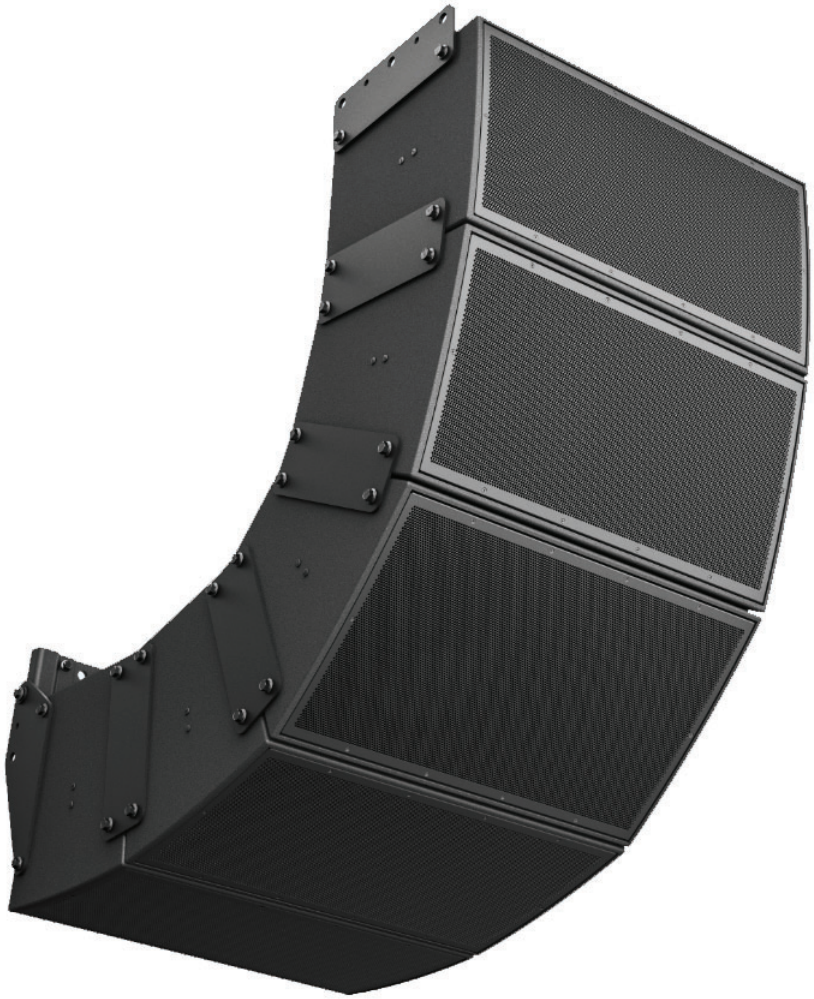
Bose® ArenaMatch
AM10, AM20 and AM40 Loudspeaker



Service Manual
Reference Number 794042-SM Rev.01

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The Bose® ArenaMatch Loudspeaker contains no user-serviceable parts. To prevent warranty infractions, refer servicing to warranty service stations or factory service.

WARRANTY

The Bose® ArenaMatch Loudspeakers are covered by a limited 5-year warranty.

Product Description

ArenaMatch is an outdoor rated passive speaker for stadiums with a capacity up to 30,000 seats. Three variants will be available (10°, 20° and 40° vertical coverage) and will utilize six drivers and a new 14-inch woofer. All variants will be IP55 rated, black and shipped standard with a crossover/ transformer/ 80° waveguide panel. Accessories will include 60° and 100° waveguide panels and external rigging (Array frame, Spreader bar, U-bracket and Array pull back bar). ArenaMatch will be considered a standard commercial speaker and comply with UL60065 and CEA-CEB19 safety standards.

Its end-use location, (Fully Exposed to Weather) and is intended to provide a functional life of 5 years and a product life expectancy of 10 years.

PART LIST NOTES

1. The individual parts located on the PCBs are listed in the Electrical Part List.

2. This part is referenced for informational purposes only. It is not stocked as a repair part. Refer to the next higher assembly for a replacement part.

3. ⚠ This part is critical for safety purposes. Failure to use a substitute replacement with the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards.

