HELPLINE

1-800-854-2235

7:30 To 5:00 Monday-Friday
Pacific Standard Time
USA

CARVIN
12340 World Trade Drive
San Diego, CA 92128

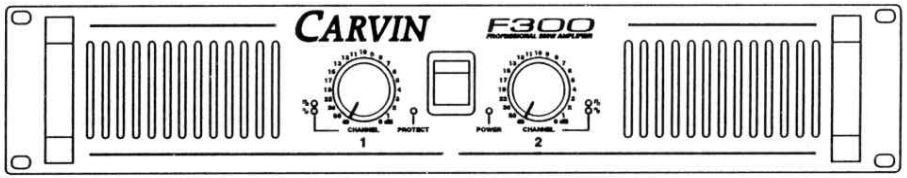
Record the serial number of your amplifier in the space provided below:

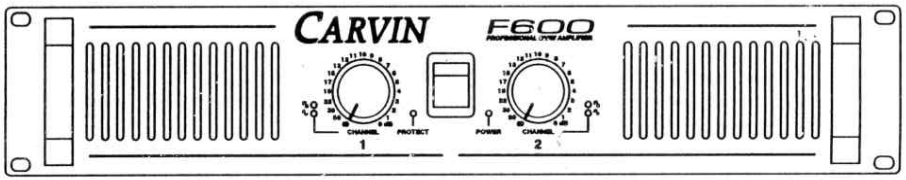
Serial No._____ Invoice Date_____

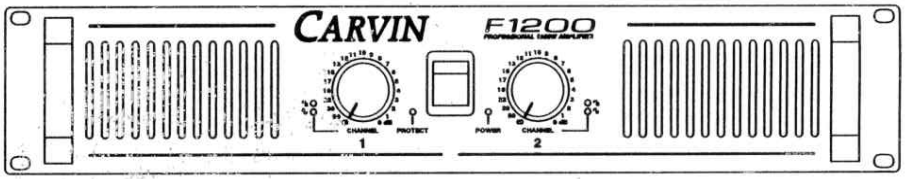
CARVIN

F300, F600 & F1200

PROFESSIONAL STEREO POWER AMPLIFIERS







OPERATION MANUAL

Manual No. 76-12028
Revision 1.0

Made in USA

CARVIN
12340 World Trade Drive
San Diego, CA 92128
(800)854-2235

RECEIVING INSPECTION

INSPECT YOUR AMPLIFIER FOR ANY DAMAGE which may have occurred during shipment. If any damage is found, notify the shipping company and call CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to reship this amplifier, always use the original carton and packing material. This will provide the best possible protection during shipment. Neither CARVIN nor the shipping company are liable for damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service. Immediately check your invoice against the items received.

SHIPMENT SHORTAGE. If items are missing, it may be that they were shipped separately. Please allow several days for the balance of your order to arrive before inquiring. If you determine (after allowing an appropriate amount of time) you have not received all the items you ordered, please call CARVIN.

FOR THE NEW OWNER

Carvin's F-Series of professional stereo amplifiers represent the state of the art in linear audio power amplification technology.

From small clubs to sports arenas you'll love the crystal clear sound these amplifiers provide. Their light-weight, compact design is complemented by heavy duty construction perfectly suited for the rigors of road use. They're available in three power levels to fit the widest possible range of applications.

It all starts with a massive, precision toroidal power transformer. This type of transformer is praised for its efficient transfer of energy and the way it confines noise fields quietly within its coils. With this quiet efficiency also comes lighter weight. One of the main reasons Carvin is able to offer a substantial 1,200 Watts of power from a two rack unit package weighing only 25 pounds.

But that's just the beginning. A specially designed cooling chamber funnels the air volume of an average sized refrigerator across the heatsinks every 20 seconds. The heatsink size, shape and configuration are custom made and optimized with the help of computer aided design. The height to width ratio pushes the envelope of aluminum extrusion technology. Our high fin count is the greatest in the industry but even more impressive are the 675 micro-fins which increase the heat transferring surface area of the sink by a phenomenal 52%! Staggered mounting of the power transistors distributes heat evenly across the entire heatsink to eliminate hotspots.

Each model in Carvin's F-Series has enough thermal headroom to dissipate more than twice its power rating.

Carvin's F-Series offers high quality audio in a tough, efficient package while providing peace of mind reliability.

Carvin's USA toll free number: 800-854-2235

NOTES:

NOTES:

QUICK SET UP

Like most new owners, you're probably in a hurry to plug in your F-Series amplifier and audition it. Here are some brief instructions to get you going quickly.

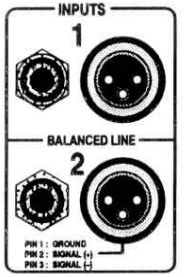
CONNECTING AC POWER

Use only a grounded (3 prong) power outlet to avoid shock hazard.

INPUT CONNECTIONS

Balanced XLR and 1/4" phone input connectors are located on the rear panel and labeled "INPUTS". The 1/4" phone jacks can be used with either balanced (ring-, tip+, sleeve gnd) or unbalanced (tip, sleeve) plugs.

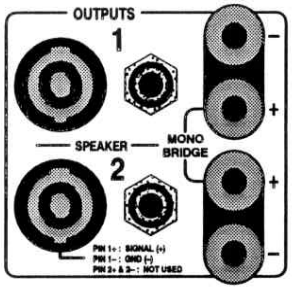
The new amplifier, right out of the box, will have its "ACCESSORY GROUP" switches configured for the typical stereo setup (see page 5).



CONNECTING SPEAKERS

STEREO

Carvin's F-Series of amplifiers contains the latest in state of the art, high current speaker connectors. Along with standard 1/4" phone jacks there are binding posts (the F1200 model also includes Speakon™ connectors). These output connections are located within a box on the rear panel labeled "OUTPUT".



BRIDGE MODE

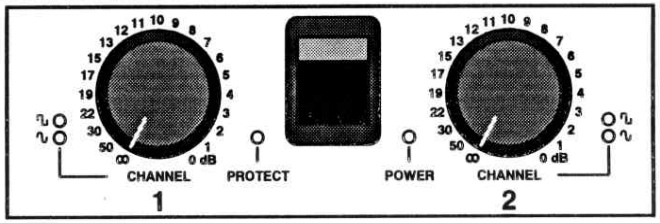
When operating in bridge mode, use the two RED binding posts marked "MONO BRIDGE" to connect the amplifier to speaker cabinets. Channel 1's RED post is positive and channel 2's RED post is negative. There are DIP switches accessible through the rear panel labeled "BRIDGE MONO". Slide both of them to the right.

POWER-UP SEQUENCE

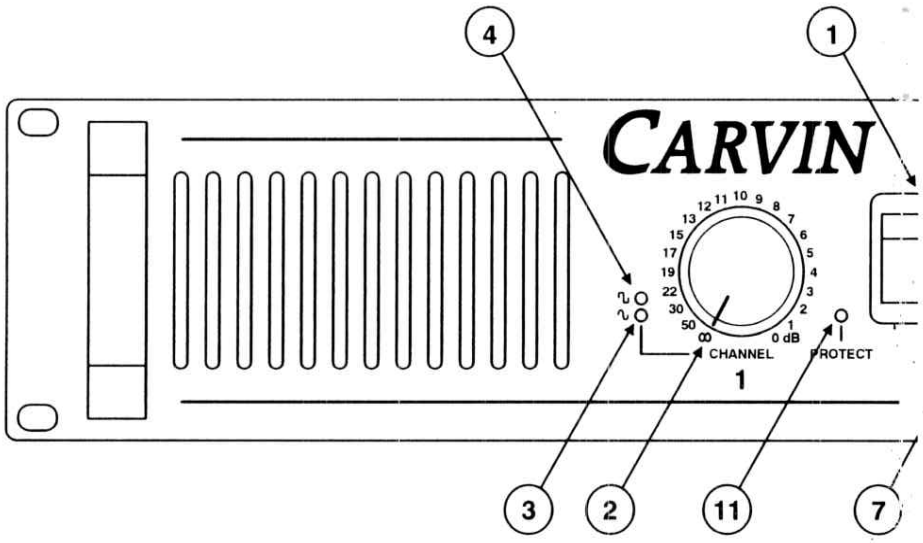
Follow these simple steps when applying power to the system.

1. Verify all system connections while power is still off.
2. Lower all power amplifier level controls to minimum.
3. Apply power to the mixers, processors etc. first.
4. Apply power to the power amplifiers last.
5. Setup mixer, processors etc. to nominal operating levels.
6. Set power amplifier level controls to desired volume.

Note: Reverse this procedure for power-down.



FRONT PANEL FEATURES



1. POWER SWITCH

Press the top half of this switch to apply power to the unit. (The orange power LED ⑦ will illuminate to show when the amplifier is powered.)

2. CHANNEL 1 LEVEL CONTROL

A precision 41 step input level attenuator is used to adjust volume levels.

3. CHANNEL 1 SIGNAL INDICATOR

This green LED comes on when signal is present on channel 1.

4. CHANNEL 1 CLIP INDICATOR

This RED LED lights when channel 1 has reached its maximum output capability.

5. FRONT PULL COOLING VENTS

The cooling chamber gets air from the front of the amplifier where the air is cooler. Make sure there is adequate ventilation. Never block the vents or attach a front cover to the rack while the equipment is operating.

6. HANDLES

These sturdy one piece aluminum handles make transporting a breeze as well as facilitate installation and removal from racks.

WARRANTY AND SERVICE INFORMATION

Call Toll-Free 800-854-2235 if you need help with your CARVIN product. If you need to return it for service, our service dept. will issue a Service Number so that we can expect your shipment. Write the Service Number on the carton and be sure to include a full description of every problem. Pack in its original carton using all its packing material. Return by UPS pre-paid. Units returned with physical damage, missing parts, or damage from improper service are not serviceable.

REPAIRS UNDER WARRANTY (1Year)

There is no charge for service under warranty. However, shipping is to be paid both ways by the customer.

REPAIRS OUT OF WARRANTY

After your warranty has expired, call us for the current flat rate charge which includes parts labor and testing to bring your unit up to factory specifications.

SERVICING IN YOUR AREA

You may select your own service center or have your own qualified technician work on the unit at your own expense. This will not void the warranty unless damage was done because of improper servicing. Under the ONE YEAR WARRANTY, Carvin will ship parts pre-paid to you or your technician providing that the defective part(s) are first returned for our inspection. If you do not have a qualified service person, we ask that you do not involve yourself in servicing the unit.

LIMITED WARRANTY

Your Carvin Professional Series Product is guaranteed against failure for ONE YEAR. Carvin will service the unit and supply all parts at no charge to the customer providing the unit is under warranty. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. This warranty is extended to the original purchaser only and is not transferable. THIS WARRANTY DOES NOT INCLUDE FAILURES CAUSED BY INCORRECT USE, INADEQUATE CARE OF THE UNIT, OR NATURAL DISASTERS. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin takes no responsibility for any horn driver or speaker damaged by this unit. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. No liability is assumed for damage due to accident, abuse, lack of reasonable care, loss of parts, or failure to follow Carvin's directions. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

In the interest of creating new products and improving existing ones, Carvin is continually researching the latest state of the art audio design methods, and modern packaging and production techniques. Thus, Carvin reserves the right to make changes in its products and specifications without notice or obligation.

