

**FreeSpace[®] DS 40SE and
DS 40F Loudspeakers**
(Surface Mount and Flush Mount 8 Ohm
and 70/100V Versions)



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CAUTION: The Bose® FreeSpace® DS 40F and DS 40SE 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 40SE Loudspeaker is covered by a Limited Warranty for Professional Systems products that are designated weather rated or environmental for two years from the purchase date for exterior finish or appearance of speaker enclosures and speaker brackets and five years for the speaker components

The Bose FreeSpace DS 40F Loudspeaker is covered by a Limited Warranty for Professional Systems products for five years from the purchase date for speaker components that are not self-powered

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

Product Name:	FreeSpace® DS 40SE Loudspeaker
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Detailed Product Specifications	
Power handling	40W
Nominal Impedance (transformer bypass)	8 Ohms
Sensitivity (at 1W @ 1 m)	87 dB-SPL
Maximum SPL (pink noise @ 1 m @ rated power)	103 dB-SPL; 109 dB-SPL (Peak)
Frequency range (-3 dB)	80 Hz - 16 kHz
Beamwidth (-6 dB point, average 1 - 4 kHz)	125° H x 125° V

Driver complement	One 4.5" (113.4mm) full-range driver
Construction features	
Enclosure	Injection-molded PC/ABS
Grille	Powder-coated steel
Dimensions (inches/mm)	
Loudspeaker only	6.9" D x 12.8" W x 6.3" H (175mm x 326mm x 159mm)
Loudspeaker with wall mount bracket	9.4" D x 12.8" W x 6.3" H (238mm x 326mm x 159mm)
Weight (lb/kg)	
Product (w/ wall mount bracket)	8.5lb (3.9kg)
Shipping (w/ wall mount bracket)	10.8lb (4.9kg)
Package contents	Loudspeaker, mounting bracket, and installation guide
Finish	Textured black or white finish with a contoured, powder-coated steel grille. Both enclosure and grille can be painted.
Connectors	The included mounting bracket features a three-terminal barrier strip. Optional accessories provide a ceramic connector and a thermal fuse for use when required.

SPECIFICATIONS

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Detailed Product Specifications	
Power handling	40W
Nominal Impedance (transformer bypass)	8 Ohms
Sensitivity (at 1W @ 1 m)	87 dB-SPL
Maximum SPL (pink noise @ 1 m @ rated power)	103 dB-SPL; 109 dB-SPL (Peak)
Frequency range (-3 dB)	80 Hz - 16 kHz
Beamwidth (-6 dB point, average 1 - 4 kHz)	125° conical

Driver complement	One 4.5" (114.3mm) full-range driver
Construction features	
Enclosure	Baffle: Injection-molded polypropylene Rear Enclosure: Powder coated drawn steel
Grille	Powder-coated steel
Dimensions (inches/mm)	
Outer flange diameter	11.8" (299mm)
Ceiling hole diameter	10.5" (267mm)
Height to top of housing	6.4" (163mm)
Weight (lb/kg)	
Product	8.25lb (3.74kg)
Shipping	11.00lb (5.00kg)
Product (8 Ohm variant)	6.25lb (2.84kg)
Shipping (8 Ohm variant)	9.00lb (4.08kg)
Package contents	Loudspeaker, paint shield, installation guide
Finish	Textured black or white finish with a contoured, powder-coated steel grille. Both enclosure and grille can be painted.
Connectors (70/100V variant)	Three-terminal barrier strip
Connectors (8 Ohm variant)	Two-terminal barrier strip

PRODUCT DESCRIPTION

FreeSpace® DS 40SE Surface-Mount Loudspeaker

The FreeSpace DS 40SE loudspeaker is the medium level surface mount speaker for Bose® business music applications. It consists of a single 4.5” speaker driver 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 black and white. The FreeSpace DS 40SE can be used on the same line as the flush-mount variant, the FreeSpace DS 40F.

The DS 40SE speaker comes with either a wall-mount bracket or a ceiling-mount bracket in the box and is available in black and white. The basic wall-mount bracket that ships with the speaker allows for 0 to -45 degree pitch when the speaker is mounted in the horizontal direction. The basic wall-mount bracket will allow 0 to -30 degree pitch when the speaker is mounted in the vertical orientation.

The FreeSpace DS 40SE 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 when installed with a ceiling mount bracket or a wall mount bracket and 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, 2008, Article 640.

• Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, National Electric Code, 2008, Article 760.

The DS 40SE loudspeaker 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.

The FreeSpace DS 40SE is RoHS (RoHS Directive 2002/95/EC) and WEEE (WEEE Directive 2002/96/EC) compliant.

DS 40SE Surface Mount Loudspeaker Accessories:

- In-wall junction box
- On-wall junction box
- Wall-mount bracket assembly, black and white
- Ceiling-mount bracket assembly, black and white
- Pole mount kit
- Ceramic connector kit
- Trim plate kit (US only), black and white

Note: EQ curves to be provided in tech data sheets and for Bose electronics

PRODUCT DESCRIPTION

FreeSpace® DS 40F Flush-Mount Loudspeaker

The FreeSpace DS 40F loudspeaker is the medium level flush-mount speaker for Bose® business music applications. It consists of a single 4.5" driver 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 40F can be used on the same line as the surface-mount variant, the FreeSpace DS 40SE.

The FreeSpace DS 40F 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, 2008, Article 640.
- Suitable for use with fire alarm circuit wiring methods in accordance with NFPA 70, National Electric Code, 2008, Article 760.
- Suitable for use in air handling (plenum) spaces.
- UL-2043, Fire Test and Visible Smoke Release for Discrete Products and their Accessories Installed in Air Handling Spaces.
- NFPA 70, National Electric Code, 2008, Article 300-22 (c).
- NFPA 90-A, 2008, Installation of Air Conditioning and Ventilation Systems, Paragraph 4.3.11.2.6.5.

The DS 40F loudspeaker and DS 40F loudspeaker - 8 Ohm have been designed to the requirements defined in the following European regulatory specification for combination systems:

- British Standard Code of Practice BS 5839, Part 8.

The FreeSpace DS 40F is RoHS (Directive 2002/95/EC) and WEEE (Directive 2002/96/EC) compliant.

DS 40F Flush Loudspeaker Accessories

- Tile bridge for suspended ceilings
- Rough-in pan (for hard-deck ceilings)
- Pendant kit (aesthetic cover and hardware)
- Square grille kit
- Ceramic connector kit


Note: EQ curves will be provided in tech data sheets and standard Bose electronics

DS 40 Loudspeaker Versions			
UMN/ Product Code	PRODUCT	Color	Quantity/ Packaging
321279-0110	FREESPACE DS 40SE w/Wall Mount Bkt.	BLACK	SINGLE
321279-0210	FREESPACE DS 40SE w/Wall Mount Bkt.	WHITE	SINGLE
321279-0120	FREESPACE DS 40SE w/Ceiling Mount Bkt.	BLACK	SINGLE
321279-0220	FREESPACE DS 40SE w/Ceiling Mount Bkt.	WHITE	SINGLE
321278-0110	FREESPACE DS 40F 70/100V	BLACK	SINGLE
321278-0130	FREESPACE DS 40F 70/100V	BLACK	SINGLE
321278-0210	FREESPACE DS 40F 70/100V	WHITE	SINGLE
321278-0230	FREESPACE DS 40F 70/100V	WHITE	SINGLE
321278-0120	FREESPACE DS 40F - 8 OHM	BLACK	SINGLE
321278-0220	FREESPACE DS 40F - 8 OHM	WHITE	SINGLE
321278-0140	FREESPACE DS 40F - 8 OHM	BLACK	SINGLE
321278-0240	FREESPACE DS 40F - 8 OHM	WHITE	SINGLE

DS 40SE Accessories			
UMN/ Product Code	PRODUCT	Color	Quantity/ Packaging
041865	DS ON-WALL JUNCTION BOX	BLACK	6 PACK
041866	DS ON-WALL JUNCTION BOX	WHITE	6 PACK
041867	DS IN-WALL JUNCTION BOX	BLACK	6 PACK
041868	DS IN-WALL JUNCTION BOX	WHITE	6 PACK
323208-0110	DS POLE MOUNTING KIT	BLACK	SINGLE
323208-0210	DS POLE MOUNTING KIT	WHITE	SINGLE
315266-001	DS TRIM PLATE KIT	BLACK	SINGLE
315266-002	DS TRIM PLATE KIT	WHITE	SINGLE
315253-001	DS WALL-MOUNT BRACKET	BLACK	SINGLE
315253-002	DS WALL-MOUNT BRACKET	WHITE	SINGLE
716377-0110	DS CEILING-MOUNT BRACKET	BLACK	SINGLE
716377-0210	DS CEILING-MOUNT BRACKET	WHITE	SINGLE

DS 40F Accessories			
UMN/ Product Code	PRODUCT	Color	Quantity/ Packaging
041862	DS 40F/DS 100F PENDANT MOUNTING KIT	BLACK	SINGLE
041863	DS 40F/DS 100F PENDANT MOUNTING KIT	WHITE	SINGLE
041864	DS 40F/DS 100F TILE BRIDGE	NONE	6 PACK
041993	DS 40F/DS 100F ROUGH-IN PAN	NONE	6 PACK
323205-0010	DS 40F/DS 100F ADJUSTABLE TILE BRIDGE	NONE	PAIR
323207-0210	DS SQUARE GRILLE	WHITE	PAIR
326668-0010	DS CERAMIC TERMINALS AND THERMAL FUSE KIT	NONE	10 PACK

