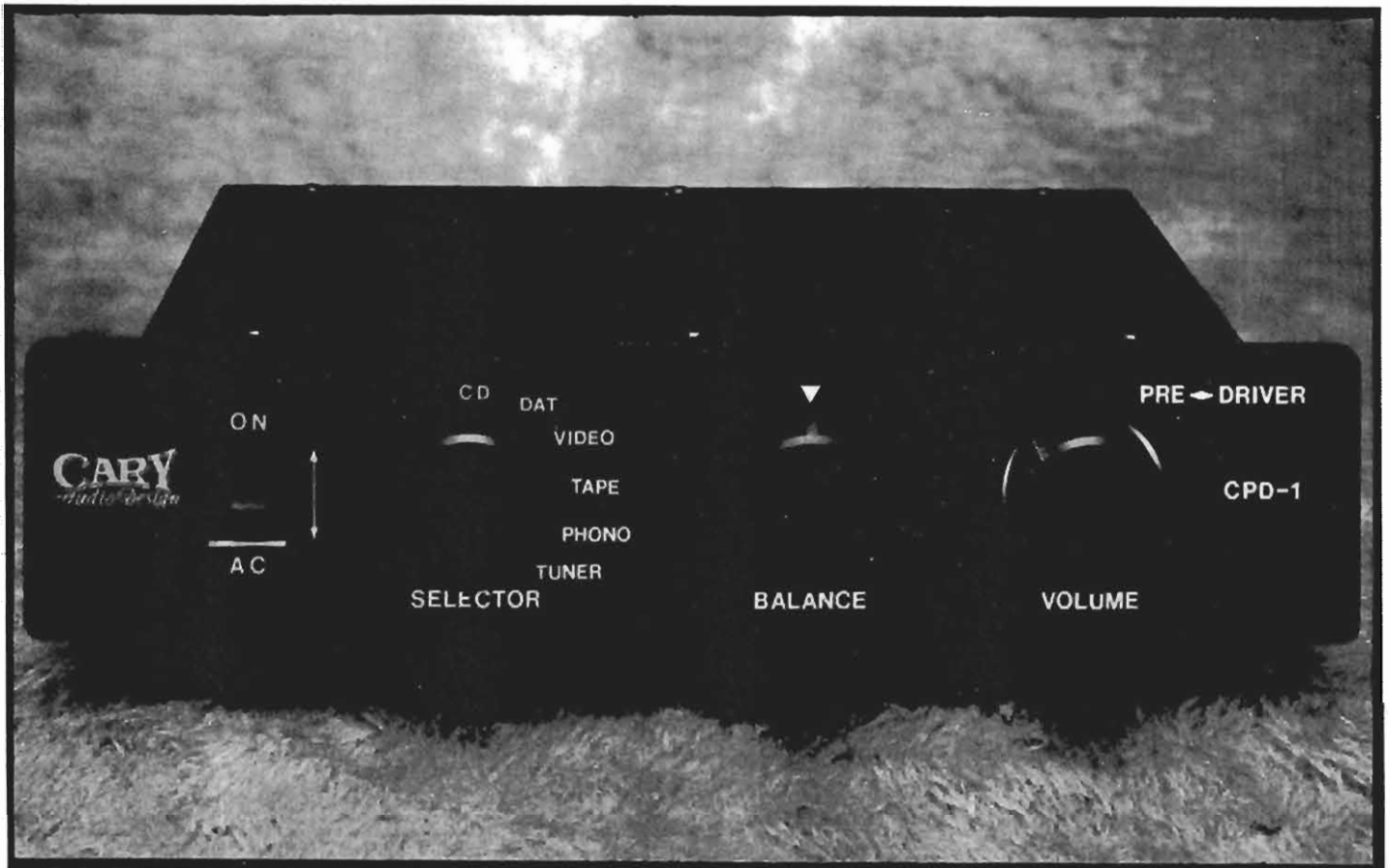




## PD-1 PRE-DRIVER



## User's Manual

# CARY AUDIO DESIGN, INC.

## PD-1 PRE-DRIVER

### 1.1 Product Description

The Cary Audio PD-1 pre-driver is a control center for your high end stereo and video system. The PD-1 is used in conjunction with basic power amplifiers such as the Cary Audio Design CAD-100 or the CAD-50 mono-blocs. The PD-1 provides the audiophile with a choice of inputs and two variable outputs and one fixed output for recording. The PD-1 series of pre-drivers are available in three versions. The PD-1-P is a passive line driver without the active phono preamplifier section. Model PD-1 contains both the passive line driver and the active phono preamplifier. The third version is active in all modes of operation and is called the PD-1-A. The most popular version is the PD-1. All PD-1 series pre-drivers are voltage controlled. The passive version, PD-1-P, has a self contained toroidal power transformer in the basic unit. The other two versions, PD-1 and PD-1-A, have a separate power pac with a six foot cable leading to the pre-driver. The separate power pac ensures hum free operation in the phono mode. Every PD-1 version is tested at its specified power input and output levels and should require a minimum of maintenance through years of operation. All PD-1 pre-drivers feature the remote output voltage ports for turning on and off the AC power on all Cary Audio Design power amplifiers. The voltage coming out of the remote ports on the rear of the PD-1's is a low 15 volts DC. This voltage activates the turn-on relays in the Cary power amps.

The most exciting feature of the PD-1 series is the input selector board. This double sided, plated through, PC board contains six gold plated DPDT 12 volt dc relays. These relays serve two functions. The first is a method to select the various inputs being fed to the pre-driver and the second is to provide a purely