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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.



ST105 SIREN AMPLIFIER INSTALLATION AND OPERATING INSTRUCTIONS



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INSTALLATION INFORMATION		MODEL: ST105 ___
SERIAL NO: _____	OPTIONS	
PURCHASE DATE: _____	_____ Thunder Disabled	
DEALER: _____	_____ Two-Tone Enabled	
INSTALLATION DATE: _____	_____ Negative Aux. Polarity	
INSTALLER: _____		
Model and serial number located on the top 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 ST105 Remote Siren Amplifier is designed for single 100W speaker use. It comes standard with the amplifier unit and control head (switch panel) all in one unit. The primary operating modes are Wail, Yelp, Standby, Manual, and Horn. Both the Horn and the Manual Control 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 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) Two-Tone Enable (jumper programmable) Auxiliary Horn Polarity (jumper programmable)
Connections (12-Pin Connector)	Detachable, 12-pin, positive locking connector with pigtail leads (1) Positive, (1) Negative, (2) Speaker, (1) Power Control, (1) Backlighting and (1) auxiliary Horn.
Size	2" High, 6" Wide, 5-3/4" Deep
Boxed Weight	ST105 - 3.4 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.

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 TD jumper option configured properly?

INSTALLATION

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

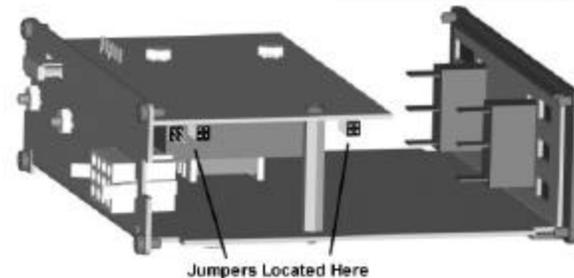
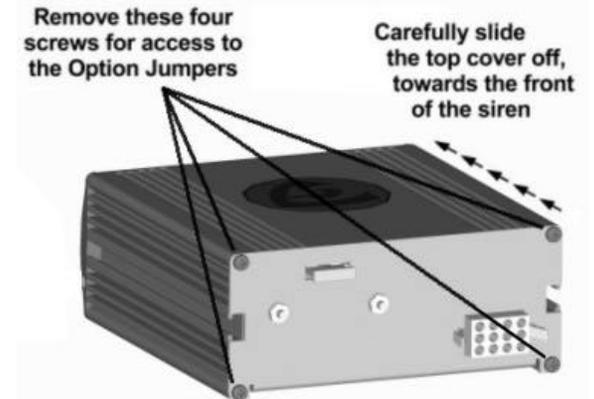
Inspect contents for shipping damage. If any damage is found, alert the carrier immediately. ST105 contents should include: an amplifier box with wiring pigtail, a "U" bracket for mounting, and these instructions. Please contact Galls immediately if any components are missing.

INSTALLER-SELECTABLE OPTIONS

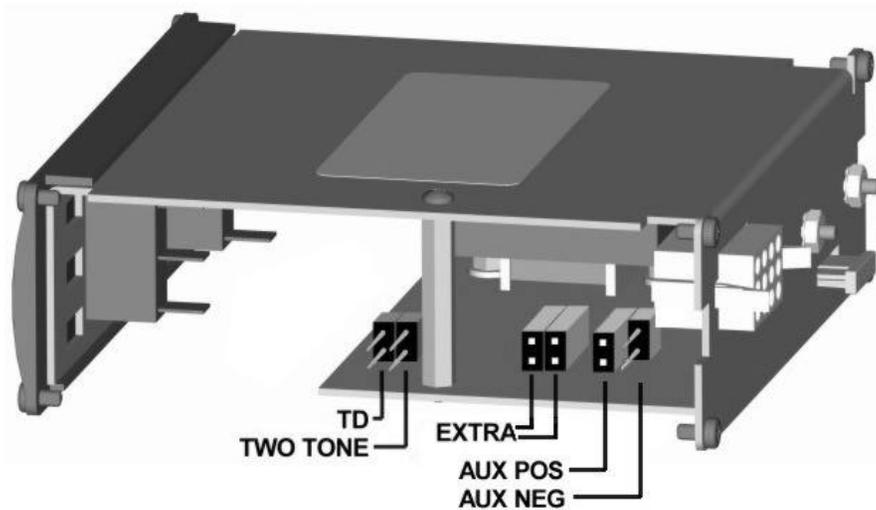
The ST105 has Thunder disable, Two-Tone enable, and Auxiliary Horn Polarity options that can be selected during installation. An internal jumper on the printed circuit board inside the amplifier case allows the installer to select these options. These options should be set before installation of the 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)

Auxiliary Horn Polarity - The Auxiliary Input allows activation by an external source of the Horn function. This input is usually wired into the vehicle horn switch. The wiring diagram on page 6 shows two connection examples. NOTE: Permanent disconnection of the vehicle horn is NOT recommended.

The auxiliary input is normally activated by applying a positive voltage to the wire. To activate by connecting to ground (negative), move the "AUX" option jumper from the "Pos." pins to the "Neg." pins. (See diagram above).

SIREN OUTPUT:

Selector Switch Position:	Speaker Output	Pressing Manual Pushbutton
Wail	Wail	Yelp
Yelp	Yelp	Thunder (or Two-Tone) (Remains Yelp if Thunder disabled)
OFF	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 pages 2 & 3).

(NOTE: TWO-TONE may be optionally selected over Thunder via program jumpers. See INSTALLER-SELECTABLE OPTIONS on pages 2 & 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 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.

SELECTOR SWITCH

The three-position rocker switch on the left 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.
- OFF** - (**Manual/Standby**) - A silent mode that allows push-button Horn and push-button Manual (MAN). The siren output *winds down* when the Manual push-button switch is released.

Manual

With the left selector switch in the OFF position, the Manual side of the 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 table 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 Manual 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 pages 2 & 3).

Horn

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.

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.**

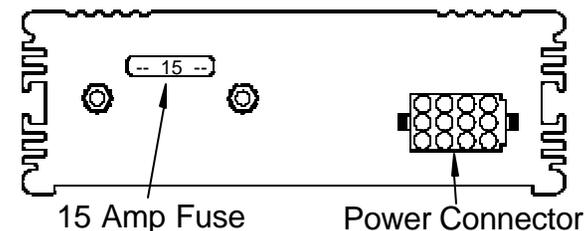
!!! WARNING !!!

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 ST105 siren may be mounted above the dash, below the dash, on a tunnel, or in a rack with the mounting u-bracket provided. Choose a mounting location convenient to the operator and away from any air bag deployment areas. Inspect behind mounting area for clearance. Assure adequate ventilation to prevent overheating. Consider wire routing and access to connections. Install mounting bracket to vehicle using 1/4" hardware (not supplied).

ELECTRICAL CONNECTIONS



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, along with recommended lead color. If the wire is longer than 10 ft. 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 vehicle battery.

Wiring Connections:

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 to +12VDC through a switched power supply (possibly ignition). This will turn the siren on and off. Be sure to use minimum size #18 AWG wire.

ORANGE LEAD: This lead supplies power for the backlighting of the siren. Connect it to +12VDC from the dash lights, parking lights or other switched source. Be sure to use minimum size #18 AWG wire.

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

Optional Connections:

GREEN LEAD: Used for remote (Aux.) HORN control. Connect to horn ring circuit or remote switch. Siren is shipped with positive voltage activation defaulted (apply +12VDC for activation). For vehicles with negative activation (connect to ground for activation), the unit must be opened up and have the Aux. Horn polarity jumper switched. Refer to pages 3 & 4 for further details.

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.

