

# Bowers & Wilkins TECHNICAL SUPPORT

## Distributor Service Technical Manual 804 D3 Speakers



Produced by: T. Taylor

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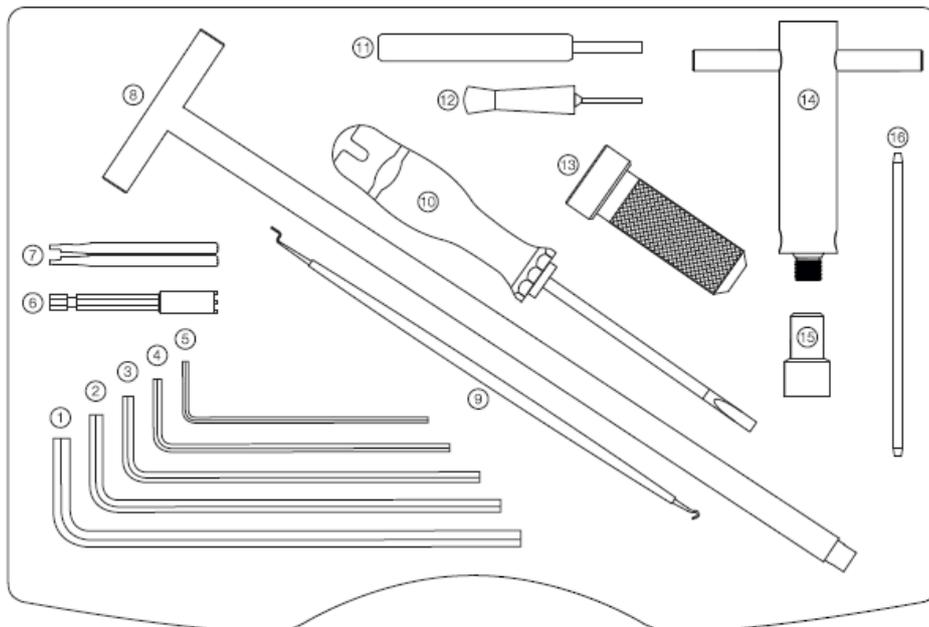
## Revision History

Date	Revision	By	Details
22 MAR 2016	1	TT	Initial Release

## 800 Series Tool Kit

Bowers & Wilkins

800 Series Diamond  
Toolkit 2015



- |                             |                                    |                                     |   |
|-----------------------------|------------------------------------|-------------------------------------|---|
| ① HH38172 - Allen Key 6.0mm | ⑤ HH38202 - Allen Key 2.5mm        | ⑨ HH15164 - Spring Hook Tool        | ⑬ HH37842 - HF Assembly Tool            |
| ② HH38237 - Allen Key 5.0mm | ⑥ HH33782 - Terminal Nut Tool      | ⑩ HH15148 - Screwdriver 4mm x 100mm | ⑭ HH15121 - MF Removal Tool             |
| ③ HH38229 - Allen Key 4.0mm | ⑦ HH37214 - HF Grille Removal Tool | ⑪ HH11169 - Molex Tool              | ⑮ HH15180 - MF Removal Tool Adaptor Cap |
| ④ HH38210 - Allen Key 3.0mm | ⑧ HH15156 - HF Removal Tool        | ⑫ HH38199 - Tyco Tool               | ⑯ HH36994 - Tommy Bar                   |

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## Content

Front Cover	Page 1
Revision History & 800 Series Tool Kit	Page 2
Content	Page 3
Introduction	Page 4
Technical Sheet	Page 5
1. Tool and Test Equipment	Page 6
2. Cosmetic Inspection	Page 7
3. First Functional Test	Page 8
4. Basic Wire Connections to Speakers	Page 8
5. Bi-Wiring Connections to Speakers	Page 9
6. Bi-Amplification Connections to Speakers	Page 9/11
7. Vertical Bi-Amplification Connection to Speakers	Page 11/12
8. 804D3 Mechanical Drawing & Spare Parts List	Page 13/15
9. Wiring Diagram for 804D3	Page 16
10. Tweeter Motor Disassembly	Page 17/20
11. Tweeter Mechanical Drawing & Parts	Page 21
12. Tweeter Unit Removal	Page 22/24
13. Mid - Range Removal	Page 25/28
14. Draw Bar Assembly Removal	Page 28/30
15. 5" MF Cabinet Tube Removal	Page 30/31
16. Upper and Lower Base Unit Speaker Removal	Page 31/32
17. Upper 6" Cabinet Tube Removal	Page 33/34
18. Lower 6" Cabinet Tube Removal	Page 34/35
19. Terminal Tray Removal	Page 36/37
20. HF Crossover Assembly Removal	Page 38/40
21. LF Crossover Assembly Removal	Page 40/41
22. HF Crossover Drawing & Circuit	Page 42
23. HF Parts List	Page 43
24. LF Crossover Drawing & Circuit	Page 44
25. LF Parts List	Page 45
26. Final Functional Test (Stethoscope Examination)	Page 45/46
27. Cleaning	Page 47
28. Product Test List	Page 48
29. Test Result Sheet	Page 49/51

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## Introduction

Please read this manual carefully before commencing servicing!

Only qualified and authorised technicians should attempt to service this product.

## Antistatic Precautions (ESD)

Electronic devices and components are extremely sensitive to electrostatics (ESD). Always observe ESD precautions when handling electronic modules or PCBs. Never exchange boards with a different revision number, unless authorised by B&W

Always use B&W original type replacement parts.



Whenever you see this warning, always take electrostatic precautions.

## Chemicals and Solvents (COSHH)

Solder's, fluxes and cleaning agents are used widely in the servicing of electronic products. Such substances are hazardous to health; therefore always take precautions to protect yourself and others when using any hazardous substance. Protective clothing and equipment if provided should be worn. If in doubt refer to the COSHH.

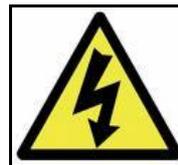


Be aware whenever you see this warning.

## Electricity

Electricity is the most common hazard that will be confronted when building and testing product.

Always take precautions when working on live equipment or with any test equipment that uses electricity. Note: Do not wear an ESD wrist strap when working on live electricity.



Be aware whenever you see this warning.

## Personal Protection Equipment (PPE)

PPE is equipment that will protect the user against health or safety at work. It can include items such as safety helmets and hard hats, gloves, eye protection, high visibility clothing, safety footwear and safety harnesses.



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## Technical Sheet

<b>Technical Features:</b>	Diamond Tweeter, Continuum Cone FST, Turbine Head, Aerofoil Cone Bass Units, Flow Port, Optimised Matrix and Solid Body Tweeter.
<b>Description:</b>	3-way vented-box system
<b>Drive units:</b>	1x ø25mm (1 in) diamond dome high-frequency 1x ø130mm (5 in) Continuum cone FST™ midrange 2x ø165mm (6.5 in) Aerofoil cone bass units
<b>Frequency range:</b>	20Hz to 35kHz
<b>Frequency response:</b>	24Hz to 28kHz (+/-3dB from reference axis)
<b>Sensitivity:</b>	89dB SPL (2.83Vrms at 1m)
<b>Harmonic distortion:</b>	2 <sup>nd</sup> and 3 <sup>rd</sup> harmonics (90dB, 1m on axis) <1% 70Hz - 20kHz & <0.3% 120Hz - 20kHz
<b>Nominal impedance:</b>	8Ω (minimum 3.0Ω)
<b>Recommended AMP power:</b>	50W - 200W into 8Ω on unclipped programme
<b>Cable Impedance:</b>	0.1Ω cable impedance
<b>Dimensions:</b>	Height: 1180mm - Width: 340mm - Depth: 480mm
<b>Net weight:</b>	33Kg (73lb)
<b>Cabinet &amp; Grille:</b>	Rosenut/Black – Gloss Black/Black & Satin White/Grey

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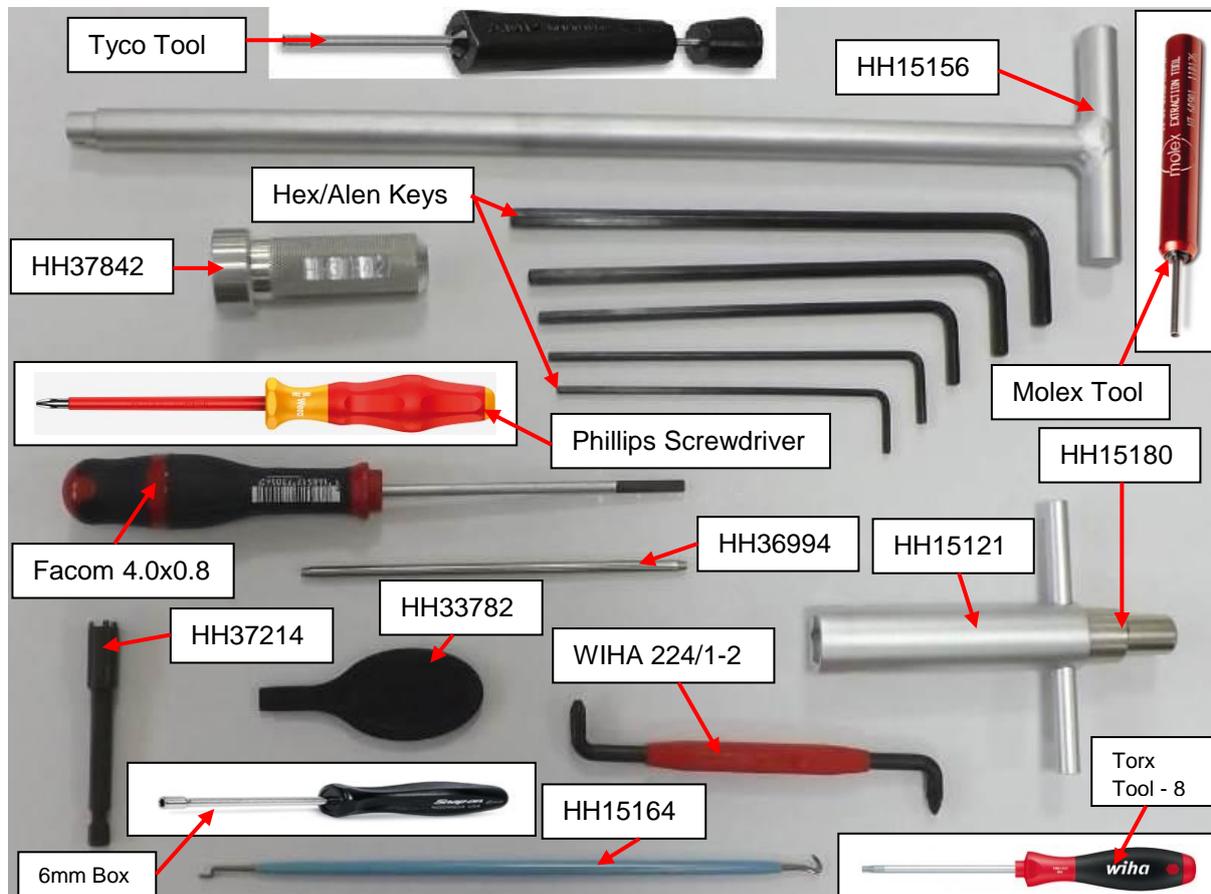
## 1. Tools and Test Equipment

The tools listed below in Figure: 1 are required to carry out the initial testing and repair of the 804 D3 Speakers, , the specialized tools are included in the 800 Diamond Tool Kit.



1 x HF Retaining Bolt Tool HH37842, 1 x Grill Removal Tool HH37214, 1 x HF Motor Removal Tool HH15156, 1 x Terminal Nut Runner HH33782, 1 x Hex/Aln Key 3mm, 1 x Phillips Screwdriver, 1 x Facom Screwdriver 4.0x0.8, 1 x Offset Screwdriver WIHA 224/1-2, 1 x Tyco tool, 1 x Molex Tool, 1 X Mid Extractor Tool HH15121, MF Adaptor Cap HH15180, 1 x Tommy Bar HH36994, 1 x 6mm Box Spanner, 1 x Torx T8, 1 x Amplifier, Spring Hook HH15164, 1 x CD Player, 1 x Stethoscope, 1 x Signal Generator and Gloves.

### Required Tools



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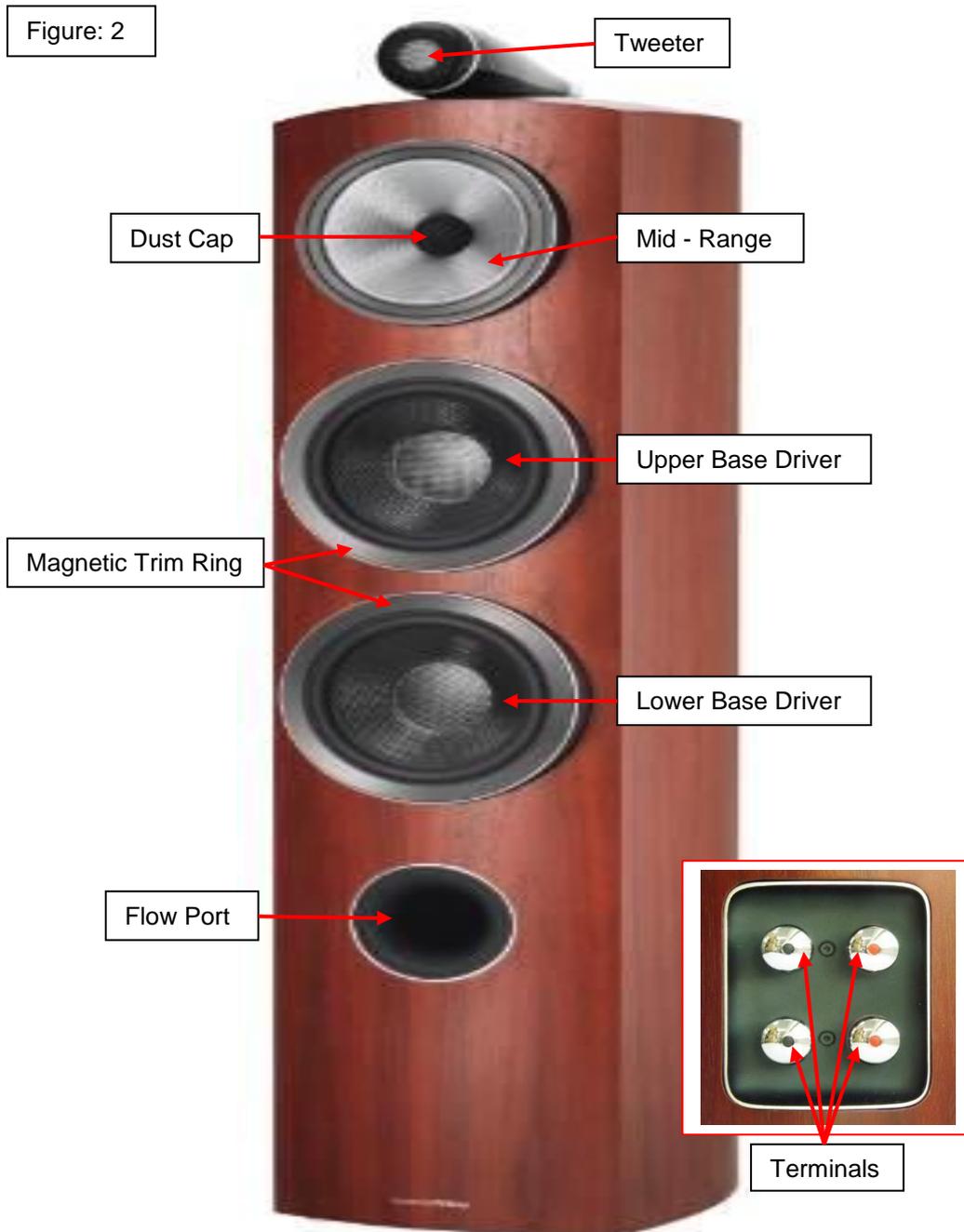
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## 2. Cosmetic Inspection

This is visual check and should be done before any work commences to clarify that there is no external damage to the 804 D3 Speaker see Figure: 2.

**Note:** It is recommended that PPE gloves are used for this function.

- Check the cabinets
- Check both tweeters, Mid - Range & Upper/Lower Base Drivers
- Check the Trim Rings
- Check both Flow Ports
- Check both sets of terminals trays



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## 3. First Functional Test

Confirm the reason for returning the 804 D3 Speakers, carry out a functional test using the equipment shown below in Figure: 3.

Figure: 3



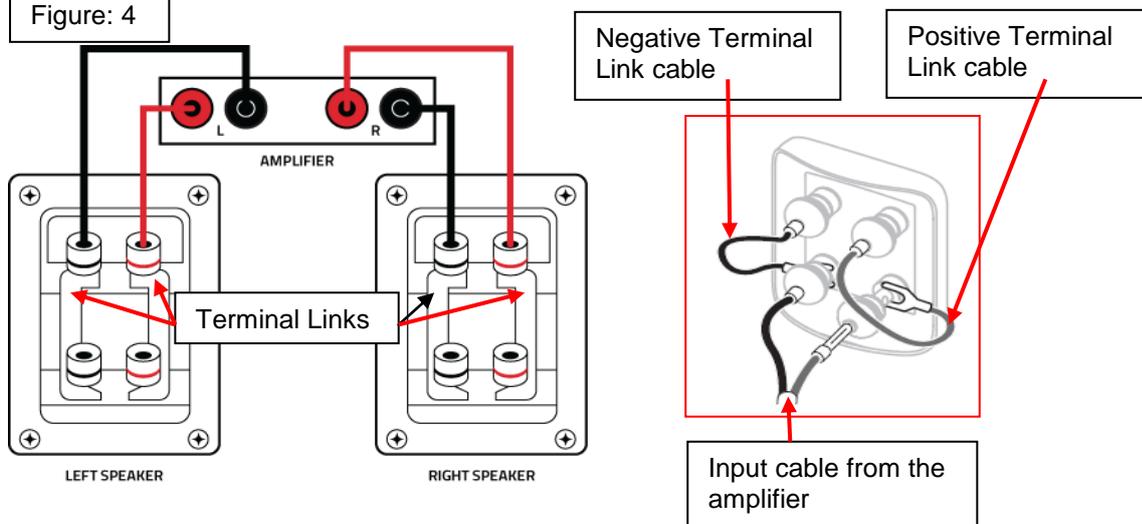
## 4. Basic-wire Connections to Speakers

B&W 804D3 have speaker wire connections to allow for bi-amplification or bi-wiring.

Connection of a basic audio system where there is only one connection from the amplifier is very simple and is shown in Figure: 4. Connect the speakers using the regular left and right speaker wire connections and ignore the second set of terminals.

B&W speakers are shipped with Terminal Links connecting the two sets of terminals that allow the speaker to be connected as a traditional loudspeaker.

Figure: 4



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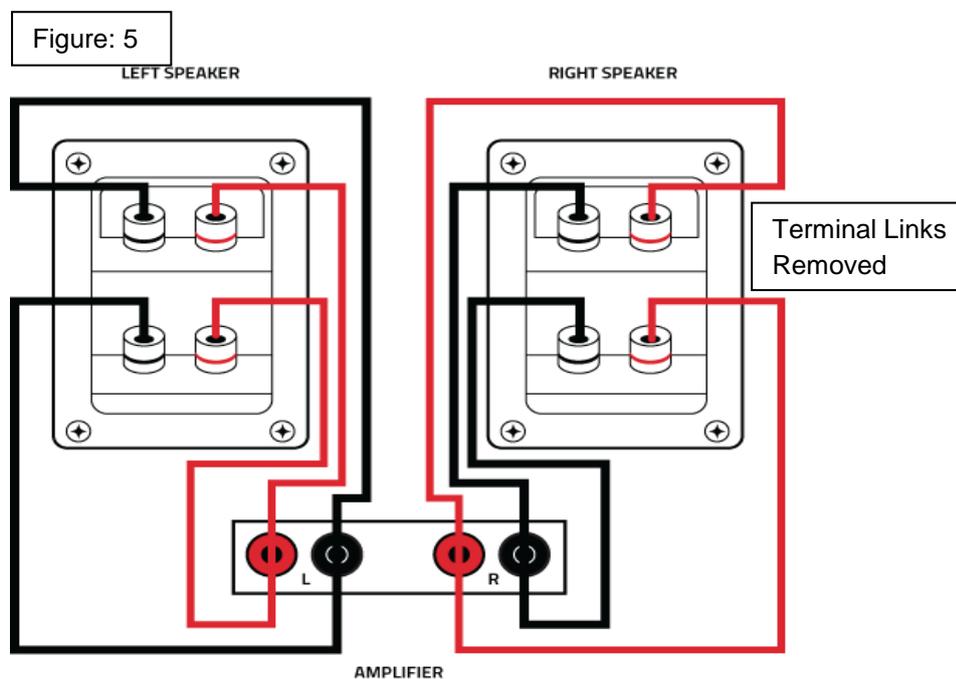
## 5. Bi-wiring Connections to Speakers

The Bi-wire connection separates the woofer/midrange from the tweeter section.

