REFERENCE Class A

PICASSO

4/3/2 Channel

Power Amplifier

OWNERS MANUAL AND INSTALLATION GUIDE

SOUNDSTREAM®

TECHNOLOGIES

CONGRATULATIONS!

You now own **the REFERENCE Class A** PICASSO **Amplifier**, the most musical amplifier ever created for the 12 volt environment. Your Soundstream REFERENCE Class A PICASSO amplifier will outperform any other amplifier in the world.

To maximize the performance of your system, we recommend that you thoroughly acquaint yourself with its capabilities and features. Please retain this manual and your sales and installation receipts for future reference.

Soundstream amplifiers are the result of American craftsmanship and the highest quality control standards, and when properly installed, will provide you with many years of listening pleasure. Should your amplifier ever need service or replacement due to theft, please record the following information, which will help protect your investment.

Serial # _____

Dealer's Name _____

Date of Purchase _____

Installation Shop _____

Installation Date _____

CAUTION!

Prolonged listening at high levels may result in hearing loss. Even though your new Soundstream REFERENCE Class A PICASSO *amplifier sounds better than anything you've ever heard, exercise caution to*

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ATTENTION!

Your new Soundstream REFERENCE Class A PICASSO amplifier is a purist, high-fidelity amplifier designed to maximize the performance of 4 or 2 ohm component loudspeakers. Do not waste its musicality trying to drive subwoofers. For high-current, low impedance

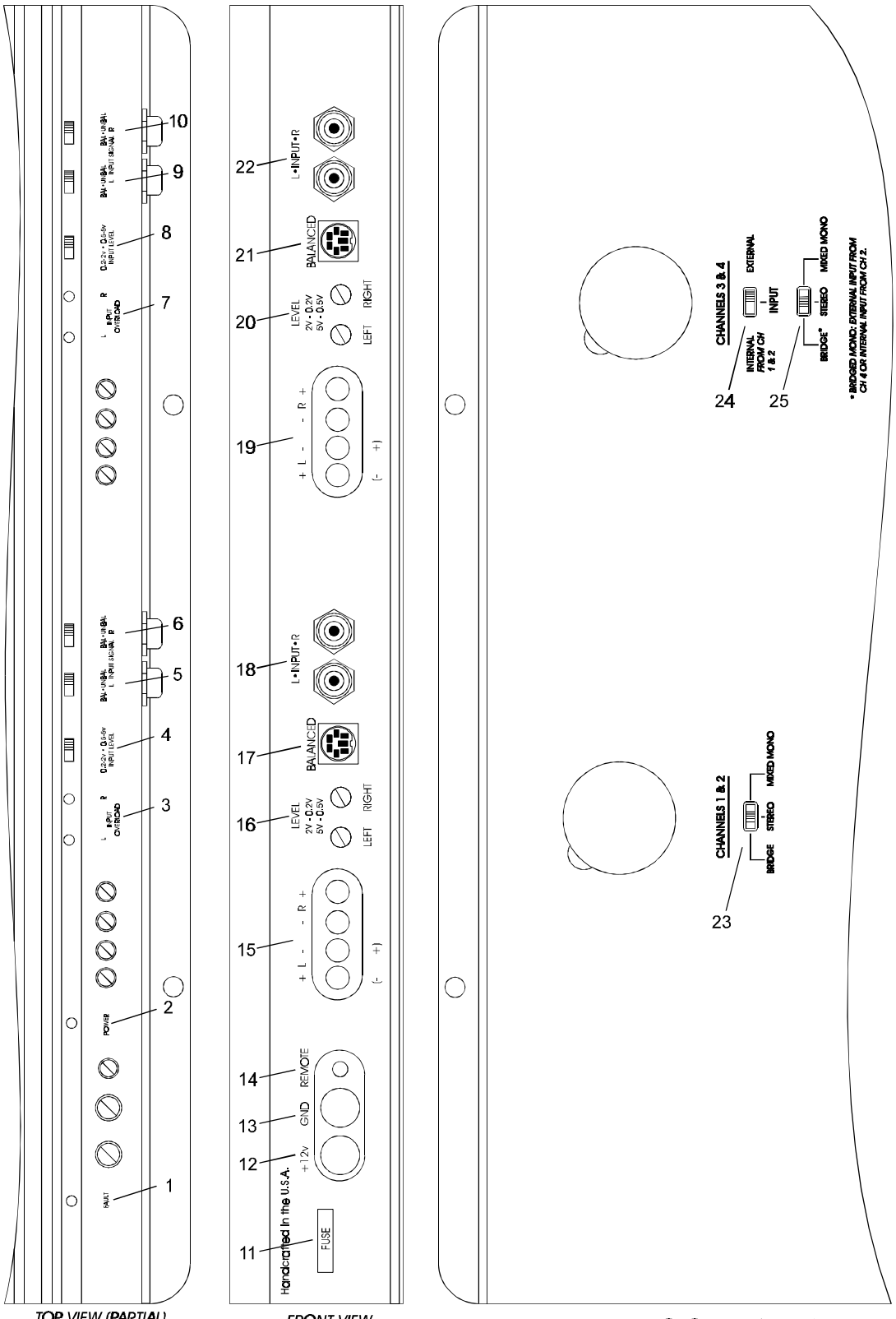
DESIGN FEATURES

- **Audiophile Circuit Topology -** The REFERENCE Class A PICASSO is designed with the shortest signal path possible, resulting in the most sonically transparent amplifier Soundstream has ever built!
- **2 ohm Satellite Drive Ability** - The REFERENCE Class A PICASSO amplifier is designed to drive satellite speaker loads down to 2 ohm stereo (4 ohm mono).
- **Esoteric Quality Components** including polypropelene capacitors in the signal path, and high performance monolithic dual ultra-low noise precision operational amplifiers to ensure the fullest, clearest musical reproduction possible.
- **Pure Class A® Output Topology** for the utmost in musicality and definitive power output. Soundstream's unique design allows the REFERENCE Class A PICASSO amplifier to deliver incomparable sonics.
- **Uncompromising Design and Construction** including mil-spec glass epoxy circuit boards and high current custom gold-plated solid brass connections that will accept up to 4 gauge power/ground wire.
- **Coherent Stereo™/Mixed Mono** selection for either “pure” stereo operation or mixed mono for simultaneous stereo and mono.
- **Chassisink™ Darlington Power Array** - Soundstream’s “overbuilding” of the output section incorporates multiple output transistors instead of a few for faster, stronger power delivery. The transistors are sandwiched between the circuit board and the heatsink in a design called Chassisink™ to ensure cool, efficient amplifier operation.
- **PowerGrid Power Supply Design** - All power supply components are located near one another, connected by thick, wide PCB traces, which ensures rapid, high current delivery. The entire power supply is isolated on one side of the circuit board while the audio stage is located opposite it, guaranteeing minimal noise.
- **Ultra-Low ESR Capacitance Bank** - Multiple small input power capacitors are used to provide a lower ESR (Equivalent Series Resistance), which *means more power in and out faster.*
- **Smart Thermal Rollback** - Most amplifiers shut off when they get too hot. In the unlikely event the REFERENCE Class A PICASSO amplifier reaches 85° C, it will gradually roll back its average power (without affecting the dynamics). Once the amplifier has cooled off, it returns to full power output. If overheating should continue, a second thermal sensing protection circuit will shut off the amplifier if the heatsink reaches 95° C.
- **Unregulated Power Supply** - 4 ohm power ratings are measured at 12 volts, meaning substantially greater output in the real world when the vehicle is running, where voltages