Specifications

AM10

Single Module Performance									
Frequency Response (–3 dB) [1]	65 Hz to 15 kHz								
Frequency Range (–10 dB)	55 Hz to 17 kHz								
Nominal Coverage Pattern (H × V)	60° × 10° (AM10/60) or 80° × 10° (AM10/80) or 100° × 10° (AM10/100)								
Recommended High-pass Filter	60 Hz with minimum 12 dB / octave								
Crossover	950 Hz internal passive or external bi-amp (Bose ControlSpace presets)								
70V/100V transformer tap settings	70V: 100, 200, 400 W; 100V: 200, 400 W								
	Bose Extended Lifecycle Test [2]			**AES Transducer Test** [3]					
	LF (bi-amp)	**HF (bi-amp)**	**Passive**	**LF (bi-amp)**	**HF (bi-amp)**	**Passive**			
Power Handling, long-term continuous	600 W	150 W	700 W	750 W	200 W	900 W			
Power Handling, peak	2400 W	600 W	2800 W	3000 W	800 W	3600 W			
	AM10/60			**AM10/80**			**AM10/100**		
	LF	**HF**	**Passive**	**LF**	**HF**	**Passive**	**LF**	**HF**	**Passive**
Sensitivity (SPL / 1W @ 1 m) [4]	96 dB	106 dB	99 dB	96 dB	105 dB	98 dB	96 dB	104 dB	97 dB
Calculated max. SPL @ 1 m (Bose power test) [5]	124 dB	128 dB	128 dB	124 dB	127 dB	127 dB	124 dB	126 dB	126 dB
Calculated max. SPL @ 1 m (2-hour power test)	125 dB	129 dB	129 dB	125 dB	128 dB	128 dB	125 dB	127 dB	127 dB
Calculated max. SPL @ 1 m (Bose power test), peak	130 dB	134 dB	134 dB	130 dB	133 dB	133 dB	130 dB	132 dB	132 dB
Calculated max. SPL @ 1 m (2-hour power test), peak	131 dB	135 dB	135 dB	131 dB	134 dB	134 dB	131 dB	133 dB	133 dB
Transducers									
Low Frequency	1 × Bose LF14 neodymium 14-inch woofer (4-inch voice coil)								
High Frequency	6 × Bose EMB2S titanium-diaphragm, neodymium compression drivers (2-inch voice coil)								
Nominal Impedance	Passive: 8 Ω / Bi-amp: 8 Ω + 8 Ω								
Physical									
Enclosure Material	Exterior-grade birch plywood								
Finish	Two-part polyurethane coating, black								
Grille	Power-coated perforated stainless steel, acoustic foam, stainless steel mesh								
Environmental	Rated for direct-exposure outdoor installations (IEC 60529: IP55)								
Connectors	Barrier strips: passive in/through, bi-amp, and 70V/100V, with cover								
Suspension/Mounting	8 × M12 threaded inserts (4 per side); 4 × M8 threaded inserts (2 per side)								
Dimensions (H × W × D) – millimeters	409 × 783 × 420								
Dimensions (H × W × D) – inches	16.1 × 30.8 × 16.5								
Net Weight	36.3 kg (80 lbs)								
Shipping Weight	43.5 kg (96 lbs)								
Accessories	U-bracket, array suspension kits, waveguide kits								

Footnotes

1. Frequency response and range measured on-axis in anechoic environment with recommended bandpass and EQ.
2. Bose extended-lifecycle test using pink noise filtered to meet IEC268-5, 6-dB crest factor, 500-hour duration.
3. AES standard 2-hour duration with IEC system noise.
4. Sensitivity measured in anechoic environment with recommended bandpass and EQ.
5. Maximum SPL calculated using sensitivity and power ratings, exclusive of power compression.

Specifications (Continued)

