

FreeSpace[®] 3 Series II Loudspeaker System



FS3B Acoustimass[®] Bass Module

FS3F Satellite Speaker

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CAUTION: The Bose® FreeSpace Series II Loudspeaker System contains no user-serviceable parts. To prevent warranty infractions, refer servicing to warranty service stations or factory service.

WARRANTY INFORMATION

The Bose FreeSpace 3 Series II Acoustimass Module Loudspeaker and Free Space Model 3F Satellite Loudspeakers are covered by a 5-year transferable limited warranty.

PROPRIETARY INFORMATION

THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION OF BOSE CORPORATION WHICH IS BEING FURNISHED ONLY FOR THE PURPOSE OF SERVICING THE IDENTIFIED BOSE PRODUCT BY AN AUTHORIZED BOSE SERVICE CENTER OR OWNER OF THE BOSE PRODUCT, AND SHALL NOT BE REPRODUCED OR USED FOR ANY OTHER PURPOSE.

SPECIFICATIONS

System Components:	Satellite:	(1) 2 1/4" Twiddler™ in each FS3F satellite
	Bass Module:	(1) 5 1/4" Woofer in each bass module
External Dimensions:	Satellite:	6.2 in. x 4.4 in. (157mm dia x 112mm depth)
	Bass Module:	15.04 in. x 7.87 in. (382mm dia x 200 mm depth)
Weight:	Single Satellite:	1.65 lbs. (0.75 kg)
	Bass Module:	15.4 lbs. (7 kg)
	Packed System:	17.6 lbs. (8 kg)
Electrical Crossover:	Frequency:	200 Hz @ 6 dB/octave
Impedance:	4 Ohms nominal	130 Ohms @ 70V, 32W, from 70 Hz - 15 kHz 250 Ohms @ 100V, 32W, from 70 Hz - 15 kHz
Power Handling:		100 Watts continuous per IEC-268-5, 96 hours. Recommended amplifier / Max 100 Watts. Filter: 24 dB/oct Butterworth, Hi-pass 50 Hz Lo-pass 250 Hz
Sensitivity: (1 W, 1m Free Space)	Satellites:	≥73 dB SPL, free field, per IEC-268-5 (for octave-band centered at 400 Hz)
	Bass Module:	≥74 dB SPL, free field, per IEC-268-5 (for octave-band centered at 100 Hz)
Flux Leakage: (satellites)		2.0 Gauss max. @ 30mm from any surface of the satellite
System Protection:	Polyswitch	

PRODUCT DESCRIPTION

The Bose® FreeSpace® 3 Series II Acoustimass® Module Loudspeaker and the Bose FreeSpace 3F satellite speakers are passive flush-mount ceiling speakers. Typical application is in retail, restaurant, hospitality and other commercial applications. The Bose Free Space 3F satellite speaker is a flush-mount variant of the current surface-mount Free Space 3 satellite.

DISASSEMBLY PROCEDURES

FreeSpace® 3B Acoustimass® Bass Module Procedures

Note: Refer to figure 5 for the following procedures:

1. Grille and Logo Removal

1.1 Use force to pull out the logo (18), then gently pull the grille (17) away from the baffle (1). Be careful not to mark the surface of the grille or the enclosure.

2. Woofer Assembly Removal

2.1 Use a cross-head screwdriver to remove the 10 screws (10) that secure the rear cover (3) to the enclosure (2). Gently turn over the rear cover (3) to allow access to the woofer assembly (5).

2.2 Remove 4 screws (9) of the woofer assembly and 3 screws of the transformer access cover (6). Lift out the transformer access cover with the transformer (7) attached to allow access to the crossover PCB (19).

2.3 Make a note of the wiring configuration and unplug the four wires of the woofer assembly from the crossover PCB.

2.4 Lift the woofer assembly out of the enclosure.

3. Transformer Kit Removal

3.1 Perform step 2.1.

3.2 Remove the 3 screws of the transformer access cover (6) and lift out the transformer kit (6, 7, 8) from the mounting hole.

3.3 Make a note of the wiring configuration and unplug all the wires from the transformer.

Re-assembly Note: Make sure the gap for the transformer wires through the enclosure is airtight.

FreeSpace® 3F Satellite Procedures

Note: Refer to figure 6 for the following procedures.

1. Grille Assembly Removal

1.1 Gently pull the grille assembly (4) away from the enclosure (8). Be careful not to mark the surface of the grille or the enclosure.

