

Hafler®

the standard

GX 2300
GX 2300CE
GX 2600
GX 2600CE



Owner's Manual

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Declaration of Conformity

Application of Council Directive: 73/23/EEC (low voltage directive)

Application of Council Directive: 89/336/EEC (EMC Directive)

Standard(s) to which Conformity is Declared: EN55103 -1 (Emissions)

EN55103 -2 (Immunity)

EN60065 (Safety)

Manufacturer's Name: Hafler

Manufacturer's Address: 546 South Rockford Drive, Tempe, Arizona 85281

Importer's Name: _____

Importer's Address: _____

Type of Equipment: 2-channel Audio Power Amplifier

Model No.: GX2300 GX2600

GX2300CE GX2600CE

Serial Number: _____

Year of Manufacturing: 2000 2001 2002 2003 2004

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s)

Place: Hafler

Date: 5/1/2000


James C. Strickland, VP Engineering

NOTICE - IMPORTANT SAFETY INFORMATION



WARNING: TO PREVENT FIRE OR SHOCK HAZARD
DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

1. READ INSTRUCTIONS

All the safety and operating instructions of your Hafler equipment should be read before power is applied to the equipment.

2. RETAIN OWNER'S MANUAL

These safety and operating instructions should be retained for future reference.

3. HEED WARNINGS

All warnings on the equipment and in the operating instructions are important and should be followed.

4. FOLLOW INSTRUCTIONS

All operating and use instructions are important and should be followed.

5. HEAT

The equipment should be kept away from areas of high temperature, i.e., heater vents, radiators, stoves/ovens, fireplaces, etc.

6. VENTILATION

The equipment should be used in an area suitable for proper ventilation. Care should be taken not to impede airflow in and around the cabinet.

7. WATER AND MOISTURE

The equipment should not be used in or around water, such as a bathtub, sink, or swimming area. Also, the equipment should not be used in areas prone to flooding, such as a basement.

8. POWER SOURCES

The equipment should be connected only to a power source of the same voltage and frequency as that listed on the rear panel above the power cord entry point.

9. POWER CORD PROTECTION

Power cords should be arranged so they do not interfere with the movement of objects in the room: people, fan blades, utility carts, etc. Also, care should be taken that the cord is not pinched or cut, and placed so it is not in danger of being pinched or cut, as in under a rug, around a tight corner, etc.

10. POWER CORD GROUNDING

The power supply cord is of a three wire grounded type, designed to reduce the risk of electric shock sustained from a live cabinet. It is assumed to be of suitable length for most uses of the equipment. The use of extension cords and power strips is discouraged unless they are of suitable rating to deliver the required total current for safe operation of all connected equipment. Furthermore, extension cords or power strips must

provide the same three wire grounded connection. It is important that the blades of the equipment plug be able to fully insert into the mating receptacle. Never remove the round grounding pin on the plug in an attempt to mate to a two wire ungrounded receptacle: use a grounding adapter with the grounding tab or wire suitably connected to earth ground.

11. NON-USE PERIODS

During periods of extended non-use, the power cord should be unplugged from the power source.

12. CLEANING

The equipment should be cleaned only as detailed in the operating instructions.

13. OBJECT AND LIQUID ENTRY

Care should be taken so that objects and/or liquids, such as cleaning fluids or beverages, are not spilled into the enclosure of the equipment.

14. DAMAGE REQUIRING SERVICE

Hafler equipment should be serviced by qualified service personnel when:

- A. The power supply cord or plug has been damaged, or
- B. Objects have fallen onto, or liquid has been spilled into the equipment, or
- C. The equipment has been exposed to rain, or
- D. The equipment does not appear to operate normally or exhibits a marked change in performance, or
- E. The equipment has been dropped, or the enclosure has been damaged.

15. SERVICING

The user should not attempt to service the equipment beyond that which is described in the operating instructions. All other service should be referred to qualified service personnel.

16. CARTS AND STANDS

The equipment should be used with carts or stands only of sufficient strength and stability for the use intended.

An equipment and cart combination should be moved with care. Quick stops and starts, excessive force, and uneven surfaces may cause the equipment and cart combination to topple.

ADVERTENCIA – INFORMACION DE SEGURIDAD IMPORTANTE



PRECAUCIONES:

Para Prevenir el incendio o la descarga eléctrica, no exponer este equipo a la lluvia o a la humedad

1. LEA LAS INSTRUCCIONES

Todas las instrucciones de seguridad y operación de su equipo Hafler, deben ser leídas antes de que el equipo sea conectado eléctricamente.

2. CONSERVE EL MANUAL DEL PROPIETARIO

Estas instrucciones de seguridad y operación, deben ser conservadas para futuras referencias.

3. CUADROS DE ADVERTENCIAS

Todas las advertencias en el equipo y en las instrucciones de operación, son importantes y deben ser seguidas.

4. SIGA LAS INSTRUCCIONES

Todas las instrucciones de uso y operación son importantes y deben ser seguidas.

5. CALOR

El equipo debe ser mantenido lejos de áreas de alta temperatura, como por ejemplo: ventilaciones de calentadores, radiadores, estufas/hornos, hogueras, etc.

6. VENTILACION

El equip debe ser usado en áreas con ventilación adecuada. Deben er tomadas las precauciones necesarias para no impedir el flujo de aire dentro y alrededor del aparato.

7. AGUA Y HUMEDAD

El equipo no debe ser usado en el agua ó alrededor de ésta, tales como en una bañera, tanque o áreas de nado. También, el equipo no debe ser usado en áreas propensas a inundaciones, tales como en un sótano.

8. FUENTES DE PODER

El equipo debe ser conectado a una fuente de poder del mismo voltaje y frecuencia que el indicado en el panel trasero sobre el punto de entrada del cable de corriente.

9. PROTECCION DEL CABLE DE CORRIENTE

Los cables de corriente deben ser dispuestos de forma tal que no interfieran con el movimiento de objetos en la sala: personas, aspas de ventilación, carretillas, etc. También, es necesario tener cuidado de que el cable no esté punzado o cortado, y debe estar ubicado de forma tal que esto no ocurra, como podría suceder debajo de una alfombra o al pasar el cable por una esquina aguda, etc.

10. ATERRAMIENTO DEL CABLE DE CORRIENTE

El cable de corriente es del tipo aterrado de tres hilos, diseñado para reducir el riesgo de una descarga eléctrica procedent de

El símbolo de flecha relámpago dentro de un triángulo equilateral, es para alertar al usuario de la presencia de "voltajes peligrosos" no aislados en el interior del aparato, los cuales pueden ser de suficiente magnitud para constituir un riesgo de choque eléctrico a las personas.

El símbolo de exclamación dentro de un triángulo equilátero, es para alertar al usuario de la presencia de instrucciones importantes de operación y mantenimiento (servicio) en la documentación que acompaña al equipo.

un chasis energizado. Se asume que su longitud es suficiente para la mayoría de usos del equipo. El uso de extensiones y multienchufes no es recomendado, a menos que tengan el amperaje adecuado para poder suministrar la corriente requerida pra la operación segura de todo el equipo conectado. Aun más, las extensiones deben proveer de la misma conexión aterrada de tres hiles. Es importante que el enchufe se pueda introducir completamente en el receptáculo. Nunca remeva el pin de aterramiento en un intento por conectar el cable en un receptáculo de dos hilos no aterrado: use un adaptador de aterramiento que esté adecuadamente conectado a un punto de tierra.

11. PERIODOS SIN USO

Durante períodos prolongados sin uso del equipo, el cable de corriente debe ser desconectado de la fuente de electricidad.

12. LIMPIEZA

El equip debe ser limpiado solo en la forma que se detalla en las instrucciones de operación.

13. INTRODUCCIÓN DE OBJETOS Y LIQUIDO

Deben ser tornadas precauciones con el fin de que objetos y/ó líquidos, tales como fluidos de limpieza y gaseosas, no sean derramados dentro del chasis del aparato.

14. DAÑOS QUE REQUIEREN DE SERVICIO

Los equipos Hafler deben ser llevados a servicio por personal calificado cuando:

- A. El cable de corriente ó el enchufe haya sido dañado, ó
- B. Objetos ó líquido hayan sido introducidos ó derramado en el equipo, ó
- C. El equipo haya sido expuesto a lluvia, ó
- D. El equipo aparenta no operar normalmente ó exhibe un marcado cambio en su desempeño, ó
- E. El equipo se ha caído, o el chasis ha sido golpeado.

15. SERVICIO

El usuario no deberá intentar darle servicio al equipo más allá de lo que está descrito en el instructivo de operación. Todo lo demás, deberá ser referido a servicio por personal calificado.

16. CARRETILLAS Y SOPORTES

El equipo podrá ser usado con carretillas y soportes que tengan la fortaleza y estabilidad suficiente para el uso previsto. La combinación equipo/carretilla deberá ser movida con cuidado. Rápidas paradas y arranques, excesiva fuerza y superficies imparejas, pueden causar el volcamiento del conjunto de carretilla/equipo.

ACHTUNG – WICHTIGE SICHERHEITS – INFORMATIONEN



WARNUNG:

Um die Gefahr eines Elektroschocks oder Feuer zu vermeiden, öffnen Sie das Gerät niemals.

Der Blitz mit dem Pfeil, in einem gleichschenkligen Dreieck, soll den Benutzer vor unisolierter "gefährlicher Spannung" innerhalb des Gerätes warnen.

Das Ausrufezeichen, in einem gleichschenkligen Dreieck, soll den Benutzer darauf aufmerksam machen, daß dem Gerät wichtige Operations - und Service - Informationen beigelegt sind.

1. INSTRUKTIONEN LESEN

Alle Sicherheits- und Operationshinweise Ihres Hafler Equipments sollten vor der Inbetriebnahme gelesen werden.

2. BETRIEBSANLEITUNG AUFBEWAHREN

Bewahren Sie die Bedienungsanleitung sorgfältig auf, damit Sie in dieser auch in Zukunft nachschlagen können.

3. WARNUNGEN BEACHTEN

Alle Warnungen des Gerätes und der Bedienungsanleitung sind extrem wichtig und müssen befolgt werden.

4. INSTRUKTIONEN BEACHTEN

Alle Operations- und Gebrauchshinweise sind extrem wichtig und müssen beachtet werden.

5. HITZE

Das Equipment sollte fern von Hitze ausstrahlenden Geräten aufgestellt werden, wie z.B. Heizungen, Öfen etc.

6. VENTILATION

Das Equipment sollte so aufgestellt werden, daß eine ausreichende Ventilation gewährt wird.

7. WASSER UND FEUCHTIGKEIT

Das Equipment sollte nicht im oder in der Nähe von Wasser benutzt werden, wie z.B. in Schwimmbädern, Saunen etc. Es sollte ebenfalls nicht in Überschwämmungsgefährdeten Gebieten aufgestellt werden, wie z.B. Kellerräumen.

8. STROMANSCHLUB

Das Equipment darf nur an eine Stromversorgung angeschlossen werden, die die gleichen Parameter aufweist, welche auf der Rückseite, über ein Anschlußterminal des Gerätes, aufgelistet sind.

9. SCHUTZ DER ZULEITUNG

Die Zuleitungen sollten so verlegt werden, daß diese nicht in den Bewegungsbereich anderer Möbelstücke oder Personen hereinragen. Achten Sie darauf, daß das Kabel nicht gequetscht oder durchschnitten wird, wie z.B. unter Schränken oder an scharfen Kanten etc.

10. MASSEANSCHLUB

Das dreiadrige Anschlußkabel ist mit einem Erdungsleiter ausgestattet, welcher die Risiken eines Elektroschocks verringert. Das Kabel hat eine Länge, welche für die meisten Anwendungen völlig ausreicht. Wenn Sie Verlängerungskabel

benutzen, achten Sie darauf, daß dies die erforderlichen Ströme übertragen können. Benutzen Sie immer dreiadrige Verlängerungskable.

11. ZEITRÄUME IN DENEN DAS GERÄT NICHT GENUTZT WIRD

Wird das Gerät über einen längeren Zeitraum nicht genutzt (z.B. Urlaub), ziehen Sie bitte den Netzstecker aus der Steckdose.

12. REINIGEN

Reinigen Sie das Gerät nur, wie in der Bedienungsanleitung detailliert beschrieben.

13. EINDRINGEN VON FREMDKÖRPERN

Achten Sie darauf, daß weder Fremdkörper, noch Flüssigkeiten in das Gerät eindringen.

14. ERFORDERLICHER REPARATURSERVICE

Hafler Equipment sollte nur von qualifizierten Service-Technikern instand gesetzt werden, wenn:

- A. Das Stromversorgungskabel beschädigt wurde
- B. Eine Flüssigkeit in das Gerät eingedrungen ist
- C. Das Gerät Regen ausgesetzt wurde
- D. Das Gerät nicht mehr ordnungsgemäß funktioniert, ggf. nicht mehr die volle Leistung abgibt
- E. Das Gerät runtergefallen ist oder das Gehäuse beschädigt wurde

15. SERVICE

Der Benutzer sollte nur den Service ausführen, der in der Bedienungsanleitung für den Benutzer freigegeben wird. Den weiterführenden Service sollte nur von qualifizierten Technikern durchgeführt werden.

16. AUFSTELLUNG

Das Equipment sollte so aufgestellt werden, daß der gewählte Untergrund die erforderliche Stabilität aufweist, so daß eine gefahrlose Benutzung gewährleistet wird.

Das Equipment und der Untergrund sollte mit äußerster Vorsicht bewegt werden. Bei schnellen Bewegungen oder starkem Abbremsen, kann es zum Umkippen des Equipments kommen.

ATTENTION: INFORMATIONS IMPORTANTES DE SÉCURITÉ



AVERTISSEMENT:

Afin de prévenir les risques de feu ou de choc, ne pas exposer cet appareil à la pluie ou à l'humidité

1. LIRE LES INSTRUCTIONS

Le mode d'emploi et les mesures de sécurité de votre équipement Hafler devraient être consultés avant sa mise en marche.

2. CONSERVER LE GUIDE DE L'UTILISATEUR

Le mode d'emploi et les mesures de sécurité devraient être conservés pour des références futures.

3. CONSIDÉRATIONS DE MISE EN GARDE

Le mode d'emploi et les mises en garde concernant cet équipement sont de grande importance et devraient être suivis.

4. SUIVRE LE MODE D'EMPLOI

Le mode d'emploi et les conseils d'utilisation sont importants et devraient être suivis.

5. CHALEUR

Le matériel devrait être préservé loin de toute source de chaleur: radiateurs, cuisinière/fours, cheminées,...etc.

6. VENTILATION

Le matériel devrait être utilisé dans un endroit à bonne ventilation. Il reste nécessaire de respecter la circulation de flux d'air à l'intérieur et autour du meuble.

7. EAU ET HUMIDITÉ

Le matériel ne devrait pas être utilisé près d'une source d'eau, telle qu'une baignoire, un évier, ou une aire de baignade. De plus, le matériel ne devrait pas être utilisé dans des lieux sujets aux inondations, tels que les sous-sols.

8. SOURCES D'ÉNERGIE

Le matériel devrait seulement être relié à une source d'énergie de même voltage et fréquence que celle indiquée sur le tableau arrière, au dessus de la fiche d'entrée de la prise de courant.

9. PROTECTION DE LA PRISE DE COURANT

La prise de courant devrait être arrangée de façon à ne pas interférer avec le déplacement d'objets (chariots, pales de ventilateurs...etc.) ou de personnes à l'intérieur de la pièce. D'autre part, il faudrait faire très attention à ce que la prise ne soit pas percée ou coupée, ou disposée de façon à risquer de l'être, comme sous un tapis, autour d'un angle pointu...etc.

10. PRISE DE COURANT À TROIS FICHES

La prise de courant est composée de trois fiches, désignées à réduire le risque de décharge électrique de l'appareil.

Elle devrait être de longueur suffisante pour la plupart des utili-

La lumière clignotante du symbole de la flèche à l'intérieur d'un triangle équilatéral, à pour objet d'alerter l'utilisateur de la présence "d'un voltage dangereux" non-isolé à l'intérieur du produit, qui pourrait être de magnitude suffisante au risque d'électrocution.

Le point d'exclamation, à l'intérieur d'un triangle équilatéral, à pour objet de prévenir l'utilisateur de l'importance des instructions de fonctionnement et de maintenance, jointes à l'appareil.

sations de ce matériel. L'utilisation de rallonge et d'adaptateur est déconseillée à moins d'être en mesure de fournir la charge électrique requise à un fonctionnement sans risque, de tout matériel relié.

11. PÉRIODES DE NON-UTILISATION

Durant les périodes de non-utilisation, la prise de courant ne devrait pas être branchée à une source d'énergie.

12. NETTOYAGE

Le matériel devrait être nettoyé en respectant les instructions indiquées.

13. PENÉTRATION DES LIQUIDES

Une attention particulière est exigée quant à la dispersion de liquides tels que les produits de nettoyage et boissons, de façon à éviter toute pénétration dans l'enceinte du matériel.

14. DÉGÂT NÉCESSITANT UNE RÉVISION

Le matériel Hafler devrait être révisé par des personnes qualifiées de service après-vente, lorsque:

- A. Les fiches ou la prise de courant ont été endommagés, ou:
- B. Des objets sont tombés sur le matériel, ou des liquides s'y sont dispersés, ou:
- C. Le matériel a été exposé à la pluie, ou:
- D. Le matériel ne semble pas fonctionner correctement, ou affiche un changement de performance, ou:
- E. Le matériel a été renversé à terre, ou l'enceinte a été endommagée.

15. RÉVISION

L'utilisateur ne devrait pas essayer de réviser le matériel en allant plus loin que ce qui a été décrit dans le mode d'emploi. Toute autre révision devrait être confiée à un personnel qualifié.

16. CHARRIOTS ET MEUBLES

Le matériel devrait être utilisé avec des chariots et meubles de qualité et stabilité suffisante à son utilisation préconçue.

L'ensemble du matériel et du charriot devrait être déplacé avec précaution. Des mises en marche et arrêts brusques, des collisions excessives ainsi que des surfaces inégales peuvent renverser l'ensemble du matériel et du charriot.