AM20

Single Module Performance									
Frequency Response (–3 dB) [1]	65 Hz to 15 kHz								
Frequency Range (–10 dB)	55 Hz to 17 kHz								
Nominal Coverage Pattern (H × V)	60° × 20° (AM20/60) or 80° × 20° (AM20/80) or 100° × 20° (AM20/100)								
Recommended High-pass Filter	60 Hz with minimum 12 dB / octave								
Crossover	950 Hz internal passive or external bi-amp (Bose ControlSpace presets)								
70V/100V transformer tap settings	70V: 100, 200, 400 W; 100V: 200, 400 W								
	Bose Extended Lifecycle Test [2]			AES Transducer Test [3]					
	LF (bi-amp)	HF (bi-amp)	Passive	LF (bi-amp)	HF (bi-amp)	Passive			
Power Handling, long-term continuous	600 W	150 W	700 W	750 W	200 W	900 W			
Power Handling, peak	2400 W	600 W	2800 W	3000 W	800 W	3600 W			
	AM10/60			AM10/80			AM10/100		
	LF	HF	Passive	LF	HF	Passive	LF	HF	Passive
Sensitivity (SPL / 1W @ 1 m) [4]	96 dB	105 dB	98 dB	96 dB	104 dB	97 dB	96 dB	103 dB	96 dB
Calculated max. SPL @ 1 m (Bose power test) [5]	124 dB	124 dB	127 dB	124 dB	126 dB	126 dB	124 dB	125 dB	125 dB
Calculated max. SPL @ 1 m (2-hour power test)	125 dB	125 dB	128 dB	125 dB	127 dB	127 dB	125 dB	126 dB	126 dB
Calculated max. SPL @ 1 m (Bose power test), peak	130 dB	133 dB	133 dB	130 dB	132 dB	132 dB	130 dB	131 dB	131 dB
Calculated max. SPL @ 1 m (2-hour power test), peak	131 dB	134 dB	134 dB	131 dB	133 dB	133 dB	131 dB	132 dB	132 dB
Transducers									
Low Frequency	1 × Bose LF14 neodymium 14-inch woofer (4-inch voice coil)								
High Frequency	6 × Bose EMB2S titanium-diaphragm, neodymium compression drivers (2-inch voice coil)								
Nominal Impedance	Passive: 8 Ω / Bi-amp: 8 Ω + 8 Ω								
Physical									
Enclosure Material	Exterior-grade birch plywood								
Finish	Two-part polyurethane coating, black								
Grille	Power-coated perforated stainless steel, acoustic foam, stainless steel mesh								
Environmental	Rated for direct-exposure outdoor installations (IEC 60529: IP55)								
Connectors	Barrier strips: passive in/through, bi-amp, and 70V/100V, with cover								
Suspension/Mounting	8 × M12 threaded inserts (4 per side); 4 × M8 threaded inserts (2 per side)								
Dimensions (H × W × D) – millimeters	437 × 783 × 416								
Dimensions (H × W × D) – inches	17.2 × 30.8 × 16.4								
Net Weight	36.2 kg (80 lbs)								
Shipping Weight	43.3 kg (95 lbs)								
Accessories	U-bracket, array suspension kits, waveguide kits								

Footnotes

1. Frequency response and range measured on-axis in anechoic environment with recommended bandpass and EQ.
2. Bose extended-lifecycle test using pink noise filtered to meet IEC268-5, 6-dB crest factor, 500-hour duration.
3. AES standard 2-hour duration with IEC system noise.
4. Sensitivity measured in anechoic environment with recommended bandpass and EQ.
5. Maximum SPL calculated using sensitivity and power ratings, exclusive of power compression.

Specifications (Continued)