2. Twiddler™ Assembly Removal

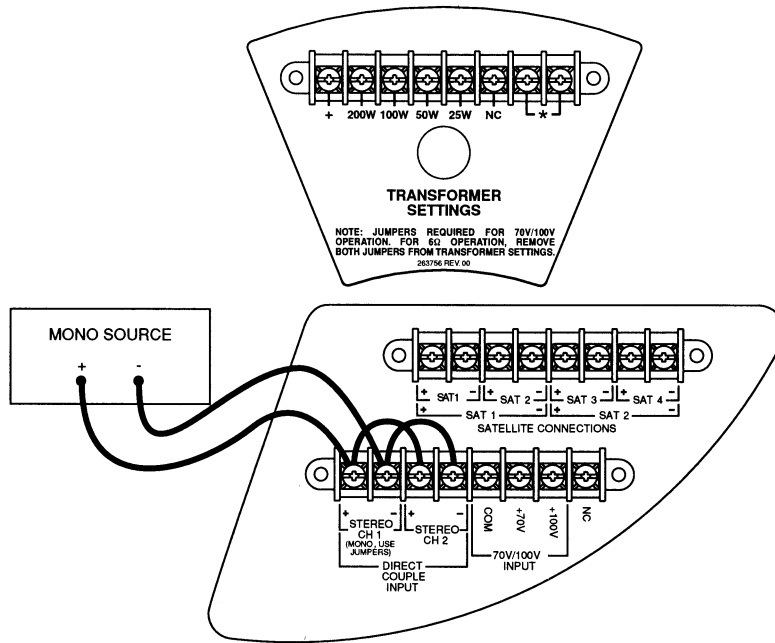
2.1 Perform procedure 1.

2.2 Using a cross-head screwdriver, remove the four screws (1) that secure the baffle plate (9) to the enclosure (8).

2.3 Unplug the two wires from the driver (2).

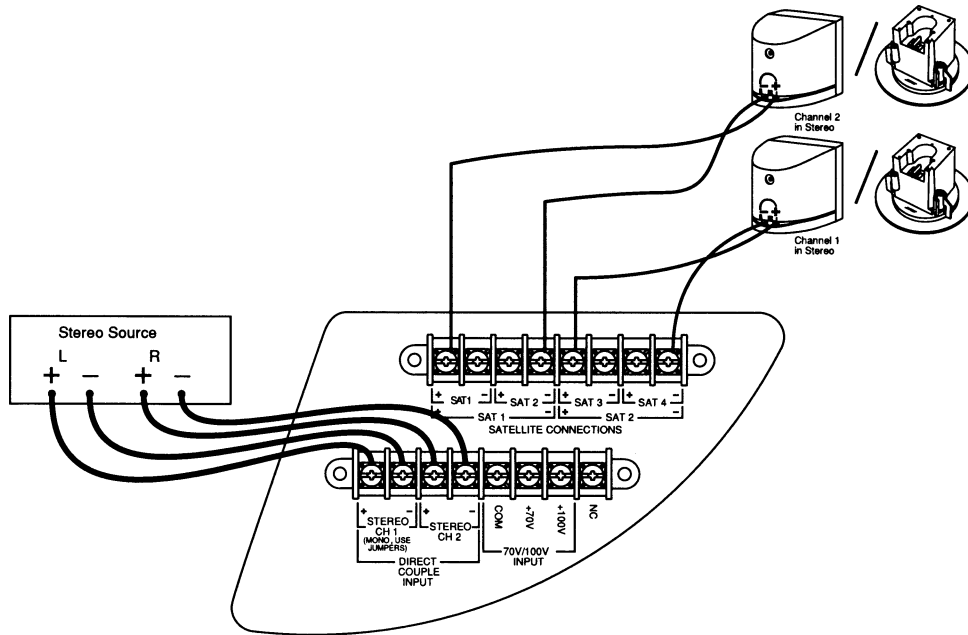
Re-assembly Note: Be sure to observe polarity when reconnecting the wires. Red for "+" and black for "-".

TEST SETUP PROCEDURES



Mono Direct: To bypass the transformer and prepare the loudspeaker for 6 Ohm use and mono sound input, remove the two jumpers from the transformer settings on the front of the loudspeakers. Leave the CH1 and CH2 jumpers on the back of the loudspeaker as they are.

Figure 1. 6 Ohm Mono Test Setup Setting



Stereo Direct: To bypass the transformer and prepare the loudspeaker for 6 Ohm use and stereo sound input, remove all the jumpers.