These two sets of terminals allow the speakers to be split into two independent sections. The split connects the mid and high frequency drivers to one set of terminals and the low frequency driver to the other pair. In the bi-wire connection the Terminal Links are removed and separate sets of speaker wire are run from the amplifier to each section as shown in Figure: 5.

### Connect speakers in the bi-wire mode:

- Ensure that your system is powered OFF.
- Remove the Terminal Links from speakers (this separates the LPF & HPF).
- Connect each amplifier channel to its respective speaker section as shown.



## 6. Bi-Amplification Connections to Speakers

Bi-amplification is the use of two amplifiers for both speakers with one amplifier connected to the woofer section of a loudspeaker while the other is connected to the tweeter section. With this arrangement each amplifier operates over a restricted frequency range. This restricted range presents each amplifier with a much simpler job and each amplifier is less likely to "influence" the sound in some way.

### Connect speakers in the bi-amplification mode:

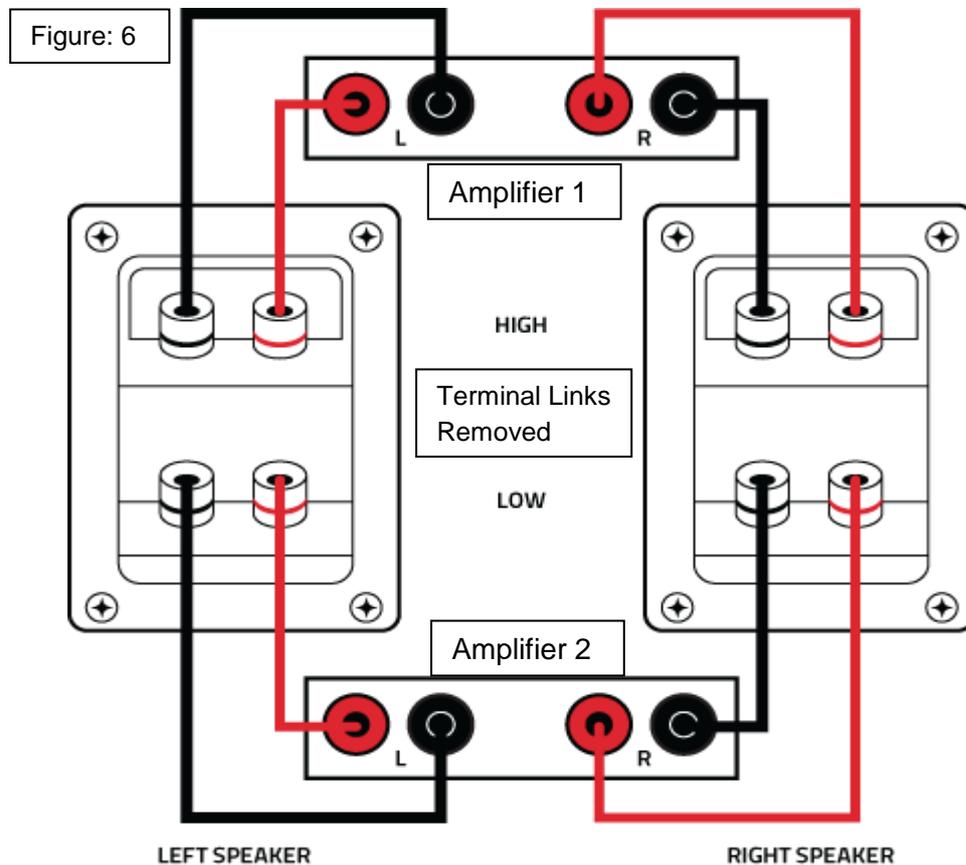
- Ensure that your system is powered OFF.

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- Remove the Terminal Links from each speaker (this separates LPF & HPF).
  - Connect each amplifier channel to its respective speaker section as shown in Figure: 6.
- Figure: 6.

Set the level controls on the amplifiers such that the signal will arrive at all speaker terminals at the same power-volume level. If your amplifiers are identical, it is usually sufficient to set all the amplifier level controls the same. The speaker's built-in crossover is designed to match the efficiency of all the individual drivers (tweeters, midranges, and woofers). When using the bi-amplifier connection you must directly deal with some of these issues by adjusting levels according to your listening preference.



The following advice assumes that you have a pre-amplifier and two power amplifiers. Ideally, the power amplifiers should be identical models. Here are the steps to connect speakers in the Bi-Amplification mode.

- a. Turn everything OFF and wait at least 30 seconds for the power amplifiers to shut down.

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- b. If present, remove the bi-wire links from each speaker. The Bi-Wire links normally connect the woofer/midrange and tweeter sections.
- c. Connect each power amplifier channel to its respective speaker section. The amplifier used for bass frequencies would connect to the bass (woofer or low frequency) terminals of each speaker. Similarly, the power amplifier used for treble (high frequency) connects to the HF (high frequency or tweeter) terminals. Ensure that you observe proper phasing of the speaker cables – that is red to red, black to black.
- d. Connect the output of the preamplifier to the appropriate inputs of each power amplifier. You may need 'Y' cables or connectors.

Above, we have shown our suggested setup using two stereo power amplifiers; one power amplifier for bass, the other for treble. This arrangement allows minimum confusion regarding connections as the method falls in line with the labelling of the input and output terminals and sockets.

If your amplifiers are not identical, use the more powerful amplifier for the low sections and the cleaner (better sounding) amplifier for the high sections.

## **7. Vertical Bi-Amplification Connections to Speakers**

Another method known as 'Vertical Bi-Amplification' exists where identical power amplifiers are used for each Speaker.

This is setup by using one channel in the amplifier for bass signals, the other channel for treble signals.

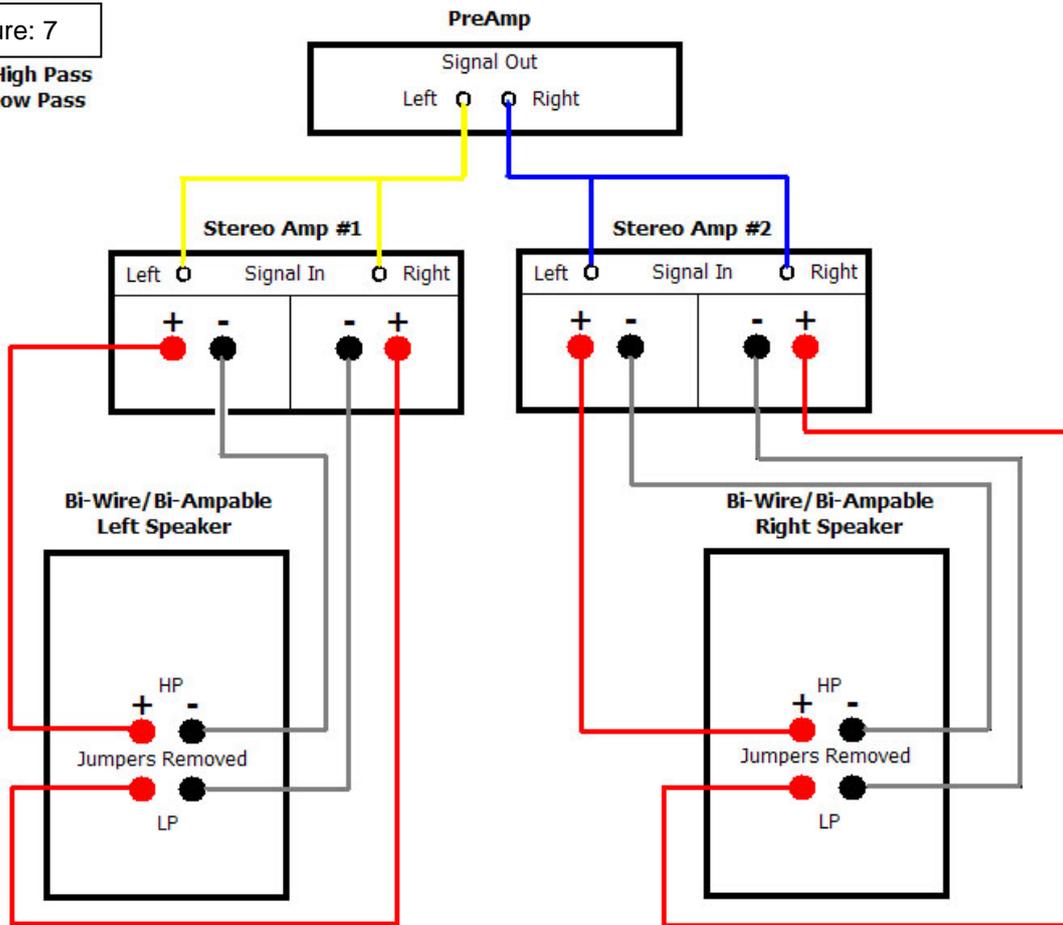
In this situation the LH output from the preamplifier is sent to one power amplifier connected to the LH speaker; the RH output is sent to the power amplifier connected to the RH speaker.

An example is shown below in in Figure: 7.

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Figure: 7

HP= High Pass  
LP= Low Pass



Note: In this diagram the Left Channels of each Amplifier are wired to the Top binding posts of the corresponding Speakers and the Right Channels to the Bottom binding posts.

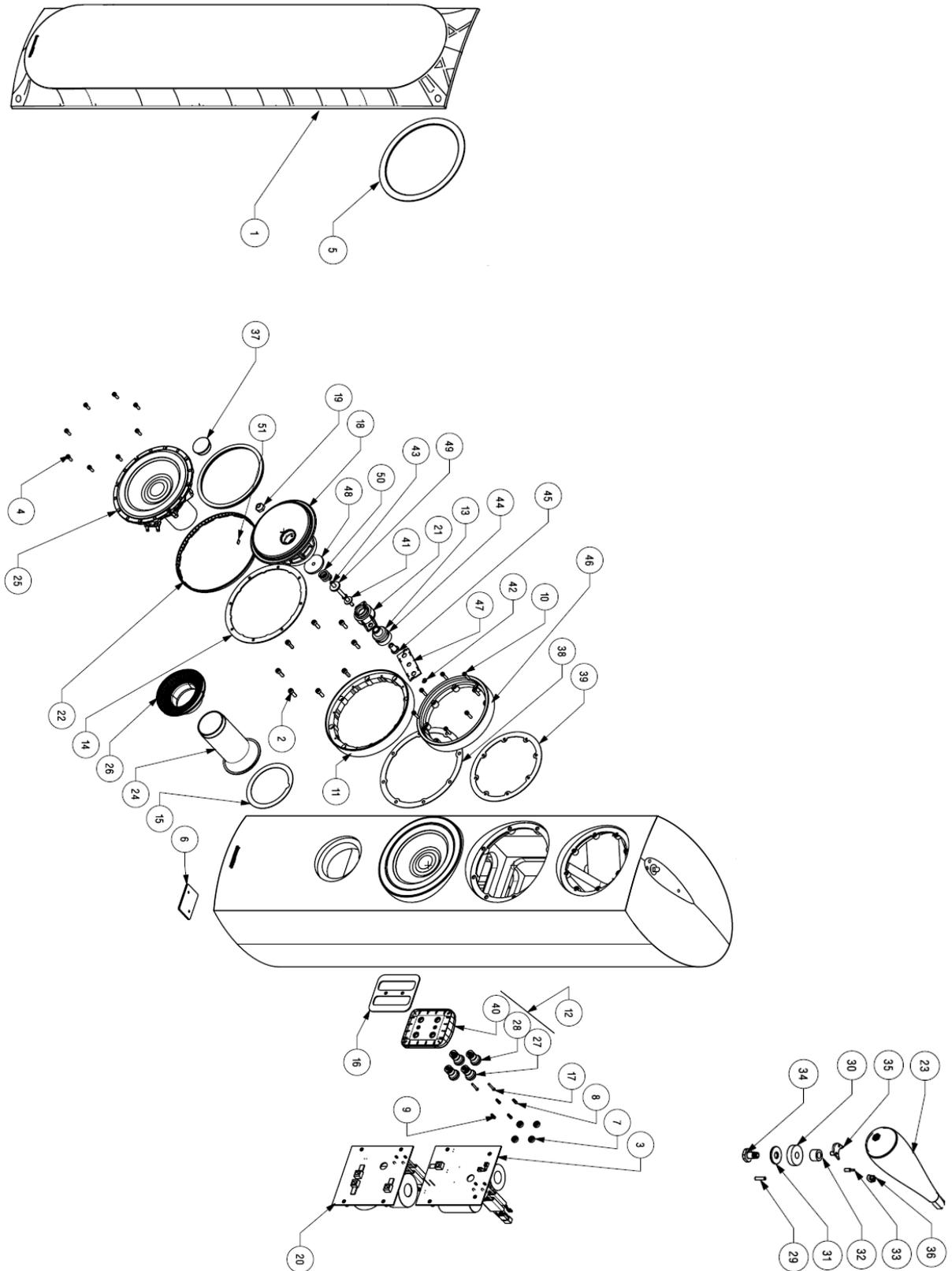
You can have it opposite with the Right Channels of each Amplifier wired to the Top binding posts of the corresponding Speakers and the Left Channel to the Bottom binding posts.

It does not matter. Just keep it symmetrical.

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## 8. 804D3 Mechanical Drawing & Spare Parts



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## 804D3 Spare Parts

51	nxm10000088802000	Gasket Neoprene 5x8x0.8	GG15482	GG15482	1
50	nxm10000086795000	Comp Spring od 18.3 wire 2.8 x 19lg	HH37664	HH37664	1
49	nxm10000087615000	Washer M6 20 x 1.5 St Stl	HH37737	HH37737	2
48	nxm10000086802000	Sleeve – 804 D3 MF Spring stop	MM11789	MM11789	1
47	nxm10000085213000	Plate – MF Snubber 804 D3	BB29793	BB29793	1
46	nxm10000086626000	5 Inch MF Cabinet Tube Parallel fit	CC69604	CC69590	1
45	nxm10000088486000	Drawbolt Fixing rear – dia 15 head	HH37923	HH37923	1
44	nxm10000088484000	lock sleeve – 804 D3 MF	HH37958	HH37958	1
43	nxm10000086800000	Drawbar – 804 D3 St stl – snub & spring	HH37680	HH37680	1
42	nxm10000086506000	Circlip – 4mm id – 9.3mm od	HH37591	HH37591	1
41	nxm10000070483000	WASHER M6 x16 x 0.8 STL ZINC	HH05142	HH05142	2
40	nxm10000062504000	804-5 D2 Term Tray Black/Silver – (A9509	MM05690	MM05690	1
39	nxm10000081092000	Gasket 5 Inch Nut Ring to Pod	GG14958	GG14958	1
38	nxm10000081081000	Gasket 6 Inch Nut Ring to Pod	GG14931	GG14931	2
37	nxm10000056801000	Dust Cap Foam 31mm profile – 685 S5	DD05843	DD05843	1
36	nxm10000072001000	Isolator Pad Cab to Small Tweeter Rear	MM10839	MM10839	1
35	nxm10000072005000	Isolator Pad Cab to Small Tweeter Front	MM10820	MM10820	1
34	nxm10000089729000	800 NG HF Strut Small Extension Stl	HH37990	HH37990	1
33	nxm10000082673000	800 NG HF Body Anti-Rotation Pin	HH37362	HH37362	1
32	nxm10000082252000	Tweeter Mounting Post Isolator Foam	FF26646	FF26646	1
31	nxm10000091631000	Nylon Washer 11.70 I/D 30.0 O/D 3.0thk	HH38318	HH38318	1
30	nxm10000084175000	Sealing Foam HF – 800 NG	FF13005	FF13005	1
29	nxm10000072356000	Dowel Pin A2 Stainless Steel P1206.05-20	HH33099	HH33099	1
28	nxm10000062553000	TERMINAL ASSEMBLY RED – E0470	CC60984	CC60984	2
27	nxm10000062564000	TERMINAL ASSEMBLY BLACK – E0470	CC60992	CC60992	2
26	nxm10000091343000	Port Assy 50mm Satin Black 800 NG	PP43060	PP43060	1
25	nxm10000069405000	6 Inch LF Assembly	LF26573	LF26573	2
24	nxm10000056097000	Port Tube Inc Flare 50X100mm Abs Black	PP15814	PP15814	1
23	nxm10000068980000	Tweeter Unit 800 NG	HF01414	HF01341	1
22	nxm10000069244000	6 Inch Tube to Chassis Isolator	II14052	II14052	2
21	nxm10000070664000	Sleeve MF Fixing Front Loading	MM10464	MM10464	1
20	nxm10000081146000	804 D3 LF CROSSOVER PCB ASSEMBLY	XX16667	XX16667	1
19	nxm10000070716000	MF Centraliser Nut	HH36463	HH36463	1
18	nxm10000070512000	5 Inch MF Assembly	LF26727	LF26735	1
17	nxm10000091624000	Scr M3 x 20 CSK 6-SPLINE HRUC+CED MA	HH36056	HH36056	2
16	nxm10000086394000	Gasket Term Tray 800 D3 series	GG15342	GG15342	1
15	nxm10000073690000	50mm Port Gasket 800 NG	GG14451	GG14451	1
14	nxm10000073760000	Gasket 6 Inch Tube to Chassis 800 NG	GG14478	GG14478	2
13	nxm10000085711000	REAR ISOLATOR shore 0 (White PP)	II14532	II14532	1
12	nxm10000062563000	804-5D2 Terminal Tray Assembly – A9505	ZT01059	ZT01059	1
11	nxm10000067248000	6 Inch Cabinet Tube	CC64939	CC68675	2
10	nxm10000070707000	Scr M4x16 Cap Hd CR3 Black	HH36595	HH36595	8
9	nxm10000084831000	TERMINAL PLUG BLACK	PP30659	PP30659	2
8	nxm10000084829000	TERMINAL PLUG RED	PP30647	PP30647	2
7	nxm10000084845000	Lock Nut – C103 Copper – Au 0.1 □M	HH32956	HH32956	4
6	nxm10000084822000	Spacer Serial Number 800 Series	MM08019	MM08019	1

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5	nxm10000077487000	6 Inch Trim Ring & Magnet Assembly 800NG	RR17779	RR17787	2
4	nxm10000067381000	Scr M4x12 Cap Hd CR3 Black	HH02089	HH02089	16
3	nxm10000081145000	804 D3 HF/MF CROSSOVER PCB ASSEMBLY	XX16659	XX16659	1
2	nxm10000068645000	SCREW M5x16 CAP HD SKT Z/B	HH32404	HH32404	16
1	nxm10000079010000	800 FL1 Grille Assembly	ZG06033	ZG05673	1
ITEM	PART NAME	DESCRIPTION	PART # LIGHT	PART # DARK	QTY

HEADCLOTH BD153 280MM X 345MM	FF10367
Reinforced Card Packaging Corner	PP19518
HF Headcloth 146 x 80mm	PP21946
Bag White Cloth - 1300x580mm - 804 D2	PP31534
SPACE FILLER ACCY BOX 800 SERIES	PP36110
Poly Top Right 805 S3 (ST)	PP41831
Poly Top Left 805 S3 (ST)	PP41858
Poly Bottom 805 S3 (ST)	PP41866
Carton 804 D3	PP41920
804 D3 Cardboard Cap	PP42560
DESCRIPTION	PART #
PACKAGING	

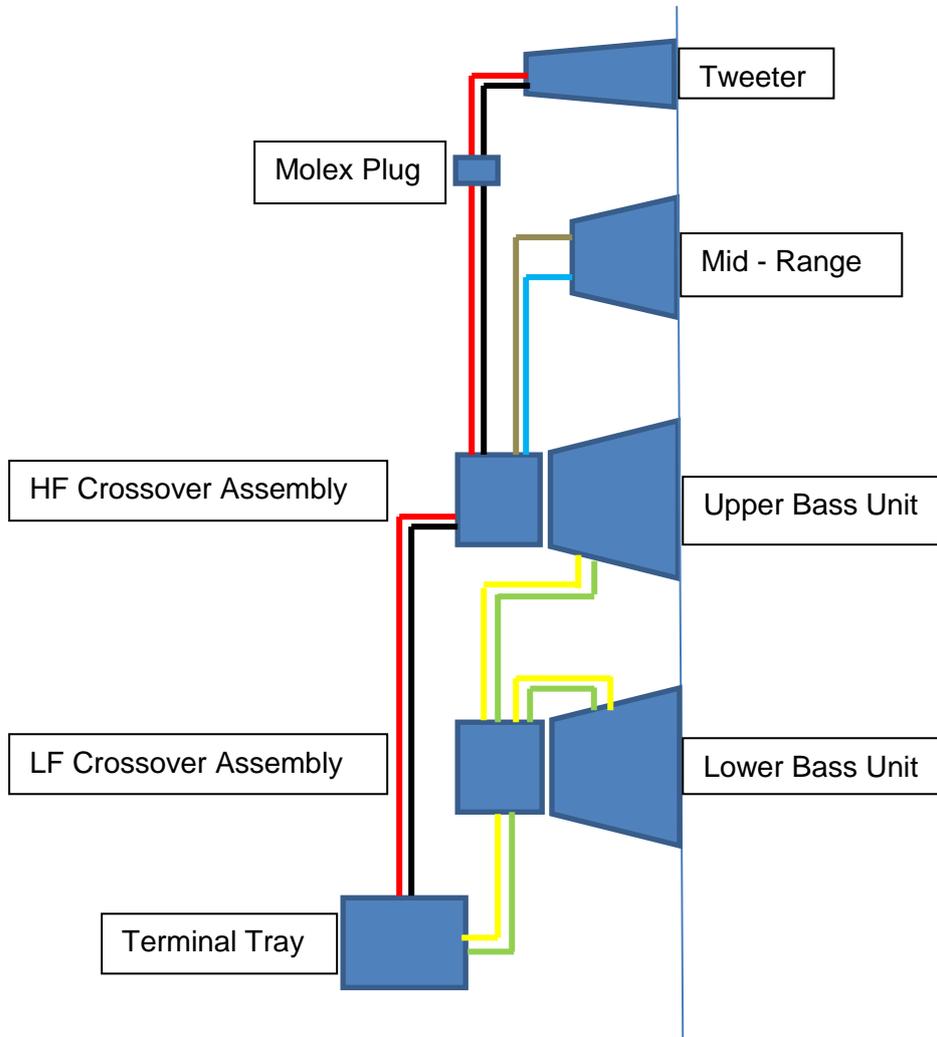
FLOOR SPIKE 800NG	FF26549
Foam Bung 2 Part (550D- 32ID/OD)x45-50mm	FF24295
803/4/5/HTM Grey Acc Carton (2014)	PP40142
804 S3 (FL1) Acc Fitment	PP41904
ACCESSORY PHANTOM - 804D3	ZE02607
Foot Rubber Opaque with M6 x 12 Insert	FF10669
Micro Fibre Cleaning Cloth 800 series	FF24926
MANUAL 805D3/804D3	II14346
800 D3 CRM Book (2015)	II14354
Anti-Static Cleaning Cloth Leaflet	LL10385
Generic Warranty Leaflet 5yr	LL12335
800 D3 Registration/Letter Card (2015)	LL13773
800 D3 Registration Card 210x210	LL13838
Harness Link C103 Spade to Banana	ZX09652
DESCRIPTION	PART #
SUNDRIES	

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## 9. Wiring Diagram for 804D3

The drawing below shows the wiring for each of the Speakers to the HF & LF Crossovers and the Terminal Tray.

