SSBALL	6-1-31	1
1N270	6-3-4	1
1N3026B	6-2-77	1
	6-2-91	1
1N3064	6-2-35	1
	6-2-38A	1
	6-2-47	1
	6-2-51	1
	6-2-52	1
	6-2-58	1
	6-2-59	1
	6-2-61	1
	6-2-64	1
	6-2-66	1
	6-2-71	1
	6-2-94	1
	6-2-100	1
	6-2-107	1
	6-2-115	1
	6-2-121	1
	6-2-122	1
	6-2-128	1
	6-4-1	1
	6-4-2	1
	6-4-3	1
	6-4-9	1
1N4002	6-3-46	1
	6-3-47	1
1N4370	6-2-76	1
1N4454	6-2-35	1
	6-2-38A	1
	6-2-94	1
	6-2-100	1
	6-2-107	1
	6-2-115	1
	6-8-21	1
	6-8-22	1
	6-8-25	1
	6-8-26	1
	6-9-2	1
	6-9-5	1
	6-9-6	1
	6-9-11	1
1N5415	6-7-9	1
	6-7-12	1

PART NUMBER	FIG - ITEM	TTL REQ
1N545	6-2-46	1
	6-2-48	1
	6-2-56	1
	6-2-65	1
	6-2-123	1
	6-2-129	1
	6-3-4	1
	6-3-53	1
	6-3-54	1
1N751A	6-3-49	1
1N938A	6-3-64	1
1N963A	6-2-54	1
	6-2-63	1
	6-2-70	1
1N965B	6-2-54	1
	6-2-63	1
	6-2-70	1
1N9698	6-2-105	1
100-206-2	6-2-2	3
102SRIH23HI	6-5-31	1
	6-5-34	1
	6-5-40	1
	6-5-45	1
	6-5-49	1
	6-6-18	1
	6-6-40	1
	6-6-48	1
	6-6-51	1
	6-6-54	1
102264AL	6-5-29	1
	6-5-32	1
	6-5-38	1
	6-5-47	1
	6-6-39	1
	6-6-47	1
	6-6-50	1
	6-6-53	1
102264RL	6-5-43	1
	6-6-17	1
105-0751-149	6-8-50	1
	6-8-52	1
	6-8-57	1
	6-8-58	1
119-0506-000009	6-2-135	15
	6-2-135	9
	6-3-103	9
119-0507-000009	6-2-136	3
1304-896-54	6-1-54	1
	6-5-51	1
	6-6-20	1
139-0090-000	6-1-39	1
	6-3-92	1
	6-5-36	1
	6-6-58	1
150D105X0035A2	6-2-36	1
	6-2-102	1
150D155X0035B2	6-2-29	1
150D225X0020A2	6-2-10A	1
	6-2-11	1
	6-2-12A	1
150D226X0035R2	6-2-21	1
	6-2-22	1
150D226X9035R2	6-3-36	1

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PART NUMBER	FIG - ITEM	TTL REQ
150D334X0035A2	6-2-8	1
	6-2-40	1
150D336X0035S2	6-2-24	1
150D475X0035B2	6-3-32	1
	6-3-35	1
	6-3-36	1
150D685X0035B2	6-3-2	1
	6-3-33	1
151D755X0020X2	6-3-11A	1
16864	6-3-94	1
1720-02	6-1-53	1
	6-5-51	1
	6-6-21	1
1822	6-1-29	1
2-00-1SPEC	6-1-32	1
2N1711	6-2-9	1
	6-2-14	1
	6-2-17	1
	6-2-45	1
	6-2-55	1
	6-2-96	1
	6-2-98	1
	6-2-109	1
	6-2-119	1
	6-2-120	1
	6-2-126	1
	6-2-127	1
	6-3-25	1
	6-3-26	1
	6-3-75	1
	6-3-81	1
	6-3-89	1
	6-3-90	1
2N2223	6-3-71	1
2N2540	6-2-34	1
	6-2-99	1
	6-2-113	1
2N2905A	6-2-79	1
	6-2-90	1
	6-2-110	1
	6-3-37	1
	6-3-60	1
2N3054	6-3-38	1
2N657A	6-2-25	1
200-5021-000	6-1-95	4
	6-5-65	4
	6-6-71	4
201-1080-001	6-1-59	1
260096CK9	6-1-47	1
260097AK1	6-1-46	1
261152BK2	6-1-45	1
262-2243-010	6-1-32	1
266-5375-020	6-1-67	1
	6-1-68	1
280-3778-010	6-1-3A	1
292P1539R8	6-8-14	1
3	6-1-90	1
	6-5-61	1
	6-6-63	1
302-0646-050	6-3-42	2
304-2800-001	6-5-42	1
310-0044-000	6-3-7A	1
310-0045-000	6-3-41	2
310-0046-000	6-5-12	2

PART NUMBER	FIG - ITEM	TTL REQ
	6-6-14	2
310-0070-000	6-1-22	4
310-0071-000	6-4-14A	1
	6-9-8	1
	6-9-10	1
310-0075-000	6-3-58	6
310-0094-000	6-2-139	13
	6-2-139	10
	6-3-102	12
310-6340-000	6-1-25	1
	6-7-8	4
314A682	6-8-2	1
	6-8-4	1
328-0013-000	6-1-35	4
	6-1-44	6
	6-5-17	2
	6-5-20	2
	6-5-22	2
	6-5-24	2
	6-6-30	2
	6-6-34	2
	6-6-37	2
	6-6-42	2
328-0473-000	6-10-9	2
343-0061-800	6-4-15	1
3540S596-103	6-5-18	1
	6-6-31	1
372-2255-020	6-7-3	25
372-2601-043	6-8-7	27
372-2601-045	6-8-8	27
4007-4HT	6-3-97	1
4012HT	6-5-42	1
	6-6-23	1
	6-6-29	1
	6-10-7	1
403	6-1-48	2
	6-9-8	1
41279	6-7-13	1
435-1169-000	6-7-4	10
44A30-01-1-6N	6-5-23	1
	6-6-38	1
44A30-02-2-4N	6-5-21	1
	6-6-35	1
44D30-09-2AJN	6-5-25	1
	6-6-43	1
4402 1-2	6-1-81	2
	6-5-59	2
	6-6-62	2
458-0815-040	6-1-55	1
	6-5-50	1
	6-6-22	1
502-244	6-1-36	1
522-4610-001	6-1-	1
	6-5-	1
522-4610-003	6-6-	1
522-4610-004	6-6-	1
533-102	6-3-72	1
533-302	6-3-73	1
538011E2P094R	6-8-45	1
540-9168-003	6-7-8	4
540-9209-003	6-5-50	4
	6-6-22	4
541-6029-002	6-1-58	4
5420DM	6-8-1	1
	6-8-75	1

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PART NUMBER	FIG - ITEM	TTL REQ
5420DM	6-8-76	1
547-5305-002	6-4-13	1
	6-9-10	1
554-2150-002	6-3-16	1
554-2164-003	6-3-6	1
600D217G040DL5	6-2-4	1
600D227G030DJ5	6-7-10	1
	6-7-11	1
600D306G040KD5	6-3-45	1
	6-3-51	1
6002-4A	6-2-5	1
601-4055-001	6-7-8	1
	6-8-	REF
601D437G040JE6	6-3-91	1
618-4921-063	6-2-14	1
	6-2-17	1
	6-2-96	1
	6-2-98	1
	6-2-109	1
	6-3-25	1
	6-3-26	1
	6-3-75	1
	6-3-81	1
	6-3-89	1
	6-3-90	1
618-4921-123	6-2-79	1
	6-2-90	1
	6-2-110	1
	6-3-37	1
	6-3-60	1
628-1209-001	6-2-134A	1
628-1213-001	6-3-97A	1
628-1216-001	6-4-12	1
	6-9-16	1
628-1216-002	6-4-17	1
	6-9-21	1
629-4909-001	6-8-73	1
629-4909-004	6-8-73	1
629-9036-005	6-7-4	1
629-9307-001	6-10-10	1
629-9315-001	6-7-14	1
629-9315-002	6-7-17	1
629-9342-001	6-1-97	1
	6-5-67	1
	6-10-	REF
629-9350-001	6-6-5	1
	6-7-	REF
	6-10-1	1
629-9351-001	6-6-25	1
	6-6-27	1
	6-10-3	1
	6-10-5	1
629-9804-001	6-5-53	1
629-9806-001	6-6-60	1
629-9812-001	6-1-73A	1
629-9812-002	6-6-76	1
629-9880-001	6-5-25	1
	6-6-3	1
629-9882-001	6-5-62	1
	6-6-65	1
629-9883-001	6-5-16	1
	6-6-33	
647-4154-001	6-6-75	1
68-1660-40	6-1-24	1
	6-1-40	1
	6-5-36	1

PART NUMBER	FIG - ITEM	TTL REQ
	6-6-58	1
68NM26	6-1-2	2
	6-3-7	1
	6-3-17	1
	6-5-1	2
	6-6-1	2
69NM40	6-1-84	2
	6-5-53	4
	6-5-59	2
	6-6-60	4
	6-6-62	2
	6-9-9	2
68NM62	6-1-11	2
	6-1-14	2
	6-1-56	4
	6-1-94	4
	6-3-95	4
	6-4-14	1
	6-5-9	2
	6-5-10	2
	6-5-12	2
	6-5-65	4
	6-8-4	2
	6-6-5	4
	6-6-7	2
	6-6-14	2
	6-6-71	4
	6-10-1	6
709HM	6-2-9	1
7101SYZQE	6-5-41	1
	6-6-23	1
7105SYZQE	6-5-19	1
	6-5-28	1
	6-6-36	1
	6-6-46	1
	6-10-8	1
7107SYZQE	6-6-28	1
	6-10-6	1
7201SYZQ	6-1-68B	1
	6-5-68	1
	6-6-73	1
7201SYZQE	6-6-29	1
	6-10-7	1
742-0648-820	6-8-15	1
756-7045-002	6-3-55	3
757-0228-002	6-5-17	1
	6-6-30	1
757-0229-010	6-5-20	1
	6-5-22	1
	6-6-34	1
	6-6-37	1
757-0231-008	6-5-24	1
	6-6-42	1
757-0232-001	6-10-9	1
757-0232-002	6-1-34	2
757-0232-009	6-10-2	1
	6-10-4	1
757-0233-002	6-1-43	3
757-9537-000	6-1-1	1
	6-5-1	1
	6-6-1	1
768-5919-003	6-8-11	1
768-9005-001	6-1-10	1

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768-9005-001	6-2-	REF
	6-2-	REF
	6-2-	REF
	6-5-9	1
	6-6-4	1
768-9009-001	6-1-13	1
	6-3-	REF
	6-5-10	1
	6-6-7	1
772-0692-001	6-1-86	1
772-0900-001	6-1-18	1
	6-5-12	1
772-0900-002	6-6-14	1
772-0901-001	6-1-71	1
	6-5-54	1
	6-6-61	1
772-0902-001	6-1-91	1
	6-5-63	1
	6-6-70	1
772-0903-001	6-1-92	1
	6-5-64	1
	6-6-71	1
772-0904-001	6-1-96	1
	6-5-66	1
	6-6-72	1
772-0905-001	6-1-77	1
	6-5-57	1
	6-6-66	1
772-0906-001	6-1-76	1
	6-5-56	1
	6-6-67	1
772-0908-001	6-1-37	1
	6-5-35	1
	6-6-57	1
772-0909-001	6-1-16	1
	6-4-	REF
	6-5-11	1
	6-6-6	1
	6-9-	REF
	6-9-	REF
772-0914-001	6-1-79	1
	6-5-58	1
	6-6-69	1
772-0915-001	6-1-42	1
	6-5-37	1
	6-6-59	1
772-0916-001	6-1-83	2
	6-5-59	2
	6-6-62	2
772-8754-001	6-1-27	1
772-8755-001	6-1-30	1
772-8756-001	6-1-23	1
772-8757-001	6-1-28	1
772-8758-001	6-1-33	1
772-8928-001	6-1-20	1
772-8995-001	6-1-73	1
	6-5-55	1
	6-6-68	1
7760-01-201	6-5-19	1
	6-5-28	1
	6-5-41	1
	6-6-23	1
	6-6-28	1

PART NUMBER	FIG - ITEM	TTL REQ
	6-6-29	1
	6-6-36	1
	6-6-46	1
777-0193-001	6-1-8A	1
	6-5-7	1
777-0193-002	6-6-12	1
777-0614-001	6-5-15	1
	6-6-24	1
	6-6-26	1
	6-6-32	1
778-0993-001	6-5-2	1
	6-6-2	1
7805UC	6-7-1	1
	6-7-2	1
791-8534-001	6-1-68C	1
	6-5-69	1
	6-6-74	1
83050-190AX	6-1-68A	2
8550A	6-1-60	1
	6-1-61	1
	6-1-63	1
	6-1-64	1
8550R	6-1-62	1
8555I	6-1-66	5
900-203	6-5-13	1
	6-6-15	1
911	6-1-59	1
	6-5-46	1
	6-6-56	1
930-5022	6-1-51	1
	6-5-52	1
	6-6-21	1
96P2230154	6-3-79	1

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A1	6-8-	601-4055-001
A1CR1	6-8-26	1N4454
A1CR2	6-8-21	1N4454
A1CR3	6-8-25	1N4454
A1CR4	6-8-22	1N4454
A1C1	6-8-3	CK05BX104K
A1C10	6-8-24	D27282
A1C11	6-8-20	CK06BX392K
A1C12	6-8-16	CK06BX105M
A1C13	6-8-14	292P1539R8
A1C14	6-8-42	DM5E200D100WV
A1C2	6-8-59	CK05BX104K
A1C4	6-8-6	CK05BX104K
A1C5	6-8-53	CK05BX104K
A1C6	6-8-47	DM5C150D300WV
A1C7	6-8-45	538011E2P094R
A1C8	6-8-38	CK06BX105M
A1C9	6-8-28	C22A510M
A1L1	6-8-18	MS14049-1
A1R1	6-8-67	RCR07G222KS
A1R10	6-8-33	RNC60H2002FS
A1R11	6-8-31	RNC60H2002FS
A1R12	6-8-29	RNC60H2002FS
A1R13	6-8-35	RNC60H1002FS
A1R14	6-8-34	RNC60H2002FS
A1R15	6-8-32	RNC60H1002FS
A1R16	6-8-30	RNC60H1002FS
A1R17	6-8-23	RCR07G103KS
A1R18	6-8-19	RN55D3320F
A1R19	6-8-17	RN55D5901F
A1R2	6-8-68	RCR07G222KS
A1R20	6-8-15	RNC60H2002FS
A1R3	6-8-70	RCR07G222KS
A1R4	6-8-71	RCR07G222KS
A1R5	6-8-9	RCR05G471KS
A1R6	6-8-49	RCR05G471KS
A1R7	6-8-43	RCR07G102KS
A1R8	6-8-41	RCR07G152KS
A1R9	6-8-36	RNC60H2002FS
A1TP1	6-8-50	105-0751-149
A1TP2	6-8-52	105-0751-149
A1TP3	6-8-57	105-0751-149
A1TP4	6-8-58	105-0751-149
A1U1	6-8-60	DM54164J
A1U10	6-8-56	DM54164J
A1U11	6-8-61	DM54164J
A1U12	6-8-63	DM54164J
A1U13	6-8-65	DM54164J
A1U14	6-8-73	629-4909-004
A1U15	6-8-75	5420DM
A1U16	6-8-1	5420DM
A1U17	6-8-4	314A682
A1U18	6-8-55	DM54164J
A1U19	6-8-54	DM54164J
A1U2	6-8-62	DM54164J
A1U20	6-8-48	M38510-01702BEB
A1U21	6-8-44	SN5404J
A1U22	6-8-40	N74161A
A1U23	6-8-37	N74161A
A1U24	6-8-27	N74161A
A1U25	6-8-12	SN5474J
A1U26	6-8-10	SN5402J
A1U27	6-8-5	SN5474J
A1U28	6-8-51	SN5474J
A1U29	6-8-39	DM5486J
A1U3	6-8-64	SN5474J
A1U30	6-8-13	MC1558G
A1U4	6-8-66	SN5483AJ
A1U5	6-8-69	SN5483AJ
A1U6	6-8-72	M38510-01702BEB
A1U7	6-8-74	SN54157J
A1U8	6-8-76	5420DM
A1U9	6-8-2	314A682
A1Y1	6-8-46	CR60AU8-000000MHZ
DS1	6-6-50	102264AL
DS1	6-1-60	855QA
DS1	6-5-32	102264AL
DS2	6-6-47	102264AL
DS2	6-1-61	855QA
DS2	6-5-29	102264AL
DS3	6-6-17	102264RL
DS3	6-1-62	855QR
DS3	6-5-43	102264RL
DS4	6-5-47	102264AL
DS4	6-6-53	102264AL
DS4	6-1-63	855QA
DS5	6-6-39	102264AL
DS5	6-1-64	855QA
DS5	6-5-38	102264AL
DS6	6-6-15	900-203
DS6	6-1-20	772-8928-001
DS6	6-5-13	900-203
M1	6-5-50	458-0815-040
M1	6-6-22	458-0815-040
M1	6-1-55	458-0815-040
P1	6-1-4	PT06A18-32P
P1	6-5-3	PT06A18-32P
P2	6-6-13	MS3116E18-32SX
P2	6-1-9	MS3116E18-32SX
P2	6-5-8	MS3116E18-32SX
R1	6-5-52	930-5022
R1	6-6-21	930-5022
R1	6-1-51	930-5022
R2	6-6-33	629-9883-001
R2	6-1-49	CM36377-030
R2	6-5-16	629-9883-001
R3	6-6-31	3540S596-103
R3	6-1-36	502-244
R3	6-5-18	3540S596-103
R4	6-6-45	RN60D4643F
R4	6-1-69	RN60D4643F
R4	6-5-27	RN60D4643F
R5	6-6-44	RN60D1103F
R5	6-1-70	RN60D1103F
R5	6-5-26	RN60D1103F
S1	6-6-46	7105SYZQE
S1	6-1-68	266-5375-020
S1	6-1-68	MS35058-27
S1	6-5-28	7105SYZQE
S10	6-6-27	629-9351-001
S10	6-10-3	629-9351-001
S11	6-6-23	7101SYZQE
S11	6-5-41	7101SYZQE
S2	6-6-36	7105SYZQE
S2	6-1-67	266-5375-020

REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
S2	6-1-67	MS35058-27
S2	6-10-8	7105SYZQE
S2	6-5-19	7105SYZQE
S3	6-6-43	44D30-09-2AJN
S3	6-1-47	260096CK9
S3	6-5-25	44D30-09-2AJN
S4	6-6-38	44A30-01-1-6N
S4	6-1-46	260097AK1
S4	6-5-23	44A30-01-1-6N
S5	6-6-35	44A30-02-2-4N
S5	6-1-45	261152BK2
S5	6-5-21	44A30-02-2-4N
S6	6-5-68	7201SYZQ
S6	6-6-73	7201SYZQ
S6	6-1-68B	7201SYZQ
S7	6-6-29	7201SYZQE
S7	6-10-7	7201SYZQE
S8	6-6-28	7107SYZQE
S8	6-10-6	7107SYZQE
S9	6-6-25	629-9351-001
S9	6-10-5	629-9351-001
TB1	6-6-4	768-9005-001
TB1	6-1-10	768-9005-001
TB1	6-2-	768-9005-001
TB1	6-2-	768-9005-001
TB1	6-2-	768-9005-001
TB1	6-5-9	768-9005-001
TB1CR1	6-2-46	1N645
TB1CR10	6-2-56	1N645
TB1CR11	6-2-64	1N3064
TB1CR12	6-2-59	1N3064
TB1CR13	6-2-123	1N645
TB1CR14	6-2-122	1N3064
TB1CR15	6-2-121	1N3064
TB1CR16	6-2-65	1N645
TB1CR17	6-2-71	1N3064
TB1CR18	6-2-66	1N3064
TB1CR19	6-2-107	1N3064
TB1CR19	6-2-107	1N4454
TB1CR2	6-2-47	1N3064
TB1CR20	6-2-94	1N3064
TB1CR20	6-2-94	1N4454
TB1CR21	6-2-115	1N3064
TB1CR21	6-2-115	1N4454
TB1CR22	6-2-100	1N3064
TB1CR22	6-2-100	1N4454
TB1CR23	6-2-35	1N3064
TB1CR23	6-2-35	1N4454
TB1CR24	6-2-38A	1N3064
TB1CR24	6-2-38A	1N4454
TB1CR3	6-2-51	1N3064
TB1CR4	6-2-48	1N645
TB1CR5	6-2-58	1N3064
TB1CR6	6-2-52	1N3064
TB1CR7	6-2-129	1N645
TB1CR8	6-2-128	1N3064
TB1CR9	6-2-61	1N3064
TB1C1	6-2-36	150D105X0035A2
TB1C1	6-2-36	CM08FD302J03
TB1C1	6-2-36	CM08FD152J03
TB1C10	6-2-18	CM05FD201J03
TB1C11	6-2-21	150D226X0035R2
TB1C12	6-2-22	150D226X0035R2

