Panaray® MA12 Modular Line Array Loudspeaker System

Service Manual

Reference Number 263639-SM Rev. 02

Contents

CAUTION: The Bose® Panaray MA12 Modular Line Array Loudspeaker System contains no user-serviceable parts. To prevent warranty infractions, refer servicing to warranty service stations or factory service.

Warranty

The Bose Panaray MA12 Modular Line Array Loudspeaker System is covered by a limited 5-year transferable limited warranty.

Specifications

External Dimensions:	38.5 x 4.2 x 5.1 in. (978 x 107 x 130 mm)
Weight:	Single Speaker: 22 lb. (10 kg) Packed System: 24 lb. (11 kg)
Sensitivity:	88dB SPL, 120 Hz - 15 kHz (1W/1m free space)
System Protection:	PTC, lamp
Impedance:	8 Ohms nominal, 7.5 Ohms minimum
Power Handling:	300 Watts continuous per IEC-268-5, 120 Hz high pass, 96 hours. Recommended amplifier power 150-300 Watts

Product Description

The Bose® Panaray® MA12 Modular Line Array Loudspeaker System is a modular system used for mid/high frequency sound reproduction. It is a vented enclosure design using 12 full range drivers housed in a closely spaced line.

The loudspeaker provides a means for mechanical attachment of two units to form a rigid single line source by using the CB-MA12 coupling bracket (see table below). Each loudspeaker has two Neutrik® connectors and one barrier style terminal so that multiple units can be connected as a system in series and parallel.

The Bose Panaray MA12 Loudspeaker can be used with the Bose Panaray MB4 Modular Bass Loudspeaker for dynamic full range reproduction.

Accessories Used with the MA12 Loudspeaker System

Description	Product Code	
	Black	White
WB-MA12 wall mount bracket (0º – 10º pitch)	028333	028334
WBP-MA12 wall mount bracket (0º – 10º pitch, +/- 90º yaw)	028673	028674
CB-MA12 coupling bracket	028337	028338
PSA-12 stand adapter	029229	-
CVT-12 70V/100V transformer (non-RoHS complaint)	029388	029389
CVT-12 70V/100V transformer (RoHS complaint)	040190	040191

Part List Notes

1. This part is not normally available from Customer Service. Approval from the Field Service Manager is required before ordering.

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

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.

4. 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.

Packaging Part List

Panaray® MA12 Loudspeaker System (see Figure 1)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	PACKING, END CAP	263624	1490-7393-0	2	
2	POLYBAG	N/A	1497-5102-0	1	
3	MA12 LOUDSPEAKER	REF	REF	1	
4	PACKING, CENTER	263625	1490-7433-1	1	
5	OWNER'S MANUAL	263626	4301-5191-0	1	
6	CARTON	263572	145A7780-0	1	

