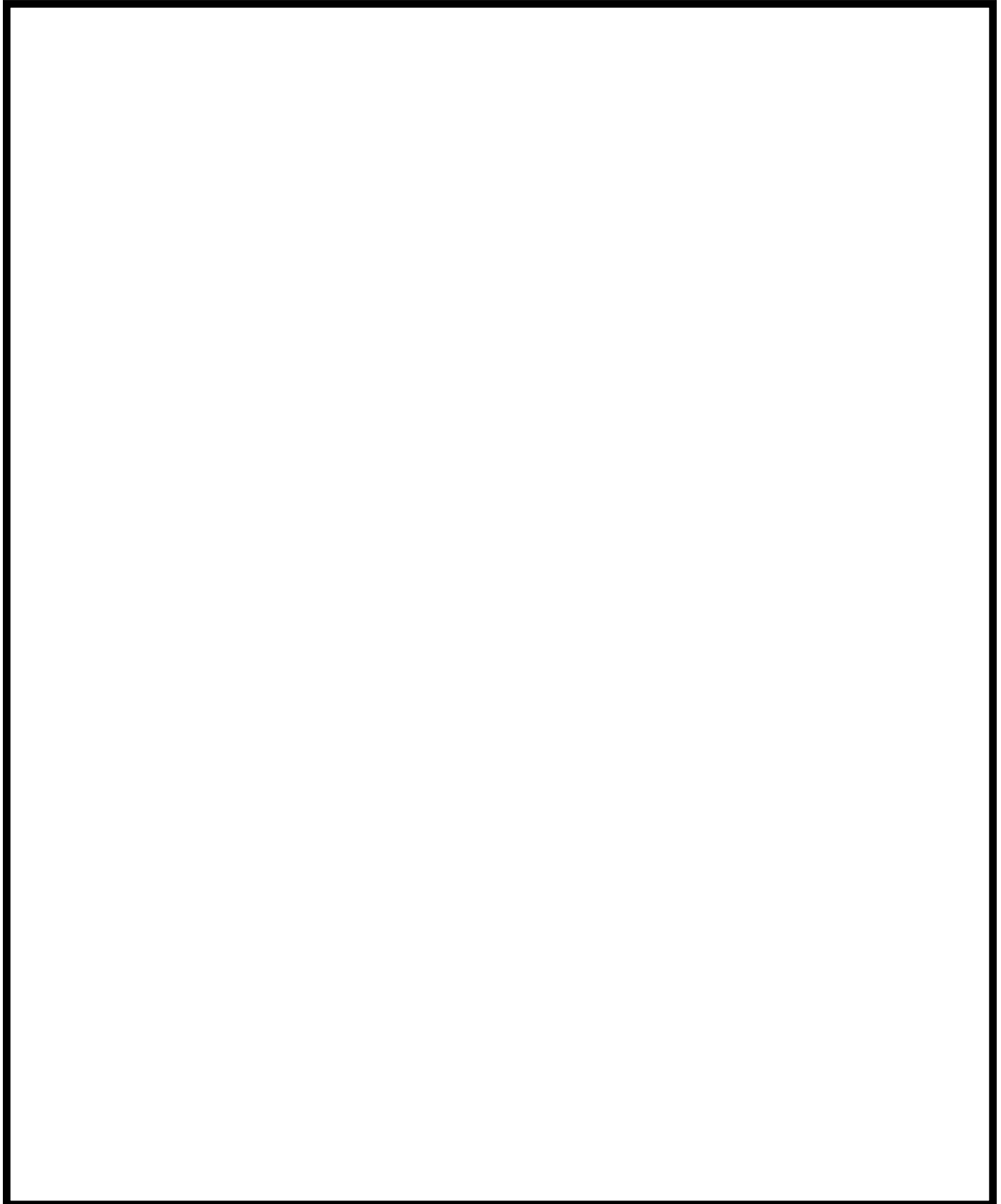


**301<sup>®</sup> SERIES IV DIRECT/REFLECTING<sup>®</sup> SPEAKER SYSTEM**



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## PROPRIETARY INFORMATION

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# BOSE® 301® SERIES IV TECHNICAL DESCRIPTION

The **BOSE** 301 Series IV speaker is a replacement for the 301 Series III and 4.2® Series II speakers. It is a passive, two-piece (mirror image stereo pair) home loudspeaker in a bookshelf configuration. The 301 Series IV is designed for use with standard amplifiers, receivers and other related home audio components.