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
TB1C13	6-2-29	150D155X0035B2
TB1C14	6-2-24	150D336X0035S2
TB1C15	6-2-4	600D217G040DL5
TB1C16	6-2-102	150D105X0035A2
TB1C17	6-2-85	CM05FD101J03
TB1C18	6-2-30	CL23CJ1R5TN3
TB1C18	6-2-30	CL23BL1R5TNE
TB1C2	6-2-8	150D334X0035A2
TB1C2	6-2-40	150D334X0035A2
TB1C3	6-2-7	CM06FD472J03
TB1C3	6-2-39A	CM06FD472J03
TB1C4	6-2-10A	150D225X0020A2
TB1C4	6-2-13	CM06FD272J03
TB1C5	6-2-11	150D225X0020A2
TB1C5	6-2-12A	150D225X0020A2
TB1C8	6-2-106	CM06FD332J03
TB1C9	6-2-93	CM06FD332J03
TB1J1	6-2-83	M39024-12-02
TB1J2	6-2-84	M39024-12-02
TB1J3	6-2-82	M39024-12-02
TB1J4	6-2-81	M39024-12-02
TB1L1	6-2-40	MS75089-40
TB1Q1	6-2-45	2N1711
TB1Q10	6-2-90	2N2905A
TB1Q10	6-2-90	618-4921-123
TB1Q11	6-2-96	2N1711
TB1Q11	6-2-96	618-4921-063
TB1Q12	6-2-113	2N2540
TB1Q13	6-2-99	2N2540
TB1Q14	6-2-14	2N1711
TB1Q14	6-2-14	618-4921-063
TB1Q15	6-2-17	2N1711
TB1Q15	6-2-17	618-4921-063
TB1Q16	6-2-34	2N2540
TB1Q17	6-2-25	2N657A
TB1Q18	6-2-98	2N1711
TB1Q18	6-2-98	618-4921-063
TB1Q19	6-2-110	2N2905A
TB1Q19	6-2-110	618-4921-123
TB1Q2	6-2-55	2N1711
TB1Q3	6-2-127	2N1711
TB1Q4	6-2-126	2N1711
TB1Q5	6-2-120	2N1711
TB1Q6	6-2-119	2N1711
TB1Q7	6-2-9	2N1711
TB1Q8	6-2-109	2N1711
TB1Q8	6-2-109	618-4921-063
TB1Q9	6-2-79	2N2905A
TB1Q9	6-2-79	618-4921-123
TB1RT1	6-2-73	0550F5-064
TB1RT2	6-2-74	0550F5-064
TB1R1	6-2-49	RCR07G473KS
TB1R10	6-2-124	RCR07G333KS
TB1R11	6-2-67	RCR07G473KS
TB1R12	6-2-68	RCR07G472KS
TB1R13	6-2-118	RCR07G103KS
TB1R14	6-2-69	RCR07G103KS
TB1R15	6-2-117	RCR07G333KS
TB1R16	6-2-10	RCR07G102KS
TB1R16	6-2-40A	RCR07G105KS
TB1R17	6-2-9A	RCR07G103KS
TB1R17	6-2-38	RCR07G473KS
TB1R18	6-2-11A	RCR07G103KS

REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
TB1R18	6-2-39	RCR07G472KS
TB1R19	6-2-37	RCR07G223KS
TB1R19	6-2-37A	RCR07G223KS
TB1R2	6-2-50	RCR07G472KS
TB1R20	6-2-12	RCR07G272KS
TB1R21	6-3-14	RN60D5110F
TB1R23	6-2-112	RCR07G153KS
TB1R24	6-2-111	RCR07G101KS
TB1R25	6-2-108	RN60D3160F
TB1R25	6-2-108	RN60D2150F
TB1R26	6-2-116	RN60D3650F
TB1R27	6-2-95	RN60D3160F
TB1R27	6-2-95	RN60D2150F
TB1R28	6-2-97	RCR07G101KS
TB1R29	6-2-86	RCR07G153KS
TB1R3	6-2-131	RCR07G103KS
TB1R30	6-2-78	RN60D4871F
TB1R30	6-2-78	RN55D4991F
TB1R30	6-2-78	RN55D4991F
TB1R31	6-2-72	RN60D2490F
TB1R32	6-2-92	RN60D4871F
TB1R32	6-2-92	RN55D4991F
TB1R32	6-2-92	RN55D4991F
TB1R33	6-2-80	RCR07G100KS
TB1R35	6-2-89	RCR07G100KS
TB1R36	6-2-75	RN60D2150F
TB1R36	6-2-75	RN60D1331F
TB1R36	6-2-75	RN60D1401F
TB1R36	6-2-75	RN60D1471F
TB1R36	6-2-75	RN60D1541F
TB1R37	6-2-114	RCR07G103KS
TB1R38	6-2-101	RCR07G103KS
TB1R39	6-2-16	RCR07G103KS
TB1R4	6-2-53	RCR07G103KS
TB1R40	6-2-19	RW69V471
TB1R41	6-2-27	RCR07G273KS
TB1R42	6-2-26	RW69V221
TB1R43	6-2-31	RCR07G821KS
TB1R44	6-2-20	RCR07G471KS
TB1R45	6-2-15	RCR07G473KS
TB1R46	6-2-33	RCR07G103KS
TB1R47	6-2-32	RCR07G474KS
TB1R48	6-2-28	RCR07G153KS
TB1R49	6-2-23	RCR20G101KS
TB1R5	6-2-130	RCR07G333KS
TB1R50	6-2-103	RCR07G330KS
TB1R51	6-2-104	RCR07G223KS
TB1R52	6-2-87	RCR07G103KS
TB1R53	6-2-88	RCR07G103KS
TB1R54	6-2-132	RCR20G121KS
TB1R54	6-2-132A	RCR07G104KS
TB1R55	6-2-133	RCR20G121KS
TB1R56	6-2-134	RCR20G121KS
TB1R6	6-2-57	RCR07G473KS
TB1R7	6-2-60	RCR07G472KS
TB1R8	6-2-125	RCR07G103KS
TB1R9	6-2-62	RCR07G103KS
TB1U1	6-2-9	709HM
TB1VR1	6-2-54	1N963A
TB1VR1	6-2-54	1N965B
TB1VR2	6-2-63	1N963A
TB1VR2	6-2-63	1N965B
TB1VR3	6-2-70	1N963A

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
TB1VR3	6-2-70	1N965B
TB1VR4	6-2-76	1N4370
TB1VR5	6-2-105	1N969B
TB1VR6	6-2-77	1N3026B
TB1VR7	6-2-91	1N3026B
TB1Y1	6-2-1	RH289-7072-010
TB1Y2	6-2-42	RH289-7072-020
TB1Y3	6-2-41	RH289-7072-030
TB2	6-6-7	768-9009-001
TB2	6-1-13	768-9009-001
TB2	6-3-	768-9009-001
TB2	6-5-10	768-9009-001
TB2CR1	6-3-4	1N645
TB2CR1	6-3-4	1N270
TB2CR2	6-3-54	1N645
TB2CR2	6-4-2	1N3064
TB2CR3	6-3-53	1N645
TB2CR4	6-3-46	1N4002
TB2CR5	6-3-47	1N4002
TB2C1	6-3-15	CM07FD682J03
TB2C10	6-3-51	600D306G040KD5
TB2C11	6-3-91	601D437G040JE6
TB2C13	6-3-77	CS13BF476M
TB2C14	6-3-79	96P223015S4
TB2C15	6-3-11A	151D755X0020X2
TB2C16	6-3-44	DM5F101J050WV
TB2C2	6-3-11	CM06FD472J03
TB2C3	6-3-12	CM06FD472J03
TB2C4	6-3-35	150D475X0035B2
TB2C5	6-3-32	150D475X0035B2
TB2C6	6-3-2	150D685X0035B2
TB2C7	6-3-33	150D685X0035B2
TB2C8	6-3-36	150B475X0035B2
TB2C8	6-3-36	150D226X9035R2
TB2C9	6-3-45	600D306G040KD5
TB2J1	6-3-22	M39024-12-02
TB2J2	6-3-21	M39024-12-02
TB2J3	6-3-20	M39024-12-02
TB2J4	6-3-19	M39024-12-02
TB2L1	6-3-5	DL644
TB2Q1	6-3-25	2N1711
TB2Q1	6-3-25	618-4921-063
TB2Q10	6-3-81	2N1711
TB2Q10	6-3-81	618-4921-063
TB2Q2	6-3-26	2N1711
TB2Q2	6-3-26	618-4921-063
TB2Q3	6-3-90	2N1711
TB2Q3	6-3-90	618-4921-063
TB2Q4	6-3-89	2N1711
TB2Q4	6-3-89	618-4921-063
TB2Q5	6-3-37	2N2905A
TB2Q5	6-3-37	618-4921-123
TB2Q6	6-3-38	2N3054
TB2Q7	6-3-60	2N2905A
TB2Q7	6-3-60	618-4921-123
TB2Q8A	6-3-71	2N2223
TB2Q9	6-3-75	2N1711
TB2Q9	6-3-75	618-4921-063
TB2R1	6-3-24	RN65C2871F
TB2R1	6-3-24	RCR07G273KS
TB2R10	6-3-23	RCR07G273KS
TB2R12	6-3-28	RCR07G472KS
TB2R13	6-3-27	RCR07G102KS

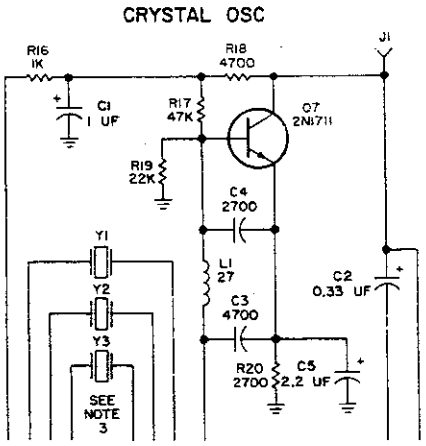
REFERENCE DESIGNATION INDEX

REFERENCE DESIGNATION	FIG - ITEM	PART NUMBER
TB2R14	6-3-29	RCR07G183KS
TB2R15	6-3-88	RCR07G681KS
TB2R16	6-3-3	RCR07G392KS
TB2R17	6-3-87	RCR07G103KS
TB2R18	6-3-34	RN60D2611F
TB2R19	6-3-78	RCR07G393KS
TB2R2	6-3-30	RCR07G333KS
TB2R20	6-3-62	RT22C2L203
TB2R22	6-3-61	RCR32G182KS
TB2R23	6-3-48	RCR20G390KS
TB2R24	6-3-74	RN65C2871F
TB2R25	6-3-68	RN60C4641F
TB2R26	6-3-69	RN60C4222F
TB2R27	6-3-73	533-302
TB2R28	6-3-50	RN65D2871F
TB2R29	6-3-70	RN60C1213F
TB2R3	6-3-31	RCR07G472KS
TB2R30	6-3-65	RN60C1472F
TB2R31	6-3-76	RN60C1472F
TB2R32	6-3-67	RT22C2L102
TB2R33	6-3-66	RT22C2L500
TB2R34	6-3-82	RN60D1470F
TB2R35	6-3-84	RS1-2-2R000F
TB2R36	6-3-83	RS1-2-2R000F
TB2R37	6-3-72	533-102
TB2R38	6-3-52	RN60D1001F
TB2R38	6-3-52	RN60D1211F
TB2R39	6-3-59	RT22C2L501
TB2R4	6-3-13	RCR07G473KS
TB2R41	6-3-63	RT22C2L501
TB2R42	6-3-9	RN60D1960F
TB2R5	6-3-1	RCR07G822KS
TB2R6	6-3-85	RN60D5111F
TB2R7	6-3-86	RCR07G223KS
TB2R8	6-3-80	RN60D5110F
TB2R9	6-3-10	RN60D5621F
TB2T1	6-3-94	16864
TB2VR1	6-3-49	1N751A
TB2VR2	6-3-64	1N938A
TB3	6-6-6	772-0909-001
TB3	6-1-16	772-0909-001
TB3	6-9-	772-0909-001
TB3	6-9-	772-0909-001
TB3	6-4-	772-0909-001
TB3	6-5-11	772-0909-001
TB3CR1	6-9-6	1N4454
TB3CR1	6-4-1	1N3064
TB3CR2	6-9-5	1N4454
TB3CR4	6-9-2	1N4454
TB3CR4	6-4-9	1N3064
TB3CR5	6-9-11	1N4454
TB3CR5	6-4-3	1N3064
TB3CR6	6-9-7	SC5614
TB3J1	6-4-5	M39024-12-02
TB3J1	6-9-17	M39024-12-02
TB3J2	6-4-6	M39024-12-02
TB3J2	6-9-18	M39024-12-02
TB3J3	6-4-7	M39024-12-02
TB3J3	6-9-19	M39024-12-02
TB3K1	6-9-9	M5757-9-011
TB3R1	6-9-4	RN60D2871F
TB3R1	6-4-11	RN60D2871F
TB3R2	6-9-12	RN60D2152F
TB3R2	6-4-4	RN60D2152F
TB3R3	6-9-3	RCR20G121KS
TB3R3	6-4-10	RCR20G121KS
TB3R4	6-9-1	RCR20G121KS
TB3R4	6-4-8	RCR20G121KS
TB3R5	6-9-13	RCR20G121KS
TB3R6	6-9-15	RCR20G121KS
TB3R7	6-9-14	RCR20G121KS
TB4	6-6-5	629-9350-001
TB4	6-7-	629-9350-001
TB4	6-10-1	629-9350-001
TB4A1	6-7-8	601-4055-001
TB4CR1	6-7-9	1N5415
TB4CR2	6-7-12	1N5415
TB4C1	6-7-10	600D227G030DJ5
TB4C2	6-7-11	600D227G030DJ5
TB4C3	6-7-7	D27282
TB4C4	6-7-6	D27282
TB4P1	6-7-4	629-9036-005
TB4T1	6-7-13	41279
TB4U1	6-7-1	7805UC
TB4U2	6-7-2	7805UC

section 7
illustrations

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
A1	Switch S6 and capacitor C15 added to provide capability for detecting antenna and cable leakage without removing the 860F-1 dust cover.	1	All (optional)
A2	Modify wiring related to 860F-1 testing to prevent damage to 860F-1 under certain testing conditions. A wire is added between S3I-7 and TB2-Q6e, and lamp DS6 is added between S3E-11 and TB2-T1.	2	Serial number 168 and above
A3	The crystal oscillator circuit on TB1 is redesigned to obtain more reliable turn-on characteristics.		CI 73083



980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Schematic Diagram
Figure 7-1 (Sheet A)

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
B1	Added note 7 for clarity.	1	All (optional)
B2	Changed location of resistors TB3R3 and TB3R4 to correct schematic.		All
B3	Changed value of TB1C1 from 3000 to 1500 pF to correct schematic.		All
B4	Changed value of resistors TB1R30 and TB1R32 from 4870 to 4990 Ω to correct schematic.		All
B5	Changed TB1R23 to TB1R33 to correct schematic.		All
B6	Changed P2-f wire reference from TB3-R4 to TB3-R3 to correct schematic.		All
B7	Added switch S2 terminal numbers to correct schematic.		All

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Schematic Diagram
Figure 7-1 (Sheet B)

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

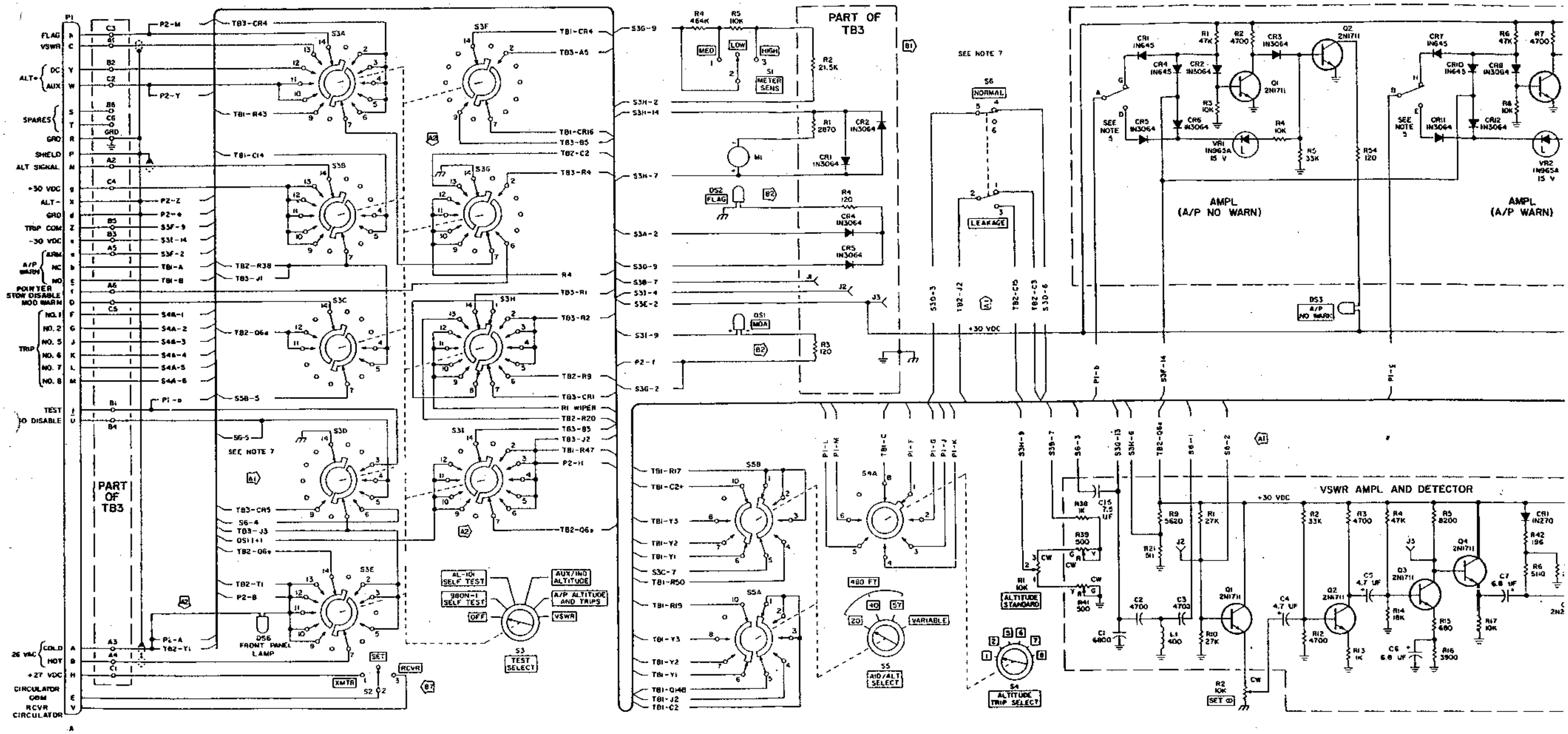
Insert facing pages 7-3/7-4, Section 7

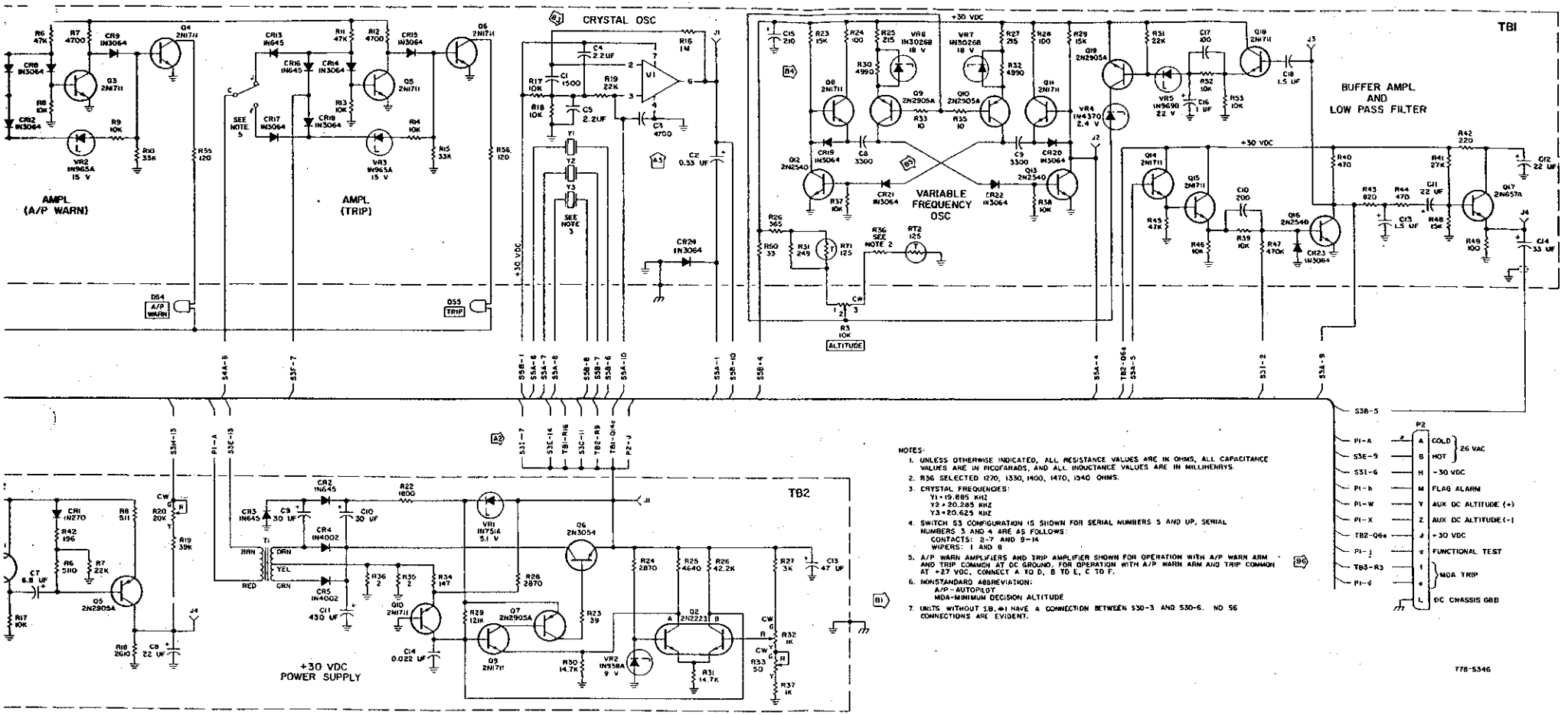
This Addendum supersedes Addendum 4.