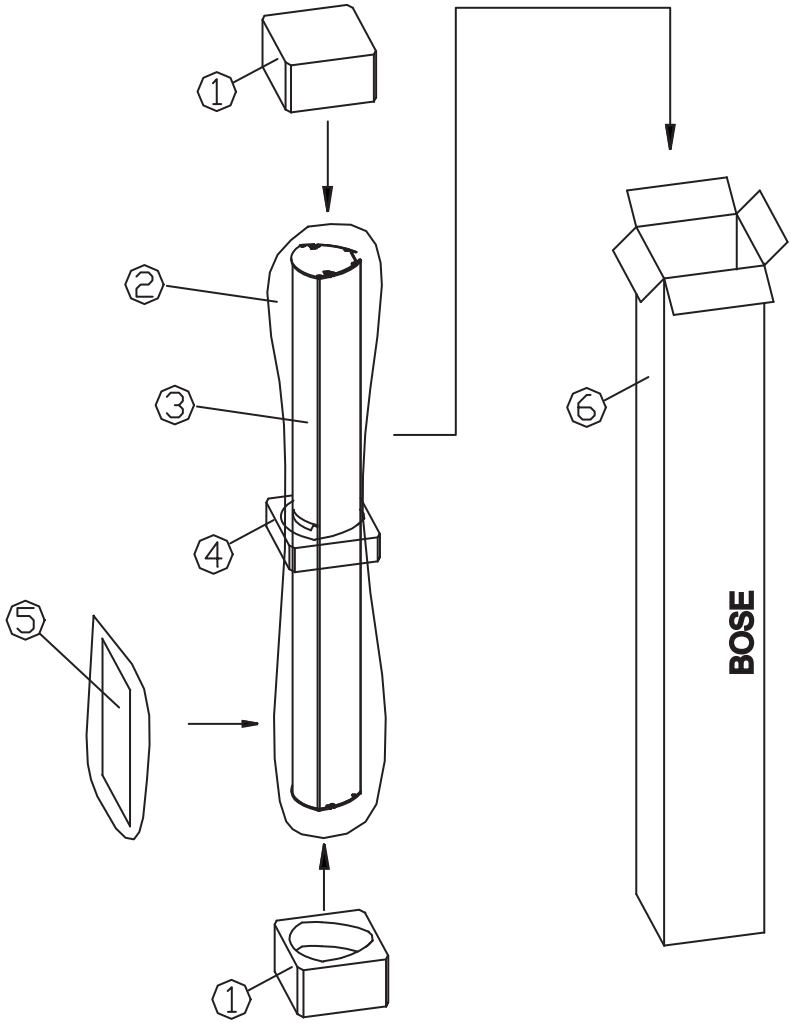


Figure 1. Panaray MA12 Loudspeaker Packaging View

Main Part List

Panaray® MA12 Loudspeaker System (see Figure 2)

Item Number	Description	Part Number		Qty	Note
		Black	White		
1	SCREW, CONNECTOR, M3x13	-	-	4	4
2	CONNECTOR, NEUTRIK	298548	298548	2	
3	GASKET, ENDCAP	259133	259133	2	
4	SCREW, ENDCAP, M3.5x13	-	-	12	4
5	ENDCAP	259132-001	259132-002	2	
6	GASKET, DRIVER	298549	298549	12	
7	DRIVER, 2.25”	303880	303880	12	
8	SCREW, BAFFLE, M4.5x12	-	-	16	4
9	SCREW, DRIVER, M3.5x8	-	-	48	4
10	U-CHANNEL, GRILLE	-	-	2M	4
12	LOGO, BOSE	298552-001	298552-002	1	
11	GRILLE	298551-001	298551-002	1	
13	U-CHANNEL FOR GRILLE COVER	-	-	.35M	4
14	GRILLE TRIM	-	-	2	4
15	BARRIER TERMINAL	-	-	1	4
16	SCREW, BARRIER TERMINAL, M3x14	-	-	2	4
-	CVT-12 TRANSFORMER (ACCESSORY ITEM)	040190	040191	1	