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 PARTS LIST

FreeSpace® DS 40SE Loudspeaker, Wall-Mount Version

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.
1	CARTON	325641-001S	1438-9901+0-2	1
2	CARTON SHEET	342840-001S	1451-0490+0	2
3	PE FOAM A	330431-001S	1493-7070+0	1
4	DS 40SE LOUDSPEAKER	REF	-	1
5	POLY BAG	-	1497-4972+0	1
6	INSTALL GUIDE	325611-0010	-	1
7	PE FOAM B	330432-001S	1493-7080+0	1
8	WALL MOUNT BRACKET	REF	-	1
9	BUBBLE BAG, 160X170MM	-	1497-2812+0	1

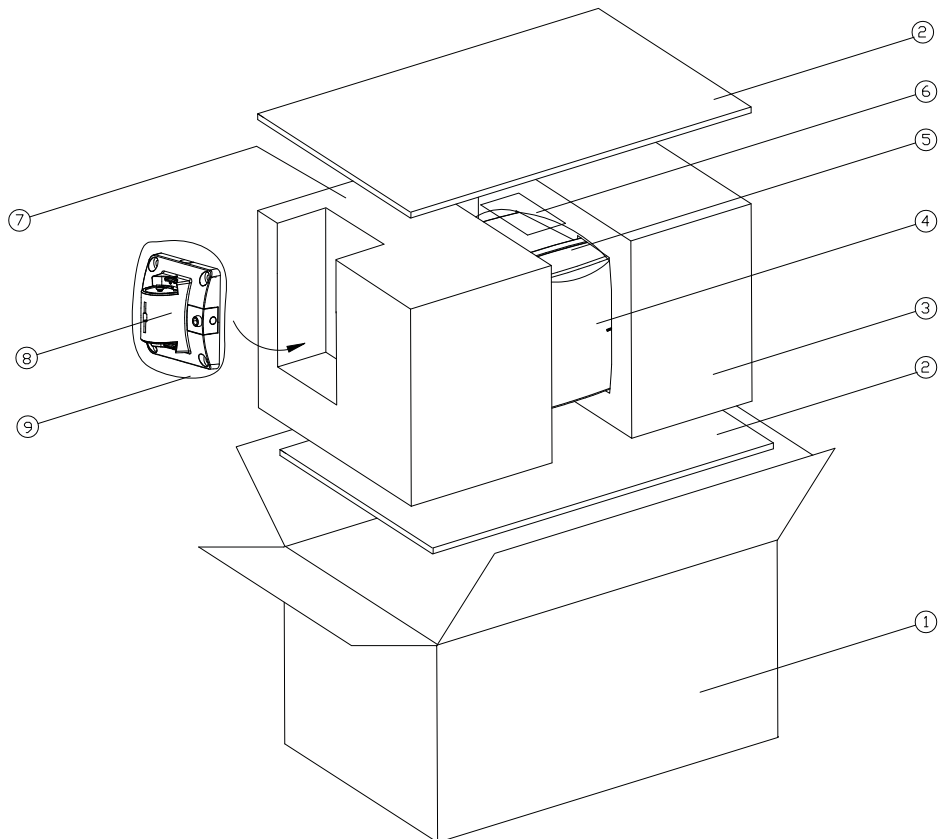


Figure 1. FreeSpace DS 40SE Wall-Mount Version Packaging View

PACKAGING PARTS LIST

FreeSpace® DS 40SE Loudspeaker, Ceiling-Mount Version

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.
1	CARTON, CEILING MOUNT SPKR	343516-001S	1439-1001+0-2	1
2	CARTON SHEET	372084-001S	1451-0590+0	2
3	PE FOAM A	330431-001S	1493-7070+0	1
4	DS40SE CEILING MOUNT SPKR	REF	-	1
5	PAPER, 880x630, 17G	-	1451-0680+0	1
6	POLYBAG, 550x400x0.5	-	1497-7902+0	1
7	INSTALL GUIDE	329497-0010	4301-7389+0	1
8	CEILING MOUNT BRKT, BLACK CEILING MOUNT BRKT, WHITE	- -	4166-0011+0 4166-0012+0	1
9	EPE FOAM, CEILING BRKT	343517-001S	1496-0150+1	1

Note: Item 8 is stocked as a service assembly with hardware. Refer to page 16.

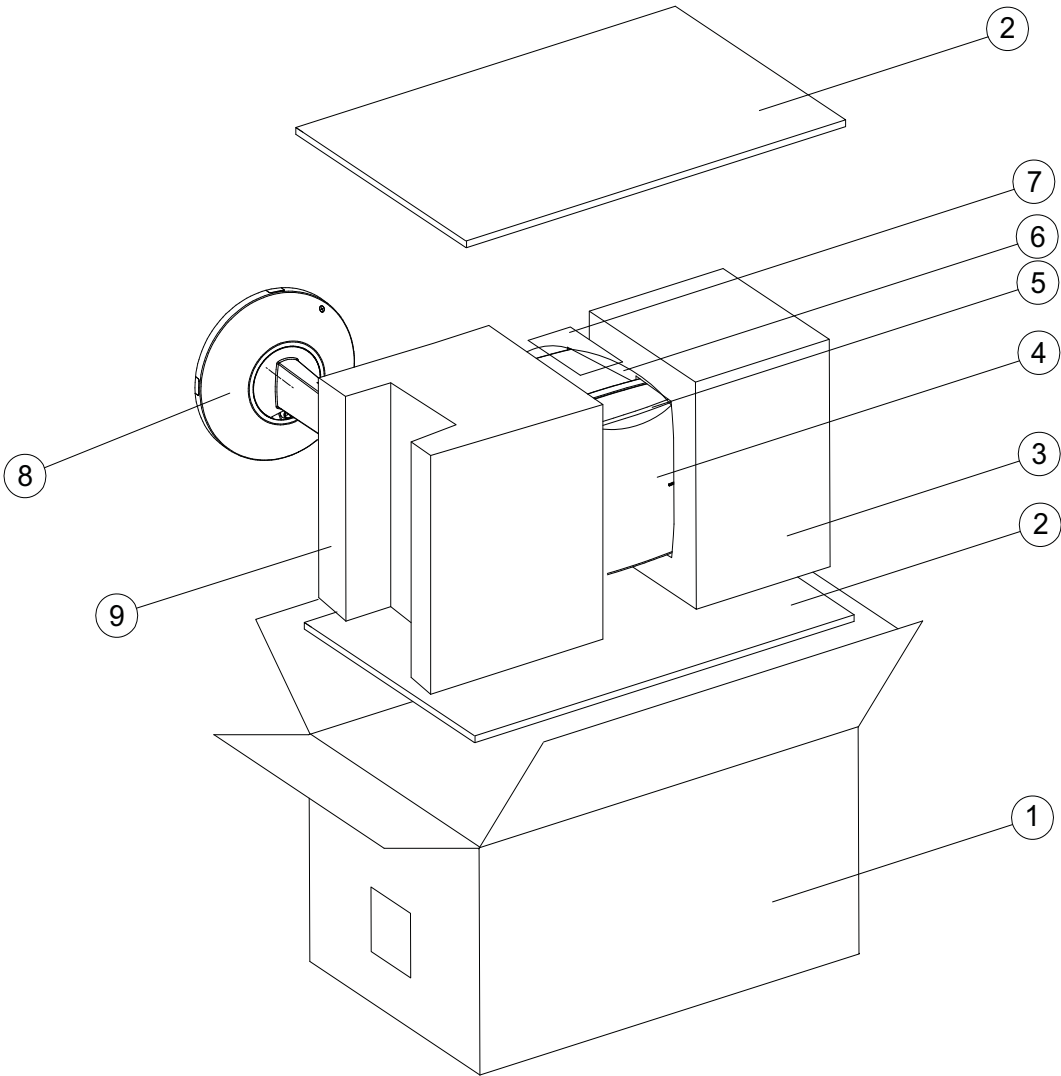


Figure 2. FreeSpace DS 40SE Ceiling-Mount Version Packaging View

PACKAGING LIST

FreeSpace® DS 40F Flush-Mount Loudspeaker

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.
1	EPE ON PAPER TOP	326926-001S	1493-1601+1	1
2	PAPER TOP	326924-001S	1496-0090+0	1
3	INNER PAPER	326927-001S	1450-9380+0	1
4	EPE ON PAPER AROUND	326925-001S	1496-0080+0	1
5	BAG, HDPE	-	1497-7492+0	1
6	CARTON	325642-001S	1439-0001+0-2	1
7	DS 40F LOUDSPEAKER	REF	-	1
8	INSTALL GUIDE	325610-0010	-	1
9	GRILLE WITH LOGO, BLACK	299570	SVC-FCURL11+GRIL	1
	GRILLE WITH LOGO, WHITE	299571	SVC-FCURL12+GRIL	
10	LOGO ASSEMBLY, BLACK	303038-001	SVC-SLAR11+LOGO	1
	LOGO ASSEMBLY, WHITE	303038-002	SVC-SLAR12+LOGO	
11	WASHER, SELF LOCKING, LOGO	-	2610-4003+1207	1
12	POLY BAG FOR GRILLE	-	1497-4732+0	1

