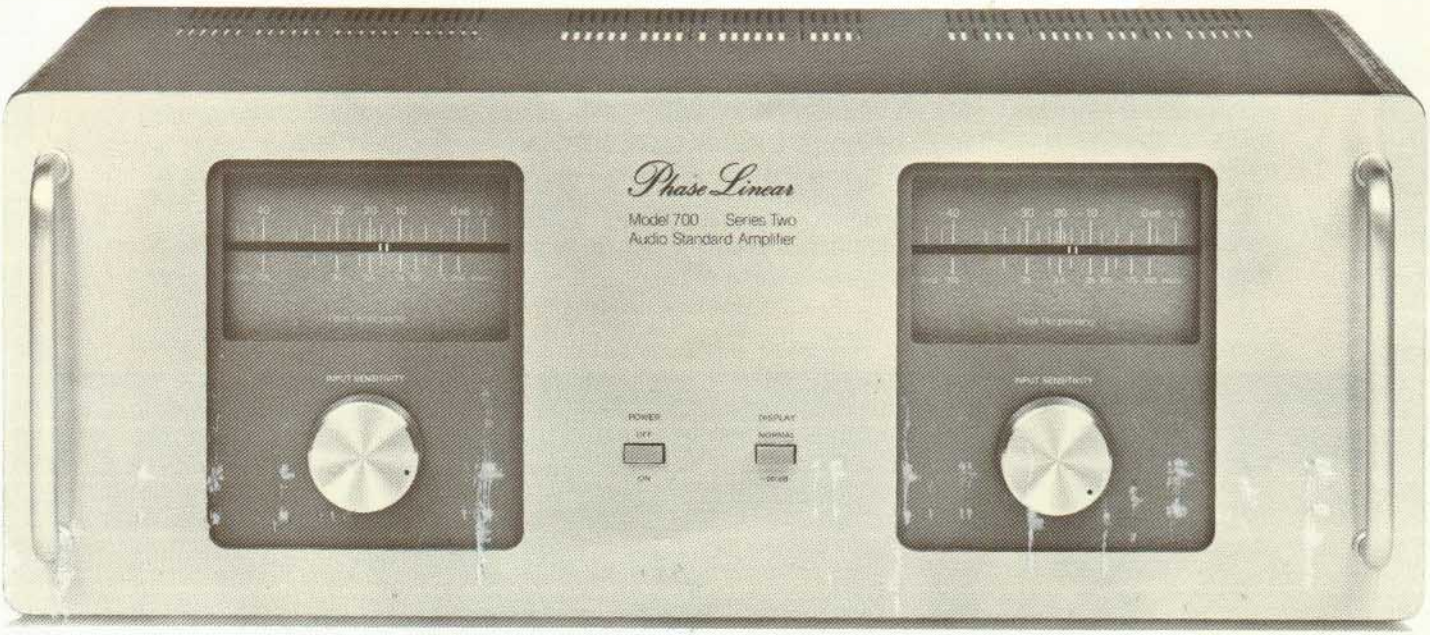
700 SERIES TWO POWER AMPLIFIER

OWNER'S MANUAL



Phase Linear®
THE POWERFUL DIFFERENCE

INTRODUCTION

INTRODUCTION

Phase Linear Corporation welcomes you to the world of exquisite sound reproduction. The Phase Linear 700-Series Two amplifier is your personal carrier into the realm of state of the art high fidelity. Your Model 700 is the finest, most advanced amplifier today's technology can produce.

You are encouraged to thoroughly digest the following manual in order to understand and be able to use your amplifier. Briefly, your Phase Linear 700-Series Two is a precision high power audio amplifier designed to meet the rugged requirements demanded in professional applications. It is capable of amplifying a wide range of frequencies with extremely low harmonic and intermodulation distortion and very low noise. Advanced state of the art technology has been incorporated into the Model 700. The extensive use of integrated circuits makes possible an amplifier with performance which in the past had been virtually unattainable.

The output circuitry utilizes 20 rugged 150 watt silicon power transistors providing a power handling capacity of 3000 watts! The output transistors operate in the Phase Linear quasi-complementary configuration which exhibits proven excellence in performance and reliability. A massive heat sink structure provides more than adequate cooling for the amplifier.

Your 700-Series Two is equipped with elaborate overload protection systems to insure safe and reliable operation. If the amplifier is accidentally connected to a short circuit or an exceedingly low impedance load, a voltage-current limiter circuit serves to keep power dissipation in the output transistors within limits. Fuses in the power supply circuit provide additional protection by preventing abnormally large current flows in the amplifier. Complete thermal protection is provided by a built-in protection circuit. If an excessive amount of heat is generated in the amplifier, the power will be disconnected automatically to avoid reaching unsafe operating temperatures.

Output voltage and power levels of each channel are displayed simultaneously with light emitting diode (LED) arrays. These displays have peak responding characteristics to permit accurate observations of output voltage and power levels.

A front panel switch is provided to increase the sensitivity of the display by 20dB for more accurate indication of low level operation.

Before leaving the factory your Phase Linear Model 700 amplifier was tested and certified to be in perfect operating condition. This manual will help you operate the 700-Series Two as well as keep it in perfect condition and should be put away for future reference. With care befitting all fine instruments, your Phase Linear 700-Series Two will provide years of musical enjoyment.

CONTENTS

CONTENTS 3
VOLTAGE AND FUSING VARIATIONS IN EXPORT MODELS 5
REAR PANEL DESCRIPTION 6
INSTALLATION INSTRUCTIONS 6
FRONT PANEL CONTROLS 8
OPERATION 10
OPTIONAL ACCESSORIES 11
TECHNICAL DESCRIPTION 12
TROUBLESHOOTING 14
MAINTENANCE AND SERVICING 15
SPECIFICATIONS 16

LIST OF ILLUSTRATIONS

1. CHANGING VOLTAGE DIAGRAMS 5
2. REAR PANEL DETAIL 6
3. CONNECTION DIAGRAM 7
4. SERIES WIRING DIAGRAM FOR MULTIPLE SPEAKERS 7
5. FRONT PANEL 8
6. PEAK RESPONDING LEVEL INDICATOR 10
7. SCHEMATIC FOR POWER AMPLIFIER 13

VOLTAGE AND FUSING VARIATIONS

LINE VOLTAGE AND FUSE

This model is available in two basic versions: one version operates only on 120 Volt, and the other operates on either 120 Volt or 220/240 Volt. If your unit is the latter version it will be designated "Dual Primary" on the rear panel. These units will be set for the proper voltage of the country of destination. You must only change the voltage if you move from a 220/240 VAC area to a 120 VAC area or conversely. If you need to make that change use the following procedure.

CHANGING LINE VOLTAGE SETTING AND FUSE

Only a qualified technician should change your unit from one voltage to another since that conversion must be done by rewiring the power supply. The following diagram will give the proper schematic to enable that conversion to be made correctly.