Subject: 980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Schematic Diagram, Figure 7-1

Change note 2 to read as follows:

R36 SELECTED 1270, 1330, 1400, 1470, 1540, 1620 OHMS.


PART OF TB3
SEE NOTE 7
AMPL (A/P NO WARN)
AMPL (A/P WARN)
VSWR AMPL AND DETECTOR
S3 TEST SELECT
S4 ALTITUDE TRIP SELECT
S5 AIO/ALT SELECT
S1 METER SENS
S6 NORMAL
LEAKAGE
FRONT PANEL LAMP
ALTITUDE STANDARD



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN PICOFARADS, AND ALL INDUCTANCE VALUES ARE IN MILLIHENRYS.
2. R36 SELECTED FROM 1270, 1330, 1400, 1470, 1540 OHMS.
3. CRYSTAL FREQUENCIES:
   Y1 = 19.885 KHZ
   Y2 = 20.285 KHZ
   Y3 = 20.625 KHZ
4. SWITCH S3 CONFIGURATION IS SHOWN FOR SERIAL NUMBERS 5 AND UP, SERIAL NUMBERS 3 AND 4 ARE AS FOLLOWS:
   CONTACTS: 2-7 AND 9-14
   WIPERS: 1 AND 8
5. A/P WARN AMPLIFIERS AND TRIP AMPLIFIER SHOWN FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT DC GROUND. FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT +27 VDC, CONNECT A TO D, B TO E, C TO F.
6. NONSTANDARD ABBREVIATION:
   A/P - AUTOPILOT
   MDA - MINIMUM DECISION ALTITUDE
7. UNITS WITHOUT SB.(#) HAVE A CONNECTION BETWEEN S30-3 AND S30-6. NO S6 CONNECTIONS ARE EVIDENT.

778-5346

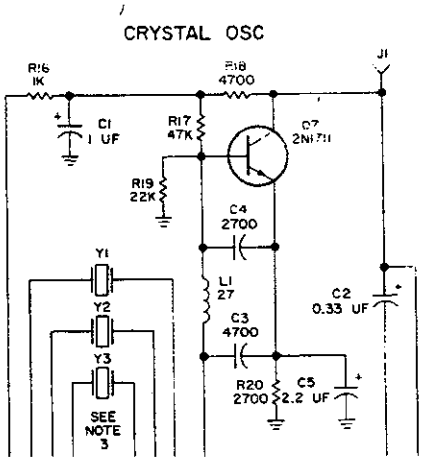
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below). Schematic Diagram
Figure 7-1

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
B4	Changed value of resistors TB1R30 and TB1R32 from 4870 to 4990 Ω to correct schematic.		All
B5	Changed TB1R23 to TB1R33 to correct schematic.		All
B6	Changed P2-f wire reference from TB3-R4 to TB3-R3 to correct schematic.		All
B7	Added switch S2 terminal numbers to correct schematic.		All
B8	Added altitude rate generator assembly TB4, switch S7 through S10, wire from TB3J2 to TB4-P1-28, and changed P2-J wire reference from TB2-Q6e to TB2-R38, to provide varying altitude rate signal to 860F-1.	4	All (optional)

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB 4).
Schematic Diagram
Figure 7-2 (Sheet B)

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
A1	Switch S6 and capacitor C15 added to provide capability for detecting antenna and cable leakage without removing the 860F-1 dust cover.	1	All (optional)
A2	Modify wiring related to 860F-1 testing to prevent damage to the 860F-1 under certain testing conditions. A wire is added between S3I-7 and TB2-Q6e, and lamp DS6 is added between S3E-11 and TB2-T1.	2	Serno 168 and above
A3	The crystal oscillator circuit on TB1 is redesigned to obtain more reliable turn-on characteristics. 		CI 73083
B1	Added note 7 for clarity.	1	All (optional)
B2	Changed location of resistors TB3R3 and TB3R4 to correct schematic.		All
B3	Changed value of TB1C1 from 3000 to 1500 pF to correct schematic.		All

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB 4), Schematic Diagram
Figure 7-2 (Sheet A)

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing pages 7-7/7-8, Section 7

This Addendum supersedes Addendum 4.

Subject: 980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB4), Schematic Diagram, Figure 7-2

Change figure title to read as follows:

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB4 and SB5), Schematic Diagram, Figure 7-2

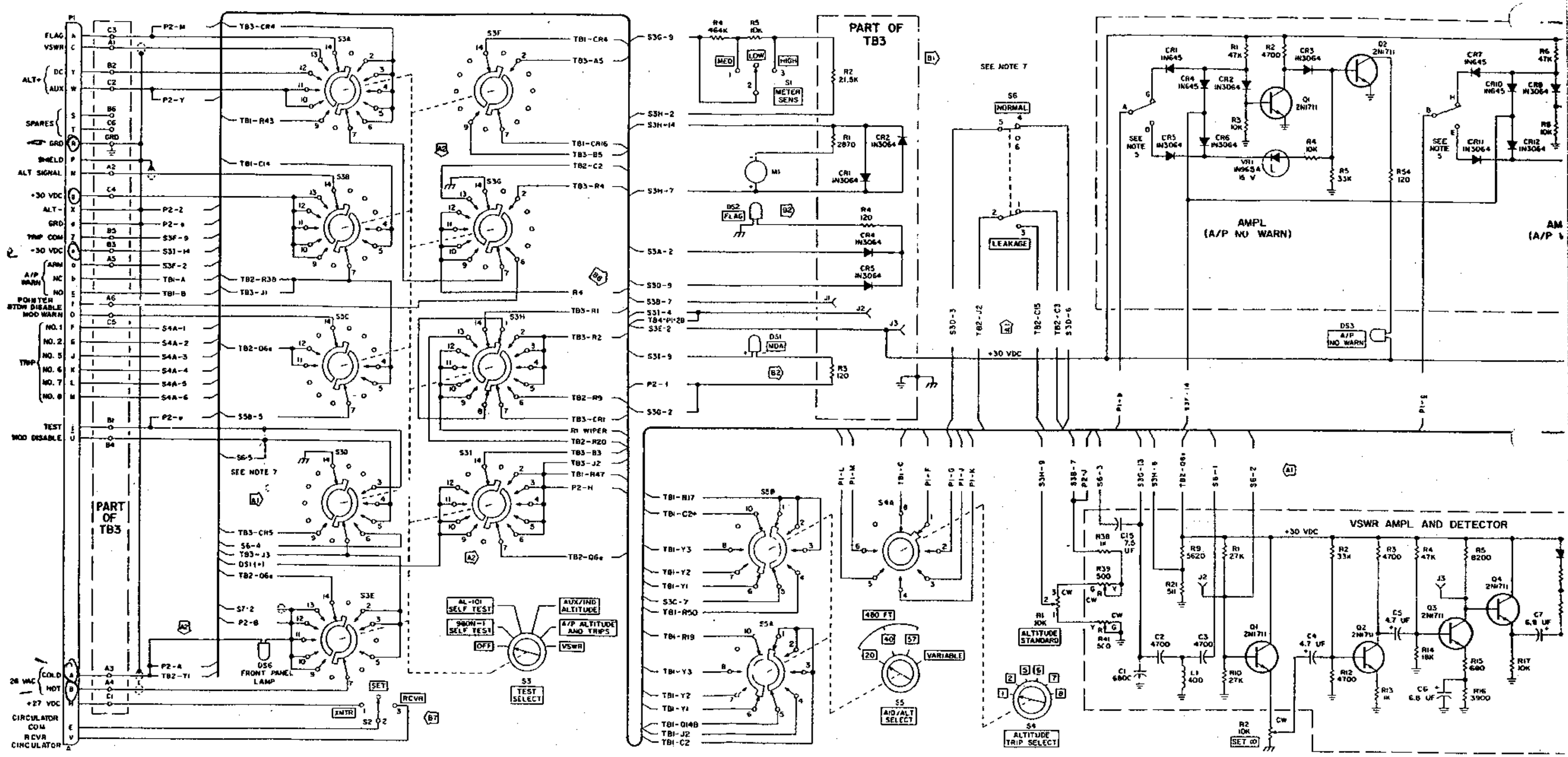
Change note 2 to read as follows:

R36 SELECTED 1270, 1330, 1400, 1470, 1540, 1620 OHMS.

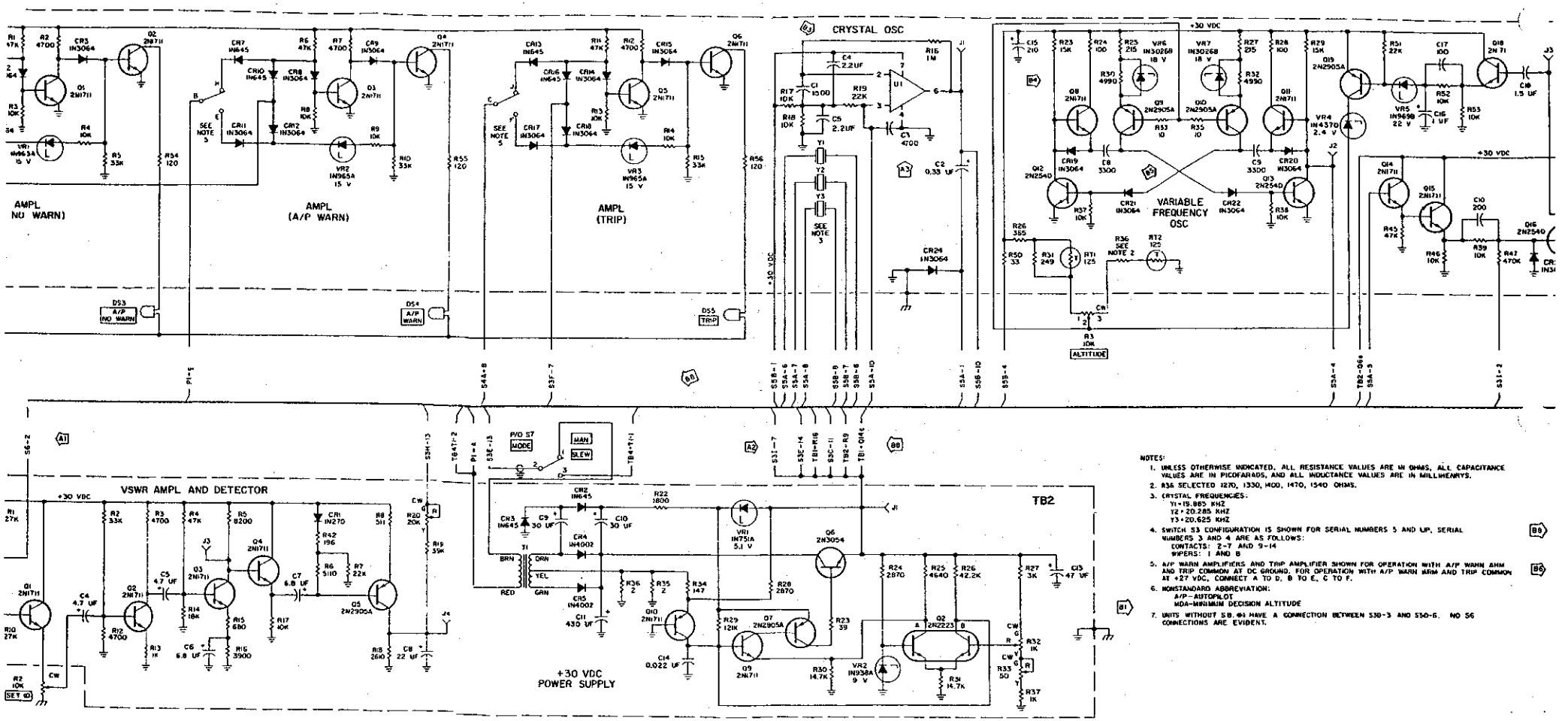
At S10 add reference to NOTE 8.

Add NOTE 8 to read as follows:

8. S10 SILKSCREEN AT POSITIONS 6 AND 7 ARE .15 AND .3 ON UNITS WITH SB5 INSTALLED.

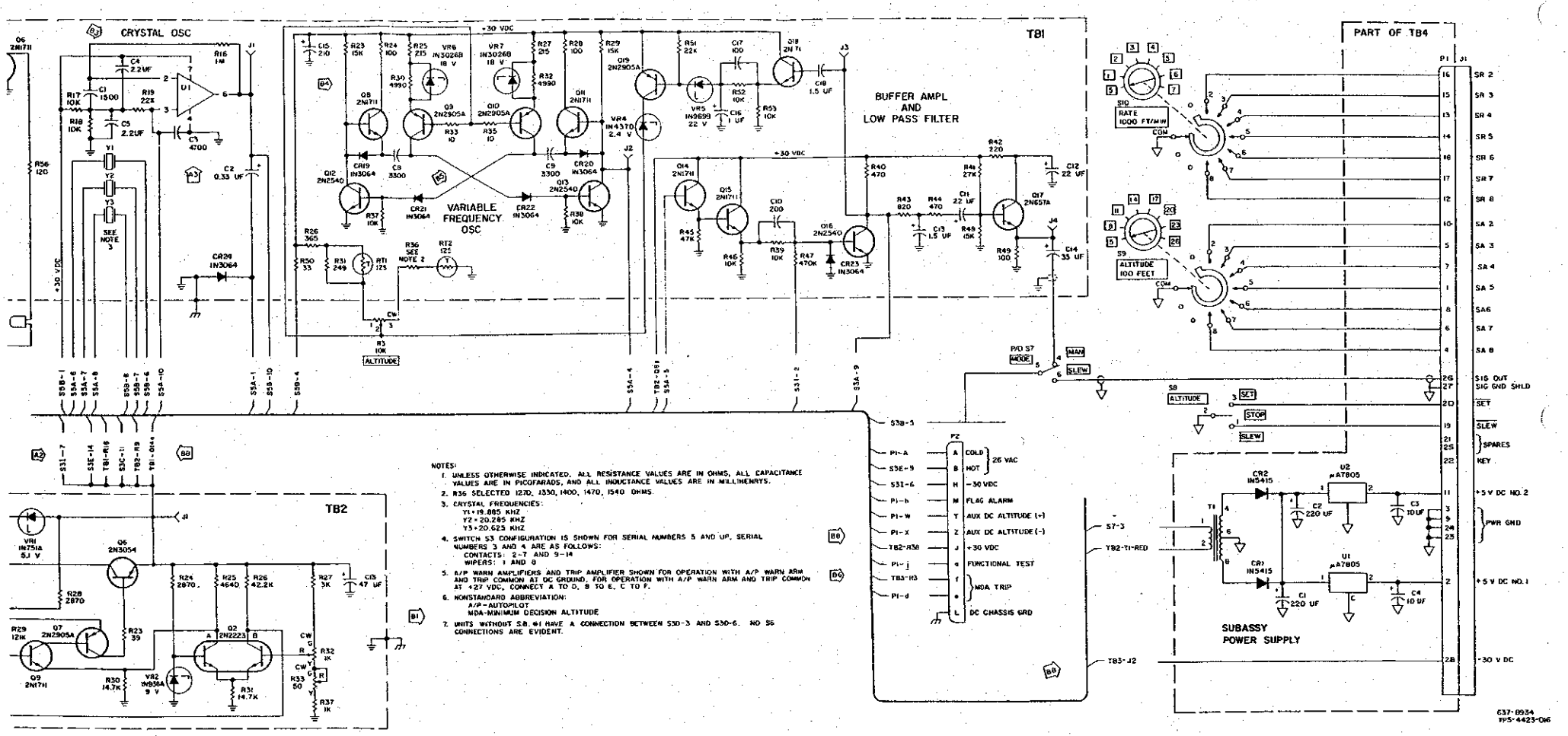


PART OF TB3
SEE NOTE 7
AMPL (A/P NO WARN)
VSWR AMPL AND DETECTOR
S3 TEST SELECT
S5 ADI/ALT SELECT
S4 ALTITUDE TRIP SELECT
S1 METER SENS
S6 NORMAL
LEAKAGE
DS6 FRONT PANEL LAMP
FLAG
VSWR
ALT+ DC
AUX
SPARES
SHIELD
ALT SIGNAL
+30 VDC
ALT-
GRD
TRIP COM
A/P WARN ARM
NC
NO
POINTER STOW DISABLE
MOD WARN
TRIP NO. 1
NO. 2
NO. 5
NO. 6
NO. 7
NO. 8
TEST
MOD DISABLE
28 VAC COLD
HOT
+27 VDC
CIRCULATOR COM
RCVR CIRCULATOR
AL-101 SELF TEST
980N-1 SELF TEST
OFF
AUX/IND ALTITUDE
A/P ALTITUDE AND TRIPS
VSWR
480 FT
VARIABLE
ALTITUDE STANDARD
SET ∞
XMTR
SET
RCVR



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN PICOFARADS, AND ALL INDUCTANCE VALUES ARE IN MILLIHENRYS.
2. R36 SELECTED 1270, 1330, 1400, 1470, 1540 OHMS.
3. CRYSTAL FREQUENCIES:
   Y1 = 19.865 KHZ
   Y2 = 20.285 KHZ
   Y3 = 20.625 KHZ
4. SWITCH S3 CONFIGURATION IS SHOWN FOR SERIAL NUMBERS 5 AND UP. SERIAL NUMBERS 3 AND 4 ARE AS FOLLOWS:
   CONTACTS: 2-7 AND 9-14
   WIPERS: 1 AND 8
5. A/P WARN AMPLIFIERS AND TRIP AMPLIFIER SHOWN FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT DC GROUND. FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT +27 VDC, CONNECT A TO D, B TO E, C TO F.
6. NONSTANDARD ABBREVIATION:
   A/P—AUTOPILOT
   MDA—MINIMUM DECISION ALTITUDE
7. UNITS WITHOUT S.B. #1 HAVE A CONNECTION BETWEEN S3D-3 AND S3D-6. NO S6 CONNECTIONS ARE EVIDENT.



NOTES:
1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN PICOFARADS, AND ALL INDUCTANCE VALUES ARE IN MILLIHENRYS.
2. R36 SELECTED 1270, 1330, 1400, 1470, 1540 OHMS.
3. CRYSTAL FREQUENCIES:
   Y1 = 19.885 KHZ
   Y2 = 20.285 KHZ
   Y3 = 20.625 KHZ
4. SWITCH S3 CONFIGURATION IS SHOWN FOR SERIAL NUMBERS 5 AND UP. SERIAL NUMBERS 3 AND 4 ARE AS FOLLOWS:
   CONTACTS: 2-7 AND 9-14
   WIPERS: 1 AND 8
5. A/P WARN AMPLIFIERS AND TRIP AMPLIFIER SHOWN FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT DC GROUND. FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT +27 VDC, CONNECT A TO D, B TO E, C TO F.
6. NONSTANDARD ABBREVIATION:
   A/P = AUTOPILOT
   MDA = MINIMUM DECISION ALTITUDE
7. UNITS WITHOUT S.B. #1 HAVE A CONNECTION BETWEEN S3D-3 AND S3D-6. NO S5 CONNECTIONS ARE EVIDENT.

