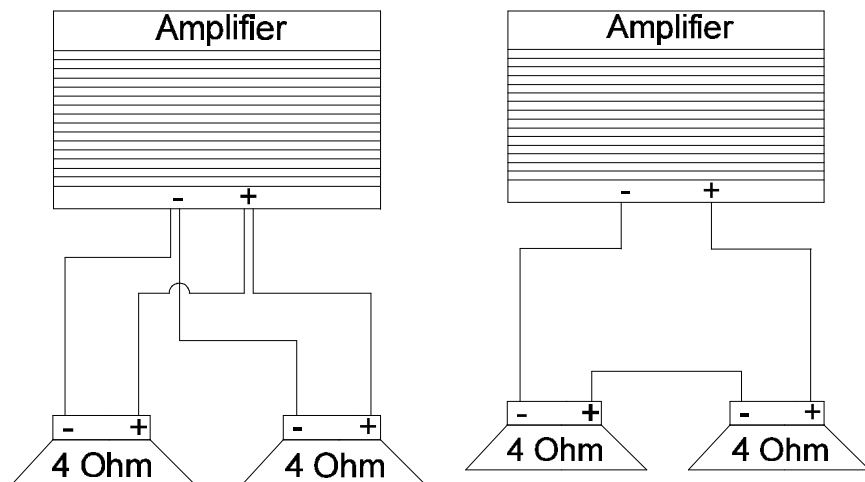


PARALLEL/SERIES WIRING DIAGRAMS



*two 4 ohm woofers
in parallel = **2 ohms***

*two 4 ohm woofers
in series = **8 ohms***

SOUNDSTREAM®

T E C H N O L O G I E S

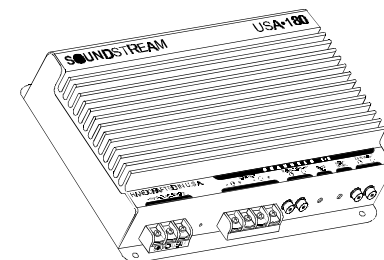
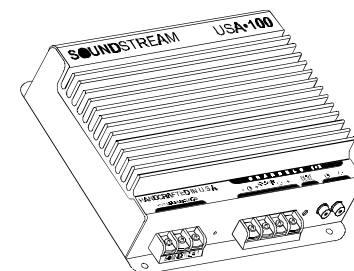
SOUNDSTREAM TECHNOLOGIES
120 Blue Ravine Road Folsom California 95630 USA
ph 916.351.1288 fax 916.351.0414 ver. 1.17.96a



USA•100

&

USA•180



Power Amplifiers

OWNERS MANUAL AND INSTALLATION GUIDE

CONGRATULATIONS!

You now own a Soundstream Amplifier, the result of a unique design and engineering philosophy.

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. When properly installed, they will provide you with many years of listening pleasure. Please record the following information which will help protect your investment should your amplifier ever need replacement or service.

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 amplifier sounds better than anything you've ever heard, exercise caution to prevent hearing damage.

SERVICE

Your Soundstream amplifier is protected by a limited warranty. Please read the enclosed warranty card.

SPECIFICATIONS

POWER OUTPUT

	Power 4 ohms	Power 2 ohms	Bridged Power 4 ohms
USA•100	40w x 2	60w x 2	100w x 1
USA•180	60w x 2	90w x 2	180w x 1

THD	< 0.1%
Signal to Noise	> 90 dB
Frequency Response	20 Hz to 20 kHz +/- 0.5 dB
Stereo Separation	> 90 dB
Damping	> 200
Input Sensitivity	100 mV - 2.5 V
Input Impedance	12 k ohms

CROSSOVER SPECIFICATIONS

High Pass: 12 dB/octave, factory set at 150 Hz

Low Pass: 12 dB/octave, factory set at 75 Hz (fixed on USA•100)

DIMENSIONS

USA•100: 7-1/8" W x 8-3/16" D x 2-3/16" H

USA•180: 8-1/2" W x 8-3/16" D x 2-3/16" H

PROTECTION CIRCUITRY

Your USA amplifier is protected against both overheating and short circuits by means of the following circuits:

- Main power supply fuses.
- Speaker output circuit breakers.
- A fail-safe thermal protection circuit activating at 95°C.

NOTE: If you experience blown main power supply fuses, DO NOT increase values beyond the original values! Doing so will void your warranty and may damage your amplifier.