resistive source to the input when a particular source is not in use. One example is when audiophile is listening to a phono source and the FM tuner, video, along with the CD player are feeding into the PD-1. All but the phono source in this example would be active with all other inputs resistively terminated. This of course eliminates any bleed through or cross talk. Another fantastic feature of this input selection system is the elimination of the bundle of long input leads from the rear panel to a front panel selector switch. The PD-1 system keeps all the input wires in a straight short path to the input voltage controlled selector board.

Operating the Cary PD-1 pre-driver is a simple procedure, since each unit is designed for long term stability in virtually any operating situation. Despite their straight-forward design and minimal user required adjustment, the PD-1 series of preamplifiers are sophisticated electronic instruments.

Therefore, if the unit is operated outside the parameters outlined in this owner's manual, damage may result. Please read this manual carefully before putting your new Cary Audio Design PD-1 pre-driver in operation.

The following definitions are applicable to this manual. These definitions must be followed explicitly.

**WARNING**  
**HAZARD PRESENTS PERSONAL INJURY OR DEATH**

**CAUTION**  
**EQUIPMENT DAMAGE MAY OCCUR BUT NOT PERSONAL INJURY**

## **NOTE**

*Proper performance of the pre-driver cannot be ensured if disregarded*

### **1.2 Specifications**

*The following section describes the PD-1 basic specs. Specifications are subject to change without notice or obligation.*

*DIMENSIONS: 2.7"H x 12"W x 9"D*

*WEIGHT: 11 Lbs.*

*CIRCUIT TYPE: PD-1 and PD-1A Class A ... PD-1-P passive*

*INPUT IMPEDANCE: Magnetic Phono: 47,000 ohms  
High Level: 10,000 to 100,000 ohms*

*GAIN: Magnetic Phono: 58 dB  
High Level: 15dB on PD-1-A, on PD-1 and PD-1-P non-active passive line stage*