NOTARE – IMPORTANTI INFORMAZIONI SULLA SICUREZZA



ATTENZIONE:

Per prevenire incendio scariche elettriche, non esporre questo apparato a pioggia o umidità.

1. LEGGETE LE ISTRUZIONI

Tutte le istruzioni riguardanti la sicurezza ed il funzionamento devono essere lette prima di applicare tensione all'apparato.

2. CONSERVATE IL MANUALE

Queste istruzioni riguardanti la sicurezza ed il funzionamento devono essere conservate come riferimento futuro.

3. AVVERTENZE

Tutte le avvertenze poste sull'apparato e sul libretto di istruzioni sono importanti e devono essere seguite.

4. SEGUIRE LE ISTRUZIONI

Tutte le istruzioni operative e di funzionamento devono essere seguite.

5. TEMPERATURA

L'apparato deve essere mantenuto lontano da tutte le zone ad alta temperatura, termosifoni, termoconvettori, stufe e forni, caminetti ed altro.

6. VENTILAZIONE

L'apparato deve essere posizionato in aree convenienti per una corretta ventilazione. Prestare attenzione che sia consentita circolazione d'aria attorno e dentro il cabinet.

7. ACQUA E POLVERE

L'apparato deve essere posizionato lontano da zone contenenti acqua, come vasche a bagno, acquari e piscine. Inoltre non deve essere impiegato in aree soggette ad allagamento, come le cantine.

8. REQUISITI DI ALIMENTAZIONE

L'apparato deve essere connesso solo ad un'alimentazione della stessa tensione e frequenza di quanto scritto sulla parte posteriore del telaio.

9. PROTEZIONE DEL CAVO DI ALIMENTAZIONE

Il cavo di alimentazione deve essere posizionato in modo di non interferire con il movimento di oggetti nella stanza: persone, ventilatori, carrelli, ecc...prestate attenzione anche che il cavo non sia tagliato o spellato e che non possa tagliarsi e spellarsi.

10. MESSA A TERRA

Il cavo di alimentazione è del tipo a tre fili con terra ed è progettato per ridurre il rischio di shock elettrici. Si presume che sia della lunghezza sufficiente per la maggior parte degli impieghi. L'impiego di prolunghie e adattatori è sconsigliato se questi non garantiscono la potenza sufficiente per il corretto funzionamento

degli apparati connessi. È altresì importante che vengano sempre impiegate prolunghie con la configurazione a tre fili con terra.

Il punto esclamativo contenuto in un triangolo equilatero vuole avvertire l'utente della presenza di parti di servizio e di manutenzione che sono dettagliate nel manuale di istruzioni.

degli apparati connessi. È altresì importante che vengano sempre impiegate prolunghie con la configurazione a tre fili con terra.

11. PERIODI DI NON UTILIZZO

Durante lunghi periodi di non utilizzo, staccare il cavo di alimentazione.

12. PULIZIA

L'apparato deve essere pulito solo come indicato dalle istruzioni.

13. INGRESSO DI OGGETTI E LIQUIDI

Si deve prestar attenzione che oggetti e liquidi, come fluidi detergenti e bibite, non vengano versati all'interno dell'apparato.

14. RIPARAZIONI

Gli apparati Hafler devono essere riparati da personale qualificato quando:

- A. Il cavo di alimentazione o la spina sono danneggiati
- B. Oggetti sono caduti all'interno del telaio o quando del liquido è entrato
- C. Quando l'apparato è stato esposto a pioggia
- D. Quando l'apparato non sembra funzionare normalmente o quando esibisce un cambiamento di prestazioni o
- E. Quando è caduto o il telaio è stato danneggiato

15. ASSISTENZA

L'utente non deve tentare di prestare assistenza all'apparato, se non per quanto esposto nelle istruzioni. Tutti gli altri interventi devono essere effettuati da un tecnico specializzato.

16. CARRELLI E STAND

L'apparato deve essere impiegato su carrelli o stand solo se questi sono sufficientemente solidi e stabili per la funzione a cui si vuole dedicarli.

La combinazione di carrello ed apparato deve essere mossa con cautela. Fermate e partenze improvvise, forze eccessive e superfici irregolari, possono ribaltare la combinazione carrello e apparato.

Specifications

All measurements taken at Normal Operating Conditions (i.e. 1/8th rated output power) unless noted otherwise.

GX2300

GX2600

POWER RATING:

8Ω	20-20kHz @ 0.1% THD	300W x 2 CH	600W x 2 CH
4Ω	20-20kHz @ 0.2% THD	300W x 2 CH	600W x 2 CH
2Ω	20-20kHz @ 0.3% THD	300W x 2 CH	600W x 2 CH
70V	20-20kHz @ 0.2% THD	600W x 1 CH	1200W x 1 CH
100V	20-20kHz @ 0.2% THD	600W x 1 CH	1200W x 1 CH
Bridged 8Ω	20-20kHz @ 0.2% THD	600W x 1 CH	1200W x 1 CH
Bridged 4Ω	20-20kHz @ 0.3% THD	600W x 1 CH	1200W x 1 CH

FREQUENCY RESPONSE:

10Hz-20kHz +/-0.1dB	10Hz-20kHz +/-0.1dB
0.2Hz-100kHz +/-3dB	0.2Hz-100kHz +/-3dB

INPUT SENSITIVITY:

8Ω	0.9V	1.3V
4Ω	0.6V	0.9V
2Ω	0.45V	0.6V

MAX. INPUT:

3.0V	3.0V
------	------

SIGNAL-TO-NOISE:

>100dB "A" WGT	>100dB "A" WGT
----------------	----------------

CMMR:

>75dB at 1kHz	>75dB at 1kHz
---------------	---------------

INPUT IMPEDANCE:

47kΩ per phase balanced	47kΩ per phase balanced
-------------------------	-------------------------

DAMPING FACTOR:

>500	>500
------	------

POWER/THERMAL REQUIREMENTS:

Idle Condition*

"U" version	55W	70W
"CE" version	860mA @ 115VAC	1.0A @ 115VAC
Thermal Dissipation	430mA @ 230VAC	500mA @ 230VAC
	190 BTU/hr	240 BTU/hr

Normal Operating Condition (1/8 rated power, pink noise)

"U" version	280W	490W
"CE" version	3.5A @ 115VAC	5.8A @ 115VAC
Thermal Dissipation	1.7A @ 230VAC	2.9A @ 230VAC
	680 BTU/hr	1160 BTU/hr

Worst Case (1/3 rated power, pink noise)

"U" version	550W	1000W
"CE" version	6.6A @ 115VAC	12A @ 115VAC
Thermal Dissipation	3.3A @ 230VAC	5.9A @ 230VAC
	1200 BTU/hr	2080 BTU/hr

FUSE:

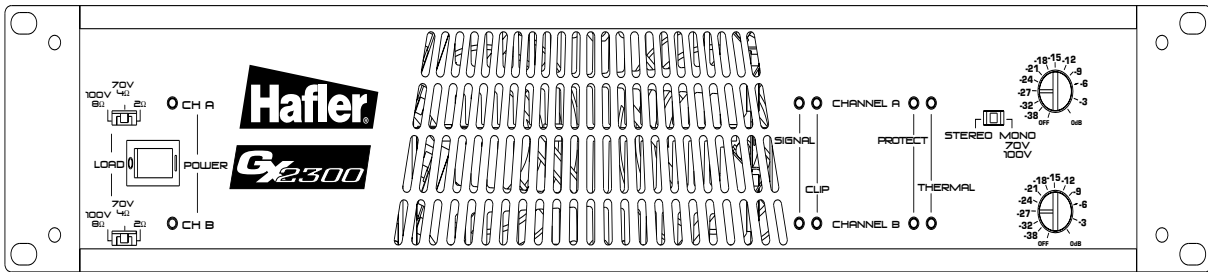
"U" version (115VAC nominal)	7A, 3AG Slo-Blo, 2 ea.	15A, 3AG Slo-Blo, 2 ea.
"CE" version (230VAC nominal)	T5A, 5 x 20mm, 2 ea.	T6.3A, 5 x 20mm, 2 ea.

MAINS POWER VOLTAGE:

"U" version	100-140VAC, 50-60Hz	100-140VAC, 50-60Hz
"CE" version	200-260VAC, 50-60Hz	200-270VAC, 50-60Hz

*both channels driven at rated power

Specifications (cont)



DIMENSIONS:

(2U) 3.5H" x 19"W x 18.5"D
(rack handles add 1.25"D)

(2U) 3.5H" x 19"W x 18.5"D
(rack handles add 1.25"D)

WEIGHT:

32lbs. (14.51 kg)

32lbs. (14.51 kg)

Introduction

The Hafler GX2300 and GX2600 amplifiers are two rack height, two channel, fan-cooled professional power amplifiers suitable for use in the most demanding sound reinforcement and commercial sound installations. These amplifiers offer outstanding efficiency by means of three technologies: high-efficiency Class-G Tri•nova amplifiers, high-frequency switching power supplies, and constant power output/load impedance selection switches. Crossover, Time Delay, Phase and CD Equalization features make the GX2300/2600 especially useful in 2-way cinema applications.

Technical Design Features

WHY A NEW AMPLIFIER TOPOLOGY?

Hafler TRANS•nova amplifiers, the recording studio reference, have a floating +/- power supply for each channel and a Nodal drive system covered by U.S. Patents 4,467,288 and 5,567,000. Our challenge was to convert this topology into a high efficiency design with minimal increase in complexity—yielding an amplifier of outstanding audio qualities, high efficiency and unprecedented value. Tri*•nova is the answer.

The most common high-efficiency (Class-H) methods raise the rail voltages going to the output devices for higher power levels. Tri•nova does not do this. Instead, it operates by forming a triplet or triplex of tracking signals: A, (A+V) and (A-V), where A is the raw audio output and +/- are the floating rails. The amplifier final output is selected to be at an appropriate voltage between (A+V) and (A-V) for each condition of the signal. The output voltage and current capability are each potentially doubled and the power potentially quadrupled—without having to increase the rail voltages fed to the devices. One or more patents are expected from this technology.

WHAT ELSE DISTINGUISHES THESE AMPLIFIERS?

Constant power into varying impedance. It takes twice as much current to develop a given wattage into 2Ω as it does into 8Ω —but only half the voltage. Many amplifiers quote a high output current at 2Ω but have an unpublished operating time measured in a handful of seconds—before thermal shutdown (hopefully) precludes thermal meltdown.

Our solution for this is *selectable* rail voltages for optimizing the amplifier to the load. This is impractical for conventional line-frequency supplies—and it comes at a cost for switching supplies. A full PWM design is needed, adding a coupled output inductor, a current-sense transformer and a current-mode controller IC. An *impedance selector switch* is also needed for each channel, simultaneously altering the rail voltage and the current limit. Each channel of the amplifier can be independently optimized for 2Ω , 4Ω , and 8Ω , useful in bi-amping and tri-amping, etc. Both 70 and 100 volt constant voltage line operation are possible. A chart on the back of the amplifier explain the various options.

UNIVERSAL LINE VOLTAGE INPUT

Voltage selection is provided in two bands: 100-140 volts and 200-260 volts, (both 50/60 Hz) via two quick-connect terminals located on the EMI filter board, accessed by removing the top cover. The current-mode control system automatically corrects for the bulk of power line variation with each band. This allows most of the PWM action to be reserved for programming and regulation of output voltages. A flyback topology provides the numerous housekeeping low voltages required by various circuits.

PROTECTION CIRCUITS

Fan control circuit - Each amplifier channel has a fan control circuit that measures the temperature of the heatsink, and adjusts the fan speed accordingly. This **thermally-tracking fan speed** circuit keeps fan noise to a minimum when power demands are low. Typically the fans will be turning slowly even at idle conditions - although abnormally low room temperatures may allow the fans to turn off completely. The fan control circuit also has a turn-on blast feature that runs the fans at full speed for a few seconds every time the amplifier is turned on. This serves the dual function of cleaning out the air tunnel, and providing a simple means to check the fans for proper operation. If you suspect that the fans are not operating correctly, try turning the amplifier off, then listening or feeling for the turn-on blast when the amplifier is turned back on.

Thermal Standby - If excessive heatsink temperature is detected, the individual amplifier channel will go into thermal standby mode. The amplifier will be turned off, and the THERMAL LED illuminates until heatsink temperatures return to normal. At that time the amplifier automatically turns back on, and continues operating normally.

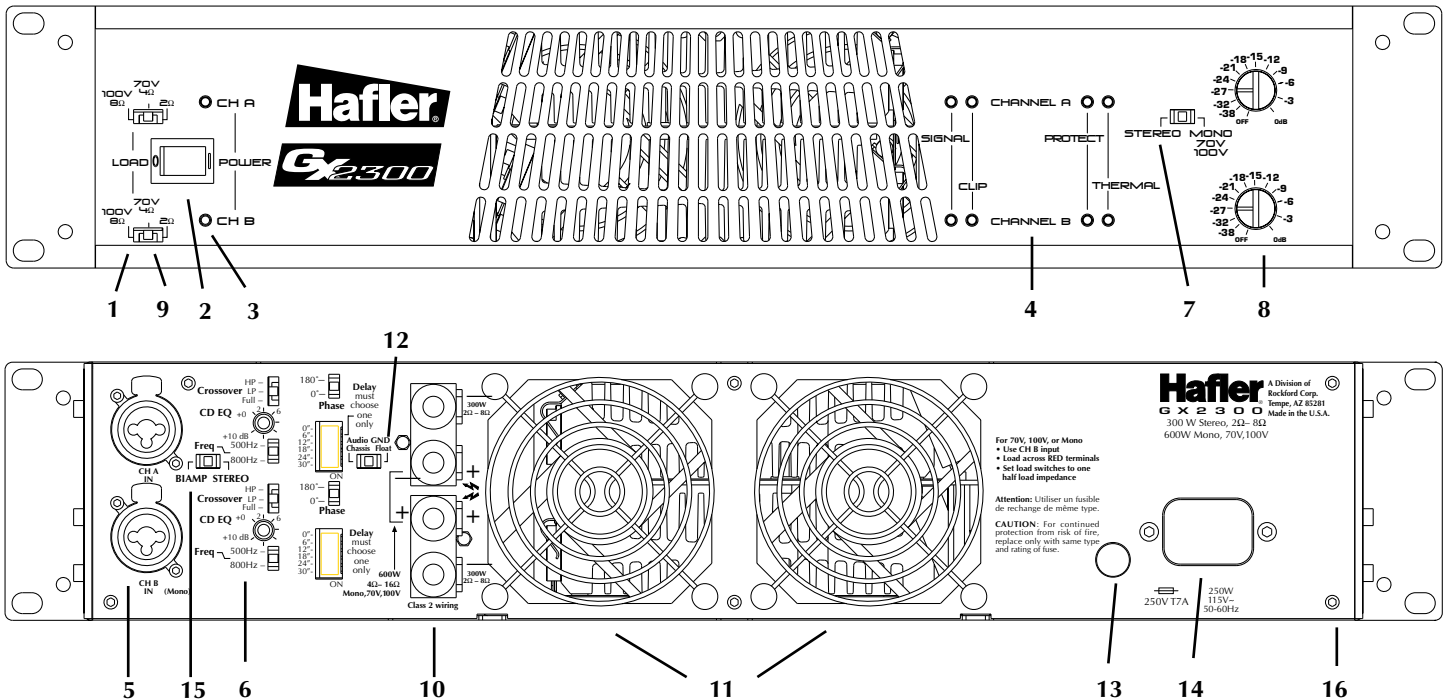
NOMAD protection - The amplifier output MOSFETs are protected from excessive power dissipation by NOMAD protection circuitry. NOMAD (Non-Multiplying Advance Decision) limits the power when it measures signal voltage and current conditions that will exceed the pre-determined power limit of the MOSFETs. This instantaneous power calculation is performed on each output MOSFET, causing the amplifier to automatically limit power when needed. In this way, a speaker load with an impedance “dip” over a particular frequency range will only activate the NOMAD protection when sufficient audio is present at that same frequency range, but continue operating normally otherwise.

Short protection - The NOMAD protection circuit also protects against shorts, and will instantly limit the output power if speaker wires are shorted together. Normal operation will continue immediately after the short is removed.

Power Supply Current Limiting protection- The switching power supply will protect itself from excessive power dissipation by continuously monitoring currents in the switching MOSFETs. The Current Limiting circuit measures the currents in the switching MOSFETs and will instantly limit them to a safe level.

Soft turn-on/fast turn-off - Speaker loads are protected from turn-on/turn-off transients by a circuit that monitors the power supply, and controls the amplifier when power on/off events are detected. At turn-on, this circuit waits for power supply voltages to settle, then sends a turn-on ramp signal to slowly turn the amplifier on. At turn-off, this circuit acts quickly to turn off the amplifier before power supply capacitors discharge, and voltages collapse into the output signal - causing speaker “pops”.

Design Features



1. Recessed Front Panel - Prevents switches and controls from accidentally being adjusted or broken.

2. Power Switch - Turns the amplifier ON and OFF

3. Power LEDs - Verifies that the amplifier channel is ON

4. Status LEDs - Displays the status of the amplifier. The LEDs are as follows: SIGNAL indicates if signal is present; CLIP illuminates if the amplifier is being overdriven; PROTECT illuminates if the amplifier is experiencing a "short" in the speaker array; THERMAL illuminates if the amplifier has shut down due an overheating condition.

5. Female XLR & 1/4" TRS Input Jacks - Feeds input signal to the amplifier using industry standard male XLR or 1/4" TRS (tip/ring/sleeve) plugs.

6. Crossover/Delay/Phase/CD EQ - Each channel is configurable for typical 2-way speaker systems.

7. Stereo/Mono Switch - This dual purpose switch is used to select the operating mode of the amplifier. In Stereo mode the amplifier can be configured for standard 2-channel stereo operation. In Mono mode the amplifier can be configured for Standard Bridge mono, 70V mono or 100V mono operation. *Turn amplifier off before operating this switch.*

8. Level Controls - Adjusts the gain of the amplifier.

9. Load Switch - Selects the speaker impedance or transformer voltage that will be connected the output binding posts. In Standard Mode the amplifier can drive 2Ω, 4Ω or 8Ω speaker loads. In Constant Voltage Mode the amplifier can drive an array of speakers using 70V or 100V transformers.