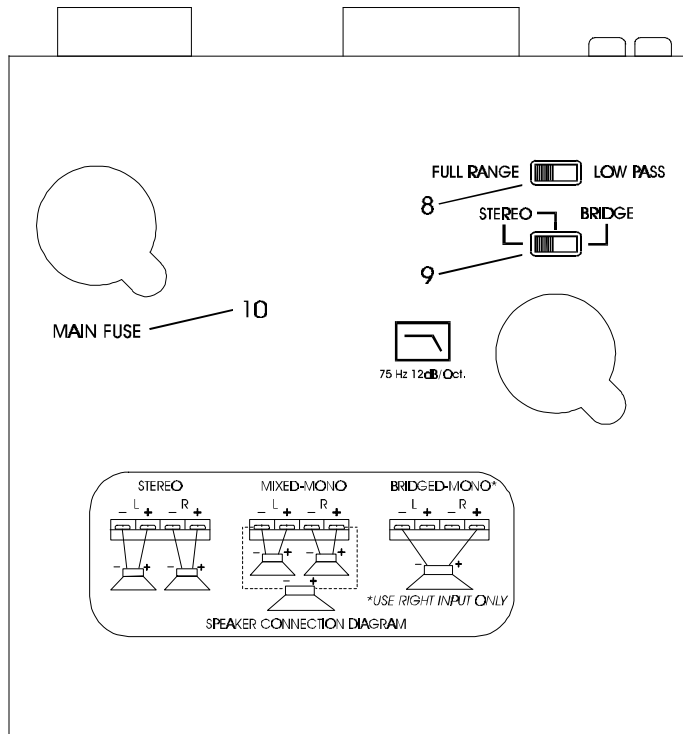
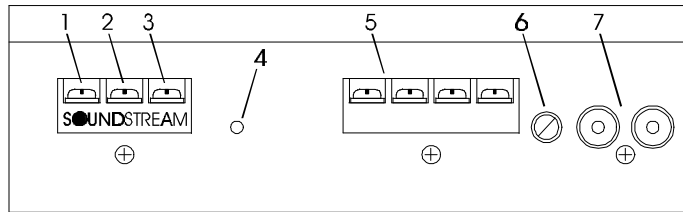
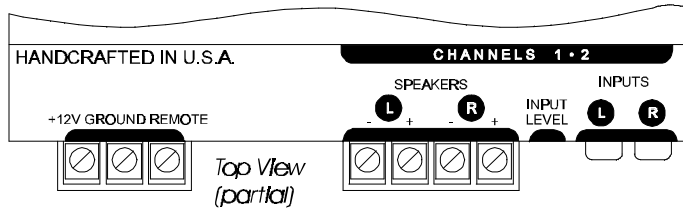
TROUBLESHOOTING

PROBLEM	CAUSE
No sound and LED is not lit	<ul style="list-style-type: none"> • no power or ground at amp • no remote turn-on signal • blown fuse near battery • blown amp power supply fuse
Repeatedly blown amp fuse, frequent activation of Thermal Protection Circuit	<ul style="list-style-type: none"> • check speaker configuration—impedance may be less than 2 ohms stereo or 4 ohms mono • speaker or leads may be shorted • verify adequate amplifier ventilation

TABLE OF CONTENTS

USA•100 Diagram	4 - 5
USA•180 Diagram	6 - 7
Features	8
Crossover Modes	9
Crossover Adjustments (USA•180 only)	10
Selecting Input Modes	11
Wiring & Wiring Diagram	12 - 13
Installation and Mounting	14
Level Setting	15
Sample Systems	16 - 21
Protection Circuitry & Troubleshooting	22
Service	23
Specifications	23

USA•100

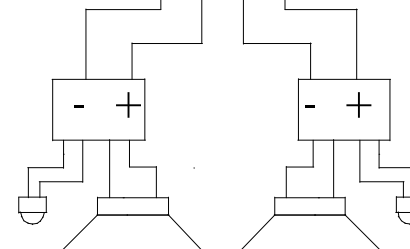
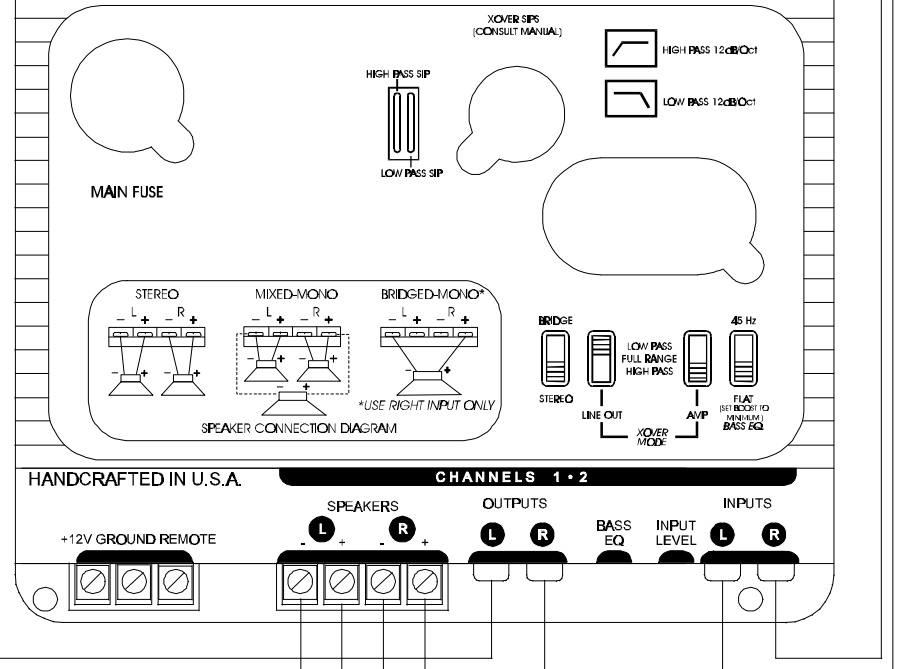


