

Errata

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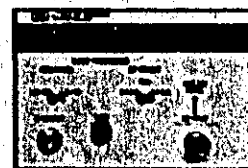
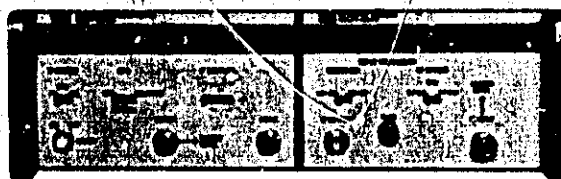
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Agilent Technologies

OPERATING AND SERVICE MANUAL

3730B
DOWN CONVERTER
3736B, 3737B, 3738B & 3739B
RF MODULES



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**HEWLETT
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OPERATING AND SERVICE MANUAL

3730B DOWN CONVERTER 3736B, 3737B, 3738B and 3739B RF MODULES (including option 010)

SERIAL NUMBERS

This manual applies directly to instruments with serial numbers prefixed 2245U. For additional information about instruments with other serial numbers, see INSTRUMENTS COVERED BY MANUAL in Section 1.

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SOUTH QUEENSFERRY, WEST LOTHIAN, SCOTLAND

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WARNING

READ THE FOLLOWING NOTES BEFORE INSTALLING OR SERVICING THE INSTRUMENT.

1. IF THIS INSTRUMENT IS TO BE ENERGIZED VIA AN AUTO-TRANSFORMER MAKE SURE THAT THE COMMON TERMINAL OF THE AUTO-TRANSFORMER IS CONNECTED TO THE NEUTRAL POLE OF THE POWER SOURCE.
2. THE INSTRUMENT MUST ONLY BE USED WITH THE MAINS CABLE PROVIDED. IF THIS IS NOT SUITABLE, CONTACT YOUR NEAREST HP SERVICE OFFICE. THE MAINS PLUG SHALL ONLY BE INSERTED IN A SOCKET OUTLET PROVIDED WITH A PROTECTIVE EARTH CONTACT. THE PROTECTIVE ACTION MUST NOT BE NEGATED BY THE USE OF AN EXTENSION CORD (POWER CABLE) WITHOUT A PROTECTIVE CONDUCTOR (GROUNDING).
3. THE SERVICE INFORMATION FOUND IN THIS MANUAL IS OFTEN USED WITH POWER SUPPLIED TO AND PROTECTIVE COVERS REMOVED FROM THE INSTRUMENT. ENERGY AVAILABLE AT MANY POINTS MAY, IF CONTACTED, RESULT IN PERSONAL INJURY.
4. BEFORE SWITCHING ON THIS INSTRUMENT:
 - (a) Make sure the instrument input voltage selector is set to the voltage of the power source.
 - (b) Ensure that all devices connected to this instrument are connected to the protective (earth) ground.
 - (c) Ensure that the line power (mains) plug is connected to a three-conductor line power outlet that has a protective (earth) ground. (Grounding one conductor of a two-conductor outlet is not sufficient).
 - (d) Check that the instrument fuse(s) is of the correct type and rating.
5. SERVICING INFORMATION:
 - (a) This manual contains information, cautions, and warnings which must be followed to ensure safe operation and to retain the instrument in safe condition. Service and adjustments should be performed only by qualified service personnel.
 - (b) Any adjustment, maintenance, and repair of the opened instrument under voltage should be avoided as much as possible and, when inevitable, should be carried out only by a skilled person who is aware of the hazard involved.
 - (c) Capacitors inside the instrument may still be charged even if the instrument has been disconnected from its source of supply.
 - (d) Whenever it is likely that the protection has been impaired, the instrument must be made inoperative and be secured against any unintended operation.

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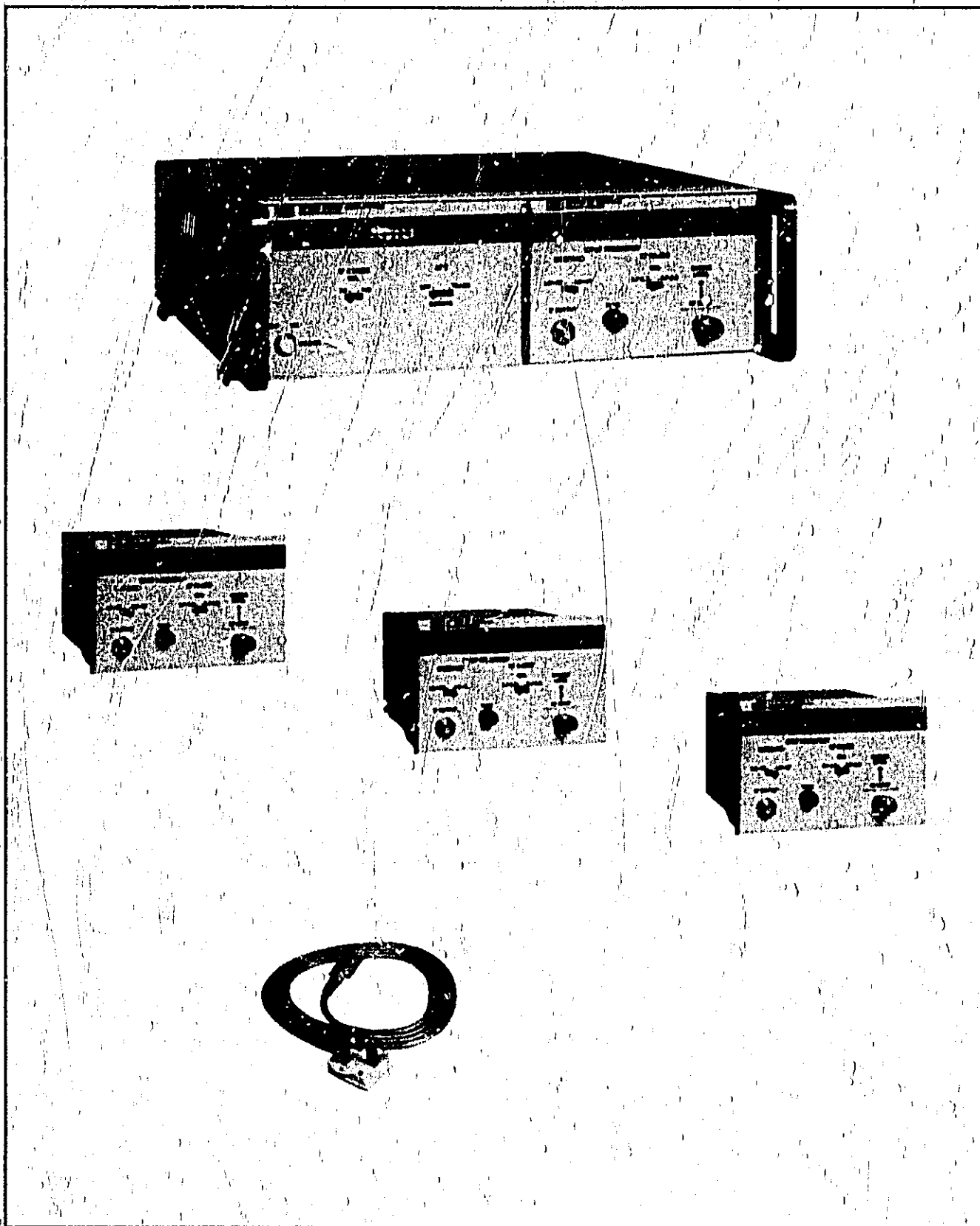


Figure 1-1 3730B Down Converter with 3736B, 3737B, 3738B
and 3739B RF Module plug-ins

SECTION 1 GENERAL INFORMATION

1-1 INTRODUCTION

1-2 This operating and service manual contains information required to install, operate, test, adjust and service the Hewlett-Packard Model 3730B DOWN CONVERTER and Models 3736B, 3737B, 3738B and 3739B RF MODULE plug-ins. The instrument, with a full range of plug-in modules and the accessories supplied, is shown in Figure 1-1.

1-3 SPECIFICATIONS

1-4 The specifications of the 3730B DOWN CONVERTER mainframe and the 3736B, 3737B, 3738B and 3739B RF MODULE plug-ins are given in Table 1-2. These specifications are the performance standards or limits against which the instrument is tested.

1-5 SAFETY CONSIDERATIONS

1-6 The Model 3730B DOWN CONVERTER, individually, complete with an RF MODULE plug-in, or with an RF MODULE plug-in connected to the mainframe via the 15906A Umbilical cable accessory, is a safety class I instrument (provided with a protective earth terminal). The instrument and manual should be reviewed for safety markings and instructions before operation or service.

1-7 INSTRUMENTS COVERED BY MANUAL

1-8 Attached to the rear panel of the instrument is a serial number plate. The serial number is in the form: 0000U-00000. It is in two parts; the first four digits and the letter are the serial prefix and the last five digits are the suffix. The prefix is the same for all identical instruments; it changes only when a change is made to the instrument. The suffix however, is assigned sequentially and is different for each instrument. The contents of this manual apply to instruments with serial number prefix(es) listed under SERIAL NUMBERS on the title page.

1-9 An instrument manufactured after the printing of this manual may have a serial prefix that is not listed on the title page. This unlisted serial number prefix indicates that the instrument may be different from those described in this manual. A Manual Changes supplement may be supplied with this manual to provide information on how to adapt the manual for such instruments.

1-10 In addition to change information, the supplement may contain information for correcting errors in the man-

ual. To keep the manual as accurate as possible, Hewlett-Packard recommend that periodic requests for the latest Manual Change supplement are made to one of the Sales and Service offices listed at the rear of this manual.

1-11 DESCRIPTION

1-12 The RF input is mixed with the local oscillator in the RF module to produce an IF output. When the AFC is switched OFF, local oscillator tuning is controlled directly with the front panel switches and controls. When the AFC switch is in the NORMAL position compensation is applied to the local oscillator for frequency drifts in either the down converter or the source, of up to ± 40 MHz with a 140 MHz IF or ± 20 MHz with a 70 MHz IF. The TRACKING mode allows the local oscillator to be swept by an internally recovered sweep, in addition to the normal AFC, to track the RF source by up to 250 MHz.

1-13 OPTIONS

1-14 The Model 3730B OPTION 010 is fitted with an independent IF amplifier and attenuator. The amplifier has a fixed 25 dB gain and the attenuator is variable in 10 dB steps from 0 to 30 dB.

1-15 ACCESSORIES SUPPLIED

1-15 The Model 3730B is supplied complete with a power cable and an extender board. The extender board is mounted in a socket next to assembly A5. Option 010 instruments are supplied with a link to connect the plug-in IF OUTPUT to the 3730B IF INPUT.

1-17 EQUIPMENT REQUIRED

1-18 A complete down converter system comprises the Model 3730B DOWN CONVERTER mainframe and one of the four available RF MODULE plug-ins, Models 3736B, 3737B, 3738B or 3739B.

1-19 ACCESSORIES AVAILABLE

1-20 The accessories available include cables with alternative connectors, isolators, and an umbilical cable which allows the RF MODULE to be mounted near to the RF source with the DOWN CONVERTER mainframe at a more convenient location.

Model 3730B

1-21 Cables with Alternative Connectors

1-22 The following accessories comprise cables, length approximately 48 inches (120cm), which mate with the instrument BNC connectors and provide an alternative output connectors.

Accessory Cable	Output Connector
15525A OPT 006	WECO LARGE, commercial equivalent of WECO 477B
15525A OPT 007	WECO SMALL, commercial equivalent of WECO 560A
15525A OPT 008	SIEMENS 2.5/6mm
15525A OPT 009	SIEMENS 1.6/5.6mm

1-23 RF Input Isolators

1-24 The following accessories comprise an RF input isolator complete with input cable which replaces the input attenuator and cable in the RF MODULE.

Isolator Accessory

Frequency Range

15600A	3.7 to 4.2GHz
15601A	5.9 to 6.5GHz
15602A	7.1 to 8.5GHz
15603A	10.7 to 11.7GHz

1-25 Umbilical Cable

1-26 The 15609A umbilical cable, length approximately 3 metres, has connectors which mate with the rear plug on the RF Module and the socket in the down converter plug-in compartment.

1-27 RECOMMENDED TEST EQUIPMENT

1-28 Table 1-1 lists the recommended test equipment together with its critical specification and information on the section of the manual in which it is used.

Table 1-1 Recommended Test Equipment

Instrument Type	Critical Specification	Suggested Model	Use*
Sweep Oscillator	Mainframe — to accept suitable plug-ins	8620C	P, A
RF Plug-in	1.7 to 4.2GHz	86235A OPT 008 †	3736B P, A
RF Plug-in	3.7 to 8.5GHz	86240C	3737B P, A
RF Plug-in	5.9 to 11.7GHz	86245A OPT 008 †	3738B P, A
RF Plug-in	10.7 to 14.5GHz	86260A OPT H82 †	3739B P, A
Electronic Counter	Up to 150MHz	5345A	P, A
Microwave Frequency Counter	65MHz to 14.5GHz	5340A	P, A
Digital Voltmeter	No special requirements	3476A/B	A
IF/BB Transmitter	Unique	3711A/3791B**	P, A; T
IF/BB Receiver	Unique	3712A/3791B**	P, A
Accessory Kit		15550C	P
Power Meter with Power Sensor	-20 to +10dBm, up to 14.5GHz	435A with 8481A	P, A
Spectrum Analyzer System	10MHz to 20GHz	141T/8555A/8552B	P, T
10dB Attenuator Pad	Up to 15GHz	8491B OPT 010	A
20dB Attenuator Pad (2 off)	Up to 15GHz	8491B OPT 020	P
Oscilloscope	Bandwidth dc — 100MHz, Timebase speed 100ns to 2 secs	1740A	T

* P = Performance Tests, A = Adjustments, T = Troubleshooting

** A limited range of Test and Adjustments can be achieved using 3710 MLA System

† Option 008 only required when using BB tones above 2MHz. Otherwise standard plug-ins can be used throughout.

Table 1-2 Specifications

SPECIFICATIONS

Except where otherwise indicated, the following parameters are warranted performance specifications. Parameters described as "typical" or "nominal" are supplemental characteristics which

provide a useful indication of typical, but non-warranted, performance characteristics.

DOWN CONVERTER SYSTEM 3730B + 3736/7/8/9B

FREQUENCY RANGE:

3730B + 3736B : 1.7 to 4.2 GHz,*

3730B + 3737B : 3.7 to 8.5 GHz;

3730B + 3738B : 5.9 to 11.7 GHz;

3730B + 3739B : 10.7 to 14.5 GHz.

*Restricted to 1.77 to 4.13 GHz for 140 MHz operation.

RESIDUAL PERFORMANCE †

	50 MHz Sweep Width at 70 MHz centre frequency	100 MHz Sweep Width at 140 MHz centre frequency
Amplitude Response	0.2 dB	0.3 dB
Group Delay	0.2 ns	0.3 ns
Diff Gain (5.6 MHz test tone)	0.3%	0.5%
Diff Phase (5.6 MHz test tone)	0.3°	0.5°

† The residual specifications quoted are measured using the FM Sweep Input to reduce the residual contributions of the RF test source, and using storage normalizer techniques to remove Microwave Link Analyzer receiver contributions.

MIN RF INPUT LEVEL:

For correct operation of MLA: -15 dBm, typically; -40 dBm when Opt 010 is fitted; however, min input level dependent on input sensitivity of MLA and RF-IF gain conversion of Down Converter (3710A/3702B MLA - min input sensitivity -10 dBm; 3711A/3712A MLA - min input sensitivity -19 dBm).

General

DIMENSIONS: 141 mm (5.5 in) high;

425 mm (16.7 in) wide;

467 mm (18.375 in) deep.

POWER SUPPLY: 100, 120, 220, or 240 Vac, +5 -10%; 48 to 66 Hz; consumption 100 VA max, including plug-in.

WEIGHT**: 11.9 kg (26 lb), net
17.7 kg (39 lb), shipping.

** including plug-in.

TEMPERATURE RANGE: 0 to +55°C, operating;
-40 to +75°C, storage.

Options

010: 25 dB fixed gain amplifier, with 30 dB (10 dB step) attenuator.

Various connector types can be fitted on a special basis. Only BNC connectors are offered on the standard product; to interface with equipment fitted with other types of connector, the following adapter cables are recommended:

15525A Opt 008 : BNC to large Siemens cable;

15525A Opt 009 : BNC to small Siemens cable;

15525A Opt 006 : BNC to WECO 477B cable;

15525A Opt 007 : BNC to WECO 560A cable.

RF MODULE (PLUG-IN) 3736/7/8/9B

RF Input

MIN INPUT LEVEL:

For correct operation of AFC circuit: -40 dBm.

RECOMMENDED MAX INPUT LEVEL:

For operation to specification: > 0 dBm; EXCESS LEVEL lamp indicates at +3 dBm RF input level, typically.

Absolute max level: +10 dBm.

LOCAL OSCILLATOR LEAKAGE:

	3736B	3737B	3738B	3739B
Max	-23 dBm	-27 dBm	-20 dBm	-15 dBm
Typical	-35 dBm	-35 dBm	-30 dBm	-30 dBm

Note: Incorporating an Isolator Accessory will reduce the local oscillator leakage by 15 dB.

IMPEDANCE: 50Ω.

RETURN LOSS:

	3736B	3737B	3738B	3739B
Typical	> 16 dB	> 15 dB	> 14 dB	> 13 dB

Note: Incorporating an Isolator Accessory will improve the RF INPUT return loss figure - see Isolator Accessory Specifications.

CONNECTOR: N-type female (mates with MIL-C-71, and MIL-C-9012).

Local Oscillator

FREQUENCY RANGE: suitable to provide RF coverage as specified in Down Converter System Specifications.
SCALE ACCURACY (MHz):

	3736B	3737B	3738B	3739B
At 25°C	± 20	± 20	± 40	± 50

FREQUENCY STABILITY (MHz/°C):

	3736B	3737B	3738B	3739B
Unlocked	± 0.5	± 0.5	± 1.2	± 4

For stability with AFC, see Down Converter (mainframe) Specifications.

IF Output

FREQUENCY RANGE: 45 to 190 MHz.

RF-IF GAIN CONVERSION (dB):

	3736B	3737B	3738B	3739B
Typical: Standard	+4	+5	+5	+3
Opt 010	+29	+30	+30	+28

OUTPUT LEVEL: dependent on RF-IF conversion gain.

HARMONICS: > 30 dB below fundamental.

IMPEDANCE: 75Ω.

RETURN LOSS: > 30 dB.

CONNECTOR: BNC.

Table 1-2. Specifications (continued)

DOWN CONVERTER (MAINFRAME) 3730B**IF Centre Frequency Meter****RANGE:** 45 to 95 MHz, or 90 to 190 MHz.**ACCURACY:** ± 0.5 MHz at 70 MHz centre frequency;
 ± 2 MHz over rest of 45 to 95 MHz scale;
 ± 1.0 MHz at 140 MHz centre frequency;
 ± 4 MHz over rest of 90 to 190 MHz scale.**Automatic Frequency Control**

RF input may be CW or swept sinusoidally at rate of 18 to 100 Hz.

SWEEP WIDTH: 0 to 50 MHz at 70 MHz IF centre frequency; 0 to 100 MHz at 140 MHz IF centre frequency.**MODES:** OFF, NORMAL, TRACKING.**NORMAL:** will track any drift of the unmodulated RF carrier frequency.**TRACKING:** in addition to tracking drift of RF carrier, compresses sweep width to approx 3%.**LOCAL OSCILLATOR CAPTURE RANGE:** ± 20 MHz at 70 MHz centre frequency; ± 40 MHz at 140 MHz centre frequency.**IF OUTPUT:** 70 ± 0.5 MHz, or 140 ± 1.0 MHz.**Recovered Sweep Output (AFC TRACKING mode)****SENSITIVITY:** 100 mV/MHz, typical, at 70 MHz centre frequency; 50 mV/MHz, typical, at 140 MHz centre frequency.**Local Oscillator Sweep Input****SENSITIVITY:** 20 MHz/V, typical,
SWEEP RATE: 18 to 100 Hz.**Option 010**

Option 010 provides an additional IF section comprising a 30 dB step attenuator and 25 dB fixed gain amplifier.

IF Input**FREQUENCY:** 45 to 190 MHz.
MAX INPUT LEVEL: +10 dBm.
IMPEDANCE: 75 Ω , nominal.
RETURN LOSS: > 30 dB.**Attenuator****RANGE:** 0 to 30 dB, in 10 dB steps.
ACCURACY: ± 0.5 dB.**Amplifier****GAIN:** 25 ± 1.0 dB.
NOISE FIGURE: 8 dB, nominal.
HARMONICS: > 30 dB below carrier at +5 dBm output level.
OUTPUT LEVEL FOR 1 dB GAIN COMPRESSION: > +12 dBm.**IF Output****MAX OUTPUT LEVEL:** +5 dBm.
IMPEDANCE: 75 Ω , nominal.
RETURN LOSS: > 30 dB.
RESIDUAL RESPONSE: no degradation on quoted system specifications.**ISOLATOR ACCESSORIES 15600A/1A/2A/3A**

	15600A	15601A	15602A	15603A
Frequency Range	3.7 to 4.2 GHz	5.9 to 6.5 GHz	7.1 to 8.5 GHz	10.7 to 11.7 GHz
Return Loss (typical)	> 25 dB	> 19 dB	> 17 dB	> 15 dB
L.O. Leakage max typical	-40 dBm -30 dBm	-42 dBm -30 dBm	-35 dBm -45 dBm	-36 dBm -45 dBm
Min Input Level	-50 dBm	-50 dBm	-50 dBm	-50 dBm
Max Input Level	-10 dBm	-10 dBm	-10 dBm	-10 dBm
RF-IF Gain (typical)	14 dB	15 dB	15 dB	13 dB

RACK MOUNTING: A rack mounting kit stock number 5060-8740, is available for the model 3730B.

INSTALLATION

SECTION II

INSTALLATION

2-1 INTRODUCTION

2-2 This section provides installation instructions for the Model 3730B DOWN CONVERTER and Models 3736B, 3737B, 3738B and 3739B RF MODULES. This section also contains information about initial inspection and damage claims, preparations for use, packaging, storage and shipment.

2-3 INITIAL INSPECTION

WARNING

To avoid hazardous electrical shocks, do not perform electrical tests when there are signs of shipping damage to any portion of the outer enclosure (covers, panels, meters).

2-4 Inspect the shipping container for damage. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the instrument has been checked mechanically and electrically. The contents of the shipment of a Model 3770B DOWN CONVERTER (mainframe) are shown in Figure 1-1 together with the four compatible RF MODULE plug-ins. The RF MODULES are not normally part of the same shipment. Procedures for checking the electrical performance of the Model 3730B mainframe and its associated RF MODULE plug-ins, are given in Section IV of this manual. If the contents of the shipment is incomplete, if there is mechanical damage or defect, or

if the instrument does not pass the performance test, notify the nearest Hewlett-Packard office. If the shipping container is damaged, or the cushioning material shows signs of stress, notify the carrier as well as the Hewlett-Packard office. Keep the shipping materials for the carrier's inspection. The HP office will arrange for repair or replacement at HP's Option without waiting for claims settlement.

2-5 PREPARATION FOR USE

2-6 Power Requirements

2-7 The Model 3730B requires a power source of 100, 120, 220 or 240V ac $\pm 5\%$ -10% , 48 to 56Hz, single phase. The power requirements of the RF module plug-ins are provided from the 3730B mainframe via the plug-in connector. The power consumption of the 3730B, complete with RF module is less than 100VA.

2-8 Line Voltage and Fuse Selection

2-9 Figure 2-1 provides instructions for line voltage selection and fuse changing. The appropriate fuses are listed in Table 2-1.

CAUTION

Before connecting the instrument to the power source, ensure that the correct line voltage has been selected and that the correct fuse is fitted.

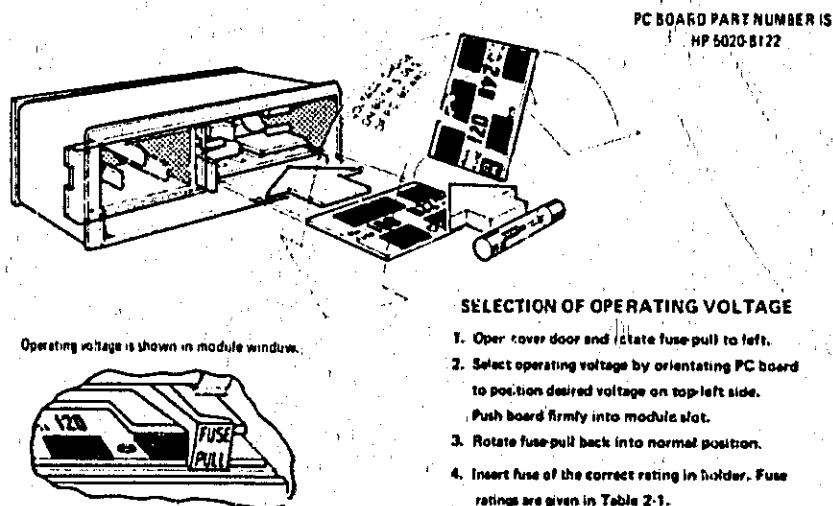


Figure 2-1 Line Selector

Table 2-1 Fuse Selection

Line Voltage	Fuse Rating	HP Stock No
100/120	1.5A (250V)	2110 0304
220/240	0.75A (250V)	2110-0360

2-10 Power Cable

2-11 The model 3730B is equipped with a three wire power cable. When connected to an appropriate ac power receptacle this cable grounds the instrument cabinet. The type of plug fitted to the power cable depends on the country of destination. Figure 2-2 gives the part numbers of power cables fitted with the various plugs available. The colour codes used in the power cable are as follows:

Line — Brown
Neutral — Blue
Ground — Green/Yellow

2-12 Mating Connectors

2-13 The mating connectors used with the Model 3730B and its associated RF Module plug-ins are given in Table 2-2. Provision is made for alternative mating connectors using accessory cables, see Paragraph 1-21.

2-14 Operating Environment

2-15 The instrument may be operated in temperatures from 0°C to 55°C and at altitudes up to 7,630 metres (25,000 feet).

2-16 STORAGE AND SHIPMENT**2-17 Environment**

2-18 The instrument may be stored or shipped in environments within the following limits:

Temperature -40°C to +75°C
Altitude up to 7,630 metres
(25,000 feet)

2-19 Packaging

2-20 Tagging for Service. If the instrument is being returned to Hewlett-Packard for service, please complete one of the blue repair tags located inside the front cover of this manual, and attach it to the instrument.

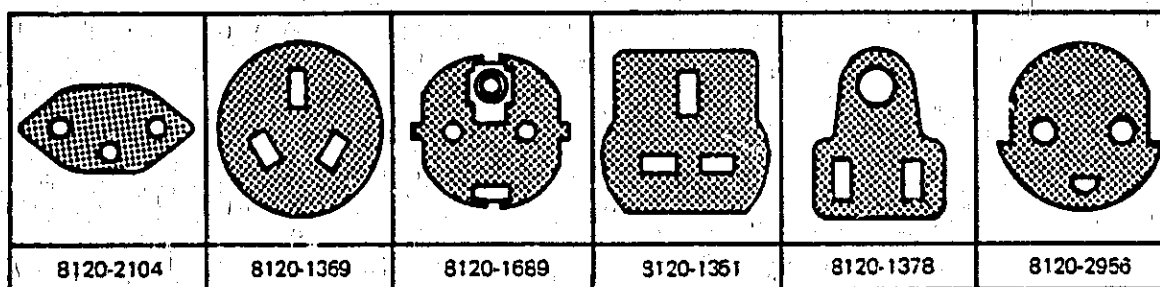


Figure 2-2 Power Cable Part Numbers/Power Receptacles

Table 2-2 Mating Connectors

Connector	Mating Connector Type	HP Part Number
RF INPUT	N type male MIL-C-71 MIL-C-39012	1250-0882
IF OUTPUT	BNC male BNC male BNC male BNC male BNC male	{ 1250-1448 1250-0629
IF INPUT OPT 010		
IF OUTPUT OPT 010		
SWEEP INPUT		
SWEEP OUTPUT		

2-21 Original Packaging. Containers and materials identical to those used in factory packaging are available through Hewlett-Packard offices. If the instrument is being returned to Hewlett-Packard for servicing, attach a tag indicating the type of service required, return address, model number, and full serial number. Also, mark the container **FRAGILE** to ensure careful handling. In any correspondence, refer to the instrument by model number and full serial number.

2-22 Other Packaging. The following general instructions should be used for re-packing with commercially available materials.

- (a) Wrap instrument in heavy paper or plastic. (If shipping to Hewlett-Packard office or service center, attach tag indicating type of service required, return address, model number, and full serial number.)

- (b) Use strong shipping container. A double-wall carton made of 350-pound test material is adequate.

- (c) Use a layer of shock-absorbing material 70 to 100mm (3 to 4 inch) thick around all sides of the instrument to provide firm cushioning and prevent movement inside container. Protect control panel with cardboard.

- (d) Seal shipping container securely.

- (e) Mark shipping container **FRAGILE** to ensure careful handling.

- (f) In any correspondence, refer to instrument by model number and full serial number.

OPERATION

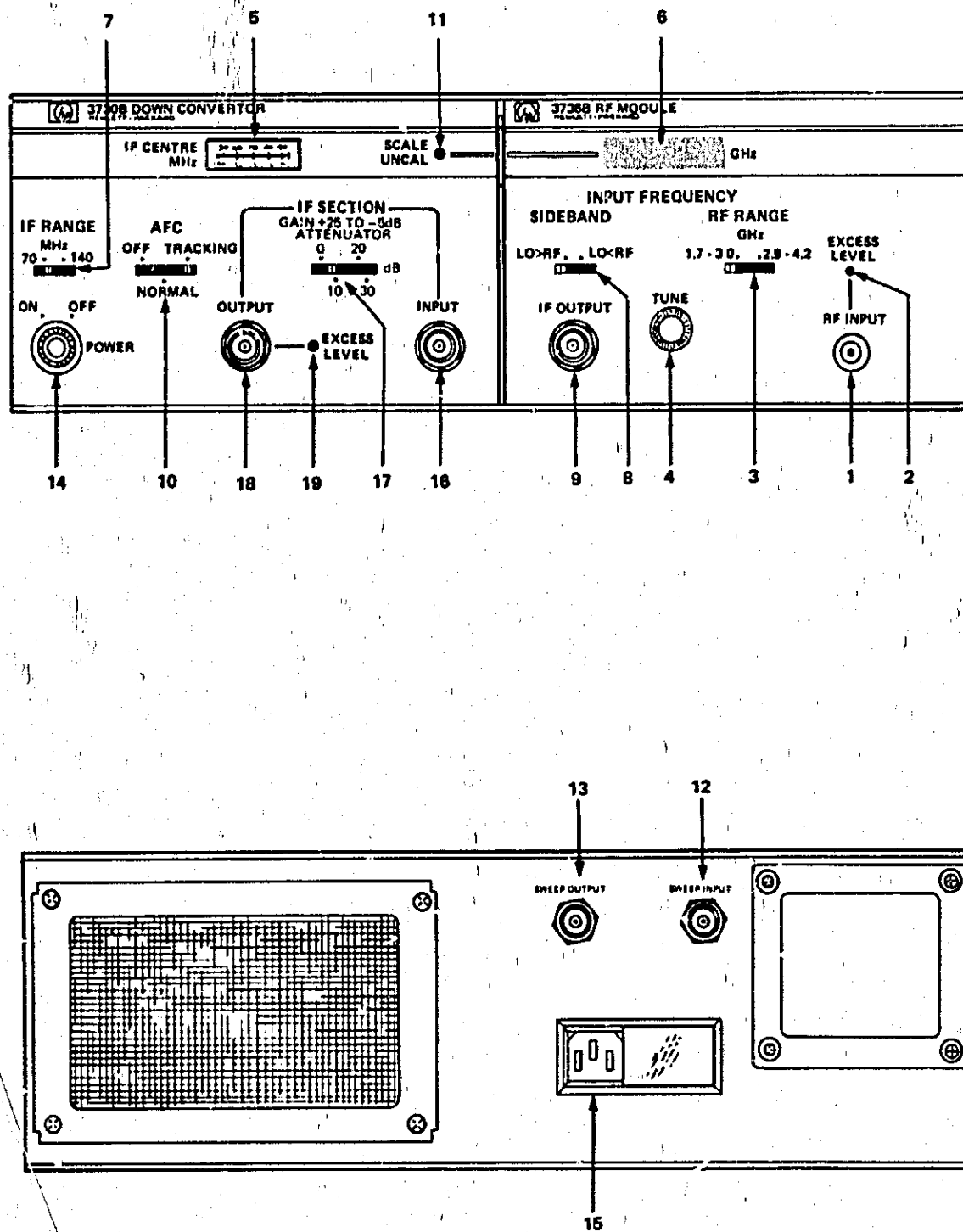


Figure 3-1 Panel Features

SECTION III

OPERATION

3-1 INTRODUCTION

3-2 This section covers the operation of the model 3730B DOWN CONVERTER mainframe complete with one of the RF MODULE plug-ins 3736B, 3737B, 3738B or 3739B. Plug-in selection information is given and the front and rear panel controls, connectors and indicators are described. General operating procedures, including an example of tracking operation are given at the end of the section.

3-3 PLUG-IN SELECTION

3-4 The frequency ranges provided by the RF MODULE plug-ins are given in Table 2-1.

Table 3-1 Plug-in Selection

Plug-in	Frequency Ranges	
	1.7 to 3GHz	2.9 to 4.2GHz
3736B	1.7 to 3GHz	2.9 to 4.2GHz
3737B	3.7 to 6.5GHz	5.7 to 8.5GHz
3738B	5.9 to 8.9GHz	8.7 to 11.7GHz
3739B	10.7 to 12.7GHz	12.5 to 14.5GHz

3-5 PANEL FEATURES

3-6 Figure 3-1 shows the front and rear panel controls, connectors and indicators with reference numbers. These reference numbers are used to identify the panel features in the following description.

1. RF INPUT connector. Accepts RF in the frequency ranges shown on the RF RANGE switch 3.
2. RF INPUT EXCESS LEVEL indicator. Comes on when the RF input level exceeds approximately +3dBm. Input levels of greater than +10dBm can cause damage to the instrument.
3. RF RANGE switch. Selects one of two frequency ranges of the local oscillator. The corresponding RF frequency ranges are given on the front panel.
4. TUNE control. Provides a variable control for the local oscillator frequency. The local oscillator frequency also depends on the setting of the RF RANGE switch 3, SIDEBAND switch 8 and IF RANGE switch 7. The local oscillator frequency can also be controlled by the incoming RF, using the AFC switch, or with an external sweep signal.
5. IF CENTRE MHz meter. Indicates the IF centre frequency output.
6. RF FREQUENCY display. Indicates the setting of the TUNE control 4 for the corresponding RF input.
7. IF RANGE switch. Selects either 70MHz or 140 MHz as the IF centre frequency.
8. SIDEBAND switch. LO > RF sets the local oscillator above the RF by the frequency selected with the IF RANGE switch 7. LO < RF sets the local oscillator below the RF by the frequency selected with the IF RANGE switch 7.
9. IF OUTPUT connector. Provides a 75Ω IF output at 70MHz or 140MHz depending on the setting of the IF RANGE switch 7.
10. AFC switch. Provides three modes of operation OFF, NORMAL and TRACKING.
OFF: This is the mode which is normally used for tuning as the AFC is disconnected.
NORMAL: In this mode the local oscillator frequency is under the control of both the TUNE control 4 and the AFC signal, see paragraph 3-12.
TRACKING: In addition to the normal AFC the local oscillator tracks the RF source by up to 250 MHz, see Paragraph 3-14.
11. SCALE UNCAL indicator. Indicates when the local oscillator is controlled by the AFC i.e. when the AFC switch 10 is in the TRACKING or NORMAL position.
12. SWEEP INPUT. Allows the local oscillator to be swept by an external sweep signal in the range 18 to 100Hz. This input is normally used as a test input to check the residual response of the DOWN CONVERTER.
13. SWEEP OUTPUT connector (rear panel). Provides an output of the sweep recovered from the incoming RF signal. The output sensitivity is typically 100mV/MHz with a 70MHz IF centre frequency and a 50mV/MHz with a 140MHz IF centre frequency.
14. POWER ON/OFF switch. Controls the ac power input to the instrument.

15. **POWER INPUT** module. Comprises a supply voltage selection plug-in card, the supply fuse and a socket for the power supply cable. Details of setting the supply voltage and fuse selection are given in Section II, Paragraph 2-8.

THE FOLLOWING PANEL FEATURES APPLY TO THE INDEPENDENT IF AMPLIFIER/ATTENUATOR SECTION FITTED TO INSTRUMENTS WITH OPTION 010.

16. **IF INPUT** connector. The 75Ω input of the independent IF amplifier/attenuator. The amplifier has a fixed 25dB gain and the attenuator is variable in 10dB steps from 0 to 30dB. The maximum input level is that which produces a +5dBm output i.e. -20dBm with the attenuator set to 0dB. +10dBm with the attenuator set to 30dB.
17. **ATTENUATOR** controls. The 10dB and 20dB switches provide four levels of attenuation between 0 and 30dB in 10dB steps.
18. **IF OUTPUT** connector. The 75Ω output of the independent IF amplifier/attenuator. The maximum output level is +5dBm.
19. **IF OUTPUT EXCESS LEVEL** indicator. Comes on when the IF output exceeds approximately +5dBm.

3-7 GENERAL OPERATING PROCEDURES

3-8 The recommended procedure for setting up and tuning the DOWN CONVERTER and RF MODULE is as follows:

WARNING

Before connecting the instrument to the ac power supply, check that the exterior panels are not damaged, that the voltage selector is correctly set and that the correct fuse is fitted.

3-9 Initial Procedures

1. Connect the instrument to the ac power supply.
2. Set the POWER ON/OFF switch 14 to ON.
3. Allow at least 15 minutes warm up time.
4. Connect the RF source to the RF INPUT connector 1.

Note: The maximum input level is +10dBm. The EXCESS LEVEL indicator 2 comes on if the level exceeds approximately +3dBm.

5. Set the RF RANGE 3, IF RANGE 7, and SIDE-BAND 8 switches as required.

3-10 Tuning

6. Set the AFC switch 10 to OFF.
7. Tune the RF MODULE with the TUNE control 4, using the RF FREQUENCY display 6 as a coarse indication and a 70/140MHz reading on the IF CENTRE frequency meter 5 as a fine indication.
8. Check the tuning by observing the IF CENTRE frequency meter 5 and setting the AFC switch 10 to NORMAL.
Correct tuning is indicated by a rapid return to the previous reading on the IF CENTRE frequency meter (70/140MHz).
Incorrect tuning is indicated by an off scale reading of the IF CENTRE frequency meter.

If the tuning is incorrect, reset the AFC switch 10 to OFF and, using the TUNE control 4, search for a different tuning point. Recheck the tuning by repeating Step 8.
9. With the RF MODULE correctly tuned set the AFC switch 10 to the NORMAL or TRACKING position as required.

3-11 NORMAL MODE

3-12 In this mode AFC is applied to the local oscillator to compensate for frequency drifts in either the local oscillator or the RF source, of up to ± 40 MHz with a 140MHz IF or ± 20 MHz with a 70MHz IF. The local oscillator frequency is still adjustable with the front panel TUNE control.

3-13 TRACKING MODE

3-14 The TRACKING mode has two main features:

- Sweep Range Extension
- Reduction in Residual Response.

3-15 In the TRACKING mode, the local oscillator of the DOWN CONVERTER follows the RF input, and the IF output is swept by the tracking difference. This effectively reduces the sweep width by a factor of approximately 30.

3-16 **EXAMPLE:** Where in the NORMAL mode, an input RF signal swept by ± 50 MHz produces an IF output swept by ± 50 MHz; in the TRACKING mode, the same RF input produces an IF output swept by approximately ± 1.5 MHz.

3-17 Sweep Range Extension

3-18 The NORMAL mode operates with sweep widths of up to $\pm 50\text{MHz}$. Where operation is required with sweep widths of between $\pm 50\text{MHz}$ and $\pm 125\text{MHz}$, or when sweep compression is required, the TRACKING mode must be used.

3-19 Figure 3-2A shows a typical test system when using the DOWN CONVERTER in the NORMAL mode. Figure 3-2B shows the same measurement modified for TRACKING mode operation. The following points should be noted when using the system in the tracking mode.

1. The sweep recovery of some MLA receivers may not be adequate with the very small sweep widths obtained in the tracking mode and it is therefore necessary to use the recovered sweep from the down converter as an external sweep input to the MLA.

Note: The phasing of the MLA trace should be performed with the bandwidth of the MLA receiver plug-in set at 10kHz.

2. Frequency markers generated in the MLA receiver are invalid as a result of the sweep compression. For sweep widths within the bandwidth of the MLA receiver (ie up to $\pm 25\text{MHz}$ with 70MHz IF or $\pm 50\text{MHz}$ with 140MHz IF) the sweep width can

be accurately measured in the NORMAL mode before switching to the TRACKING mode. For wider sweep widths it is necessary to generate frequency markers externally using a directional coupler to couple some of the RF signal into a tuned cavity frequency meter. Markers are produced by a fall in level from the crystal detector as the RF signal is swept through the tuned frequency of the tuned cavity frequency meter. The detector output is applied to the MLA EXT input so that with external input selected a frequency marker "blip" occurs on the display.

3-20 Reduction of Residual Response

3-21 The residual response of the test equipment is reduced when using the TRACKING mode as a result of the reduced sweep width. Any residual error produced in the DOWN CONVERTER or MLA RECEIVER is virtually eliminated.

3-22 EXTERNAL SWEEP OPERATION

3-23 The local oscillator can be swept with an external sweep signal in the range 18 to 100Hz. This mode of operation can be used for one method of checking the DOWN CONVERTER residual response, this method is used in the Performance Test, see Paragraph 4-6.

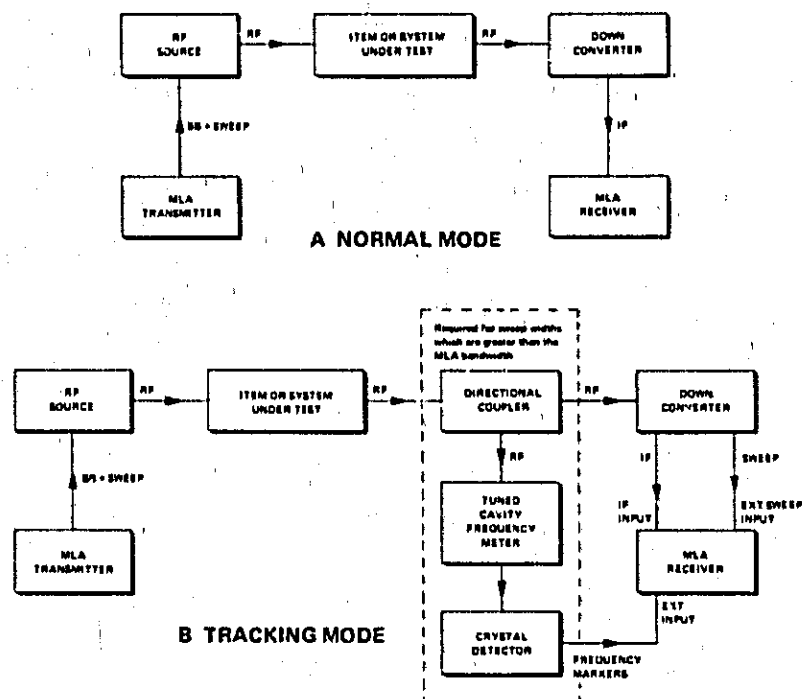


Figure 3-2 Typical Test Systems

PERFORMANCE CHECK

SECTION IV

PERFORMANCE TESTS

Note: In some RF MODULES the 10dB Attenuator at the RF INPUT may be replaced by an isolator. If this is the case the specifications relating to the instrument will be changed, in particular relating to the EXCESS LEVEL lamp threshold which will be reduced by typically 10dB. The frequency range of the DOWN CONVERTER will also be restricted to the frequency limits of the ISOLATOR.

4-1 INTRODUCTION

4-2 The procedures in this section test the electrical performance of a model 3730B DOWN CONVERTER complete with one of the plug-in RF MODULES: 3736B, 3737B, 3738B or 3739B. The procedures use the specifications given in Table 1-2 as the performance standards. All of the procedures in this section can be performed without access to the interior of the instrument. Each test is a complete procedure and can therefore be performed in isolation. For complete performance testing it is recommended that the tests are performed in the order given.

4-3 An independent OPERATIONAL VERIFICATION PROCEDURE is given at the end of the performance tests. The OPERATIONAL VERIFICATION PROCEDURE is intended to:

- (a) Check out the entire Down Converter, Mainframe and plug-in, to a high confidence level using minimal test equipment.

- (b) Permit adjustments, where necessary, without referring to adjustment procedure.
- (c) Be used as the initial step in System troubleshooting to locate a failure to an area of an instrument.

It is recommended that this procedure should be performed after a repair has been implemented.

