

Note

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HP References in this Manual

This manual may contain references to HP or Hewlett-Packard. Please note that Hewlett-Packard's former test and measurement, semiconductor products and chemical analysis businesses are now part of Agilent Technologies.

Changes to this Manual

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OPERATING AND SERVICE MANUAL

**10740A
COUPLER**

(PART OF 5501A LASER TRANSDUCER SYSTEM)

SERIAL PREFIX

This manual applies directly to Hewlett-Packard Model 10740A Coupler with serial prefix 1948A.

For serial prefixes above 1948A, a "Manual Change Sheet" is included with this manual.

Printed: JAN 1980

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5301 STEVENS CREEK BLVD., SANTA CLARA, CALIF. 95050

**Manual Part No. 10740-90004
Microfiche No. 10740-90005**

Printed in U.S.A.



CERTIFICATION

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

WARRANTY

This Hewlett-Packard instrument product is warranted against defects in materials and workmanship for a period of 90 days from date of shipment. During the warranty period, HP will, at its option, either repair or replace products which prove to be defective.

Warranty service of this product will be performed at Buyer's facility at no charge within HP service travel areas. Outside HP service travel areas, warranty service will be performed at Buyer's facility only upon HP's prior agreement and Buyer shall pay HP's round trip travel expenses. In all other cases, products must be returned to a service facility designated by HP.

For products returned to HP for warranty service, Buyer shall prepay shipping charges to HP and HP shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

HP warrants that its software and firmware designated by HP for use with an instrument will execute its programming instructions when properly installed on that instrument. HP does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error free.

LIMITATION OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. HP SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES. HP SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

ASSISTANCE

Product maintenance agreements and other customer assistance agreements are available for Hewlett-Packard products.

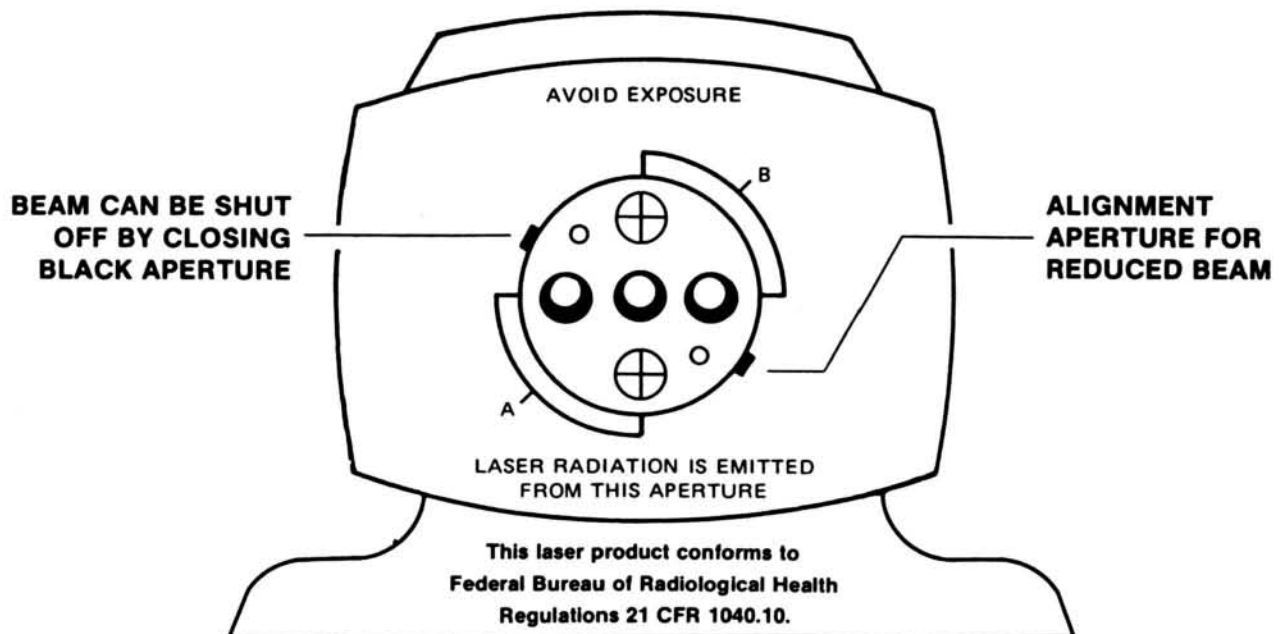
For any assistance, contact your nearest Hewlett-Packard Sales and Service Office. Addresses are provided at the back of this manual.

(U.S.A. ONLY)
FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE
STATEMENT

Warning: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

SAFETY PRECAUTIONS

This is a Safety Class I system. This system has been designed and tested according to IEC Publication 348, "Safety Requirements for Electronic Measuring Apparatus". This product is also a Class II Laser Product conforming to Federal Bureau of Radiological Health Regulations 21 CFR 1040.10.



"CAUTION" - Laser radiation when open and interlock failed or defeated. DO NOT STARE INTO BEAM.

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Model 10740A
General Information