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB 4). Schematic Diagram
Figure 7-2

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
B1	Added schematic for CPN 522-4610-001, serno 352 and above.		980N-1, CPN 522-4610-001, serno 352 and above
C1	Changed R41 from 27 kΩ to 15 kΩ and changed C14 from 33 μF to 6.8 μF to minimize loading effects of audio output stages.		Serno 388 and above
C2	Changed VR6 and VR7 from 1N3026B to 1N4963 to improve oscillator stability.		Serno 408 and above
C3	Added note for R36 test select.		All

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Schematic Diagram
Figure 7-3 (Sheet A)

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

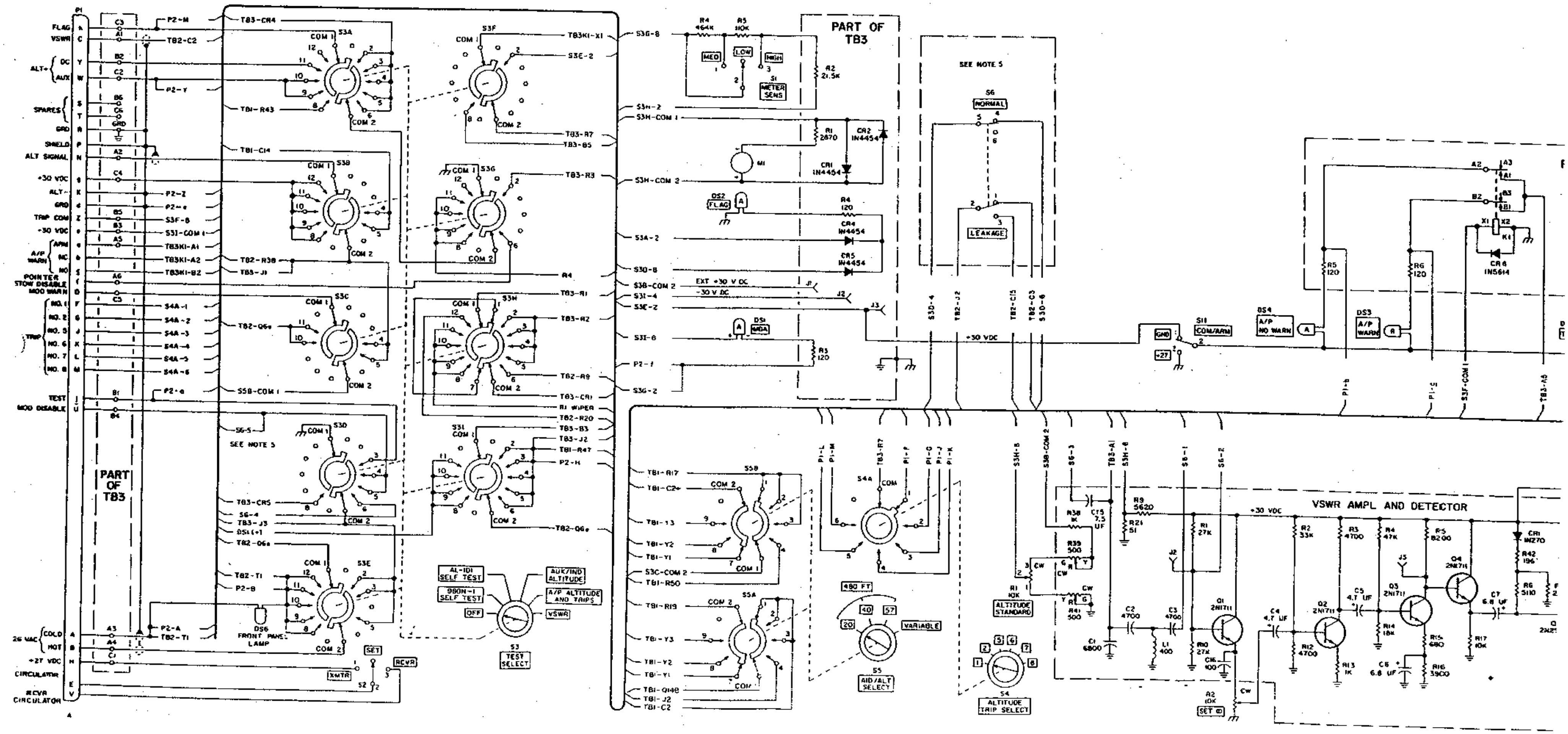
Insert facing pages 7-11/7-12, Section 7

This Addendum supersedes Addendum 4.

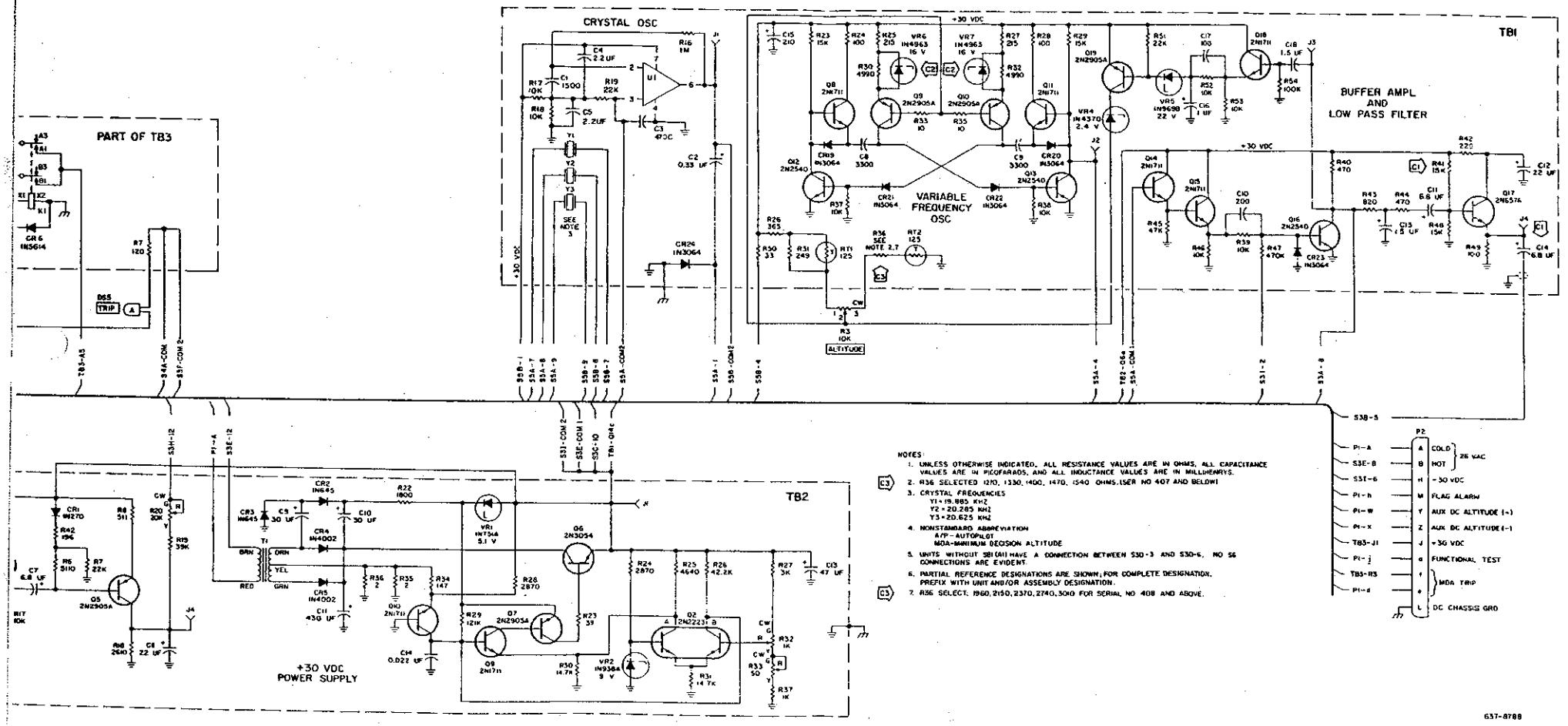
Subject: 980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Schematic Diagram, Figure 7-3

Change note 2 to read as follows:

R36 SELECTED 1270, 1330, 1400, 1470, 1540, 1620 OHMS (SER NO 407 AND BELOW).



PART OF TB3
SEE NOTE 5
S3 TEST SELECT
AL-101 SELF TEST
980N-1 SELF TEST
OFF
AUX/IND ALTITUDE
A/P ALTITUDE AND TRIPS
VSWR
S5 AID/ALT SELECT
480 FT
VARIABLE
S4 ALTITUDE TRIP SELECT
S6 NORMAL
LEAKAGE
S1 METER SENS
S11 COM/ARM
VSWR AMPL AND DETECTOR
DS6 FRONT PANEL LAMP
FLAG
VSWR
ALT SIGNAL
+30 VDC
26 VAC
+27 VDC
CIRCULATOR
RCVR CIRCULATOR



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN PICOFARADS, AND ALL INDUCTANCE VALUES ARE IN MILLIHENRYS.
2. R36 SELECTED 1270, 1330, 1400, 1470, 1540 OHMS. USER NO 407 AND BELOW.
3. CRYSTAL FREQUENCIES
   Y1 = 19.885 KHZ
   Y2 = 20.285 KHZ
   Y3 = 20.625 KHZ
4. NONSTANDARD ABBREVIATION
   A/P - AUTOPILOT
   MDA - MINIMUM DECISION ALTITUDE
5. UNITS WITHOUT SB (A1) HAVE A CONNECTION BETWEEN S30-3 AND S30-6. NO S6 CONNECTIONS ARE EVIDENT.
6. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION.
7. R36 SELECT: 1960, 2150, 2370, 2740, 3010 FOR SERIAL NO 408 AND ABOVE.

980N-1 Altimeter Test Set (CPN 522-5810-001, Serno 352 and Above). Schematic Diagram
Figure 7-3

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing pages 7-13/7-14, Section 7

This Addendum supersedes Addendum 4.

Subject: 980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4 and CPN 522-4610-003), Schematic Diagram, Figure 7-4 (Sheet A)

Add the following to figure 7-4:

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
	Changed Q12, Q13, and Q16 from 2N2540 to 2N2369A. 2N2540 is an obsolete part.		Assembly CPN 768-9005-001 REV AA
	Changed R37 and R38 from 10k to 27 kΩ to improve performance.		Assembly CPN 768-9005-001 REV AA
	Changed CR19, CR20, CR21, CR22, CR23, and CR24 from 1N3064 to 1N4454. 1N3064 is an obsolete part.		Assembly CPN 768-9005-001 REV R

SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
B1	Added schematic for CPN 522-4610-001 with SB 4, and CPN 522-4610-003 with rate generator capability.	4	980N-1, CPN 522-4610-001; 980N-1, CPN 522-4610-003
C1	Changed R41 from 27 kΩ to 15 kΩ and changed C14 from 33 μF to 6.8 μF to minimize loading effects of audio output stages.		Serno 388 and above
C2	Changed VR6 and VR7 from 1N3026B to 1N4963 to improve oscillator stability.		Serno 408 and above
C3	Added note for R36 test select.		All
C4	Added C19 to prevent oscillations on +30 V dc line.		Serno 544, 2010, 2013 and above

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4 and CPN 522-4610-003), Schematic Diagram
Figure 7-4 (Sheet A)

ADDENDUM 6 TO THE 980N-1 ALTIMETER TEST SET

INSTRUCTION BOOK (523-0759341)

Insert facing pages 7-15/7-16, Section 7

This Addendum supersedes Addendum 4.

Subject: 980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB4 and CPN 522-4610-003), Schematic Diagram Figure 7-4

Change figure title to read as follows:

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB4 and SB5, CPN 522-4610-003 with SB5, and CPN 522-4610-004), Schematic Diagram, Figure 7-4

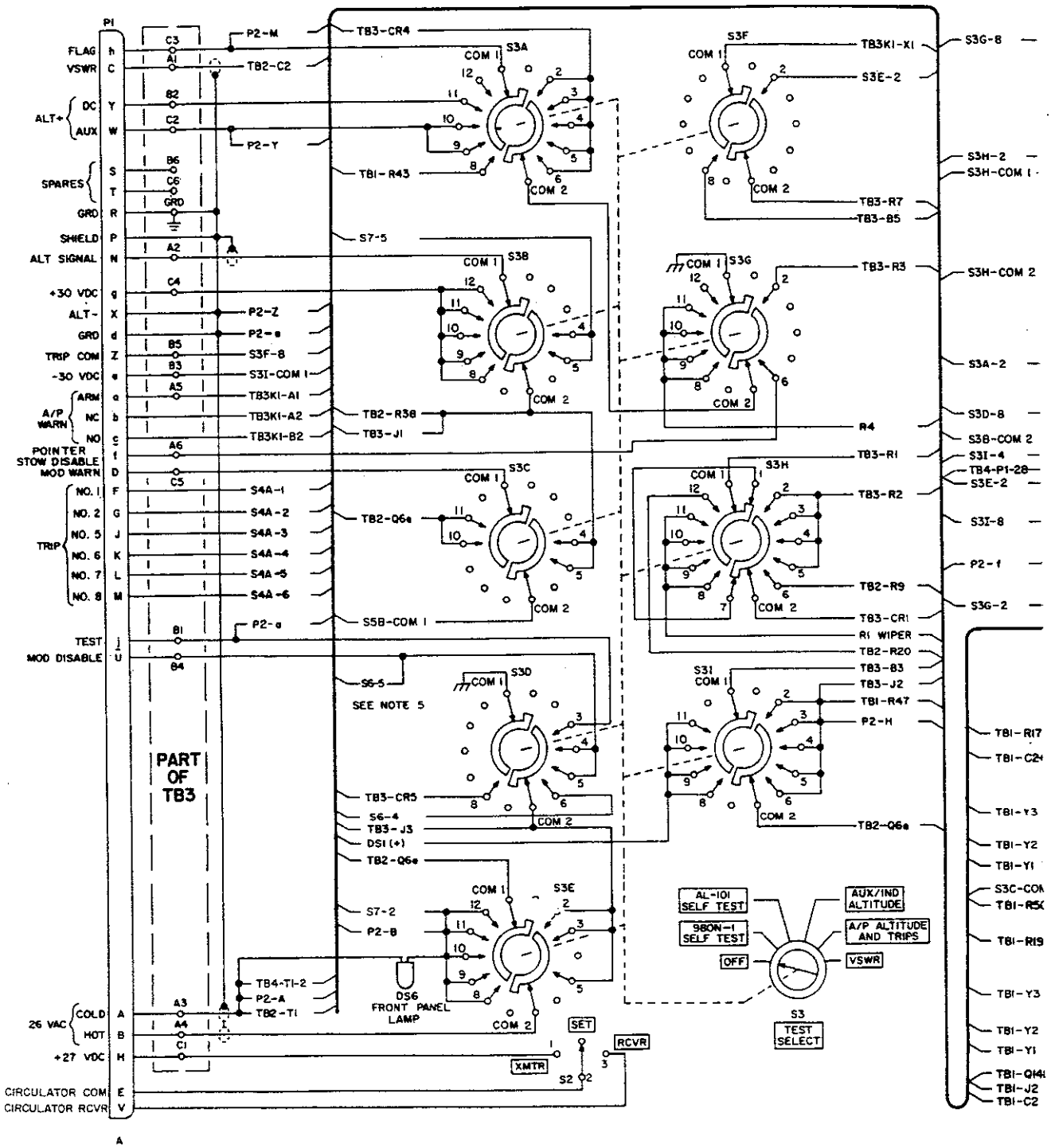
Change note 2 to read as follows:

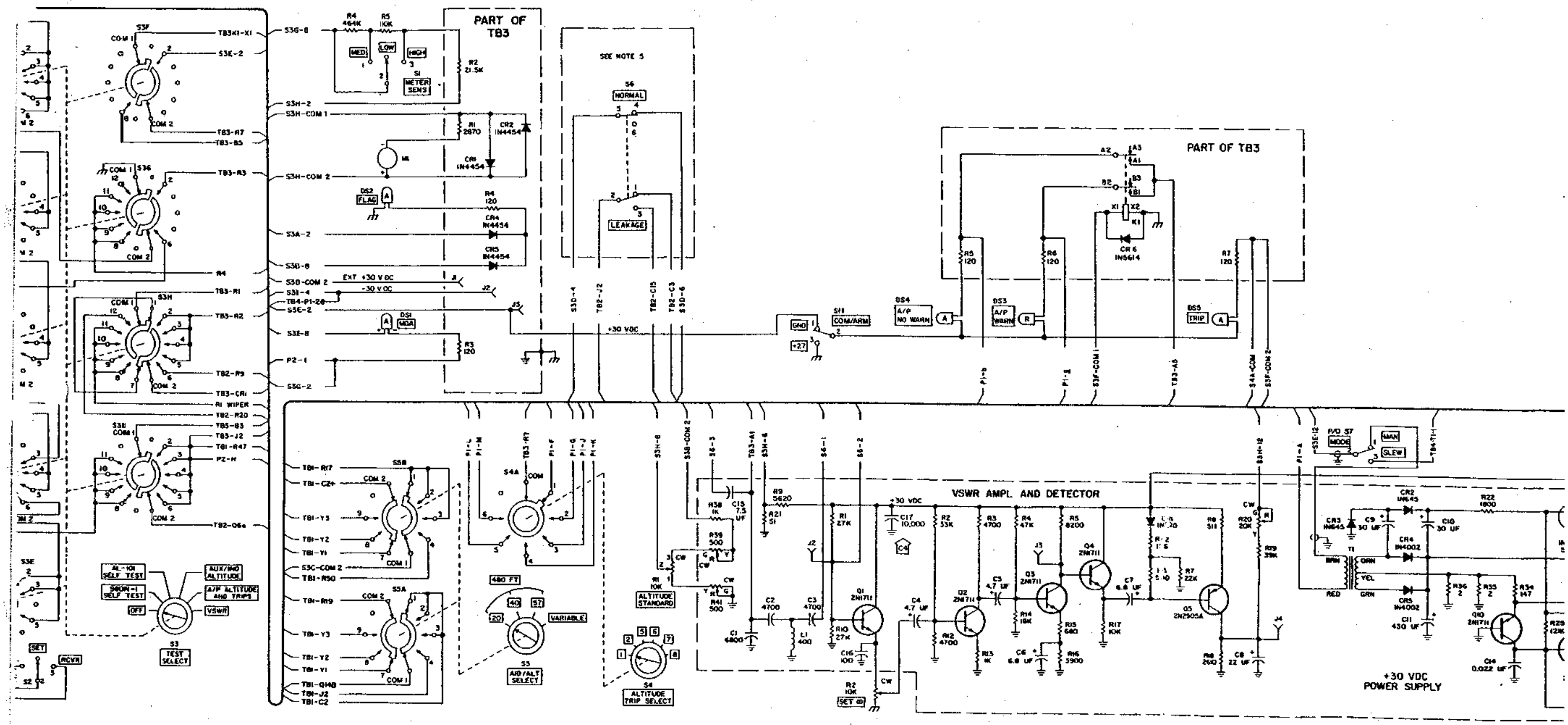
R36 SELECTED 1270, 1330, 1400, 1470, 1540, 1620 OHMS SER NO 407 AND BELOW.

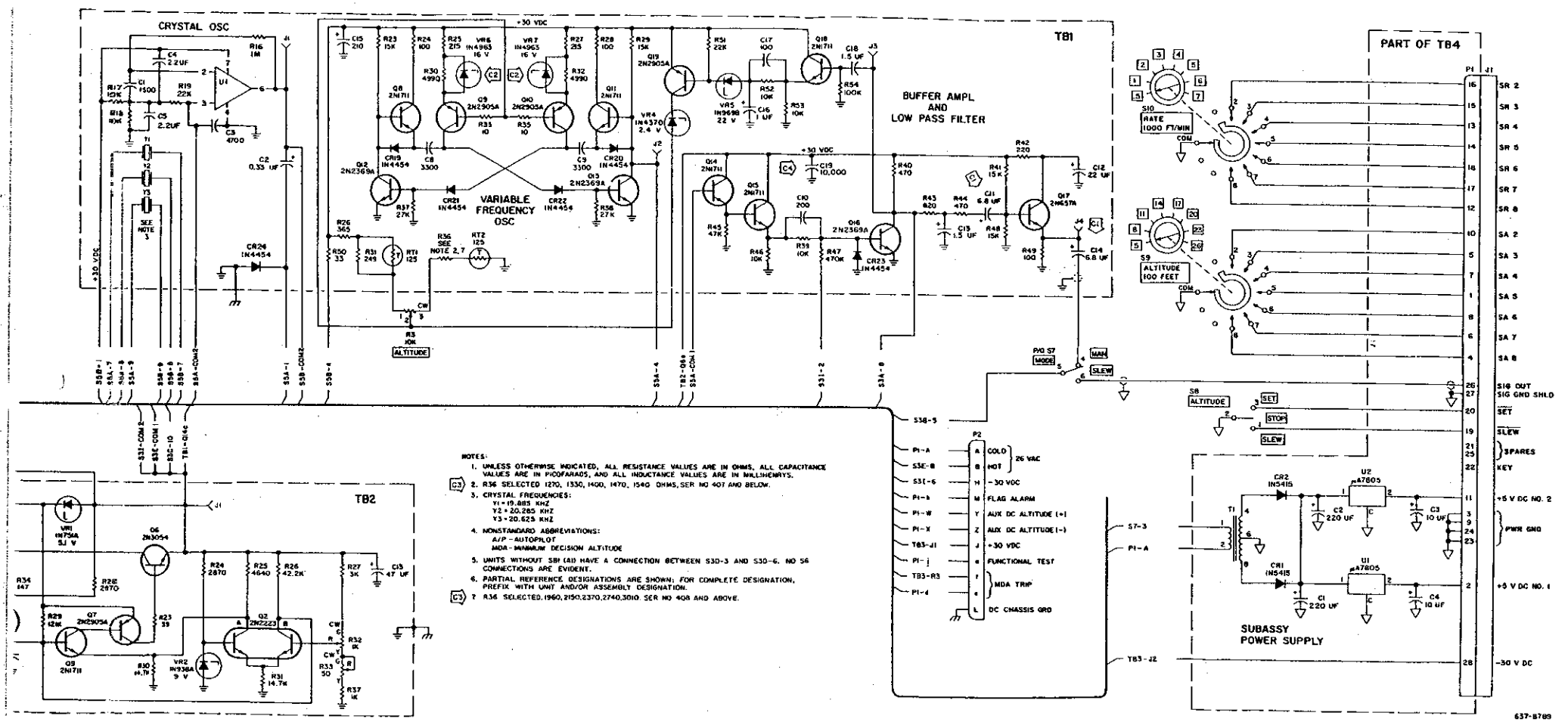
At S10 add reference to NOTE 8.

Add NOTE 8 to read as follows:

8. S10 SILKSCREEN AT POSITIONS 6 AND 7 ARE .15 AND .3 ON CPN 522-4610-001/-003 UNITS WITH SB5 INSTALLED, AND CPN 522-4610-004 UNITS.