10. Output Binding Posts - Connects the speaker array to the amplifier. These jacks allow bare wire, spade lugs or dual banana plugs to be connected to the amplifier.

11. Internal Fans - internal fans keep the amplifier circuitry cool. Allow a minimum of 3" clearance on the front and back of the amplifier vents for adequate ventilation.

12. Chassis/Float ground switch - Isolates Audio GND and helps eliminate noise in the signal chain. With the switch in "Chassis" position, the Audio GND is connected to chassis ground. In the "Float" position, the Audio GND is isolated (floating) from the chassis. The chassis is permanently connected to earth (safety) ground.

13. Mains Power Fuse - Protects the "mains" electrical circuit in case abnormal current draw from the amplifier is experienced.

14. Mains Power Connector - Connects AC Voltage to the amplifier. The power connector is safety approved IEC type 320. The earth (safety) ground pin of the power connector is permanently connected to the chassis. This connection is capable of shunting in excess of 30A of fault current.

15. Stereo/Biamp Switch - This dual purpose switch selects either standard 2-channel stereo mode or 1-channel in, 2 channels out Biamp mode. *Turn amplifier off before operating this switch.*

16. Removable Rear Panel - 8 screws can be removed to service fans and internal components without uncracking the amplifier.

Installation

The GX2300/2600 is a standard 2U (2 rack height) 19" rack-mount unit, with both front and rear rack mounting ears. In portable systems, the amplifier must be supported at both the front and rear.

COOLING

The GX2300/2600 uses forced-air cooling (fan cooling) to remove the heat produced during normal operation. Free air flow at the mounting location is a critical factor in accomplishing long-term reliable operation of the amplifier. The internal fans of the amplifier pull in fresh (cool) air from the rear panel, and force the heated air out the front panel. This air flow must be as open and free of obstructions as possible. Also take care to exhaust the heated air away from the front panel intakes, so as not to recirculate and reheat the same air over and over again. In a rack system, make sure there is a significant source of fresh air to the rack. This can be achieved with air conditioning vents to the top of the rack, an open back that is well ventilated, or rack panel fans/vents. In the case of rack panel fans/vents, the cooling will be most effective when the amplifier(s) are located as far away from the fans/vents as possible, to prevent air recirculation i.e. amplifiers at the bottom, fans/vents at top or vice-versa. When installing equipment in a rack, take care that the weight is distributed evenly. Hazardous conditions may be created by uneven weight distribution.

POWER/THERMAL REQUIREMENTS

For your convenience in planning for sufficient power and cooling in the amplifier environment, we have included AC mains current draw and thermal dissipation values in the Specifications Sheet. The specifications listed are for idle (no signal), $\frac{1}{8}$ th power ("normal operating conditions" for continuous voice or music), and $\frac{1}{3}$ rd power (worst-case hard-clipped music) for an amplifier with both channels driven. The thermal dissipation specifications indicate how much heat will have to be removed from the amplifier environment under the three different conditions.

NOISE

The GX2300/2600 exceeds all relevant international emissions and immunity standards, and has further been specifically designed to minimize interference in Pro-Audio environments. Regardless of this fact, amplifiers consume, process and deliver significant amounts of power over a wide frequency range. Standard practice calls for caution to be exercised in the placement of signal cables and signal-level components such as mic preamps, tuners, etc., to avoid inducing noise in the low level circuitry. Possible sources of noise are: AC current in shared power lines, magnetic interference between adjacent rack-mount units, high current audio speaker cables. In general **avoid the following:**

Mounting sensitive signal processing equipment directly above or below amplifiers.

Sharing AC power outlets between amplifiers and signal processing equipment.

Bundling signal cables with speaker cables or AC power cords.

AC LINE

Connect the unit to a properly rated supply circuit. The GX2300/2600 can be configured to operate within the following AC mains voltage ranges:

100-140VAC, 50-60Hz (115VAC, 60Hz typ.)

200-260VAC, 50-60Hz (230VAC, 50Hz typ.)

Connection is made by 14 gauge, IEC type 320, grounded line cord. For safety considerations only a properly grounded (earthed) receptacle should be used. If a grounded circuit is not available, do not break off the ground pin; use the proper adapter plug for a two wire receptacle. The AC mains fuse is accessible at the rear panel of the amplifier. If this fuse blows replace it only with the same type and rating fuse. The correct replacement fuse value is printed on the rear of the amplifier, and on the specifications page.

AUDIO GROUND CHASSIS/FLOAT SWITCH

In general, the Audio Ground of each amplifier should be connected to AC mains earth ground AT ONE POINT ONLY- either through the Chassis (by selecting the "Chassis" position) OR through the input cable (with the switch in the "Float" position, and pin 1 of the XLR or the sleeve of the 1/4" connected to the ground of the signal source unit.)

The Chassis/Float switch can be used as a means to troubleshoot ground loop problems, or to verify wiring. Ground loops are characterized by a hum or buzz through the speakers, and occur when multiple paths exist for a given ground circuit. This switch allows the Audio Ground to be temporarily "lifted" or "floated" from the chassis, so continuity tests can be made to verify or reverse-engineer a grounding system. The following information will be useful when planning or troubleshooting system wiring:

- The chassis is permanently connected to the earth (safety) ground pin of the Mains power connector.
- The Audio Ground of each GX2300/GX2600 is permanently connected to the black terminals of both output binding posts, to pin 1 of each XLR input, and to the sleeve of each 1/4" input.
- The XLR shell is permanently connected to chassis.
- With the Chassis/Float switch in the "Chassis" position, the Audio Ground will be connected to the Chassis and AC mains earth ground. This connection is made through a 0Ω resistor (R350) located on the input board. The resistor serves as a fuselink in the case of severe system faults. To check this resistor, remove all connectors from the amplifier and disconnect the AC main plug. With the switch in the "Chassis" position, use an ohmmeter to measure the 0Ω resistance between the earth ground pin of the AC mains plug and Audio Ground at either black terminal of the output binding posts.
- By selecting the "Float" position, the Audio Ground is not directly connected to the chassis, and can be referenced to some other ground through the input cable or speaker ground. For safety reasons, a 0.1μF capacitor (C125) permanently connects Audio Ground and chassis. C125 is located on the input board. The 0.1μF capacitor couples Audio Ground to chassis at RF frequencies, but only presents approximately 27kΩ of impedance at 60Hz.

OUTPUT

The speaker output connectors are dual binding posts which will accept wire up to 12 AWG, or spade connectors. They are spaced on 3/4" centers for use with dual banana plugs. The positive output red terminals are oriented such that a dual banana plug can be used for bridged mono operation.

POWER SWITCH

The power switch is located on the front of the amplifier. Two green "Power" LEDs indicate that the corresponding amplifier channel is turned on. Standard practice is to turn the amplifier **on last**, and **off first** when powering your system on and off. This insures that any turn on/off glitches in source components or signal processing equipment will occur **before the amplifier is turned on**, or **after it is turned off**. It is possible to leave the power switch on at all times and switch the amplifier remotely with a breaker switch or other AC power switch. When doing so make sure the switch is rated for the current required by the amplifier.

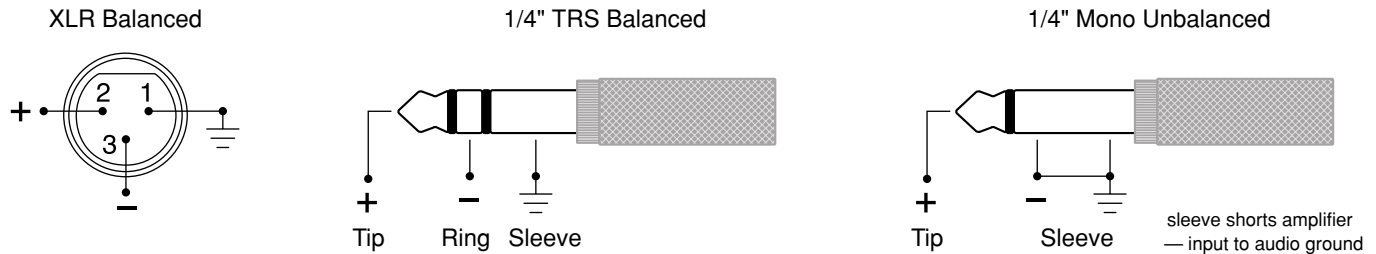
Operation

The amplifier will operate with either a balanced or unbalanced signal source.

INPUT

The input jacks used on the GX2300/2600 are dual function connectors which accept 1/4" TRS (Tip Ring Sleeve) or male XLR plugs. The amplifier will operate with either a balanced or unbalanced signal, from earth ground or floated source equipment. To determine if your equipment is earth grounded or floated, consult the owner's manual or test with an ohmmeter.

The signal connections are as follows:

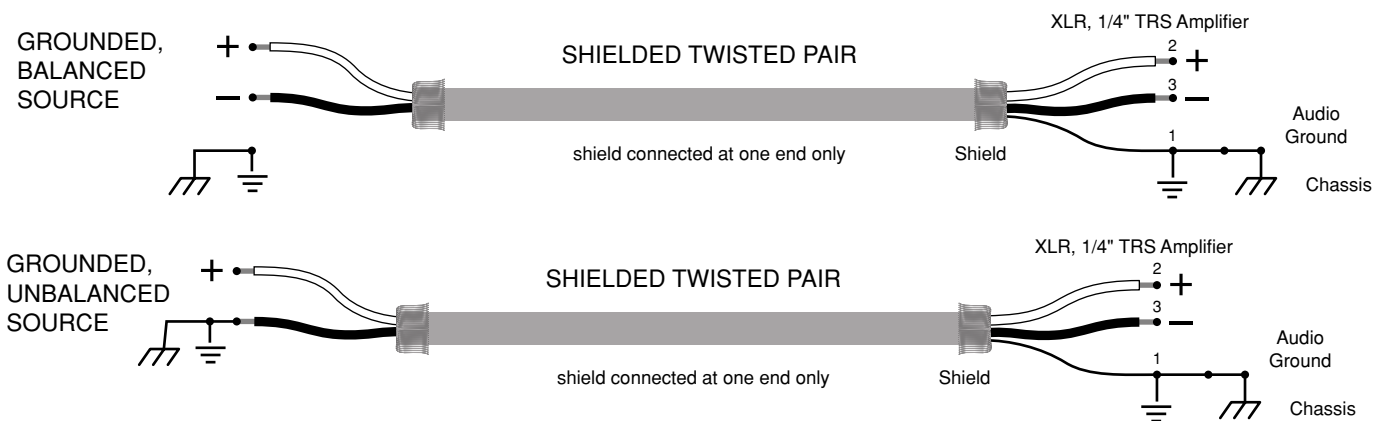


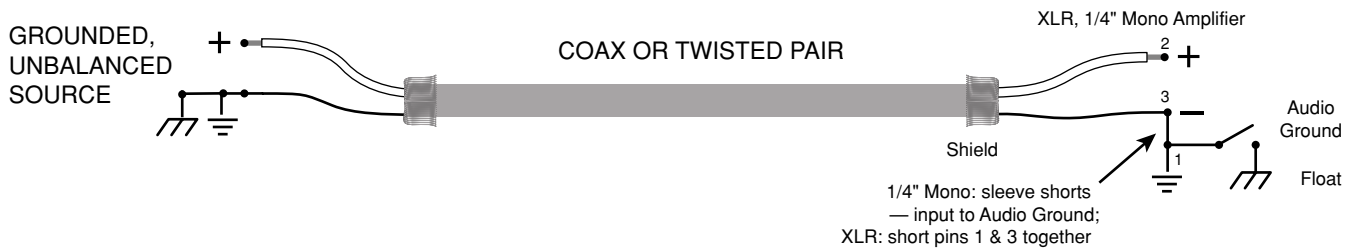
Proper cable wiring will be determined by the source equipment that is feeding signal to the amplifier.

EARTH GROUNDED SOURCE EQUIPMENT

Source units with a 3-pin mains power cord will typically have the audio output ground connected to the earth-grounded chassis. This can be verified with an ohmmeter by disconnecting the mains power cord from the AC outlet and checking for continuity between the earth ground pin and the audio output ground. This test should be done with the equipment installed in the complete system, including cables. **If the audio output ground is connected to the earth ground pin, it is earth grounded equipment.**

Consult the following diagrams for examples of recommended wiring techniques:

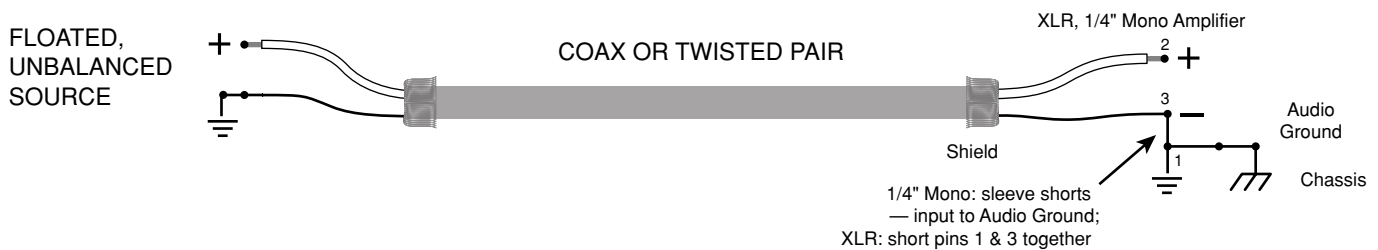
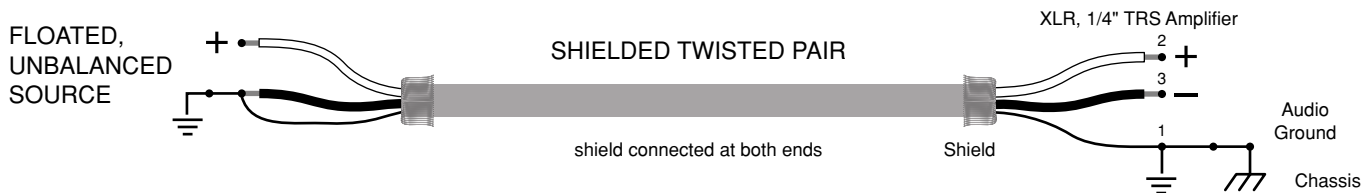
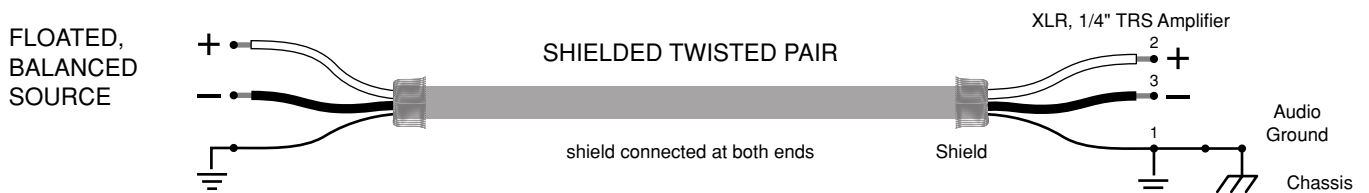


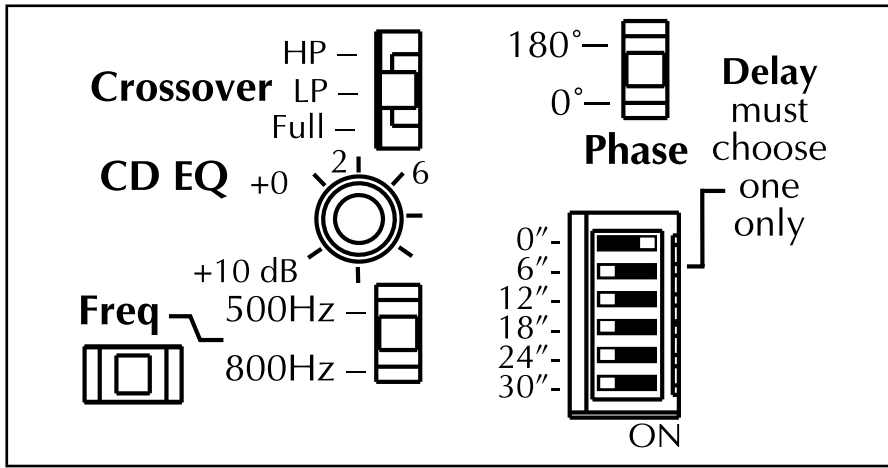


FLOATED SOURCE EQUIPMENT

Source units with a 2-pin mains power cord have no means to connect the audio output ground to earth ground, so usually the audio output ground is floated from earth ground. However, this does not insure that when installed in a system, the audio output ground will remain floated from earth ground. The input cable to this equipment may already be connected to earth ground earlier in the audio chain, and it will typically be carried straight through to the output. It is also possible that the audio output ground connects to the earth ground through the chassis to an earth-grounded rack. The only way to know for sure is to test the installed system. Use an ohmmeter to check for continuity between the earth ground socket of the mains power receptacle and the audio output ground. **If the audio output ground is not connected to earth ground, it is floated equipment.**

Consult the following diagrams for examples of recommended wiring techniques:





DELAY

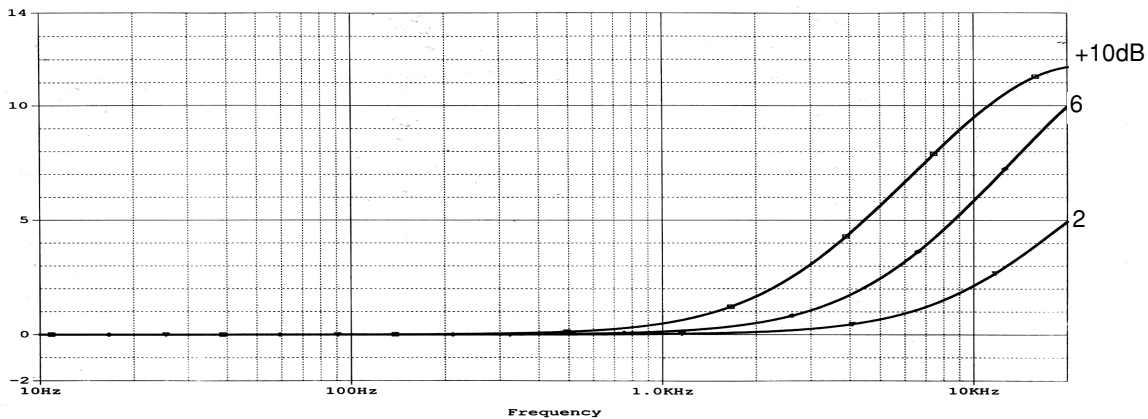
(One of these switches must be selected. If all the switches are OFF, there will be no output signal.)

