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To Return Merchandise...

You don't need to call us if you have a problem with the merchandise you've received. Simply follow the instructions on the reverse side of the packing slip that comes with your order. Galls provides a preaddressed label for you to affix to the package. If you don't have your packing slip, place the item in the original packaging (along with a brief explanation for the return), then place in a second box to prevent damage. To assure speedy handling, please ship it directly to:

Galls, Inc. Returns Department
1340 Russell Cave Road, Lexington, KY 40505

If you have any questions concerning this or any other Galls product, please contact our **Customer Service Department** at (800) 477-7766.



ST110 SIREN AMPLIFIER INSTALLATION AND OPERATING INSTRUCTIONS



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INSTALLATION INFORMATION	MODEL: ST110
SERIAL NO: _____	
PURCHASE DATE: _____	OPTIONS
DEALER: _____	_____ Thunder Disabled
INSTALLATION DATE: _____	_____ Two-Tone Enabled
INSTALLER: _____	
Model and serial number located on the bottom of the amplifier unit	

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NOTICE

Due to continuous product improvements, we must reserve the right to change any specifications and information contained in this manual at any time without notice. Galls makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Galls shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

GENERAL DESCRIPTION

The ST110 Remote Siren Amplifier is designed for single 100W speaker use. It comes standard with the amplifier unit as well as a remote control head (switch panel). The primary operating modes are Wail, Yelp, Standby, Manual, and Horn. Both the Manual Control and the Horn function will override all other functions, and can be utilized at any time via a rocker switch. The Thunder function can be optionally disabled entirely with a program jumper.

The ST110 unit is designed to allow maximum versatility in mounting. The control head is remote from the siren amplifier box creating a compact user interface panel that can be easily mounted under the dashboard. The amplifier box can then be mounted remotely in the trunk, under the dashboard, under the seat, or wherever convenient.

The siren amplifier has been designed with several protection features to provide exceptional field service. Excessively high voltage detection will disable the siren output to protect both the amplifier and the speaker. Fused inputs provide safety against reverse polarity. Speaker protection shuts down the output if the speaker output becomes electrically shorted. **CAUTION:** These protection features will not guard against overloading the outputs.

SPECIFICATIONS

Input Voltage	10 - 16 VDC (negative ground)
Input Current	8 Amps @ 13.6 VDC (100W speaker)
Standby Current	Less than 20 mA
Output Power	105 WATTS RMS MAX. (15.0 VDC - single 100W speaker)
Siren Frequency	675Hz - 1633Hz
High Voltage Protection	16 - 18 VDC will cause siren output to cease, resume at normal
Short Circuit Current	50 AMPS (supply circuit must be capable of supplying this)
Operating Temperature	-15° F to +140°F
Controls	3-position primary mode rocker switch (Wail, Yelp, and Standby) Momentary 3-position rocker switch (Horn and Manual) Thunder disable (jumper programmable)
Connections (12-Pin Connector)	Detachable, 12-pin, positive locking connector with pigtail leads for Amplifier. (1) Positive, (1) Negative, (2) Speaker, Wail, Yelp, Horn, Manual, and auxiliary positive switching Horn.
Size	ST110-AMP - Amplifier: 2" High, 6" Wide, 5-3/4" Deep ST110-CH - Control Head (Switch Panel): 3" High, 2-1/4" Wide, 1-1/2" Deep
Boxed Weight	3.5 lbs.

LIMITED WARRANTY

Galls warrants this new product to be free from defects in material and workmanship, under normal use and service, for a period of seven (7) years from the date of delivery to the first user-purchaser.

During this warranty period the obligation of Galls is limited to repairing or replacing, as Galls may elect, any part or parts of such product which after examination by Galls is determined to be defective in material and/or workmanship.

This warranty does not cover labor charges for removal or re-installation of the product. Fuses and lamps are not covered under this warranty.

This warranty does not extend to any unit that has been subjected to abuse, misuse, improper installation or which has not been adequately maintained, nor to units which have problems related to service or modification at any facility other than the manufacturer.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL GALLS BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIALS OR WORKMANSHIP.