P1
FLAG h
VSWR C
ALT+ DC Y
AUX W
SPARES S
T
GRD R
SHIELD P
ALT SIGNAL N
+30 VDC q
ALT- X
GRD d
TRIP COM Z
-30 VDC e
A/P WARN ARM a
NC b
NO c
POINTER STOW DISABLE f
MOD WARN D
TRIP NO. 1 F
NO. 2 G
NO. 5 J
NO. 6 K
NO. 7 L
NO. 8 M
TEST j
MOD DISABLE U
26 VAC COLD A
HOT B
+27 VDC H
CIRCULATOR COM E
CIRCULATOR RCVR V
A
C3
A1
B2
C2
B6
C6
GRD
A2
C4
B5
B3
A5
A6
C5
B1
B4
A3
A4
C1
P2-M
TB2-C2
P2-Y
P2-Z
P2-e
S3F-8
S3I-COM 1
TB3K1-A1
TB3K1-A2
TB3K1-B2
S4A-1
S4A-2
S4A-3
S4A-4
S4A-5
S4A-6
P2-a
S5B-COM 1
S6-5
SEE NOTE 5
PART OF TB3
TB4-T1-2
P2-A
TB2-T1
TB3-CR4
S7-5
TB2-R38
TB3-J1
TB2-Q6e
TB3-CR5
S6-4
TB3-J3
DS1 (+)
TB2-Q6e
S7-2
P2-B
DS6 FRONT PANEL LAMP
S3A
S3B
S3C
S3D
S3E
COM 1
COM 2
TB1-R43
XMTR
SET
RCVR
S2
S3F
S3G
S3H
S3I
TB3K1-X1
S3E-2
TB3-R7
TB3-B5
TB3-R3
R4
TB3-R1
TB3-R2
TB2-R9
TB3-CR1
R1 WIPER
TB2-R20
TB3-B3
TB3-J2
TB1-R47
P2-H
TB2-Q6e
AL-101 SELF TEST
980N-1 SELF TEST
OFF
AUX/IND ALTITUDE
A/P ALTITUDE AND TRIPS
VSWR
S3
TEST SELECT
S3G-8
S3H-2
S3H-COM 1
S3H-COM 2
S3A-2
S3D-8
S3B-COM 2
S3I-4
TB4-P1-28
S3E-2
S3I-8
P2-f
S3G-2
TB1-R17
TB1-C24
TB1-Y3
TB1-Y2
TB1-Y1
TB1-R19
TB1-Y3
TB1-Y2
TB1-Y1
TB1-J2
TB1-C2


PART OF TB3
SEE NOTE 5
S6 NORMAL
LEAKAGE
PART OF TB3
VSWR AMPL AND DETECTOR
+30 VDC POWER SUPPLY
S3 TEST SELECT
AL-101 SELF TEST
560N-1 SELF TEST
OFF
AUX/INO ALTITUDE
A/P ALTITUDE AND TRIPS
VSWR
S5 AID/ALT SELECT
480 FT
VARIABLE
S4 ALTITUDE TRIP SELECT
R1 10K ALTITUDE STANDARD
R2 10K SET ∞
S1 METER SENS
MED
LOW
HIGH
DS1 MDA
DS2 FLAG
DS3 A/P WARN
DS4 A/P NO WARN
DS5 TRIP
S11 COM/ARM
GND
+27
P/O S7 MODE
MAN
SLEW
SET
RCVR
EXT +30 VDC
-30 VDC
+30 VDC



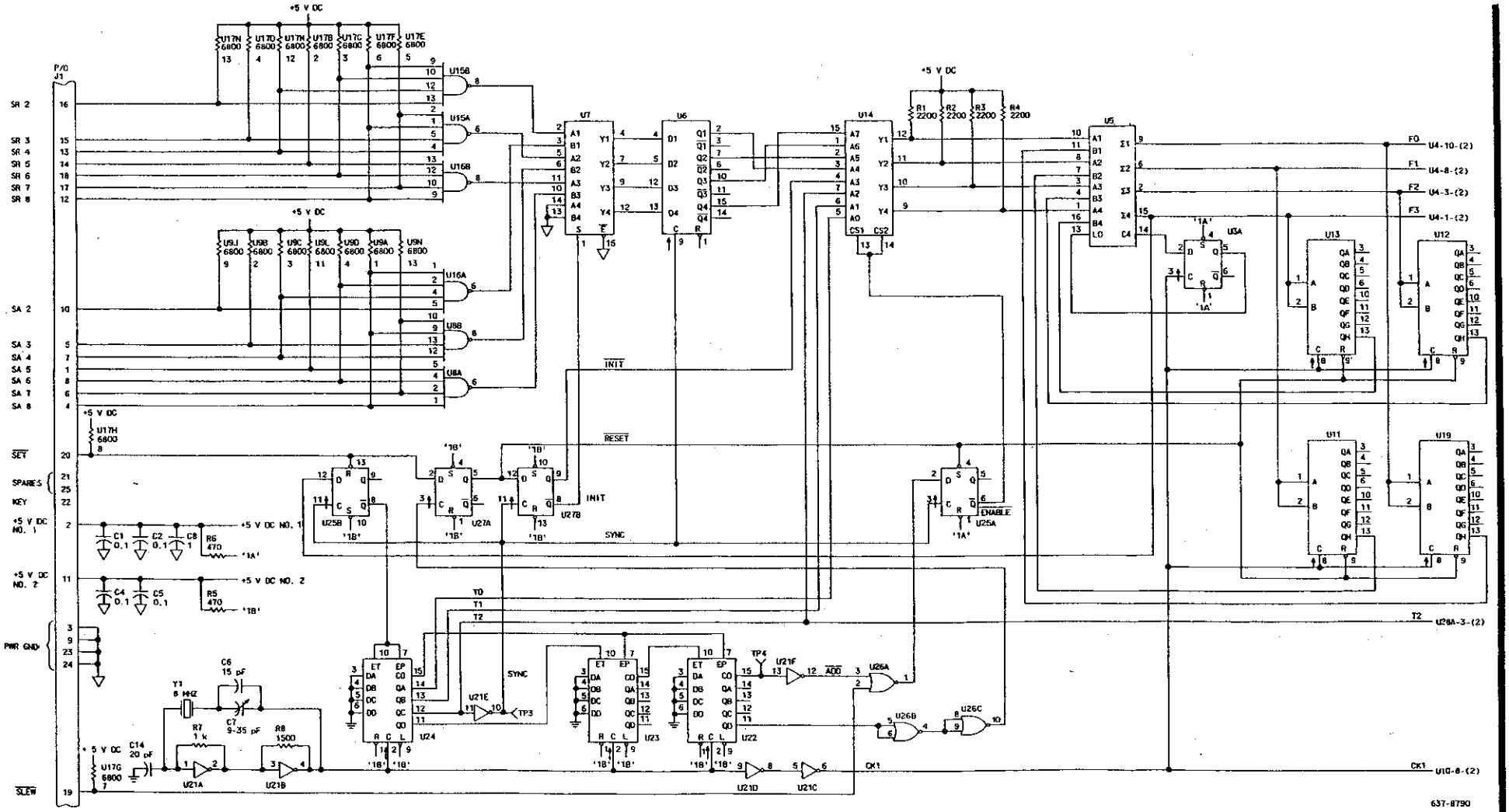
637-8789

980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 1 and CPN 522-4610-003). Schematic Diagram
Figure 7-4

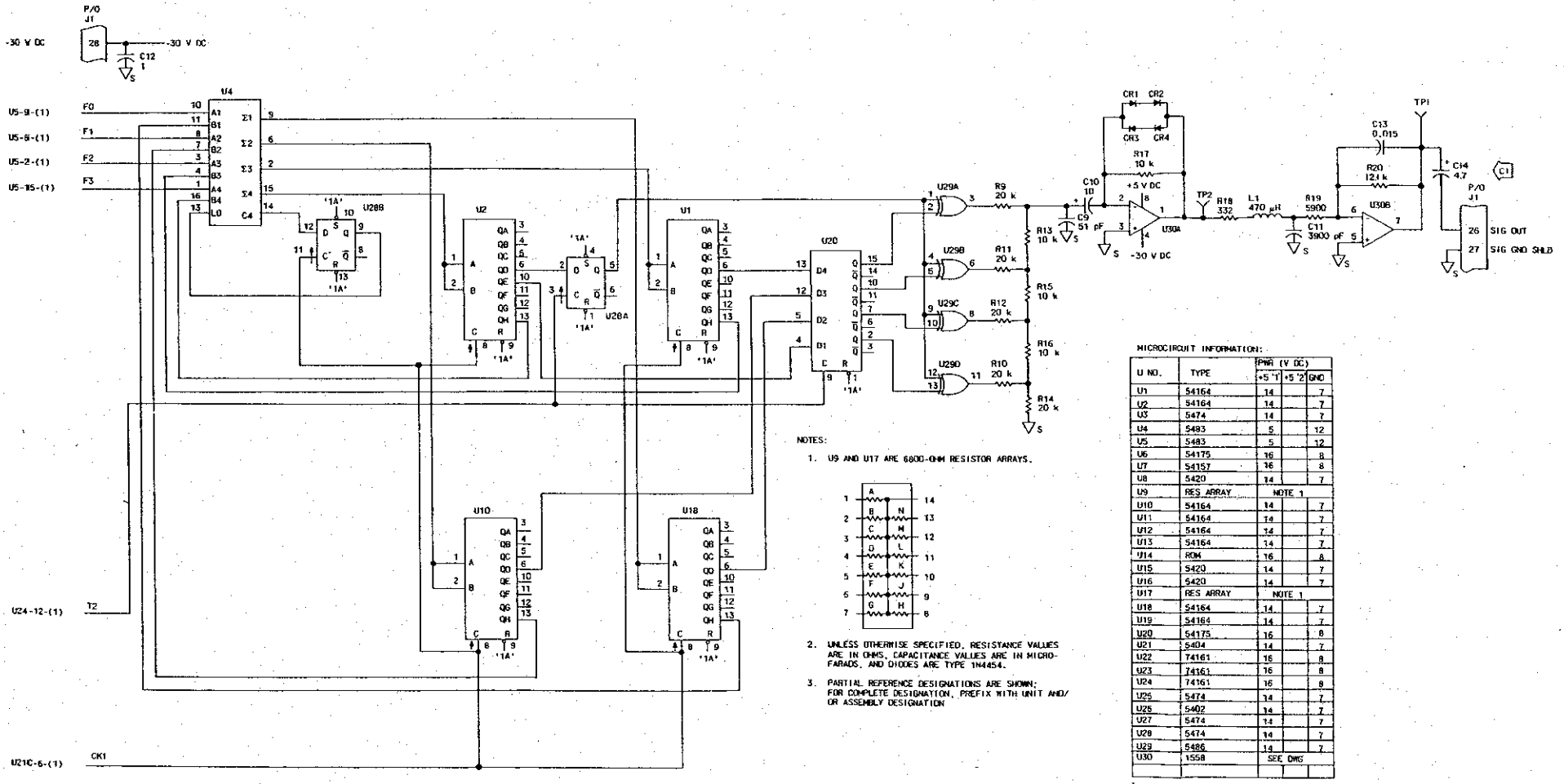
SCHEMATIC CHANGES

REVISION IDENTIFICATION	DESCRIPTION OF REVISION AND REASON FOR CHANGE	SERVICE BULLETIN	EFFECTIVITY
B1	Added schematic for rate generator circuit card assembly A1, CPN 601-4055-001 (part of power supply and rate generator terminal board TB4, CPN 629-9350-001).	4	980N-1, CPN 522-4610-001; 980N-1, CPN 522-4610-003
C1	Added C14 and changed R20 from 20 kΩ to 12.1 kΩ to minimize loading effects on audio output stages.		Serno 388 and above

Rate Generator Circuit Card A1, Schematic Diagram
Figure 7-5 (Sheet A)



Rate Generator Circuit Card A1.
Schematic Diagram
Figure 7-3 (Sheet 1 of 2)



NOTES:

1. U9 AND U17 ARE 680Ω-OHM RESISTOR ARRAYS.

2. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS, AND DIODES ARE TYPE 1N4454.

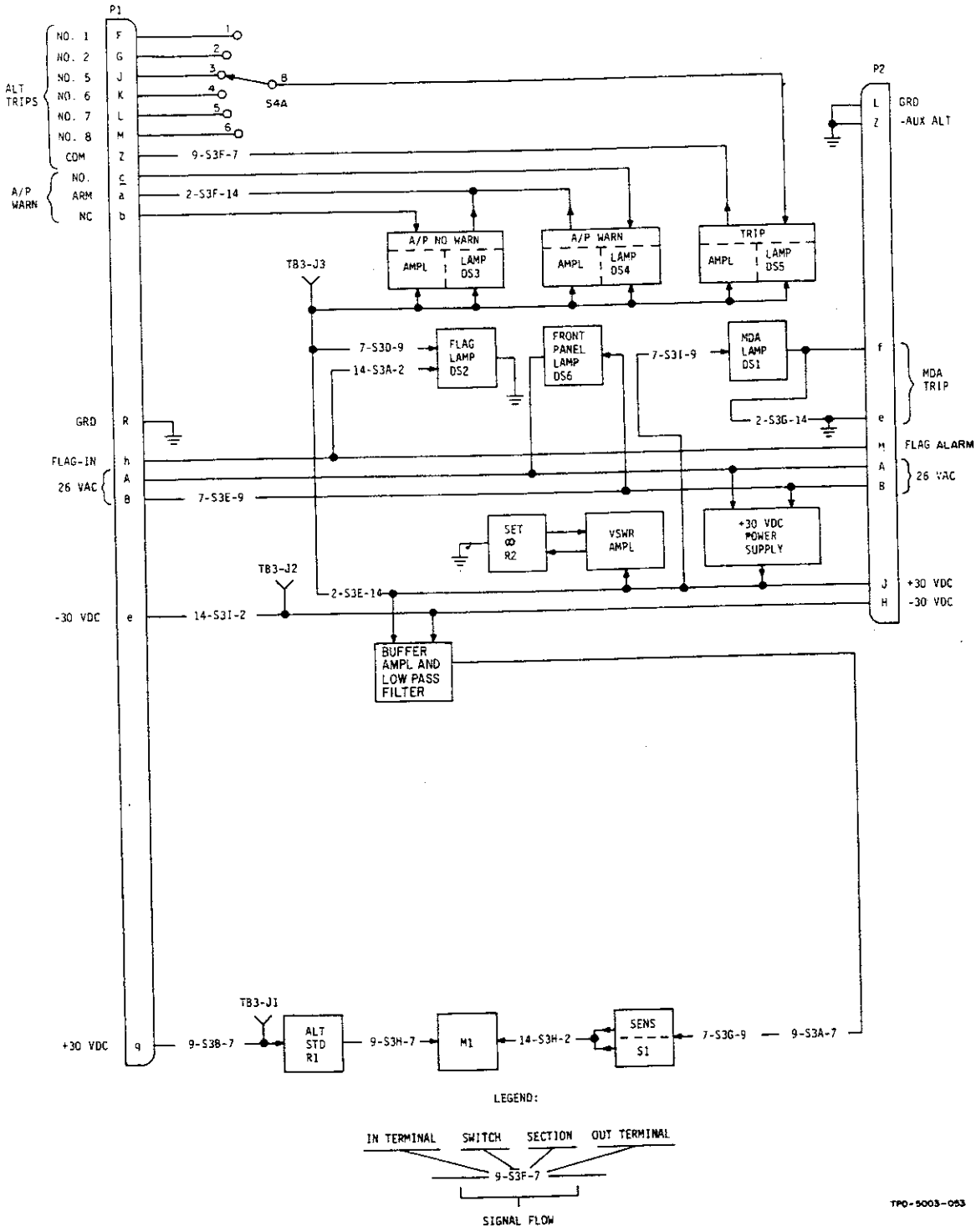
3. PARTIAL REFERENCE DESIGNATIONS ARE SHOWN; FOR COMPLETE DESIGNATION, PREFIX WITH UNIT AND/OR ASSEMBLY DESIGNATION

MICROCIRCUIT INFORMATION:

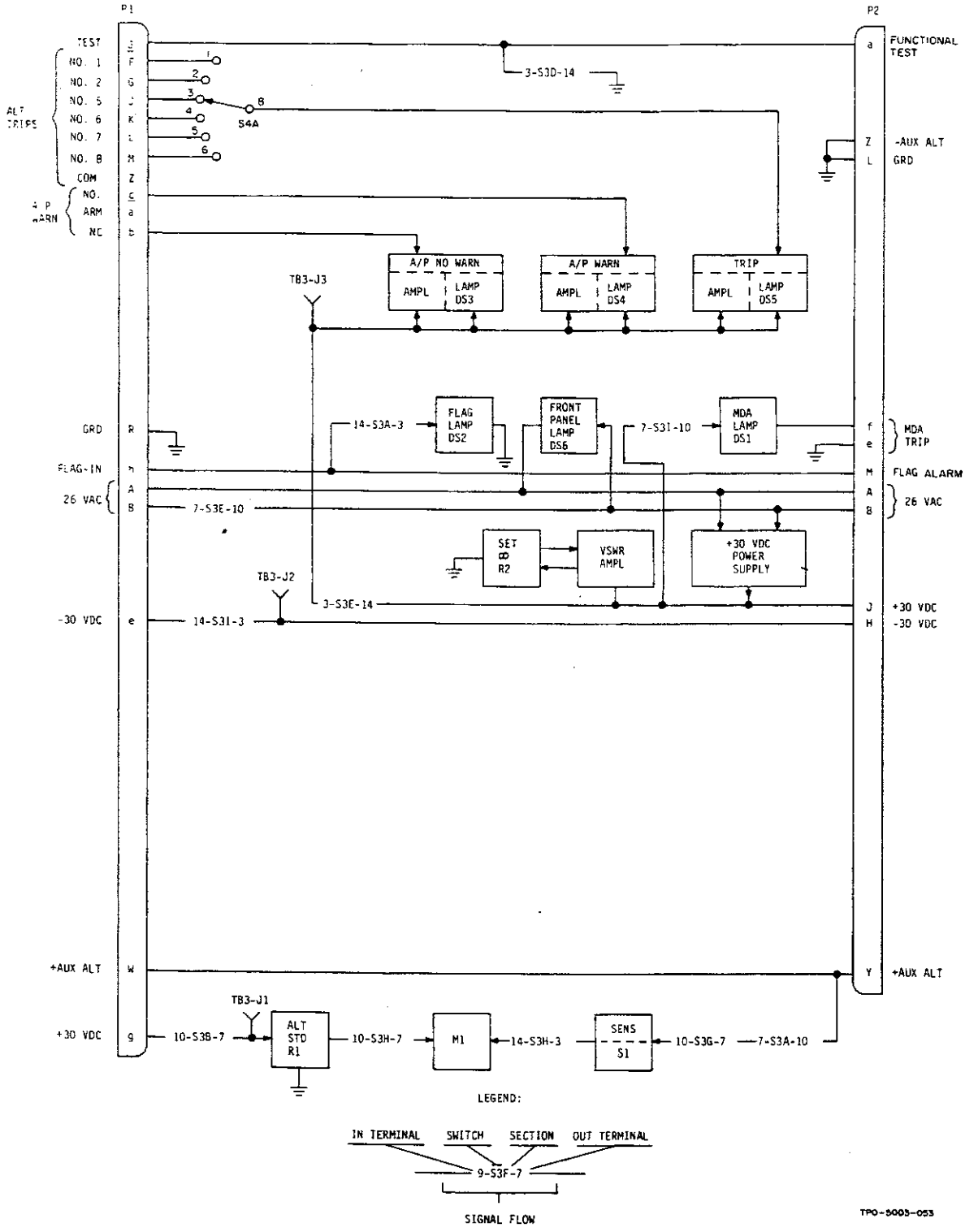
U NO.	TYPE	PWR (V DC) +5 '1'	+5 '2'	GND
U1	54164	14		7
U2	54164	14		7
U3	5474	14		7
U4	5483	5		12
U5	5483	5		12
U6	54175	16		8
U7	54157	16		8
U8	5420	14		7
U9	RES ARRAY	NOTE 1		
U10	54164	14		7
U11	54164	14		7
U12	54164	14		7
U13	54164	14		7
U14	ROM	16		8
U15	5420	14		7
U16	5420	14		7
U17	RES ARRAY	NOTE 1		
U18	54164	14		7
U19	54164	14		7
U20	54175	16		8
U21	5404	14		7
U22	74161	16		8
U23	74161	16		8
U24	74161	16		8
U25	5474	14		7
U26	5402	14		7
U27	5474	14		7
U28	5474	14		7
U29	5486	14		7
U30	1558	SEE DWG		

