

Phoenix Gold International, Inc. (or "Phoenix Gold") warrants its products against defects in materials and workmanship for a limited period of time.

For a period of one (1) year from date of original purchase, we will repair or replace the electronic product, at our option, without charge for parts and labor. The limited warranty period is **EXTENDED** to three (3) years from date of original purchase if the product was originally installed by an authorized Phoenix Gold electronics dealer and accompanied by a valid sales receipt showing a charge for installation. Customer must pay all parts and labor charges after the limited warranty period expires. The limited warranty period for factory refurbished products expires after ninety (90) days from date of original purchase. This limited warranty applies only to purchases from authorized Phoenix Gold Electronics/Speaker retailers.

This limited warranty is extended only to the original purchaser and is valid only to consumers in the United States. Consumers are required to provide a copy of the original sales invoice from an authorized Phoenix Gold dealer when making a claim against this limited warranty. This limited warranty only covers failures due to defects in materials or workmanship that occur during normal use. It does not cover failures resulting from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, service by anyone other than Phoenix Gold, or damage that is attributable to Acts of God. It does not cover costs of transportation to Phoenix Gold or damage in transit.

This warranty will become void if the serial number identification has been wholly or partially removed, altered or erased. Repair or replacement under the terms of this warranty does not extend the terms of this warranty.

Should a product prove to be defective in workmanship or material, the consumer's sole remedies will be repair or replacement as provided under the terms of this warranty. Under no circumstances shall Phoenix Gold be liable for loss or damage, direct, consequential or incidental, arising out of the use of or inability to use the product. There are no express warranties other than described above.

# PHOENIX GOLD



**XS**  
**XS2200**

Complete manuals, technical tips, FAQ's, system diagrams and new product information available on our website:

[www.phoenixgold.com](http://www.phoenixgold.com)

## Features

- Defeatable 18dB per Octave Crossover:  
Fixed at 125 Hz High Pass or Fixed at 90 Hz Low Pass
- Adjustable Twin T™ Bass Enhancement with 18dB of Boost Centered @ 45Hz
- External Output to send Full Range Signals to an additional amplifier without the use of Y connections
- 24kt Gold Plated Signal Input and Output Jacks
- 24kt Gold Plated Power and Speaker Terminals
- Power-on LED Indicator
- Fully Differential Hi-Level Inputs for Easy Integration with most Factory Headunits
- Fully Differential Line Level Inputs Eliminates Common Noise Problems
- Glass Filled ABS Isolation Mounting Feet
- PWM Mosfet Power Supply
- Tri-Linear™ Capability Allows Simultaneous Stereo and Bridged Mono Operation
- Stable into 2 ohm Bridged or 1 ohm Stereo Speaker Loads
- Advanced Muting Circuitry Eliminates Turn-on and Turn-off Noises
- Advanced Thermal and Overload Protection
- 2 layer, 2 ounce, Copper G10 Glass-Epoxy Printed Circuit Board
- Audiophile Grade Metal Film Capacitors and 1% Metal Film Resistors



Phoenix Gold International

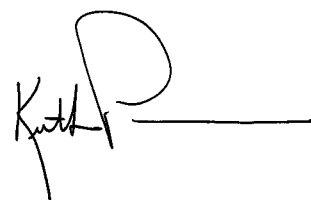
9300 North Decatur • Portland, OR 97203 • Tel: 503.286.9300 • Fax: 503.978.3380

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Dear Phoenix Gold enthusiast,

I thank you for purchasing this Phoenix Gold product. By doing so, you have demonstrated a desire to own the finest audio components available for the car and home. At Phoenix Gold, we use state-of-the-art design, engineering and production methods to continually improve the quality, reliability and performance of our products.

The XS2200 provides incredible power and system design flexibility for the most demanding audiophile or competitor. Properly installed by an Authorized Phoenix Gold Mobile Electronics Retailer, this equipment will provide years of enjoyment. For proper operation, please read this manual carefully and keep it for future reference.