INSTALLATION

TROUBLESHOOTING

Symptom	Possible Cause	Check
No power	Power source not turned on Connector loose Amplifier 15A fuse blown Loose connection at power source	Is ignition switch in AUX or ON position? Do you hear a “pop” when turned on? Is power hooked up backwards? Positive ground vehicle? Is an external fuse or circuit breaker used? Are the negative leads connected to a good ground?
No siren tone	High voltage protection Bad speaker or speaker wiring	Input voltage must be less than 16 volts. Check for a short or an open in the output.
Distorted siren sound	Speaker assembly loose Intermittent Aux. Input connection High vehicle voltage	Is the speaker bell or tip loose? Is the Aux. Input used and wired properly? Input voltage must be less than 16 volts.
Intermittent siren tone	High voltage protection Circuit breaker in supply Bad Connection Shorted speaker or speaker wire	Is the vehicle voltage regulator working properly? Is a circuit breaker used with at least a 30A rating? Is the connector tight on the back of the unit? Does the speaker have water damage, or is a wire pinched?
Horn function or Manual function stuck on	Horn switch stuck Manual push-button switch stuck Aux. Input improperly connected Aux. Horn Input Polarity reversed	Does the horn switch return fully when released? Does the Manual push-button switch return fully when released? Is the AUX Input used and wired properly? Is the AUX horn wire wired for correct polarity?
Wrong siren tone	Two-Tone option jumper installed Aux. Horn Input Polarity reversed	Is the TT jumper option properly configured? Is the AUX horn wire wired for correct polarity?
Thunder not working	Thunder disabled	Is the jumper option configured properly?

Proper installation of the unit is essential for years of safe, reliable operation. Please read all instructions **before** installing the unit. Failure to follow these instructions can cause serious damage to the unit or vehicle and may void warranties.

Qualifications - The installer must have a firm knowledge of basic electricity, vehicle electrical systems and emergency equipment.

Keep These Instructions - Keep these instructions in the vehicle or other safe place for future reference. Advise the vehicle operator of the location.

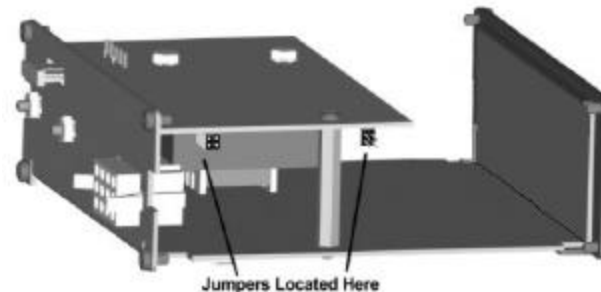
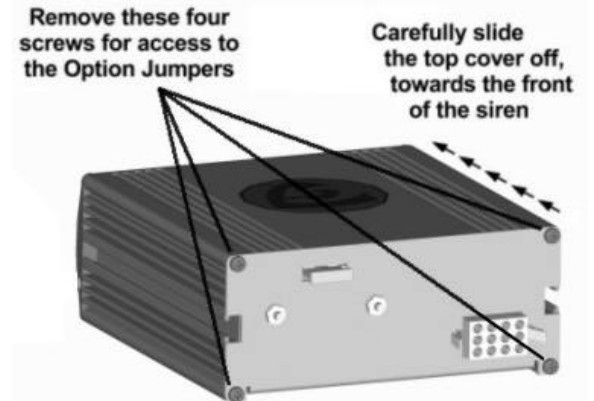
Unpacking - Inspect contents for shipping damage. If any damage is found, alert the carrier immediately. ST110 contents should include: an amplifier box with wiring pigtail, a control head (switch panel), (6) six 1/4" quick connect terminals, and these instructions. Please contact Galls immediately if any components are missing.

INSTALLER-SELECTABLE OPTIONS

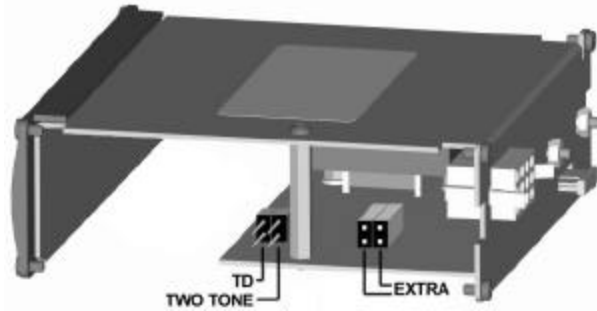
The ST110 has Thunder disable and Two-Tone enable options that can be selected during installation. An internal jumper on the printed circuit board inside the amplifier case allows the installer to select these options. These options should be set before installation of the unit.