Table 4-4 is a separate Test Record Sheet for the Operational Verification Procedure.

4-4 Equipment required for the performance tests is listed in the Recommended Test Equipment Table in Section 1. There is also a list with each test which gives the equipment required for that test. Any equipment which satisfies the critical specifications given in Table 1-1 may be substituted for the recommended model(s).

4-5 PRELIMINARY PROCEDURE

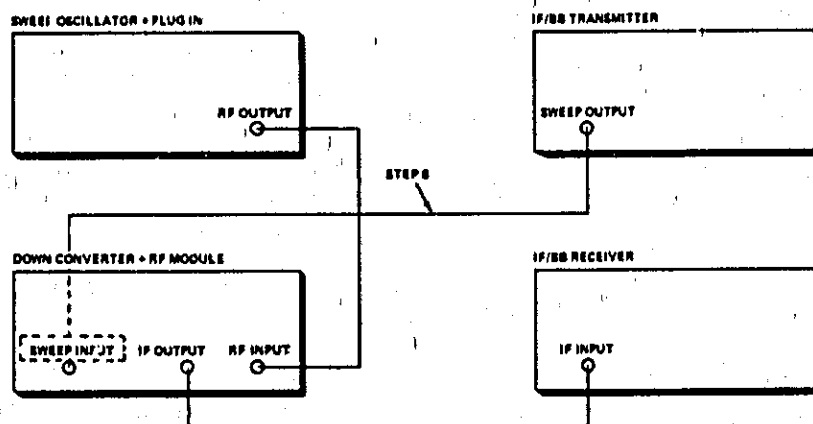


Figure 4-1 Preliminary Procedure Test Equipment Connection

TEST EQUIPMENT

MLA IF/BB Transmitter	HP 3711A + 3791B	} See Note
MLA IF/BB Receiver	HP 3712A + 3793B	
Sweep Oscillator	HP 8620C + plug in*	
Power Meter	HP 435A	
Power Sensor	HP 8481A	

* For 3736B use 86235A OYT 008
 For 3737B use 86240C
 For 3738B use 86245A OPT 008
 For 3739B use 86260A H82

Note: Where a 3711A/3712A MLA system is not available a 3710A/3702B MLA system may be substituted. In such instances the 3730B should be operated with the IF RANGE switch set to 70MHz and the maximum sweep width at the plug-in RF input should be limited to 50MHz. This allows the 3730B to be checked out with a high degree of confidence, although the checks will not cover the entire specified range.

PROCEDURE

1. Set the SWEEP OSCILLATOR and the 3730B RF MODULE to the same frequency.
2. Set the SWEEP OSCILLATOR to the CW mode of operation.
3. Connect a POWER METER to the SWEEP OSCILLATOR RF OUTPUT and adjust the power level to 0dBm.
4. Connect the test equipment as shown in Figure 4-1.
5. Set the 3730B AFC switch to OFF, and the IF RANGE switch to 140MHz.
6. Set the 3730B RF MODULE TUNE control to give an IF CENTRE MHz reading of 140MHz on the 3730B. Set the 3730B AFC switch to NORMAL to check for correct tuning. If the meter swings off scale reset the AFC switch to OFF and retune the RF MODULE to another tuning position. (There are normally two tuning points close together.)
7. Set the 3712A IF/BB RECEIVER to the 140MHz mode of operation with the Y1Y2 DISPLAY switches set to IF FLATNESS. Adjust the 3712A IF LEVEL control to give a centre zero reading on the 3712A POWER MEASUREMENT meter.

8. Connect the cable from the 3730B SWEEP INPUT to the 3711A IF/BB TRANSMITTER SWEEP OUTPUT. Set the 3711A SWEEP LEVEL to display 100MHz of SWEEP.

4-6 RESIDUAL RESPONSE and OPERATING RANGE

SPECIFICATION

	70 $\pm$ 25MHz	140 $\pm$ 50MHz
Amplitude (max)	0.2dB	0.3dB
Group Delay (max)	0.2ns	0.3ns
Diff Gain at 5.6MHz (max)	0.3%	0.5%
Diff Phase at 5.6MHz (max)	0.3°	0.5°
Maximum input level	0dBm	
Minimum input level	-15dBm STD, -40dBm OPT 010	

DESCRIPTION

One of the requirements to make a measurement of the residual response is a constant input level at the DOWN CONVERTER RF MODULE RF INPUT. Instead of sweeping the SWEEP oscillator (see Figure 4-1) the sweep is applied to the YIG OSCILLATOR in the RF MODULE via the 3730B rear panel SWEEP INPUT. The RF INPUT from the SWEEP OSCILLATOR is a good approximation of the constant level required as it contains only the BB Frequency modulation. As the SWEEP GENERATOR is not swept it is also eliminated as a source of residual errors.

TEST EQUIPMENT

MLA IF/BB Transmitter	HP 3711A + 3791B
MLA IF/BB Receiver	HP 3712A + 3793B
Sweep Oscillator	HP 8620C + Plug in*
Power Meter + Power Sensor	HP 435A + HP 8481A
Attenuator 2 off	HP 8491B OPT 20

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A H82

PROCEDURE

1. Carry out the Preliminary Procedure, Paragraph 4-5.
2. Set the IF/BB TRANSMITTER to 500kHz or 555kHz and set the SWEEP mode to INT.
3. Reduce the SWEEP WIDTH on the IF/BB TRANSMITTER, so that only Baseband is present at the BB + SWEEP output. Also reduce the BB LEVEL attenuator to -16dBm.
4. Connect a cable from the IF/BB TRANSMITTER BB + SWEEP OUTPUT to the SWEEP OSCILLATOR plug-in MLA BB INPUT, some plug-ins are labelled FM INPUT.
5. Set the 3711A SWEEP LEVEL control to give 100MHz sweep width on the 3712A.
6. Check that the IF flatness does not exceed 0.3dB.
7. Set the 3712A/3793B to measure Group Delay at 500kHz or 555kHz.
8. Check that the Group Delay does not exceed 0.3ns.

Model 3730B

9. Set the 3711A/3791B and the 3712A/3793B to 5.6MHz baseband. Set the 3712A controls to measure differential gain and differential phase.
10. Check that the differential gain does not exceed 0.5% and that the differential phase does not exceed 0.5° .
11. Set the 3730B IF RANGE switch to 70MHz, and the 3712A IF RANGE to 70MHz.
12. Reduce the SWEEP LEVEL control to display 50MHz of sweep.
13. Check that the differential gain does not exceed 0.3% and that the differential phase does not exceed 0.3° .
14. Reset the 3711A/3791B and the 3712A/3793B to a 500kHz or 555kHz baseband tone. Reset the 3712A DISPLAY switches to measure Group Delay and IF Flatness.
15. Check that the IF Flatness does not exceed 0.2dB and that the Group Delay does not exceed 0.2ns.
16. Connect one attenuator to the output of the SWEEP OSCILLATOR and re-adjust the power level to give a reading of -15dBm at the output.
17. Check that the AFC locks as before and that the displayed residual response remains within specification. Steps 18 thru 23 apply to OPTION 010 models only, step 24 applies to all instruments.
18. Reset the power level at the output of the SWEEP OSCILLATOR to give a reading of -20dBm.
19. Connect the other attenuator in series with the first attenuator to give an output level of -40dBm.
20. Reconnect the SWEEP OSCILLATOR output via the Attenuator pads to the 3730B RF MODULE. The AFC should lock as before.
21. Connect the 3730B RF MODULE IF OUTPUT to the 3730B IF INPUT.
22. Connect the 3730B IF OUTPUT to the 3712A IF INPUT.
23. Check that the displayed residual response remains within the specified limits.
24. Repeat the procedure at various frequencies throughout the band as required.

4-7 METER ACCURACY

SPECIFICATION

$\pm 0.5\text{MHz}$ at 70MHz
 $\pm 2\text{MHz}$ over 45 - 95MHz
 $\pm 1\text{MHz}$ at 140MHz
 $\pm 4\text{MHz}$ over 90 - 190MHz

DESCRIPTION

The 3730B RF MODULE is tuned across the frequency band and the frequency of the IF OUTPUT compared with the meter reading.

TEST EQUIPMENT

See Preliminary Procedure Paragraph 4-5.

PROCEDURE

1. Carry out the Preliminary Procedure, Paragraph 4-5, Steps 1 thru 7, only.
2. Set the 3730B AFC switch to OFF.
3. Set the 3712A MARKERS switch to IF. The FREQUENCY MHz display on the 3712A now indicates the IF input frequency.
4. Set the 3730B RF MODULE TUNE control to give reading of 140MHz on the 3712A FREQUENCY display.
5. Check that the 3730B IF CENTRE MHz meter reads 140MHz $\pm$ 1MHz.
6. Retune the 3730B RF MODULE to spot frequencies at 10MHz intervals across the band 90 – 190MHz and check that the 3730B IF CENTRE MHz meter reading is within $\pm$ 4MHz of the reading on the 3712A FREQUENCY display.
7. Set the 3730B and the 3712A RANGE switches to 70MHz.
8. Set the 3730B RF MODULE TUNE control to give a reading of 70MHz on the 3712A FREQUENCY display.
9. Check that the 3730B IF CENTRE MHz meter reads 70MHz $\pm$ 0.5MHz.
10. Retune the 3730B RF MODULE to spot frequencies at 10MHz intervals across the band 45 – 95MHz and check that the 3730B IF CENTRE MHz meter reading is within $\pm$ 2MHz of the reading on the 3712A FREQUENCY display.

4-8 LO CAPTURE RANGE and IF CENTRE FREQUENCY with AFC switch on NORMAL or TRACKING

SPECIFICATION

LO Capture Range	$\pm$ 20MHz 70MHz range
	$\pm$ 40MHz 140MHz range
IF CENTRE frequency with AFC ON	$\pm$ 0.5MHz 70MHz range
	$\pm$ 1MHz 140MHz range

DESCRIPTION

The 3730B RF MODULE is tuned, with the AFC switch OFF, to the limits of the AFC capture range, and the AFC is switched on. The IF CENTRE frequency is checked with the AFC on.

TEST EQUIPMENT

See Preliminary Procedure Paragraph 4-5.

PROCEDURE

1. Carry out the Preliminary Procedure, Paragraph 4-5, Steps 1 thru 7.
2. Set the 3712A MARKERS switch to IF, the FREQUENCY MHz display on the 3712A now indicates the IF input frequency.
3. Set the 3730B AFC switch to OFF and adjust the 3730B RF MODULE TUNE control to give a frequency of 180MHz.
4. Set the 3730B AFC switch to NORMAL and check that the FREQUENCY returns to 140MHz $\pm$ 1MHz.

Model 3730B

5. Check that the FREQUENCY with the AFC switch set to TRACKING is also $140\text{MHz} \pm 1\text{MHz}$.
6. Set the 3730B AFC switch to OFF and adjust the 3730B RF MODULE TUNE control to give a frequency of 100MHz. Repeat Steps 4 and 5.
7. Set the 3730B AFC switch to OFF, set the 3712A and the 3730B IF RANGE to 70MHz and adjust the 3730B RF MODULE TUNE control to give a frequency of 90MHz.
8. Set the AFC switch to NORMAL and check that the frequency is $70\text{MHz} \pm 0.5\text{MHz}$.
9. Set the AFC switch to TRACKING and check that the frequency is $70\text{MHz} \pm 0.5\text{MHz}$.
10. Set the 3730B AFC switch to OFF and adjust the 3730B RF MODULE TUNE control to give a frequency of 50MHz. Repeat Steps 8 and 9.

4-9 LO LEAKAGE

SPECIFICATION

The Local Oscillator leakage of the various RF MODULES is as follows:

3736B	max -23dBm
3737B	max -27dBm
3738B	max -20dBm
3739B	max -15dBm

DESCRIPTION

To measure the local oscillator leakage the IF OUTPUT of the RF MODULE is monitored on a SPECTRUM ANALYZER and the TUNE control on the RF MODULE adjusted throughout the frequency range.

TEST EQUIPMENT

Spectrum Analyzer System HP 141T/8555A/8552B

PROCEDURE

1. Connect the SPECTRUM ANALYZER RF INPUT to the RF MODULE IF OUTPUT. (Set the SPECTRUM ANALYZER scan width to 100MHz.)
2. Tune the RF MODULE and the SPECTRUM ANALYZER simultaneously across the same frequency range.
3. Check that the LO break-through is below the levels specified for the appropriate RF MODULES (see SPECIFICATION).

4-10 FREQUENCY - SCALE ACCURACY

SPECIFICATION

The scale accuracy of the various RF Modules is as follows:

3736B	$\pm 20\text{MHz}$
3737B	$\pm 20\text{MHz}$
3738B	$\pm 40\text{MHz}$
3739B	$\pm 50\text{MHz}$

DESCRIPTION

This test measures the accuracy of the scale on the RF Module. A Sweep oscillator is used as the frequency reference source. The output frequency of the sweep oscillator is set, using an electronic counter, before being applied to the DOWN converter.

TEST EQUIPMENT

Sweep Oscillator HP 8620C + plug-in *
Electronic Counter HP 5340A

* For 3736B use 86235A OPT 008
For 3737B use 86240C
For 3738B use 86245A OPT 008
For 3739B use 86260A H82

PROCEDURE

1. Switch on the DOWN CONVERTER with the appropriate RF Module, and allow at least 15 minutes warm up of the DOWN CONVERTER and test equipment.
2. Set the SWEEP OSCILLATOR to the CW mode.

Note: Ensure the SWEEP OSCILLATOR OUTPUT does not exceed 0dBm to prevent damage to the Counter (Step 3).
3. Connect the ELECTRONIC COUNTER to the SWEEP OSCILLATOR RF OUTPUT.
4. Set the SWEEP OSCILLATOR frequency to correspond to the lowest number on the RF MODULE frequency scale.
5. Disconnect the ELECTRONIC COUNTER and connect the SWEEP OSCILLATOR RF OUTPUT to the DOWN CONVERTER RF INPUT.
6. Set the DOWN CONVERTER IF RANGE switch to 70MHz and the AFC switch to OFF. Adjust the TUNE control to give an IF CENTRE MHz meter reading of 70. Confirm that the tuning is correct by setting the AFC switch to NORMAL. With correct tuning the IF CENTRE MHz reading remains unchanged (or returns to the same reading). If the meter reading changes, readjust the TUNE control to another tuning point. Confirm the frequency is correct as before. The meter reading should remain unchanged when the setting of either the SIDE-BAND switch or the IF RANGE switch is changed.
7. The frequency reading on the RF MODULE display should be within $\pm 20\text{MHz}$ for 3736B/3737B, $\pm 40\text{MHz}$ for 3738B and $\pm 50\text{MHz}$ for the 3739B, of the Electronic Counter reading.
8. Repeat Steps 3 to 7 selecting other appropriate frequencies in step 4.

4-11 HARMONICS

SPECIFICATION

$< -30\text{dB}$ (at 0dBm input level)

DESCRIPTION

The RF MODULE is tuned to an incoming RF frequency and the IF harmonics are checked on the SPECTRUM ANALYZER.

Model 3730B

TEST EQUIPMENT

Sweep Oscillator HP 8620C + plug in*
Spectrum Analyzer System HP 141T/8554B/8552B

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A H82

PROCEDURE

1. Carry out the Preliminary Procedure Paragraph 4-5 Steps 1 thru 6, but in Step 4 connect the 3730B IF OUTPUT to the SPECTRUM ANALYZER RF input instead of to the 3712A.
2. Check the harmonics at multiples of 140MHz are less than -30dB.
3. Set the 3730B IF RANGE switch to 70MHz and check the harmonics at 70MHz intervals are less than -30dB.

4-12 RETURN LOSS (IF OUTPUT)

SPECIFICATION

>30dB

TEST EQUIPMENT

IF/BB Transmitter HP 3711A/3791B
IF/BB Receiver HP 3712A/3793B
3712A Accessory Kit HP 15550C

PROCEDURE

1. Connect the MLA System to measure return loss, as outlined in Section II of the MLA OPERATING INSTRUCTIONS booklet (03711-90002).
2. Check that the return loss is better than 30dB across 45 - 195MHz.

Note: The following checks apply only to instruments fitted with Option 010.

4-13 RETURN LOSS IF OUTPUT and IF INPUT (OPTION 010 INSTRUMENTS ONLY)

SPECIFICATION

>30dB

TEST EQUIPMENT

IF/BB Transmitter HP 3711A/3791B
IF/BB Receiver HP 3712A/3793B
3712A Accessory Kit HP 15550C

PROCEDURE

1. Connect the MLA System to measure return loss, as outlined in Section II of the MLA OPERATING INSTRUCTIONS booklet (03711-90002).
2. Check that the return loss of the IF OUTPUT and IF INPUT is better than 30dB across the band 45 – 195MHz.
3. Repeat step 2 with all combinations of attenuator setting.

4-14 HARMONICS (OPTION 010 INSTRUMENTS ONLY)

SPECIFICATION

>30dB down

DESCRIPTION

A 3711A IF/BB Transmitter is used to set the output level of the 3730B OPT 010 IF AMPLIFIER to +5dB. The harmonics are then checked on a Spectrum Analyzer.

TEST EQUIPMENT

IF Transmitter HP 3711A
Spectrum Analyzer System HP 141T/8554B/8552B

PROCEDURE

1. Set the 3711A SWEEP RATE to OFF, the IF OUTPUT to -30dBm, and connect the 3711A IF OUTPUT to the 3730B IF INPUT.
2. Connect the 3730B IF OUTPUT to the SPECTRUM ANALYZER RF INPUT.
3. Increase the 3711A IF LEVEL to give an output level of +5dBm on the Spectrum Analyzer. Ensure that there is attenuation in the Spectrum Analyzer input attenuator to prevent limiting/overloading of the Spectrum Analyzer Input Stage.
4. Check that all of the harmonics remain >30dB down when the 3711A IF FREQUENCY is varied across the range 45 – 190MHz.

4-15 OUTPUT LEVEL for 1dB GAIN COMPRESSION (OPTION 010 INSTRUMENTS ONLY)

SPECIFICATION

>+12dBm

DESCRIPTION

The output level of the amplifier is set to a measured value of +11dBm. The input level is then increased by 1dB. The output level should also increase by 1dB.

TEST EQUIPMENT

IF Transmitter HP 3711A
IF Receiver HP 3712A

Model 3730B

PROCEDURE

1. Set the 3711A/3712A up to make an IF to IF measurement as outlined in Section 9 of the MLA OPERATING INSTRUCTIONS (03711-90002) for a 140MHz IF with a 100MHz sweep width.
2. Disconnect the 3711A IF OUTPUT from the 3712A.
3. Reset the 3711A IF LEVEL to -30dB and connect the 3711A IF OUTPUT to the 3730B IF INPUT.
4. Connect the 3730B IF OUTPUT to the 3712A IF INPUT and reset the 3712A IF LEVEL to +11dBm.
5. Set the 3711A IF LEVEL to give a centre zero reading on the 3712A POWER MEASUREMENT meter.
6. Set the 3712A Y1 DISPLAY switch to IF FLAT (DC) and calibrate the trace for 1dB per division.
7. Increase the power output level by 1dB.
8. Change the 3712A IF LEVEL to +12dBm. The POWER MEASUREMENT meter reading should be the same as obtained in Step 5 and the trace should be the same as obtained in Step 6.

4-16 AMPLIFIER GAIN and ATTENUATOR ACCURACY (OPTION 010 INSTRUMENTS ONLY)

SPECIFICATION

Gain 25dB $\pm$ 1dB
Attenuator Accuracy 0 - 30dB $\pm$ 0.5dB

TEST EQUIPMENT

IF Transmitter	HP 3711A
Power Meter	HP 435A
Power Sensor	HP 8481A

PROCEDURE

1. Set the 3711A SWEEP RATE to OFF. Use the POWER METER to set the 3711A IF OUTPUT LEVEL to -25dBm.
2. Connect the 3711A IF OUTPUT to the 3730B mainframe IF INPUT.
3. Connect the POWER METER to the 3730B mainframe IF OUTPUT and remove any attenuation from the 3730B.
4. The POWER METER should read 0dBm $\pm$ 1dB.
5. Insert 10dB in the 3730B attenuator and check that the POWER METER reading falls by 10dB $\pm$ 0.5dB. Remove the attenuation.
6. Insert 20dB in the 3730B attenuator and check that the POWER METER reading falls by 20dB $\pm$ 0.5dB. Remove the Attenuation.
7. Insert 30dB in the 3730B attenuator and check that the POWER METER reading falls by 30dB $\pm$ 0.5dB. Remove the Attenuation.

4-17 OPERATIONAL VERIFICATION PROCEDURE

Procedure	Troubleshooting															
4-18 LOCAL OSCILLATOR LEAKAGE 1. Connect an RF SPECTRUM ANALYZER to the RF INPUT on the 3730B RF MODULE. 2. Set the SPECTRUM ANALYZER controls as follows: SCANWIDTH 100MHz/div INPUT ATTENUATION 0dB FREQUENCY BAND co-incident with range on RF MODULE 3. Set the 3730B AFC switch to OFF. 4. Tune the SPECTRUM ANALYZER and RF MODULE across the band. Check that the leakage level is less than the specified maximum as given in Table 4-1. Table 4-1 Local Oscillator Leakage Levels <table><tr><td></td><td>3736B</td><td>3737B</td><td>3738B</td><td>3739B</td></tr><tr><td>Specified Max</td><td>-23dB</td><td>-27dB</td><td>-20dB</td><td>-15dB</td></tr><tr><td>Typical Max</td><td><-35dB</td><td><-35dB</td><td><-30dB</td><td><-30dB</td></tr></table> 4-19 LO CAPTURE RANGE, METER ACCURACY, SCALE ACCURACY and EXCESS LEVEL Indicator 1. Set the SWEEP OSCILLATOR and the 3730B RF MODULE to the same frequency. 2. Set the SWEEP OSCILLATOR to the CW mode of C N. 3. Connect a POWER METER to the SWEEP OSCILLATOR RF OUTPUT and adjust the power level to 0dBm. 4. Connect the SWEEP OSCILLATOR RF OUTPUT to the 3730B plug-in RF INPUT. 5. Set the 3730B AFC switch to OFF, and the IF RANGE switch to 70MHz. 6. Adjust the 3730B RF MODULE TUNE control to give an IF CENTRE reading of 70MHz.		3736B	3737B	3738B	3739B	Specified Max	-23dB	-27dB	-20dB	-15dB	Typical Max	<-35dB	<-35dB	<-30dB	<-30dB	No leakage signal present check Power Supply rails on assemblies A3, A4, A6. Also check regulated supplies on A11 assembly in the RF MODULE – see RF MODULE troubleshooting. If an isolator is fitted in place of the 10dB Attenuator pad in the RF MODULE the typical Max levels will be further reduced by -15dB ie in the case of the 3736B to <-50dB. If the signal is present but does not tune see RF MODULE troubleshooting.
	3736B	3737B	3738B	3739B												
Specified Max	-23dB	-27dB	-20dB	-15dB												
Typical Max	<-35dB	<-35dB	<-30dB	<-30dB												

OPERATIONAL VERIFICATION PROCEDURE (continued)

Procedure	Troubleshooting
7. Set the 3730B AFC switch to NORMAL to check for correct tuning. If the meter swings off scale re-set the AFC switch to OFF and re-tune the RF MODULE to another tuning point [there are normally 2 tuning positions close together]. 8. Connect an electronic counter to the 3730B RF MODULE IF OUTPUT, (if a 3712A is being used connect the 3730B RF MODULE IF OUTPUT to the 3712A IF INPUT and monitor the frequency on the 3712A counter). Monitor the IF frequency (for $70\text{MHz} \pm 0.5\text{MHz}$). 9. Set the 3730B AFC switch to OFF and adjust the 3730B RF MODULE TUNE control to give a frequency of 90MHz. 10. Set the 3730B AFC switch to ON and check the IF FREQUENCY returns to $70\text{MHz} \pm 0.5\text{MHz}$. 11. Repeat steps 9 and 10 with the IF FREQUENCY tuned to 50MHz. 12. Set the 3730B IF RANGE switch to 140MHz and follow the procedure outlined in steps 9 and 10 to check that the AFC locking range is $140\text{MHz} \pm 40\text{MHz}$. (The tuning points are at 100MHz and 180MHz). 13. Set the AFC switch to OFF and check the METER TUNING against the IF FREQUENCY at selected spot frequencies across the band – varied by the 3730B RF MODULE TUNE control. The meter should be within $\pm 4\text{MHz}$ of the IF frequency. 14. Set the SWEEP OSCILLATOR frequency, with the aid of a suitable electronic counter, to correspond exactly to the lowest frequency number on the RF MODULE. 15. Repeat steps 1 through 7 (to tune the DOWN CONVERTER) and check the RF display reading is within the frequency limits in Table 4-2. 16. Set the SWEEP OSCILLATOR frequency to correspond to the highest frequency number on the RF MODULE and repeat steps 1 through 7. Check the display reading is within the frequency limits in Table 4-2.	Down converter won't lock or tune: See General Service Sheet G1 Troubleshooting. Adjustments for AFC lock and METER para 5-14. Scale accuracy not within specified limits – Adjustment para 5-19.

Table 4-2 Scale Accuracy

Scale Accuracy	RF Module
$\pm 20\text{MHz}$	3736B
$\pm 20\text{MHz}$	3737B
$\pm 40\text{MHz}$	3738B
$\pm 50\text{MHz}$	3739B

OPERATIONAL VERIFICATION PROCEDURE (continued)

Procedure	Troubleshooting
17. With the DOWN CONVERTER tuned, increase the RF POWER level until the EXCESS LEVEL indicator just comes on. 18. Monitor the power level at the SWEEP GENERATOR RF OUTPUT. The power level should be within +2.5dBm to +4dBm. 4-20 RESIDUAL RESPONSE AND OPERATING RANGE See Performance Test para 4-6.	Adjustment for EXCESS LEVEL indicator threshold A12R3.

Table 4-3 Performance Test Record

Hewlett-Packard		Tested by		
		Date		
		Serial No.		
Para No.	Test Description	Result		
		Min.	Actual	Max.
4-6	RESIDUAL RESPONSE AND OPERATING RANGE			
	140MHz			
(6)	IF flatness (amplitude)			0.3dB
(8)	Group delay			0.3ns
(10)	Differential gain			0.5%
	Differential phase			0.5°
	70MHz			
(13)	Differential gain			0.3%
	Differential phase			0.3°
(15)	IF flatness (amplitude)			0.2dB
	Group delay			0.2ns
	Minimum Input Level			
(17)	AFC locks (✓)			
	Residual response within specification (✓)			
	Minimum Input Level (OPTION 010)			
(23)	Residual response within specification (✓)			
	Other Frequencies			
(24)	Residual response within specification at selected frequencies (✓)			
4-7	METER ACCURACY			
	90 to 190MHz Range			
(5)	Meter within ±1MHz at 140MHz (✓)			
(6)	Meter within ±4MHz over range 90 to 190MHz (✓)			
	45 to 95MHz Range			
(9)	Meter within ±0.5MHz at 70MHz (✓)			
(10)	Meter within ±2MHz over range 45 to 95MHz (✓)			

Table 4-3 Performance Test Record (continued)

Para No.	Test Description	Result		
		Min.	Actual	Max.
4-8	LO CAPTURE RANGE and IF CENTRE FREQUENCY with AFC switch on NORMAL or TRACKING			
	140MHz			
(4)	AFC NORMAL. Frequency returns to $140 \pm 1\text{MHz}$ from 180MHz (✓)		.....	
(5)	AFC TRACKING. Frequency returns to $140 \pm 1\text{MHz}$ from 180MHz (✓)		.....	
(6)	AFC NORMAL. Frequency returns to $140 \pm 1\text{MHz}$ from 100MHz (✓)		.....	
	AFC TRACKING. Frequency returns to $140 \pm 1\text{MHz}$ from 100MHz, 70MHz		.....	
(8)	AFC NORMAL. Frequency returns to $70 \pm 0.5\text{MHz}$ from 90MHz (✓)		.....	
(9)	AFC TRACKING. Frequency returns to $70 \pm 0.5\text{MHz}$ from 90MHz (✓)		.....	
(10)	AFC NORMAL. Frequency returns to $70 \pm 0.5\text{MHz}$ from 50MHz (✓)		.....	
	AFC TRACKING. Frequency returns to $70 \pm 0.5\text{MHz}$ from 50MHz (✓)		.....	
4-9	LO LEAKAGE			
(3)	Local oscillator breakthrough		.....	-23dBm
	3736B		.....	-27dBm
	3737B		.....	-20dBm
	3738B		.....	-15dBm
	3739B		.....	
4-10	FREQUENCY DISPLAY ACCURACY			
(7)	Scale accuracy:		.....	
	3736B $\pm 20\text{MHz}$ (✓)		.....	
	3737B $\pm 20\text{MHz}$ (✓)		.....	
	3738B $\pm 40\text{MHz}$ (✓)		.....	
	3739B $\pm 50\text{MHz}$ (✓)		.....	
4-11	HARMONICS			
(2)	At least 30dB down at multiples of 140MHz (✓)		.....	
(3)	At least 30dB down at multiples of 70MHz (✓)		.....	
4-12	RETURN LOSS (IF OUTPUT)			
(2)	Better than 30dB (45 to 195MHz) (✓)		.....	

Table 4-3 Performance Test Record (continued)

Para No.	Test Description	Result		
		Min.	Actual	Max.
	OPTION 010 ONLY			
4-13	RETURN LOSS IF OUTPUT and IF INPUT			
(2)	IF OUTPUT, Better than 30dB (45 to 195MHz) (✓)		.....	
	IF INPUT, Better than 30dB (43 to 195MHz) (✓)		.....	
(3)	Better than 30dB with the following attenuator settings			
	30dB (✓)		.....	
	20dB (✓)		.....	
	10dB (✓)		.....	
	0dB (✓)		.....	
4-14	HARMONICS			
(4)	30dB down (45 to 95MHz) (✓)		.....	
4-15	OUTPUT LEVEL for 1dB GAIN COMPRESSION			
(8)	Power measurement as in step 5 (✓)		.....	
	Trace position as in step 6 (✓)		.....	
4-16	AMPLIFIER GAIN and ATTENUATOR ACCURACY			
	Gain			
(4)	Output with -25dBm Input	-1dBm	.....	+1dBm
	Attenuator Accuracy			
(5)	10dB, 10 ± 0.5 dB below reading in step 4 (✓)		.....	
(6)	20dB, 20 ± 0.5 dB below reading in step 4 (✓)		.....	
(7)	30dB, 30 ± 0.5 dB below reading in step 4 (✓)		.....	

Table 4-4 Operational Verification Record

Para No.	Test Description	Result		
		Min.	Actual	Max.
4-18	LOCAL OSCILLATOR LEAKAGE			
(4)	Leakage Level			
	3736B		.....	-23dB
	3737B		.....	-27dB
	3738B		.....	-20dB
	3739B		.....	-15dB
4-19	LO CAPTURE RANGE, METER ACCURACY, SCALE ACCURACY and EXCESS LEVEL INDICATOR			
	70MHz IF Capture Range			
(10)	Capture achieved with IF set to 90MHz (✓) (✓)		.....	
(11)	Capture achieved with IF set to 50MHz (✓)		.....	
	140MHz IF Capture Range			
(12)	Capture achieved with IF set to 100MHz (✓)		.....	
	Capture achieved with IF set to 180MHz (✓)		.....	
	Meter Accuracy			
(13)	Indication within ± 4 dB across the band (✓)		.....	
	Scale Accuracy			
(15)	Scale within limits at lowest frequency (✓)		.....	
(16)	Scale within limits at highest frequency (✓)		.....	
	Excess Level Indicator			
(18)	RF input for excess level indicator threshold.	+2.5dBm	.....	+4dBm
4-20	(Performance Test 4-6) RESIDUAL RESPONSE AND OPERATING RANGE			
	140MHz			
(6)	IF flatness (amplitude)		.....	0.3dB
(8)	Group delay		.....	0.3ns
(10)	Differential gain		.....	0.5%
	Differential phase		.....	0.5°
	70MHz			
(13)	Differential gain		.....	0.3%
	Differential phase		.....	0.3°

Table 4-4 Operational Verification Record (continued)

Para No.	Test Description	Result		
		Min.	Actual	Max.
(15)	IF flatness (amplitude) Group delay		..... .....	0.2dB 0.2ns
	Minimum Input Level			
(17)	AFC locks (✓) Residual response within specification (✓)		..... .....	
	Minimum Input Level (OPTION 010)			
(23)	Residual response within specification (✓) Other Frequencies		.....	
(24)	Residual response within specification at selected frequencies (✓)			

ADJUSTMENTS

SECTION V

ADJUSTMENTS

Note: In some RF MODULES the 10dB Attenuator at the RF INPUT may be replaced by an Isolator. If this is the case the specifications relating to the instrument will be changed, in particular relating to the EXCESS LEVEL lamp threshold which will be reduced by typically 10dB. The frequency range of the DOWN CONVERTER will also be restricted to the frequency limits of the ISOLATOR.

5-1 INTRODUCTION

5-2 This section describes the adjustments required to return the instrument to its optimum operating state. The procedures given may be required during periodic calibration or after repair. Each procedure is self contained and can be performed individually, however, it is recommended that the adjustments are performed in the order given i.e. power supply, 3730B mainframe standard, RF module (plug-in), Option 010 IF amplifier.

5-3 The procedures in this section apply to a model 3730B DOWN CONVERTER mainframe complete with one of the RF MODULE plug-ins: 3736B, 3737B, 3738B or 3739B. After completing the adjustments for the mainframe and one plug-in, adjustments to additional plug-ins can be performed using only the power supply and RF module (plug-in) procedures.

WARNING

Adjustments are performed with power supplied to the instrument and the protective covers removed. The procedures in this section should be performed only by service trained personnel who are aware of the hazards involved (for example fire and electrical shock).

5-4 EQUIPMENT REQUIRED

5-5 Equipment required for the adjustment procedures is listed in the Recommended Test Equipment table in Section 1. There is also a list with each procedure which gives the equipment required for that procedure. Any equipment which satisfies the critical specifications given in Table 1-1 may be substituted for the recommended model (s).

5-6 FACTORY SELECTED COMPONENTS

5-7 There are no factory selected components in the models 3730B, 3736B, 3737B, 3738B and 3739B.

5-8 RELATED ADJUSTMENTS

5-9 Table 5-2 lists the related adjustments which must be performed if an assembly is repaired or replaced. Some of these adjustments are interactive.

5-10 ADJUSTMENT LOCATIONS

5-11 Figure 5-1 shows the location of assemblies. The location of adjustments on the assemblies is given on the service sheet component locations in Section 8.

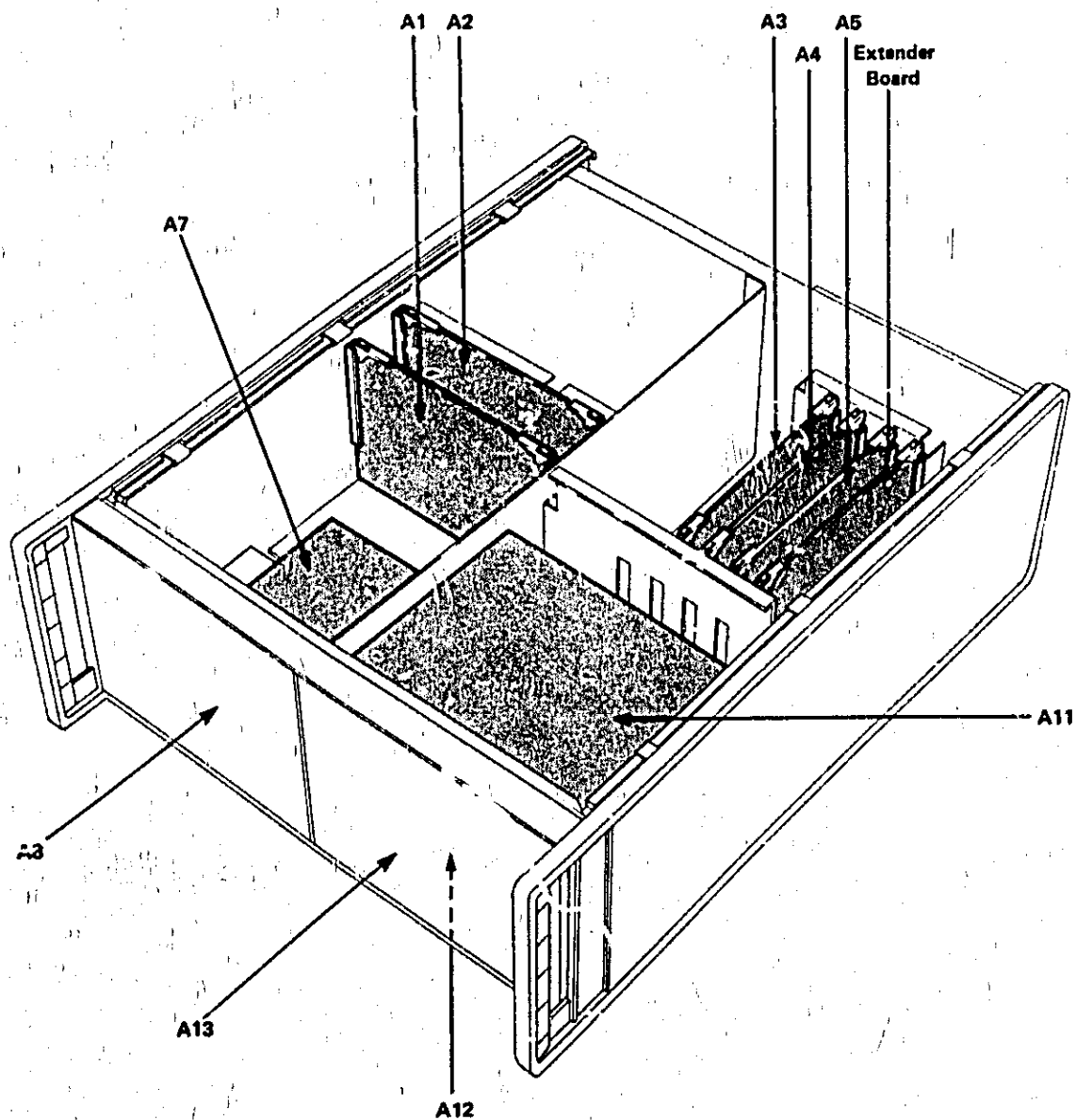


Figure 5-1 Location of Assemblies

Table 5-1 Adjustable Components

Instrument, Assembly and Reference Designator		Adjustment Paragraph	Description
3730B	A1R4	5-14	IF Centre meter frequency scale
	A1R8	5-14	AFC amplifier output level (0V)
	A2R26	5-14	Discriminator output level (+5V)
	A5R9	5-13	Sets +20V power line
	A7R2	5-22	Option 010 IF amplifier excess level lamp Threshold

Table 5-1 Adjustable Components (continued)

Instrument Assembly and Reference Designator	Adjustment Paragraph	Description	
The following adjustments are common to all of the RF Modules:			
3736B } 3737B } 3738B } 3739B }	A11R6	5-19	70MHz IF frequency
	A11R8	5-19	Upper sideband frequency
	A11R10	5-19	Low frequency limit, band 1
	A11R12	5-19	Low frequency limit, band 2
	A11R14	5-19	High frequency limit, band 1
	A11R15	5-19	High frequency limit, band 2
	A12C1		
	A12R1	5-20	IF flatness
	A12R3	5-21	RF input excess level lamp threshold
	A13R16	5-19	Low frequency display, band 1
	A13R17	5-19	High frequency display, band 2
	A13R18	5-19	Low frequency display, band 1
	A13R19	5-19	High frequency display, band 2
The following adjustments are unique to the individual RF Modules:			
3736B	A11R24	5-15	Stabilised voltage supply level (-10V)
3737B	A11R24	5-19	Sets 0V at A11TP1
	A11R32	5-19	Sets FU at A11TP2
	A11R35	5-19	Sets VU at A11TP2
	A11R45	5-16	Stabilised voltage supply level (+5V)
	A11R54	5-16	Stabilised voltage supply level (-10V)
3738B	A11R23	5-17	VIG bias
3739B	A11R24	5-19	VIG bias
	A11R30	5-18	Overvoltage limit

Table 5-2 Related Adjustments

3730B MAINFRAME

	Assembly Changed or Repaired	Perform the following Related Adjustments	Para No.
A1	AFC Amplifier	A1R4 - IF Centre meter frequency scale A1R8 - AFC Amplifier output level (0V)	5-14
A2	Discriminator	A2R9 - Discriminator output level (+5V)	5-14
A3	-15V Assembly	A1R4 - IF Centre meter frequency scale A1R8 - AFC Amplifier output level (0V) A2R9 - Discriminator output level (+5V)	5-14
A4	+15V and +5V Assembly	A1R4 - IF Centre meter frequency scale A1R8 - AFC Amplifier output level (0V) A2R9 - Discriminator output level (+5V)	5-14
A5	+20V Assembly	A5R9 - Set +20V power line	5-13
A6	EXTENDER Card	None	-
A7	IF AMPLIFIER (OPT 010 only)	A7R2 - Excess level lamp threshold for OPT 010 IF Amplifier	5-22

Table 5-2 Related Adjustments (continued)

3736B/3737B/3738B/3739B RF MODULE

	Assembly Changed or Repaired	Perform the following Related Adjustments	Para No.
A11	YIG DRIVER	A11R6 – 70MHz IF Frequency A11R8 – Set USB (LO > RF) A11R10 – Set Low frequency limit, band 1 A11R12 – Set Low frequency limit, band 2 A11R14 – Set High frequency limit, band 1 A11R15 – Set High frequency limit, band 2 3736B A11R24 – Sets -10V ref. supply 3737B A11R24 – Sets 0V at A11TP1 3737B A11R32 – Sets FU at A11TP2 3737B A11R35 – Sets VU at A11TP2 3737B A11R45 – Sets +5V ref. supply 3737B A11R54 – Sets -10V ref. supply 3738B A11R23 – Sets YIG bias supply 3739B A11R24 – Sets YIG bias supply 3739B A11R30 – Sets overvoltage limits	5-19 5-19 5-19 5-19 5-19 5-19 5-15 5-19 5-19 5-19 5-16 5-16 5-17 5-18 5-18
A12	IF AMPLIFIER	A12C1 – IF Flatness A12R1 – IF Flatness A12R2 – Excess Level indicator threshold	5-20 5-20 5-21

5-12 The 3730B contains only 4 adjustable components (5 for OPT 010) as follows:

- A5R9: Sets the +20V supply.
- A2R26: Sets the Discriminator output to +5V with a 70MHz/140MHz IF input.
- A1K8: Sets the output of the AFC Amplifier to 0V after the Discriminator has been set up.
- A1R4: Sets the IF CENTRE meter outer scale limits.
- (A7R2: Sets the EXCESS LEVEL indicator threshold for OPT 010 only.)

5-13 POWER SUPPLY ADJUSTMENTS

DESCRIPTION

The power supply is contained in 3 assemblies A3, A4 and A5, only the 20V power rail is adjustable by means of A5R9.

TEST EQUIPMENT

DVM HP 3476A/B

PROCEDURE

1. Monitor the +20V test point on Assembly A5.
2. If necessary adjust A5R9 to give $20V \pm 0.01V$.

5-14 DISCRIMINATOR, AFC AND IF CENTRE MHz METER ADJUSTMENT

DESCRIPTION

This adjustment sets the DISCRIMINATOR (assembly A2), the AFC AMPLIFIER (assembly A1) output levels and the front panel IF CENTRE MHz meter calibration offset. The procedure uses a 3730B mainframe plus RF module, in conjunction with an 8620C and suitable plug-in. An alternative procedure is however described at the end of the procedure using a suitable RF source with a fixed frequency in the range 100MHz to 180MHz.

TEST EQUIPMENT

Sweep Oscillator + Plug-in	HP 8620C + plug-in*
Electronic Counter	HP 5345A
10dB Attenuator Pad	HP 8491B OPT 010

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A OPT H82

PROCEDURE

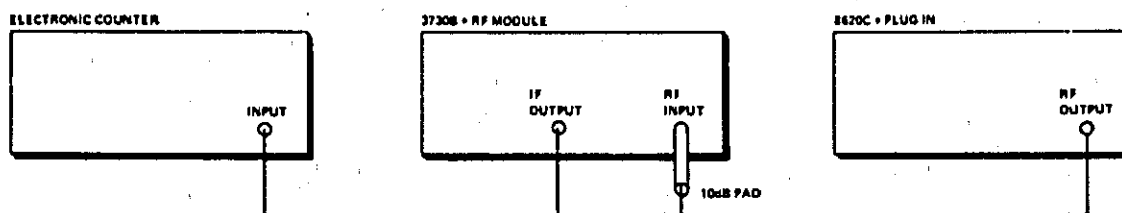


Figure 5-2 Discriminator, AFC and IF Centre Meter Adjustments,
Test Equipment Connection

1. Connect the test equipment up as shown in Figure 5-2.
2. Switch the equipment on and allow a 15 minute warm-up period.
3. Set the 3730B + RF MODULE controls as follows:

IF Range	140MHz
AFC	OFF
Sideband	LOWER
4. Use the TUNE control of the RF module to set the frequency to mid-scale.
5. Set the Sweep Oscillator to the CW mode of operation and tune the frequency to the same as the frequency setting indicated on the RF module scale.
6. Set the POWER LEVEL control on the Sweep Oscillator plug-in to the mid-position.
7. Set the Sweep Oscillator frequency control to give a reading on the Electronic Counter (connected to the 3730B RF MODULE IF OUTPUT) of 140MHz $\pm$ 0.3MHz.