Underside View

HEAD UNIT

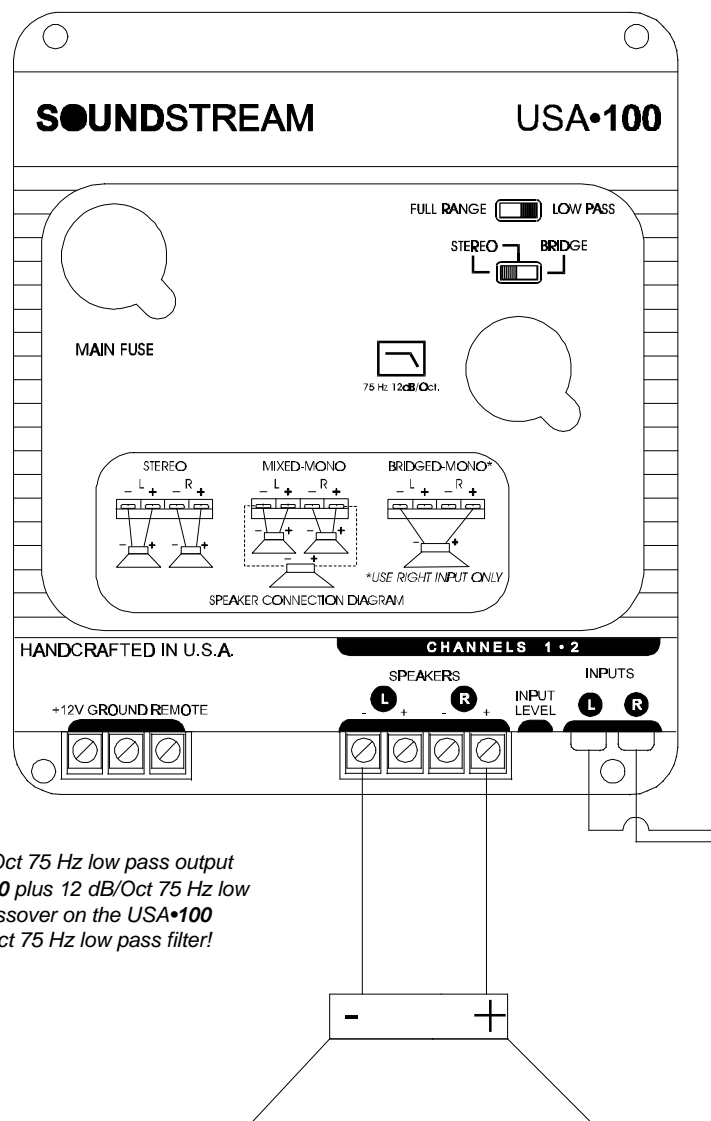
SOUNDSTREAM

USA•180



System Configuration #2:

