

FreeSpace[®] 360 Loudspeaker
Passive (FS360P)
Non-passive (FS360)

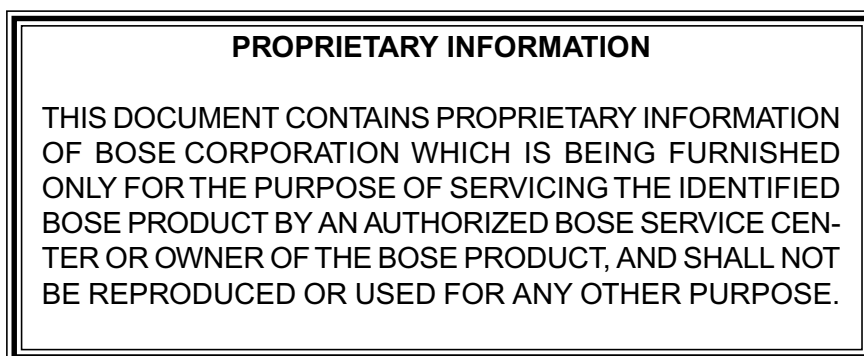


[Click here to go to table of contents](#)

Contents

Product Description	2
Specifications	2
Disassembly/Assembly Procedures	3
Figure 1. Wiring Diagram	3
Test Procedures	4
Figure 2. 4 Ohm Passive Version Equalizer Schematic Diagram	4
Figure 3. 70/100V Passive Version Equalizer Schematic Diagram	4
Main Part List	5
Figure 4. Exploded View	6
Equalizer PCB Part List	7
Packaging Part List	7
Figure 5. Packaging View	7
Figure 7. Equalizer PCB Component Layout	7
Figure 6. Position of EQ PCB on Driver	7

[Click here for FS360 Image](#)



CAUTION: The FreeSpace® 360P/360 loudspeaker contains no user serviceable parts. To prevent warranty infractions, refer servicing to warranty service centers or factory service.

WARRANTY INFORMATION

The FreeSpace 360P/360 loudspeaker is covered by a 5 year warranty

PRODUCT DESCRIPTION

The FreeSpace® 360P/360 is a full-range environmental loudspeaker intended for background music and paging. There are three versions. The FS360P 70V/100V, 25W version has an internal passive equalizer. The FS360P 4 Ohm, 25W version has an internal passive equalizer. The FS360 70V/100V, 25W version requires a Bose® FS360 active equalizer to be connected to or located in the amplifier.

The FreeSpace 360P/360 can be installed in-ground with approximately one-half of the speaker exposed above ground. It can also be permanently secured above ground on a horizontal surface such as a deck.

SPECIFICATIONS

External dimensions:	13.80" base diameter x 14.6" height (320 mm base diameter x 370 mm height)
Weight (packed system):	12.0 lbs. (5.4 kg)
Internal cabinet volume:	Top enclosure: 142 cubic inches (2.3 liters) Bottom enclosure: 659 cubic inches (10.8 liters)
Port:	Diffuser port: Tuned to 80 Hz Three connecting ports: Tuned to 180 Hz
Impedance (nominal):	Non-passive version: 214 Ohm, 70V transformer @ 25W 271 Ohm, 100V transformer @ 25W Passive version: 414 Ohm, 70V transformer @ 25W 852 Ohm, 100V transformer @ 25W Non-transformer version: 4 Ohms
Power Handling:	25W (70V, 100V) continuous per IEC-268-5, 100 hour duration
Sensitivity (1W, 1M):	80 dB SPL, free field, per IEC-268-5 (for octave-band centered at 400 Hz)

DISASSEMBLY/ASSEMBLY PROCEDURES

(Refer to Figure 4)

1. Mounting Plate Removal

1.1 Remove the four screws (20) that secure the mounting plate (10) to the base housing (14).

1.2 Lift off the mounting plate.

2. Mounting Plate Replacement

2.1 Align the mounting plate (10) to the base (14). Replace the four screws (20) that secure the mounting plate to the base.

3. Driver/Equalizer PCB Removal

Note: For versions without a passive equalizer, ignore references to the equalizer PCB.

