ASM-LS800

LS800 Series
External Loudspeaker

INSTALLATION AND OPERATION MANUAL

Document: LS800-804-0 REV 1.01
Feb 13, 2025

Anodyne Electronics Manufacturing Corp.
100-966 Crowley Avenue
Kelowna BC, Canada
V1Y 0L1

Telephone (250) 763-1088
Facsimile (250) 763-1089

Website: www.aem-corp.com

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Prepared By:	Checked By:	Approved By:
Duane Stewart Designer 13-Feb-2025	Adam Pembleton Designer 13-Feb-2024 Tony Pearson Designer 13-Feb-2025	Johnathon White Program Manager 13-Feb-2025

The status of this installation and operation manual is controlled by the revision shown on the title page. The status of each section is controlled by revision shown in the footer of each page. All revisions affecting sections of this manual have been incorporated.

AEM MANUAL REVISIONS

Section	Revision Number	Revision Description	Date
2.7	Rev 1.01	ECO1232 – corrected typo on LSA800-002-403-0 Interconnect Drawing (incorrect pins referenced on LS800-34xx connector).	FEB 13, 2025
All	Rev 1.00	Initial Release	NOV 5, 2024

Table of Contents

Section 1.0 Description

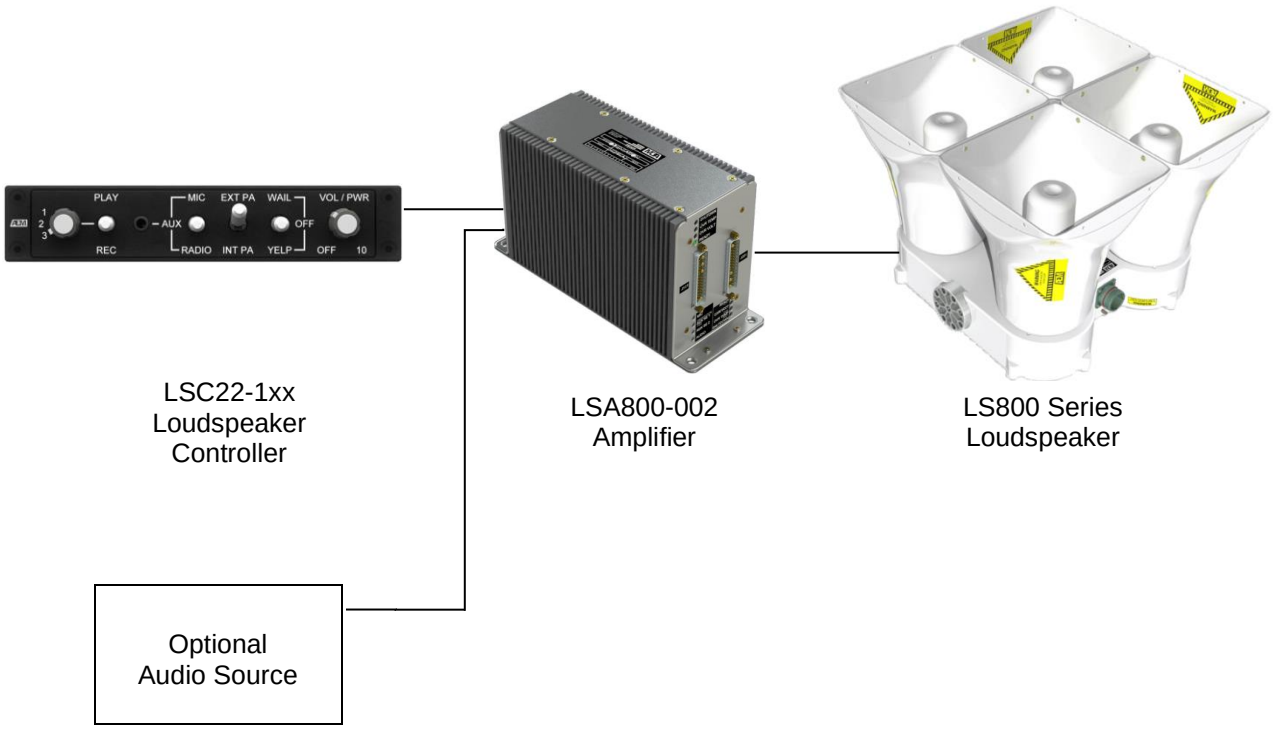
1.1 Introduction

Information in this section consists of product description, design features and specifications for the LS800 Series Loudspeakers.

Review all notes, warnings and cautions.

1.2 Product Description

The LS800 Series Loudspeakers are high output power loudspeakers for use in air-to-ground, air-to-sea, or ground-to-ground audible communication systems. The LS800 Series Loudspeaker must only be driven by AEM's LSA800-002 Amplifier and may be used with a loudspeaker/siren controller as a complete system. The optimal configuration uses the LSC22-1xx Loudspeaker Controller, but an optional audio source may be used.



1.3 Design Features

This series of loudspeakers is a 4-bell configuration with an adjustable mounting method, which allows orientating the loudspeaker towards the intended target.

The LS800 Series Loudspeakers are designed and qualified to meet many operational roles of current and future light, medium, and heavy helicopters as well as fixed wing aircraft.