8. DISCRIMINATOR
9. Connect a DVM to the 3730B assembly A2TP3 and adjust A2W26 to give a reading of +5V.
10. AFC AMPLIFIER
11. Connect the DVM to the 3730B assembly A1TP3 and adjust A1R8 to give a reading of $0V \pm 5mV$. The IF CENTRE MHz meter should be mid-scale $\pm 4MHz$.
12. IF CENTRE MHz METER
13. Set the Sweep Oscillator frequency control to give a reading of 180MHz on the Electronic Counter.
14. Adjust A1R4 to give a METER reading of $180MHz \pm 4MHz$.
15. Re-set the Sweep Oscillator frequency control to give a reading of 100MHz. Check that the IF CENTRE MHz METER reads $100MHz \pm 4MHz$. If necessary repeat Steps 13 through 15 to obtain the best compromise within the $\pm 4MHz$ limits.

ALTERNATIVE PROCEDURE

16. Disconnect the co-ax connector at A2J1 and connect a suitable RF source to A2J1.
17. Tune the frequency of the RF source to 140MHz and set the 3730B + RF module controls to the settings given in Step 3.
18. Carry out Steps 8 through 11.
19. Set the RF source to 180MHz and perform Step 14.
20. Set the RF source to 100MHz and check that the meter reading remains within $\pm 4MHz$ of the frequency setting. If necessary repeat Steps 16 through 20 to obtain the best compromise within the $\pm 4MHz$ limits.

5-15 3736B A11 YIG BIAS ADJUSTMENTS

DESCRIPTION

This sets the bias level for the YIG OSCILLATOR.

TEST EQUIPMENT

DVM HP 3476A/B

PROCEDURE

1. Connect a DVM to A11TP2 and adjust A11R24 to give a DVM reading of $-10V \pm 0.1V$

3736B A11 YIG FREQUENCY ADJUSTMENTS

See Paragraph 5-19.

3736B A12 IF AMPLIFIER ADJUSTMENTS

See Paragraphs 5-20, 5-21.

5-16 3737B A11 YIG BIAS ADJUSTMENTS**DESCRIPTION**

This sets the +5V and -10V supply levels for the YIG OSCILLATOR.

TEST EQUIPMENT

DVM HP 3476A/B

PROCEDURE

1. Set the Down Converter IF RANGE switch to 140MHz, the SIDEBAND switch to LO > RF, and the RF RANGE switch to the highest range.
2. Connect a DVM to A11TP4 and adjust A11R45 to give a DVM reading of $+5V \pm 0.01V$.
3. Connect a DVM to A11TP5 and adjust A11R54 to give a DVM reading of $-10V \pm 0.01V$.

3737B A11 YIG FREQUENCY ADJUSTMENTS

See Paragraph 5-19.

3737B A12 IF AMPLIFIER ADJUSTMENTS

See Paragraphs 5-20, 5-21.

5-17 3738B A11 YIG BIAS ADJUSTMENTS**DESCRIPTION**

This sets the bias level for the YIG OSCILLATOR.

TEST EQUIPMENT

DVM HP 3476A/B

PROCEDURE

1. Connect a DVM to A11TP2 and adjust A11R23 to give a DVM reading equal to the bias voltage stamped on the YIG OSCILLATOR.

3738B A11 YIG FREQUENCY ADJUSTMENTS

See Paragraph 5-19.

3738B A12 IF AMPLIFIER ADJUSTMENTS

See Paragraphs 5-20, 5-21.

5-18 3739B A11 YIG BIAS ADJUSTMENTS**DESCRIPTION**

This adjustment sets the bias level for the YIG OSCILLATOR and the overvoltage protection circuit.

TEST EQUIPMENT

DVM HP 3476A/B
Power Supply HP 6220B

PROCEDURE

1. Disconnect the wire links A11 TL1 and A11 TL2.
2. Connect the Power Supply -VE to A11 TP3 and +VE/GND to the GND TP. Set the Power Supply current limit to <1A.
3. Connect a DVM between A11 TP3 and GND.
4. Increase the POWER SUPPLY voltage until the overvoltage protection circuit operates. The "trip voltage" should be 1V more negative than the voltage stamped on the YIG OSCILLATOR. If this is not the case set the POWER SUPPLY voltage to correspond to this voltage and adjust A11R30 to set the "trip voltage"
5. Remove the POWER SUPPLY and replace TL1.
6. Adjust A11R24 to set the voltage exactly to the same voltage setting as stamped on the YIG OSCILLATOR.
7. Replace TL2.

5-19 3736B/3737B/3738B/3739B YIG OSCILLATOR FREQUENCY ADJUSTMENTS (Assemblies A11 & A13)

DESCRIPTION

This adjustment sets the scale end stops and the upper and lower limits of the YIG OSCILLATOR. The YIG BIAS reference voltages Paragraphs 5-15, 5-16, 5-17, 5-18 should be carried out prior to this adjustment. Adjustments are usually only necessary if a component is replaced or if the Performance Check for SCALE ACCURACY Paragraph 4-10 fails.

TEST EQUIPMENT

Sweep Oscillator + Plug-in HP 8620C + plug-in*
Electronic Counter HP 5340A
10dB Attenuator Pad HP 8491B OPT 010

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A OPT H82

PROCEDURE

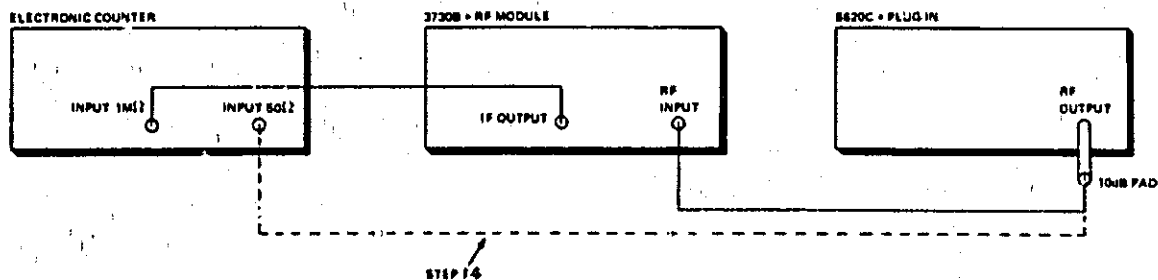


Figure 5-3 YIG Oscillator Frequency Adjustments, Test Equipment Connection

Note: The 4 variable resistors A13R16, A13R17, A13R18 and A13R19 which set the end stop limits of the tuning scale (seven segment LED display) are located on the underside of the RF MODULE. These components are accessible with a long thin bladed screw-driver when the top and bottom covers of the 3730B and the RF MODULE are removed. If an umbilical cable 15609A is available, it will permit easier access to the adjustable components on the RF MODULE.

1. Remove the top and bottom covers from the 3730B. Remove the RF MODULE from the 3730B, unscrew and remove the top and bottom covers of the RF MODULE.
2. Carefully insert the RF MODULE in the 3730B. Switch the 3730B ON and allow a ten minute warm-up.
3. Set the RF RANGE to the lowest frequency range.
4. Turn the TUNE control fully anti-clockwise and check that the display reads at least $0.05\text{GHz} \pm 0.03\text{GHz}$ less than the lowest frequency indicated on the bottom RF RANGE. If necessary, adjust A13R18 to achieve this.
5. Set the RF RANGE switch to the highest frequency range.
6. Check that the display reads at least $0.05\text{GHz} \pm 0.03\text{GHz}$ less than the lowest frequency on the top RF RANGE. If necessary, adjust A13R19 to achieve this.
7. Turn the TUNE control fully clockwise and check that the display reads at least $0.05\text{GHz} \pm 0.03\text{GHz}$ higher than the highest frequency on the RF RANGE switch. If necessary, adjust A13R17 to achieve this.
8. Set the RF RANGE switch to the lowest frequency range.
9. Check that the display reads at least $0.05\text{GHz} \pm 0.03\text{GHz}$ higher than the lowest RF RANGE switch. If necessary, adjust A13R16 to achieve this.
10. Set the 3730B controls as follows:

IF RANGE	140MHz
AFC	OFF
SIDEBAND	LO < RF
RF RANGE	Lowest Range

11. Adjust the TUNE control to give a display which corresponds to the lowest frequency on the RF RANGE switch.
12. Connect the test equipment as shown in Figure 5-3. Start with the 8620 RF OUTPUT connected to the counter.
13. Set the Sweep Oscillator to the CW mode, and the POWER LEVEL control to mid-position.
14. Monitor the frequency output of the Sweep Oscillator on the ELECTRONIC COUNTER, ensure that the 10dB ATTENUATOR remains connected, and tune the Sweep Oscillator to the frequency that the 3730B RF MODULE is tuned to $\pm 5\text{MHz}$.
15. Reconnect the Sweep Oscillator RF OUTPUT to the 3730B RF input.
16. Adjust A11R10 to bring the ELECTRONIC COUNTER reading to $140.00\text{MHz} \pm 2\text{MHz}$.

Note: If the 3730B RF MODULE tuning is set exactly to the end of the range, at the top and bottom there will be no interactive effect. Some Plug-ins for the 8620C do not correspond directly in frequency ranges to the RF MODULE, requiring a small offset in frequency at the lower end of the RF MODULE frequency range. In such cases the adjustments should be repeated to avoid interactive effects.

17. Check that the frequency remains unchanged when the 3730B AFC switch is set to NORMAL. If the frequency changes by more than $\pm 5\text{MHz}$ continue adjusting the trimmer to another tuning point with the 3730B AFC switch off.

Model 3730B

18. Adjust the TUNE control on the 3730B RF MODULE to give a frequency reading corresponding to the highest frequency on the same band.
19. Repeat Steps 14 and 15. See Note.
20. Adjust A11R14 to bring the ELECTRONIC COUNTER reading to $140.00\text{MHz} \pm 2\text{MHz}$.
21. Repeat Step 17.
22. The two adjustments, A11R10 and A11R14, are interactive. Repeat the adjustments until no further adjusting is necessary.
23. Check the frequencies at the mid-band position.
24. Set the 3730B RF MODULE RF RANGE switch to the highest range.
25. Use the TUNE control on the 3730B RF MODULE to give a frequency reading corresponding to the lowest frequency on the higher band.
26. Repeat Steps 14 and 15.
27. Adjust A11R12 to bring the ELECTRONIC COUNTER reading to $140\text{MHz} \pm 2\text{MHz}$.
28. Repeat Step 17.
29. Use the TUNE control on the 3730B RF MODULE to give a frequency corresponding to the highest frequency.
30. Repeat Steps 14 and 15.
31. Adjust A11R15 to bring the ELECTRONIC COUNTER reading to $140\text{MHz} \pm 2\text{MHz}$.
32. Repeat Step 17.
33. The two adjustments, A11R12 and A11R15, are interactive. Repeat the adjustments until no further adjusting is required.
34. Check the frequencies at the mid band position.
35. Tune the 3730B to a suitable frequency mid band.
36. Adjust the Sweep Oscillator frequency control to the same frequency, with the ELECTRONIC COUNTER reading $140\text{MHz} \pm 2\text{MHz}$.
37. Check for AFC lock by switching the 3730B AFC switch to NORMAL. If the frequency goes off scale, retune the Sweep Oscillator to another tuning point (with the AFC switch set to OFF) close to the frequency reading on the 3730B RF MODULE.
38. Reset AFC to OFF. Set the 3730B IF RANGE switch to 70MHz, and if necessary adjust A11R6 to give a counter reading of $70\text{MHz} \pm 2\text{MHz}$. Check for AFC lock and if necessary re-adjust A11R6.
39. Reset AFC to OFF. Set the 3730B RF MODULE SIDEBAND switch to LO > RF and if necessary adjust A11R8 to retain the frequency at 70MHz. Recheck for AFC lock and if necessary retune A11R8.

The following steps apply only to the 3737B RF MODULE. These additional steps are necessary on the 3737B to ensure the YIG OSCILLATOR power level variations across the band are kept to a minimum.

40. Adjust the 3737B TUNE control to the maximum frequency in the band (ensure the RANGE switch is set to the highest range).

41. Connect a DVM to A11TP1 and adjust A11R24 to give $0V \pm 0.01V$.
42. Connect a DVM to A11TP2 and adjust A11R35 to set the voltage to the reading stamped on the YIG (next to VU).
43. Adjust the 3737B TUNE control to set the frequency to the minimum frequency in-band (ensure the RANGE switch is set to the low range) and note the reading at TP2 – this will nominally be $-9.8V \pm 0.1V$.
44. Adjust the 3737B TUNE control (and RANGE switch) to set the scale frequency 140MHz below the frequency reading stamped on the YIG (next to FU).
45. Adjust A11P 2 to give a DVM reading (at TP2) so that the voltage just starts to change (typically $< 10mV$ from the reading obtained in Step 43).

5-20 3736B/3737B/3738B/3739B IF FLATNESS ADJUSTMENT (Assembly A12)

DESCRIPTION

This adjustment optimises the IF AMPLIFIER response to give the best IF Flatness when used in conjunction with an MLA.

TEST EQUIPMENT

Sweep Oscillator	HP 8620C + plug-in*
IF/BB Transmitter	HP 3711A/3791B or HP 3710A/3716A†
IF/BB Receiver	HP 3712A/3791B or HP 3702A/3705A

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A OPT H82

† Note: The system is only tested over a limited range (50MHz) using a 3710A system.

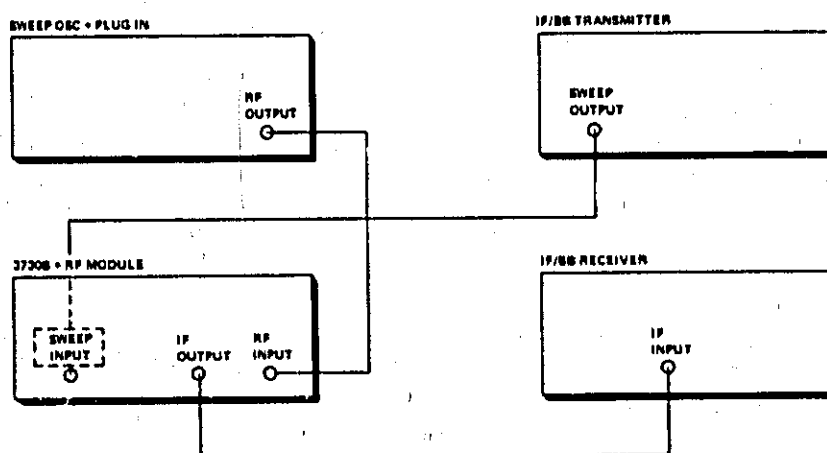


Figure 5-4 IF Flatness Adjustments, Test Equipment Connection

PROCEDURE

1. Set the SWEEP OSCILLATOR and 3730B RF MODULE to the same frequency setting corresponding to the lowest number marked on the RF MODULE frequency scale.
2. Set the Sweep Oscillator to the CW mode of operation.

Model 3730B

3. Set the IF/BB TRANSMITTER to 500 or 555kHz with the SWEEP mode set to INT.
4. Connect the test equipment as shown in Figure 5-4. Reduce the SWEEP LEVEL control to 0.
5. Set the 3730B AFC switch to OFF and the IF range switch to 140MHz (70MHz if a 3710A MLA system is used).
6. Set the 3730B RF MODULE TUNE control to bring the IF CENTRE MHz meter to mid-scale. Set the 3730B AFC switch to NORMAL, to check for correct tuning. If the meter swings off scale return the RF MODULE to another tuning position (with the AFC switch OFF).
7. Adjust the IF/BB TRANSMITTER SWEEP LEVEL control to give a displayed sweep of 100MHz (50MHz if a 3710A MLA system is used).
8. The IF flatness should be within 0.3dB over 100MHz sweep width 0.2dB over 50MHz sweep width. If necessary adjust A12C1, and A12R1 in the RF Module to achieve this. Note to gain access to A12C1 and A12R1 the bottom cover of the RF MODULE and the 3730B have to be removed. Extreme care should be exercised to avoid damage when refitting the RF MODULE into the 3730B.
9. Repeat Step 8 at various tuning points in the RF band covered by the RF MODULE. The tuning procedure is the same as in Steps 1 and 6 except for the frequency selected in Step 1.

5-21 3736B/3737B/3738B/3739B EXCESS LEVEL ADJUSTMENT (Assembly A12)

DESCRIPTION

The threshold limit on the IF AMPLIFIER in the RF MODULE is set by A12R3 so that the EXCESS LEVEL indicator comes on when the RF INPUT level exceeds +3dBm. (The input level may vary slightly from unit to unit depending on the conversion loss of the mixer. IN INSTRUMENTS WHERE AN ISOLATOR REPLACES THE 10dB ATTENUATOR PAD, BETWEEN THE RF INPUT AND THE MIXER, THE EXCESS LEVEL INDICATOR WILL BE ON AT LEVELS $> -7\text{dBm}$.)

TEST EQUIPMENT

Power Meter + Power Sensor HP 435A + HP 8481A
Sweep Oscillator HP 8620C + plug-in*

- * For 3736B use 86235A OPT 008
- For 3737B use 86240C
- For 3738B use 86245A OPT 008
- For 3739B use 86260A OPT H82

PROCEDURE

1. Tune the 3730B RF MODULE and the Sweep Oscillator to the same frequency, corresponding (approximately) to mid-scale on the RF MODULE. Set the Sweep Oscillator to the CW mode of operation.
2. Connect the Power Meter to the Sweep Oscillator RF OUTPUT and adjust the power output to +3dBm.
3. Connect the Sweep Oscillator RF OUTPUT to the 3730B RF MODULE RF INPUT.
4. With the 3730B AFC switch set to OFF, set the RF MODULE TUNE control to bring the 3730B IF CENTRE MHz meter to mid-scale.
5. Check for AFC lock by switching the 3730B AFC switch to NORMAL. The meter should stabilise at the same tuning point. If the meter deflects off scale repeat Steps 4 and 5 at another tuning point.
6. The EXCESS LEVEL indicator on the RF MODULE should be on. If the indicator is not on increase the Power Level of the Sweep Oscillator until the EXCESS LEVEL indicator just comes on.

7. Check the power level at the Sweep Oscillator output, it should be between +2.5dBm and +4dBm.
8. If necessary adjust A12R3 on the RF MODULE to achieve this.

Note: To gain access to A12R3 the bottom cover of the RF MODULE and the bottom cover of the 3730B have to be removed. Extreme care should be exercised, to avoid damage, when refitting the RF MODULE into the 3730B.

5-22 3730B EXCESS LEVEL ADJUSTMENT (OPT 010 Instruments Only)

DESCRIPTION

An IF signal in the range 70 – 140MHz is applied to the IF SECTION INPUT and the power level increased to +5dBm. The EXCESS LEVEL indicator should come on, A7R2 is adjusted if necessary.

TEST EQUIPMENT

IF Source	HP 3710A, HP 3711A, HP 8601, etc
Power Meter	HP 435A
Power Sensor	HP 8481A

PROCEDURE

1. Set the IF output level of the IF SOURCE to -20dBm and tune the IF SOURCE to a fixed frequency between 70 and 140MHz.
2. Remove any attenuation from the 3730B.
3. Connect the IF SOURCE to the 3730B IF SECTION, IF INPUT, and increase the power level of the IF SOURCE until the EXCESS LEVEL indicator just comes on.
4. Measure the power output from the 3730B IF SECTION, IF OUTPUT; the output level should be 5dBm $\pm$ 0.2dBm. If necessary set the power output level of the IF SOURCE to give +5dBm at the 3730B IF SECTION, IF OUTPUT and adjust A7R2 so that the EXCESS LEVEL indicator just comes on.

PARTS LIST

SECTION VI REPLACEABLE PARTS

6-1 INTRODUCTION

6-2 This section contains information for ordering parts. Table 6-1 lists abbreviations used in the parts list and throughout the manual. Table 6-2 lists the names and addresses that correspond to the manufacturer's code numbers used in the parts list and Table 6-3 lists all the replaceable parts in reference designator order.

6-3 ABBREVIATIONS

6-4 Table 6-1 lists all the abbreviations used in the parts list, the schematics and throughout this manual. In some cases, two forms of an abbreviation are given — one all capital letters and the other with partial or no capital letters. This occurs because the abbreviations used in the parts list are always all capitals, however, in other parts of the manual, abbreviations are used with both capital and non-capital letters.

6-5 REPLACEABLE PARTS LIST

6-6 Table 6-3 is a list of replaceable parts, with parts listed in the following order:

- (a) Electrical assemblies and their components by reference designator, in alpha-numeric order.
- (b) Chassis-mounted components by reference designator in alpha-numeric order.
- (c) Miscellaneous parts.

6-7 The information given for each part consists of the following:

- (a) The Hewlett-Packard part number.
- (b) Part number check digit (CD).
- (c) For the first listing of a part, the total quantity (QTY) of that part used in the instrument.
- (d) A description of the part.
- (e) A manufacturer (not necessarily the only manufacturer) of the part, given as a five-digit code.
- (f) The manufacturer's part number for the part.

6-8 ORDERING INFORMATION

6-9 To order a part listed in the replaceable parts table, quote the Hewlett-Packard part number (with check digit), indicate the quantity required and address the order to the nearest Hewlett-Packard Office. The check digit will ensure accurate and timely processing of your order.

6-10 To order a part not listed in the replaceable parts table, give the instrument model number, instrument serial number, a description of the part required, together with a description of its function and the quantity required. Address the order to the nearest Hewlett-Packard Office.

Table 6-1 Reference Designations and Abbreviations

REFERENCE DESIGNATIONS

A assembly	E miscellaneous electrical part	P electrical connector (movable portion); plug	U integrated circuit; microcircuit
AT attenuator; isolator; termination	F fuse	Q transistor; SCR; triode thyristor	V electron tube
B fan; motor	FL filter	R resistor	VR voltage regulator; breakdown diode
BT battery	H hardware	RT thermistor	W cable; transmission path; wire
C capacitor	HY circulator	S switch	X socket
CP coupler	J electrical connector (stationary portion); jack	T transformer	Y crystal unit (piezo-electric or quartz)
CR diode; diode thyristor; varactor	K relay	TB terminal board	Z tuned cavity; tuned circuit
DC directional coupler	L coil; inductor	TC thermocouple	
DL delay line	M meter	TP test point	
DS annunciator; signaling device (audible or visual); lamp; LED	MP miscellaneous mechanical part		

ABBREVIATIONS

A ampere	COMPL complete	FET field-effect transistor	LF low frequency
ac alternating current	CONN connector	F/F flip-flop	LG long
ACCESS accessory	CP cadmium plate	FH flat head	LH left hand
ADJ adjustment	CRT cathode-ray tube	FIL H filament head	LIM limit
A/D analog-to-digital	CTL complementary transistor logic	FM frequency modulation	LIN linear taper (used in parts list)
AF audio frequency	CW continuous wave	FP front panel	lin linear
AFC automatic frequency control	cw clockwise	FREQ frequency	LK WASH lock washer
AGC automatic gain control	cm centimeter	FXD fixed	LO low; local oscillator
AL aluminum	D/A digital-to-analog	g gram	LOG logarithmic taper (used in parts list)
ALC automatic level control	dB decibel	GE germanium	log logarithm(ic)
AM amplitude modulation	dBm decibel referred to 1 mW	GHz gigahertz	LPF low pass filter
AMPL amplifier	dc direct current	GL glass	LV low voltage
APC automatic phase control	deg degree (temperature interval or difference)	GRD ground(ed)	m meter (distance)
ASSY assembly	° degree (plane angle)	H henry	mA milliamperes
AUX auxiliary	°C degree Celsius (centigrade)	h hour	MAX maximum
avg average	°F degree Fahrenheit	HET heterodyne	MΩ megohm
AWG American wire gauge	°K degree Kelvin	HEX hexagonal	MEG meg (10 ⁶) (used in parts list)
BAL balance	DEPC deposited carbon	HD head	MET FLM metal film
BCD binary coded decimal	DET detector	HDW hardware	MET OX metallic oxide
BD board	diam diameter	HF high frequency	MF medium frequency; microfarad (used in parts list)
BE CU beryllium copper	DIA diameter (used in parts list)	HG mercury	MFR manufacturer
BFO beat frequency oscillator	DIFF AMPL differential amplifier	HI high	mg milligram
BH binder head	div division	HP Hewlett-Packard	MHz megahertz
BKDN breakdown	DPDT double-pole, double-throw	HPF high pass filter	mH millihenry
BP bandpass	DR drive	HR hour (used in parts list)	mho mho
BPF bandpass filter	DSB double sideband	HV high voltage	MIN minimum
BRS brass	DTL diode transistor logic	Hz Hertz	min minute (time)
BWO backward-wave oscillator	DVM digital voltmeter	ID inside diameter	minute (plane angle)
CAL calibrate	ECL emitter coupled logic	IF intermediate frequency	MINAT miniature
ccw counter-clockwise	EMF electromotive force	IMPG impregnated	mm millimeter
CER ceramic	EDP electronic data processing	in inch	MOD modulator
CHAN channel	ELECT electrolytic	INCD incandescent	MOM momentary
cm centimeter	ENCAP encapsulated	INCL include(s)	MOS metal-oxide semiconductor
CMO cabinet mount only	EXT external	INP input	ms millisecond
COAX coaxial	F farad	INS insulation	MTG mounting
COEF coefficient		INT internal	MTR meter (indicating device)
COM common		kg kilogram	mV millivolt
COMP composition		kHz kilohertz	mV _{ac} millivolt, ac
		kΩ kilohm	mV _{dc} millivolt, dc
		kv kilovolt	mVpk millivolt, peak
		lb pound	
		LC inductance-capacitance	
		LED light-emitting diode	

NOTE

All abbreviations in the parts list will be in upper-case.

Table 6-1 Reference Designations and Abbreviations (continued)

mVp-p . . . millivolt, peak-to-peak	P peak (used in parts list)	REF reference	TERM terminal
mVrms millivolt, rms	PAM pulse-amplitude modulation	REG regulated	TFT thin-film transistor
mW milliwatt	PC printed circuit	REPL replaceable	TGL toggle
MUX multiplex	PCM pulse-code modulation; pulse-count modulation	RF radio frequency	THD thread
MY mylar	PDM pulse-duration modulation	RFI radio frequency interference	THRU through
μA microampere	PF picofarad	RH round head; right hand	TI titanium
μF microfarad	PH BRZ phosphor bronze	RLC resistance-inductance-capacitance	TOL tolerance
μH microhenry	PHL Philips	RMO rack mount only	TRIM trimmer
μmho micromho	PIN positive-intrinsic-negative	rms root-mean-square	TSTR transistor
μs microsecond	PIV peak inverse voltage	RND round	TTL transistor-transistor logic
μV microvolt	pk peak	ROM read-only memory	TV television
μVac microvolt, ac	PL phase lock	R&P rack and panel	TVI television interference
μVdc microvolt, dc	PLO phase lock oscillator	RWV reverse working voltage	TWT traveling wave tube
μVpk microvolt, peak-to-peak	PM phase modulation	S scattering parameter	U micro (10 ⁻⁶) (used in parts list)
μVrms microvolt, rms	PNP positive-negative-positive	S second (time)	UF microfarad (used in parts list)
μW microwatt	P/O part of	S second (plane angle)	UHF ultrahigh frequency
NA nanampere	POLY polystyrene	S-B slow-blow (fuse) (used in parts list)	UNREG unregulated
NC no connection	PORC porcelain	SCR silicon controlled rectifier; screw	V volt
N/C normally closed	POS positive; position(s) (used in parts list)	SE selenium	VA voltampere
NE neon	POSN position	SECT sections	Vac volts, ac
NEG negative	POT potentiometer	SEMICON semiconductor	VAR variable
nF nanofarad	P-p peak-to-peak	SHF superhigh frequency	VCO voltage-controlled oscillator
NI PL nickel plate	PP peak-to-peak (used in parts list)	SI silicon	Vdc volts, dc
N/O normally open	PPM pulse-position modulation	SIL silver	VDCW volts, dc, working (used in parts list)
NOM nominal	PREAMPL preamplifier	SL slide	V(F) volts, filtered
NORM normal	PRF pulse-repetition frequency	SNR signal-to-noise ratio	VFO variable-frequency oscillator
NPN negative-positive-negative	PRR pulse repetition rate	SPDT single-pole, double-throw	VHF very-high frequency
NPO negative-positive zero (zero temperature coefficient)	ps picosecond	SPG spring	Vpk volts, peak
NRFR not recommended for field replacement	PT point	SR split ring	Vp-p volts, peak-to-peak
NSA not separately replaceable	PTM pulse-time modulation	SPST single-pole, single-throw	Vrms volts, rms
na nanosecond	PWM pulse-width modulation	SSB single sideband	VSWR voltage standing wave ratio
nW nanowatt	PWV peak working voltage	SST stainless steel	VTO voltage-tuned oscillator
OBD order by description	RC resistance-capacitance	STL steel	VTVM vacuum-tube voltmeter
OD outside diameter	RECT rectifier	SQ square	V(X) volts, switched
OH oval head		SWR standing-wave ratio	W watt
OP AMPL operational amplifier		SYNC synchronize	W/ with
OPT option		T timed (slow-blow fuse)	WIV working inverse voltage
OSC oscillator		TA tantalum	WW wirewound
OX oxide		TC temperature compensating	W/O without
oz ounce		TD time delay	YIG yttrium-iron-garnet
Ω ohm			Z ₀ characteristic impedance

NOTE

All abbreviations in the parts list will be in upper-case.

MULTIPLIERS

Abbreviation	Prefix	Multiple
T	tera	10 ¹²
G	giga	10 ⁹
M	mega	10 ⁶
k	kilo	10 ³
da	deka	10
d	deci	10 ⁻¹
c	centi	10 ⁻²
m	milli	10 ⁻³
μ	micro	10 ⁻⁶
n	nano	10 ⁻⁹
p	pico	10 ⁻¹²
f	femto	10 ⁻¹⁵
a	atto	10 ⁻¹⁸

Table 6-2 Code List of Manufacturers

Mfr No.	Manufacturer Name	Address	Zip Code
0000J	GTE SYLVANIA MINIATURE LT PROD	HILLSBORO NH	03244
00863	SANGAMO ELEC COS CAROLINA DIV	PICKENS SC	29671
01121	ALLEN-GRADLEY CO	MILWAUKEE WI	53204
01295	TEXAS INSTR INC SEMICONDUCTOR DIV	DALLAS TX	75222
01928	RCA CORP SOLID STATE DIV	SOMERVILLE NJ	08876
02111	SPECTROL ELECTRONICS DIV	CITY OF IND CA	91745
04713	MOTOROLA SEMICONDUCTOR PRODUCTS	PHOENIX AZ	85062
06665	PRECISION MONOLITHICS INC	SANTA CLARA CA	95050
07263	FAIRCHILD SEMICONDUCTOR DIV	MOUNTAIN VIEW CA	94042
19702	MEPCO/ELECTRA CORP	MINERAL WELLS TX	76067
23936	PA MOTOR DIV WILLIAM J PURDY	BURLINGAME CA	94010
24046	TRANSITRON ELECTRONIC CORP	WAKEFIELD MA	01880
24546	CORNING GLASS WORKS (BRADFORD)	BRADFORD PA	16701
25088	SIEMENS CORP	ISELIN NJ	08830
27014	NATIONAL SEMICONDUCTOR CORP	SANTA CLARA CA	95051
28480	HEWLETT-PACKARD CORPORATE HQ	PALO ALTO CA	94304
32997	BOURNS INC TRIMPOT PROD DIV	RIVERSIDE CA	92507
51642	CENTRE ENGINEERING INC	STATE COLLEGE PA	16801
56289	SPRAGUE ELECTRONIC CO	NORTH ADAMS MA	01247
71400	BUSSMAN MFG DIV OF MCGRAW-EDISON CO	ST LOUIS MO	63107
72136	ELECTRO MOTIVE CORP SUB IEC	WILLIMANTIC CT	06226
75915	LITTELFUSE INC	DES PLAINES IL	60016
82110	GUDEBROD BROS SILK CO INC	PHILADELPHIA PA	19107
91506	AUGAT INC	ATTLEBORO MA	02703

Table 6-3. Replacable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A1	03730-00001	2	1	APC AMPLIFIER ASSEMBLY	28000	03730-00001
A1C1	0100-1915	9	2	CAPACITOR-FXD 7.5UF +-20% 20VDC TA NPOL	56289	1510755X0020R2
A1C2	0100-0300	9	2	CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C3	0100-0200	8	1	CAPACITOR-FXD 0.001UF +-5% 100VDC TA	72136	0115F001J0300V1CR
A1C4	0100-0300	8	2	CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	28000	0100-0300
A1C5	0100-0300	3	2	CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C6	0100-0100	7	1	CAPACITOR-FXD 0.03UF +-10% 200VDC POLYE	28000	0100-0100
A1C7	0100-0300	5	2	CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	28000	0100-0300
A1C8	0100-0300	3	1	CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C9	0100-0300	9	1	CAPACITOR-FXD 0.01UF +-10% 200VDC POLYE	56289	292P47302
A1C10	0100-0300	5			28000	0100-0300
A1C11	0100-0300	6			28000	0100-0300
A1C12	0100-0300	5		CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C13	0100-0200	5	1	CAPACITOR-FXD 100UF +-10% 10VDC TA	28000	0407501A70K
A1C14	0100-0200	4	1	CAPACITOR-FXD 0.22UF +-20% 35VDC TA	28000	0100-0200
A1C15	0100-0300	3		CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C16	0100-1915	4		CAPACITOR-FXD 7.5UF +-20% 20VDC TA NPOL	56289	1510755X0020R2
A1C17	0100-0300	4	1	CAPACITOR-FXD 1000PF +-20% 100VDC CER	28000	0100-0300
A1C18	0100-0300	4	3	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	28000	0100-0300
A1C19	0100-0300	5	15	CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C20	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C21	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C22	0100-0300	4		CAPACITOR-FXD 2.2UF +-20% 35VDC TA	28000	0100-0300
A1C23	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C24	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C25	0100-0300	4		CAPACITOR-FXD 2.2UF +-20% 35VDC TA	28000	0100-0300
A1C26	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C27	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C28	0100-0300	5		CAPACITOR-FXD 0.1UF +-20% 50VDC CER	28000	0100-0300
A1C29	0100-0300	3		CAPACITOR-FXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-HP0-330J
A1C30	1902-0000	7	3	DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C31	1902-0000	5	21	DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C32	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C33	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C34	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C35	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C36	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C37	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C38	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C39	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C40	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C41	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C42	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C43	1902-0000	5	1	DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C44	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C45	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C46	1902-0000	4		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C47	1902-0000	4	2	DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C48	1902-0000	4		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C49	1902-0000	4		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C50	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C51	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C52	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C53	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C54	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C55	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C56	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C57	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C58	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C59	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C60	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C61	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C62	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C63	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C64	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C65	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C66	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C67	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C68	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C69	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C70	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C71	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C72	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C73	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C74	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C75	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C76	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C77	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C78	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C79	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C80	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C81	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C82	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C83	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C84	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C85	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C86	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C87	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C88	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C89	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C90	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C91	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C92	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C93	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C94	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C95	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C96	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C97	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C98	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C99	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C100	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C101	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C102	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C103	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C104	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C105	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C106	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C107	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C108	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C109	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C110	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C111	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C112	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C113	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C114	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C115	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C116	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C117	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C118	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C119	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C120	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C121	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C122	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C123	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C124	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C125	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C126	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C127	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C128	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C129	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C130	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C131	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C132	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C133	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C134	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C135	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C136	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C137	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C138	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C139	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C140	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C141	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C142	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C143	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C144	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000
A1C145	1902-0000	5		DIODE-SWITCHING 50V 50MA 0NS	28000	1902-0000</

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3730B MAINFRAME

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A1R6	0757-0417	0	1	RESISTOR 502 1% .125W F TC000-100	24546	C=1/A-T0=3424-F
A1R7	0757-0419	4	1	RESISTOR 0.01K 1% .125W F TC000-100	24546	C=1/A-T0=0411-F
A1R8	2100-3109	2	1	RESISTOR-TMR 2% 10K C BIDE-ADJ 17-TMR	02111	03P202
A1R9	0757-0260	2	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F
A1R10	0757-1694	9	2	RESISTOR 1.47K 1% .125W F TC000-100	24546	C=1/A-T0=1471-F
A1R11	0757-0444	1	2	RESISTOR 12.1K 1% .125W F TC000-100	24546	C=1/A-T0=1212-F
A1R12	0757-0445	6	10	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R13	0757-0260	3	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F
A1R14	0698-0443	2	1	RESISTOR 80.3K 1% .125W F TC000-25	24546	0698-0443
A1R15	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R16	0699-0026	1	1	RESISTOR 10.21K .25% .125W F TC000-50	24546	0699-0026
A1R17	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R18	0698-3160	8	2	RESISTOR 31.6K 1% .125W F TC000-100	24546	C=1/A-T0=3162-F
A1R19	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R20	0698-3130	2	1	RESISTOR 90.8K 1% .125W F TC000-50	19701	WFC1/A-T2=9081-F
A1R21	0698-3160	8	1	RESISTOR 31.6K 1% .125W F TC000-100	24546	C=1/A-T0=3162-F
A1R22	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R23	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R24	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R25	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R26	0757-0260	3	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F
A1R27	0698-3156	2	4	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R28	0757-0447	0	1	RESISTOR 121K 1% .125W F TC000-100	24546	C=1/A-T0=1213-F
A1R29	0757-0444	9	1	RESISTOR 90.8K 1% .125W F TC000-100	24546	C=1/A-T0=9082-F
A1R30	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R31	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R32	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R33	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R34	0698-3161	9	9	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R35	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R36	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R37	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R38	0698-3156	2	1	RESISTOR 10.7K 1% .125W F TC000-100	24546	C=1/A-T0=1072-F
A1R39	0698-3156	2	1	RESISTOR 10.7K 1% .125W F TC000-100	24546	C=1/A-T0=1072-F
A1R40	0698-3161	7	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R41	0698-0026	3	1	RESISTOR 025K 1% .125W F TC000-100	24546	0698-0026
A1R42	0757-0260	3	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F
A1R43	0757-0260	3	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F
A1R44	0698-3156	2	1	RESISTOR 10.7K 1% .125W F TC000-100	24546	C=1/A-T0=1072-F
A1R45	0757-0270	0	1	RESISTOR 3.16K 1% .125W F TC000-100	24546	C=1/A-T0=3161-F
A1R46	0698-1452	1	3	RESISTOR 147K 1% .125W F TC000-100	24546	C=1/A-T0=1473-F
A1R47	0698-1452	1	3	RESISTOR 147K 1% .125W F TC000-100	24546	C=1/A-T0=1473-F
A1R48	0757-0442	9	10	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R49	0757-0442	9	10	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R50	0757-0442	9	10	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R51	0757-0442	9	10	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R52	0757-0442	9	2	RESISTOR 75K 1% .125W F TC000-100	24546	C=1/A-T0=7502-F
A1R53	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R54	0698-3161	9	5	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R55	0698-3157	3	1	RESISTOR 17.0K 1% .125W F TC000-100	24546	C=1/A-T0=1702-F
A1R56	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R57	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R58	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R59	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R60	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R61	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R62	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R63	0698-3157	3	1	RESISTOR 17.0K 1% .125W F TC000-100	24546	C=1/A-T0=1702-F
A1R64	0698-3157	3	1	RESISTOR 17.0K 1% .125W F TC000-100	24546	C=1/A-T0=1702-F
A1R65	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R66	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R67	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R68	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R69	0698-3157	3	1	RESISTOR 17.0K 1% .125W F TC000-100	24546	C=1/A-T0=1702-F
A1R70	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R71	0698-3161	9	1	RESISTOR 30.3K 1% .125W F TC000-100	24546	C=1/A-T0=3032-F
A1R72	0698-1452	1	1	RESISTOR 147K 1% .125W F TC000-100	24546	C=1/A-T0=1473-F
A1R73	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R74	0698-3157	3	1	RESISTOR 17.0K 1% .125W F TC000-100	24546	C=1/A-T0=1702-F
A1R75	0757-0445	7	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R76	0757-0445	7	1	RESISTOR 31.1K 1% .125W F TC000-100	24546	C=1/A-T0=3112-F
A1R77	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R78	0757-0445	6	1	RESISTOR 100K 1% .125W F TC000-100	24546	C=1/A-T0=1003-F
A1R79	0757-0442	9	1	RESISTOR 10K 1% .125W F TC000-100	24546	C=1/A-T0=1002-F
A1R80	0757-0260	3	1	RESISTOR 1K 1% .125W F TC000-100	24546	C=1/A-T0=1001-F

See introduction to this section for ordering information
 *Indicates factory selected value

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C	D	Qty	Description	Mfr Code	Mfr Part Number
A1R01	0757-0442	3			RESISTOR 75K 1% .125W F TC000-100	24546	C0-1/8-T0-7502-F
A1R02	0757-0442	3			RESISTOR 10K 1% .125W F TC000-100	24546	C0-1/8-T0-1002-F
A1B1	3101-1341	3	1		SWITCH-GLIDE 8P0Y-4S	20480	3101-1341
A1U1	1026-0223	0	4		IC OP AMP GP TC-99	04713	U1-3014G
A1U2	1026-0223	0			IC OP AMP GP TC-99	04713	U1-3014G
A1U3	1026-0223	0			IC OP AMP GP TC-99	04713	U1-3014G
A1U4	1026-0223	0			IC OP AMP GP TC-99	04713	U1-3014G
A1U5	1026-0323	3	2		IC OP AMP GP QUAD 14-DIP-C	20480	1026-0323
A1U6	1026-0323	3			IC OP AMP GP QUAD 14-DIP-C	20480	1026-0323
A1U7	1026-0223	0			IC OP AMP GP TC-99	04713	U1-3014G
A1U8	1026-0223	0			IC OP AMP GP TC-99	04713	U1-3014G
A1U9	1026-0140	0	1		IC TIMER TTL MONO/ASTBL	04713	U1-455P1
A2	03730-00002	3	1		DISCRIMINATOR ASSEMBLY	20480	03730-00002
A2C1	0100-0576	5			CAPACITOR-FXD .1UF +-20% 50VDC CER	20480	0100-0576
A2C2	0100-0576	5			CAPACITOR-FXD .1UF +-20% 50VDC CER	20480	0100-0576
A2C3	0100-2019	5	5		CAPACITOR-FXD .47UF+-20% 35VDC TA	20480	0100-2019
A2C4	0100-2019	5			CAPACITOR-FXD .47UF+-20% 35VDC TA	20480	0100-2019
A2C5	0100-0443	3	1		CAPACITOR-FXD 33PF +-5% 200VDC CER 00-30	51042	200-200-AP0-270J
A2C6	0100-2250	2	1		CAPACITOR-FXD 9.1PF +-25% 500VDC CER	20480	0100-2250
A2C7	0100-2019	5			CAPACITOR-FXD .47UF+-20% 35VDC TA	20480	0100-2019
A2C8	0100-2017	1	1		CAPACITOR-FXD .47UF+-10% 35VDC TA	25048	0100-2017
A2C9	0100-2019	5			CAPACITOR-FXD .47UF+-20% 35VDC TA	20480	0100-2019
A2C10	0100-2019	5			CAPACITOR-FXD .47UF+-20% 35VDC TA	20480	0100-2019
A2C11	0100-0155	0	1		CAPACITOR-FXD 3300PF +-10% 200VDC POLYE	20480	0100-0155
A2C12	0100-0157	0	2		CAPACITOR-FXD 4700PF +-10% 200VDC POLYE	20480	0100-0157
A2C13	0100-0157	0			CAPACITOR-FXD 4700PF +-10% 200VDC POLYE	20480	0100-0157
A2C14	0100-0346	3			CAPACITOR-FXD 33PF +-5% 200VDC CER 00-30	51042	200-200-AP0-330J
A2C15	0100-0346	3			CAPACITOR-FXD 33PF +-5% 200VDC CER 00-30	51042	200-200-AP0-330J
A2C16	0100-3079	7	0		CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C17	0100-3079	7			CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C18	0100-3077	5	1		CAPACITOR-FXD 1000PF +-20% 200VDC CER	20480	0100-3077
A2C19	0100-0010	0	1		CAPACITOR-FXD .01UF+-20% 35VDC TA	20480	0100-0010
A2C20	0100-3079	7			CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C21	0100-3079	7			CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C22	0100-3079	7			CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C23	0100-3079	7			CAPACITOR-FXD .01UF +-20% 100VDC CER	20480	0100-3079
A2C24	1001-0044	5			DIODE-SWITCHING 50V 30mA 64S	20480	1001-0044
A2C25	1001-0044	5			DIODE-SWITCHING 50V 30mA 64S	20480	1001-0044
A2C26	1001-0044	5			DIODE-SWITCHING 50V 30mA 64S	20480	1001-0044
A2C27	1002-3071	0	1		DIODE-ZNR 4.22V 2% DO-35 P00-40	10480	1002-3071
A2C28	1002-0040	7			DIODE-ZNR 100V 0.2V 5% DO-7 P00-40	20480	1002-0040
A2C29	1001-0044	5			DIODE-SWITCHING 50V 30mA 64S	20480	1001-0044
A2J1	1250-0932	0	1		CONNECTOR-REF 8P-8HP M PC 75-0MM	20480	1250-0932
A2L1	9100-2257	0	1		INDUCTOR-REF-CM-VLO 420MH 10% .1050H,20LG	20480	9100-2257
A2L2	9100-2256	0	1		INDUCTOR-REF-CM-VLO 390MH 10% .1050H,20LG	20480	9100-2256
A2L3	9100-2248	0	1		INDUCTOR-REF-CM-VLO 120MH 10% .1050H,20LG	20480	9100-2248
A2L4	9100-1021	0	2		INDUCTOR-REF-CM-VLO 10UH 10% .1000H,105LG	20480	9100-1021
A2L5	9100-1021	0			INDUCTOR-REF-CM-VLO 10UH 10% .1000H,105LG	20480	9100-1021
A2L6	9100-1020	0	1		INDUCTOR-REF-CM-VLO 15UH 10% .1000H,105LG	20480	9100-1020
A2L7	9100-0210	0	2		INDUCTOR-REF-CM-VLO 100UH 5% .1000H,105LG	20480	9100-0210
A2L8	9100-0210	0			INDUCTOR-REF-CM-VLO 100UH 5% .1000H,105LG	20480	9100-0210
A2R1	1450-0345	0	2		TRANSISTOR NPN 2N5179 SI TO-92 P00-200MM	04713	2N5179
A2R2	1450-0345	0			TRANSISTOR NPN 2N5179 SI TO-92 P00-200MM	04713	2N5179
A2R3	1053-0075	0	1		TRANSISTOR-QUAL PNP P00-400MM	20480	1053-0075
A2R4	0698-3132	0	3		RESISTOR 20K 1% .125W F TC000-100	24546	C0-1/8-T0-2010-F
A2R5	0757-0410	7	7		RESISTOR 51K 1% .125W F TC000-100	24546	C0-1/8-T0-5110-F
A2R6	0757-0410	7			RESISTOR 51K 1% .125W F TC000-100	24546	C0-1/8-T0-5110-F
A2R7	0757-0240	3			RESISTOR 1K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R8	0757-0240	3			RESISTOR 1K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R9	0757-0240	3			RESISTOR 1K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R10	0698-0003	0	2		RESISTOR 1.0K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R11	0698-0003	0			RESISTOR 1.0K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R12	0757-0240	3			RESISTOR 1K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R13	0757-0240	3			RESISTOR 1K 1% .125W F TC000-100	24546	C0-1/8-T0-1001-F
A2R14	0698-3132	0			RESISTOR 20K 1% .125W F TC000-100	24546	C0-1/8-T0-2010-F
A2R15	0698-3132	0			RESISTOR 20K 1% .125W F TC000-100	24546	C0-1/8-T0-2010-F