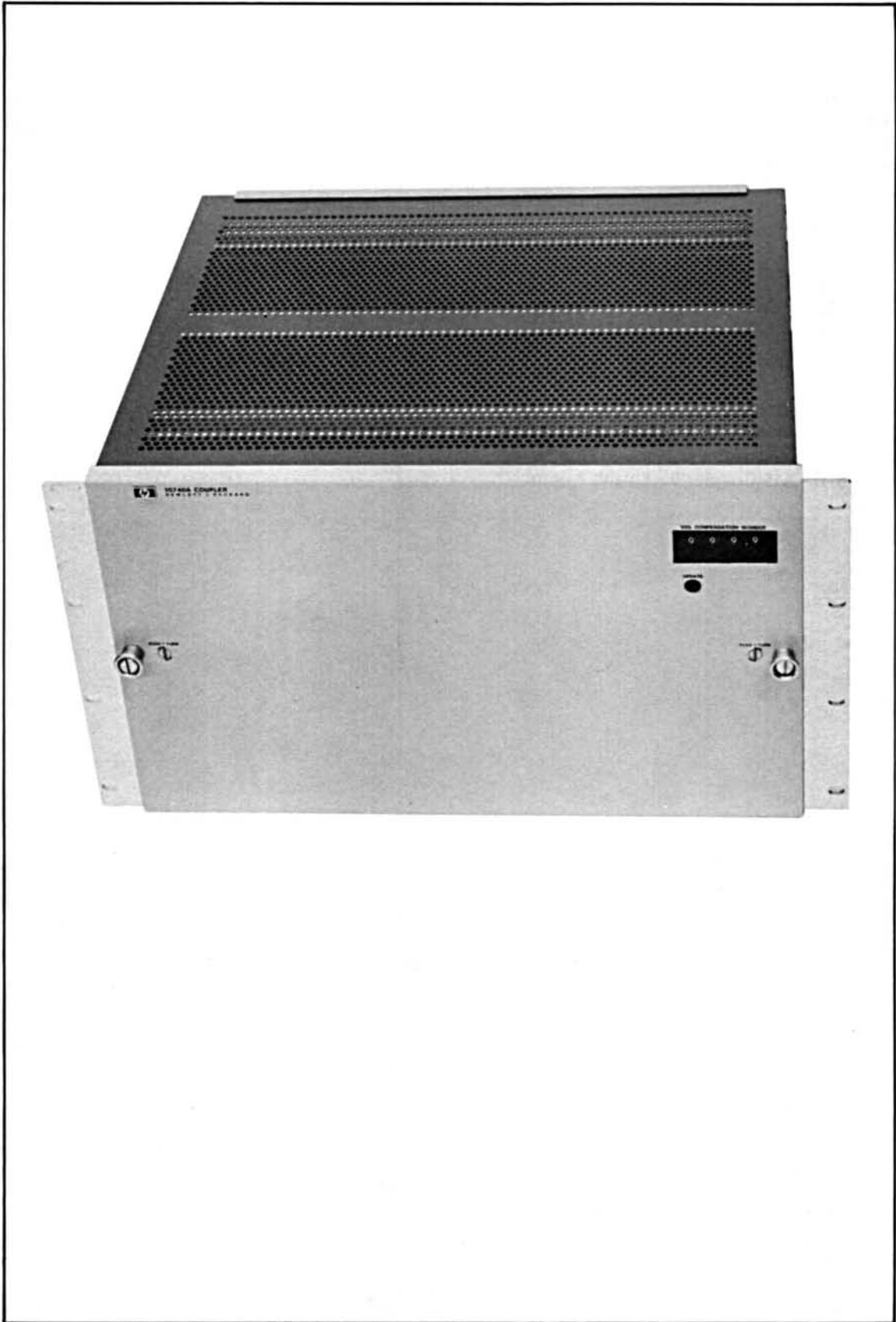


Figure 1-1. Model 10740A Coupler

SECTION 1 GENERAL INFORMATION

1-1. SCOPE OF THIS MANUAL

1-2. This manual provides installation, operation, and service information for the Hewlett-Packard Model 10740A Coupler.

1-3. INFORMATION IN OTHER MANUALS

1-4. Some non-specific information in the 5501A Laser Transducer System manual and other manuals also applies to the 10740A and has not been repeated in this manual. For complete 10740A understanding, you must be thoroughly familiar with the 5501A system and service manuals and the functional operation of all electronic modules that can plug into the Coupler housing.

1-5. HP 10740A COUPLER DESCRIPTION

1-6. The Model 10740A Coupler is the housing for all input/output electronic circuit boards used in 5501A Laser Transducer-based measurement systems. Designed to hold up to 10 circuit cards, the 10740A Coupler provides all interconnections by means of a backplane bus which allows data transfer and the application of input power (+5V, $\pm 15V$) to all circuit cards. Both the rear and front panels of the Coupler are removable to provide access to all circuit cards. If the 10756A Manual Compensator is selected in a measurement system, the 10740A Coupler front panel allows access to the thumbwheel input and update switches. The Coupler is supplied with power supply cables 10740-60004 and 10740-60005.

1-8. HP 10740A SPECIFICATIONS

1-9. Specifications of the 10740A are given in Table 1-1.

Table 1-1. HP Model 10740A Coupler Specifications

Capacity	10 circuit boards (up to 14 on special order)
Input Power:	+5V, $\pm 15V$ via rear terminal strip on backplane bus
Input/Output	Cable access through rear of 10740A Coupler
Maximum Power Dissipation	100 watts
Weight	5.3 kg (11.7 lbs.)
Dimensions	See Figure 1-1

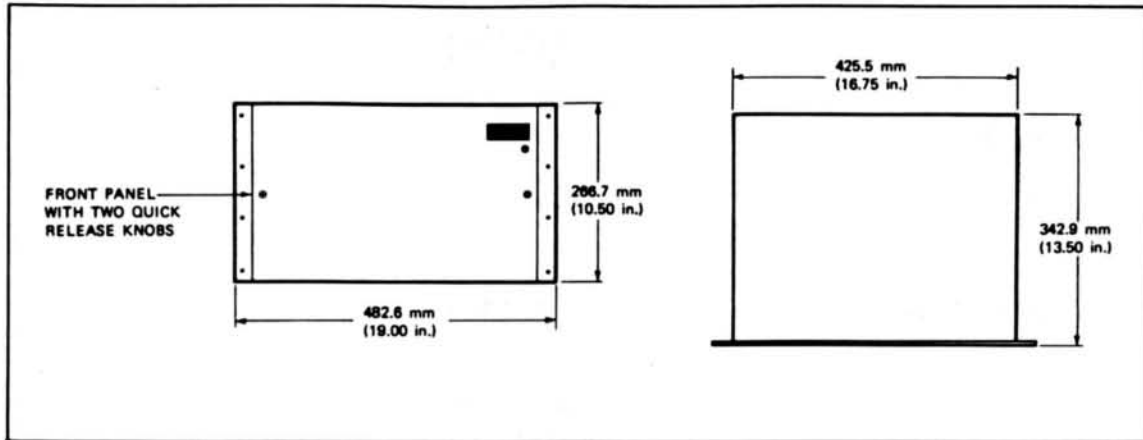


Figure 1-1. 10740A Dimensions

1-10. PRINTED CIRCUIT BOARD IDENTIFICATION AND MANUAL CHANGES

1-11. Each model 10740A backplane printed circuit board has a four-digit series identification number (e.g., 1644). The series number identifies a group of identical printed circuit boards. If the series number on your board is not the same as the series number on the title page of this manual, your board is different from this manual. A change sheet should be included that has the correct series number (change sheet is only for series numbers that are greater than the one shown on the title page), and this change sheet describes the differences between series numbers. If the change sheet is missing, request one from the nearest Hewlett-Packard Sales and Service Office listed at the back of this manual.

1-12. For information regarding serial numbers lower than the one shown on the title page, refer to Section 7 of this manual.

1-13. MANUAL MICROFICHE

1-14. A microfiche of this manual will not include changes listed on the MANUAL CHANGES sheet for this manual, but will include Supplemental information. Shortly after a Supplement for a manual is created, a new microfiche of the manual (with the pages provided by the Supplement integrated into it) is prepared. This new microfiche is then issued under the microfiche number shown for this manual alone. Thus, the microfiche user will (usually) have the most up-to-date version of the manual on his fiche, without having to switch fiches to pick up Supplement pages.

1-15. SAFETY CONSIDERATIONS

1-16. The HP 10740A is a Safety Class I instrument. This instrument has been designed and tested in accordance with IEC Publication 348, *Safety Requirements for Electronic Measuring Apparatus*.

1-17. This manual contains information, cautions, and warnings which must be followed by the user to ensure safe operation and to retain the instrument in safe condition.

1-18. EQUIPMENT SUPPLIED AND AVAILABLE ACCESSORIES

1-19. The 10740A Coupler standard equipment consists of the Coupler and 2 power supply cables 10740-60004 and 10740-60005.