The delay feature provides five sections of 2nd-order all-pass delay filters of $450\mu\text{sec} \pm 10\mu\text{sec}$ each. Unlike the more commonly used 1st-order all-pass, the 2nd-order filters achieve a constant delay time over the usable frequency range of 1Hz to 1kHz. At frequencies higher than 1kHz, the gain remains flat, while the delay time gradually decreases to zero.

The delay time is labeled in inches of delay (i.e. $450\mu\text{sec}/\text{section} \times 1130\text{ft}/\text{sec} \times 12 \text{ inches}/\text{ft} = 6 \text{ inches}/\text{section}$). If there is uncertainty about the amount of delay needed, choose the 0" switch.

CD HORN EQUALIZATION

This adjustable high-frequency shelving circuit can be used to compensate for the roll-off of constant directivity (CD) horns. At the +10dB setting, the gain increases with frequency to about +3dB at 3kHz, and finally to +12dB at 20kHz.



CROSSOVER

A 3-position slide switch selects the High-Pass (HP), Low-Pass (LP), or Full-Range (Full) configuration of the 4th-order crossover.

FREQUENCY

The crossover frequency can be selected as either 500Hz or 800Hz.

PHASE

The Phase switch will select either 0° (normal polarity) or 180° (inverted polarity) for the corresponding output signal.

LEVEL CONTROLS

The gain for each channel can be controlled individually using the front panel level control. The controls have 32 detented positions that are calibrated in dB. The maximum gain position is marked as the "0 dB" position, and the lower gain positions indicate the amount of attenuation relative to the maximum gain position in dB. Minimum gain position is marked as "Off" and represents over 100dB of attenuation relative to the maximum gain position.

The CH B level control is used for all Bridged Mono configurations, and 100V and 70V modes (Except for GX2600 Dual 70V mode).

each channel. *See diagrams*

The Stereo/Biamp switch is defeated whenever the front panel Stereo/Mono switch is in the Mono position. In this case, the Stereo/mono switch overrides the Stereo/Biamp switch, and the amplifier operates in mono mode.

STEREO/BIAMP SWITCH

Turn amplifier off before operating this switch. This switch is located on the rear panel and selects either:

Stereo mode- 2 input signals and 2 output signals.

Biamp mode- 1 input signal and 2 output signals.

Biamp mode is useful if a mono signal needs to be distributed to speakers of differing impedance or power level. The load switch for each channel can be selected for the appropriate load, and the level controls can be adjusted individually for each channel. *See diagrams*

The Stereo/Biamp switch is defeated whenever the front panel Stereo/Mono switch is in the Mono position. In this case, the Stereo/Mono switch overrides the Stereo/Biamp switch, and the amplifier operates in Mono mode.

STEREO/MONO 70V 100V SWITCH

Turn amplifier off before operating this switch. This switch will override the Stereo/Biamp switch.

This Stereo/Mono 70V 100V switch is located on the front panel and selects either:

Stereo mode- 2 input signals and 2 output signals.

Mono, 70V, 100V mode- 1 input signal and 1 bridged output signal.

Mono mode uses the CH B input connector and level control only. The output load should be connected across the red terminals of the output connectors. Set both load switches equal to 1/2 the load value. For example, after connecting a 4 Ω load across the red terminals, set both load switches to 2 Ω . The rated power into the mono load will be double the rating for a stereo load. *See diagram*

70V and 100V Mono mode also use the CH B input connector and level control only. The 70V or 100V speaker array load should be connected across the red terminals of the output connectors. Set both load switches to the appropriate 70V or 100V value. The rated power into the mono load will be double the rating for a stereo load. *See diagram*

PROTECT

The red "Protect" LED on the front panel indicates that the NOMAD protection circuit has been activated, and is limiting the output power of the amplifier. This indicates that during the "Protect" event, the NOMAD circuit detected a speaker load that was temporarily significantly lower than the value selected with the load switch. Typically it may only occur when a transient signal corresponds to a "dip" in the speakers' impedance curve, and will not be objectionable. However, if the nominal speaker impedance is significantly lower than the Load Switch setting, excessive clip limiting can result, accompanied by continuous or prolonged illumination of the protect LED. **In this situation the Load Switch should be changed to a lower value until the "protect" events are eliminated, or occur infrequently.** *See "Load Switch" paragraph.*

LOAD SWITCH

The Load Switch - located on the front panel - allows the amplifier power supply to be matched to the speaker load for more efficient, cooler running operation. This unique feature of the GX2300/2600 allows each channel to be configured for 2Ω, 4Ω, 8Ω, or 70V, 100V mono operation. (also 70V Dual Mono-GX2600 only).

The power output and thermal performance of the amplifier remains consistent with all the possible combinations of the loads listed. In Stereo or Biamp mode the Load switches can be configured independently, and each channel will deliver the same consistent output power and thermal performance, regardless of how the other channel is configured. Use the following guide when selecting the Load Switch setting:

<i>Nominal Speaker Impedance</i>	<i>Load Switch Setting</i>
5Ω-8Ω or higher	8Ω
3Ω-5Ω	4Ω
2Ω-3Ω or lower	2Ω

If the "Protect" LED is illuminated for prolonged periods during normal operation, **select the next lower value Load Switch setting**. Continue until the "Protect" LED ceases to illuminate, or lights infrequently. This switch can be safely operated while the amplifier is running. In 70V or 100V mode, the "Protect" LED indicates there are too many speakers loading the array.

THERMAL

Indicates when the thermal protection has shut down the amplifier. After cooling sufficiently, the amplifier will automatically recover and continue operating.

CLIPPING

Lights up when the output or input signal reaches the maximum allowable voltage, and "clips" the output signal. Input clipping occurs at 3 VRMs (sine), and can be eliminated by attenuating the signal at the source unit - before it reaches the amplifier. Output clipping can be eliminated by turning down the amplifier level control.

To determine whether the signal is clipping at the input or output of the amplifier, perform this test: Turn the amplifier control all the way "OFF". If the clipping continues, this is an indication that the signal is clipping at the amplifier input.

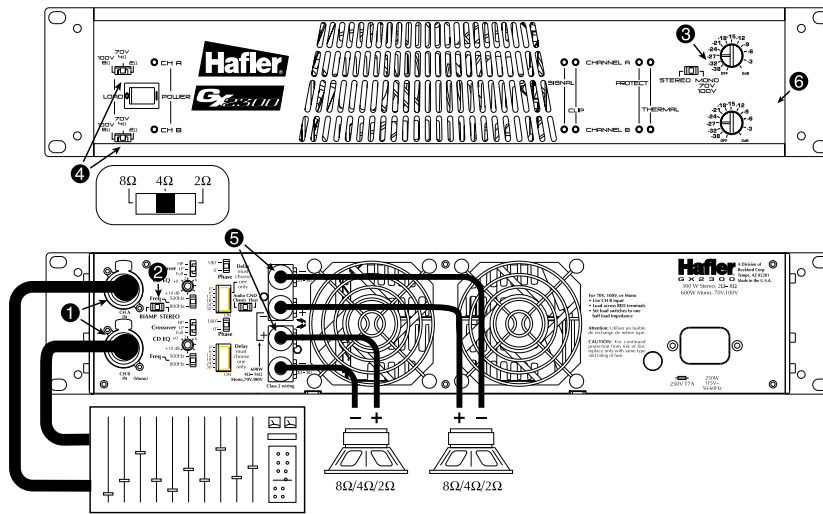
SIGNAL

Monitors the amplifier **output** and indicates when a signal of at least 1 Vrms is present. A number of situations could exist where the input cable is properly connected to the signal source, but the Signal LED does not illuminate, such as:

Level control is not high enough to amplify the output signal to 1 Vrms.

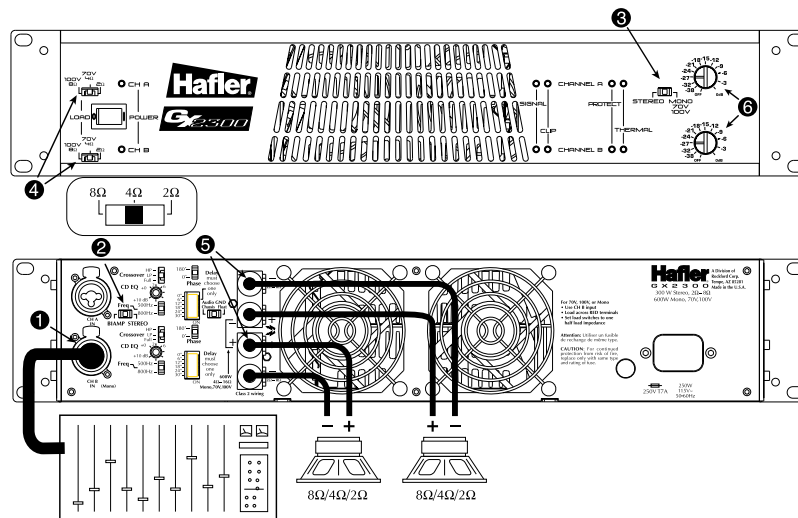
Source signal is off, or lower than normal.

STEREO MODE (GX2300/GX2600)



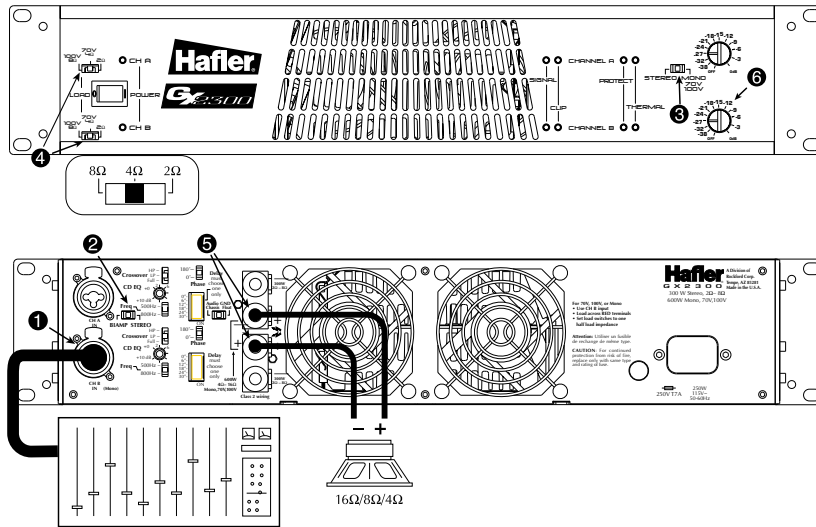
1. Connect signal from source to both CH A and CH B inputs.
2. Move Stereo/Biamp switch to Stereo input mode.
3. Move Stereo/Mono switch to Stereo mode.
4. Select desired speaker load ($8\Omega/4\Omega/2\Omega$) for each channel – CH A & CH B loads do not need to match.
5. Connect appropriate speaker load $8\Omega/4\Omega/2\Omega$ to 5-way binding posts.
6. Adjust CH A & CH B level controls independently.

BIAMP MODE (GX2300/GX2600)



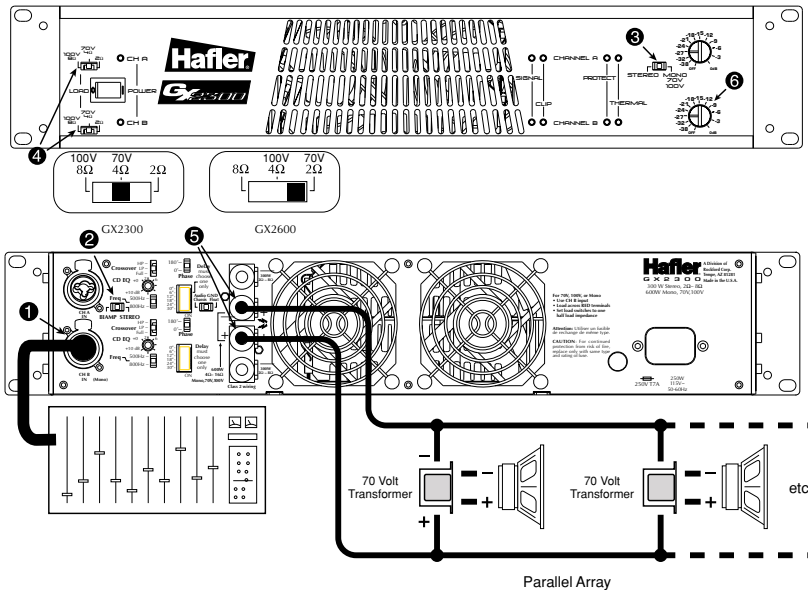
1. Connect signal from source to CH B input.
2. Move Stereo/Biamp switch to BIAMP input mode.
3. Move Stereo/Mono switch to Stereo mode.
4. Select desired speaker load ($8\Omega/4\Omega/2\Omega$) for each channel — CH A and CH B loads do not need to match.
5. Connect appropriate speaker load $8\Omega/4\Omega/2\Omega$ to 5-way binding posts.
6. Adjust CH A & CH B level controls independently.

BRIDGE MONO MODE (GX2300/GX2600)



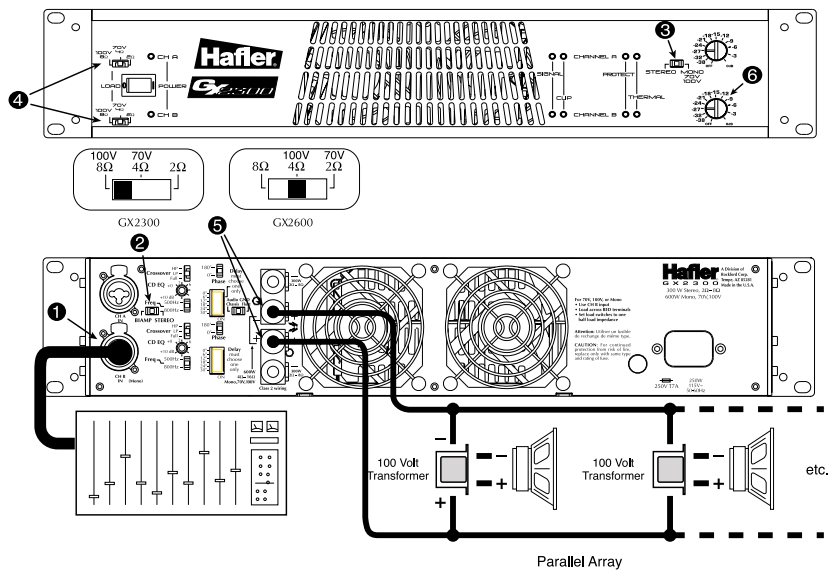
1. Connect signal from source to CH B input.
2. Stereo/Biamp switch not active-(Stereo/Mono switch overrides this switch when in mono/70V/100V mode).
3. Move Stereo/Mono switch to MONO mode.
4. Set load switches (8Ω/4Ω/2Ω) to 1/2 the actual load impedance. (16Ω/8Ω/4Ω) i.e. for a 4Ω speaker load,
5. Connect appropriate speaker load 16Ω/8Ω/4Ω across the red terminals of the 5-way binding posts.
6. CH B level control adjusts the mono output level. (1200W-GX2600, 600W-GX2300)

70V MONO MODE (GX2300/GX2600)



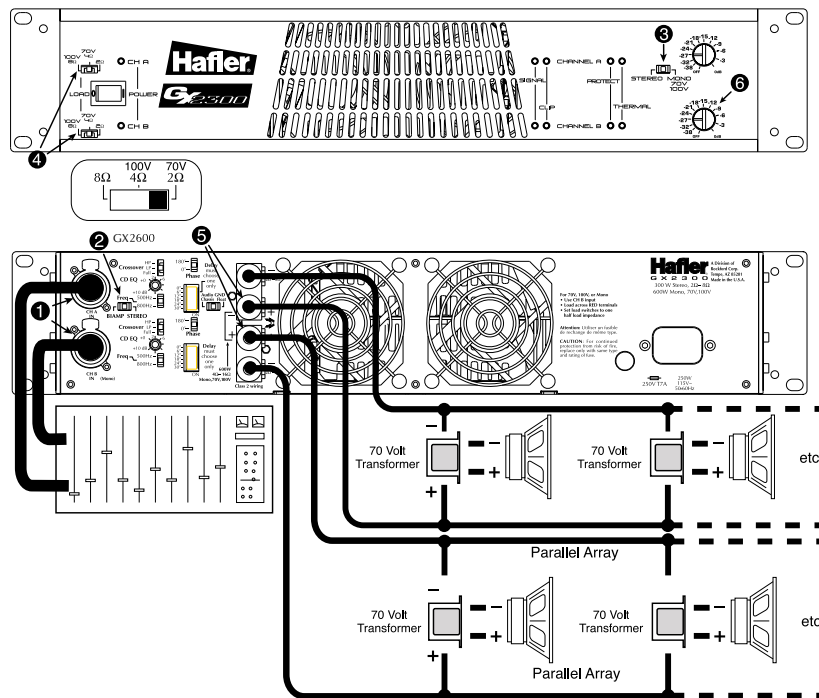
1. Connect signal from source to CH B input.
2. Stereo/Biamp switch not active (Stereo/Mono switch overrides this switch when in mono/70V/100V mode).
3. Move Stereo/Mono switch to 70V mode.
4. Select 70V load, both channels.
5. Connect parallel array of 70V transformer-equipped speakers across the red terminals of the 5-way binding posts. (1200W-GX2600, 600W-GX2300)
6. CH B input sensitivity controls 70V mono output level. Amplifier will clip at 70Vrms level.

