

## FreeSpace<sup>®</sup> DS 100SE and DS100F Loudspeakers (Surface Mount and Flush Mount Versions)



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**CAUTION: The Bose® FreeSpace DS 100F and DS 100SE Loudspeakers contain no user-serviceable parts. To prevent warranty infractions, refer servicing to warranty service stations or factory service.**

## WARRANTY INFORMATION

The Bose FreeSpace DS 100F and DS 100SE 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

## FreeSpace® DS 100SE Surface-Mount Loudspeaker

### Electrical

Loudspeaker Impedance:	8 ohms
Power Handling:	100 Watts
Transformer Taps in 70V Mode:	12.5, 25, 50 and 100W
Transformer Taps in 100V Mode:	25, 50 and 100W
Bypass Mode:	8 Ohms

### Acoustical

Sensitivity:	85 dB SPL @ 1W/1m.
Maximum Sound Pressure Level:	105 dB SPL @ 1m (pink noise)
Frequency Range:	55Hz - 16kHz
Radiation Pattern:	180 degrees x 75 degrees avg from 800 Hz - 5 kHz
Compression:	<3 dB with 100W watt sine wave measured in 8 ohm bypass mode
Distortion:	<30% at 200W sine wave
Port Noise:	< -40dB (from fundamental)

### Mechanical

Dimensions:	Single Speaker:	15" W x 8.5" D x 7" H (38.1 x 21.6 x 17.8 cm)
	Packed System	18.5" W x 13.25" D x 10.75" H (47 x 33.7 x 27.3 cm)
Weight:	Single Speaker:	13.5 lbs (6.1 kg)
	Packed System:	16 lbs (7.3 kg)

# SPECIFICATIONS

## FreeSpace® DS 100F Flush-Mount Loudspeaker

### Electrical

Loudspeaker Impedance:	8 ohms
Power Handling:	100 Watts.
Transformer Taps in 70V Mode:	12.5, 25, 50 and 100W
Transformer Taps in 100V Mode:	25, 50 and 100W
Bypass Mode:	8 Ohms

### Acoustical

Sensitivity:	85 dB SPL @ 1W/1m
Maximum Sound Pressure Level:	105 dB SPL @ 1m (pink noise)
Frequency Range:	55Hz - 16kHz
Radiation Pattern:	160 degrees conical averaged from 800 Hz to 5 kHz.
Compression:	<3 dB with 100W watt sine wave
Distortion:	<30% at 200W sine wave
Port Noise:	< -40dB (from fundamental)

### Mechanical

Dimensions:	Single Speaker:	11"H x 7.5"D (28 x 19 cm)
	Packed System:	14"L x 14"W x 12.5"H (35.5 x 35.5 x 31.8 cm)
System Weight:	Single Speaker:	11.5 lb (5.2 kg)
	Packed System:	15 lb (6.8 kg)

# PRODUCT DESCRIPTION

## FreeSpace® DS 100SE Surface-Mount Loudspeaker

The FreeSpace DS 100SE loudspeaker is the medium level surface mount speaker for Bose® business music applications. It consists of two 2 ¼” drivers mounted in a rotatable array and a single 5 ¼” woofer assembled in a rugged, plastic enclosure. The speaker is intended for indoor and outdoor use and is qualified to end use environment J (Fully Exposed to Weather – Commercial). It is available in color versions, black and white. The FreeSpace DS 100SE can be used on the same line as the flush-mount variant, the FreeSpace DS 100F.

The DS 100SE speaker comes with a bracket in the box and is available in black and white. The basic bracket that ships with the speaker allows for 0 to -45 degree pitch when the speaker is mounted in the horizontal direction. The basic bracket will allow 0 to -30 degree pitch when the speaker is mounted in the vertical orientation.

The DS 100SE has passed extensive testing and complies with the following specifications and uses:

LISTED to ANSI/UL 1480-2005

- Fire Protective Signaling Use – UL Category UUMW, File Number S 3241. Control Number 42S9 when installed with a junction box (on-wall or in-wall). Not for use with DC-supervised systems.
- General Purpose Use – UL Category UEAY, File Number S 5591 Control Number 3N89.
- Suitable for use outdoors in wet locations.
- Suitable for installation using Class 1, Class 2, or Class 3 wiring methods in accordance with NFPA 70, National Electric Code, 2002, Article 640.
- Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, National Electric Code, 2002, Article 760.
- EMC Directive 89/336/EEC and Article 10 (1) of the directive, EN50081-1 and EN50082-1 as signified by the CE mark.

The DS 100SE also has been designed to the requirements defined in the following European regulatory specification for combination systems:

- British Standard Code of Practice BS 5839, Part 8.
- Tested to IEC60268-5.

The FreeSpace DS 100SE is RoHS (RoHS Directive 2002/95/EC) and WEEE (WEEE Directive 2002/96/EC) compliant.

DS 100SE Flush Loudspeaker Accessories:

- In-wall junction box
- On-wall junction box
- Bracket assembly, black and white
- Trim plate kit (US only), black and white
- EQ curves to be provided in tech data sheets and for Bose electronics

# PRODUCT DESCRIPTION

## FreeSpace® DS 100F Flush-Mount Loudspeaker

The FreeSpace DS 100F loudspeaker is the medium level flush-mount speaker for Bose® business music applications. It consists of a single 2 ¼" driver and a 5 ¼" woofer housed in a rugged, metal enclosure with a front plastic baffle. The product is intended for indoor use only and will be qualified to end use environment B (Not Exposed to Weather – Commercial). It is available in two color versions, black and white. The FreeSpace DS 100F can be used on the same line as the surface-mount variant, the FreeSpace DS 100S. The FreeSpace DS 100F loudspeaker has passed extensive testing and complies with the following specifications and uses:

LISTED to ANSI/UL 1480-2005

- Fire Protective Signaling Use – UL Category UUMW, File Number S 3241. Control Number 42S9. Not for use with DC-supervised systems.
- General Purpose Use – UL Category UEAY, File Number S 5591 Control Number 3N89.
- Suitable for use indoors in damp locations.
- Suitable for installation using Class 1, Class 2, or Class 3 wiring methods in accordance with NFPA 70, National Electric Code, 2002, Article 640.
- Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, National Electric Code, 2002, Article 760.
- Not intended for use in air handling (plenum) spaces.
- EMC Directive 89/336/EEC and Article 10 (1) of the directive, EN50081-1 and EN50082-1 as signified by the CE mark.

The DS 100F also has been designed to the requirements defined in the following European regulatory specifications for combination systems:


- British Standard Code of Practice BS 5839, Part 8 (when used with the PC-16).
- Tested to IEC60268-5.

The FreeSpace DS 100F is RoHS (Directive 2002/95/EC) and WEEE (Directive 2002/96/EC) compliant.

DS 100F Flush Loudspeaker Accessories

- Tile bridge for suspended ceilings
- Rough-in pan (for hard-deck ceilings)
- Pendant kit (aesthetic cover and hardware)
- EQ curves will be provided in tech data sheets and standard Bose electronics

## 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 LIST

FreeSpace® DS 100SE Wall-Mount Loudspeaker

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	CARD, INSTALLATION	-	3050-4481+0	1	4
2	OWNER'S MANUAL	300289	4301-7260+1	1	
3	POLY BAG	-	1497-4972+0	1	4
4	FOAM, POLY	299568	1490-4631+0	2	
5	BRACKET, WALL MOUNT, BLK BRACKET, WALL MOUNT, WHT	315253-001 315253-002	BSACDS100+08CSX1 BSACDS100+08CSX2	1	
6	CARTON	299567	1437-8801+0-2	1	
7	BAG, BUBBLE	-	1497-2812+0	1	4