The 301 Series IV speaker utilizes separate inward and outward firing tweeters to achieve consistent stereo imaging over a broad listening area (Stereo Everywhere® performance), while maintaining a spacious sound stage.

Aesthetically, the 301 Series IV speaker features molded plastic right and left side caps mounted to a vinyl covered, particle board enclosure. This construction eliminates the use of edge-banding, and maintains differentiation with competitors due to horizontal placement on the bookshelf.

The sum of all these unique features makes the 301 Series IV speaker capable of reproducing the wide dynamic range demanded by today's advanced recordings without strain or loss of clarity.

## SPECIFICATIONS

<b>Speaker Compliment:</b>	One 8" (20 cm) woofer One 3" (7.6 cm) tweeter One 2" (5.08 cm) tweeter
<b>Nominal Impedance:</b>	8 Ohms
<b>IEC Power Rating:</b>	Min: 10 Watts per channel Max: 75 Watts per channel
<b>Cabinet:</b>	All Black, all Warm Gray or Rosewood finish w/Black End Caps
<b>Shipping Weight:</b>	27.7 lbs. (12.6 kg) per pair
<b>Speaker Dimensions:</b>	10.25"H x 16.38"W x 9.5"D

# DISASSEMBLY/ASSEMBLY PROCEDURES

**Note:** Refer to **Figure 3** for the following procedures.

**1. Grille Removal:** Both the front grille (**1**) and the side grille (**3**) are held in place by a snap-fit and are easily removed by hand. To remove, CAREFULLY pull the grille away from the speaker.

**2. Woofer Removal/Replacement:**

**2.1** Remove the front grille as indicated in Procedure 1.

**2.2** Remove the 4 screws (**11**) holding the woofer (**9**) in place.

**2.3** Lift the woofer out and cut the wires connected to the woofer terminals as close to the terminals as possible.

**2.4** Strip the wires and connect to the replacement woofer. Make sure that the Red wire is connected to the positive (+) terminal, both Black wires are connected to the negative (-) terminal and both Yellow wires are connected to the woofer's "dummy" terminal, (no solder joint at this terminal). Dress or twist wires to prevent buzzing.

**2.5** Remount the woofer to the cabinet using the four screws.

**3. 3" Tweeter Removal/Replacement:** In order to remove the tweeter it will first be necessary to remove the woofer from the enclosure.

**Note:** The positive terminal of the tweeter is marked with a Red dot.

**3.1** Remove both the front and side grilles as indicated in Procedure 1.

**3.2** Remove the 4 screws that secure the woofer to the enclosure and lift the woofer away from its opening.

**3.3** Remove the #8-32 screw (**6**) from the back of the gasket backed tweeter (**4**) and separate the

tweeter from the molded bracket portion of the endcap.

**3.4** Cut the wires connected to the tweeter as close to the tweeter terminals as possible.

**3.5** Strip the wires and connect the replacement tweeter. Make sure the Yellow wire is connected to the positive (+) terminal and the Black wire is connected to the negative terminal (-).

**3.6** Remount the tweeter using the #8-32 screw.

**3.7** Remount the woofer using the four #8-11 screws.

**4. 2" Tweeter Removal/Replacement:** In order to remove the tweeter it will first be necessary to remove the woofer from the enclosure.

