ANODYNE ELECTRONICS MANUFACTURING CORP.

SERVICE BULLETIN

Part No.: LSxxx

Description: Loud Speaker 300/600W External	
Service Manual: ASM-LS	Service Bulletin No.: ASM-LS-603-0001
ECO No.: ECO# 1130	Subject: Re-entrant tip securing (MOD 2)

Prepared By:	Checked By:	Approved By:
Derrick Formosa Mechanical Designer 13-Apr-22	Tony Pearson Designer Apr 13, 2022	Todd Blackstock Program Manager Apr 13/22

1. Planning Information

1.1 Applicability

This modification is applicable to all LS300-xxx and LS600-xxx units that do not have MOD 2 applied.

1.2 Reason

AEM received a customer observation of an LS600 re-entrant tip inspected to be loose after a flight.

1.3 Description

AEM does not have a history of re-entrant tips loosening that previously would've caused a mechanical design change. However, AEM is committed to the safety of its customers and therefore has made a design improvement to its speaker series. This modification consists of replacing the doubler plate with one that includes a mechanically formed positive locking tab which engages a structural portion of the re-entrant tip during assembly. The mechanically formed locking tab limits the re-entrant tip from counter-clockwise rotation to prevent the possibility of rotating loose.

1.4 Compliance

Customer option. Anodyne Electronics Manufacturing Corp. recommends this change be accomplished on all affected units.

1.5 Approval

No change to existing approval.

1.6 Costing

This modification incorporates a customer request and design improvement which does not constitute changes to correct a malfunction. The modification is therefore not subject to warranty consideration.

1.6.1 Parts and Labour

One (1) hour estimated. Please contact Product Support for current parts pricing.

1.7 Equipment Required

Part No.	Description	Part Number
TB-001	AEM	Tab Bending Tool
WA-001	AEM	Wrench Adapter
1017T21*	McMaster-Carr	Handheld Inspection Mirror
5751A58*	McMaster-Carr	1/4" Hex, Phillips #2 Size, 6” Length
5716A21*	McMaster-Carr	Torque Driver, 1/4" Hex Drive, 2 - 36 in.-lb
5522A33*	McMaster-Carr	Drive Adapter, 3/8" Female x 1/2" Male Square
85555A413*	McMaster-Carr	Torque Wrench, 3/8” Square Drive, 50 - 250 in-lb

* - an approved equivalent may be substituted.

1.8 Weight and Balance

Not affected.

1.9 Electrical Load Data

Not affected.

1.10 References

None.

1.11 Other Publications Affected

ASM-LS Installation and Operations Manual

2. Procedure Instructions

The modification status label will be updated with a permanent marking to indicate MOD 2 has been incorporated.

2.1 Modification Procedure

2.1.1 Re-entrant Tip & Doubler Plate Removal

2.1.1.1 Place Wrench Adaptor (WA-001) onto re-entrant tip. Ensure rubber fitting of Wrench Adaptor is concentric/parallel to re-entrant tip and tightly fit.

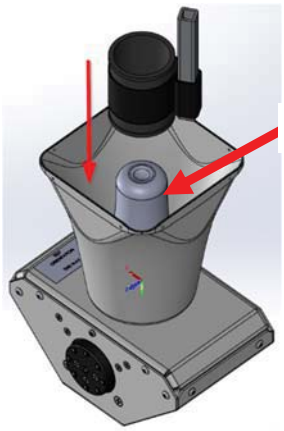

Figure 1

2.1.1.2 Ensure there is a tight fit. Wrap square tube counter-clockwise. Ensure the Wrench Adaptor does not contact bell. Surface damage to the bell will occur if the Wrench Adaptor scrapes the bell during assembly.

Figure 2

2.1.1.3 Remove the re-entrant tip with a ½" drive torque wrench. Rotate wrench counter-clockwise. Inspect re-entrant tip internal threads for stripping and cross members for cracking, see Figure 14 to identify re-entrant tip cross members. Contact AEM for replacement re-entrant tips as necessary. Remove Wrench Adaptor. Set re-entrant tip aside for later re-assembly.

Figure 3

2.1.1.4 With a #2 Phillips screwdriver, remove the 6 screws used to retain the doubler plate. Set screws aside for re-assembly. Remove and discard doubler plate. **The bell may be loose**, support it in place or set aside for re-assembly.