CARVIN
12340 World Trade Drive
San Diego, CA 92128
800-854-2235 M-F 7:30 to 5:00

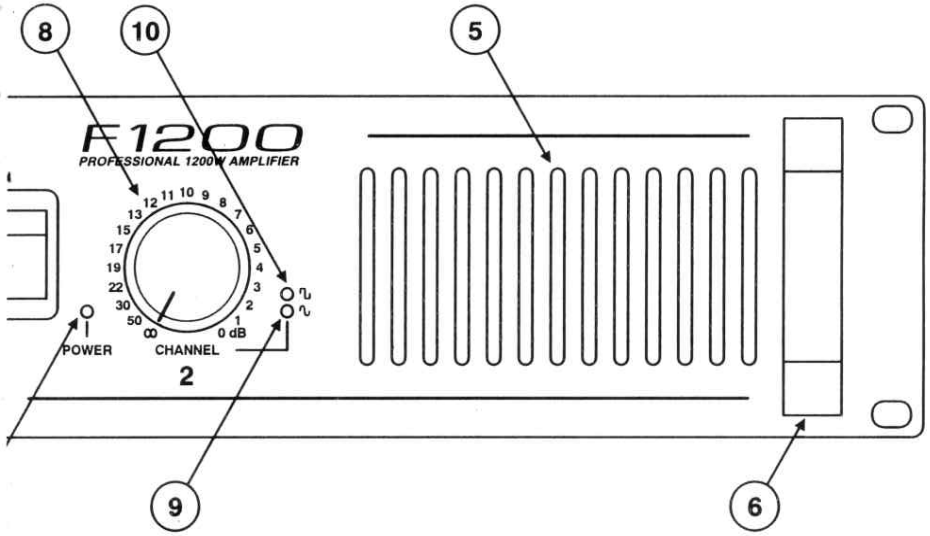
SPECIFICATIONS

	F300	F600	F1200
Output Power			
8Ω, 1kHz, < 1% THD	300 Watts	600 Watts	1,200 Watts
4Ω, 1kHz, < 1% THD	N/A	N/A	1,200 Watts
2Ω, 1kHz, < 1% THD (BRIDGE MONO)	N/A	N/A	1,800 Watts
8Ω, 1kHz, < 0.5% THD	100/100 Watts	200/200 Watts	400/400 Watts
4Ω, 1kHz, < 0.5% THD	150/150 Watts	300/300 Watts	600/600 Watts
2Ω, 1kHz, < 0.5% THD	N/A	N/A	600/600 Watts
2Ω, 1kHz, < 0.5% THD (Stereo, both channels driven)	N/A	N/A	900/900 Watts* (*RMS POWERMAX™)
THD			
20-20kHz (8Ω at half power)	< 0.1%	< 0.1%	< 0.1%
Damping Factor	>450	>450	>500
Sensitivity (@ 4Ω)	0.75 Vrms	1.0 Vrms	1.5 Vrms
Signal to Noise Ratio	100 dB	103 dB	106 dB
Weight (Shipping)	21 lbs.	23 lbs.	27 lbs.
Power Consumption (120V)	290 VA	575 VA	1250 VA
(240V)	290 VA	575 VA	1250 VA
Frequency Response	±0.5 dB, 20 Hz to 20 kHz (±1.0 dB, 10 Hz to 40 kHz)		
Input Impedance	> 20kΩ Balanced or Unbalanced		
Dimensions	3 1/2" High x 19" Wide x 10" Deep		

MAINTENANCE

Carvin's F-Series amplifiers have free-flow ventilation and require no filter maintenance. However, use caution to avoid spilling liquids or allowing any other foreign matter inside the unit. As with all pro-audio gear, avoid prolonged use in caustic environments (i.e., on the beach). When used in such an environment, please be sure the amplifier is adequately protected by rack, covers, etc..

To clean the unit, always use a mild detergent and warm water solution applied to a soft cloth. Never spray cleaning products directly on the unit.



7. POWER INDICATOR

An orange LED unmistakably tells when the amplifier is turned on. (The various front panel indicators were deliberately given different colors so the operator can see the status of the amplifier from across the room with only a glance.)

8. CHANNEL 2 LEVEL CONTROL

A precision 41 step input level attenuator is used to adjust volume levels.

9. CHANNEL 2 SIGNAL INDICATOR

This green LED comes on when signal is present on channel 2.

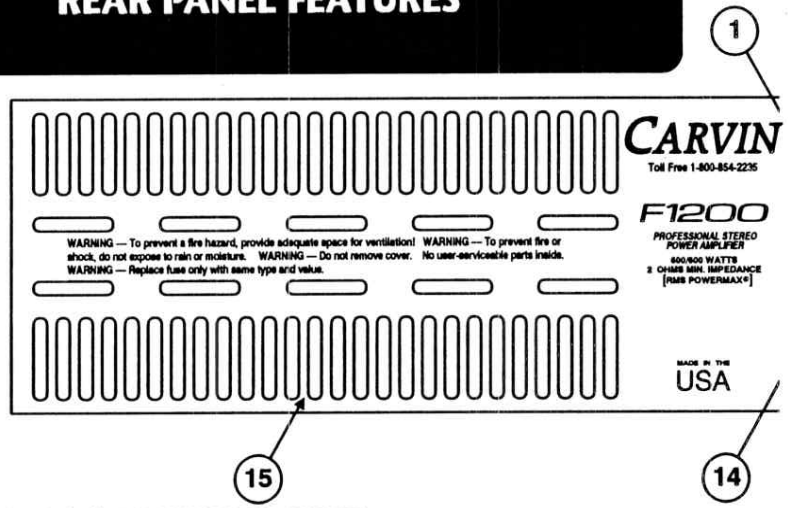
10. CHANNEL 2 CLIP INDICATOR

This RED LED lights when channel 2 has reached its maximum output capability.

11. PROTECT INDICATOR

If the amplifier detects any problems due to abusive operating conditions, it will automatically enter "PROTECT" mode. This mode will remove signal from one or both affected channels and the "PROTECT" LED will light. (See the section entitled "PROTECT LED" for more detailed information.)

REAR PANEL FEATURES



1. CHANNEL 1 1/4" PHONE JACK INPUT

This stereo phone jack is designed to receive either balanced or unbalanced input signals. Balanced signals coming into this jack should be wired with the connector's tip going to signal + and the connector's ring to signal -. The connector's sleeve is then tied internally to ground through the GROUND LIFT switch.

2. CHANNEL 1 XLR INPUT CONNECTOR

Like the 1/4" phone jack, this input connector will accept either balanced or unbalanced signals. Pin 2 is signal +, pin 3 signal - and pin 1 is grounded through the GROUND LIFT switch.

3. CHANNEL 1 SPEAKON OUTPUT

The Speakon speaker connectors' twist-lock design and high current capacity is a great way to simplify speaker connection while maintaining a high, system wide damping factor. (F1200 only).

4. CHANNEL 1 1/4" PHONE JACK SPEAKER OUTPUT

Standard 1/4" phone jacks are supplied for convenient speaker connection.

5. CHANNEL 1 BINDING POST SPEAKER OUTPUT

An alternative for connecting speakers is through the binding posts. RED is positive and BLACK is negative. These high current connectors will safely clamp bare wires at their base or will accept standard banana plugs. (The two RED binding posts are used for mono bridging, ch1 is + and ch2 is -).

6. RMS POWERMAX™ IMPEDANCE MATCHING SWITCH

Set this switch to the position that corresponds to the speaker load. (F1200 model only. See the section "RMS POWERMAX™" for more information.)

7. MAIN POWER FUSE

Should the fuse ever blow, replace only with same type and value (see "Fuse Selection").

F300	3A	@ 120VAC or	1 1/2A @ 240VAC, Slow Blow
F600	6A	@ 120VAC or	3A @ 240VAC, Slow Blow
F1200	12A	@ 120VAC or	6A @ 240VAC, Slow Blow

(Note: Some F-Series amplifiers are supplied with circuit breakers. Should one of these ever blow, simply let the breaker cool down and press to reset.)

PCB REF	DESCRIPTION	PART #
R254	Resistor 1/4W, ±5%, 2.2K	50-22035
R255	Resistor 1/4W, ±5%, 2.2K	50-22035
R256	Resistor 1/4W, ±5%, 4.7K	50-47035
R257	Resistor 1/4W, ±5%, 33K	50-33045
R258	Resistor 1/4W, ±5%, 220Ω	50-22025
R259	Resistor 1/4W, ±5%, 100K	50-10055
R260	Resistor 1/4W, ±5%, 2.2K	50-22035
R261	Resistor 1/4W, ±5%, 4.7K	50-47035
R262	Resistor 1/4W, ±5%, 2.2K	50-22035
R263	Resistor 1/4W, ±5%, 10K	50-10045
R264	Resistor 1/4W, ±5%, 4.7K	50-47035
R265	Resistor 1/4W, ±5%, 2.2K	50-22035
R266	Resistor 1/4W, ±5%, 470Ω	50-47025
R267	Resistor 1/4W, ±5%, 470Ω	50-47025
R268	Resistor 1/4W, ±5%, 2.2K	50-22035
R269	Resistor 1/4W, ±5%, 1K	50-10035
R270	Resistor 1/4W, ±5%, 1K	50-10035
R271	Resistor 1/4W, ±5%, 2.2K	50-22035
R272	Resistor 1/4W, ±5%, 33K	50-33045
R273	Resistor 1/4W, ±5%, 1K	50-10035
R274	Resistor 1/4W, ±5%, 1K	50-10035
R275	Resistor, 5W,±10%, 5KΩ, Wire Wound	55-50030
R276	Resistor, 5W,±10%, 5KΩ, Wire Wound	55-50030
R277	Resistor 1/4W, ±5%, 47K	50-47045
R278	Resistor 1/4W, ±5%, 47K	50-47045
R279	Resistor 1/4W, ±5%, 100K	50-10055
R280	Resistor 1/4W, ±5%, 100K	50-10055
R281	Resistor 2W, ±10%, 1.5k	54-15030
R282	Resistor 1/4W, ±5%, 22K	50-22045
R283	Resistor 1/4W, ±5%, 2.2K	50-22035
R284	Resistor 1/2W, ±5%, 2.2K	52-22035
R285	Resistor 1/4W, ±5%, 68K	50-68045
R286	Resistor 1/4W, ±5%, 220K	50-22055
R287	Resistor 1/4W, ±5%, 470K	50-47055
R288	Resistor 1/4W, ±5%, 47K	50-47045
R289	Resistor 1/4W, ±5%, 100K	50-10055
R290	Resistor 1/4W, ±5%, 47K	50-47045
R291	Resistor 1/4W, ±5%, 47K	50-47045
R292	Resistor 1/4W, ±5%, 220K	50-22055
R293	Resistor 1/4W, ±5%, 220K	50-22055
R294	Resistor 1/4W, ±5%, 100K	50-10055
R295	Resistor 1/4W, ±5%, 4.7K	50-47035
R296	Resistor 1/4W, ±5%, 4.7K	50-47035
R297	Resistor 1/4W, ±5%, 470K	50-47055
R298	Resistor 1/4W, ±5%, 220Ω	50-22025
R299	Resistor 1/4W, ±5%, 220Ω	50-22025
S1	Switch, DIP, 8 Pole single throw	25-02068
SYS GND	Jumper, 22AWG, .500"x.175"	44-15000
VR1	Regulator, Voltage, +15, 2A	60-78150
VR2	Regulator, Voltage, -15, 2A	60-79150
Z100	Zener Diode,16V ±5%, 1N4745A	61-47450
Z101	Not used	
Z102	Not used	
Z103	Not used	
Z200	Zener Diode,16V ±5%, 1N4745A	61-47450
Z201	Not used	
Z202	Not used	
Z203	Not used	

FUSE SELECTION

There are two versions of each F-Series amplifier. A 120 Volt AC version for those countries supplying 120 and a 240 Volt version for others.