AM40

Single Module Performance									
Frequency Response (–3 dB) [1]	65 Hz to 15 kHz								
Frequency Range (–10 dB)	55 Hz to 17 kHz								
Nominal Coverage Pattern (H × V)	60° × 40° (AM40/60) or 80° × 40° (AM40/80) or 100° × 40° (AM40/100)								
Recommended High-pass Filter	60 Hz with minimum 12 dB / octave								
Crossover	950 Hz internal passive or external bi-amp (Bose ControlSpace presets)								
70V/100V transformer tap settings	70V: 100, 200, 400 W; 100V: 200, 400 W								
	Bose Extended Lifecycle Test [2]			AES Transducer Test [3]					
	LF (bi-amp)	HF (bi-amp)	Passive	LF (bi-amp)	HF (bi-amp)	Passive			
Power Handling, long-term continuous	600 W	150 W	700 W	750 W	200 W	900 W			
Power Handling, peak	2400 W	600 W	2800 W	3000 W	800 W	3600 W			
	AM10/60			AM10/80			AM10/100		
	LF	HF	Passive	LF	HF	Passive	LF	HF	Passive
Sensitivity (SPL / 1W @ 1 m) [4]	96 dB	104 dB	97 dB	96 dB	103 dB	96 dB	96 dB	102 dB	95 dB
Calculated max. SPL @ 1 m (Bose power test) [5]	124 dB	126 dB	126 dB	124 dB	125 dB	125 dB	124 dB	124 dB	124 dB
Calculated max. SPL @ 1 m (2-hour power test)	125 dB	127 dB	127 dB	125 dB	126 dB	126 dB	125 dB	125 dB	125 dB
Calculated max. SPL @ 1 m (Bose power test), peak	130 dB	132 dB	132 dB	130 dB	131 dB	131 dB	130 dB	130 dB	130 dB
Calculated max. SPL @ 1 m (2-hour power test), peak	131 dB	133 dB	133 dB	131 dB	132 dB	132 dB	131 dB	131 dB	131 dB
Transducers									
Low Frequency	1 × Bose LF14 neodymium 14-inch woofer (4-inch voice coil)								
High Frequency	6 × Bose EMB2S titanium-diaphragm, neodymium compression drivers (2-inch voice coil)								
Nominal Impedance	Passive: 8 Ω / Bi-amp: 8 Ω + 8 Ω								
Physical									
Enclosure Material	Exterior-grade birch plywood								
Finish	Two-part polyurethane coating, black								
Grille	Power-coated perforated stainless steel, acoustic foam, stainless steel mesh								
Environmental	Rated for direct-exposure outdoor installations (IEC 60529: IP55)								
Connectors	Barrier strips: passive in/through, bi-amp, and 70V/100V, with cover								
Suspension/Mounting	8 × M12 threaded inserts (4 per side); 4 × M8 threaded inserts (2 per side)								
Dimensions (H × W × D) – millimeters	489 × 783 × 400								
Dimensions (H × W × D) – inches	19.3 × 30.8 × 15.8								
Net Weight	34.9 kg (77 lbs)								
Shipping Weight	42.2 kg (93 lbs)								
Accessories	U-bracket, array suspension kits, waveguide kits								

Footnotes

1. Frequency response and range measured on-axis in anechoic environment with recommended bandpass and EQ.
2. Bose extended-lifecycle test using pink noise filtered to meet IEC268-5, 6-dB crest factor, 500-hour duration.
3. AES standard 2-hour duration with IEC system noise.
4. Sensitivity measured in anechoic environment with recommended bandpass and EQ.
5. Maximum SPL calculated using sensitivity and power ratings, exclusive of power compression.

Packaging View

Item Number	Description	Material	Qty	Note
1	CARTON	805908-0010	1	
2	INSERT, PE FOAM, 10 DEG	805938-1010	2	
	INSERT, PE FOAM, 20 DEG	805938-2010	2	
	INSERT, PE FOAM, 40 DEG	805938-4010	2	