**Note:** The positive terminal of the tweeter is marked with a Red dot.

**4.1** Remove the front grille only, as indicated in Procedure 1.

**4.2** Remove the 4 screws that secure the woofer to the enclosure and lift the woofer away from its opening.

**4.3** Remove the #8-32 screw from the back of the gasket backed tweeter (**12**) and separate the tweeter from the molded bracket portion of the endcap.

**4.4** Cut the Yellow wire and the lamp lead connected to the tweeter as close to the tweeter terminals as possible.

**4.5** Strip the Yellow wire and connect the replacement tweeter. Make sure the Yellow wire is connected to the negative (-) terminal and the lamp is connected to the positive terminal (+).

**Note:** To replace just the lamp or both the tweeter and lamp it will be necessary to remove the tweeter by following procedures outlined in **section 4**.

**4.6** Remount the tweeter using the #8-32 screw.

**4.7** Remount the woofer using the four #8-11 screws.

**5. Remounting the Grilles:** Both side and front grilles can only be mounted one way.

**5.1** Side Grille: Align the feet with the fast-on grommets. Press in lightly until the grille feet are fully inserted into the grommets and the snap is engaged.

**5.2** Front Grille: Align the feet with the four mounting holes on the end caps and press the grille in lightly until the snaps are engaged.

# TEST PROCEDURES

**Note:** Before performing any tests, remove both grilles by following the grille removal instructions in the disassembly section of this manual.

**1. Woofer Rub and Tick Test:** Connect the output of a signal generator to the input of a power amplifier. Connect the output of the power amplifier to the input terminals of the speaker under test, (see **Figure 1**). Adjust the frequency of the generator to 45 Hz and the amplifier output to 8 Vrms. No extraneous noises such as rubbing, scraping or ticking should be heard.

**Note:** To distinguish between normal suspension noise and rubs or ticks, slightly displace the cone of the woofer with your fingers. If the noise can be made to go away or get worse, it is a rub or tick and the woofer should be replaced. If the noise stays the same, it is normal suspension noise and the woofer is fine. Suspension noises will not be heard with program material.

**2. Woofer Sweep Test:** Sweep the signal generator from 10 Hz to 5 kHz using the 8 Vrms signal. There should be no loud extraneous sounds. If there are any loud buzzes or distortion, replace the woofer.

**Note:** There should not be any buzzes or rattles from within the speaker cabinet. Redress any wire or component that buzzes.

**3. Tweeter Sweep Test:** Reduce the amplifier output to 3 Vrms and continue sweeping from 5 kHz to 15 kHz. Replace either of the tweeters in which buzzing or distortion occurs.

**4. Air Leak Test:** Using an 8 Vrms signal, set the generator frequency to 45 Hz. Listen for air leaks around the woofer, tweeters and cabinet seams (glue joints). Any air leaks will be heard as a sputtering or hissing sound. The repair of air leaks can be made by repositioning the transducer gaskets.

**5. Woofer Phase Test:**

**Note:** In this test, supply voltage should only be momentarily applied to the speaker input terminals to avoid possible damage to the speaker.

Set a DC power supply to **8 volts**. To ensure that the woofer is connected in phase, connect the positive lead of the supply to the positive (+) speaker input terminal and the negative lead to the negative (-) input terminal. The woofer should move outwards with the application of the supply voltage.