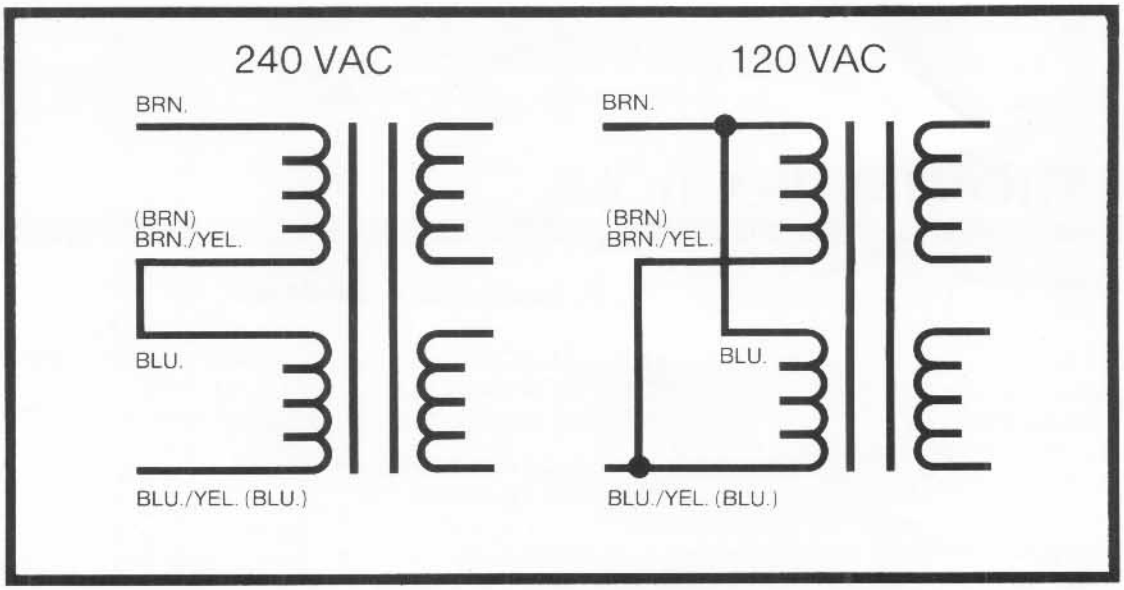


Illustration 1

IF THE PRIMARY VOLTAGE IS CHANGED, THE LINE FUSE MUST BE CHANGED AS FOLLOWS:

120 VAC: Use 10 AMP, Type AGC
240 VAC: Use 5 AMP, Type AGC

REAR PANEL DESCRIPTION

AMPLIFIER INPUTS
Use Shielded Cables Only To Connect Source Inputs.

INPUT COUPLING SWITCH
See Operation Section for details.

SPEAKER CONNECTION TERMINALS
Use 18 gauge AC line cord to connect to speakers.

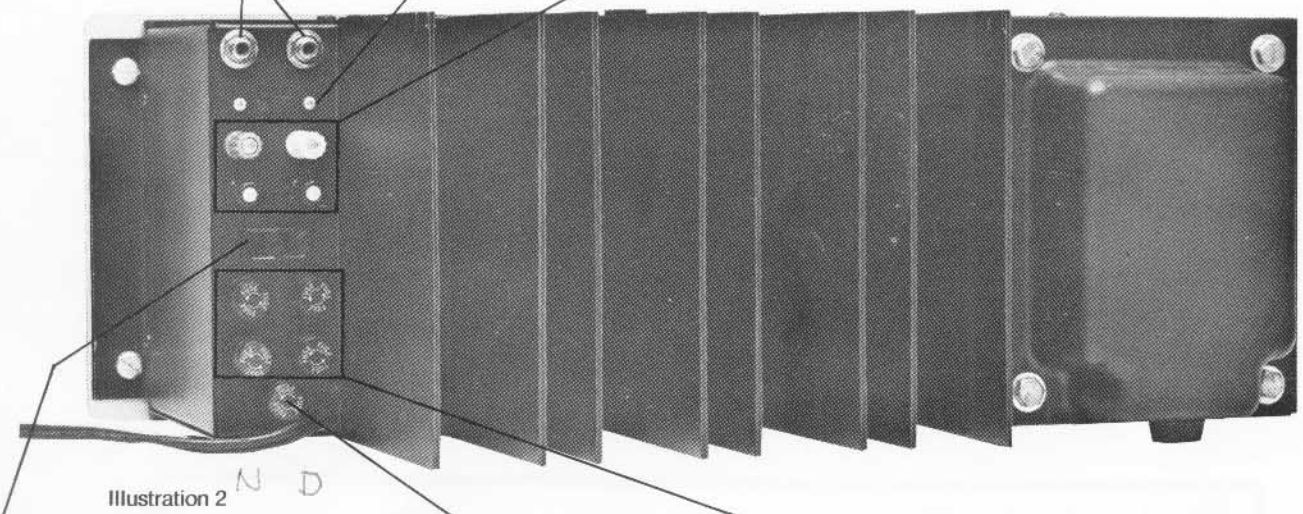


Illustration 2

AC OUTLET
Use for auxiliary equipment, fan, etc.

LINE FUSE
Use AGC 10 only

SUPPLY FUSES
Use AGX 5 only

INSTALLATION INSTRUCTIONS

PREAMP CONNECTION
To connect the Phase Linear 700-Series Two to a preamplifier run shielded audio cable from the outputs on the preamp to the input jacks on the Model 700.

SPEAKER CONNECTION
Illustration 3 shows the correct method of connecting the Model 700 to a pair of speakers. Speaker wire should be run from the Model 700 to the left and right speakers as shown in the illustration. Due to the high power output of the Model 700 speakers should be fused. Please refer to the section on speaker fusing. PHASE LINEAR IS NOT RESPONSIBLE FOR ANY DAMAGE DONE TO SPEAKERS WHILE USING THE MODEL 700.

The speaker wire must be of sufficient wire gauge to handle the Model 700 output current and not add significant impedance to the output. Any increase in output impedance will result in a reduction of the overall damping factor. Heavy duty AC line cord of at least 18 gauge wire is recommended for the speaker connections.

Care should be taken to insure that all connections are made properly. Dual banana plugs are recommended to minimize the chance of short circuiting the outputs of the amplifier.

CAUTION: NEVER CONNECT THE OUTPUTS OF THE TWO CHANNELS TOGETHER OR WITH ANOTHER AMPLIFIER'S OUTPUT AS THIS WILL LEAD TO AMPLIFIER DAMAGE. BE CERTAIN THAT POWER IS OFF WHEN HOOKING UP ANY SPEAKERS TO THE AMPLIFIER.

SPEAKER PHASING
Correct phasing of the speakers should be made when connecting them to the amplifier. If the speakers are connected out of phase, sound cancellations will occur at some frequencies. Proper phasing can be assured by connecting the "hot" and "common" terminals of the amplifier to the corresponding terminals on the speakers.

The simplest listening test to check for phasing is the following: play a musical selection with substantial bass material and set the preamp tone controls for maximum bass boost. Rotate the preamp balance control all the way to one side, then back to center, and repeat this while listening for changes in the bass level. If the bass is weaker with the balance control centered, the speakers are out of phase; reverse the leads on one speaker and double check all wiring.

SPEAKER IMPEDANCE
For proper operation of the amplifier, the minimum impedance of the speakers (or the combined impedance of parallel connected speakers) is 4 ohms. Series wiring of multiple speaker systems may be necessary since the amplifier must not be operated into less than 4 ohms (see Illustration 4). Please contact your dealer or the factory service center for any specific problems concerning speaker installation.