There are several differences between the two but of primary concern are power cord and fuse values. Models with power cords containing the standard North American three prong plug are for use with 120VAC where models with the European CEE-7 plugs are for 240V. The following chart shows what fuse values to use for each model:

Fuse Selector Chart for 120 VAC Models

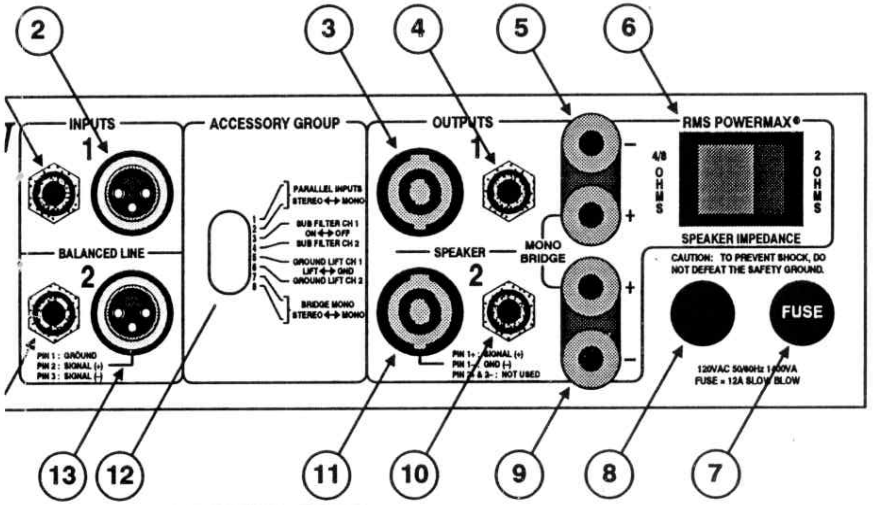
Model	Fuse Value	Size	Carvin P/N
F1200	12A, 250V, Slow Blow	3AB, 1/4 x 1 1/2"	70-22112
F600	6A, 250V, Slow Blow	3AG, 1/4 x 1 1/2"	70-22060
F300	3A, 250V, Slow Blow	3AG, 1/4 x 1 1/2"	70-22030

Fuse Selector Chart for 240 VAC (Export) Models

Model	Fuse Value	Size	Carvin P/N
F1200	6A, 250V, Slow Blow	3AG, 1/4 x 1 1/2"	70-22060
F600	3A, 250V, Slow Blow	3AG, 1/4 x 1 1/2"	70-22030
F300	1 1/2A, 250V, Slow Blow	3AB, 1/4 x 1 1/2"	70-22015

Warning: Installing a wrong value fuse can damage the amplifier or create a fire hazard.

PCB REF	DESCRIPTION	PART #
L100	Inductor, 2.5µH, 26 Turns of 15AWG, .31" I.d.	15-00165
L200	Inductor, 2.5µH, 26 Turns of 15AWG, .31" I.d.	15-00165
P100	Pot, 16 "K", B10KΩ, 41 Click, Alpha	71-10302
P101	Pot, Vert Trimmer, 3KΩ, .25W	71-23110
P102	Pot, Vert Trimmer, 3KΩ, .25W	71-23110
P200	Pot, 16 "K", B10KΩ, 41 Click, Alpha	71-10302
P201	Pot, Vert Trimmer, 3KΩ, .25W	71-23110
P202	Pot, Vert Trimmer, 3KΩ, .25W	71-23110
Q1	Transistor, Darlington, NPN, 0.5A, 30V	60-00014
Q100	Transistor, 2N5550	60-55500
Q101	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q102	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q103	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q104	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q105	Transistor, PNP, 3A,100V, 40 W, TIP 32C	60-32000
Q106	Transistor, 2N5550	60-55500
Q107	Transistor, 2N5550	60-55500
Q108	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q109	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q110	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q111	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q112	Transistor, 2N5400	60-54000
Q113	J175, JFET, P-Channel	60-17500
Q114	Transistor, NPN, .5A, 300V, 1 W, MPSW42	60-00042
Q115	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q116	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q117	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q118	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q200	Transistor, 2N5550	60-55500
Q201	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q202	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q203	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q204	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q205	Transistor, PNP, 3A,100V,40 W, TIP 32C	60-32000
Q206	Transistor, 2N5550	60-55500
Q207	Transistor, 2N5550	60-55500
Q208	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q209	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q210	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q211	Transistor, MOSFET, N Ch, STW33N20	60-33420
Q212	Transistor, 2N5400	60-54000
Q213	J175, JFET, P-Channel	60-17500
Q214	Transistor, NPN, .5A, 300V, 1 W, MPSW42	60-00042
Q215	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q216	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q217	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
Q218	Transistor, PNP, .5A, 300V, 1 W, MPSW92	60-00092
QC1	Zierick/Keystone, Straight, .250 QC	06-40050
QC2	Zierick/Keystone, Straight, .250 QC	06-40050
QC3	Zierick/Keystone, Straight, .250 QC	06-40050
QC4	Zierick/Keystone, Straight, .250 QC	06-40050
QC5	Zierick/Keystone, Straight, .250 QC	06-40050
QC6	Zierick/Keystone, Straight, .250 QC	06-40050
QC7	Zierick/Keystone, Straight, .250 QC	06-40050
R1	Resistor 1/4W, ±5%, 2.2K	50-22035
R2	Resistor 1/4W, ±5%, 100K	50-10055
R3	Resistor 1/4W, ±5%, 33K	50-33045
R4	Resistor 1/4W, ±5%, 150Ω	50-15025
R5	Resistor 1/4W, ±5%, 47Ω	50-47015
R6	Resistor 1/4W, ±5%, 3.3K	51-33045
R7	Resistor 1/4W, ±5%, 47Ω	50-47015
R8	Resistor 1/4W, ±5%, 0.56Ω	50-05605
R9	Resistor 1/4W, ±5%, 0.56Ω	50-05605
R10	Resistor 1/4W, ±5%, 22K	50-22045
R12	Resistor 1/4W, ±5%, 24K	50-24045
R13	Resistor 2W, ±10%, 3.3k	54-33035
R14	Resistor 10W, ±10%, 40Ω, Stand off	56-40015
R15	Resistor 1/4W, ±5%, 47Ω	50-47015
R16	Resistor 1/4W, ±5%, 47Ω	50-47015
R17	Resistor 1/4W, ±5%, 100K	50-10055
R18	Resistor 1/4W, ±5%, 22K	50-22045
R19	Resistor 1/4W, ±5%, 470K	50-47055
R20	Resistor 1/4W, ±5%, 24K	50-24045
R21	Resistor 1/4W, ±5%, 33K	50-33045
R22	Resistor 1/4W, ±5%, 4.7K	50-47035
R23	Resistor 1/4W, ±5%, 10K	50-10045
R25	Resistor 1/4W, ±5%, 47Ω	50-47015
R26	Resistor 1/4W, ±5%, 22Ω	50-22015
R27	Resistor 1/4W, ±5%, 1K	50-10035
R28	Resistor, 2W, 150Ω	54-15025
R29	Resistor, 2W, 150Ω	54-15025
R100	Resistor 1/4W, ±5%, 150Ω	50-15025
R101	Resistor 1/4W, ±5%, 150Ω	50-15025
R102	Resistor 1/4W, ±5%, 150Ω	50-15025
R103	Resistor 1/4W, ±5%, 150Ω	50-15025
R104	Resistor 1/4W, ±5%, 47Ω	50-47015
R105	Resistor 1/4W, ±5%, 150Ω	50-15025
R106	Resistor 1/4W, ±5%, 220Ω	50-22025
R107	Resistor 3W, ±10%, 0.22Ω	54-02205
R108	Resistor 3W, ±10%, 0.22Ω	54-02205
R109	Resistor 3W, ±10%, 0.22Ω	54-02205
R110	Resistor 3W, ±10%, 0.22Ω	54-02205
R115	Resistor 1/4W, ±5%, 150Ω	50-15025
R116	Resistor 1/4W, ±5%, 150Ω	50-15025
R117	Resistor 1/4W, ±5%, 150Ω	50-15025
R118	Resistor 1/4W, ±5%, 150Ω	50-15025
R119	Resistor 1/4W, ±5%, 47Ω	50-47015
R120	Resistor 1/4W, ±5%, 150Ω	50-15025
R121	Resistor 1/4W, ±5%, 100K	50-10055
R122	Resistor 1/4W, ±5%, 220Ω	50-22025
R123	Resistor 1/4W, ±5%, 2.2K	50-22035
R124	Resistor 1/4W, ±5%, 22K	50-22045
R125	Resistor 3W, ±10%, 0.22Ω	54-02205
R126	Resistor 3W, ±10%, 0.22Ω	54-02205
R127	Resistor 3W, ±10%, 0.22Ω	54-02205
R128	Resistor 3W, ±10%, 0.22Ω	54-02205
R130	Resistor 1/4W, ±5%, 470K	50-47055
R131	Resistor 1/4W, ±5%, 1K	50-10035
R132	Not used	
R133	Resistor 1/4W, ±5%, 100K	50-10055
R134	Resistor 1/4W, ±5%, 47K	50-47045
R135	Resistor 1/4W, ±5%, 1.5K	50-15035
R140	Resistor 1/4W, ±5%, 22K	50-22045
R141	Resistor 1/4W, ±5%, 22K	50-22045
R142	Resistor 1/4W, ±5%, 33K	50-33045
R143	Resistor 1/4W, ±5%, 33K	50-33045
R144	Resistor 1/4W, ±5%, 10K	50-10045
R145	Resistor 1/4W, ±5%, 24K	50-24045
R146	Resistor 1/4W, ±5%, 24K	50-24045
R147	Resistor 1/4W, ±5%, 15K	50-15045
R148	Resistor, 5W,±10%, 22Ω	55-22026
R149	Resistor 1/4W, ±5%, 10K	50-10045
R150	Resistor 1/4W, ±5%, 10K	50-10045
R151	Resistor 1/4W, ±5%, 10K	50-10045
R153	Resistor 1/4W, ±5%, 220K	50-22055
R154	Resistor 1/4W, ±5%, 2.2K	50-22035
R155	Resistor 1/4W, ±5%, 2.2K	50-22035
R156	Resistor 1/4W, ±5%, 4.7K	50-47035
R157	Resistor 1/4W, ±5%, 33K	50-33045
R158	Resistor 1/4W, ±5%, 220Ω	50-22025
R159	Resistor 1/4W, ±5%, 100K	50-10055
R160	Resistor 1/4W, ±5%, 2.2K	50-22035
R161	Resistor 1/4W, ±5%, 4.7K	50-47035
R162	Resistor 1/4W, ±5%, 2.2K	50-22035
R163	Resistor 1/4W, ±5%, 10K	50-10045
R164	Resistor 1/4W, ±5%, 4.7K	50-47035
R165	Resistor 1/4W, ±5%, 2.2K	50-22035
R166	Resistor 1/4W, ±5%, 470Ω	50-47025
R167	Resistor 1/4W, ±5%, 470Ω	50-47025
R168	Resistor 1/4W, ±5%, 2.2K	50-22035
R169	Resistor 1/4W, ±5%, 1K	50-10035
R170	Resistor 1/4W, ±5%, 1K	50-10035
R171	Resistor 1/4W, ±5%, 2.2K	50-22035
R172	Resistor 1/4W, ±5%, 33K	50-33045
R173	Resistor 1/4W, ±5%, 1K	50-10035
R174	Resistor 1/4W, ±5%, 1K	50-10035
R175	Resistor, 5W,±10%, 5KΩ, Wire Wound	55-50030
R176	Resistor, 5W,±10%, 5KΩ, Wire Wound	55-50030
R177	Resistor 1/4W, ±5%, 47K	50-47045
R178	Resistor 1/4W, ±5%, 47K	50-47045
R179	Resistor 1/4W, ±5%, 100K	50-10055
R180	Resistor 1/4W, ±5%, 100K	50-10055
R181	Resistor 2W, ±10%, 1.5k	54-15030
R182	Resistor 1/4W, ±5%, 22K	50-22045
R183	Resistor 1/4W, ±5%, 2.2K	50-22035
R184	Resistor 1/2W, ±5%, 2.2K	52-22035
R185	Resistor 1/4W, ±5%, 68K	50-68045
R186	Resistor 1/4W, ±5%, 220K	50-22055
R187	Resistor 1/4W, ±5%, 470K	50-47055
R188	Resistor 1/4W, ±5%, 47K	50-47045
R189	Resistor 1/4W, ±5%, 100K	50-10055
R190	Resistor 1/4W, ±5%, 47K	50-47045
R191	Resistor 1/4W, ±5%, 47K	50-47045
R192	Resistor 1/4W, ±5%, 220K	50-22055
R193	Resistor 1/4W, ±5%, 220K	50-22055
R194	Resistor 1/4W, ±5%, 100K	50-10055
R195	Resistor 1/4W, ±5%, 4.7K	50-47035
R196	Resistor 1/4W, ±5%, 4.7K	50-47035
R197	Resistor 1/4W, ±5%, 470K	50-47055
R198	Resistor 1/4W, ±5%, 220Ω	50-22025
R199	Resistor 1/4W, ±5%, 220Ω	50-22025
R200	Resistor 1/4W, ±5%, 150Ω	50-15025
R201	Resistor 1/4W, ±5%, 150Ω	50-15025
R202	Resistor 1/4W, ±5%, 150Ω	50-15025
R203	Resistor 1/4W, ±5%, 150Ω	50-15025
R204	Resistor 1/4W, ±5%, 47Ω	50-47015
R205	Resistor 1/4W, ±5%, 150Ω	50-15025
R206	Resistor 1/4W, ±5%, 220Ω	50-22025
R207	Resistor 3W, ±10%, 0.22Ω	54-02205
R208	Resistor 3W, ±10%, 0.22Ω	54-02205
R209	Resistor 3W, ±10%, 0.22Ω	54-02205
R210	Resistor 3W, ±10%, 0.22Ω	54-02205
R215	Resistor 1/4W, ±5%, 150Ω	50-15025
R216	Resistor 1/4W, ±5%, 150Ω	50-15025
R217	Resistor 1/4W, ±5%, 150Ω	50-15025
R218	Resistor 1/4W, ±5%, 150Ω	50-15025
R219	Resistor 1/4W, ±5%, 47Ω	50-47015
R220	Resistor 1/4W, ±5%, 150Ω	50-15025
R221	Resistor 1/4W, ±5%, 100K	50-10055
R222	Resistor 1/4W, ±5%, 220Ω	50-22025
R223	Resistor 1/4W, ±5%, 2.2K	50-22035
R224	Resistor 1/4W, ±5%, 22K	50-22045
R225	Resistor 3W, ±10%, 0.22Ω	54-02205
R226	Resistor 3W, ±10%, 0.22Ω	54-02205
R227	Resistor 3W, ±10%, 0.22Ω	54-02205
R228	Resistor 3W, ±10%, 0.22Ω	54-02205
R230	Resistor 1/4W, ±5%, 470K	50-47055
R231	Resistor 1/4W, ±5%, 1K	50-10035
R232	Not used	
R233	Resistor 1/4W, ±5%, 100K	50-10055
R234	Resistor 1/4W, ±5%, 47K	50-47045
R235	Resistor 1/4W, ±5%, 1.5K	50-15035
R240	Resistor 1/4W, ±5%, 22K	50-22045
R241	Resistor 1/4W, ±5%, 22K	50-22045
R242	Resistor 1/4W, ±5%, 33K	50-33045
R243	Resistor 1/4W, ±5%, 33K	50-33045
R244	Resistor 1/4W, ±5%, 10K	50-10045
R245	Resistor 1/4W, ±5%, 24K	50-24045
R246	Resistor 1/4W, ±5%, 24K	50-24045
R247	Resistor 1/4W, ±5%, 15K	50-15045
R248	Resistor, 5W,±10%, 22Ω	55-22026
R249	Resistor 1/4W, ±5%, 10K	50-10045
R250	Resistor 1/4W, ±5%, 10K	50-10045
R251	Resistor 1/4W, ±5%, 10K	50-10045
R253	Resistor 1/4W, ±5%, 220K	50-22055