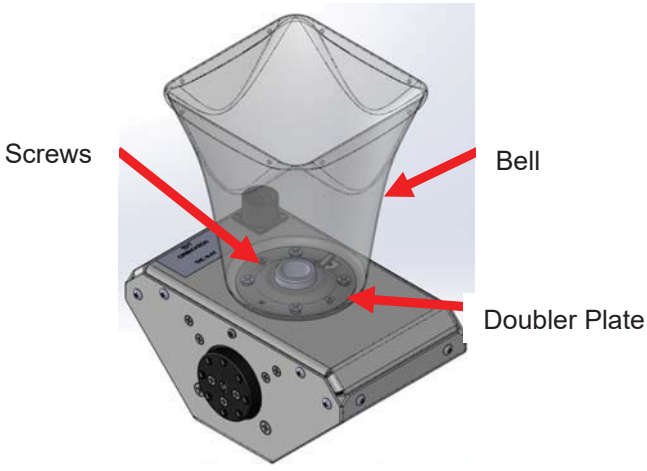

Figure 4

2.1.2 Re-entrant Tip & Doubler Plate Installation

2.1.2.1 Position bell as shown below, place the new doubler plate with locking tab into the bell. Align doubler plate holes with holes in bell/chassis, the larger holes in the doubler plate align with the larger holes in the bell/chassis. Apply Loctite 271 to the four ¼" screws. **Do not** Loctite the two #10 self tapping screws. With a #2 Phillips screwdriver, fasten the 6 screws used to retain the doubler plate. Torque ¼" screws to 30 in-lb. Torque #10 self tapping screws to 9 in-lb.

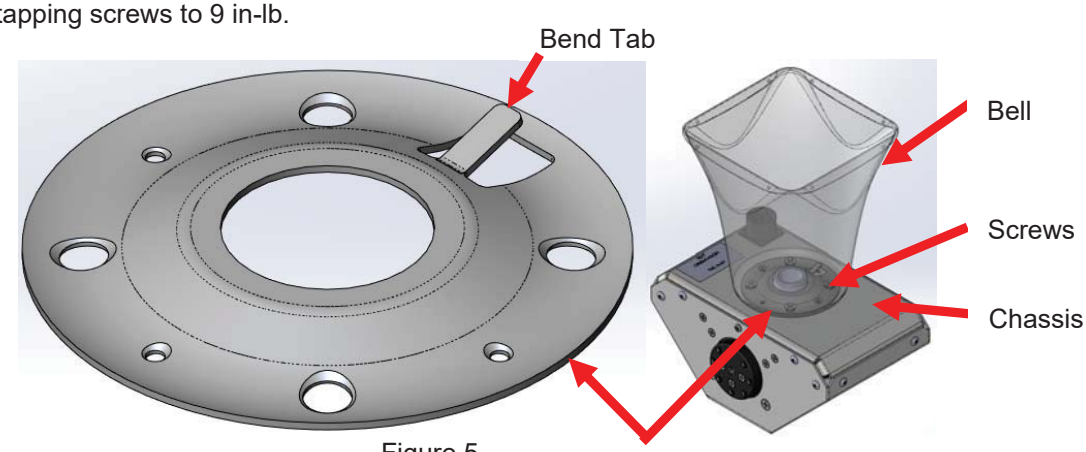

Figure 5

2.1.2.2 Thread re-entrant tip onto chassis by hand until hand tight. Place Wrench Adaptor onto re-entrant tip. Ensure rubber fitting of Wrench Adaptor is concentric/parallel to re-entrant tip and tightly fit.

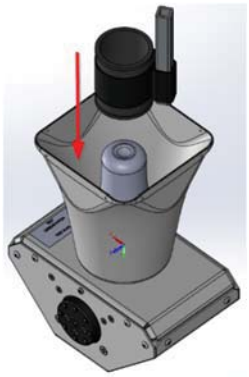

Figure 6

2.1.2.3 Ensure there is a tight fit. Wrap square tube clockwise. Ensure the Wrench Adaptor does not contact bell. Surface damage to the bell will occur if the Wrench Adaptor scrapes the bell during assembly.

Figure 7

2.1.2.4 Torque to 140 in-lb, rotate wrench clockwise. Ensure re-entrant tip cross member is beyond bend tab, if necessary, rotate re-entrant tip clockwise slightly to clear. See Figure 14 for tab bend position example. Remove Wrench Adaptor. Repeat steps 2.1.1.1 to 2.1.2.4 for each doubler plate.