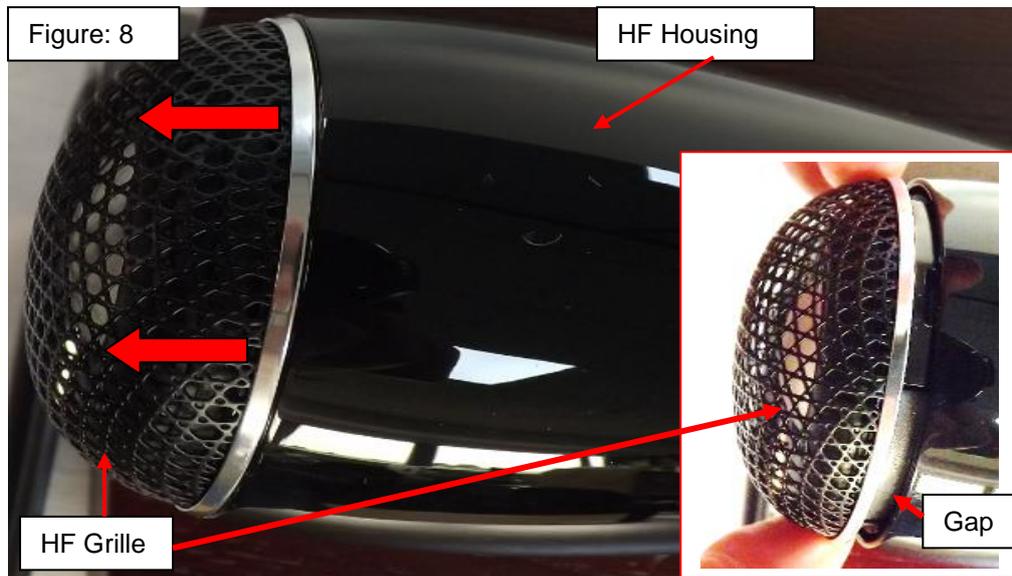


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## 10. Tweeter & Motor Disassembly

To remove the HF Grille it will need pulling forward from the Tweeter housing as shown in Figure: 8.



Once the gap appears around the HF Grille insert the HF Grille Removal Tool HH37214 into the grille release slot as shown in Figure: 9. Make sure the tool is in the correct orientation and then rotate the Grille in a clockwise motion to release the HF Grille.



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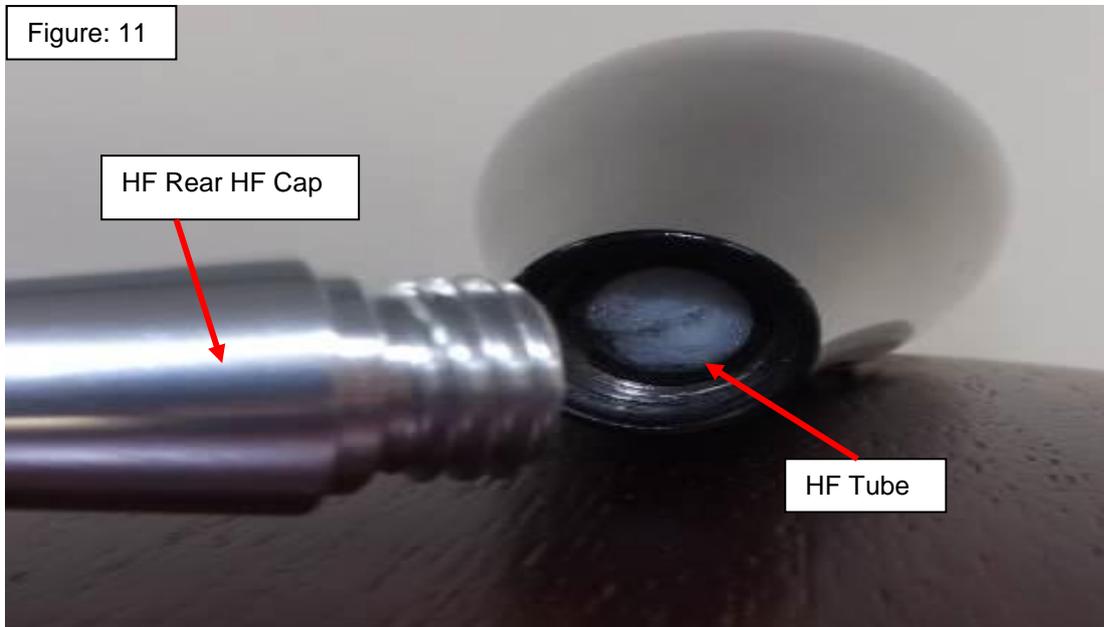
Now use a 4mm Allen/Hex to unscrew the rear HF Cap as shown in Figures: 10.

Figure: 10



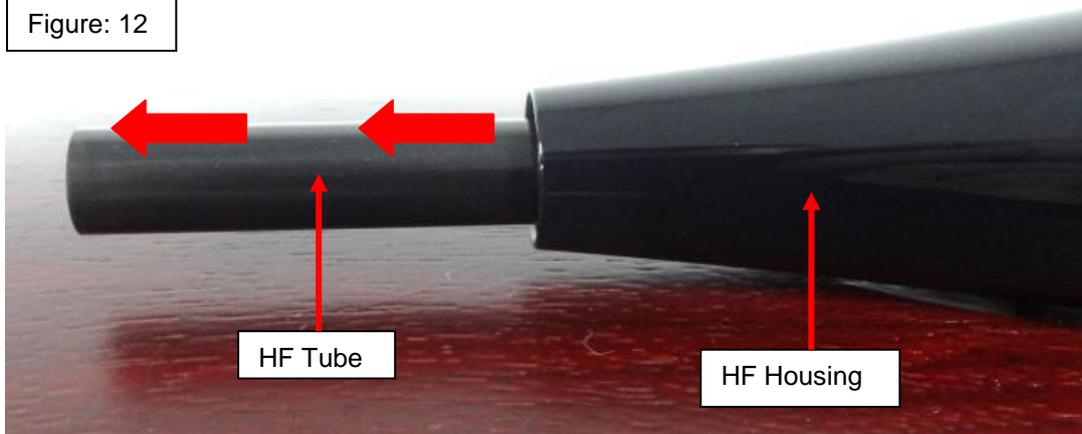
Once the Rear HF Cap is removed the HF Tube is visible shown in Figure: 11.

Figure: 11



Use a small Spring Hook, carefully pull the HF tube out of the HF Housing, Figure: 12.

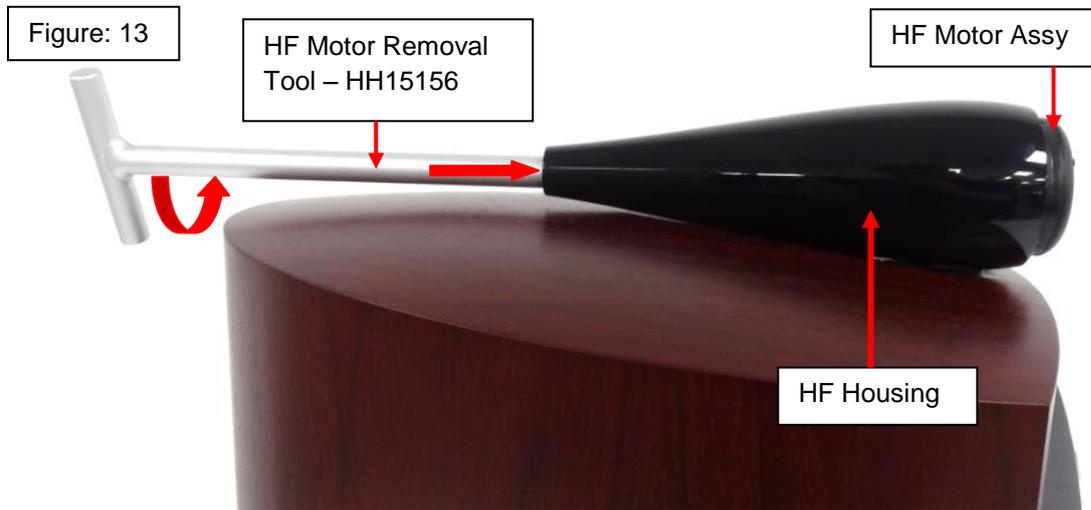
Figure: 12



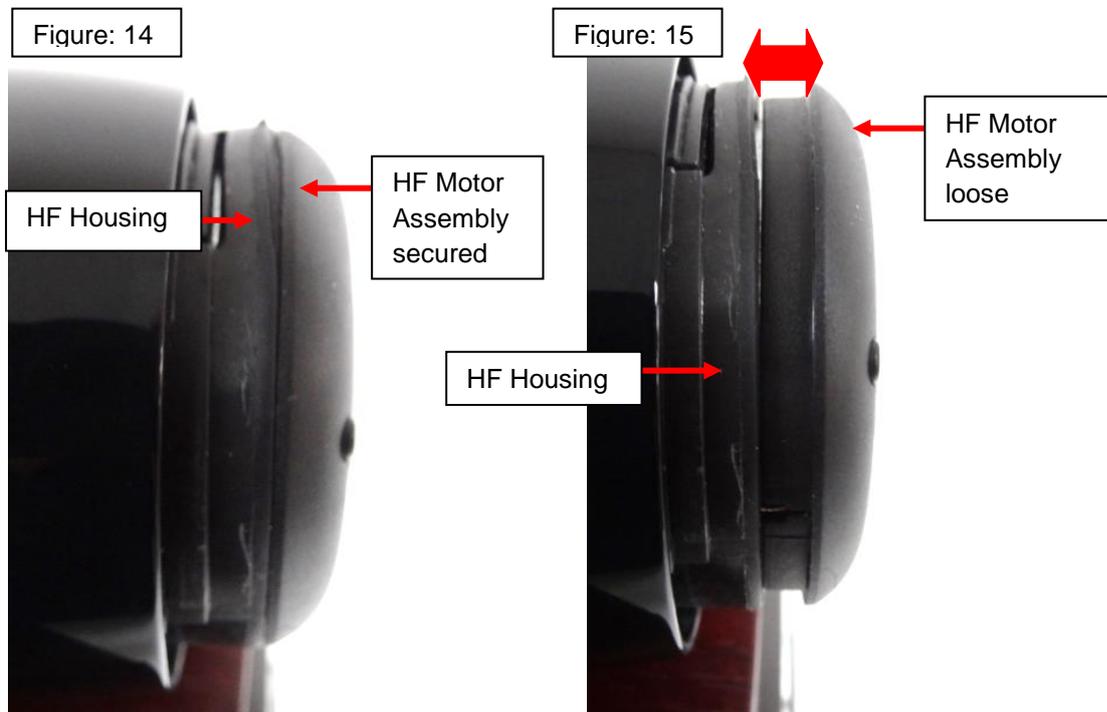
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Now insert the HF Motor removal tool HH15156 in to the rear of the tweeter, shown in Figure: 13 and then slowly rotate the tool until it locks in to the HF motor.



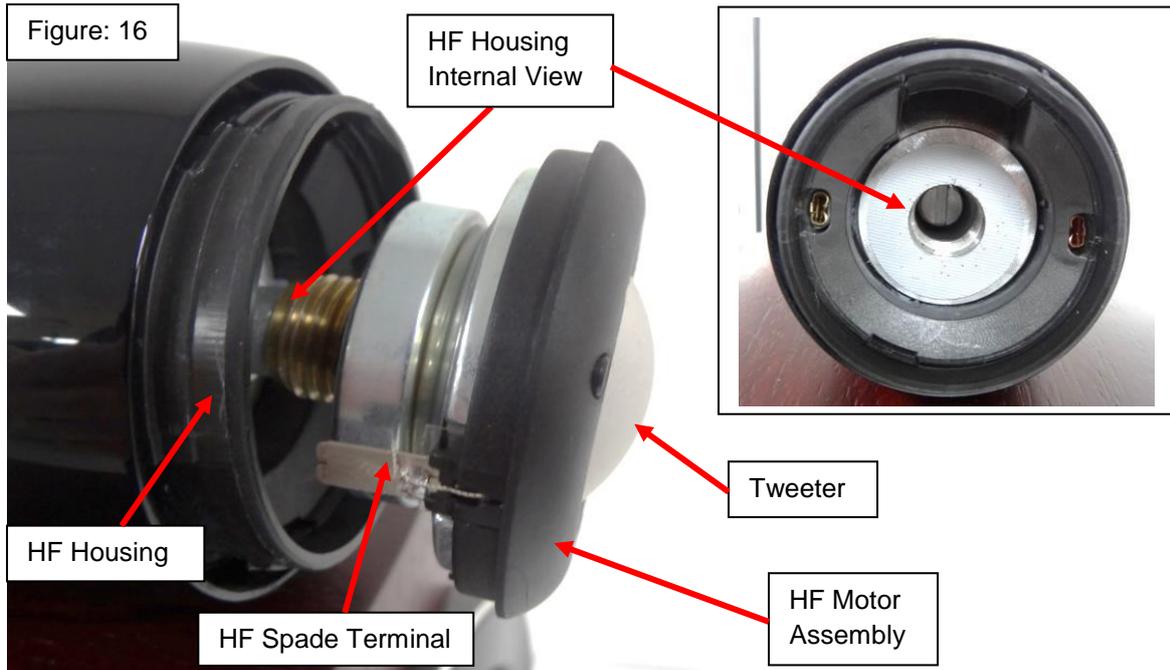
With the HF Motor Removal Tool in the correct position rotate in an anti-clockwise motion while supporting the HF Motor. This will release the HF Motor so it can be removed from the front of the HF Housing, see Figures: 14 & 15.



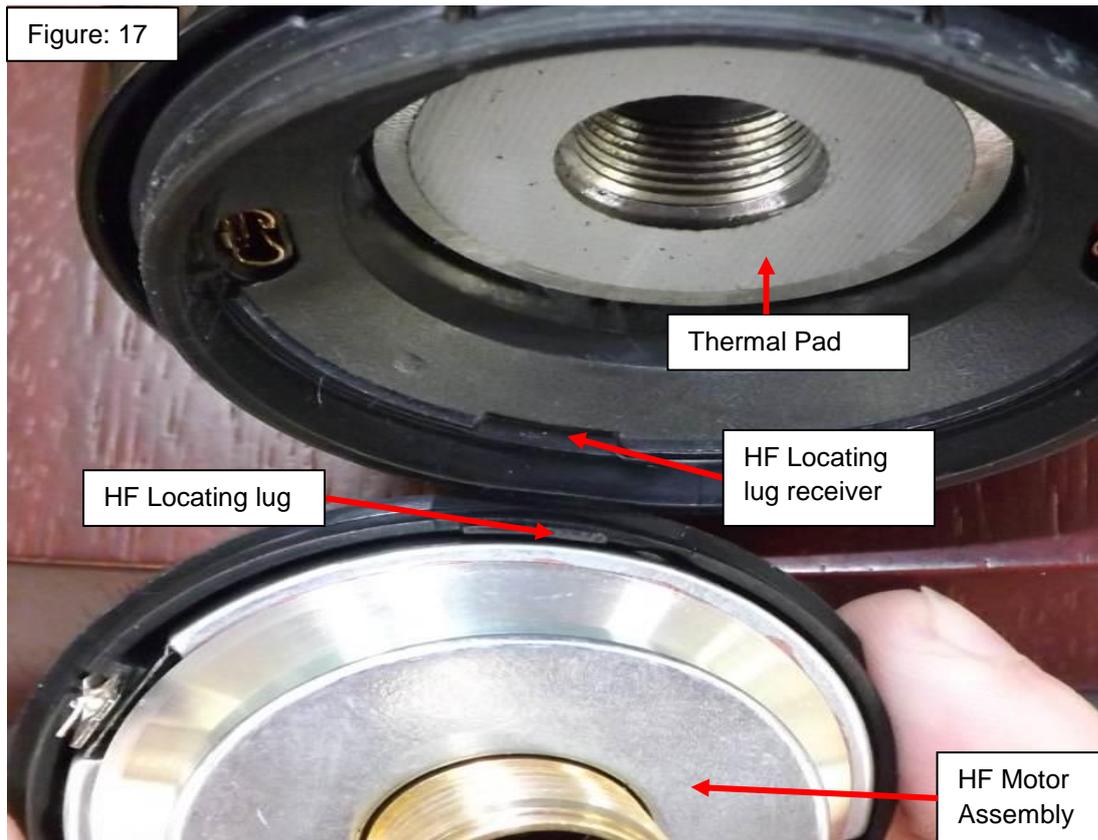
It should now be possible to remove the tweeter motor from the HF housing, shown in Figure: 16.

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To refit the replacement motor make sure the locating lug is in the correct orientation and aligned with the receiver socket as shown in figure 17.