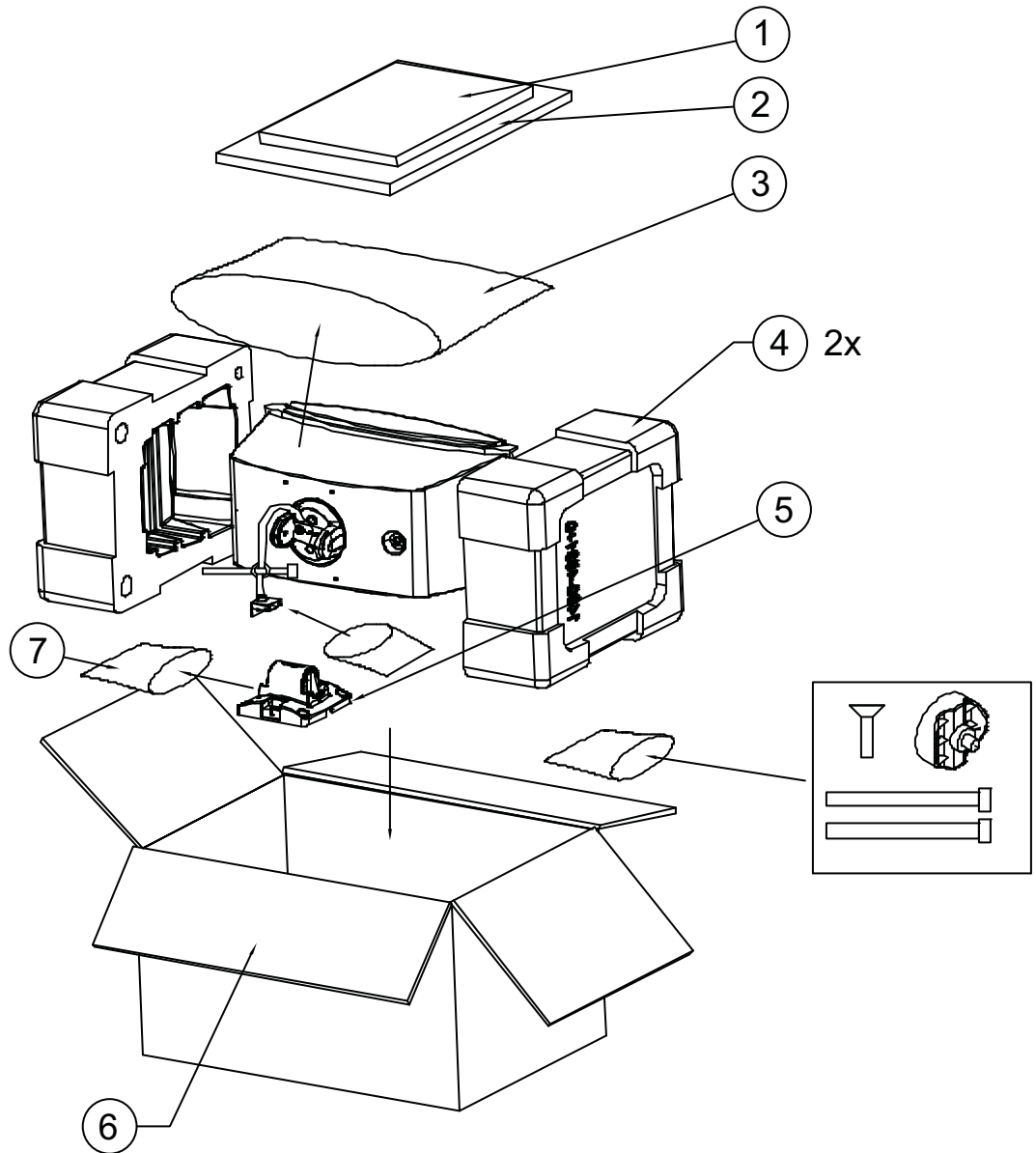


Figure 1. DS 100SE Wall-Mount Version Packaging View

# PACKAGING LIST

FreeSpace® DS 100SE Ceiling-Mount Loudspeaker

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	CARTON, DS100 SE W/CMB	372217-001S	1439-4001+0-2	1	
2	EPE FOAM, RIGHT	372220-001S	1496-0270+0	1	
3	POLY BAG	-	-	1	4
4	MANUAL	329550-0010	4301-7389+0	1	
5	POLY BAG	-	-	1	4
6	CEILING BRACKET ARM (SEE NOTE BELOW)	-	-	1	4
7	EPE FOAM LEFT	372221-001S	1496-0270+0	1	
8	DS100 SE SPKR W/CMB	REF	-	1	4

**Note:** Item 6 is available as a Service part that includes hardware. Refer to pages 15 and 16.

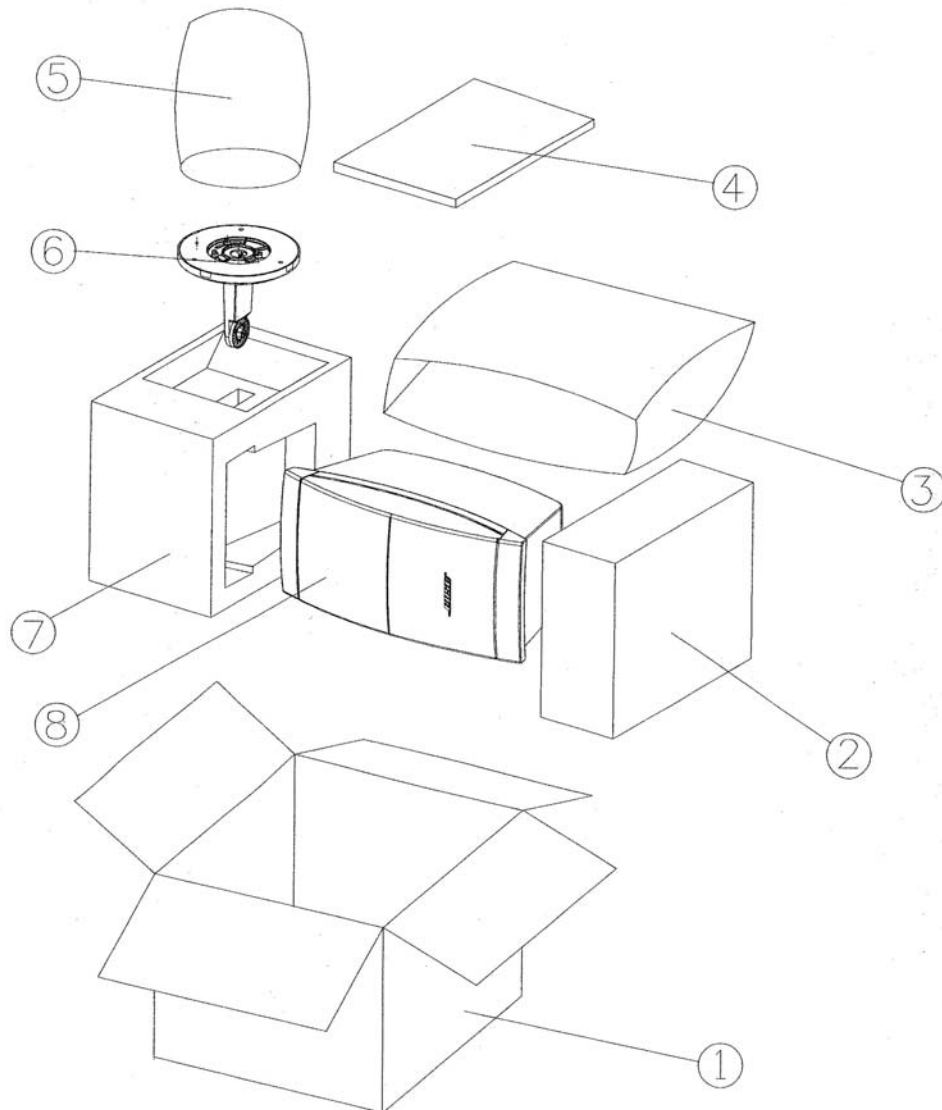


Figure 2. DS 100SE Ceiling-Mount Version Packaging View



# PACKAGING LIST

FreeSpace® DS 100F Loudspeaker

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	PAPER COVER	299575	1450-9270+0	1	
2	PAPER TOP	299576	1450-9190+0	1	
3	HDPE BAG	-	1497-7492+0	1	4
4	PAPER SURROUND	299577	1450-9210+0	4	
5	DS 100F LOUDSPEAKER	REF	-	1	
6	PAPER BOTTOM	299578	1450-9200+0	1	
7	CARTON	299574	1437-8701+0-2	1	

