



GAI-TRONICS® CORPORATION  
A HUBBELL COMPANY

# Model 701-302, 701-304, and 701-307 Handset/Speaker Amplifiers

## Confidentiality Notice

This manual is provided solely as an operational, installation, and maintenance guide and contains sensitive business and technical information that is confidential and proprietary to GAI-Tronics. GAI-Tronics retains all intellectual property and other rights in or to the information contained herein, and such information may only be used in connection with the operation of your GAI-Tronics product or system. This manual may not be disclosed in any form, in whole or in part, directly or indirectly, to any third party.

## General Information

This manual applies to the following GAI-Tronics handset/speaker amplifiers models:

Model	Description
701-302	Handset/Speaker Amplifier with Pressbar and Magnetic Hookswitch
701-304	Handset/Speaker Amplifier with Pressbar, Auxiliary Jack, and Magnetic Hookswitch
701-307	Handset/Speaker Amplifier with Pressbar; 24 V dc and Magnetic Hookswitch

The 701 Series Handset/Speaker Amplifiers are an important component of the 700 Series Page/Party® system. These handset/speaker amplifiers are plug-in amplifiers that mate directly with the Model 702, 703, 732 and 733 Series Amplifier Enclosures and are suitable for indoor or outdoor use.

The Model 701-302, 701-304, and 701-307 Handset/Speaker Amplifiers include new printed circuit board assemblies (PCBAs). All the amplifiers listed above use new PCBAs for replacement purposes. See the Replacement Parts section for details.



# Installation



**Do not install this equipment in hazardous areas or areas other than those on the equipment approval list in the Specifications section. Such installation may cause a safety hazard and consequent injury or property damage.**

The Model 701-302, 701-304, and 701-307 Handset/Speaker Amplifiers plug it directly into the enclosure. The following figure shows installation and adjustment details. Please refer to it when you are installing and adjusting the 701 Series Amplifiers.