Keith Peterson  
President

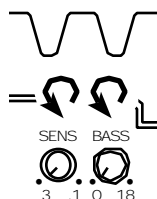
# PHOENIX GOLD

SYSTEM	POSSIBLE CAUSE	SOLUTION
No output and Power-on LED is off	No battery, ground, or remote connection	Connect B+, B-, and a remote turn-on to the amplifier. The amplifier must have clean solid chassis ground connected to the B- terminal and receive at least 10.5 volts through the B+ and remote turn-on terminals.
	Blown power fuse	Use an ohmmeter to check for a short to chassis ground in the B+ cable disconnected from the amplifier, battery and all other devices. Correct any short and install a new fuse. Replace only with the same rating and type of fuse:  Use one 30 amp ATO fuse
No output and Power-on LED is on	No signal from the headunit	Use an AC volt meter to check for voltage at the headunit's preamp outputs. The level should fluctuate with the peaks in music.
	Faulty input signal cables	Use an AC volt meter to check for voltage at the signal cables' outputs. Try substituting different signal cables.
	Faulty speaker or speaker cables	Try substituting another speaker or cables.
Distorted sound	Clipped input signal feeding the amplifier	Make sure the headunit is not producing a clipped signal. Most headunits clip their own output above 7/8 volume. Distorted signals coming into the amp will sound distorted at any input sensitivity setting.
	Input sensitivity too high	Lower input sensitivity. Setting the sensitivity too high causes distortion. Distortion causes speakers to rapidly overheat and can result in speaker failure.
Amplifier cuts off when driven to high output levels	Thermal protection circuit activated (LED turns amber in color)	Check for poor mounting location hot air to be trapped within the heatsink. If the heatsink reaches 90 degrees Celsius, the amplifier shuts down and the Power-on LED turns amber in color. The amplifier will turn back on when the heatsink temperature falls below 90 degrees.
	Overload circuit activated by excessive output current. Various causes are:	
	- Total speaker load impedance is too low	Minimum bridged impedance is 2 ohms. Minimum stereo impedance is 1 ohm.
	- A damaged speaker cable touching the vehicle chassis, speaker cables or tinsel leads touching each other, or damaged speaker voice coil	With the wires disconnected from the amp, Use an ohm meter to check for a short from any speaker cable to chassis ground. Check the DC resistance of the speaker's voice coil. It should fluctuate when the cone is touched. Visually check each speaker for damaged tinsel leads, or other broken parts. Smell the speaker's magnet area for a burned scent.
	- Damaged passive crossover components	Visually examine inductors, capacitors and resistors for signs of heat stress. Use a soldering iron to touch up connections to the circuit board. Try substituting a different crossover network.

**INPUT SENSITIVITY AND BASS ADJUSTMENT**

1. Install all system fuses.

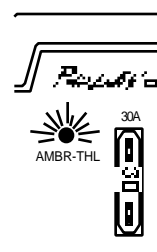
2. Set the amplifier's input sensitivity control and bass equalization control to minimum (full counterclockwise).



3. Set all amplifier signal routing switches according to your system's design.

4. Turn the headunit on with the volume set to *minimum*.

5. Visually check the amplifier's condition. The green power LED should be on.

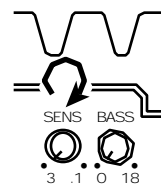


6. Check the condition of all other components to make sure they are powered up and working.

7. Set the headunit's tone controls, balance, and fader to the center (flat) position. Turn off any loudness or other signal processing features.

8. Set the volume control of the headunit for maximum undistorted output (on most headunits this will be approximately 7/8 of maximum volume). Use a very clear and dynamic recording.

9. Use the amplifier's sensitivity control to reach maximum undistorted speaker output. Repeat this for all other amplifiers. The idea is to find maximum undistorted output for each amplifier independently.

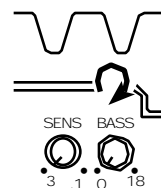


10. Reduce the headunit's volume to a comfortable level.

11. Listen to various musical selections to check overall system balance. Compare front to rear, midbass to midrange, etc. If an amplifier is too loud compared to the others, then its level must be lowered to blend correctly with the weakest amp. The idea is to reference all amplifiers to the capability of the weakest amp.

12. Adjust the Bass Equalization Controls according to taste.

*Note:* Use these controls sparingly. Every 3dB of boost requires double the power at 45Hz. If your subwoofer system requires 18dB of boost to sound good, there may be a problem. Look for out-of-phase woofers, a leaking subwoofer box, or incorrect box size.



13. With all levels set correctly, the system will reach overall maximum undistorted output at the volume level set in step 9.

Features	Cover
Introduction	1
Specifications	2
Operational Details	3
System Configurations	4-5
Powerflow™ Systems	6
Installation-Mounting	7
Adjustments- Input Sensitivity and Bass Adjustment	8
Inputs	9
Troubleshooting	10
Limited Warranty	11