8. AC POWER CORD

Always use grounded (3 prong) outlets. Defeating the power cord's ground connection can result in electrocution. If the speakers produce hum caused by a ground loop, the loop can be broken by opening the GROUND LIFT switches provided in the "ACCESSORY GROUP".

9. CHANNEL 2 BINDING POST SPEAKER OUTPUT

Performs the same function as channel 1's binding posts. (See ⑤.)

10. CHANNEL 2 1/4" PHONE JACK SPEAKER OUTPUT

Performs the same function as channel 1's jack. (See ④.)

11. CHANNEL 2 SPEAKON OUTPUT

Performs the same function as channel 1's Speakon. (See ③.)

12. ACCESSORY GROUP SWITCHES

Use these switches to enable or defeat the following features:

SWITCH	FUNCTION
1	Parallel or 'Y' Inputs*
2	Parallel or 'Y' Inputs*
3	Channel 1 SUB FILTER (15Hz)
4	Channel 2 SUB FILTER (15Hz)
5	Channel 1 GROUND LIFT
6	Channel 2 GROUND LIFT
7	BRIDGE MONO**
8	BRIDGE MONO**

SPEAKON:
1+ SIGNAL
1- GROUND
2's NOT USED

* Switches 1 and 2 must be set in unison. For STEREO operation both must be in the left position, for MONO, both right.

** Switches 7 and 8 must also be set in unison. Both left for STEREO and both right for BRIDGE MONO.

13. CHANNEL 2 XLR INPUT CONNECTOR

Performs the same function as channel 1's XLR input. (See ②.)

14. CHANNEL 2 1/4" PHONE JACK INPUT

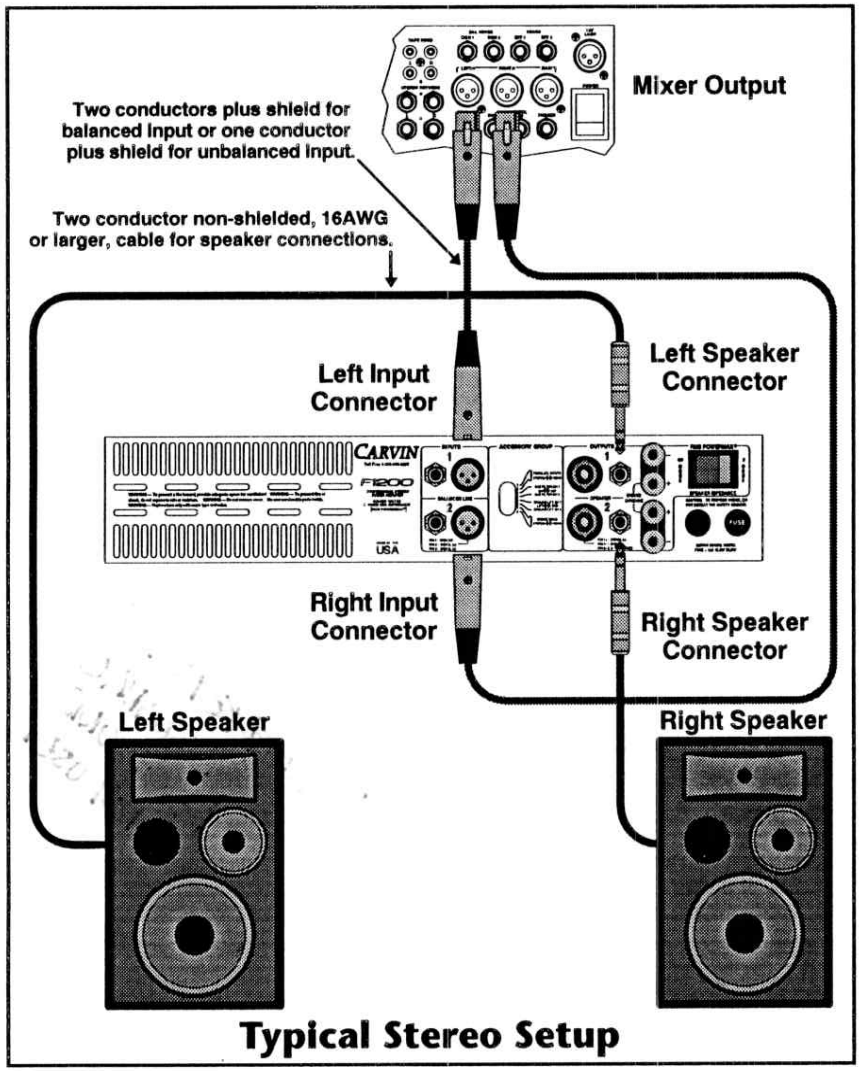
Performs the same function as channel 1's 1/4" input. (See ①.)

15. EXHAUST VENTS

These vents must have a minimum of 3" clearance to ensure adequate ventilation. Blocking them will cause the amp to prematurely enter "PROTECT" mode.

CONNECTING THE SYSTEM

The following diagram illustrates the typical stereo setup. Although it shows XLR's for inputs and 1/4" phone plugs for outputs, a variety of alternative connectors are available (see the following sections on "INPUT CONNECTIONS" and "OUTPUT CONNECTIONS").