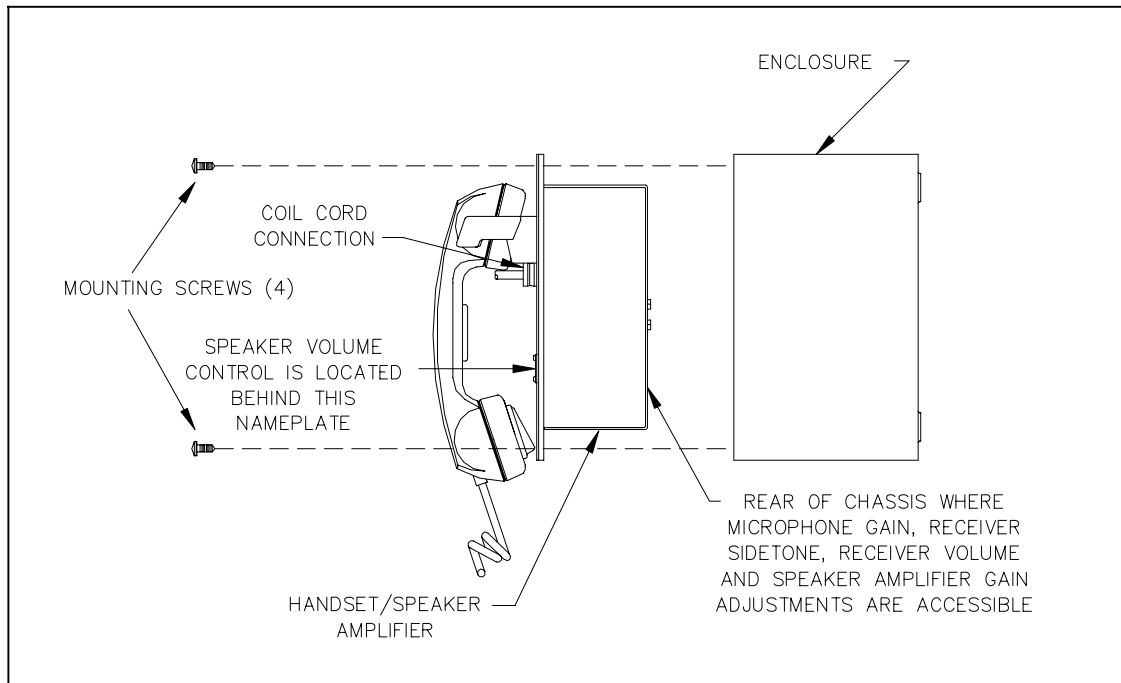


Figure 1. Installation and Adjustment Details

## SCR Electrical Noise - Communications Alert

Please refer to publication 42004-139, 700 Series Page/Party<sup>®</sup> Systems, or 42004-140, Installation of 24 Volt DC Page/Party<sup>®</sup> Systems, for system installation suggestions where SCR power supply systems are used, or consult with a GAI-Tronics sales representative.



## Operation

GAI-Tronics offers two types of Page/Party<sup>®</sup> systems: page/single-party (with one party line), and page/multi-party (with five party lines allowing up to five simultaneous two-way conversations).

- *Page/Single-Party*: To initiate a call, lift the station handset and press the page button or press the handset pressbar. Speak directly into the handset to make the page announcement. The paged individual lifts the handset of a Page/Party<sup>®</sup> station for two-way communication over the party line.
- *Page/Multi-Party*: First, select an available party line using the five-position selector switch. Then make the page announcement as in single-party operation, remembering to indicate which party line is being used. The paged individual then selects the indicated party line and lifts the handset for two-way communication.

The following adjustments are accessible through the rear chassis of the amplifier using a small standard screwdriver. However, these levels have been factory-set for optimal performance. Do not adjust these levels unless you have followed all the steps in the Troubleshooting section and are still not satisfied with the station performance. Each adjustment is clearly labeled:

- *Microphone Gain*: adjusts the gain level from the microphone signal to the page or party lines
- *Receiver Sidetone*: the amount of signal transmitted from the microphone to the receiver of a handset
- *Receiver Volume*: adjusts the gain level from a party line to the receiver
- *Speaker Amplifier Gain*: adjusts the speaker volume; also accessible from the front panel



## Maintenance

The following table lists some hints to aid technicians in troubleshooting:

## Troubleshooting

Problem	Solution
Any problem with station performance occurs.	Review all the steps of the installation, ensuring that you have correctly followed ALL steps. Check all the terminations on the board and in the line balance assembly before proceeding to any other adjustments.
Integral speaker level requires adjustment.	<ol style="list-style-type: none"> <li>1. Adjust the volume control behind the nameplate on the front panel.</li> <li>2. Replace the speaker or driver.</li> </ol>
Outgoing conversation level requires adjustment.	<ol style="list-style-type: none"> <li>1. Adjust the microphone gain by removing the front cover of the station and attaching a Model 10440 Series extension ribbon cable between the connectors. Use a small standard screwdriver (<math>\frac{1}{8}</math>-inch blade) to slowly turn potentiometer (R17) on the rear chassis of amplifier until reaching the proper microphone gain.</li> <li>2. Replace the handset microphone.</li> </ol>
Incoming conversation level requires adjustment.	<ol style="list-style-type: none"> <li>1. Use a small standard screwdriver to adjust the receiver volume control on the rear of the amplifier using the extension ribbon cable assembly as described above.</li> <li>2. Replace the receiver element in the handset.</li> </ol>
Feedback/distortion (a hum or buzz on the line) occurs during all Page/Party <sup>®</sup> station operation.	<ol style="list-style-type: none"> <li>1. Adjust the receiver sidetone on the rear of the amplifier using the ribbon cable assembly as described above.</li> <li>2. The line may be improperly terminated. Inspect the system cable for loose connections, shorts, and grounds. Line balance assembly connections are critical.</li> <li>3. Replace the line balance assembly.</li> </ol>
Feedback occurs only during page.	Use the muting feature in the amplifier enclosure at the terminal blocks. Connect the violet wire at terminal 8 to terminal 7.
Sidetone (how the operator hears his own voice) requires adjustment.	<ol style="list-style-type: none"> <li>1. Adjust the receiver sidetone at the amplifier, using the extension ribbon cable as described above.</li> <li>2. Check that the line balance assembly resistors are connected properly. See GAI-Tronics Publication 42004-139 (or 42004-140 for 24 V dc systems.)</li> </ol>
Crosstalk occurs.	One or more system cable pairs may be improperly terminated. Visually inspect the system cable connections for accidental crossing of the cable pairs or grounds.