637-8790

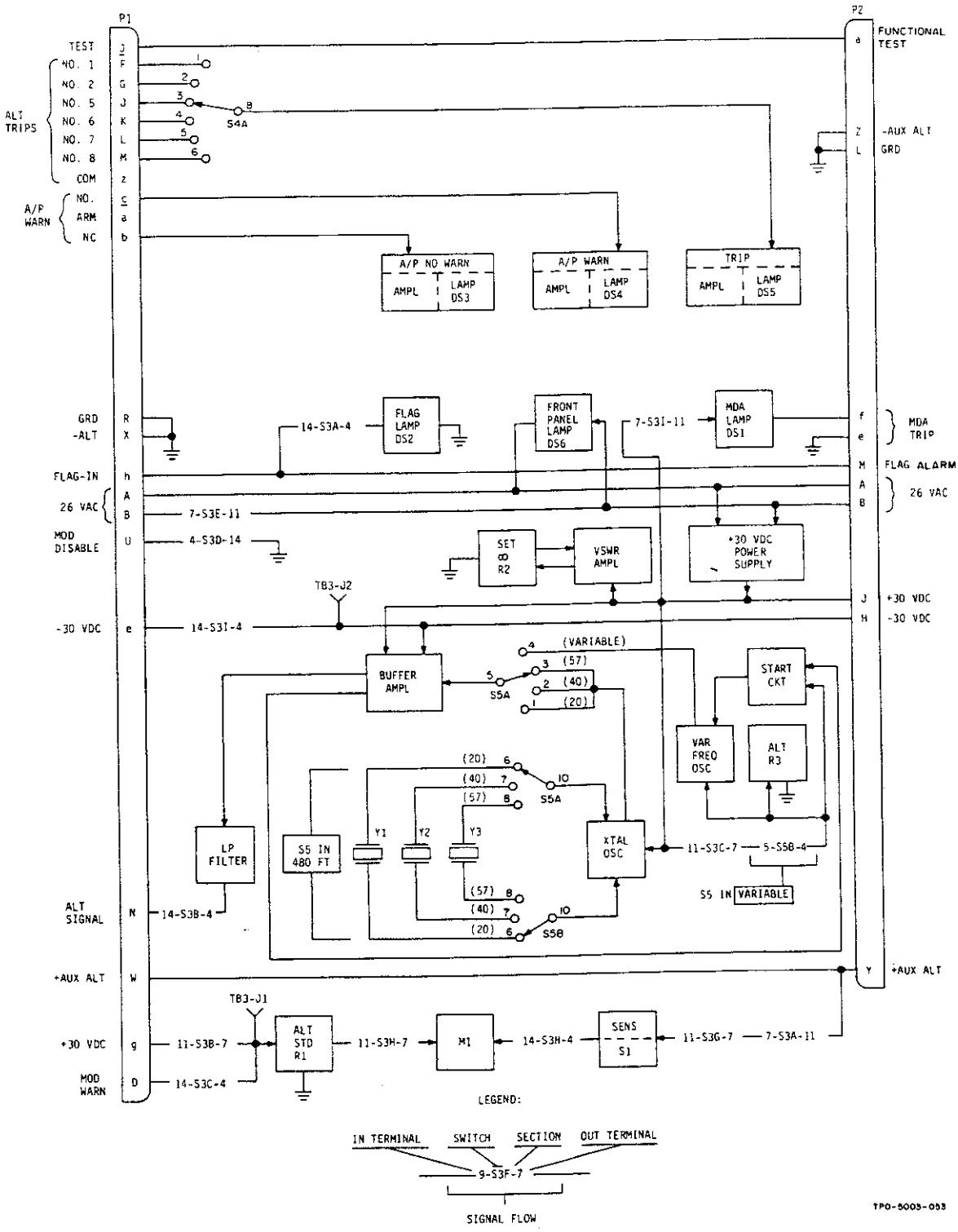
Rate Generator Circuit Card A1, Schematic Diagram
Figure 7-5 (Sheet 2)



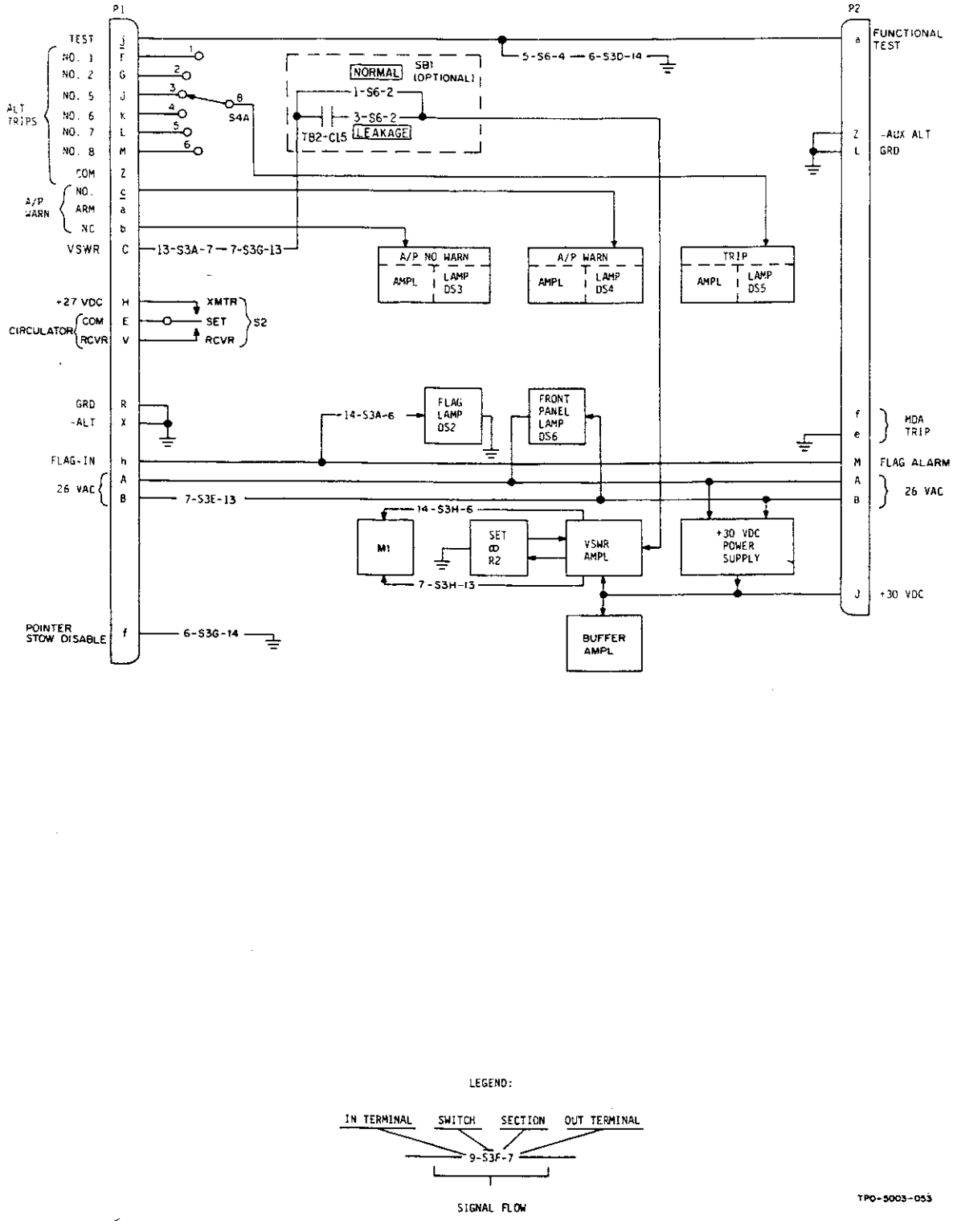
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Functional Block Diagram of Circuits Connected in 980N-1 SELF TEST
Figure 7-6



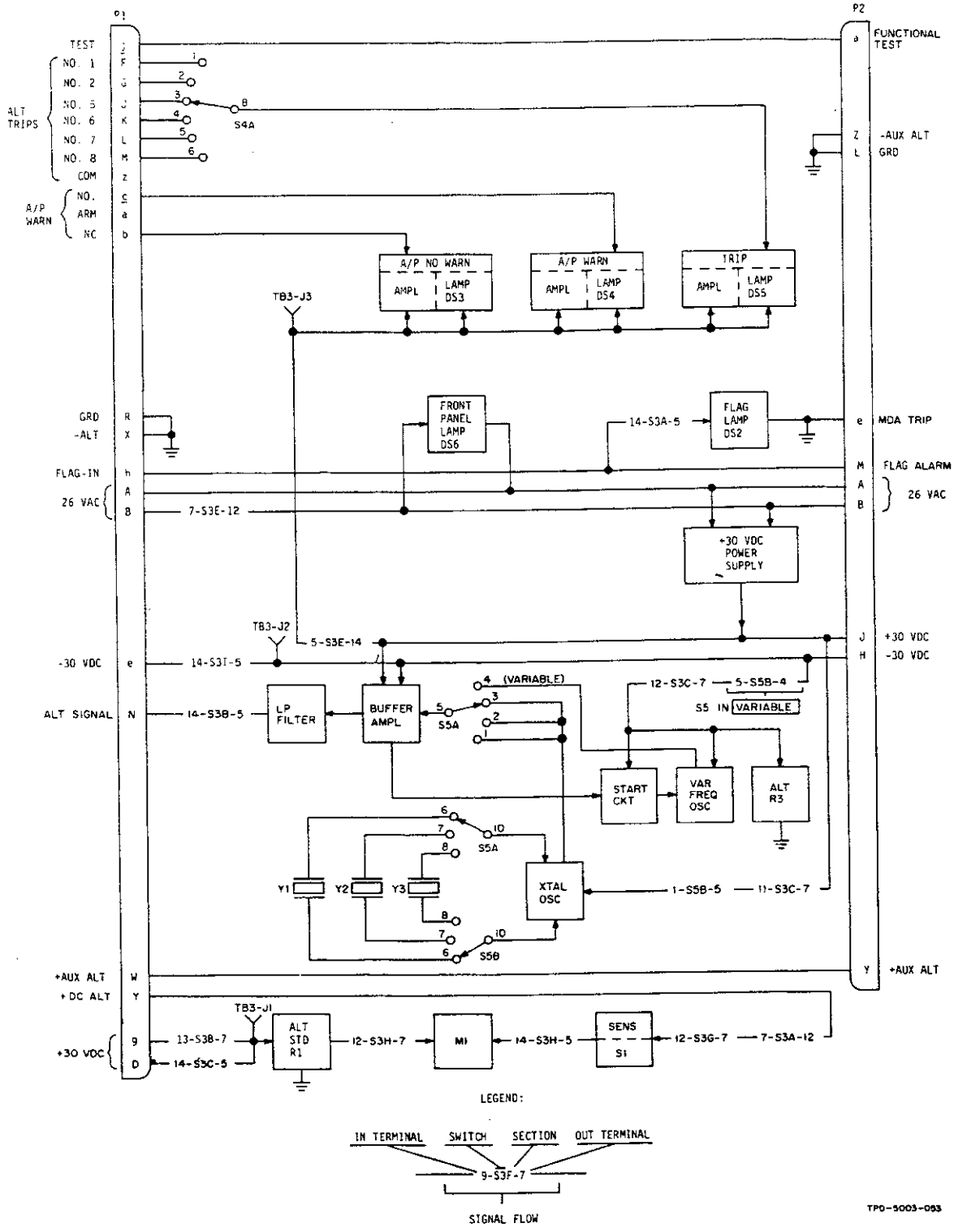
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Functional Block Diagram of Circuits Connected in AL-101 SELF-TEST.
Figure 7-7



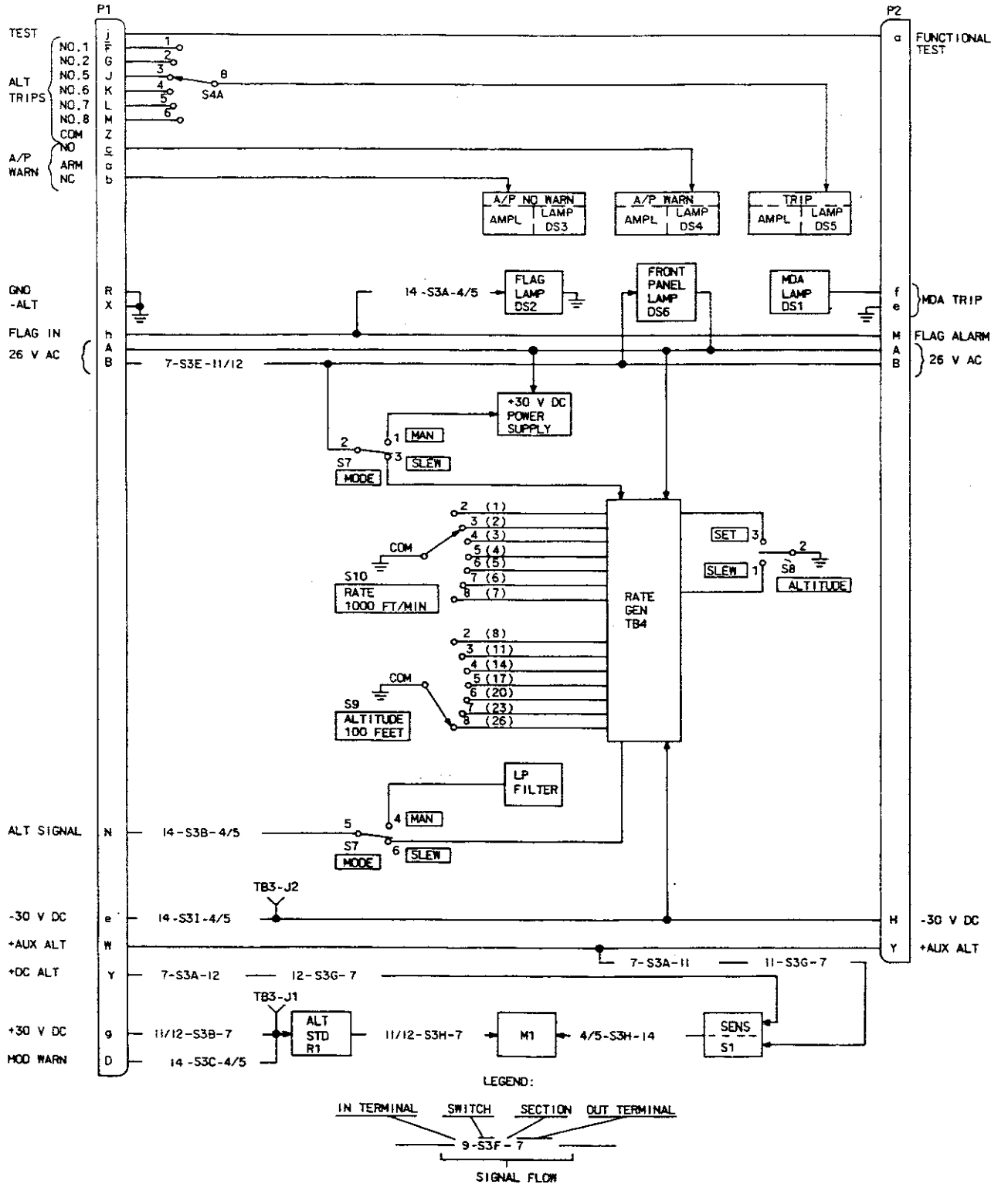
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Functional Block Diagram of Circuits Connected in AUX/IND ALTITUDE Test
Figure 7-8



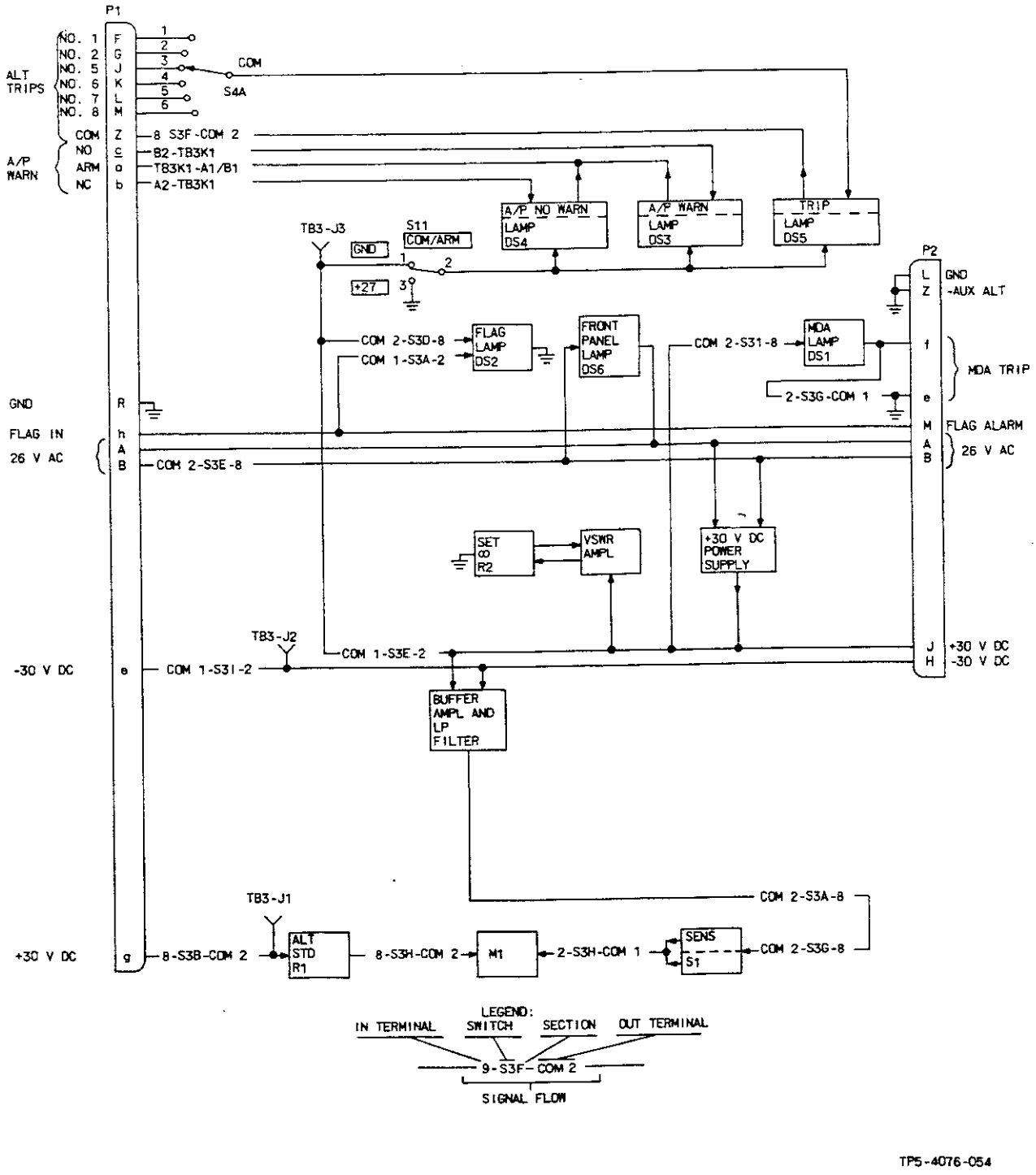
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Functional Block Diagram of Circuits Connected in VSWR Test
Figure 7-9



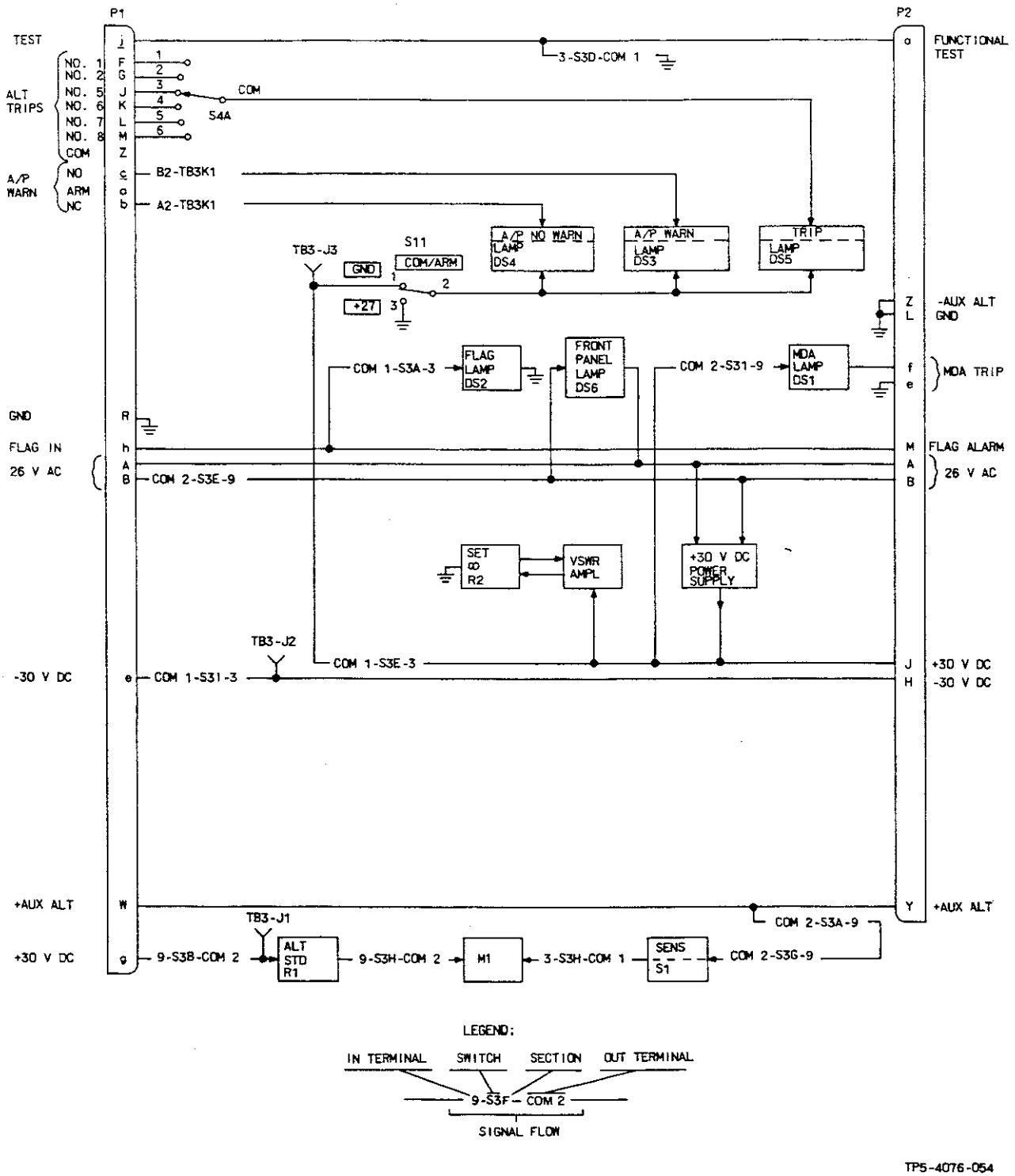
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below), Functional Block Diagram of Circuits Connected in A/P ALTITUDE AND TRIPS Test
Figure 7-10