Figure 2. Stereo Test Setup Setting

TEST SETUP PROCEDURES

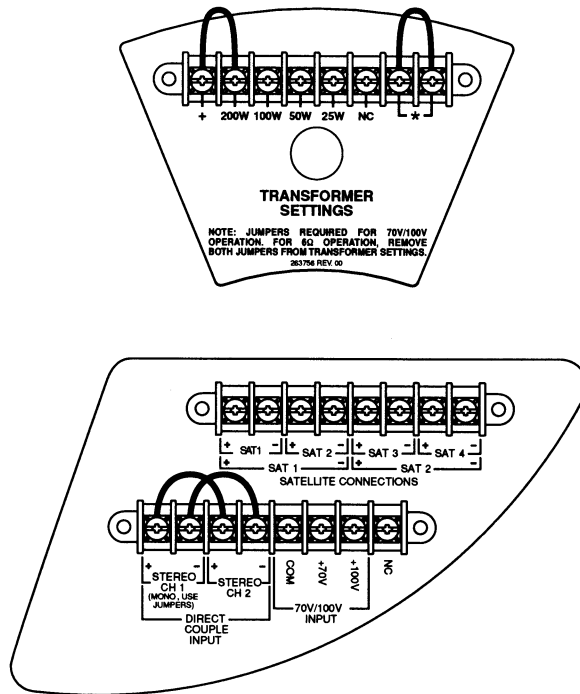


Figure 3. Factory Default Setting

Note: Using the factory default settings, connect an amplifier output to either the 70 Volt or 100 Volt input connections as illustrated above.

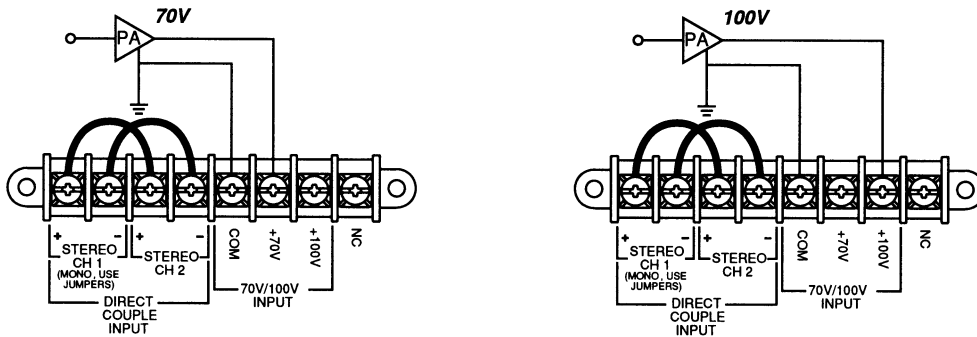


Figure 4. 70/100 Volt Test Setup Setting

TEST PROCEDURES

Note: The input voltage should be the actual voltage present at the input and not the open circuit generator output.

1. Bass Module Air Leak Test

Note: Connect the system as shown in figure 1, 6 Ohm mono test setup settings.

1.1 Apply a 6 Vrms, 50 Hz signal to the mono input terminals of the bass module. Do not connect the satellite speakers.

1.2 Listen carefully for air leaks from around the terminal cup, port cap and cabinet seams.

2. Woofer Phase Test

2.1 Apply a 6 Vrms, 50 Hz signal to both the CH1 and CH2 stereo input terminals of the bass module.

2.2 While the signal is being applied to the bass module, remove the input to one of the stereo terminals.

2.3 The sound output level should drop by approximately half. If the sound output level increases, stays the same, or stops completely, then there is a wiring problem at the crossover PCB or woofer.

3. System Sweep Test

3.1 Connect the system as shown in figure 2, stereo test setup settings.

3.2 Apply a 6 Vrms, 10 Hz signal to the stereo input terminals of the bass module.

3.3 While listening to the output of the system, sweep the input frequency slowly from 10 Hz to 500 Hz. The output should cross over from the bass module to the satellite speakers.

Note: A whooshing noise from the bass module port at around 40 Hz and 160 Hz to 180 Hz is acceptable.

3.4 Reduce the input level to 3 Vrms.

3.5 Continue sweeping from 500 Hz to 15 kHz. Listen for a clean, undistorted output from each satellite assembly. Replace any satellite or woofer that buzzes or sounds distorted.

4. 70/100 Volt Input Test Procedure

Note: This test is to ensure the transformer is functioning. Connect the system as shown in figure 4, 70/100V test setup settings.

4.1 Apply a 13 Vrms, 50 Hz signal to the bass module at the 70 Volt input terminals.

4.2 Sweep the input frequency from 50 Hz to 500 Hz.

4.3 Apply a 13 Vrms, 50 Hz signal to the 100 Volt input terminals.

4.4 Sweep the input frequency from 50 Hz to 500 Hz.

Note: If the crossover or any components on the crossover PCB are found to be defective, replace the entire crossover PCB.