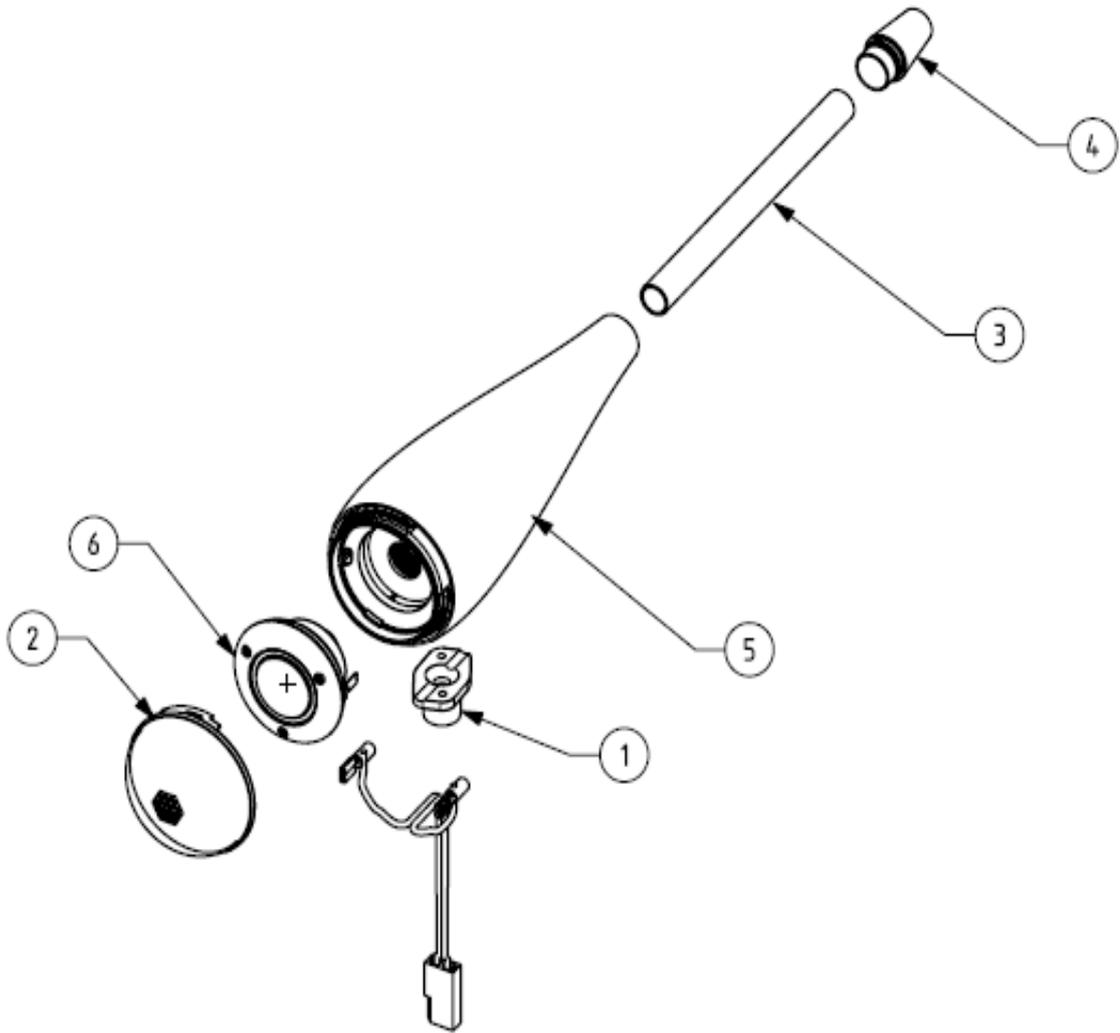


Now carefully insert the replacement HF Motor back in to the HF Housing observing the correction orientation. Using the HF Removal Tool rotate in a clockwise motion to secure the motor in the HF Housing. Now replace the HF Tube and HF Rear Cap.

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# Bowers & Wilkins TECHNICAL SUPPORT

## 11. Tweeter Mechanical Drawing & Parts



6	nxm10000068118000	HF Motor System 800 NG	ZZ28738	ZZ28738	1
5	nxm10000069036000	800NG - Tweeter Short Body Solid	ZZ29572	ZZ29599	1
4	nxm10000070204000	TAIL PIECE - HF SHORT BODY	HH36145	HH36145	1
3	nxm10000078341000	HF Baff Tube - 800NG	TT12661	TT12661	1
2	nxm10000070371000	HF Grille Assembly 800 NG	ZG06122	ZG05630	1
1	nxm10000087953000	800 NG Tweeter Strut Base Al Cast	CC69663	CC69663	1
ITEM #	PART NAME	DESCRIPTION	PART # LIGHT	PART # DARK	QTY

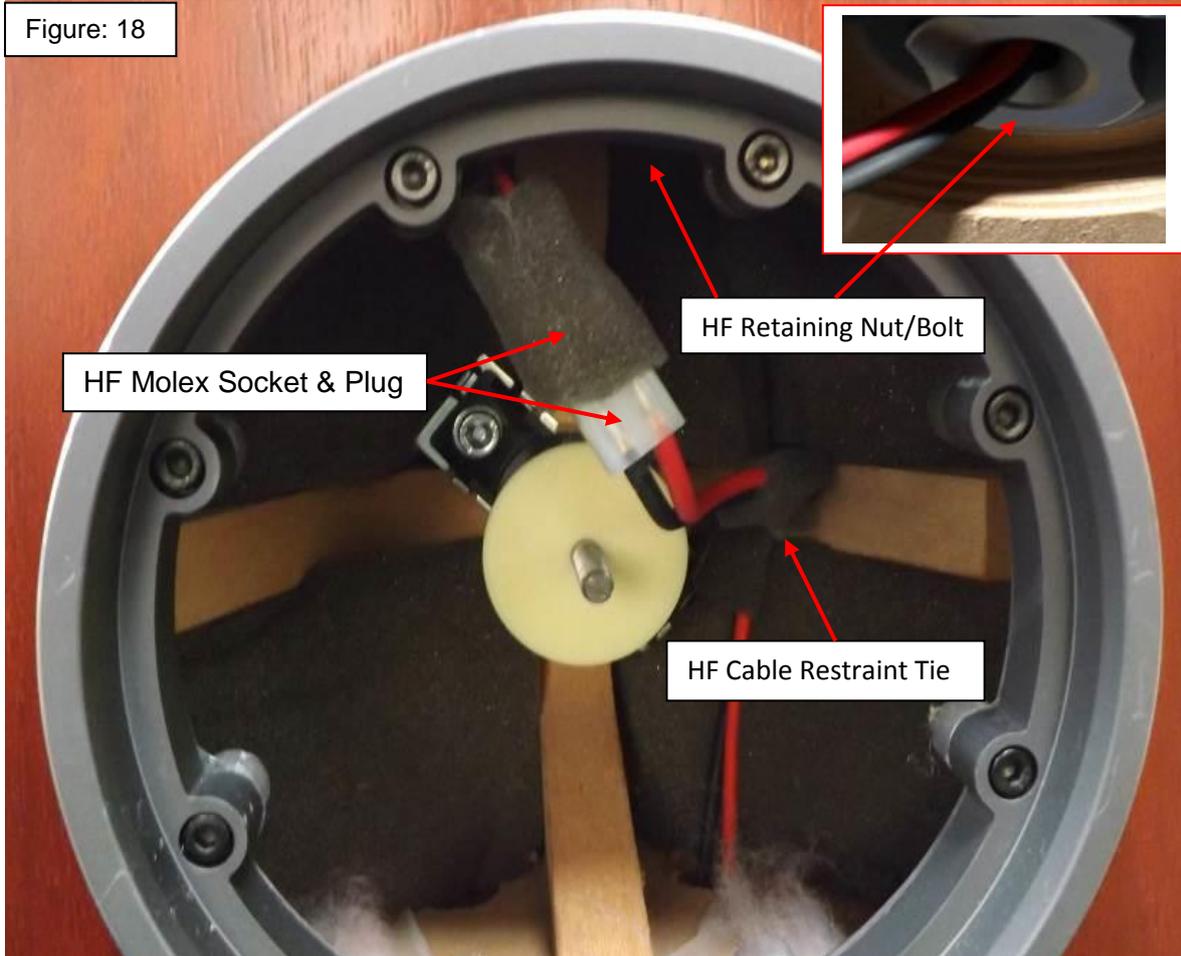
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# Bowers & Wilkins TECHNICAL SUPPORT

## 12. Tweeter Unit Removal

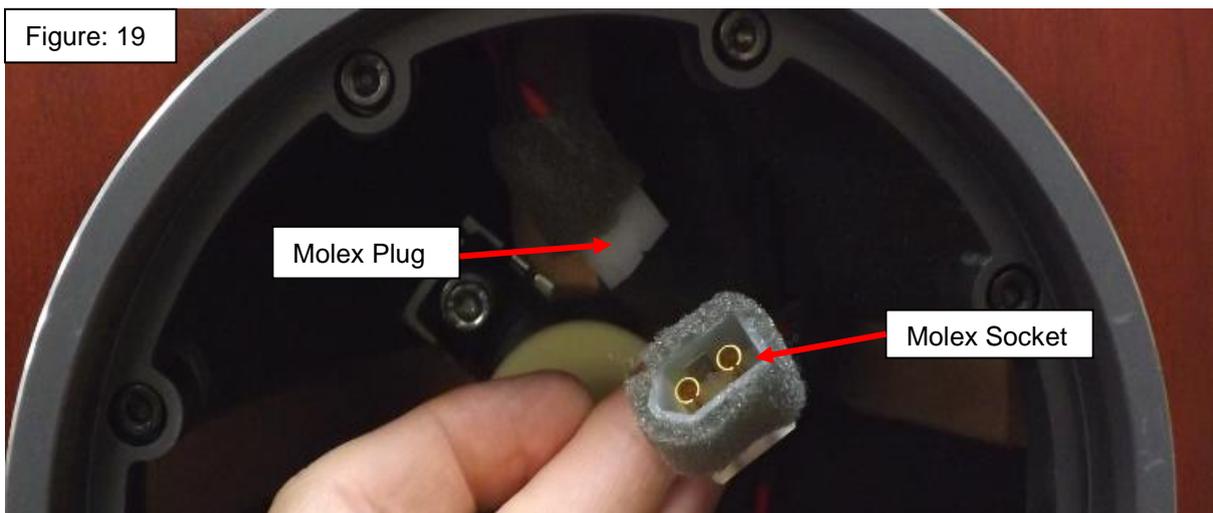
With the Mid - Range Unit Speaker removed (as in section 13) the Tweeter Housing connections can be accessed and disconnected and then removed as shown in Figure: 18.

Figure: 18



Cut the HF Cable Restraint Tie and disconnect the Molex Plug as shown in Figure: 19.

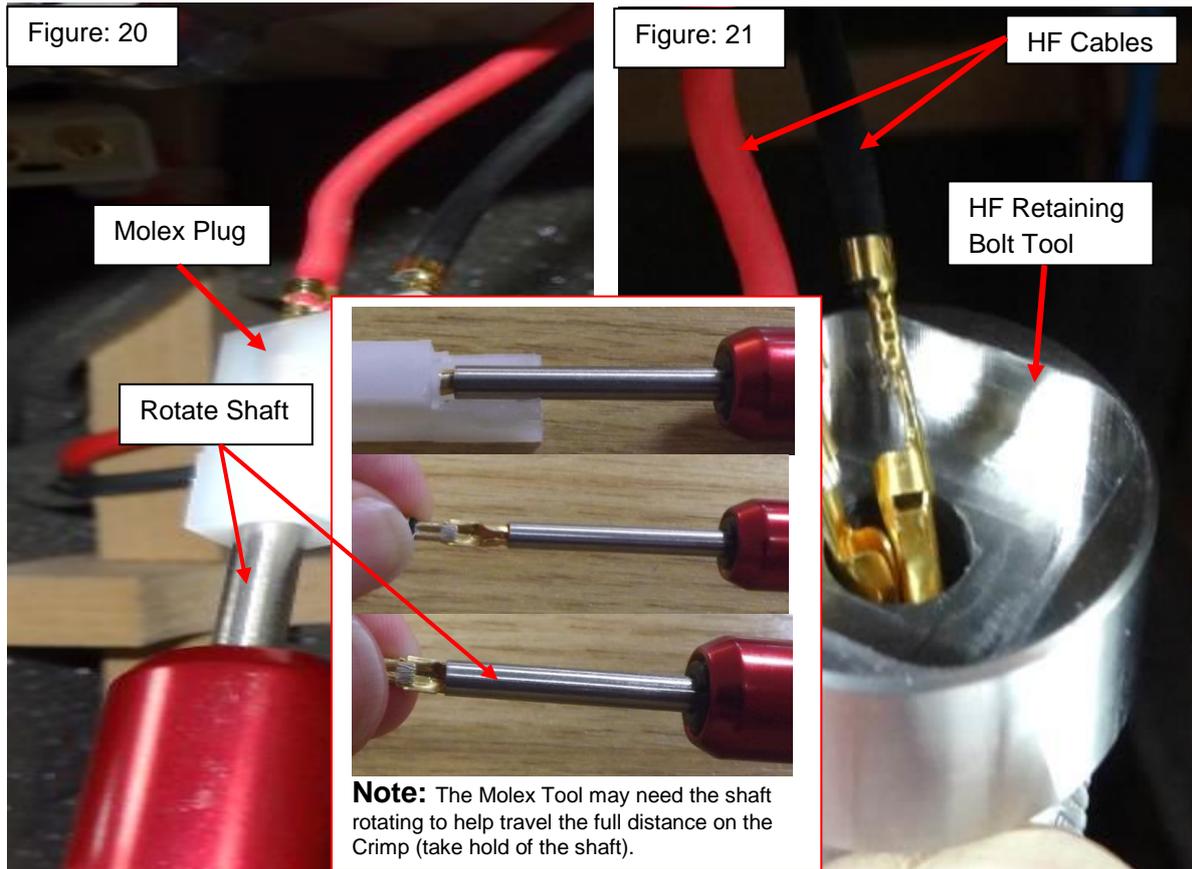
Figure: 19



The next stage of this process is to use a Molex Removal Tool to extract the Black and Red cable from the Molex Plug as shown in Figure: 20.

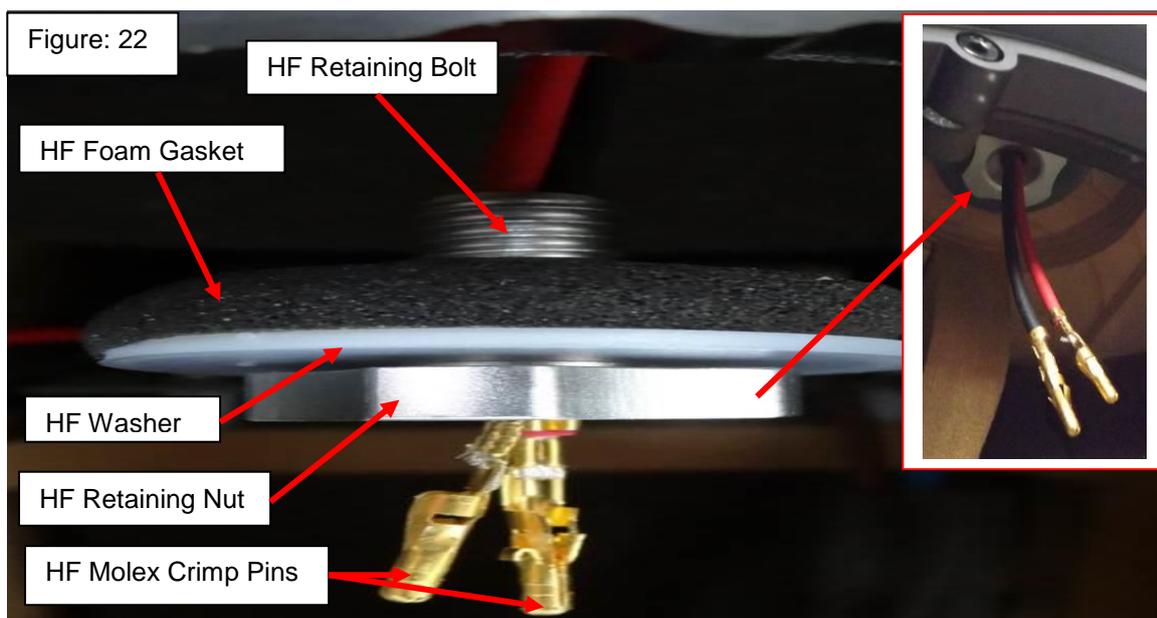
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# Bowers & Wilkins TECHNICAL SUPPORT



Once the 2 x HF Cables have been removed from the Molex Plug carefully thread both of the HF Cables into the HF Retaining Bolt Tool as shown in Figure: 21.

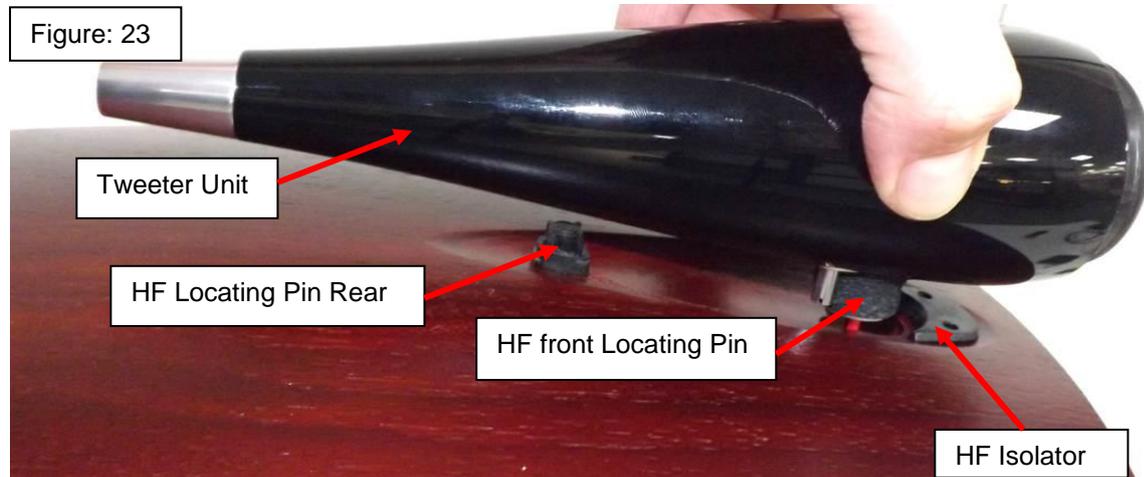
Now slide the Removal Bolt Tool up to the Retaining Bolt and proceed to unscrew the Retaining Bolt. Once the Retaining Bolt is completely unscrewed slide the Removal Bolt Tool back down the HF cables. This will allow the Retaining Nut and washer to slide down to the Molex Crimp Pins as shown in Figure: 22.



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It will now be possible to carefully feed the Molex Crimp Pins through the HF Retaining Bolt, the Molex Pins will only go through one at a time. The Tweeter Housing can now be lifted off the Cabinet, as shown in Figure: 23.



Refit the replacement Tweeter Unit in reverse order and remember to tighten the HF Retaining Nut with the HF Retaining Bolt Tool HH37842 shown in Figure: 24.



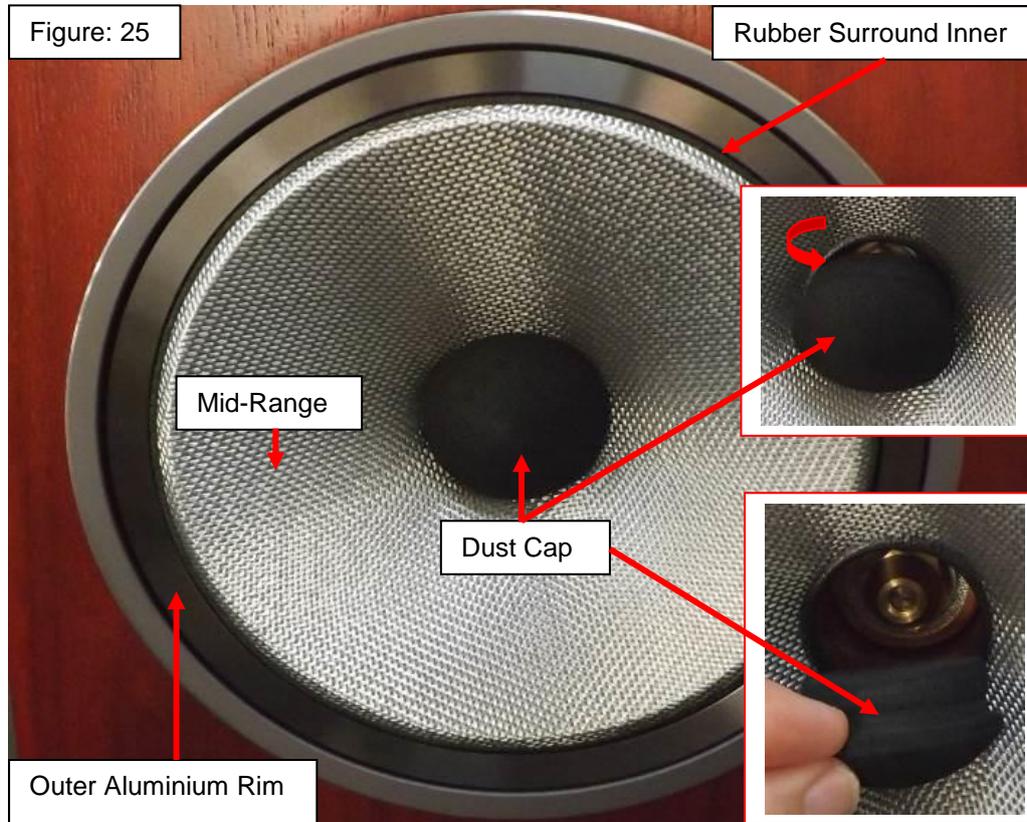
And remember to refit the Molex Plug with the Black Lead fitted to the pointed side of the Molex Plug as shown in Figure: 24

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# Bowers & Wilkins TECHNICAL SUPPORT

## 13. Mid - Range Removal

To gain access to the Mid - Range Speaker start by putting your fingers against the Dust Cap, then slowly pull it forwards as shown in Figure: 25. Place the Dust Cap in a safe place for reinsertion on reassembly.