GROUNDING
Input and output grounds are internally connected to the chassis of the amplifier. Grounding of the chassis to the preamplifier is accomplished through the input audio cable. No further grounding of the amplifier is necessary.

VENTILATION
The 700-Series Two requires a generous supply of cooling air to dissipate the large amount of heat generated. The amplifier must be installed allowing unrestricted ventilation with adequate clearance for the top, back, and sides of the amplifier. If the amplifier is used in a high average power application, a cooling fan may be necessary.

NOTE: THE OPTIONAL CABINET IS DESIGNED TO ALLOW ADEQUATE VENTILATION AND MAY BE SAFELY USED WITH THE AMPLIFIER.

CONNECTING POWER
The switched AC outlet of the associated preamplifier may be used to supply power to the 700-Series Two, if that AC outlet is capable of providing the required power. If an extension cord is required, use the heavy duty type and keep the length short to prevent power loss.

AC OUTLET
The AC outlet on the rear panel of the 700 is designed to supply power for a cooling fan, if used. Power at the outlet is controlled by the front panel power switch.

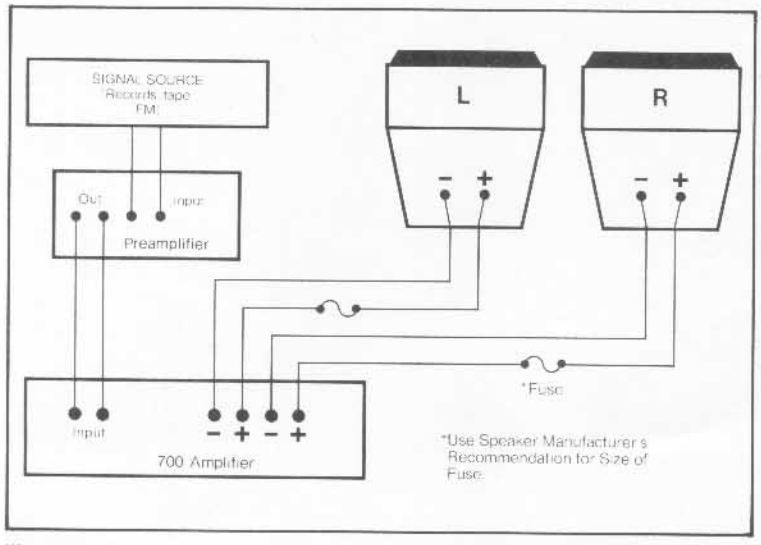


Illustration 3

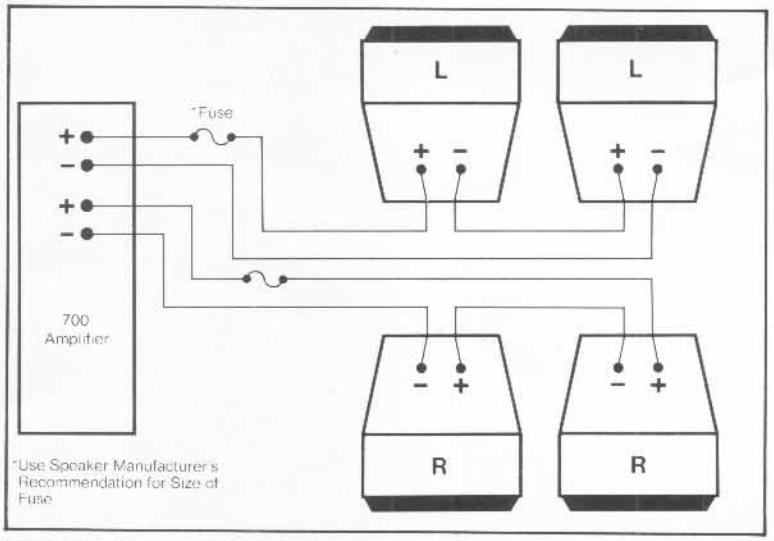


Illustration 4

FRONT PANEL CONTROLS

PEAK RESPONDING—LEVEL INDICATOR
Simultaneous display of both output voltage and power levels by sequential lighting of 36 segment LED array. Dynamic range in excess of 40 dB with power calibration for 8 ohms.

POWER SWITCH
Push-push ON-OFF switch used to close the AC line to the transformer primary.