Reference section 1.7 of this manual for nomenclature details.

1.4 Specifications

1.4.1 Electrical/Acoustic Specifications

Loudspeaker	Total Bell Configuration	Impedance	Rated Peak Power	Maximum Sound Pressure Level @ 1 meter	Weight (Max)
LS800-34DT	4	2 Channels at 4 Ω each	400 Watts RMS 800 Watts Peak	142 ±3 dB	29 lb [13.2 kg]

Table 1: Electrical/Acoustic Specifications

1.4.2 Physical Specifications

See Mechanical Installation drawing listed in Section 2.7 for speaker physical specifications.

1.4.3 Environmental Specifications

Table 2 defines the applicable minimum standard environmental test conditions used to determine the performance of the LS800-34DT.

Conditions	Section	Category	
Temperature and Altitude	4.0	B4	-40 to +60 °C (operating) -55 to +85 °C (survival) +25,000 ft. (+7,260 m) max.
Humidity	6.0	A	95% RH for 48 hrs.
Operational Shock and Crash Safety	7.0	A	6g (any axis)
Vibration	8.0	S, U2	Cat S, Curves B & M Cat U2, Curves F & F1
Magnetic Effect	15.0	B	1° Deflection: 1m < D ≤ 3m

Table 2: Summary of DO-160G Environmental Testing

1.5 System Configuration

Controller	Amplifier	Loudspeaker	Output Level @ 1m
* LSC22-1xx	LSA800-002	LS800-34DT	142 ±3 dB

* Use for optimal configuration

Table 3: System Configuration

1.6 Product Limitations

The LS800-34xx speaker must only be driven by AEM's LSA800-002 Amplifier.

1.7 Unit Nomenclature

The product part number is defined as follows:

L	S	8	0	0	-	3	4	D	T
1		2				3	4	5	6

Item	Name	Description
1	AEM Product Line	Loudspeaker
2	Bell Style	7.4" L x 7.4" W x 8.42" H per Bell
3	Impedance of each Speaker Driver	3: 8 ohm
4	Number of Bells	4: 4 Bells
5	Speaker Colour	D: White
6	Mounting Style	T: Turret

Table 4: Unit Nomenclature

End of Section 1.0

Section 2.0 Installation

2.1 Introduction

Information in this section consists of unpacking and inspection procedures, installation procedures, post-installation checks, and installation drawings.

2.2 Unpacking and Inspection

Unpack the equipment carefully. Inspect the unit visually for damage due to shipping and report all such claims immediately to the carrier involved. Note that each unit should have the following:

- LS800 Series External Loudspeaker
- Acceptance Test Report
- Certificate of Conformity or release certification

Verify that all items are present before proceeding and report any shortage immediately to your supplier.

2.2.1 Warranty

Please refer to the standard product warranty conditions available on our website, www.aem-corp.com.

2.3 Installation Procedures

2.3.1 Warnings

WARNING:

When the speaker is connected to an appropriate amplifier, the system is capable of producing 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.

2.3.2 Cautions

CAUTION:

Do not operate the equipment in a hangar or in confined areas.

Do not operate the equipment with snow, water or other foreign matter in the loudspeaker horn.

Do not clean inside the loudspeaker bell with compressed air or pressure washer.

Bundle and route the Speaker Output wires separately from low level Audio Input lines.

Always check ADF and compass calibration after installing external loudspeakers or power amplifiers.

This loudspeaker is intended for public address installations with a keyed microphone only, not a live microphone.

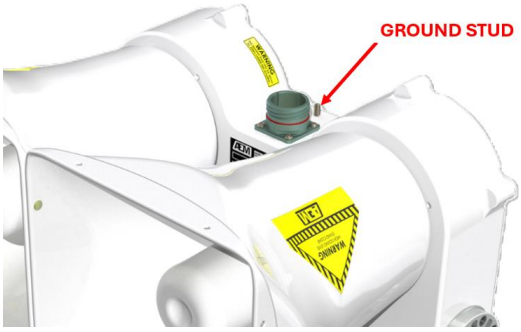
To reduce chances of audible feedback, this loudspeaker should be installed more AFT of the exterior of the aircraft, especially if public address operation includes open doors where the microphone may be more susceptible to the feedback loop.

2.3.3 Cabling and Wiring

All wire shall be selected in accordance with the original aircraft manufacturer's Maintenance Instructions or AC43.13-1B Change 1, Paragraphs 11-76 through 11-78. Unshielded wire types shall qualify to MIL-W-22759 as specified in AC43.13-1B Change 1, Paragraphs 11-85, 11-86, and listed in Table 11-11. For shielded wire applications, use Tefzel MIL-C-27500 shielded wire with solder sleeves (for shield terminations) to make the most compact and easily terminated interconnect. Follow the interconnect drawing in Section 2.7 as required.

Maintain wire segregation and route wiring in accordance with the original aircraft manufacturers Maintenance Instructions. Check that the ground connection is clean and well secured.

If desired, a 10-32 ground stud is provided for additional shield grounding. A nut is included in the installation kit listed in Section 2.4.