3.1 Remove the three screws (6) that secure the driver protector (4) and the driver (1) to the cap housing (13).

3.2 Lift off the driver protector. The equalizer PCB is attached by a screw to the driver magnet. Work the driver with attached equalizer PCB out of the cap housing.

3.3 Cut the wires as close as possible from the driver terminal. Remove the screw that secures the equalizer PCB to the driver magnet.

4. Driver/Equalizer PCB Replacement

Note: For versions without a passive equalizer, ignore references to the equalizer PCB.

4.1 Referring to Figure 6, position the equalizer PCB on the driver and using the screw removed in procedure 3.3, attach the equalizer PCB to the driver (1) magnet. Attach the red wire to the positive (+) driver terminal and the black wire to the negative (-) driver terminal. Refer to Figure 1 Wiring Diagram.

4.2 Work the assembled driver and equalizer into the cap housing (13). Twist together any excess wire to prevent a wire buzz.

4.3 Align the driver protector (4), the driver and the driver gasket (2) to the cap housing. Replace the three screws (6) that secure the driver to the cap housing.

5. Transformer Removal

Note: For transformer versions only.

5.1 To gain slack in the wires, perform procedure 3.1 and 3.2 first.

5.2 Remove the four screws (8) that secure the transformer plate (11) to the cap housing (13). Lift up the transformer plate.

5.3 Make a note of the wiring configuration and then remove the wires from the transformer (3).

5.4 Remove the two nuts (9) that secure the transformer to the transformer plate.

6. Transformer Replacement

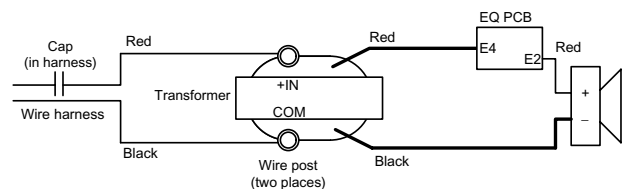
Note: For transformer versions only.

6.1 Align the transformer (3) to the transformer plate (11) and replace the two nuts (9) that secure the transformer to the transformer plate.

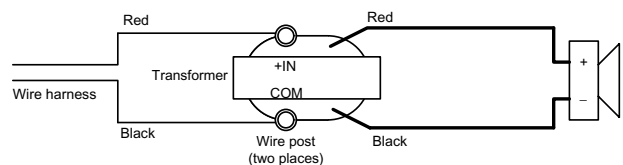
6.2 Referring to the wiring configuration notes taken in procedure 5.3 or to Figure 1 Wiring Diagram, attach the wires to the transformer.

6.3 Lower the transformer with attached transformer plate into the cap housing (13) and secure into place with four screws (8).

6.4 Use procedure 4.2 and 4.3 to replace the driver.



Passive Version



Non-passive Version

Figure 1. Wiring Diagram

TEST PROCEDURES

1. Phase Check

1.1 Referring to Figure 1, ensure proper wiring of the loudspeaker.

2. Rub and Tick Test

2.1 Apply a 35Vrms, 80Hz signal to the input of the loudspeaker.

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

3. Air Leak Test

3.1 Apply a (6Vrms for 4 Ohm version) (35Vrms for transformer version), 80Hz signal to the input of the loudspeaker.

3.2 Check for air leaks around the cabinet, driver, and transformer plate. Replace any gasket that is found to be defective.

4. Sweep Test

4.1 Apply a (6Vrms for 4 Ohm version) (35Vrms for transformer version), 50Hz signal to the input of the loudspeaker.

4.2 Sweep the signal generator from 50Hz to 5kHz. Listen for buzzes, rattles or extraneous noises from the driver or internal parts. A whooshing noise from the port around 80Hz is acceptable. Replace any driver that buzzes. Redress any wire that buzzes.

