Model 96A
V/f Preamplifier

Part No. 617282 Rev. B

Φ PHYSICAL ELECTRONICS

Limited Warranty

Except as otherwise provided herein, the Seller warrants to Buyer that the equipment sold hereunder, whether it is new equipment or remanufactured (reconditioned) equipment, is, at the time of shipment to Buyer from Seller, free from defects in material and workmanship. As Buyer's sole exclusive remedy under this warranty Seller agrees either to repair or replace, at Seller's sole option and free of part charge to Buyer, any part or parts of such equipment which, under proper and normal conditions of use prove to be defective within 12 months from the date of receipt by the Buyer. Warranty period for equipment requiring installation by Seller will commence on completion of standard installation services. If customer delays installation beyond 45 days after delivery, the warranty period will commence to run 45 days after delivery. After installation, any realignment, readjustment, recleaning or recalibration, provided it does not relate to a proven defect in material or workmanship, shall be performed only at Seller's then current rates for service.

Exclusions and Limitations

It is recognized that some parts by their nature (expendable items) may not function for one full year; therefore, excluded from the foregoing warranty are filaments, anodes, cathodes, multipliers, retard grids, special ceramics, ionizers, along with other such parts mentioned in the applicable operating manual.

The foregoing warranty excludes certain major items or accessories specifically indicated on applicable price lists or quotations, as to which Seller passes to Buyer whatever warranty is provided to Seller by the manufacturer or the specific warranty indicated by the price list or quotation.

This warranty does not cover loss, damage, or defects resulting from transportation to the Buyer's facility, improper or inadequate maintenance by Buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the equipment or improper site preparation and maintenance.

Product Service

All claims must be brought to the attention of Seller within 30 days of the failure to perform.

Seller at his option may require the product to be returned to the factory, transportation prepaid, for repair.

Refund of Purchase Price

In lieu of the foregoing, Seller may at any time elect, in its sole discretion, to discharge its warranty by accepting the return of such equipment and refunding any portion of the purchase price paid by Buyer.

Software and Firmware Products

The sole exclusive warranty applicable to software and firmware products provided by Seller for use with a processor will be as follows: Seller warrants that such software and firmware will conform to Seller's program manuals current at the time of shipment to Buyer when properly installed on that processor. Seller does not warrant that the operation of the processor software or firmware will be uninterrupted or error free.

No other warranty is expressed or implied.
Seller expressly disclaims the implied warranties of merchantability and fitness for a particular purpose.

OPERATOR SAFETY SUMMARY

All PHI Systems have been designed to assure operator safety. However, like all other sophisticated instruments, continual operator safety is dependent on the proper use of system components. Such use is described in the manuals supplied with each unit.

LISTED BELOW ARE WARNINGS APPLICABLE TO THIS EQUIPMENT. ALL PERSONNEL INVOLVED IN THE OPERATION AND MAINTENANCE OF THIS EQUIPMENT MUST FULLY UNDERSTAND THE WARNINGS AND THE PROCEDURES BY WHICH THE HAZARD IS TO BE REDUCED OR ELIMINATED.

WARNING

THE PRODUCT(S) COVERED IN THIS MANUAL HAS BEEN DESIGNED TO FUNCTION SAFELY WITH THE REQUIRED DEGREE OF PRECISION WHEN USED IN THE PRESCRIBED MANNER.

WE DO NOT RECOMMEND THAT THIS EQUIPMENT BE MODIFIED FOR ANY NON-STANDARD APPLICATION SINCE HAZARDOUS CONDITIONS MAY RESULT. DUE TO THE FACT THAT PHYSICAL ELECTRONICS DIVISION OF PERKIN-ELMER HAS NO CONTROL OVER CUSTOMER MODIFICATIONS TO PHI PRODUCTS SHIPPED, IT DISCLAIMS ANY RESPONSIBILITY FOR ANY MALFUNCTIONS OR ACCIDENTS THAT MAY RESULT!

DANGER

ELECTRICAL SHOCK HAZARD

HIGH VOLTAGES ARE PRESENT IN THE SYSTEM WHEN THE SYSTEM POWER INPUT LINES ARE CONNECTED. DISCONNECT INPUT POWER AT THE WALL BEFORE MAKING ANY ADJUSTMENTS. REFER SERVICING TO PERSONNEL WHO HAVE BEEN TRAINED AND HAVE WORKING EXPERIENCE WITH VOLTAGES IN EXCESS OF 50 VOLTS.

ALL ELECTRICAL CABLES ASSOCIATED WITH VARIOUS UNITS INCLUDED IN A SYSTEM ARE WELL SHIELDED. HOWEVER, CARE MUST BE TAKEN NEVER TO COME IN CONTACT WITH ANY ASSOCIATED TERMINALS WHEN THE POWER IS ON. SOME OF THESE LEADS CARRY POTENTIALLY LETHAL HIGH VOLTAGES. OTHER LEADS MAY CARRY SUFFICIENT RF POWER TO INFLICT SEVERE BURNS.

RF INTERFERENCE

THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO-FREQUENCY ENERGY, AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. 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.

SECTION I

THEORY OF OPERATION

GENERAL OPERATING DESCRIPTION

The PHI Model 96A V/F Preamp detects analyzer collector current and converts the output to a proportional frequency or amplified analog signal.

INPUT AMPLIFIERS

The voltage-to-frequency preamp receives an input current from the collector of the analyzer electron multiplier. Referring to the block diagram, Figure 1, the first stage converts the current to a signal voltage with a bandwidth of about 10 kHz. An output connector is available at this point which is marked LOCK-IN. The signal is also further amplified by the second stage after which it goes to a voltage-to-frequency converter.