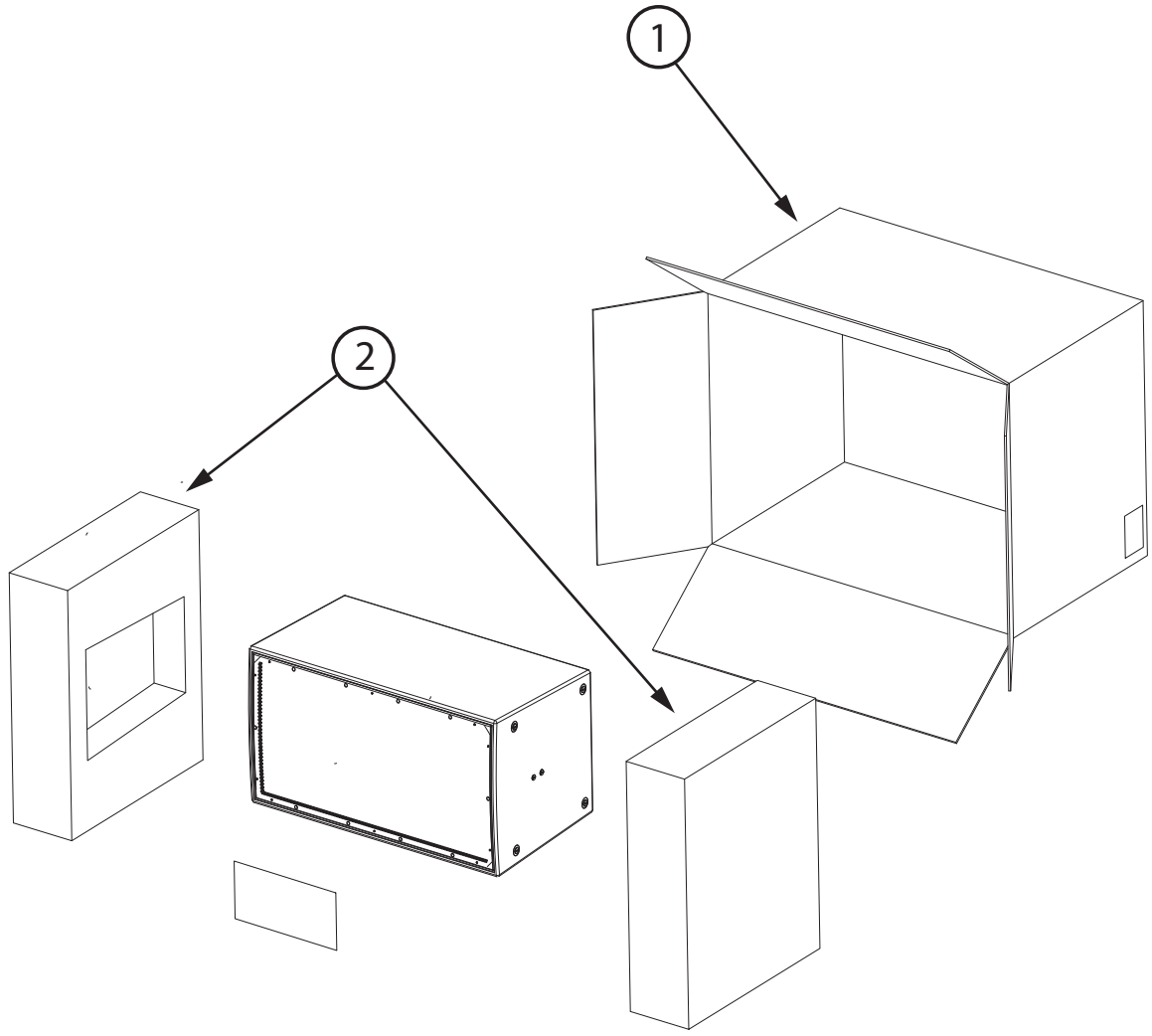

Figure 1. Packaging View

Main Parts List

Item Number	Description	Material	Qty	Note
1	ASSY, COVER, I/O PANEL, SVCE	802312-011S	1	
2	DRIVER, COMPRESSION, BLK, SVCE	770438-011S	6	
3	GASKET, WOOFER, BLK	826169-0110	1	
4	WOOFER, 14IN, 8 OHM, B&C 14NW100, SVCE	807968-001S	1	
5	ASSY, GRILLE, 10 DEG, SVCE	796021-101S	1	
	ASSY, GRILLE, 20 DEG, SVCE	796021-201S	1	
	ASSY, GRILLE, 40 DEG, SVCE	796021-401S	1	