See Introduction to this section for ordering information
 *Indicates factory selected value

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A2P16	0757-0816	7		RESISTOR 511 1% .125W F TC000-100	24546	CN-1/A-T0-5114-F
A2P17	0757-0199	3	1	RESISTOR 21.54 1% .125W F TC000-100	24546	CN-1/A-T0-2152-F
A2P18	0696-1441	4	2	RESISTOR 215 1% .125W F TC000-100	24546	CN-1/A-T0-2154-F
A2P19	0757-0379	1	1	RESISTOR 12.1 1% .125W F TC000-100	19781	MF4C1/A-T0-12-1-F
A2P20	0696-1435	0	1	RESISTOR 34.3 1% .125W F TC000-100	24546	CN-1/A-T0-3431-F
A2P21	0696-1442	0	2	RESISTOR 237 1% .125W F TC000-100	24546	CN-1/A-T0-2374-F
A2P22	0696-1442	0	2	RESISTOR 237 1% .125W F TC000-100	24546	CN-1/A-T0-2374-F
A2P23	0757-1094	0	1	RESISTOR 1.47K 1% .125W F TC000-100	24546	CN-1/A-T0-1471-F
A2P24	0757-0396	4	1	RESISTOR 75 1% .125W F TC000-100	24546	CN-1/A-T0-7540-F
A2P25	0696-1441	0	1	RESISTOR 215 1% .125W F TC000-100	24546	CN-1/A-T0-2154-F
A2P26	2100-3095	5	2	RESISTOR-TANH 200 10% C BIDE-ADJ 17-TAN	42111	43P201
A2P27	0006-3444	1	1	RESISTOR 422 1% .125W F TC000-100ST	24546	CN-1/A-T0-318K-F
A2P28	0757-0401	0	6	RESISTOR 100 1% .125W F TC000-100	24546	CN-1/A-T0-101-F
A2P29	0757-0410	7	1	RESISTOR 511 1% .125W F TC000-100	24546	CN-1/A-T0-5114-F
A2P30	0757-0410	7	1	RESISTOR 511 1% .125W F TC000-100	24546	CN-1/A-T0-5114-F
A2P31	0757-0410	7	1	RESISTOR 511 1% .125W F TC000-100	24546	CN-1/A-T0-5114-F
A2P32	0696-1442	0	1	RESISTOR 237 1% .125W F TC000-100	24546	CN-1/A-T0-2374-F
A2P33	0757-0442	0	1	RESISTOR 10K 1% .125W F TC000-100	24546	CN-1/A-T0-1002-F
A2P34	0757-0434	3	1	RESISTOR 5.11K 1% .125W F TC000-100	24546	CN-1/A-T0-5111-F
A2P35	0757-0442	0	1	RESISTOR 10K 1% .125W F TC000-100	24546	CN-1/A-T0-1002-F
A2U1	5081-7361	7	1	DISCRIMINATOR DRIVER	24480	5081-7361
A2U10	03730-20212	2	2	HEATSHINK-LOWER	24480	03730-20212
A2U1C	23747-23010	4	2	HEATSHINK-TOP	24480	23747-23010
A2U2	1420-0817	0	1	IC PP ECL 04M/3 DUAL	44713	MC10131P
A2U3	1420-1225	4	1	IC PP ECL 04M/3 DUAL	44713	MC10231P
A2U4	1420-0223	0	1	IC OP AMP GP T0-49	44713	MC1301AG
A2U5	1420-0223	0	1	IC OP AMP GP T0-49	44713	MC1301AG
A2U6	1420-0802	1	1	IC GATE ECL NOR QUAD 2-INP	44713	MC10102P
A2Z1	9170-0029	3	2	CORE-SHIELDING BEAD	24480	9170-0029
A2Z2	9170-0029	3	2	CORE-SHIELDING BEAD	24480	9170-0029
A3	03730-00003	4	1	-15V POWER SUPPLY ASSEMBLY	24480	03730-00003
A3C1	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A3C2	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A3C3	0180-1704	3	2	CAPACITOR-FXD 220UF+-10% 35VDC TA	56289	150D220X035A2
A3C4	0180-0576	5	1	CAPACITOR-FXD .10F+-20% 50VDC CER	24480	0180-0576
A3CR1	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A3CR2	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A3CR3	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A3CR4	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A3CR5	1902-0184	6	2	DIODE-ZNR 10.2V 5% 00-35 PDB,44	24480	1902-0184
A3CR6	1084-0066	3	4	THYRISTOR-SCR 2N4443 VRRM=400	04713	2N4443
A3F1	2110-0425	0	2	FUSE 2A 125V .25X.27	24480	2110-0425
A3G1	1453-0134	0	4	TRANSISTOR PNP 61 T0-18 P0310044	24480	1453-0134
A3H1	0757-0380	4	4	RESISTOR 10K 1% .125W F TC000-100	24546	CN-1/A-T0-1002-F
A3H2	0757-0399	4	4	RESISTOR 82.5 1% .125W F TC000-100	24546	CN-1/A-T0-8243-F
A3H3	0696-0684	0	6	RESISTOR 2.15K 1% .125W F TC000-100	24546	CN-1/A-T0-2151-F
A3H4	0757-0401	0	1	RESISTOR 100 1% .125W F TC000-100	24546	CN-1/A-T0-101-F
A4	03730-00004	5	1	+5V AND +15V POWER SUPPLY ASSEMBLY	24480	03730-00004
A4C1	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A4C2	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A4C3	0180-1704	3	2	CAPACITOR-FXD 220UF+-10% 35VDC TA	56289	150D220X035A2
A4C4	0180-0576	5	1	CAPACITOR-FXD .10F+-20% 50VDC CER	24480	0180-0576
A4C5	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A4C6	0180-0230	0	9	CAPACITOR-FXD 10F+-20% 50VDC TA	56289	150D103X050A2
A4C7	0180-0229	7	1	CAPACITOR-FXD 330UF+-10% 10VDC TA	56289	150D330X010B2
A4C8	0180-0576	5	1	CAPACITOR-FXD .10F+-20% 50VDC CER	24480	0180-0576
A4CR1	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A4CR2	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A4CR3	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A4CR4	1901-0692	0	8	DIODE-PWR RECT 200V 3A 200NS	04713	WR452
A4CR5	1902-0184	6	2	DIODE-ZNR 10.2V 5% 00-35 PDB,44	24480	1902-0184
A4CR6	1084-0066	3	4	THYRISTOR-SCR 2N4443 VRRM=400	04713	2N4443
A4CR7	1901-0638	3	1	DIODE-PWR BR05 100V 4A	04713	WD40700-2
A4CR8	1902-0041	0	1	DIODE-ZNR 5.11V 5% 00-35 PDB,44	24480	1902-0041
A4CR9	1084-0066	3	1	THYRISTOR-SCR 2N4443 VRRM=400	04713	2N4443
A4F1	2110-0425	0	1	FUSE 2A 125V .25X.27	24480	2110-0425
A4F2	2110-0424	0	1	FUSE .75A 125V .25X.27	24480	2110-0424

See introduction to this section for ordering information.
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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A401 A402	1853-0034 1853-0034	0 0		TRANSISTOR PNP 81 TO-18 P03360M TRANSISTOR PNP 81 TO-18 P03360M	28480 28480	1853-0034 1853-0034
A401 A402 A403 A404 A405	0757-0340 0757-0340 0690-0084 0757-0401 0757-0340	6 5 0 0 0		RESISTOR 10K 1% .25W F TC00+-100 RESISTOR 82.5 1% .125W F TC00+-100 RESISTOR 2.15K 1% .125W F TC00+-100 RESISTOR 100 1% .125W F TC00+-100 RESISTOR 10K 1% .25W F TC00+-100	24546 24546 24546 24546 24546	C5-1/4-T0-1002-F C4-1/8-T0-0285-F C4-1/8-T0-2151-F C4-1/8-T0-101-F C5-1/4-T0-1002-F
A406 A407 A408	0757-0340 0690-0084 0757-0401	5 0 0		RESISTOR 82.5 1% .125W F TC00+-100 RESISTOR 2.15K 1% .125W F TC00+-100 RESISTOR 100 1% .125W F TC00+-100	24546 24546 24546	C4-1/4-T0-0285-F C4-1/8-T0-2151-F C4-1/8-T0-101-F
A5	03730-00005	0	1	+20V POWER SUPPLY ASSEMBLY	28480	03730-00005
A5C1 A5C2 A5C3 A5C4 A5C5	0180-0230 0180-0230 0180-0227 0180-0230 0180-0230	0 0 7 0 0		CAPACITOR-PXD 10UF+-20% 50VDC TA CAPACITOR-PXD 10UF+-20% 50VDC TA CAPACITOR-PXD 2000PF +-5% 300VDC MICA CAPACITOR-PXD 10UF+-20% 50VDC TA CAPACITOR-PXD 22UF+-10% 15VDC TA	50209 50209 204-0 50209 50209	1500105X0050A2 1500105X0050A2 0180-0227 1500105X0050A2 1500226X001502
A5C6 A5C7 A5C8	0180-0570 0180-0570 0180-1010	5 5 3		CAPACITOR-PXD .10UF +-20% 50VDC CER CAPACITOR-PXD .10UF +-20% 50VDC CER CAPACITOR-PXD 100UF+-75% 18V 50VDC AL	28480 28480 50209	0180-0570 0180-0570 30D1076050002
A5C9 A5C10 A5C11 A5C12 A5C13 A5C14	1900-0096 1901-0044 1900-0080 1902-3246 1900-0080	7 5 7 7 3		DIODE-PN 8VDC 200V 2A DIODE-SWITCHING 50V 50mA 40% DIODE-ZNR 14027 0.2V 32 00-7 P03.44 DIODE-ZNR 21.5V 3A 00-35 P03.44 TRANSISTOR-BCH 2N4433 YNR4400	04713 28480 24546 28480 04713	WDA202 1901-0044 14027 1902-3246 244443
A5P1 A5P2	2110-0046 2110-0046	1 1	2	FUSE .5A 125V .75X.27 FUSE .5A 125V .75X.27	28480 28480	2110-0046 2110-0046
A601	1853-0034	0		TRANSISTOR PNP 81 TO-18 P03360M	28480	1853-0034
A601 A602 A603 A604	0757-0340 0757-0410 0757-0430 0757-0401	6 7 5 0		RESISTOR 10K 1% .25W F TC00+-100 RESISTOR 511 1% .125W F TC00+-100 RESISTOR 5.11K 1% .125W F TC00+-100 RESISTOR 100 1% .125W F TC00+-100	24546 24546 24546 24546	C5-1/4-T0-1002-F C4-1/8-T0-511-F C4-1/8-T0-511-F C4-1/8-T0-101-F
A606 A607 A608 A609 A610	0690-0084 0757-0270 0690-0084 2100-3045 0757-0422	0 1 0 0 5		RESISTOR 2.15K 1% .125W F TC00+-100 RESISTOR 1.74K 1% .125W F TC00+-100 RESISTOR 2.15K 1% .125W F TC00+-100 RESISTOR-TMM 200 10% C 810E-ADJ 17-TM RESISTOR 100 1% .125W F TC00+-100	24546 24546 24546 02111 24546	C4-1/8-T0-2151-F C4-1/8-T0-1741-F C4-1/8-T0-2151-F 430201 C4-1/8-T0-0090-F
A611 A612 A613	0757-0340 0690-0084 0757-0401	5 0 0		RESISTOR 82.5 1% .125W F TC00+-100 RESISTOR 2.15K 1% .125W F TC00+-100 RESISTOR 100 1% .125W F TC00+-100	24546 24546 24546	C4-1/4-T0-0285-F C4-1/8-T0-2151-F C4-1/8-T0-101-F
A6U1	1828-0013	0	1	IC OP AMP LOW-NOISE TO-99	04445	0887-1CJ
A6				NOT ASSIGNED		
A7	03730-00007	0	1	IF AMPLIFIER (OPTION 010)	28480	03730-00007
A7C1 A7C2 A7C3 A7C4	0180-0386 0180-2035 0180-2035 0180-2035	3 0 0 0		CAPACITOR-PXD 33PF +-5% 200VDC CER +-30 CAPACITOR-PXD .01UF +-20% 50V 100VDC CER CAPACITOR-PXD .01UF +-20% 50V 100VDC CER CAPACITOR-PXD .01UF +-20% 50V 100VDC CER	51002 28480 28480 28480	200-2004-F0-330J 0180-2035 0180-2035 0180-2035
A7C5 A7C6 A7C7 A7C8 A7C9 A7C10 A7C11 A7C12 A7C13 A7C14	1901-0040 1902-0600 1250-0032 1250-0032 1901-0040 1902-0600 1250-0032 1250-0032 1901-0040 1902-0600 1250-0032 1250-0032	1 0 0 0 1 0 0 0 1 0 0 0 0		DIODE-SWITCHING 50V 50mA 200 00-35 DIODE ZENNER 8.2V CONNECTOR-PF 84-84P M PC 75-04M CONNECTOR-PF 84-84P M PC 75-04M TRANSISTOR PNP 81 P03360M FT0230M2 RESISTOR 1.64K 1% .125W F TC00+-100 RESISTOR-TMM 500 10% C TOP-ADJ 1-70% RESISTOR 10K 1% .125W F TC00+-100 RESISTOR 10K 1% .125W F TC00+-100 RESISTOR 10K 1% .125W F TC00+-100 RESISTOR 1.0K 1% .120W F TC-0+-100 AMPLIFIER HEAT-SINK-LOWER HEAT-SINK-TOP IC OP AMP GP TO-99	28480 28480 28480 28480 28480 28480 28480 28480 28480 28480 28480 28480 04713	1901-0040 1902-0600 1250-0032 1250-0032 1853-0034 C4-1/8-T0-0041-F 2100-0356 C4-1/8-T0-1002-F C4-1/8-T0-1002-F C4-1/8-T0-1002-F C4-1/8-T0-1002-F C4-1/8-T0-1101-F 5001-7300 03719-20212 03747-23010 4L4301A6
A8	03730-00008	0	1	SWITCH ASSEMBLY	28480	03730-00008
A80S1 A80S2	1900-0487 1900-0487	7 7		LED-LAMP LUMINT - 1MCD IF - 20MA-MAX BVR - 5V OPTION 010 (Refer to Main List)	28480 28480	1900-0487 1900-0487
A8U1 A8U2	1251-5864 1251-4386	8 6		CONNECTOR 7-PIN M METRIC POST TYPE CONNECTOR 16-PIN M METRIC POST TYPE	28480 28480	1251-5864 1251-4386
A8R1 A8R2	0690-3443 0690-3443	0 0	2	RESISTOR 287 1% .120W F TC-0+-100 RESISTOR 287 1% .120W F TC-0+-100	24546 24546	C4-1/8-T0-287-F C4-1/8-T0-287-F

See introduction to this section for ordering information
*Indicates factory selected value

3730B MAINFRAME

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
ABS1	03730-80246	8	1	SWITCH SLIDE ASSY	28480	03730-80246
ABS2	03730-80246	7	1	SWITCH SLIDE ASSY	28480	03730-80246
ABS3	03730-80246	7	1	OPTION 010 (Refer to Main List)		
				AS MISCELLANEOUS PARTS		
ABMP1	5040-0267	8	2	SWITCH GUIDE	28480	5040-0267
ABMP2	0381-1075	7	10	RIVET	28480	0381-1075
ABMP3	5020-3440	7	2	DETENT SPRING	28480	5020-3440
ABMP4	03782-40001	2	1	SPACER LED	28480	03782-40001
				CHASSIS MOUNTED PARTS (3730B)		
AT1	33355	1	1	OPTION 010 - ATTENUATOR ASSEMBLY	28480	33355
B1	3180-0209	4	1	FAN-TRAX 32 CFM 105-125V 50/60Hz	23930	8500C
C1	0180-2679	5	2	CAPACITOR-FXD 8800UF*75-105 50VDC AL	28480	0180-2679
C2	0180-0480	2	1	CAPACITOR-FXD 4500UF*75-105 25VDC AL	01803	500452025A42A
C3	0180-2679	5	1	CAPACITOR-FXD 8800UF*75-105 50VDC AL	28480	0180-2679
C4	0180-2325	8	1	CAPACITOR-FXD 1500UF*75-105 25VDC AL	04953	500152025A02A
C5	0180-0355	6	2	CAPACITOR-FXD .01UF *+10% 250VAC(R*H)	28480	0180-0355
C6	0180-0355	6	1	CAPACITOR-FXD .01UF *+10% 250VAC(R*H)	28480	0180-0355
AB062	1080-0487	7	1	LED-LAMP LUM/INT-1MCDIF-20MA-MAX EVR-5V	28480	5082-4584
OS3	2140-0244			LAMP, PART OF POWER ON/OFF SWITCH		
E1	0060-0448	6	1	LINE MODULE-FILTERED 6A MAX; 240V MAX	28480	0560-0448
E1A	4890-1093	1	1		28480	4890-1093
F1	2110-0300	7	1	FUSE .75A 250V TD 1.25X.25 UL	75*15	313,750
F1	2110-0300	4	1	FUSE 1.5A 250V TD 1.25X.25 UL	28480	2110-0300
				(1.5A 250V, FOR 110/120V OPERATION)		
J1				CONNECTOR-SHEEP OUT, SEE #2		
J2				CONNECTOR-SHEEP IN, SEE #7		
J3				OPTION 010, CONNECTOR, IF INPUT, SEE #4		
J4				OPTION 010, CONNECTOR, IF OUTPUT, SEE #6		
J5				NOT ASSIGNED		
J6				NOT ASSIGNED		
J7				NOT ASSIGNED		
J8				CONNECTOR- RF MODULE PLUG-IN, SEE #P17		
M1	1120-0095	6	1	METER (IF CENTRE FREQUENCY)	28480	1120-0095
R23	0698-3162	0	1	RESISTOR 40.4K 1% .125W	24548	C4-1/8-TO-4042F
AB*3	03730-80246	7	1	SWITCH SLIDER ASSY	28480	03730-AC246
B4				SEE RF MODULE		
B5				SWITCH-POWER OFF/ON, SEE #9		
T1	03730-00001	4	1	TRANSFORMER	28480	03730-00001
U1	1020-0100	5	1	IC V RGLTR TO-3	27014	L*3204-15
U2	1020-0101	1	1	IC V RGLTR TO-3	27014	L*3223
U3	1020-0203	0	1	IC 7815 V RGLTR TO-3	07203	7815*2C
U4	1020-0423	4	1	IC V RGLTR TO-3	27014	L*3174
A1A				RF MODULE SOCKET/A2J1		
B1	03730-00207	0	1	COAX CABLE ASSEMBLY-BLK/GRN	28480	03730-00207
B1B	1250-0931	4	1	CONNECTOR-COAX, CABLE MTS, BNC #A2J1	28480	1250-0931
B2	03730-10204	4	1	COAX CABLE ASBY-BLK/RED SHEEP OUT/RA1(6)	28480	03730-10204
B2A	1250-0610	9	1	CONN-COAX, PANEL MTS, BNC #SHEEP OUT	28480	1250-0610
B3	03730-00221	4	1	COAX CABLE ASBY-GRN RA1(6) APC SWITCH	28480	03730-00221
B4				IF INPUT/ATTENUATOR AT1		
B4A	03730-00201	4	1	COAX CABLE ASBY-BLK/YLL (OPTION 010)	28480	03730-00201
B4B	1250-0610	0	1	CONN-COAX, PANEL MTS, BNC #IF INPUT	28480	1250-0610
B4C	1250-1631	7	1	CONN-COAX, CABLE MTS, BNC #A11 INPUT	28480	1250-1631
B5A				ATTENUATOR AT1/A7J5		
B5	03730-00206	9	1	COAX CABLE ASBY-BLK/GRN (OPTION 010)	28480	03730-00206
B5B	1250-1631	7	1	CONN-COAX, CABLE MTS, BNC #A11 OUTPUT	28480	1250-1631
B5C	1250-0931	0	1	CONN-COAX, CABLE MTS, BNC #A7J5	28480	1250-0931
B6				A7J6/IF OUTPUT		
B6A	03730-00202	5	1	COAX CABLE ASBY-BLK/BLU (OPTION 010)	28480	03730-00202
B6B	1250-0610	0	1	CONN-COAX, PANEL MTS, BNC #IF OUTPUT	28480	1250-0610
B6C	1250-0931	0	1	CONN-COAX, CABLE MTS, BNC #A7J6	28480	1250-0931
B7A				SHEEP IN/RF MODULE SOCKET		
B7	03730-00208	1	1	COAX CABLE ASBY-BLK-VIU	28480	03730-00208
B7B	1250-0610	0	1	CONN-COAX, PANEL MTS, BNC #SHEEP IN	28480	1250-0610
B8A				APC SWITCH/RF MODULE SOCKET		
B8	03730-00222	9	1	COAX CABLE ASBY-BLK-BLU	28480	03730-00222
B9	03730-00211	6	1	CABLE ASSEMBLY-POWER I/P MODULE/LINE IN.	28480	03730-00211
B9A	3101-1395	7	1	SWITCH-POWER ON/OFF	28480	3101-1395

See Introduction to this section for ordering information
 *Indicates factory self-ind value

3730B MAINFRAME

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C	D	Qty	Description	Mfr Code	Mfr Part Number
MISCELLANEOUS PARTS (3730B)							
MP1	03730-00225	6	1	1	FRONT PANEL SUPPORT	28480	03730-00225
MP2	03730-00224	6	1	1	FRONT PANEL	28480	03730-00224
MP2	03730-00226	7	1	1	MP2, OPTION 010	28480	03730-00226
MP6	5020-4175	7	1	1	TRIM-FRONT PANEL, TOP	28480	5020-4175
MP6	5020-4176	6	1	1	TRIM-FRONT PANEL, BOTTOM	28480	5020-4176
MP7	03730-00203	6	1	1	COVER-TOP	28480	03730-00203
MP8	03730-00212	7	1	1	COVER-BOTTOM	28480	03730-00212
MP9	5000-0767	9	5	5	FOOT	28480	5000-0767
MP10	1490-0030	6	1	1	TYLT STAND 3-IN-13.75-IN-DA-LS SST	28480	1490-0030
MP11	5000-0732	4	2	2	SIDE FRAME	28480	5000-0732
MP12	5000-0722	1	7	7	HANDLE ASSEMBLY	28480	5000-0722
MP13	5000-0737	6	2	2	RETAINER-HANDLE ASSEMBLY	28480	5000-0737
MP14	5000-0051	6	2	2	TRIM STRIP	28480	5000-0051
MP15	5000-0700	6	2	2	SIDE COVER-FRONT	28480	5000-0700
MP16	5000-0711	3	2	2	SIDE COVER-REAR	28480	5000-0711
MP17	03730-00206	3	1	1	MODULE HOUSING WITH CONNECTOR JA	28480	03730-00206
MP18	03730-00207	4	1	1	CENTRE SUPPORT	28480	03730-00207
MP19	03730-00214	4	1	1	PCB SUPPORT(A1, A2) AND DIVISION	28480	03730-00214
MP20	03730-00211	6	1	1	PCB SUPPORT(A3, A4, A5), FAN MOUNTED	28480	03730-00211
MP21	03730-00219	6	1	1	REAR PANEL	28480	03730-00219
MP22	5001-0235	2	1	1	TRANSFORMER COVER	28480	5001-0235
MP23	03730-00200	3	1	1	FAN COVER	28480	03730-00200
MP24	03730-20221	4	1	1	HEATSINK (U1, U2, U3, U4)	28480	03730-20221
MP25	03730-14010	7	1	1	MOUNTING BRACKET, METER	28480	03730-14010
MP26	03730-00000	7	1	1	EXTENDER BOARD	28480	03730-00000
MP27	4000-0760	3	1	1	EXTRA-PC BD BLK POLYC .002-00-THICK	28480	4000-0760
MP28	5000-0760	4	1	1	KEITHLEY MOUNT, SHIM (1/2 IN) GRAY	28480	5000-0760

See introduction to this section for ordering information
*Indicates factory selected value

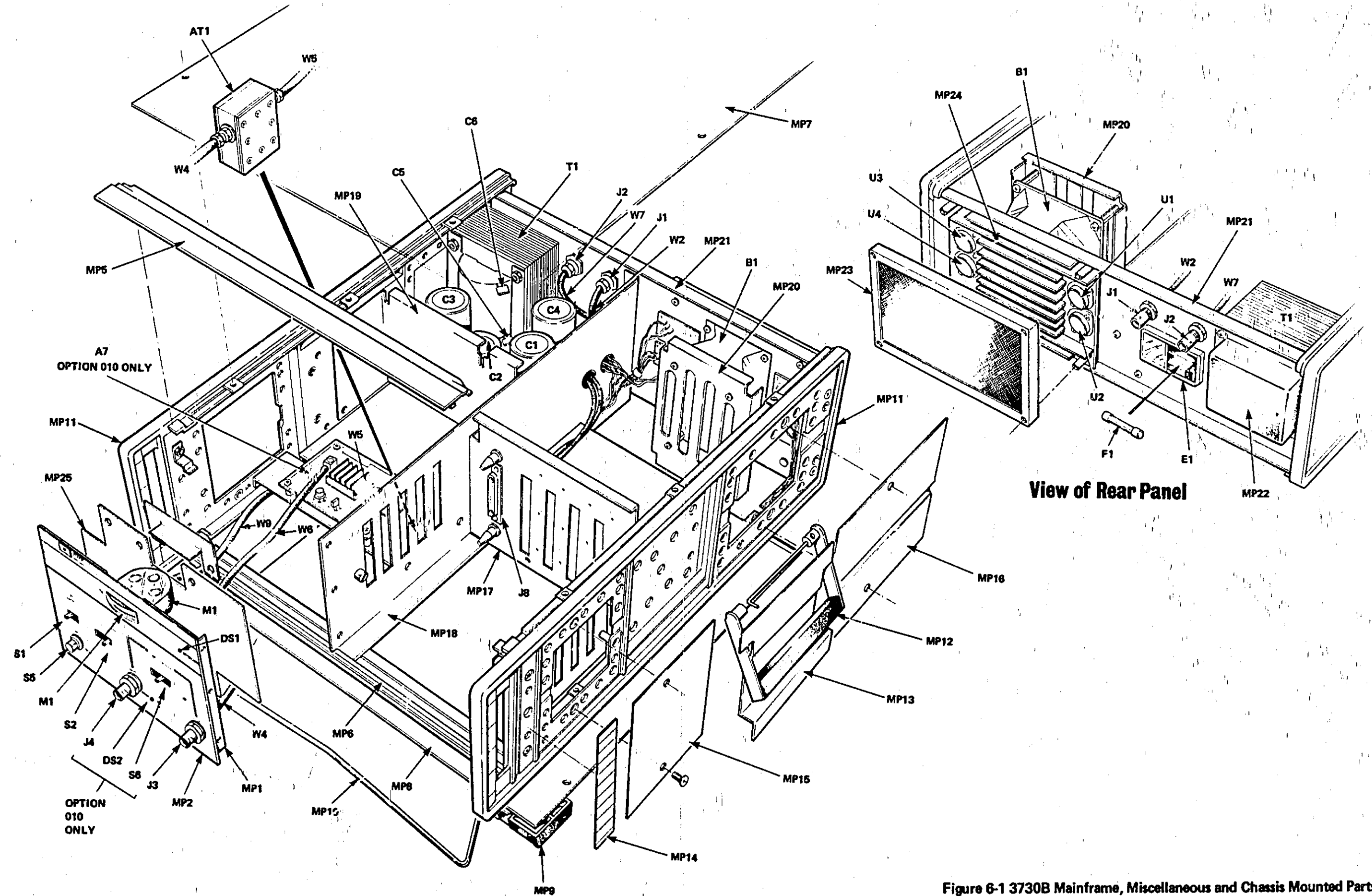


Figure 6-1 3730B Mainframe, Miscellaneous and Chassis Mounted Parts

3736B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11	03731-00011	0	1	3736B YIG DRIVER ASSEMBLY	20400	03731-00011
A11C1	0140-1515	0	1	CAPACITOR-FXD 7.5UF $\pm$ 20% 20VDC TA NPOL	50209	1510751X0020X2
A11C2	0140-1516	3	1	CAPACITOR-FXD 33PF $\pm$ 5% 200VDC CER 0-30	51042	200-200-HP-330J
A11C3	0140-1576	5	1	CAPACITOR-FXD .1UF $\pm$ 20% 50VDC CER	20400	0140-0576
A11C4	0100-0576	5	1	CAPACITOR-FXD .1UF $\pm$ 20% 50VDC CER	20400	0100-0576
A11C5	0100-0576	5	1	CAPACITOR-FXD 33PF $\pm$ 5% 200VDC CER 0-30	51042	200-200-HP-330J
A11C6	0140-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0140-2810
A11C7	0100-3079	7	4	CAPACITOR-FXD .1UF $\pm$ 20% 100VDC CER	20400	0100-3079
A11C8	0140-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0140-2810
A11C9	0100-3079	7	4	CAPACITOR-FXD .1UF $\pm$ 20% 100VDC CER	20400	0100-3079
A11C10	0140-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0140-2810
A11C11	0100-3079	7	4	CAPACITOR-FXD .1UF $\pm$ 20% 100VDC CER	20400	0100-3079
A11C12	0100-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0100-2810
A11C13	0100-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0100-2810
A11C14	0100-3079	7	4	CAPACITOR-FXD .1UF $\pm$ 20% 100VDC CER	20400	0100-3079
A11C15	0140-2810	4	5	CAPACITOR-FXD 2.2UF $\pm$ 20% 35VDC TA	20400	0140-2810
A11C16	0100-3079	7	4	CAPACITOR-FXD .1UF $\pm$ 20% 100VDC CER	20400	0100-3079
A11C17	0100-0576	5	1	CAPACITOR-FXD .1UF $\pm$ 20% 50VDC CER	20400	0100-0576
A11C18	0100-1704	3	1	CAPACITOR-FXD 22UF $\pm$ 10% 35VDC TA	50209	1500220X015042
A11C19	1901-0732	4	1	DIODE-PWR RECT 1KV 1A	20400	1901-0732
A11C20	1902-0000	7	2	DIODE-2NR 1A027 6.2V 3% DO-7 PWR, 4W	20400	19027
A11C21	1902-0000	7	2	DIODE-2NR 1A027 6.2V 3% DO-7 PWR, 4W	20400	19027
A11C22	1902-1169	3	1	DIODE-2NR 1A 7V 3% DO-35 PWR, 4W	20400	1902-3169
A11C23	1904-0000	5	1	THYRISTOR-SCR 2A043 VPR4000	04713	2A043
A11C24	1901-0040	1	2	DIODE-SWITCHING 30V 50mA 2NR DO-35	20400	1901-0040
A11C25	1901-0044	5	1	DIODE-SWITCHING	20400	1901-0044
A11F1	2110-0049	2	2	FUSE .25A 250V .25X.27	20400	2110-0049
A11F2	2110-0049	2	2	FUSE .25A 250V .25X.27	20400	2110-0049
A11H1	0490-1202	7	1	RELAY	20400	0490-1202
A11J1	1453-0052	2	1	TRANSISTOR PNP 2N1700 ST TO-18 PWR, 10W	04713	2N1700
A11J2	1453-0054	0	1	TRANSISTOR PNP 2N1700 ST TO-18 PWR, 10W	20400	1453-0054
A11K1	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K2	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K3	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K4	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K5	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K6	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K7	0490-1202	7	1	RELAY	20400	0490-1202
A11K8	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K9	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K10	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K11	0490-1202	7	1	RELAY	20400	0490-1202
A11K12	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K13	0490-1202	7	1	RELAY	20400	0490-1202
A11K14	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K15	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TMR	20400	2100-3070
A11K16	0490-1202	7	1	RELAY	20400	0490-1202
A11K17	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K18	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K19	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K20	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K21	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K22	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K23	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K24	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K25	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K26	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K27	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K28	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K29	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K30	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K31	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K32	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K33	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11K34	0757-0042	4	0	RESISTOR 10K 1% .125W F TC00-100	20400	C0-1/8-T0-1002-F
A11L1	1250-0124	7	1	DIN-PROGRAMMING DUMPER .30 CONTACT	01500	A130-07561
A11U1	1020-0223	0	4	IC OP AMP GP TO-99	04713	LM101AC
A11U2	1020-0261	0	1	IC OP AMP LOW-NOISE TO-99	20400	1020-0261
A11U3	1020-0223	0	1	IC OP AMP GP TO-99	04713	LM101AC
A11U4	1020-0223	0	1	IC OP AMP GP TO-99	04713	LM101AC
				A11 MISCELLANEOUS PARTS		
				INSULATOR-1500V THERMO-FILM		
				CONNECTOR 15-PIN POST TYPE		

See introduction to this section for ordering information
 *Indicates factory selected value

3736B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C.D.	Qty	Description	Mfr Code	Mfr Part Number
A12	03736-60012	1	1	3736B IF AMPLIFIER ASSEMBLY	28480	03736-60012
A12C1	0121-0510	1	1	CAPACITOR-V TMR-POLY 1-5PF 50V PC-MTC	28480	0121-0510
A12C2	0100-2055	0	3	CAPACITOR-FXD .01UF +20% 10VDC CER	28480	0100-2055
A12C3	0100-2055	0	3	CAPACITOR-FXD .01UF +20% 10VDC CER	28480	0100-2055
A12C4	0100-2055	0	3	CAPACITOR-FXD .01UF +20% 10VDC CER	28480	0100-2055
A12C5	0100-0346	3	3	CAPACITOR-FXD 33PF +5% 20VDC CER H=30	51642	200-2000-00-33UJ
A12CR1	1901-0040	1	1	DIODE-SWITCHING 30V 50MA 2MS 00-35	28480	1901-0040
A12CR2	1902-0680	1	1	DIODE ZENNER 6.2V	28480	1902-0680
A12J1	1250-1255	1	1	CONNECTOR-HP 8V-M PC 35-0MM	28480	1250-1255
A12J1A	1250-0932	0	2	CONNECTOR-HP 8V-MPC M PC 35-0MM	28480	1250-0932
A12J1B	1250-0932	0	0	CONNECTOR-HP 8V-MPC M PC 35-0MM	28480	1250-0932
A12R1	1853-0030	2	1	TRANSISTOR PNP 81 P00310M FT-250-PM2	28480	1853-0030
A12R1	2100-3211	7	1	RESISTOR-TMR 1K 10% C TOP-ADJ 1-TMR	28480	2100-3211
A12R2	0048-1155	1	1	RESISTOR 0.004K 1% .125W F TC=0+-100	28480	C4-1/8-T0-0001-F
A12R3	2100-0554	5	1	RESISTOR-TMR 500 10% C TOP-ADJ 1-TMR	28480	2100-0554
A12R4	0757-0442	0	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	C4-1/8-T0-1002-F
A12R5	0757-0442	0	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	C4-1/8-T0-1002-F
A12R6	0757-0442	0	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	C4-1/8-T0-1002-F
A12R7	0757-0424	7	1	RESISTOR 1.00K 1% .125W F TC=0+-100	28480	C4-1/8-T0-1102-F
A12U1A	03739-20212	2	1	HEAT SINK-LOSER	28480	03739-20212
A12U1	5001-7550	2	1	IF AMPLIFIER	28480	5001-7550
A12U1B	03747-23010	0	1	HEAT SINK-TOP	28480	03747-23010
A12U2	1820-0223	0	1	IC OP AMP CP 10-99	04713	04713
A13	03736-60013	2	1	DISPLAY ASSEMBLY	28480	03736-60013
A13C1	0180-2814	0	1	CAPACITOR-FXD 22UF +-20% 10VDC TA	04200	19801146
A13C2	0180-2879	7	5	CAPACITOR-FXD .01UF +-20% 100VDC	04583	8121-N141-X7R-103M
A13C3	0180-2818	4	3	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	04200	19801150
A13C4	0180-3879	7	5	CAPACITOR-FXD .01UF +-20% 100VDC	04583	8121-N142-X7R-103M
A13C5	0180-2818	4	3	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	04200	19801150
A13C6	0180-3879	7	5	CAPACITOR-FXD .01UF +-20% 100VDC	04583	8121-N142-X7R-103M
A13C7	0180-2818	4	3	CAPACITOR-FXD 2.2UF +-20% 25VDC TA	04200	19801150
A13C8	0180-3879	7	5	CAPACITOR-FXD .01UF +-20% 100VDC	04583	8121-N141-X7R-103M
A13C9	0180-0676	5	3	CAPACITOR-FXD .01UF +-20% 50VDC CER	04482	20CN20C104MAN
A13C10	0180-3877	5	2	CAPACITOR-FXD 100PF +-20% 200VDC CER	04583	8121-13228-X7R-101M
A13C11	0180-3877	5	1	CAPACITOR-FXD 100PF +-20% 200VDC CER	04583	8121-13228-X7R-101M
A13C12	0180-0676	5	1	CAPACITOR-FXD .01UF +-20% 50VDC CER	04482	20CN20C104MAN
A13C13	0180-0676	5	1	CAPACITOR-FXD .01UF +-20% 50VDC CER	04482	20CN20C104MAN
A13C14	0180-3879	7	1	CAPACITOR-FXD .01UF +-20% 100VDC	04583	8121-N142-X7R-103M
A13C15	0180-0676	4	1	CAPACITOR-FXD .047UF +-20% 50VDC CER	04482	CW20C47M3
A13C16	0180-2453	1	1	CAPACITOR-FXD .22UF +-10% 80VDC POLYE	04200	192F22498
A13CR2	1902-0777	3	1	DIODE-ZNR 6.2V 5% DO-7 PD=.4W	02037	19825
A13CR3	1902-0961	5	1	DIODE-ZNR 5.1V 5% DO-35 PD=.4W	02037	2230036-9
A13OS1	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	5082-7810
A13OS2	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	5082-7810
A13OS3	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	5082-7810
A13OS4	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	5082-7810
A13OS5	1990-0487	7	1	LED-LAMP LUM-INT-1MCD IF=20MAX BVR=6V	28480	5082-4884
A13J1	1251-5864	8	1	CONNECTOR 7-PIN M METRIC POST TYPE	28480	1251-5864
A13J2	1251-4385	8	1	CONNECTOR 15-PIN M POST TYPE	28480	1251-4385
A13R1	0696-3443	0	3	RESISTOR 287 1% .125W F TC=0+-100	24546	C4-1/8-T0-287R-F
A13R2	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1331-F
A13R3	0757-0298	1	1	RESISTOR 9.09K 1% .125W F TC=0+-100	24546	C4-1/8-T0-9091-F
A13R4	0757-0428	1	1	RESISTOR 1.82K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1821-F
A13R5	0757-0317	7	1	RESISTOR 1.33K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1331-F
A13R6	0696-3443	0	1	RESISTOR 287 1% .125W F TC=0+-100 ST	24546	C4-1/8-T0-287R-F
A13R7	0757-0280	3	1	RESISTOR 1K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1001-F
A13R8	0757-0485	8	2	RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A13R9	0696-3453	2	1	RESISTOR 198K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1983-F
A13R10	0696-3157	3	1	RESISTOR 19.8K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1982-F
A13R11	0696-3168	2	1	RESISTOR 14.7K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1472-F
A13R12	0757-0442	0	1	RESISTOR 10K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1002-F
A13R13	0696-3443	0	1	RESISTOR 287 1% .125W F TC=0+-100	24546	C4-1/8-T0-287R-F
A13R14	0757-0485	8	1	RESISTOR 100K 1% .125W F TC=0+-100	24546	C4-1/8-T0-1003-F
A13R15	0696-3260	8	1	RESISTOR 484K 1% .125W F TC=0+-100	24546	C4-188-T0-4843-F
A13R16	2100-3103	6	2	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02111	43P103
A13R17	2100-3103	6	1	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02111	43P103
A13R18	2100-3181	6	2	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	43P203
A13R19	2100-3181	6	1	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	43P203

See introduction to this section for ordering information
 *Indicates factory selected value

3736B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A13S1	03780-70075	7	1	SLIDE ASSY	28480	03780-70075
A13S2	03780-60043	2	1	SLIDE ASSY	28480	03780-60043
A13U1	1828-0878	1	1	IC DVM		
A13U2	1828-0036	4	1	IC OP AMP LOW-DRIFT TO - 99 PKG	27014	LMC08AH
A13 MISCELLANEOUS PARTS						
A13MP1-4	1200-0426	1	4	SKT 14 PIN DIL	28480	1200-0426
A13MP2	1200-0854	7	1	SKT 40 PIN DIL	28480	1200-0854
A13MP6	03782-40001	2	1	SPACER LED	28480	03782-40001
A13MP7	5020-4184	8	4	SWITCH GUIDE	28480	5020-4184
A13MP8	0381-1075	7	8	RIVET	28480	0381-1075
A13MP9	5040-0377	8	2	SWITCH LEVER	28480	5040-0377
A13MP10	5020-3440	7	2	DETENT SPRING	28480	5020-3440
CHASSIS MOUNTED PARTS - 3736B						
AT1	8493A-0010	4	1	ATTENUATOR-RF INPUT, 100B	28480	8493A-0010
AT2	8493A-0003	5	1	ATTENUATOR-VIS/VISER, 30B, SELECT ON TEST	28480	8493A-0003
AT3	8493A-0006	6	1	ALTERNATIVE VALUE FOR AT2, 00B	28480	8493A-0006
E1	5086-7311	7	1		28480	5086-7311
E2	8955-0130	2	1		28480	8955-0130
E3				NOT ASSIGNED IN 3736B		
FL1	03739-00002	2	1	ABSORPTIVE FILTER	28480	03739-00002
J1				NOT ASSIGNED		
J2				NOT ASSIGNED		
J3				NOT ASSIGNED		
J4				NOT ASSIGNED		
J5	08640-00103	4	1	CONNECTOR-RF INPUT	28480	08640-00103
J6				CONNECTOR-RF OUTPUT, SEE #14		
P1				NOT ASSIGNED		
P2				CONNECTOR-MODULE/MAINFRAME, SEE MP46		
P3						
Q1A	0340-0765	4	1	INSULATOR-HEAT DARTON	28480	0340-0765
Q1	1850-0678	2	1	TRANSISTOR NPN 51 04HL P0050H	01205	1850-0678
Q2				NOT ASSIGNED IN 3736B		
R1	2100-3243	5	1	NEURISTON-VAR PREC W/CR 10-744 5K 50K	28480	2100-3243
U11	03736-00206	5	1	COAX CABLE ASSY-SEMI-RIGID, RF INPUT/AT1	28480	03736-00206
U11B	1250-1241	1	4	DOES NOT INCLUDE JS	28480	1250-1241
U11C	1250-1241	1	4	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1241
U11D	03736-00201	0	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	03736-00201
U12A	1250-1241	5	1	COAX CABLE ASSY-SEMI-RIGID, E1/AT2	28480	1250-1241
U12B	1250-1241	5	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1241
U12C	1250-1241	5	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1241
U13	03736-00202	1	1	COAX CABLE ASSY-RGN/DRN, FL1/AT3J33	28480	03736-00202
U13A	1250-1356	1	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1356
U13B	1250-1356	1	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1356
U13C	03736-00205	4	1	COAX CABLE ASSY-RGN/VEL, AT2J14/IF OUTPUT	28480	03736-00205
U13D	1250-1356	8	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1356
U13E	1250-1356	9	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-1356
U14	03736-00203	2	1	COAX CABLE ASSY-RGN/DRN, AT2J15/PP	28480	03736-00203
U14A	1250-0931	4	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-0931
U14B	1250-2017	5	1	CONN-COAX-CABLE MFG, SNA 0212J13	28480	1250-2017
W18	03736-00215	6	1	MAIN HARNESS	28480	03736-00215
W18A	1251-3054	4	1	CONN-0-PIN 021	28480	1251-3054
W18B	1251-0430	2	2	CONN-15-PIN 021	28480	1251-0430
W18C	1251-0430	2	2	CONN-15-PIN 021	28480	1251-0430
W17				NOT ASSIGNED IN 3736B		
W18				NOT ASSIGNED IN 3736B		
MISCELLANEOUS PARTS (3736B)						
MP27	03736-00217	2		FRONT SUB PANEL	28480	03736-00217
MP28	03736-00220	7		FRONT PANEL	28480	03736-00220
MP34	0370-1081	8	1	KNOB	28480	0370-1081
MP44	03736-00218	4	1	SIDEWALL RIGHT HAND	28480	03736-00218
MP45	03736-00218	3	1	SIDEWALL LEFT HAND	28480	03736-00218
MP46	03736-20202	1	1	BACK PANEL WITH PS	28480	03736-20202
MP47	03736-00207	3	1	TOP COVER	28480	03736-00207
MP48	03736-00208	2	1	BOTTOM COVER	28480	03736-00208
MP49	03736-00203	1	1	HANDLE/LATCH	28480	03736-00203
MP50	03736-20208	4	1	MTG BLK LH	28480	03736-20208
MP51	03736-20210	7	1	MTG BLK RH	28480	03736-20210

Note: RF Module, Miscellaneous and Chassis Mounted Parts are shown in Figure 6-2, Page 6-27.