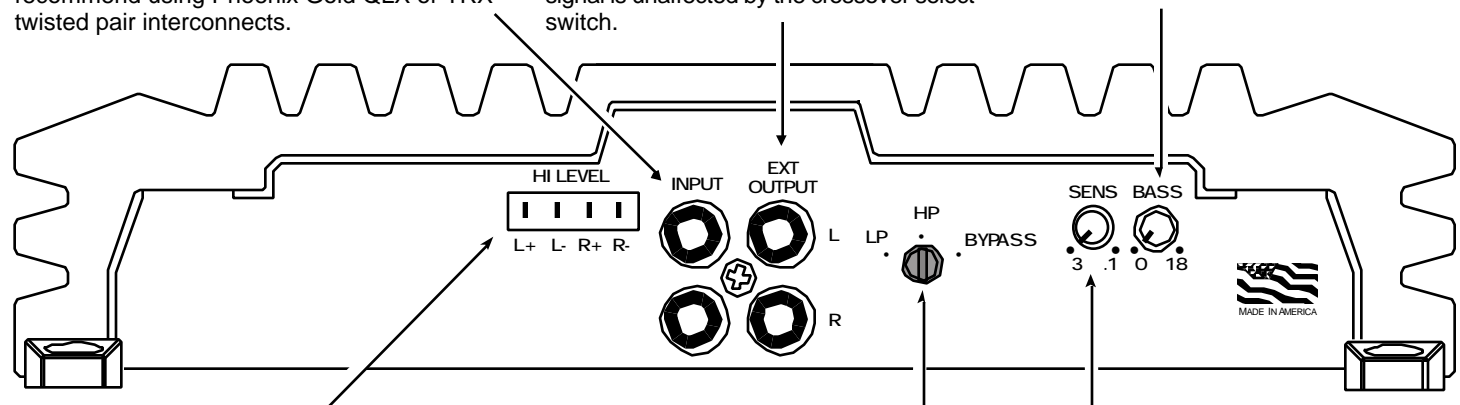
**Specifications**

Continuous Output Power at 1% THD (WRMS):	
Into 4 ohms @ 12.5 (IASCA)/14.4 VDC	25/50 watts x 2
Into 2 ohms @ 14.4 VDC	100 watts x 2
Bridged into 4 ohms @ 14.4 VDC	200 watts x 1
Frequency Response	±1dB 20Hz to 20kHz
Signal to Noise Ratio (20Hz to 20kHz)	>100dB
Input Sensitivity, Line Inputs	100 mVRMS to 3 VRMS
Input Sensitivity, Speaker Inputs	1.75 WRMS to 35 WRMS
Low Pass Crossover Frequency	Fixed 90 Hz
High Pass Crossover Frequency	Fixed 125 Hz
Crossover Slope	18dB per octave
Bass Boost @ 45Hz	0 to +18dB
DC Input Voltage Range	10 volts to 15.5 volts
Typical Current Draw at Idle	2 amps
Peak Current Draw @ Full Power	35 amps
Recommended Fuse Size	30 amp ATO style
Dimensions, Chassis	7.75"L x 9.25"W x 2.0"H
Dimensions, Overall	9.1"L x 9.25"W x 2.1"H

Connect pre-amp signal cables from the headunit directly to these terminals. We recommend using Phoenix Gold QLX or TRX twisted pair interconnects.

Provides a Full Range signal for an additional amplifier. The External Output signal is unaffected by the crossover select switch.

Used to boost the amplifier's output from 0 to +18dB at 45Hz.



Connect speaker wires from a headunit without pre-amp level outputs directly to these terminals using the supplied .187" female spade connectors. Maximum input power is 35 watts per channel.

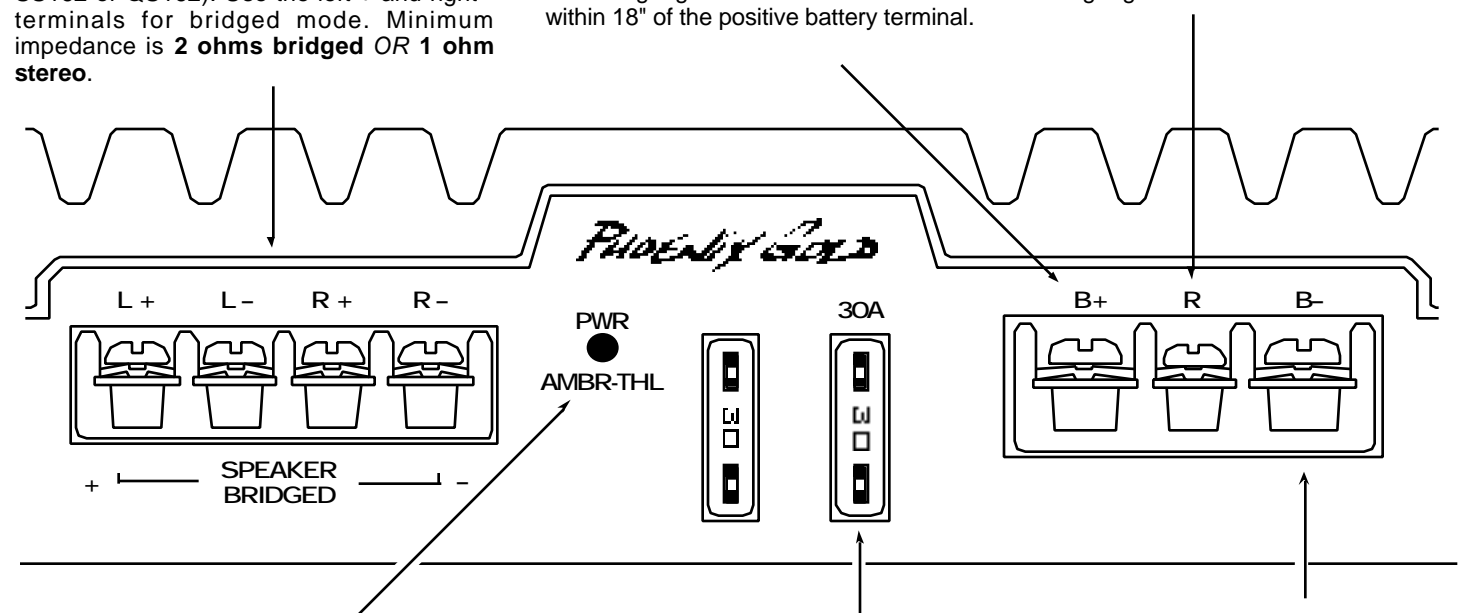
This switch controls the type of signal that reaches the speaker outputs. For a High pass signal fixed at 125 Hz set the switch to HP. For Low pass signal fixed at 90 Hz set the switch to LP. To bypass the crossover for Full Range signal set the switch to BYPASS.