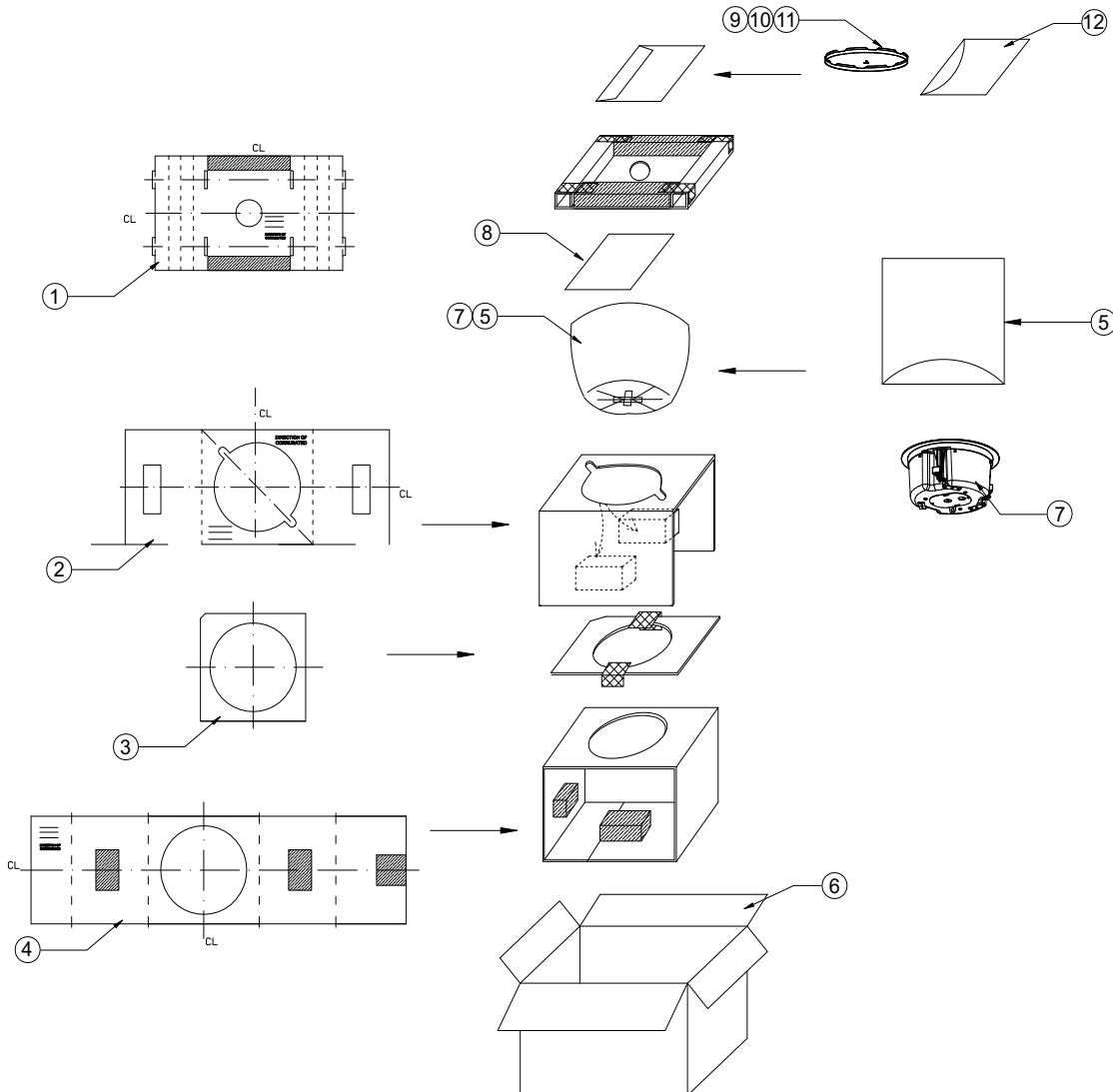
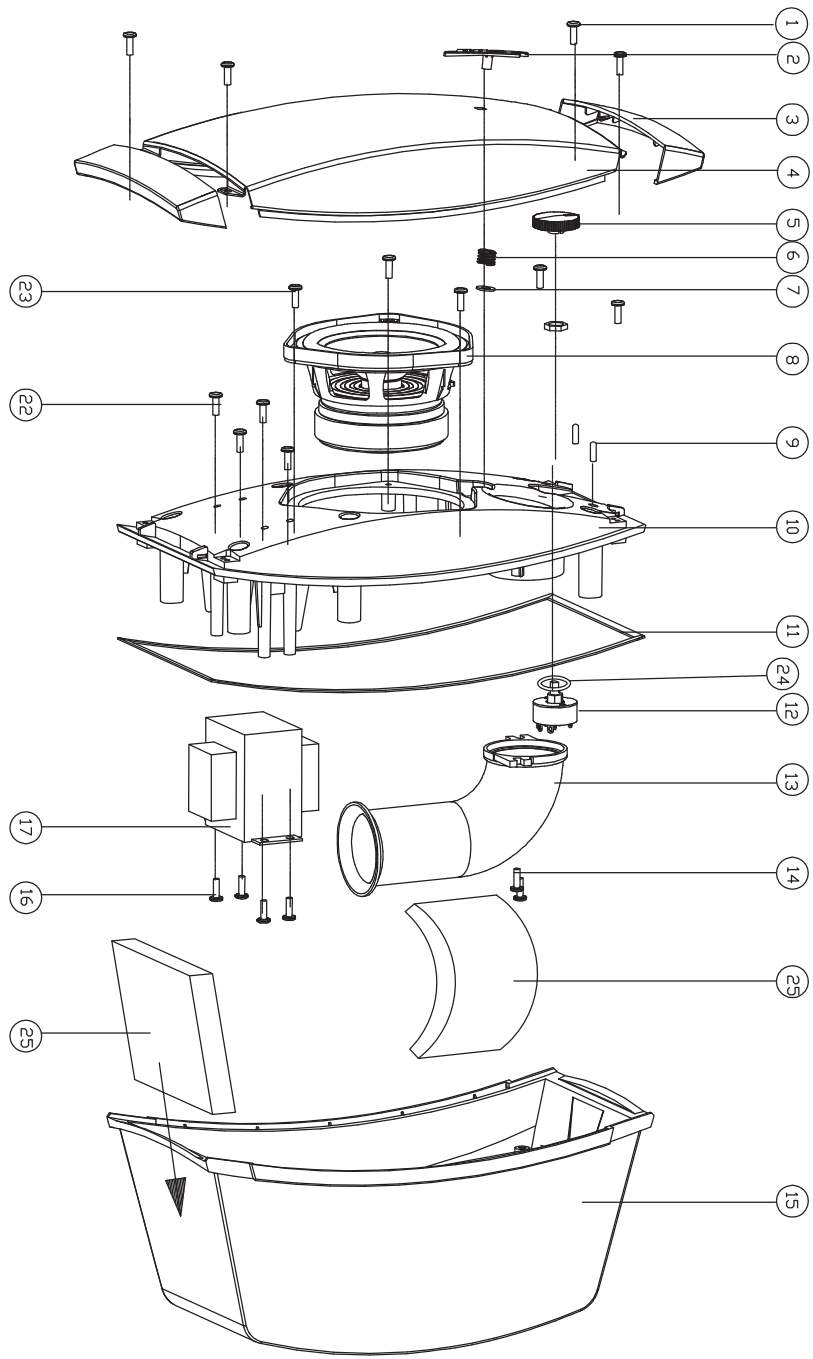


Figure 3. FreeSpace DS 40F Flush-Mount Packaging View

MAIN PART LIST

FreeSpace® DS 40SE Loudspeaker, Wall-Mount Version (see Figure 4)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	SCREW, B-TITE, PAN, M4X8	-	2950-4008+H000	4	4
2	LOGO ASSY, BLACK LOGO ASSY, WHITE	303038-001 303038-002	SVC-SLAR11+LOGO SVC-SLAR12+LOGO	1	
3	ENDCAP, GRILLE, BLACK ENDCAP, GRILLE, WHITE	324008-011S 324008-021S	4155-4401+1 4155-4402+1	1	
4	GRILLE ASSY, INCLUDES SCREWS, GASKET AND LOGO, BLACK WHITE	326912-011S 326912-021S	SVC-SLAR11+GRIL SVC-SLAR12+GRIL	1	
5	KNOB, SWITCH, D30	295898-004	2447-3605+1	1	
6	SPRING, LOGO, D8X8	-	2510-3941+0	1	4
7	WASHER, M6.2X1.2X12	-	2600-6212+1207	1	4
8	WOOFER, 4.5 INCH, 8 OHM	324015-001S	1527-0001+0	1	
9	FOAM, D12, L=18	-	4149-1171+0	2	4
10	FRONT BAFFLE, BLACK	-	4155-4391+2	1	4
11	GASKET, PE, 600X10X1.0MM	-	4149-7221+0	3.5	4
12	SWITCH, ROTARY, 1P6T	-	5200-4933+1	1	4
13	SURFACE PORT, PP+10% GF	-	4155-4381+0	1	4
14	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	2	4
15	ENCLOSURE, REAR, PC/ABS, BLACK WHITE	-	4155-4372+2 4155-4371+2	1	4
16	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	4	4
17	TRANSFORMER ASSY W/ SWITCH (includes item 12)	326913-001S	SVC-SLAR11+TRAN	1	
18	MOUNT, BRACKET ARM (includes hardware) BLACK WHITE	315821-001S 315821-002S	4155-3421+0 4155-3422+0	1	
19	SCREW, MOUNT	-	2904-4014+H000	4	4
20	CONNECTOR	-	7012-7710+0	1	4
21	BRACE, SPEAKER MOUNT	-	4135-8551+0	1	4
22	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	6	4
23	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	4	4
24	EVA GASKET	-	4149-1781+0	1	4
25	ACOUST FUZZ, 120x200x25MM	-	4149-7321+1	2	4
-	PCB ASSY, PROTECTION	324014-001S	SVC-SLAR11+PCB	1	