*SIGNAL/NOISE RATIO: Magnetic Phono: -80dB "A" weighted*

*RESISTORS: 1% metal-film*

*CAPACITORS: Polystyrene and Polypropylene*

*PRINTED CIRCUIT BOARDS: Glass double sided plated through holes*

*POWER TRANSFORMER: Toroidal 100% duty cycle*

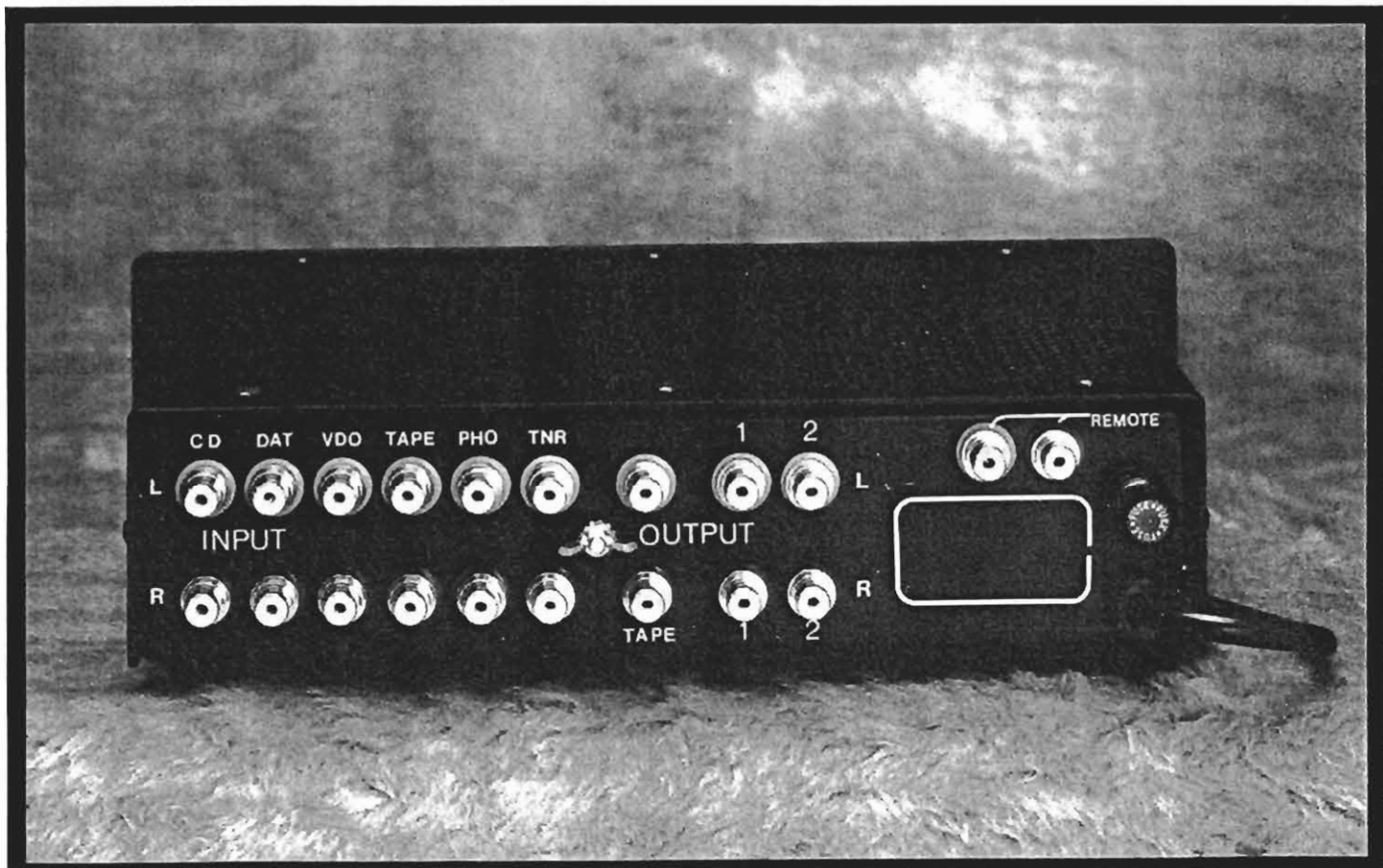
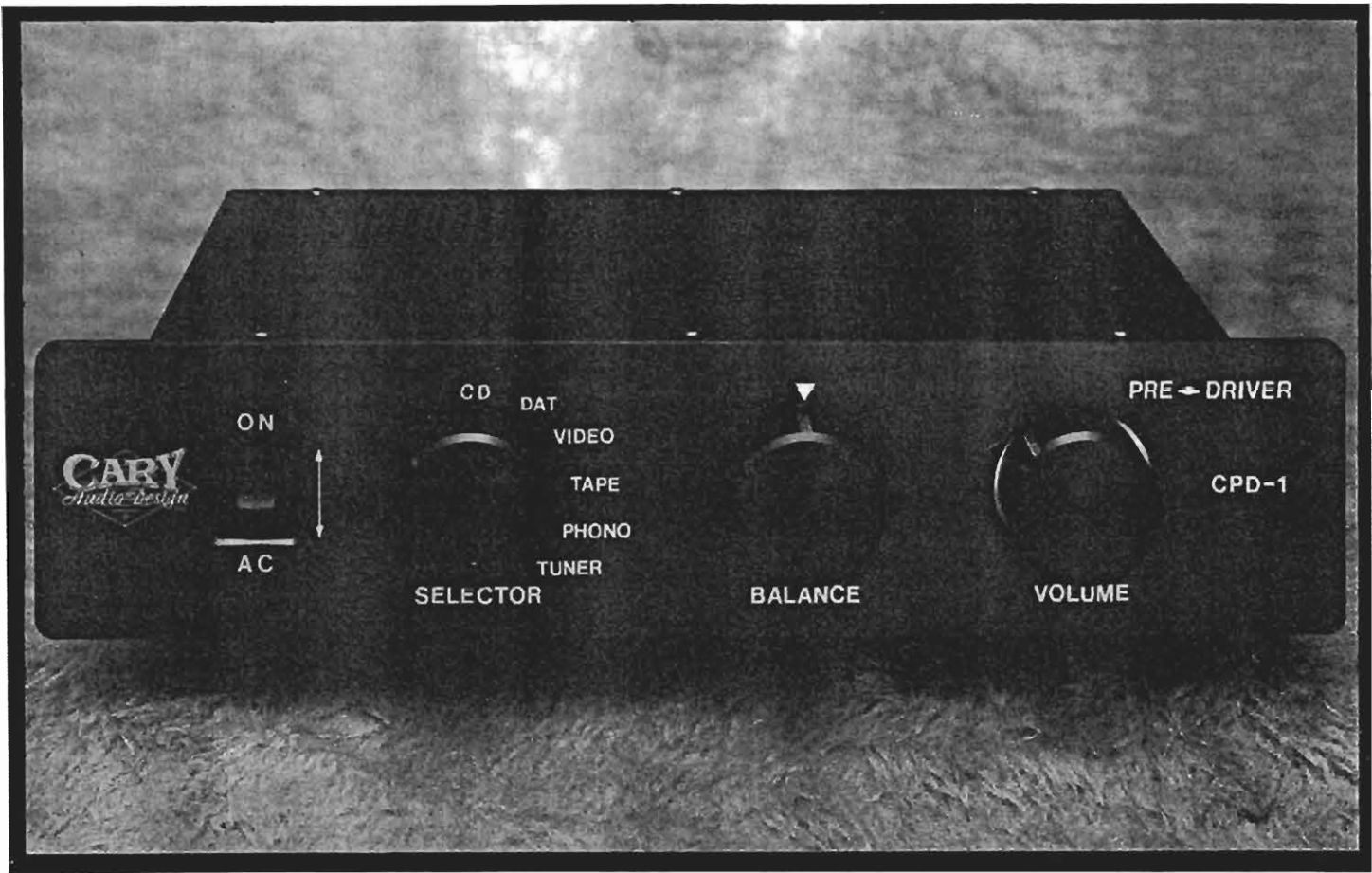
*AC POWER CORD: 3 conductor shielded*