Used to reach maximum amplifier power with a wide variety of headunits. The amplifier is more sensitive to input signals when set to .1 and less sensitive when set to 3.

Used to connect the amplifier to speakers. Minimum speaker cable size is 16 gauge (PG# SS162 or QS162). Use the left + and right - terminals for bridged mode. Minimum impedance is **2 ohms bridged OR 1 ohm stereo**.

Used to connect the amplifier to the vehicle's battery. Minimum power cable size is 8 gauge. This cable must be fused within 18" of the positive battery terminal.

Used to turn the amplifier on and off with the headunit. Minimum turn-on wire size is 18 gauge.



This LED turns on whenever the amplifier is on. The amplifier cannot turn on unless it is grounded through the B- terminal and receiving 12 volts at both the B+ and R terminals. The LED will turn amber if the amplifier shuts down due to overheating (thermal).

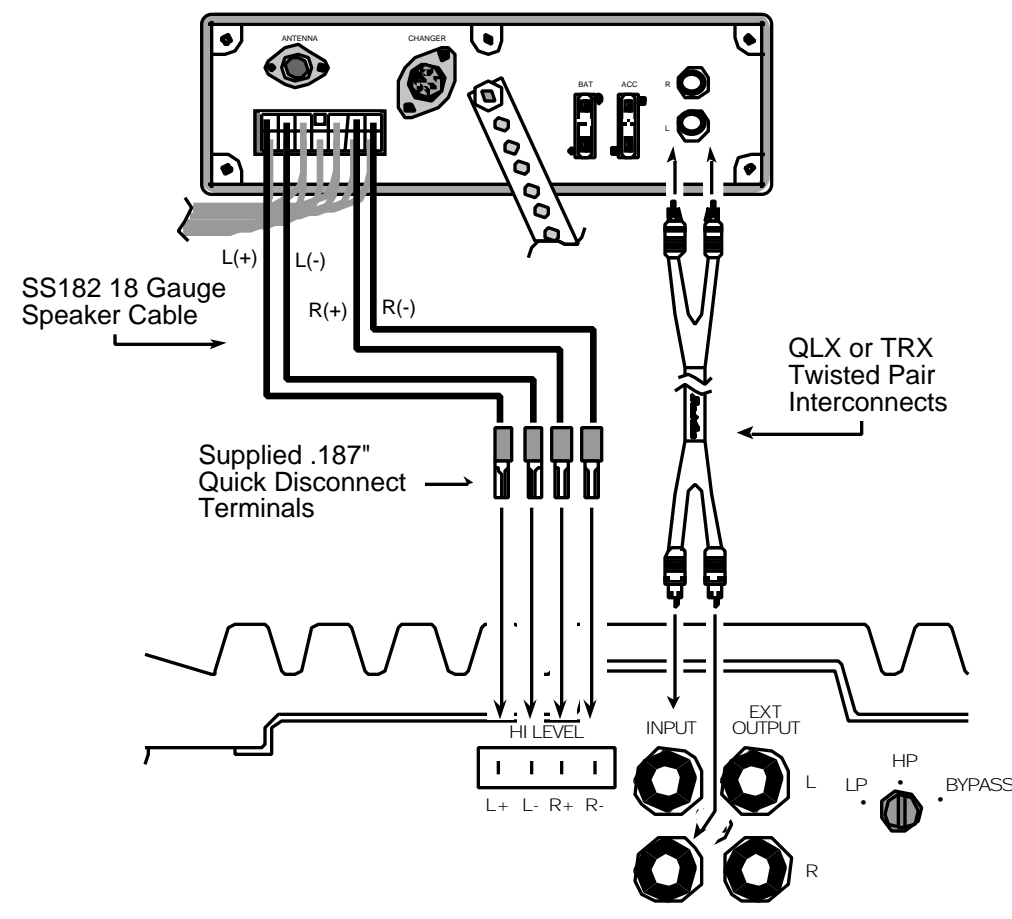
Used to protect the amplifier's power supply from improper connection (reversed B+ and B-). The fuse located on the right or closest to the power terminals is used to protect the amplifier, while the fuse located to the left or closest to the speaker terminals is a spare replacement fuse. If replacement is necessary, use the same size and type. Use one 30 amp ATO style fuse.