Figure 8

2.1.3 Locking the Bend Tab

2.1.3.1 Locate bend tab in bell. Inspection mirror can be used to help locate tab position.

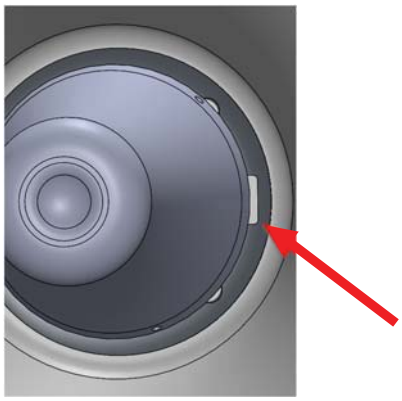

Figure 9

2.1.3.2 Slide Tab Bender (TB-001) to the bottom of the bell and rotate.

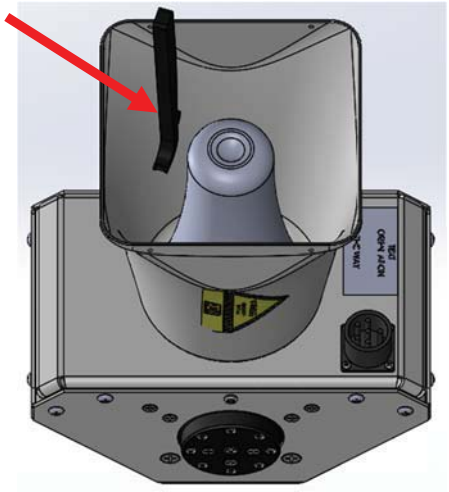

Figure 10

2.1.3.3 Rotate Tab Bender into tab. You should feel resistance from the tab on the Tab Bender tool.

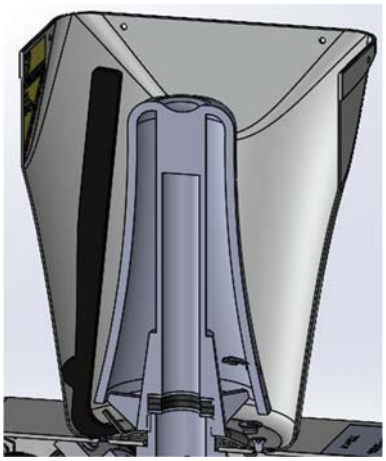

Figure 11

2.1.3.4 Seat the Tab Bender up against the tab.

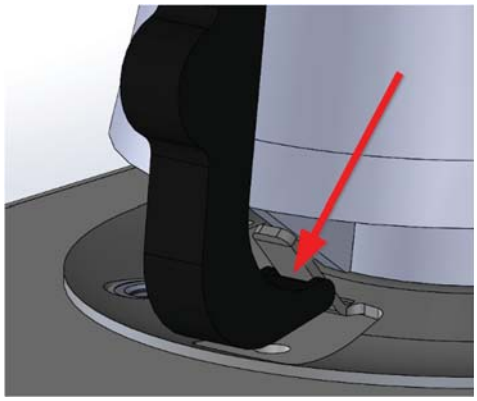

Figure 12

2.1.3.5 Push or 'rock' Tab Bender towards bell.

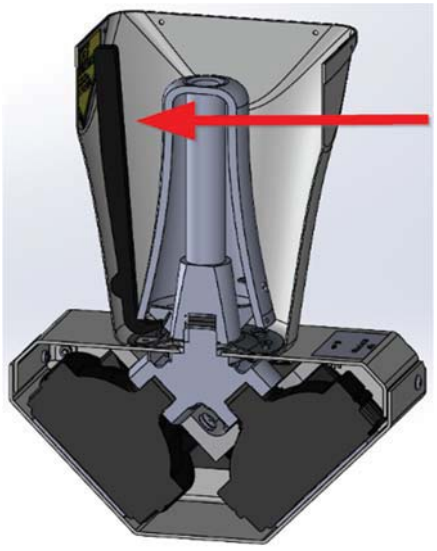

Figure 13

2.1.3.6 Inspect that the tab has bent into the removal path of the re-entrant tip cross member as shown.

Re-entrant tip cross member

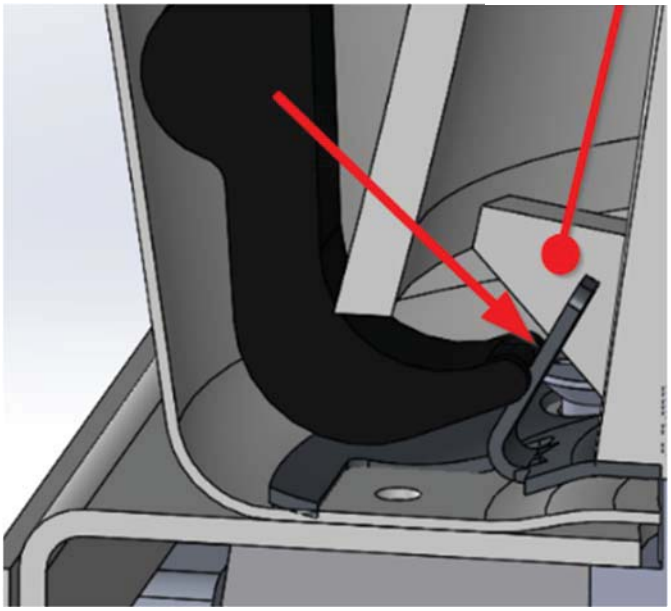

Figure 14

2.1.3.7 Remove the Tab Bender tool. Repeat steps 2.1.3.1 to 2.1.3.7 for each doubler plate.

2.1.3.8 Inspect each re-entrant tip visually for dents and try to rock it side to side. Any damaged/dented or loose re-entrant tips need to be replaced. To remove the re-entrant tip, place Wrench Adaptor onto re-entrant tip as detailed in step 2.1.1.1. Ensure there is a tight fit. Wrap square tube counter-clockwise. Using a ½" torque wrench, remove the re-entrant tip. Rotate wrench counter-clockwise. The tab attached to the doubler plate will break and could become separated from the doubler plate. Ensure to remove the tab from the bell. Starting at 2.1.1.4, repeat the steps for each re-entrant tip that was loose/ damaged.

2.2 Acceptance Test Procedure

2.2.1 If the unit is being factory modified, referencing the Acceptance Test Procedure listed in Section 4 Reference documents, test the modified unit.

2.2.2 If unit is being field modified, ensure the unit functionally works by performing an audible system test on the aircraft.