*TUBES: Four ECC83/12AX7*

*POWER SUPPLY: Regulated 12 volts DC, Regulated 160 volts DC*

*AC POWER REQUIREMENTS: 100 to 125 volts AC 50/60 Hz*

*WARM-UP TIME: 3 minutes*



*INPUT AND OUTPUT JACKS: Gold plated "TIFFANY" with Teflon*

*DUTY CYCLE: Continuous duty all modes 24 hours a day*

### **1.3 Front Panel Features**

*AC-ON ROCKER SWITCH - Turns AC power on and off along with sending 15 VDC out the rear two remote jacks to turn on and off Cary Audio amplifiers*

*SELECTOR - Switches the various inputs on the rear of unit*

*BALANCE- center position equal output for left and right channel*

*VOLUME - equal control of audio output to both left and right channel*

### **1.4 Rear Apron Features**

*L & R - indicates LEFT and RIGHT channel*

*INPUT - From program source*

*OUTPUT - #1 and #2 are common for feeding signal to final power amplifiers*

*OUTPUT TAPE - feeds audio to recorder input - this output is fixed and not controlled by the front volume control*

*REMOTE -CAUTION!!! - to be used with Cary Audio Design amplifiers ONLY!!!! - when the PD-1 is powered up, 15 VDC will come from these jacks to energize the ON-OFF relay in Cary Audio Amplifiers*

*FUSE - Protection of PD-1 power supply - use 2 amp fuse only*

### **CAUTION**

**NEVER REMOVE/INSERT AC LINE CORD WHEN THE UNIT IS ON**

### **2.1 INSTALLATION**

*This section describes the unpacking and installation procedures for the PD-1 series of pre-drivers*

### **WARNING**

**MAKE NO ATTEMPT TO PUT THE PRE-DRIVER IN SERVICE  
OUTSIDE OF THE CABINET - CONTACT WITH VOLTAGE  
IN THE PD-1 CAN BE FATAL!!!**

## **2.2 Unpacking**

*All shipping containers have been specially designed to protect their contents and special care has been taken to prevent damage under normal shipping conditions. Mishandling should be evident upon inspection of the shipping container. If damage is found after visual inspection, take care not to destroy the evidence. If necessary, document the damage with photographs and contact the transport carrier immediately.*

*Carefully remove your new PD-1 series pre-driver from its packing carton, and examine it closely for signs of shipping damage. It is recommended to save all original packing cartons to protect your pre-driver from damage should you wish to store it or ship it for after-sales service.*

## **2.3 Warranty Card**

*Fill out the enclosed warranty registration card and return to Cary Audio Design, Inc. within 10 days of Original purchase. Keep your original sales slip with the packing cartons should you ever need it for reference.*

## **2.4 Pre-driver Placement**

*In general, the location of your new PD-1 is not critical. However, certain precautions must be taken to ensure optimum performance. Avoid extremely hot locations such as near radiators or other heating units. Keep the top of the PD-1 case clear of books, paper, or other equipment to protect against overheating.*

## **2.5 Power Requirements**

*The PD-1 is designed to operate from house current mains. The design voltage is 117 VAC at 50/60 Hz.*

## **2.6 Cables**

*The interconnect cables from the output jacks of the PD-1 to the input jacks on the basic amplifiers can be any convenient length your set-up requires. The best installation is with a Cary monobloc amplifier next to each speaker. The choice of a high quality interconnect cable is important. Most audio dealers will have proper cables in stock for this purpose.*

*The two cables from the phono cartridge, (turntable) should be as short as possible. Make sure to ground the turntable ground wire at the back of the PD-1 star ground screw.*

## **3.1 Operation**

*Your new PD-1 is ready for operation after all the interconnect cables have been installed. The PD-1 is provided with functional, useful front panel controls with a logical layout. The most used control on the right with the least used on the left.*

## **3.2 AC ON power switch**

*Simply push the rocker switch up to the on position. The blue light behind the volume control will light. You will also hear a small relay click. If your system has Cary Audio CAD-100 or CAD-50's as amplifiers, they will also come on line at the flip of this power switch.*

### **3.3 Selector Switch**

*This rotary switch connects a choice of program source, both channels simultaneously, together with proper amplification and equalization for the magnetic phono source. All program sources, including tape deck playback, are selected by this switch. As you switch from source to source you will hear the clicking of the input board relays. This click is normal and proper.*

