BOSE®
Better sound through research®

402®Series II Loudspeaker

Service Manual

Reference Number 260431-SM Rev. 03

CONTENTS

WARRANTY

5 year limited warranty

SPECIFICATIONS

External dimensions:

Single speaker:	23.3" H x 8.2" W x 7.8" D (59.2 x 20.8 x 19.8)cm
Packed system:	27.0" H x 12.0" W x 11.0" D (68.6 x 30.5 x 27.9)cm

Weight:

Single speaker:	17.5 lbs (7.94 kg)
Packed system:	21.3 lbs (9.66 kg)

Transducer: Four 4.5" environmental drivers per enclosure

Internal cabinet volume: 1067.9 cu. In. (17.5 liters)

Port:

Type:	Two rectangular ports located at the top and bottom.
Total port area:	8.84 sq. in. (57 sq. cm)
Port length:	3.23" (8.2cm)
Resonance frequency:	90 Hz

Impedance: 8 ± 2 Ohm

Power handling: 120W continuous per IEC-268-5

Sensitivity: 90 dB SPL, 1W, 1m

MAIN PART LIST

Item Number	Description	Part Number	Qty	Note
1	GRILLE, BLACK GRILLE, ARCTIC WHITE GRILLE, PRO GRAY	792238-0110 252380-002 252380-004	1	
2	SCREW, TAPP, 8-15, HEXW, SLOT	290290-12	14	
3	DRIVER ASSEMBLY, 4.5"	291020-002	4	1
4	GASKET, DRIVER, 4.5"	128407	4	
5	FOAM, ACOUSTIC, 19.75"x7"x1	120357	1	
6	CLIP, TINNERMAN	187943	2	
7	CROSSOVER ASSEMBLY	291042-001	1	
8	CONN, SPEAKON, PANEL MOUNT	258213-002	2	
9	SCREW, THUMB, M8x1.25x25mm	137050	2	
10	CONN, FUSE CLIP, 1 POS, FEMALE	121112	2	
11	SCREW, TAPP, 6-20x.5, PAN, XR	290296-08	2	
12	TAPE, FOAM	257555	1	
13	NUT, J-TYPE, 8-32	109481	12	
14	INSERT, KNURLED	290293-01	4	
15	DEFLECTOR	126973-1	1	
16	SCREW, TAPP, 6-13x.625, PAN	290294-10	4	
17	NAME PLATE, LOGO, BLACK NAME PLATE, LOGO, WHITE	254458-001 254458-002	1	

Note: When ordering a driver, also order a driver gasket.