Typical Stereo Setup

INPUT CONNECTIONS

The preferred method of connecting input signals is with balanced XLR's (two conductors plus a shield wire, such as Carvin's XLR8). Balanced input signals provide the highest gain and best noise rejection. 1/4" phone jacks are also capable of providing balanced input by using a stereo plug (ring-, tip+ & sleeve gnd). However, not all sources provide balanced outputs. In these cases an unbalanced 1/4" input is recommended (single conductor plus a shield wire, such as Carvin's SH2 or SH15).

Parts List For F-Series PC Sub Assemblies

PCB REF	DESCRIPTION	PART #
A1	4558 Op Amp	60-45580
A2	4558 Op Amp	60-45580
A3	5532 Op Amp	60-55320
A4	4558 Op Amp	60-45580
A5	5532 Op Amp	60-55320
A6	4558 Op Amp	60-45580
A7	5532 Op Amp	60-55320
A8	4558 Op Amp	60-45580
A9	4558 Op Amp	60-45580
A10	4558 Op Amp	60-45580
A11	4558 Op Amp	60-45580
A12	4558 Op Amp	60-45580
BIAS ADJ	Header, 4 Pin, .100, Straight	23-10004
C4	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C5	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C6	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C8	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C9	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C10	Capacitor, Electrolytic, 4700µF, 100V	42-47212
C11	Capacitor, Electrolytic, 470µF, 25V	47-47125
C12	Capacitor, Electrolytic, 470µF, 25V	47-47125
C14	Capacitor, Electrolytic, 470µF, 25V	47-47125
C15	Capacitor, Electrolytic, 10µF, 50V	47-10051
C16	Capacitor, Electrolytic, 10µF, 50V	47-10051
C18	Capacitor, Electrolytic, 10µF, 50V	47-10051
C19	Capacitor, Electrolytic, 10µF, 50V	47-10051
C20	Capacitor, Electrolytic, 470µF, 25V	47-47125
C21	Capacitor, Electrolytic, 10µF, 50V	47-10051
C22	Capacitor, Electrolytic 47µF, 63V	47-47061
C23	Capacitor, Electrolytic 47µF, 63V	47-47061
C100	Capacitor, Electrolytic, 470µF, 25V	47-47125
C101	Capacitor, Electrolytic, 470µF, 25V	47-47125
C105	Capacitor, Mylar, 0.22µF	46-22412
C106	Capacitor, Electrolytic, 10µF, 50V	47-10051
C107	Capacitor, Poly, .001µF, 100V	46-10212
C109	Capacitor, Electrolytic, 470µF, 25V	47-47125
C110	Capacitor, Ceramic, 56pF	45-56052
C111	Capacitor, Ceramic, 56pF	45-56052
C112	Capacitor, Electrolytic, 10µF, 50V	47-10051
C113	Capacitor, Electrolytic, 10µF, 50V	47-10051
C114	Capacitor, Ceramic, 39pF	45-39052
C115	Capacitor, Ceramic, 39pF	45-39052
C116	Capacitor, Mylar, 0.22µF	46-22412
C117	Capacitor, Ceramic, 56pF	45-56052
C118	Capacitor, Poly 0.068µF 100V	46-68312
C119	Capacitor, Electrolytic, 47µF, 63V	47-47061
C125	Capacitor, Electrolytic, 10µF, 50V	47-10051
C126	Capacitor, Ceramic, 56pF	45-56052
C127	Capacitor, Ceramic, 27pF	45-27052
C128	Not used	
C129	Capacitor, Electrolytic, 10µF, 50V	47-10051
C130	Not used	
C131	Capacitor, Ceramic, 120pF	45-12152
C132	Not used	
C133	Not used	
C134	Capacitor, Mylar, 0.22µF	46-22412
C135	Capacitor, Mylar, 0.22µF	46-22412
C136	Capacitor, Mylar, 0.047µF/400V	46-47342
C138	Capacitor, Mylar, 0.0033µF/100V	46-33212
C139	Capacitor, Electrolytic, 22µF, 160V	47-22016
C140	Capacitor, Electrolytic, 10µF, 50V	47-10051
C141	Capacitor, Mylar, 0.22µF	46-22412
C142	Capacitor, Mylar, .01µF, 100V	46-10312
C200	Capacitor, Electrolytic, 470µF, 25V	47-47125
C201	Capacitor, Electrolytic, 470µF, 25V	47-47125
C205	Capacitor, Mylar, 0.22µF	46-22412
C206	Capacitor, Electrolytic, 10µF, 50V	47-10051
C207	Capacitor, Poly, .001µF, 100V	46-10212
C209	Capacitor, Electrolytic, 470µF, 25V	47-47125
C210	Capacitor, Ceramic, 56pF	45-56052
C211	Capacitor, Ceramic, 56pF	45-56052
C212	Capacitor, Electrolytic, 10µF, 50V	47-10051
C213	Capacitor, Electrolytic, 10µF, 50V	47-10051
C214	Capacitor, Ceramic, 39pF	45-39052
C215	Capacitor, Ceramic, 39pF	45-39052
C216	Capacitor, Mylar, 0.22µF	46-22412
C217	Capacitor, Ceramic, 56pF	45-56052
C218	Capacitor, Poly 0.068µF 100V	46-68312
C219	Capacitor, Electrolytic, 47µF, 63V	47-47061
C225	Capacitor, Electrolytic, 10µF, 50V	47-10051
C226	Capacitor, Ceramic, 56pF	45-56052
C227	Capacitor, Ceramic, 27pF	45-27052
C228	Not used	
C229	Capacitor, Electrolytic, 10µF, 50V	47-10051
C230	Not used	
C231	Capacitor, Ceramic, 120pF	45-12152
C232	Not used	
C233	Not used	
C234	Capacitor, Mylar, 0.22µF	46-22412
C235	Capacitor, Mylar, 0.22µF	46-22412
C236	Capacitor, Mylar, 0.047µF/400V	46-47342
C238	Capacitor, Mylar, 0.0033µF/100V	46-33212
C239	Capacitor, Electrolytic, 22µF, 160V	47-22016
C240	Capacitor, Electrolytic, 10µF, 50V	47-10051
C241	Capacitor, Mylar, 0.22µF	46-22412
C242	Capacitor, Mylar, .01µF, 100V	46-10312
D1	LED, Small Red	60-75320
D2	LED, Small Yellow	60-24251
D3	Diode, 1A, 200V, 1N4003	61-40030
D4	Diode, 1A, 200V, 1N4003	61-40030
D5	Diode, 1A, 200V, 1N4003	61-40030
D6	Diode, 1A, 200V, 1N4003	61-40030
D7	Diode, 1A, 200V, 1N4003	61-40030
D8	Diode, 1A, 200V, 1N4003	61-40030
D9	Diode, 1A, 200V, 1N4003	61-40030
D100	Diode, 1A, 1000V, 1N4007	61-10000
D101	Diode, 1A, 200V, 1N4003	61-40030
D102	Diode, 1A, 1000V, 1N4007	61-10000
D105	Diode, 1A, 200V, 1N4003	61-40030
D106	Diode, 1A, 200V, 1N4003	61-40030
D107	LED, Small Red	60-75320
D108	Diode, 1A, 200V, 1N4003	61-40030
D109	LED, Small Green	60-75330
D110	Diode, 1A, 200V, 1N4003	61-40030
D111	Diode, 1A, 200V, 1N4003	61-40030
D112	Resistor 1/4W, ±5%, 47K	50-47045
D113	Diode, 1A, 200V, 1N4003	61-40030
D114	Diode, 1A, 200V, 1N4003	61-40030
D115	Diode, 1A, 200V, 1N4003	61-40030
D116	Diode, 1A, 200V, 1N4003	61-40030
D117	Diode, 1A, 200V, 1N4003	61-40030
D118	Diode, 1A, 200V, 1N4003	61-40030
D119	Diode, 1A, 200V, 1N4003	61-40030
D120	Diode, 1A, 200V, 1N4003	61-40030
D121	Diode, 1A, 200V, 1N4003	61-40030
D200	Diode, 1A, 1000V, 1N4007	61-10000
D201	Diode, 1A, 200V, 1N4003	61-40030
D202	Diode, 1A, 1000V, 1N4007	61-10000
D205	Diode, 1A, 200V, 1N4003	61-40030
D206	Diode, 1A, 200V, 1N4003	61-40030
D207	LED, Small Red	60-75320
D208	Diode, 1A, 200V, 1N4003	61-40030
D209	LED, Small Green	60-75330
D210	Diode, 1A, 200V, 1N4003	61-40030
D211	Diode, 1A, 200V, 1N4003	61-40030
D212	Resistor 1/4W, ±5%, 47K	50-47045
D213	Diode, 1A, 200V, 1N4003	61-40030
D214	Diode, 1A, 200V, 1N4003	61-40030
D215	Diode, 1A, 200V, 1N4003	61-40030
D216	Diode, 1A, 200V, 1N4003	61-40030
D217	Diode, 1A, 200V, 1N4003	61-40030
D218	Diode, 1A, 200V, 1N4003	61-40030
D219	Diode, 1A, 200V, 1N4003	61-40030
D220	Diode, 1A, 200V, 1N4003	61-40030
D221	Diode, 1A, 200V, 1N4003	61-40030
E1	Not used	
E2	Wire, RED, 14AWG, 14"	04-14214
E3	Wire, BLU, 14AWG, 16"	04-14616
E5	Wire, RED, 14AWG, 6"	04-16206
E6	Wire, BIU, 14AWG, 7"	04-14607
E100	Wire, GRN, 14AWG, 9"	04-14509
E101	Wire, BLK, 14AWG, 16"	04-14016
E102	Wire, BRN, 14AWG, 11"	04-14111
E103	Wire, BRN, 14AWG, 5"	04-14105
E200	Wire, GRN, 14AWG, 12"	04-14512
E201	Wire, BLK, 14AWG, 16"	04-14016
E202	Wire, BLK, 14AWG, 8"	04-14008
E203	Wire, BLK, 14AWG, 4"	04-14004
H1	Cable, Ribbon, 24AWG, 8Pin, 175mm	05-24175
H2	Cable, Ribbon, 24AWG, 4Pin, 254mm	05-24254
H3	Cable, Ribbon, 24AWG, 4Pin, 275mm	05-24275
H4	Cable, Ribbon, 24AWG, 4Pin, 125mm	05-24125
H5	Cable, Ribbon, 24AWG, 4Pin, 225mm	05-24225
H6	Cable, Ribbon, 24AWG, 8Pin, 255mm	05-24255
H7	Cable, Ribbon, 24AWG, 8Pin, 255mm	05-24255
H8	Conn. Header, 4 Pin, .100, Straight	23-10004
H9	Cable, Ribbon, 24AWG, 8Pin, 255mm	05-24255
J100	Jack, 1/4" 7P Plastic, 24mm	21-06457
J101	XLR, Female, Neutrik	21-40000
J102	Jack, 1/4" 3P Plastic, 24mm	21-06453
J103	Connector, Speakon 4 Pin	21-45000
J200	Jack, 1/4" 7P Plastic, 24mm	21-06457
J201	XLR, Female, Neutrik	21-40000
J202	Jack, 1/4" 3P Plastic, 24mm	21-06453
J203	Connector, Speakon 4 Pin	21-45000
JMP108	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP110	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP113	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP114	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP119	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP120	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP130	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP131	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP132	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP134	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP136	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP137	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP138	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP139	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP140	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP151	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP156	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP162	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP165	Resistor, 0.0Ω, 0.35" jumper	50-00035
JMP166	Resistor, 0.0Ω, 0.35" jumper	50-00035
K1	Relay, 10 Amp, SPDT, 24VDC, JY1JDC24V	70-05698
K100	Relay, 10 Amp, SPDT, 24VDC, JY1JDC24V	70-05698
K200	Relay, 10 Amp, SPDT, 24VDC, JY1JDC24V	70-05698