See introduction to this section for ordering information
*Indicates factory selected value

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11	03737-00011	1	1	37375 YIG DRIVER ASSEMBLY	20400	03737-00011
A11C1	0100-0015	4	1	CAPACITOR-FXD 7.5UF +-20% 20VDC TA -40L	96289	15107551-00202
A11C2	0100-0016	3	7	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C3	0100-0017	5	4	CAPACITOR-FXD .1UF +-20% 50VDC CER	20400	0100-0017
A11C4	0100-0018	5	4	CAPACITOR-FXD .1UF +-20% 50VDC CER	20400	0100-0018
A11C5	0100-0018	3	3	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C6	0100-0019	1	1	CAPACITOR-FXD 22UF +-10% 35VDC TA	96289	15107551-00202
A11C7	0100-0020	1	1	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C8	0100-0020	3	1	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C9	0100-0020	4	1	CAPACITOR-FXD 2.2UF +-20% 15VDC TA	20400	0100-0020
A11C10	0100-0020	7	1	CAPACITOR-FXD .01UF +-20% 100VDC CER	20400	0100-0020
A11C11	0100-0020	4	1	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	20400	0100-0020
A11C12	0100-0020	3	1	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C13	0100-0020	3	1	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	20400	0100-0020
A11C14	0100-0020	5	1	CAPACITOR-FXD .1UF +-20% 50VDC CER	20400	0100-0020
A11C15	0100-0020	7	1	CAPACITOR-FXD .01UF +-20% 100VDC CER	20400	0100-0020
A11C16	0100-0020	4	1	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	20400	0100-0020
A11C17	0100-0020	3	1	CAPACITOR-FXD 33PF +-5% 20VDC CER 0+-30	51642	200-2000-000-330J
A11C18	0100-0020	3	1	CAPACITOR-FXD .01UF +-20% 100VDC CER	20400	0100-0020
A11C19	0100-0020	5	1	CAPACITOR-FXD .1UF +-20% 50VDC CER	20400	0100-0020
A11C20	0100-0020	7	1	CAPACITOR-FXD .01UF +-20% 100VDC CER	20400	0100-0020
A11C21	0100-0020	4	1	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	20400	0100-0020
A11C22	0100-0020	3	1	CAPACITOR-FXD .01UF +-20% 100VDC CER	20400	0100-0020
A11C23	0100-0020	3	1	CAPACITOR-FXD 2.2UF +-20% 35VDC TA	20400	0100-0020
A11C24	1901-0732	8	1	DIODE-PWR RECT 1A 1A	20400	1901-0732
A11C25	1901-0040	1	4	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C26	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C27	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C28	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C29	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C30	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C31	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C32	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C33	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C34	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C35	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C36	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C37	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C38	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C39	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C40	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C41	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C42	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C43	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C44	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C45	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C46	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C47	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C48	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C49	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C50	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C51	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C52	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C53	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C54	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C55	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C56	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C57	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C58	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C59	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C60	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C61	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C62	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C63	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C64	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C65	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C66	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C67	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C68	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C69	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C70	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C71	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C72	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C73	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C74	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C75	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C76	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C77	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C78	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C79	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C80	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C81	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C82	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C83	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C84	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C85	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C86	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C87	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C88	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C89	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C90	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C91	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C92	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C93	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C94	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C95	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C96	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C97	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C98	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C99	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C100	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C101	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C102	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C103	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C104	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C105	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C106	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C107	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C108	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C109	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C110	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C111	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C112	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C113	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C114	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C115	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C116	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C117	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C118	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C119	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C120	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C121	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C122	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C123	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C124	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C125	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C126	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C127	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C128	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C129	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C130	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C131	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C132	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C133	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C134	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C135	1901-0040	1	1	DIODE-SWITCHING 3A 50mA 240 DO-35	20400	1901-0040
A11C136	1901-0040	1				

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tion to this section for ordering information
actory selected value

Referenc. Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11988	0757-0340	4	1	RESISTOR 75 1% .125W F TC00+-100	24546	C4-1/8-T0-3500-F
A11989	0694-0044	0	4	RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11990	0757-0042	0	5	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11991	0694-0024	0	1	RESISTOR 2K 1% .125W F TC00+-25	24480	0694-0024
A11992	2100-0554	0	2	RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11993	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11994	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-2002-F
A11995	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11996	0757-0042	0	4	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-2002-F
A11997	0006-3440	0	6	RESISTOR 20.7K 1% .125W F TC00+-100	24546	C4-1/8-T0-2072-F
A11998	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0757-0001	1		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11991	0757-0001	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11992	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11993	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11994	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11995	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11996	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11997	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	7	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11999	0757-0042	0	3	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11990	0694-0044	0		RESISTOR 2.15K 1% .125W F TC00+-100	24546	C4-1/8-T0-2151-F
A11991	0757-0001	0		RESISTOR 5.11K 1% .125W F TC00+-100	24546	C4-1/8-T0-5111-F
A11992	0757-0001	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1011-F
A11993	0757-0280	3		RESISTOR 1K 1% .125W F TC00+-100	24546	C4-1/8-T0-1001-F
A11994	0757-0317	7		RESISTOR 1.33K 1% .125W F TC00+-100	24546	C4-1/8-T0-1331-F
A11995	0757-0042	0		RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11996	2100-0554	0		RESISTOR-TANH 20K 10% C TOP-ADJ 1-TNH	24480	2100-0554
A11997	0757-0042	0	1	RESISTOR 10K 1% .125W F TC00+-100	24546	C4-1/8-T0-1002-F
A11998	0757-0042					

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A13	03736-60013	2	1	DISPLAY ASSEMBLY	28480	03736-60013
A13C1	0180-2814	0	1	CAPACITOR-FXD 22UF + - 20% 10VDC TA	04200	19801148
A13C2	0180-3879	7	5	CAPACITOR-FXD .01UF + - 20% 100WVDC	04563	8121-N141-X7R-103M
A13C3	0180-2818	4	3	CAPACITOR-FXD 2.2UF + - 20% 35VDC TA	04200	19801150
A13C4	0180-3879	7	5	CAPACITOR-FXD .01UF + - 20% 100WVDC	04563	8121-N142-X7R-103M
A13C5	0180-2818	4	3	CAPACITOR-FXD 2.2UF + - 20% 35VDC TA	04200	19801150
A13C6	0180-3879	7	5	CAPACITOR-FXD .01UF + - 20% 100WVDC	04563	8121-N142-X7R-103M
A13C7	0180-2818	4	3	CAPACITOR-FXD 2.2UF + - 20% 25VDC TA	04200	19801150
A13C8	0180-3879	7	5	CAPACITOR-FXD .01UF + - 20% 100WVDC	04563	8121-N142-X7R-103M
A13C9	0180-0676	5	3	CAPACITOR-FXD .1UF + - 20% 50VDC CER	04492	2DCW20C104MAH
A13C10	0180-3877	5	2	CAPACITOR-FXD 100PF + - 20% 200V DC CER	04563	8121-13228-X7R-101M
A13C11	0180-3877	5	6	CAPACITOR-FXD 100PF + - 20% 200VDC CER	04563	8121-13228-X7R-101M
A13C12	0180-0676	5	3	CAPACITOR-FXD .1UF + - 20% 50VDC CER	04492	2DCN20C104ZAN
A13C13	0180-0676	5	3	CAPACITOR-FXD .1UF + - 20% 50VDC CER	04492	2DCN20C104MAN
A13C14	0180-3879	7	5	CAPACITOR-FXD .01UF + - 20% 100WVDC	04563	8121-N142-X7R-103M
A13C15	0180-0676	4	1	CAPACITOR-FXD .047UF + - 20% 50VDC CER	04492	CW20C473M3
A13C16	0180-2483	1	1	CAPACITOR-FXD .22UF + - 10% 80VDC POLYE	04200	192P22498
A13CR2	1902-0777	3	1	DIODE-ZNR 8.2V 5% DO-7 PD -.4W	02037	1N825
A13CR3	1902-0861	5	1	DIODE-ZNR 5.1V 5% DO-35 PD -.4W	02037	2Z30035-8
A13DS1	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR .3H	28480	5082-7810
A13DS2	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR .3H	28480	5082-7810
A13DS3	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR .3H	28480	5082-7810
A13DS4	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR .3H	28480	5082-7810
A13DS5	1990-0487	7	1	LED-LAMP LUM-INT - 1MCD IF - 20MAX BVR - 5V	28480	5082-4884
A13J1	1251-5864	8	1	CONNECTOR 7-PIN M METRIC POST TYPE	28480	1251-5864
A13J2	1251-4385	8	1	CONNECTOR 15-PIN M POST TYPE	28480	1251-4385
A13R1	0698-3443	0	3	RESISTOR 287 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 287R-F
A13R2	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1331-F
A13R3	0757-0298	1	1	RESISTOR 8.09K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 8091-F
A13R4	0757-0428	1	1	RESISTOR 1.82K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1821-F
A13R5	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1331-F
A13R6	0698-3443	0	3	RESISTOR 287 1% .125W F TC = 0 + - 100 ST	24546	C4 - 1/8 - TO - 287R-F
A13R7	0757-0280	3	1	RESISTOR 1K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1001-F
A13R8	0757-0465	6	2	RESISTOR 100K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1003-F
A13R9	0698-3443	2	1	RESISTOR 198K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1983-F
A13R10	0698-3157	3	1	RESISTOR 19.8K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1982-F
A13R11	0698-3156	2	1	RESISTOR 14.7K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1472 - F
A13R12	0757-0442	9	1	RESISTOR 10K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1002-F
A13R13	0698-3443	0	3	RESISTOR 287 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 287R-F
A13R14	0757-0465	6	2	RESISTOR 100K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 1003-F
A13R15	0698-3260	9	1	RESISTOR 464K 1% .125W F TC = 0 + - 100	24546	C4 - 1/8 - TO - 4643-F
A13R16	2100-3103	8	2	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02111	43P103
A13R17	2100-3104	8	2	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02111	43P103
A13R18	2100-3151	8	2	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	43P203
A13R19	2100-3181	8	2	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	43P203
A13S1	03780-70075	7	1	SLIDE ASSY	28480	03780-70075
A13S2	03780-60043	2	1	SLIDE ASSY	28480	03780-60043
A13U1	1826-0876	1	1	IC DVM	27014	LM308AH
A13U2	1826-0035	4	1	IC OP AMP LOW-DRIFT TO - 99 PKG	27014	LM308AH
A13 MISCELLANEOUS PARTS						
A13MP1-4	1200-0426	1	4	SKT 14 PIN DIL	28480	1200-0426
A13MP5	1200-0684	7	1	SKT 40 PIN DIL	28480	1200-0684
A13MP6	03782-40001	2	1	SPACER LED	28480	03782-40001
A13MP7	5020-4184	8	4	SWITCH GUIDE	28480	5020-4184
A13MP8	0381-1075	7	8	RIVET	28480	0381-1075
A13MP9	5040-0377	5	2	SWITCH LEVER	28480	5040-0377
A13MP10	5020-3440	7	2	DETENT SPRING	28480	5020-3440

See introduction to this section for ordering information
 *Indicates factory selected value

AI702	0757-0445	6	RESISTOR 100K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI703	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI704	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI705	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI706	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI707	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI708	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI709	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI710	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI711	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI712	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI713	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI714	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI715	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI716	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI717	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI718	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI719	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI720	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI721	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI722	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI723	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI724	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI725	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI726	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI727	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI728	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI729	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F
AI730	0698-1157	3	RESISTOR 10.0K 1% .125W P TC000-100	24546	C4-1/P070-1502-F

See introduction to this section for ordering information
 *Indicates factory selected value

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Model 3730B

3737B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
CHASSIS MOUNTED PARTS - 3737B						
AT1	8493A-010	4	1	ATTENUATOR-RF INPUT, 10DB	28480	8493A-010
AT2A	8493A-003	5	1	ATTENUATOR-RF INPUT, 10DB, SELECT ON TEST	28480	8493A-003
AT2B						
E1	5086-7367	3	1		28480	5086-7367
E2	0955-0129	9	1		28480	0955-0129
E3	0955-0400	6	1		28480	0955-0400
FL1	03737-00002	2	1	ABSORPTIVE FILTER	28480	03737-00002
J1				NOT ASSIGNED		
J2				NOT ASSIGNED		
J3				NOT ASSIGNED		
J4				NOT ASSIGNED		
J5	08449-00103	6	1	CONNECTOR-RF INPUT	28480	08449-00103
J6				CONNECTOR-RF OUTPUT, SEE #16		
P1				NOT ASSIGNED		
P7				CONNECTOR-MODULE/HASHFRAME, SEE #40		
P8						
Q1	1854-0670	2	2	TRANSISTOR NPN SI DARL PNP50N	01295	Y1P110
Q2	0340-0765	6	2	INSULATOR-XSTR NATION	28480	0340-0765
Q3	1854-0670	2	2	TRANSISTOR NPN SI DARL PNP50N	01295	Y1P110
Q4	0340-0765	6	2	INSULATOR-XSTR NATION	28480	0340-0765
R1	2100-3203	3	1	RESISTOR-VAN PREC W/COP 10-TRM 5K 10%	28480	2100-3203
R11	03736-00206	9	1	COAX CABLE ASSY-BEMIPISID, RF INPUT/AT1	28480	03736-00206
R11A	1250-1201	3	2	DOES NOT INCLUDE JS	28480	1250-1201
R11B	1250-1201	3	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R11C	03737-00201	1	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	03737-00201
R12	03737-00201	1	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	03737-00201
R12C	1250-1202	6	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1202
R12D	1250-1202	6	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1202
R13	03736-00202	1	1	COAX CABLE ASSY-BEMIPISID, RF INPUT/AT1	28480	03736-00202
R13A	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R13B	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R13C	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R14	03736-00205	6	1	COAX CABLE ASSY-BEMIPISID, RF INPUT/AT1	28480	03736-00205
R14A	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R14B	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R14C	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R15	03736-00203	2	1	COAX CABLE ASSY-BEMIPISID, RF INPUT/AT1	28480	03736-00203
R15A	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R15B	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R15C	1250-1201	3	1	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R16	03737-00208	5	1	MAIN WAVELENGTH	28480	03737-00208
R16A	1250-1201	3	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R16B	1250-1201	3	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R17	03737-00203	3	1	MAIN WAVELENGTH	28480	03737-00203
R17A	1250-1201	3	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R17B	1250-1201	3	2	CONN-COAX-CABLE MTG, SMA, REAR OF JS	28480	1250-1201
R18	1250-1159	6	1	ADAPTER-SMA-SMA, E1/E3	28480	1250-1159
MP27	03736-00217	2	1	FRONT S/S PANEL	28480	03736-00217
MP28	03737-00212	6	1	FRONT PANEL	28480	03737-00212
MP34	0370-1081	6	1	KNOB	28480	0370-1081
MP44	03736-00210	4	1	SIDEWALL RIGHT HAND	28480	03736-00210
MP45	03736-00218	3	1	SIDEWALL LEFT HAND	28480	03736-00218
MP46	03737-00202	6	1	BACK PANEL-MITM PA	28480	03737-00202
MP47	03737-00207	3	1	TOP COVER	28480	03737-00207
MP48	03737-00206	2	1	BOTTOM COVER	28480	03737-00206
MP49	03736-00203	6	1	HANDLE/LATCH	28480	03736-00203
MP50	03736-20208	4	1	MTG BLK LH	28480	03736-20208
MP51	03736-20210	7	1	MTG BLK RH	28480	03736-20210

Note: RIF Module, Miscellaneous and Chassis Mounted Parts are shown in Figure 6-2, Page 6-27.

See introduction to this section for ordering information
 *Indicates factory selected value

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A11	0373A-00011	2	1	37300 VIO DRIVER ASSEMBLY	20400	0373A-00011
A11C1	0100-1015	9	1	CAPACITOR-PXD 7.5UF+-20% 20VDC TA 4POL	50209	151075510020X2
A11C2	0100-0306	3	3	CAPACITOR-PXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-4P0-330J
A11C3	0100-0306	3	3	CAPACITOR-PXD 33PF +-5% 200VDC CER 0+-30	51042	200-200-4P0-330J
A11C4	0100-0570	5	3	CAPACITOR-PXD .1UF +-20% 50VDC CER	20400	0100-0570
A11C5	0100-0570	5	3	CAPACITOR-PXD .1UF +-20% 50VDC CER	20400	0100-0570
A11C6	0100-2010	4	3	CAPACITOR-PXD 2.2UF+-20% 35VDC TA	20400	0100-2010
A11C7	0100-3070	7	4	CAPACITOR-PXD .01UF +-20% 100VDC CER	20400	0100-3070
A11C8	0100-2010	4	4	CAPACITOR-PXD 2.2UF+-20% 35VDC TA	20400	0100-2010
A11C9	0100-2010	4	4	CAPACITOR-PXD 2.2UF+-20% 35VDC TA	20400	0100-2010
A11C10	0100-2010	4	4	CAPACITOR-PXD 2.2UF+-20% 35VDC TA	20400	0100-2010
A11C11	0100-3070	7	1	CAPACITOR-PXD .01UF +-20% 100VDC CER	20400	0100-3070
A11C12	0100-3070	7	1	CAPACITOR-PXD .01UF +-20% 100VDC CER	20400	0100-3070
A11C13	0100-3070	6	1	CAPACITOR-PXD 1000PF +-20% 100VDC CER	20400	0100-3070
A11C14	0100-0570	5	3	CAPACITOR-PXD .1UF +-20% 50VDC CER	20400	0100-0570
A11C15	0100-2010	4	4	CAPACITOR-PXD 2.2UF+-20% 35VDC TA	20400	0100-2010
A11C16	0100-3070	7	1	CAPACITOR-PXD .01UF +-20% 100VDC CER	20400	0100-3070
A11C17	0100-3070	3	1	CAPACITOR-PXD 220PF+-10% 35VDC TA	50209	15002200V035W2
A11C21	1001-0712	4	1	DIODE-PWR RECT 1KV 1A	20400	1001-0712
A11C22	1001-0040	7	1	DIODE-ZNR 1N427 6.2V 5% 00-7 P00.5W	20400	1001-0040
A11C23	1001-0040	4	1	DIODE-ZNR 1N427 6.2V 5% 00-7 P00.5W	04713	1001-0040
A11C24	1001-0040	3	1	TRANSISTOR-SCR 2N6443 VRRV0400	04713	2N6443
A11C25	1001-0040	1	1	DIODE-SWITCHING 30V 50MA 2N6 00-35	20400	1001-0040
A11C26	1001-0040	5	1	DIODE-SWITCHING	20400	1001-0040
A11F1	2110-0040	1	2	FUSE .5A 125V .25X.27	20400	2110-0040
A11F2	2110-0040	1	2	FUSE .5A 125V .25X.27	20400	2110-0040
A11K1	0490-1202	7	1	RELAY	20400	0490-1202
A11M1	1053-0034	0	1	TRANSISTOR PNP 81 TO-18 P00.500W	20400	1053-0034
A11N1	0757-0042	9	3	RESISTOR 10K 1% .125W F TC00+-100	20400	C0-1/8-T0-1002-F
A11N2	0757-0042	9	3	RESISTOR 10K 1% .125W F TC00+-100	20400	C0-1/8-T0-1002-F
A11N3	0757-0042	9	3	RESISTOR 10K 1% .125W F TC00+-100	20400	C0-1/8-T0-1002-F
A11N4	0757-0042	9	3	RESISTOR 10K 1% .125W F TC00+-100	20400	C0-1/8-T0-1002-F
A11N5	0757-0040	9	3	RESISTOR 100K 1% .125W F TC00+-100	20400	C0-1/8-T0-1103-F
A11N6	2100-3070	0	1	RESISTOR-TMR 500K 10% C TOP-ADJ 17-TM	20400	2100-3070
A11N7	0090-0020	3	1	RESISTOR 025K 1% .125W F TC00+-100	20400	0090-0020
A11N8	2100-3070	0	1	RESISTOR-TMR 200K 10% C TOP-ADJ 17-TM	32907	32907-1-200
A11N9	0090-0020	3	1	RESISTOR 20K 1% .125W F TC00+-100	20400	C0-1/8-T0-2013-F
A11N10	2100-3070	7	2	RESISTOR-TMR 5K 10% C TOP-ADJ 17-TM	32907	32907-1-502
A11N11	0090-0037	0	1	RESISTOR 11K 1% .125W F TC00+-10	20400	0090-0037
A11N12	2100-3070	7	1	RESISTOR-TMR 5K 10% C TOP-ADJ 17-TM	32907	32907-1-502
A11N13	0090-0030	9	1	RESISTOR 7.5K 1% .125W F TC00+-10	20400	0090-0030
A11N14	2100-3200	4	2	RESISTOR-TMR 10K 10% C TOP-ADJ 17-TM	32907	32907-1-103
A11N15	2100-3200	0	2	RESISTOR-TMR 10K 10% C TOP-ADJ 17-TM	32907	32907-1-103
A11N16	0090-0040	3	1	RESISTOR 17.5K 1% .125W F TC00+-10	20400	0090-0040
A11N17	0000-0000	2	1	RESISTOR 511K 1% .125W F TC00+-100	20400	0000-0000
A11N18	0090-0040	0	4	RESISTOR 2.15K 1% .125W F TC00+-10	20400	C0-1/8-T0-2151-F
A11N19	0090-0041	0	1	RESISTOR 2.15K 1% .125W F TC00+-10	20400	0090-0041
A11N20	0011-1900	0	1	RESISTOR 10 .1% 2.5W PM TC00+-10	20400	0011-1900
A11N21	0757-0317	7	1	RESISTOR 1.33K 1% .125W F TC00+-100	20400	C0-1/8-T0-1331-F
A11N22	0090-0041	0	1	RESISTOR 215 1% .125W F TC00+-100	20400	C0-1/8-T0-2151-F
A11N23	2100-0507	0	1	RESISTOR-TMR 2K 10% C TOP-ADJ 17-TM	20400	2100-0507
A11N24	0757-0270	0	1	RESISTOR 3.10K 1% .125W F TC00+-100	20400	C0-1/8-T0-3101-F
A11N25	0090-0254	7	1	RESISTOR 1.8 5% .5W CC TC00+-10	01121	1010G5
A11N26	0090-0003	4	1	RESISTOR 1.04K 1% .125W F TC00+-100	20400	C0-1/8-T0-1041-F
A11N27	0757-0100	5	1	RESISTOR 12.5 1% .125W F TC00+-100	20400	C0-1/8-T0-0251-F
A11N28	0090-0000	0	1	RESISTOR 2.15K 1% .125W F TC00+-100	20400	C0-1/8-T0-2151-F
A11N29	0757-0001	9	1	RESISTOR 100 1% .125W F TC00+-100	20400	C0-1/8-T0-1011-F
A11N30	0090-0010	0	1	RESISTOR 2.15K 1% .125W F TC00+-100	20400	C0-1/8-T0-2151-F
A11N31	0757-0002	9	1	RESISTOR 10K 1% .125W F TC00+-100	20400	C0-1/8-T0-1002-F
A11N32	0757-0200	3	1	RESISTOR 1K 1% .125W F TC00+-100	20400	C0-1/8-T0-1001-F
A11N33	0757-0100	4	1	RESISTOR 75 1% .125W F TC00+-100	20400	C0-1/8-T0-7510-F
A11N34	0090-0000	0	1	RESISTOR 2.15K 1% .125W F TC00+-100	20400	C0-1/8-T0-2151-F
A11U1	1020-0223	0	3	IC OP AMP GP TO-99	04713	LM301AC
A11U2	1020-0201	0	1	IC OP AMP LOW-NOISE TO-99	20400	1020-0201
A11U3	1020-0190	0	1	IC 723 V REG TO-100	04713	MC723C
A11U6	1020-0223	0	1	IC OP AMP GP TO-99	04713	LM301AC
				ALL MISCELLANEOUS PARTS		
	1251-0300	7	2	CONNECTOR 15-PIN M POST TYPE	20400	1251-0300

See introduction to this section for ordering information
*Indicates factory selected value

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A12	03738-00012	1	1	3738B IF AMPLIFIER ASSEMBLY	28480	03738-00012
A12C1	0121-0516	1	1	CAPACITOR-V TRVR-POLY 1-5PF 50V PC-476	28480	0121-0516
A12C2	0160-2055	1	1	CAPACITOR-FXD .01UF + -20% 100VDC TA	28480	0160-2055
A12C3	0160-2055	1	1	CAPACITOR-FXD .01UF + -20% 100VDC CER	28480	0160-2055
A12C4	0160-2055	1	1	CAPACITOR-FXD .01UF + -20% 100VDC CER	28480	0160-2055
A12C5	0160-2055	1	1	CAPACITOR-FXD .01UF + -20% 100VDC CER	28480	0160-2055
A12C6	0160-2055	1	1	CAPACITOR-FXD .01UF + -20% 100VDC CER	28480	0160-2055
A12C7	1901-0540	1	1	DIODE - SWITCHING	28480	1901-0540
A12C8	1902-0608	1	1	DIODE - ZNR 6.2V	28480	1902-0608
A12J1	1250-1255	1	1	CONNECTOR-RF 8-P M PC 50-OHM	28480	1250-1255
A12J14	1250-0932	1	2	CONNECTOR-RF 8-P M PC 75-OHM	28480	1250-0932
A12J15	1250-0932	1	2	CONNECTOR-RF 8-P M PC 75-OHM	28480	1250-0932
A12K1	2100-3211	1	1	RESISTOR-TRMR 1K 10% C TOP-47J 1-70W	28480	2100-3211
A12K2	0698-3155	1	1	RESISTOR 2.2K 1% .125W F TC=0+-100	28480	0698-3155
A12K3	0160-0554	1	1	RESISTOR-TRMR 50K 10% C TOP-40J 1-70W	28480	0160-0554
A12K4	0757-0442	1	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	0757-0442
A12K5	0757-0442	1	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	0757-0442
A12K6	0757-0442	1	1	RESISTOR 10K 1% .125W F TC=0+-100	28480	0757-0442
A12K7	0757-0424	1	1	RESISTOR 1.0K 1% .125W F TC=0+-100	28480	0757-0424
A12K1A	03738-00012	1	1	HEATSHNK-ONEN	28480	03738-00012
A12K1B	03738-00012	1	1	IF AMPLIFIER	28480	03738-00012
A12K1C	03738-00012	1	1	HEATSHNK-TOP	28480	03738-00012
A12K1D	03738-00012	1	1	IC OP AMP GP TO-99	28480	03738-00012
A13	03738-00013	2	1	DISPLAY ASSEMBLY	28480	03738-00013
A13C1	0160-2814	0	1	CAPACITOR-FXD 22UF + -20% 10VDC TA	04200	0160-2814
A13C2	0160-2879	7	6	CAPACITOR-FXD .01UF + -20% 100VDC TA	04563	0160-2879
A13C3	0160-2818	4	3	CAPACITOR-FXD 2.2UF + -20% 35VDC TA	04200	0160-2818
A13C4	0160-3879	7	5	CAPACITOR-FXD .01UF + -20% 100VDC TA	04563	0160-3879
A13C5	0160-2818	4	3	CAPACITOR-FXD 2.2UF + -20% 35VDC TA	04200	0160-2818
A13C6	0160-3879	7	5	CAPACITOR-FXD .01UF + -20% 100VDC TA	04563	0160-3879
A13C7	0160-2818	4	3	CAPACITOR-FXD 2.2UF + -20% 35VDC TA	04200	0160-2818
A13C8	0160-3879	7	5	CAPACITOR-FXD .01UF + -20% 100VDC TA	04563	0160-3879
A13C9	0160-0676	5	3	CAPACITOR-FXD .1UF + -20% 50VDC CER	04492	0160-0676
A13C10	0160-3877	5	2	CAPACITOR-FXD 100PF + -20% 200V DC CER	04563	0160-3877
A13C11	0160-3877	5	2	CAPACITOR-FXD 100PF + -20% 200VDC CER	04563	0160-3877
A13C12	0160-0676	5	3	CAPACITOR-FXD .1UF + -20% 50VDC CER	04492	0160-0676
A13C13	0160-0376	5	3	CAPACITOR-FXD .1UF + -20% 50VDC CER	04492	0160-0376
A13C14	0160-3879	7	5	CAPACITOR-FXD .01UF + -20% 100VDC TA	04563	0160-3879
A13C15	0160-0676	4	1	CAPACITOR-FXD .047UF + -20% 50VDC CER	04492	0160-0676
A13C16	0160-2483	1	1	CAPACITOR-FXD .22UF + -10% 80VDC POLYE	04200	0160-2483
A13C17	1902-0777	3	1	DIODE-ZNR 6.2V 5% DO-7 PD = .4W	02037	1902-0777
A13C18	1902-0861	5	1	DIODE-ZNR 5.1V 5% DO-35 PD = .4W	02037	1902-0861
A13D1	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	1990-0631
A13D2	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	1990-0631
A13D3	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	1990-0631
A13D4	1990-0631	2	4	DISPLAY-NUM-SEG 1-CHAR 3-H	28480	1990-0631
A13D5	1990-0487	7	1	LED-LAMP LUM-INT - IMCD IF = 20MA; BVR = 5V	28480	1990-0487
A13J1	1251-6864	8	1	CONNECTOR 7-PIN M METRIC POST TYPE	28480	1251-6864
A13J2	1251-4385	8	1	CONNECTOR 16-PIN M POST TYPE	28480	1251-4385
A13K1	0698-3443	0	3	RESISTOR 287 1% .125W F TC=0+-100	24548	0698-3443
A13K2	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC=0+-100	24548	0757-0317
A13K3	0757-0298	1	1	RESISTOR 9.09K 1% .125W F TC=0+-100	24548	0757-0298
A13K4	0757-0428	1	1	RESISTOR 1.82K 1% .125W F TC=0+-100	24548	0757-0428
A13K5	0757-0317	7	2	RESISTOR 1.33K 1% .125W F TC=0+-100	24548	0757-0317
A13K6	0698-3443	0	3	RESISTOR 287 1% .125W F TC=0+-100 ST	24548	0698-3443
A13K7	0757-0280	3	1	RESISTOR 1K 1% .125W F TC=0+-100	24548	0757-0280
A13K8	0757-0465	8	2	RESISTOR 100K 1% .125W F TC=0+-100	24548	0757-0465
A13K9	0698-3453	2	1	RESISTOR 196K 1% .125W F TC=0+-100	24548	0698-3453
A13K10	0698-3157	3	1	RESISTOR 18.8K 1% .125W F TC=0+-100	24548	0698-3157
A13K11	0698-3158	2	1	RESISTOR 14.7K 1% .125W F TC=0+-100	24548	0698-3158
A13K12	0757-0442	8	1	RESISTOR 10K 1% .125W F TC=0+-100	24548	0757-0442
A13K13	0698-3443	0	3	RESISTOR 287 1% .125W F TC=0+-100	24548	0698-3443
A13K14	0757-0465	8	2	RESISTOR 100K 1% .125W F TC=0+-100	24548	0757-0465
A13K15	0698-3280	9	1	RESISTOR 464K 1% .125W F TC=0+-100	24548	0698-3280
A13K16	2100-3103	5	2	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02113	2100-3103
A13K17	2100-3103	5	2	RESISTOR-VAR 10K 10% C SIDE-ADJ 17-TRN	02113	2100-3103
A13K18	2100-3161	5	2	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	2100-3161
A13K19	2100-3161	5	2	RESISTOR-VAR 20K 10% C SIDE-ADJ 17-TRN	02111	2100-3161

See introduction to this section for ordering information
 *Indicates factory selected value

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Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A13S1	03760-70075	7	1	SLIDE ASSY	26480	03760-70075
A13S2	03760-60043	2	1	SLIDE ASSY	26480	03760-60043
A13U1	1826-0876	1	1	IC DVM		
A13U2	1826-0035	4	1	IC OP AMP LOW-DRIFT TO - 09 PKG	27014	LM308AH
A13 MISCELLANEOUS PARTS						
A13MP1-4	1200-0426	1	4	SKT 14 PIN DIL	26480	1200-0426
A13MP5	1200-0654	7	1	SKT 40 PIN DIL	26480	1200-0654
A13MP6	03782-40001	2	1	SPACER LED	26460	03782-40001
A13MP7	5020-4184	8	4	SWITCH GUIDE	26480	5020-4184
A13MP8	0361-1075	7	8	RIVET	26480	0361-1075
A13MP9	5040-0377	5	2	SWITCH LEVER	26480	5040-0377
A13MP10	5020-3440	7	2	DETENT SPRING	26480	5020-3440
CHASSIS MOUNTED PARTS - 3738B						
AT1	8439A-010	1	1	ATTENUATOR-RF INPUT, 100W	26480	8439A-010
AT2	8439A-006	4	1	ALTERNATIVE VALUE FOR AT2, 50W	26480	8439A-006
AT2	8439A-003	5	1	ATTENUATOR-VIS/MIXER, 008, SELECT ON TEST	26480	8439A-003
E1	5046-7313	9	1	YIG OSCILLATOR	26480	5046-7313
E2	0955-0129	9	1	MIXER	26480	0955-0129
E3	0960-0499	7	1	ISOLATOR	26480	0960-0499
FL1	03739-60002	2	1	ABSORPTIVE FILTER	26480	03739-60002
J1				NOT ASSIGNED		
J2				NOT ASSIGNED		
J3				NOT ASSIGNED		
J4				NOT ASSIGNED		
J5	08640-60103	6	1	CONNECTOR-RF INPUT	26480	08640-60103
J6				CONNECTOR-TF OUTPUT, SEE -14		
P1-P7				NOT ASSIGNED		
P8				CONNECTOR-MODULE/MAINFRAME, SEE MP46		
Q1	1456-0670	2	2	TRANSISTOR NPN SI DARL PDS50	01295	T1P110
Q2	0360-0065	6	2	INSULATOR-XSTR KAPTON	26480	0360-0065
Q2	1456-0670	2	2	TRANSISTOR NPN SI DARL PDS50	01295	T1P110
Q2	0360-0065	6	2	INSULATOR-XSTR KAPTON	26480	0360-0065
R1	2100-3243	3	1	RESISTOR-VAR PREC 4/CP 10-TM 5% 1W	26480	2100-3243
DOES NOT INCLUDE JS						
R11	03736-00206	5	1	COAX CABLE ASSY-SEMI-RIGID, RF INPUT/AT1	26480	03736-00206
R11B	1250-1201	3	4	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1201
R11C	1250-1201	3	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1201
R12	03736-00201	2	1	COAX CABLE ASSY-SEMI-RIGID, 13/AT2	26480	03736-00201
R12A	1250-1201	3	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1201
R12B	1250-1201	3	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1201
R13	03736-00202	1	1	COAX CABLE ASSY-RF/CN, FL1/AT2, 13	26480	03736-00202
R13A	1250-1356	3	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1356
R13B	1250-1356	9	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1356
R14	03736-00205	4	1	COAX CABLE ASSY-RF/TEL, AT2/J14/IF OUTPUT	26480	03736-00205
R14A	1250-1503	4	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1503
R14B	1250-1504	9	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-1504
R15	03736-00203	2	1	COAX CABLE ASSY-RF/CN, AT2/J15/PA	26480	03736-00203
R15A	1250-0931	4	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1250-0931
R15B	1251-2017	15	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1251-2017
R16	00738-60200	4	1	MAIN HARNESS	26480	00738-60200
R16A	1251-1050	6	1	CONN-COAX-CABLE VTC, SMA MFG OF JS	26480	1251-1050
R16B	1251-0030	2	2	CONN-15-PIN PA11	26480	1251-0030
R16C	1251-0030	2	2	CONN-15-PIN PA11	26480	1251-0030
R17				NOT ASSIGNED IN 3738B		
R18	1250-1159	4	1	ADAPTER-SMA-SMA, E1/E3	26480	1250-1159

See Introduction to this section for ordering information
 *Indicates factory selected value

Table 6-3. Replaceable Parts

3738B

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
MISCELLANEOUS PARTS - 3738B						
MP27	03736-00217	2	1	FRONT SUB PANEL	28483	03736-00217
MP38	03736-00212	8	1	FRONT PANEL	28488	03736-00212
MP36	0370-1081	8	1	KNOB	28488	0370-1081
MP37	03736-30106	1	1	COUSLER	28488	03736-30106
MP38	03736-30092	4	1	STOP PLATE	28488	03736-30092
MP39	03736-30109	4	1	STOP BAR	28488	03736-30109
MP46	03736-00210	4	1	SIDEWALL RIGHT HAND	28488	03736-00210
MP45	03736-00218	3	1	SIDEWALL LEFT HAND	28488	03736-00218
MP46	03736-20202	7	1	BACK PANEL WITH PB	28488	03736-20202
MP47	03736-00207	3	1	TOP COVER	28488	03736-00207
MP43	03736-00206	2	1	BOTTOM COVER	28488	03736-00206
MP49	03736-30203	6	1	HANDLE/LATCH	28488	03736-30203
MP50	03736-20208	4	1	MTG BLK LH	28488	03736-20208
MP51	03736-20210	7	1	MTG BLK RH	28488	03736-20210

Note: RF Module, Miscellaneous and Chassis Mounted Parts are shown in Figure 6-2, Page 6-27.