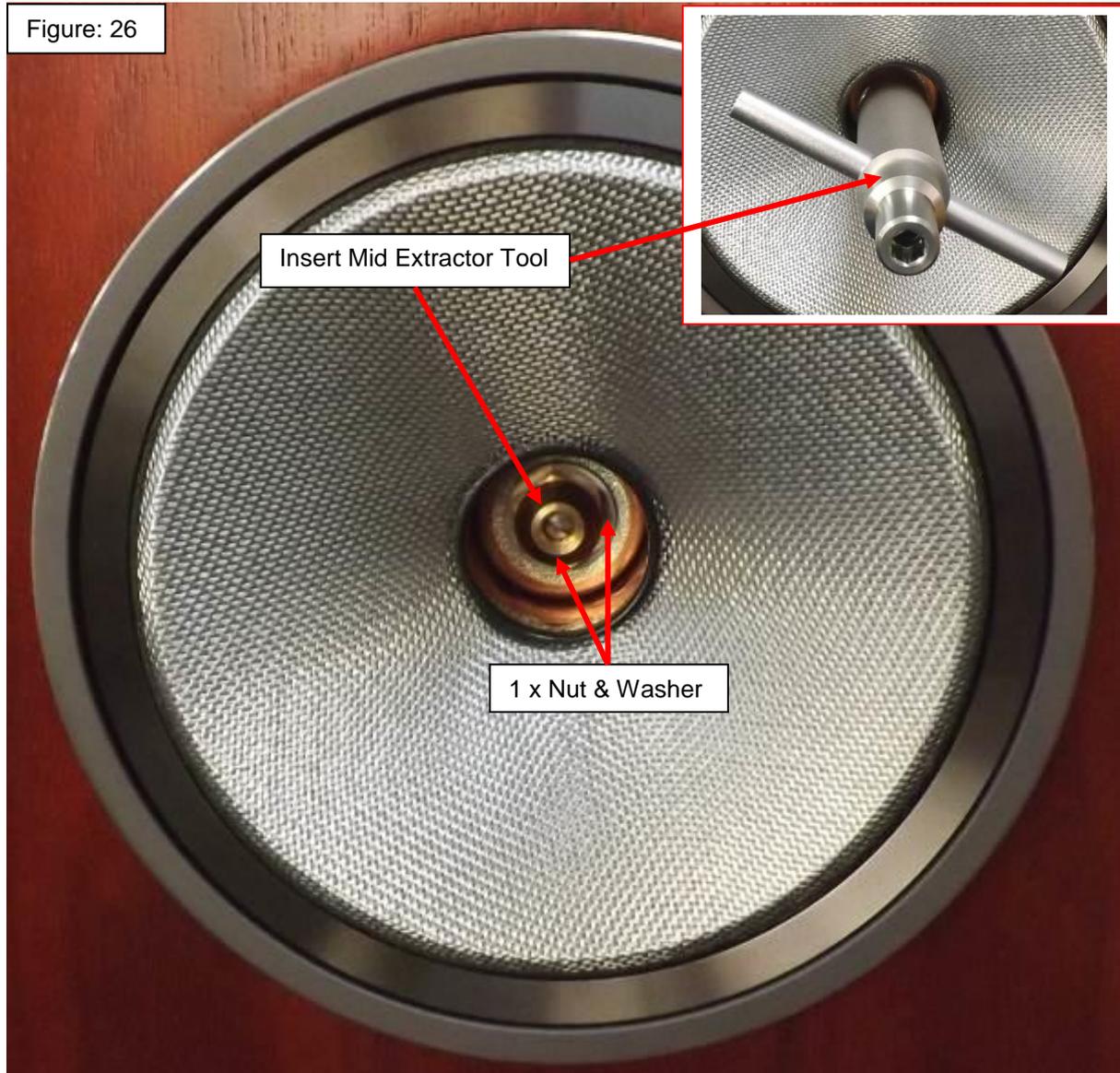


**Note:** Do not attempt to remove the Outer Aluminium Rim, this is fixed to the Mid - Range Speaker Rim.

With the Dust Cap completely removed as shown in Figure: 26, it is possible to insert the Mid Extractor Tool HH15121. Turn the Mid Extractor tool anti-clockwise and remove the Nut, the Washer will fall away as the Nut is removed.

## Bowers & Wilkins TECHNICAL SUPPORT

Figure: 26



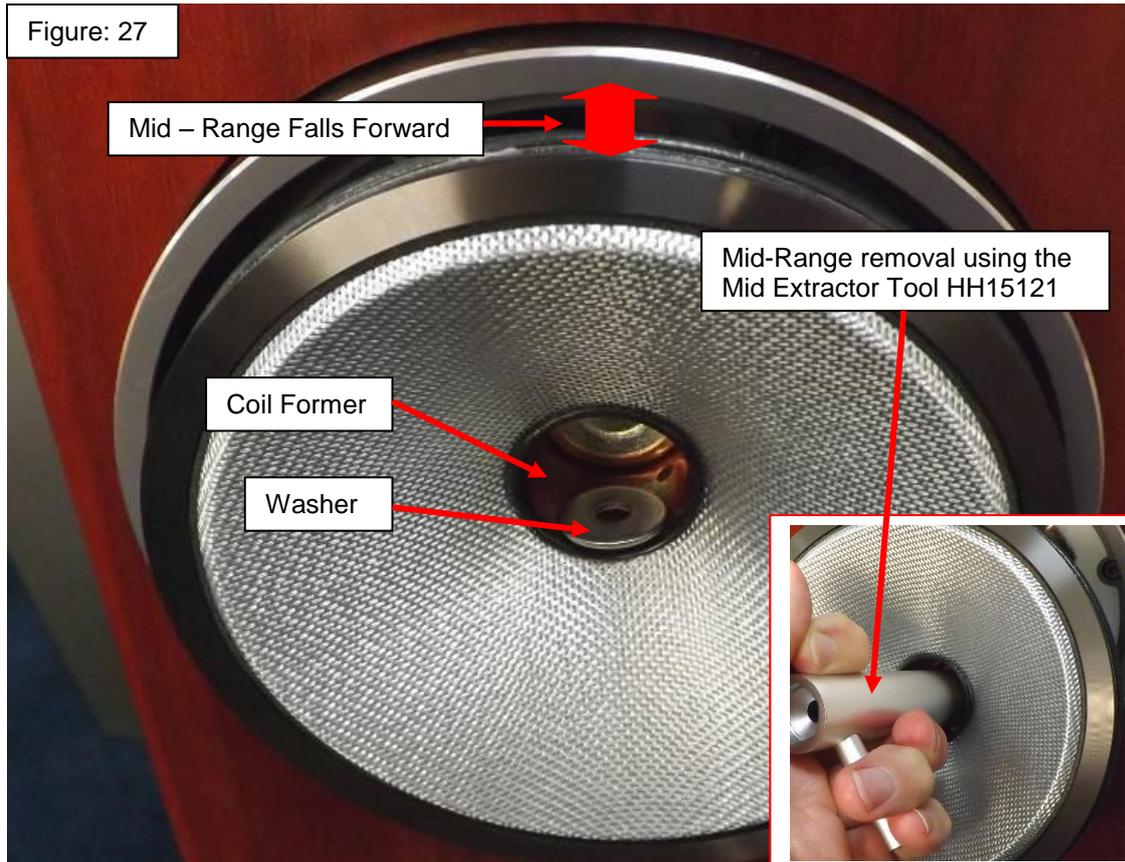
Care should be taken in the form of support when the Nut has been removed as the Mid – Range Speaker will fall forward as shown in Figure: 27, if not reverse the Mid Extractor Tool HH15121 and remove with the Tool.

The Washer may fall inside the Coil Former Area once the Nut has been removed, carefully remove this and put to one side along with the Nut for reassembly.

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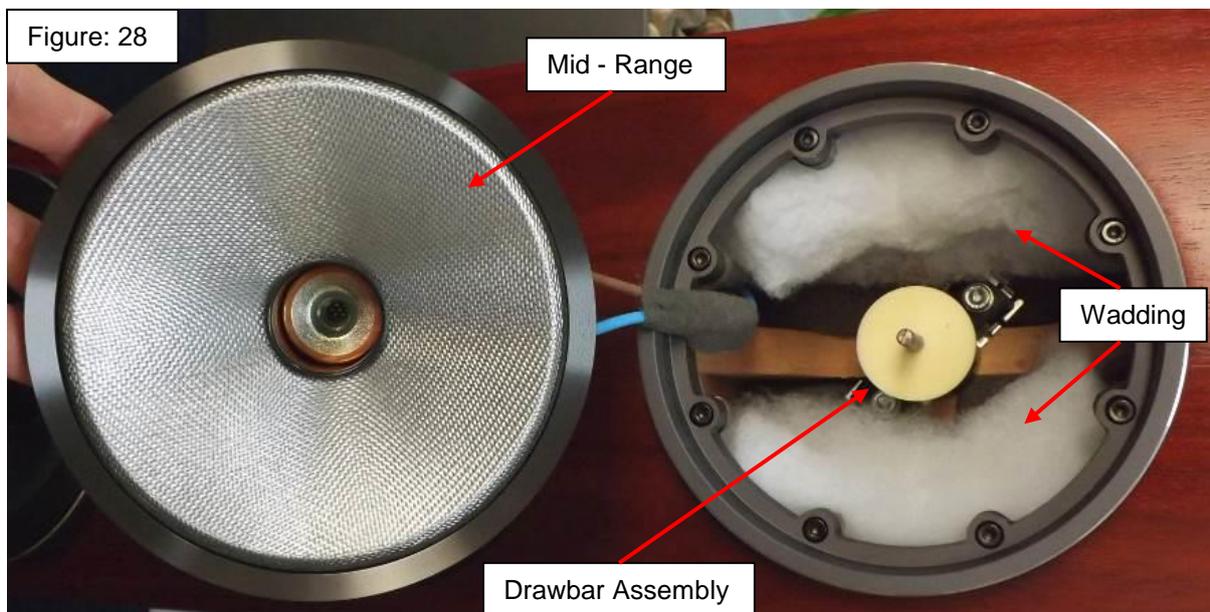
# Bowers & Wilkins TECHNICAL SUPPORT

Figure: 27



The Mid - Range Speaker can now be taken out of its fixing as shown in Figure: 28, take care not to damage the Bass Unit Speaker below.

Figure: 28

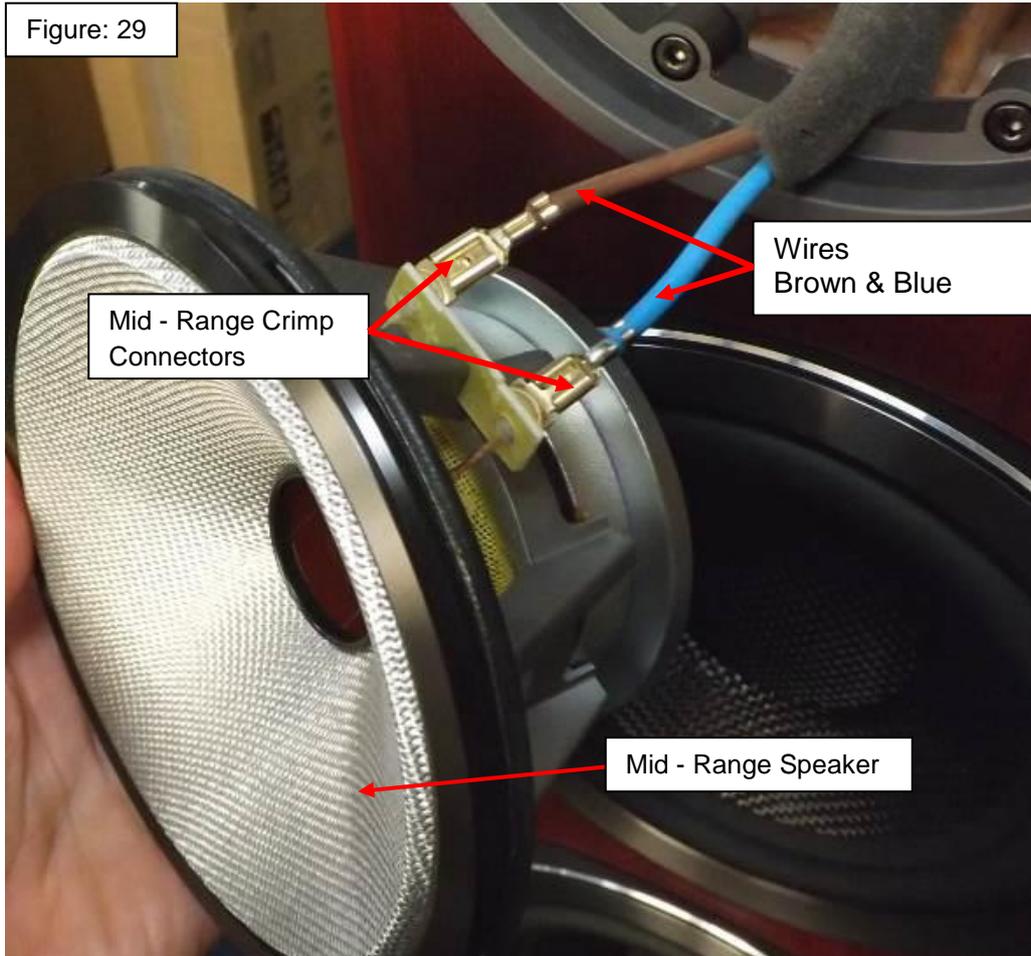


Turn the Mid - Range Speaker sideways so that the Crimp Connection are accessible as shown in Figure: 29 and disconnect the 2 x Crimp Connectors.

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Figure: 29

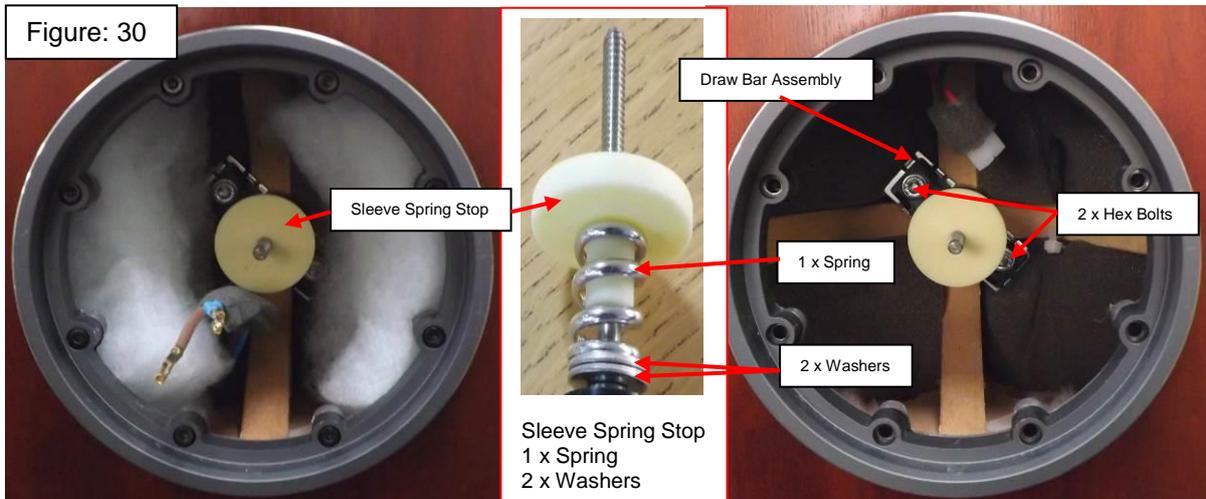


Disconnect the 2 x Crimp Connectors and then fit the replacement Mid - Range Speaker in reverse order...

## 14. Draw Bar Assembly Removal

With the Mid – Range Speaker removed as per section 10, lift out the wadding and remove the Sleeve Spring Stop, the Spring and 2 x Washers shown in Figure: 30.

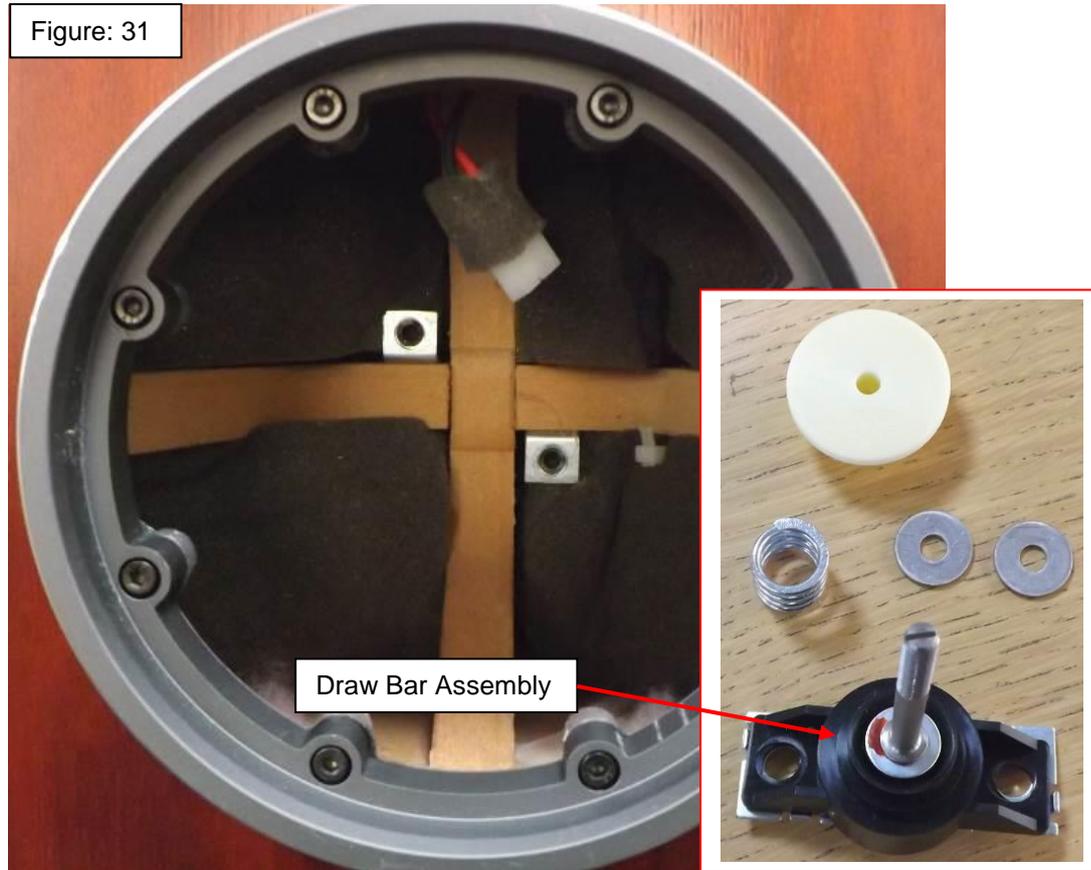
Figure: 30



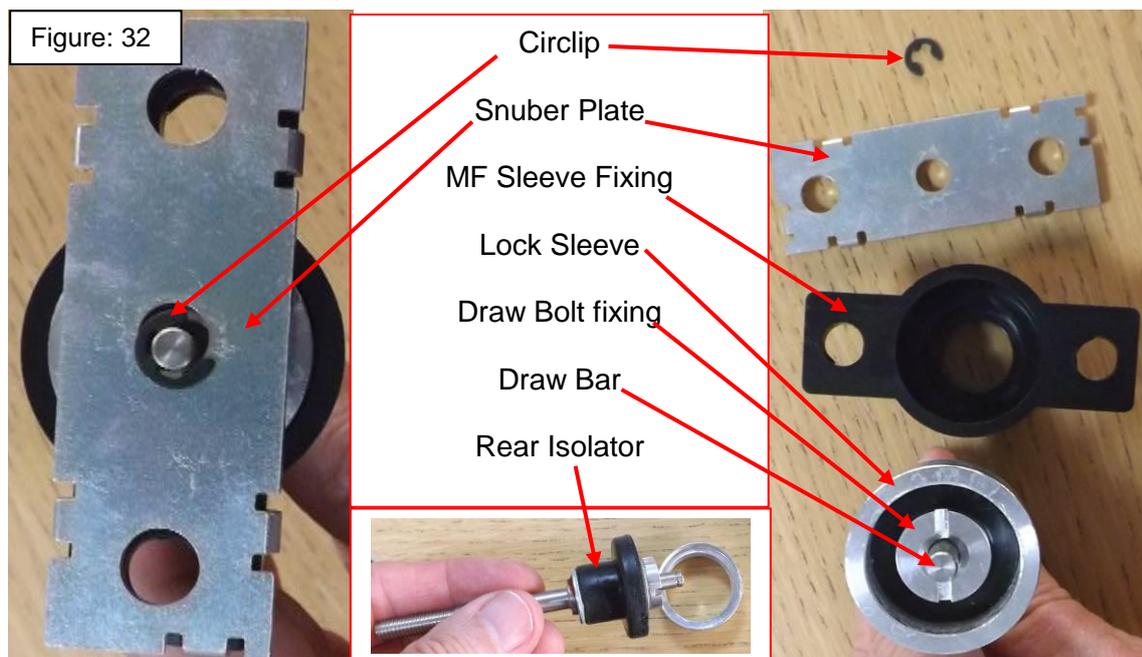
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Now remove the 2 x Hex Bolts shown in Figure: 30 and lift the Draw Bar Assembly out of the Cabinet as shown in Figure: 31.