WALL MOUNT ASSEMBLY
OF SURFACE BRACKET

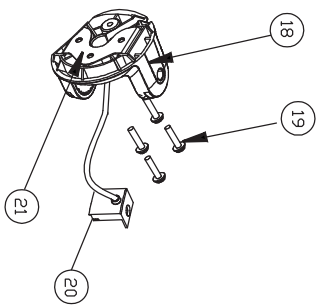


Figure 4. FreeSpace® DS 40SE, Wall-Mount Version Exploded View

MAIN PART LIST

DS 40SE Wall-Mount Bracket (included with loudspeaker)

Item Number	Description	Bose® Part Number	Vendor Part Number	Note
1	DS 40/100SE Bracket Assy, Black DS 40/100SE Bracket Assy, White	315253-001 315253-002	BSACDS100+08CSX1 BSACDS100+08CSX2	
2	DS 40/100SE Bracket, Wall Mount (w/strain relief, terminals & pivot screw) BLACK WHITE	315824-001S 315824-002S	4155-3411+0 4155-3412+0	
3	DS 40/100SE Bracket Arm (w/4 screws, 4 washers & pivot screw) BLACK WHITE	315821-001S 315821-002S	4155-3421+0 4155-3422+0	
4	DS 40/100SE 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)	- -	- -	
-	DS 40/100SE 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	

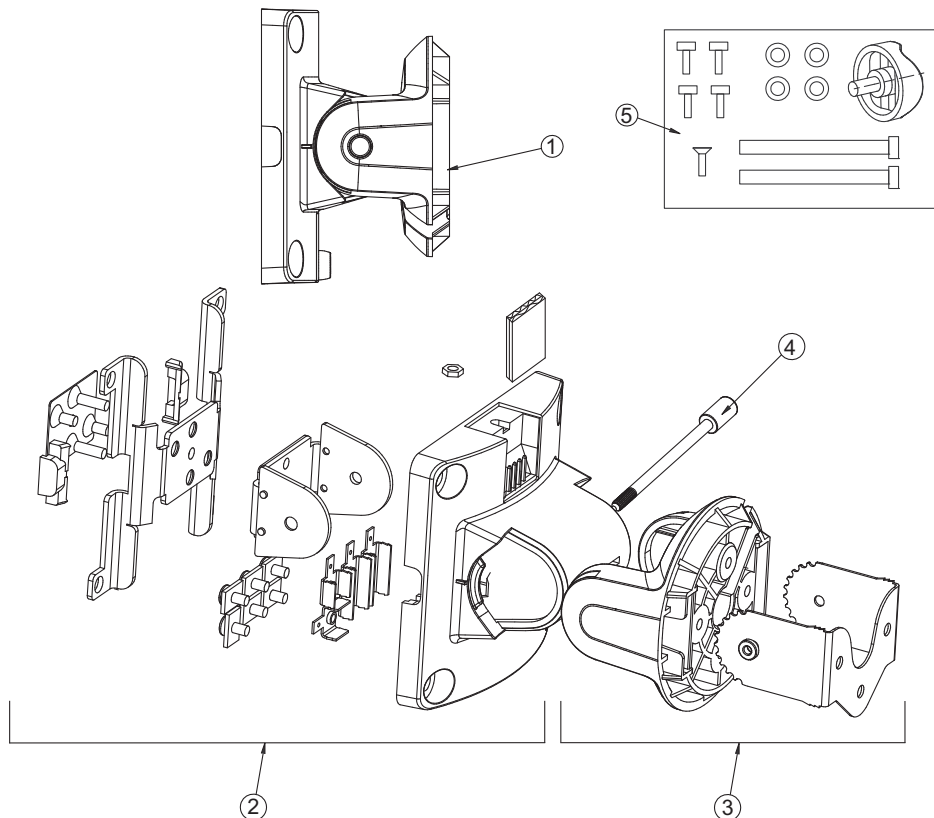


Figure 5. DS 40SE Wall-Mount Bracket Exploded View

MAIN PART LIST

FreeSpace® DS 40SE Loudspeaker, Ceiling-Mount Version (see Figure 6)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	SCREW, B-TITE, PAN, M4X8	-	2950-4008+H000	4	4
2	LOGO ASSY, BLACK LOGO ASSY, WHITE	303038-001 303038-002	SVC-SLAR11+LOGO SVC-SLAR12+LOGO	1	
3	ENDCAP, GRILLE, BLACK ENDCAP, GRILLE, WHITE	324008-011S 324008-021S	4155-4401+2 4155-4402+2	1	
4	GRILLE ASSY, INCLUDES SCREWS, GASKET AND LOGO, BLACK WHITE	326912-011S 326912-021S	SVC-SLAR11+GRIL SVC-SLAR12+GRIL	1	
5	KNOB, SWITCH, D30	295898-004	2447-3605+1	1	
6	SPRING, LOGO, D8X8	-	2510-3941+0	1	4
7	WASHER, M6.2X1.2X12	-	2600-6212+1207	1	4
8	WOOFER, 4.5 INCH, 8 OHM	324015-001S	1527-0001+0	1	
9	FOAM, D12, L=18	-	4149-1171+0	2	4
10	FRONT BAFFLE, BLACK	-	4155-4391+4	1	4
11	GASKET, PE, 600X10X1.0MM	-	4149-7221+0	3.5	4
12	SWITCH, ROTARY, 1P6T	-	5200-4933+1	1	4
13	SURFACE PORT, PP+10% GF	-	4155-4381+0	1	4
14	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	2	4
15	ENCLOSURE, REAR, PC/ABS, BLACK WHITE	- -	4155-4373+3 4155-4374+3	1	4
16	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	4	4
17	TRANSFORMER ASSY W/ SWITCH (includes item 12)	326913-001S	SVC-SLAR11+TRAN	1	
18	BRACKET ARM, CEILING MNT (includes hardware) BLACK WHITE	716377-0110 716377-0210	472651-1 472651-2	1	
19	SCREW, MOUNT, M4x18.5	-	-	4	4
20	CABLE W/CONNECTOR BLACK WHITE	- -	7012-7710+0 7012-7711+0	1	4
21	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	6	4
22	SCREW, B-TITE, BIND, M4X16	-	2954-4016+H000	4	4
23	EVA GASKET	-	4149-1781+0	1	4
24	ACOUST FUZZ, 120x200x25MM	-	4149-7321+1	2	4
25	WASHER, METAL, M4x0.8x10	-	2600-4008+100H	2	4
26	SCREW, B-TITE, PAN, M3x8	-	2950-3008+H010	1	4
27	SCREW, B-TITE, PAN, M4x12	-	2950-4012+H000	4	4
28	PCB ASSY, LOAD COM	324014-001S	PCB-FLAR11+LOAD	1	
29	WASHER, 4.25x7.5x0.75	-	4166-0012+1	4	4
-	PCB ASSY, PROTECTION	324014-001S	SVC-SLAR11+PCB	1	