MAIN PART LIST

FreeSpace® 3 Series II Acoustimass® Module Loudspeaker

Item Number	Description	Part Number	Qty.	Note
1	Baffle, FS3B Series II, Black Baffle, FS3B Series II, White	-	1	
2	Enclosure, FS3B Series II, Black Enclosure, FS3B Series II, White	-	1	
3	Rear Cover	303862	1	
4	Junction Box Cover	303863	1	
5	Woofer Assembly	303864	1	
6	Transformer Access Cover	303865	1	
7	Transformer, 70/100V, 100W	303866	1	
8	Gasket for Transformer Cover	-	1	
9	Screw, M4x12	-	6	
10	Screw, M4x18	-	12	
11	Screw, M5x62	-	4	
12	Terminal, 8 position	303867	3	
13	Screw, M6x12		2	
14	Anchor, Black Anchor, White	303869 303870	4	
15	Port Flare, Black Port Flare, White	-	1	
16	Cover, Front, Black Cover, Front, White	303871 303872	1	
17	Grille, FS3B Series II, Black Grille, FS3B Series II, White	303873 303874	1	
18	Nameplate, Logo, Black Nameplate, Logo, White	303875 303876	1	
19	Crossover Assembly	303877	1	

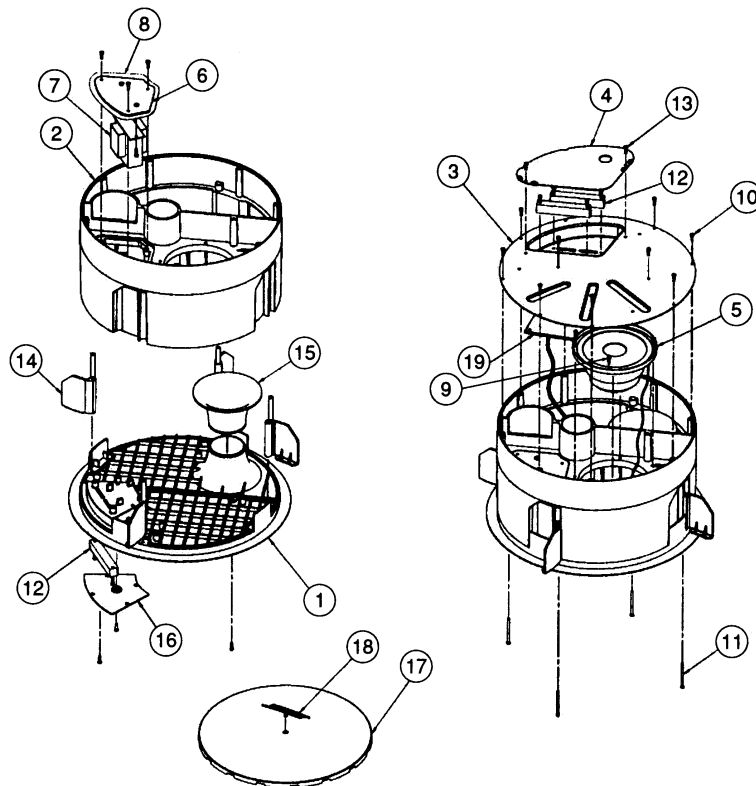


Figure 5. FreeSpace Series II Acoustimass Loudspeaker Exploded View

ELECTRICAL PART LIST

FreeSpace® 3B Crossover PCB

Resistors

Reference Designator	Description	Part Number	Note
R11	5.1 Ohm, WW, 5W, 10%	303897	4
R21	5.1 Ohm, WW, 5W, 10%	303897	4

Capacitors

Reference Designator	Description	Part Number	Note
C10	100uF, EL, BP, 85C, 50V, 20%	303898	4
C11	10uF, EL, BP, 85C, 50V, 20%	303899	4
C20	100uF, EL, BP, 85C, 50V, 20%	303898	4
C21	10uF, EL, BP, 85C, 50V, 20%	303899	4

Inductors

Reference Designator	Description	Part Number	Note
L11	Inductor, 300uH	303900	4
L21	Inductor, 300uH	303900	4

Miscellaneous

Reference Designator	Description	Part Number	Note
PTC11	Polyswitch, 60V, RXE110	303901	4
PTC21	Polyswitch, 60V, RXE110	303901	4

MAIN PART LIST

FreeSpace® 3F Satellite Speaker

Item Number	Description	Part Number	Qty.	Note
1	Screw, M4x12mm	303879	6	
2	Twiddler® Assembly	303880	1	
3	Screw, M3x75mm	303881	3	
4	Grille Kit, Black (consists of): Grille, FS3F, Black Nameplate, Logo, Black Clip, Retaining, Logo Grille Kit, White (consists of): Grille, FS3F, White Nameplate, Logo, White Clip, Retaining, Logo	303882 - - - 303884 - - -	1	
5	Cover, Junction Box	303885	1	
6	Anchor, Black Anchor, White	303887 303888	3	
7	Terminal, 2 position	303889	2	
8	Enclosure, FS3F, Black Enclosure, FS3F, White	- -	1	
9	Plate, Baffle, FS3F	-	1	
10	Shield, Paint	303890	1	