CAUTION

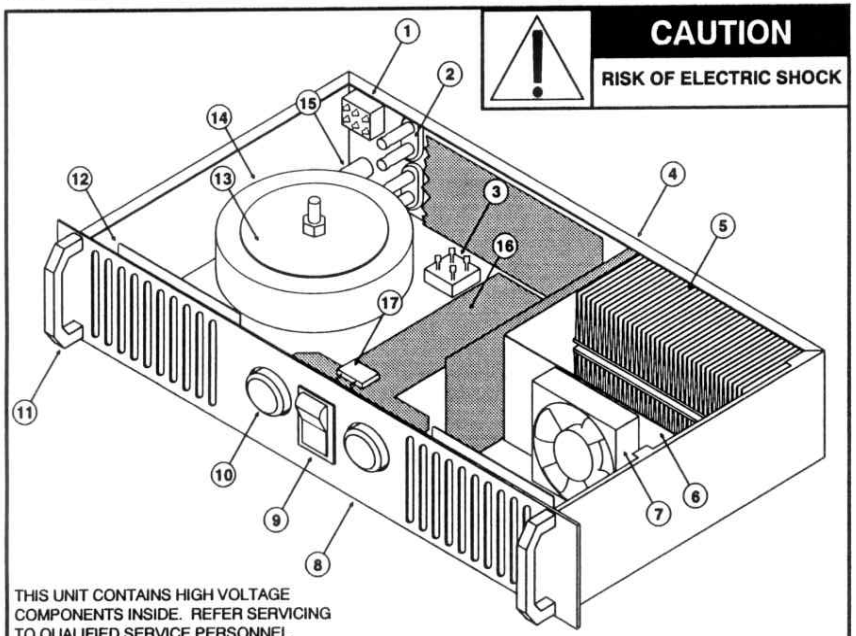
RISK OF ELECTRIC SHOCK

THIS UNIT CONTAINS HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

REPLACEMENT PART GUIDE

CAUTION

RISK OF ELECTRIC SHOCK



THIS UNIT CONTAINS HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

REF	DESCRIPTION	PART #	QTY
1	Switch, Impedance	25-31360	1
2	Binding Post, Dual, Black/Red, Long	03-10450	2
3	Bridge Rectifier, 35A	60-35040	1
4	Unichassis	10-06009	1
5	Heatsink, custom, natural aluminum finish	12-00504	2
6	Bracket, Fan, Dual	10-10027*	1
7	Fan, DC 24V, 80mm, 36CFM	70-02408	2**
8	Front Panel	10-06001-3	1
9	Switch, Power	25-31350	1
10	Knob, Power Amp	07-09001	2
11	Handle, Extruded, F-Series	10-11120	2
12	Shield, Vent, F-Series	10-06003	2
13	Mount, Toroid Cap	10-15004	1
	Insulator, Toroid Pad (Not shown)	03-15010	2
14	Transformer, Power, Toroid	See Chart	1
15	Fuse Holder (See chart for fuse values)	23-81116	1
16	Circuit Board Assembly (Includes all PCB's)	80-12028	1
17	Capacitor, AC Line Switch	41-47322	1
18	Cover, Chassis (Not shown)	10-06005	1
19	Foot, .875x.3125 (Not shown)	03-19682	4
20	Power Cord, AC, 16AWG (Not shown)	05-01604	1

* F1200 uses 10-10027 dual fan bracket, F300 & F600 uses 10-10017 single fan bracket.
** F1200 uses two fans whereas F300 and F600 uses only one.

Fuse/Transformer Selector Chart

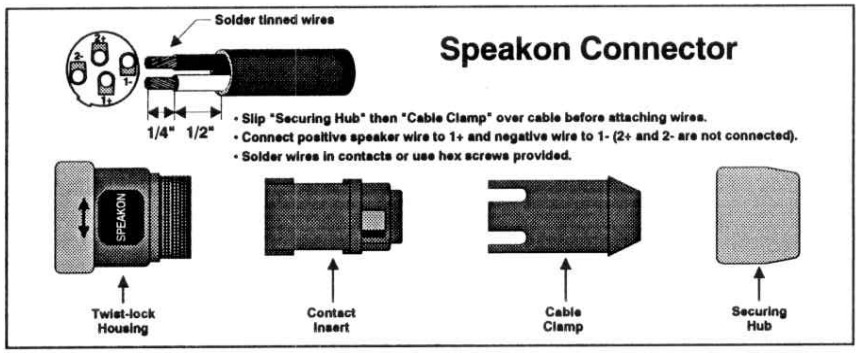
Model	Line	Fuse Value	Transformer P/N
F1200	120 VAC	12A, 250V, Slow Blow	15-12120
F1200	240 VAC	6A, 250V, Slow Blow	15-12240
F600	120 VAC	6A, 250V, Slow Blow	15-06120
F600	240 VAC	3A, 250V, Slow Blow	15-06240
F300	120 VAC	3A, 250V, Slow Blow	15-03120
F300	240 VAC	1 1/2A, 250V, Slow Blow	15-03240

MONO "Y" INPUT MODE

This feature allows both channels of the amplifier to be driven from a single input. To use this feature, plug one speaker cabinet into any of the channel 1 speaker output connectors and a second cabinet into any of the channel 2 speaker output connectors. Next, set the Accessory Group switches labeled "PARALLEL INPUTS" to their right-most position (as viewed from the rear of the amplifier). Now, signal entering any input will be available on both channels. The channel 1 level control will affect speakers connected to channel 1's output and channel 2 level will control speakers on channel 2's outputs. This feature is also used to "daisy chain" from one piece of equipment to the next (since channel 1 and channel 2 inputs are placed in parallel, any signal present on one will be available at the other).

OUTPUT CONNECTIONS

There are two 1/4" phone jacks available for speaker connections (one for each channel). Additionally, there are two pairs of binding posts that not only allow for high current connections to speakers but are also used when "bridging" the outputs (see section titled "Bridging the Amp"). Carvin supplies another alternative for connecting speakers to an F1200. Widely acclaimed audio connector manufacturer "Neutrik", created a standard for speaker connections that provides high current capacity and ease of use. These connectors, dubbed "Speakons", have been embraced by professionals as an improvement over previous standards.

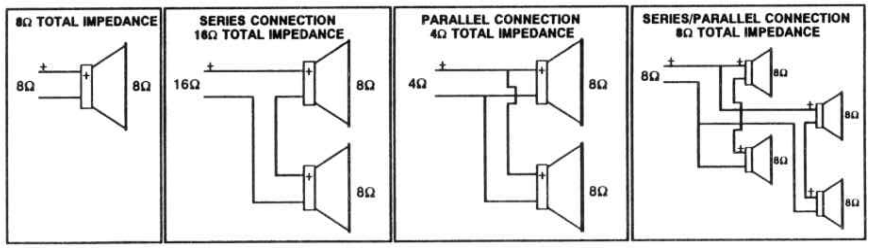


As shown above, standard Speakon speaker cables are wired to pins 1+ and 1-. Pins 2+ and 2- are reserved for use when biamping (as is the case on Carvin TR1503 and TR1801 trapezoidal speaker systems), or bridging (not supported).

Make sure to use heavy gauge wire for all speaker connections (no lighter than 16 gauge up to 50', like Carvin's PH50). Caution: never use shielded cable (i.e., guitar cable) to connect speakers. It poses an abnormal load on *any* audio power amplifier and its impedance will not provide an adequate current path for the speakers.

TYPICAL LOUDSPEAKER IMPEDANCE CONFIGURATIONS

Individual speakers or speaker cabinet wiring examples.



RMS POWERMAX™

Unlike most amplifiers, the F1200 is capable of driving speaker loads down to 2Ω per channel, continuously, at full output power.

This is made possible through the use of Carvin's exclusive RMS POWERMAX™ feature. Competitors boast exceptionally high power ratings at 2Ω, as does the F1200, but many admit continuous duty is just not possible. **The Carvin F1200 amplifier will continuously deliver 600 Watts per channel into either 2Ω or 4Ω per channel by setting the RMS POWERMAX™ switch to match the speaker load.** You will recognize the value of this feature if you have ever experienced a blown fuse or thermal shut-down when operating at 2Ω.

There are three possible configurations for using the RMS POWERMAX™ feature: 1. "Matching Mode" 2. "High Power Mode" 3. "Heat Savings Mode".

MATCHING MODE

When loading the speaker outputs to 2Ω, set the RMS POWERMAX™ switch to the 2Ω position. When loading the speaker outputs to 4Ω or higher, set the RMS POWERMAX™ switch to the 4/8Ω position. Whether running 2Ω or 4Ω output power will remain at 600W per channel.

HIGHER POWER MODE

Under normal operating conditions, with each channel loaded to 2Ω and the RMS POWERMAX™ switch set to its 2Ω position, the amplifier will deliver 600 Watts per channel continuously. However, if the amplifier is not running into clipping, try switching the RMS POWERMAX™ switch to the "4/8Ω" position. (That's right; if the amplifier is not being pushed to extremes, you can load both channels to 2Ω and set the RMS POWERMAX™ switch to "4/8Ω".) Why? Because, instead of 600 Watts per channel you get 900 Watts!

The PEAK LED's indicate when the amplifier has reached its maximum output. Therefore, as RMS POWERMAX™ is switched from 'higher power mode' (900W) to 'matching mode' (600W), the PEAK LED's will light sooner. The same is true when switching from 'matching mode' to 'heat savings mode'.

HEAT SAVINGS MODE

If the amplifier is loaded with 4Ω or more per channel and operating under such extreme load and environmental conditions that it's entering thermal "PROTECT" mode, move the RMS POWERMAX™ switch to the 2Ω position. This will allow continued operation by decreasing the heat in the power section.

BRIDGING THE AMP

Carvin's F-Series of amplifiers can be operated in bridged mode if you need a high power mono (single channel) amplifier.

When 'bridging' the amp, the impedance capacity is always reduce in half. For example; if the amp is rated with a minimum impedance of 4Ω per channel then the lowest impedance is 8Ω in bridge mode. Likewise, if the amp is rated at 2Ω per channel then the lowest recommended impedance would be 4Ω.

Speaker connections must be made on the two RED binding posts. The channel 1 RED binding post is the positive output while channel 2's RED post is negative.

When bridging the F1200, set the RMS POWERMAX™ switch to the position that is half the speaker's impedance rating. (i.e., when running a 4Ω speaker in bridge mode, the RMS POWERMAX™ switch should be in the 2Ω position.)

The switches in the Accessory Group labeled "BRIDGE MONO" must be in their right-most position. The output level is controlled by channel 1's level control (the channel 2 level control is disabled).