# Specifications

## Amplifier

### Power Requirements (120 V ac)

Voltage..... 90-140 V ac range, 50/60 Hz, 120 V ac nominal

Power Consumed: Zero/max. signal (12 watts)..... 10.5 VA, 5.3 W/58 VA, 29.5 W

### Power Requirements (24 V dc)

Voltage..... 21-28.8 V dc range, 25 V dc nominal

Power Consumed: Zero/max. signal (12 watts)..... 2.75 W/27 W

Construction/Finish.....16-gauge cold-rolled steel/gray baked enamel

## Handset

Microphone.....Dynamic, noise-canceling

Receiver..... Dynamic, hearing aid compatible per FCC Part 68

Cable..... Retractable, 6-foot extended PVC

Material.....Gray ABS

External controls.....Push-to-page handset pressbar and handset hookswitch

## Handset Amplifier

Output level ..... 1.5 V<sub>RMS</sub> nominal into 33-ohm load

Output limiter ..... 1.5 V<sub>RMS</sub> nominal

Gain ..... 55 dB nominal (below limiter level); adjustable from 40 to 63 dB

Frequency response..... 250-4000 Hz, +0/-3 dB ref. to 1,000 Hz (below AGC)

Distortion..... 1.5% maximum THD @ 1,000 Hz

Controls.....Microphone gain, receiver volume and sidetone

## Speaker Amplifier

Output ..... 12 watts minimum with nominal supply voltage

Voltage gain..... 26 dB maximum, adjustable

Frequency response..... 250-4,000 Hz, +0/-3 dB ref. to 1,000 Hz

Distortion..... 1% maximum THD @ 1,000 Hz, 12 watts

Input impedance..... 50,000 ohms nominal

Controls..... Speaker volume (adjusted through the access hole behind the nameplate on the front panel)

## General

Temperature range ..... -22 °F to +158 °F (-30 °C to +70 °C), operating and storage

Dimensions ..... 8.1 H × 8.1 W × 3 D inches (20.6 × 20.6 × 7.6 cm) behind panel

8.1 H × 8.1 W × 3.5 D inches (20.6 × 20.6 × 8.9 cm) front of panel

Shipping weight .....6.8 lbs. (3.1 kg)



**Approvals**

Models 701-302 and 701-204:

NRTL Listed for USA and Canada ..... Class I, Div. 2, Groups A, B, C, D  
when used with listed GAI-Tronics Models 702 or 703 120 V ac series enclosures  
Class I, Div. 2, Groups A, B, C, D  
Class II, Div. 2, Groups F and G;  
Class III, Div. 2, when used with  
listed GAI-Tronics Models 732, 7325, 733, or 7335 120 V ac series enclosures

Model 701-307:

NRTL Listed for USA and Canada ..... Class I, Div. 2, Groups A, B, C, D  
when used with listed GAI-Tronics Models 702 or 703 24 V dc series enclosures  
Class I, Div. 2, Groups A, B, C, D  
Class II, Div. 2, Groups F and G;  
Class III, Div. 2, when used with  
listed GAI-Tronics Models 732, 7325, 733, or 7335 24 V dc series enclosures