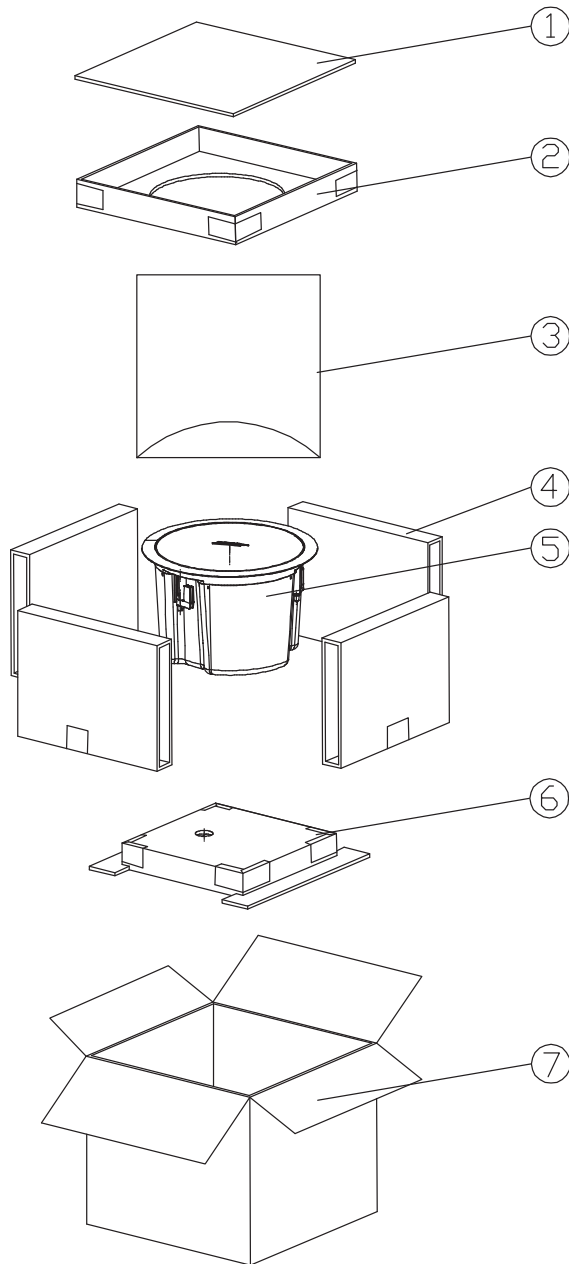


Figure 3. FreeSpace DS 100F Packaging View

# MAIN PART LIST

FreeSpace® DS 100SE Wall-Mount Loudspeaker (see Figure 4)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	GRILLE CAP, BLACK GRILLE CAP, WHITE	299560 299561	1467-7601+0 1467-7602+0	2	
2	GRILLE, ASSY, BLACK GRILLE, ASSY, WHITE (Includes logo, screw, spring and washers)	299558 299559	SVC-SCURL11+GRIL SVC-SCURL12+GRIL	1	
3	SCREW, M4x8	-	2950-4008+H000	4	4
4	DRIVER, 2.25" W/GASKET	299562	SVC-8900-3850+0	2	
5	SCREW, M4x16	-	2954-4016+H000	18	4
6	WOOFER, 5.25" W/GASKET	299563	SVC-8900-6800+0	1	
7	SCREW, M4x16	-	2954-4016+H000	12	4
8	BAFFLE	-	4155-2101+2	1	4
9	CROSSOVER PCB ASSY	299569	SVC-SCURL11+PCB	1	2
10	ENCLOSURE, BLACK ENCLOSURE, WHITE	-	1467-7501+0 1467-7502+0	1	4
11	DS100SE BRACKET ASSY (Includes 2 doors, strain relief, 4 screws, 4 washers & 1 spare pivot screw) BLACK WHITE	315253-001 315253-002	BSACDS100+08CSX1 BSACDS100+08CSX2	1	
12	SCREW, M4x16	-	2954-4016+H000	4	4
13	WASHER	-	2600-4008+0767	2	4
14	CONNECTOR	-	7012-7710+0	1	4
15	TRANSFORMER ASSY WITH ROTARY SWITCH	299566	SVC-CURL11+TRAN	1	
16	SCREW, M4x16	-	2954-4016+H000	2	4
17	WASHER	-	2600-4008+H010	3	4
18	ROTARY SWITCH	-	5200-4933+0	1	4
19	KNOB, TAP	295898-004	2447-3605+1	1	
20	SCREW, M4x10	-	2904-4010+H000	4	4
21	SCREW, M3x10	-	2954-3012+H000	1	4
22	SCREW, M2.6x8	-	2954-2612+H000	1	4
23	SPRING	-	2510-3941+0	1	4
24	WASHER	-	2600-6212+1207	2	4
25	SCREW, M3x8	-	2954-4008+H000	1	4
26	BOSE LOGO ASSY, BLACK BOSE LOGO ASSY, WHITE	303038-001 303038-002	2150-7191+0 2150-7192+0	1	
-	DS LDSPKR TRIM PLATE (Includes any required mounting hardware) BLACK WHITE	315266-001 315266-002	- -	1	

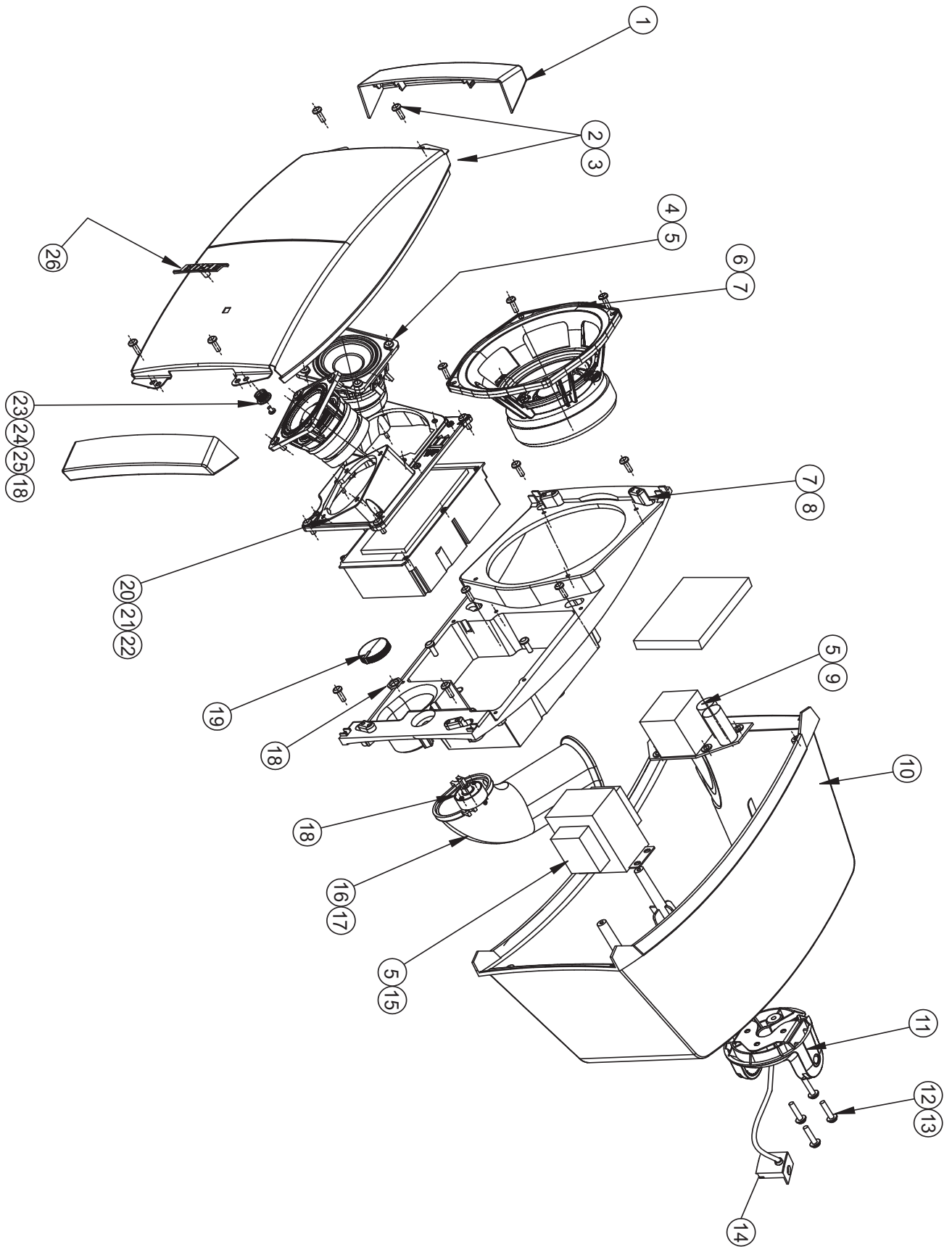


Figure 4. DS100 SE Wall-Mount Loudspeaker Exploded View

# MAIN PART LIST

Wall-Mount Bracket (included with loudspeaker)