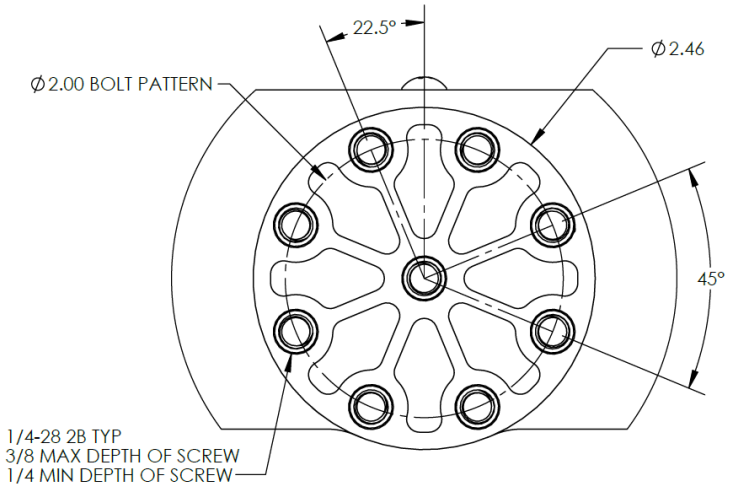
Reference the Interconnect drawing listed in Section 2.7 for additional specifications.

2.3.4 Mechanical Installation

The installing agency is responsible for the design, engineering and installation of the mounting bracket for the LS800 Series External Loudspeakers. Careful consideration should be given to the operating environment and the mechanical forces acting upon the LS800 Series unit(s).

The guidelines used in the AC43.13-1B Advisory Circular should be used to provide general reference to the selection of hardware, torque values, etc. The specific references are contained in AC43.13-1B, Chapter 7, Table 7-1.

A minimum of five mounting 1/4“-28 bolts per side is necessary for the LS800 speakers. The bolts shall be installed at a torque value of 50 – 70 inch-lb as per the AC43.13-1B. Refer to the following diagram for the mounting hole pattern.



Fabrication of mounting brackets and installation related calculations/analyses is the responisibility of the installer for airworthiness safety of the aircraft.

2.3.5 Post-Installation Checks

Ensure all connectors are tight and the speaker array mechanical installation is sound.

Ensure the speaker is secure and adjusted with the line of sight focused towards the intended target. See Section 2.6 for speaker location and orientation information.

When the PA system installation is complete, carry out a full performance test to ensure that all components of the system (including the loudspeaker array) are functioning correctly.

2.4 Accessories Required but Not Supplied

LS800-IKC	LS800 90° Crimp Installation Kit

2.5 Continued Airworthiness

Maintenance of the LS800 Series is 'on condition' only. Periodic maintenance of this product is not required.

2.5.1 Cleaning

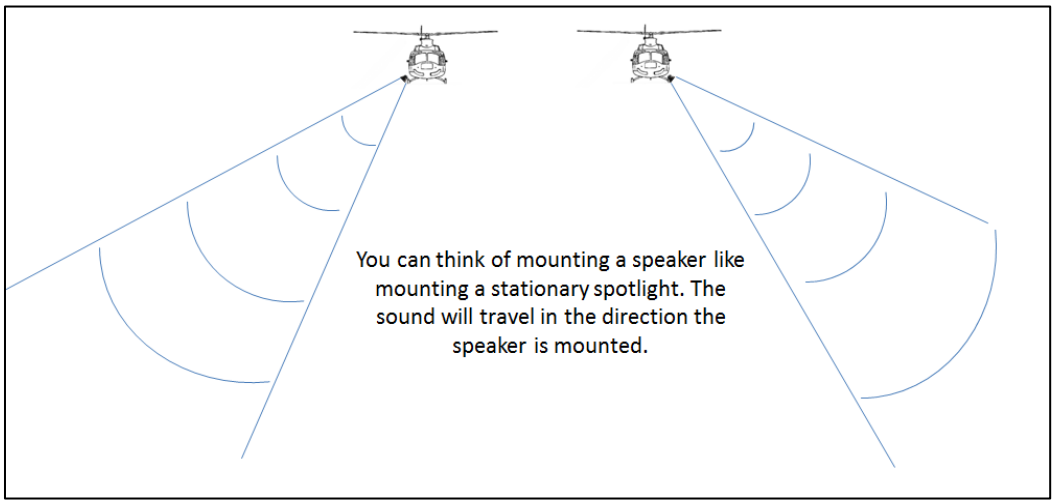
Chassis & Outside of Speaker Bell:

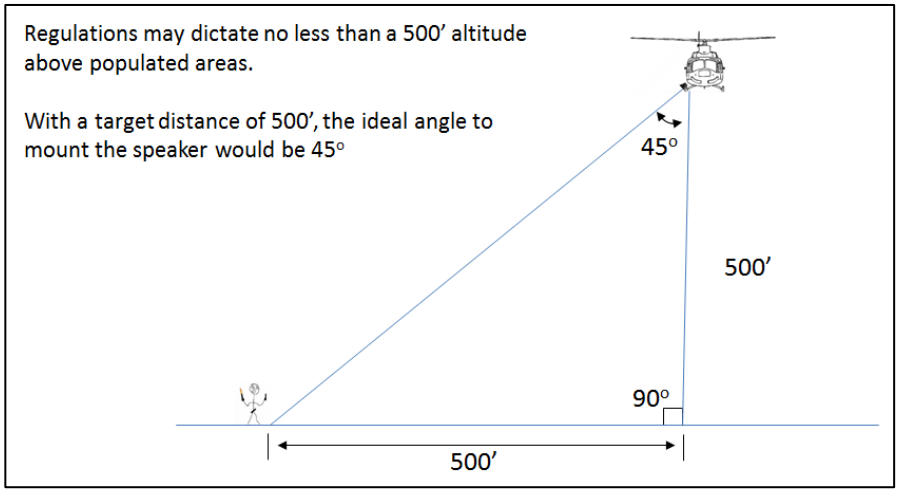
- Hand wash or pressure wash is acceptable.
- Use applicable aircraft approved cleaners/degreasers if necessary.
- Compressed air is acceptable.

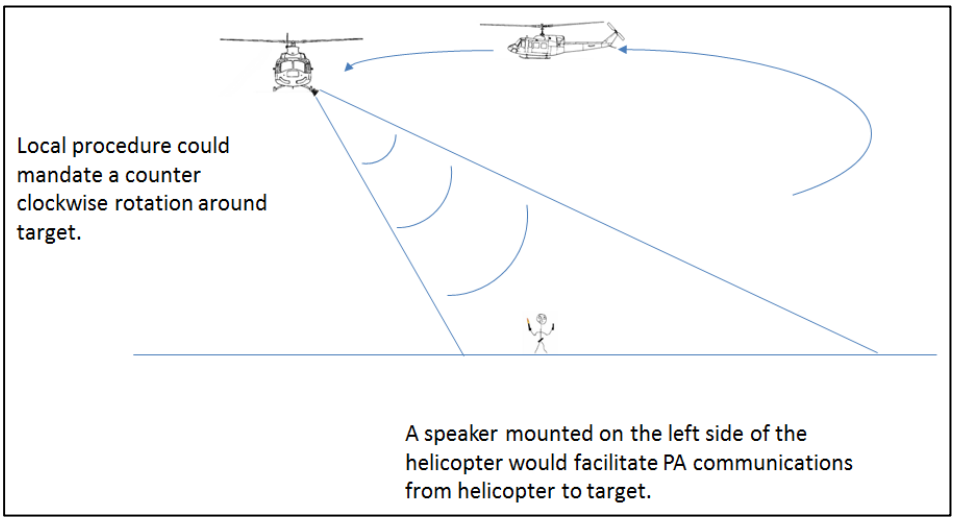
Inside of Speaker Bell:

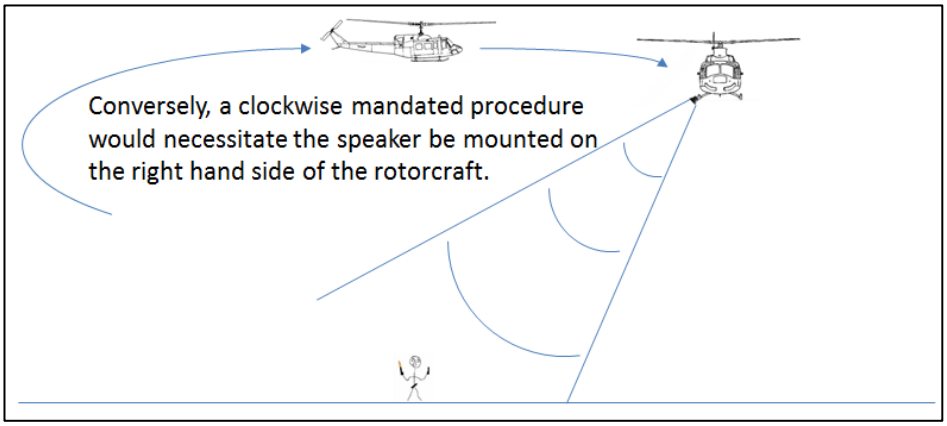
- Hand wash only.
- Use applicable aircraft approved cleaners/degreasers if necessary.
- Do not use compressed air.