range from 13.2 to 14.4 volts.

- **Fault Monitor LED** on the top panel notifies you of blown power supply fuses.
- **Dual Discrete Class A Drive Stages** - Over six times the drive current of most amps, which maintains performance into low impedance loads.
- **Drive Delay™ Muted Turn-on/off Circuit** - A unique circuit which completely eliminates any amplifier-related turn-on/off noises.
- **Flexible Dual Input Level Sensitivity** accepts 2 voltage ranges; from 200 mV to 2.0 V and from 500 mV to 5.0 V, permitting maximum output from the amplifier with virtually any source unit.
- **Differential Balanced Input Design** for added immunity to noise caused by component and vehicle electrical system interaction.
- **Discrete Matched Pair True Balanced Input** for professional-quality performance and noise cancellation. The 6-pin din plug carries (+) and (-) Signal information for Left and Right channels, audio ground, and ±15 Vdc to operate the Soundstream BLT Balanced Line Transmitter.

PICASSO



TOP VIEW (PARTIAL)

FRONT VIEW

BOTTOM VIEW (PARTIAL)

Key to Callouts

1. **Fault LED -** Indicates a blown fuse.
2. **Power LED -** Indicates amplifier power on.
3. **Input Overload Indicators -** Indicates the signal input level or input gain level is too high - channels 1 & 2.
4. **Input Level Selector Switch -** Selectable input sensitivity range from 0.2-2 Volts RMS, or from 0.5-5 Volts RMS - channels 1 & 2.
5. **Left Channel Balanced / Unbalanced Input Selector Switch -** Select "Balanced" to use the 6 pin Balanced signal Input. Select "Unbalanced" to use the RCA signal inputs - channel 1.
6. **Right Channel Balanced / Unbalanced Input Selector Switch -** Select "Balanced" to use the 6 pin Balanced signal Input. Select "Unbalanced" to use the RCA signal inputs - channel 2.
7. **Input Overload Indicators -** Indicates the signal input level or input gain level is too high - channels 3 & 4.
8. **Input Level Selector Switch -** Selectable input sensitivity range from 0.2-2 Volts RMS, or from 0.5-5 Volts RMS - channels 3 & 4.
9. **Left Channel Balanced / Unbalanced Input Selector Switch -** Select "Balanced" to use the 6 pin Balanced signal Input. Select "Unbalanced" to use the RCA signal inputs - channel 3.
10. **Right Channel Balanced / Unbalanced Input Selector Switch -** Select "Balanced" to use the 6 pin Balanced signal Input. Select "Unbalanced" to use the RCA signal inputs - channel 4.
11. **Main Fuse -** Main power supply fuse. Replace only with the same value fuse.
12. **+12V -** Connect to a fuse or circuit breaker, then to the battery's positive post.
13. **GND -** Main ground connection. Bolt to a clean chassis ground in the vehicle.
14. **REM -** Remote turn-on input from the head unit. Accepts +12V.
15. **Speaker Output Connections -** Channels 1 & 2.
16. **Input Level -** Independent Left and Right channel input level controls - ch's 1 & 2.
17. **Balanced Signal Input Connector -** 6-pin Balanced signal input connector for use with the Soundstream BLT Balanced Line Transmitter - channels 1 & 2.
18. **Inputs -** Channel 1 & 2 RCA (Unbalanced) inputs.
19. **Speaker Output Connections -** Channels 3 & 4.
20. **Input Level -** Independent Left and Right channel input level controls - ch's 3 & 4.
21. **Balanced Signal Input Connector -** 6-pin Balanced signal input connector for use with the Soundstream BLT Balanced Line Transmitter - channels 3 & 4.
22. **Inputs -** Channel 3 & 4 RCA (Unbalanced) inputs.
23. **Coherent Stereo/Bridge/Mixed Mono switch -** Channels 1 & 2; Select "Bridge" for bridged mono operation (use right channel input). Select "Stereo" for coherent stereo operation. Select "Mixed Mono" for simultaneous stereo / bridged mono operation.
24. **Channels 3 & 4 Input Select -** Selectable inputs from internal (from channels 1 & 2) or external (from channels 3 & 4 local balanced or unbalanced inputs).
25. **Coherent Stereo/Bridge/Mixed Mono switch -** Channels 3 & 4; same as above.

INSTALLATION STEP 1

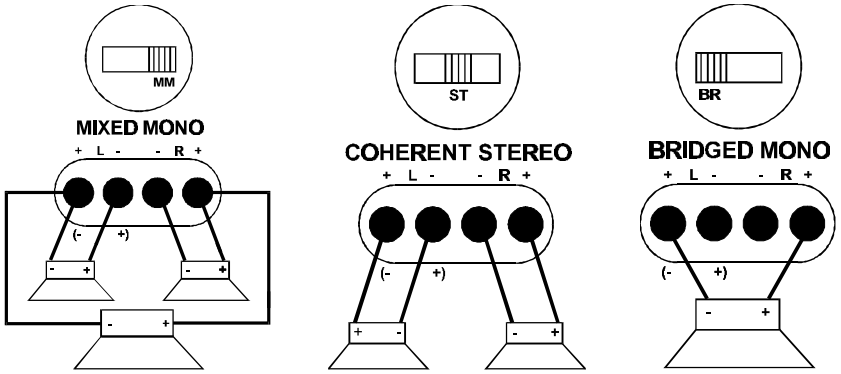
COHERENT STEREO™ / MIXED-MONO / BRIDGED MONO

The REFERENCE Class A PICASSO amplifier has the ability to operate in any one of the following modes:

Coherent Stereo™ with identical left and right stereo channels for maximum fidelity. Best choice for satellite speakers. Use this mode unless Mixed-Mono is necessary.