1-20. An available accessory is the Model 10743A Extender Board. It acts as a feed-through blank circuit board to assist in system integration and troubleshooting. The 10743A Extender Board allows all 5501A Laser Transducer system input/output circuit cards to be brought external to the 10740A Coupler.

SECTION 2 INSTALLATION

2-1. INTRODUCTION

2-2. This section provides instructions for unpacking, inspection, preparation for use, power requirements, operating environment, installation, interconnecting cables, operational check and warranty claims, packaging for reshipment, storage, and field installation of optics.

2-3. UNPACKING AND INSPECTION

2-4. If the shipping carton is damaged, inspect the 10740A for visible damage (scratches, cracks, etc.). If the 10740A is damaged, notify the carrier and the nearest Hewlett-Packard Sales and Service Office immediately (offices are listed at the back of this manual). Keep the shipping carton and packing material for the carrier's inspection. The HP Sales and Service Office will arrange for repair or replacement of your instrument without waiting for the claim against the carrier to be settled.

2-5. WARRANTY CLAIMS

2-6. Contact the nearest HP Sales and Service Office (see manual inside back cover) for information relative to warranty claims.

2-7. PACKAGING FOR RESHIPMENT

2-8. Original Packaging

2-9. The same containers and materials used in factory packaging can be obtained through the nearest Hewlett-Packard Sales and Service Office.

2-10. If the 10740A is being returned to Hewlett-Packard for service attach a tag indicating the type of service required, return address, model number, and full serial number. Mark the container FRAGILE to assure careful handling.

2-11. In any correspondence refer to the instrument by model number and full serial number.

2-12. Other Packaging Methods

2-13. If it becomes necessary to reship an instrument, good commercial packing should be used. Contract packaging companies in many cities can provide dependable custom packaging on short notice. The following general instructions should be followed when repackaging with commercially available materials.

- a. If shipping to a Hewlett-Packard Service Office or Center, attach a tag indicating the type of service required, return address, model number and full serial number.
- b. Wrap the instrument in heavy paper or plastic.
- c. Use a strong shipping container. A double-wall carton, made of 350 pound test material, is adequate.
- d. Use enough shock-absorbing material (three- to four-inch layer) around all sides of the instrument to provide a firm cushion and prevent movement inside the container. Protect the control panel with cardboard.
- e. Seal the shipping container securely.
- f. Mark the shipping container FRAGILE to assure careful handling.

2-14. STORAGE

2-15. If the 10740A is to be stored for an extended period of time, it should be enclosed in a clean sealed container.

2-16. POWER REQUIREMENTS

2-17. The HP 10740A requires +5V, +15V, and -15V dc with a maximum total power dissipation of 100 watts. The Coupler has no internal power supplies, but supplies power to the modules from external power supplies connected to a barrier strip on its rear panel. Note that the $\pm 15V$ is required only if the 5510A Option 010 Automatic Compensator is used in place of the 10756A Manual Compensator.

NOTE

Power must be supplied by units external to the Coupler. Refer to the HP 5501A Transducer System manual for general power requirements.

2-18. HP 10740A SYSTEM INTEGRATION AND RACK MOUNTING

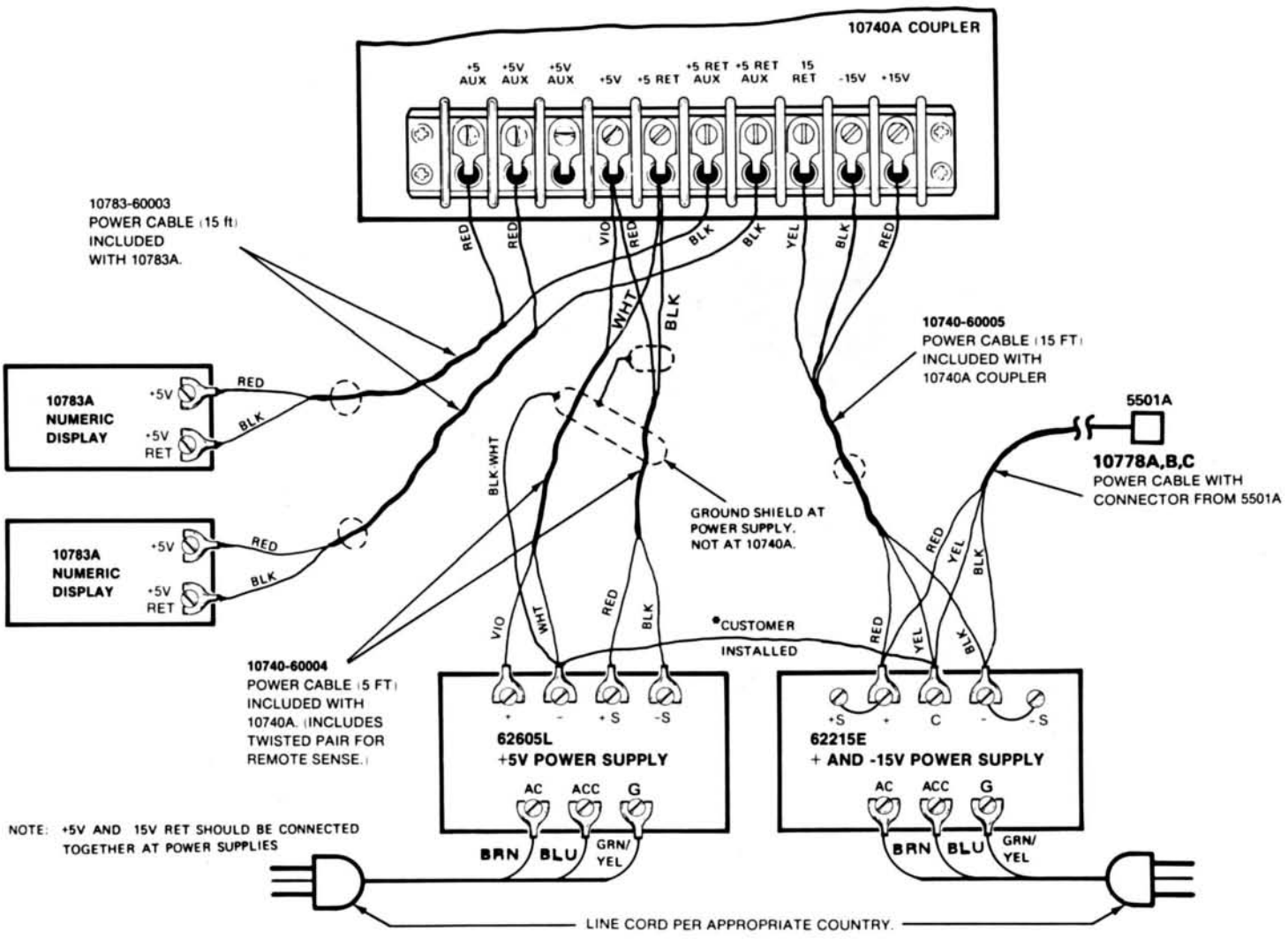
WARNING

BEFORE PERFORMING THE FOLLOWING STEPS, BE SURE THAT ALL SYSTEM ITEMS THAT ARE CONNECTED TO AN AC POWER SOURCE HAVE A COMMON EARTH GROUND CONNECTION. IT IS POSSIBLE TO HAVE A DIFFERENCE IN ELECTRICAL POTENTIAL BETWEEN THE VARIOUS SYSTEM COMPONENTS IF A COMMON GROUND IS NOT ENSURED. THIS CONDITION CAN CAUSE INJURY TO OPERATING PERSONNEL AND/OR CAUSE DAMAGE TO THE SYSTEM COMPONENTS. ALSO, BE CERTAIN THAT ANY SURROUNDING EQUIPMENT, SUCH AS A MACHINE TOOL, HAS THE SAME COMMON GROUND FOR ITS POWER SOURCE AS THE LASER SYSTEM GROUND.