Once the Sleeve Spring Assembly has been removed from the Cabinet it can be disassembled further by removing the Circlip as shown in Figure: 32.



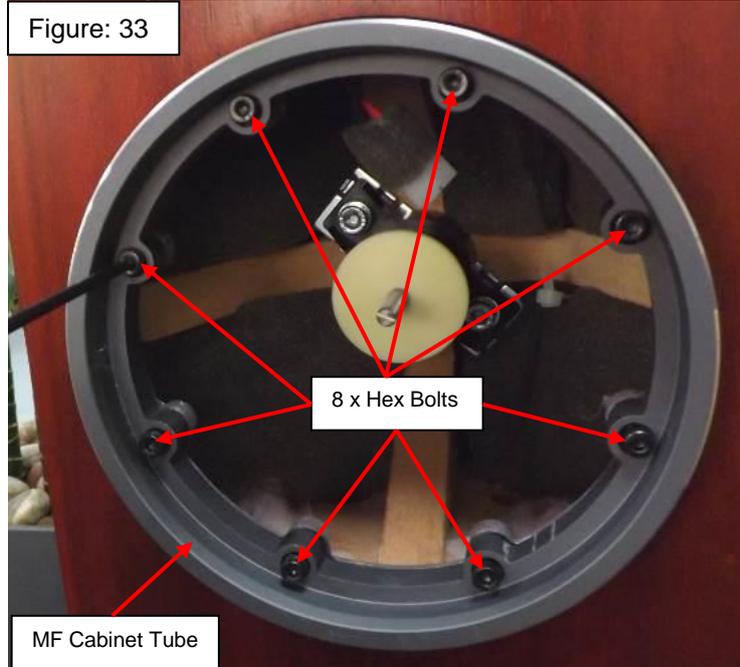
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**Note:** Although it is possible to disassemble the Rear Isolator from the Drawbar it is recommended that the Rear Isolator remains on the Draw Bar as removing the Draw Bolt Fixing could damage the Draw Bar.  
Once the Drawbar Assembly has been repaired or a replacement sourced refit in reverse order.

## 15. 5" MF Cabinet Tube Removal

Start by removing the 8 x Hex Bolts shown in Figure: 33 and put these to one side for reassembly.



**Note:** Take care not to drop any of the 8 x Hex Bolts into the Cabinet or scratch the MF Cabinet Tube.

Once all 8 x Hex Bolts have been removed the MF Cabinet Tube will fall forward as shown in Figure: 34, take care not to damage the Gasket.



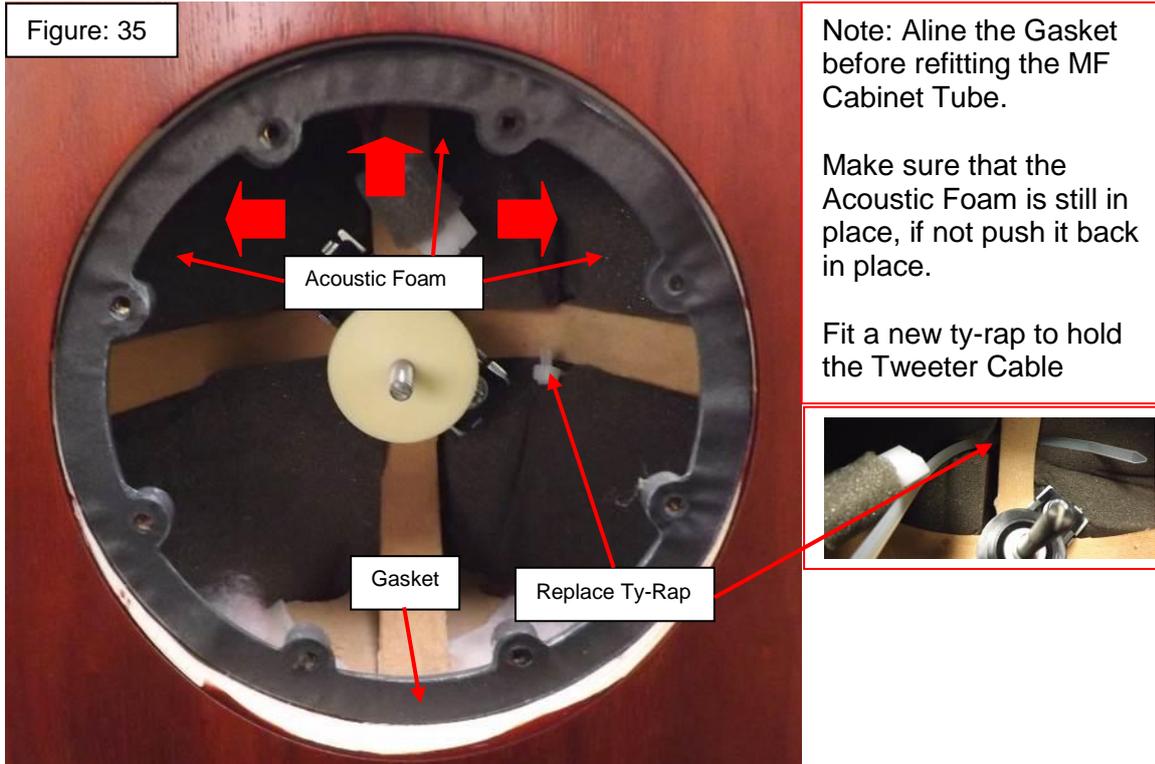
**Note:** Take care not to damage the Cabinet when lifting the MF Cabinet Tube away from the Cabinet.

Also the Gasket may stick to the MF Cabinet Tube. Ensure that the Gasket is in place as shown in Figure: 35, before refitting the MF Cabinet Tube.

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# Bowers & Wilkins TECHNICAL SUPPORT

Figure: 35



Once the 5" MF Cabinet Tube has been replaced (in reverse order) and following the instruction in section 13 refit the Mid – Range Speaker in reverse order.

## 16. Upper & Lower Bass Unit Speakers Removal

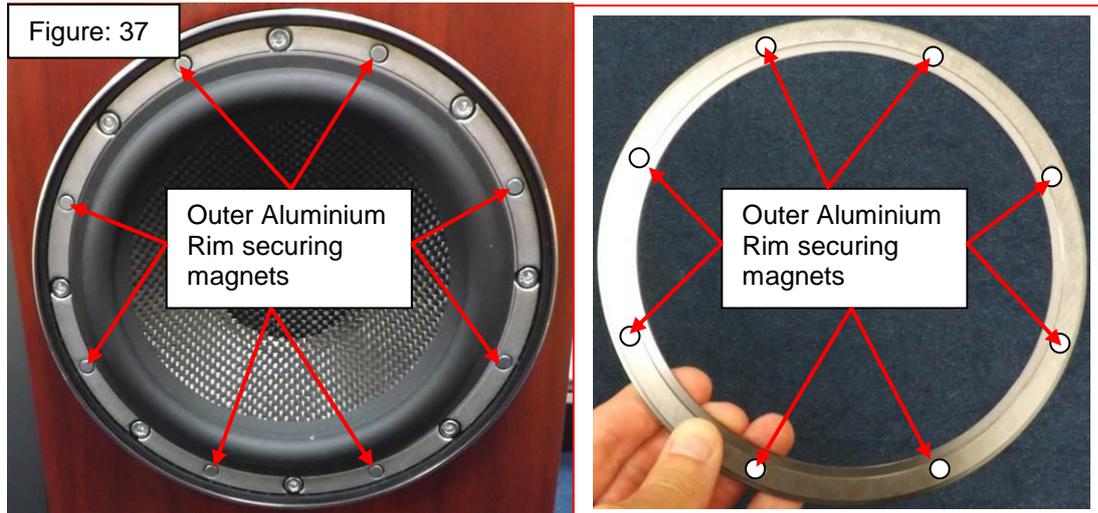
To gain access to the Bass Unit Speakers start by putting your fingers against the Rubber Surround Inner and your thumb on the Outer Aluminium Rim as shown in Figure: 36. Now apply a small amount of pressure and pull outwardly.



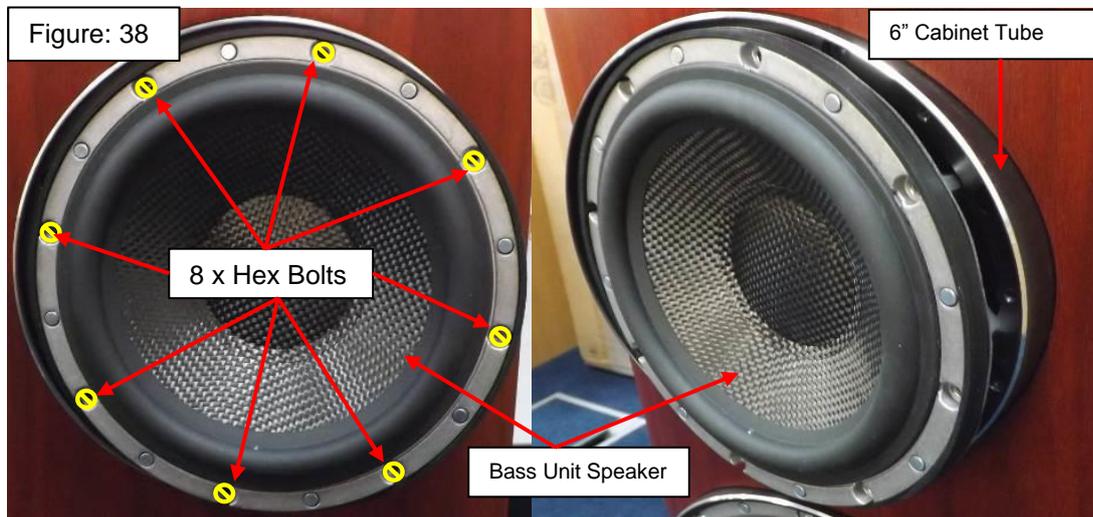
The Outer Aluminium Rim will come away as shown in Figure: 36, place this in a safe place in preparation for reassembly. With the Outer Aluminium Rim removed it is possible to see how it is secured in place as shown in Figure: 37. There are 8 x Magnets in the Outer Aluminium Rim and 8 x Magents in the Bass Unite Speaker.

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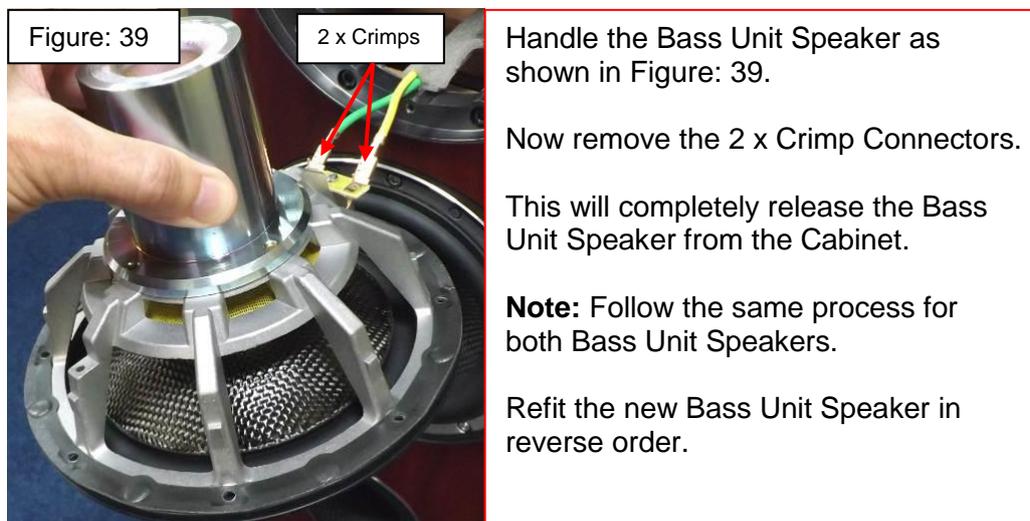
# Bowers & Wilkins TECHNICAL SUPPORT



With the Outer Aluminium Rim removed now unscrew and remove the 8 x Hex Bolts as shown in Figure: 38.



Take care as the Bass Unit Speaker may fall forward or may need pulling forward to release it from the 6" Cabinet Tube.



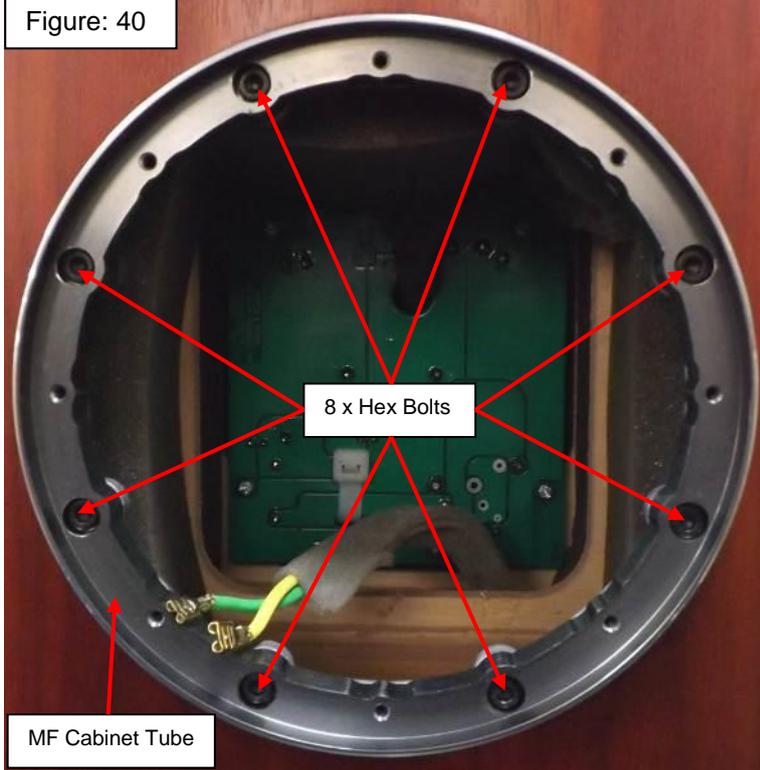
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# Bowers & Wilkins TECHNICAL SUPPORT

## 17. Upper 6" Cabinet Tube Removal

Start by removing the 8 x Hex Bolts shown in Figure: 40 and put these to one side for reassembly.

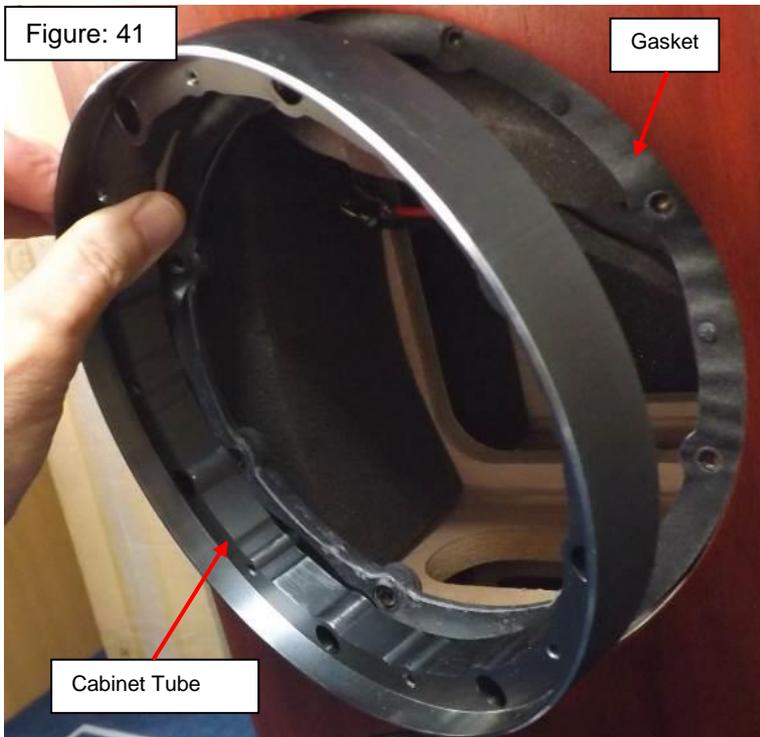
Figure: 40



**Note:** Take care not to drop any of the 8 x Hex Bolts into the Cabinet or scratch the Cabinet Tube.

Once all 8 x Hex Bolts have been removed the Cabinet Tube will fall forward as shown in Figure: 41, take care not to damage the Gasket.

Figure: 41



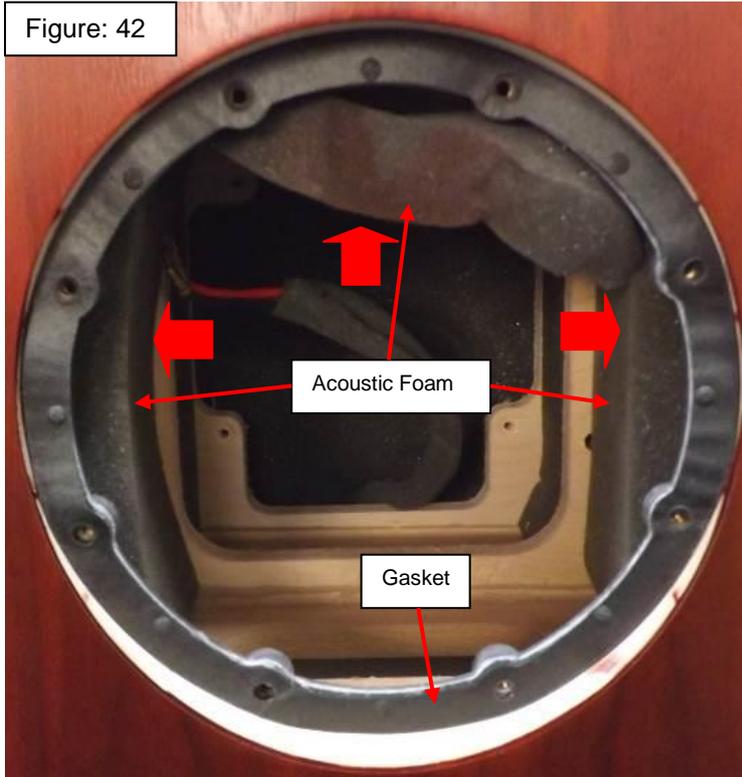
**Note:** Take care not to damage the Cabinet when lifting the Cabinet Tube away from the Cabinet.

Also the Gasket may stick to the Cabinet Tube. Ensure that the Gasket is in place as shown in Figure: 42, before refitting the Cabinet Tube.

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# Bowers & Wilkins TECHNICAL SUPPORT

Figure: 42



Note: Align the Gasket before refitting the Cabinet Tube.

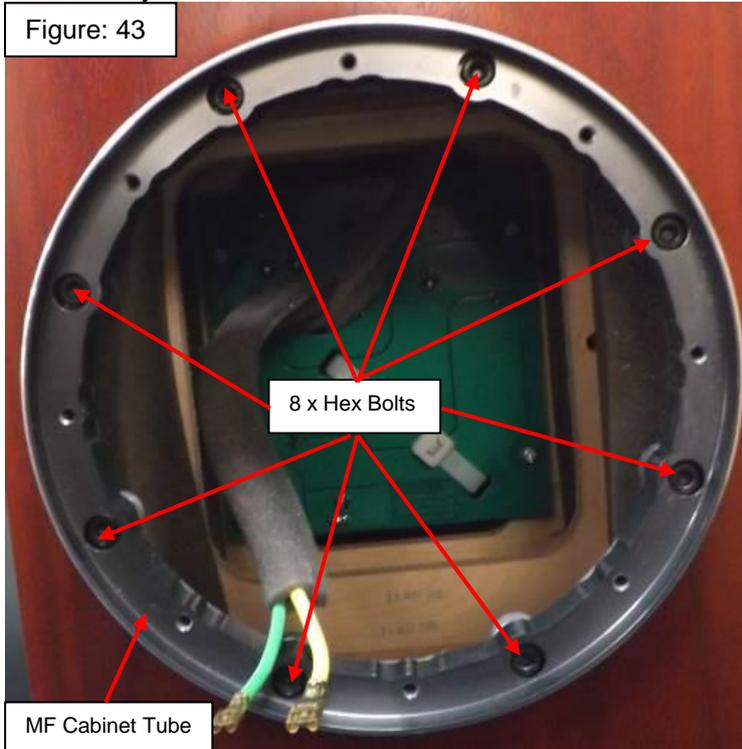
Make sure that the Acoustic Foam is still in place, if not push it back in place.

Once the 6" Cabinet Tube has been replaced (in reverse order) and following the instruction in section 15 refit the Bass Unit Speaker in reverse order.

## 18. Lower 6" Cabinet Tube Removal

Start by removing the 8 x Hex Bolts shown in Figure: 43 and put these to one side for reassembly.

Figure: 43



Note: Take care not to drop any of the 8 x Hex Bolts into the Cabinet or scratch the Cabinet Tube.