Mixed-Mono in order to drive stereo and mono simultaneously; works well for center channels. It can be used anytime you need a summed mono channel. However, it somewhat sacrifices sonic accuracy as additional circuitry is introduced to one channel. ***In Mixed-Mono, the left channel is inverted, see diagram below or on the bottom of the amplifier.***

Bridged Mono for dedicated single channel operation; ideal for driving the PICASSO in 3 or 2 channel mode. It is also used when larger amounts of power are necessary for single speakers. ***In bridged mono, only the right channel input is active.***



In bridged mono, only the right channel input is active.

NOTE: *If you intend to drive the* REFERENCE Class A PICASSO *amp in Mono but have stereo outputs from your crossover or source unit, you can put the switch in Mixed-*

INSTALLATION STEP 2

BALANCED / UNBALANCED INPUT

The REFERENCE Class A PICASSO amplifier has the ability to accept either standard Unbalanced RCA signal inputs, or Balanced "Pro Audio" inputs with the use of the Soundstream **BLT** Balanced Line Transmitter or some other balanced line audio source. Before installing your system, you should decide upon which signal type you wish to run.

	UNBALANCED INPUT	***BALANCED INPUT***
ADVANTAGES	1. Most preamplifier / source units have "UNBAL" RCA outputs. (Industry standard) 2. No Interface module is	1. Improved Signal to Noise Ratio. (S/N Ratio) 2. Excellent noise cancellation characteristics. 3. Immune to noise radiated in the car audio environment.

The REFERENCE Class A PICASSO's signal inputs accept two ranges of input signal levels: 0.2 - 2.0 Vrms, or 0.5 - 5.0 Vrms for both Balanced and Unbalanced inputs. The input range switch position and level settings are dependent upon the preamplifier / source unit output signal level. For the best system Signal to Noise Ratio, we recommend that the input level controls be set as far down as possible (rotated counter-clockwise), while maintaining an acceptable level of output.

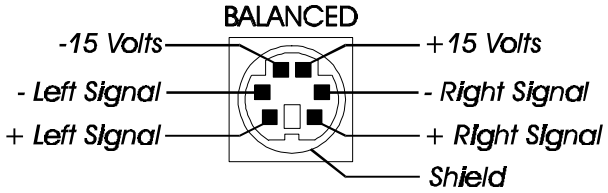
Using the "Unbalanced" RCA input

When using the Unbalanced RCA input, the *RIGHT* channel (channel 2) input signal switch *MUST* be in the "UNBAL" position. Also, when first installing the amplifier using this input configuration, we suggest that the remaining input signal switches be in the "UNBAL" position as well. **If you experience alternator whine or other installation noise with all switches in the "UNBAL" position, try moving channels 1,3 & 4 input signal switch to the "BAL" position.** This should remove any system noise due to installation.

Using the "Balanced" RCA input

When using one or both Balanced 6-pin DIN inputs, all input switches *MUST* be in the "BAL" position. Also, we recommend that when using this input configuration, the "INPUT LEVEL" switches be in the "0.5 - 5V" position, and the gains on the amplifiers be set to "minimum" (rotated counter-clockwise). The system gains should then be adjusted on the **BLT**

NOTE: The pin configuration shown in the diagram is the view looking into the Balanced input jack on the amplifier.



INSTALLATION STEP 3

WIRING

POWER AND GROUND

To ensure maximum output from your REFERENCE Class A PICASSO amplifier, use high quality, low-loss power and ground cables. The PICASSO amplifier will accept up to 4 gauge power and ground cables. Determine from the chart below the minimum gauge power and ground wire for your application.

	up to 10'	***up to 20'***
PICASSO	Soundstream Power40 or Power80 (4 or 8 ga.)	Soundstream Power40 (4 ga.)

CIRCUIT BREAKERS/FUSES

INTERNAL

The PICASSO amplifier is fused with a 30 Amp automotive-type fuse. **Never replace the fuses with a higher value than what is supplied.** ***This may result in amplifier damage and will void the warranty!*** In the event of blown power supply fuses, the "Fault" indicator on the top panel will light. The fuse is accessible on the front of the amplifier.

EXTERNAL

Like all audio components, the PICASSO amplifier must be fused near the battery. A fuse or circuit breaker must be located within 18" of the battery. This will prevent a fire in the event of a shorted cable. A 40 Amp fuse is recommended.

REMOTE TURN-ON

Connect the "Remote" to the turn-on lead from the source unit. When +12 volts is received, the amplifier will turn on.

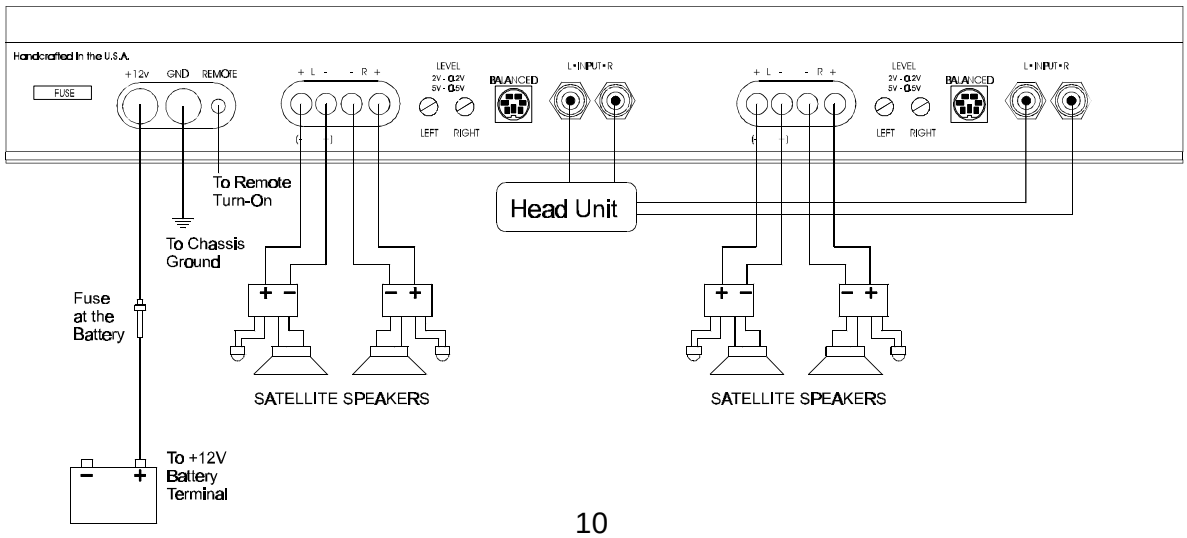
SIGNAL CABLE

Use a high-quality cable that will be easy to install and has minimal signal loss to guarantee optimum performance. Soundstream's DL 1 and SL 1 are ideal.