**REPLACEMENT PARTS**

<b>Part Number</b>	<b>701-302</b>	<b>701-304</b>	<b>701-307</b>
10112-101 Handset Assembly	■	■	■
13204-002 Receiver Cap	■	■	■
12511-001 Dynamic Transmitter and Cap	■	■	■
12525-001 Pressbar Switch Kit	■	■	■
12514-007 6-foot PVC Cord and Bushing	■	■	■
12514-008 15-foot PVC Cord and Bushing	■	■	■
12514-009 25-foot PVC Cord and Bushing	■	■	■
12514-004 6-foot Hytrel Cord and Bushing	■	■	■
12514-005 15-foot Hytrel Cord and Bushing	■	■	■
12514-006 25-foot Hytrel Cord and Bushing	■	■	■
69701-008 PCBA	■		
69701-015 PCBA			■
69701-014 PCBA		■	
12523-001 GAI-Tronics Nameplate Kit	■	■	■
46101-012 Amplifier Enclosure Mounting Hardware	■	■	■
12512-008 Hookswitch/Cradle Assembly Kit	■	■	■
12530-001 Transformer/Connector Subassembly	■	■	
12530-002 Transformer/Connector Subassembly			■
21412-001 Cap and Chain Assembly		■	
25210-005 Cell Gasket	■	■	■
10440-002 16-pin Ribbon Cable Connector	■	■	■
12604-001 0.7 amp (10 pack)	■	■	
12604-002 1/16 amp (10 pack)	■	■	
12604-005 0.3 amp (10 pack)			■
12604-004 2 amp (10 pack)			■



# Warranty

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**Equipment.** GAI-Tronics warrants for a period of one (1) year from the date of shipment, that any GAI-Tronics equipment supplied hereunder shall be free of defects in material and workmanship, shall comply with the then-current product specifications and product literature, and if applicable, shall be fit for the purpose specified in the agreed upon quotation or proposal document. If (a) Seller's goods prove to be defective in workmanship and/or material under normal and proper usage, or unfit for the purpose specified and agreed upon, and (b) Buyer's claim is made within the warranty period set forth above, Buyer may return such goods to GAI-Tronics nearest depot repair facility, freight prepaid, at which time they will be repaired or replaced, at Seller's option, without charge to Buyer. Repair or replacement shall be Buyer's sole and exclusive remedy, and the warranty period on any repaired or replacement equipment shall be one (1) year from the date the original equipment was shipped. In no event shall GAI-Tronics warranty obligations with respect to equipment exceed 100% of the total cost of the equipment supplied hereunder. Buyer may also be entitled to the manufacturer's warranty on any third-party goods supplied by GAI-Tronics hereunder. The applicability of any such third-party warranty will be determined by GAI-Tronics.

**Services.** Any services GAI-Tronics provides hereunder, whether directly or through subcontractors, shall be performed in accordance with the standard of care with which such services are normally provided in the industry. If the services fail to meet the applicable industry standard, GAI-Tronics will, for a period of one (1) year from the date of completion, re-perform such services at no cost to Buyer. Re-performance of services shall be Buyer's sole and exclusive remedy, and in no event shall GAI-Tronics warranty obligations with respect to services exceed 100% of the total cost of services provided hereunder.

**Warranty Periods.** Every claim by Buyer alleging a defect in the goods and/or services provided hereunder shall be deemed waived unless such claim is made in writing within the applicable warranty periods as set forth above. Provided, however, that if the defect complained of is latent and not discoverable within the above warranty periods, every claim arising on account of such latent defect shall be deemed waived unless it is made in writing within a reasonable time after such latent defect is or should have been discovered by Buyer.

**Limitations / Exclusions.** The warranties herein shall not apply to, and GAI-Tronics shall not be responsible for, any damage to the goods or failure of the services supplied hereunder, to the extent caused by Buyer's neglect, failure to follow operational and maintenance procedures provided with the equipment, or the use of technicians not specifically authorized by GAI-Tronics to maintain or service the equipment. THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE IN LIEU OF AND EXCLUDE ALL OTHER WARRANTIES AND REMEDIES, WHETHER EXPRESS OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

# Return Policy

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If the equipment requires service, contact your Regional Service Center for a return authorization number (RA#). Equipment should be shipped prepaid to GAI-Tronics with a return authorization number and a purchase order number. If the equipment is under warranty, repairs or a replacement will be made in accordance with the warranty policy set forth above. Please include a written explanation of all defects to assist our technicians in their troubleshooting efforts.

Call 800-492-1212 (inside the USA) or 610-777-1374 (outside the USA) for help identifying the Regional Service Center closest to you.



(Rev. 1/97)