Problem	Possible Cause	Correction
One or both clip LED's flash intermittently	Input signal	Clip LED's light to indicate maximum output level. This is not a problem as long as the LED's don't stay continuously lit and the sound is not distorted. Running the system with the LED's continuously lit will not harm the power amp but is dangerous to speakers whose power ratings are not well above the amplifier's power rating.
Sound is coming from both channels when only one channel has signal at its input	Accessory Group's "Parallel Inputs" switches are in the mono position	Move "Parallel Inputs" switches to the Stereo position.
	Accessory Group's "BRIDGE MONO" switches are in the mono position	Move "BRIDGE MONO" switches to the Stereo position.
Unit enters PROTECT mode repeatedly after resets	Excessive speaker load	Verify that the total speaker load is not less than the amplifiers rating. (i.e., three 4Ω speakers per channel is less than 2Ω total.)
	Shorted speaker or speaker cable	Try different cables and speakers
	Program material contains excessive signal below 20Hz	Move Accessory Group "Sub Filters" switches to the ON position.

TECHNICAL ASSISTANCE

If the above chart has not been able to guide you to the problem then answer the following five questions:

1. AC cord attached to a source 'alive' with appropriate Voltage and current capacity?
2. Is the fuse OK and power switched on?
3. Correct level audio signal connected to inputs through known good cables?
4. Are the Accessory Group switches set properly and level controls raised sufficiently?
5. Are known good speakers connected properly using known good cables?

Carvin's friendly technical support staff will be happy to assist by calling 800-854-2235.

Problem	Possible Cause	Correction
Loud hum coming from speakers (cont'd)		es (located in the Accessory Group on the rear panel) to the right-most position.
No sound out of one channel	Bridge switch not set properly	Make sure the bridge switches (located in the Accessory Group on the rear panel) are set to the position appropriate for your setup.
One or both channels cut out every few minutes	Unit entering PROTECT mode due to overheating	Make sure both the front and rear of the amplifier has adequate space for ventilation.
		Verify that the total speaker load is not less than the amplifiers rating. (i.e., three 4Ω speakers per channel is less than 2Ω total.)
		Check for shorted speaker cables.
	Program material contains excessive signal below 20Hz	Move Accessory Group "Sub Filters" switches to the ON position.
Sound is distorted and clip indicator(s) are on	Shorted speaker or speaker cable	Try different cables and speakers
	Too many speakers	Try connecting one speaker system at a time.
Sound is distorted and clip indicator(s) are not on or only flash occasionally	Amplifier input signal is too high	Turn down the output level of equipment feeding the amplifier. If the sound level is too low then raise the controls on the front of the power amp.
	Defective input cable	Try substituting a known good cable.

BIAMPING AND TRIAMPING

It is desirable in many circumstances to bypass the speaker's passive crossover network and power the individual drivers through an active crossover.

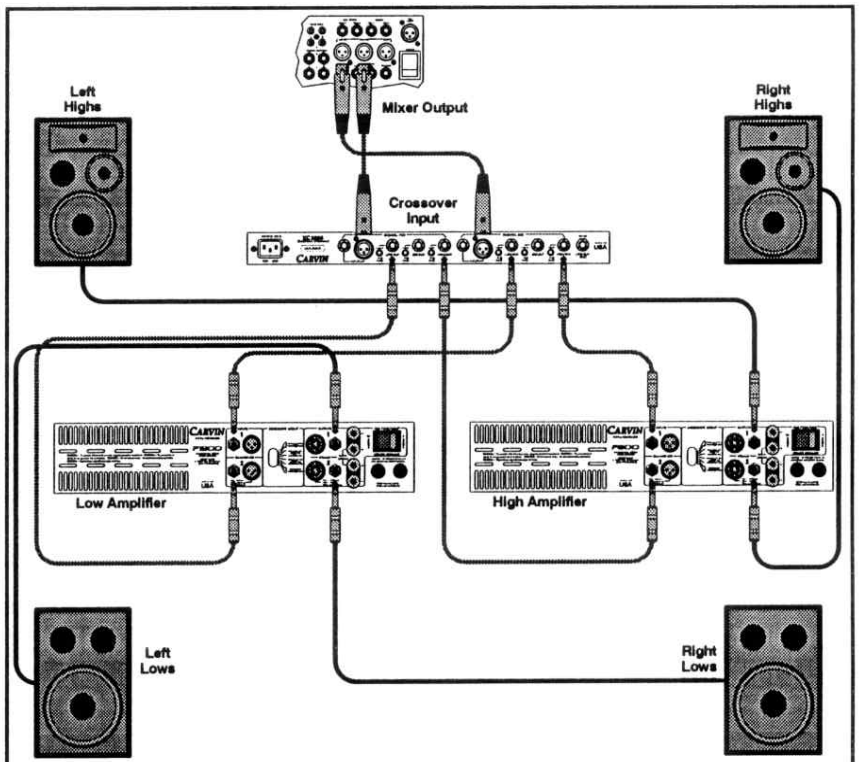
This is called biamping (when separating the highs and lows) or triamping (when separating the highs, mids and lows.) The F-Series power amplifiers are well suited to this application. The following sections illustrate a few possible configurations. By following the concepts presented here, you should be able to tailor a system to fit your needs.

STEREO BIAMP SYSTEM

The following illustration demonstrates the use of a Carvin XC3000 active crossover, an F1200 amplifier for lows and an F600 for highs.

By moving the speaker's Biamp switch (if so equipped) to the Biamp position, the user is able to feed power directly into the horn through the Hi's input and into the woofer/mid through the Lows input.

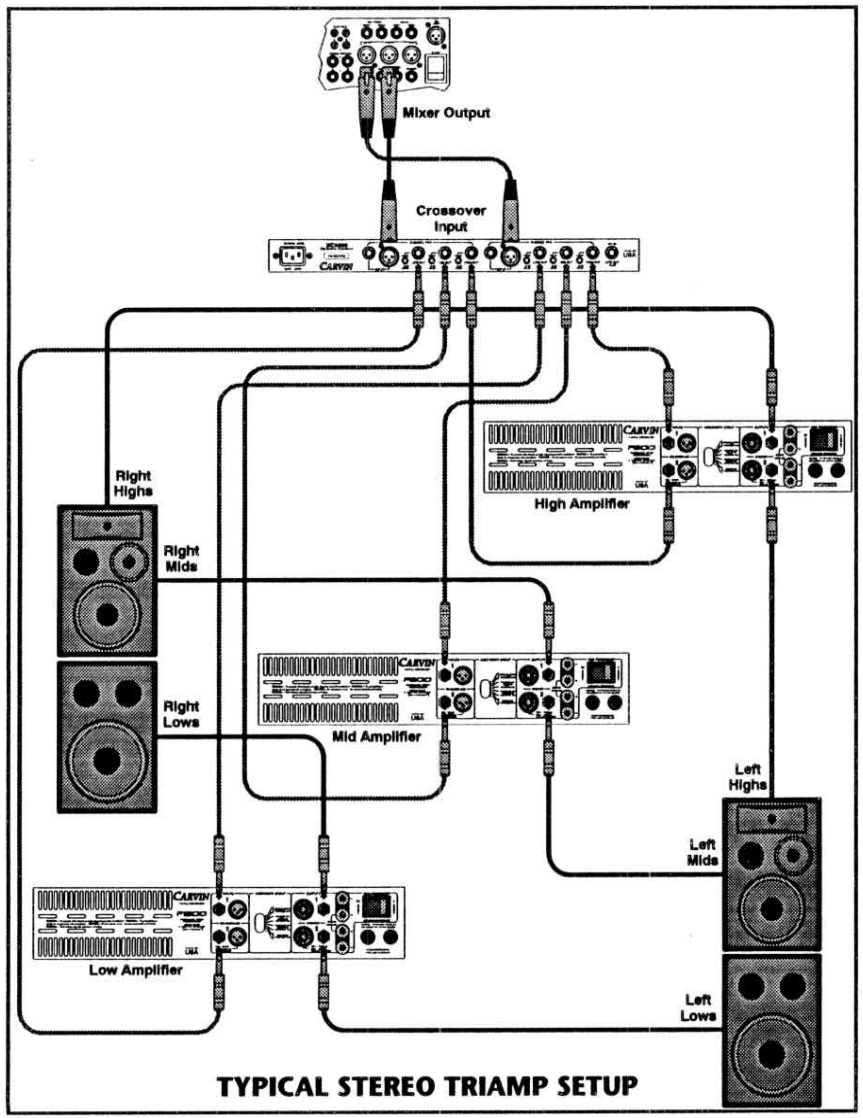
The crossover frequency of this setup was chosen to be 3.5kHz.



TYPICAL STEREO BIAMP SETUP

STEREO TRIAMP SYSTEM

This diagram demonstrates the use of a Carvin XC3000 active crossover, F1200 amplifier for lows, F600 for mids and F300 for the highs. By moving the speaker Biamp switch to the Biamp position, the user is able to feed power directly into the horn through the High input and into the woofer/mid through the Low input. This time the speaker's woofer/mid combination is actually only reproducing the mid frequencies. The lows are then fed to the subwoofer whose crossover selector switch is in the Bypass position. The crossover frequency between the high and mid is 3.5kHz. The crossover frequency between the mid and low is 500Hz.