SPEAKER CABLE

The REFERENCE Class A PICASSO amplifier will accept up to 8 gauge speaker cable. Use a high quality, flexible,

WIRING DIAGRAM



INSTALLATION STEP 4

INSTALLATION AND MOUNTING

1. AMPLIFIER LOCATION

The REFERENCE Class A PICASSO amplifier employs highly efficient circuitry and a unique Chassisink™ design to maintain lower operating temperatures. Additional cooling may be required if the amplifier is located in a tightly confined area or when driving especially low impedance loads at extremely high levels.

When mounting the amplifier, it should be securely mounted to either a panel in the vehicle or an amp board or rack that is securely mounted to the vehicle. The mounting location should be either in the passenger compartment or in the trunk of the vehicle, away from moisture, stray or moving objects, and major electrical components. To provide adequate ventilation, mount the amplifier so that there are at least two inches of freely circulating air above and to the sides of it.

2. SWITCHES

Set the Coherent Stereo™/Bridged Mono/Mixed Mono switches to the appropriate positions (see pages 14 - 17).

3. MOUNTING THE AMPLIFIER

a. Using the amplifier as a template, mark the mounting surface.

b. Remove the amplifier and drill the holes.

c. Mount the amplifier to the surface using the provided hardware.

4. WIRING

a. Run and connect the audio signal and remote turn-on cables to the amplifier from the source unit.

b. Carefully run the positive cable from the amplifier to a fuse or circuit breaker within 18” of the battery.

c. Connect the fuse or circuit breaker to the battery. Leave the circuit breaker off or the fuse out until everything is bolted down.

d. Secure the ground cable to a solid chassis ground on the vehicle. It may be necessary to sand paint down to raw metal for a good connection.

e. Double check each and every connection!

NOTE: *There may be a small spark when connecting the power and ground lead to the amplifier for the first time. This is caused by current rushing into the amplifier to charge the power supply capacitors, and is completely*

f. Re-connect the fuse or circuit breaker.

5. POWER UP

Power up the system and look at the red "POWER" LED. There may be a 2 -3 second delay from the time the the source unit is turned on to the time that the LED on the amp turns on, which is normal. Once the amplifier power LED is on and the source unit is playing, you should have sound coming from the speakers.

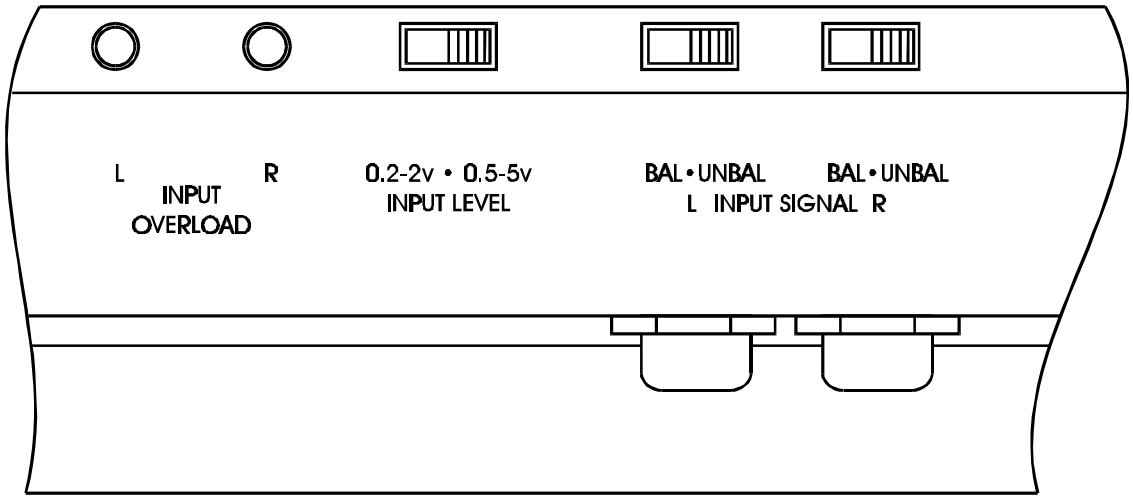
INSTALLATION STEP 5

LEVEL SETTING

The input levels are adjusted by means of the individual channel input level controls located on the front of the amplifier. This is a unique dual-stage circuit that adjusts both level and gain. This topology maintains better Signal to Noise ratios even when using sources with minimal output.

In the ideal situation, all components in the audio system reach maximum undistorted output at the same time. The reason is because an amplifier will only make what comes into it bigger. So, if you send it a distorted signal from the head unit, the amplifier is going to amplify distorted information. The same thing holds true if an outboard processor or crossover begins to distort before you have maximum output from the amplifier. By setting all components to reach clipping at the same time, you can maximize the output of your system. For the REFERENCE Class A PICASSO amplifier, follow the steps below for the quickest, easiest means of setting the

1. Turn the amp's input levels to minimum position (fully counter-clockwise).
2. Begin with the input level switch in the 0.5 - 5.0 Volt position.
3. Set source unit volume to approximately 3/4 of full volume.
4. While playing dynamic source material, slowly increase the amplifier's input level until a near maximum undistorted level is heard in the system.
5. If you can't get enough gain out of the amplifier, set the input level switch to the 0.2 - 2.0 Volt position, and