100V MONO MODE (GX2300/GX2600)



1. Connect signal from source to CH B input.
2. Stereo/Biamp switch not active (Stereo/Mono switch overrides this switch when in mono/70V/100V mode).
3. Move Stereo/Mono switch to 100V mode.
4. Select 100V load, both channels.
5. Connect parallel array of 100V transformer-equipped speakers across the red terminals of the 5-way binding posts. (1200W – GX2600, 600W – GX2300)
6. CH B input sensitivity controls 100V mono output level. Amplifier will clip at 100Vrms level.

70V STEREO MODE (GX2600 ONLY)



1. Connect signal from source to both CH A and CH B inputs.
2. Move Stereo/Biamp switch to Stereo mode.
3. Move Stereo/Mono switch to Stereo mode.
4. Select 8Ω speaker load for each channel.
5. Connect parallel array of 70V transformer-equipped speakers (up to 600W per channel) to 5-way binding posts.
6. Adjust CH A and CH B level controls independently.

Service Policy and Limited Warranty

Hafler offers a limited warranty on Hafler products on the following terms:

- **Length of Warranty**

5 years on GX2300 & GX2600

- **What is Covered**

This warranty applies only to products sold to the original owner (non-transferable). This only applies to units sold in the Continental United States. You are required to have a copy of the receipt stating the customer's name, dealer name, product purchased and date of purchase.

- **Products found to be defective during the warranty period** will be repaired or replaced (with product deemed to be equivalent) at Hafler's discretion.

- **What is NOT Covered**

1. Damage caused by accident, abuse, improper operations, water, theft
2. Service performed by anyone other than Hafler or an Authorized Hafler service center
3. Any product purchased outside the United States (please contact your local dealer)
4. Shipping charges to get the unit to Hafler
5. Any product which has had the serial number defaced, altered, or removed

- **Limit on Implied Warranties**

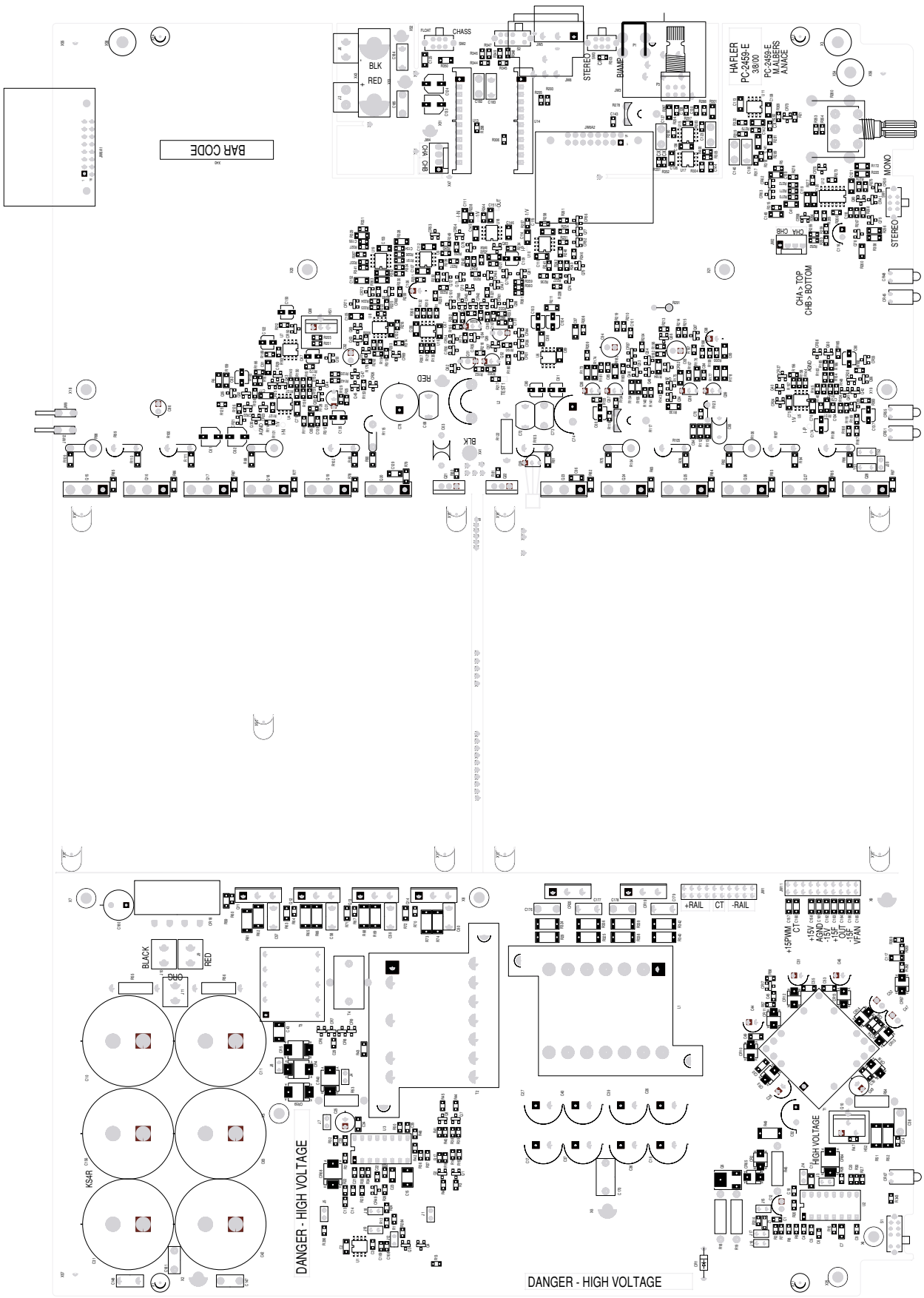
Any implied warranties including warranties of fitness for use and merchantability are limited in duration to the period of the express warranty set forth above. Some states do not allow limitations on the length of an implied warranty, so this limitation may not apply. No person is authorized to assume for Rockford Fosgate any other liability in connection with the sale of the product.

- **How to obtain service or technical support**

Please call 1-800-669-9899 for Rockford/Hafler support. (you may also fax 1-800-398-3985). You must obtain an RA # (return authorization number) to return any products to Hafler. You are responsible for shipment of product to Hafler. Always include Proof of Purchase. Mark RA# on outside of shipping carton.

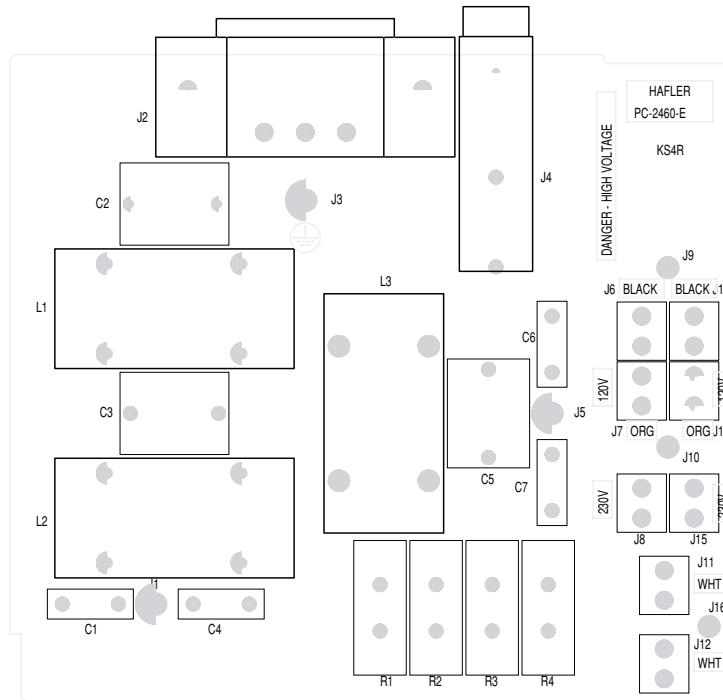
Rockford Corporation
Hafler Division
(receiving amps)
2055 E. 5th Street
Tempe, Arizona 85281