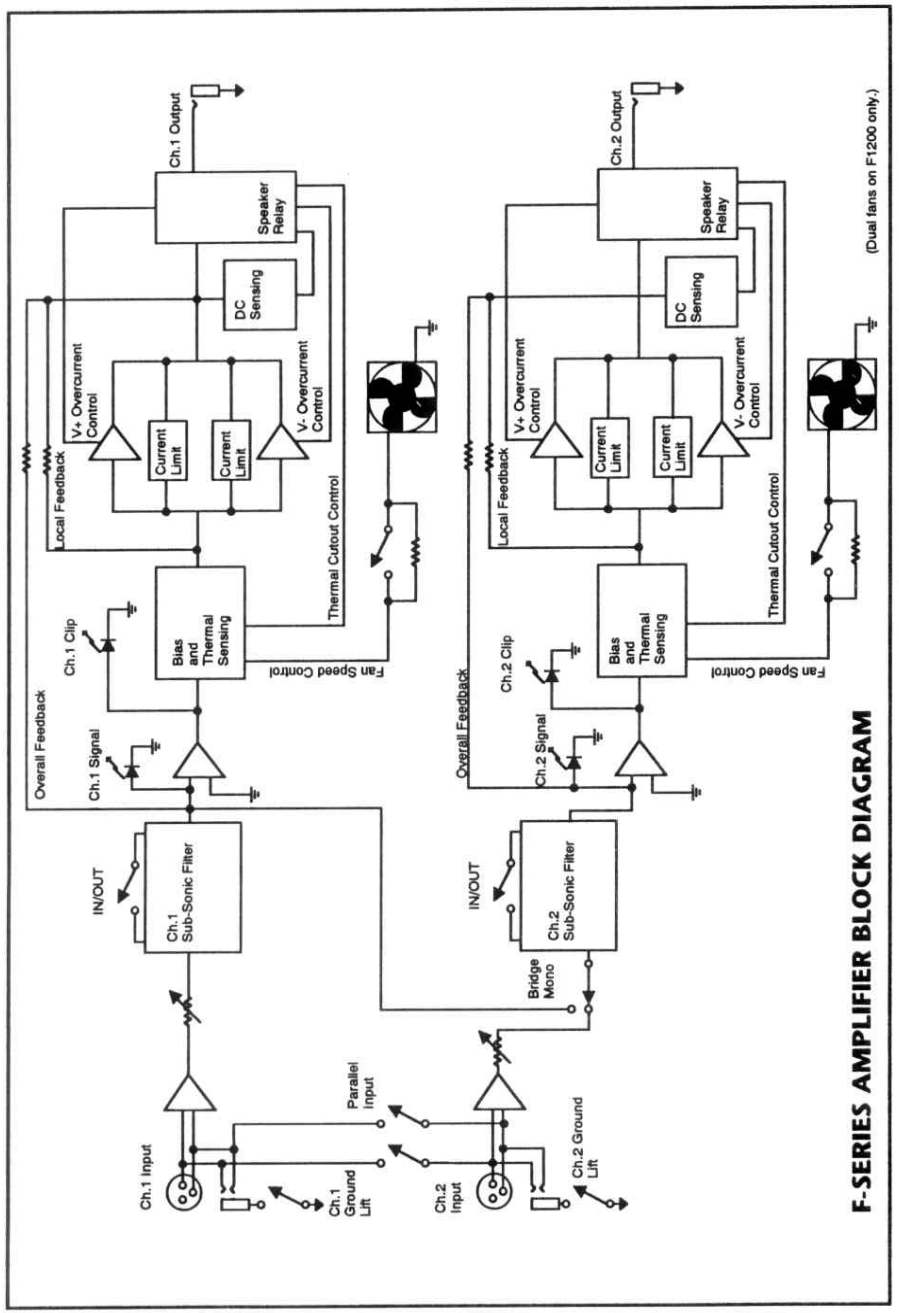
TYPICAL STEREO TRIAMP SETUP

IN CASE OF TROUBLE

Every F-Series amplifier undergoes severe environmental "burn-in" as well as thorough computer controlled and human testing. It is unlikely a malfunction will occur. However, when something doesn't seem to work properly, please refer to the following chart:

Problem	Possible Cause	Correction
Power switch is on but LED doesn't light	Power plug is loose or disconnected	Reconnect plug.
	Circuit breaker tripped or fuse blown in circuit fuse box	Disconnect all other loads on the same circuit and reset circuit breaker or replace fuse.
	Amplifier fuse or circuit breaker is blown	Disconnect the power cord and replace fuse only with same type and value or reset circuit breaker.
The unit has power but no output is present at the speakers	No input signal	Check that the source equipment is properly feeding the amplifier's input. The green signal LED's will show if signal is present.
	Open speaker cable	Replace speaker cable with a known good one.
	Blown speaker fuse	Check speaker cabinet for fuses and replace as necessary
Loud hum coming from speakers	Ground loop	Move one or both GROUND LIFT switches (located in the Accessory Group on the rear panel) to the left-most position. (Note: Never defeat the ground prong of the AC power cord. Serious shock or electrocution may occur.)
	Missing ground feed (unbalanced only)	Move one or both GROUND LIFT switch-

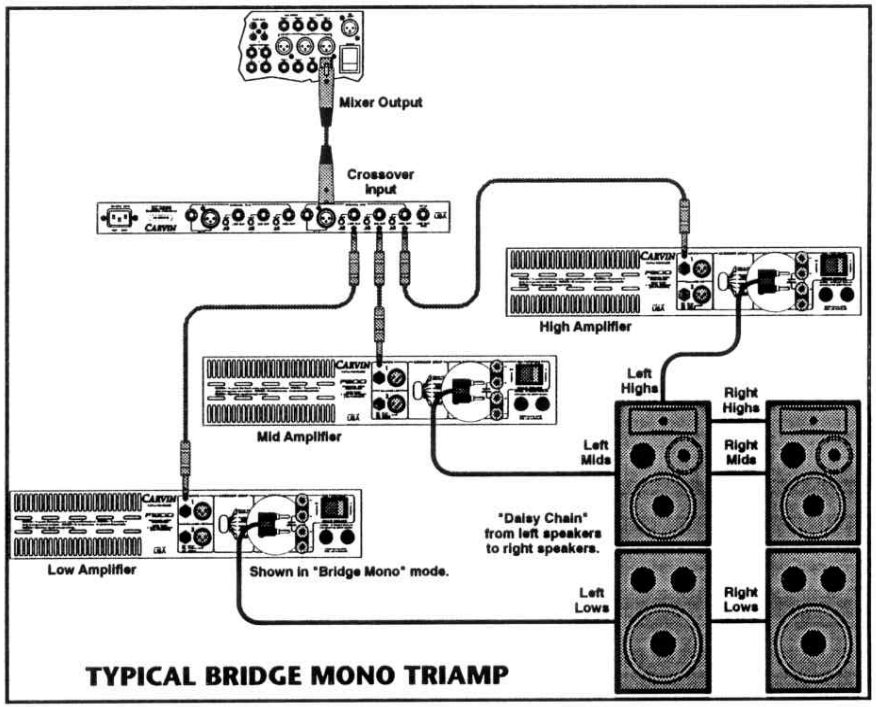
BLOCK DIAGRAM



MONO TRIAMP SYSTEM

This illustration shows a Carvin XC3000 active crossover, F1200 amplifier for lows, F600 for mids and F300 for the highs in BRIDGE MONO mode. Cabling from the speakers and their selector switches are set as in stereo mode above. However, the power amplifiers are setup in BRIDGE MONO mode and the speakers connect to the bridge outputs (channel 1's RED binding post is signal + and channel 2's RED binding post is signal -.)

Warning: These power amplifiers produce extreme volume levels capable of causing permanent hearing damage.



Accessory Group

Recessed beneath the rear panel sits an 8 position DIP switch that controls some of the amplifiers features. The next few paragraphs explain what the features are and how to use them.

"Y" INPUTS

Switches 1 and 2 are used together to couple the input connectors. When the switches are in their right-most position the signal + of channel 1's input is tied to signal + of channel 2's. The same is true for signal -. This is useful when running in mono because only one input cable is required to drive both channels.

It also provides a way of "daisy chaining" amps together. When using two or more amp's, plug the source into any input of the first amp then from the other input run a jumper to any input on the second amp (and so on for additional amp's).

SUB FILTERS

Switches 3 and 4 control the low frequency cut-off point. Switch 3 is for channel 1 and 4 is for channel 2. These switches may be set separately to allow different cut-off frequencies for each channel.

When in the left-most position, the SUB FILTER is engaged and the low frequencies are down 3dB at 15Hz. In the right-most position the filter is disabled.

It is normal to run with the filters engaged. There is virtually no desirable audio content below 20Hz. Any energy below 20Hz will waste the amplifier's power and has a greater potential for damaging speakers.

GROUND LIFT SWITCHES

Many times sound systems are connected in such a manner to cause ground loops that result in audible hum. The purpose of switches 5 and 6 are to eliminate this ground loop. If your system emits audible hum try moving the GROUND LIFT switches to the other position. Each channel can be controlled independently but usually both channels will be "lifted" or "grounded" simultaneously

GROUND LIFT switches such as the ones found in Carvin products are great for curing ground loop problems. A more complicated and expensive way would be to isolate two pieces of equipment from each other with 'audio isolation' or 'line matching' transformers. However, **never defeat the AC cord safety ground in any piece of electrical equipment** to open a ground loop. Doing so can damage equipment and cause serious electrical shock or electrocution.

BRIDGE MONO

This power amplifier can be converted from stereo to mono, providing twice the power capacity of a single channel, by switching into BRIDGE MONO mode and connecting the speakers across the two RED binding posts.

When switches 7 and 8 are to their left-most position, the amplifier is configured for normal STEREO operation. (If switches 1 and 2 are selected to mono it simply means both speaker outputs contain the same program material. You would then plug one set of speakers into channel 1's outputs and a separate set of speakers into channel 2's outputs. Channel 1's level control affects the speakers plugged into channel 1's outputs while channel 2's level control affects speakers plugged into channel 2.)

When switches 7 and 8 are in their right-most position, the amplifier is setup for BRIDGE MONO operation. This is different than standard mono mode in that channel 1's outputs are "out of phase" from channel 2's. In this configuration a single set of speakers is connected with one lead going to channel 1's RED binding post and the other lead going to channel 2's RED binding post. (See the "Typical Bridge Mono Triamp" illustration, two pages back.)

Speaker impedance in this mode is twice the actual load on each channel. For example; when operating an F600, whose minimum speaker impedance rating is 4Ω, in BRIDGE MONO mode, speaker impedance must be no lower than 8Ω. A 4Ω speaker load, in this situation, would violate the minimum impedance rating of the amplifier.

PROTECT LED

The "PROTECT LED" provides the operator with information about the status of the amplifier. There are 4 different reasons for it to light.

1. During power-up, the amplifier stays in a muted state until it determines all is well. First the fan(s) kick into high speed for a few seconds. After that it looks for DC Voltages on the outputs (F1200 only). Then if there are no short circuits on the outputs and its not overheated, the amp auto-initializes by disengaging the mute and turning off the "PROTECT LED". This all happens during the first 5 seconds after power is applied.
2. If the output load draws excessive current, such as when a speaker cable short circuits, the amp detects this danger and mutes the channel. It then remains muted until power is turned off. Correct the problem then re-apply power to the unit. When power is re-applied the unit will come on normally. When the amplifier encounters this situation, it deals with it by muting only the affected channel. This way a shorted speaker cable on one side won't stop the show!
3. If the amp is subjected to sufficiently severe environmental or abusive load conditions to cause overheating, the unit will mute the affected channel. In this case, turning the power off and then on again will not reset the mute. The unit will have to cool off first. Fortunately the unaffected channel will remain on while the fan(s) cool the muted channel. Remedy the problem at once! Get the amp into a cooler environment or reconfigure the loads or whatever else can be done to prevent abuse. (When this situation occurs on F1200's, set the RMS POWERMAX™ switch to the 2Ω position. The amp will run cooler.) This condition mutes each channel independently so that a problem on one channel does not shut down the entire amplifier. Again, the show goes on.
4. (F1200 only.) When the amp detects high levels of subsonic content in the program material or DC on the output, it triggers the mute circuit. Since this circuit is non-latching, the mute disengages as soon as the problem is corrected. As with the other protection modes, this one works on each channel independently.

In summary:

If the amplifier goes in and out of PROTECT every few *seconds,* then the problem is most likely excessive low frequencies (F1200 only).

If the amplifier goes in and out of PROTECT every few *minutes,* then its probably overheating.

If the amplifier goes into PROTECT and *stays* until you turn power off and back on again, it is experiencing over-current. (i.e., shorted speaker cable or too many speakers are connected.)

If you turn the power off and back on a gain and the unit stays in PROTECT, then it is probably overheated and needs to cool off. Leave the power on so the fan(s) will cool it faster. It will come back on automatically when it is cool enough. Be sure to correct whatever caused it to overheat in the first place.