V/F CONVERTER

This stage produces a pulse train, whose frequency is linearly proportional to the input and whose maximum frequency is 1 mHz. The pulse train is sent to a one-shot multivibrator which reduces the width of each pulse from 500 nanoseconds to 100 nanoseconds. This is done so that when the pulses are sent through the pulse transformer at the 1 mHz rate, that this transformer has time to recover and consequently will not cause the secondary voltage to dc level shift.

ISOLATION TRANSFORMER

A pulse transformer is used as the coupling medium to shift the signal reference to ground level from the multiplier voltage level.

OUTPUT AMPLIFIERS

After the signal is transmitted through the transformer, it is sent through a second one-shot multivibrator which widens the pulses back to their original 500 nanoseconds width. This is done because the next stage frequency-to-voltage converter requires it for proper operation. The FREQ OUT connector is the output signal of the second one-shot multivibrator. The frequency-to-voltage converter reconverts the pulse train back to an analog signal. The last stage in the unit takes the voltage signal from the frequency-to-voltage converter and amplifies once more before it is sent to the ANALOG OUT connector.

POWER SUPPLIES

A floating power supply is used to power the stages before the pulse transformer. Primary power for this floating supply and the voltages to run the ground referenced circuitry are obtained from the PHI Model 32-100 Multiplier Supply.

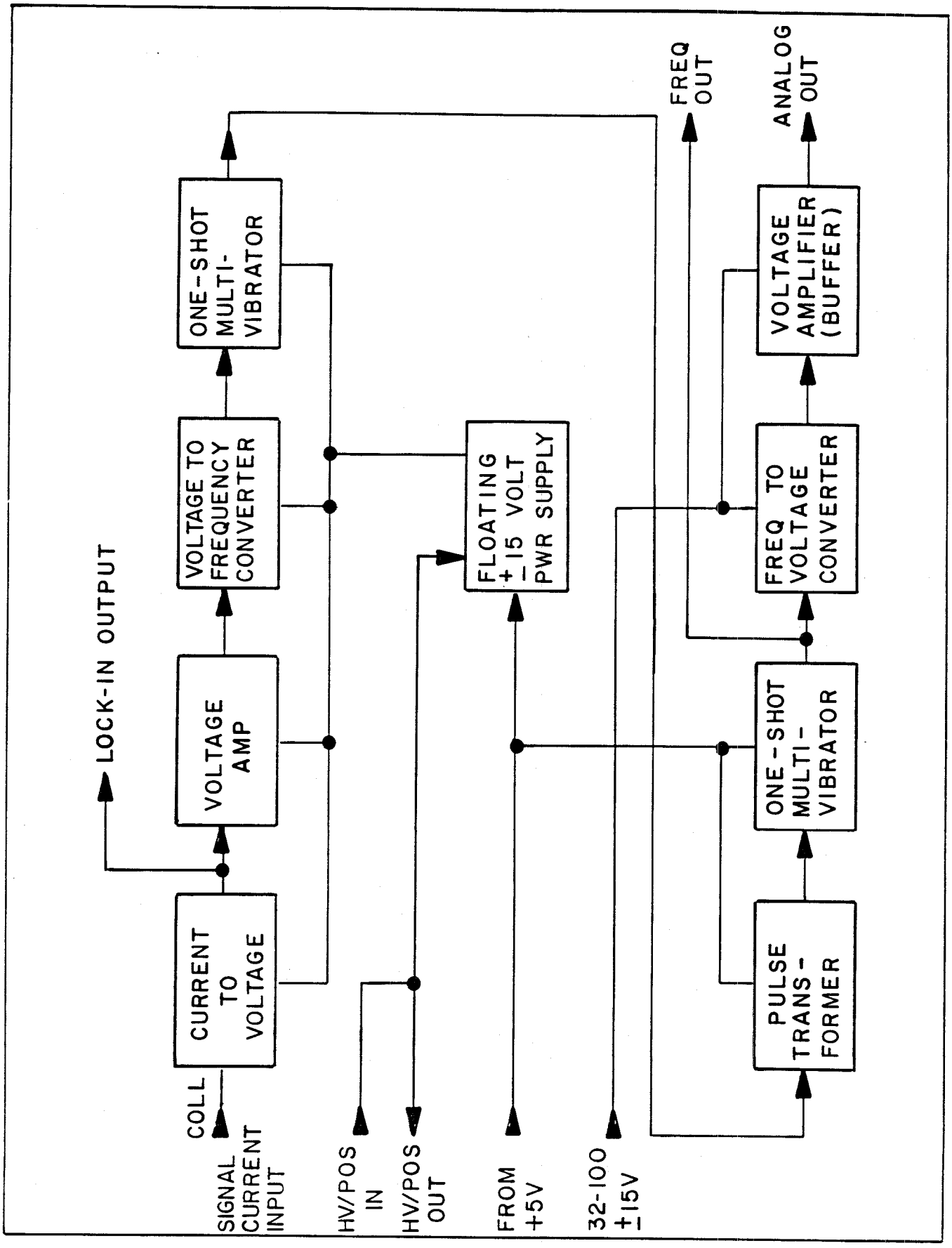


Figure 1 Block diagram, voltage-to-frequency amplifier.

SECTION II

CALIBRATION AND MAINTENANCE

CALIBRATION SETUP

This calibration procedure provides for bench calibration of the V/F Preamp using standard test equipment.

/ WARNING /

Electric Shock Hazard

High voltages are present when the preamp is connected to the PHI Model 32-100 Multiplier Supply. Disconnect cables before calibrating. Refer calibration to qualified personnel.