WARNING:
The system can produce high sound pressure levels. Proper personal protective equipment is required to prevent hearing damage. Stand clear, this equipment operates at an intense sound level. Personnel must be kept away from the direct loudspeaker beam. Do not operate the equipment in a hangar or in confined areas.

2.3 Modification Status Marking

Locate the modification status label on the product label and apply a permanent marking on the 2 to indicate MOD 2 has been incorporated.

Apply re-entrant tip warning label to each bell as shown below.

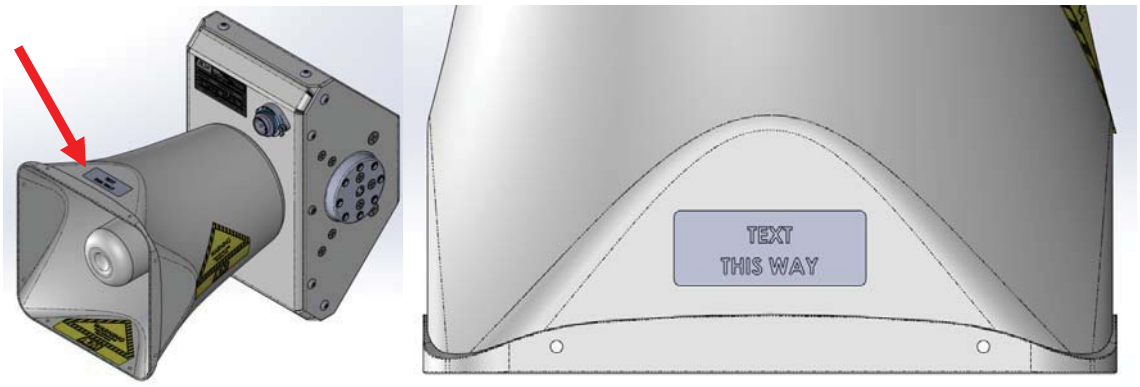

Figure 15

3. Material Information

The following parts are required to modify one LS300-xxx speaker product to MOD 2 status.

Part Number	DESCRIPTION	QTY
150-08-009	Doubler/Mounting Plate, Loudspeaker (Rev 1.20 or later)	1
143-39-019	Label, Re-Entrant Tip Warning (Rev 1.00 or later)	1
150-61-001	Re-entrant Tip, Speakers	*as required

The following parts are required to modify one LS600-xxx speaker product to MOD 2 status.

Part Number	DESCRIPTION	QTY
150-08-009	Doubler/Mounting Plate, Loudspeaker (Rev 1.20 or later)	2
143-39-019	Label, Re-Entrant Tip Warning (Rev 1.00 or later)	2
150-61-001	Re-entrant Tip, Speakers	*as required

* - only required if replacing damaged re-entrant tips. QTY determined by number of damaged tips.

4. Reference Documents

The following documents are required to complete the factory modification (2.2.1). The documents listed below are **not** required if completing this modification in the field (2.2.2). If additional documents are required refer to the applicable Installation and Operations Manual.

DOCUMENT	REV.	DESCRIPTION	TYPE
LS300-200-614-0	2.10 or later	Loud Speaker, 300W, External	Acceptance Test Procedure
LS600-200-614-0	2.10 or later	Loud Speaker, 600W, External	Acceptance Test Procedure

End of Service Bulletin