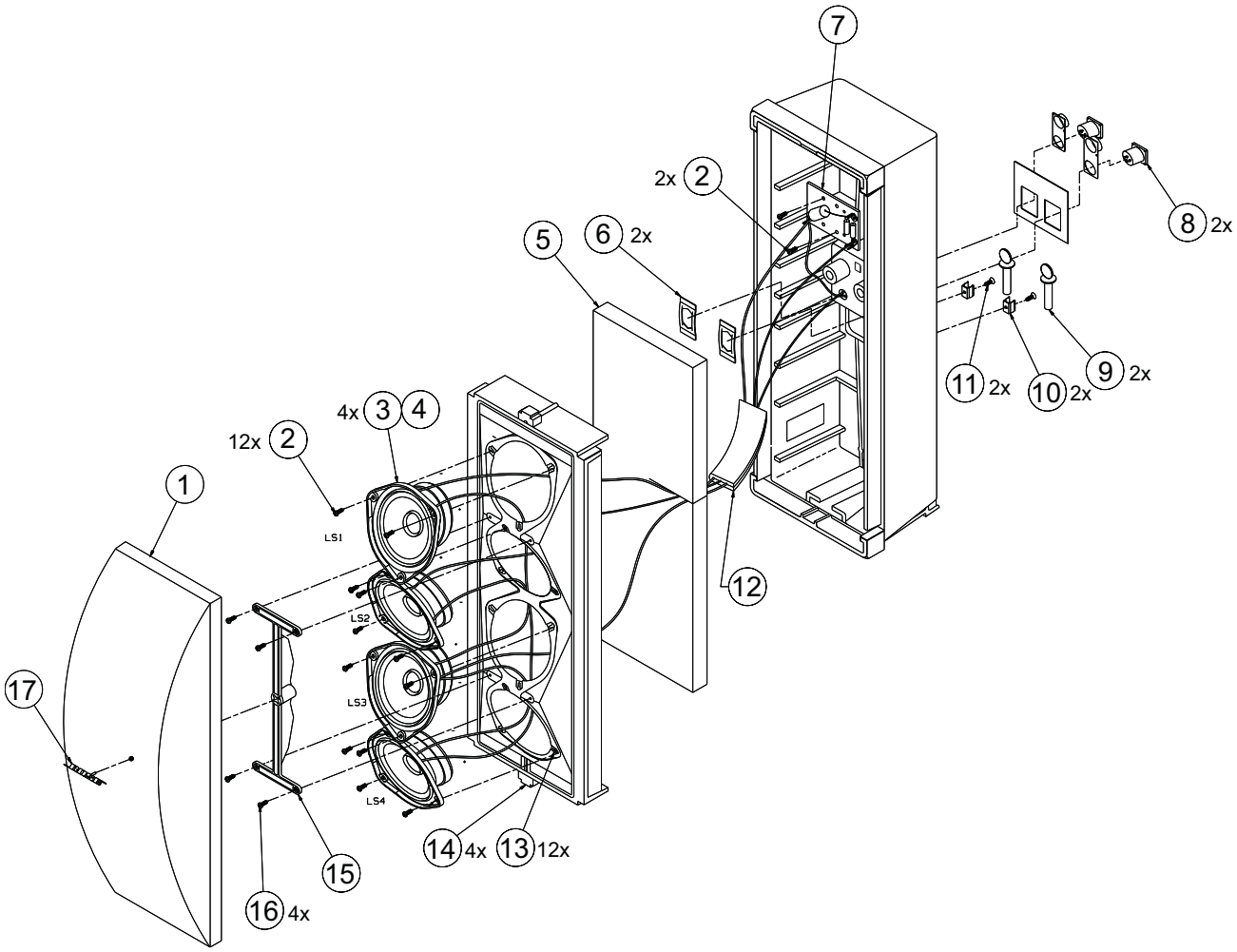


Figure 1. Exploded View

CROSSOVER PCB PART LIST

Item Number	Description	Part Number	Qty
1	LAMP, AXIAL LEAD	114462	2
2	20uF, CAP, FILM, 75V, 10%	119026	1

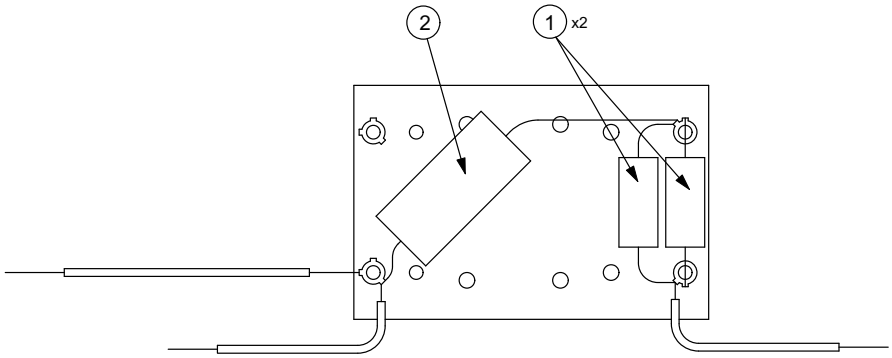


Figure 2. Crossover PCB Layout

PACKAGING PART LIST

Item Number	Description	Part Number	Qty	Note
1	PACKING, FOAM, BOTTOM, EPS	258908	1	
2	PACKING, FOAM, P/U, RIGHT	258927	2	
3	PACKING, FOAM, P/U, LEFT	258928	2	
4	MANUAL, OWNERS	256597	1	
5	BAG, POLY, 13.5x35x9.5x1 MIL	114522	1	
6	CARTON, RSC, 402 II	256591	1	
-	AU/NZ WARR SLIP SHEET 8.5 X 5.5	355731-0010	1	