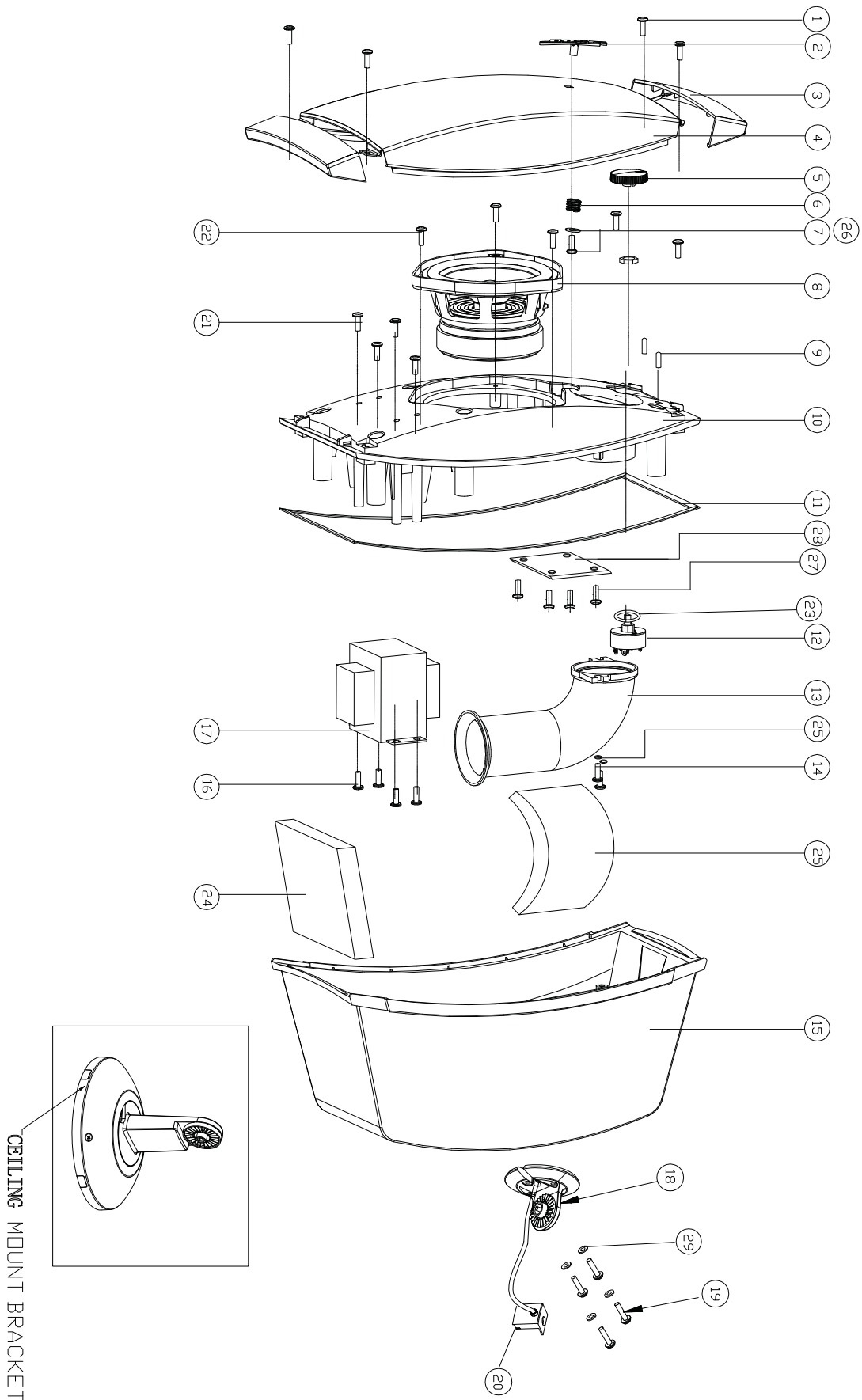


Figure 6. FreeSpace® DS 40SE, Ceiling-Mount Version Exploded View

MAIN PART LIST

DS 40SE 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	

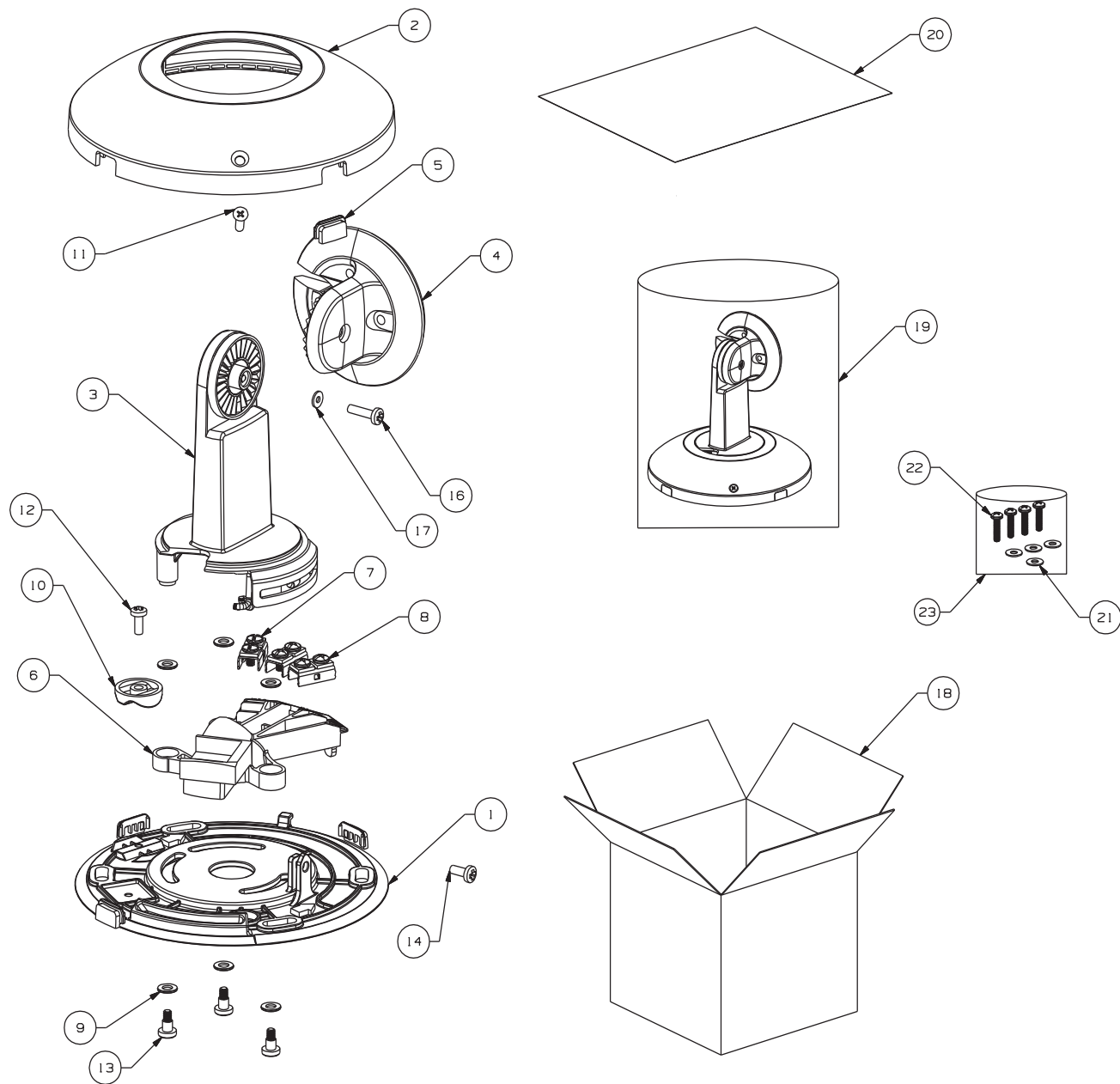


Figure 7. DS 40SE Ceiling-Mount Bracket Exploded View

MAIN PART LIST

FreeSpace® DS 40F, 8 Ohm Version (see Figure 8)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	FRONT BAFFLE, BLACK FRONT BAFFLE, WHITE	- -	1468-6411+2 1468-6412+2	1	4
2	DRIVER, 4.5 INCH	324015-001S	1527-0001+0	1	
3	GASKET	-	4149-0911+0	1	4
4	FLUSH ANCHOR, PC/ABS	324012-011S	4155-4351+1	3	
5	SCREW, #8-32, WIRE CLAMP	-	2AZZ-0007+ZZZZ	3	4
6	ACOUSTIC WOOL	-	4149-7321+1	2.0	4
7	ENCLOSURE, REAR	-	4135-9381+0	1	4
8	SCREW, MACHINE, BIND, M6X12	-	2904-6012+3000	3	4
9	ACORN NUT, ANCHOR	346479-011S	4135-9421+0	3	
10	JUNCTION BOX COVER	-	1404-6501+2	1	4
11	SCREW, B-TITE, 3X10MM, BLK	-	2954-3010+3000	4	4
12	SIDE BRACKET	-	4135-9371+0	3	4
13	S/T SCREW, 03X5	-	2940-3005+3000	6	4
14	JUNCTION BOX, MAIN	-	4155-1961+2	1	4
15	TERMINAL WITH SCREWS	299572	SVC-FCURL11+TERM	3	
16	ANCHOR BOLT	327657-011S	4135-9411+1	3	
17	FLUSH PORT	-	4155-4361+0	1	4
18	PCB ASSY, PROTECTION	324014-001S	SVC-SLAR11+PCB	1	
19	GRILLE, BLACK, W/LOGO GRILLE, WHITE, W/LOGO	299570 299571	SVC-FCURL11+GRIL SVC-FCURL12+GRIL	1	
20	PAD, PAINTING, SHIELD	-	1451-0580+0	1	4
-	WASHER, ANCHOR BOLT	346480-011S	2600-4012+1203	3	
-	LOGO ASSY, BLACK LOGO ASSY, WHITE	303038-001 303038-002	SVC-SLAR11+LOGO SVC-SLAR12+LOGO	1	