Test Equipment Needed

The following test equipment is needed to calibrate the preamp:

- DVM (3 1/2 digit).
- Universal Power Supply.
- Test Cables.
- Oscilloscope.
- Frequency Counter.
- Universal Current Source.
- Special Test Cover (provides access holes for potentiometers and cables).

Visual Check

Visually inspect printed circuit board for open or shorted conductors.

Visually inspect all wiring inside the box for possible shorts or opens.

Check for tightness of mounting of all components.

ALIGNMENT, CALIBRATION AND TESTING

All measurements are ±10 percent unless stated otherwise.

Power Supply Check

Connect the Universal Power Supply with ±15 V and +5 V to the POWER-IN connector J1 on the preamp box. Turn the power switch ON. With the dvm, measure the voltage as follows:

IC AR1 - Pin 7 + 14 V ± 1 V
AR1 - Pin 4 - 14 V ± 1 V
Note: Common on AR1 - Pin 3
Short C9 with a clip lead.

AR1 Offset Adjustment

With the dvm, measure the voltage at TP2. Adjust R23 for 0 V ±1 mV.

V/F Adjustment

1. With the oscilloscope, measure at FREQ OUT.
   - Adjust R18 for approximately 0 Hz.
   - Adjust R15 for 0.45 V, ±1 mV on TP1.
   - Adjust R37 for 0 V, ±1 mV on ANALOG OUTPUT.
2. Connect the Universal Current Source to the COLLECTOR connector J4 and the HV/POS IN connector J6. Set the current source for -500 nA.

3. With dvm, measure the voltage at TP2. It should be approximately 10 V. Install the test cover.

4. With the Frequency Counter, measure at FREQ OUT. Adjust R8 for 1 mHz, ±100 Hz.

5. With scope, check for 500 nsec ±100 nsec pulse at FREQ OUT.

6. Adjust R28 for 10 V, ±50 mV on ANALOG OUT.

7. Set Current Source to -5 nA.

- Adjust R18 for 10 kHz on FREQ OUT.

- Adjust R37 for 0.1 V on ANALOG OUT.