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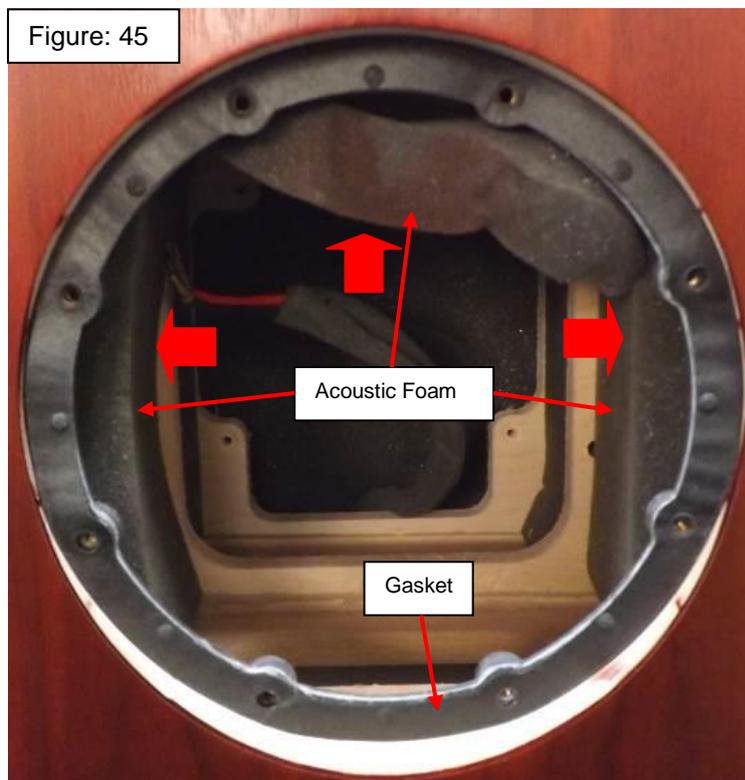
## Bowers & Wilkins TECHNICAL SUPPORT

Once all 8 x Hex Bolts have been removed the Cabinet Tube will fall forward as shown in Figure: 44, take care not to damage the Gasket.



**Note:** Take care not to damage the Cabinet when lifting the Cabinet Tube away from the Cabinet.

Also the Gasket may stick to the Cabinet Tube. Ensure that the Gasket is in place as shown in Figure: 45, before refitting the Cabinet Tube.



**Note:** Align the Gasket before refitting the Cabinet Tube.

Make sure that the Acoustic Foam is still in place, if not push it back in place.

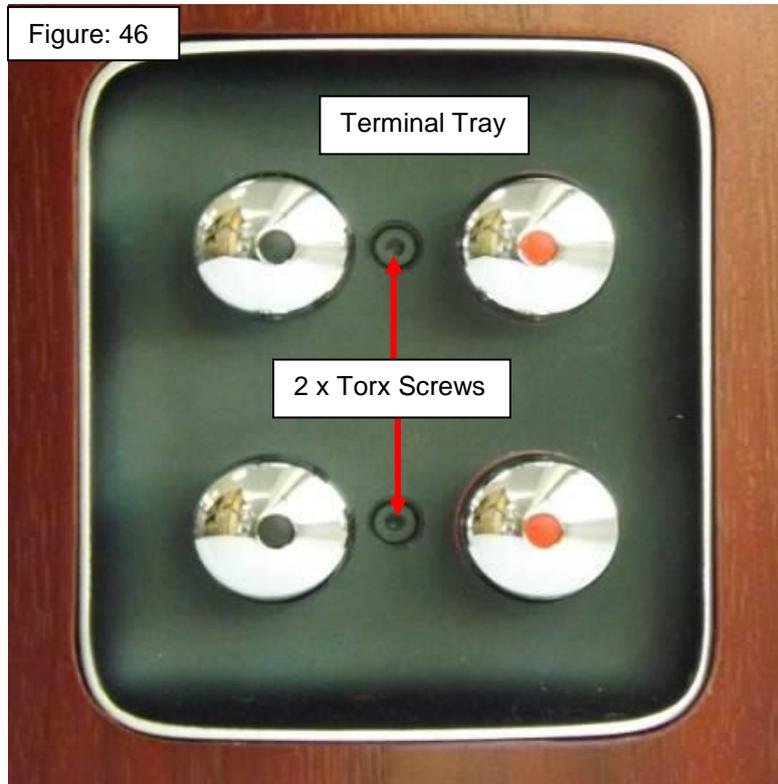
Once the 6" Cabinet Tube has been replaced (in reverse order) and following the instruction in section 15 refit the Bass Unit Speaker in reverse order.

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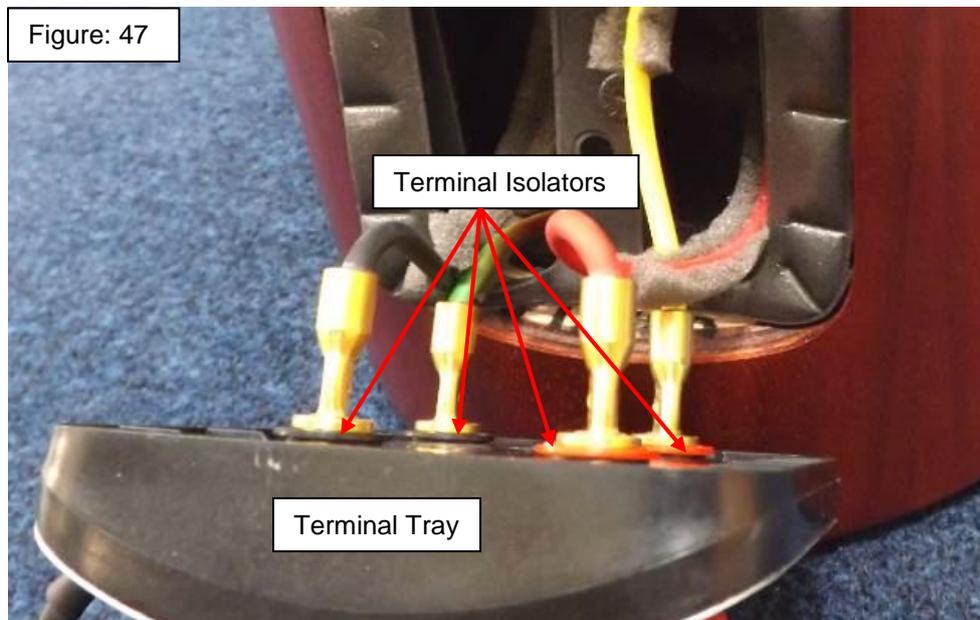
# Bowers & Wilkins TECHNICAL SUPPORT

## 19. Terminal Tray Assembly Removal

Start by removing the 2 x Torx Screws using a Torx size 8 key to unscrew the 2 x Torx screws as shown in Figure: 46.



With the 2 x Torx Screws removed the Terminal Tray can be pulled forward which is shown in Figure: 47, this allows access to the Terminal Tray and the crimped wires/ terminals.

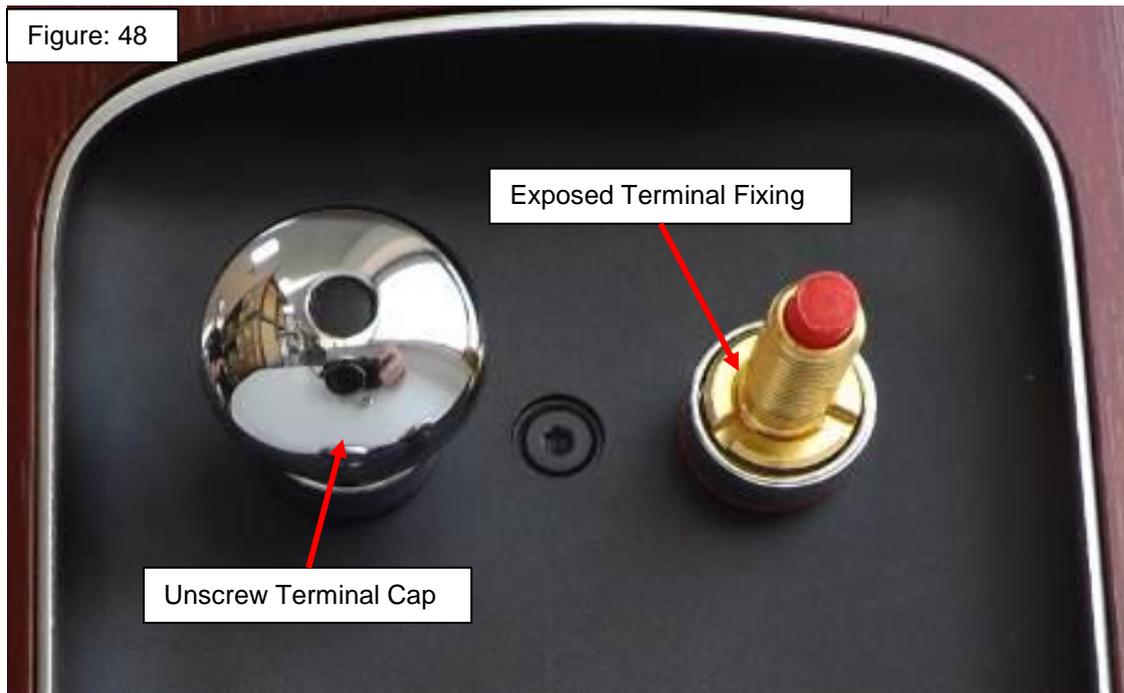


After carefully sliding the Terminal Tray out of the Cabinet unscrew the 4 x Terminal Caps to expose the Terminal Fixings as shown in Figure: 48.

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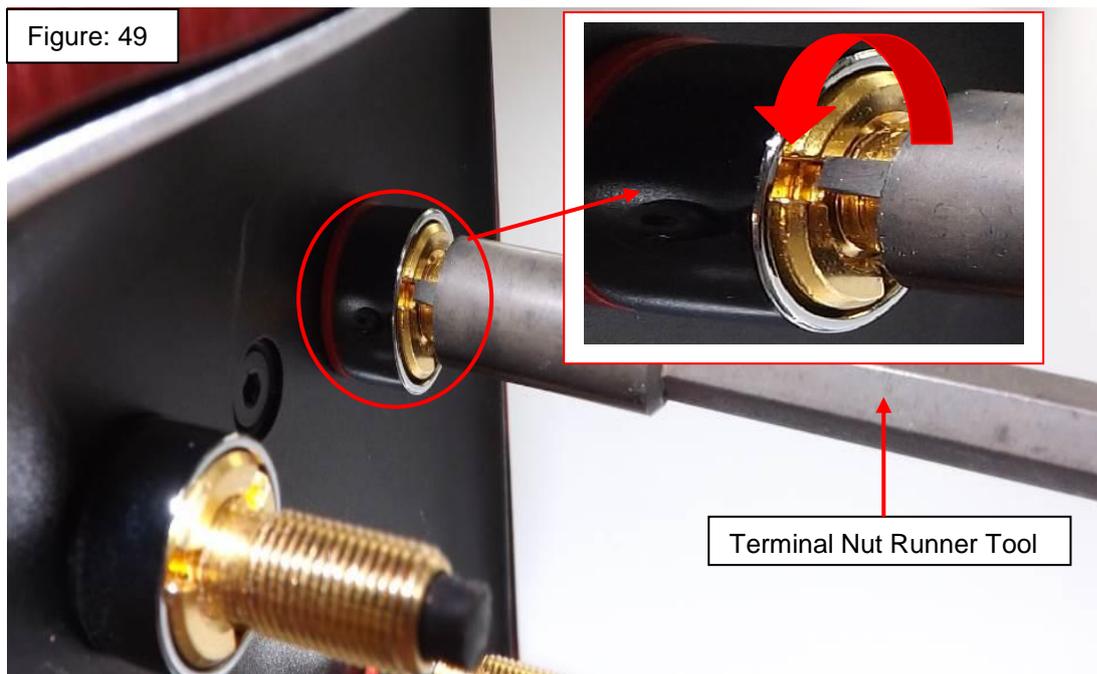
# Bowers & Wilkins TECHNICAL SUPPORT

Figure: 48



Using the Terminal Nut Runner Tool HH33782 unscrew the Retaining Nuts on each of the Terminals as shown in Figure: 49.

Figure: 49



When the Terminal Nuts have been removed carefully slide each terminal out the back of the Terminal Tray making sure you retain the 2 x Red and 2 x Black Terminal Isolators as shown in Figure: 47. Once all of the Terminal Nuts have been removed the 4 x Terminal Posts can be removed from the Terminal Tray. Now the Terminal Posts and Cables are free from the Terminal Tray proceed to replace with a new Terminal Tray in reverse order.

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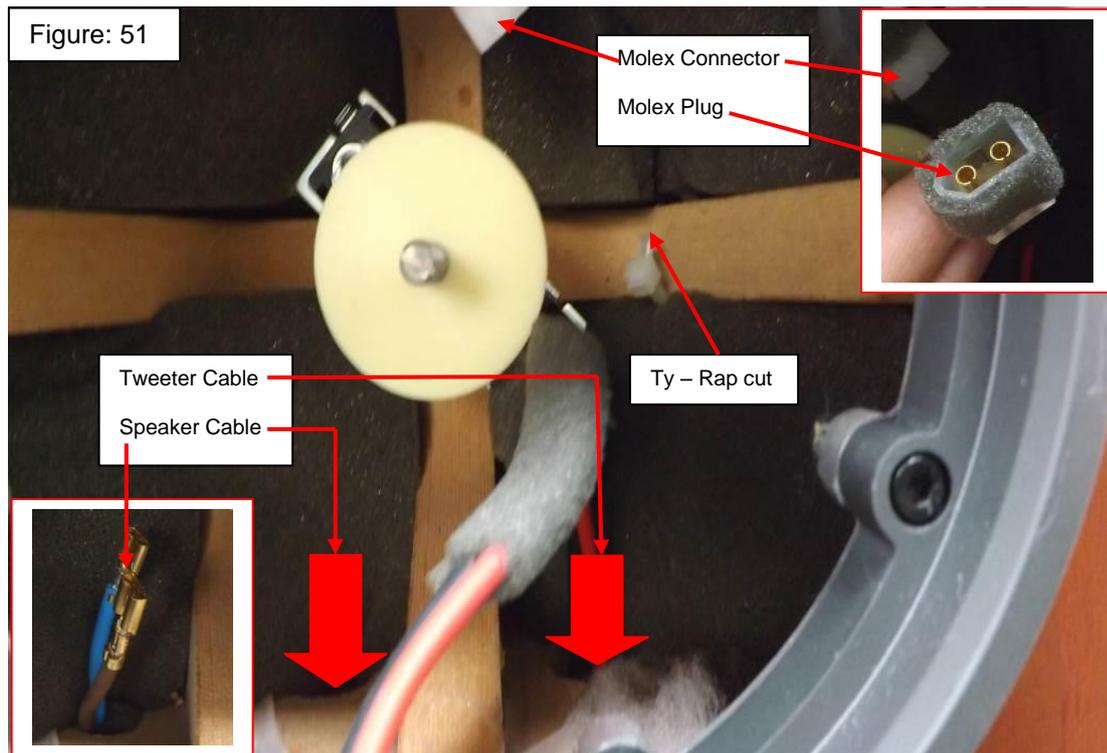
# Bowers & Wilkins TECHNICAL SUPPORT

## 20.HF Crossover Assembly Removal

Start by removing the Mid – Range Speaker as in section 12, then remove the Wadding shown in Figure: 50.



With the Wadding removed the Molex Connector is visible, pull the Molex Plug out of the Molex Connector (these Red & Black Cables are for the Tweeter) and cut the Ty-rap which holds the cable in place as shown in Figure: 51.



The Mid – Range Speaker Cable and Tweeter Cable will need to be fed through the Internal Cabinet and their Rubber Bung will need pushing down through the holes as shown in Figure: 51.

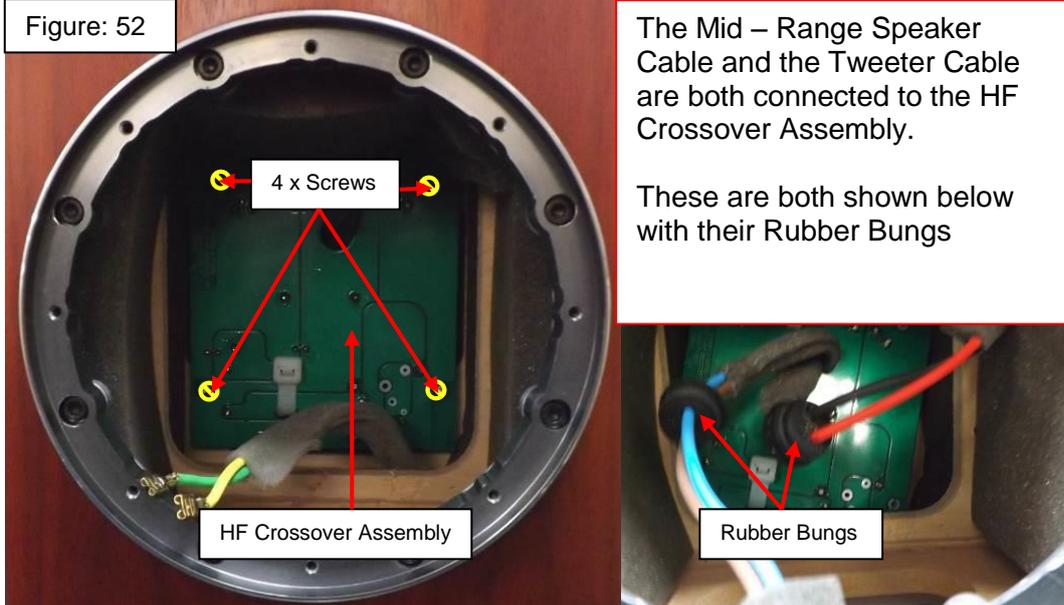
Now follow section 15 and remove the Upper Bass Unit Speaker.

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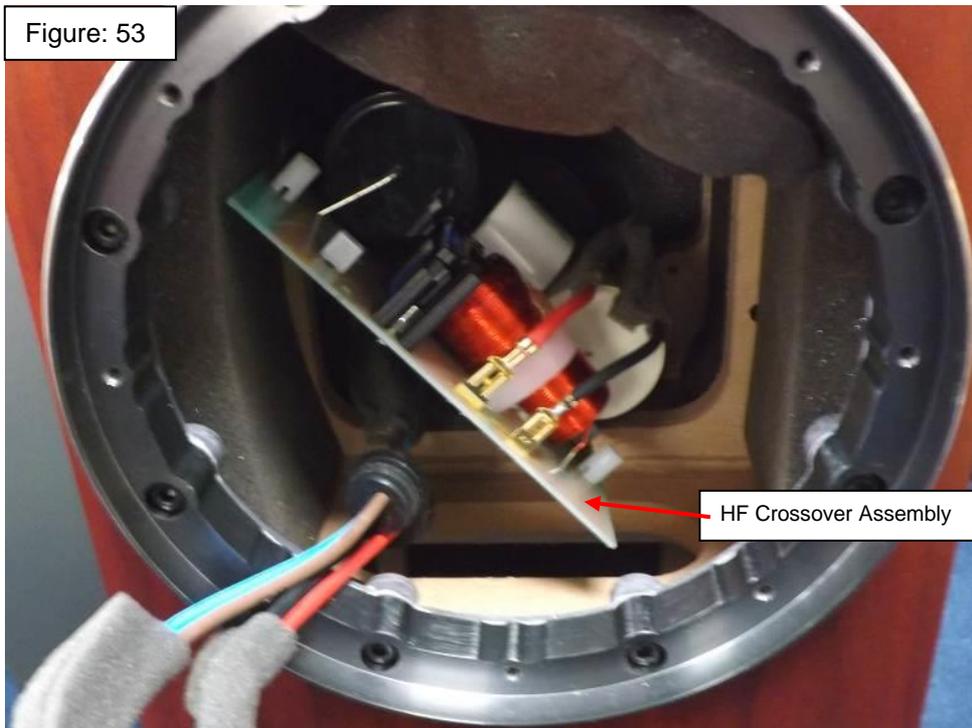
With the Upper Bass Unit Speaker removed unscrew the 4 x Phillips Screws holding the HF Crossover Assembly in place as shown in Figure: 52.

Figure: 52



Take extra care when removing the 4 x Phillips Screws not to drop them into the Cabinet. Now the HF Crossover Assembly can be removed at an angle as shown in Figure: 53.