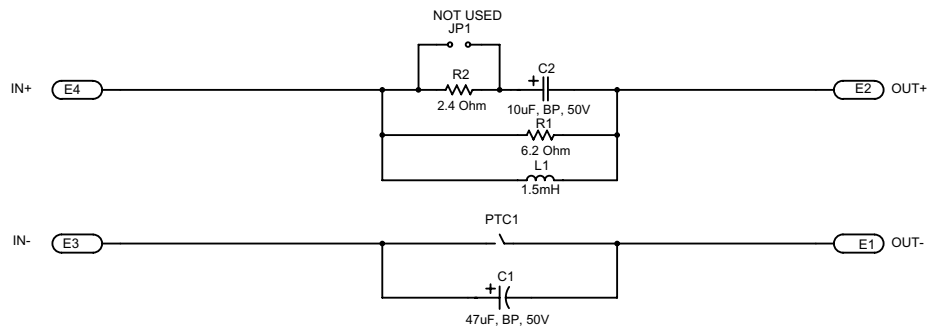


Figure 2. 4 Ohm Passive Version Equalizer Schematic Diagram

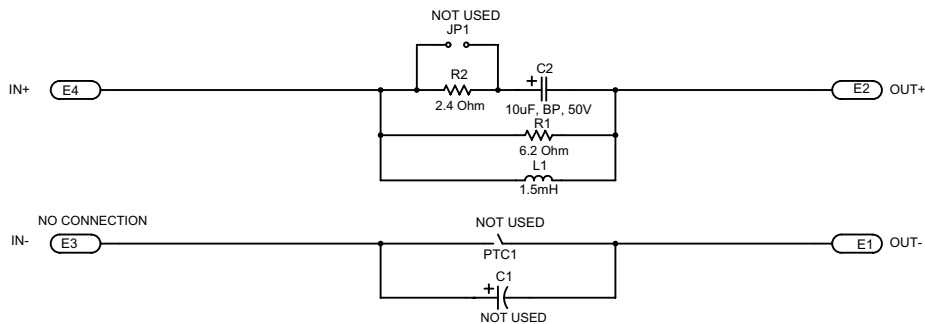


Figure 3. 70/100V Passive Version Equalizer Schematic Diagram

MAIN PART LIST

(Item numbers are referenced in Figure 4)

Item Number	Description	Part Number	Qty.
1	4.5" Driver (active equalization version)	196241	1
	4.5 " Driver With Equalizer PCB (transformer passive version)	254390	1
	Consists of:		
	Driver, 4.5", Environmental	254379	1
	Equalizer PCB	254378	1
	Screw, Tapp, 8-32x.375, HEXW, HEX	134517-06	1
	Washer, Fender, Non-Magnetic	181700-01	1
1	4.5 " Driver With Equalizer PCB (4 Ohm passive version)	.NA	1
	Consists of:		
	Driver, 4.5", Environmental	254379	1
	Equalizer PCB	.NA	1
	Screw, Tapp, 8-32x.375, HEXW, HEX	134517-06	1
	Washer, Fender, Non-Magnetic	181700-01	1
2	Gasket, Driver, 4.5"	116572	1
3	Transformer, 70V, 25W	196236	1
	Transformer, 100V, 25W	196237	
4	Protector, Driver	120003	1
5	70V Wire Harness, With Inline 6.8 uF Cap. (passive version) (25 uF, 150V, 20%, BP Capacitor)	254428 125959	1
	100V Wire Harness, With Inline 4.7 uF Cap. (passive version) (4.7 uF, 100V, 5%, NP Capacitor)	252370-001 252369-475	
	Wire Harness (active equalization and 4 Ohm passive version)	191929	
6	Screw, TT, 8-32x.75, HEX, SL/XREC (passive version)	256070-08	3
	Screw, TAPP, 8-32, PAN Head (active equalization version)	145727-06	
7	Screw, TAPP, 8-10, .75, HEXW, HEX (passive version)	178835-12	3
	Screw, TAPP, 8-11, PAN, XREC (active equalization version)	193902-12	
8	Screw, TAPP, 8-32x.375, PAN, XRC/S	145727-06	4
9	Nut, Hex, 8-32, KEPS	100413-2	2
10	Plate, Mounting	193903	1
11	Plate, Transformer, Black	191927-001	1
12	Grille, Diffuser, Black	191926-001	1
13	Housing, Cap, Granite Green (passive version)	190691-005	1
	Housing, Cap, Green (active equalization version)	190691-003	
14	Housing, Base, Granite Green (passive version)	190690-005	1
	Housing, Base, Green (active equalization version)	190690-003	

Note: The active equalization version requires the use of an external Bose® active equalizer. The passive version has a passive equalizer PCB mounted to the rear of the driver.