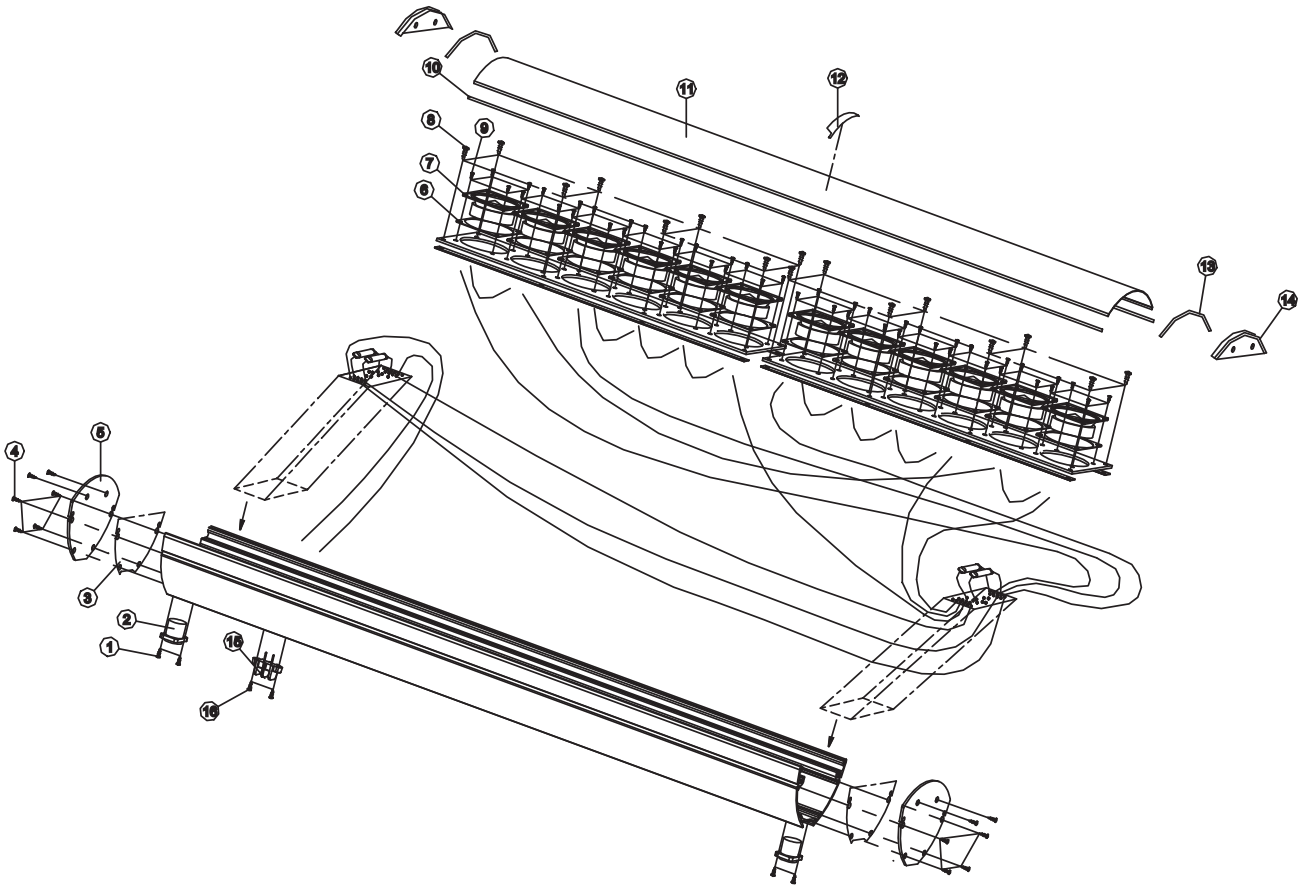


Figure 2. Panaray® MA12 Loudspeaker System Exploded View

Part List

Panaray® MA12 Loudspeaker Protection Circuit Board (see Figure 3)

Item Number	Description	Part Number	Qty.	Note
	PCB ASSY, PROTECTION CKT	298553	1	
1	LAMP, GREEN DOT	298554	2	
2	POLYSWITCH, RXE075	298555-075	1	