Item Number	Description	Bose® Part Number	Vendor Part Number	Note
1	DS100SE Bracket Assy, Black DS100SE Bracket Assy, White	315253-001 315253-002	BSACDS100+08CSX1 BSACDS100+08CSX2	
2	DS100SE Bracket, Wall Mount (w/strain relief, terminals & pivot screw) BLACK WHITE	315824-001S 315824-002S	4155-3411+0 4155-3412+0	4 4
3	DS100SE Bracket Arm (w/4 screws, 4 washers & pivot screw) BLACK WHITE	315821-001S 315821-002S	4155-3421+0 4155-3422+0	4 4
4	DS100SE Bracket Pivot Screw BLACK WHITE Theft-Deterrent Pivot Screw BLACK WHITE	315829-001S 315829-002S 315831-001S 315831-002S	4135-8511+0 4135-8512+0 4135-8514+0 4135-8513+0	
5	Hardware included with item 1 (strain relief w/screw, 2 pivot screws, 4 screws, 4 washers)	- -	- -	
-	DS100SE Bracket Hardware Kit (2 doors, strain relief w/screw, 4 screws, 4 washers) BLACK WHITE	315827-001S 315827-002S	SVC-SCURL11+BKTB SVC-SCURL12+BKTW	

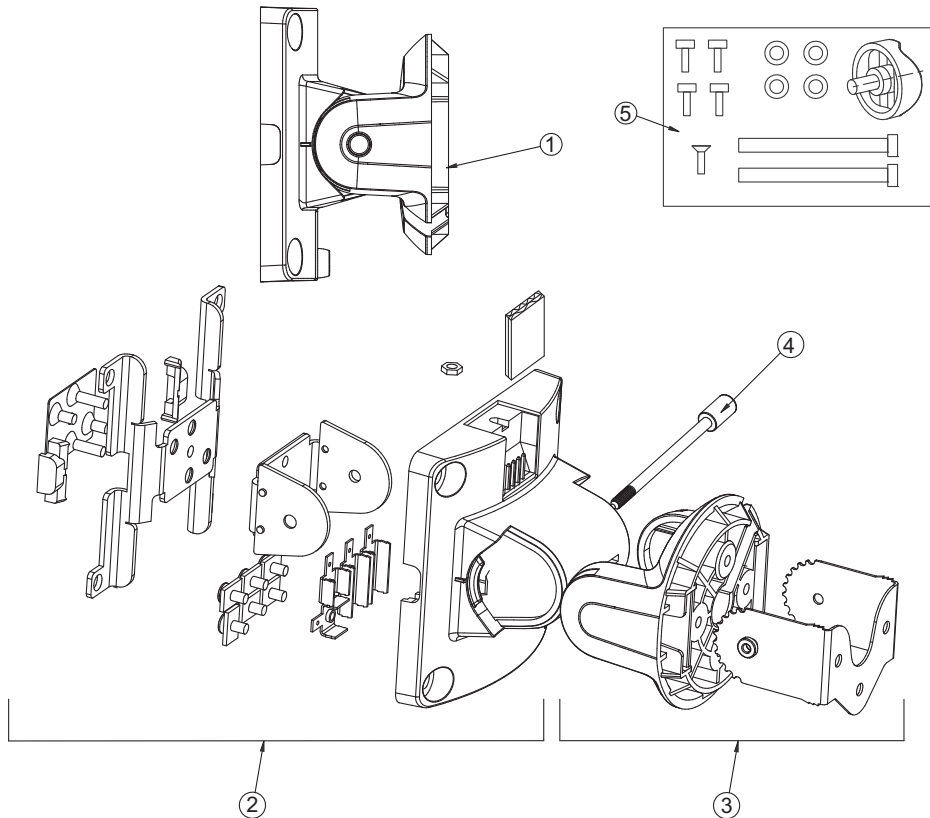


Figure 5. Wall-Mount Bracket Exploded View

# MAIN PART LIST

FreeSpace® DS 100SE Ceiling-Mount Loudspeaker (see Figure 6)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	GRILLE CAP, BLACK GRILLE CAP, WHITE	299560 299561	1467-7601+0 1467-7606+0	2	
2	SCREW, GRILLE, M4x8	-	2950-4008+H000	4	4
3	GRILLE, ASSY, BLACK GRILLE, ASSY, WHITE (Includes logo, screw, spring and washers)	299558 299559	SVC-SCURL11+GRIL SVC-SCURL12+GRIL	1	
4	SCREW, TWEETER, M4x16	-	2954-4016+H000	18	4
5	DRIVER, 2.25" W/GASKET	299562	SVC-8900-3850+0	2	
6	WOOFER, 5.25" W/GASKET	299563	SVC-8900-6800+0	1	
7	SCREW, WOOFER / BAFFLE, M4x16	-	2954-4016+H000	12	4
8	WASHER, BAFFLE SCREW	-	2600-4008+076Q	4	4
9	BAFFLE	-	4155-2101+2	1	4
10	CROSSOVER PCB ASSY	299569	SVC-SCURL11+PCB	1	2
11	ENCLOSURE, BLACK ENCLOSURE, WHITE	-	1467-750B+0 1467-750C+0	1	4
12	MOUNT ARM (includes 4 mounting screws, 4 washers, 1 pivot screw) BLACK WHITE	342184-011S 342184-012S	- -	1	
13	WASHER, MOUNT ARM, BLK WASHER, MOUNT ARM, WHT	- -	4166-0011+1 4166-0012+1	4	4
14	SCREW, MOUNT ARM BLACK WHITE	- -	4166-0011+1 4166-0012+1	4	4
15	LANYARD CABLE, BLACK LANYARD CABLE, WHITE	- -	7012-7710+0 7012-7711+0	1	
16	TRANSFORMER ASSY WITH ROTARY SWITCH	299566	SVC-CURL11+TRAN	1	
17	WASHER, METAL, M4x0.8x10	-	2600-4008+100H	2	4
18	ROTARY SWITCH	-	5200-4933+0	1	4
19	KNOB, TAP SWITCH, D30	295898-004	2447-3605+1	1	
20	SCREW, M2.6 FOR TVE	-	2954-2612+H000	1	4
21	SCREW, M3 FOR TVE	-	2954-3012+H000	5	4
22	SCREW, TWID MOUNT	-	2950-4008+H000	4	4
23	SCREW FOR LOGO	-	2950-3008+H010	1	4
24	SPRING FOR LOGO	-	2510-3941+0	1	4
25	WASHER FOR LOGO	-	2600-6212+1207	1	4
26	BOSE LOGO ASSY, BLACK BOSE LOGO ASSY, WHITE	303038-001 303038-002	2150-7191+0 2150-7195+0	1	