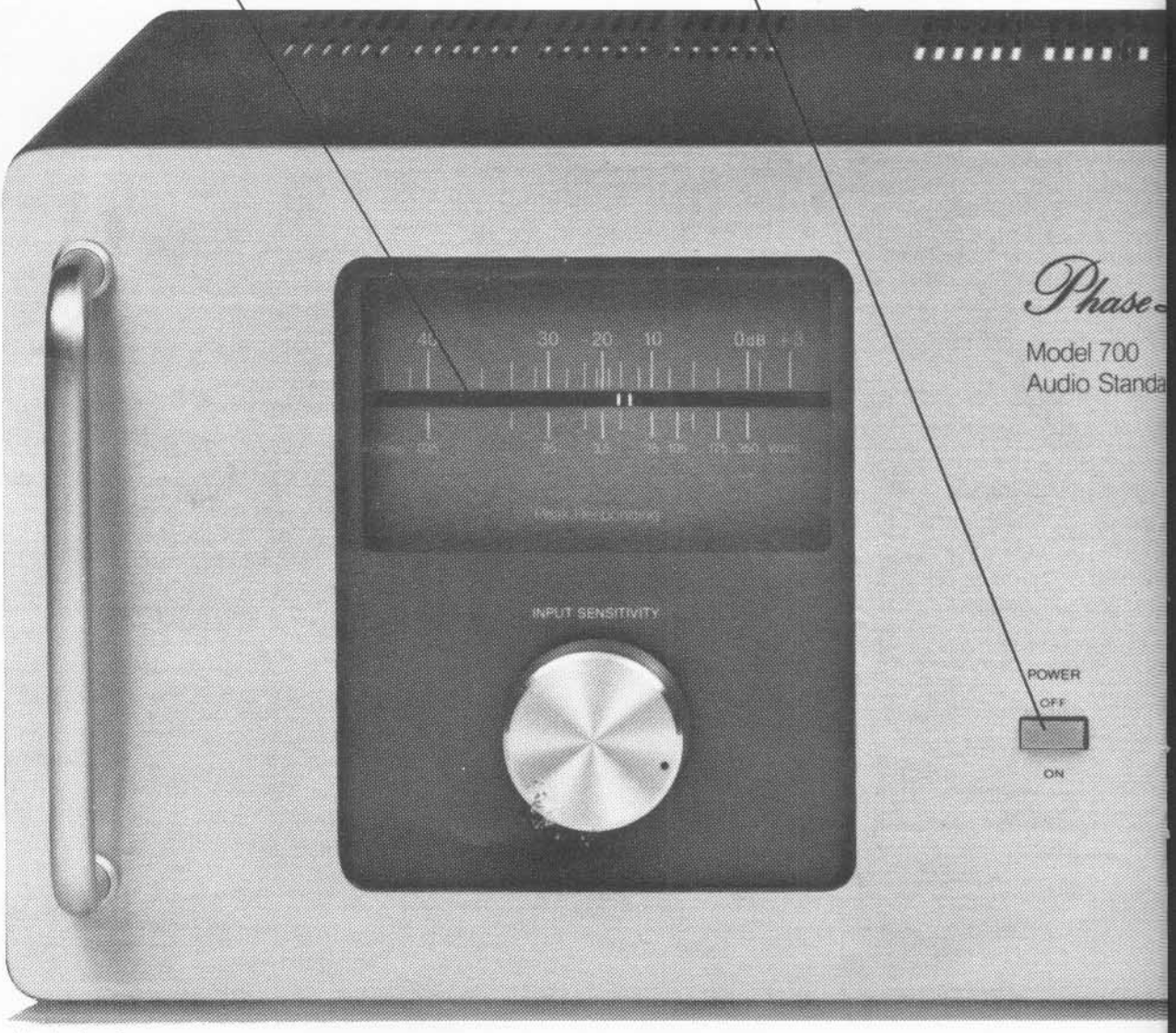
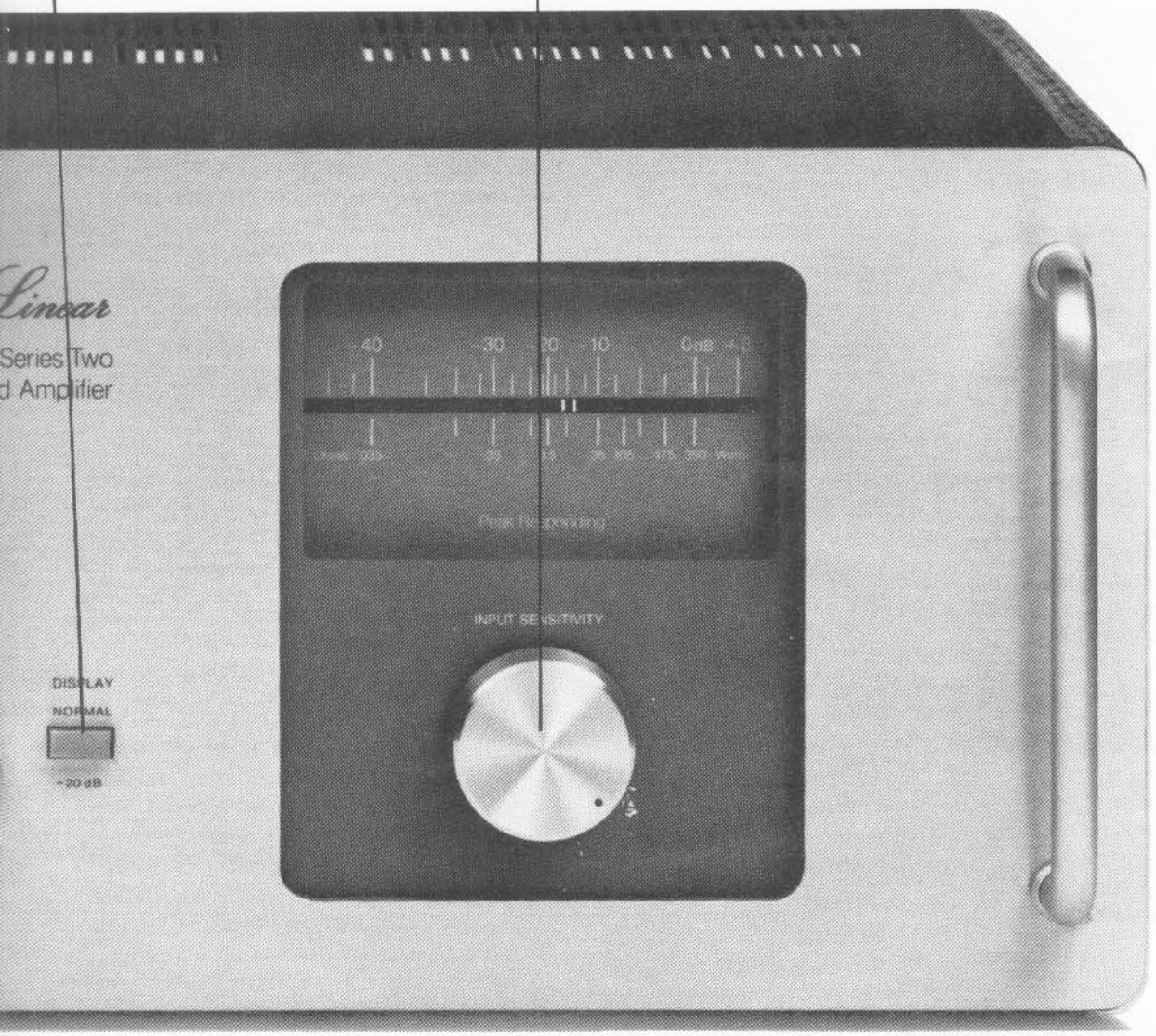


Illustration 5

METER RANGE SWITCH
Used to change the meter range by 20 dB.

INPUT SENSITIVITY CONTROLS
Individual controls for continuously variable adjustment of apparent amplifier gain.



OPERATION

INITIAL USE
The first time the amplifier is placed in operation, the front panel level controls should be turned all the way down (fully counterclockwise). Double check all connections, then depress the power switch to turn unit on. The left segments of the output level indicators should illuminate.

A few preamplifiers, particularly vacuum tube designs, have the annoying habit of injecting a large subsonic "thump" into the inputs of the power amplifier at the moment of turn-on. A few minutes of careful experimentation (with the level controls on the 700 set very low) will determine if your particular pre-amplifier does this. In the event your preamp does, the solution is to turn on the power amplifier after the preamp is switched on, or simply turn down the level controls before switching on the whole system. This will avoid the possibility of speaker damage.

AC POWER SWITCH
This switch is a push-push type used to turn the amplifier on or off.

LEVEL CONTROLS
The input sensitivity of each channel of the amplifier can be adjusted independently with the front panel level controls. The position of these controls in no way affects the power output capabilities of the amplifier. They affect only the input sensitivity, i.e., the required input voltage necessary for full power output. For example, with the controls turned fully clockwise, an input of 1.2 volts is required for 360 watts output (8 ohm load); however with the controls positioned half-way, an input of approximately 2.4 volts is now required to produce the same 360 watts into 8 ohms.

PEAK RESPONDING LEVEL INDICATORS
Output voltage and power levels of each channel are displayed simultaneously with the front panel light emitting diode arrays (see Illustration 6). The moving "light spots" on these displays cover more than 40 dB of range. 0dB is calibrated to indicate rated power output. The peak response characteristics (fast-rise/slow-decay) of these displays permit accurate observations of peak output voltage and power levels. Amplifier clipping or overload is indicated by flashing the right-hand portion of the LED display. Flashing will continue for approximately 2 seconds after an overload condition.

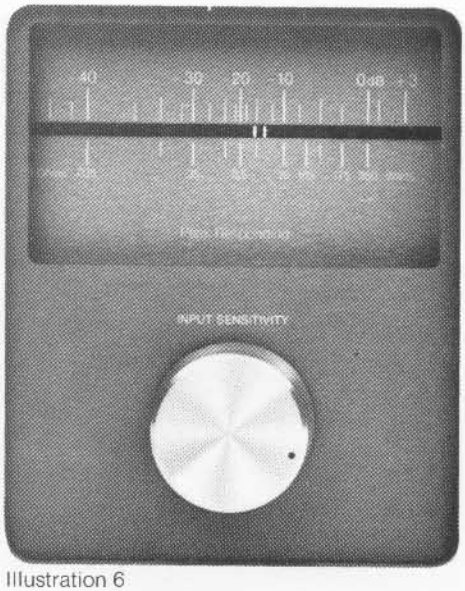


Illustration 6

LEVEL INDICATOR RANGE SWITCH
The peak responding level indicators are basically voltage reading devices designed to display the output voltage levels of the amplifier. However, they are calibrated to indicate "output power" at a nominal speaker impedance of 8 ohms.