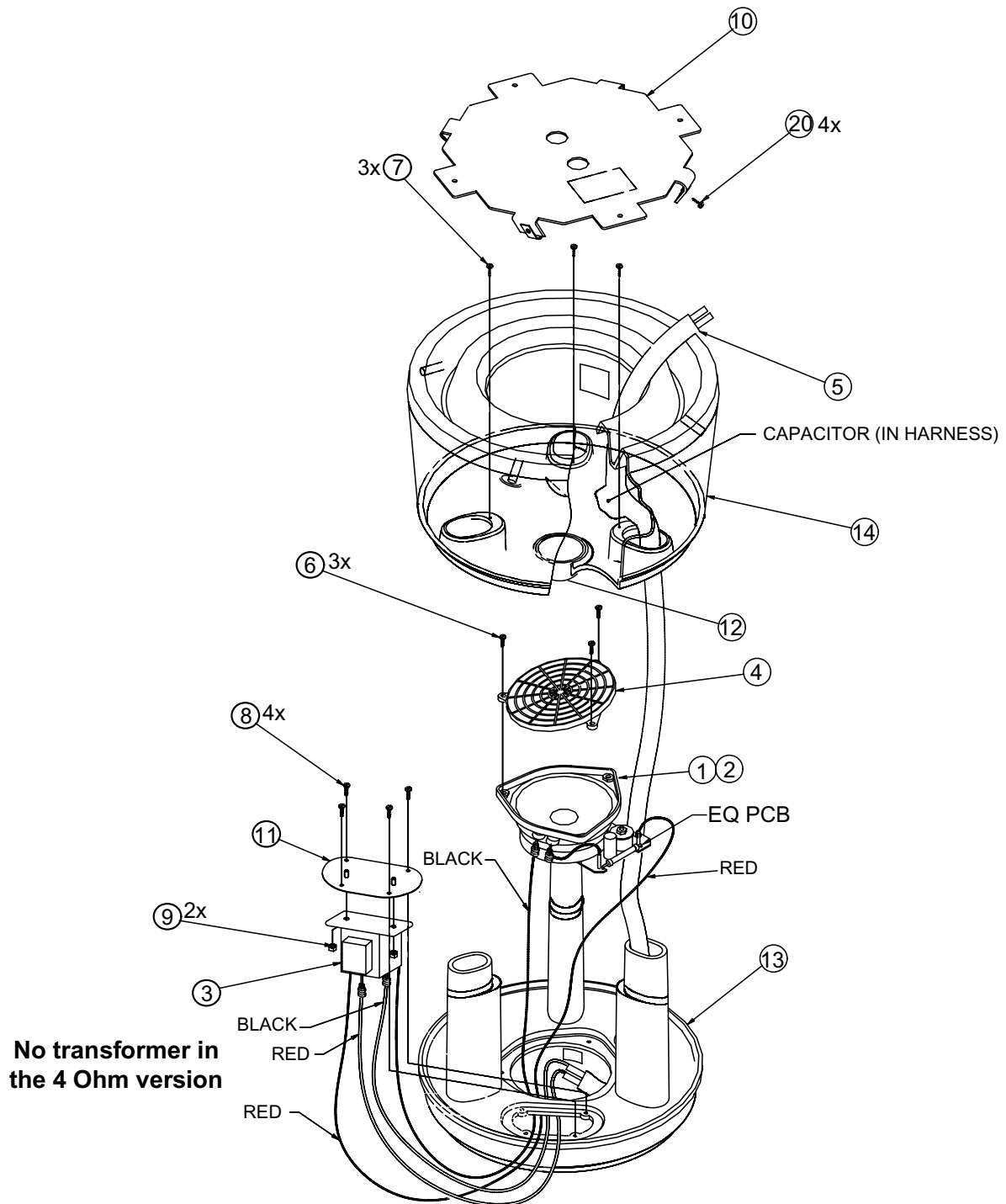


Figure 4. Exploded View

EQUALIZER PCB PART LIST

(Passive version)