Amplifier Cover Removal

Remove the four Philip head screws located on the back of the amplifier unit. Carefully slide the cover off of the extrusion.



INSTALLER-SELECTABLE OPTIONS (cont'inued)



Thunder Disable - The Thunder function can be completely disabled by moving one of the option jumpers inside the amplifier unit from "Extra" to the "TD". When Thunder is disabled, the Manual button will not have any effect on the tone while the siren is in the Yelp mode

Two-Tone Enable - The Two-Tone function can be enabled by moving one of the option jumpers inside the amplifier unit from "Extra" to the "Two-Tone". When Two-Tone is enabled, a European Two-Tone sound will replace the Thunder sound when the Manual button is pressed while the siren is in the Yelp mode. (The tone will toggle between Yelp and Two-Tone each time the Manual button is pressed)

MOUNTING

SAFETY PRECAUTIONS

For the safety of the installer, vehicle operator, passengers and the community please observe the following safety precautions. **Failure to follow all safety precautions and instructions may result in property damage, injury or death.**

!!! WARNING !!!

DO NOT mount in air bag deployment area.
Devices should be mounted only in locations listed in SAE standard J1849.
Controls should be placed within convenient reach of the driver.
Assure clearances before drilling in vehicle.
Sound levels produced by attached speakers can cause permanent hearing loss.
Never operate this unit without adequate hearing protection for you and others in the area. (OSHA 1910.95)

AMPLIFIER

The ST110 amplifier should be mounted in a location such as the firewall, under the seat, in the trunk, or in the saddlebag. It is not recommended to mount the amplifier in the engine compartment or in an area that would be allowed direct exposure to weather elements. Choose a mounting location away from any air bag deployment areas. Assure adequate ventilation to prevent overheating.

The amplifier unit is provided with a U-bracket for mounting.

SIREN OUTPUT:

Selector Switch Position:	Speaker Output	Pressing Manual Pushbutton
Wail	Wail	Yelp
Yelp	Yelp	Thunder (Remains Yelp if Thunder disabled)
Manual (Standby)	No Output	Creates a manual WAIL tone while button is being held that sweeps down when the button is released.

(NOTE: THUNDER may be optionally disabled via program jumpers. See INSTALLER-SELECTABLE OPTIONS on page 3.)

AUXILIARY INPUT

During installation an auxiliary input may be connected to the vehicle horn ring or other switching device. It provides the same operation as pressing the Horn button. See the wiring diagram on page 6 for wiring details.

OPERATION

GENERAL

This unit is designed for easy operation under the stress associated with high-speed pursuit. Most siren functions are accessible with one simple motion without repetitive activation of switches or automatic timed switching that can interfere with desired operation.

CONTROL HEAD

The three-position rocker switch on the left side of the Control Head controls the primary operating function of the siren.

Wail - A normal rise-fall tone used on highways and areas with low traffic or constant traffic flow.

Yelp - A rapid warble tone used in light to moderately congested areas.



Center Off – (Manual/Standby) - A silent mode that allows momentary push-button Manual and momentary push-button Horn. The siren output *winds down* when the Manual momentary switch is released.

MANUAL BUTTON

With the left selector switch in the Center Off (Manual/Standby) position, the Manual momentary switch provides a manually activated Wail siren tone. While the selector switch is in the Wail or Yelp position, this switch provides a generally quicker changing tone. (See tables on next page). These quicker tones are used to momentarily alert motorists at intersections and very highly congested areas. Pressing the button once changes to the next faster tone. Pressing the MAN button again will toggle the siren back to the original tone.

Optional configuration allows disabling of the Thunder tone entirely. This option is selected during installation and may be governed by State or Local laws. (Refer to the INSTALLER SELECTABLE OPTIONS section on page 3).

HORN BUTTON

This momentary push-button switch provides a simulated air-horn tone while pressed. This can be used to either replace, or to supplement the normal vehicle horn and is useful at intersections or in low noise areas. This tone will override all other siren tones.