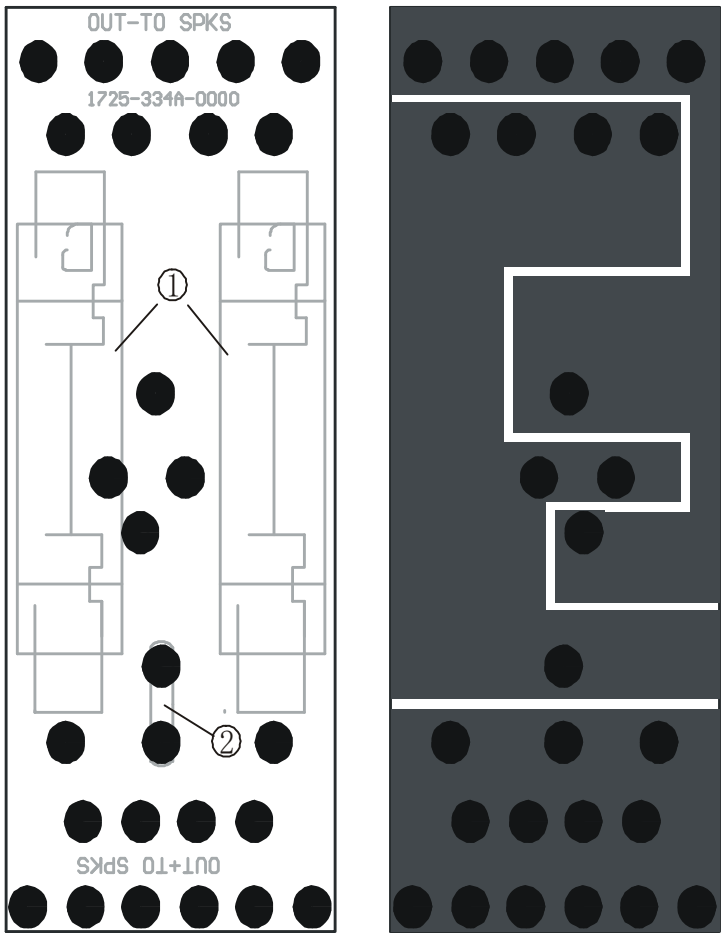
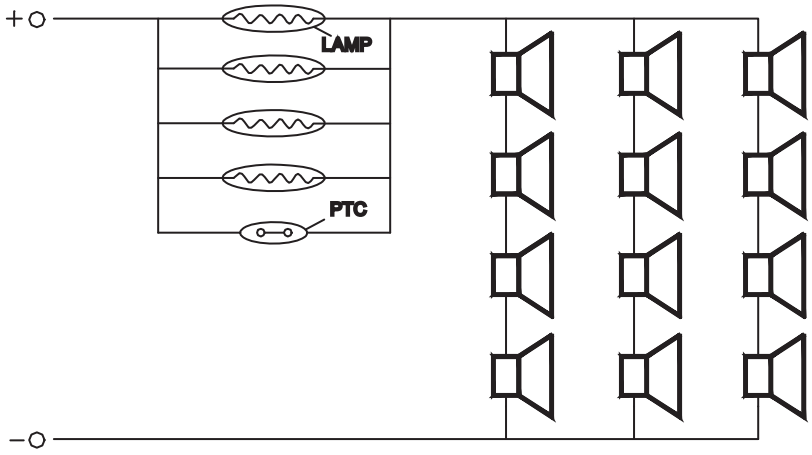


Figure 3. MA12 Protection Circuit Board Layout Diagram



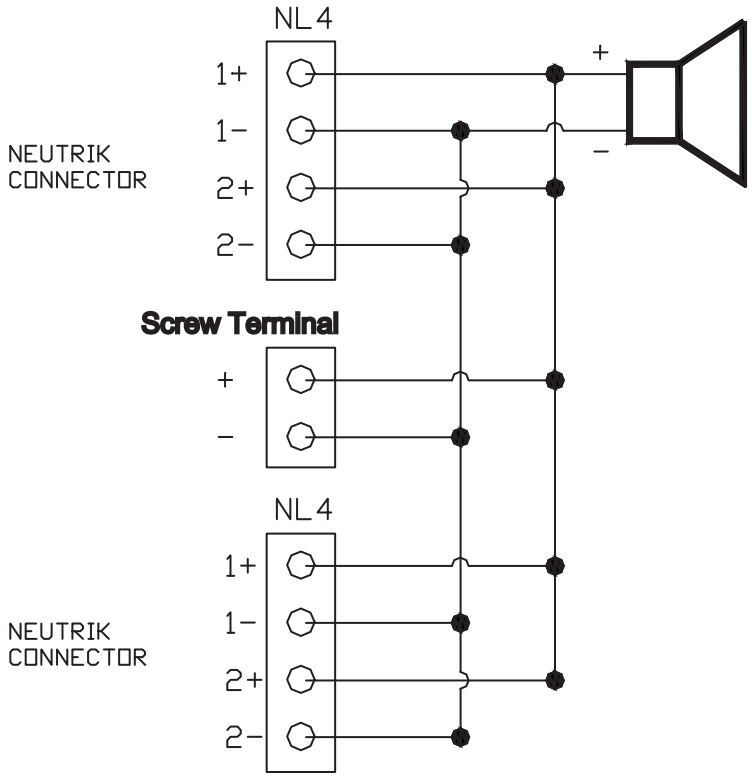


Figure 4. Panaray® MA12 Loudspeaker Wiring Diagram

Disassembly Procedures

Note: Refer to the figure below for the following procedures.