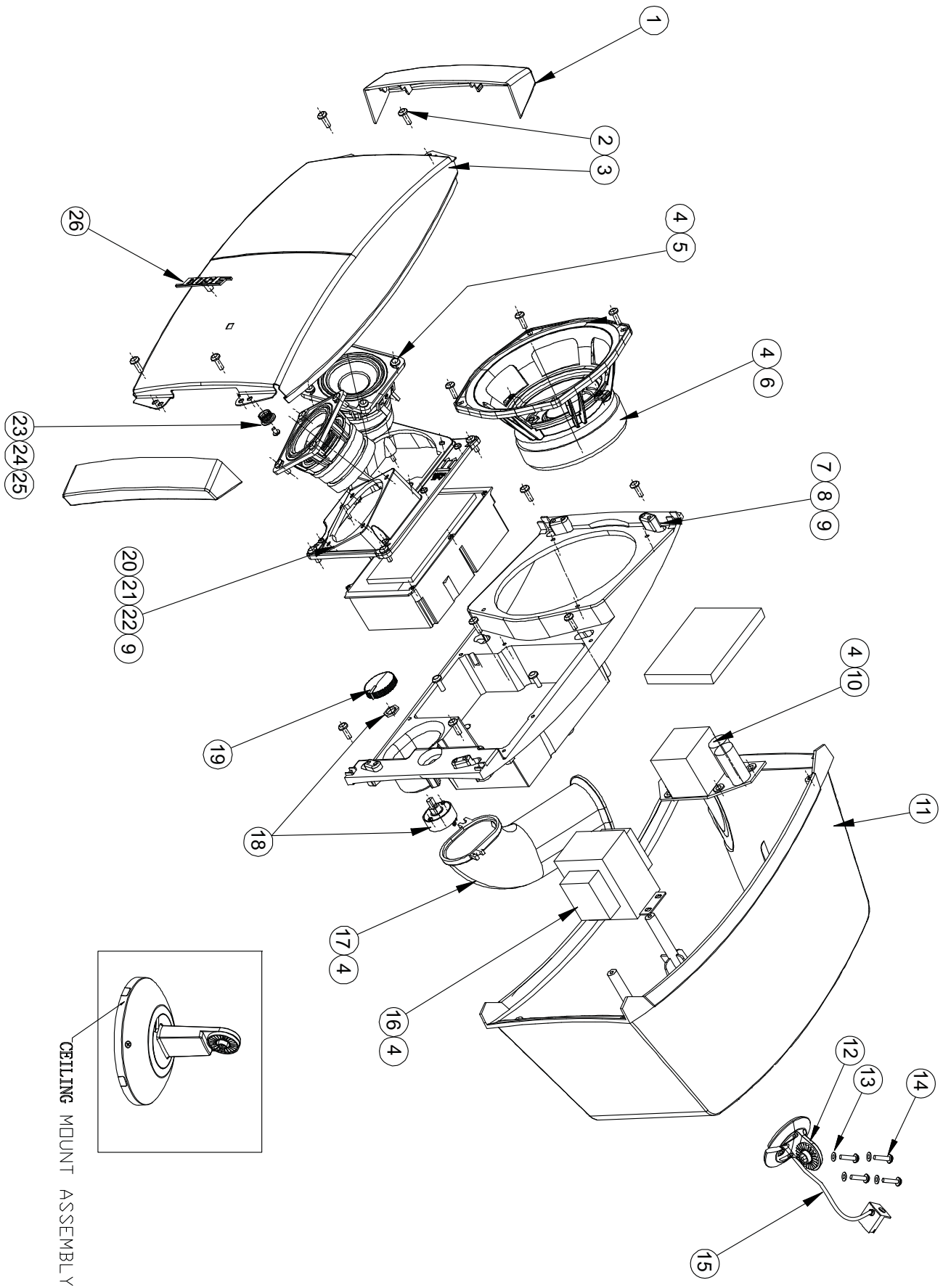


Figure 6. DS100 SE Ceiling-Mount Loudspeaker Exploded View

# MAIN PART LIST

DS 100SE Ceiling-Mount Bracket (included with loudspeaker), refer to Figure 7.

Item Number	Description	Part Number	Qty.	Note
1	CEILING MOUNTING PLATE, BLK CEILING MOUNTING PLATE, WHT	- -	1	4
2	COVER, BLK COVER, WHT	- -	1	4
3	MOUNTING ARM, BLK MOUNTING ARM, WHT	- -	1	4
4	SPEAKER ARM, BLK SPEAKER ARM, WHT	- -	1	4
5	WIRE HOLE COVER, BLK WIRE HOLE COVER, WHT	- -	4	4
6	ELECTRONICS MOUNT	-	1	4
7	TERMINAL, SINGLE POLE	-	2	4
8	TERMINAL, DUAL POLE	-	2	4
9	WASHER, M5, DELRIN	-	6	4
10	STRAIN RELIEF	-	1	4
11	SCREW, M4X14, FLAT HEAD, CAPTIVE, SS, BLK ZINC (PREASSEMBLED TO ITEM 2)	-	1	4
12	SCREW, M4X10, PAN HEAD, CAPTIVE, SS, BLK ZINC (PREASSEMBLED TO ITEM 10)	-	1	4
13	SHOULDER SCREW, M4	-	3	4
14	SCREW, M4X10, PAN HEAD, SS, BLK ZINC	-	1	4
15	WIRE, INSULATED, 18 AWG, 200 C	-	4	4
16	SCREW, M4X16, PAN HEAD, SS, BLK ZINC	-	1	4
17	WASHER, NYLON, 8MM OD, 3.5MM ID, 0.93MM THK	-	1	4
18	CARTON	-	1	4
19	POLYBAG	-	1	4
20	INSTALLATION INSTRUCTIONS	-	1	4
21	WASHER, 4.25MM ID, 7.5MM OD, 0.75MM THK, SS	-	4	4
22	SCREW, M4X18.5MM, PHILLIPS PAN HEAD, SS	-	4	4
23	POLYBAG	-	1	4
-	SPEAKER ARM W / SCREW (INCLUDES METAL SPEAKER ARM, 4 SCREWS, 4 WASHERS AND 1 SHOULDER SCREW ON ARM) BLACK WHITE	342184-011S 342184-012S	1	
-	COSMETIC COVER W / DOORS (INCLUDES COVER W / MOUNTING SCREW AND 4 SURFACE-RUN WIRE DOORS) BLACK WHITE	342186-011S 342186-012S	1	
-	HARWARE KIT (INCLUDES 4 DOORS, 1 STRAIN RELIEF ASSY, 1 COSMETIC COVER SCREW, 1 ARM SHOULDER SCREW, 4 ARM SCREWS, 4 ARM WASHERS) BLACK WHITE	342185-011S 342185-012S	1	