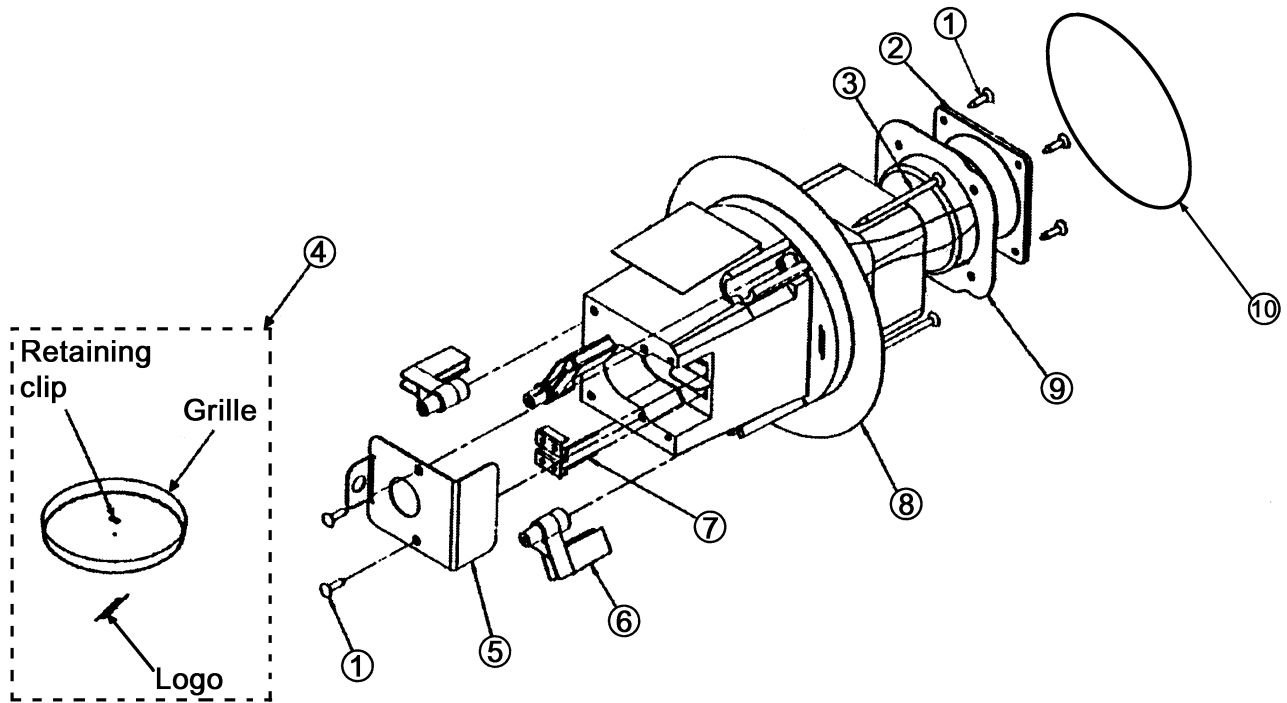


Figure 6. FreeSpace 3F Satellite Speaker Exploded View

PACKING LIST

FreeSpace® 3 Series II Acoustimass® Module Loudspeaker

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	Carton, FS3B Series II	263585	1436-0501-1-2	1	
2	Inner Pad A	263876	1450-6290-1	1	
3	Inner Pad C	263878	1450-6430-0	1	
4	FS3 Series II Loudspeaker, White FS3 Series II Loudspeaker, White	- -	BS030C BS031C	1	
5	Inner Pad B	263877	1450-6330-1	1	
6	Nameplate, Logo	263586	4154-5001-0	1	
7	Grille, Black Grille, White	263567-001 263567-002	4135-2271-0 4135-2272-0	1	
8	Owner's Manual	263579	4301-7016-0	1	
-	Aus/NZ Warranty Slip Sheet, 8.5" x 5.5"	355731-0010	-	1	