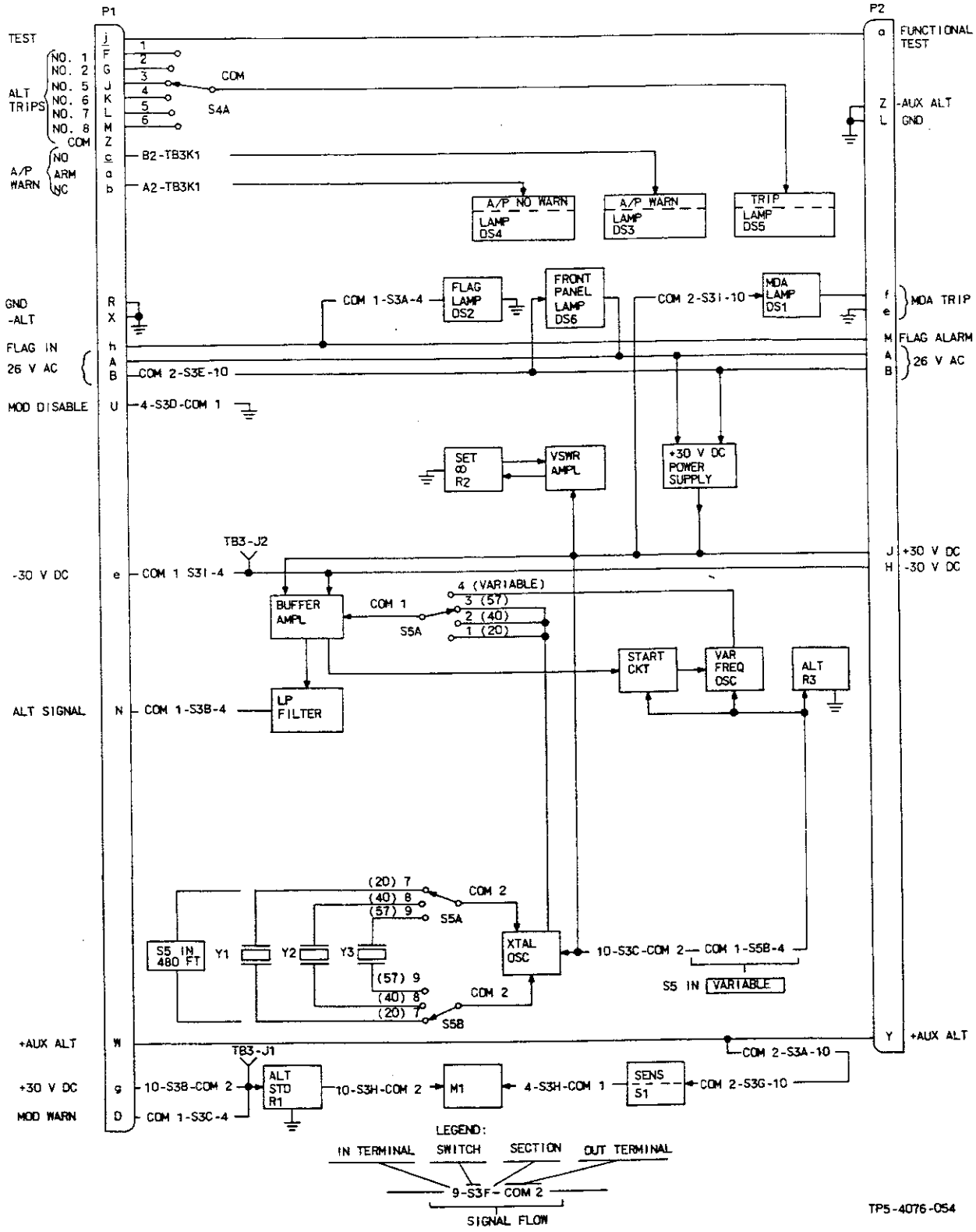
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 351 and Below With SB 4).
Functional Block Diagram of Circuits Connected in Altitude Slew Test
Figure 7-11



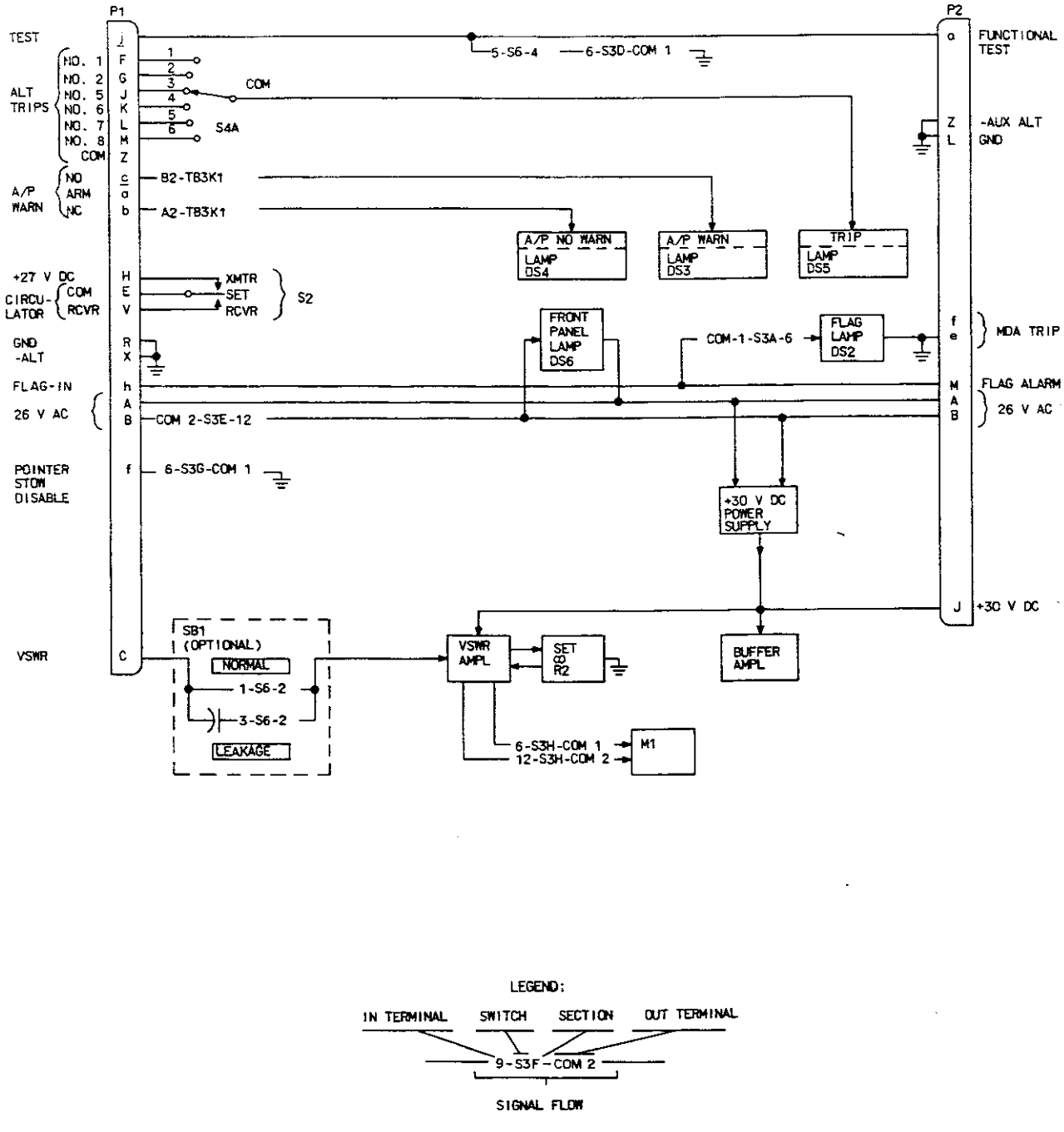
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Functional Block Diagram of Circuits Connected in 980N-1 SELF TEST
Figure 7-12



980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Functional Block Diagram of Circuits Connected in AL-101 SELF TEST
Figure 7-13



980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above). Functional Block Diagram of Circuits Connected in AUX/IND ALTITUDE Test
Figure 7-14



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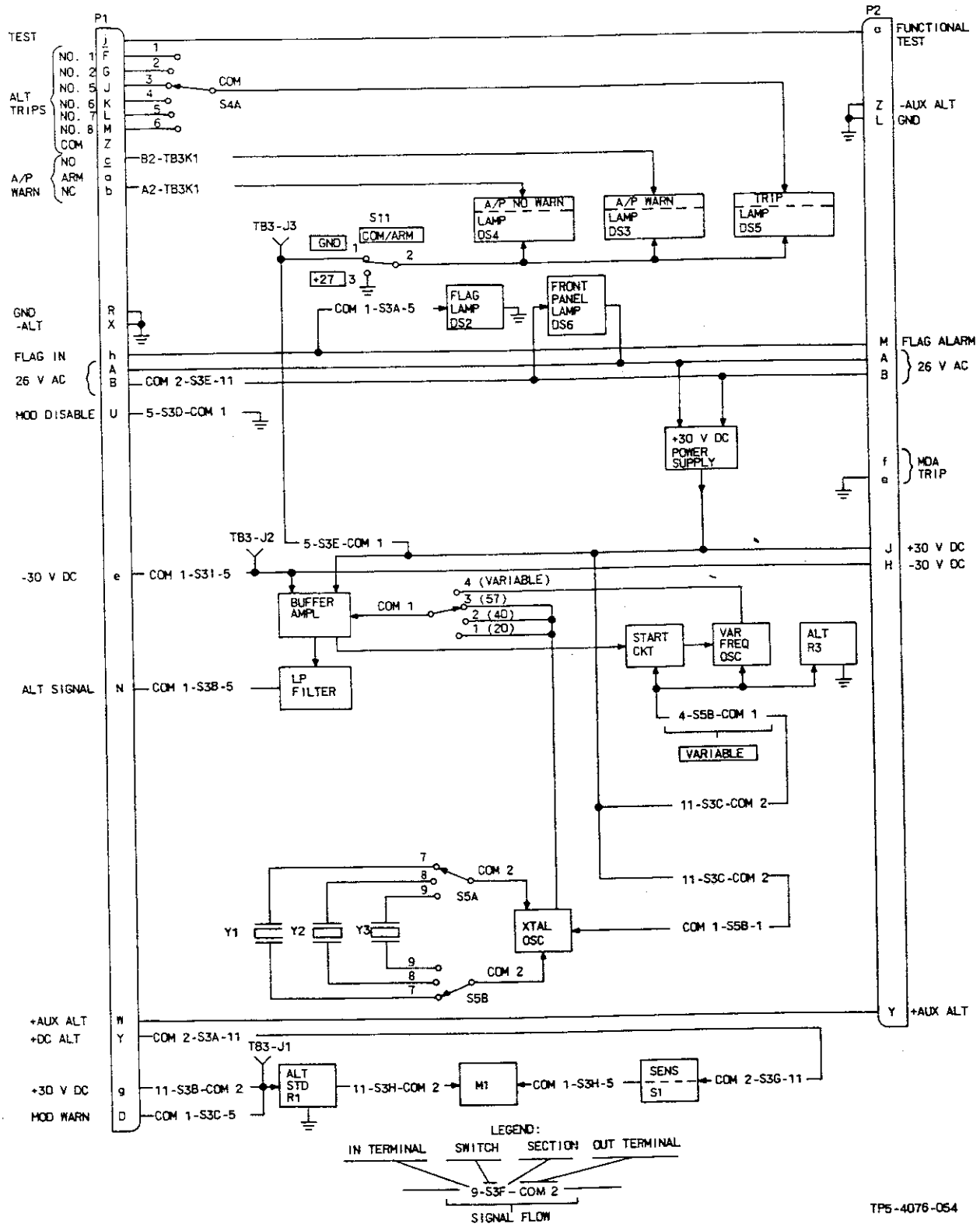
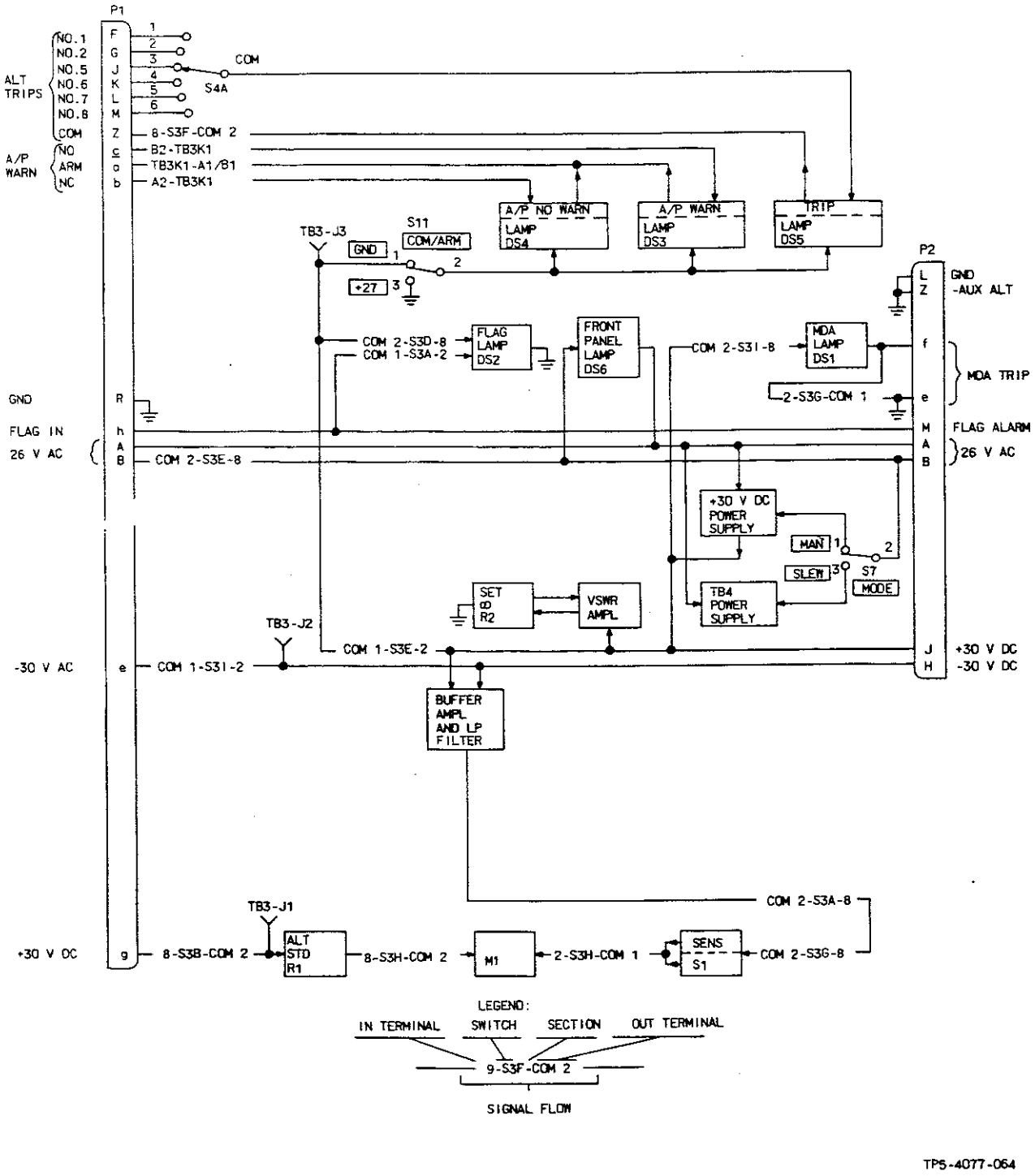
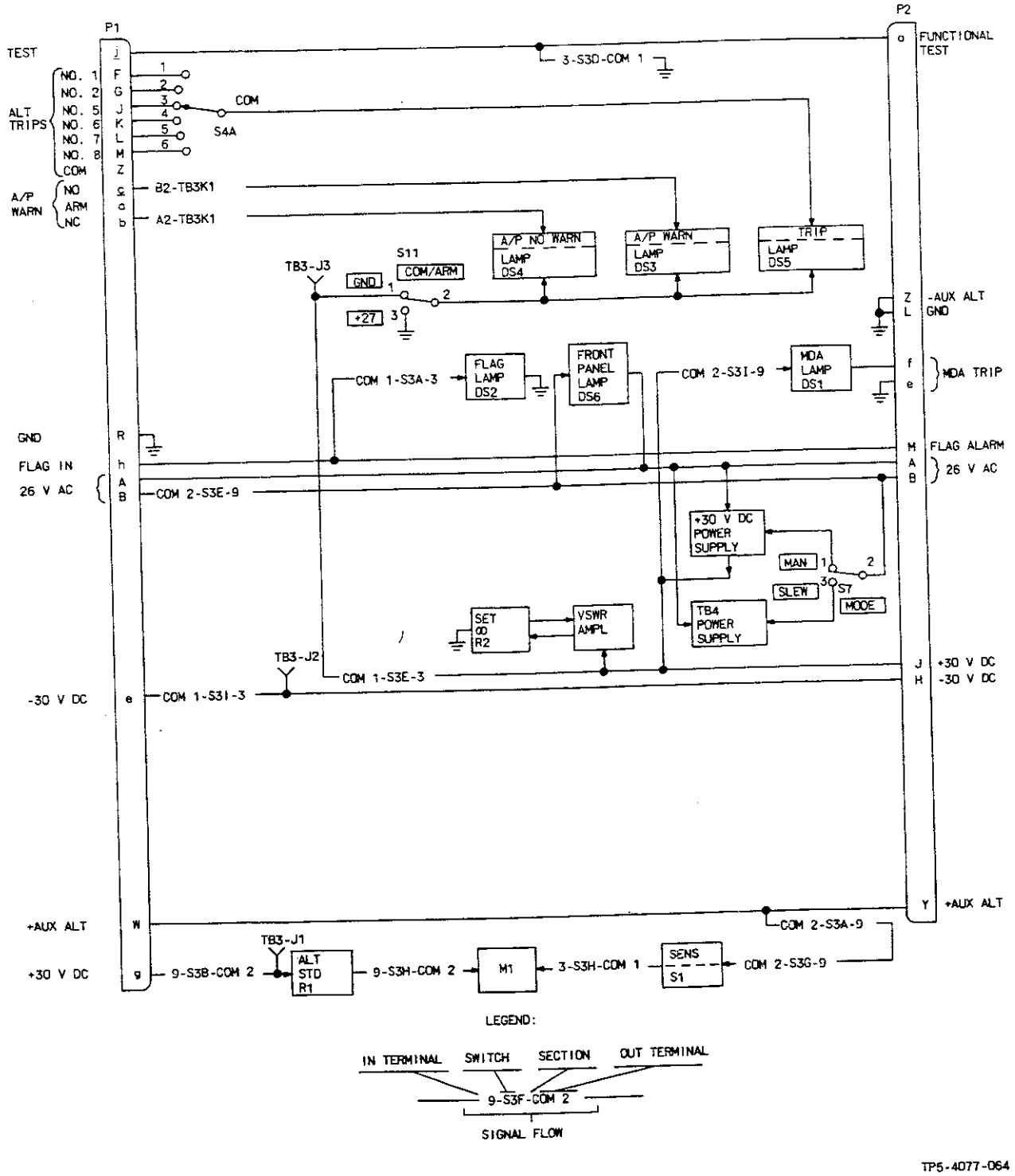
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Functional Block Diagram of Circuits Connected in VSWR Test
Figure 7-15