The 20 dB meter range switch decreases the power indications by a factor of 100.

INPUT COUPLING SWITCH
The 700-Series Two may be operated in either the "normal" or "direct coupled" mode. Mode selection can be achieved by using the input coupling switch located on the rear panel of the amplifier. The "normal" mode should be used for high fidelity music reproduction. This mode provides protection for the woofer against large cone excursions caused by subsonic signals generated in the preamp at the moment of turn-on. Whereas, the "direct coupled" mode should only be used when the unit is driven as a power operational amplifier in industrial applications.

CAUTION: DO NOT SWITCH MODES WHILE THE AMPLIFIER IS IN OPERATION.

AMPLIFIER FUSING
The amplifier is delivered from the factory with fuses appropriate for all purposes. The four power supply fuses are AGX 5 types. Should your amplifier start to distort or malfunction in any way, replace these fuses.

Since the peak to average voltage ratio of recorded musical material is approximately 3:1 (9.5dB) or greater, and since power is proportional to the square of the voltage, the peak to average power ratio for most musical material is approximately 9:1. This means that when the amplifier is being driven to its limit of approximately 450 watts per channel, the average power delivered to the loudspeaker system is 1/9 of 450 watts or 50 watts. Since fuses respond to the average power level, full power operation of the amplifier with musical material is allowed using the factory installed AGX 5 fuses. Ordinarily they will only open on an accidental overload. The common symptom of an open supply fuse is extremely high distortion and low power output.

CAUTION: UNPLUG THE MODEL 700 BEFORE REPLACING FUSES. NEVER USE GREATER THAN 5 AMP (AGX 5) FUSES FOR THE POWER SUPPLY. THE USE OF ANY OTHER FUSE SIZES WILL INVALIDATE THE WARRANTY.

SPEAKER FUSING

After incorporating a high-power amplifier into a sound system, it is important to realize the necessity of proper fusing of the speakers. The power supply fuses contained in the amplifier are designed primarily to protect the amplifier. Since the Model 700 has enough power to destroy most speakers, Phase Linear recommends the use of additional in-line fuses for optimum speaker protection.

NOTE: Phase Linear Corporation is not responsible for the damage of any speaker systems used with its power amplifiers. Determine from the speaker manufacturer the correct protection fuse for your specific model. Use a fuse socket and install it in the speaker line where it will be easily accessible. If the fuse opens repeatedly, it indicates that the desired listening level is not safely obtainable with the present speaker system.

If fusing information is not available from the manufacturer or if the speaker system is a home-built type, the following equation is recommended for determining the correct speaker protection fuse:

$$I = \sqrt{\frac{P}{4R}}$$

where I is the current rating of the fuse in amperes, P is the maximum recommended peak power handling capability of the speaker in watts, and R is the value of the speaker impedance in ohms. For example, an 8 ohm speaker capable of handling 200 watts of peak power should be protected with a 2.5 amp fast acting fuse.

OPERATING CHARACTERISTICS (TURN-OFF THUMP)

The 700-Series Two has a slight turn-off thump which will not damage any part of your system. It is normal and should not be considered as a malfunction.

SOUND REINFORCEMENT AND INDUSTRIAL USE

When using the 700-Series Two in a sound reinforcement or industrial application, the following guidelines should be observed:

1. The unit should be fan cooled.
2. Be sure that adequate ventilation is provided.
3. Load impedance must not be less than 4 ohms.
4. Use only the recommended fuses.
5. The weight of the transformer makes additional support advisable if the unit is to be rack mounted and then transported.
6. Easy access to the rear panel fuses should be provided.

THERMAL PROTECTION CIRCUIT

When operating at high power output levels the amplifier will be hot to the touch but this is normal and will not cause damage. Excessive operating temperatures will activate the thermal protection circuit and cause the amplifier to turn off. After a brief cooling period the unit will automatically turn on. If your amplifier shuts itself off consistently, check the impedance of the speakers to insure that the amplifier is not driving less than 4 ohms. A cooling fan should be installed if the amplifier is used in a high average power application.

OPTIONAL ACCESSORIES

1. Integral mounted, contoured wood sides with deep-brushed aluminum top cover. Available in either solid walnut or solid oak.
2. Rack mounting front panel with standard E.I.A. hole location and dimension.
3. Fan kit for high temperature applications.

TECHNICAL DESCRIPTION

POWER AMPLIFIER

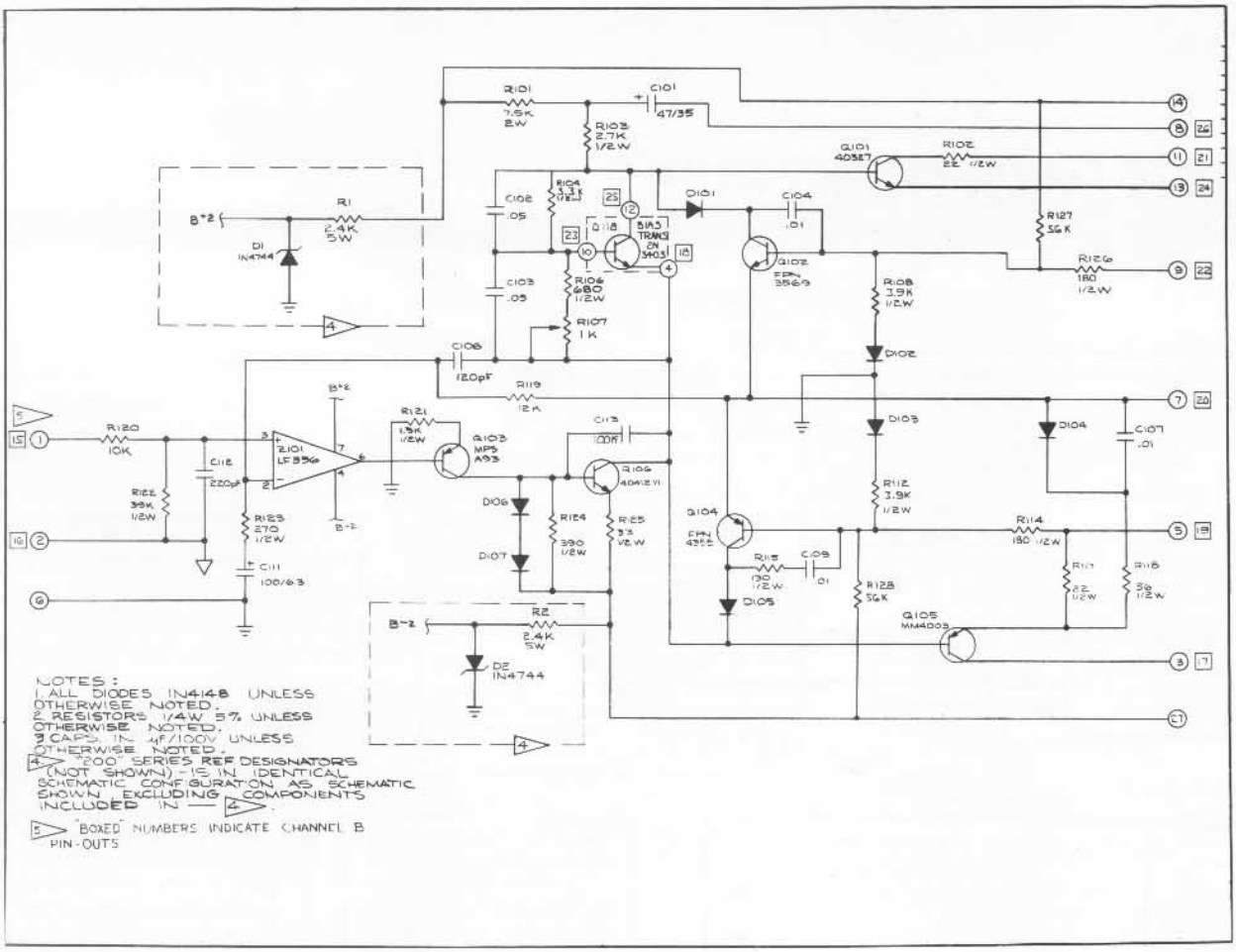
The Phase Linear Model 700 consists of two independent direct coupled linear power amplifiers combined to form a single, dual channel unit capable of extremely high power output. Please refer to the schematic diagram (Illustration 7) for the following circuit description of the individual power amplifier.