8. Set Current Source to -500 nA. Repeat steps 4-7.

9. Disconnect the current source. Adjust R23 for 3 kHz, ±10 Hz at FREQ OUT.

10. Remove test cover, remove clip lead and install cover.

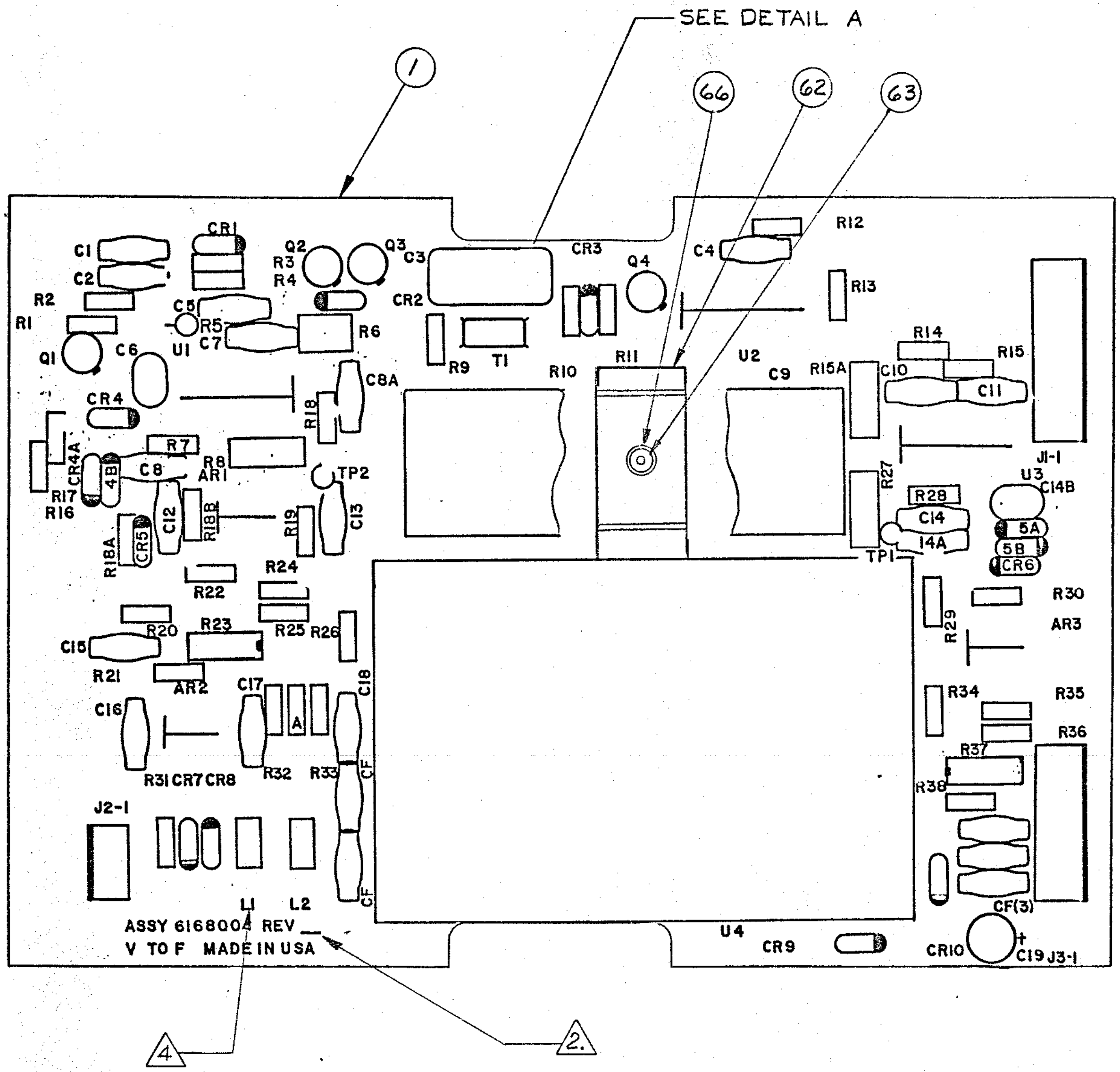
PERKIN-ELMER
PHYSICAL ELECTRONICS DIV

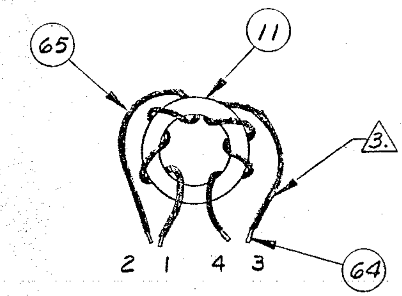
CABLE INTERCONNECT DATA
COMPUTER GENERATED

JOB: NAME: MODEL: 96A DRAWING NO: 615431 REV: A SHEET 2 OF 2

		FROM:					TO:						
ITEM	PART NO	MODEL	A NO	IDENT	J NO	CONN	MODEL	A NO	IDENT	J NO	CONN	OPTION	REMARKS
1	607273	96A	76	PWR IN	1	5MSF	32-100	70	V/F PWR	2	5MSM		
2	476070	96A	76	FREQ OUT	2	BNC	20-137A	49	TTL 3	16	BNC		
3	602557	96A	76	COLL	4	SHV	ANALYZER		COLL		SHV		
4	602557	96A	76	H.V. POS OUT	5	SHV	ANALYZER		H.V. POS		SHV		
5	602533	96A	76	POS IN	6	SHV	32-100	70	POS	10	SHV		
6	476070	96A	76	B S E	7	BNC	20-250 20-070A	77 22	B S E LOCK-IN	13 7	BNC		ATTACH BOTH LABELS
7	602563	96A	76	COLL	4	SHV	ANALYZER		COLL		MHV		
8	602563	96A	76	H.V. POS OUT	5	SHV	ANALYZER		H.V. POS		MHV		
9													
10													
11													
12													
13													
14													
15													
16													

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	REL PER ECO 7545	12-87	ROGER
	B	VISHAY 7696	2-88	ROGER





DETAIL A (T1)
SCALE: NONE

NOTES:
1. FABRICATE & ASSEMBLE PER PERKIN-ELMER PHI, SPECIFICATIONS.
2. MARK APPLICABLE REVISION LEVEL IN SPACE PROVIDED.
3. COVER WIRE WITH TUBING AND SHRINK COMPLETELY BEFORE WINDING ON CORE.
4. CHOKES L1 & L2 MUST BE INSTALLED WITH THEIR WINDINGS NOT CONTACTING GROUND PLANE ON THE PC BOARD.

SEE DETACHED PART LIST

NEXT ASS'Y.	USED ON
605978	96A

THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND ANY REPRODUCTION, DISCLOSURE OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT AS PHYSICAL ELECTRONICS MAY OTHERWISE AGREE TO IN WRITING.

TOLERANCING AND DIMENSIONING PER ANSI Y14.5 — 1973

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
.X ±.030 ANGLES ± 0° 30'
.XX ±.010 MACH. 63
.XXX ±.005 SURF.
REMOVE ALL BURRS AND BREAK SHARP EDGES ___ MAX.

		DATE
DRN.		12-10-81
CKD.	G TAKO	12-15-81
APPD.		1-1-82
APPD.		DATE
APPD.		DATE
MATERIAL		
FINISH		

PERKIN-ELMER
Physical Electronics Division
6509 Flying Cloud Drive • Eden Prairie, Mn