See introduction to this section for ordering information
 *Indicates factory selected value

Table 6-3. Replaceable Parts

See introduction to this section for ordering information
*Indicates factory selected value

3739B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
A13S1	03780-70075	7	1	SLIDE ASSY	28480	03780-70075
A13S2	03780-60043	2	1	SLIDE ASSY	28480	03780-60043
A13U1	1826-0876	1	1	IC DVM		
A13U2	1826-0036	4	1	IC OP AMP LOW-DRIFT TO - 99 PKG	27014	LM308AH
A13 MISCELLANEOUS PARTS						
A13MP1-4	1200-0426	1	4	SKT 14 PIN DIL	28480	1200-0426
A13MP5	1200-0664	7	1	SKT 40 PIN DIL	28480	1200-0664
A13MP6	03782-40001	2	1	SPACER LED	28480	03782-40001
A13MP7	5020-4184	8	4	SWITCH GUIDE	28480	5020-4184
A13MP8	0361-1075	7	8	RIVET	28480	0361-1075
A13MP9	5040-0377	6	2	SWITCH LEVER	28480	5040-0377
A13MP10	6020-3440	7	2	DETENT SPRING	28480	6020-3440
CHASSIS MOUNTED PARTS - 3739B						
A71	8493A-0010	4	1	ATTENUATOR-RF INPUT, 100B	28480	8493A-0010
A72	8493A-0003	8	1	ATTENUATOR-VIS/MIXER, 30B, SELECT ON TEST	28480	8493A-0003
A72A	9483B-0004	9	1	ALTERNATIVE VALUE FOR A72, 60B	28480	9483B-0004
E1	0955-0083	4	1	VIS OSCILLATOR	28480	0955-0083
E2	0955-0120	8	1	MIXER	28480	0955-0120
E3	0955-0131	3	1	ISOLATOR	28480	0955-0131
FL1	03739-00002	2	1	ABSORPTIVE FILTER	28480	03739-00002
J1				NOT ASSIGNED		
J2				NOT ASSIGNED		
J3				NOT ASSIGNED		
J4				NOT ASSIGNED		
J5	00040-00103	6	1	CONNECTOR-RF INPUT	28480	00040-00103
J6				CONNECTOR-IF OUTPUT, SEE M14		
P1				NOT ASSIGNED		
P7				CONNECTOR-MODULE/MAINFRAME, SEE MP48		
P8						
Q1	1894-0076	2	1	TRANSISTOR NPN SI DARL P0854	01295	11P110
Q2	0340-0005	2	2	INSULATOR	28480	0340-0005
Q2	1894-0095	2	1	TRANSISTOR NPN SI P0854 500MHZ	01295	11P412
Q2	0340-0005	3	1	INSULATOR	28480	0340-0005
R1	2100-3283	3	1	RESISTOR-VAR PREC 4/CP 10-TKN 5K 102	28480	2100-3283
M11	03736-00206	5	1	COAX CABLE ASSY-SEMIRIGID, RF INPUT/A71 DOES NOT INCLUDE JS	28480	03736-00206
M11C	1250-1241	3	4	CONN-COAX-CABLE M16, SMA BREAK BY JS	28480	1250-1241
M11D	1250-1241	3	1	CONN-COAX-CABLE M16, SMA DATA INPUT	28480	1250-1241
M12	03739-00201	3	1	COAX CABLE ASSY-SEMIRIGID, E3/A72	28480	03739-00201
M12A	1250-1241	3	1	CONN-COAX-CABLE M16, SMA REF OUTPUT	28480	1250-1241
M12B	1250-1241	3	1	CONN-COAX-CABLE M16, SMA DATA INPUT	28480	1250-1241
M13	03736-00202	1	1	COAX CABLE ASSY-BRN/GRN, FL1/A12J13	28480	03736-00202
M13A	1250-1356	3	1	CONN-COAX-CABLE M16, SMA 0412J13	28480	1250-1356
M13B	1250-1671	9	1	CONN-COAX-CABLE M16, SMA 0413	28480	1250-1671
M14	03736-00205	4	1	COAX CABLE ASSY-BRN/YEL, A12J14 IF OUTPUT	28480	03736-00205
M14A	1250-1353	3	1	CONN-COAX-CABLE M16, SMA 0412J14	28480	1250-1353
M14B	1250-1560	9	1	CONN-COAX-CABLE M16, SMA 0413 IF OUTPUT	28480	1250-1560
M15	03736-00203	2	1	COAX CABLE ASSY-BRN/GRN, A12J15/P8	28480	03736-00203
M15A	1250-0431	9	1	CONN-COAX-CABLE M16, SMA 0412J15	28480	1250-0431
M15B	1251-2017	5	1	CONN-COAX-CABLE M16, SMA 0413	28480	1251-2017
M16	03736-00212	6	1	MAIN WIRELESS	28480	03736-00212
M16A	1251-0030	2	2	CONN-15-PIN DALL	28480	1251-0030
M16B	1251-0030	2	1	CONN-15-PIN DATA	28480	1251-0030
M17				NOT ASSIGNED IN 3739B		
M18	1250-1159	4	1	ADAPTER-SMA-SMA, E1/E3	28480	1250-1159

See introduction to this section for ordering information.
 *Indicates factory selected value

3739B

Table 6-3. Replaceable Parts

Reference Designation	HP Part Number	C D	Qty	Description	Mfr Code	Mfr Part Number
MISCELLANEOUS PARTS 3730B						
MP87	03736-00217	2	1	FRONT SUB PANEL	28480	03736-00202
MP88	03736-00226	5	1	FRONT PANEL	28480	03736-00226
MP89	0370-1081	6	1	KNOB-BASE	28487	0370-1081
MP90	03736-00210	4	1	SIDEWALL RIGHT HAND	28480	03736-00210
MP91	03736-00218	3		SIDEWALL-LEFT HAND	28480	03736-00218
MP92	03736-00202	7	1	BACK PANEL-WITH PS	28480	03736-00202
MP93	03736-00207	3	1	TOP COVER	28480	03736-00207
MP94	03736-00206	2	1	BOTTOM COVER	28480	03736-00206
MP95	03736-00203	4	1	HANDLE/LATCH	28480	03736-00203
MP96	03736-00209	2	4	MTG BLK LH	28480	03736-00209
MP97	03736-00210	5	7	MTG BLK RH	28480	03736-00210

See introduction to this section for ordering information
 *Indicates factory selected value

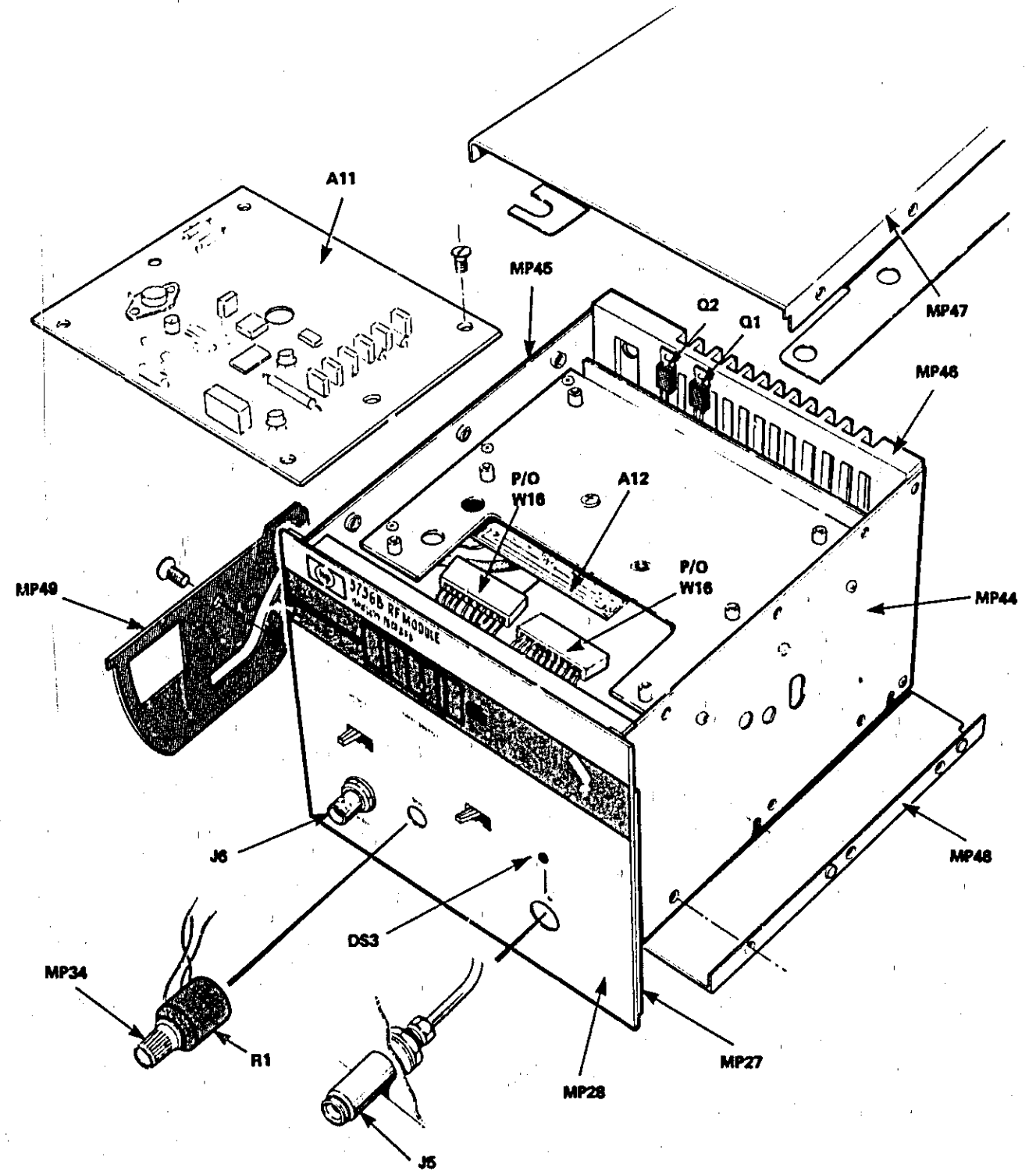
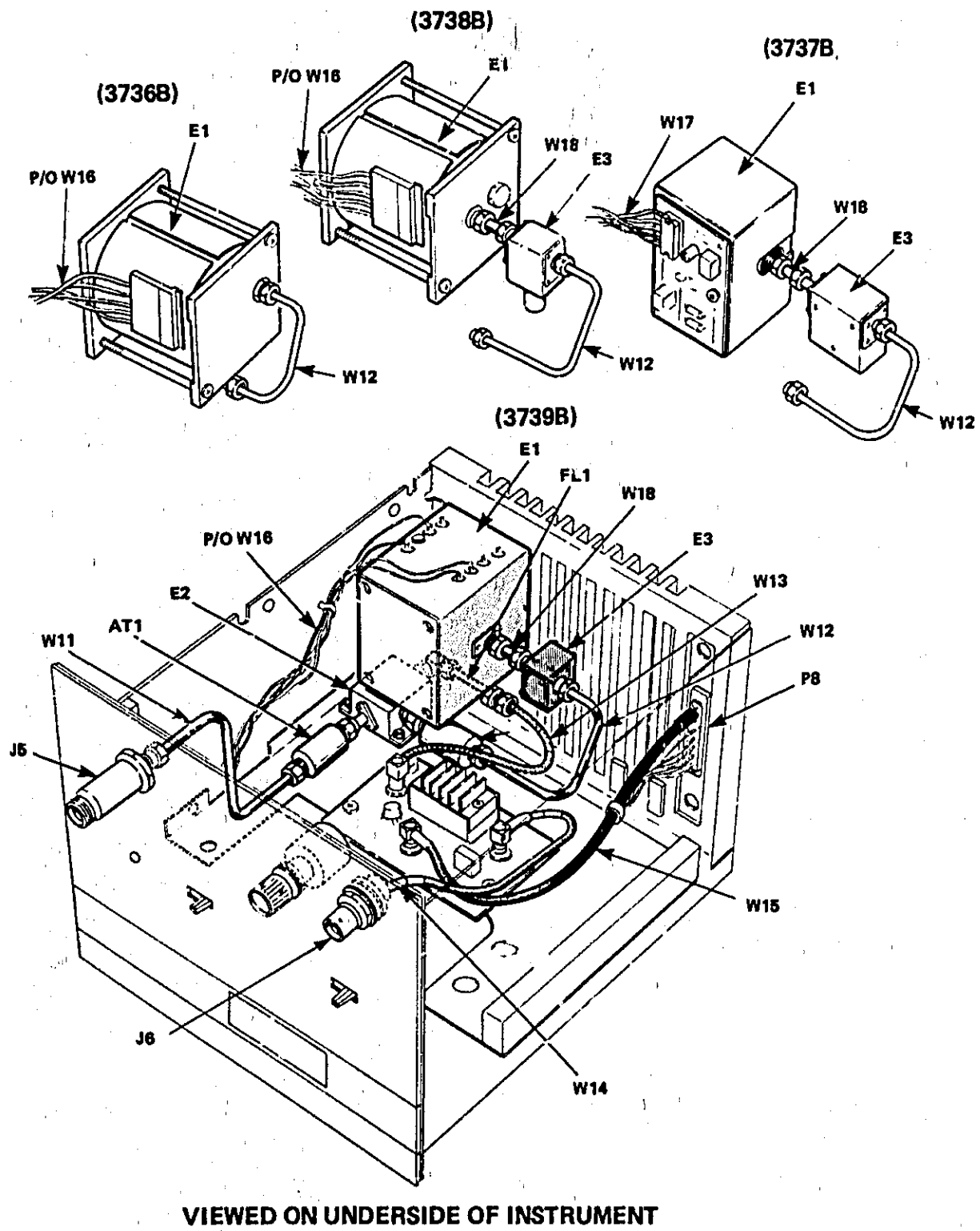


Figure 6-2 3736B, 3737B, 3738B and 3739B RF Module Plug-in, Miscellaneous and Chassis Mounted Parts

BACK DATING MANUAL CHANGES

SECTION VII

MANUAL CHANGES

7-1 INTRODUCTION

7-2 This section normally contains information for adapting this manual to instruments for which the manual content does not apply directly. Since this manual does apply

directly to instruments having Serial Numbers listed on the title page, no change information is given here. Refer to INSTRUMENTS COVERED BY MANUAL in Section I for additional important information about Serial Numbers coverage.

SERVICE INFORMATION

SECTION VIII

SERVICE

8-1 INTRODUCTION

8-2 This section contains information on the troubleshooting and repair of the Hewlett-Packard Model 3730B Down Converter mainframe and its associated plug-in RF Modules 3736B, 3737B, 3738B and 3739B. The section comprises introductory information, theory of operation, general troubleshooting information and service sheets. There are individual service sheets for each assembly in the 3730B Down Converter mainframe and one for each of the plug-in RF Modules. Each service sheet contains a circuit description, troubleshooting information, component locations and schematic diagrams.

8-3 SAFETY CONSIDERATIONS

8-4 This section contains warnings and cautions that must be followed for your protection and to avoid damage to the equipment.

WARNING

Maintenance described herein is performed with power supplied to the instrument, and protective covers removed. Such maintenance should be performed only by service-trained personnel who are aware of the hazards involved (for example, fire and electrical shock).

Where maintenance can be performed without power applied, the power should be removed.

Before any repair is completed, ensure that all safety features are intact and functioning, and that all necessary parts are connected to their protective grounding means.

8-5 THEORY OF OPERATION

8-6 A description of the overall instrument operation is given in the theory of operation section, Paragraph 8-9. The general service sheet contains a description, troubleshooting and an overall block diagram of the mainframe and plug-in. More detailed circuit descriptions are given in the appropriate service sheets.

8-7 TROUBLESHOOTING

8-8 The recommended method of fault isolation to one of the service sheets is to perform the OPERATIONAL VERIFICATION PROCEDURE, given in Paragraph 4-17, which contains initial troubleshooting information. General service sheet G1 troubleshooting procedure contains information to verify correct operation of the assemblies in the Down Converter.

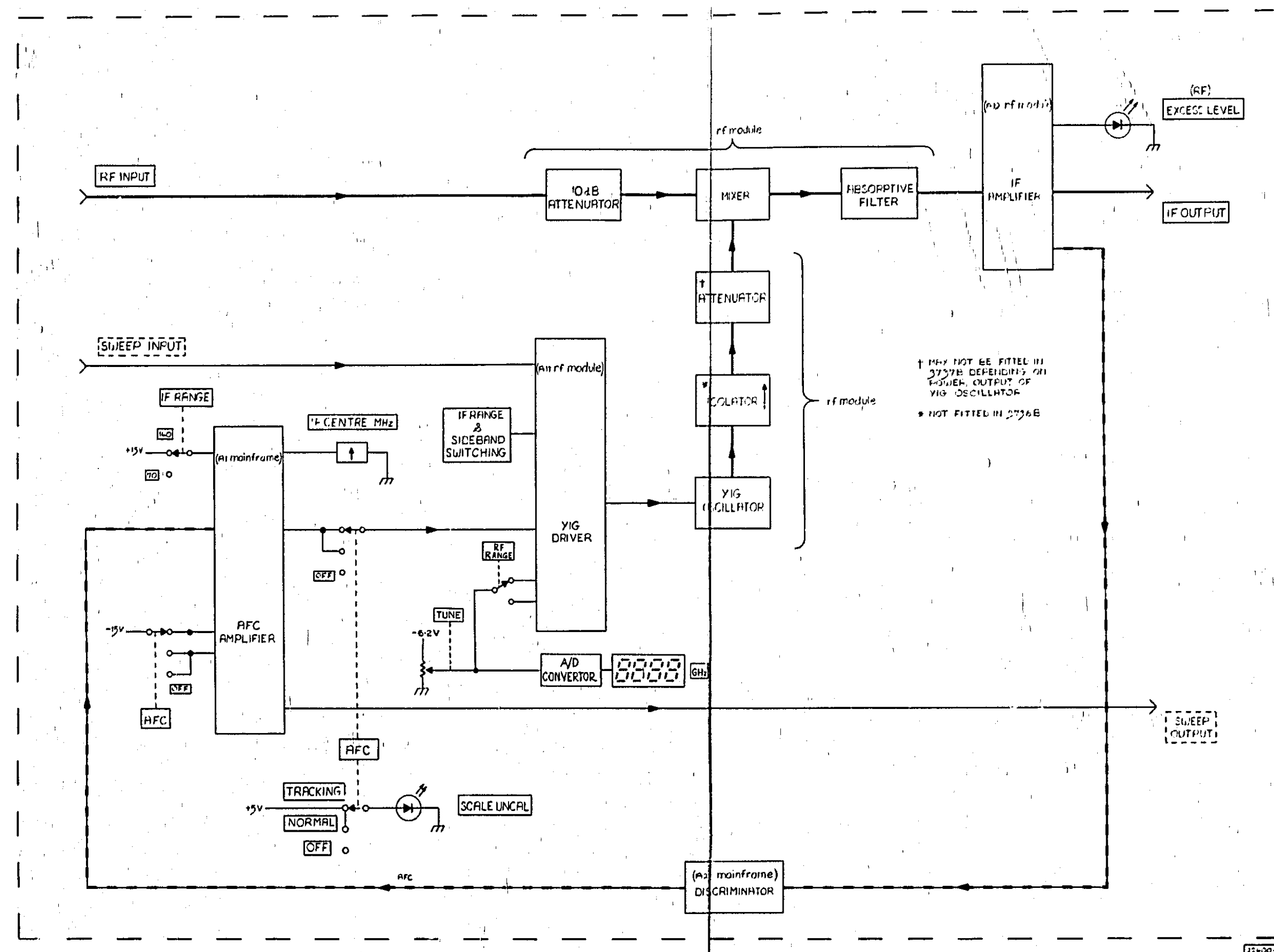
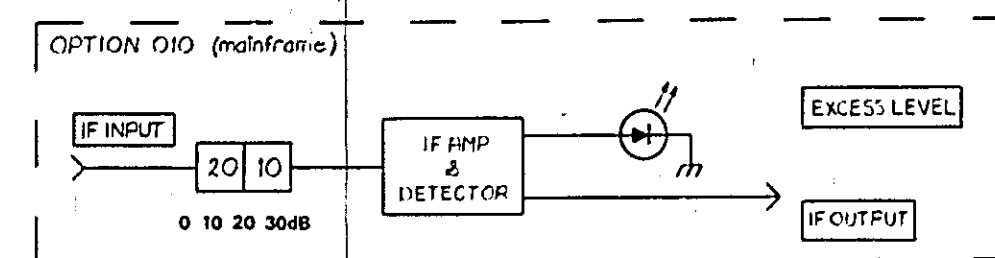


Figure 8-1 Simplified Block Diagram



Model 3730B

8-9 THEORY OF OPERATION

8-10 In the RF MODULE, the RF INPUT is mixed with the LOCAL OSCILLATOR (LO) signal from the YIG OSCILLATOR to produce the IF which is amplified to provide the front panel IF OUTPUT.

8-11 A 10dB ATTENUATOR pad connected between the RF INPUT and the MIXER improves the isolation and matching between the RF source and the MIXER. The 10dB ATTENUATOR may be replaced by an isolator which gives improved input sensitivity, over a limited frequency range (determined by the isolator). Isolator accessories are listed in Paragraph 1-24.

8-12 The YIG OSCILLATOR is connected to the MIXER via an ATTENUATOR and an ISOLATOR (except for the model 3736B in which the isolator is not fitted). The ATTENUATOR pad is selected to set the YIG OSCILLATOR drive to the mixer to approximately 10dBm. The attenuator pad is nominally 3dB or 6dB, though in certain cases where the YIG OSCILLATOR output power is lower no ATTENUATOR is fitted. The ISOLATOR is broadband with a typical insertion loss of less than 1dB and better than 18dB's of isolation. This prevents any reflections from the MIXER 'pulling' the YIG OSCILLATOR. The ISOLATOR is connected as close to the YIG OSCILLATOR as possible and the ATTENUATOR as close to the MIXER as possible to minimise the effect of reflections (the longest length of semi-rigid co-ax is therefore between the ISOLATOR and ATTENUATOR).

8-13 A low-pass ABSORPTIVE FILTER, connected between the MIXER output and the IF AMPLIFIER (assembly A12), absorbs any RF present at the MIXER output thus preventing reflections and allowing the IF component to pass to the IF AMPLIFIER.

8-14 The IF AMPLIFIER (assembly A12) contains a Thin Film IF Amplifier with a gain of 22dB. The amplifier has two outputs, one to the IF OUTPUT connector and one to the DISCRIMINATOR (assembly A2). The IF signal on assembly A12 is detected and compared with a reference voltage. The difference voltage is amplified to provide drive to the EXCESS LEVEL indicator.

8-15 The YIG OSCILLATOR frequency is determined by the current flowing through the field coil of the YIG. This current and hence the OSCILLATOR frequency is adjustable by means of the front panel TUNE control on the RF MODULE. The exact frequency of the YIG OSCILLATOR is determined by the summation of various voltages at the input to the YIG DRIVER assembly. These voltages are, an AFC voltage derived at the DISCRIMINATOR assembly A2, the pre-set RF RANGE voltage, off-set IF RANGE (70/140) voltage, and the off-set, SIDEBAND (LO > RF/LO < RF) voltage.

8-16 With the AFC switch set to the NORMAL position, the dc output from the DISCRIMINATOR assembly (A2) is applied to the YIG OSCILLATOR via the AFC AMPLIFIER (assembly A1) and the YIG DRIVER (assembly A11). If the RF input is swept, the output from the DISCRIMINATOR will contain a swept component plus any dc offset. The sweep component is filtered out in the AFC AMPLIFIER and the dc offset is applied to the YIG OSCILLATOR to compensate for any changes in frequency, due to drifting of either the YIG OSCILLATOR or the RF SOURCE.

8-17 With the AFC switch set to TRACKING the filtering on the AFC AMPLIFIER (assembly A1) is switched, allowing the sweep component to be applied to the YIG OSCILLATOR. The YIG OSCILLATOR will then track an incoming RF signal by up to $\pm 125\text{MHz}$.

8-18 The frequency scale calibration on the RF MODULE is valid only when the instrument is tuned with the AFC switch in the OFF position. When the YIG OSCILLATOR is under control of AFC (with the AFC switch set to NORMAL or TRACKING) the front panel SCALE UNCAL indicator is on.

8-19 On instruments fitted with OPTION 010 an additional IF AMPLIFIER provides an extra level of signal amplification (25dB). A step attenuator allows the gain of the amplifier to be varied from -5dB to +25dB in 10dB steps. The EXCESS LEVEL indicator on the option operates in the same way as the EXCESS LEVEL indicator on the RF MODULE.

GENERAL SERVICE SHEET G1

G1-1 INTRODUCTION

G1-2 The 3730B DOWN CONVERTER in conjunction with a suitable RF MODULE (plug-in) converts an RF signal, in the frequency range of 1.7GHz to 14.7GHz, to an IF signal.

G1-3 A front panel IF RANGE switch on the DOWN CONVERTER allows either a 70MHz or 140MHz IF centre frequency to be selected.

The AFC switch has three positions, OFF, NORMAL, and TRACKING. In the NORMAL position the AFC holds the IF centre frequency stable for RF carrier frequency variations of $\pm 20\text{MHz}$ on the 70MHz IF RANGE, and $\pm 40\text{MHz}$ on the 140MHz IF RANGE. The TRACKING facility allows the YIG oscillator in the RF module to be swept at the same rate as the incoming RF input. In this mode the IF sweep width is reduced to approximately 3% of the RF sweep. Use is made of this

facility, in certain applications, to give an extended sweep range when used with an hp Microwave Link Analyzer (MLA) system.

G1-4 On the RF MODULE the RF frequency coverage is in two ranges controlled by the setting of the RF RANGE switch. The sideband switch selects either LO > RF or LO < RF. The EXCESS LEVEL indicator comes on when the RF level exceeds +3dBm to indicate that the performance of the DOWN CONVERTER may be degraded.

G1-5 As some MLA systems may not be able to recover the small amount of residual sweep available in the tracking mode, the DOWN CONVERTER has a very high gain sweep signal which amplifies the very low level AFC sweep signal to provide a suitable drive level at the rear panel SWEEP OUTPUT connector. This sweep output is connected to the MLA external sweep input for tracking operation.

G1-6 The SWEEP INPUT provides a facility to sweep the YIG oscillator with an external sweep signal in the range 18 to 100Hz. This facility is normally used for testing the DOWN CONVERTER.

G1-7 An additional stage of IF amplification is available when OPTION 010 is fitted. The IF amplifier has a fixed gain of 25dB with a total attenuation of 30dB available in 10dB steps.

G1-8 TROUBLESHOOTING

G1-9 It is recommended that the OPERATIONAL VERIFICATION PROCEDURE Paragraph 4-17 is carried out prior to proceeding with this troubleshooting. The procedure below checks the operation of all of the assemblies in the DOWN CONVERTER using a suitable IF signal source in the frequency range 40 to 200MHz. The power output level of the signal source should be variable between -40dBm and -10dBm.

G1-10 (a) Remove the top and bottom covers from the DOWN CONVERTER.

(b) Remove the top and bottom covers from the RF MODULE and carefully re-insert the plug-in into the housing.

(c) Disconnect A12J1.

(d) Set the signal source as follows (a 3711A is suitable).

Power output level -22dBm
Frequency 70MHz
Mode CW (sweep OFF)

(e) Connect the signal source via a suitable cable (15539A) to A12J1 and set the 3730B IF RANGE switch to 70MHz.

G1-11 IF AMPLIFIER A12

(a) Carry out Paragraph G1-10.

(b) Check that the power output at the front panel IF OUTPUT is 0dBm $\pm$ 1dB.

(c) Check that the power output at A12J3 is +1dBm $\pm$ 2dB.

(d) Increase the power input and check that the Excess Level Indicator comes ON (usually between -14dBm and -20dBm). Replace A12J3.

G1-12 DISCRIMINATOR A2

(a) Carry out Paragraph G1-10.

(b) Set the POWER switch to OFF. Remove the AFC Assembly A1 to gain access to the discriminator assembly. Set the POWER switch ON.

(c) The voltage at A2TP3 should be $\approx$ +5V with the signal input frequency at 70MHz and the Down Converter IF RANGE switch at 70MHz. Switch the IF RANGE switch to 140MHz; the voltage at A2TP3 should halve. With the IF RANGE switch in the 140MHz position increase the input frequency to 190MHz, the voltage at A2TP3 should increase to $\approx$ +6.75V.

(d) Replace the A1 assembly.

G1-13 AFC AMPLIFIER A1

(a) Carry out Paragraph G1-10.

(b) Connect a DVM or dc coupled oscilloscope to A1TP3.

(c) The voltage reading should be 0V as the IF FREQUENCY is tuned towards 70MHz $\pm$ 0.01MHz, +0.5V as the frequency is increased beyond 70MHz and -0.5V as the frequency is decreased below 70MHz. The IF CENTRE meter should also vary with the IF FREQUENCY.

(d) If the instrument appears to be operating correctly except for the TRACKING mode of operation refer to the assembly service sheet troubleshooting for A1.

G1-14 YIG DRIVER ASSEMBLY

This assembly has variations depending on the type of RF MODULE fitted. See the appropriate RF MODULE service sheet (3736B, 3737B, 3738B, 3739B).

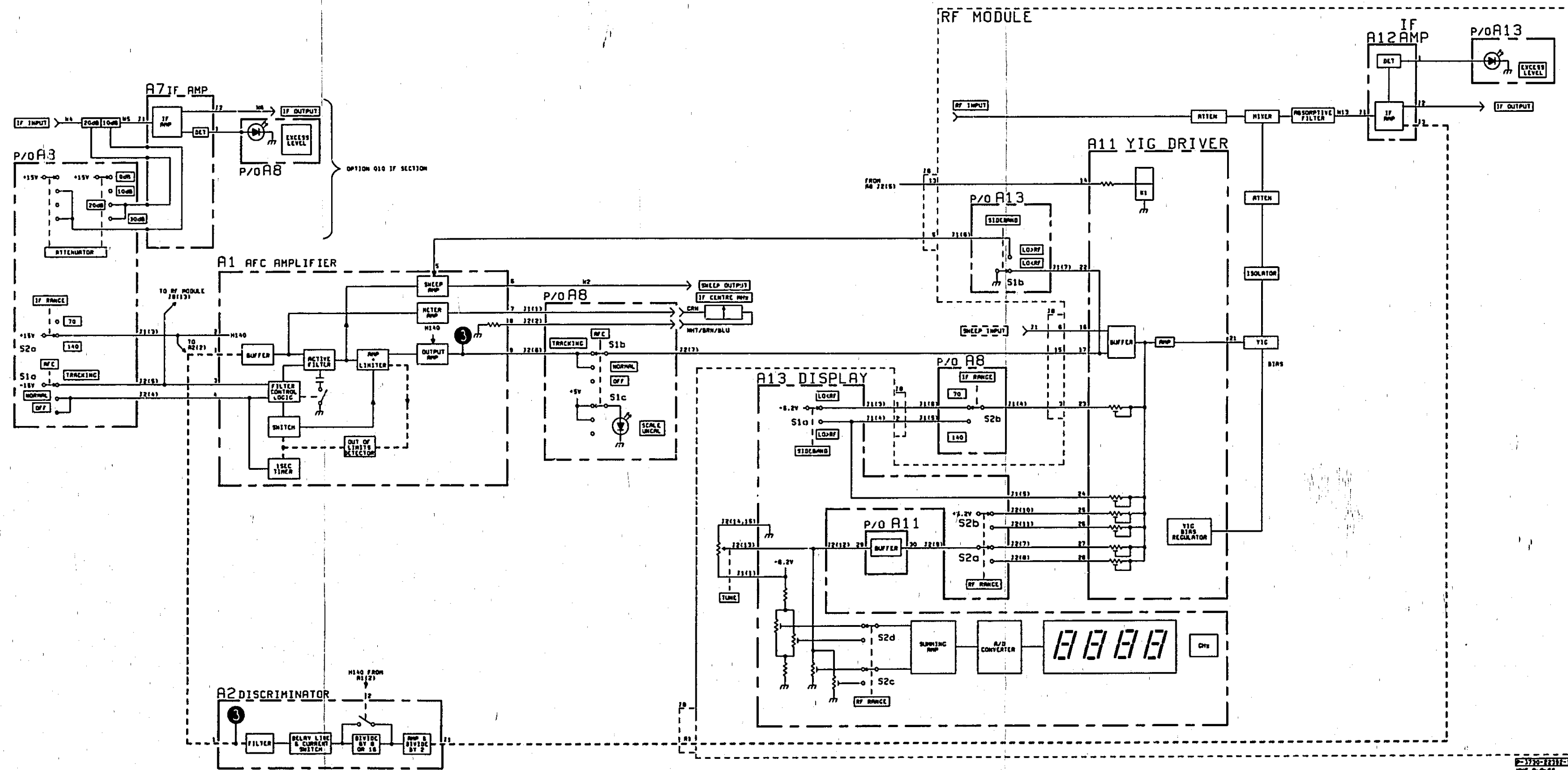


Figure G1-1 Overall Block Diagram

ASSEMBLY A1 - AFC AMPLIFIER

A1-1 INTRODUCTION

A1-2 The primary function of this assembly is to amplify the output of the DISCRIMINATOR (assembly A2) to provide the control voltage for the YIG OSCILLATOR (located in the RF MODULE) when the AFC switch is set to either the NORMAL or TRACKING positions. The assembly also provides drive to the IF CENTRE meter to give an indication of the IF FREQUENCY. A SWEEP AMPLIFIER provides a SWEEP OUTPUT, suitable for use with an hp Microwave Link Analyzer (MLA), when the AFC switch is in the TRACKING MODE (sweep output is NOT present in either the NORMAL or OFF modes).

A1-3 DESCRIPTION

A1-4 The input BUFFER U7 has a gain of 0.25. The offset control R8 is adjusted to give 0V at the OUTPUT AMPLIFIER, TP3, with the IF CENTRE set at 70MHz or 140MHz. (In the 140MHz mode the gain of the OUTPUT AMPLIFIER is switched, increasing the gain by a factor of 2.)

A1-5 The SWITCHED ACTIVE FILTER has two modes of operation, TRACKING and NORMAL, controlled by the front panel AFC switch. In the NORMAL mode U1, U3 and U4 operate as a low pass active filter removing all traces of IF sweep. In the TRACKING mode any recovered sweep from the DISCRIMINATOR (assembly A2) is applied to the YIG OSCILLATOR to make the YIG OSCILLATOR track the incoming RF signal. In the normal mode of operation the sweep is completely removed, and any dc offset from the DISCRIMINATOR (assembly A2) is applied to the YIG OSCILLATOR. Figure A1-2 shows a simplified drawing of the SWITCHED ACTIVE FILTER with the FETS replaced by switches. In the Figure A1-2 the switches are shown in the TRACKING mode with U1, U3, and U4 operating effectively as an active Low filter.

A1-6 The LIMITER ensures that the AFC voltage does not pull the YIG OSCILLATOR frequency beyond the recovery frequency of the AFC loop during the initial lock up as this would cause a false lock condition. With the AFC switch set to the NORMAL position limiting action occurs when the output of USA exceeds approximately +0.5V or -0.5V. At +0.5V CR19 cuts-off and the current is limited to the current through R56, CR20, any further increase in voltage at USA output has no effect. Similarly as the voltage decreases beyond -0.5V, CR21 cuts off and the current is limited to the current through R71, CR22. The zener diodes CR17, CR18 prevent USA saturating. With the AFC switch in the TRACKING position the LIMITER

range is extended by a factor of two. This is achieved by switching R70 in parallel with R71 and R55 in parallel with R56.

A1-7 A LIMITS DETECTOR formed by U6A and U6B detects when the sweep width exceeds 250MHz at 140MHz IF centre or 100MHz at 70MHz IF centre. When the AFC switch is in the TRACKING mode and the loop is not locked the voltage excursion at USA output is limited to $\pm 10.7V$, set by the zener diodes CR17 and CR18. However, when the voltage at USA output exceeds -5V, U6A output switches from approximately -14V to +14V, switching U6B output to -5V. If the voltage at the output of USA exceeds +5V, the current in CR11 R34 is large enough to switch U6B output to -5V. The output of U6B is clamped at -5V by CR13 until the sweep width voltage returns to within the normal sweep limits.

A1-8 The TIMER circuit is only operational when the AFC switch is set to TRACKING. In the NORMAL and OFF positions -15V is applied to Q10 to hold U9 Reset line low. In the TRACKING mode the TIMER switches at approximately a 1Hz rate. The SWITCH formed by Q8, Q9 grounds TP4 for approximately 500ms.

A1-9 The PULSE STRETCHING circuit operates in the TRACKING mode only. In the NORMAL and OFF positions of the AFC switch, -15V is applied to U8 pin 2 via CR15, holding the output of U8 high and the LIMITER SWITCHES cut off. In the TRACKING position of the AFC switch, if the output of the LIMITS DETECTOR pulses to -5V (see TRACKING LOOP ACTION), U8 output is switched high and at the same time, C14 is rapidly charged via R40, CR14. At the end of the pulse, C14 discharges slowly via R41. When C14 reaches the -1V threshold the stretched U8 output returns to its low state.

A1-10 In the TRACKING mode of operation a SWEEP AMPLIFIER amplifies the sweep to a level which is suitable to drive the X deflection of an hp Microwave Link Analyzer. With switch S1 open, U6D operates as a normal unity gain amplifier. With switch S1 closed, when the SIDEBAND switch is set to LO > RF, U6D pin 12 is grounded to give phase reversal. The switch S1 is factory preset to the ON position (closed). This ensures that the left hand side of the displayed sweep on the MLA corresponds to the lowest RF frequency irrespective of the position of the SIDEBAND switch.

A1-11 The METER AMPLIFIER amplifies any dc offset from the DISCRIMINATOR (assembly A2) to a suitable level to drive the meter. The dc output from the DIS-

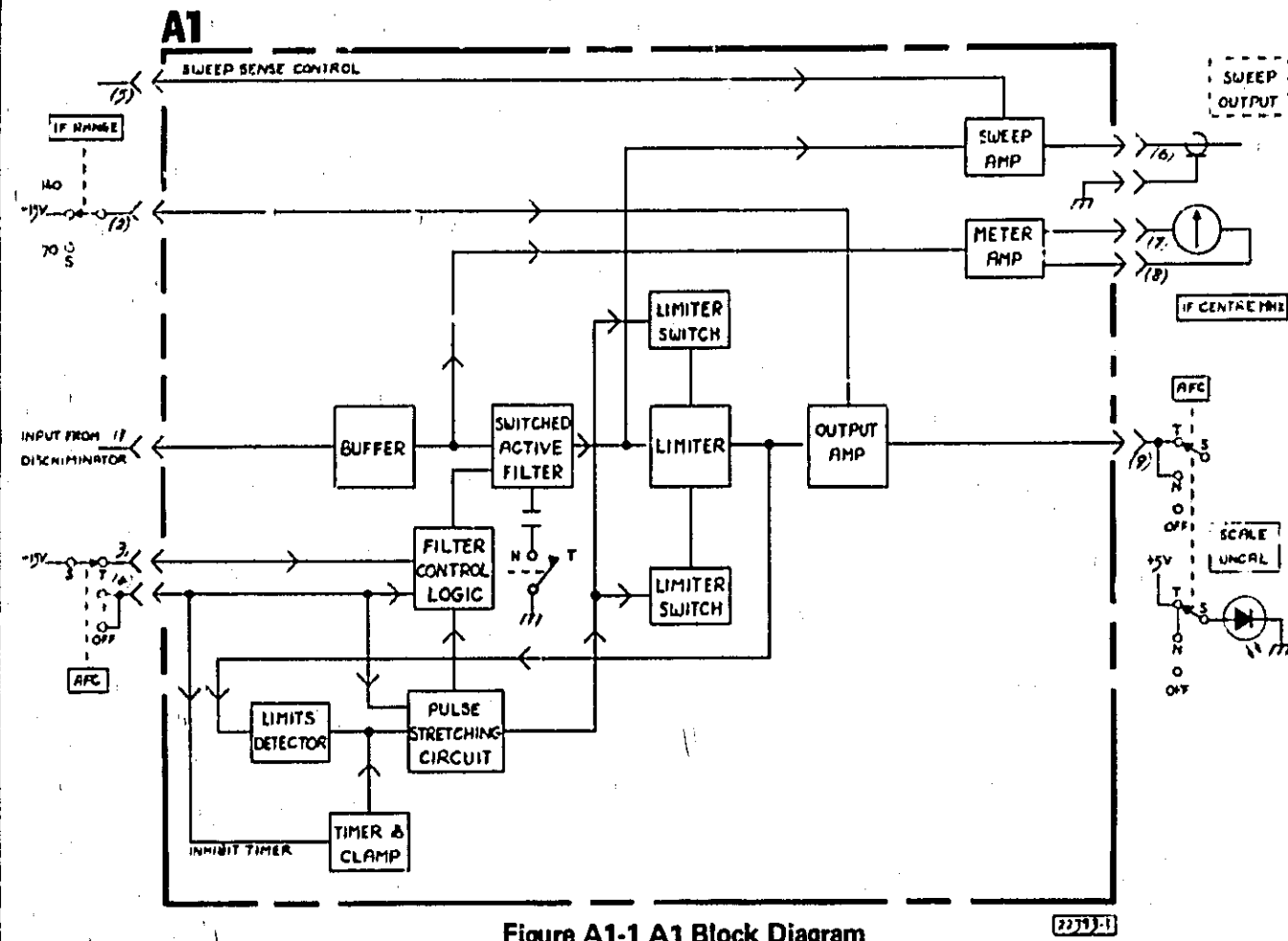


Figure A1-1 A1 Block Diagram

A1 SIMPLIFIED SWITCHED ACTIVE FILTER

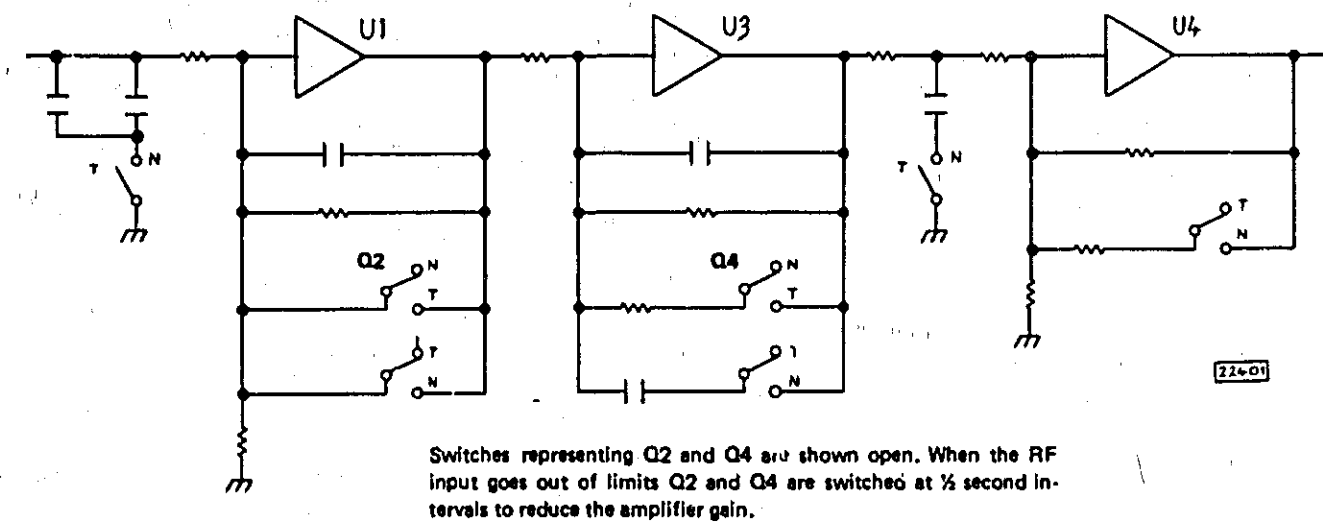


Figure A1-2 Simplified Switched Active Filter

CRIMINATOR (assembly A2) and the meter indication, varies with the IF (the frequency difference between the incoming RF and the YIG OSCILLATOR). The meter is provided to give a manual tuning indication when the YIG OSCILLATOR is close to the RF signal. R1/C1 removes any sweep component and R82 limits the current in the meter coil.

A1-12 The OUTPUT AMPLIFIER has a gain of approximately 2 when the IF RANGE is set to 140MHz. With the IF RANGE switch set to 70MHz, the FET Q13 is turned on and the amplifier gain reduced to approximately unity.

A1-13 TRACKING LOOP ACTION

A1-14 The TRACKING mode of operation enables the DOWN CONVERTER to be used with RF sweep widths up to 250MHz. This is achieved by allowing the YIG Local oscillator to follow the swept RF input to produce an IF OUTPUT with a compressed sweep. It can also be used on any sweep to reduce the IF residual both of the DOWN CONVERTER and the MLA RECEIVER.

A1-15 In the tracking mode the SWITCHED ACTIVE FILTER operates as a Low-pass filter designed to pass sweep frequencies. When the loop is locked U8 output is low and the LIMITER SWITCHES are ON doubling the current supply to the LIMITER. This doubles the range the LO can be swept.

A1-16 One consequence of this increased range is that the LO can now move far enough to achieve a false 'lock'. When this occurs the output of U5 limits within $\pm 10.7V$. A voltage in excess of $\pm 5V$ is detected by the LIMITS DETECTOR and U6 goes low, U8 output goes high to turn off the LIMITER switches to the "NORMAL" state. Also Q2 and Q4 are switched ON to reduce the gain of U1 and U3.

A1-17 Once the loop regains lock the output at USA returns to near zero volts, and the LIMITS DETECTOR output at U6B returns high ($\approx +0.7V$). C14 discharges slowly via

R31 until the threshold level is reached, switching U8 output low again. This returns the SWITCHED ACTIVE FILTER to the "full" TRACKING configuration. The limiter switches Q16 and Q12 are also on and the full range of the loop is now doubled giving $\pm 200MHz$ on a 140MHz IF centre.

A1-18 If the RF INPUT sweep exceeds 200MHz the loop (locked in the full TRACKING mode) cannot cope since the pull is limited to $\pm 100MHz$. Hence even with the local oscillator to follow the swept RF input to produce an IF goes low twice per sweep cycle. As a result the TRACKING loop is unable to lock and the loop is no longer in the "full" TRACKING mode. The TIMER circuit however switches Q9 on at $\frac{1}{2}$ second intervals to hold U6B output high long enough to switch U8 output low again returning to the "full" TRACKING mode. If the loop subsequently locks, the negative pulses at U6B output disappear. If no lock is achieved the pattern repeats at $\frac{1}{2}$ second intervals.

A1-19 TROUBLESHOOTING

A1-20 Voltages and waveforms are included on the schematic diagram to assist in isolating the faulty component(s). Additional troubleshooting information is given below.

A1-21 (a) Set the IF/BB TRANSMITTER controls as follows: (A 3711A, or 3710A may be used.)

IF LEVEL (output level) -22dBm
IF FREQUENCY 70MHz
SWEEP OFF

(b) Disconnect A12J1 and connect the IF/BB Transmitter IF OUTPUT via a suitable cable (15539A) to A12J1. Set the 3730B IF RANGE switch to 70MHz.

(c) Vary the IF FREQUENCY manually. A voltage variation should be present at U7(6), U1(6), U3(6), U4(6), U5A(14) and TP3. Table A1-1 gives typical output voltages for frequency variations above and below 70MHz.

Table A1-1 A1 Voltage Variations with different IF frequencies

SET 3730B AFC OFF	OUTPUT at TP3	Output at A1 pin 14	Output at A1 pin 7	Output at A1 pin 8
TUNE IF FREQ. to exactly 70MHz	0V	0V	0V	0V
TUNE IF FREQ. to 90MHz	+0.5V	-10V	-4.3V	-4.3V
TUNE IF FREQ. to 50MHz	-0.5V	+10V	+4.5V	+4.5V

(d) Set the 3730B AFC switch to TRACKING, and the IF/BB TRANSMITTER SWEEP to INT. Reduce the SWEEP WIDTH to $\frac{1}{2}MHz$. Adjust the IF FREQUENCY to exactly 70MHz, ($\pm 0.01MHz$) if the frequency is offset from 70MHz the following waveforms may show signs of limiting on either or both +ve and -ve half cycles.

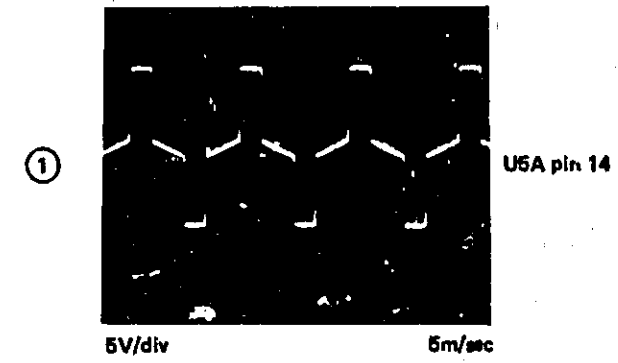
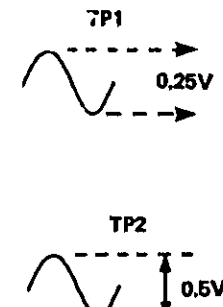


Figure A1-3 U5A Limiting with Sweep > 4MHz

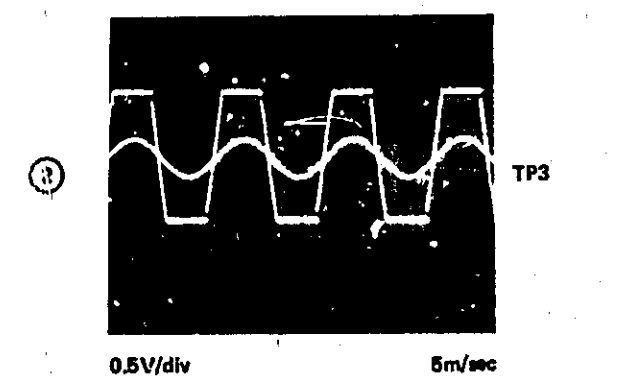


Figure A1-4 1Hz Switched Waveform at TP3

The waveform at TP3 switches between sine-wave and squarewave at 1Hz. Figure A1-4 shows 2 separate waveforms which is, in reality, single waveform switching between the two states.