PC BOARD LAYOUTS

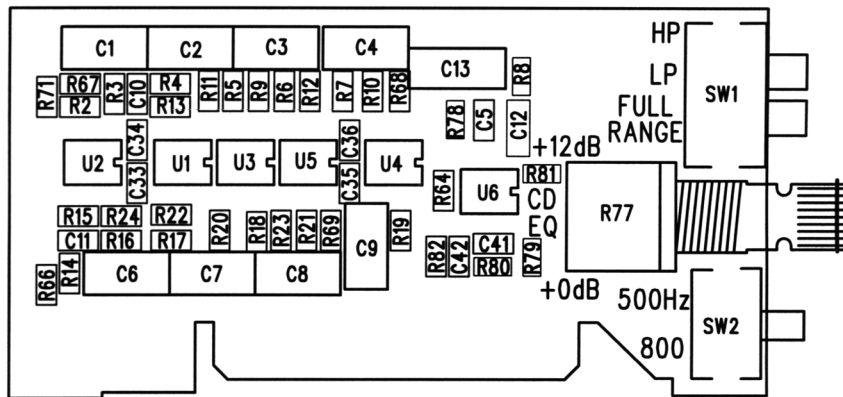


PC BOARD LAYOUTS

EMI FILTER

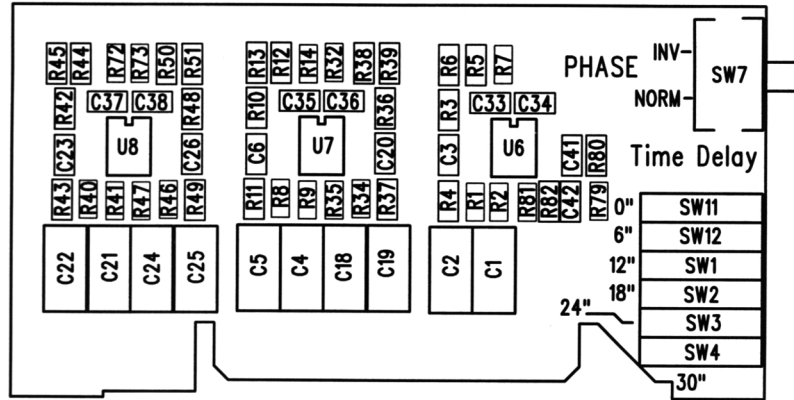


CROSSOVER CD EQ

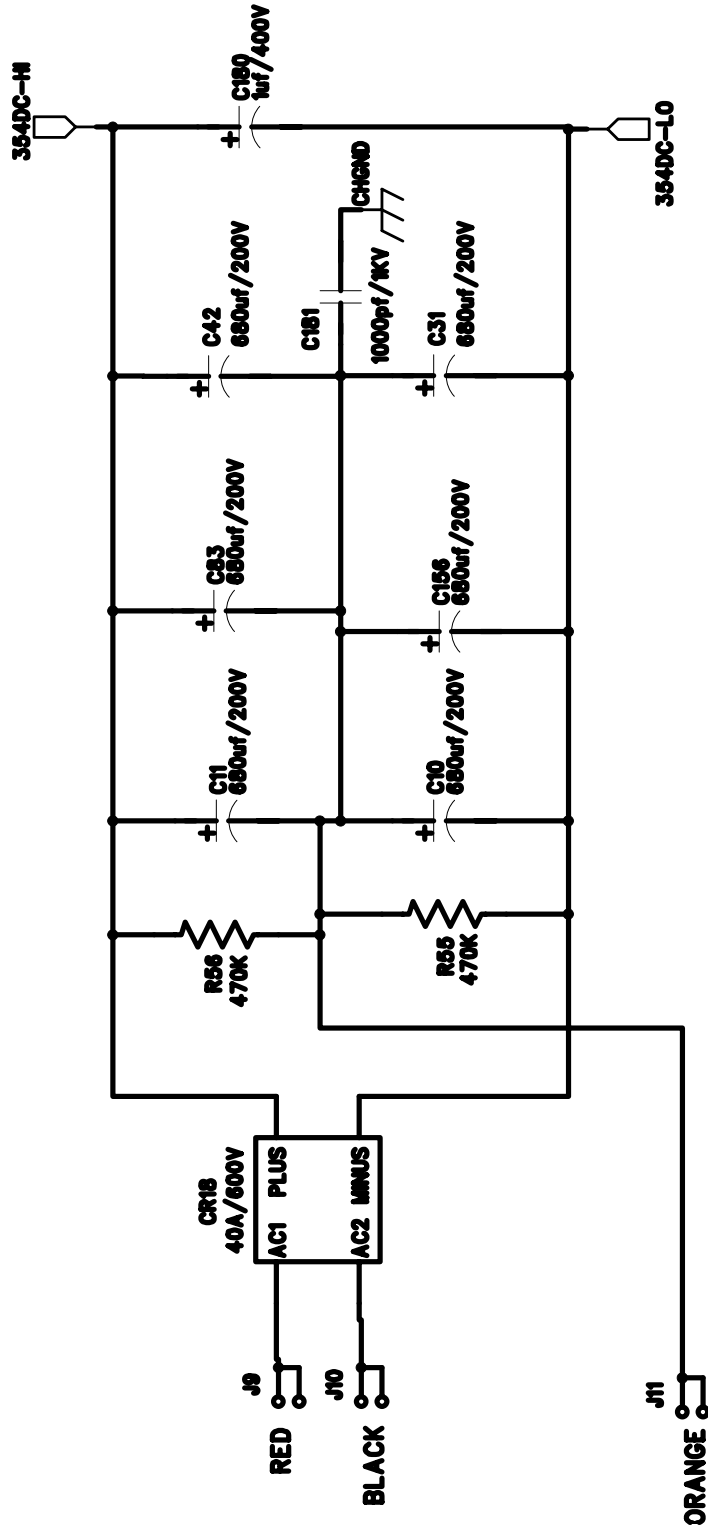


PC BOARD LAYOUTS

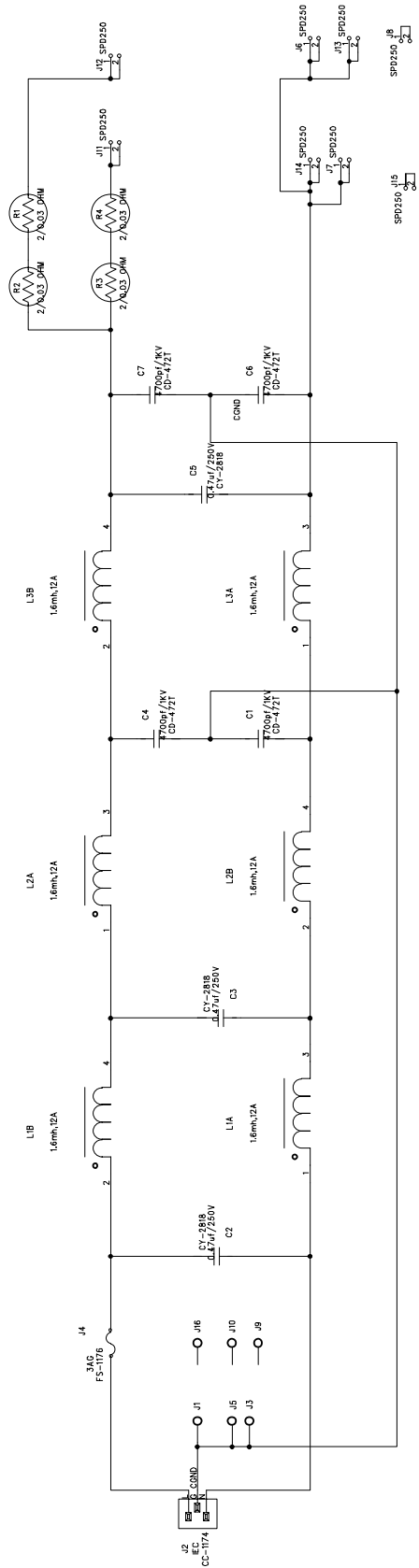
TIME DELAY/PHASE INVERTER



BRIDGE RECTIFIER



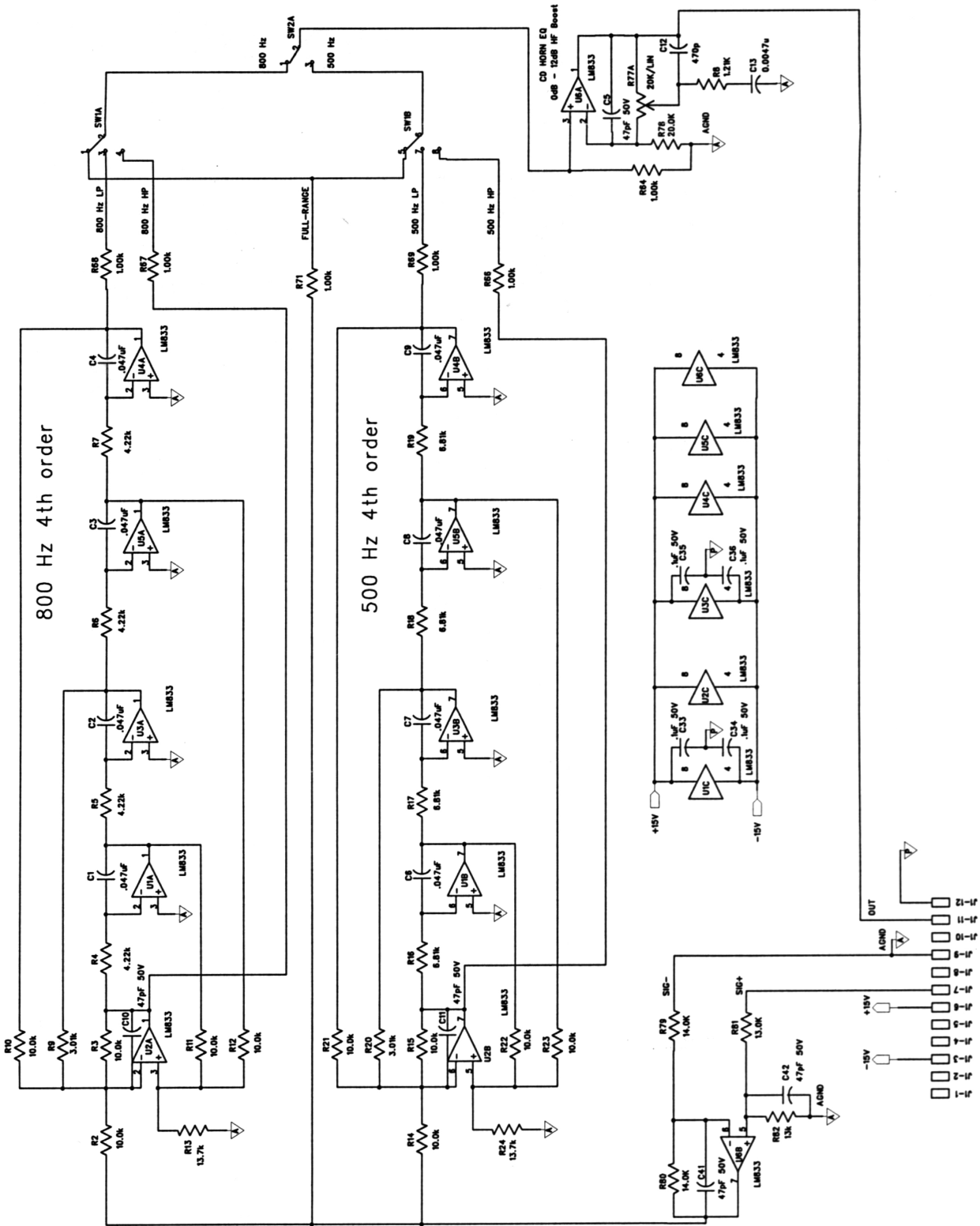
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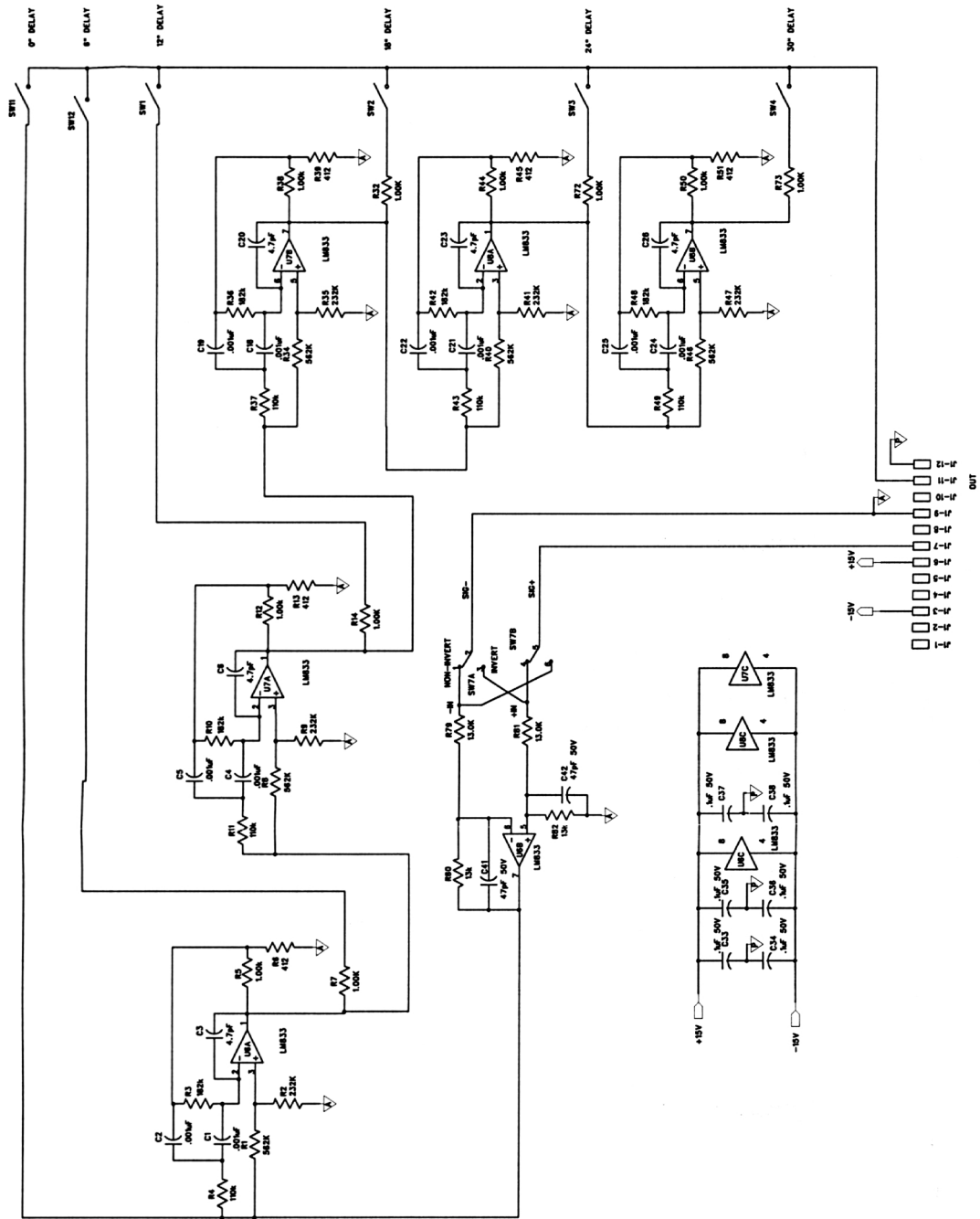
PC-2460-e.sch-1

Schematic Diagrams

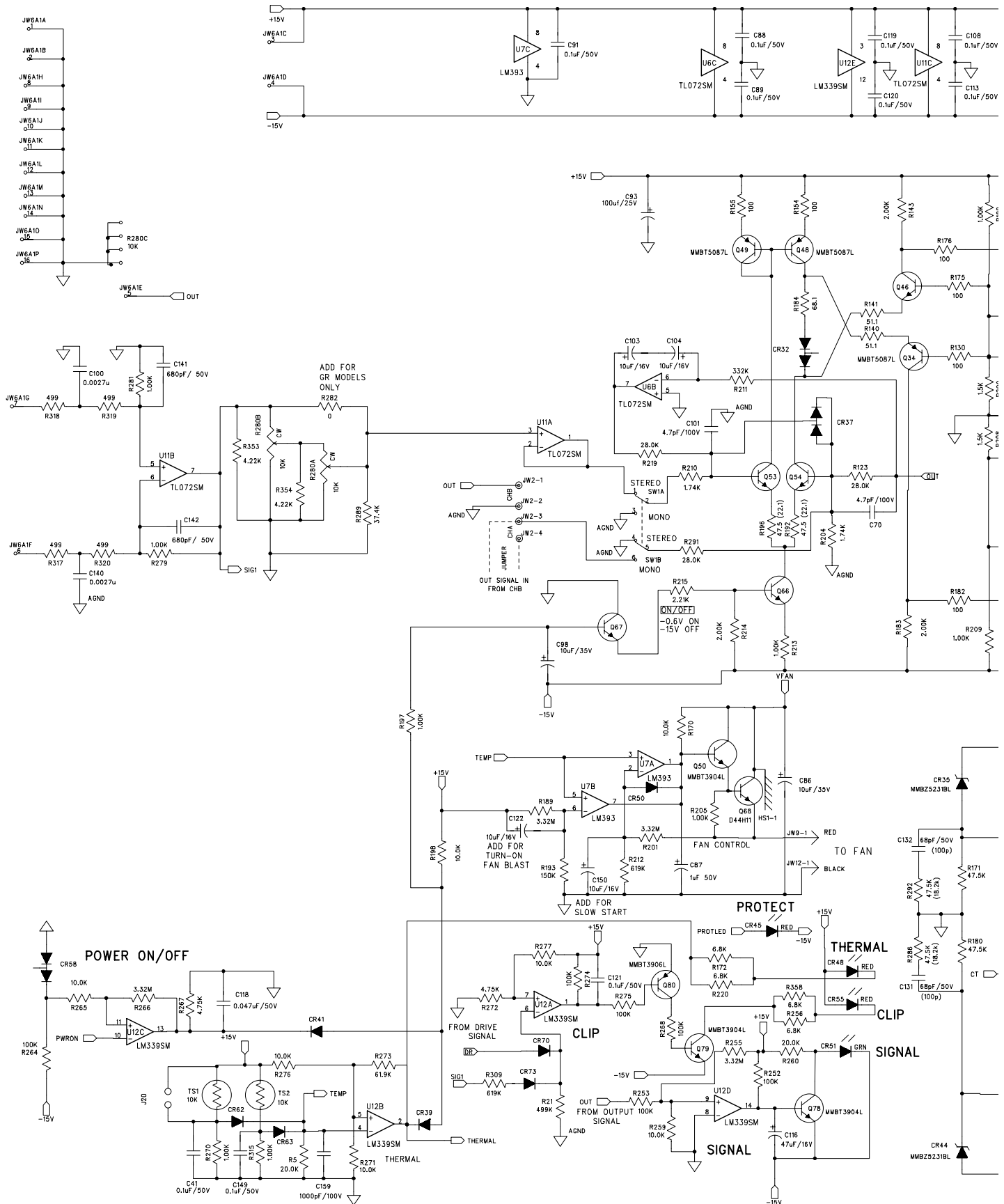
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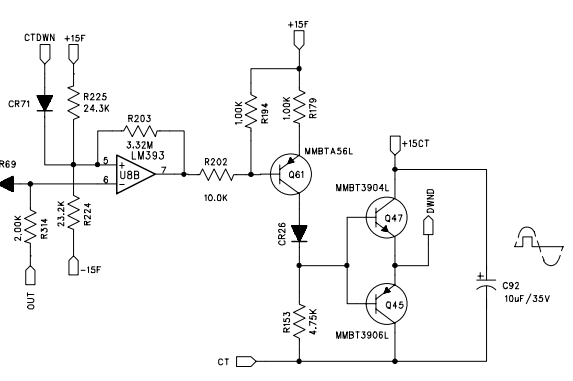
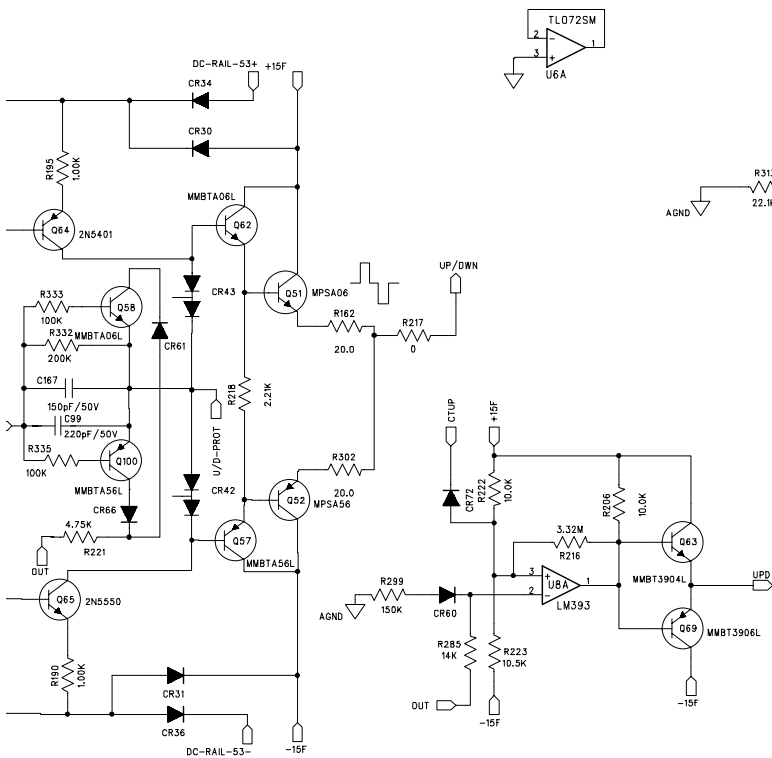
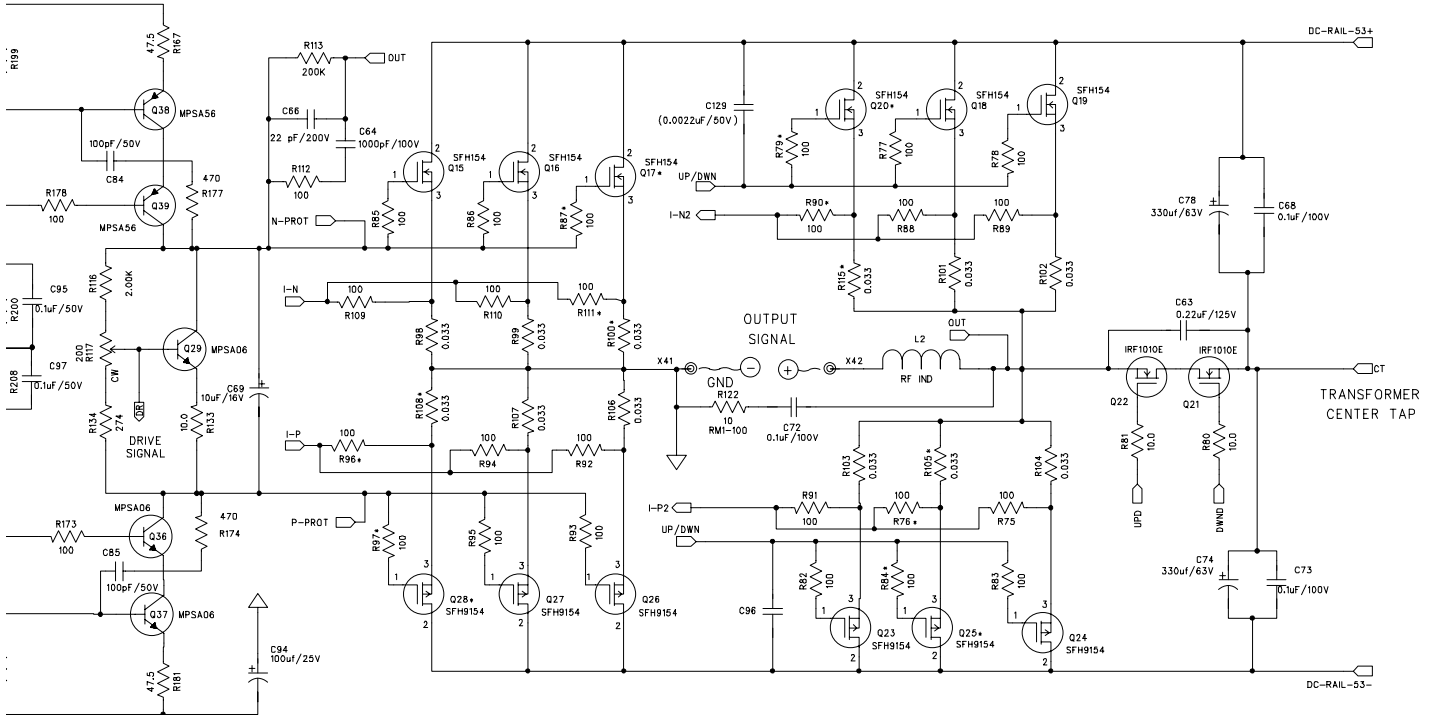
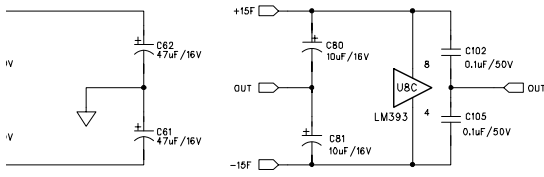