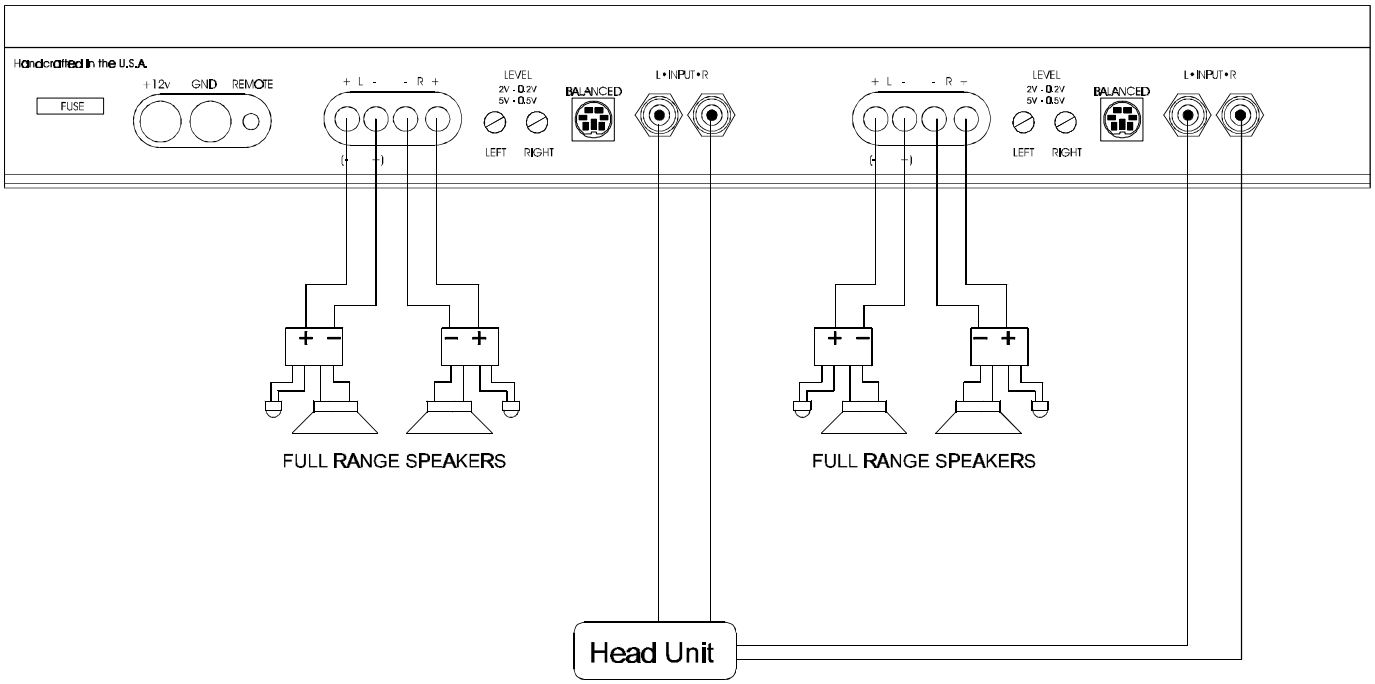


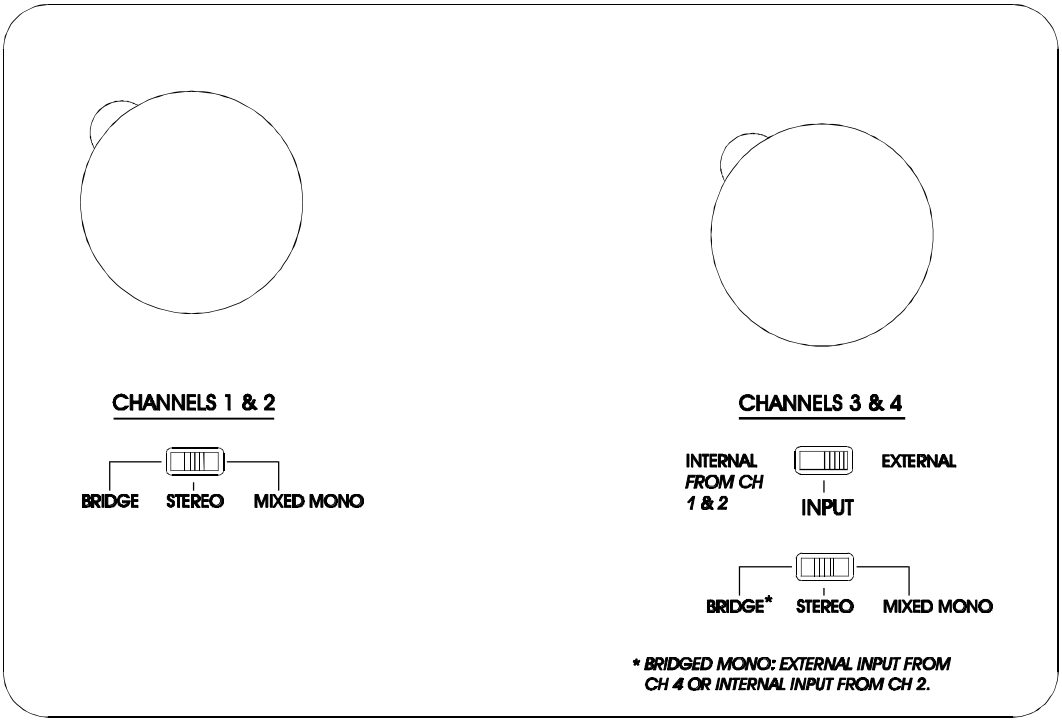
If your preamplifier / source unit has an extremely high output level, be sure to pay attention to the clipping indicators located on the top of the amplifier. These indicators will notify you if you are clipping the *PREAMPLIFIER* stage of the amplifier. If the amplifier's output is distorted and the clipping lights are not blinking, you are most likely clipping the *OUTPUTS* of the amplifier, or driving the speaker to distortion.

NOTE: *Even though the S/N ratio with low output sources is better with the* PICASSO *amplifier than others, your best combination of output level and Signal to Noise ratio will be achieved when the input levels are set between 500 mV and 5.0 V.*