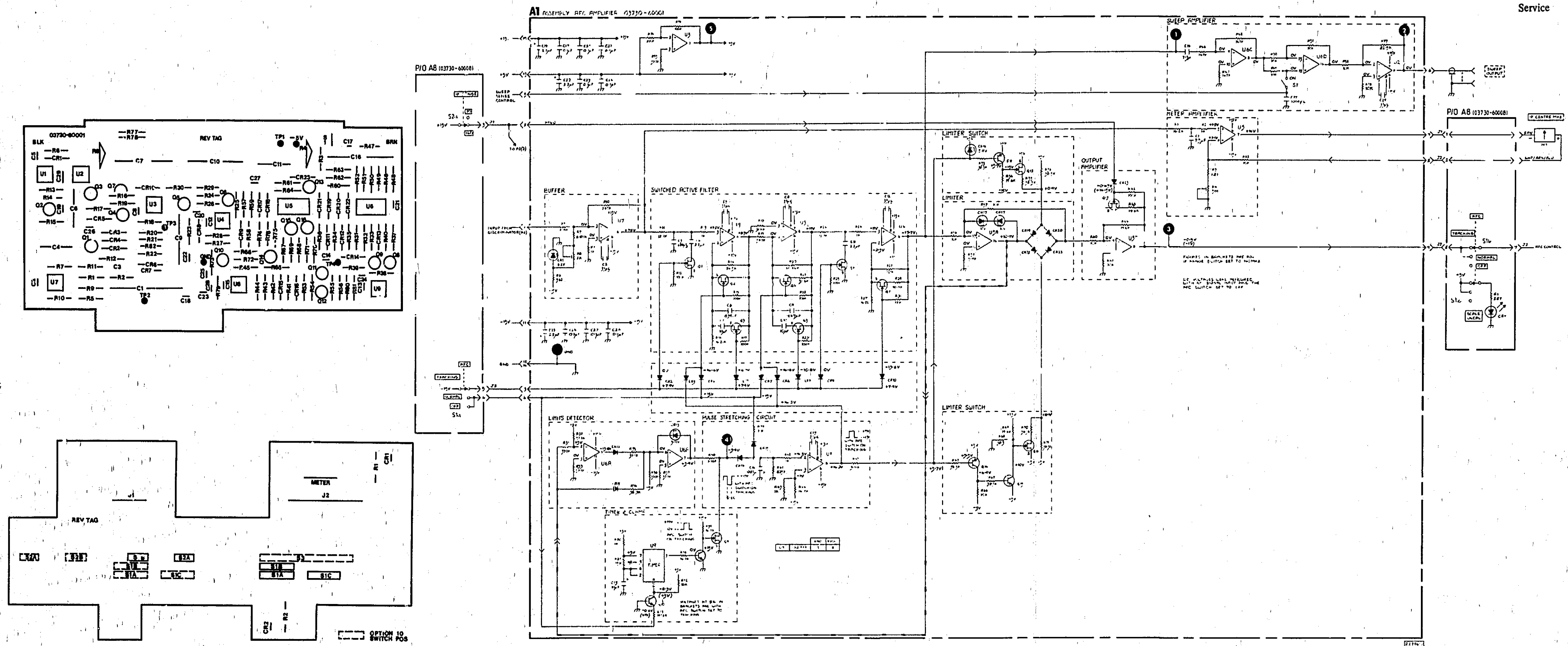


Figure A1.5 Schematic and Component Location

ASSEMBLY A2 — DISCRIMINATOR

A2-1 INTRODUCTION

A2-2 The discriminator assembly provides a voltage output proportional to the frequency input. This output voltage is dc only in the case of unswept RF inputs, or a composite dc + sweep in the case of swept RF inputs. The dc part of the Discriminator output provides an AFC control signal. This is applied to the YIG OSCILLATOR, to compensate for any drift in the YIG OSCILLATOR or the RF Signal frequencies.

A2-3 DESCRIPTION

A2-4 The DISCRIMINATOR DRIVER U1 includes a dual stage of amplification and limiting as well as the first divider stage. The amplifier is high gain and operates typically down to levels of less than -35dBm to provide a divided ECL output at TP1.

A2-5 The FREQUENCY DIVIDER ($\div 8/\div 16$) is switched by the front panel IF RANGE switch to divide by either 8 or 16. In the 70MHz position of the IF RANGE switch G2 is enabled and G3 is inhibited effectively connecting FF2 output to FF4 input giving division by 8. In the 140MHz position of the IF RANGE switch G2 is inhibited and G3 enabled (via G1) to include FF3 in the signal path. This increases the division to 16.

A2-6 The complementary outputs of FF4 drive the dual inputs of the DELAY LINE DRIVER. The DELAY LINE DRIVER comprises Q1 and Q2 which are connected as a Schmitt Trigger. The output of the DELAY LINE DRIVER switches the DELAY LINE to produce a narrow width pulse. The pulse width at the output of the DELAY LINE is constant, dependent on the lumped constant of the DELAY LINE. Figure A2-2 shows the relationship between the input and output of the DELAY LINE.

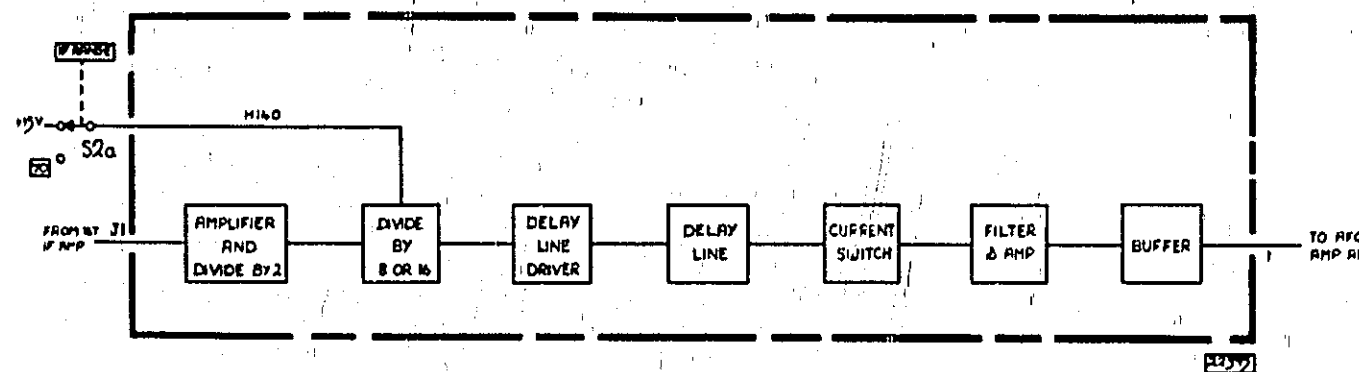


Figure A2-1 A2 Block Diagram

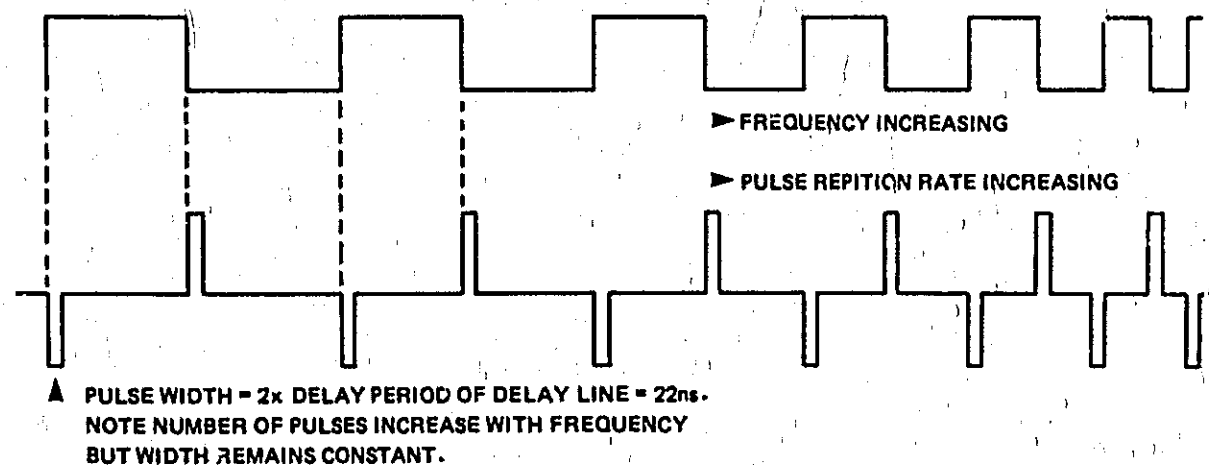


Figure A2-2 Delay Line Input / Output with Increasing Input Frequency

A2-7 With no input signal, the state of the CURRENT SWITCH is Q3A ON and Q3B OFF. The positive output pulses from the DELAY LINE switch Q3A OFF and Q3B ON to drive current into the low pass OUTPUT FILTER. The average current through the filter is proportional to the frequency of the input signal.

A2-8 U5 and U4 Amplify and Buffer the output from the CURRENT SWITCH/OUTPUT filter.

A2-9 TROUBLESHOOTING

Note: The heat sink of the thin film amplifier on this assembly is bolted to the mainframe. The assembly can however be checked by removing the AFC assembly.

A2-10 The schematic diagram contains voltages and waveforms to assist in troubleshooting to isolate the faulty component. Additional troubleshooting information not contained on the schematic diagram is given below.

Waveforms were measured on an oscilloscope with 100MHz bandwidth. The input signal at A251* was tuned to 50MHz, and the front panel IF RANGE switch set to 70MHz.

*Connect signal as in paragraph G1-10.

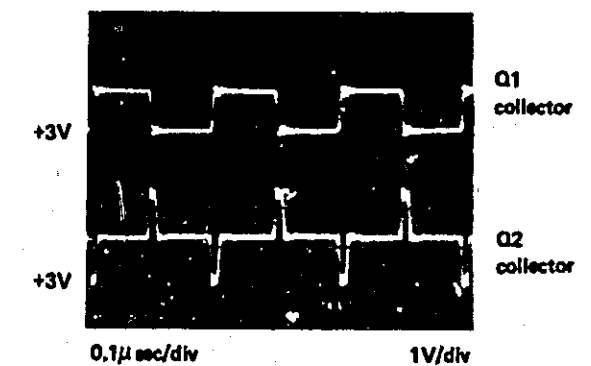


Figure A2-3 Waveforms at Q1 and Q2 Collectors

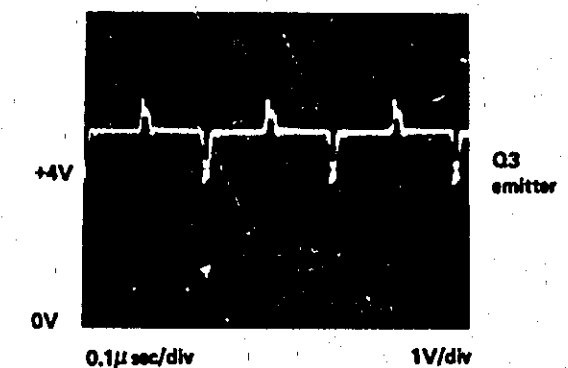
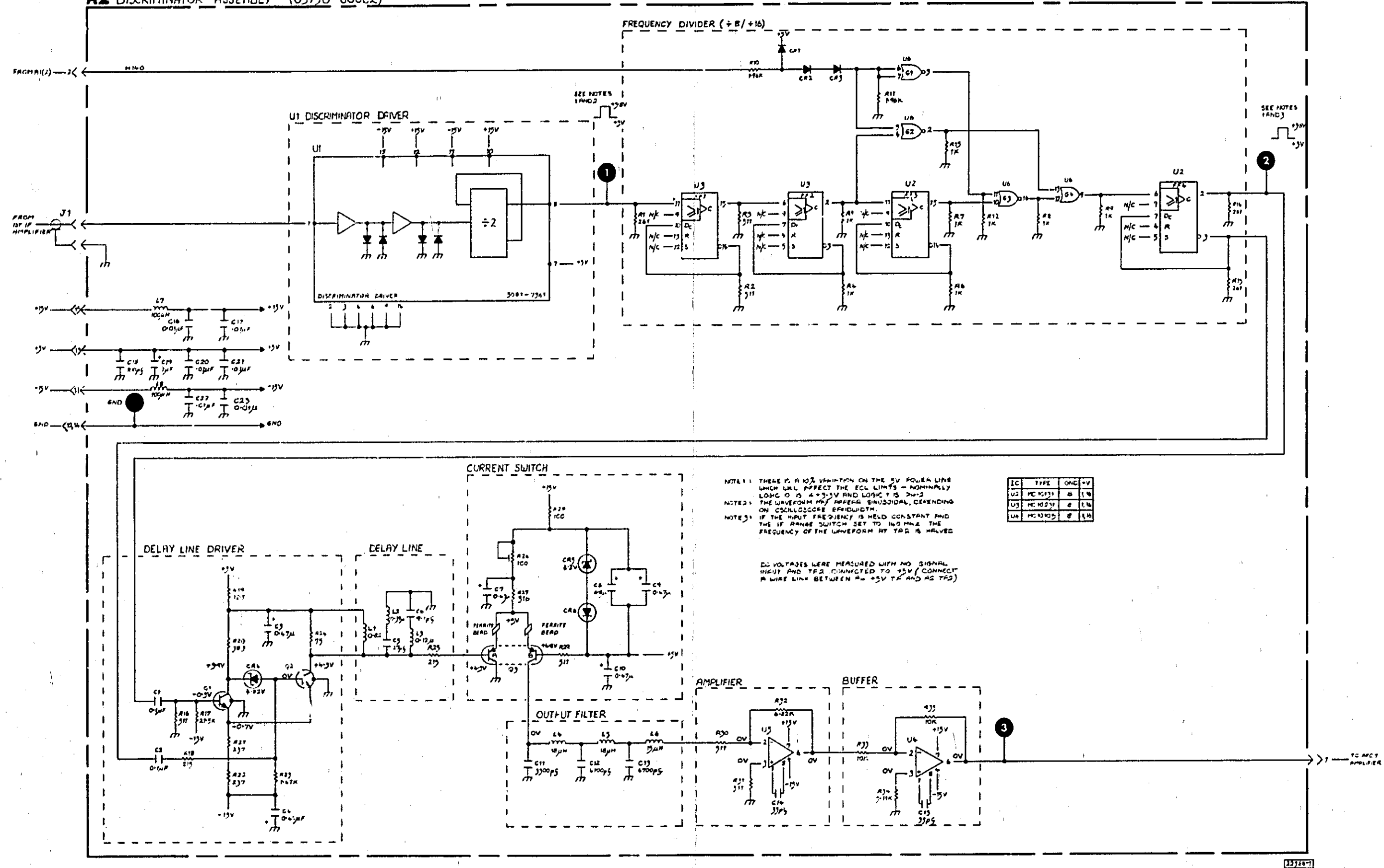


Figure A2-4 Waveform at Q3 Emitter

Table A2-1 Voltage Variations With Input Frequency

Monitor Point	V with Input Freq. 50MHz	V with Input Tuned to 70MHz
Q3B collector (L4)	0.4V	0.6V
U5 pin 6	-3.6V	-5V
TP3	+3.6	+5V

A2 DISCRIMINATOR ASSEMBLY (03730-60002)



ASSEMBLY SHEET A3/4/5 — POWER SUPPLY ASSEMBLIES

A3,4,5-1 DESCRIPTION

A3,4,5-2 There are three power supply assemblies in the instrument.

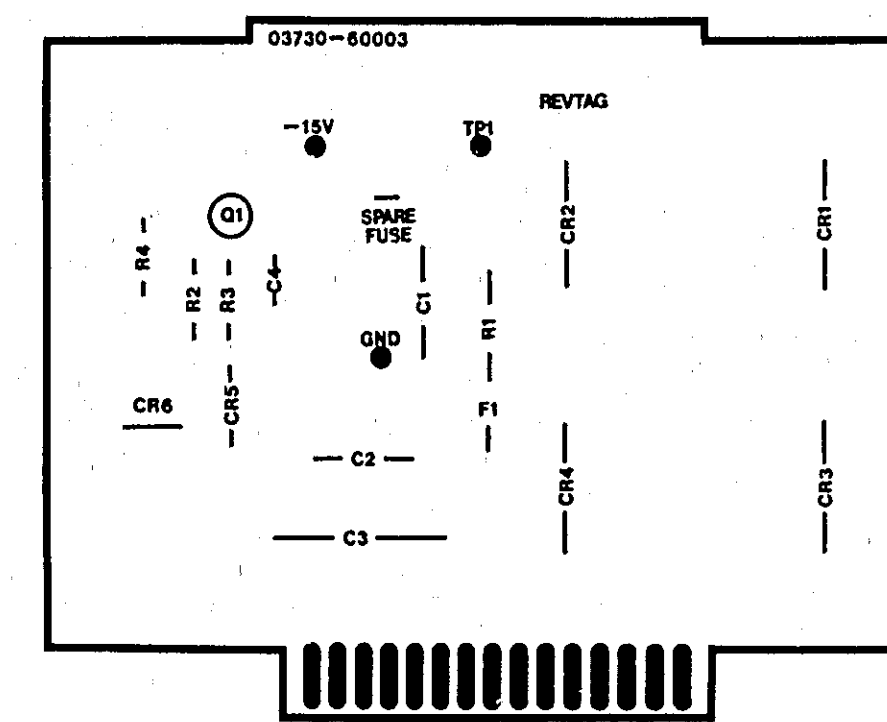
- A3 -15V supply assembly.
- A4 +5V and +15V supply assembly.
- A5 +20V supply assembly.

A3,4,5-3 The supplies are fullwave rectified and routed to regulators mounted on the rear panel of the instrument. Each supply has its own overvoltage protection circuit on

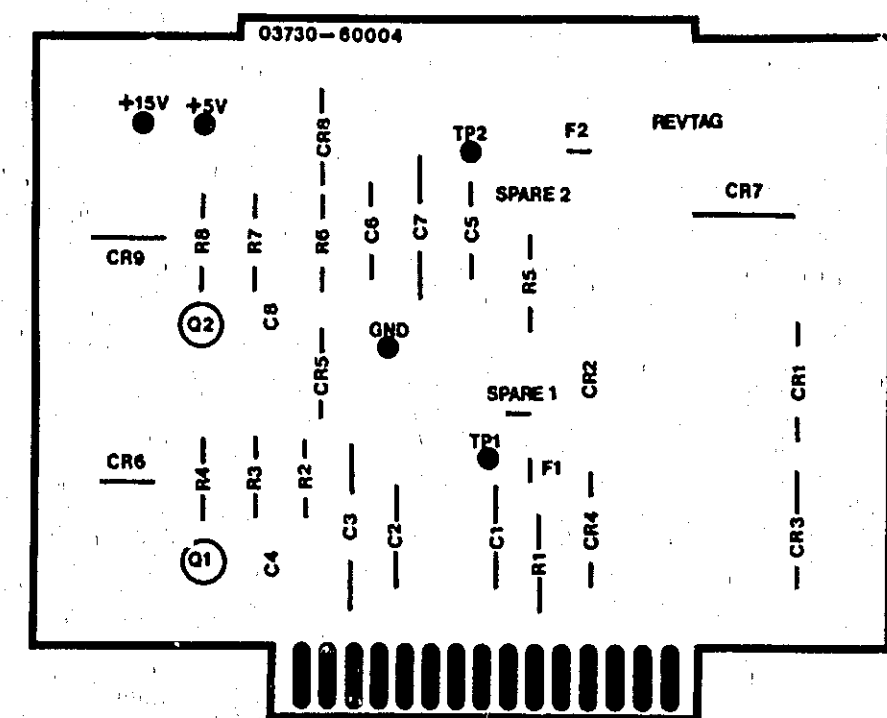
the respective assembly. The output voltage of the +20V assembly (A5) is adjustable by R9 which varies the feedback to the regulator (U4) via A5U1. A5CR2 supplies +15V to the +20V regulator U4 in order to ensure start-up at switch on.

A3,4,5-4 TROUBLESHOOTING NOTE

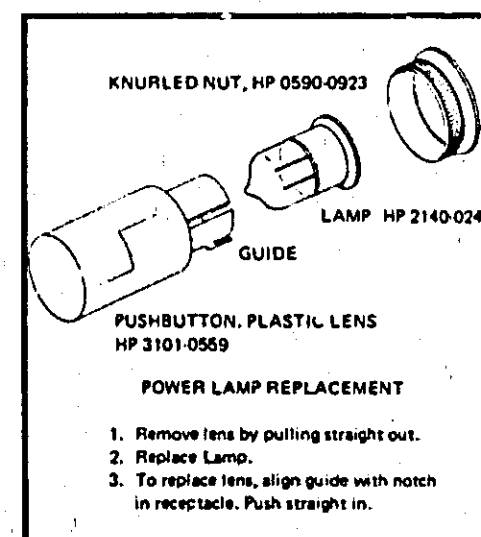
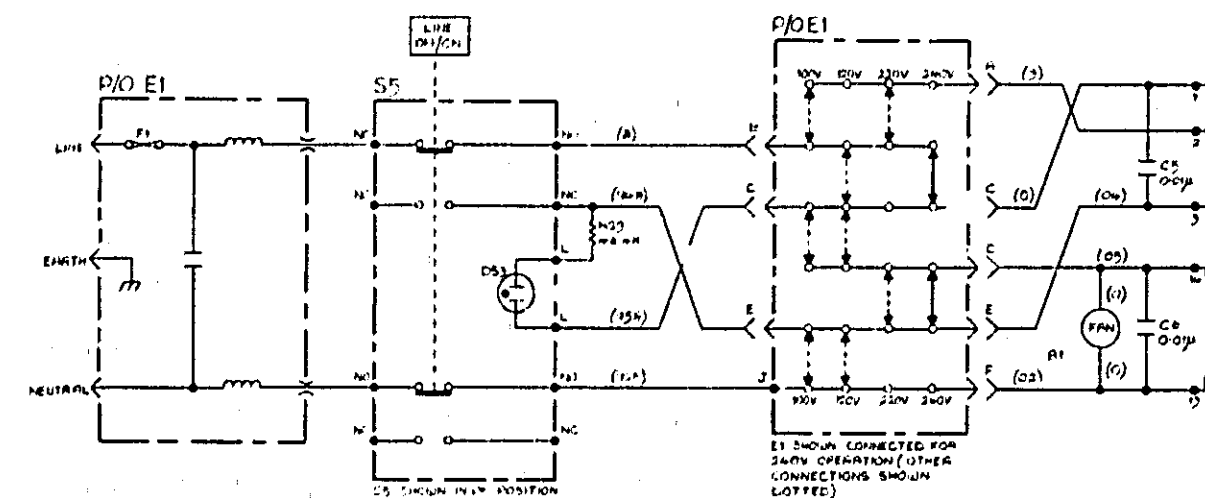
A3,4,5-5 The presence of A5CR2 will cause a voltage up to 14V to be present at the +20V TP on assembly A5 after A5F1 has blown.



A3 Component Location

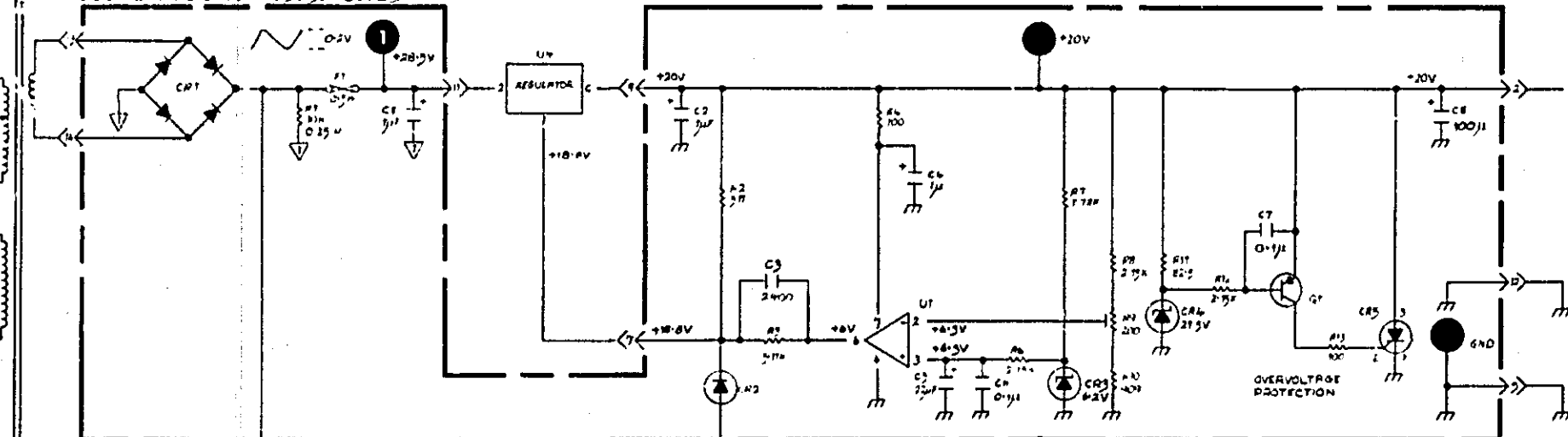


A4 Component Location

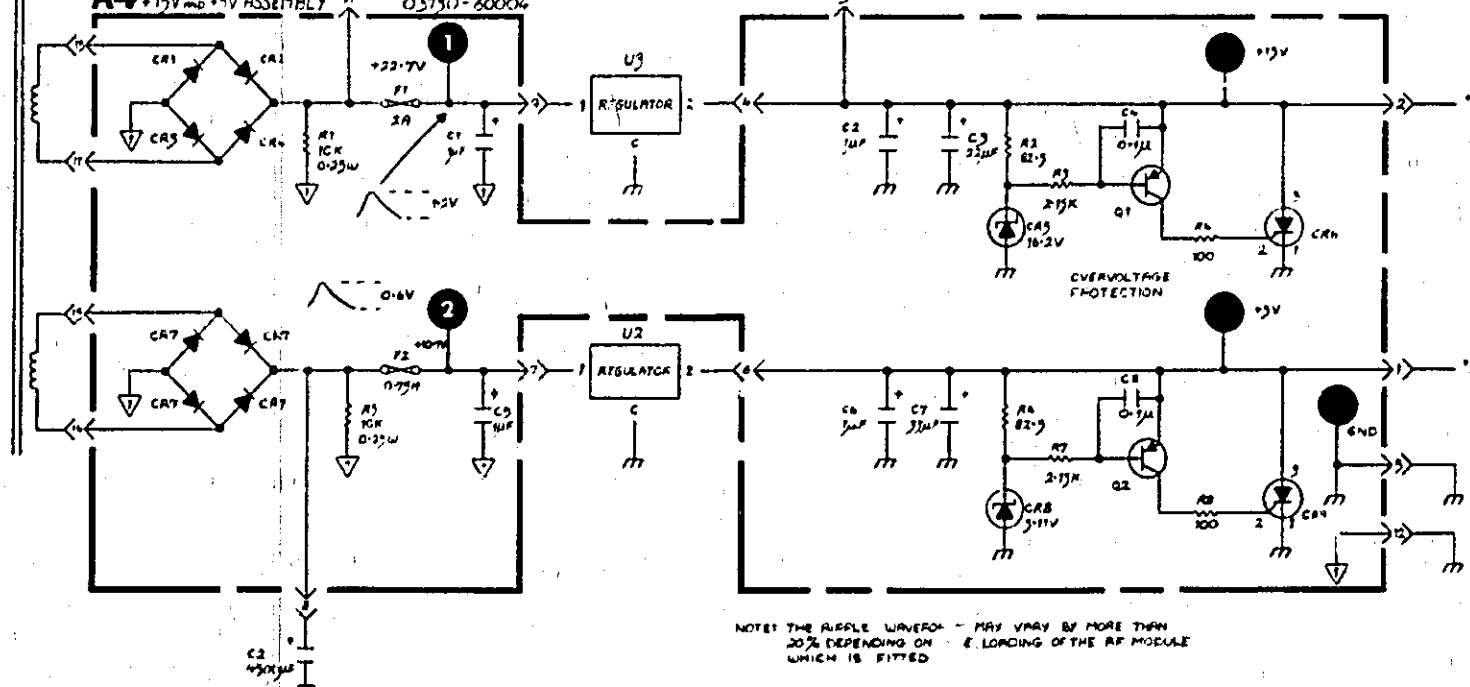


POWER SUPPLY ASSEMBLIES

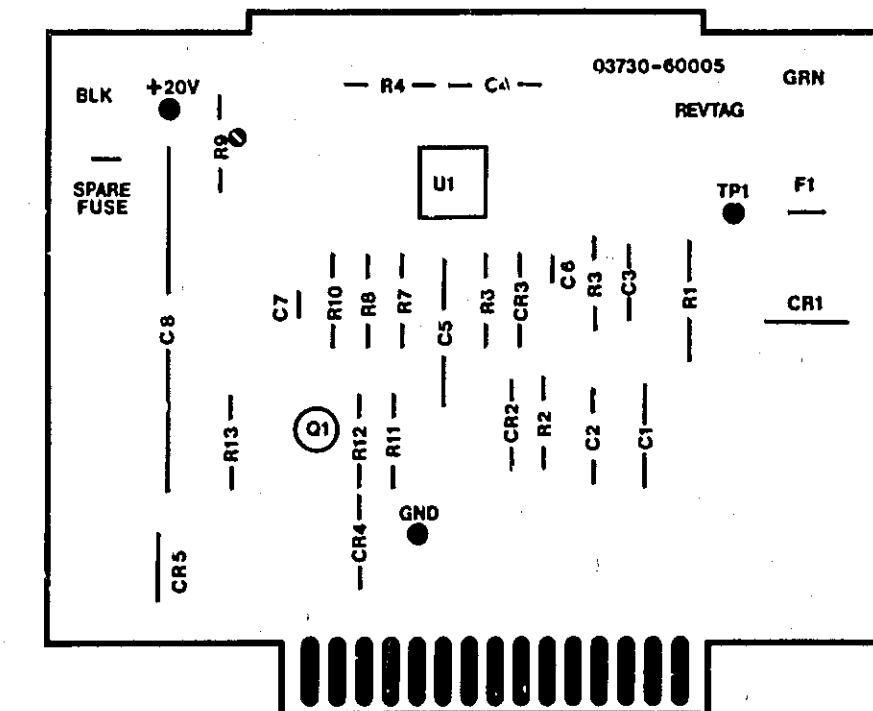
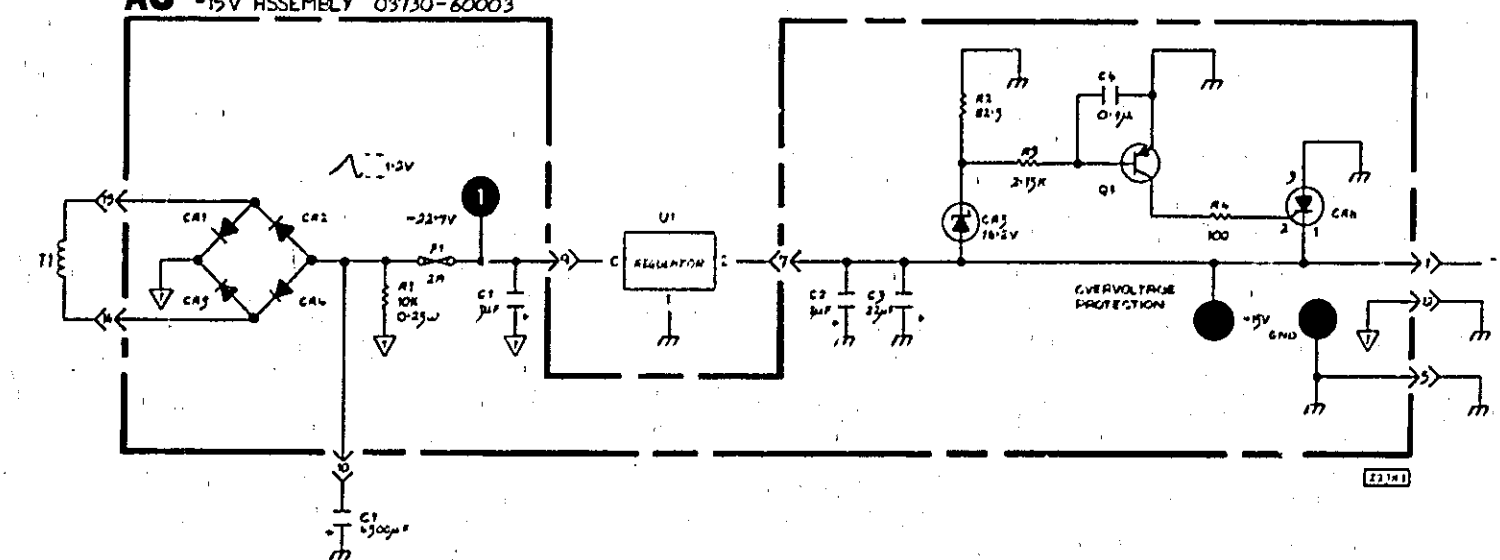
A5 +20V ASSEMBLY 03730-60005



A4 +15V and +5V ASSEMBLY 03730-60004



A3 -15V ASSEMBLY 03730-60003



A5 Component Location

Figure A3,4,5-1, A3,4,5 Schematic and Component Locations

ASSEMBLY A7 — IF AMPLIFIER OPTION 010

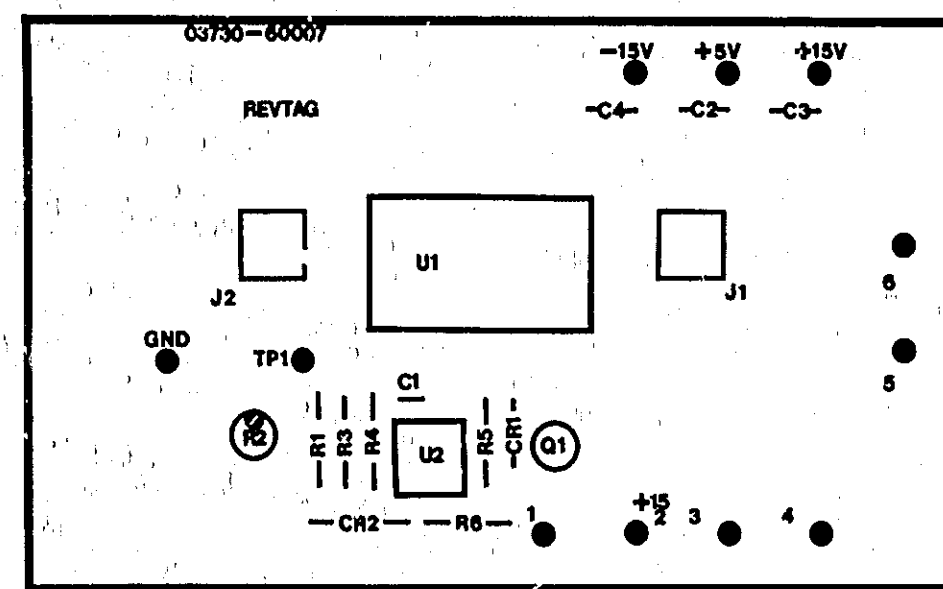
A7-1 DESCRIPTION

A7-2 Option 010 is an independent IF amplifier and attenuator. The front panel IF INPUT is connected to an attenuator which provides 0 to 30dB attenuation in 10dB steps. The attenuator output is connected to the thin film IF amplifier A7U1 which has a fixed gain of approximately 25dB. The output of the thin film amplifier is connected to the front panel IF OUTPUT (3730B mainframe). A detected IF output at U1 pin 10 gives a dc output proportional to

the IF level. The threshold detector U2, adjusted by R2, lights the EXCESS LEVEL lamp (3730B mainframe) when the IF output exceeds approximately +5dBm.

A7-3 ATTENUATOR REPAIR/REPLACEMENT

A7-4 The IF SECTION attenuator AT1 is not a field-repairable item. The attenuator is set up under a BLUE STRIPE exchange program. The exchange part number is 33355-60003.



A7 Component Location

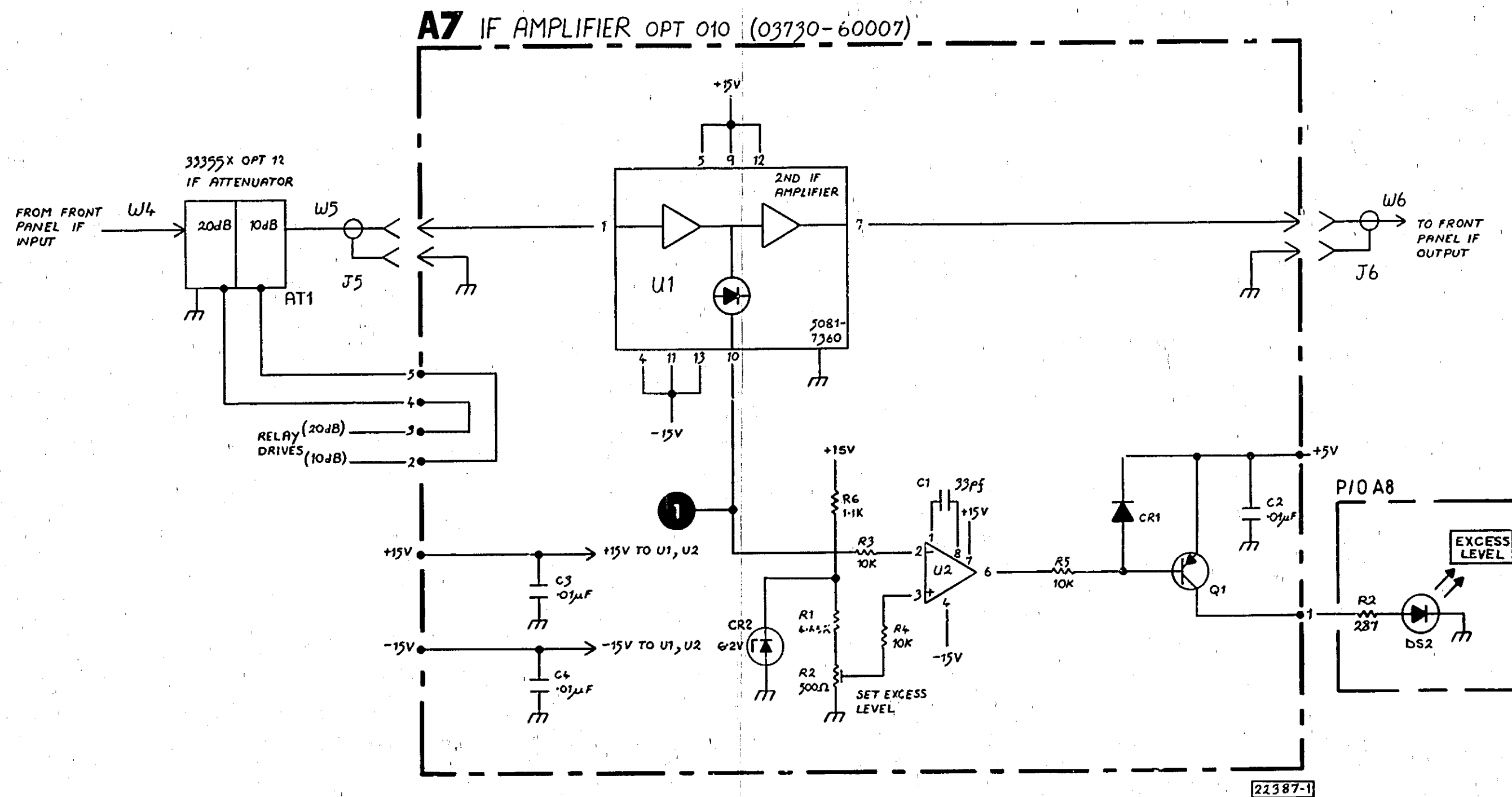


Figure A7-1 Schematic and Component Location

36-7 MICROWAVE COMPONENTS

36-8 A 10dB ATTENUATOR pad connected between the RF INPUT and the MIXER improves the isolation and matching between the RF source and the MIXER. The semi-rigid co-ax connection between the 10dB ATTENUATOR pad and the MIXER is kept to a minimum, to reduce the VSWR. The 10dB ATTENUATOR may be replaced with an isolator which gives improved input sensitivity, over a limited frequency range (determined by the isolator). Isolator accessories are listed in Paragraph 1-24.

36-9 The YIG OSCILLATOR is connected to the MIXER via an ATTENUATOR. The ATTENUATOR pad is selected to set the YIG OSCILLATOR drive to the mixer at +10dBm. The attenuator pad is nominally 3dB or 6dB, though in certain cases where the YIG OSCILLATOR output power is low no ATTENUATOR is fitted.

36-10 A low-pass ABSORPTIVE FILTER, connected between the MIXER output and the IF AMPLIFIER (assembly A12), absorbs any RF present at the MIXER output thus preventing reflections and allowing the IF component to pass to the IF AMPLIFIER.

36-11 IF AMPLIFIER ASSEMBLY A12

36-12 The thin film IF AMPLIFIER U1 has dual outputs and a gain of approximately 22dB. A flatness adjustment by means of C1/R1 optimises the IF flatness across the band. The detected IF output at U1 pin 6 gives a dc output proportional to the IF level, which in turn is proportional to the RF level. The threshold detector U2 is adjusted by A12R3 to light the EXCESS LEVEL lamp when the RF level at the RF INPUT exceeds +3dBm.

36-13 DISPLAY ASSEMBLY A13

36-14 This assembly produces a readout of the INPUT FREQUENCY directly (with offset and scaling) from the YIG tuning voltage. This is possible because the YIG frequency is directly proportional to the tuning current and hence to the tuning voltage.

36-15 The circuit is based around U1, a DVM chip which provides a seven-segment coded output directly to the LED displays which is proportional to the ratio of V_{IN} and V_{REF} .

36-16 U2 sums the offset and scaled voltages which are adjusted to suit individual plug-ins. The upper and lower frequency ranges are selected by S2c and S2d, and the upper and lower sidebands by S1a and S1b.



36-1 RF MODULE 3736B

36-2 INTRODUCTION

36-3 The RF MODULE contains the essential components to perform the down conversion from RF to IF. The RF INPUT signal is mixed with a signal from the YIG OSCILLATOR to produce the IF signal which is filtered and amplified. The tuning and output power of the YIG OSCILLATOR are controlled by the YIG DRIVER assembly (A11). An IF AMPLIFIER assembly (A12) with dual outputs provides a front panel IF OUTPUT and an output for AFC purposes which is connected to the DISCRIMINATOR assembly (A2) in the mainframe. Indication of the EXCESS LEVEL at the RF INPUT is derived from a detected output on the IF AMPLIFIER.

36-4 YIG DRIVER ASSEMBLY A11

36-5 The tuning of the YIG OSCILLATOR is dependent on the summation of the various voltages at U2 input, which in turn is dependent on the setting of the TUNE control, the RF RANGE switch, the IF RANGE switch, the

SIDEBAND switch and also the AFC switch. With the AFC switch to set NORMAL or TRACKING, an AFC voltage is applied via Buffer U1 to the summing input of U2. Switching the SIDEBAND switch, at the input U1, inverts the phase of the voltage at U1 output to ensure the sense of the AFC loop is correct. Pre-set adjustments are described further in paragraph 5-19. The Darlington pair transistor Q1 provides the current drive to the YIG oscillator tuning coil. The relay K1 is closed in all positions of the AFC switch except tracking to connect R34/C17 across the tuning coil minimising any FM noise from the high impedance output of Q1. In the TRACKING mode however, R34/C17 are switched out by A11K1 to maintain AFC loop stability. Diodes A11CR1 and A11CR6 prevent the relay contacts and coil respectively from introducing spikes on to the power supply lines.

36-6 The circuit of A11U3 and A11Q1 provide the stabilised power supply for YIG oscillator bias. Overvoltage protection is provided by A11Q2, A11CR4 and A11CR5. The overvoltage is determined by the zener voltage of A11CR4. When overvoltage is detected, thyristor A11CR5 is triggered on. The power supply is protected by fuse A11F1.

36-17 RF MODULE TROUBLESHOOTING

36-18 Typical RF to IF Gain Conversion +4dB.