*Never use a fuse with a higher amp rating.*

Used to connect the amplifier to the vehicle's chassis. Minimum ground cable size is 8 gauge. Keep the cable as short as possible. **DO NOT** connect directly to the negative battery terminal.

**Line-Level:** Connect high quality RCA style signal cables to the inputs jacks. Use both left *and* right input jacks for stereo, bridged or Tri-Mode operation. For maximum noise rejection, we recommend Phoenix Gold QLX or TRX twisted pair signal cables.

**Hi-Level:** Connect the positive hi-level inputs to the headunit's positive speaker outputs. Connect the negative hi-level inputs to the headunit's negative speaker outputs.



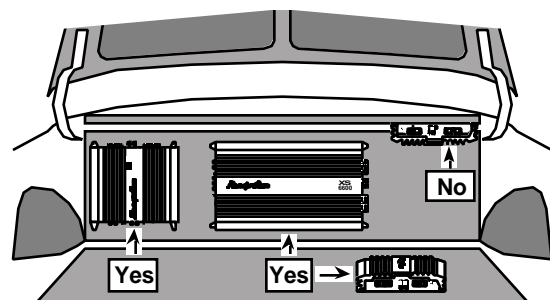
*Note:* Never use hi-level and line-level inputs at the same time.

Maximum hi-level input power: **35 watts per channel**

**MOUNTING**

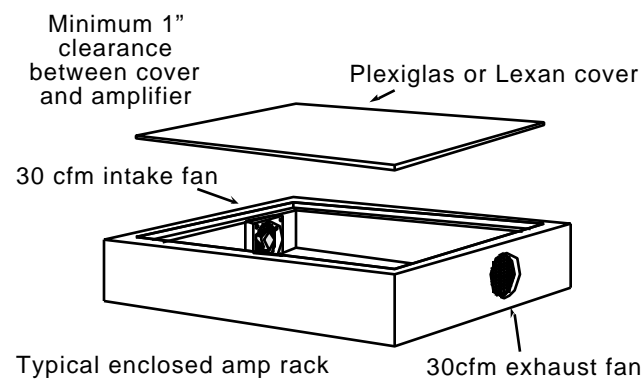
You can mount the XS amplifier in a variety of positions. There are only a few precautions that must be observed:

Never mount the amplifier upside down. This traps heat within the amplifier causing the amplifier to overheat and shut down.



Never mount the amplifier where it can get wet. Water damage is not covered by the limited warranty.

The Zytel ST801 mounting feet allow the amplifier to be mounted on almost any surface. If damaged, they can be ordered through an Authorized Phoenix Gold Mobile Electronics Retailer.

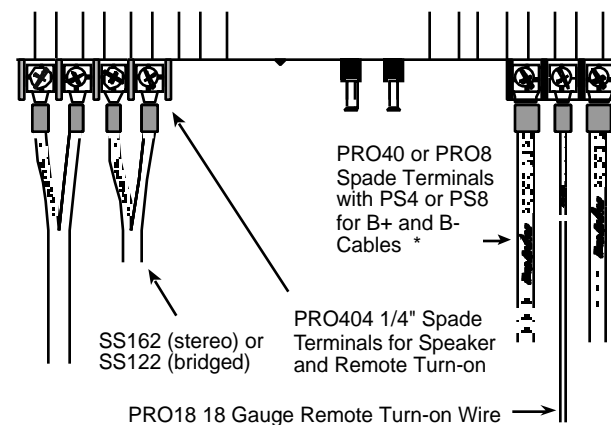


Use fans when mounting the amplifier in an enclosed space like a small storage compartment or enclosed amp rack. Design your cooling system to circulate at least 30cfm (cubic feet per minute) for each amplifier.