SAMPLE SYSTEM #1

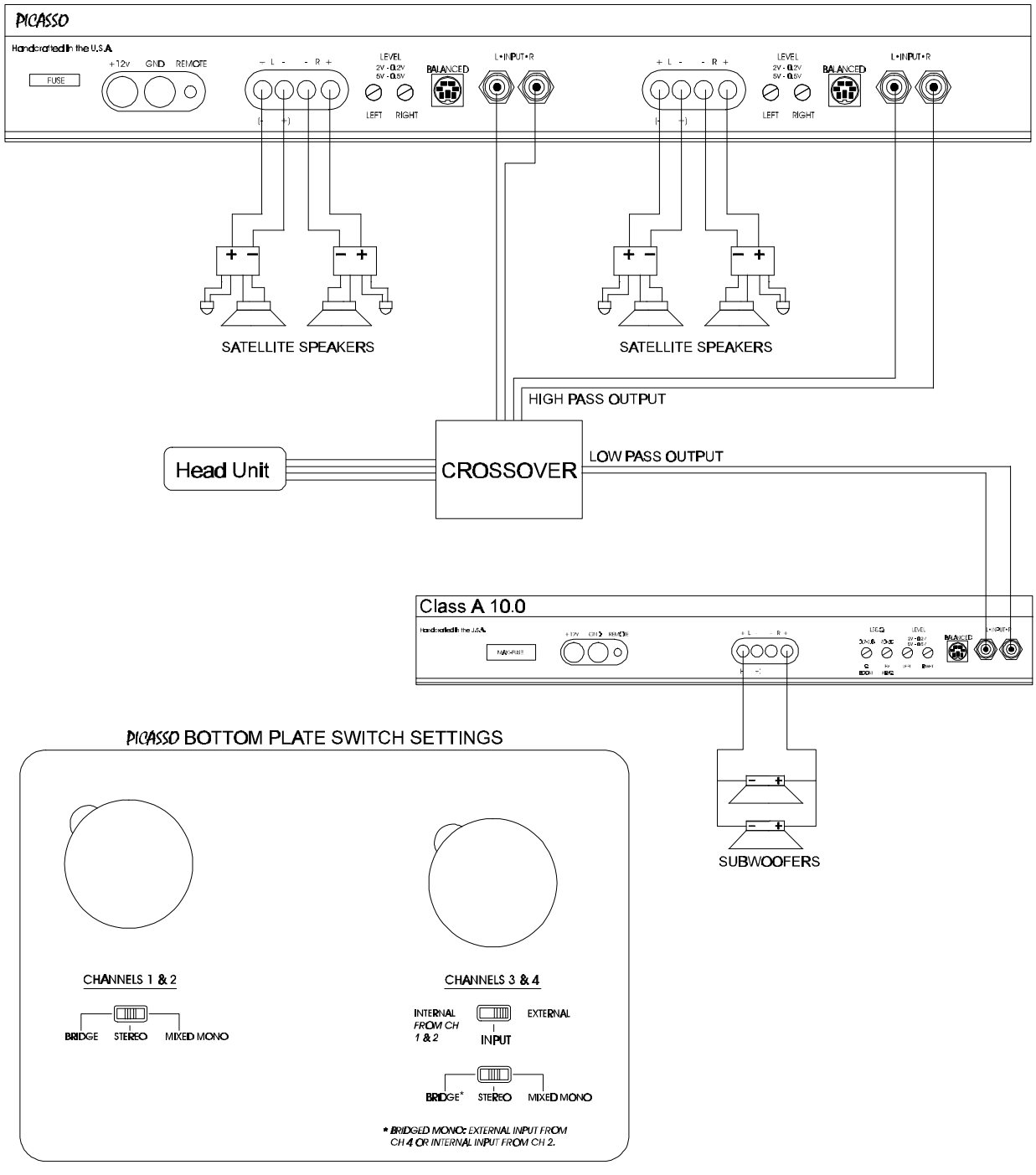
4 channels of input
4 channels of full range output
External input to channels 3 & 4





SAMPLE SYSTEM #2

4 channels of high pass input to the PICASSO
4 channels of high pass output to satellite speakers
External input to channels 3 & 4 from an external crossover
- - - - - - - - - -
2 channels of low pass input to the Class A 10.0 or other amplifier
1 Bridged Mono channel of low pass output to subwoofers

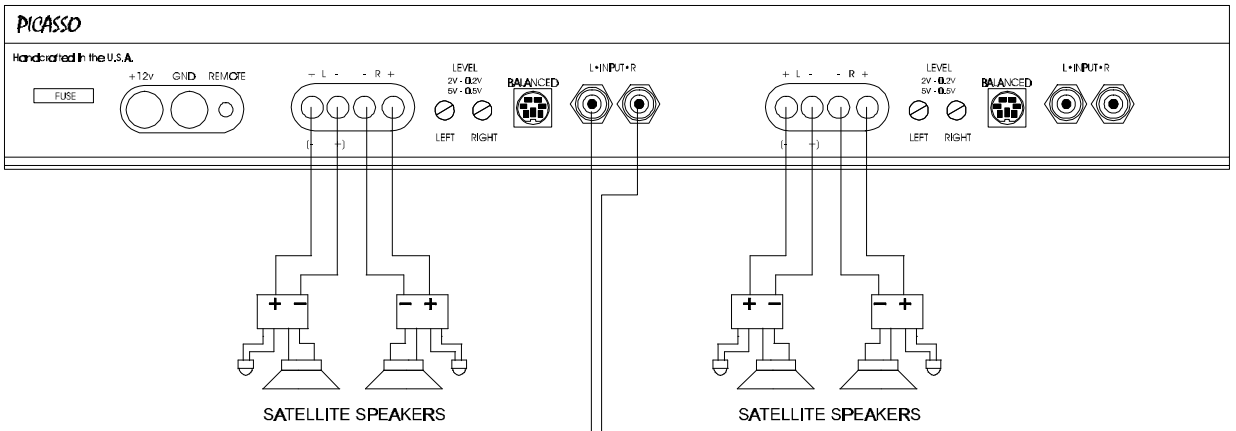


SAMPLE SYSTEM #3

2 channels of high pass input to the PICASSO
4 channels of high pass output to satellite speakers
Internal input to channels 3 & 4 from an external crossover

- - - - - - - - -

2 channels of low pass input to the Class A 10.0 or other amplifier
1 Bridged Mono channel of low pass output to subwoofers