TITLE P.C. BD. ASS'Y - V/F PREAMP

SIZE C | DRAWING NO. 616800 | REV. B
SCALE 2:1 | WEIGHT | SHEET 1 OF 1

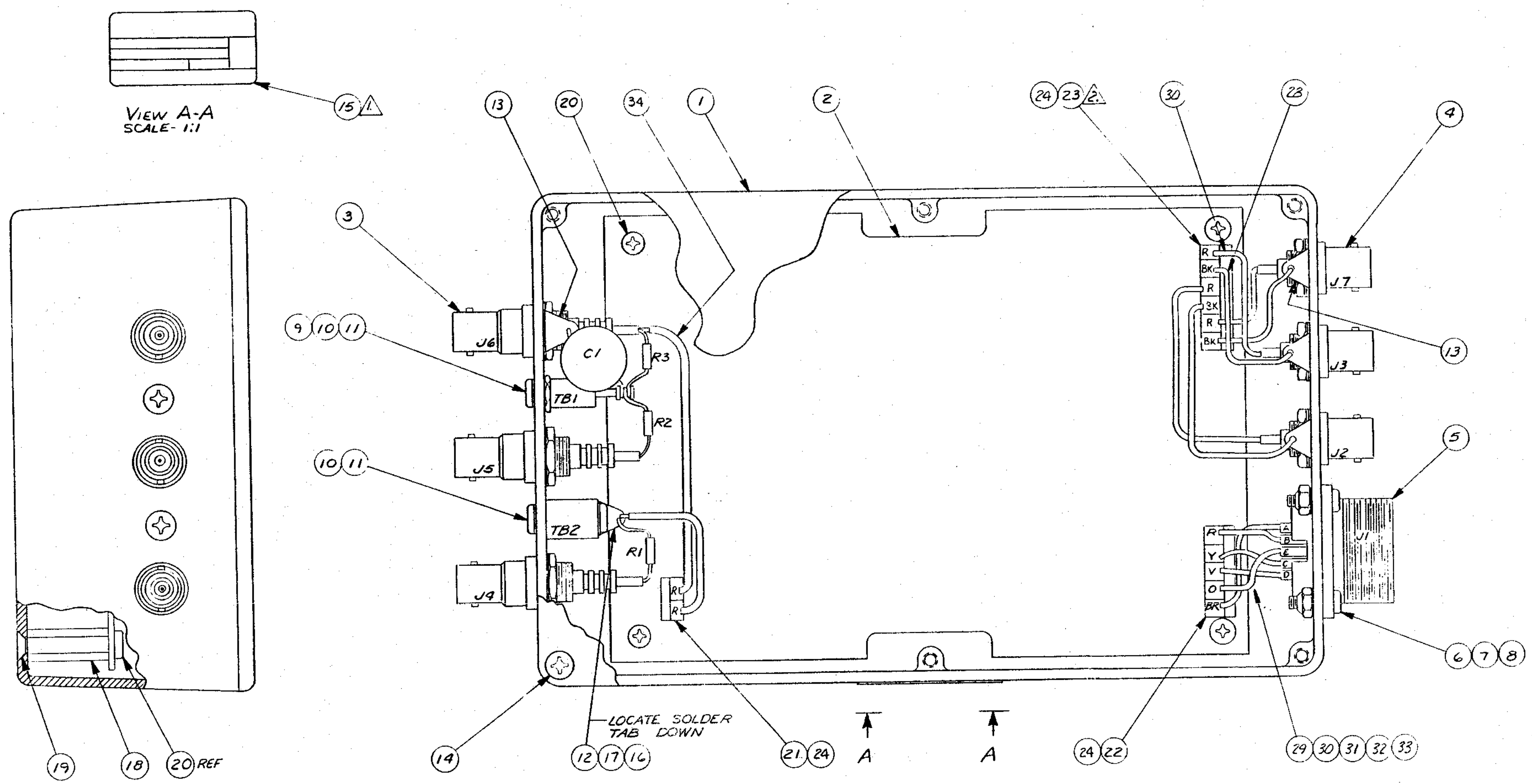
DWG. NO. 616800 SH. 1 REV. B

PERKIN-ELMER YSICAL ELEC. DIV.	TITLE SHEET: 1 1/27/88 BOARD ASSY-V TO F	PART NUMBER 616800	ENG. DWG NO/REV 1B	EFF DATE FROM TO

ITEM	PART NO.	QTY	UM	DESCRIPTION	DRAWING NO.	REFERENCE
001	616799	1.000	EA	PC BOARD-V TO F		
002	603716	1.000	EA	IC-DC/DC CONVERTER,ANALOG# 944		U4
003	177228	2.000	EA	IC-OP AMP,JFET,INPUT,LF356N		AR2,3
004	472038	1.000	EA	IC-OP AMP,72301P		AR1
005	616777	2.000	EA	IC-V/F/V CONVERTER, AD650KN		U1,3
006	605912	4.000	EA	XSTR-NPN, 15V, .2A, 2N2369A		Q1,2,3,4
007	372075	1.000	EA	IC-TTL,MONOSTABLE MV, 74121		U2
008	602791	2.000	EA	DIODE-SCH BARR,15V,.02A,AS2811		CR7,8
009	603955	7.000	EA	DIODE-HS SW,75V,.25W, 1N914		CR2,3,4,4A,4B,5A,5B
010	273016	1.000	EA	DIODE-ZENER,10V,400MW,1N758A		CR5
011	605911	1.000	EA	CORE-TOROIDAL, 768T188-3E2A		
012	373054	2.000	EA	CHOKE-4.7MH		L1,2
013	602668	1.000	EA	CAP- 33UF, 10VDC,DP TANT		C19
014	602136	10.000	EA	CAP- .22UF, 50V,ML CER RDL		CF'S,C13,16,17,18
015	602028	1.000	EA	CAP- .10UF, 5KVDC,FILM TUB		C9
016	373045	3.000	EA	CAP- 15PF, 1KV,CER DISC		C1,12,15
017	171636	1.000	EA	CAP-.002MF,6KV,CER-DISC		C3
019	472043	1.000	EA	CAP- 1 UF, 50V,ML CER,RDL		C8
020	616776	2.000	EA	CAP- 56 PF, 1%,100V,ML CER		C6,14B
021	371015	3.000	EA	CAP-.001MF,1KV,CER		C7,11,14
022	477157	4.000	EA	CAP- .1 UF, 50V,ML CER RDL		C5,8A,10,14A
023	174085	1.000	EA	CAP-5PF,1KV,CER DISC		C2
025	373057	1.000	EA	POT- 10 K, .52,20T,TRMR-T/A		R23
026	177402	2.000	EA	POT-20K,.25W,20 TURNS,TRIM T/A		R8,15A
027	607420	2.000	EA	POT- 2K OHM,.25W,21T,10PPM,T/A		R6,27
028	279285	1.000	EA	RES- 15 M OHM,.25W, 5%, RC07		R12
029	279205	4.000	EA	RES- 100 OHM,.25W, 5% RC07		R21,32,32A,33
030	279223	1.000	EA	RES- 2.2K OHM,.25W, 5% RC07		R15
031	279220	2.000	EA	RES- 1.5K OHM,.25W, 5% RC07		R7,17
032	602147	1.000	EA	RES 3.6K OHM,.25W, 5% RC07		R18A
033	603597	1.000	EA	RES- 20K OHM,.12W, 1%,RN55D		R31
034	603599	1.000	EA	RES- 1M OHM,.12W, 1%,RN55D		R20
035	604965	2.000	EA	RES-1.02K OHM,.12W, 1%,RN55D		R22,24
036	604347	1.000	EA	RES-49.9K OHM,.12W, 1%,RN55D		R25
037	603131	1.000	EA	RES- 100 OHM,.12W, 1%,RN55D		R26
038	604969	1.000	EA	RES-34.5K OHM,.12W, 1%,RN55D		R19
039	609303	2.000	EA	RES- 249K OHM,.12W, 1%,RN55D		R14,18B
040	279263	1.000	EA	RES- 340K OHM,.25W, 5%, RC07		R16
041	604345	1.000	EA	RES-5.76K OHM,.12W, 1%,RN55D		R13
042	603936	1.000	EA	RES- 243 OHM,.12W, 1%,RN55D		R34
043	604967	1.000	EA	RES-9.76K OHM,.12W, 1%,RN55D		R33