### **3.4 Balance**

*This control is normally in the vertical 12:00 o'clock position. That position will provide equal outputs on both channels if the input signal is equal from the driving source. The balance control has a very gradual action in the first 90 degree of rotation each side of center. The action increases rapidly to the extremes of rotation, to the point that either the right or left channel will be silenced.*

### **3.5 Volume**

*The output of both left and right channels is controlled simultaneously by this control. The control potentiometer is of such high quality that the tracking error is less than .5 dB from 0 to -60 dB. The program source remains in balance over the entire range of this control. The taper rate of the volume control has been chosen to provide a slow increase in gain over the first half of rotation and a more rapid gain increase above 12 o'clock.*

## **4.1 PD-1 Pre-Driver Care and Cleaning**

*After completely disconnecting your PD-1 from the AC power source, wait 30 minutes so all electrolytic capacitors have discharged through their bleeder resistors. The top cover can then be safely removed by taking out the top and side row of screws.*

*Since the top cover is vented, the pre-driver will collect particles of dust which must be periodically removed. The frequency of cleaning will be governed by how many hours the PD-1 is operated, and by operating environment cleanliness. The best way to clean the PD-1 is to blow the dust out with compressed air. If compressed air is not available, a soft-bristled one inch paint brush can be used to brush the chassis and components clean.*

## **4.2 Tube Replacement**

*If it becomes necessary to replace the tubes in the pre-driver the same brand should be used. A new tube kit is available from Cary Audio Design, Inc. You should get a number of years use from a set of ECC83 tubes in the PD-1.*

## **4.3 Factory Service**

Careful consideration has been given to the design of your PD-1 pre-driver to keep maintenance problems to a minimum. However, it is possible that some problems may arise which cannot be cured by tube substitution. At this point we suggest that you contact our Customer Service Department at phone number 1-919-481-4494 to describe your problem in detail. Do not return the PD-1 to the factory without a return authorization number from the Customer Service Department. Cary Audio Design, Inc. will assume no responsibility if the transportation company refuses to pay a damage claim due to your improper packing or lack of insurance should the unit be lost in shipment.

### **WARNINGS**

**MAKE NO ATTEMPT TO PUT THE PD-1 IN SERVICE OUTSIDE OF THE CABINET. CONTACT WITH HIGH VOLTAGES FOUND IN THE UNIT CAN BE FATAL.**

**COMPLETELY REMOVE AC POWER PLUG FROM THE WALL AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS TO DISCHARGE THROUGH BLEEDER RESISTORS BEFORE ATTEMPTING TO CHANGE TUBES OR CLEAN THE INSIDE OF THE PRE-DRIVER**

### **CAUTIONS**

**NEVER REMOVE/INSERT AC PLUG WHEN THE UNIT IS ON OR THE AC POWER SWITCH IS IN THE ON POSITION.**

**OBSTRUCTION OF THE TOP VENT HOLES ON THE PD-1 COVER MAY RESULT IN TUBES OVERHEATING**

**OBSERVE DIRECTIONS IN THIS MANUAL**

## LIMITED WARRANTY

Cary Audio Design, Inc. warrants to the original purchaser that this product shall be free from defects in material (except tubes and AF output transistors) or workmanship for (2) years from the date of the original purchase.

During the warranty period, Cary Audio Design, Inc. or an authorized Cary Audio Design, Inc. service facility will provide free of charge both parts (except tubes and AF output transistors) and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

- (1) Complete and send in the Warranty Registration Card.
- (2) Notify Cary Audio Design, Inc. as soon as possible after the discovery of a possible defect, of:
  - (a) The model number and serial number;
  - (b) The identity of the seller and the approximate date of purchase;
  - (c) A detailed description of the problem, including details on the electrical connection in the associated equipment and the list of such equipment.
- (3) Deliver the product to Cary Audio Design, Inc. or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and the shipping charges prepaid.

Correct maintenance, repair and use are important to obtain proper performance from this product. Therefore, carefully read the Instruction Manual. This warranty does not apply to any defect that Cary Audio Design, Inc. determines is due to:

- (1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and the specifications of the original parts.
- (2) Misuse, abuse, neglect or improper installation.
- (3) Accidental or intentional damage. All implied warranties, if any, terminate one (1) year from the date of the original purchase.