36-19 YIG DRIVER ASSEMBLY

36-20 The dc voltages on the schematic diagram are typical. Note the -10V supply which is derived from the -15V has fused protection on this assembly.

36-21 With the conditions set up as outlined on the schematic diagram the voltage at A11 pin 18 increases by typically +1.3V per GHz when the TUNE control is varied, and the voltage at A11 pin 20 decreases by typically +1.3V per GHz.

36-22 Carry out para G1-13 (AFC AMPLIFIER) steps a, b and c. Set the AFC switch to NORMAL and the SIDEBAND switch to LO > RF. The voltage variation at A11U1 pin 6 should be similar to that obtained in G1-13 step c. Switch the SIDEBAND switch to LO < RF the voltages should remain almost the same numerically but with reversed sign.

36-23 If a fault is suspected in one of the microwave components, check the power levels with a Microwave Spectrum Analyzer.

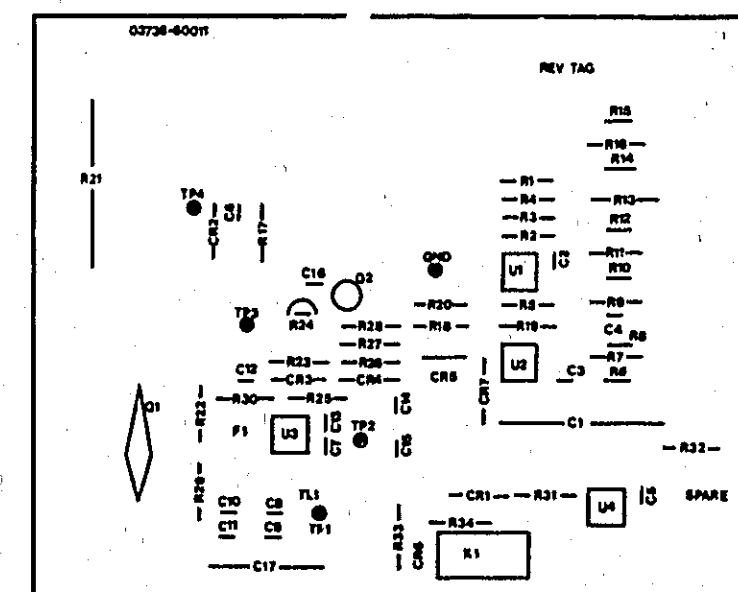
36-24 The YIG OSCILLATOR POWER OUTPUT should be between +13dBm and +19dBm with a variation across the band of <5dBm (into 50Ω).

36-25 The MIXER CONVERSION LOSS should be between 6 and 10dB.

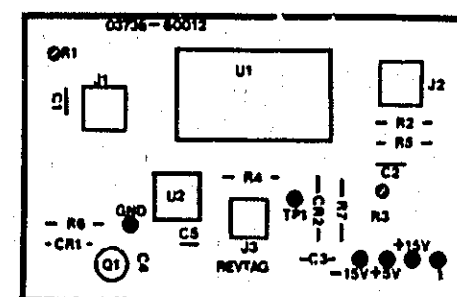
36-26 The YIG OSCILLATOR is not a field-repairable item and is set up under the BLUE STRIPE exchange program. The exchange part number is 5086-6311.

36-27 The output of A13U2 (measured at A13R12 or A13U1(31)) should vary by at least 100mV when the TUNE control is taken from fully clockwise to fully anti-clockwise. Typically, a 1GHz change in frequency per 110mV (at A13U1 pin 31) can be expected.

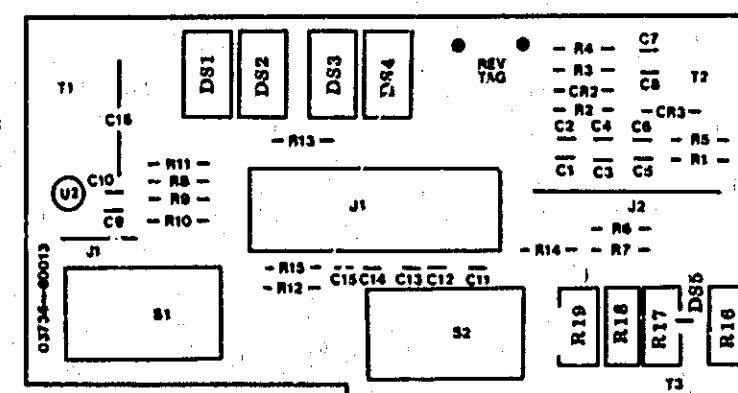
36-28 The seven-segment coded outputs of A13U1 should be $2.8 \pm 0.2V$ when the appropriate LED segment is energised, and $4.4 \pm 2V$ when the segment is off. The individual seven-segment LED displays may be interchanged if one is suspected of being faulty.



A11 Component Location



A12 Component Location



A13 Component Location

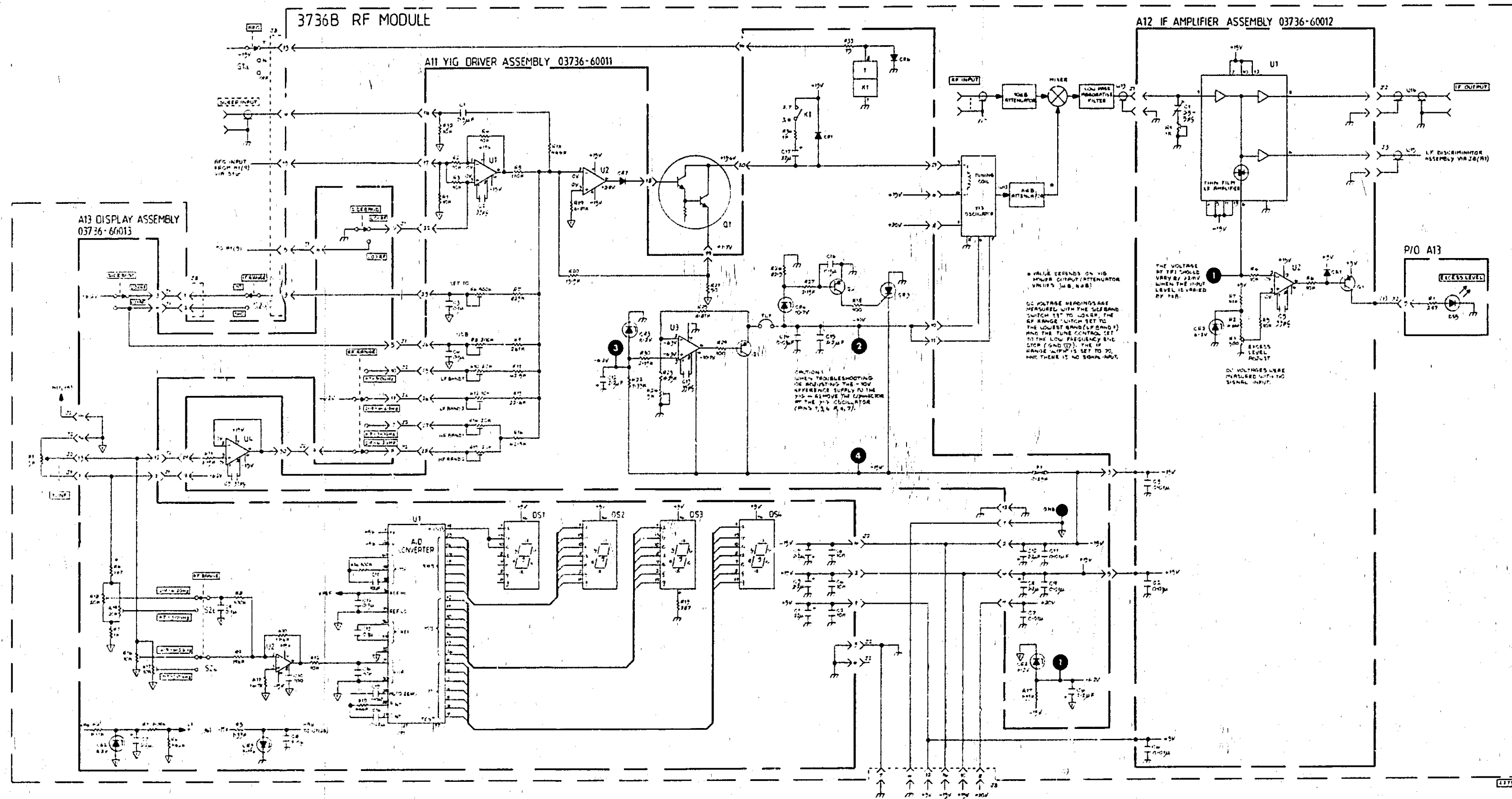


Figure 36-1 3736B Schematic and Component Locations

37-1 RF MODULE (3737B)

37-2 INTRODUCTION

37-3 The RF MODULE contains the essential components to perform the down conversion from RF to IF. The RF INPUT signal is mixed with a signal from the YIG OSCILLATOR to produce the IF signal which is filtered and amplified. The tuning and output power of the YIG OSCILLATOR are controlled by the YIG DRIVER assembly (A11). An IF AMPLIFIER assembly (A12) with dual outputs provides a front panel IF OUTPUT and an output for AFC purposes which is connected to the DISCRIMINATOR assembly (A2) in the mainframe. Indication of the EXCESS LEVEL at the RF INPUT is derived from a detected output on the IF AMPLIFIER.

37-4 YIG DRIVER ASSEMBLY A11

37-5 The tuning of the YIG OSCILLATOR is dependent on the summation of the various voltages at U5 input, which in turn is dependent on the setting of the TUNE control, the RF RANGE switch, the IF RANGE switch, the SIDEBAND switch and also the AFC switch. With the AFC switch set to NORMAL or TRACKING, an AFC voltage is applied via Buffer U4 to the summing input of U5. Switching the SIDEBAND switch, at the input U4, inverts the phase of the voltage at U4 output to ensure the sense of the

AFC loop is correct. Pre-set adjustments are described further in paragraph 5-19. The Darlington pair transistor Q1 provides the current drive to the YIG oscillator tuning coil. The relay K1 is closed in all positions of the AFC switch except tracking to connect R27/C6 across the tuning coil minimising any FM noise from the high impedance output of Q1. In the TRACKING mode however, R27/C6 are switched out by A11K1 to maintain AFC loop stability. Diodes A11CR10 and A11CR1 prevent the relay contacts and coil respectively from introducing spikes on to the power supply lines.

37-6 The YIG oscillator in the 3737B requires three power supplies: +5V, -10V and a frequency dependent voltage as shown in Figure 37-1.

37-7 The +5V supply is derived from +15V by A11U5 and the Darlington transistor Q2. The voltage is controlled by a reference from A11U5 which is adjusted by A11R45. Over-voltage protection on the +5V supply is provided by CR4, Q3, CR5 and the circuit is protected by A11F1.

37-8 The -10V supply is derived from the -15V supply by A11U6 and A11Q4. CR6 provides the voltage reference to A11U6. A11R54 adjusts the feedback ratio and hence the output. Overvoltage protection on the -10V supply is provided by CR7, Q5, CR8 and the circuit is protected by A11F2.

37-9 In order to optimise YIG oscillator harmonic performance it is necessary to provide a frequency dependent bias voltage. The characteristic of this voltage, produced by the YIG BIAS SHAPING circuit, is shown in Figure 37-1.

37-10 For frequencies below F_{U1} , the bias is held constant (at $-9.8 \pm 0.1V$) by the saturation of A11Q2. At frequencies between F_{U1} and F_{max} , the characteristic is controlled by the YIG BIAS SHAPING circuit of A11U1/A11U2. Protection is provided by A11F2 in the -10V supply line.

The A11U1 amplifier inverts the ramp from the current sense resistors R20 and R21. A11R24 is used to adjust the voltage at TP1 to 0V at F_{max} . At F_{max} the output of U2 is controlled only by R35 which is used to set the voltage at TP2 to $-V_u$. Finally R32 is adjusted till the ramp at TP2 intercepts the $-9.8V$ level at F_u .

37-11 MICROWAVE COMPONENTS

37-12 A 10dB ATTENUATOR pad connected between the RF INPUT and the MIXER improves the isolation and matching between the RF source and the MIXER. The semi-rigid co-ax connection between the 10dB ATTENUATOR pad and the MIXER is kept to a minimum, to reduce the VSWR. The 10dB ATTENUATOR may be replaced with an isolator which gives improved input sensitivity, over a limited frequency range (determined by the isolator) Isolator accessories are listed in Paragraph 1-24.

37-13 The YIG OSCILLATOR is connected to the MIXER via an ATTENUATOR and an ISOLATOR. The ATTENUATOR pad is selected to set the YIG OSCILLATOR drive to the mixer at +10dBm. The attenuator pad is nominally 3dB or 6dB, though in certain cases where the YIG OSCILLATOR output power is low no ATTENUATOR is fitted. The ISOLATOR is broadband with a typical insertion loss of less than 1dB and better than 18dB's of isolation. This prevents any reflections from the MIXER 'pulling' the YIG OSCILLATOR. The ISOLATOR is connected as close

to the YIG OSCILLATOR as possible and the ATTENUATOR as close to the MIXER as possible to minimise the effect of reflections (the longest length of semi-rigid co-ax is therefore between the ISOLATOR and ATTENUATOR).

37-14 A low-pass ABSORPTIVE FILTER, connected between the MIXER output and the IF AMPLIFIER (assembly A12), absorbs any RF present at the MIXER output thus preventing reflections and allowing the IF component to pass to the IF AMPLIFIER.

37-15 IF AMPLIFIER ASSEMBLY A12

37-16 The thin film IF AMPLIFIER U1 has dual outputs and a gain of approximately 22dB. A flatness adjustment by means of C1/R1 optimises the IF flatness across the band. The detected IF output at U1 pin 6 gives a dc output proportional to the IF level, which in turn is proportional to the RF level. The threshold detector U2 is adjusted by A12R3 to light the EXCESS LEVEL lamp when the RF level at the RF INPUT exceeds +3dBm.

37-17 DISPLAY ASSEMBLY A13

A37-18 This assembly produces a readout of the INPUT FREQUENCY directly (with offset and scaling) from the YIG tuning voltage. This is possible because the YIG frequency is directly proportional to the tuning current and hence to the tuning voltage.

37-19 The circuit is based around U1, a DVM chip which provides a seven-segment coded output directly to the LED displays which is proportional to the ratio of V_{IN} and V_{REF} .

37-20 U2 sums the offset and scaled voltages which are adjusted to suit individual plug-ins. The upper and lower frequency ranges are selected by S2c and S2d, and the upper and lower sidebands by S1a and S1b.

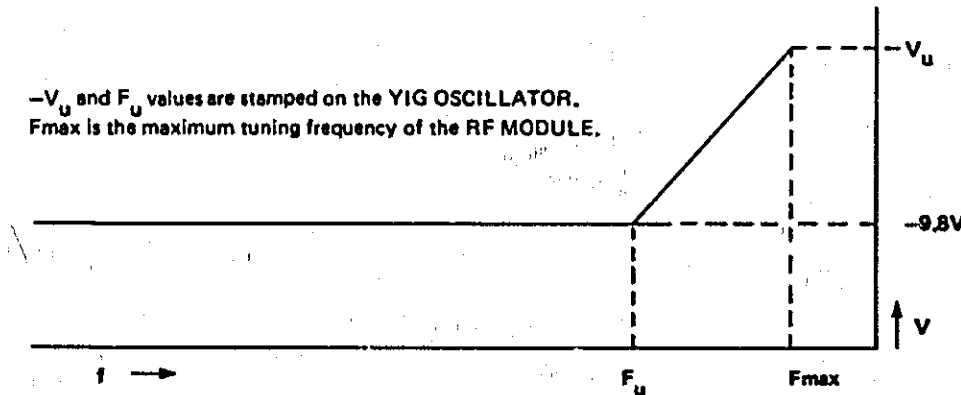


Figure 37-1 YIG Bias Shaping Circuit Output

37-21 RF MODULE TROUBLESHOOTING

37-22 Typical RF to IF Gain Conversion +5dB.

37-23 YIG DRIVER ASSEMBLY

37-24 The dc voltages on the schematic diagram are typical. Note the +5V supply which is derived from the +15V line, and the -10V supply which is derived from the -15V line have fused protection on this assembly.

37-25 With the conditions set up as outlined on the schematic diagram the voltage at A11 pin 18 increases by typically 0.6V per GHz when the TUNE control is varied and the voltages at A11 pin 20 decreases by typically 1.3V per GHz.

37-26 Carry out the procedure given in Paragraph G1-13 (AFC AMPLIFIER) steps a, b and c. Set the AFC switch to NORMAL and the SIDEBAND switch to L0 > RF. The voltage variation at A11U3 pin 6 should be similar to that obtained in G1-13 step c. Switch the SIDEBAND switch to L0 < RF the voltages should remain the same numerically but with reversed sign.

37-27 If a fault is suspected in one of the microwave components, check the power levels with a Microwave Spectrum Analyzer.

37-28 The YIG OSCILLATOR POWER OUTPUT should be between +10dBm and +17dBm with a variation across the band of < 5dBm (into 50Ω).

37-29 The ISOLATOR INSERTION LOSS is < 1dBm.

37-30 The MIXER CONVERSION LOSS should be between 6 and 10dBm.

37-31 The YIG OSCILLATOR and associated Bias Assembly are non field repairable and set up under the BLUE STRIPE exchange program. The exchange part number for the YIG OSCILLATOR inclusive of the Bias assembly is 5086-6312.

37-32 The output of A13U2 (measured at A13R12 or A13U1(31)) should vary by at least 100mV when the TUNE control is taken from fully clockwise to fully anti-clockwise. Typically, a 1GHz change in frequency per 110mV (at A13U1 pin 31) can be expected.

A37-33 The seven-segment coded outputs of A13U1 should be $2.8 \pm 0.2V$ when the appropriate LED segment is energised, and $4.4 \pm 2V$ when the segment is off. The individual seven-segment LED displays may be interchanged if one is suspected of being faulty.

37-28 YCR BIAS ASSEMBLY

37-29 The control YCR BIAS assembly 5061-1026, mounted on the YIG oscillator, is considered as part of the YIG oscillator for replacement purposes. The following parts list, schematic and component location of this assembly are shown for reference.

Table 37-1 YCR BIAS Assembly Replaceable Parts

Reference Designation	HP Part Number	Description
C1	0160-0127	CAPACITOR-FXD 1μF 25V CER
C2	0160-0127	CAPACITOR-FXD 1μF 25V CER
CR1	1902-0579	DIODE-ZNR 5.11V 5% 1W
CR2	1902-0579	DIODE-ZNR 5.11V 5% 1W
J1	1200-0507	CONNECTOR 16 WAY
J2	1250-0543	CONNECTOR RF SM-SNP
R1	-	RESISTOR SELECT ON TEST 51.5 to 464 Ohms
R2	-	RESISTOR SELECT ON TEST 162 to 619 Ohms
R3	0757-0279	RESISTOR 3.16K 1% 125W
R4	2100-2633	RESISTOR-VAR 1K 10% 1 TURN
W1	8159-0005	WIRE LINK
W2	8159-0005	WIRE LINK

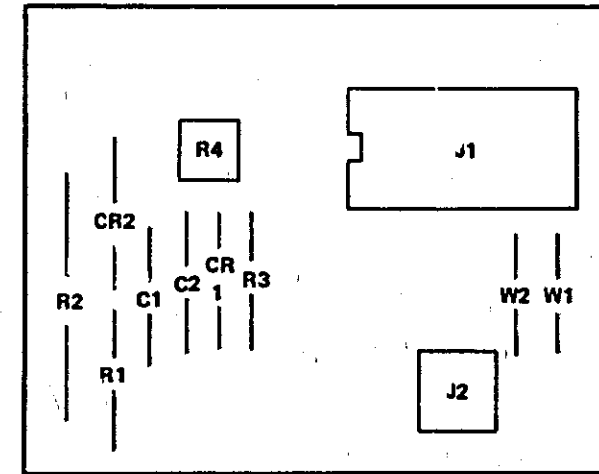


Figure 37-2 YCR BIAS Assembly Component Location

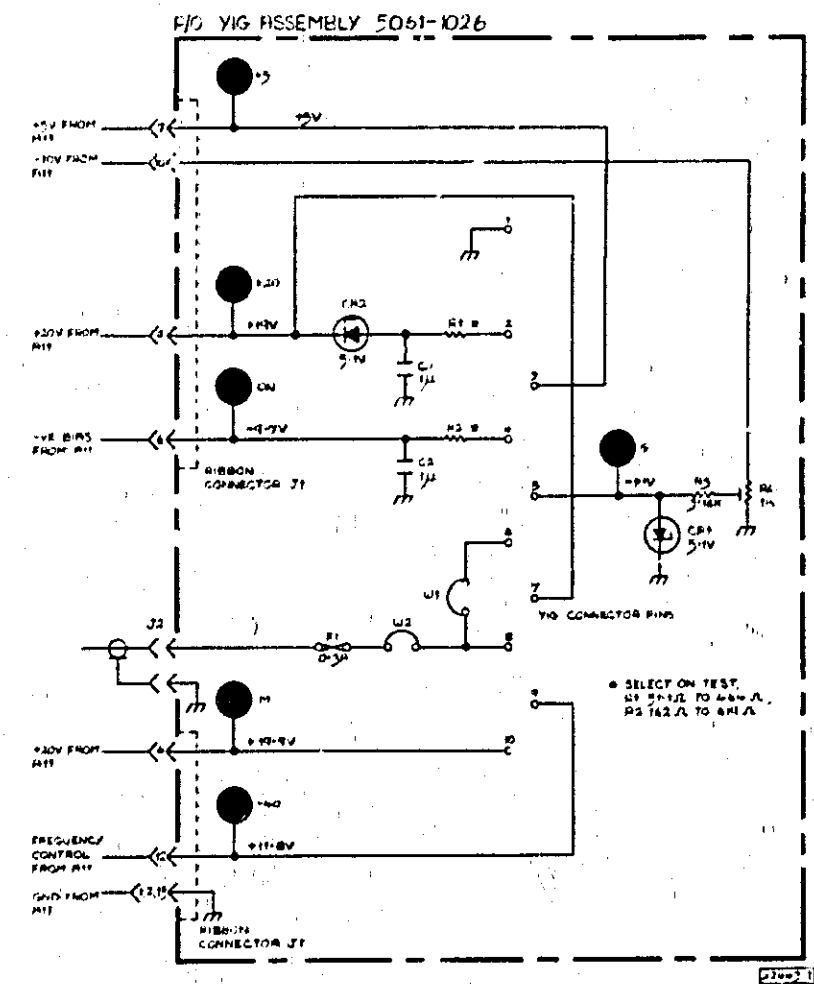


Figure 37-3 YCR BIAS Assembly Schematic

**SERVICE
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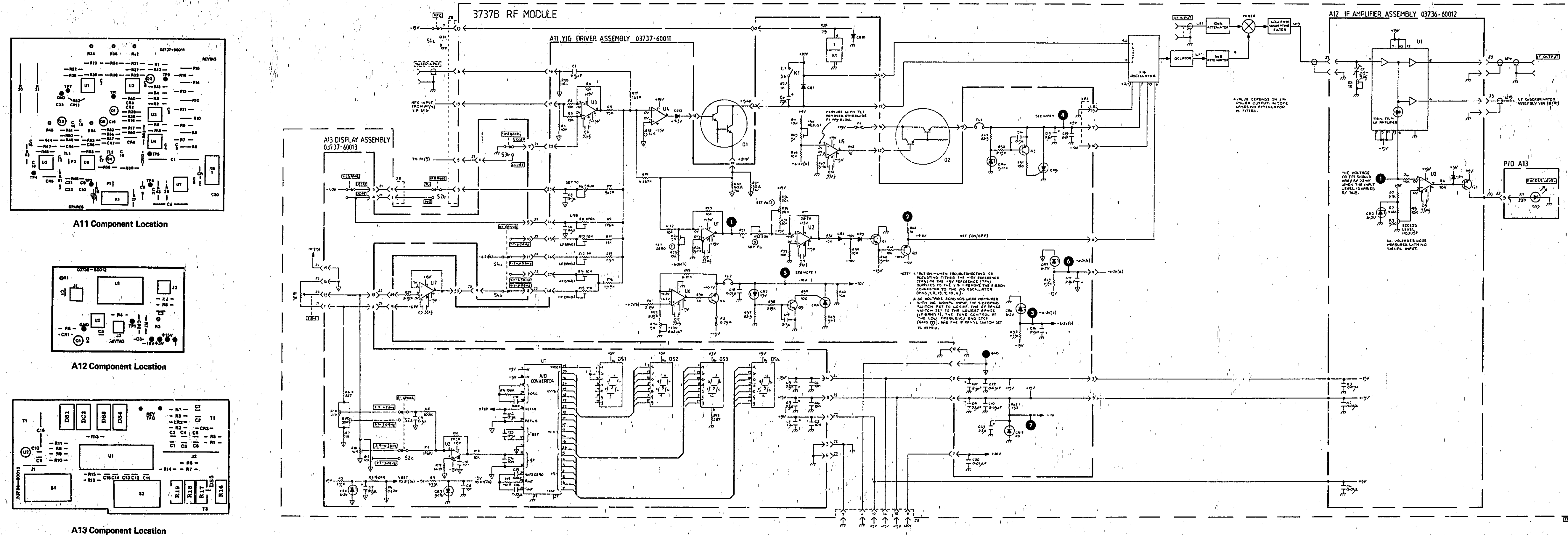


Figure 37-4 3737B Schematic and Component Locations

38-1 RF MODULE (3739B)

38-2 INTRODUCTION

38-3 The RF MODULE contains the essential components to perform the down conversion from RF to IF. The RF INPUT signal is mixed with a signal from the YIG OSCILLATOR to produce the IF signal which is filtered and amplified. The tuning and output power of the YIG OSCILLATOR are controlled by the YIG DRIVER assembly (A11). An IF AMPLIFIER assembly (A12) with dual outputs provides a front panel IF OUTPUT and an output for AFC purposes which is connected to the DISCRIMINATOR assembly (A2) in the mainframe. Indication of the EXCESS LEVEL at the RF INPUT is derived from a detected output on the IF AMPLIFIER.

38-4 YIG DRIVER ASSEMBLY A11

38-5 The tuning of the YIG OSCILLATOR is dependent on the summation of the various voltages at U2 input, which in turn is dependent on the setting of the TUNE control, the RF RANGE switch, the IF RANGE switch, the SIDEBAND switch and also the AFC switch. With the AFC switch set to NORMAL or TRACKING, an AFC voltage is applied via Buffer U1 to the summing input of U2. Switching the SIDEBAND switch, at the input U1, inverts the

phase of the voltage at U1 output to ensure the sense of the AFC loop is correct. Pre-set adjustments are described further in Paragraph 5-19. The Darlington pair transistor Q1 provides the current drive to the YIG oscillator tuning coil. The relay K1 is closed in all positions of the AFC switch except tracking to connect R32/C17 across the tuning coil minimising any FM noise from the high impedance output of Q1. In the TRACKING mode however, R32/C17 are switched out by A11K1 to maintain the AFC loop stability. Diodes A11CR1 and A11CR5 prevent the relay contacts and coil respectively from introducing spikes on to the power supply lines.

38-6 The circuit of A11U3, A11Q1 and Q2 provide the stabilised power supply for YIG oscillator bias. The voltage is set (by A11R23) to the voltage stamped on the YIG. Overvoltage protection is provided by A11Q1, A11CR3 and A11CR5. The overvoltage is determined by the zener voltage CR3. When overvoltage is detected, thyristor A11CR4 is triggered on. The power supply is protected by fuse A11F1.

38-7 MICROWAVE COMPONENTS

38-8 A 10dB ATTENUATOR pad connected between the RF INPUT and the MIXER improves the isolation and matching between the RF source and the MIXER. The

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semi-rigid co-ax connection between the 10dB ATTENUATOR pad and the MIXER is kept to a minimum, to reduce the VSWR. The 10dB ATTENUATOR may be replaced with an isolator which gives improved input sensitivity, over a limited frequency range (determined by the isolator). Isolator accessories are listed in Paragraph 1-24.

13-9 The YIG OSCILLATOR is connected to the MIXER via an ATTENUATOR and an ISOLATOR. The ATTENUATOR pad is selected to set the YIG OSCILLATOR drive to the mixer at +10dBm. The attenuator pad is nominally 3dB or 6dB, though in certain cases where the YIG OSCILLATOR output power is low no ATTENUATOR is fitted. The ISOLATOR is broadband with a typical insertion loss of less than 1dB and better than 18dB's of isolation. This prevents any reflections from the MIXER 'pulling' the YIG OSCILLATOR. The ISOLATOR is connected as close to the YIG OSCILLATOR as possible and the ATTENUATOR as close to the MIXER as possible to minimise the effect of reflections (the longest length of semi-rigid co-ax is therefore between the ISOLATOR and ATTENUATOR).

38-10 A low-pass ABSORPTIVE FILTER, connected between the MIXER output and the IF AMPLIFIER (assembly A12), absorbs any RF present at the MIXER output thus preventing reflections and allowing the IF component to pass to the IF AMPLIFIER.

38-11 IF AMPLIFIER ASSEMBLY A12

38-12 The thin film IF AMPLIFIER U1 has dual outputs and a gain of approximately 22dB. A flatness adjustment by means of C1/R1 optimises the IF flatness across the band. The detected IF output at U1 pin 6 gives a dc output proportional to the IF level, which in turn is proportional to the RF level. The threshold detector U2 is adjusted by A12R3 to light the EXCESS LEVEL lamp when the RF level at the RF INPUT exceeds +3dBm.

38-13 DISPLAY ASSEMBLY A13

38-14 This assembly produces a readout of the INPUT FREQUENCY directly (with offset and scaling) from the YIG tuning voltage. This is possible because the YIG frequency is directly proportional to the tuning current and hence to the tuning voltage.

38-15 The circuit is based around U1, a DVM chip which provides a seven-segment coded output directly to the LED displays which is proportional to the ratio of V_{IN} and V_{REF} .

RF MODULE (3738B)

38-16 U2 sums the offset and scaled voltage which are adjusted to suit individual plug-ins. The upper and lower frequency ranges are selected by S2c and S2d, and the upper and lower sidebands by S1a and S1b.

38-17 RF MODULE TROUBLESHOOTING

38-18 Typical RF to IF Gain Conversion +5dB.

38-19 YIG DRIVER ASSEMBLY

38-20 The dc voltages on the schematic diagram are typical. The V bias voltage at TP2 is stamped on the YIG. This voltage is derived from the -15V line and has fused protection on this assembly.

38-21 With the conditions set up as outlined on the schematic diagram the voltage at A11 pin 18 increases by typically +0.2V per GHz when the TUNE control is varied, and the voltage at A11 pin 20 decreases by typically +1V per GHz.

38-22 Carry out Paragraph G1-13 (AFC AMPLIFIER) steps a, b and c. Set the AFC switch to NORMAL and the SIDEBAND switch to LO > RF. The voltage variation at A11U1 pin 6 should be similar to that obtained in G1-13 step c. Switch the SIDEBAND switch to LO < RF the voltages should remain almost the same numerically but with reversed sign.

38-23 If a fault is suspected in one of the microwave components, check the power levels with a Microwave Spectrum Analyzer.

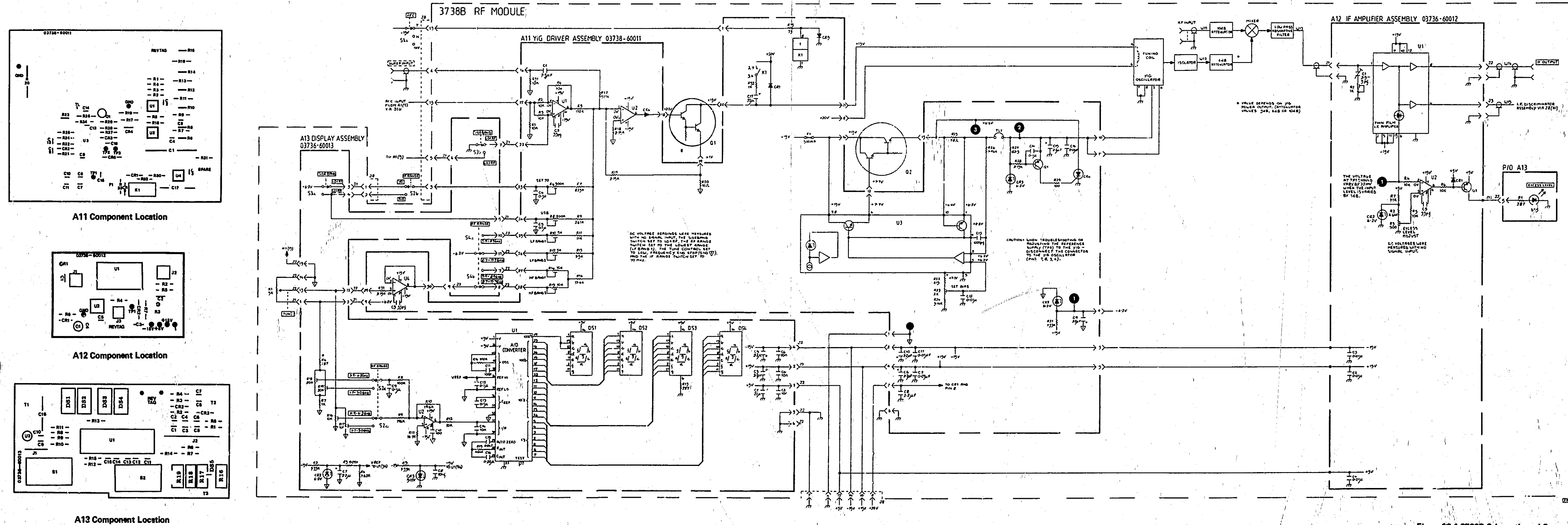
38-24 The YIG OSCILLATOR POWER OUTPUT should be between +12dBm and +24dBm with a variation across the band of <9dBm (into 50Ω).

38-25 The ISOLATOR INSERTION LOSS is <1dB.

38-26 The MIXER CONVERSION LOSS should be between 6 and 10dB.

38-27 The output of A13U2 (measured at A13R12 or A13U1(31)) should vary by at least 100mV when the TUNE control is taken from fully clockwise to fully anticlockwise. Typically, a 1GHz change in frequency per 110mV (at A13U1 pin 31) can be expected.

38-28 The seven-segment coded outputs of A13U1 should be $2.8 \pm 0.2V$ when the appropriate LED segment is energised, and $4.4 \pm 2V$ when the segment is off. The individual seven-segment LED displays may be interchanged if one is suspected of being faulty.



39-1 RF MODULE (3739B)

39-2 INTRODUCTION

39-3 The RF MODULE contains the essential components to perform the down conversion from RF to IF. The RF INPUT signal is mixed with a signal from the YIG OSCILLATOR to produce the IF signal which is filtered and amplified. The tuning and output power of the YIG OSCILLATOR are controlled by the YIG DRIVER assembly (A11). An IF AMPLIFIER assembly (A12) with dual outputs provides a front panel IF OUTPUT and an output for AFC purposes which is connected to the DISCRIMINATOR assembly (A2) in the mainframe. Indication of the EXCESS LEVEL at the RF INPUT is derived from a detected output on the IF AMPLIFIER.

39-4 YIG DRIVER ASSEMBLY A11

39-5 The tuning of the YIG OSCILLATOR is dependent on the summation of the various voltages at U2 input, which in turn is dependent on the setting of the TUNE control, the RF RANGE switch, the IF RANGE switch, the SIDEBAND switch and also the AFC switch. With the AFC switch set to NORMAL or TRACKING, an AFC voltage is applied via Buffer U1 to the summing input of U2. Switching the SIDEBAND switch, at the input U1, inverts the

phase of the voltage at U1 output to ensure the sense of the AFC loop is correct. Pre-set adjustments are described further in Paragraph 5-19. The Darlington pair transistor Q1 provides the current drive to the YIG oscillator tuning coil. The relay K1 is closed in all positions of the AFC switch except tracking to connect R27/C17 across the tuning coil minimising any FM noise from the high impedance output of Q1. In the TRACKING mode however, R27/C17 are switched out by A11K1 to maintain AFC loop stability. Diodes A11CR1 and A11CR5 prevent the relay contacts and coil respectively from introducing spikes on to the power supply lines.

39-6 The circuit of A11U3, A11Q1 and Q2 provide the stabilised power supply for YIG oscillator bias. The voltage is set, (by A11R24), to the voltage stamped on the YIG described in Paragraph 5-18. Overvoltage protection is provided by A11U4 and A11CR4. Overvoltage is detected by A11U4 at a level set by A11CR30. Adjustment of A11R30 is given in Paragraph 5-18. When overvoltage is detected, thyristor A11CR4 is triggered on. The power supply is protected by fuse A11F1.

39-7 MICROWAVE COMPONENTS

39-8 A 10dB ATTENUATOR pad connected between the RF INPUT and the MIXER improves the isolation and

Model 3730B

matching between the RF source and the MIXER. The semi-rigid co-ax connection between the 10dB ATTENUATOR pad and the MIXER is kept to a minimum, to reduce the VSWR. The 10dB ATTENUATOR may be replaced with an isolator which gives improved input sensitivity, over a limited frequency range (determined by the isolator). Isolator accessories are listed in Paragraph 1-24.

39-9 The YIG OSCILLATOR is connected to the MIXER via an ATTENUATOR and an ISOLATOR. The ATTENUATOR pad is selected to set the YIG OSCILLATOR drive to the mixer at +10dBm. The attenuator pad is nominally 3dB or 6dB, though in certain cases, where the YIG OSCILLATOR output power is low, no ATTENUATOR is fitted. The ISOLATOR is broadband with a typical insertion loss of less than 1dB and better than 18dB's of isolation. This prevents any reflections from the MIXER 'pulling' the YIG OSCILLATOR. The ISOLATOR is connected as close to the YIG OSCILLATOR as possible and the ATTENUATOR as close to the MIXER as possible to minimise the effect of reflections (the longest length of semi-rigid co-ax is therefore between the ISOLATOR and ATTENUATOR).

39-10 A low-pass ABSORPTIVE FILTER, connected between the MIXER output and the IF AMPLIFIER (assembly A12), absorbs any RF present at the MIXER output thus preventing reflections and allowing the IF component to pass to the IF AMPLIFIER.

39-11 IF AMPLIFIER ASSEMBLY A12

39-12 The thin film IF AMPLIFIER U1 has dual outputs and a gain of approximately 22dB. A flatness adjustment by means of C1/R1 optimises the IF flatness across the band. The detected IF output at U1 pin 6 gives a dc output proportional to the IF level, which in turn is proportional to the RF level. The threshold detector U2 is adjusted by A12R3 to light the EXCESS LEVEL lamp when the RF level at the RF INPUT exceeds +3dBm.

39-13 DISPLAY ASSEMBLY A13

39-14 This assembly produces a readout of the INPUT FREQUENCY directly (with offset and scaling) from the YIG tuning voltage. This is possible because the YIG frequency is directly proportional to the tuning current and hence to the tuning voltage.

39-15 The circuit is based around U1, a DVM chip which provides a seven-segment coded output directly to the LED displays which is proportional to the ratio of V_{IN} and V_{REF} .

RF Module (3739B)

39-16 U2 sums the offset and scaled voltages which are adjusted to suit individual plug-ins. The upper and lower frequency ranges are selected by S2c and S2d, and the upper and lower sidebands by S1a and S1b.

39-17 RF MODULE TROUBLESHOOTING

39-18 Typical RF to IF Gain Conversion +3dB.

39-19 YIG DRIVER ASSEMBLY

39-20 The dc voltage on the schematic diagram are typical. For V bias value see the value stamped on the YIG. This voltage is derived from the -15V supply and has fused protection on this assembly.

39-21 With the conditions set up as outlined on the schematic diagram the voltage at A11 pin 18 increases by typically +0.2V per GHz when the TUNE control is varied, and the voltage at A11 pin 20 decreases by typically +0.5V per GHz.

39-22 Carry out Paragraph G1-13 (AFC AMPLIFIER) steps a, b and c. Set the AFC switch to NORMAL and the SIDEBAND switch to LO > RF. The voltage variations at A11U1 pin 6 should be similar to that obtained in G1-13 step c. Switch the SIDEBAND switch to LO < RF the voltages should remain almost the same numerically but with reversed sign.

39-23 If a fault is suspected in one of the microwave components, check the power levels with a Microwave Spectrum Analyzer.

39-24 The YIG OSCILLATOR POWER OUTPUT should be between +13dBm and +19dBm with a variation across the band of < 6dBm (into 50Ω).

39-25 The ISOLATOR INSERTION LOSS is < 1dBm.

39-26 The MIXER CONVERSION LOSS should be between 6 and 12dB.

39-27 The output of A13U2 (measured at A13R12 or A13U1(31) should vary by at least 100mV when the TUNE control is taken from fully clockwise to fully anti-clockwise. Typically, a 1GHz change in frequency per 110mV (at A13U1 pin 31) can be expected.

39-28 The seven-segment coded outputs of A13U1 should be $2.8 \pm 0.2V$ when the appropriate LED segment is energised, and $4.4 \pm 2V$ when the segment is off. The individual seven-segment LED displays may be interchanged if one is suspected of being faulty.

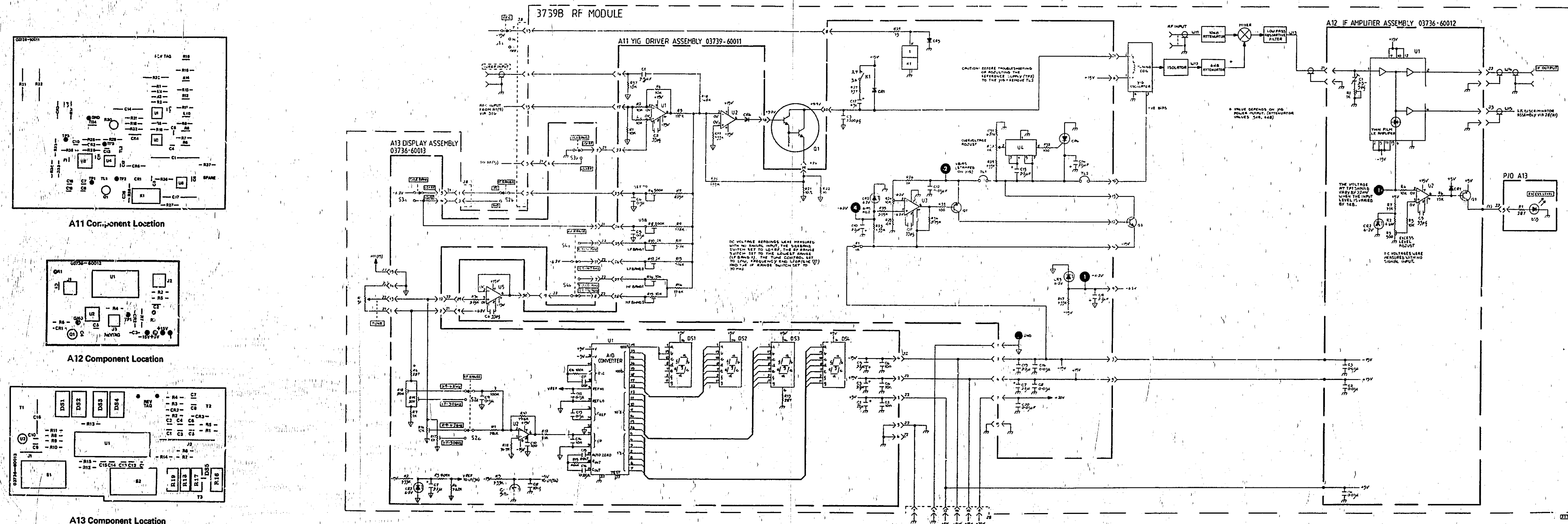


Figure 39-1 3739B Schematic and Component Locations

MANUAL CHANGES

MANUAL CHANGES

MANUAL IDENTIFICATION

Model Number: 3730B

Date Printed: Sept. 1982

Part Number: 03730-90002

This supplement contains important information for correcting manual errors and for adapting the manual to instruments containing improvements made after the printing of the manual.

To use this supplement:

Make all ERRATA corrections.

Make all appropriate serial number related changes indicated in the tables below.

Serial Prefix or Number	Make Manual Changes	Serial Prefix or Number	Make Manual Changes

• NEW ITEM

ERRATA

TITLE PAGE of Manual.

Amend text under SERIAL NUMBERS to read as follows:

This manual applies directly to instruments with the following serial prefix, 3730B . . . 2245U, 3736B . . . 2246U, 3737B . . . 2243U, 3738B . . . 2244U and 3739B . . . 2243U. For additional information about instruments with other serial numbers, see INSTRUMENTS COVERED BY MANUAL in Section 1.

NOTE

Manual change supplements are revised as often as necessary to keep manuals as current and accurate as possible. Hewlett-Packard recommends that you periodically request the latest edition of the supplement. Free copies are available from all HP offices. When requesting copies quote the manual identification information from your supplement or the model number and print date from the title page of the manual.

8th Nov. 1982

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