The low level input stage employs a wideband low noise FET input integrated circuit operational amplifier (Op Amp) to provide high open loop voltage gain for minimum distortion. The input signal is applied to the noninverting input of the Op Amp while the inverting input receives a portion of the final output voltage forming a negative feedback loop. A transistor functioning as a voltage level shifter couples the output signal of the Op Amp to a common emitter amplifier. The common emitter amplifier stage, biased for class A operation, is capable of swinging the full power supply voltage of 200 volts, providing the final voltage gain of the amplifier. The output stage forms a unity voltage gain buffer, capable of delivering the required current.

A bootstrap arrangement is used to provide a high impedance load for the common emitter stage and at the same time increases the amount of drive current available to the positive predriver transistor allowing symmetrical saturation. Control of the amplifier idle current is accomplished with a transistorized biasing circuit (Vbe multiplier) which regulates the bias conditions of the predriver, driver, and output transistors. The bias regulator transistor is mounted on the output stage heat sink assembly to achieve proper thermal tracking and prevents the possibility of thermal runaway.

The output stage of each channel employs 10 high current, high voltage silicon power transistors arranged in a quasi-complementary format and biased for true class B operation. Most of the required bias current is carried by the driver transistors, resulting in very high circuit efficiency. In this design, the driver and predriver transistors serve to provide current amplification of the output signal from the common emitter stage to a level required by the parallel connected output transistors.

Voltage and current levels of the output transistors are monitored continuously during amplifier operation by the built-in, dual-slope protection circuit. The protection circuit consists of two transistors, one operates when the amplifier output is positive and the other operates when the amplifier output is negative. If the voltage and current levels in the output transistors become excessive, the protection transistors will conduct to divert drive current entering the predriver transistors; thereby limiting the current flow in the output stage to a safe value.