- 2-19. If the 10740A Coupler is to be rack mounted or installed in a cabinet, perform the following:
- The following restrictions apply when rack mounting the Coupler.
 - You must provide your own mounting screws.
 - The 10740A Coupler only fits a 19-inch wide rack.
 - Place 10740A Coupler in rack allowing for proper ventilation (1-inch spacing above and below the Coupler housing).
 - Place the cosmetic facing for the rack-mount ears on the installed Coupler and attach via mounting screws to the cabinet body.
- 2-7. Install and check out the 10740A Coupler as follows.
- Attach cables to the Coupler as shown in Figure 2-1. (See also Appendix C of 5501 Laser Transducer System Manual.)
 - Apply system power to suitable source of ac power. At the rear panel of the 10740A Coupler, verify that the voltage is +15V (± 0.25 Vdc), -15V (± 0.25 Vdc), and +5V (+0.10 to -0.05 Vdc). See Figure 2-1.

CAUTION

Before installing any circuit board in the Coupler's housing, turn the power off.



**If noise problems occur, try moving this wire to the rear terminal strip of the 10740A coupler.*

Figure 2-1. 10740A Coupler Rear-Panel Wiring and Strapping on Power Supplies

NOTE

To connect any hooded connector to a circuit card in the 10740A Coupler, pass the connector through the slot in the rear panel of the Coupler and install it on the front edge connector of the applicable card (see Figure 2-2).

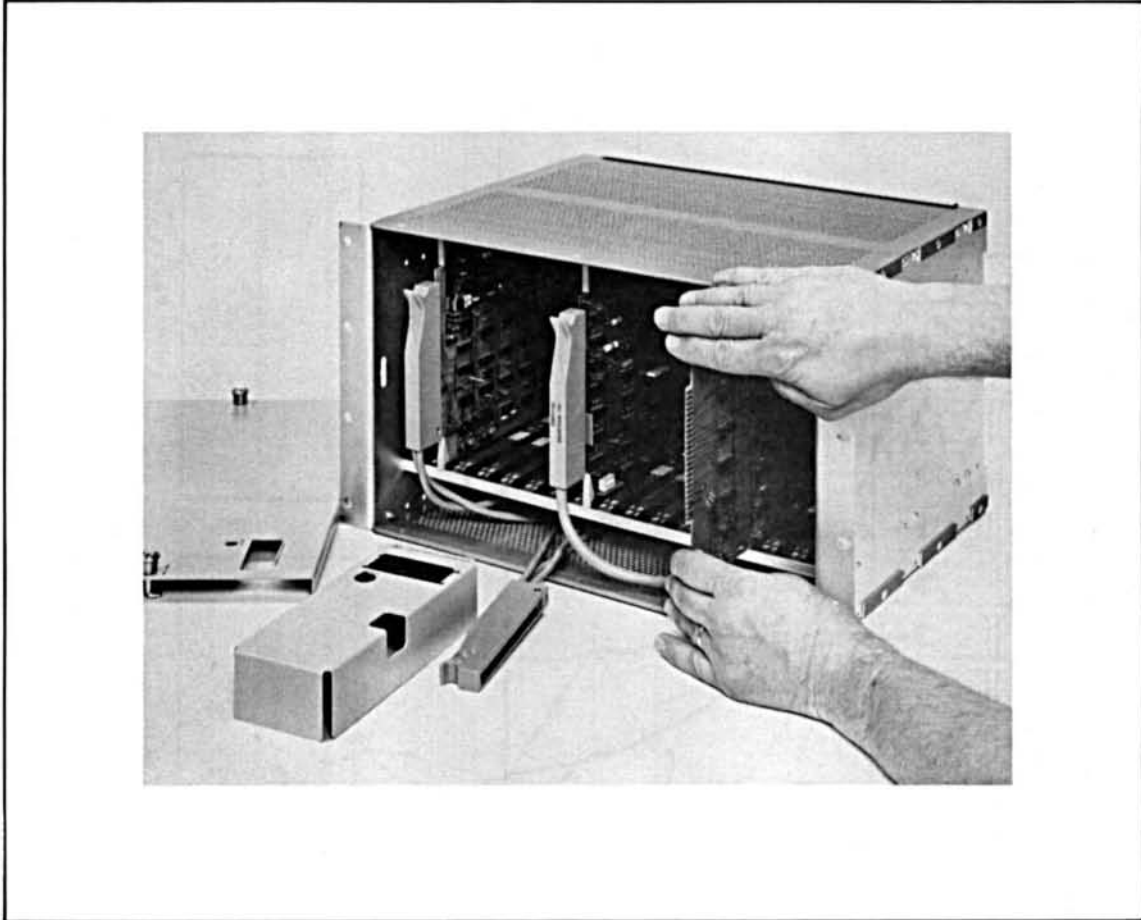


Figure 2-2. Installation of Hooded Connectors and Circuit Cards

2-8. Complete system installation and checkout procedures for the various configurations of 5501 systems can be found in the 5501 Laser Transducer System Operating and Service Manual.

SECTION 3

OPERATION AND THEORY

3-1. INTRODUCTION

3-2. This section contains operating and theory information for the HP 10740A Coupler.

3-3. OPERATION

3-4. The 10740A Coupler has no active electronic components or operating controls.

3-5. THEORY

3-6. The purpose of the 10740A is to serve as the interconnecting wiring and power distribution medium for the printed circuit assemblies which plug into the backplane connectors of the 10740A Coupler housing.

SECTION 4

MAINTENANCE AND TROUBLESHOOTING

4-1. INTRODUCTION

4-2. This section contains maintenance and service information references for the 10740A Coupler.

4-3. PREVENTIVE MAINTENANCE

4-4. The preventive maintenance procedures given in the following paragraphs are provided to help prolong the useful life of the Coupler.

- **VISUAL INSPECTION:** Inspect the unit for indication of electrical defects. Look for signs of overheating, corrosion, accumulations of dust, oil, loose electrical connections, or broken parts.
- **REPAIR AND CLEANING:** Repair any obvious defects, and if necessary, clean the unit with a brush, compressed clean dry air jet, a vacuum cleaner, or a suitable liquid solvent.