DWG. NO. 605978 SH. 1 REV. D

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASE PER ECO 3123 SUPERSEDES 602013		G.T.
	B	SEE ECO 4670	3-31-84	
	C	HDW CHANGE	7-22-85	
		SEE ECO # 7575		



NOTES:

1. MARK APPLICABLE INFORMATION ON I.D. LABEL, ITEM 15, PER ENGRG SPEC. 603328 AND AFFIX APPROX. AS SHOWN. (COMP I.D. NO. A76).
2. WIRES ENDING AT THIS CONNECTOR ARE IN TWISTED PAIRS (ONE RED, ONE BLACK) FROM EACH BNC CONNECTOR.

SEE DETACHED PART LIST

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UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
.X ±.030 ANGLES ±0°30'
.XX ±.010 MACH SURF 63
.XXX ±.005
REMOVE ALL BURRS AND BREAK SHARP EDGES .... MAX

NEXT ASSY | USED ON

PERKIN-ELMER
Physical Electronics Division

TITLE MODEL 96A - V/F PREAMP

SIZE D DRAWING NO. 605978

PERKIN-ELMER PHYSICAL ELEC. DIV.	TITLE SHEET: 1 12/16/87 MOD 96A-V/F PREAMP	PART NUMBER 605978	ENG. DWG NO/REV 10	

ITEM	PART NO.	QTY	UM	DESCRIPTION	DRAWING NO.	REFERENCE	EFF DATE FROM	EFF DATE TO
0001	605443	1.000	EA	HOUSING-V/F PREAMP,MODEL 96A				
0002	605249	1.000	EA	BOARD ASSY-V TO F	IN U/616800			10188
0002	616800	1.000	EA	BOARD ASSY-V TO F			10188	
0003	601542	3.000	EA	CONN-COAX,SHV,CHAS RCPT 1704-1		J4,5,6		
0004	171289	3.000	EA	CONN-COAX,BNC,CHAS,RCPT,31-221		J2,3,7		
0005	601834	1.000	EA	CONN-CIRC,CHAS RCPT,5P,MS3102A		J1		
0006	541806	4.000	EA	SCREW-PNH, 4-40X .375,SST PHH				
0007	542104	4.000	EA	NUT-HEX,SMALL PATTERN,4-40 SST				
0008	512104	4.000	EA	WASHER-INT,TOOTH,#4 ,SST				
0009	602128	1.000	EA	STDF-INSUL,TUR,6-32 INTNL THD		TB1		
0010	541904	2.000	EA	SCREW-PNH, 6-32X .250,SST,PHH				
0011	512106	2.000	EA	WASHER-INT,TOOTH,#6 ,SST				
0012	471072	1.000	EA	SPCR-RND,.38 OD,6-32,.5 LG,CER		TB2		
0013	501000	4.000	EA	LUG-PLAIN SOLDER,3/8 STUD				
0014	546307	6.000	EA	SCREW-FLH, 6-32X .437,SST,PHH				
0015	479092	1.000	EA	LABEL-UNIT ID,1.38 X 2.75,POLY	PHI-192			
0016	501106	1.000	EA	LUG-LOCKING SOLDER,#6 STUD				
0017	541903	1.000	EA	SCREW-PNH, 6-32X .187,SST,PHH				
0018	606002	4.000	EA	SPCR-HEX,.25AF,6-32, .75LG,NYL				
0019	606001	4.000	EA	SCR-FLH,6-32X.375,NYL/MET CORE				
0020	604083	4.000	EA	SCR-RHD,6-32X.25, NYL/MET CORE				
0021	177058	1.000	EA	CONN-PLUG,CRIMP TYPE,2 SKT				
0022	177271	1.000	EA	CONN-PLUG,CRIMP TYPE,5 SKT				
0023	377092	1.000	EA	CONN-HSG,6 POSN,W/LKG RAMP				
0024	177070	13.000	EA	TERM-CRP CONN CONT,FOR S/S HSG				
0025	171636	1.000	EA	CAP-.002MF,6KV,CER-DISC		C1		
0026	279228	1.000	EA	RES- 4.7 K, .25W, 5% RC07		R1		
0027	279252	2.000	EA	RES- 100K OHM,.25W, 5% RC07		R2,3		
0028	502201	.900	FT	WIRE-STRD,22GA,600V,IPVC,BLK				
0029	502202	.300	FT	WIRE-STRD,22GA,600V,IPVC,BRN				
0030	502203	1.000	FT	WIRE-STRD,22GA,600V,IPVC,RED				
0031	502204	.300	FT	WIRE-STRD,22GA,600V,IPVC,ORN				
0032	502205	.300	FT	WIRE-STRD,22GA,600V,IPVC,YEL				
0033	502208	.300	FT	WIRE-STRD,22GA,600V,IPVC,VIO				
0034	602076	.700	FT	WIRE-STRD,20GA,9KVDC,TFL,RED				
0035	605980	.000	EA	FUNC SCHEM-V TO F MODEL 96A				
0036	605981	.000	EA	TEST AND CAL PROC-MODEL 96A	IN U/616795			10188
0036	616795	.000	EA	TEST & CAL PROC-MODEL 96A			10188	
0037	605982	.000	EA	PROD SPEC-MODEL 96A V TO F				
				*** END OF REPORT ***				