TIME DELAY/PULSE INVERTER



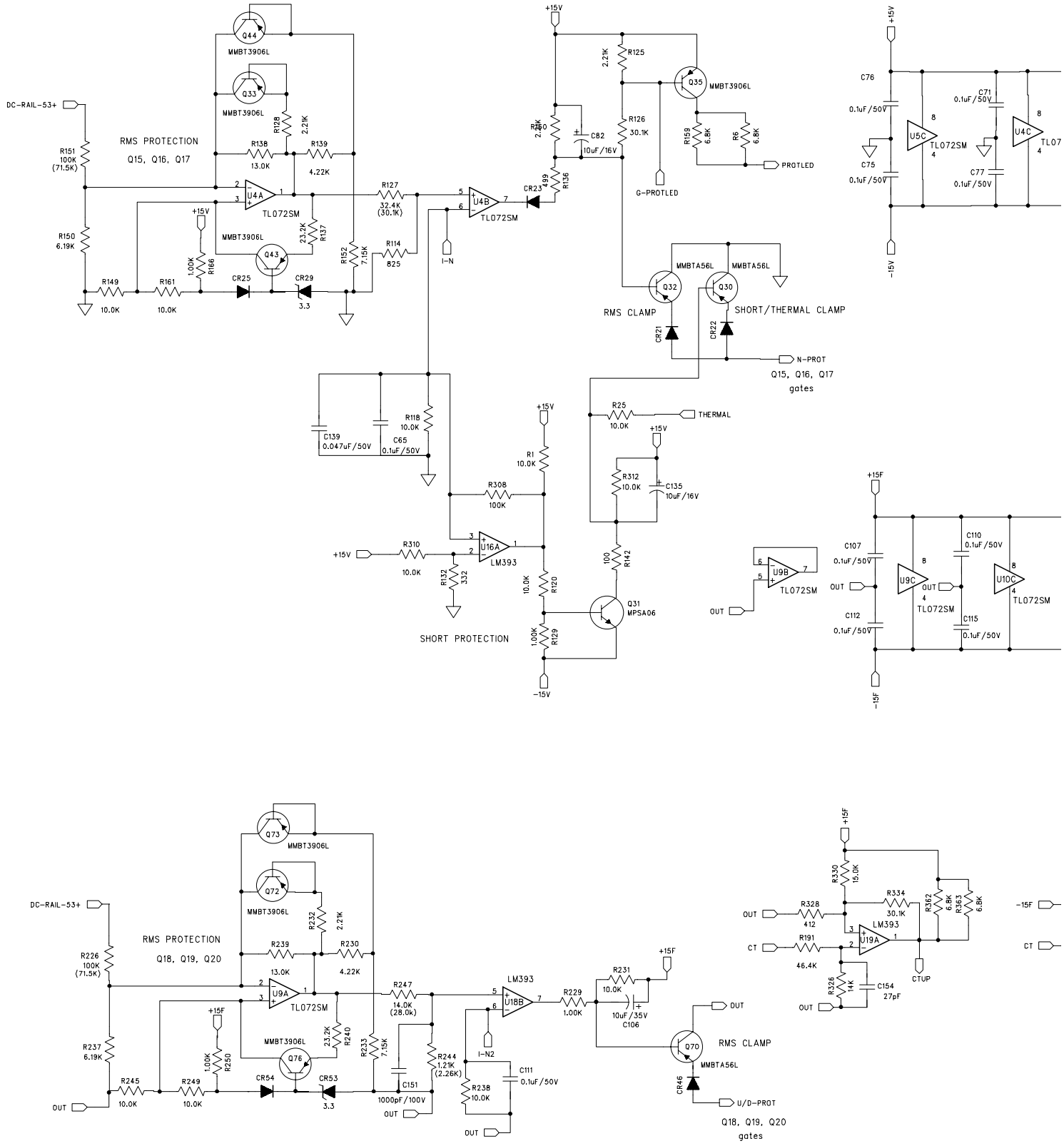
AMPLIFIER

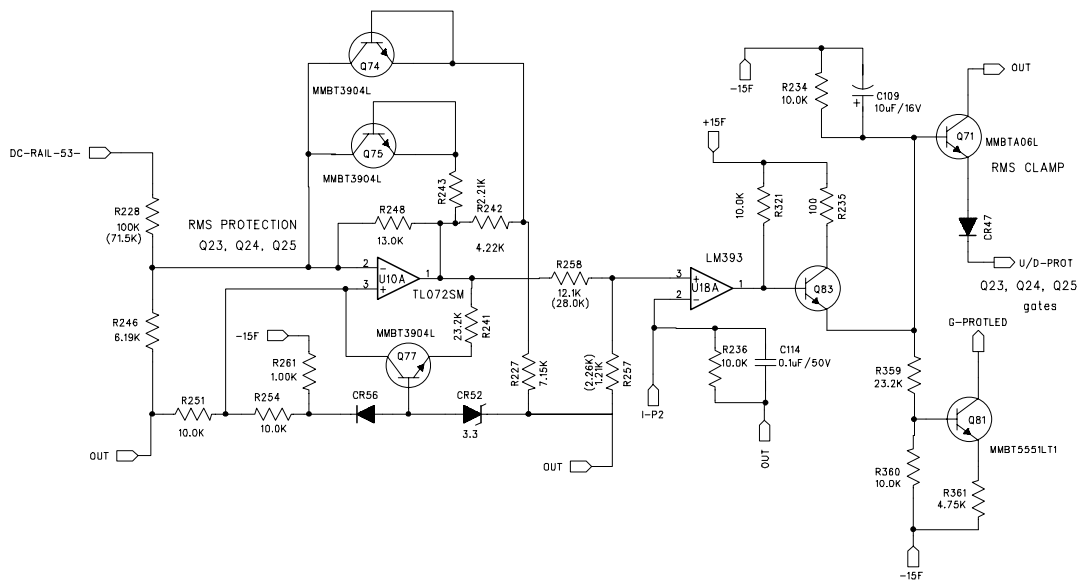
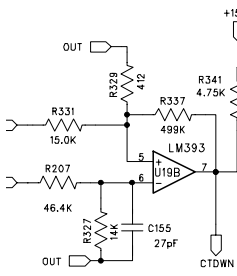
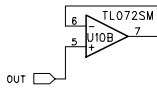
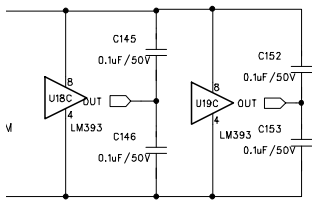
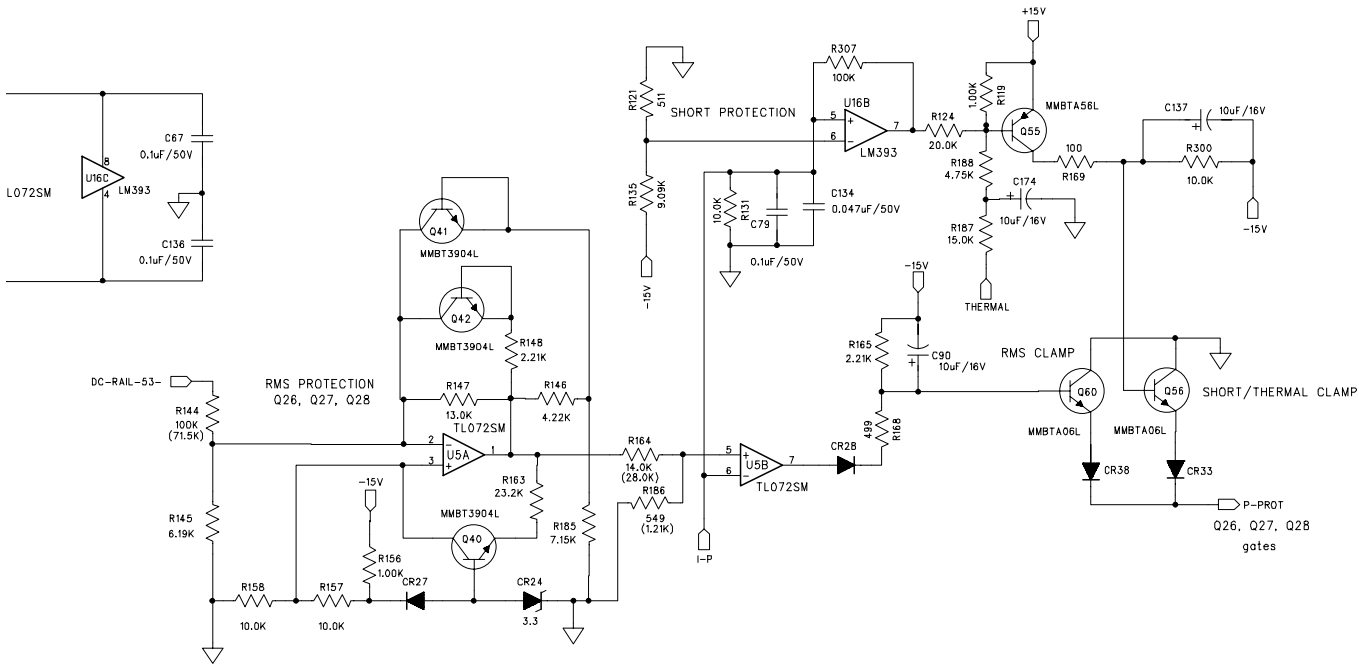