1. End Cap Removal

1.1 Using a Phillips-head screwdriver, remove the six screws (4) that secure the steel end cap (5) to the housing and grille trim.

1.2 Gently pull the end cap away from the housing.
Re-assembly Note: When replacing the end cap, ensure that it is fully seated against the housing for an airtight seal. Replace all six screws to prevent air leaks.

2. Grille Assembly Removal

2.1 Remove the two screws at the front of each end cap.

2.2 Take the grille trim (14) along with the U-rubber channel (13) away from the end of the grille (11).

2.3 Gently pull the grille assembly away from the housing. Be careful not to mark the surface of the grille or the housing.

3. Driver Removal

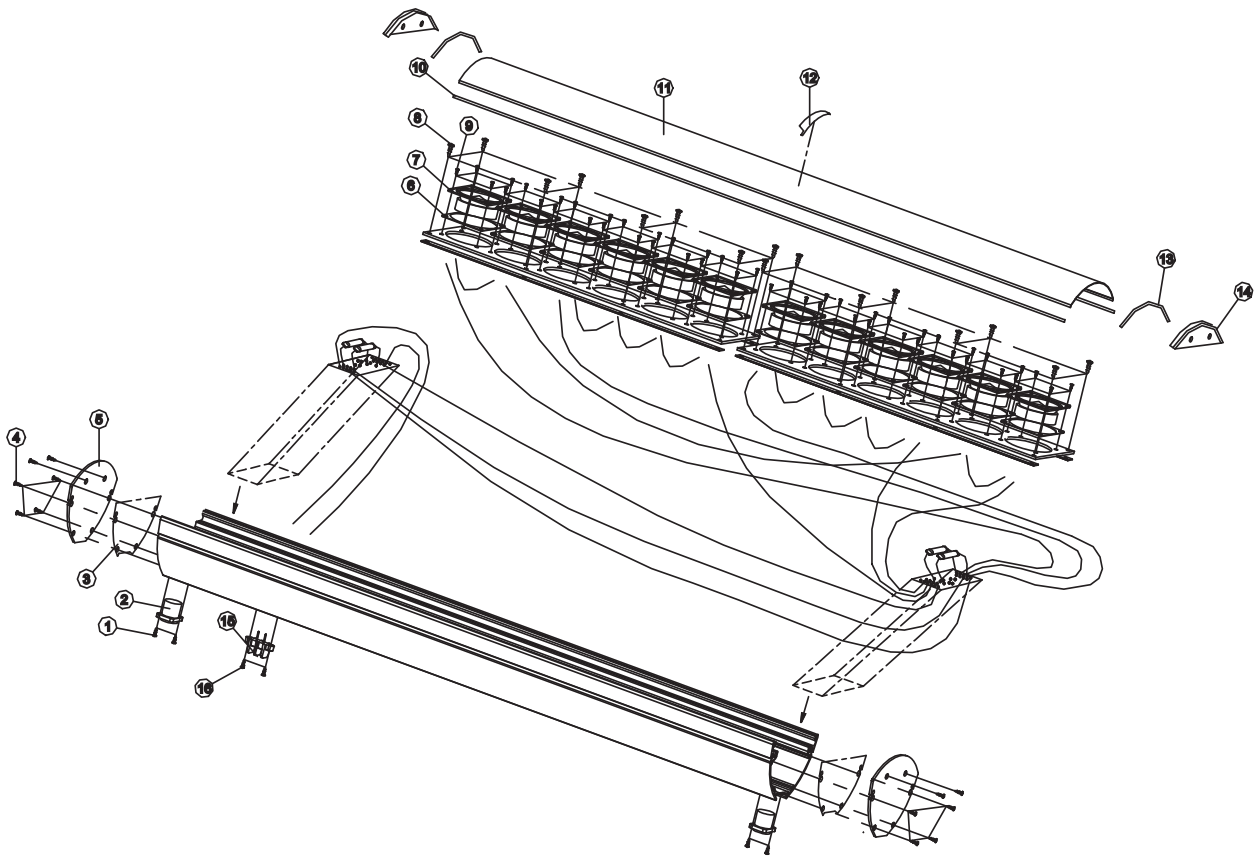
3.1 Perform procedure 2.