4-5. TROUBLESHOOTING

4-6. Procedures to isolate system troubles to this assembly are contained in the 5501A System Manual. The only way to isolate specific problems in the 10740A Coupler is to run a continuity check. Table 4-1 has been provided to assist continuity checking.

Table 4-1. 10740A Coupler Bus Lines

Function	Pins*	Names	Pins*	Names
POWER	1	+15 VOLTS	2	+15 VOLTS
	3	-15 VOLTS	4	-15 VOLTS
	5	±15 RETURN	6	±15 RETURN
	7	SPARE	8	SPARE
ADDRESSES INSTRUCTIONS COMMANDS	9	CARD ADDRESS — A	10	CARD ADDRESS — B
	11	CARD ADDRESS — C	12	CARD ADDRESS — D
	13	CARD CMD — A	14	CARD CMD — B
	15	CARD CMD — C	16	CARD CMD — D
STATUS	17	<u>DATA VALID</u>	18	<u>DATA VALID</u>
	19	<u>INSTRUCTION VALID</u>	20	<u>INSTRUCTION VALID</u>
	21	<u>OPERATION COMPLETE</u>	22	<u>OPERATION COMPLETE</u>
	23	<u>SAMPLE</u>	24	<u>PWR-UP/SYSTEM RESET</u>
ERRORS	25	<u>REF ERROR—BIT</u>	26	<u>MEAS ERROR—BIT</u>
	27	<u>V.O.L. ERROR—BIT</u>	28	<u>OVFL—BIT</u>
DECIMAL POINT	29	D.P.—BIT 1	30	D.P.—BIT 0
	31	D.P.—BIT 3	32	D.P.—BIT 2
MODE-STATUS	33	λ-MODE BIT	34	SYSTEM NULLED
	35	SPARE	36	SPARE
	Key—		Key -	
POWER	37	+5V RETURN	38	+5V RETURN
	39	+5V RETURN	40	+5V RETURN
	41	+5 VOLTS	42	+5 VOLTS
	43	+5 VOLTS	44	+5 VOLTS
	45	+5 VOLTS	46	+5 VOLTS
	47	+5V RETURN	48	+5V RETURN
	49	+5V RETURN	50	+5V RETURN
	51	SPARE	52	SPARE
DATA	53	DATA BIT 1	54	DATA BIT 0
	55	DATA BIT 3	56	DATA BIT 2
	57	DATA BIT 5	58	DATA BIT 4
	59	DATA BIT 7	60	DATA BIT 6
	61	DATA BIT 9	62	DATA BIT 8
	63	DATA BIT 11	64	DATA BIT 10
	65	DATA BIT 13	66	DATA BIT 12
	67	DATA BIT 15	68	DATA BIT 14
	69	DATA BIT 17	70	
	71	DATA BIT 19	72	DATA BIT 18
	73	DATA BIT 21	74	DATA BIT 20
	75	DATA BIT 23	76	DATA BIT 22
77	DATA BIT 25	78	DATA BIT 24	
79	DATA BIT 27	80	DATA BIT 26	
	81		82	
	83	MAKE NO CONNECTION	84	MAKE NO CONNECTION
	85		86	

*Facing the back of the 10740A backplane, connector pins are numbered with even numbers on the right and odd numbers on the left.

SECTION 5 REPLACEABLE PARTS

5-1. INTRODUCTION

5-2. This section contains information for ordering replacement parts. Table 5-1 lists parts in alphanumeric order of reference designations and provides the following information on each part:

- a. Hewlett-Packard part number,
- b. Description of part (see abbreviations below),
- c. Total quantity used in the instrument (the total quantity appears after the first entry for a given part),
- d. Typical manufacturer of the part in a five-digit code,
- e. Manufacturer's part number.

5-3. Miscellaneous parts are listed at the end of Table 5-1.

5-4. ORDERING INFORMATION

5-5. To obtain replacement parts, address order to your local Hewlett-Packard Sales and Service Office listed at the back of this manual. Identify parts by their Hewlett-Packard part number. To obtain a part that is not listed, include:

- a. Instrument model number,
- b. Instrument serial number,
- c. Description of the part,
- d. Function and location of the part.

REFERENCE DESIGNATIONS			
A = assembly AT = attenuator; isolator; termination B = fan; motor BT = battery C = capacitor CP = coupler CR = diode; diode thyristor; varactor DC = directional coupler DL = delay line DS = annunciator; signaling device (audible or visual); lamp; LED	E = miscellaneous electrical part F = fuse FL = filter H = hardware HY = circulator J = electrical connector (stationary portion); jack K = relay L = coil; inductor M = meter	MP = miscellaneous mechanical part P = electrical connector (movable portion); plug Q = transistor; SCR; triode thyristor R = resistor RT = thermistor S = switch T = transformer TB = terminal board TC = thermocouple	TP = test point U = integrated circuit; microcircuit V = electron tube VR = voltage regulator; breakdown diode W = cable; transmission path; wire X = socket Y = crystal unit-piezoelectric Z = tuned cavity; tuned circuit
ABBREVIATIONS			
A = ampere ac = alternating current ACCESS = accessory ADJ = adjustment A/D = analog-to-digital AF = audio frequency AFC = automatic frequency control AGC = automatic gain control AL = aluminum ALC = automatic level control AM = amplitude modulation AMPL = amplifier APC = automatic phase control ASSY = assembly AUX = auxiliary avg = average AWG = american wire gauge BAL = balance	BCD = binary coded decimal BD = board BE CU = beryllium copper BFO = beat frequency oscillator BH = binder head BKDN = breakdown BP = bandpass BPF = bandpass filter BRS = brass BWO = backward-wave oscillator CAL = calibrate ccw = counterclockwise CER = ceramic CHAN = channel cm = centimeter CMO = coaxial COEF = coefficient COM = common	COMP = composition COMPL = complete CONN = connector CP = cadmium plate CRT = cathode-ray tube CTL = complementary transistor logic CW = continuous wave cw = clockwise D/A = digital-to-analog dB = decibel dBm = decibel referred to 1 mW dc = direct current deg = degree (temperature interval or difference) ° = degree (plane angle) °C = degree Celsius (centigrade) °F = degree Fahrenheit	*K = degree Kelvin DEPC = deposited carbon DET = detector diam = diameter DIA = diameter (used in parts list) DIFF = differential amplifier div = division DPDT = double-pole, double-throw DR = drive DSB = double sideband DTL = diode transistor logic DVM = digital voltmeter ECL = emitter coupled logic EMF = electromotive force EDP = electronic data processing ELECT = electrolytic

ABBREVIATIONS (CONTINUED)