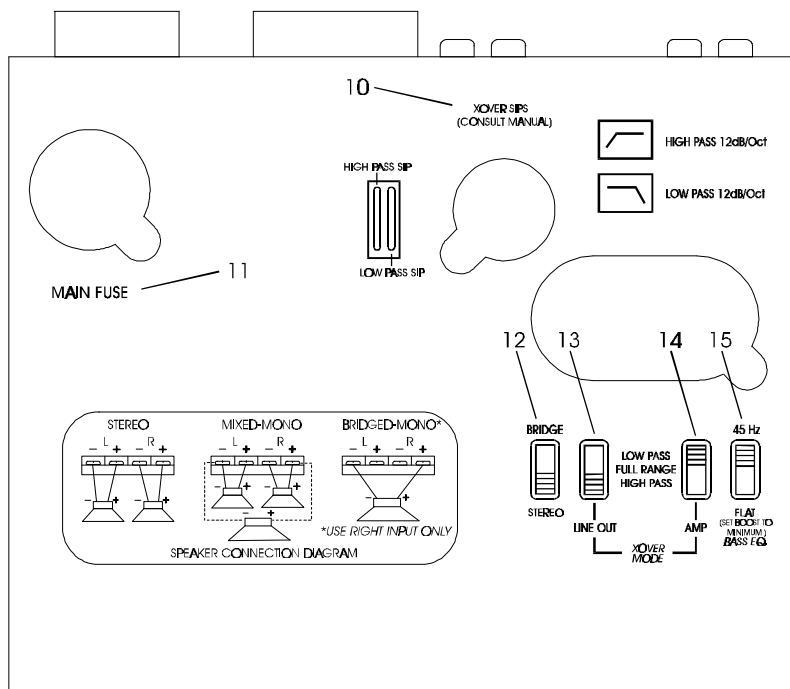
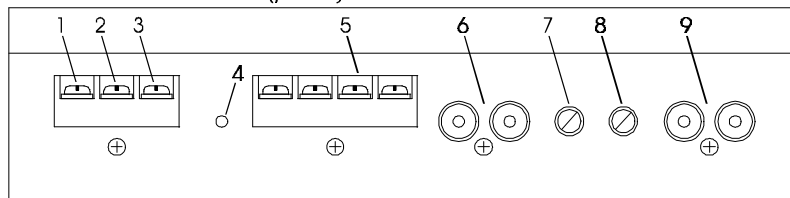
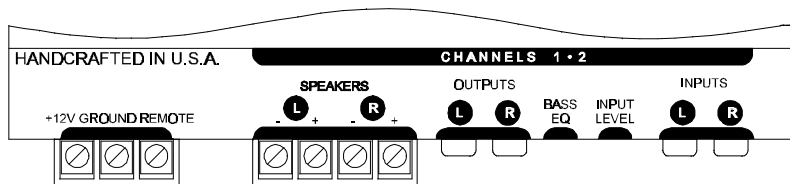
- Stereo inputs
- Stereo wiring driving one pair of satellite speakers
- Low pass RCA outputs to an external amplifier driving a subwoofer



Key to Callouts

1. **+12V** - Connected to fuse or circuit breaker, then battery's positive post.
2. **Ground** - Main ground connection. Bolt to a clean chassis ground in the vehicle.
3. **Remote** - Remote turn-on input from the head unit. Accepts +12V.
4. **LED** - Indicates amplifier power on.
5. **Speaker Output Connections** - Channels 1 & 2
6. **Input Level** - Variable from 100mV to 2.5V.
7. **Inputs** - Right and left channel inputs; only right channel input used in "Mono" mode.
8. **[underside] Amplifier Crossover Switch** - Select low pass or full range operation.
9. **[underside] Stereo/Bridged Mono Switch** - Select "Mono" for bridged operation (use only right channel input) or stereo position for 2-channel Stereo or Mixed Mono operation.
10. **[underside] Main Fuse** - Main power supply fuse. Replace only with same fuse value.

USA•180

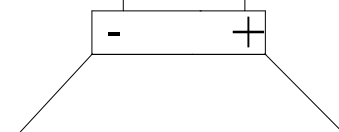
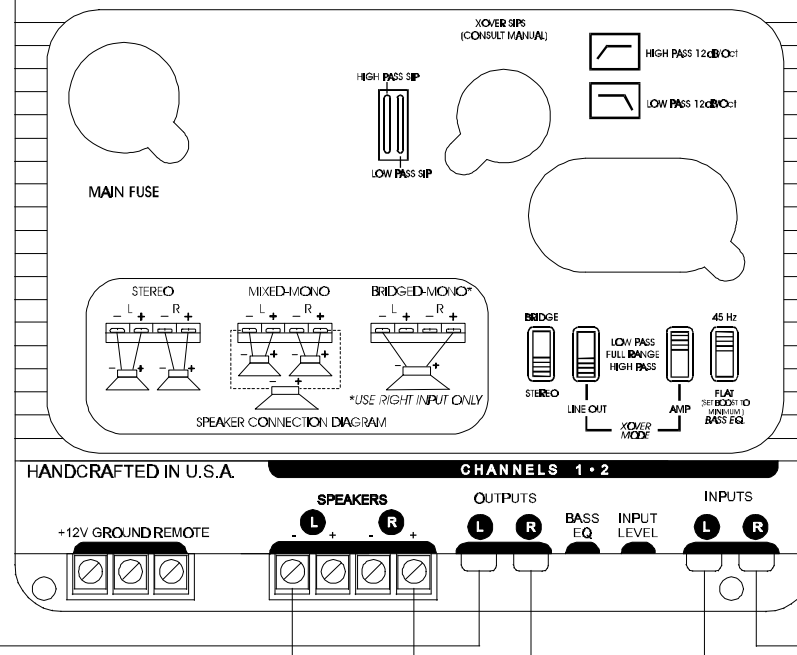