Reference Designator	Description	Part Number	Qty.	Note
R1	6.2 Ohm, WW, 5W, 10%	125605-6R2	1	
R2	2.4 Ohm, WW, 5W, 10%	125605-2R4	1	
C1	47uF, EL, BP, 85, 50V, 20%	136548	1	4 Ohm version only
C2	10 uF, EL, BP, 85C, 50V, 20%	138365	1	
L1	1.5 mH	139571	1	
PTC1	Polyswitch, 60V, RXE135	190348-135	1	4 Ohm version only
-	Screw, Mach, 6-32, PAN, XREC	181701-01	1	
-	Nut, HEX, 6-32	103234-632	1	
-	Washer, Fender, Non-Magnetic	181700-01	1	
-	Pin, Grooved, .52x.34x.045	129000-5234	2	

PACKAGING PART LIST

Item Number	Description	Part Number	Qty.
15	Manual, Owner's 254405 (PRO installer) 259124 (end user)		1 each
16	Carton	254393	1
17	Bag, Poly, 48X24X14X2 Mil	128238	1
18	Connector, Wire Nut, 16-22 AWG	188199-001	2
19	Bag, Poly, 3x3x2 Mil	107305	1
20	Screw, Tapp, 8-11, PAN, XREC, 1.75	193902-28	4
21	Washer, Flat, .438" Diameter, #8	137923-08	4
22	Connector, Butt Splice, 10-22 AWG	198380-2218	1

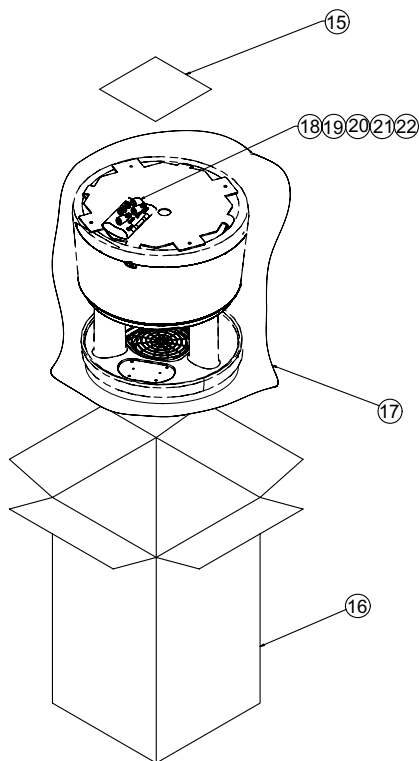


Figure 5. Packaging View

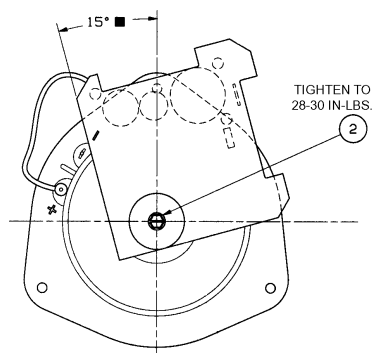


Figure 6. Position of EQ PCB on Driver

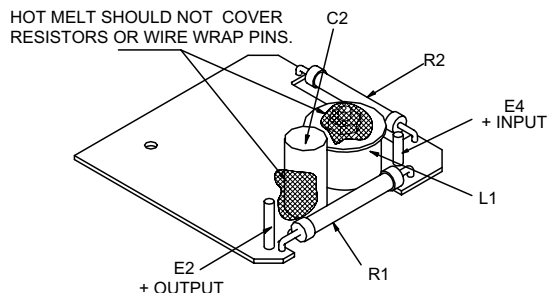


Figure 7. Equalizer PCB Component Layout

Specifications and Features Subject to Change Without Notice

BOSE®
Better sound through research®

Bose Corporation
The Mountain

Framingham Massachusetts USA 01701

P/N 197458 REV. 02 6/2000 For Technical Assistance or Part Orders, Call 1-800-233-4408