Test Connections, 301® Series IV Speaker

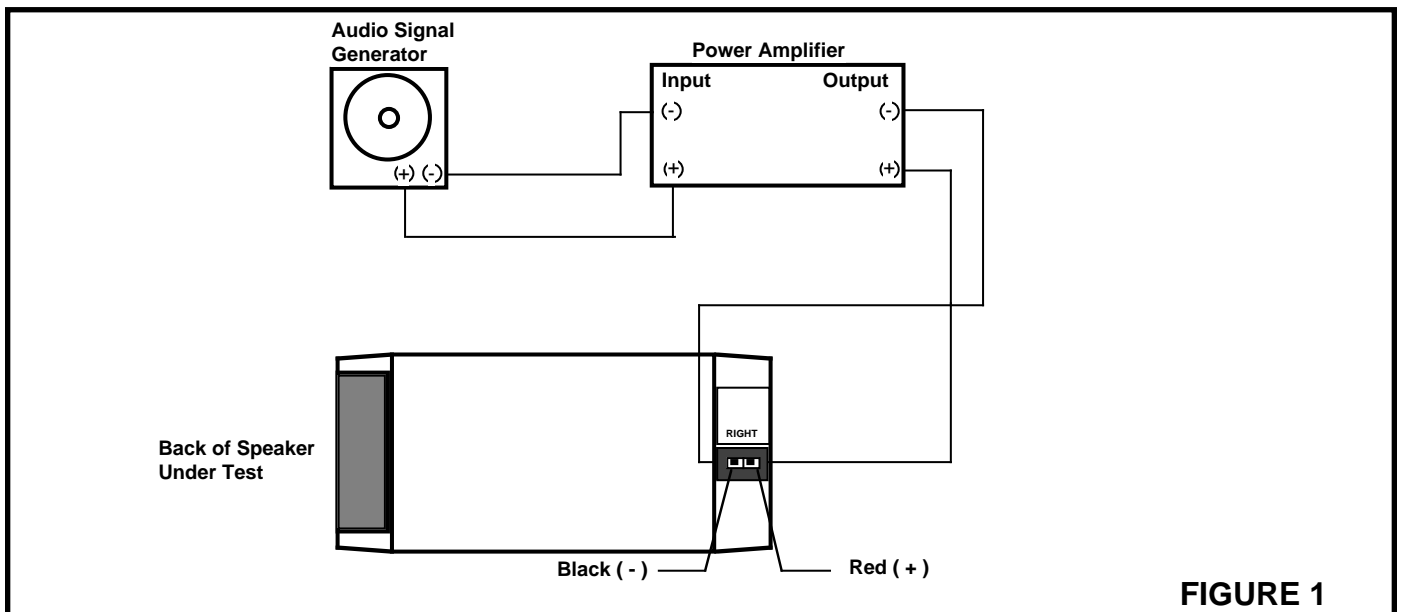


FIGURE 1

This ensures that the woofer and speaker input terminals are wired in phase, (see Schematic Diagram, **Figure 2**).

- 6. Tweeter Phase Test:** Remove 4 screws and lift the woofer carefully away from the speaker cabinet in order to access the terminal cup. Check the wiring on the terminal cup and on both sets of tweeter terminals against the schematic in **Figure 2**. This ensures that both tweeters are wired in phase.

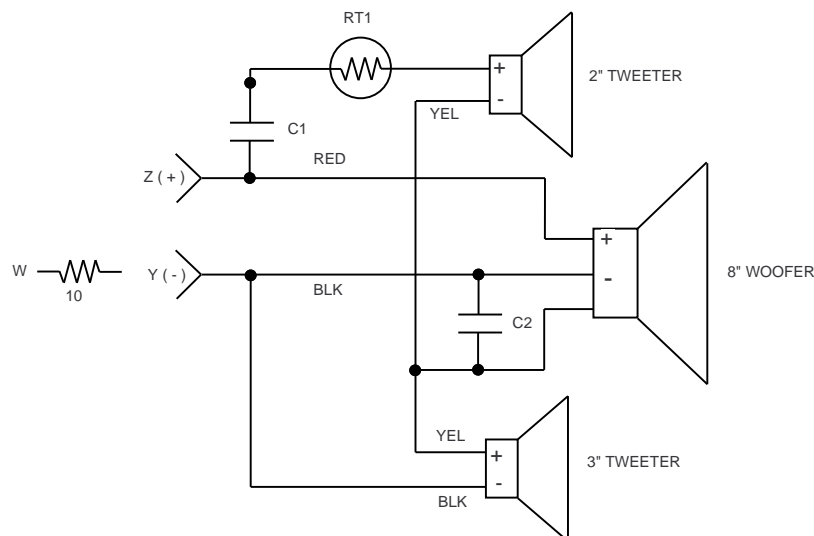
**Note:** Due to the inaccessibility of the tweeters, it may be necessary to remove the tweeters from their respective endcaps. Refer to the **Disassembly Procedures** on replacing tweeters and for separating the tweeters from the endcaps.