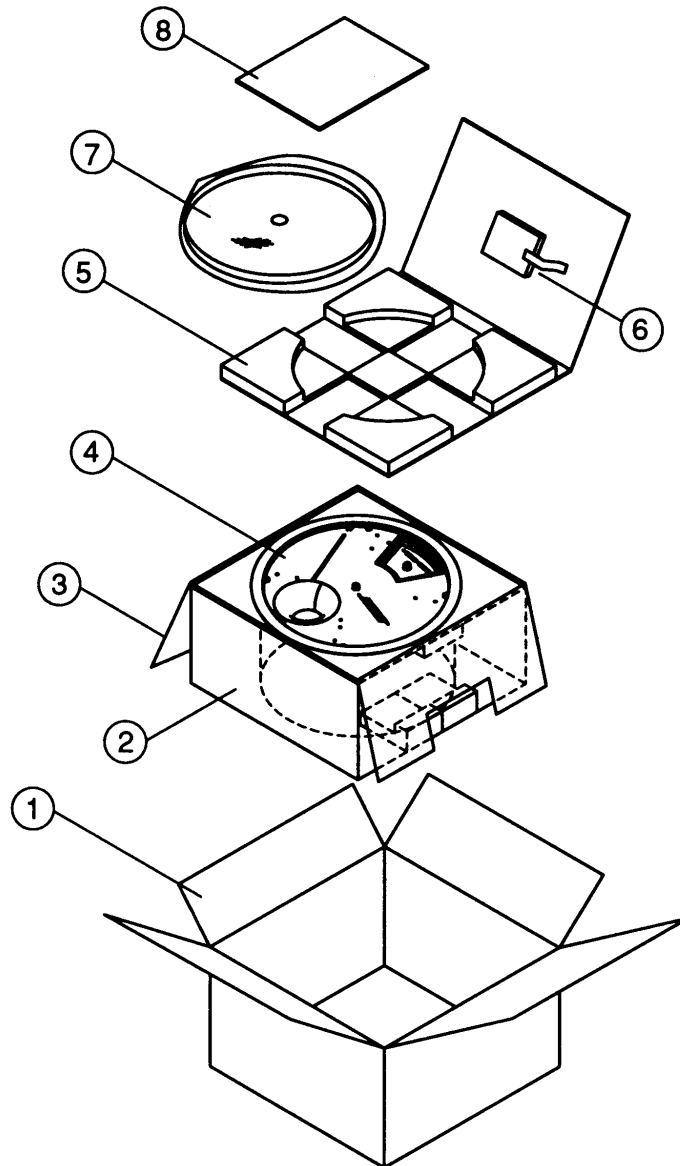


Figure 7. FreeSpace Series II Acoustimass Loudspeaker Packaging View

PACKING LIST

FreeSpace® 3 Omni Loudspeaker Bracket

Item Number	Description	Part Number	Qty	Note
1	CARTON	-	1	4
2	INSERT, CARDBOARD	-	4	4
3	BRACKET, SATELLITE, OMNIMOUNT, BLACK	282615-001	4	
	BRACKET, SATELLITE, OMNIMOUNT, ARTIC WHT	282615-002	4	
4	SCREW, M4x0.7x10MM, PAN HEAD, STAINLESS	-	4	4
5	WASHER, M4, 9.8x4.5x1.0, STAINLESS	-	4	4
6	COVER, OMNIMOUNT, BLACK	282614-001	1	
	COVER, OMNIMOUNT, ARTIC WHT	282614-002	1	
7	SHEET, INSTRUCTION	283942	1	
8	BAG, POLY	-	3	4
9	HARNESS, WIRE, OMNIMOUNT, BLACK	282617-001	1	
	HARNESS, WIRE, OMNIMOUNT, ARTIC WHT	282617-002	1	
10	EYEBOLT, FORGED, SHOULDER, M6x1, 12MM LONG SHANK, 210 KG WORKING LOAD	-	3	4
11	HARNESS, CABLE, OMNIMOUNT, FS3B	282909	1	
12	WASHER, M6, 12.7x6.8x1.0, STAINLESS	-	6	4
13	SCREW, M5x0.8x12MM, HEX HEAD, STAINLESS	-	4	4