Example - An XS2200 in an enclosed amp rack requires two 30cfm fans. One fan for intake and one for exhaust.

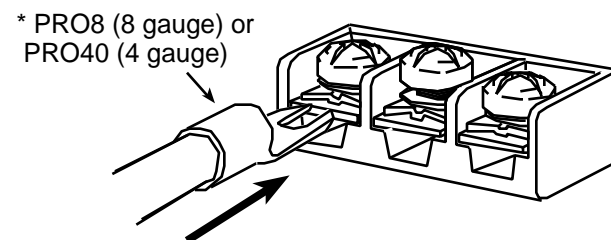
**POWER & SPEAKER CONNECTIONS**

Use crimp-on terminals for connecting battery and speaker cables to the amplifier.



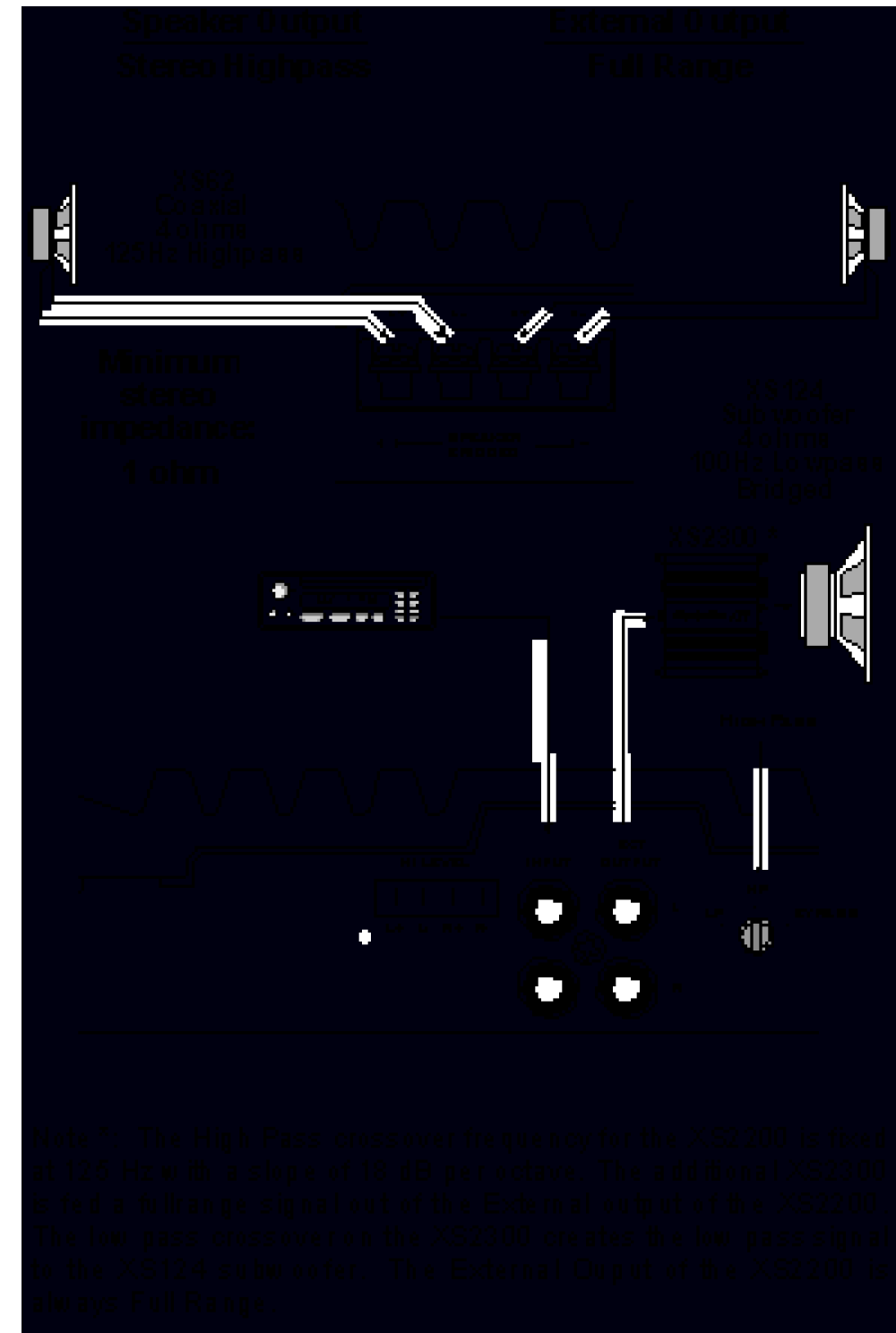
Use a tool designed to crimp noninsulated terminals. For extra reliability, crimp and solder each terminal.