- 7. Crossover Testing:** The crossover is tested by measuring the voltage across a 10 Ω, 5 watt resistor in series with the loudspeaker. See **Figure 2** and the following **Table**. If output voltage is not within the limits shown, check connections and component values for C1, C2, and RT1.

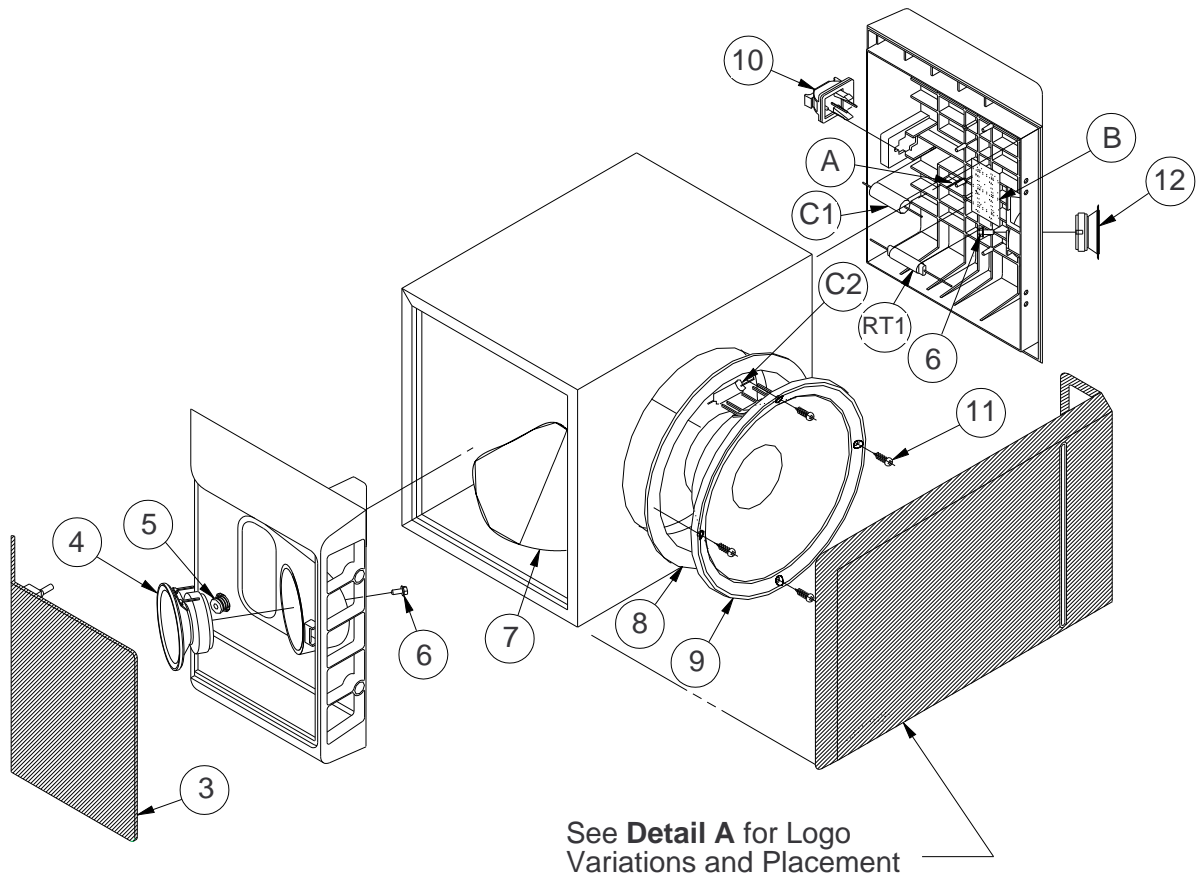
### Crossover Measurements

Transfer Function Test	Input Voltage (Vrms z, W)	Input Frequency, Position	Output Terminals	Output Voltage (Vrms)
1	2.00 ± 0.10	2.5 kHz, ±75 Hz M	W, Y	.90 High Limit  .50 Low Limit
2	2.00 ± 0.10	8.0 kHz, ±240 Hz C	W, Y	1.30 High Limit  .90 Low Limit