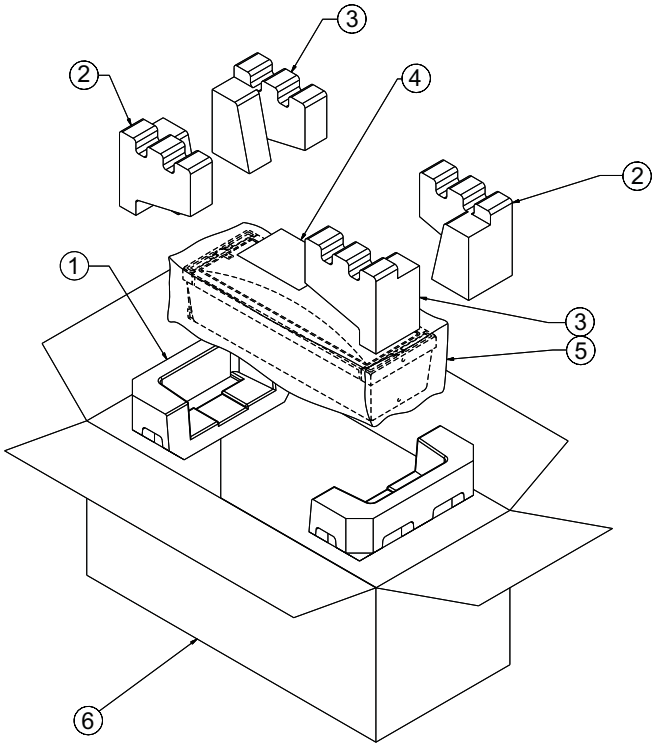


Figure 3 Packaging View

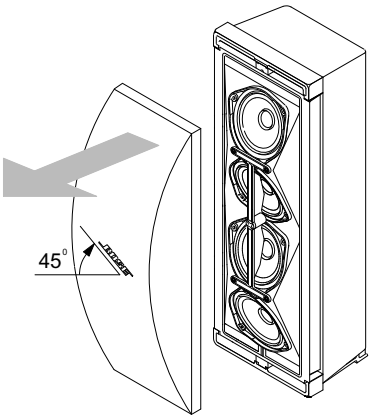
DISASSEMBLY/ASSEMBLY PROCEDURES

Note: Numbers in parenthesis correspond to call-outs in figure 1.

1. Grille Removal

1.1 Rotate the Bose® logo (9) 45^0 to release the grille (6).

1.2 Grasp the edge of the grill and pull it off.



2. Grille Replacement

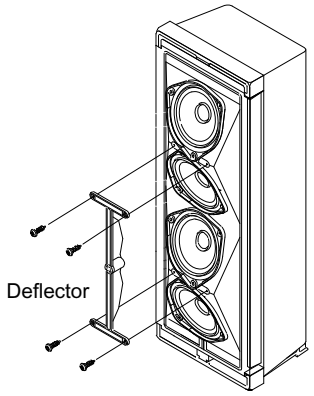
2.1 Rotate the Bose logo (9) 45^0 so the locking tabs on the logo line up with the slot on the deflector (8). Press the grille into place.