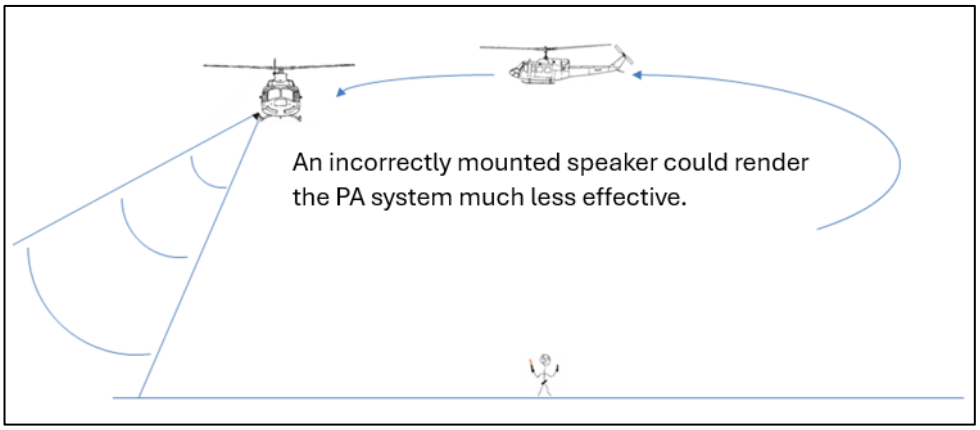
2.6 Speaker Location and Orientation

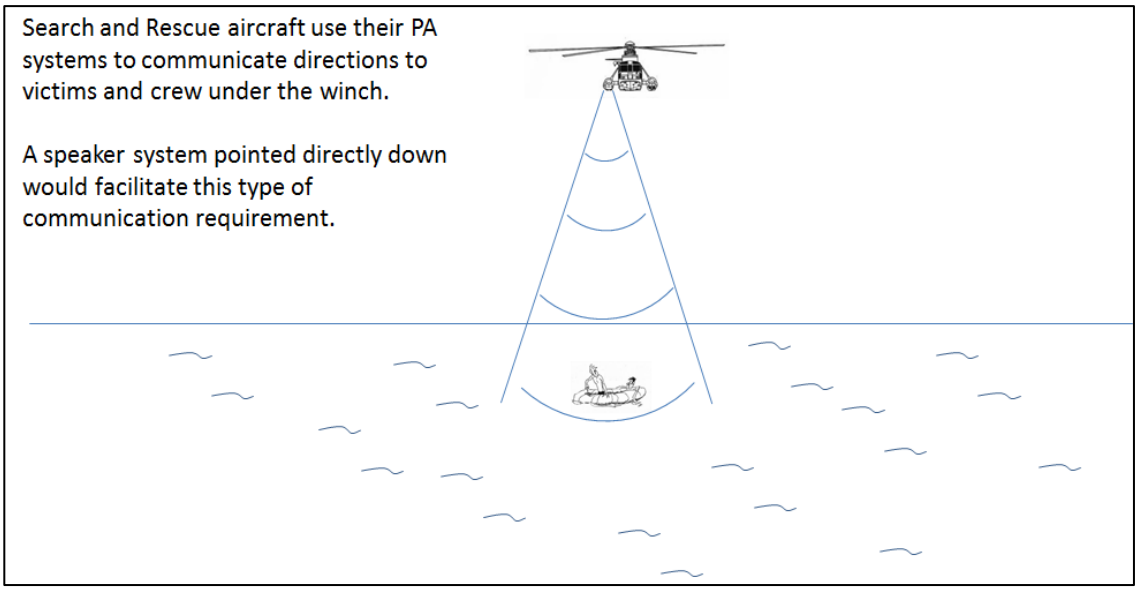












2.7 Installation Drawings

Use of the "#" symbol in the REV. column indicates that the document is listed elsewhere in the manual. Refer to the applicable AEM Part No. to locate the referenced document.

DRAWING	REV.	DESCRIPTION	TYPE	SERIAL NO.
LSA800-002-403-0	1.01	LHS41 Loudhailer System	Interconnect	All
LS800-34DT-405-0	1.00	Loudspeaker, LS800	Connector Map	All
LS800-34DT-922-0	1.00	Loudspeaker, LS800	Mechanical Installation	All

Section 2.0 ends following the above documents

REVISIONS			
REV	DESCRIPTION	DATE	BY
1.01	ECO 1232 - PINS D & E INTERCHANGED ON LS800-34xx CONNECTOR	13-FEB-2025	AMP

LSA800-002 INSTALLATION NOTES

NOTES:

1. ALL WIRES SHOULD BE 22 AWG UNLESS OTHERWISE SPECIFIED. ALL UNSHIELDED WIRE SHALL BE SELECTED IN ACCORDANCE WITH AC43.13-1B CHANGE 1, PARAGRAPHS 11-76 THROUGH 11-78. WIRE TYPES SHOULD BE TO MIL-W-22759 AS SPECIFIED IN AC43.13-1B CHANGE 1, PARAGRAPHS 11-85, 11-86 AND LISTED IN TABLE 11-11. ALL SHIELDED WIRE/CABLE SHOULD BE IN ACCORDANCE WITH MIL-C-27500.

2. CABLE LENGTH NOT TO EXCEED 30 FT [9.14 M], UNLESS OTHERWISE SPECIFIED.

△3 CABLE LENGTH NOT TO EXCEED 1 FT [0.3 M].

△4 SYSTEM CROSSTALK MAY BE EFFECTED BY STYLE OF HEADSET AND JACK. CHECK SPECIFICATIONS AND SYSTEM REQUIREMENTS BEFORE SELECTING AND INSTALLING SAME.

△5 OPTIONAL. PARALLEL TO HEADPHONE (1 ONLY) CONNECTION FOR MONITORING RADIOS VIA EXTERNAL P.A. SPEAKER.

△6 CABLE LENGTH NOT TO EXCEED 3.3 FT [1.0 M].