DETACHED PARTS LIST

PERKIN-ELMER Φ
Physical Electronics

TITLE: BOARD ASSEMBLY V/F PREAMP

PART NO. 605349 REV F

SHEET 1 OF 3

INACTIVE - FOR SERVICE USE ONLY - SUPERSEDED BY 616890 PER ECO

ITEM NO.	PART NUMBER	QUANTITY PER ASSEMBLY	DESCRIPTION	DRG CODE	REF DESIGNATIONS / NOTES
1	605348	1.	PC BD - V/F/V PREAMP		
2	603716	1.	IC-DC/DC CONVERTOR ANALOG 944		U4
3	177228	2.	IC-OP AMP/FET INPUT LF 356N		AR2, 3
4	472038	1.	IC-OP AMP LM 301P		AR1
5	604970	2.	IC-V/F/V CONVERTOR INTECH A8404		U1, 3
6	605912	4.	TRANSISTOR - 2N2369A		Q1-4
7	372075	1.	IC-TTL, MONOSTABLE MV 74121		U2
8	602791	2.	DIODE - SCH BAR, 15V, .02A, AS2811		CR7, 8
9	603955	3.	DIODE - H, SP, SW, 75V, .25W IN914		CR2-4
10	273016	1.	DIODE - ZENER, 10V, 400MW IN758A		CR5
11	605911	1.	CORE - TOROIDAL, 768T188-3E2A		
12	373054	2.	CHOKE 4.7MH		L1, 2
13	602668	1.	CAP - 33MFD, 10VDC, DPD TANT.		C19
14	602136	10.	-.22MFD, 50VDC, MONO CER		C13, 16-18, C.F.(6)
15	602038	1.	-.10MFD, 5000VDC, FILM TUBE		C9
16	373045	3.	-15PFD, 1KV, CER. DISC.		C1, 12, 15
17	171636	1.	-.002MFD, 6KVDC, CER DISC		C3
18	273021	1.	-330PFD, 1KV, CER DISC		C7
19	472043	2.	-1UF, 50V, CER, RDL		C8, 10
20	177256	2.	-33PFD, 300V, DPD MICA		C6, 14
21	171455	1.	-.005MFD, 100V, CER. DISC		C11
22	273002	1.	-.01MFD, 50V. CER. RDL		C5
23	174085	1.	CAP. - 5PFD, 1KV. CER. DISC		C2
24	472033	1.	POT - 1K, .25W, 20T, TRIM, T/A		R18
25	373057	1.	POT - 10K, .5W, 20T, TRIM, T/A		R23

PREPARED DATE 12-10-91

CHECKED G. Tako DATE 12-15-91

APPROVED DATE

☐ ADD

DETACHED PARTS LIST

PERKIN-ELMER
Physical Electronics

TITLE: BOARD ASSEMBLY - V/F PREAMP

PART NO. 605349 REV E

SHEET 2 OF 3

ITEM NO.	PART NUMBER	QUANTITY PER ASSEMBLY	DESCRIPTION	DOC CODE	REF. DESIGNATIONS / NOTES
51	476180	1.	TRANSORB-5V, 160A, MPTE-5		CR9
52	177048	1.	CONN-P.C. BD., 2 PIN		J2
53	177281	1.	CONN-P.C. BD., 5 PIN		J3
54	377091	1.	CONN-P.C. BD., 6 PIN		J1
55	378050	1.	RESISTOR-8.2K, .25W, 5%		R1
56	271037	1.	-680Ω, .5W, 5%		R5
57	279219	1.	-1.2K, .25W, 5%		R4
58	604097	1.	-75Ω, .25W, 5%		R9
59	279226	1.	-3.3K, .25W, 5%		R10
60	279211	1.	RESISTOR-330Ω, .25W, 5%		R11
61	279163	1.	CAP-120PFD, 100V, DPD MICA		C4
62	601849	1.	CLIP-COMPONENT, .875 DIA.		
63	505500	1.	RIVET-POP, .125OD, .063-.125, AL		
64	501700	.5'	WIRE-SLD, BARE, 22GA.		
65	506703	6.0"	HEAT SHRINK TUBING - 3/32 ID, PVC, BK		
66	505400	1.	WASHER-POP RIVET, 1/8, STL PLD		
67	471007	1.	DIODE-SIG, 175V, 100MA, IN459A		CR1
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PREPARED [signature] DATE 12-10-81