ENCAP	= encapsulated	min	= minute (time)	PIV	= peak inverse voltage	TFT	= thin-film transistor
EXT	= external	...	= minute (plane angle)	pk	= peak	TGL	= toggle
F	= farad	MINAT	= miniature	PL	= phase lock	THD	= thread
FET	= field-effect transistor	mm	= millimeter	PLO	= phase lock oscillator	THRU	= through
F/F	= flip-flop	MOD	= modulator	PM	= phase modulation	TI	= titanium
FH	= flat head	MOM	= momentary	PNP	= positive-negative-positive	TOL	= tolerance
FOL H	= fillister head	MOS	= metal-oxide semi-conductor	P/O	= part of	TRIM	= trimmer
FM	= frequency modulation	ms	= millisecond	POLY	= polystyrene	TSTR	= transistor
FP	= front panel	MTG	= mounting	PORC	= porcelain	TTL	= transistor-transistor logic
FREQ	= frequency	MTR	= meter (indicating device)	POS	= positive; position(s) (used in parts list)	TV	= television
FXD	= fixed	mV	= millivolt	POSN	= position	TVI	= television interference
g	= gram	mVac	= millivolt, ac	POT	= potentiometer	TWT	= traveling wave tube
GE	= germanium	mVdc	= millivolt, dc	p-p	= peak-to-peak	U	= micro (10 ⁻⁶) (used in parts list)
GHz	= gigahertz	mVpk	= millivolt, peak	PP	= peak-to-peak (used in parts list)	UF	= microfarad (used in parts list)
GL	= glass	mVp-p	= millivolt, peak-to-peak	PPM	= pulse-position modulation	UHF	= ultrahigh frequency
GND	= ground(ed)	mVrms	= millivolt, rms	PRF	= pulse-repetition frequency	UNREG	= unregulated
H	= henry	mW	= milliwatt	PREAMPL	= preamplifier	V	= volt
h	= hour	MUX	= multiplex	PRF	= pulse-repetition frequency	VA	= voltampere
HET	= heterodyne	MY	= mylar	PRR	= pulse repetition rate	Vac	= volts ac
HEX	= hexagonal	μA	= microampere	ps	= picosecond	VAR	= variable
HD	= head	μF	= microfarad	PT	= point	VCO	= voltage-controlled oscillator
HDW	= hardware	μH	= microhenry	PTM	= pulse-time modulation	Vdc	= volts dc
HF	= high frequency	μmho	= micromho	PWM	= pulse-width modulation	VDCW	= volts dc, working (used in parts list)
HG	= mercury	μs	= microsecond	PWV	= peak working voltage	V(F)	= volts, filtered
HI	= high	μV	= microvolt	RC	= resistance capacitance	VFO	= variable-frequency oscillator
HP	= Hewlett-Packard	μVdc	= microvolt, dc	RECT	= rectifier	VHF	= very-high frequency
HPF	= high pass filter	μVpk	= microvolt, peak	REF	= reference	Vpk	= volts peak
HR	= hour (used in parts list)	μVp-p	= microvolt, peak-to-peak	REG	= regulated	Vp-p	= Volts peak-to-peak
HV	= high voltage	μVrms	= microvolt, rms	REPL	= replaceable	Vrms	= volts rms
HZ	= Hertz	μW	= microwatt	RF	= radio frequency	VSWR	= voltage standing wave ratio
IC	= integrated circuit	nA	= nanoampere	RFI	= radio frequency interference	VTO	= voltage-tuned oscillator
ID	= inside diameter	NC	= no connection	RH	= round head; right hand	VTVM	= vacuum-tube voltmeter
IF	= intermediate frequency	N/C	= normally closed	RLC	= resistance-inductance-capacitance	V(X)	= volts, switched
IMPG	= impregnated	NE	= neon	RMO	= rack mount only	W	= watt
in	= inch	NEG	= negative	rms	= root-mean-square	W/	= with
INCD	= incandescent	nF	= nanofarad	RND	= round	WIV	= working inverse voltage
INCL	= include(s)	NI PL	= nickel plate	ROM	= read-only memory	WW	= wirewound
INP	= input	N/O	= normally open	R&P	= rack and panel	W/O	= without
INS	= insulation	NOM	= nominal	RWV	= reverse working voltage	YIG	= yttrium-iron-garnet
INT	= internal	NORM	= normal	S	= scattering parameter	Zo	= characteristic impedance
kg	= kilogram	NPN	= negative-positive-negative	s	= second (time)		
kHz	= kilohertz	NPO	= negative-positive zero (zero temperature coefficient)	...	= second (plane angle)		
kΩ	= kilohm	NRFR	= not recommended for field replacement	S-B	= slow-blow (fuse (used in parts list)		
kV	= kilovolt	NSR	= not separately replaceable	SCR	= silicon controlled rectifier; screw		
lb	= pound	ns	= nanosecond	SE	= selenium		
LC	= inductance-capacitance	nW	= nanowatt	SECT	= sections		
LED	= light-emitting diode	OBD	= order by description	SEMICON	= semiconductor		
LF	= low frequency	OD	= outside diameter	SHF	= superhigh frequency		
LG	= long	OH	= oval head	SI	= silicon		
LH	= left hand	OP AMPL	= operational amplifier	SIL	= silver		
LIM	= limit	OPT	= option	SL	= slide		
LIN	= linear taper (used in parts list)	OSC	= oscillator	SNR	= signal-to-noise ratio		
lin	= linear	OX	= oxide	SPDT	= single-pole, double-throw		
LK WASH	= lockwasher	oz	= ounce	SPG	= spring		
LO	= low; local oscillator	Ω	= ohm	SR	= split ring		
LOG	= logarithmic taper (used in parts list)	P	= peak (used in parts list)	SPST	= single-pole, single-throw		
log	= logarithm(ic)	PAM	= pulse-amplitude modulation	SSB	= single sideband		
LPF	= low pass filter	PC	= printed circuit	SST	= stainless steel		
LV	= low voltage	PCM	= pulse-code modulation; pulse-count modulation	STL	= steel		
m	= meter (distance)	PDM	= pulse-duration modulation	SQ	= square		
mA	= milliampere	pF	= picofarad	SWR	= standing-wave ratio		
MAX	= maximum	PH BRZ	= phosphor bronze	SYNC	= synchronize		
MΩ	= megohm	PHL	= Phillips	T	= timed (slqw-blow fuse)		
MEG	= meg (10 ⁶) (used in parts list)	PIN	= positive-intrinsic-negative	TA	= tantalum		
MET FLM	= metal film			TC	= temperature compensating		
MET OX	= metal oxide			TD	= time delay		
MF	= medium frequency; microfarad (used in parts list)			TERM	= terminal		
MFR	= manufacturer						
mg	= milligram						
MHz	= megahertz						
mH	= millihenry						
mho	= mho						
MIN	= minimum						