2.2 Rotate the Bose logo horizontally, locking the grille into place.

3. Driver Removal

3.1 Perform procedure 1.

3.2 Remove the four screws (12) securing the deflector (8) to the cabinet. Lift off the deflector.

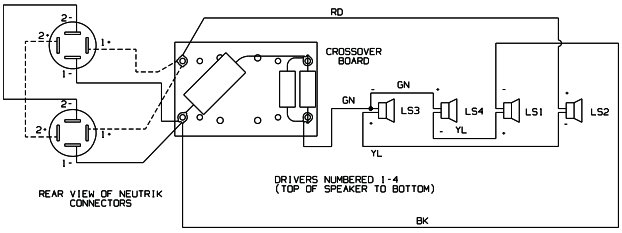


3.3 Remove the three screws (7) securing the driver (1) to the cabinet. Lift out the driver.

3.4 Cut the wires as close as possible to the driver's wire terminal.

4. Driver Replacement

4.1 Referring to the schematic below, attach the wires to the driver (1).



4.2 Line up the driver (1) to the cabinet and secure it with three screws (7).

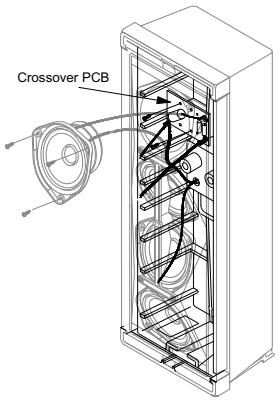
4.3 Line up the deflector (8) with the cabinet and secure it with four screws (12).

5. Crossover Removal

5.1 Remove the three screws (7) securing the top driver (1) to the cabinet. Lift out the driver.

5.2 Remove the two screws (7) securing the crossover PCB to the cabinet.

5.3 Pull the crossover PCB through the driver opening in the cabinet.



DISASSEMBLY/ASSEMBLY PROCEDURES

6. Crossover Replacement

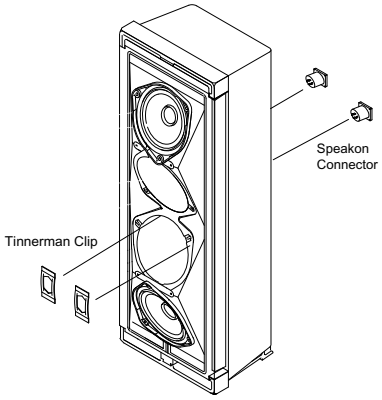
6.1 Replace the two screws (7) securing the crossover PCB (3) to the cabinet.

6.2 Perform procedure 4 and 2.

7. Speakon Connector Removal

7.1 Perform procedure 3.1-3.3 to remove the two center drivers.

7.2 Using a flat-blade screwdriver, pry out the tinnerman clip (5) securing the Speakon connector (4) to the cabinet.



7.3 Pull out the Speakon connector and remove the wires.

8. Speakon Connector Replacement

8.1 Referring to figure 1, attach the wires to the Speakon connector (4).

8.2 Align the Speakon connector in the cabinet.

8.3 Reshape the tinnerman clip (5) or use a new one. Place an appropriate size wood block between the Speakon connector (rear of speaker) and a hard surface. Using a flat-blade screwdriver (or similar tool) and a hammer, secure the tinnerman clip into place. Make sure the Speakon connector is securely fastened.