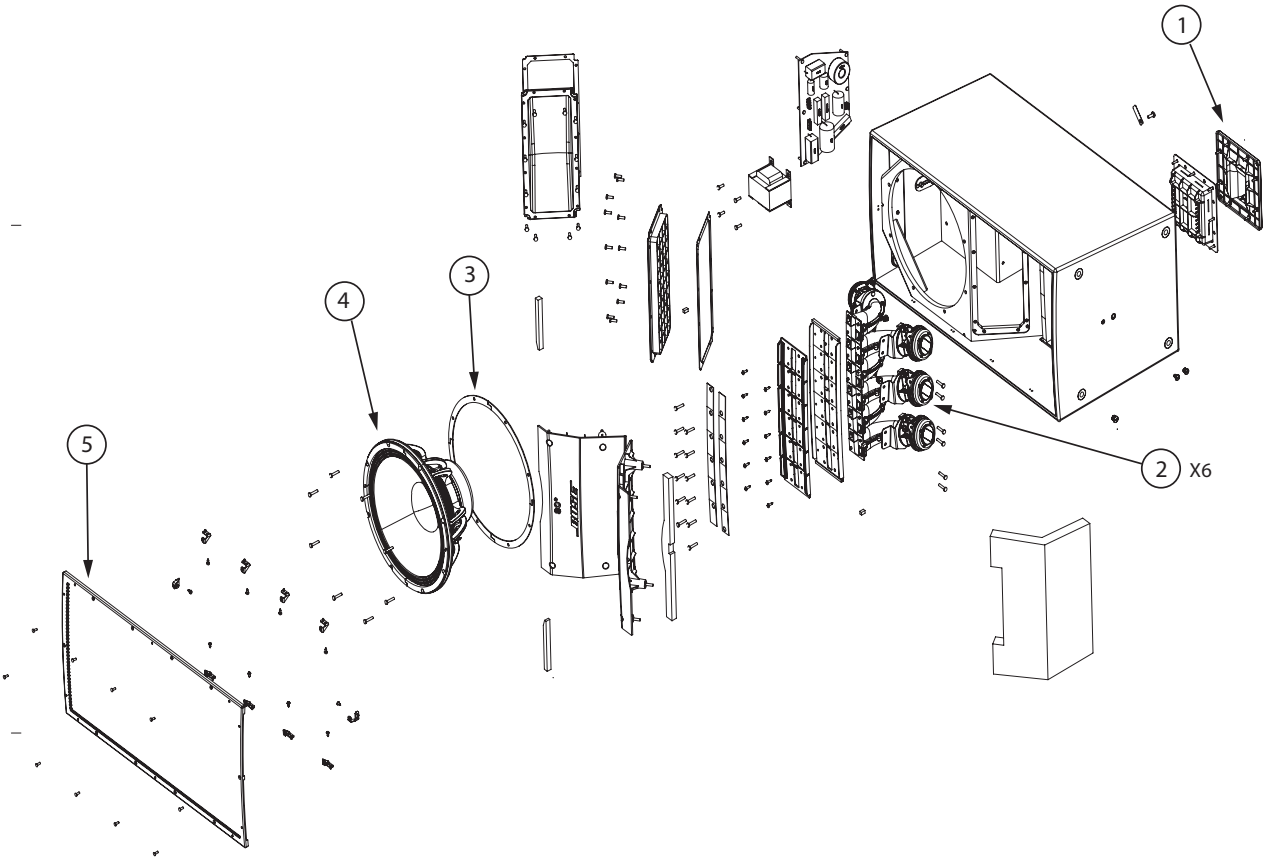

Figure 2. Exploded View

Disassembly Procedures

1. Grille Removal

1.1 Remove the ten screws that secure the grille to the cabinet indicated by arrows in figure 3.

NOTE: There are four screws on each side of the grille. and 1 each on the top and bottom.

Figure 3

2. Lift off the grille. Figure 4.

Figure 4

Disassembly Procedures

3. Woofer Removal

3.1 Perform procedures 1 and 2.

3.2 Remove the eight screws indicated by circles that secure the woofer to the enclosure. Figure 5.

3.3 Carefully lift out the woofer.

Figure 5

3.4 Remove the Faston connectors.

Note: There is a locking tab that must be released to remove the Faston connectors. The arrows are pointing to the locking TAB located underneath the plastic. Figure 6.