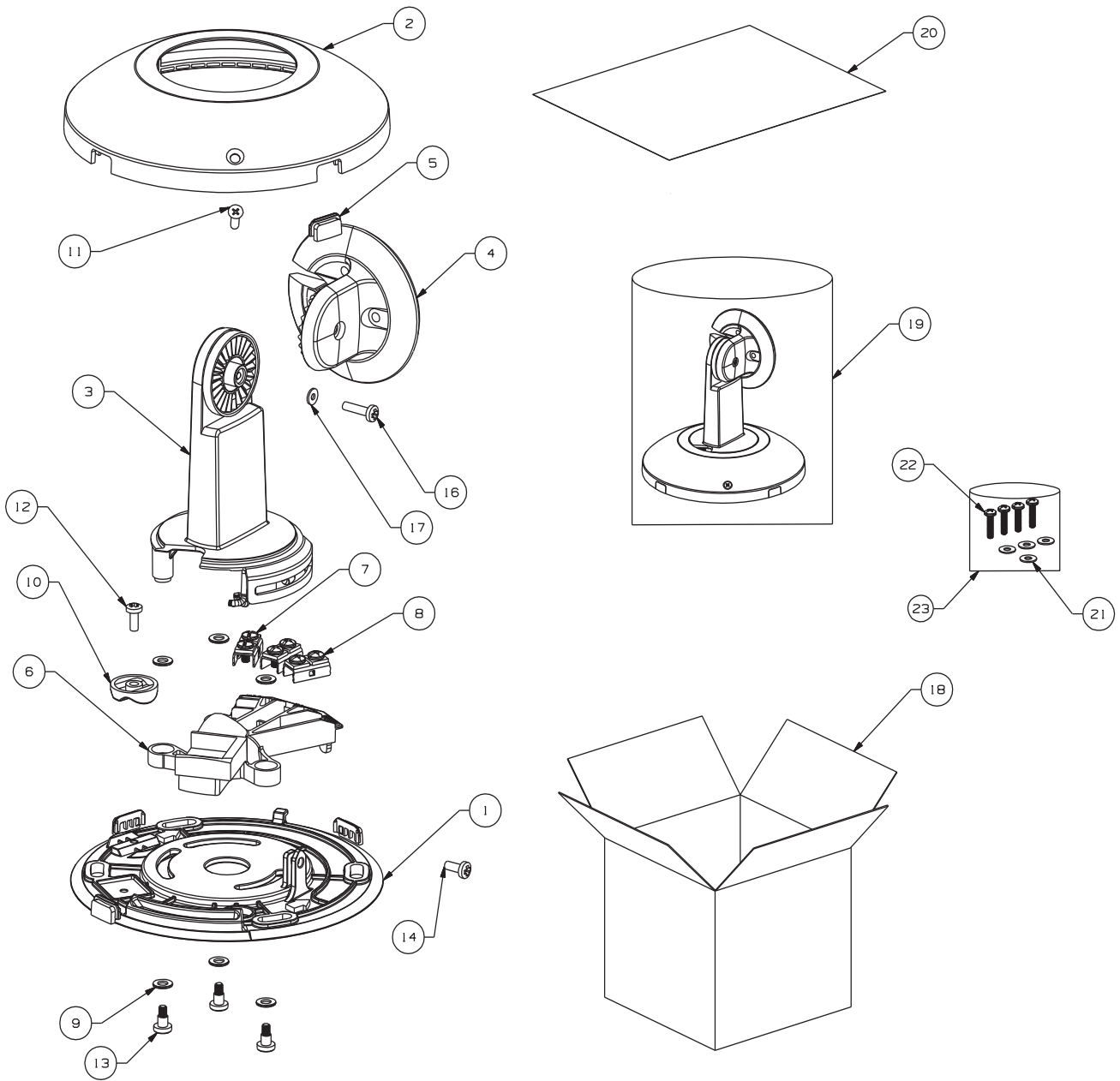


Figure 7. DS 100SE Ceiling-Mount Bracket Exploded View



# MAIN PART LIST

FreeSpace® DS100F Loudspeaker (see Figure 8)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	BOSE LOGO, BLACK BOSE LOGO, WHITE	-	2150-7181+0 2150-7182+0	1	4
2	GRILLE ASSY, BLACK GRILLE ASSY, WHITE (INCLUDES LOGO AND WASHER)	299570 299571	SVC-FCURL11+GRIL SVC-FCURL12+GRIL	1	
3	WASHER, SELF LOCK	-	2610-4003+1207	1	4
4	DRIVER, 2.25" W/GASKET	299562	SVC-8900-3860+0	1	
5	KNOB, TAP	295898-003	2447-3602+0	1	
6	CAP, BAFFLE, BLACK CAP, BAFFLE, WHITE	-	4155-2031+0 4155-2032+0	1	4
7	EVA GASKET	-	4153-3331+0	5	4
8	BAFFLE, FRONT, BLACK BAFFLE, FRONT, WHITE	-	4155-1951+0 4155-1951+0	1	4
9	CROSSOVER ASSEMBLY	299573	SVC-FCURL11+XOVE	1	
10	SWITCH, ROTARY, 1P6T, ST-700	-	5200-4933+0	1	
11	PORT	-	4155-1971+0	1	4
12	TRANSFORMER, AUDIO, 70V/100V	299566	1806-3935+0	1	
13	JUNCTION BOX	-	4155-1961+0	1	4
14	TERMINAL WITH SCREWS	299572	SVC-FCURL11+TERM	1	
15	SCREW, 8-23, WIRE CLAMP	-	2AZZ-0003+ZZZZ	6	4
16	ENCLOSURE, BLACK	-	4135-6441+0	1	4
17	COVER, JUNCTION BOX	-	1404-6501+1	1	4
18	SCREW, B-TITE, BIND, M4x14	-	2954-4014+3000	1	4
19	WOOFER, 5.25" W/GASKET	299563	SVC-8900-6800+0	1	
20	SCREW, CLASS 1, PAN, M3.5x7	347277- 011S	2A10-3575+3000	3	4
21	SCREW, B-TITE, FLAT-CS, M3	-	2951-3010+3000	2	4
22	SCREW, TAP-C2, BH, M4x10	-	2954-4010+3000	9	4
23	ANCHOR, BLACK ANCHOR, WHITE	259259-001 259259-002	4154-4982+1 4154-4981+1	3	
24	SCREW, B-TITE, BIND, M4x12	-	2954-4012+3000	10	4
25	TERMINAL BLOCK	-	2113-1956+0	1	4
26	PRODUCT LABEL	-	3001-1495+0	1	4
27	SCREW, M4x20, TAPPING	-	2910-4020+3000	2	4
28	SCREW, B-TITE, M3x10, BLK, ZN	-	2954-3010+3000	4	4
29	GASKET, TRANSFORMER	-	4149-0111+0	2	4
30	GASKET, WOOFER	-	4153-3471+0	1	4

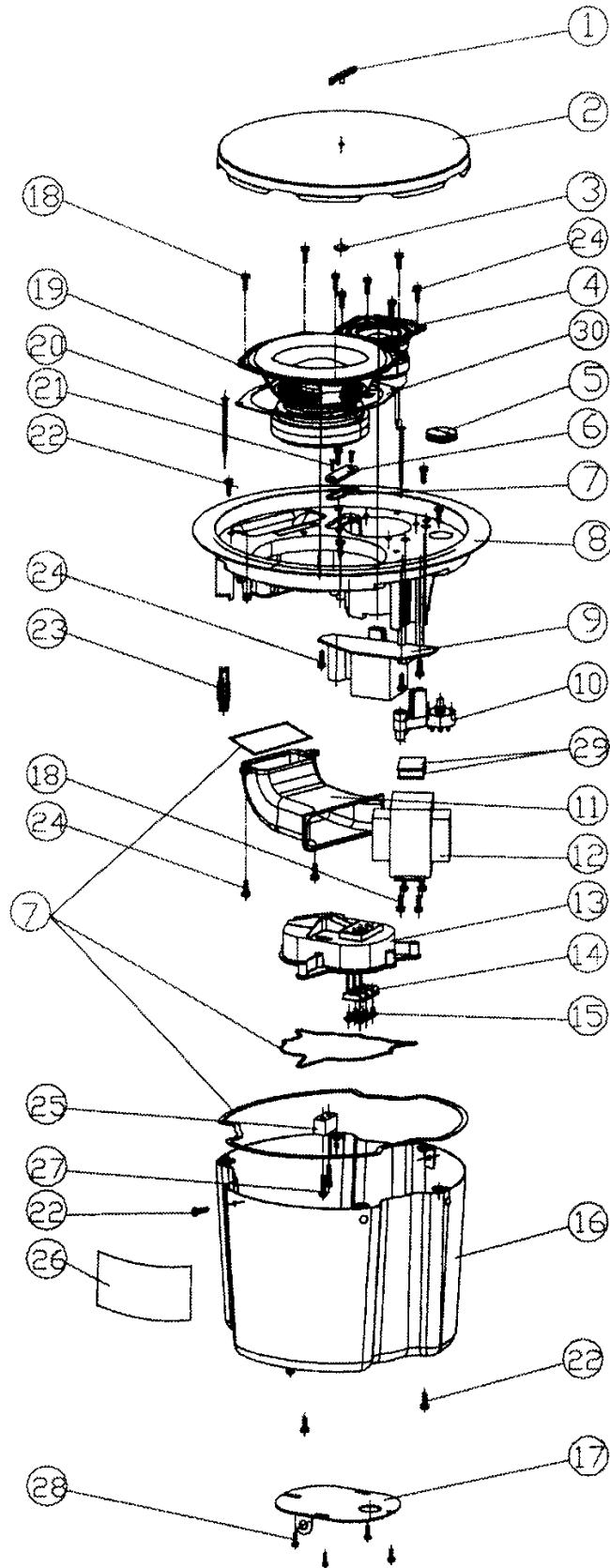


Figure 8. FreeSpace® DS100F Exploded View

# DISASSEMBLY PROCEDURES

## FreeSpace® DS 100SE Surface-Mount Loudspeaker

**Note:** Refer to Figure 4 for the following procedures. The procedures are the same for the ceiling-mount version of the speaker.