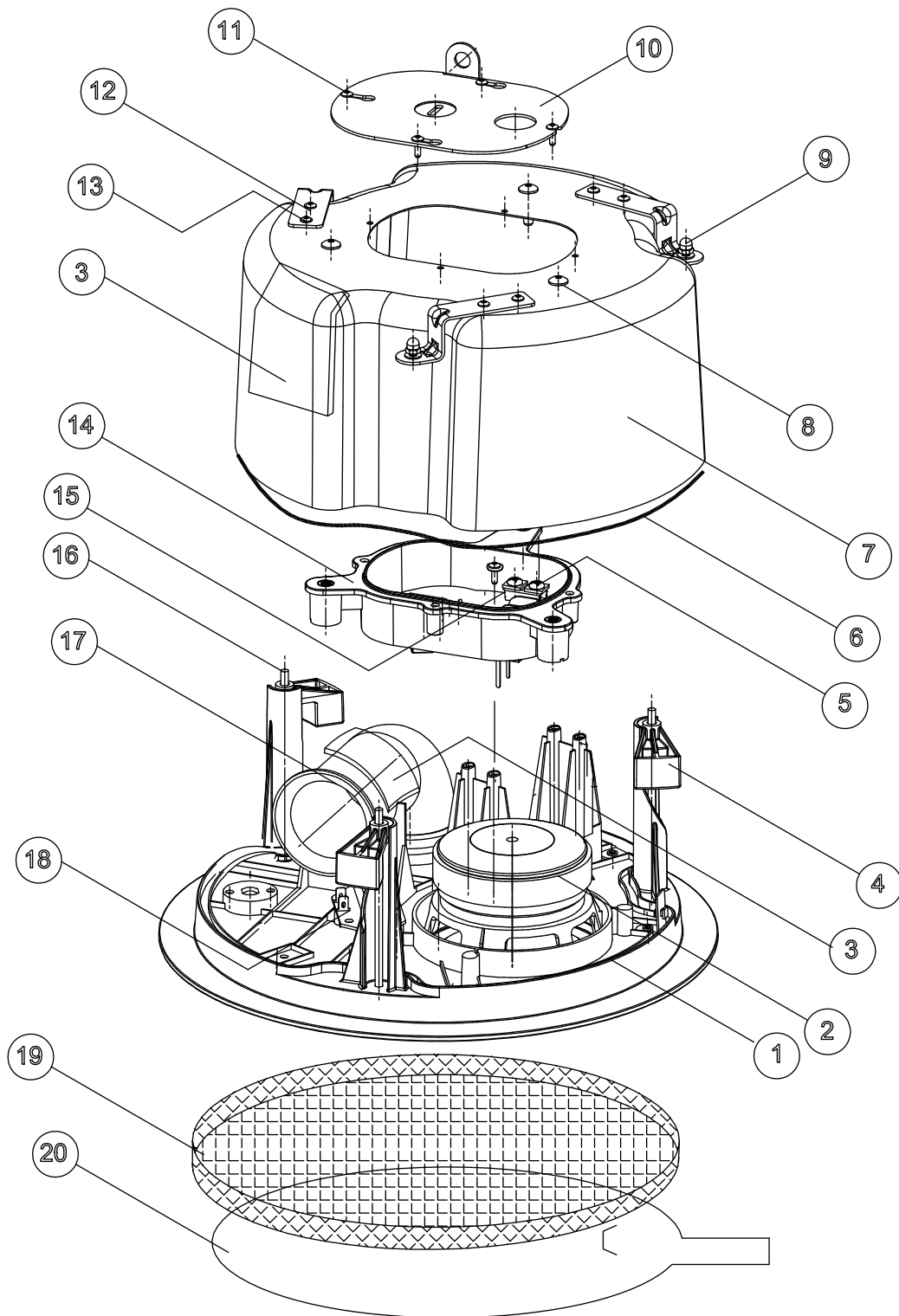


Figure 8. FreeSpace® DS40F, 8 Ohm Version Exploded View

MAIN PART LIST

FreeSpace® DS 40F, 70/100V Version (see Figure 9)

Item Number	Description	Bose® Part Number	Vendor Part Number	Qty.	Note
1	FRONT BAFFLE, BLACK FRONT BAFFLE, WHITE	- -	1468-6401+2 1468-6402+2	1	4
2	DRIVER, 4.5 INCH	324015-001S	1527-0001+0	1	
3	TRANSFORMER ASSY W/ SWITCH (includes item 18)	326913-001S	SVC-SLAR11+TRAN	1	4
4	FLUSH ANCHOR, PC/ABS	324012-011S	4155-4351+1	3	
5	SCREW, TAP, M4X10MM	-	2954-4010+3000	4	4
6	SCREW, #8-32, WIRE CLAMP	-	2AZZ-0007+ZZZZ	3	4
7	ENCLOSURE, REAR	-	4135-9381+0	1	4
8	SCREW, MACHINE, M6X12	-	2904-6012+3000	3	4
9	ACORN NUT, ANCHOR	346479-011S	4135-9421+0	3	
10	JUNCTION BOX COVER	-	1404-6501+2	1	4
11	B-TITE, 3X10MM (BLK.ZN)	-	2954-3010+3000	4	4
12	SIDE BRACKET	-	4135-9371+0	3	4
13	S/T SCREW, 03X5	-	2940-3005+3000	6	4
14	JUNCTION BOX, MAIN	-	4155-1961+2	1	4
15	TERMINAL WITH SCREWS	299572	SVC-FCURL11+TERM	3	
16	ANCHOR BOLT	327657-011S	4135-9411+1	3	
17	FLUSH PORT	-	4155-4361+0	1	4
18	ROTARY SWITCH	-	5200-4933+1	1	4
19	EVA GASKET	-	4149-1781+0	1	4
20	PCB ASSY, PROTECTION	324014-001S	SVC-SLAR11+PCB	1	
21	KNOB, FRONT, TAP SELECT	-	2447-3602+1	1	4
22	GRILLE, BLACK, W/LOGO GRILLE, WHITE, W/LOGO	299570 299571	SVC-FCURL11+GRIL SVC-FCURL12+GRIL	1	
23	PAD, PAINTING SHIELD	-	1451-0580+0	1	4
24	GASKET	-	4149-0911+0	1	4
25	ACOUSTIC WOOL	-	4149-7321+1	2.0	4
-	WASHER, ANCHOR BOLT	346480-011S	2600-4012+1203	3	
-	LOGO ASSY, BLACK LOGO ASSY, WHITE	303038-001 303038-002	SVC-SLAR11+LOGO SVC-SLAR12+LOGO	1	

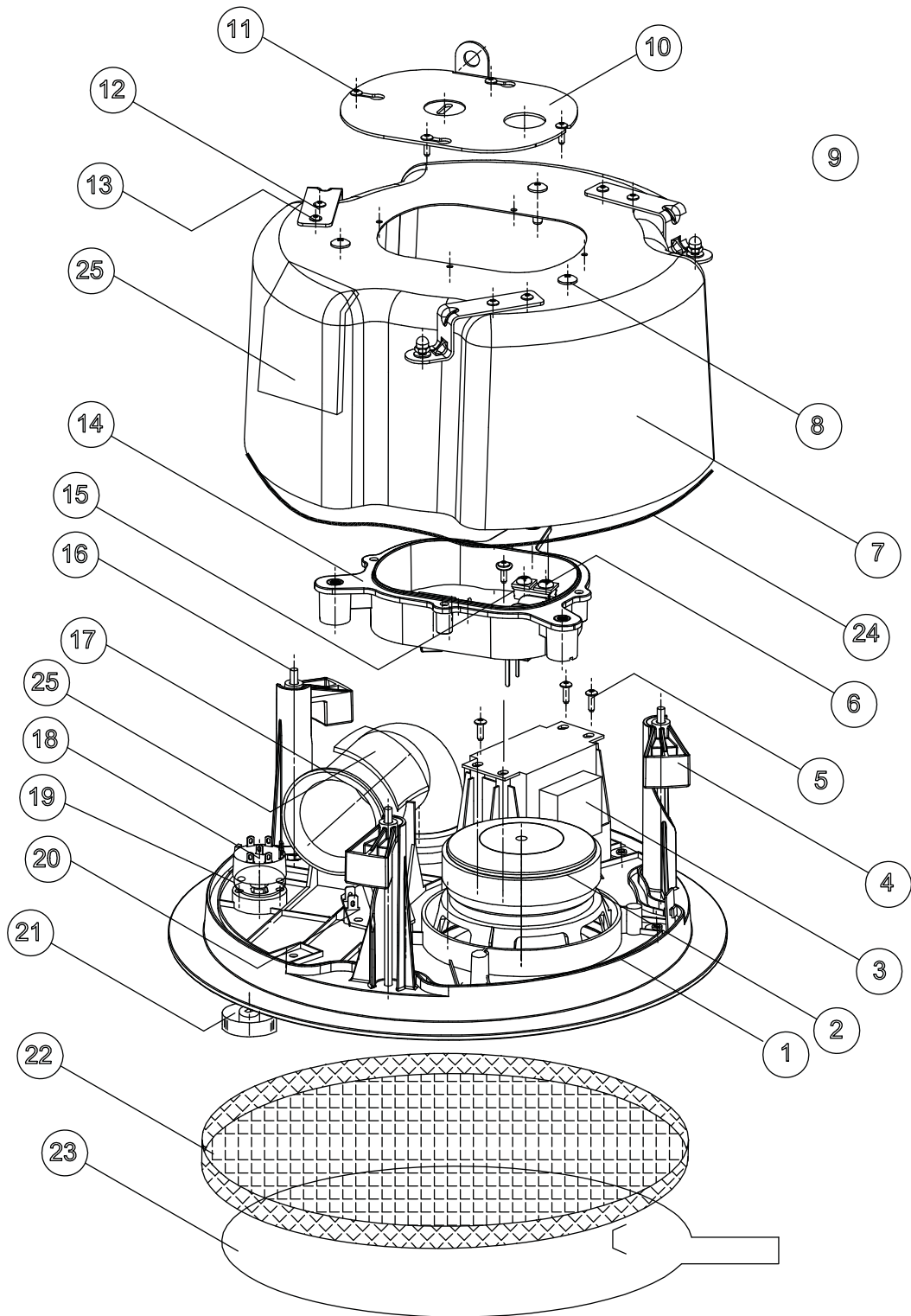
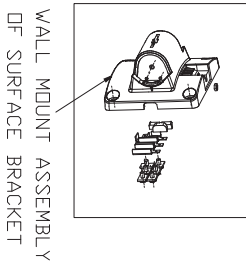
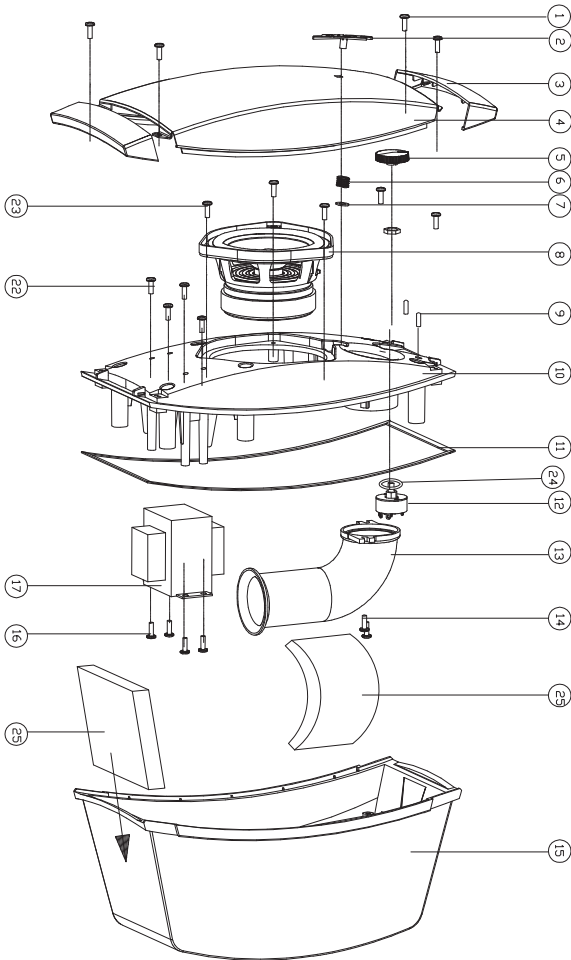