\* You can connect 4 gauge cable directly to the amplifier using PG# PRO40 spade terminals.

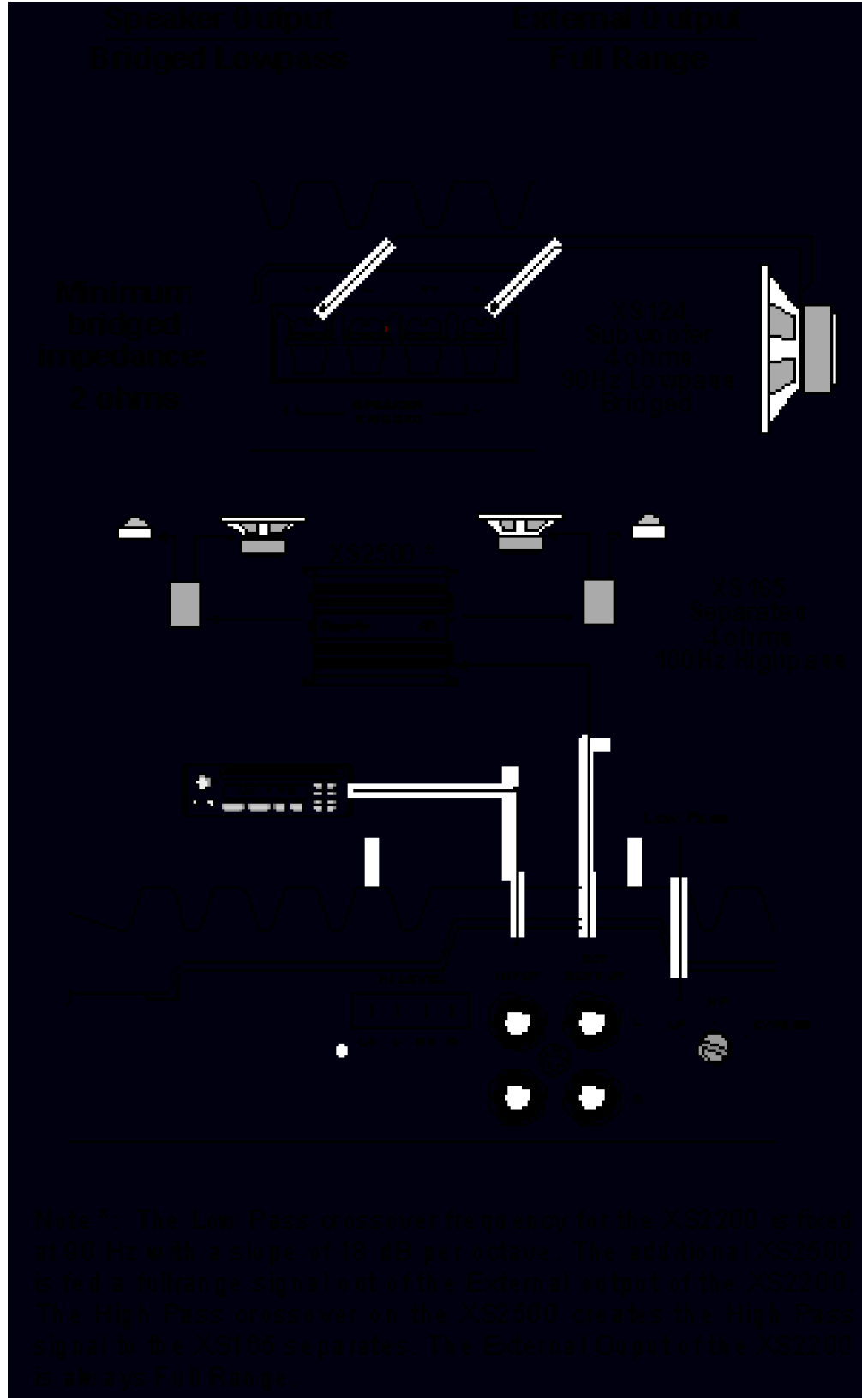


Use a #2 phillips screwdriver to tighten each terminal.