### 1. Grille Removal

**1.1** Grasp the grille cap (1) and slide it off toward the front of the loudspeaker. You will need to remove both grille caps to be able to remove the grille (2).

**1.2** Using a Phillips-head screwdriver, remove the four screws (3) that secure the grille to the baffle (8). Lift off the grille.

### 2. Logo Removal

**2.1** Perform procedure 1.

**2.2** Using a Phillips-head screwdriver, remove the screw located on the logo's mounting post. Slide the two washers and spring (19, 25, 26) off of the logo's post. Lift the logo (28) off of the grille (2).

### 3. Tweeter Driver Removal

**3.1** Perform procedure 1.

**3.2** Using a Phillips-head screwdriver, remove the four screws (5) that secure the 2.25" driver (4) to the rotatable array section.

**3.3** Lift out the driver. Disconnect the two Faston connectors.

### 4. Front Baffle Removal

**4.1** Perform procedure 1.

**4.2** Using a Phillips-head screwdriver, remove the four screws (5) that secure the tweeter baffle section to the loudspeaker baffle.

**4.3** Lift out the tweeter section and remove the two main baffle screws (7) that are located underneath it. Remove the other six screws that secure the baffle (8) to the enclosure (10). Lift off the baffle.

### 5. Woofer Removal

**5.1** Perform procedure 1.

**5.2** Using a Phillips-head screwdriver, remove the four screws (7) that secure the woofer (6) to the baffle (8).

**5.3** Lift out the woofer. Disconnect the two Faston connectors.

### 6. Crossover PCB Removal

**6.1** Perform procedure 4.

**6.2** Remove the four screws (5) that secure the crossover PCB assembly (9) to the enclosure.

**6.3** Make a note of the wiring configuration for use during re-assembly. Disconnect the four Faston connectors that run from the input cable to the crossover board. Disconnect the two Faston connectors that run up to the woofer. Disconnect the two Faston connectors that run to the twiddler baffle section. Lift out the PCB assembly.

### 7. TAP Rotary Switch Removal

**7.1** Perform procedure 4.

**7.2** Using a small flat-tip screwdriver, gently pry underneath the TAP switch knob (21) to remove it. Take care to not mark the enclosure (10) or baffle (8).

**7.3** Using a nut driver, remove the nut that secures the switch to the baffle. Slide the switch out of the baffle.

# DISASSEMBLY PROCEDURES

## 8. Transformer Removal

**8.1** Perform procedure 7.

**8.2** Remove the four screws (5) that secure the transformer (17) to the enclosure. Lift out the transformer.

**8.3** Make a note of the wiring configuration and cut the wires that connect to the cross-over PCB assembly (9) as close to the board as possible.

## 9. Loudspeaker Mounting Bracket Removal

**9.1** Using a Phillips-head screwdriver, remove the four screws (13) that secure the mounting bracket to the back of the loudspeaker.

**9.2** Slide the bracket (12) and rubber grommet (15) away from the speaker. Slide the bracket off of the rubber grommet.

## FreeSpace® DS 100F Flush-Mount Loudspeaker

**Note:** Refer to Figure 8 for the following procedures.

### 1. Grille Removal

**1.1** Using a small tool, such as an awl, carefully pry the grille (2) away from the front baffle (8). Lift off the grille.

### 2. Logo Removal

**2.1** Perform procedure 1.

**2.2** Slide the retaining washer (3) off of the logo's post. Lift the logo (1) off of the grille (2).

### 3. Tweeter Driver Removal

**3.1** Perform procedure 1.

**3.2** Using a Phillips-head screwdriver, remove the four screws (24) that secure the 2.25" driver (4) to the baffle (8).

**3.3** Lift out the driver. Disconnect the two Faston connectors from the tweeter's terminal strip.

### 4. Woofer Removal

**4.1** Perform procedure 1.

**4.2** Using a Phillips-head screwdriver, remove the four screws (18) that secure the woofer (19) to the baffle (8).

**4.3** Lift out the woofer. Disconnect the two Faston connectors from the woofer's terminal strip.

# DISASSEMBLY PROCEDURES

## 5. Rear Enclosure Removal

**5.1** Perform procedure 1.

**5.2** Using a Phillips-head screwdriver, remove the five screws (22) located around the perimeter of the loudspeaker's front baffle. Remove the one screw (22) located on the side of the rear enclosure near the woofer. Slide off the rear enclosure.

## 6. Crossover PCB Removal

**6.1** Using a Phillips-head screwdriver, remove the five screws (22) located around the perimeter of the loudspeaker's front baffle. Remove the one screw (22) located on the side of the rear enclosure near the woofer.

**6.2** Disconnect the two Faston connectors from the woofer terminal strip (14). Disconnect the two Faston connectors from the P1 and P2 pins on the crossover PCB (9).

**6.3** Perform procedure 1.

**6.4** Using a Phillips-head screwdriver, remove the four screws (24) that secure the tweeter to the front baffle (8). Lift out the tweeter. Disconnect the two Faston connectors from the tweeter terminals. Remove the foam batting and feed the wires out through the hole in the tweeter enclosure.

**6.5** Remove the four screws that secure the crossover PCB assembly to the enclosure. Lift off the PCB assembly.

## 7. TAP Rotary Switch Removal

**7.1** Perform procedure 5.

**7.2** Using a small flat-tip screwdriver, gently pry underneath the TAP switch knob (5) to remove it. Take care to not mark the enclosure or baffle.

**7.3** Using a nut driver, remove the nut that secures the switch (10) to the baffle. Slide the switch out of the baffle.

## 8. Audio Transformer Removal

**8.1** Perform procedure 7.

**8.2** Make a note of the wiring configuration of the transformer harness wiring connections. Unplug the two Faston connectors from the crossover board at P1 and P2. Unplug the three Faston connectors from the terminal board located on the rear enclosure.

**8.3** Remove the four screws (24) that secure the audio transformer (12) to the enclosure. Lift out the transformer.

# TEST PROCEDURES

## FreeSpace® DS 100SE Surface-Mount Loudspeaker

### 1. Air Leak Test

**1.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**1.2** Apply a 12.5 Vrms, 80 Hz signal to the 8 Ohm input of the loudspeaker.

**1.3** Listen for air leaks around the drivers, baffle and input terminal area. Re-align or replace any leaking gaskets. Replace any driver that has a rubbing or ticking noise.

### 2. Rub and Tick Test

**2.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**2.2** Apply a 12.5 Vrms, 30 Hz signal to the 8 Ohm input of the loudspeaker.

**2.3** Listen to the drivers for any rubbing, ticking or other extraneous noise. Replace any defective driver. Small ticks are acceptable if they cannot be heard at a distance of one foot.

**Note:** There is a normal suspension noise. To distinguish between a rub or a tick and suspension noise, displace the cone slightly with your finger. If the rubbing can be made to go away or get worse, it is a rub or a tick. If the noise stays the same, it is suspension noise.

### 3. Power Sweep Test

**3.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**3.2** Apply a 12.5 Vrms, 50 Hz signal to the 8 Ohm input of the loudspeaker.

**3.3** Slowly sweep the oscillator frequency from 50 Hz to 5 kHz. Listen for any buzzes, rattles or other extraneous noises from the drivers or from the internal parts. Test sweep time should be about 3 seconds up and 3 seconds down. Replace any driver that has a buzzing noise.

**Note:** The whooshing noise from the port at around 80Hz is acceptable.

### 4. Transformer TAP Select Test

**4.1** Apply a 70 Vrms, 100 Hz signal to the 70/100V loudspeaker input.

**4.2** Slowly change the TAP selection switch from the 100W position to the 12.5W position. A decrease in audio output level should be heard for each descending TAP position of the switch.

# TEST PROCEDURES

## FreeSpace DS 100F Flush-Mount Loudspeaker

### 1. Air Leak Test

**1.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**1.2** Apply a 12.5 Vrms, 80 Hz signal to the 8 Ohm input of the loudspeaker.