* NOT USED ON 2300 MODELS:
(XX.X) SR2300 VALUES IN PARENTHESIS

PROTECTION

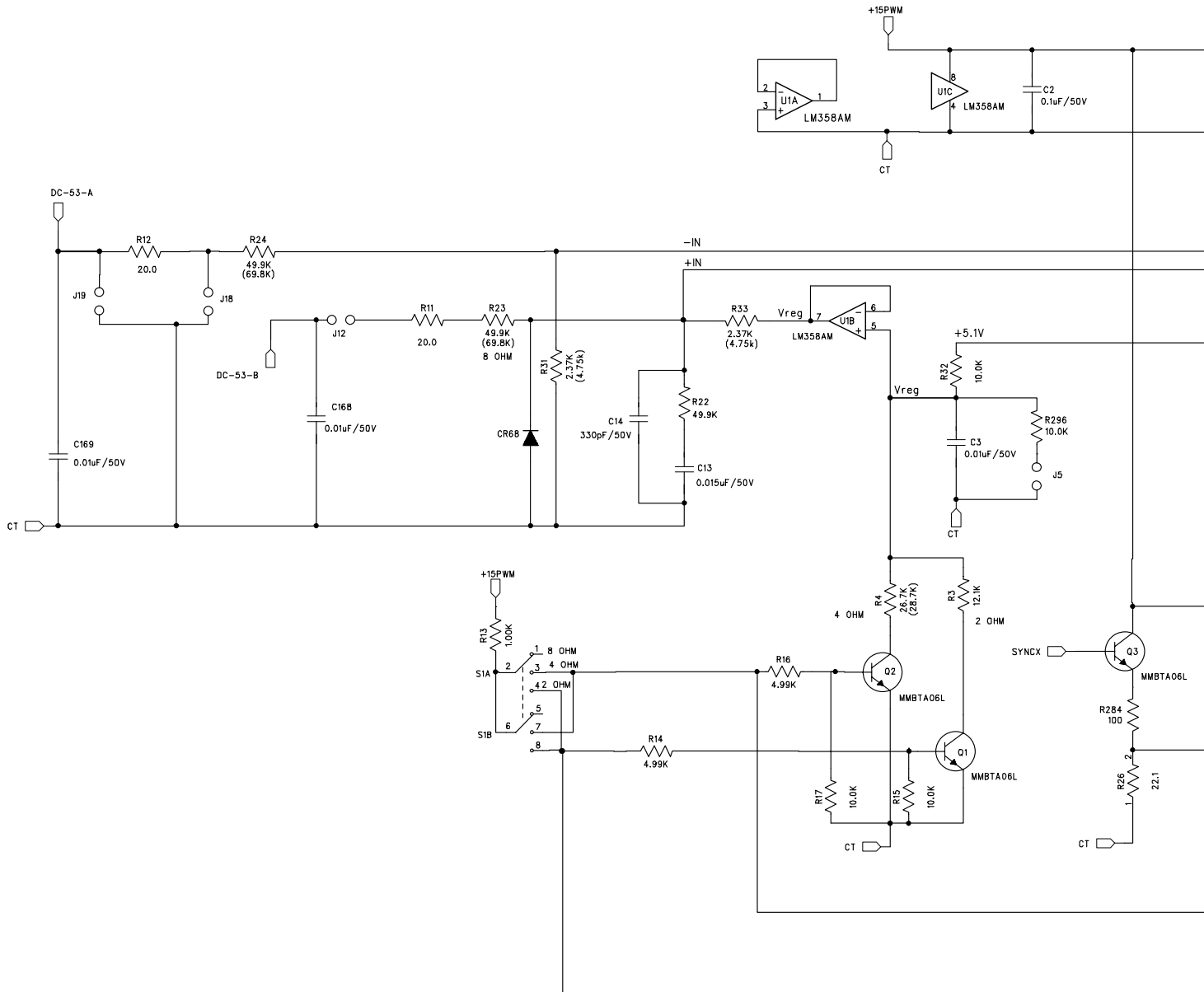




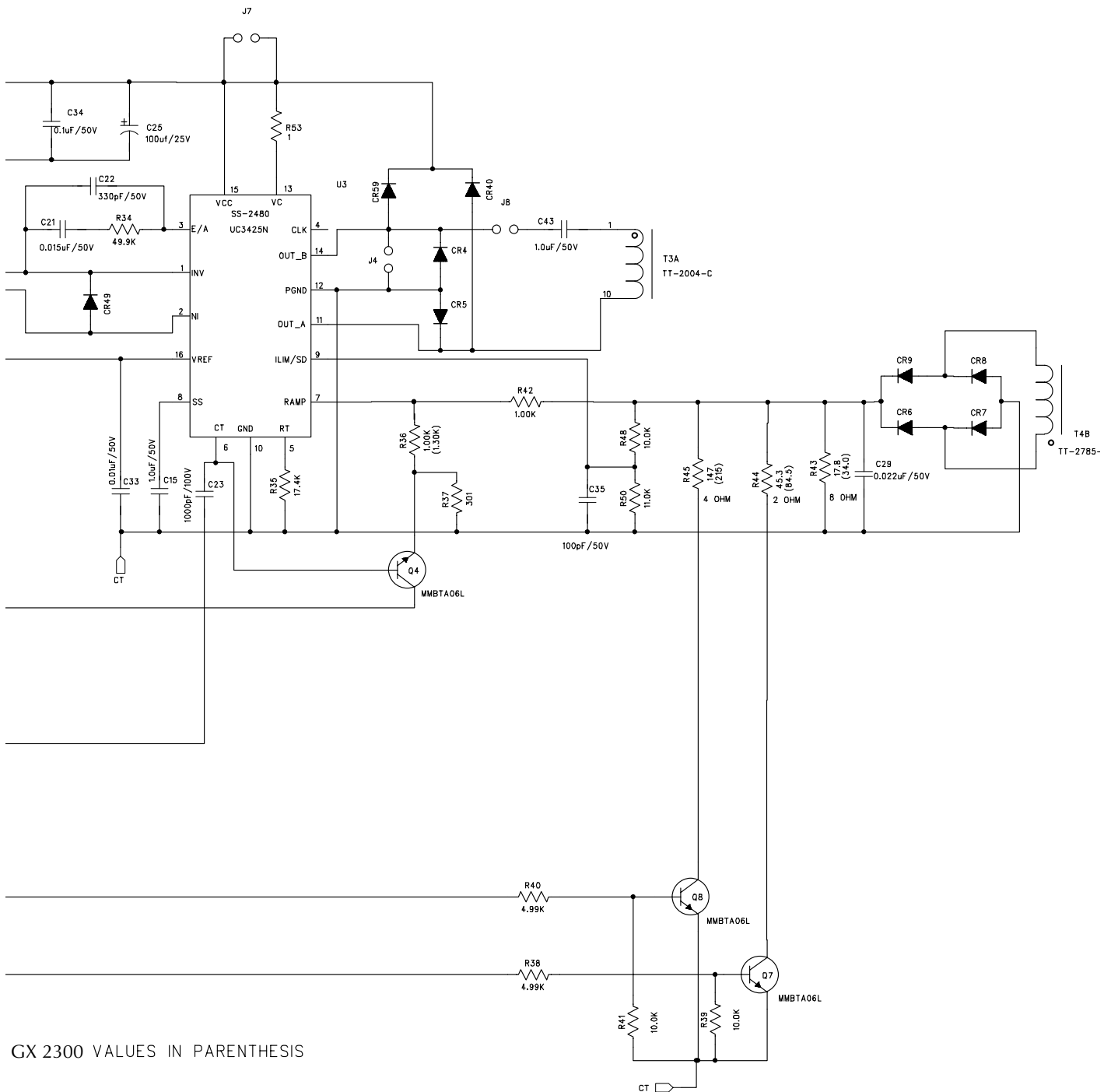
(XX.X) SR2300 VALUES IN PARENTHESIS

C600_maulB.sch-2

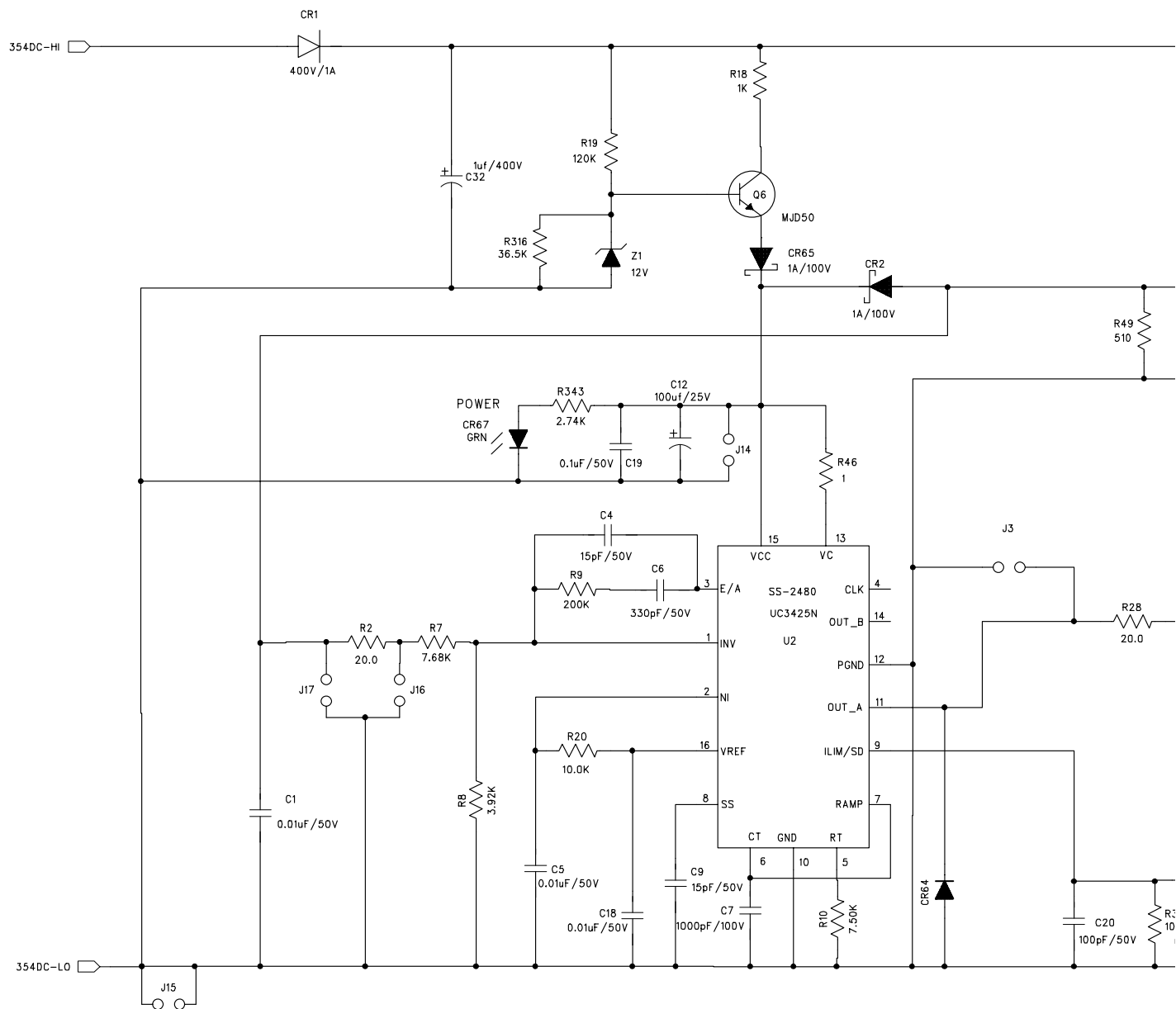
HIGH VOLTAGE CONTROL

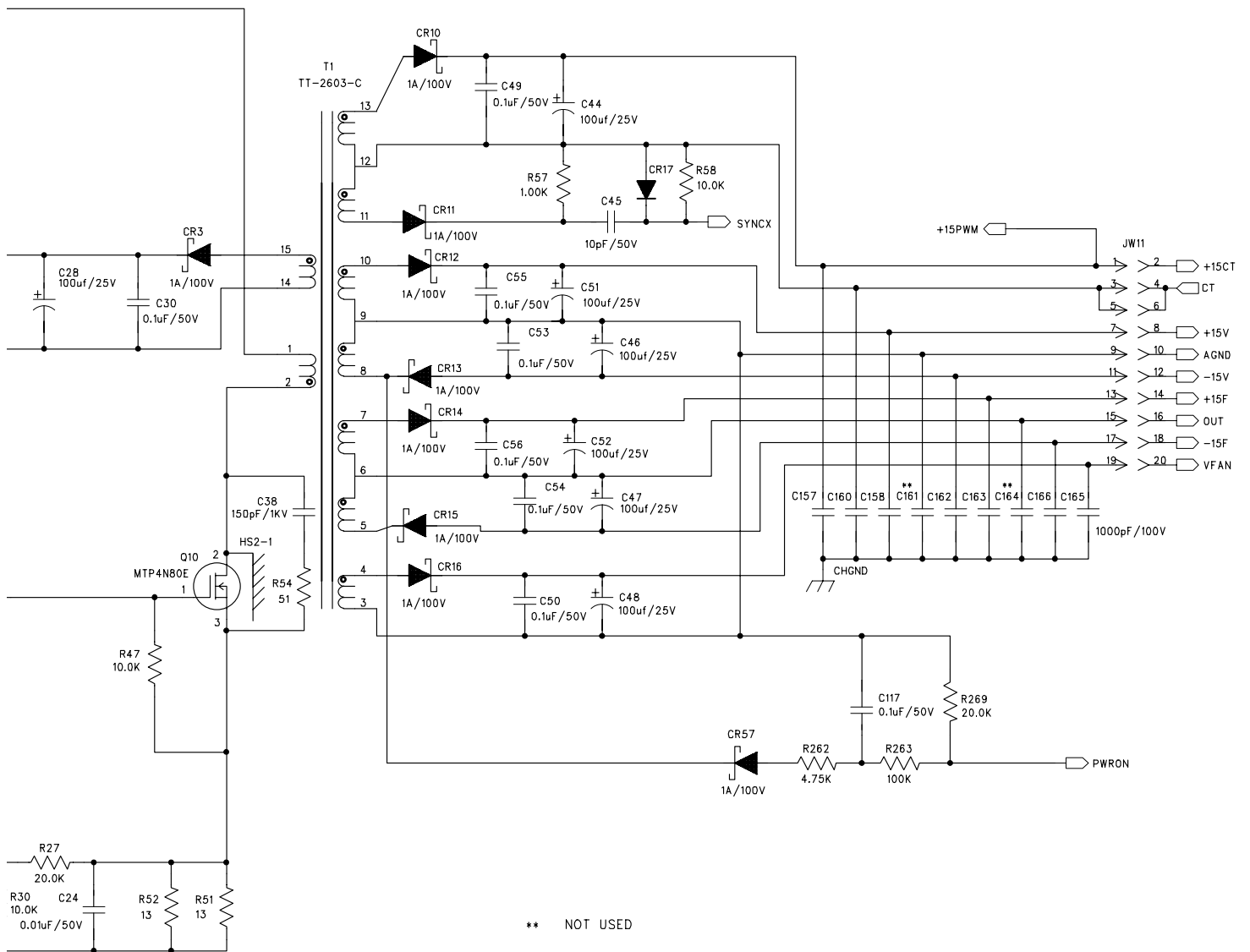


(XX.X)

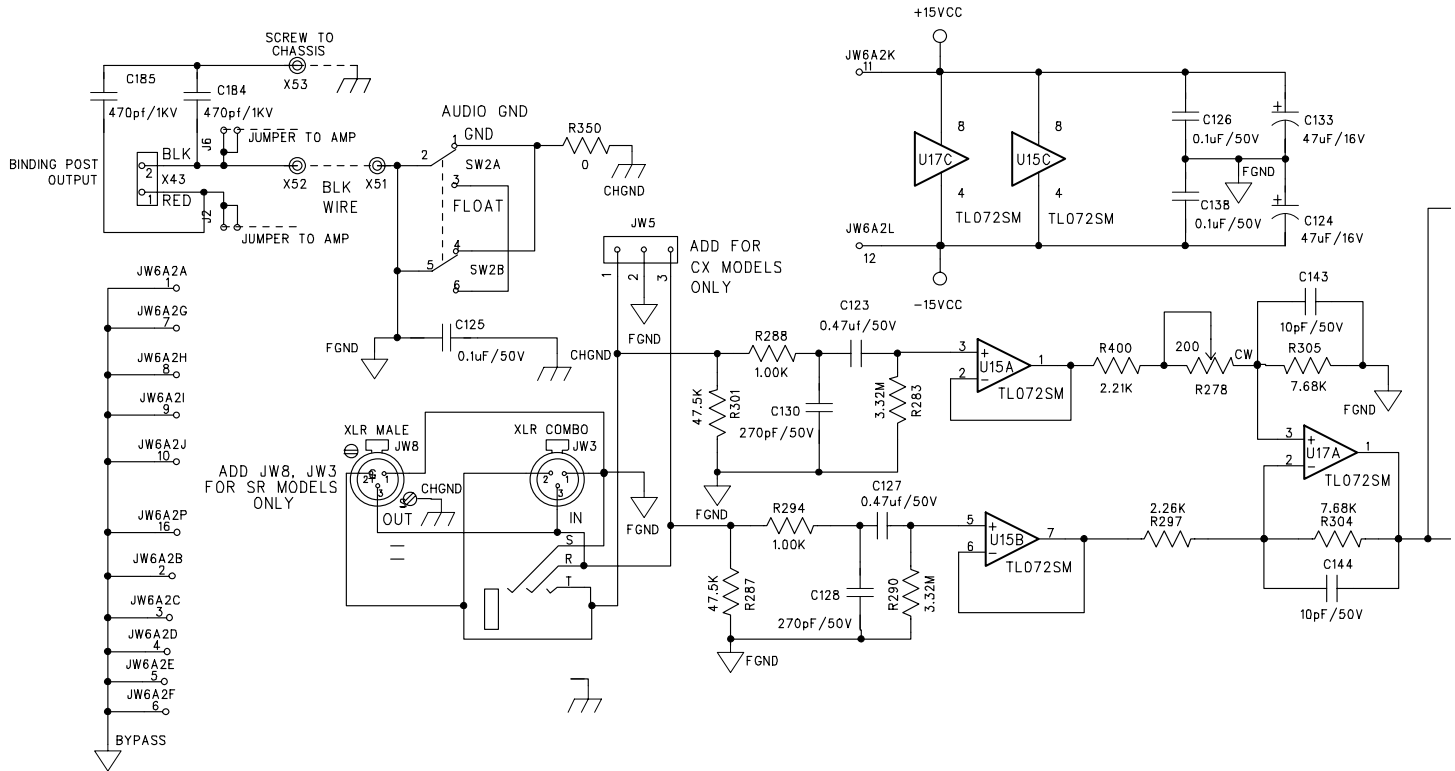


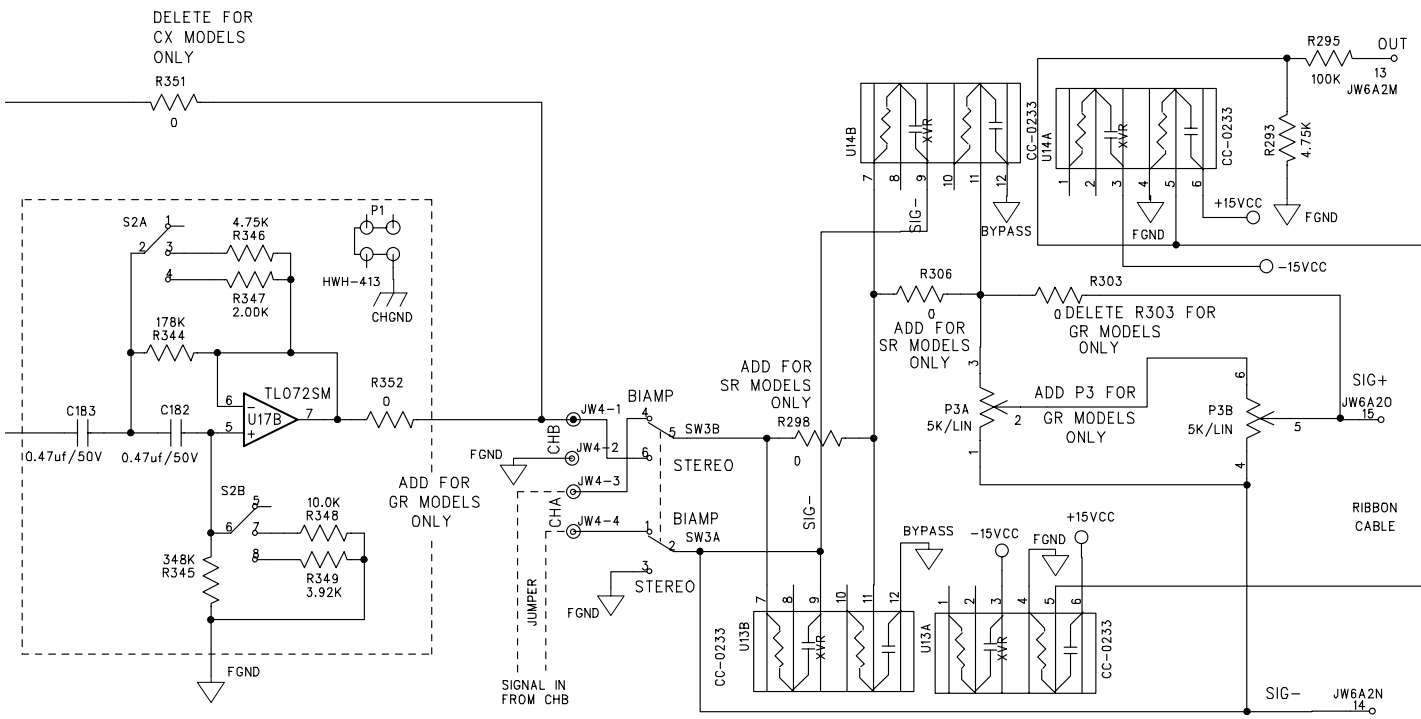
HOUSEKEEPING CONTROL





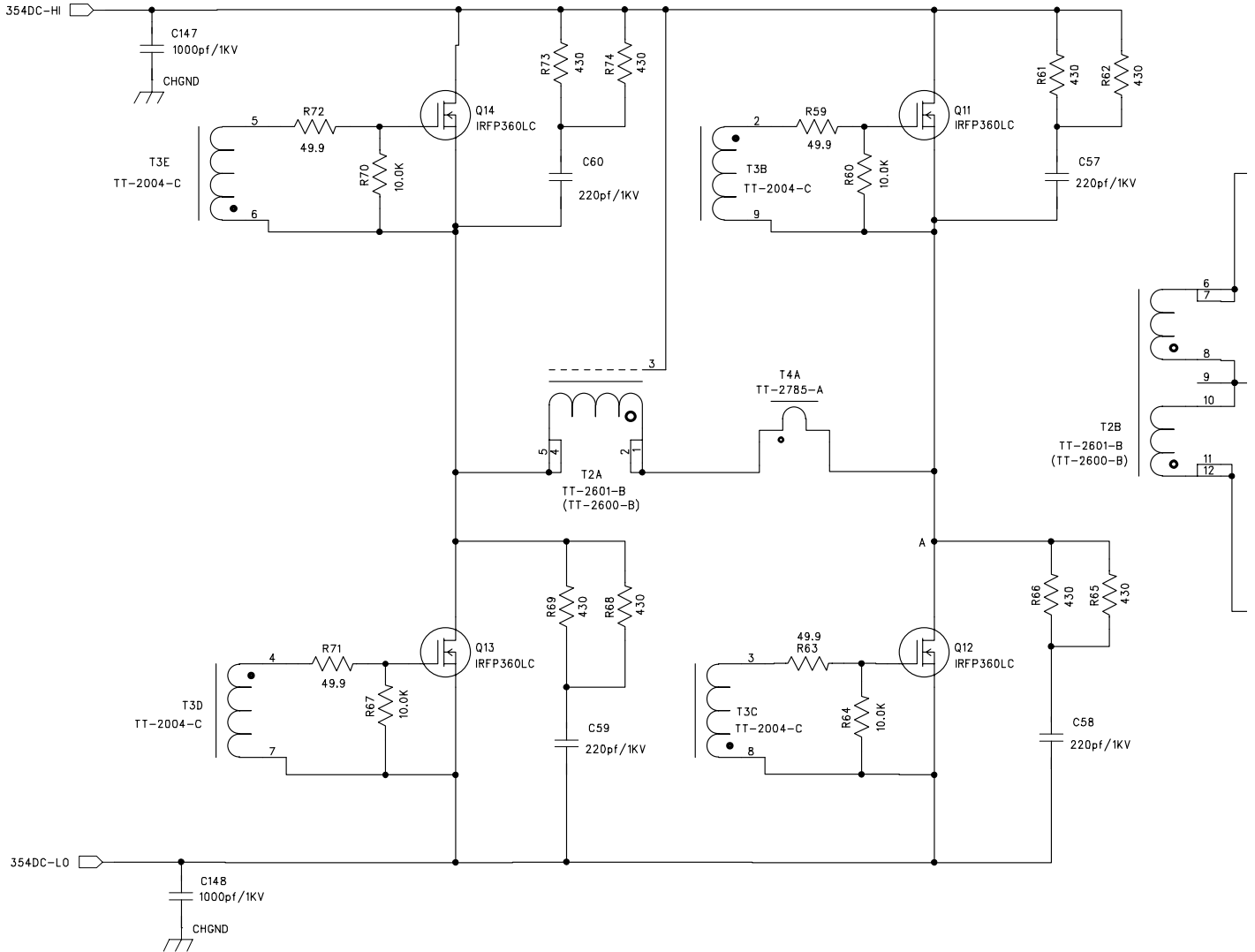
INPUT

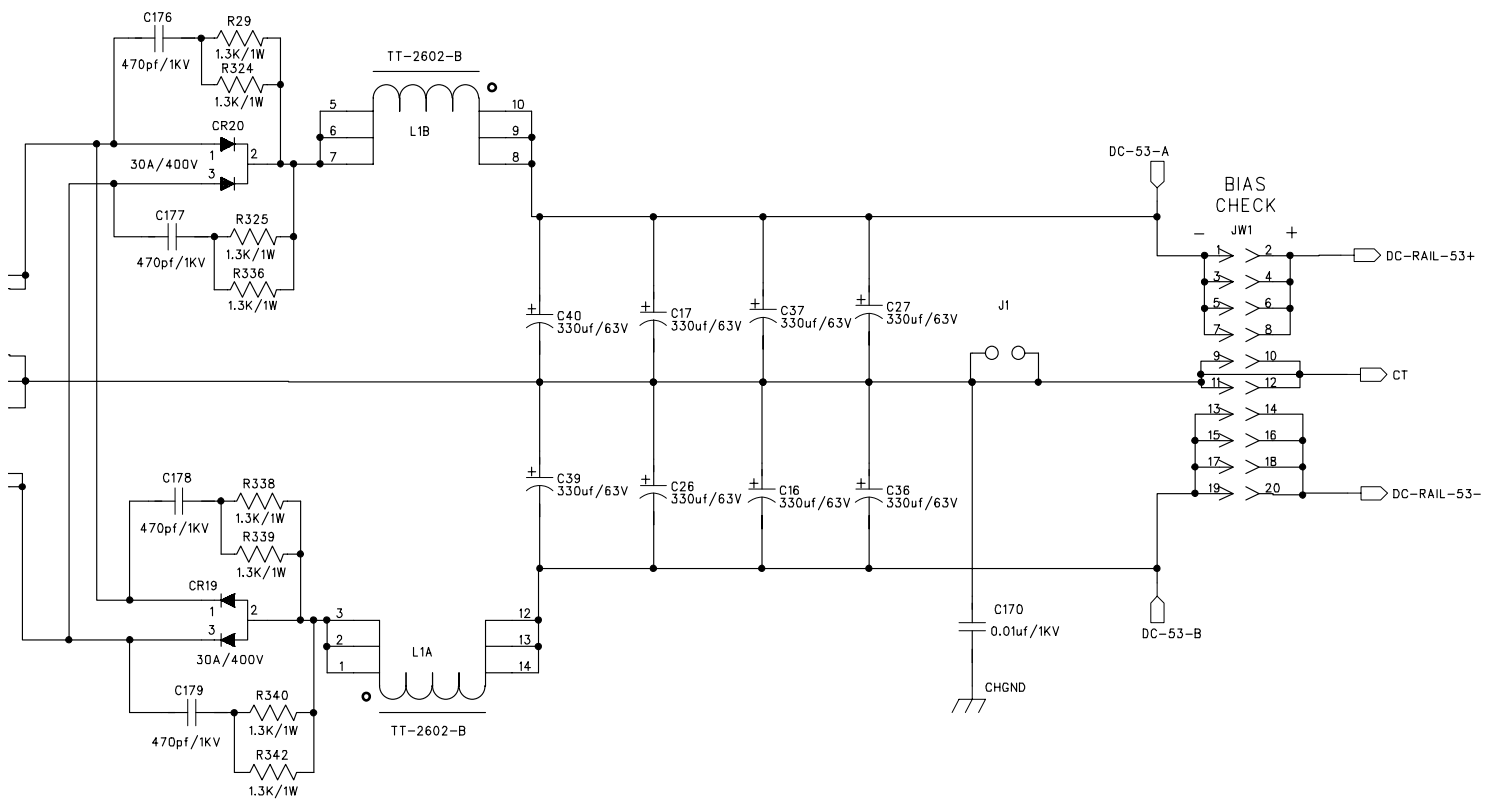




C600_maulB.sch-8

POWER





(XX.X) SR2300 VALUES IN PARENTHESIS

C600_mauaIB.sch-5



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