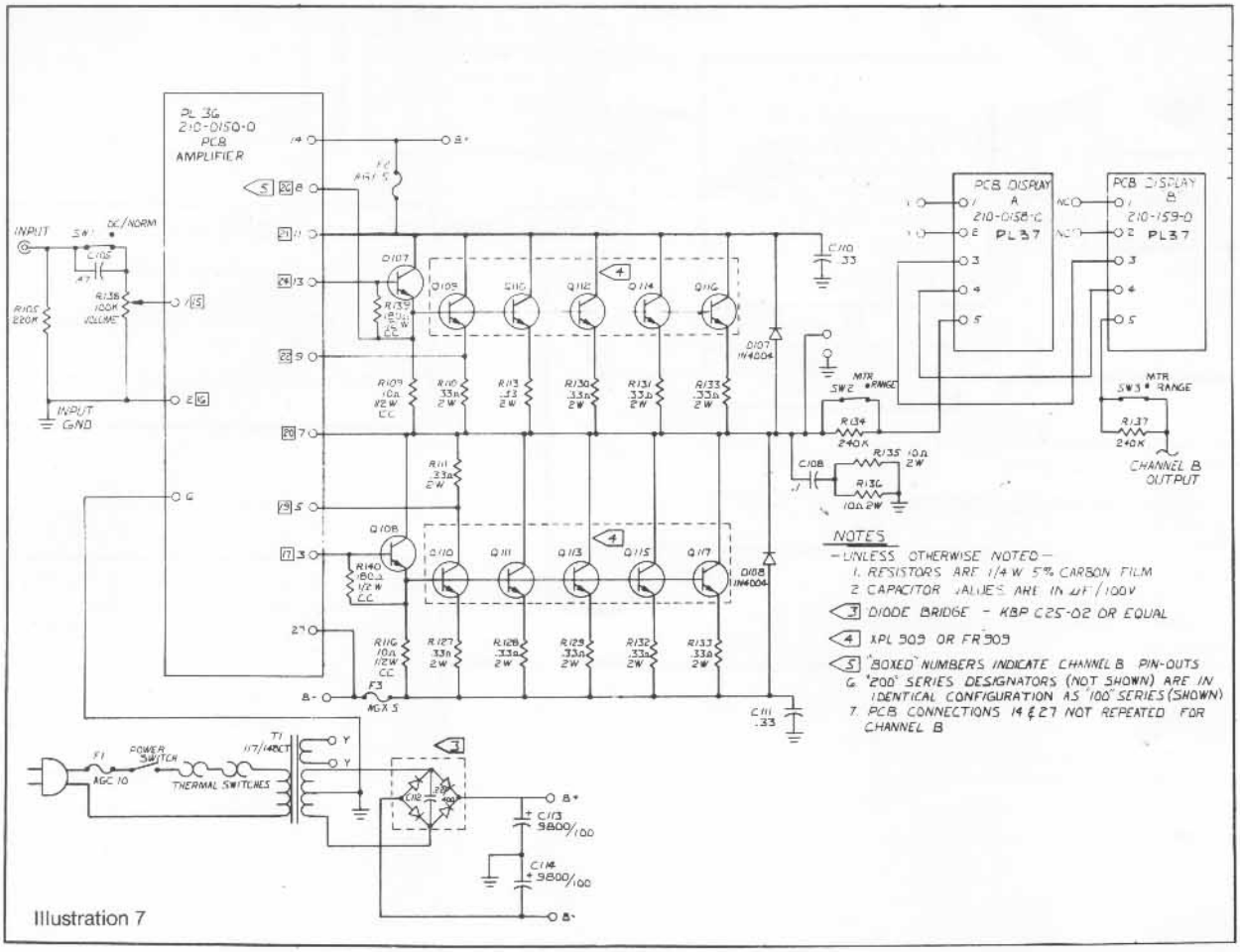
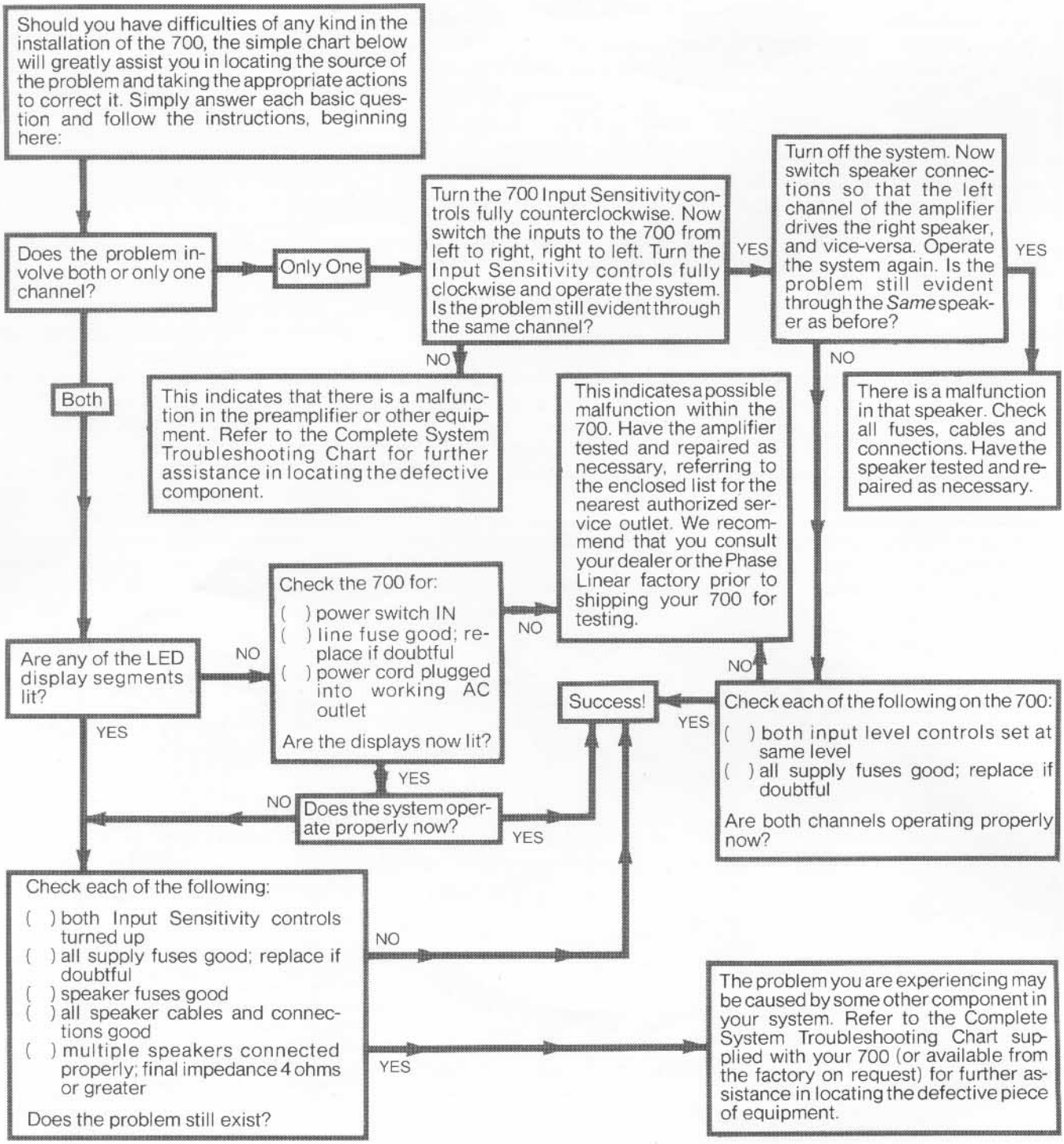


Illustration 7

TROUBLESHOOTING CHART



MAINTENANCE AND SERVICING

CLEANING
To maintain the luster of the front panel, occasionally clean it with a soft paper towel and diluted ammonia. This will remove dulling films which have a tendency to build up on the brushed finish.

REPAIR FACILITIES
Only qualified technicians should be allowed to repair the Phase Linear 700-Series Two. Phase Linear Corporation and its authorized warranty stations have the personnel and equipment to repair the Model 700. Should any problems occur with the unit, BE SURE to refer to the Troubleshooting Section in this manual BEFORE sending it anywhere for repairs. This will help you to identify and locate any specific malfunctions and possibly avoid needless shipment. **PLEASE BE SURE TO INCLUDE THE SERIAL NUMBER OF THE MODEL 700 IN ANY CORRESPONDENCE.**

If the Model 700 is in need of service, either send it to the factory or take it to the nearest warranty station described on the enclosed list. In either case, BE SURE TO ENCLOSE A COMPLETE DESCRIPTION OF ANY PROBLEM WITH THE RETURNED UNIT, along with your NAME, RETURN ADDRESS, and a copy of the WARRANTY CARD or SALES SLIP, if applicable.

If assistance of any kind is required, please feel free to contact the Factory Service Department, 20121 - 48th Avenue West, Lynnwood, WA 98036, phone (206) 774-8848.

SHIPPING
Never ship the Model 700 in any shipping carton other than the original or a replacement supplied by Phase Linear. Ship only via a reputable carrier. DO NOT USE PARCEL POST! Insure the unit for the full value and double check to ensure the unit is properly packaged.

CAUTION: Do not ship the Model 700 with the wood sides or decorative top cover.

SPECIFICATIONS

PERFORMANCE

Power Output:
360 watts minimum power, RMS into 8 ohms from 20 Hz to 20,000 Hz with no more than .09% Total Harmonic Distortion.

Continuous Power:
450 watts per channel 8 ohms at 1000 Hz.
550 watts per channel 4 ohms at 1000 Hz.

Typical Total Harmonic Distortion:
.009% at rated power into 8 ohms at 1 kHz.
.009% at rated power into 4 ohms at 1 kHz

Intermodulation Distortion:
(60 Hz: 7kHz = 4:1)
less than .09% at rated power into 8 ohms.
less than .09% at rated power into 4 ohms.

Frequency Response:
12 Hz to 40 kHz. +0-1dB

Signal to Noise Ratio:
110 dB
(IHF A-WEIGHTED)

Residual Noise:
120 uV
(IHF A-WEIGHTED)

Damping Factor:
1000:1 @ 1000 Hz

Input Impedance:
33 K ohms minimum

Input Sensitivity:
1.2 volts RMS for 360 watts at 8 ohms.

Speaker Impedance:
Accept 4 ohms to 16 ohms.

Slew Rate:
Better than 18 V/uS

Rise Time: (Small Signal):
Less than 4.0 uS

Phase Shift:
0 degrees at 20 Hz
– 18 degrees at 20 kHz

GENERAL SPECIFICATIONS

Displays:
A peak responding 3½ inch sequential light emitting diode (LED) display is provided for each channel. The display is calibrated to indicate output voltage and power levels on a logarithmic scale, with 0dB corresponding to rated power output (360 watts into 8 ohms). The dynamic range of the display is greater than 40 dB; it responds to peak output voltage levels with very fast rise-time but relatively slow decay-time. Amplifier clipping or overload is indicated by a flashing right-hand portion of the display. Flashing will continue for approximately 2 seconds after an overload condition.