**1.3** Listen for air leaks around the drivers, baffle and input terminal area. Re-align or replace any leaking gaskets. Replace any driver that has a rubbing or ticking noise.

### 2. Rub and Tick Test

**2.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**2.2** Apply a 12.5 Vrms, 30 Hz signal to the 8 Ohm input of the loudspeaker.

**2.3** Listen to the drivers for any rubbing, ticking or other extraneous noise. Replace any defective driver. Small ticks are acceptable if they cannot be heard at a distance of one foot.

**Note:** There is a normal suspension noise. To distinguish between a rub or a tick and suspension noise, displace the cone slightly with your finger. If the rubbing can be made to go away or get worse, it is a rub or a tick. If the noise stays the same, it is suspension noise.

### 3. Power Sweep Test

**3.1** Remove the loudspeaker grille using disassembly procedure 1. Set the TAP rotary switch to the 8 Ohm position.

**3.2** Apply a 12.5 Vrms, 50 Hz signal to the 8 Ohm input of the loudspeaker.

**3.3** Slowly sweep the oscillator frequency from 50 Hz to 5 kHz. Listen for any buzzes, rattles or other extraneous noises from the drivers or from the internal parts. Test sweep time should be about 3 seconds up and 3 seconds down. Replace any driver that has a buzzing noise.

**Note:** The whooshing noise from the port at around 80Hz is acceptable.

### 4. Transformer TAP Select Test

**4.1** Apply a 70 Vrms, 100 Hz signal to the 70/100V loudspeaker input.

**4.2** Slowly change the TAP selection switch from the 100W position to the 12.5W position. A decrease in audio output level should be heard for each descending TAP position of the switch.

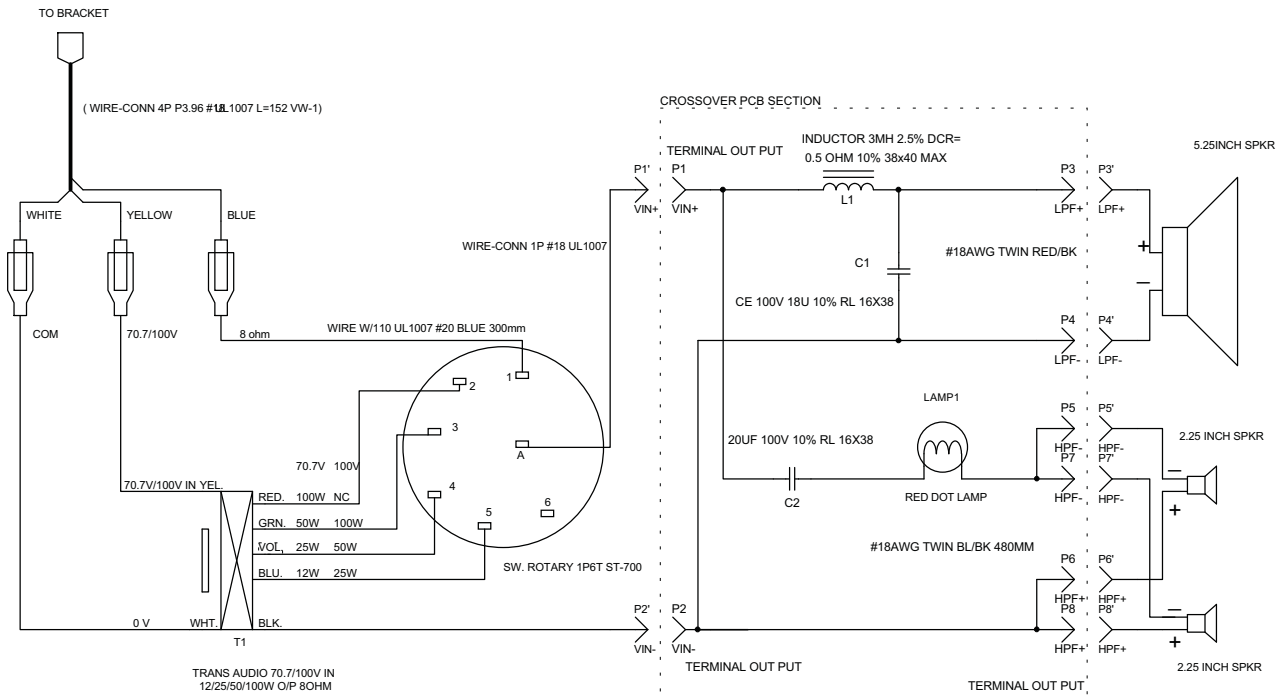


Figure 9. FreeSpace® DS 100SE Surface Mount Speaker Wiring Diagram

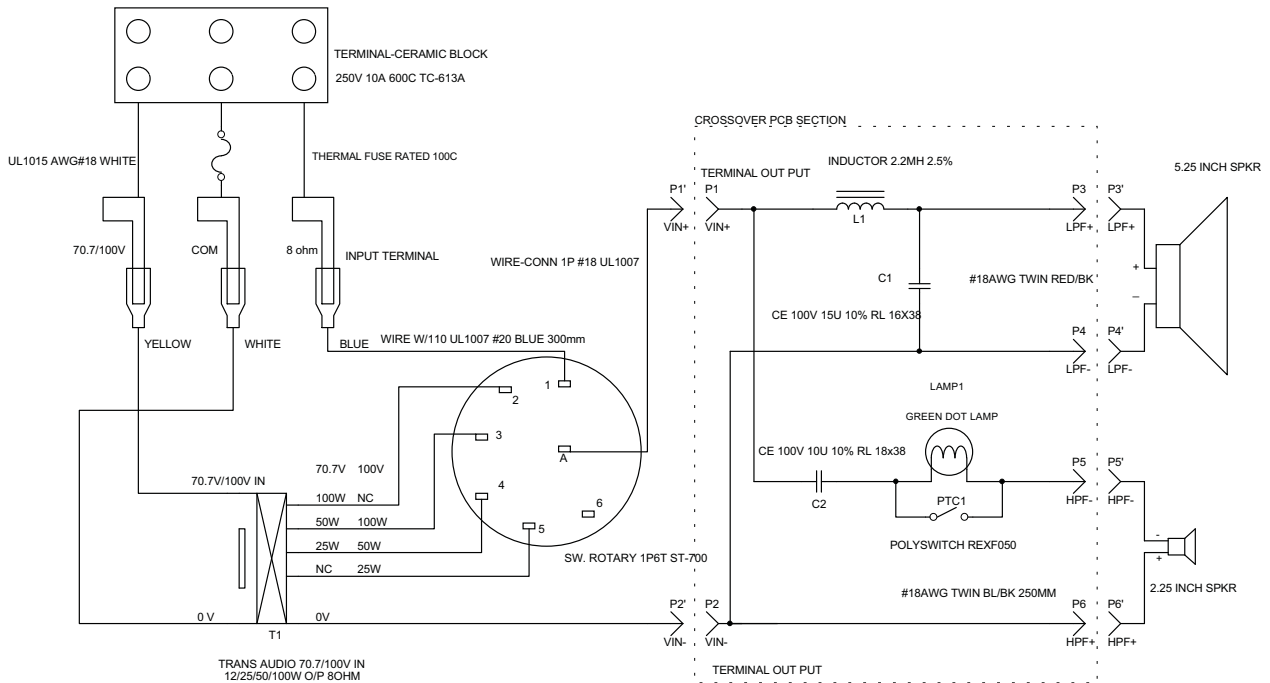


Figure 10. FreeSpace DS 100F Flush Mount Speaker Wiring Diagram



# SERVICE MANUAL REVISION HISTORY

Date	Revision Level	Description of Change	Change Driven By	Pages Affected
12/06	00	Document released at revision 00.	Service manual initial release	All
10/08	01	New DS 100SE wall-mount bracket. Replaces original bracket.	New bracket	7, 9, 10, 11
2/13 7/20	02 03	Added DS100 SE Ceiling Mount speaker information.	ECN Part	All
		Corrected DS100SE knob part number	error	

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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