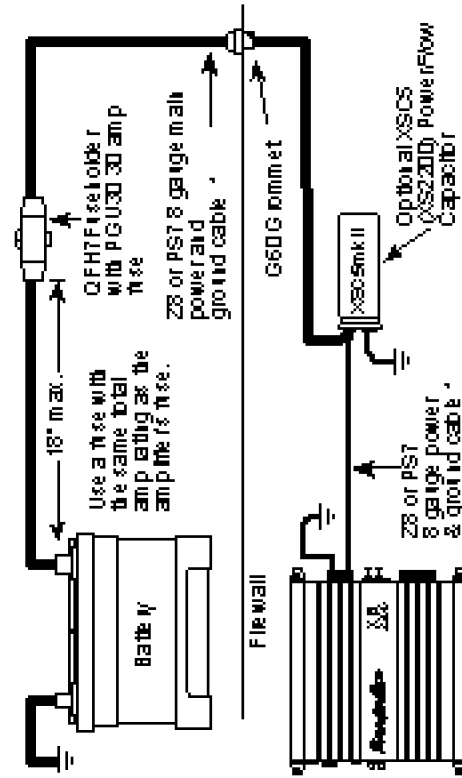
*Note:* Do not use powered screwdrivers to tighten the terminals. This can damage the gold plating and strip the screw's head.

**System One**

System Two



Single Amplifier



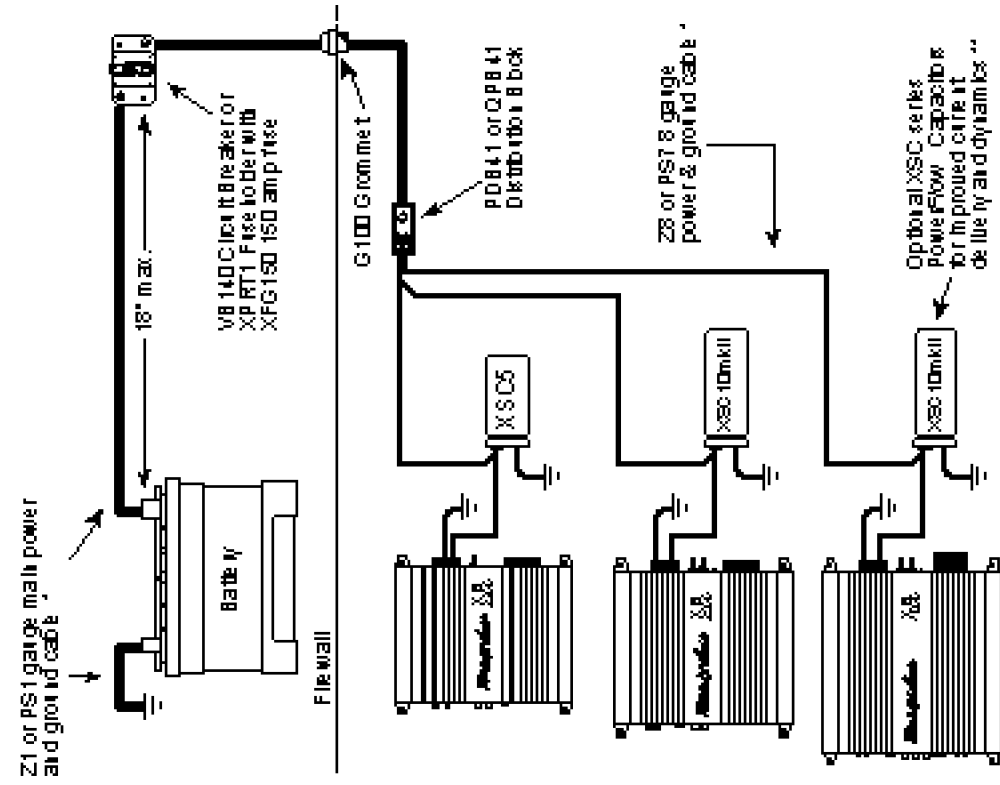
If not using PowerFlow capacitors, you can connect 4 or 8 gauge cable directly to the amplifier using PG# PRO40 or PRO8 spade terminals.

\* Use the Power Cable Calculator below for the exact gauge of cable required.

Find the total power the cable must support on the left and the distance of the cable run along the top. Where the two meet indicates the proper gauge cable. When in doubt use a larger gauge.

	4 ft	8 ft	12 ft	16 ft	20 ft	24 ft
100 W	10	10	8	8	4	4
200 W	10	8	8	4	4	4
400 W	8	8	4	4	4	2
600 W	8	4	4	4	2	2
800 W	4	4	2	2	2	2
1000 W	4	2	2	2	2	1/0
1400 W	4	2	2	2	1/0	1/0
1800 W	2	2	2	1/0	1/0	1/0
2200 W	2	2	1/0	1/0	1/0	1/0 X 2
2600 W	2	1/0	1/0	1/0	1/0 X 2	1/0 X 2
3000 W	1/0	1/0	1/0 X 2	1/0 X 2	1/0 X 2	1/0 X 3

Multi Amplifier



\* Use the Power Cable Calculator on the previous page for the exact gauge of cable required.

\*\* Use at least 1 farad of capacitance for every 1,000 watts of amplifier output.