3.2 Using a Phillips-head screwdriver, remove the sixteen screws (8) that secure the baffle to the housing.

3.3 Lift the baffle with the six drivers (7) out of the housing.

3.4 Unplug the driver cable wires from the driver you wish to remove.

3.5 Using a Phillips-head screwdriver, remove the four screws (9) that secure the driver to the baffle. Lift out the driver.



Test Procedures

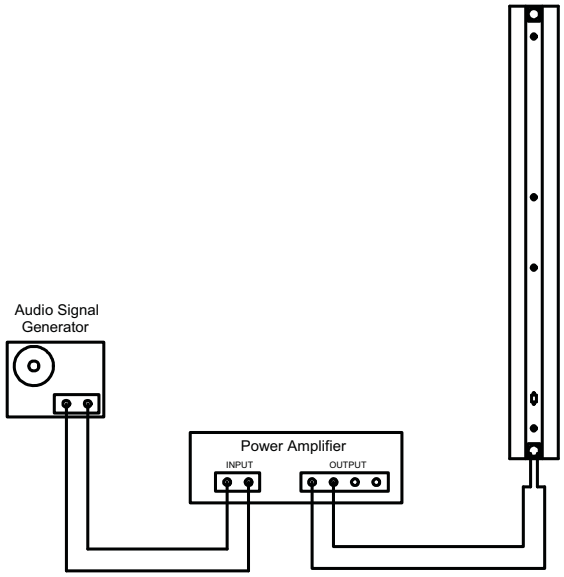


Figure 5. Panaray® MA12 Test Setup Diagram

1. Air Leak Test

1.1 Set up the system for test as shown in Figure 5.

1.2 Apply a 100 Hz, 10 Vrms sine wave to the input connectors.

1.3 Listen carefully for any air leaks from around the end cap, drivers and the baffle. Air leaks will be heard as a hissing or sputtering sound. All repairs must be hidden. Test duration should be 5 seconds minimum.

2. Rub and Tick Test

2.1 Perform disassembly procedure 3. It is not necessary to unplug the wires at the driver assembly terminals.

2.2 Connect a signal generator directly to the terminals of the driver under test.

2.3 Apply a 20 Hz, 5 Vrms sine wave to the driver assembly.

2.4 Listen carefully for any extraneous noises, such as rubbing, scraping or ticking. **Note:** To distinguish between normal suspension noise and rubs or ticks, displace the cone slightly with your fingers.

If the noise stays the same, it is normal suspension noise and the driver is fine. Suspension noise will not be heard with program material.

3. Phase Test

3.1 Momentarily apply 10 VDC to the loudspeaker input connector. Apply the positive to pin “1+” and the negative to pin “1-” of the Neutrik® connector.

3.2 When applying the DC voltage level, observe the driver cones. They should all move outward when the DC level is applied.

3.3 Rewire any incorrectly wired driver.

4. System Sweep Test

4.1 Set up the system for test as shown in Figure 5.

4.2 Apply a 10 Hz, 10 Vrms sine wave to the loudspeaker input connector.

4.3 While listening to the output of the system, sweep the input frequency slowly from 10 Hz to 20 kHz.

4.4 Listen carefully for any extraneous noises such as buzzing or ticking.

Service Manual Revision History

Date	Revision Level	Description of Change	Change Driven By	Pages Affected
1/02	00	Document released at revision 00.	Service manual release	All
10/06	01	Added RoHS compliant part numbers.	RoHS initiative	4, 6
12/15	02	New driver part number.	Part number change	5

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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P/N: 263639-SM Rev. 02; 12/2015 (P)
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