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 5-1. Replaceable Parts

Reference Designation	HP Part Number	Qty	Description	Mfr Code	Mfr Part Number
A15	10740-60001	1	BOARD ASSEMBLY, BACK PLANE	28480	10740-60001
C1	0160-0949	2	CAPACITOR-FXD 68PF +-5% 300VDC	28480	0160-0949
C2	0160-0949		CAPACITOR-FXD 68PF +-5% 300VDC	28480	0160-0949
TB1	0360-0692	1	BARRIER BLOCK 10-TERM INTERNAL FEED-THRU	28480	0360-0692
XA1	1251-3755	10	CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA2	-----		NOT ASSIGNED	-----	-----
XA3	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA4	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA5	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA6	-----		NOT ASSIGNED	-----	-----
XA7	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA8	-----		NOT ASSIGNED	-----	-----
XA9	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA10	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA11	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA12	-----		NOT ASSIGNED	-----	-----
XA13	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
XA14	1251-3755		CONNECTOR-PC EDGE 43-CONT/ROW 2-ROWS	28480	1251-3755
			MISCELLANEOUS PARTS		
	0510-1017	2	RETAINER-RING CRSNT EXT .375-DIA STL	0573B	2000-37-8-CD
	1390-0295	2	FASTENER-LATCH ADJ PAWL GRIP RANGE	28480	1390-0295
	5040-1498	16		28480	5040-1498
	10740-60003	1	COVER ASSEMBLY	28480	10740-60003
	12768-00005	2	TRIM STRIP	28480	12768-00005
	12768-20001	4	RAIL SUPPORT	28480	12768-20001
	12768-20004	4	RAIL, MOTHER BOARD	28480	12768-20004

See introduction to this section for ordering information

SECTION 6

SCHEMATIC DIAGRAMS

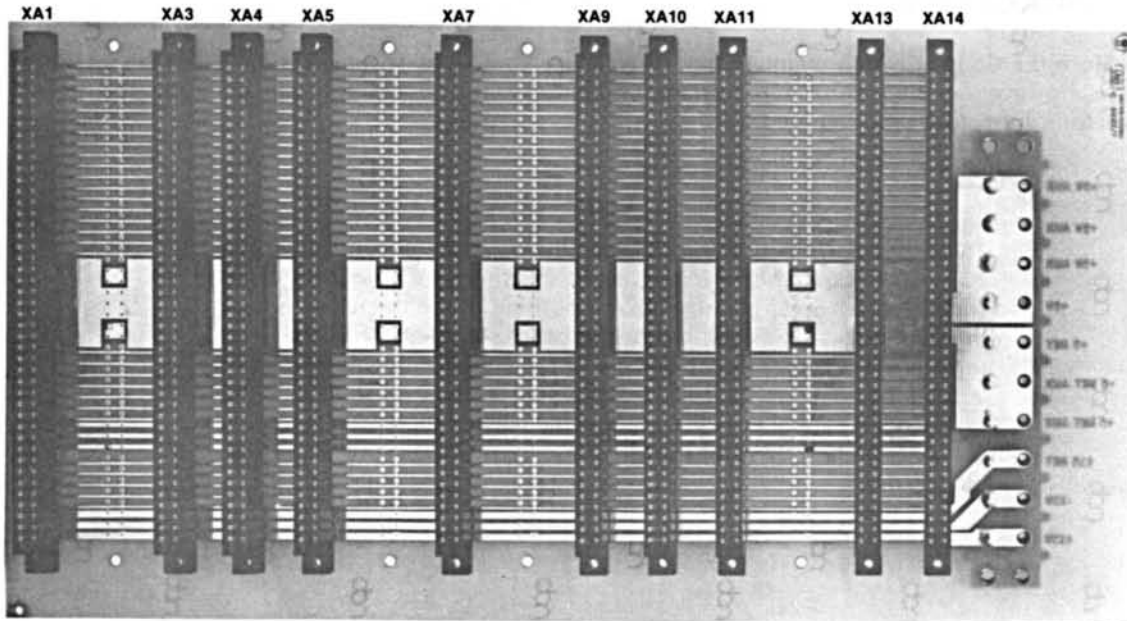
6-1. INTRODUCTION

6-2. Since the Coupler is only an interconnecting device, there is no schematic supplied in this section. There is, however, an interconnection diagram. Also included is a photograph with applicable reference designator information superimposed.

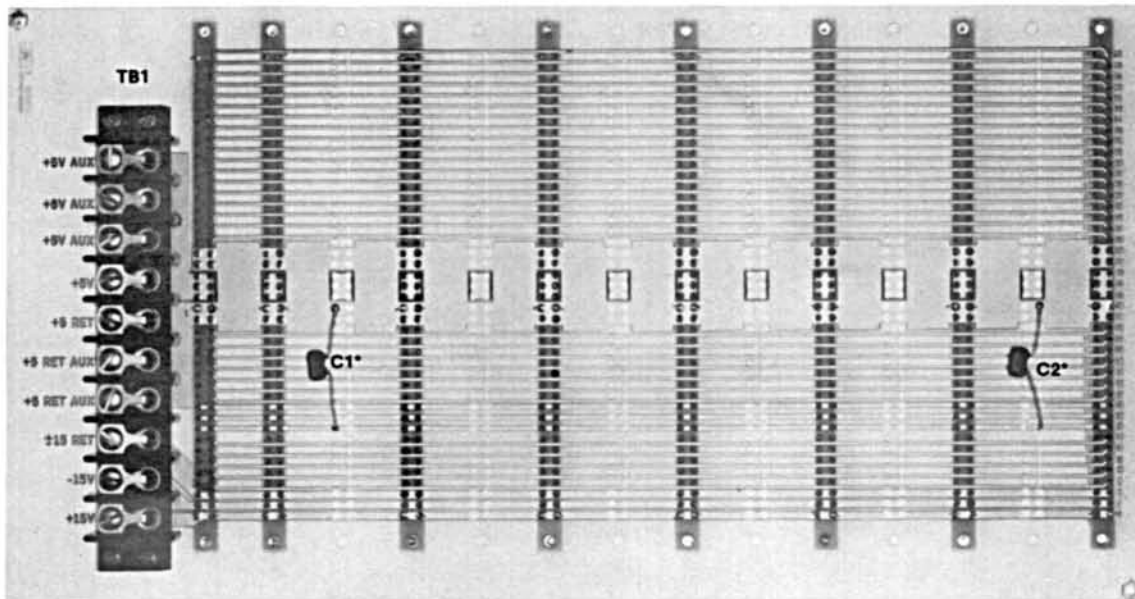
NOTE

The two capacitors (C1 and C2) are placed on the circuit side of the 10740-60001 board between the line connecting pins 17 and 18 and the wide center ground plane. Note the position of the capacitors is near the connectors on either end of the board. 10740-60001 boards with serial prefixes earlier than 1644A are not provided with empty holes to accommodate these capacitors. For serial prefixes up to 1932A, the capacitors are installed on the backplane back as shown in Figure 6-1. For series prefix 1932A and above, C1 and C2 are mounted on the backplane front.

Figure 6-1. A15 Coupler Backplane Assembly



BACKPLANE FRONT (INSIDE OF 10740A COUPLER HOUSING)



BACKPLANE BACK

*Mounted on the backplane front for serial prefix 1948A and above.