Controls:
Independent front panel level controls for each channel, push button power switch, and push button meter range switch.

Protection:
A. Output transistor protection:
Electronic limiters together with power supply fuses prevent excursions into the unsafe operating region, regardless of load conditions.

B. Speaker protection:
The amplifier does not provide speaker protection from excessively high-power audio signals. External fusing of the speakers is highly recommended.

C. Thermal protection:
Automatic turn-off of the amplifier will take place if operating temperature exceeds 90°C to prevent thermal breakdown.

Power Requirements:
60 Hz 120 v (U.S.A. & Canadian Models) or 100-120/220-240 v AC, 50/60 Hz.

Power Consumption:
1200 watts (10 amps) maximum at rated output.

Dimensions:
19"×7"×10"
(48.3 cm × 17.8 cm × 25.4 cm)

Weight Gross:
45 lbs.; 20 kgs.

Phase Linear®

THE POWERFUL DIFFERENCE

20121 48th Avenue West, Lynnwood, Washington 98036 (206) 774-8848

157-0020-0

1279-4

WARNING TO PREVENT FIRE OR SHOCK HAZARD DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

All warranty services must be performed at a warranty station located in the country where the unit was purchased or at the Phase Linear factory.

If you have any questions concerning the warranty please write to:

Service Manager
Phase Linear Corporation
20121 48th Avenue West
Lynnwood, Washington 98036
(206) 774-8848

PARTS LIST - Model 700 Series Two

TRANSISTORS:	PART NO.	
XPL909, FPL909	126-0015	$ 4.60
TP9054, MJ15024	126-0073	6.00
MJ15025	126-0123	6.90
RCA 66546	126-0016	5.00
40412V1	126-0005	2.60
40327	126-0007	1.80
MM4003	126-0006	2.70
MPS A93	126-0028	.65
TIS 97	126-0020	.30
TIS 93	126-0009	.40
GES 97	126-0033	.30
MPS 5172	126-0010	.30
2N3403	126-0018	.75
4355	126-0045	.30
3569	126-0044	.30

INTEGRATED CIRCUITS:		
LF356	126-0051	2.70
LF351	126-0114	1.50
UAA170	126-0048	5.60
4558	126-0038	1.10

DIODES:		
Bridge Rect:S25A20	126-0001	5.85
1N4148	126-0002	.10
1N4004	126-0003	.20
1N4744 (15v)	126-0064	.35
1N752 (5.6v)	126-0049	.35
LED array:display	126-0050	4.80

CAPACITORS:[1]		
9800/100v:lytic	127-0021	22.80
470/25v:lytic:ax	127-0102	1.10
100/6.3v:lytic rad	127-0033	.20
47/35v:lytic:rad	127-0032	.30
10/35v:lytic:ax	127-0035	.20
5/35v:lytic:ax	127-0037	.20
2.2/35v:lytic:ax	127-0068	.10
1/35v:lytic:ax	127-0036	.10
.33/100v:mylar	127-0027	.35
.22/100v:mylar	127-0028	.30
.22/400v:mylar	127-0041	.70
.1/100v:mylar	127-0015	.25
.01/100v:mylar	127-0063	.10
.01/100v:disc	127-0005	.10
.05/25v:disc	127-0007	.25
220pF/100v:disc	127-0042	.10
120pF/100v:disc	127-0020	.10

RESISTORS:		
2.5K/5watt	128-0371	.50
5/5watt	128-0381	.50
7.5K/2watt	128-0366	.20
.33/2watt	128-0350	.20

TRANSFORMER:		
117-220v/146v:CT	125-0034	131.70

POTENTIOMETERS:	PART NO.	
1K trim:vert	129-0073	$ .45
1K trim:horiz	129-0096	.45
Input sens:100K:L	129-0005	1.50

SWITCHES:		
Input:slide:2P2T	129-0018	.80
Assy:2-sta:pwr/rng	129-0093	8.50
Thermal cut-out	129-0030	3.55

PRINTED CIRCUIT BOARDS:[2]		
PL36 drive PCB	210-0150	100.20
PL37 display:B ch	210-0158	102.10
PL37 display:A ch	210-0159	98.20

FRONT PANEL COMPONENTS:		
Knob:1.5"dia	142-0038	1.75
Handle:rack-mount	142-0029	4.80
Handle end ferrule	143-0015	.65
Glass:display	141-0072	1.30
Bezel:display	141-0118	.45
Gasket:display	141-0119	1.05
Switch pushbutton	142-0028	.45

METALWORK:		
Front panel	220-0035	53.40
Sub-front panel	220-0037	26.70
Chassis	141-0105	18.60
Cover:top	220-0049	12.25
Cover:bottom	141-0104	7.00
Cover:output trnstr	141-0019	1.50
Heatsink:R	142-0008	10.50
Heatsink:L	142-0002	10.50
Clamp:pwr spply cap	141-0035	.70

HARDWARE:		
Screw:handle	122-0092	.05
Washer:handle	122-0101	.02
Screw:top,btm.cvr	122-0123	.03

MISCELLANEOUS:		
Jack:phono:input	121-0002	.90
Binding post:white	121-0006	1.30
Binding post:red	121-0007	1.30
Binding post:black	121-0008	1.30
Line cord:16-2	121-0021	1.80
Strain relief	121-0029	.10
Fuseholder:AGC	121-0010	1.50
Fuseholder:AGX	121-0011	1.50
Fuse:AGX-5	121-0037	.25
Fuse:AGC-10	121-0039	.25
Manual:owner's	- -	2.00
Manual:service	- -	4.00

-continued on reverse

[1]All values in microfarrads unless otherwise noted.

[2]Circuit board prices are based on a direct non-exchange purchase. If the defective circuit board is returned in exchange, a refund of one-half the listed price will be returned or credited against the purchaser's account, whichever is applicable. Mail orders on a pre-payment basis may include one-half the listed price ONLY IF the defective circuit board accompanies the order

Ordering Information

All parts orders must include the model AND serial number of the product(s) for which the parts are being ordered to insure proper parts shipment.

When ordering parts include both the device number and/or description together with the seven digit Phase Linear part number.

There is a minimum $10.00 parts order.

All parts orders must include payment with the order unless an account is established with Phase Linear (authorized dealers and servicing agencies only). Cashier's checks or money orders are preferred methods of payment. Personal checks exceeding $25.00 will be held for clearance before the order will be processed. This usually takes about 14 additional working days.

All prices include shipping and handling within the US via United Parcel Service (UPS) surface unless postal First Class is specified. For UPS Blue Label (air) service and handling include an additional 10% of the total parts order value.

No C.O.D. shipments.

Prices and specifications subject to change without notice.

USE ONLY REPLACEMENT PARTS ISSUED OR AUTHORIZED BY THE PHASE LINEAR FACTORY SERVICE DEPARTMENT.

If there are any questions or if further assistance is required contact the Phase Linear service department.

ORDERING ADDRESS - PHASE LINEAR SERVICE DEPARTMENT
20121 48th Ave. West
Lynnwood, WA 98036
(206)774-8848
(206)774-3571