CONTROL HEAD

The control head is designed to be mounted in an easily accessible location such as under the dash, in the overhead console, or in a center console. Choose a mounting location convenient to the operator and away from any air bag deployment areas. Be sure to choose a location that has at least two inches of depth to accommodate the control head and cables. Consider wire routing and access to connections when selecting location as well.



Using the switch panel unit itself as a template, mark the location of the two mounting holes to be drilled. Be sure to check for obstructions behind the mounting hole locations. Drill the two mounting holes and secure the switch panel using appropriate hardware (not supplied). Permanently mount the control using two screws (not provided).

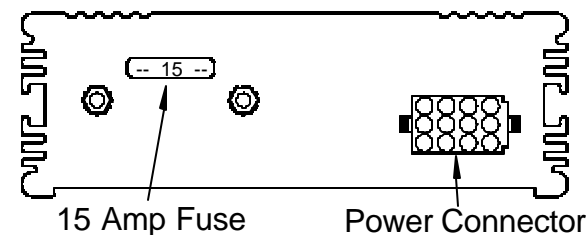
ELECTRICAL CONNECTIONS

CONTROL HEAD

Electrical power connections to the control head are made using the (6) six 1/4" quick connect terminals provided. A wiring diagram on page 6 shows detail of how to wire the control head to the vehicle.

AMPLIFIER

Electrical power connections to the amplifier are made using a removable connector located on the back of the amplifier case. You should make all electrical connections to the power connector before installing the connector on the unit. If the unit needs service, the power connector can be easily removed without unwiring the connector.



The power supply of the unit must be capable of delivering peak currents up to 30 amps for adequate short circuit protection and reliable operation. The preferred source is directly at the vehicle battery. The unit is internally fused. A wiring diagram on page 6 shows detail of how to wire the power connector on the amplifier to the vehicle.

Wire Size and Termination

The adjacent wiring diagram shows the minimum wire size used for each connection. If the wire is longer than 10 ft. it is recommended to use the next larger wire size. Use only high quality crimp connectors. Make sure all connections are tight. Route wiring to prevent wear, overheating and interference with air bag deployment. Use grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. Ground connections should only be made to substantial chassis components, preferably directly to the negative of the vehicle battery. Install and check all wiring before connection to the vehicle battery.

Connection Of The Wires From The Amp:

BLACK LEAD: Connect the black wire from the amplifier to the negative side of the battery or to a good chassis ground. Be sure to use minimum size #16 AWG.

RED LEAD: Connect the red wire from the amplifier to positive 12 VDC. It is strongly recommended that you connect to a 12 VDC source that is present only when the vehicle ignition is in the on position. A power relay may also be used. Be sure to use a minimum size #16 AWG wire.

YELLOW LEAD: Connect the yellow wire from the amplifier to +12 VDC through the remote switch that will switch the siren on and off. Be sure to use minimum size #18 AWG.

BROWN LEADS: Connect one lead to each terminal or lead of the speaker. Be sure to use a minimum size #16 AWG wire.

GRAY LEAD: Used for HORN control. For the ST110 connect the gray lead to pin 3 of SW2 as shown on the next page. *Please note: The #1 and #3 terminals on each switch are reversed from the function they control. Although the horn function is activated by pressing the switch to the top, the connection is actually made at the bottom.*

BLUE LEAD: Used for MANUAL control. For the ST110 connect the Blue lead to pin 1 of SW2 as shown on next page.

WHITE LEAD: Used for WAIL control. Connect the White lead to pin 3 of SW1 (next to YELP label) as shown on next page for the ST110. Be sure to use minimum size #18 AWG wire.

Violet: Used for YELP control. Connect the Violet lead to pin 1 of SW1 (next to WAIL label) as shown on next page. Be sure to use a minimum size #18 AWG wire.

Please Note: Terminal 2 from both switches on your ST110 Control Head must be attached to a Good Chassis Ground as pictured on the following page.

Optional Connections:

GREEN LEAD: Used for remote (Aux.) HORN control. Connect to horn ring circuit or remote switch. Circuit must have positive voltage activation (apply +12VDC for activation). For vehicles with negative activation (connect to ground for activation), the vehicle horn switch should be wired in parallel with the control head horn switch. See diagram on adjacent page.

NOTE: Cut lead short if not used & insulate with electrical tape.

Testing - Test all siren functions after installation to assure proper operation. Test vehicle operation to assure no damage to vehicle.