Figure 9. FreeSpace® DS40F, 70/100V Version Exploded View

DISASSEMBLY PROCEDURES

FreeSpace® DS 40SE Surface-Mount Loudspeaker

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



1. Grille Removal

1.1 Grasp the grille cap (3) 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 (4).

1.2 Remove the four screws (1) that secure the grille to the baffle (10). Lift off the grille.

2. Logo Removal

2.1 Perform procedure 1.

2.2 Remove the screw located on the logo's mounting post. Slide the washer and spring (6, 7) off of the logo's post. Lift the logo (2) off of the grille (4).

3. 4.5" Driver Removal

3.1 Perform procedure 1.

3.2 Remove the three screws (23) that secure the 4.5" driver (8) to the front baffle (10).

3.3 Lift out the driver. Disconnect the two Faston connections.

4. Front Baffle Removal

4.1 Perform procedure 1.

4.2 Remove the six screws (22) that secure the front baffle (10) to the loudspeaker enclosure (15). Lift off the baffle.

Re-assembly Note: Be sure to note which end of the rear enclosure the transformer is located at to ensure proper re-assembly.

5. Protection PCB Removal

5.1 Perform procedure 4.

5.2 Disconnect the Faston connector from the wiring harness at the VIN+ connection on the protection PCB. Disconnect the wire that runs from the J2 VOUT+ connection at the driver's (8) positive (+) terminal.

5.3 Remove the four screws that secure the protection PCB assembly to the front baffle (10). Lift out the PCB assembly.

DISASSEMBLY PROCEDURES

6. TAP Rotary Switch Removal

6.1 Perform procedure 4.

6.2 Using a small plastic tool, gently pry underneath the TAP switch knob (5) to remove it. Take care to not mark the enclosure (15) or the front baffle (10).

6.3 Remove the nut that secures the rotary switch (12) to the front baffle. Slide the switch out of the baffle.

7. Transformer Removal

7.1 Perform procedure 6.

7.2 Make a note of the wiring configuration of the transformer harness wiring connections.

7.3 Remove the one Faston connection on the protection board at J1 VIN+. Remove the wire from the J2 connection on the protection PCB at the Faston connection on the positive (+) terminal at the 4.5" driver (8).

7.4 Disconnect the three Faston in-line connections that connect to the input wiring harness on the back of the loudspeaker enclosure (15).

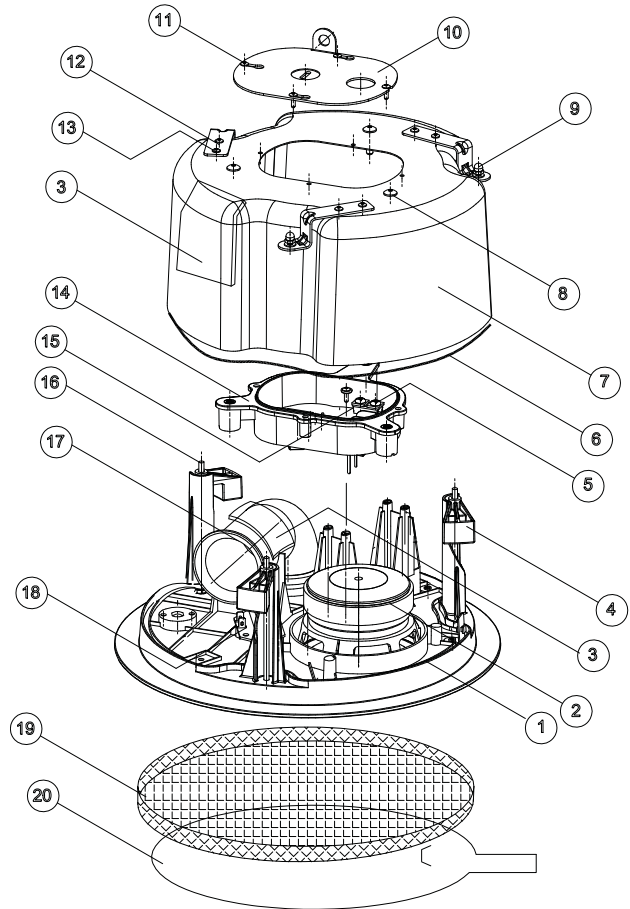
7.5 Remove the four screws (16) that secure the audio transformer (17) to the enclosure. Lift out the transformer.

8. Loudspeaker Mounting Bracket Removal

8.1 Remove the four screws (19) that secure the mounting bracket (18) to the loudspeaker enclosure (15). Lift off the bracket

FreeSpace® DS 40F Flush-Mount Loudspeaker, 8 Ohm Version

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



1. Grille Removal

1.1 Using a small tool, such as an awl, carefully pull the grille (19) away from the front baffle (1). Lift off the grille.

2. Logo Removal

2.1 Perform procedure 1.

2.2 Slide the retaining washer off of the logo's post. Lift the logo off of the grille (19).

DISASSEMBLY PROCEDURES

3. 4.5" Driver Removal

3.1 Perform procedure 1.

3.2 Remove the three screws that secure the driver (2) to the baffle (1).

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

4. Rear Enclosure Removal

4.1 Perform procedure 1.

4.2 On the back of the loudspeaker enclosure (7), remove the three acorn nuts (9) and washers from the ceiling anchor bolts (16).

4.3 On the front baffle (1) remove the six screws located around the perimeter of the loudspeaker's front baffle. Slide off the rear enclosure.

Re-assembly Note: Be sure that the enclosure's gasket is located in the groove on the back of the front baffle before re-assembly to ensure an airtight seal.

5. Protection Board Removal

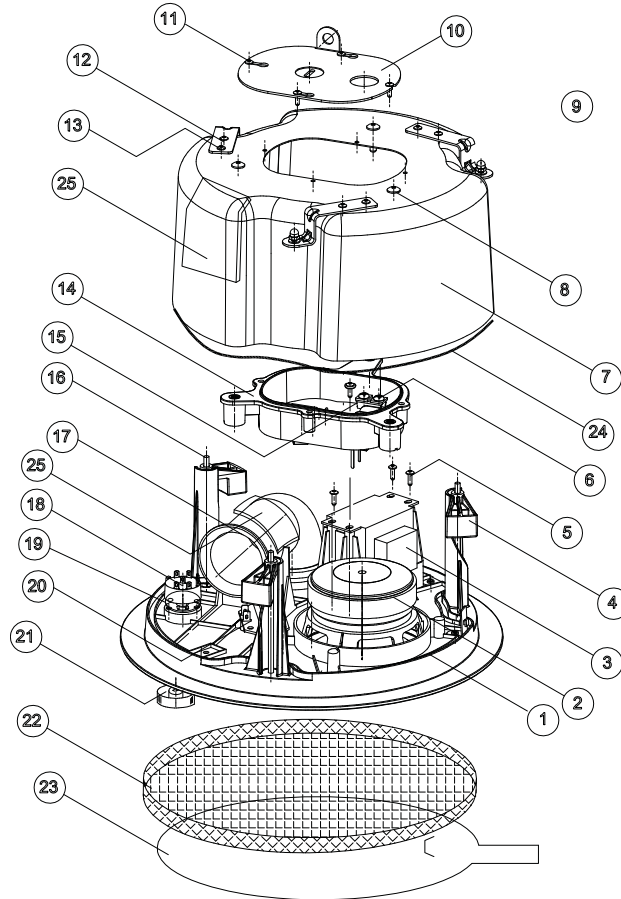
5.1 Perform procedure 4.

5.2 Remove the one Faston connection at the board at J1 VIN. Remove the Faston connection from the board at the 4.5" driver.

5.3 Remove the four screws that secure the protection board to the front baffle. Lift off the board.

FreeSpace® DS 40F Flush-Mount Loudspeaker, 70/100V Version

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



1. Grille Removal

1.1 Using a small tool, such as an awl, carefully pull the grille (22) away from the front baffle (1). Lift off the grille.