USA•180

HEAD UNIT

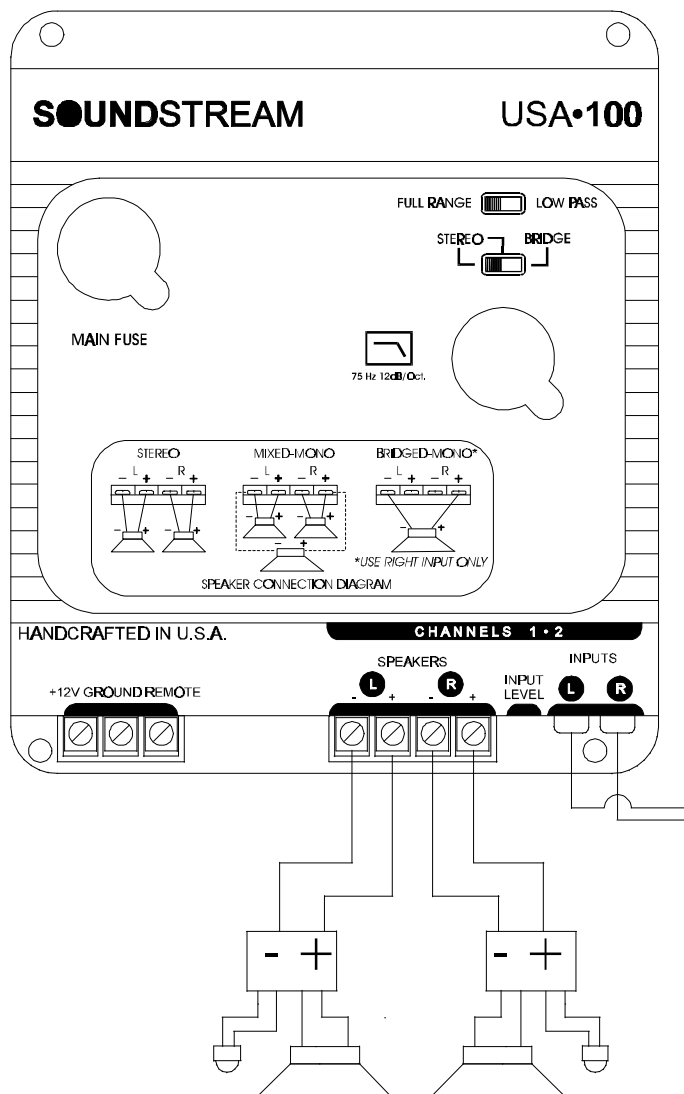
SOUNDSTREAM

USA•180



System Configuration #1:

- Stereo inputs
- Bridged mono wiring driving one subwoofer
- Bass EQ engaged
- High pass RCA outputs to an external amplifier driving satellite speakers

**Key to Callouts**

1. **+12V** - Connected to fuse or circuit breaker, then battery's positive post.
2. **Ground** - Main ground connection. Bolt to a clean chassis ground in the vehicle.
3. **Remote** - Remote turn-on input from the head unit. Accepts +12V.
4. **LED** - Indicates amplifier power on.
5. **Speaker Output Connections** - Channels 1 & 2.
6. **Crossover Output** - High pass, low pass or full range low level output to an auxiliary amplifier.
7. **Bass EQ** - Adjustable bass equalization circuit, 0 to +9 dB boost at 45 Hz.
8. **Input Level** - Channels 1 & 2; variable from 100mV to 2.5V.
9. **Inputs** - Channels 1 & 2; right and left channel inputs; only right channel input used in "Mono" mode.
10. **[underside] Crossover S.I.P.s** - Crossover frequency settings for channels 1 & 2 and crossover output.
11. **[underside] Main Fuse** - Main power supply fuse. Replace only with same fuse value.
12. **[underside] Stereo/Bridged Mono/Internal Switch** - Select "Mono" for bridged operation (use only right channel input) or stereo position for 2-channel Stereo or Mixed Mono operation.
13. **[underside] Line Out Crossover Switch** - Select high pass, low pass or full range operation of the crossover outputs.
14. **[underside] Amplifier Crossover Switch** - Select high pass, low pass or full range operation of the amplifier.
15. **[underside] Bass EQ Switch** - On/Off switch for the bass equalization circuit.