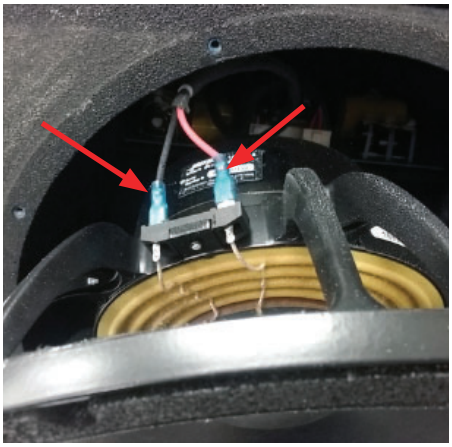

Figure 6

Disassembly Procedures

4.1 Driver Removal

4.2 Perform procedures 1 and 2

4.3 Remove the two access panels as shown in figure 7.

4.4 Each driver is secured with two screws on the front panel as shown in figure 7 and 8.

Figure 7

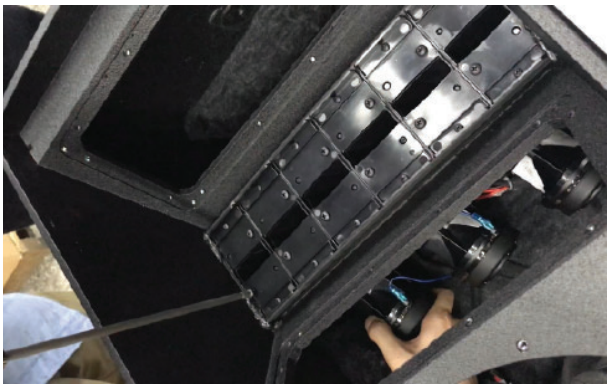

Figure 8

4.3 There are two screws for each driver on the underside of the enclosure that must also be replaced.

Figure 9

Test Procedures

Equipment Required:

Audio signal generator
Audio amplifier

Test Connection Information
Ensure the Panel has all jumpers (green) in place as shown. Test connections should be to the 8 Ohm input terminals as indicated by the red and white arrows shown in figure 10.

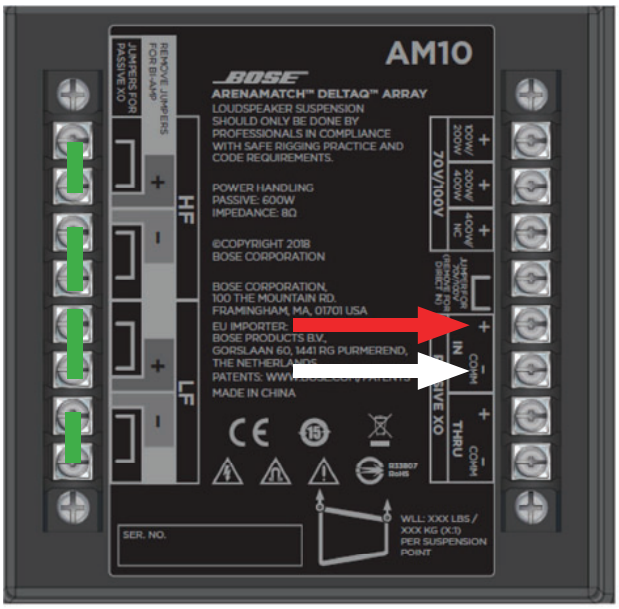

Figure 10

1. Phase Test

Note: All acoustic testing from 1.1 through 3.2 should be performed without the grille attached.

1.1 Refer to disassembly procedure 1, Grille Removal, Figures 4-5.

1.2 Place one hand on the woofer and gently touch the dust cap or cone with fingers. Momentarily apply a voltage of 8 VDC ± 1 VDC, to the input terminals.

Pass: The woofer where the cone moves outward.

Fail: The woofer where the cone does not move outward.

2. Air Leak Test

Note: You can measure the AC input voltage levels for the following tests at the loudspeaker barrier strip terminals.

2.1 Apply a signal of 30 Vrms, ± 2 Vrms, @ 40 Hz and 55 Hz to the speaker input.

2.2 Sweep the input frequency from 20 Hz to 200 Hz. 4 seconds up and 4 seconds down.

2.3 Listen carefully for air leaks at gaskets and joints. Replace any driver that has a rubbing or a ticking noise.

3. Rub and Tick Test

3.1 Apply a 25 Vrms, ± 1 Vrms, 10Hz signal to the speaker input.

3.2 Listen carefully for buzzes, rattles, or other extraneous noises from the drivers or from the enclosure.

PASS: any speaker that has no rubbing or ticking noise.

FAIL: any speaker that has a rub, tick, rattle, buzz, thump or any other extraneous noise.

4. Low Frequency Sweep with Grille attached

4.1 Reattach Grille.

4.1 Slowly apply 1 Vrms, 20 Hz to 2K Hz, into the speaker. Listen carefully for any buzzing or rattles from the grille assembly.

4.2 Replace any speaker that has a buzzing noise or is defective. There must not be any buzzes, ticks, rubs, bottoming sounds, air leaks or other unwanted acoustic noises.

Revision History

DATE	REV	CN	DESCRIPTION
02/2019	00		INITIAL RELEASE
05/2019	01		Woofer service part number

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http://serviceops.bose.com