The foregoing constitutes Cary Audio Design, Inc.'s entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives specific legal rights and you may also have other rights which vary from state to state.

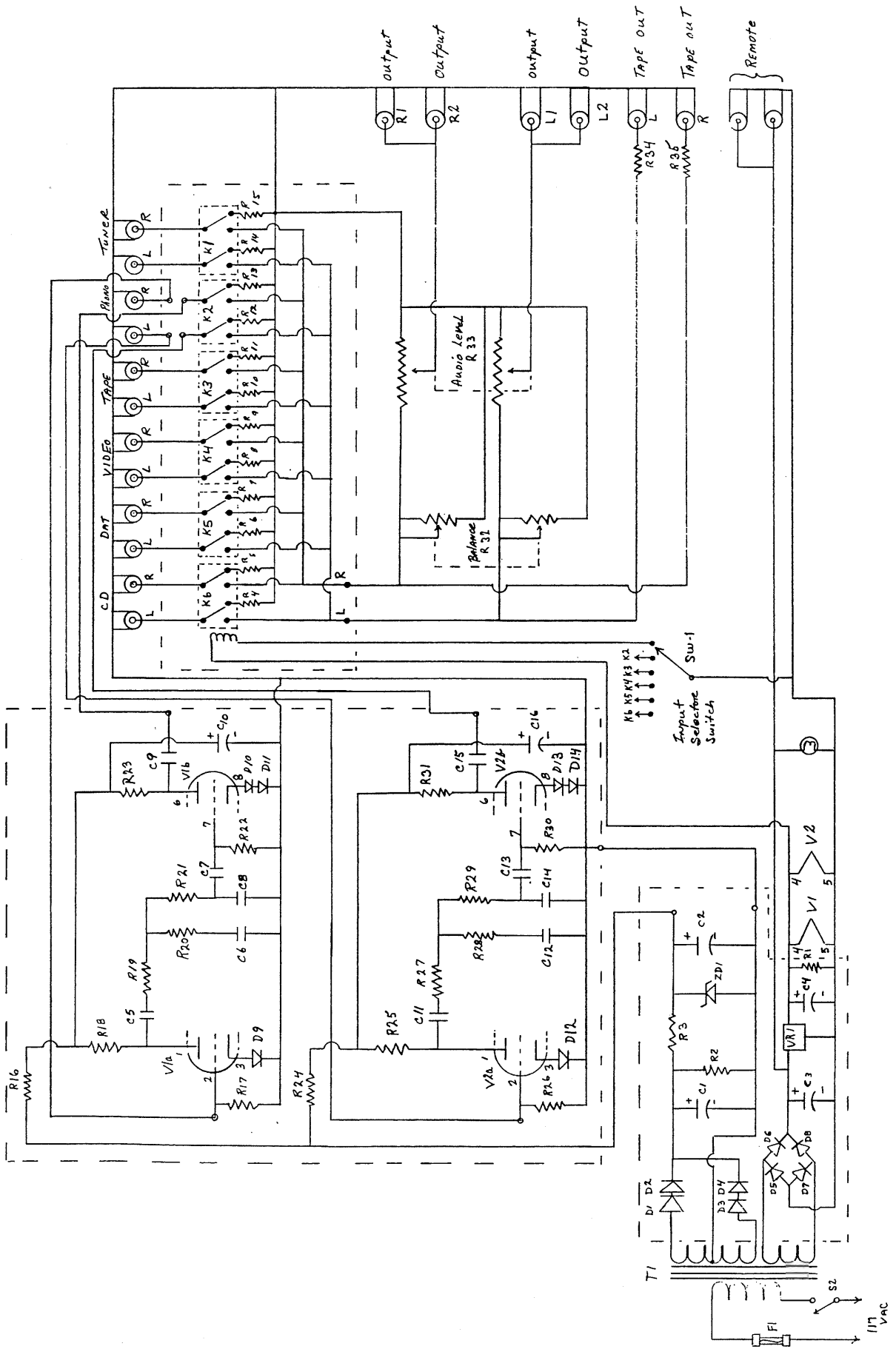
CARY AUDIO DESIGN,INC. CPD-1 PARTS LIST 8-9-89