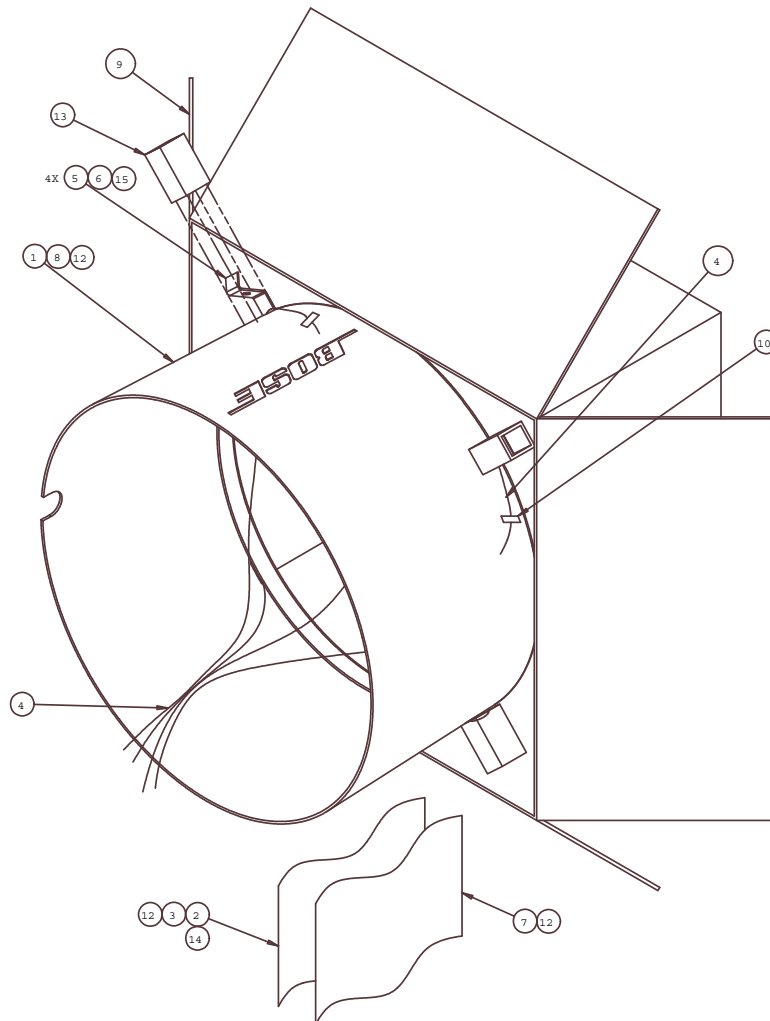
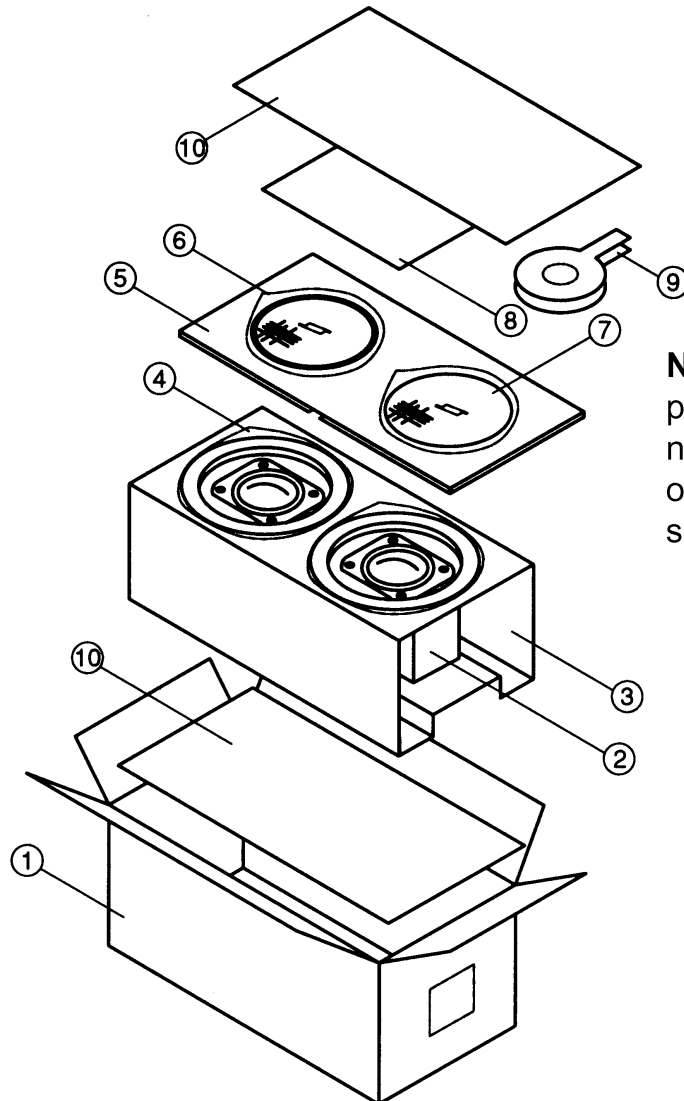


Figure 8. FreeSpace 3 Omni Speaker Bracket Packaging View

PACKING LIST

FreeSpace® 3F Satellite Speaker

Item Number	Description	Bose® Part Number	GPE Part Number	Qty. per carton	Note
1	Carton, FS3F	253811-001 or 356589-001S	-	1	
2	FS3F Loudspeaker, Black FS3F Loudspeaker, White	- -	bs011c bs010c	2	
3	Inner Pad A	263791	1450-6220-1	1	
4	Polybag	-	1497-4742-0	2	
5	Inner Pad B	263790	1450-6210-0	1	
6	Polybag	-	1497-1962-0	2	
7	Grille Kit, Black Grille Kit, White	303882 303884	- -	2	
8	CE Declaration Sheet	-	3050-2321-1	1	
9	Shield, Paint	-	1450-6160-1	2	
10	Carton Sheet	263792	1450-6230-0	2	
-	Aus/NZ Warranty Slip Sheet, 8.5" x 5.5"	355731-0010	-	1	



Note: Item 9, paint shield, is normally installed over the drivers for shipment.