△7 SHIELD LENGTH NOT TO EXCEED 1 FT [0.3 M]. SPEAKER OUTPUT WIRES TO BE BUNDLED AND ROUTED SEPERATELY FROM LOW LEVEL AUDIO INPUT LINES.

△8 NO CONNECTION IN THE AIRCRAFT.

△9 SWITCHED TO POWER GROUND WHEN ACTIVE. CURRENT (SINK) 0.4A MAX.

△10 THE LS800-34xx LOUDSPEAKER CAN ONLY BE USED WITH THE LSC22-1xx LOUDSPEAKER CONTROLLER AND LSA800-002 AMPLIFIER.

DEFINITIONS:

N/C: NO CONNECTION. THE PIN IS NOT CONNECTED TO ANYTHING INTERNALLY, AND THEREFORE SHALL HAVE NO CONNECTION EXTERNALLY.

N/C SPARE: NO CONNECTION INTERNALLY, BUT A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

RESERVED: MAY BE CONNECTED AND USED IN THE FUTURE. THE CIRCUITRY MAY BE PRESENT OR ADDED TO ACTIVATE THE FUNCTION. THE PIN MAY BE USED FOR TEST PURPOSES. THERE IS NO EXTERNAL CONNECTION.

RESERVED SPARE: (RSV SP) RESERVED, BUT INSTRUCTIONS SHALL BE FOLLOWED TO ACTIVATE THE CIRCUITRY. A SPARE WIRE SHALL BE INSTALLED IN THE WIRE HARNESS.

	NAME	DATE
DRAWN	LAC/AJV	10-Apr-2024
CHECKED	AEM DJ	13-Feb-2025
APPROVED	AEM	13-Feb-2025

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 0.5 Deg
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ± 0.01
THREE PLACE DECIMAL ± 0.005
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL N/A
FINISH N/A
DO NOT SCALE DRAWING

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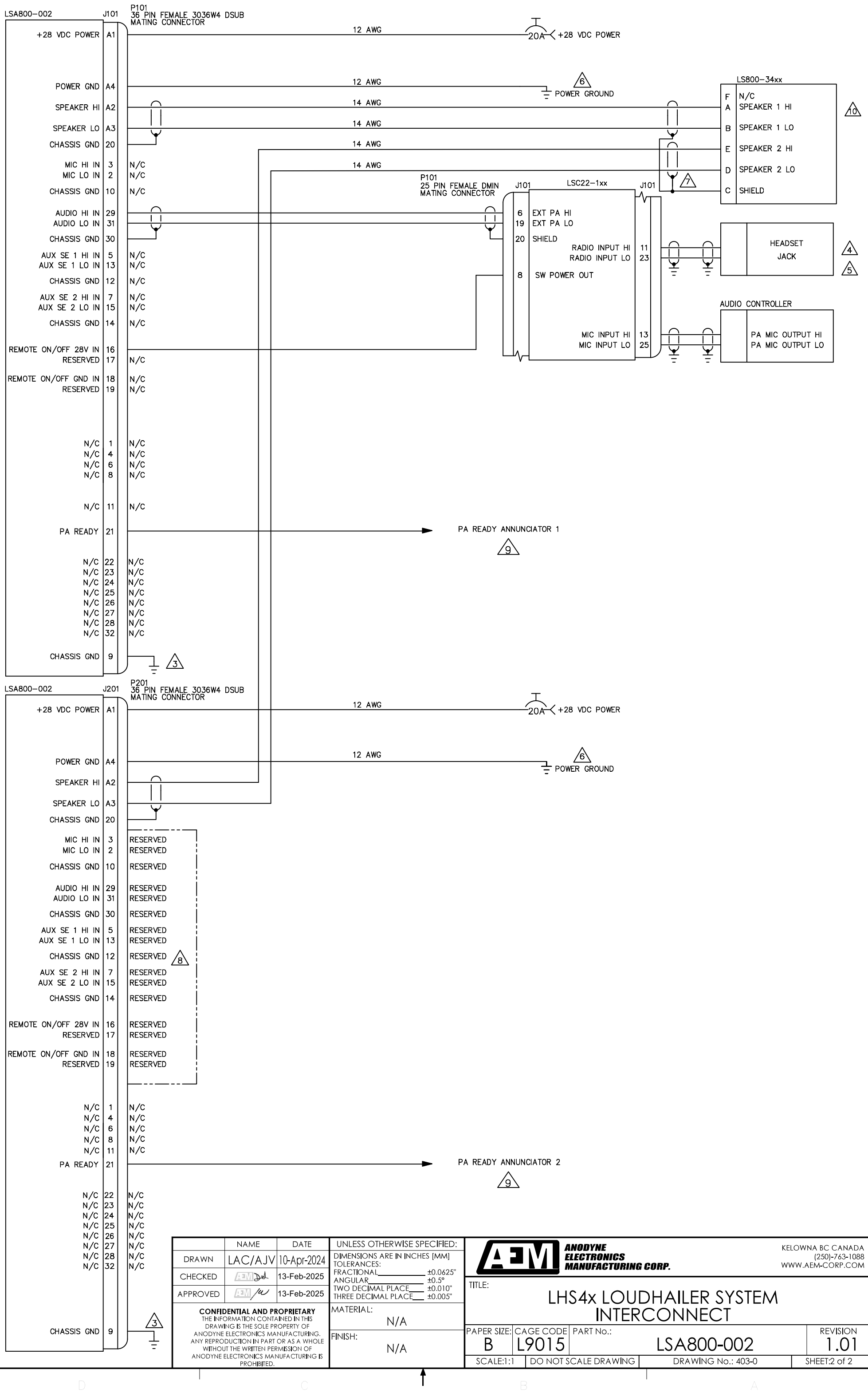
TITLE:

LHS4x LOUDHAILER SYSTEM TITLE

SIZE	CAGE CODE	PART No.	REV
A	L9015	LSA800-002	1.01

SCALE: 1:1 | DRAWING No.: 403-0 | SHEET 1 of 2



	NAME	DATE
DRAWN	LAC/AJV	10-Apr-2024
CHECKED		13-Feb-2025
APPROVED		13-Feb-2025

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES [MM]
TOLERANCES:
FRACTIONAL ±0.0625"
ANGULAR ±0.5°
TWO DECIMAL PLACE ±0.010"
THREE DECIMAL PLACE ±0.005"

MATERIAL: N/A

FINISH: N/A

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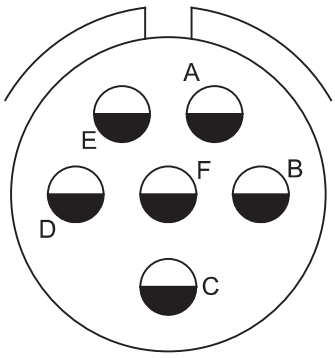
TITLE:
LHS4x LOUDHAILER SYSTEM INTERCONNECT

PAPER SIZE:	CAGE CODE	PART No.:	REVISION
B	L9015	LSA800-002	1.01

SCALE:1:1	DO NOT SCALE DRAWING	DRAWING No.: 403-0	SHEET:2 of 2



6 PIN CIRCULAR
CONNECTOR,
FEMALE CONTACTS

P1
MATING CONNECTOR
VIEW IS FROM REAR OF AIRFRAME CONNECTOR

PINOUT	
A	SPEAKER 1 HI
B	SPEAKER 1 LO
C	SHIELD
D	SPEAKER 2 LO
E	SPEAKER 2 HI
F	N/C

	NAME	DATE
DRAWN	DMF/AMP	04-JAN-2024
CHECKED		04-Jan-2024
APPROVED		04-Jan-2024

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES [MM]
TOLERANCES:
FRACTIONAL_____ ±0.0625"
ANGULAR_____ ±0.5°
TWO DECIMAL PLACE___ ±0.010"
THREE DECIMAL PLACE___ ±0.005"

MATERIAL: NA

FINISH: NA

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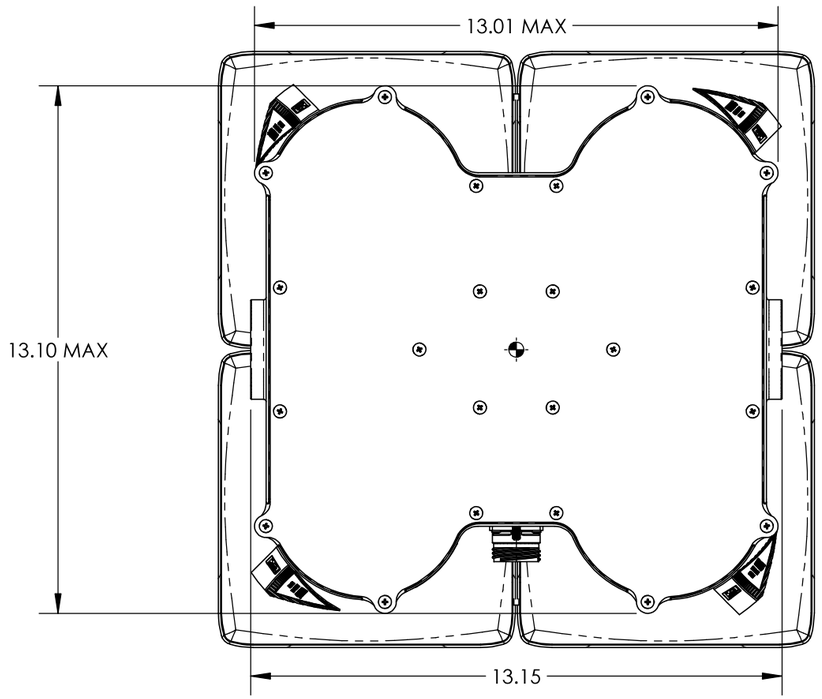
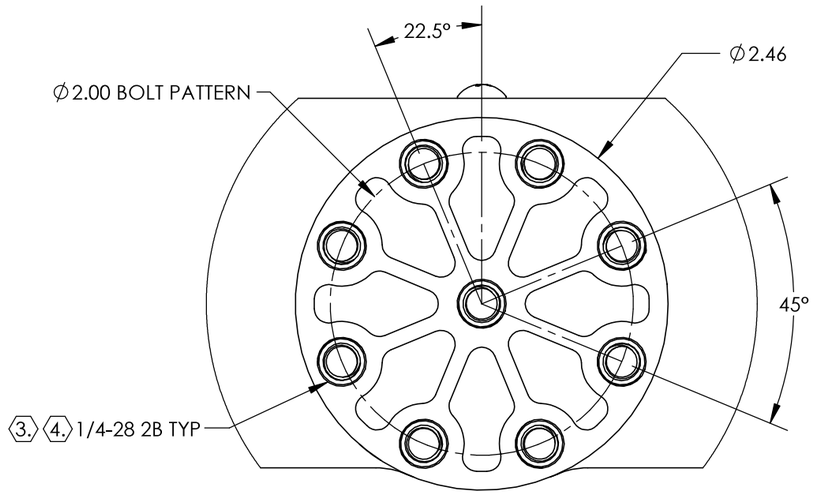
TITLE:
LS800-34xx LOUD SPEAKER CONNECTOR MAP