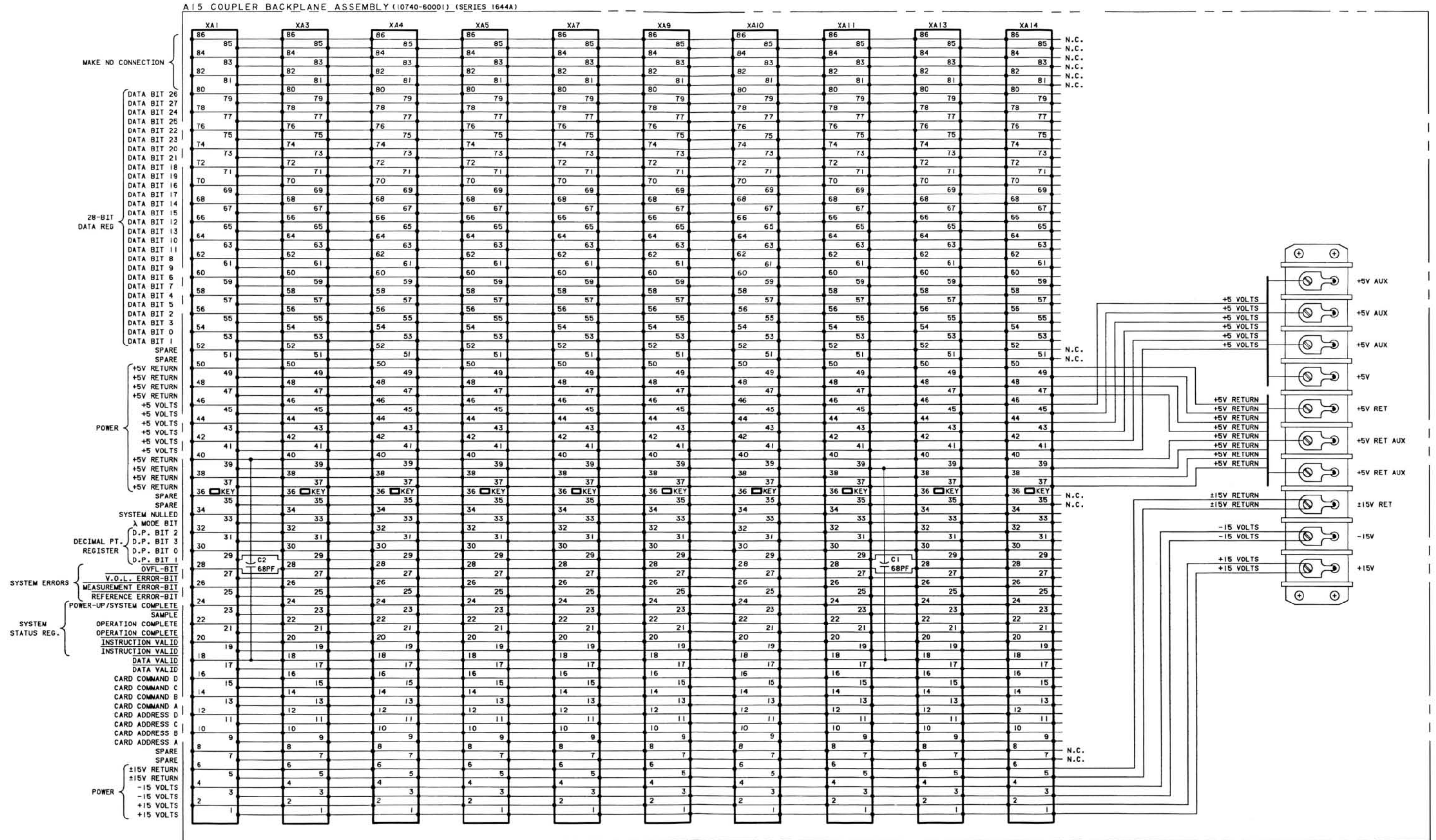


FIGURE 6-1. A15 COUPLER BACKPLANE ASSEMBLY

SECTION 7 MANUAL CHANGES

7-1. INTRODUCTION

7-2. This section contains information necessary to adapt this manual to older instruments.

7-3. MANUAL CURRENT STATUS

7-4. This manual applies directly to Model 10740A with serial prefix 1948A.

7-5. NEWER INSTRUMENTS

7-6. If changes are made, newer instruments may have serial prefixes not listed in this manual. If necessary a manual change sheet, with new information to describe newer instruments, should accompany this manual. If the change sheet is missing, ask for a copy from your nearest Hewlett-Packard Sales and Service Office as listed at the back of this manual or at the back of the system manual.

7-7. OLDER INSTRUMENTS

7-8. Table 7-1 lists the serial numbers and serial number prefixes of units that differ electrically from the units documented in this manual. Find the prefix or range of serial numbers that corresponds to your unit, and make the manual changes specified in Table 7-1.

Table 7-1. Backdating Changes

Serial Number or Prefix	Make These Changes
1932A	Change 1
1644A	Change 1, 2
1604A	Changes 1 thru 3
1525A	Changes 1 thru 4
1524A, 1444A, 1420A	Changes 1 thru 5

CHANGE 1

Page 1-1, Paragraph 1-6:

In second sentence, change "10 circuit cards" to "8 circuit cards".

Delete the last sentence referring to the power supply cables being supplied with the 10740A.

Page 1-2, Paragraph 1-19:

Delete the reference to power supply cables being supplied with the 10740A.

Page 2-22, Paragraph 2-17:

Change 5510A Option 010 to "C10-5510A".

Page 2-3, Figure 2-1:

Change 10783-60003 to "C18-59995A included with 5501A".

Change 10783A to "5501A Option 401".

Change 10740-60004 to "C17-59995A included with options 250 and 251 under C60-59995A".

Change 62605L to "5510A Option 008".

Change 62215E to "5501A Option 019".

Change 10740-60005 to "C19-59995A included with Option 402".

Change 05501-60009 to "C21-59995A".

Page 5-3, Table 5-1:
Delete XA4 and XA10.

Page 6-3, Figure 6-1:
On component locator and schematic diagram, delete XA4 and XA10.

CHANGE 2

Page 6-3, Figure 6-1:
On Component Locator, indicate that C1 and C2 are installed on the backplane back as shown.

CHANGE 3:

Page 5-3, Table 5-1:
Add misc. part 0380-0111/4/STANDOFF .250 in./28463/0380-01111.
Delete C1 and C1 0160-0949/2/CP 68PF 300V/28463/0160-0949.

Page 6-3, Figure 6-1:
Delete C1 and C2 (68PF).

CHANGE 4:

Page 5-3, Table 5-1:
Change TB1 part number from 0360-0692 to 0360-0630/1/Barrier Strip/0360-0630.

CHANGE 5:

No change occurs in this manual. However, the front panel was altered to allow it to be mounted when a 10756A Manual Compensator is part of the system. This change also affects serial number 1526A00115.