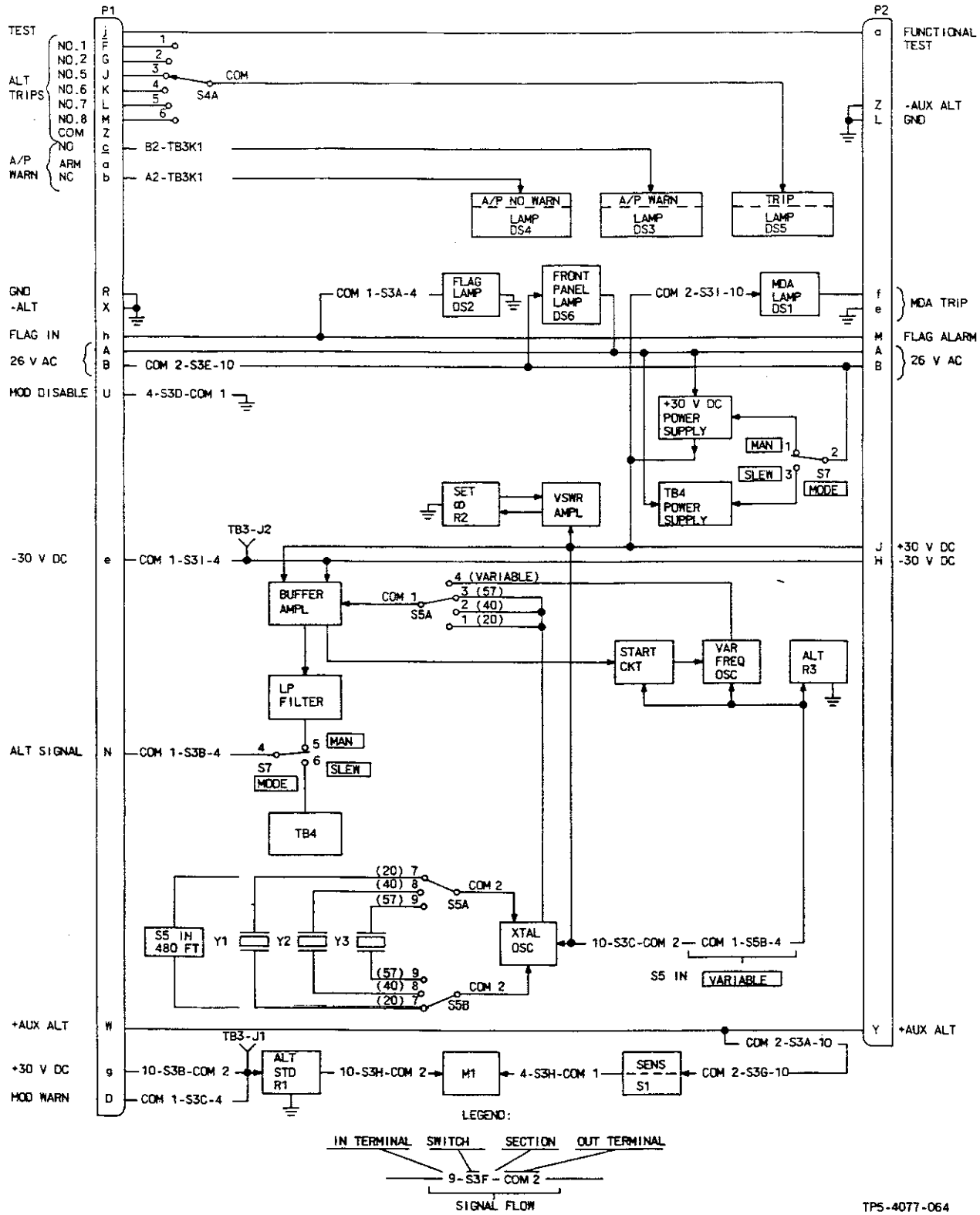
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above), Functional Block Diagram of Circuits Connected in A/P ALTITUDE AND TRIPS Test
Figure 7-16



980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in 980N-1 SELF TEST
Figure 7-17

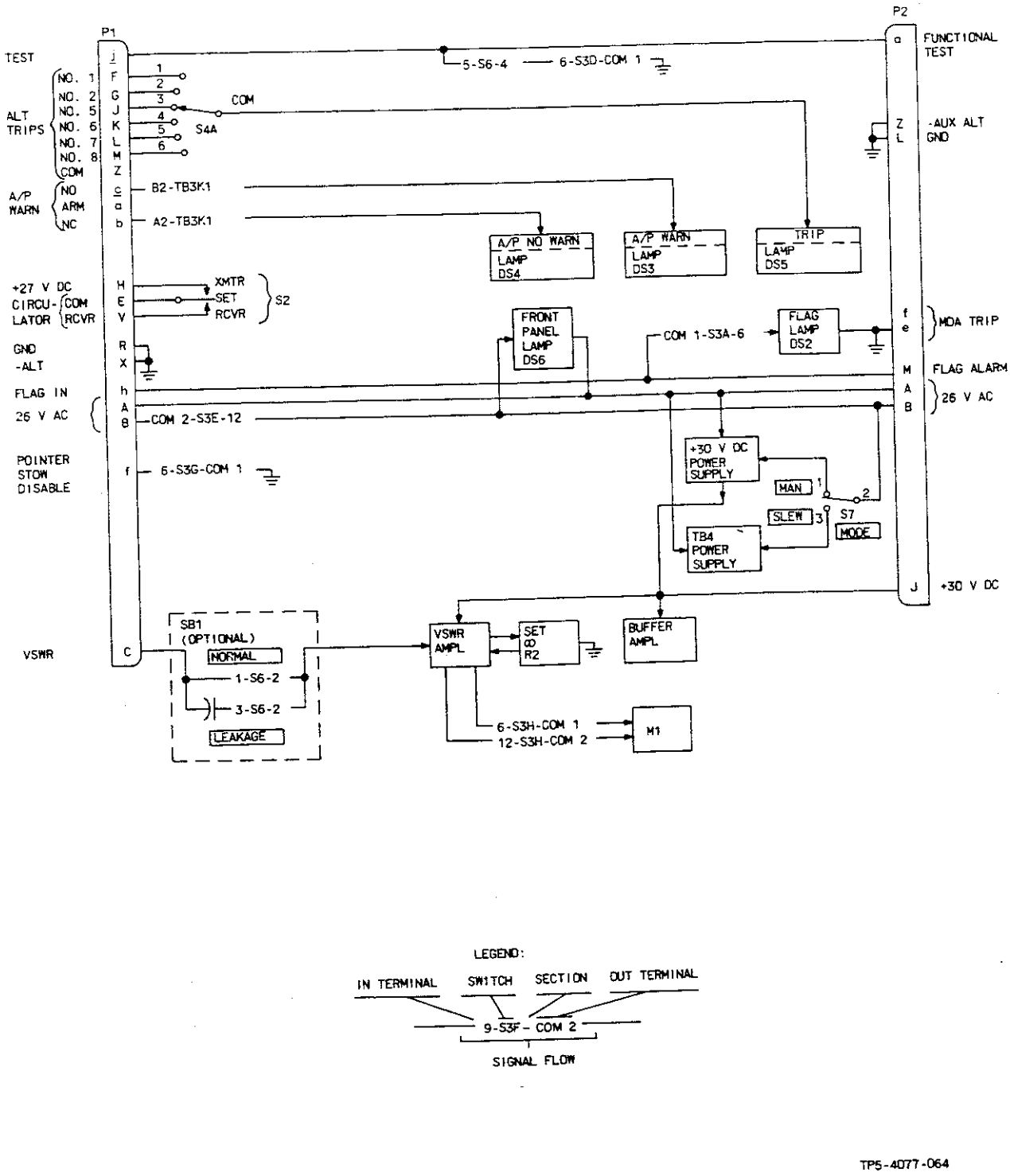


980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in AL-101 SELF TEST
Figure 7-18

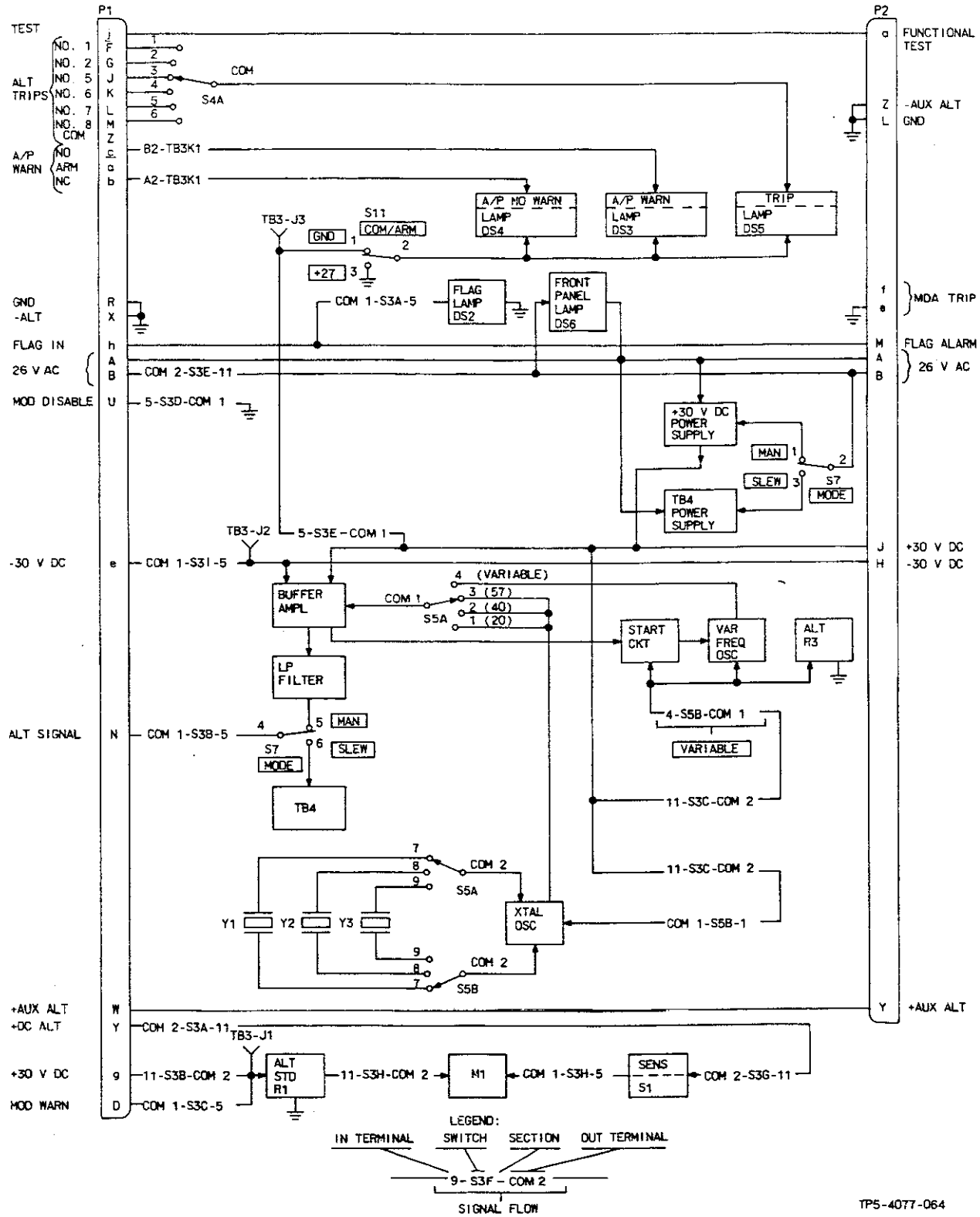


980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in AUX/IND ALTITUDE Test

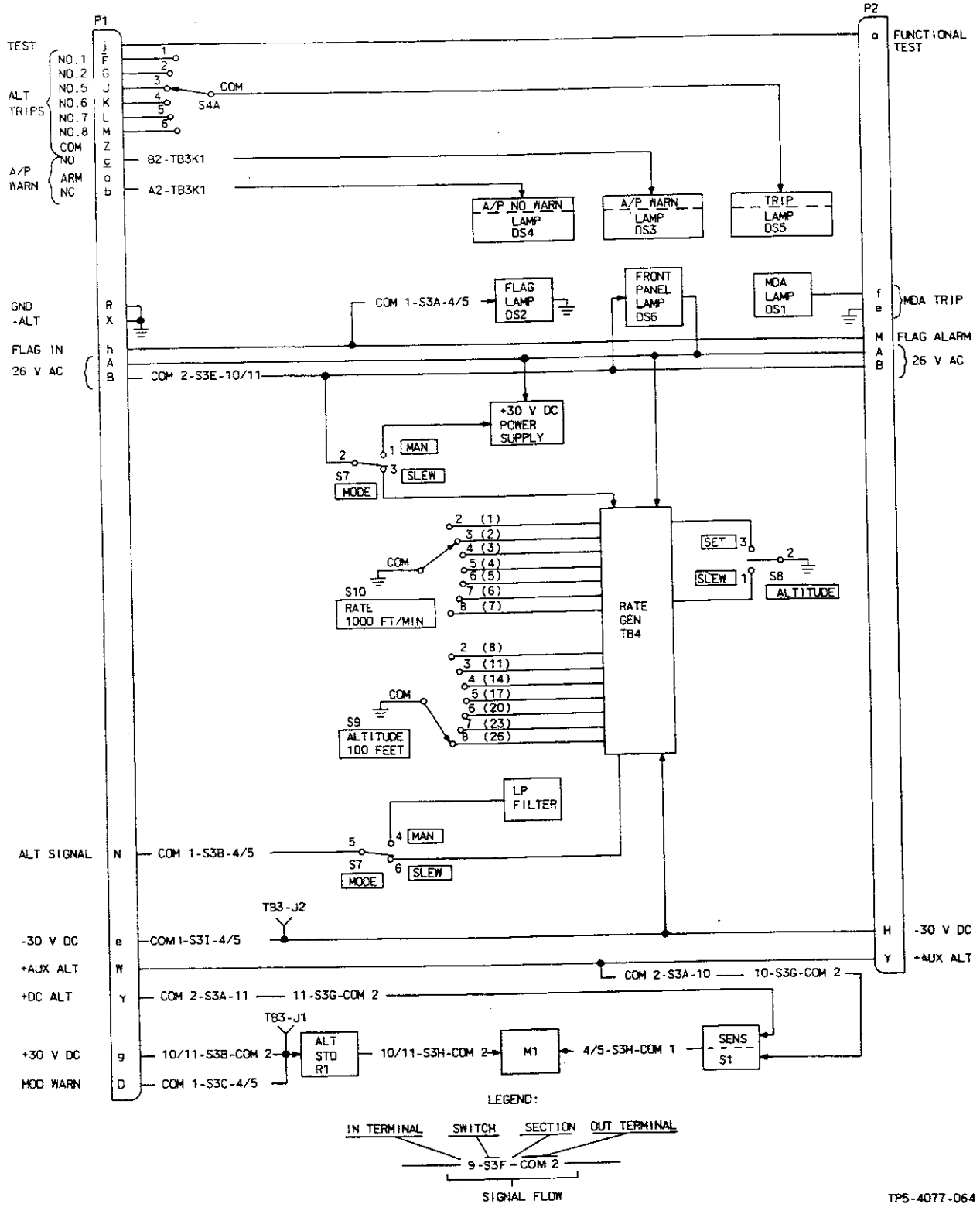
Figure 7-19



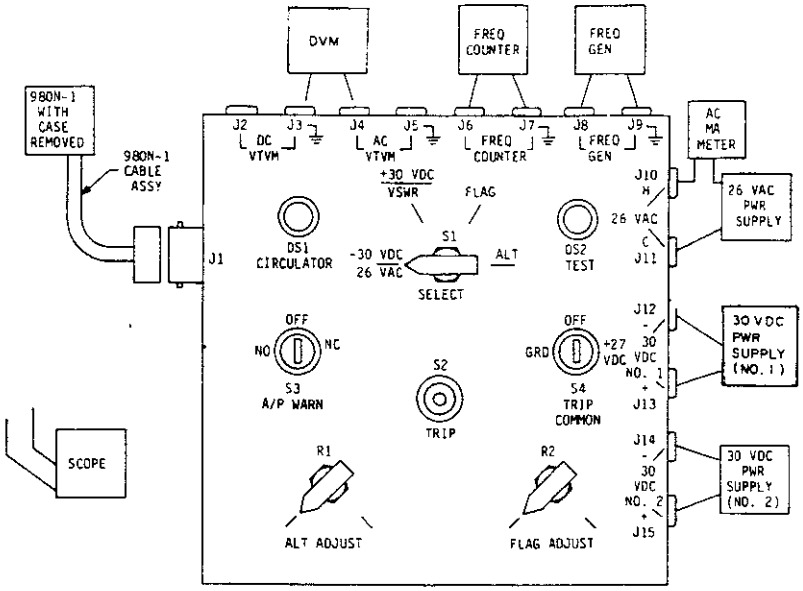
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in VSWR Test
Figure 7-20



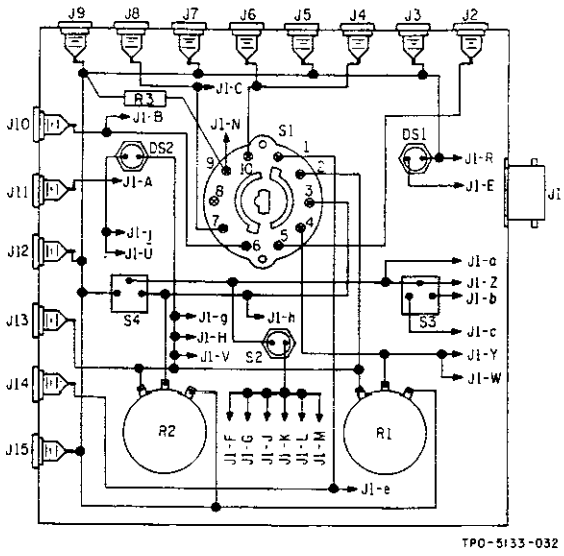
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above With SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in A/P ALTITUDE AND TRIPS Test
Figure 7-21



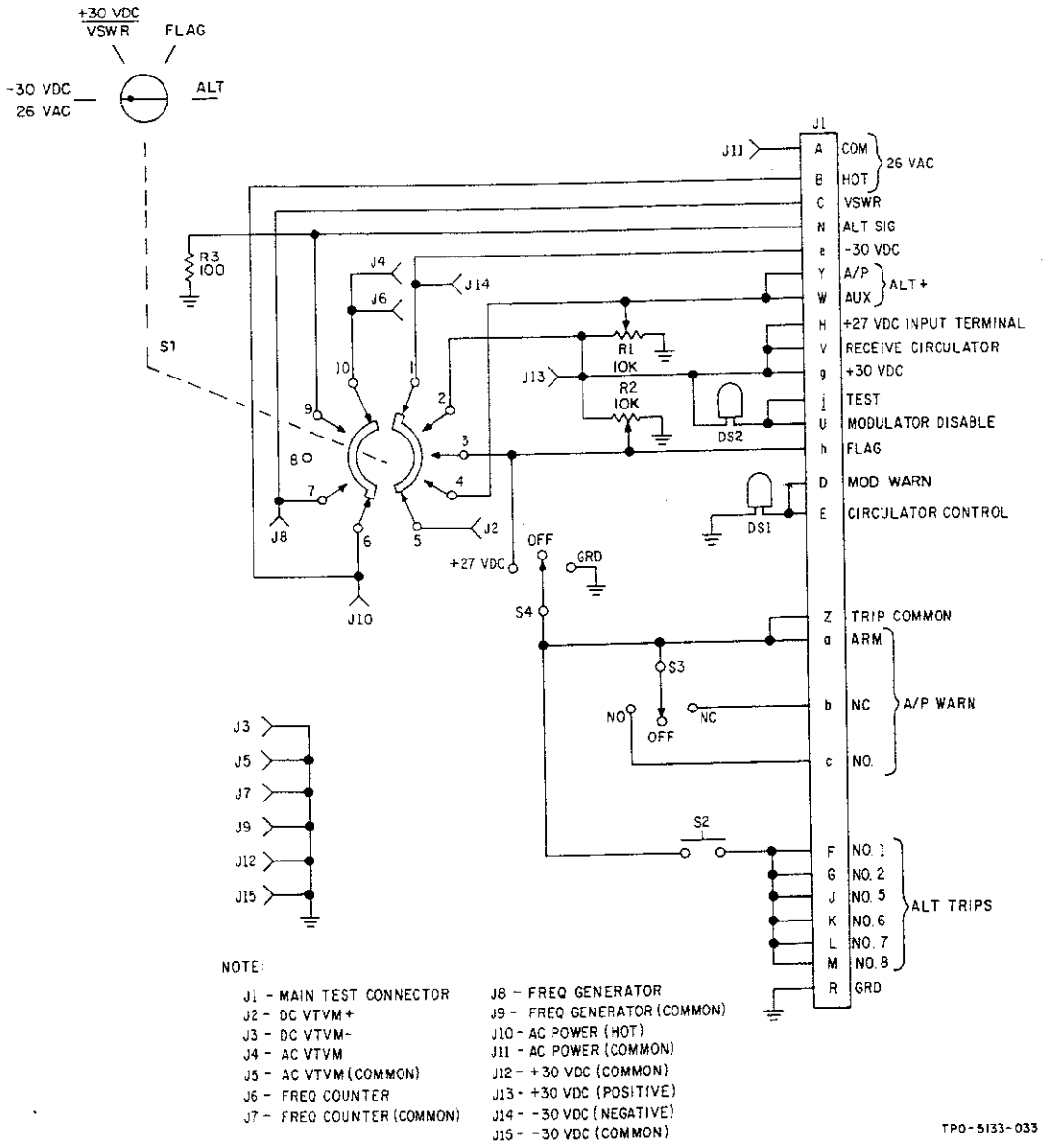
980N-1 Altimeter Test Set (CPN 522-4610-001, Serno 352 and Above with SB 4, and CPN 522-4610-003), Functional Block Diagram of Circuits Connected in Altitude Slew Test
Figure 7-22



980N-1 Test Adapter, Panel Top View and Test Setup
Figure 7-23



980N-1 Test Adapter, Panel Bottom View (Wired)
Figure 7-24



980N-1 Test Adapter, Schematic Diagram
Figure 7-25

Table 7-1. 980N-1 Test Adapter, Parts List

QUANTITY	DESCRIPTION	COLLINS PART NUMBER
14	Tip jacks, for use with 0.080-inch-diameter test probes (J2 through J15)	360-0149-00 (white - other colors available)
2	Pilot lamps (DS1 and DS2) Lampholder (T-3-1/4) Lamp (1819)	262-0913-00 262-1863-00
1	4-position, 2-circuit, wafer switch, S1	259-8000-130 (adjustable stop)
2	3-position toggle switches, S3 and S4	259-9031-00
1	Pushbutton switch, S2, NO	260-2709-00
1	Variable resistor, R1, 10K, Helipot	381-1735-010
1	Variable resistor, R2, 10K	376-2488-00
1	P1 mating connector, J1, type BT02-A18-32SH	371-2587-010
AR	Hookup wire (any convenient size)	
AR	Chassis material (any convenient size)	
1	Resistor, 100 Ω ±10%, 1/4 W	745-0713-000