SATELLITE SPEAKERS

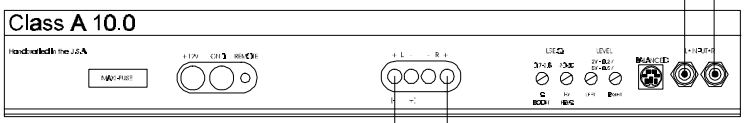
SATELLITE SPEAKERS

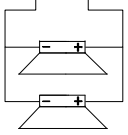
HIGH PASS OUTPUT

Head Unit

CROSSOVER

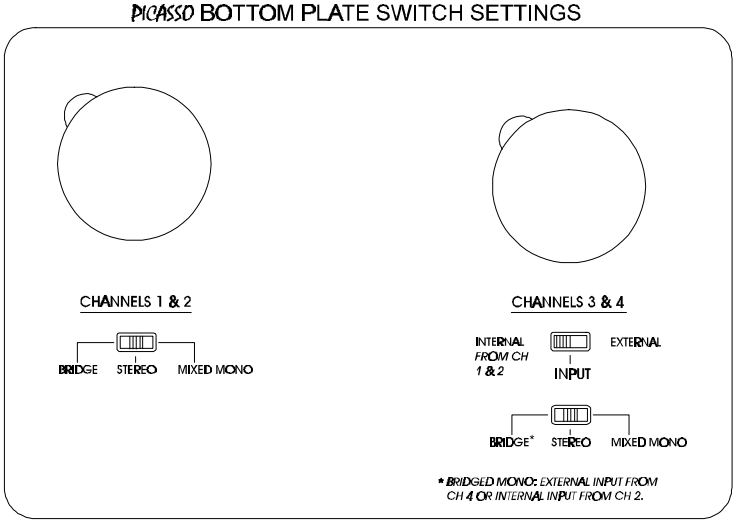
LOW PASS OUTPUT





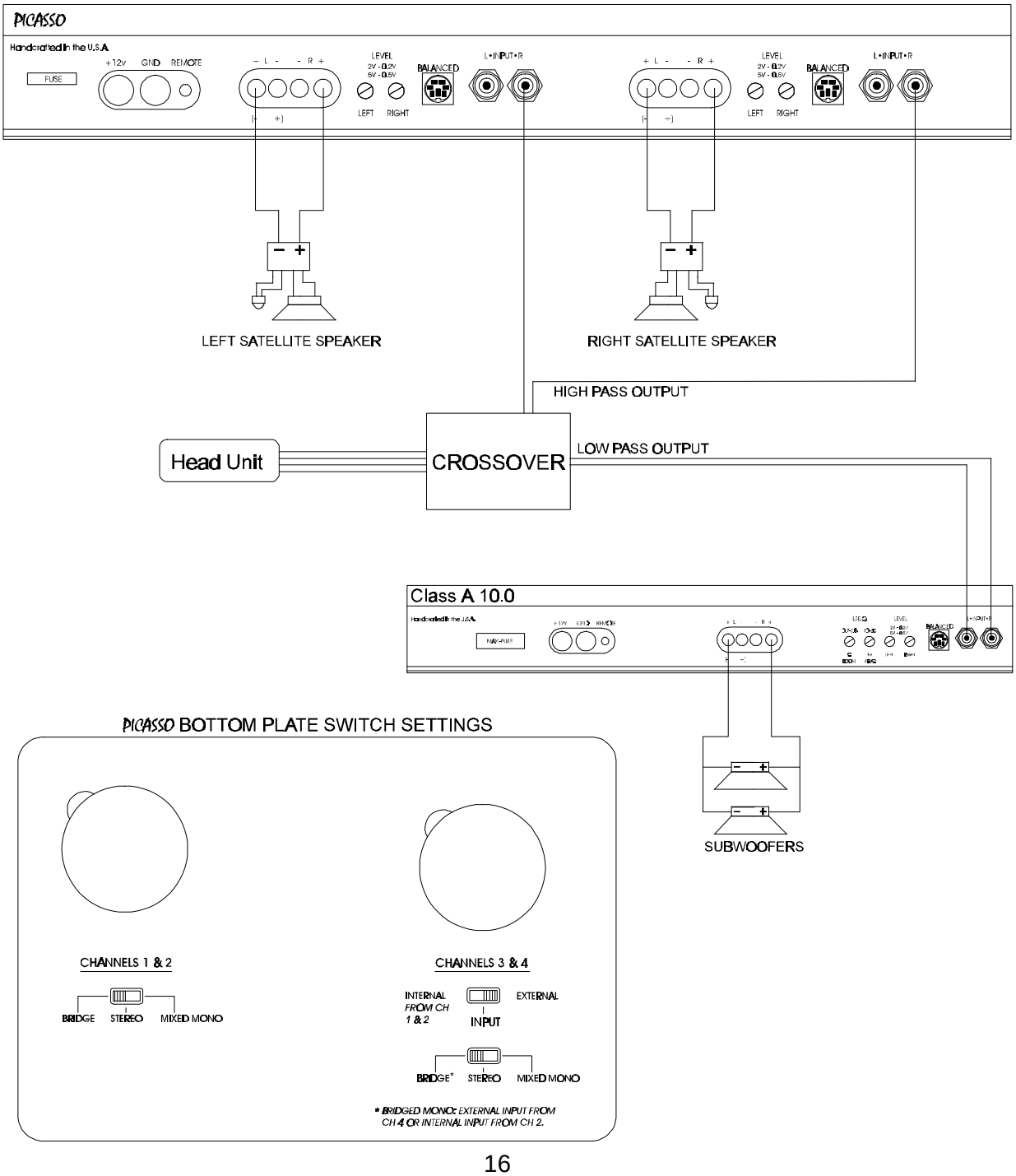
SUBWOOFERS

PICASSO BOTTOM PLATE SWITCH SETTINGS



SAMPLE SYSTEM #4

2 channels of high pass input to the PICASSO
2 channels of bridged high pass output to satellite speakers
External input to channel 4 from an external crossover
- - - - - - - - - -
2 channels of low pass input to the Class A 10.0 or other amplifier
1 Bridged Mono channel of low pass output to subwoofers



SAMPLE SYSTEM #5

2 channels of high pass input to the PICASSO, with 2 stereo channels driving tweeters
2 channels of band pass input to the PICASSO, with 2 stereo channels driving mid-range speakers
External input to channels 3 & 4 from an external crossover