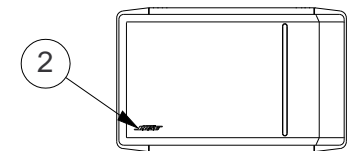
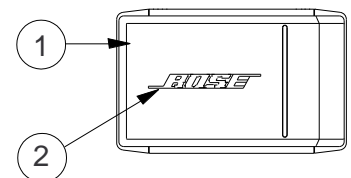
### Schematic Diagram



**FIGURE 2**



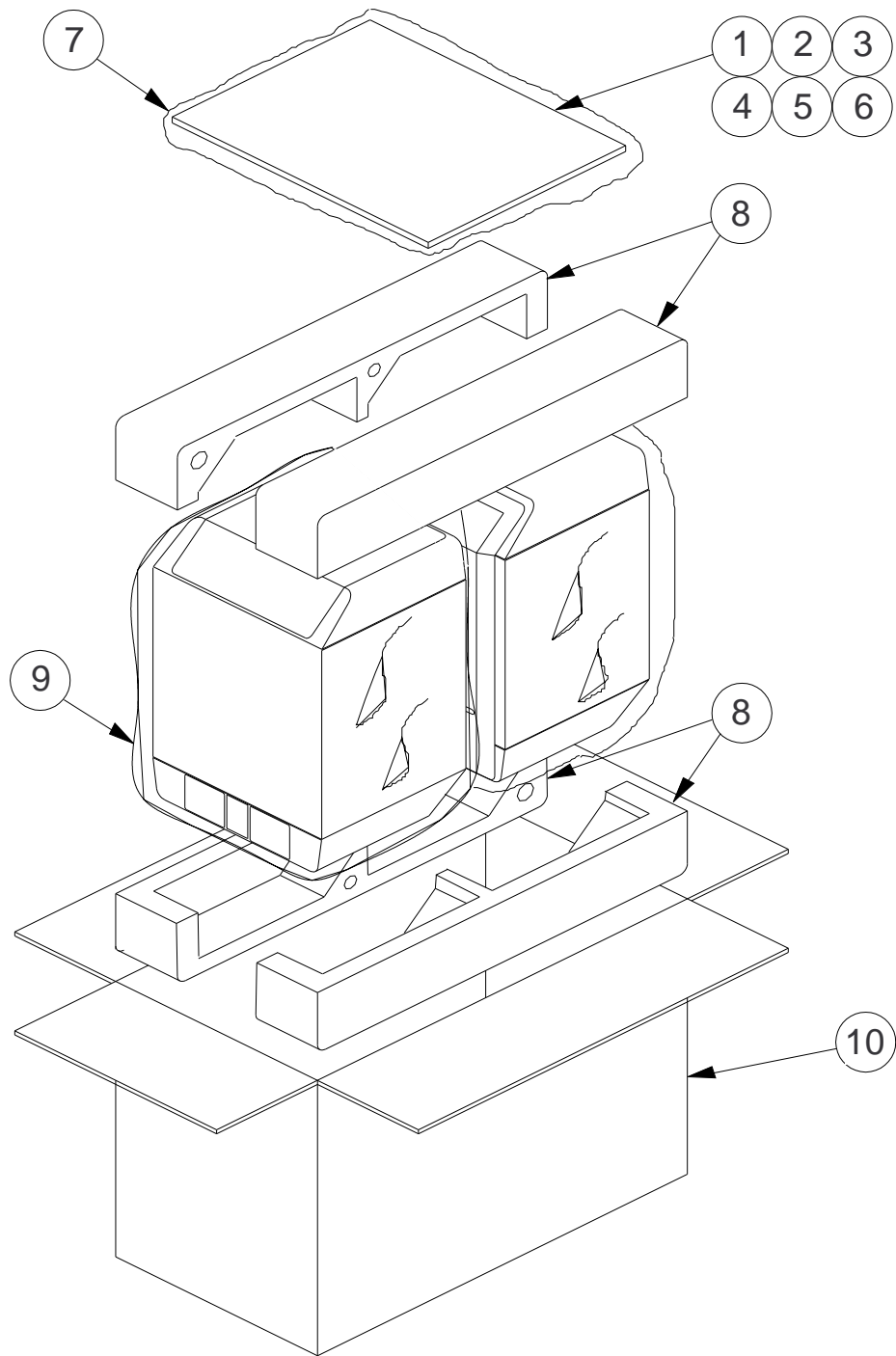
**Note:** Exploded view of end caps is to show relative location of crossover components as well as the tweeters and is not intended to represent a serviceable part.