PART #	DESCRIPTION	DESIGNATE	QTY.
1025	25K DBL. POTENTIOMETER(3/8"R-32		1
1050	50K BALANCE DBL.POT. (3/8"R-33		1
1180	10 K OHM 1/4 WATT 2%	R-4 THRU 15	12
1264	2 K OHM 1/2 WATT 1%	R-34,35	2
1274	4.7 K OHM 1/2 WATT 1%	R-16,24	4
1285	15 K OHM 1/2 WATT 1%	R-20,28	2
1294	47 K OHM 1/2 WATT 1%	R-11,26	4
1295	68 K OHM 1/2 WATT 1 %	R-21,23,29,31,	6
1296	100 K OHM 1/2 WATT 1 %	R-18,25	2
1298	150 K OHM 1/2 WATT 1 %	R-19,27	2
1299	1 MEG.OHM 1/2 WATT 1 %	R-22,23	2
1458	1 K OHM 2 WATT 1 %	R-1,3	2
1496	100 K OHM 2 WATT 1 %	R-2	1
1291	22 K OHM 1/2 WATT 1%	R-36,37	2
2220	2200 uF 25VDC ELECTROLITIC	C-3,4	2
2225	47 uF 250VDC ELECTROLITIC	C-10,16	2
2268	680 uF 200VDC ELECTROLITIC	C-1,2	2
2384	1000 PF S.M. (DM-15) 300V	C-8,14	2
2412	.022 100VDC	C-6,12	2
2418	.10 200VDC	C-5,7,9,11,13,15-	8
3148	IN4148 SIGNAL DIODE	D-9 THRU 18	10
3149	1N3049 160V ZENER DIODE	ZD-1	1
3154	1N5408 RECTIFIER DIODE	D-1 THRU 8	8
3372	7812K VOLT-REG. (T0-3 CASE)		1
3373	I.C. HEAT SINK		1
3420	14 VDC LAMP		2
3421	14 VDC LAMP SOCKET		2
3506	12 VDC REED RELAY (PC MOUNK-1 THRU 6		6
4060	PC BOARD-1 POWER SUPPLY		1
4062	PC BOARD-2 RELAY CONTROL		1
4063	PC BOARD-3 AMPLIFIER		2
4190	9-PIN PC SOCKET		4
4310	GOLD RCA JACK	J-1 THRU 20	20
4421	MINI ON/OFF ROCKER SWITCH	S-2	1
4453	DP-6 POSITION ROTARY SWITCH	S-1	1

CARY AUDIO DESIGN,INC. CPD-1 PARTS LIST 8-9-89

4521	MACH. ALUMINUM KNOB (KN-		3
4611	RUBBER FOOT		4
4622	LINE CORD STRAIN RELIEF		1
4727	FUSE HOLDER	F - 1	1
4733	3 AMP FUSE		1
5174	12AX7A TUBE	V-1,2,3,4	4
6107	POWER TRANSFORMER	T - 1	1
7165	CHASSIS		1
7265	CHASSIS COVER		1
7365	FRONT PANAL		1
7301	TOROID CASE		1

PART #	DESCRIPTION	DESIGNATE	QTY.
8115	LINE CORD		1
8180	8-COND. CABLE		8
8200	ASST. HOOK-UP WIRE		
9100	HARDWARE		
9144	4/40 X 1/4 SET SCREW		3
4380	MALE CONNECTOR		1
4388	FEMALE CONNECTOR		1
9313	E.F.J. SPACER		6
9310	WHITE RCA WASHER		20
9311	RED RCA SHOULDER WASHER		10
9312	WHITE RCA SHOULDER WASHER		10
7366	BLUE PLEXIGLASS(MACHINED)		1



PD-1