DESIGN FEATURES

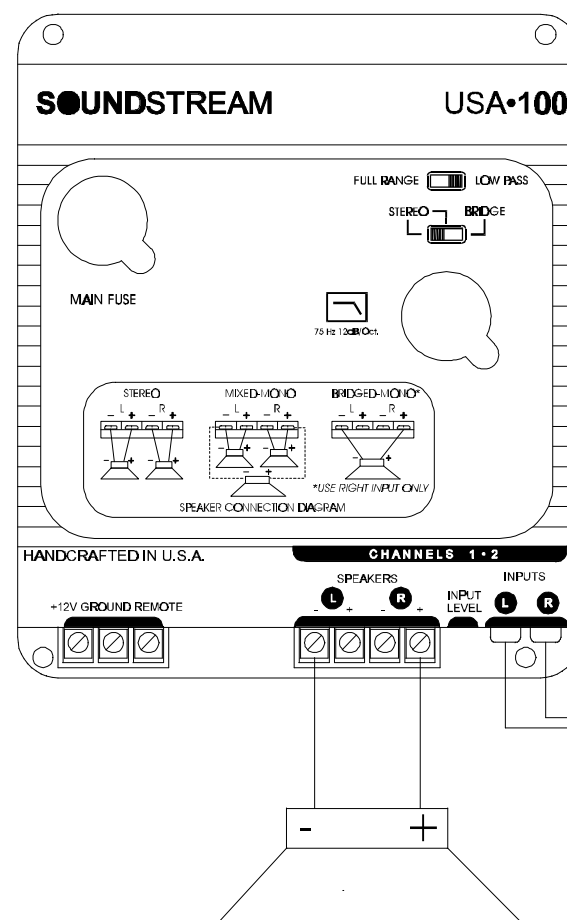
- ♦ **Hand-crafted in the U.S.A.** with mil-spec glass epoxy circuit boards, low-loss connections, gold-plated input connectors, and metal film resistors.
- ♦ **Darlington High Current Output Topology** - Soundstream's "overbuilding" of the output section incorporates Darlington output devices sandwiched between the circuit board and the heatsink in a design called Chassisink™ to ensure cool, efficient amplifier operation.
- ♦ **Mixed Mono Capable** so you can simultaneously drive a stereo and mono load (satellites and subwoofer).
- ♦ **2 Ohm Drive Ability** - Soundstream amplifiers are designed to drive loads down to 2 Ohms stereo and 4 Ohms bridged.
- ♦ **Built-in Staggered Crossover** - Built in 2-way electronic crossover is designed to send either high or low pass information (1-way low pass only on the USA•100) to the amplifier.
- ♦ **Bass EQ (USA•180 only)** - Adjustable bass equalization circuit allows you to boost bass by as much as +9 dB at 45 Hz. A built-in subsonic filter helps to protect speakers.
- ♦ **Drive Delay™ Muted Turn-on/off Circuit** - A unique circuit which completely eliminates any amplifier-related turn-on/off noises.
- ♦ **Flexible Input Sensitivity** - Accepts input voltages from 100 mV to 2.5 V, which permits maximum output from amplifier with virtually any source unit.
- ♦ **Differential Balanced Input Topology** for added immunity to ground loops caused by component and vehicle electrical system interaction.

	Power 4 ohms	Power 2 ohms	Bridged Power 4 ohms
USA•100	40w x 2	60w x 2	100w x 1
USA•180	60w x 2	90w x 2	180w x 1

System Configuration #2:

- Stereo Inputs
- Bridged mono wiring driving one subwoofer
- Using internal low pass filter

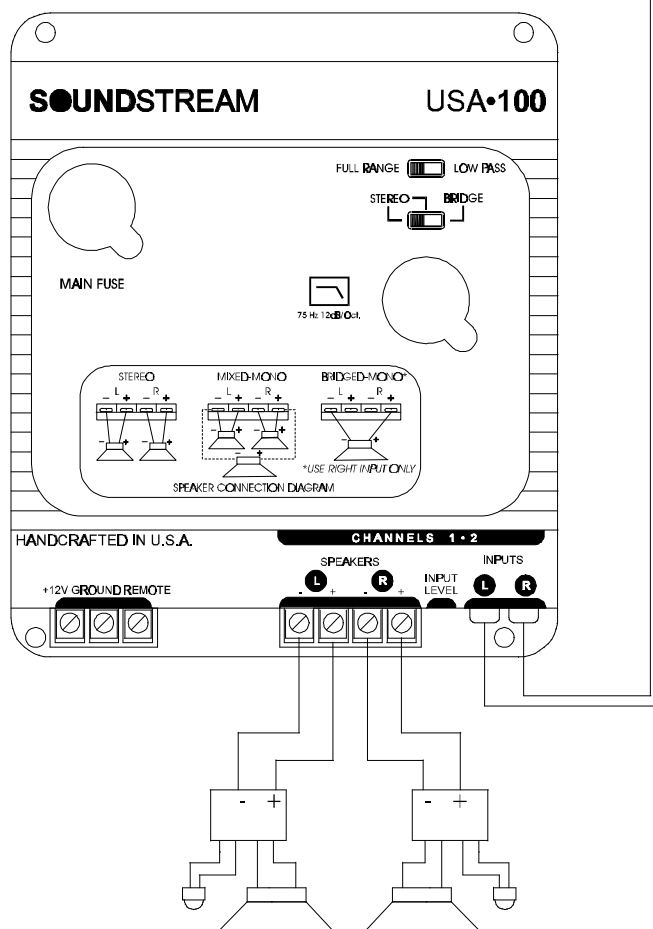
HEAD UNIT



System Configuration #1:

- Stereo operation
- Driving one pair of speakers in full range

HEAD UNIT

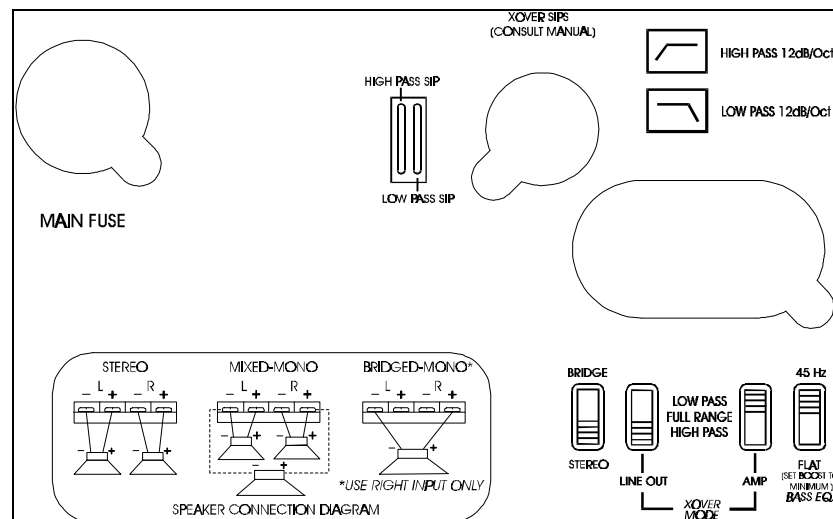


INSTALLATION STEP 1

SETTING THE CROSSOVER MODES

The Soundstream USA•100 & 180 incorporate a defeatable electronic crossover for each pair of channels. With its crossover outputs, the USA•180 amplifier can drive a complete system without need of an outboard electronic crossover.

Before installing the amplifier, make certain the switches on the bottom are set to the correct positions.



USA•180 shown

LOW PASS

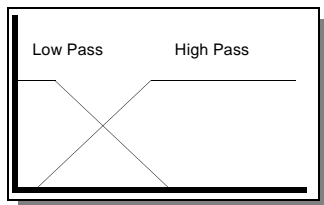
The low pass crossover is used for sending only low frequency information to particular speakers. Activate the low pass crossover if you intend to drive subwoofers.

HIGH PASS (USA•180 only)

The high pass crossover is used for sending only midrange and high frequency information to specific speakers. Activate the high pass crossover if you intend to drive satellite or coaxial speakers in the system. Even if your system does not include subwoofers, it may be helpful to activate the high pass crossover with smaller speakers to protect them from low frequency information.

CROSSOVER ADJUSTMENTS

In most car audio installations, there is a tendency for a “midbass boom.” Because of their interior dimensions, most cars will resonate or ring at these midbass frequencies. If we design the system so there is less musical information in this region, the final response is very smooth and natural sounding.

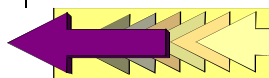
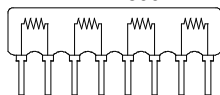


The USA•180 incorporates a staggered electronic crossover. The high and low pass portions of the crossover can be set independent of one another.

Below is a chart of S.I.P. values which can be used for changing the factory preset crossover points. (Only on USA•180. The crossover on the USA•100 is not variable.)

Staggered Crossover
12 dB/octave low pass,
12 dB/octave high pass (USA•180)

FREQUENCY	RESISTOR VALUE	COLOR CODE
53 Hz	30 K Ω	Green-Green
73 Hz	22 K Ω	Green-White
89 Hz	18 K Ω	
107 Hz	15 K Ω	Violet-Green
145 Hz	11 K Ω	Violet-White
195 Hz	8.2 K Ω	
286 Hz	5.6 K Ω	
485 Hz	3.3 K Ω	
800 Hz	2.0 K Ω	



NOTE: The following formula may be used to determine values in creating “custom” resistor packs. The frequency is equal to 1,600,000 divided by the individual resistor value, or $1,600,000 / R \text{ ohms} = X \text{ Hz}$. To make a custom S.I.P., use 4 identically valued resistors of 2% or tighter tolerance. See the drawing of the S.I.P. for more information.

Example: $1,600,000 / 22,000 = 73 \text{ Hz}$

INSTALLATION STEP 5

LEVEL SETTING

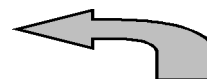
The input levels are adjusted by means of the input level controls located on the front of the amplifier.

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, it 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.

Follow the below procedure for the quickest, easiest means of setting the levels:

1. Turn the amp's input levels to minimum position (fully counter-clockwise).
2. Set source unit volume to approximately 3/4 of full volume.
3. While playing dynamic source material, slowly increase the amplifier's

NOTE: Even though the S/N ratio with low output sources is better with the Soundstream amplifiers 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 2.5 V.