PAPER SIZE:	CAGE CODE	PART No.:	REVISION
A	L9015	LS800-34DT	1.00

SCALE:NTS | DO NOT SCALE DRAWING | DRAWING No.: 405-0 | SHEET:1 of 1





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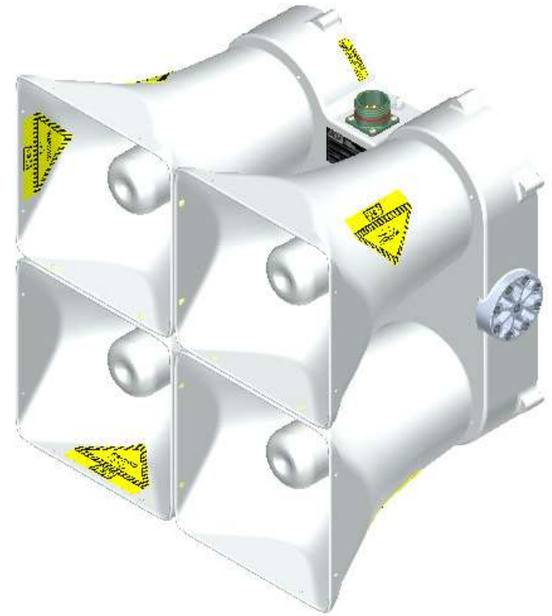

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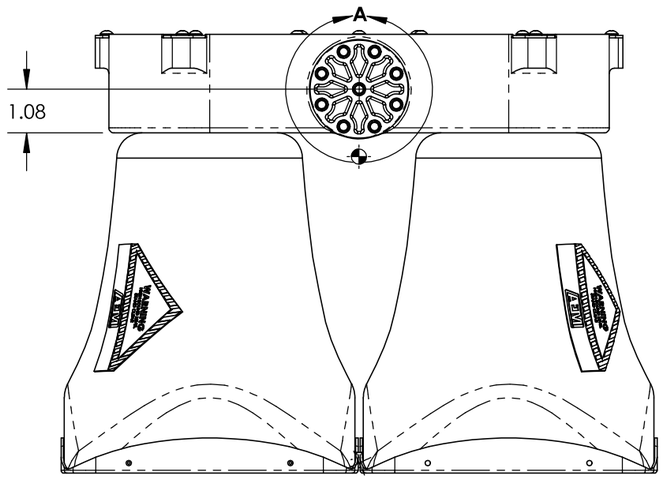

NOTES:

1. MASS: 29.0 lb [13.2 kg] MAX.
2. ⌖ DENOTES APPROXIMATE CENTER OF MASS. MASS IS CENTERED ACROSS THE LENGTH & WIDTH.
3. THREAD ENGAGEMENT: 0.250 MINIMUM, 0.375 MAXIMUM.
4. MINIMUM 5 FASTENERS INSTALLED, 4 EQUALLY SPACED ACROSS THE BOLT PATTERN, AND THE CENTER FASTENER.
5. GROUND STUD: #10-32.

	NAME	DATE
DRAWN	DMF/AMP	17-SEP-2024
CHECKED	A.V.	17-Sep-2024
APPROVED	TB	18-Sep-2024

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES [MM]
TOLERANCES:
ANGULAR ±0.5°
FRACTIONAL ±0.0625"
ONE DECIMAL PLACE ±0.100"
TWO DECIMAL PLACE ±0.030"
THREE DECIMAL PLACE ±0.010"

MATERIAL: N/A

FINISH: N/A
-

ANODYNE ELECTRONICS MANUFACTURING CORP.
100-966 Crowley Ave.
KELOWNA, BC V1Y 0L1
(250)-763-1088
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TITLE:
LOUDSPEAKER, EXTERNAL MECHANICAL INSTALLATION

PAPER SIZE:	CAGE CODE	PART No. :	REVISION
B	L9015	LS800-34DT	1.00

SCALE: 1:3.75 | DO NOT SCALE DRAWING | DRAWING No. : 922-0 | SHEET: 1 OF 1

Section 3.0 Operation

3.1 Operation Specifics

The LS800 Series High Power Loudspeaker has no normal user operational aspects.

End of Section 3.0