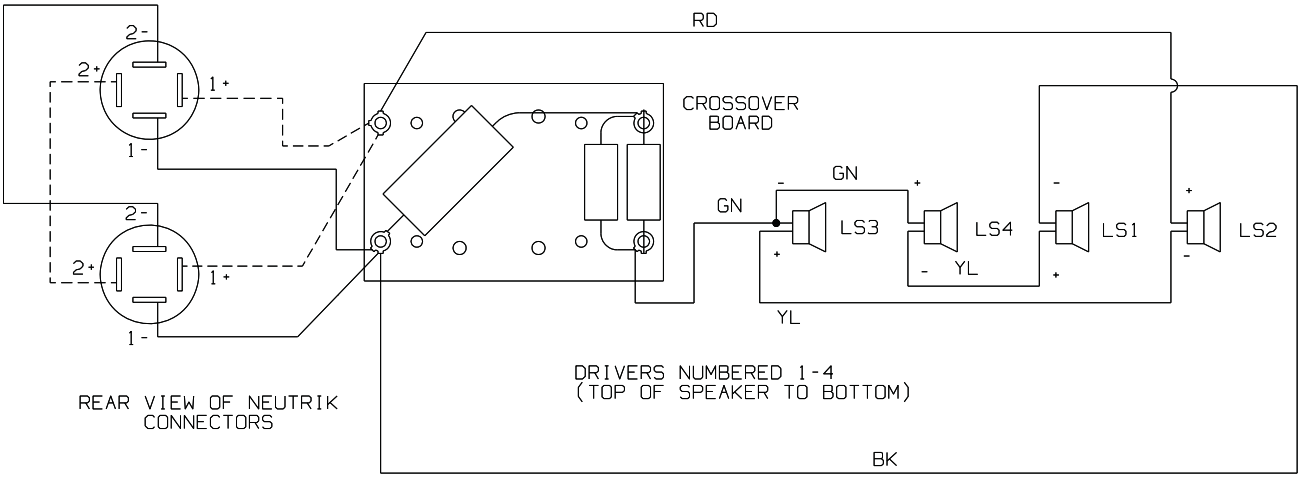


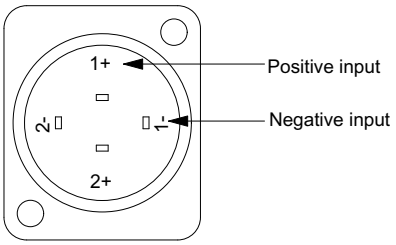
Figure 4. Schematic Diagram

TEST PROCEDURES

1. Phase Test

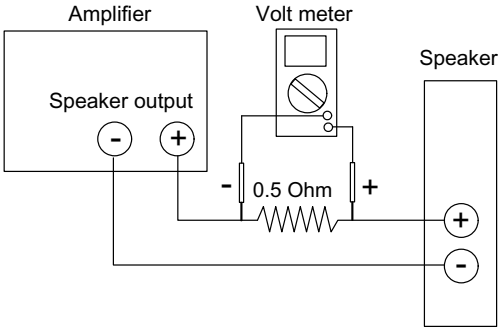
1.1 Observing polarity, apply 9 VDC to the input connector. Refer to the figure below.

1.2 All driver cones should move outward. Referring to figure 4, rewire any driver that moves inward.



2. Crossover Test

2.1 Connect a 0.5 Ohm resistor and amplifier to the speaker input connector as shown in the diagram below.



2.2 Apply a 2 Vrms, 8 kHz signal to the speaker input connector.

2.3 Measure the voltage across the 0.5 Ohm resistor. It should be 68-90 mVrms. If the voltage is out of range, check the crossover components and wiring.

3. Rub and Tick Test

3.1 Apply a 9 Vrms, 10 Hz signal to the speaker input connector.

3.2 No extraneous noises such as rubbing, scraping or ticking should be heard.
Note: To distinguish between normal suspension noise and rubs or ticks, slightly displace the cone of the driver with your fingers. If the noise can be made to go away or get worse, it is a rub or tick and the driver should be replaced. If the noise stays the same, it is normal suspension noise and the driver is fine. Suspension noises will not be heard with program material.

4. Air Leak Test

4.1 Apply a 15 Vrms, 65 Hz signal to the speaker input connector.

4.2 Listen for air leaks around the drivers and cabinet seam. Reposition or replace any gasket that is found to leak. Repairs made to the cabinet seam should not be visible from the exterior of the speaker.

5. Sweep Test

5.1 Apply a 9 Vrms, 10 Hz signal to the speaker input connector.

5.2 Sweep the signal generator from 10 Hz to 500 Hz.

5.3 Apply a 500 Hz, 2 Vrms signal to the speaker input connector.

5.4 Sweep the signal generator from 500 Hz to 5 kHz.

5.5 Listen for buzzes, rattles or other noises. Redress any wire that buzzes; replace any driver that is found to be defective.
Note: A whooshing noise from the port at its resonance frequency of approximately 90 Hz is acceptable.

SERVICE MANUAL REVISION HISTORY

Date	Revision Level	Description of Change	Change Driven By	Pages Affected
12/22	03	Updated Grille Part Number	Part changes	3
02/06	01	Added RoHS part numbers	This product is now built with RoHS compliant parts.	3
1/07	No change	Corrected part number, Driver Assembly, 4.5”	Correct part number is 254451	3
5/09	02	- New part numbers for speaker parts and packaging - Layout changed to reflect current manuals	Part changes Service manual layout change	3, 4 All

Specifications and Features Subject to Change Without Notice

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