2. Logo Removal

2.1 Perform procedure 1.

2.2 Slide the retaining washer off of the logo's post. Lift the logo off of the grille (22).

DISASSEMBLY PROCEDURES

3. 4.5" Driver Removal

3.1 Perform procedure 1.

3.2 Remove the three screws that secure the driver (2) to the baffle (1).

3.3 Lift out the 4.5" driver. Disconnect the two Faston connectors from the driver's terminal strip.

4. Rear Enclosure Removal

4.1 Perform procedure 1.

4.2 On the back of the loudspeaker enclosure (7), remove the three acorn nuts (9) and washers from the ceiling anchor bolts (16).

4.3 On the front baffle remove the six screws located around the perimeter of the loudspeaker's front baffle (1). Slide off the rear enclosure.

Re-assembly Note: Be sure that the enclosure's gasket is located in the groove on the back of the front baffle before re-assembly to ensure an airtight seal.

5. Protection PCB Removal

5.1 Perform procedure 4.

5.2 Remove the one Faston connection at the board at J1 VIN. Remove the wire from the J2 connection on the protection PCB at the Faston connection on the positive (+) terminal at the 4.5" driver.

5.3 Remove the four screws that secure the protection board to the front baffle. Lift off the board.

6. TAP Rotary Switch Removal

6.1 Perform procedure 4.

6.2 Using a small plastic tool, gently pry underneath the TAP switch knob (21) to remove it. Take care to not mark the front baffle (1).

6.3 Using a nut driver, remove the nut that secures the rotary switch (18) to the front baffle. Slide the switch out of the baffle.

7. Audio Transformer Removal

7.1 Perform procedure 7.

7.2 Make a note of the wiring configuration of the transformer harness wiring connections.

7.3 Remove the one Faston connection on the protection board at J1 VIN+. Remove the wire from the J2 connection on the protection PCB at the Faston connection on the positive (+) terminal at the 4.5" driver (2).

7.4 Remove the four screws (5) that secure the audio transformer (3) to the enclosure (7). Lift out the transformer.

TEST PROCEDURES

FreeSpace® DS 40SE Surface-Mount Loudspeaker

Note: For the air leak, rub and tick, and power sweep tests, all listening will be done at a distance not to exceed 1 foot if the ambient noise is greater than 65 dBA SPL. An air leak is considered to exist when audible to the inspector while facing the baffle of the speaker assembly. Leaks that are only audible by reorientation of the speaker assembly from this position are considered acceptable.

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 9 Vrms, 100 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 9 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 12.75 Vrms, 75 Hz signal to the 8 Ohm input of the loudspeaker.

3.3 Slowly sweep the oscillator frequency from 60 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 75Hz 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 40W position to the 2.5W position. A decrease in audio output level should be heard for each descending TAP position of the switch.

TEST PROCEDURES

FreeSpace® DS 40F Flush-Mount Loudspeaker, 8 Ohm Version

Note: For the air leak, rub and tick, and power sweep tests, all listening will be done at a distance not to exceed 1 foot if the ambient noise is greater than 65 dBA SPL. An air leak is considered to exist when audible to the inspector while facing the baffle of the speaker assembly. Leaks that are only audible by reorientation of the speaker assembly from this position are considered acceptable.

1. Air Leak Test

1.1 Remove the loudspeaker grille using disassembly procedure 1.

1.2 Apply a 9 Vrms, 100 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.

2.2 Apply a 9 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.

3.2 Apply a 12.75 Vrms, 75 Hz signal to the 8 Ohm input of the loudspeaker.

3.3 Slowly sweep the oscillator frequency from 60 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 75Hz is acceptable.

FreeSpace DS 40F Flush-Mount Loudspeaker, 70/100V Version

Note: For the air leak, rub and tick, and power sweep tests, all listening will be done at a distance not to exceed 1 foot if the ambient noise is greater than 65 dBA SPL. An air leak is considered to exist when audible to the inspector while facing the baffle of the speaker assembly. Leaks that are only audible by reorientation of the speaker assembly from this position are considered acceptable.

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 9 Vrms, 100 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.

TEST PROCEDURES

FreeSpace® DS 40F Flush-Mount Loudspeaker, 70/100V Version (continued):

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 9 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 12.75 Vrms, 75 Hz signal to the 8 Ohm input of the loudspeaker.

3.3 Slowly sweep the oscillator frequency from 60 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 75Hz 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 40W position to the 2.5W position. A decrease in audio output level should be heard for each descending TAP position of the switch.

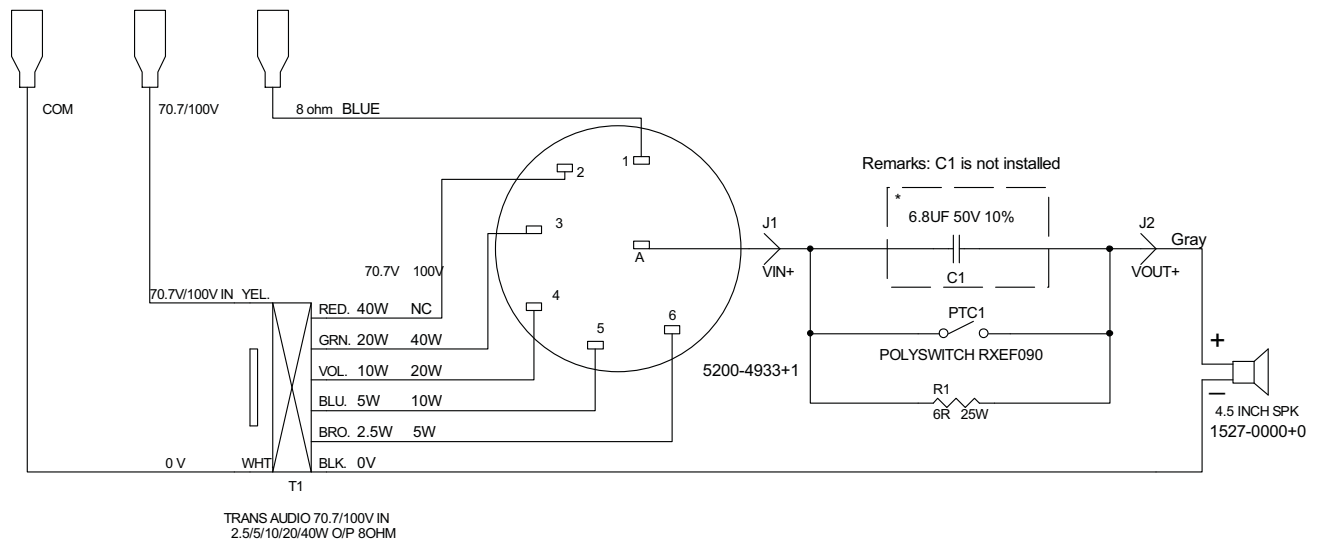


Figure 10. FreeSpace® DS 40SE and DS 40F 70/100V Version Wiring Diagram

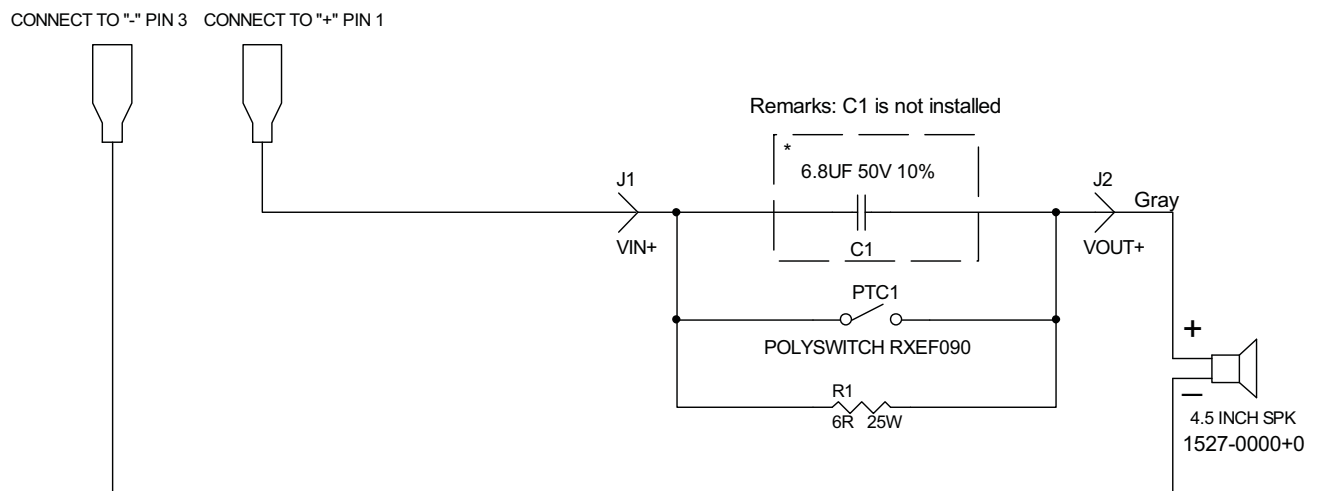


Figure 11. FreeSpace DS 40F 8 Ohm Version Wiring Diagram

SERVICE MANUAL REVISION HISTORY

Date	Revision Level	Description of Change	Change Driven By	Pages Affected
9/10	00	Document released at revision 00.	Service manual initial release	All
1/11	01	- New DS40F loudspeaker versions added. - New Universal Material numbers listed. - New Bose part numbers for DS40F parts added, anchor bolt, acorn nut and washer.	New speaker versions New parts added	7 15, 17
2/13	02	Added DS40 SE Ceiling Mount version information	ECN 52657	All
7/16	03	New ceiling mount bracket part number	New part number	7

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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