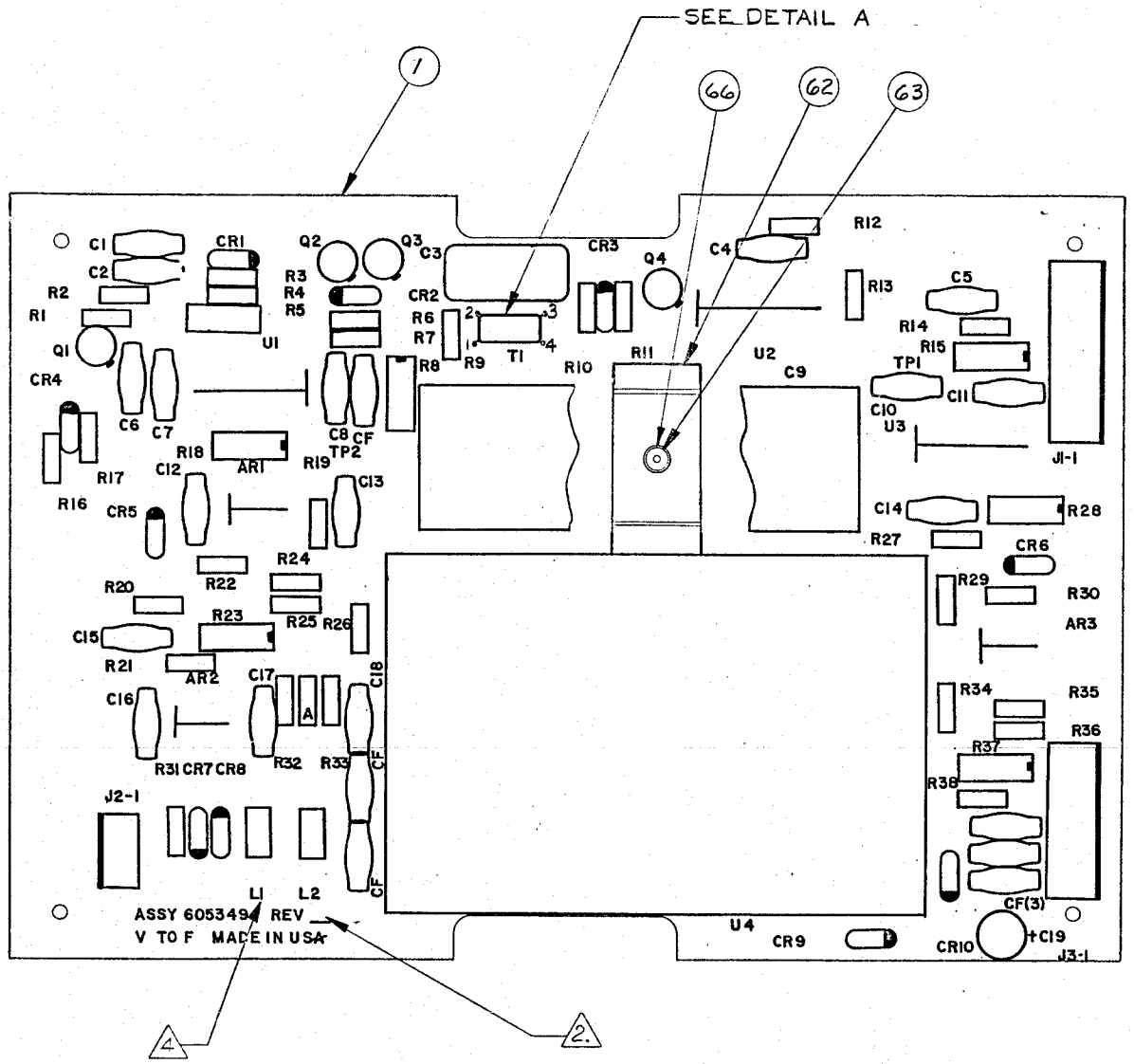
CHECKED [signature] DATE 12.15.81

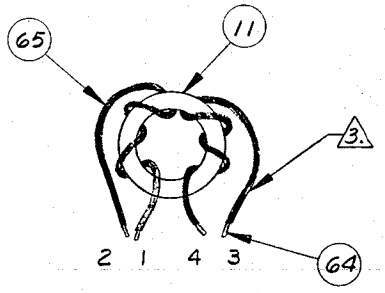
APPROVED DATE

☐ ADD

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	RELEASE PER ECO 3123 SUPERSEDES 602013	12-15-81	G.T.
	B	SEE ECO 3256 WAH	4-22-82	G.T.
	C	HDW CHG	3-15-85	
	D	SEE ECO 5174 KWA	8-13-85	G.T.
	E	HDW CHG KWA	8-20-85	
	F	SEE ECO # 7545	1-25-86	TJL

INACTIVE - FOR SERVICE USE ONLY - SUPERSEDED BY 606960 PER ECO 7545





DETAIL A (T1)
SCALE: NONE

NOTES:

1. FABRICATE & ASSEMBLE PER PERKIN-ELMER PHI, SPECIFICATIONS.
2. MARK APPLICABLE REVISION LEVEL IN SPACE PROVIDED.
3. COVER WIRE WITH TUBING AND SHRINK COMPLETELY BEFORE WINDING ON CORE.
4. CHOKES L1 & L2 MUST BE INSTALLED WITH THEIR WINDINGS NOT CONTACTING GROUND PLANE ON THE PC BOARD.

SEE DETACHED PART LIST

NEXT ASS'Y.	USED ON
605978	96A

THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND ANY REPRODUCTION, DISCLOSURE OR USE OF THIS DRAWING IS EXPRESSLY PROHIBITED EXCEPT AS PHYSICAL ELECTRONICS MAY OTHERWISE AGREE TO IN WRITING.
TOLERANCING AND DIMENSIONING PER ANSI Y14.5 — 1973

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES
.X ± .030 ANGLES ± 0° 30'
.XX ± .010 MACH. 63
.XXX ± .005 SURF.
REMOVE ALL BURRS AND BREAK SHARP EDGES ____ MAX

DRN.		DATE 12-10-81
CKD.	G. Tuko	DATE 12-15-81
APPD.		DATE 1-1-82
APPD.		DATE
APPD.		DATE
MATERIAL		
FINISH		

PERKIN-ELMER
Physical Electronics Division
6509 Flying Cloud Drive • Eden Prairie, Mn

TITLE P.C. BD. ASS'Y - V/F PREAMP

SIZE	DRAWING NO.	REV.
C	605349	F

SCALE 2:1 | WEIGHT | SHEET 1 OF 1

605349 F