**Detail A**  
Logo Variations & Placement  
( Left Speaker Shown )

**FIGURE 3: 301® Series IV Main Assembly Drawing**





**FIGURE 4: 301® Series IV Packaging Parts Drawing**

### 301® Series IV Main Assembly Parts List (Figure 3)

Item Number	Description	Part Number	Qty. Per Speaker	Reference
1	Grille Assembly, Front: Brown/Grey or Black	181851-01 181851-00	1 1	
2	Nameplate, Logo: Large or Small	122812-0 185208-01	1 1	
3	Grille Assembly, Side: Dark Brown or Black	181856-01 181856-00	1 1	
4	Tweeter, 3" Gasket Backed	266161	1	11/4/2002
5	Grommet, Grille Socket	176068	2	
6	Screw, Machine, 8-32 x .375, HexW, Hex	121441-06	2	
7	Batting, Polyester, 12 x 2	116082	1	See Note
8	Gasket, Woofer, 8"	187395-208	1	
9	Woofer Assembly, 8"	181870-001	1	
10	Connector, Barrier, 2 Position	181865	1	
11	Screw, Tapp, 8-11 x .75, Pan	172672-12	4	
12	Tweeter, 2", Gasket Backed	181862-SP	1	10/1/2002

**Note:** This item is not normally stocked as a service part.

### 301® Series IV Crossover Parts List (Figure 3)

Symbol or Item Number	Description	Part Number	Qty. Per Speaker Assy.	See Note
C1	Capacitor, 4.5uF, 50V, 10%, Elect.	131428	1	
C2	Capacitor, 22uF, 50V, 10%, Elect.	184956	1	1
RT1	Lamp, Green dot	141989	1	
A	Connector, Terminal, Wirewrap	181864	1	2
B	Tape, Foil	103597	3"	2

**Notes:**

1. C2 is mounted to the surface of the woofer basket using foam tape P/N 118223.
2. This part is not normally stocked as a service part.

### 301 Series IV Main Packaging Parts List (Figure 4)

Item Number	Description	Part Number	Qty. Per Carton	Reference
1	Owner's Manual	181869	1	
2	List, Warranty Service Stations	122766	1	
3	Card, Info, Warranty, Multi Language	181460	1	
4	Card, Info, Warranty, U.S.	181357	1	
5	Brochure, All Products	141478	1	
6	Bumper, Foot, Adhesive Backed, 8-ct	173012-08	1	
7	Polybag, 14.38 x 9.87 x 2 mil	103351	1	
8	Packing, Corner Post Set	181867	2	
9	Polybag, 13.5 x 35 x 9.5 x 2.5, 5 mil	114522	2	
10	Carton, RSC	181868-01	1	

SPECIFICATIONS AND FEATURES SUBJECT TO CHANGE WITHOUT NOTICE

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