Figure 9. FreeSpace 3F Satellite Speaker Packaging View

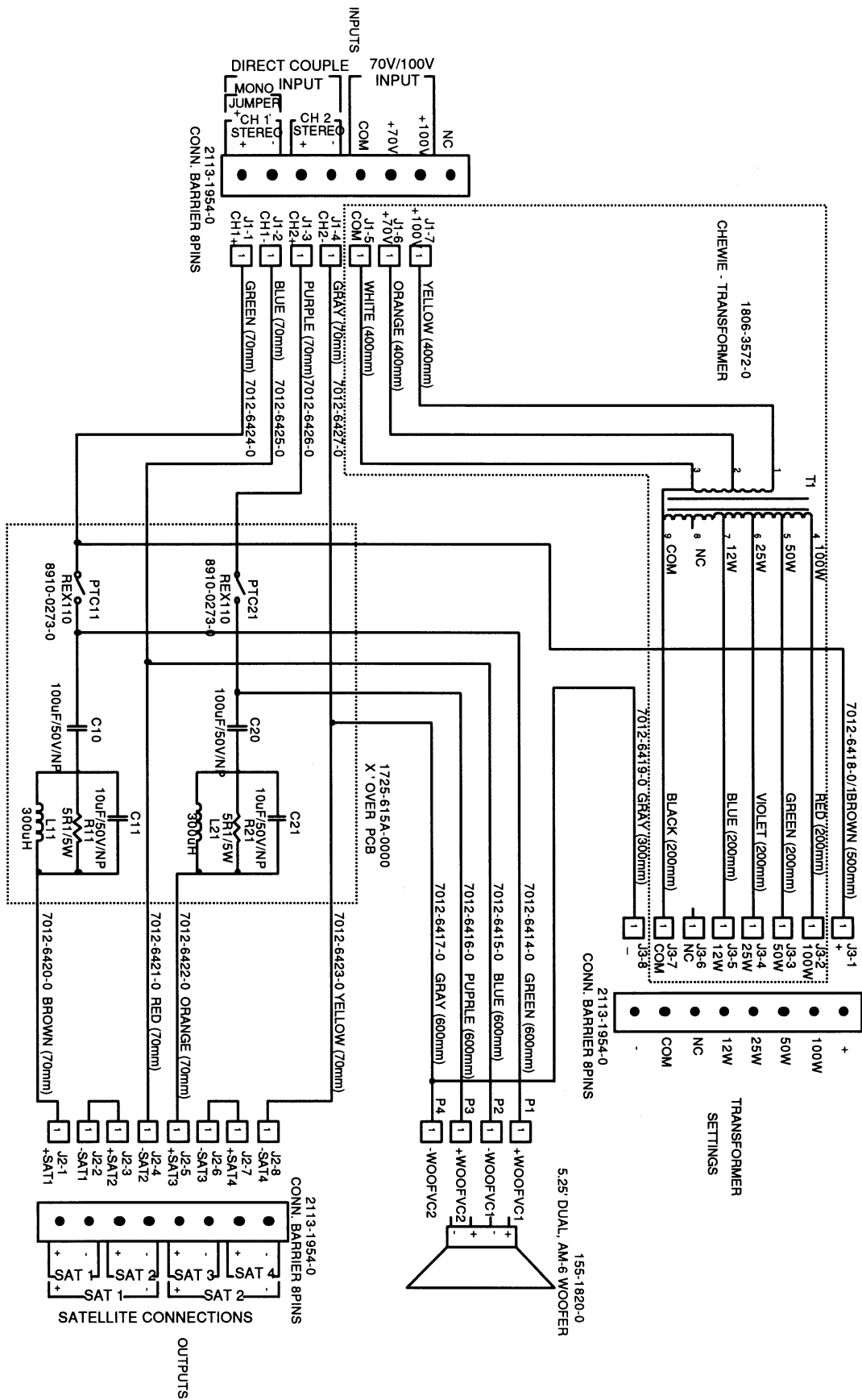


Figure 10. FreeSpace® 3B Crossover PCB Schematic Diagram

Service Manual Revision History

Date	Revision Level	Description of Change	Change Driven By	Pages Affected
11/02	00	Document released at revision 00.	Service manual release	All
5/05	01	Omnimount FS3B Bracket information added	Accessory add	12
8/08	02	Added RoHS information	RoHS	8-10
4/12	03	FS3F carton part number change. New Aus/NZ warranty slip sheet required	New part number New slip shet	11, 13

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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