Installation with Plexiglass Bottom Plates

Plexiglass bottom plates are available for all USA amplifiers. They are designed to enhance the cosmetics of virtually any installation by proudly displaying the USA flag circuit board, and American made circuitry!

When installing a USA amplifier with a plexiglass bottom plate, try to make certain that the amplifier receives adequate ventilation. You can do this by mounting the amplifier in such a way that the heat sink fins are oriented vertically. If the amplifier is to be mounted horizontally, a +12V fan can be

INSTALLATION STEP 4

INSTALLATION AND MOUNTING

1. **AMPLIFIER LOCATION**

The USA amplifiers employ 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 Input and Crossover switches to the appropriate positions (see pages 16 - 21).

3. **MOUNTING THE AMPLIFIER**

- Using the amplifier as a template, mark the mounting surface.
- Remove the amplifier and drill the holes.
- Mount the amplifier to the surface using the provided hardware.

4. **WIRING**

- Run and connect the audio signal and remote turn-on cables to the amplifier from the source unit.
- Carefully run the positive cable from the amplifier to a fuse or circuit breaker within 18 inches of the battery.**
- Then connect the fuse or circuit breaker to the battery. Leave the circuit breaker off or the fuse out until everything is bolted down.
- 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.
- Double check each and every connection!
- Re-connect the fuse or circuit breaker.

5. **POWER UP**

Power up the system and look at the LED and it should be lit. There may be a 2 - 3 second delay from the time the source unit is turned on to the time 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 2

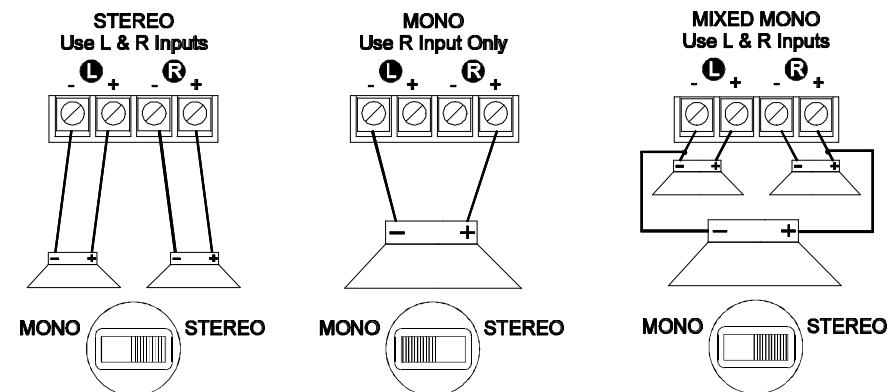
SELECTING INPUT MODES

On Soundstream amplifiers, a pair of channels may be bridged for mono operation. To do so, simply put the stereo switch into the "mono" position and follow the mono wiring (Right Positive goes to speaker's positive; Left Negative goes to speaker negative).

Stereo for normal operation.

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 (i.e., With this switch in *stereo* and using bridged output wiring, left and right channel information will be summed into a single mono load. This is ideal for using stereo inputs to drive a mono subwoofer!)

Bridged Mono for dedicated single channel operation; ideal for driving a subwoofer with a mono input. It is also used when large 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.

**For system examples and diagrams, see
pages 16 - 21.**

INSTALLATION STEP 3

WIRING

POWER AND GROUND

To assure maximum output from your amplifier, use high quality, low-loss power and ground cables. Soundstream USA amplifiers incorporate gold-plated barrier strips for maximum power transfer and protection from corrosion. The screw terminals back out for use with spade & ring terminals, as well as bare wire. Determine from the chart below the minimum gauge power and ground wire for your application.

	up to 10'	up to 20'
USA•100	Soundstream Power80 or Power100	Soundstream Power80 (8 ga.)
USA•180	Soundstream Power80 or Power100 (or 8 or 10 ga.)	Soundstream Power80 (8 ga.)

CIRCUIT BREAKERS/FUSES

EXTERNAL

Like all audio components, the Soundstream amplifiers 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. **See the chart below to determine the value of your battery fuse/circuit breaker.**

Model	Amplifier Fuse	Battery Fuse/ Circuit Breaker
USA•100	15 amp automotive	20 amp
USA•180	25 amp automotive	30 amp

(Continued on page 13)

(Continued from page 12)

INTERNAL

The Soundstream amplifiers are fused internally with automotive-type fuses. The fuses are accessible via a plastic plug on the bottom of the amplifier. **Never replace the fuses with a higher value than what is supplied. This may result in amplifier damage and will void the warranty!**

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. Soundstream's Remote200 20 gauge turn on lead works perfectly.

SIGNAL CABLE

To guarantee optimum performance, use a high-quality cable that will be easy to install and has minimal signal loss such as Soundstream's DL 1 or SL 1.

SPEAKER CABLE

Use a high quality, flexible, multi-strand cable for best performance and

WIRING DIAGRAM