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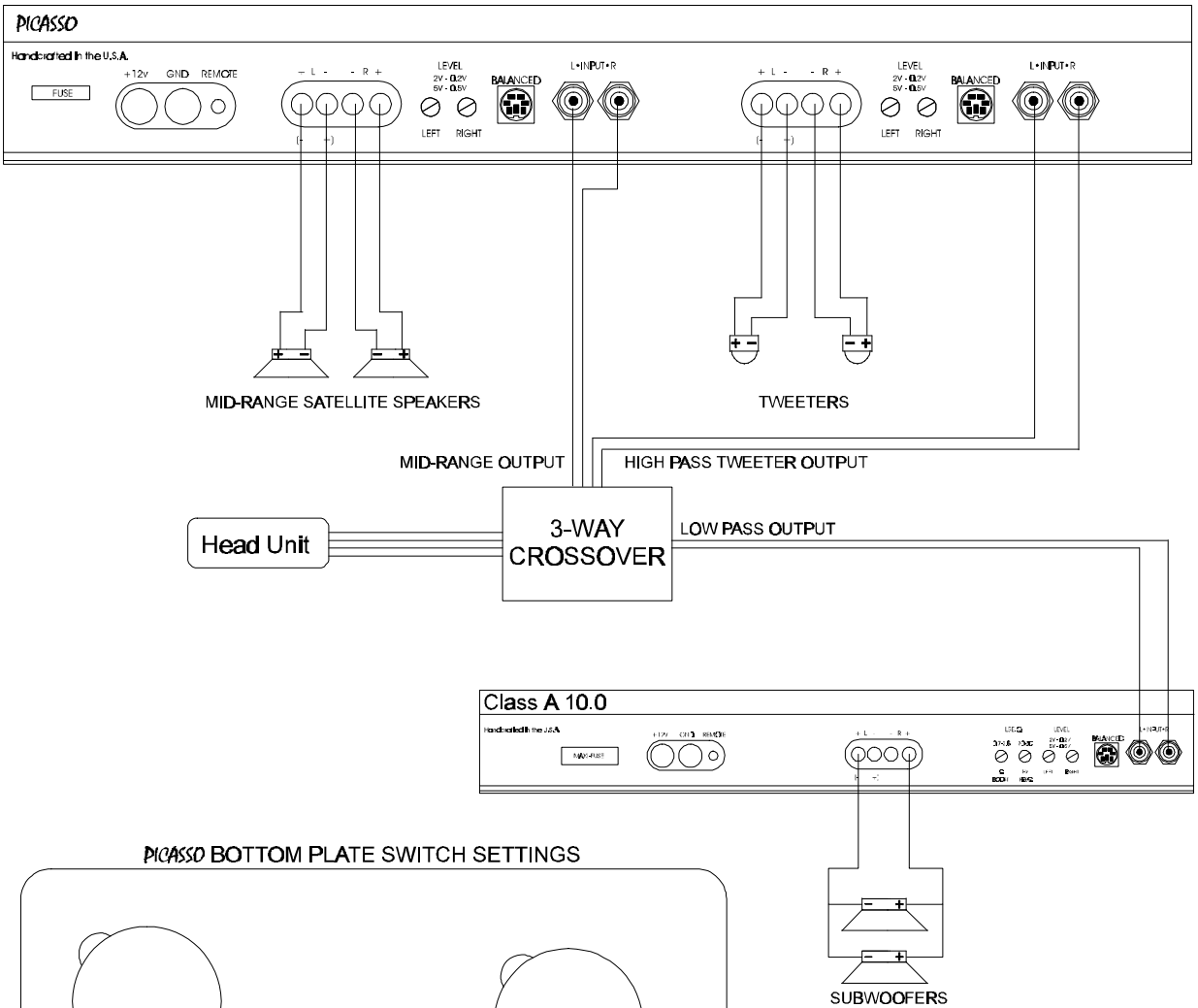
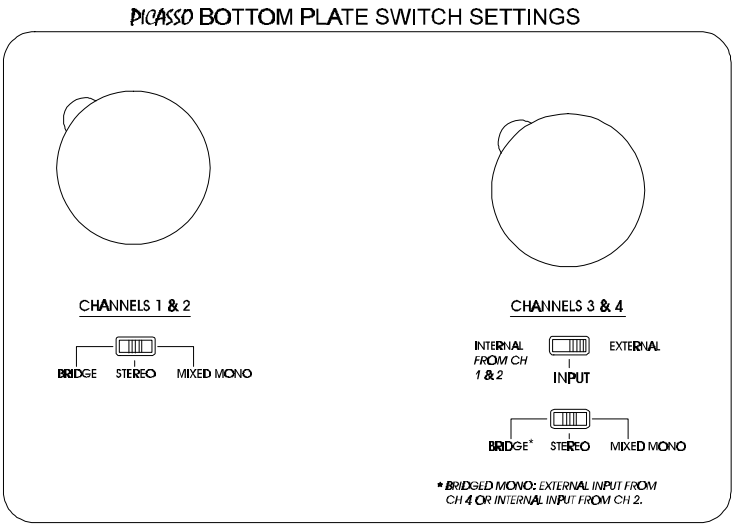
2 channels of low pass input to the Class A 10.0 or other amplifier
1 Bridged Mono channel of low pass output to subwoofers





PROTECTION CIRCUITRY

Your REFERENCE Class A PICASSO is protected against both overheating and short circuits by means of the following circuits:

- Main power supply fuses
- Smart Power Supply Thermal Rollback activating at 85°C.
- A fail-safe thermal protection circuit activating at 95°C.

Your amplifier also incorporates an innovative Fault Diagnosis system that identifies a blown power supply fuse.

NOTE: *If you experience blown main power supply fuse, DO NOT increase value beyond the 30 Amp fuse! Doing so will void your warranty and may damage your amplifier.*

TROUBLESHOOTING

PROBLEM	***CAUSE***
No sound and power LEDs are not lit	• no power or ground at amp • no remote turn-on signal • blown fuse near battery
Fault LED is lit	• amp power supply fuse is blown or missing
Repeatedly blown amp fuse, frequent activation of Smart	• speaker or leads may be shorted • verify adequate amplifier ventilation
No output from channels 3 & 4 with 1 pair of RCA inputs	• Select "*Internal from ch's 1 & 2*" on Ch 3 & 4 input on the bottom of the amplifier. (see page 15)
Not enough input sensitivity while using Balanced input	• Be sure both Left and Right Input Signal Switches are set to the "BAL" position
Left and Right Input Overload indicators lighting	• Input signal level is too high - readjust input gains, or select the 0.5-5V input signal level range
Alternator whine while using Unbalanced RCA inputs	• Make sure the channel 2 Input Signal Switch is in the "UNBAL" position. • Try the Input Signal Switches for channels 1,3 & 4 in the "BAL" position: leave the switches in the quietest position. This will not effect

SERVICE

The REFERENCE Class A PICASSO is protected by a limited warranty. Please read the enclosed warranty card.

SPECIFICATIONS

REFERENCE Class A PICASSO

POWER	**4 Ω Stereo (8 Ω Bridged)**	**2 Ω Stereo (4 Ω Bridged)**
Watts	25 x 4	50 x 4

THD	<0.1%
Signal to Noise	>100 dB
Frequency Response	20 Hz to 20 kHz ± 0.5 dB
Stereo Separation	>90 dB
Damping	>200
Input Sensitivity	200 mV - 2.0 V, or 500 mV - 5.0 V
Input Impedance	12 kΩ

Dimensions

W x D x H: 16.0” x 9.8” x 2.25”

SOUNDSTREAM®

TECHNOLOGIES

SOUNDSTREAM TECHNOLOGIES
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USA