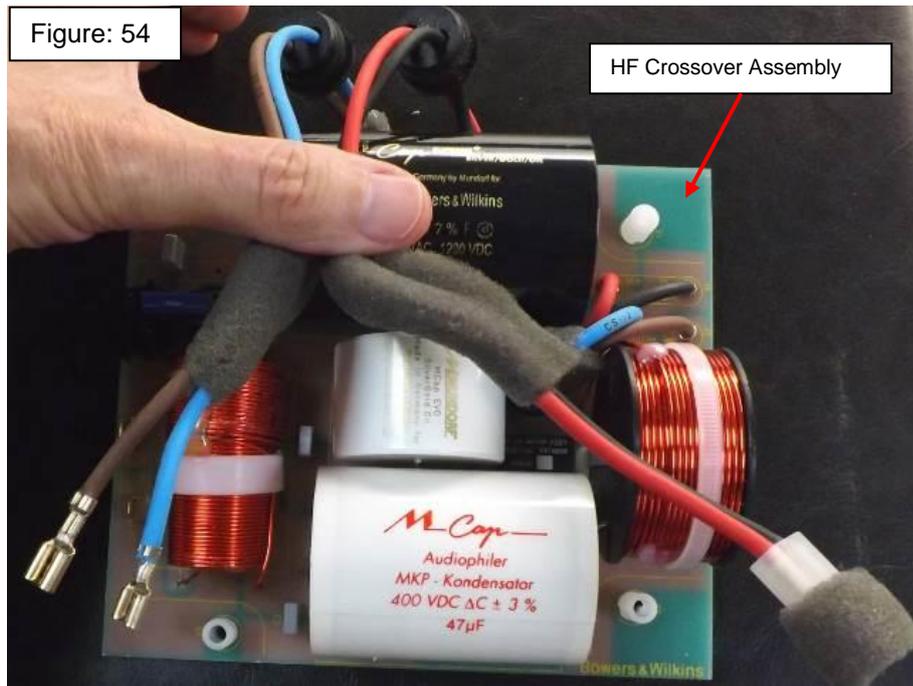
Figure: 53



The HF Crossover Assembly can now be replaced in reverse order, see Figure: 54 to view the complete Upper Crossover Assembly.

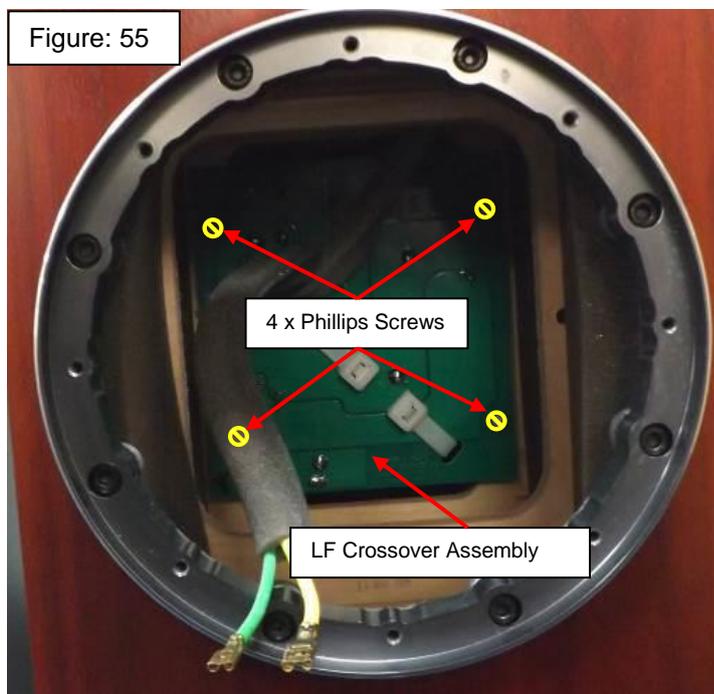
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# Bowers & Wilkins TECHNICAL SUPPORT



## 21. LF Crossover Assembly Removal

Start by removing the Upper and Lower Bass Unit Speakers as in section 15. Then remove the 4 x Phillips Screws holding the LF Crossover Assembly in place shown in Figure: 55.



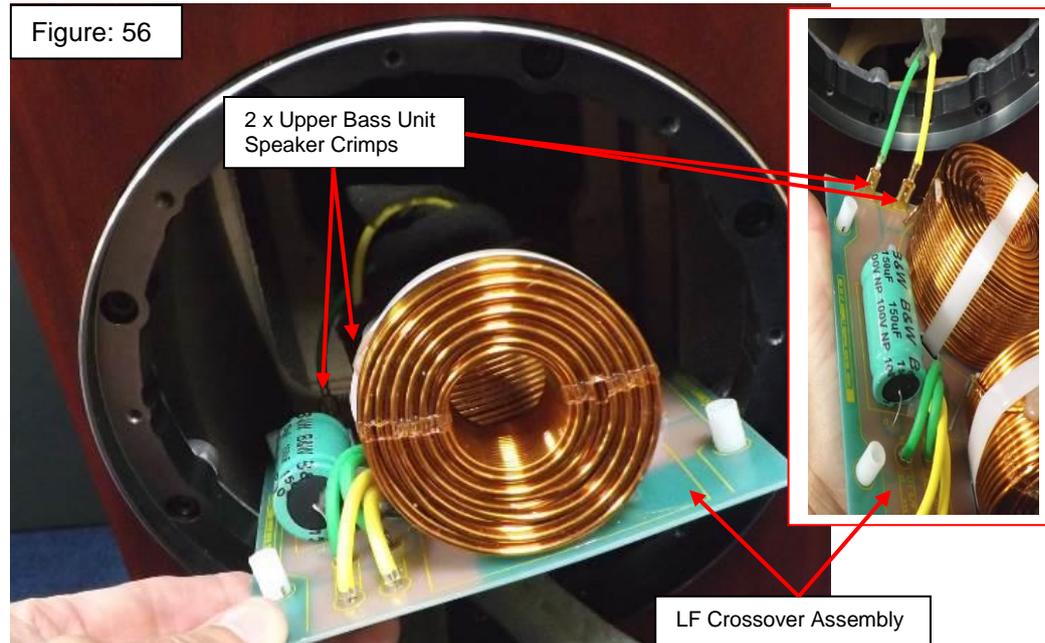
Take extra care when removing the 4 x Phillips Screws not to drop them into the Cabinet.

The LF Crossover Assembly can be removed at an angle as shown in Figure: 56.

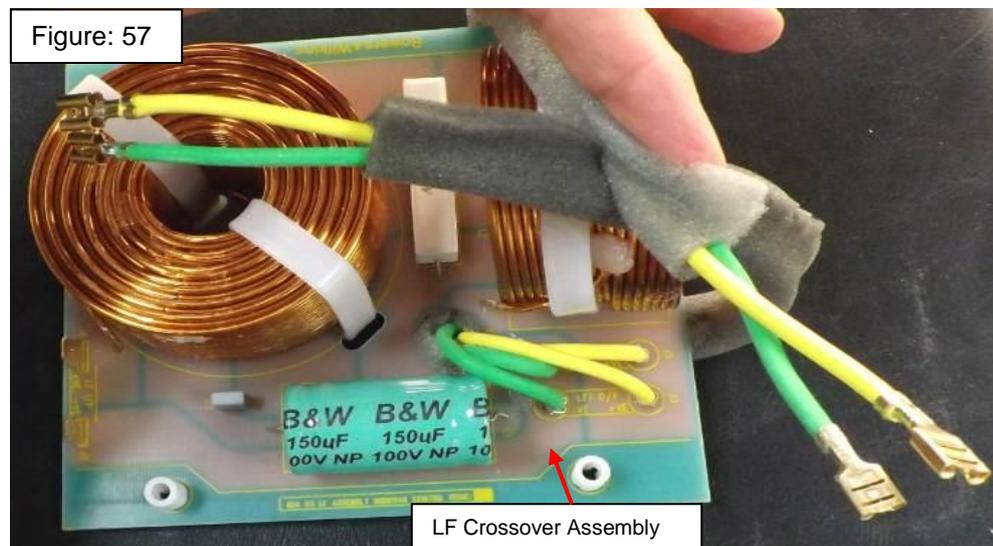
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As the LF Crossover is lifted out the 2 x Crimp connectors from the Upper Bass Unit Speaker will need disconnecting as shown in Figure: 56.



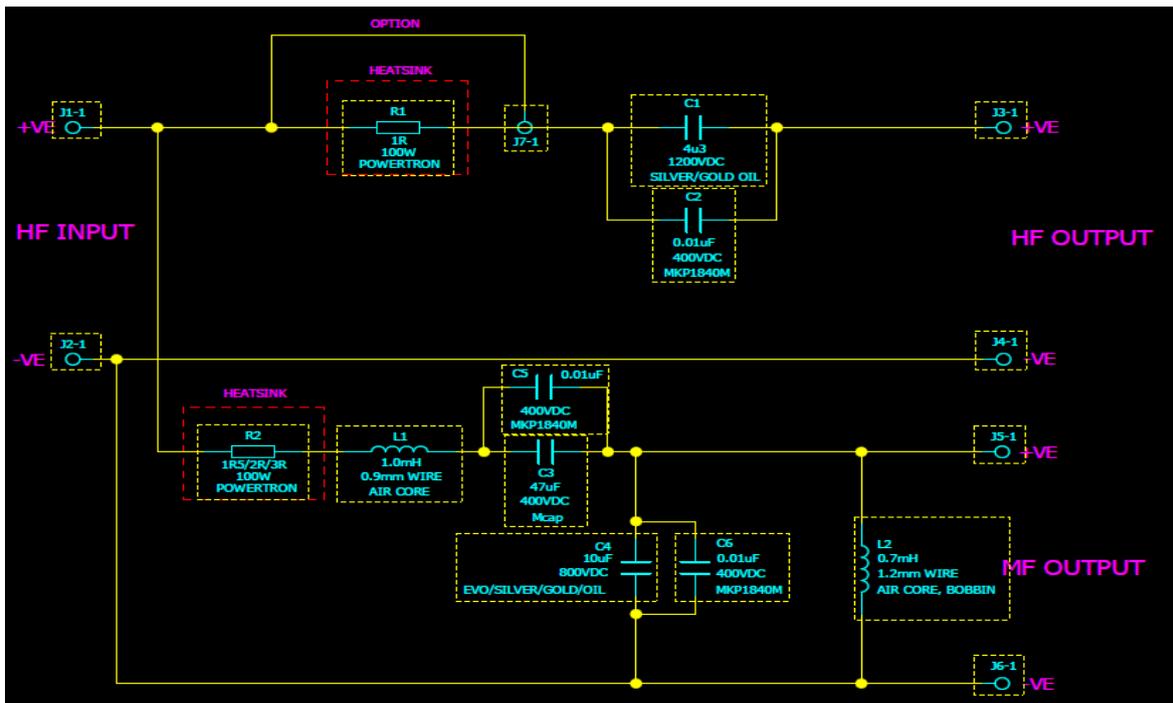
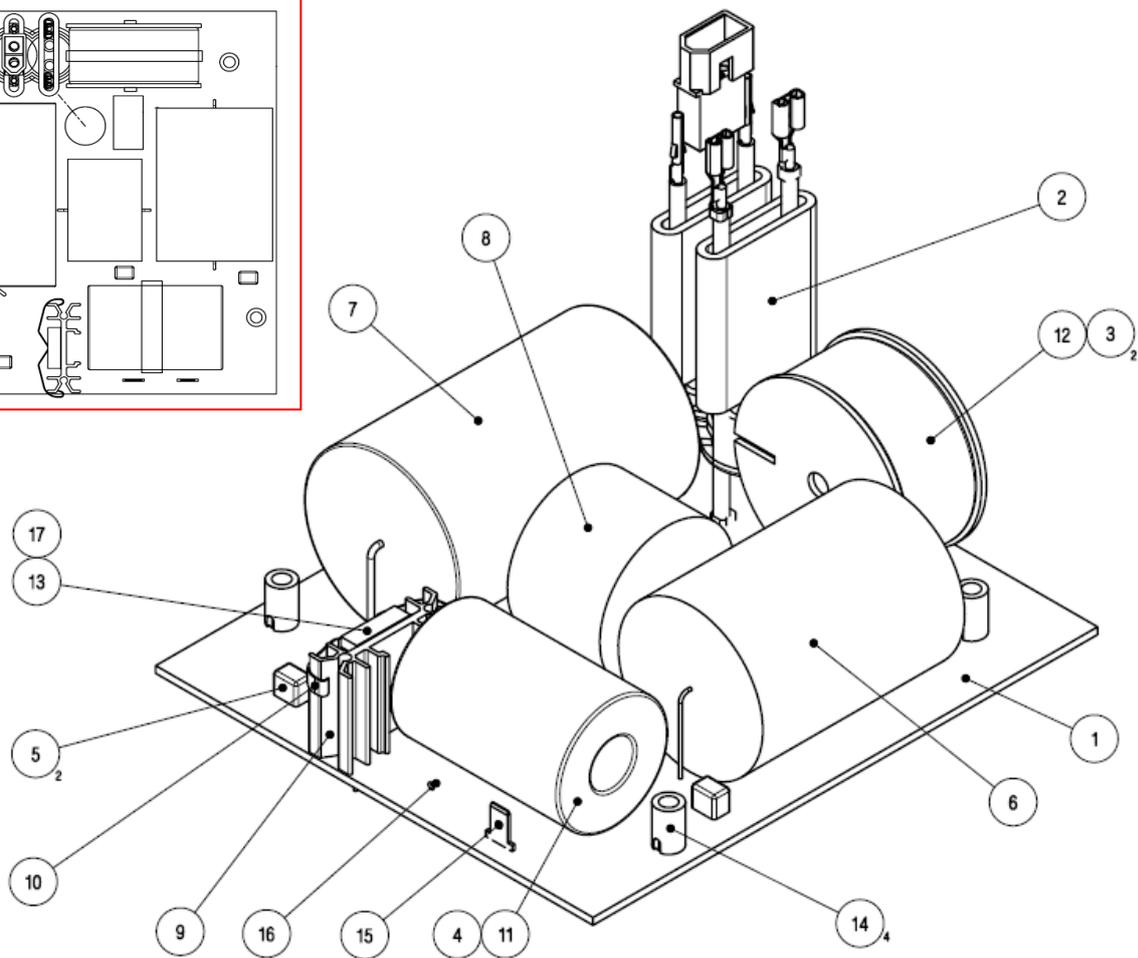
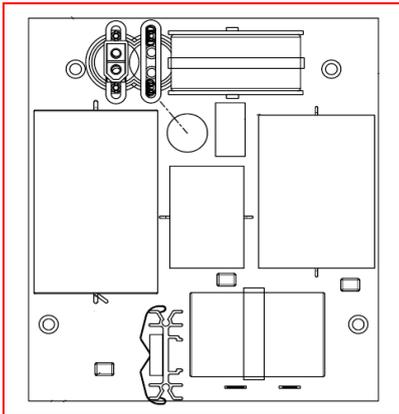
The LF Crossover Assembly can now be replaced in the reverse order, see Figure: 57 to view the complete LF Crossover Assembly.



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# Bowers & Wilkins TECHNICAL SUPPORT

## 22.HF Crossover Drawing & Circuit



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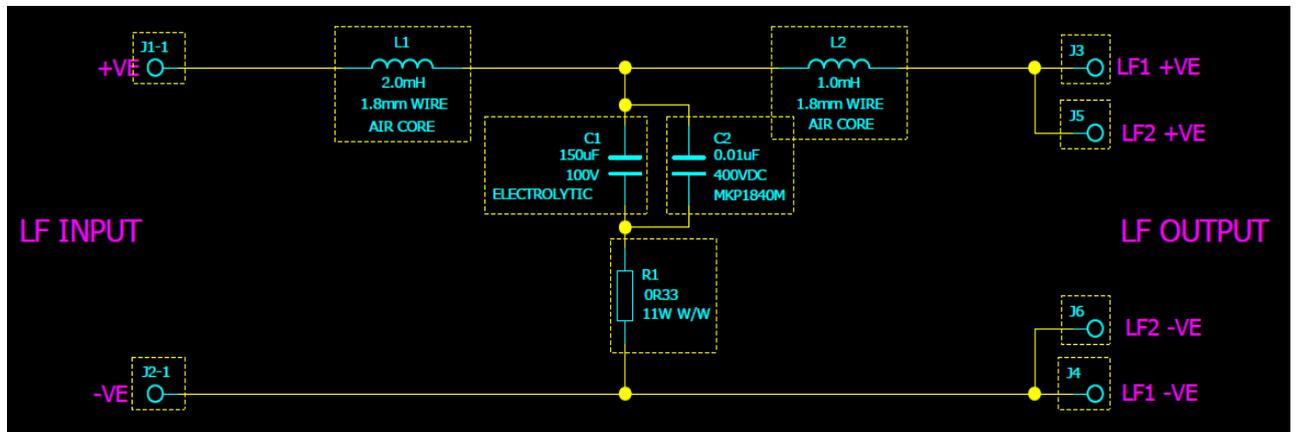
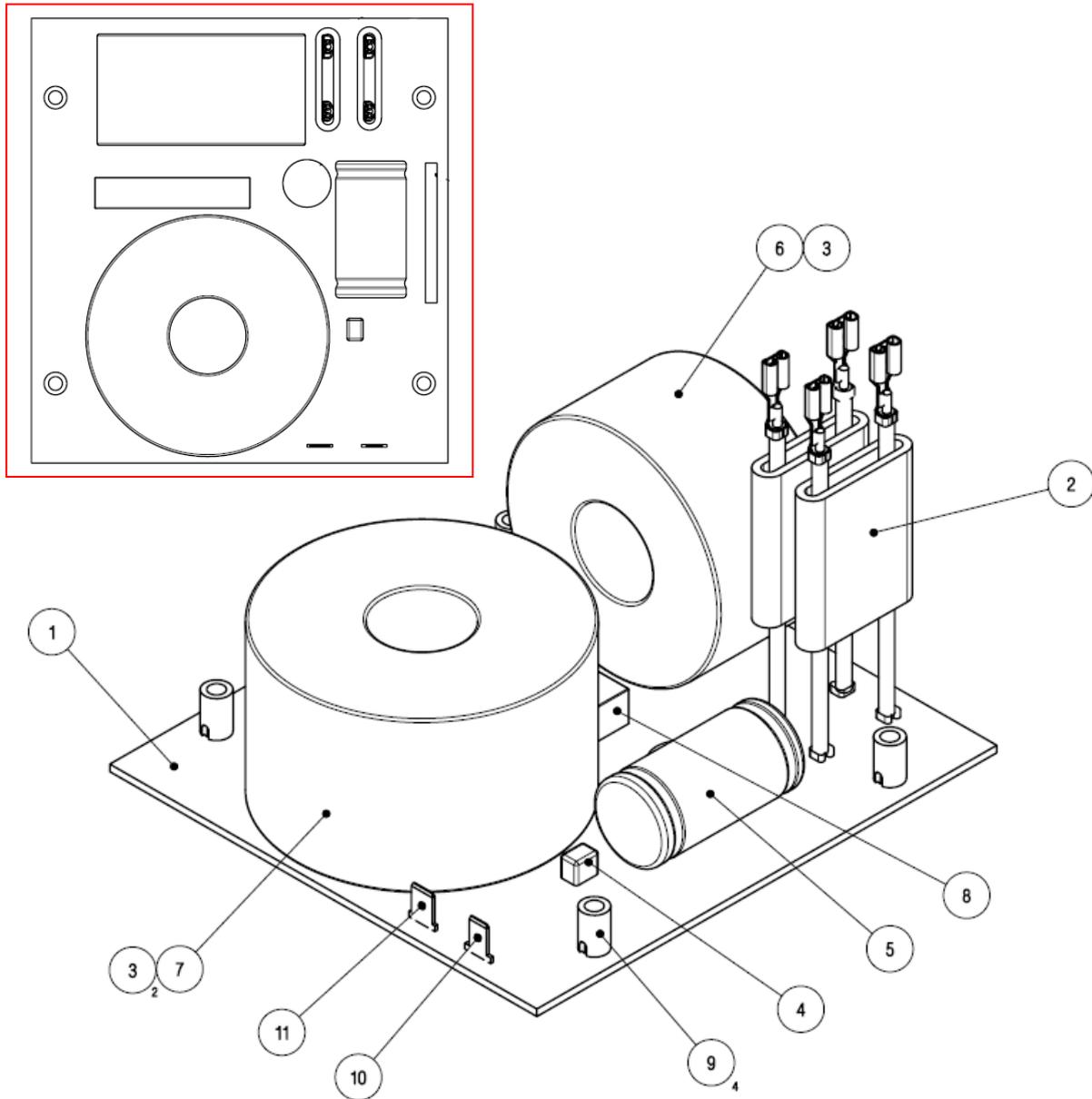
## 23. HF Parts List

17	nxm10000065925000	Thermal pad Q Pad II - 102 (Bergquist)	(R2)	HH31039	1
16	nxm10000056202000	Terminal Spade Male 6.3mm Gold	J1	TT06920	1
15	nxm10000056212000	Terminal Spade Male 5.2mm Gold	J2	TT07645	1
14	nxm10000065931000	Spacer, SRS8-7-01	-	HH31742	4
13	nxm10000087461000	RESISTOR 2R 1% POWERTRON	R2	RR34312	1
12	nxm10000056209000	Inductor 0.7mH 1.2mm AC Bobbin	L2	ZL02720	1
11	nxm10000088201000	INDUCTOR 0.75mH 0.9mm WIRE, AIR CORE	L1	ZL11045	1
10	nxm10000065920000	Heat Sink Clip 2004 800 Series X-Overs	(R2)	PP19695	1
9	nxm10000065921000	Heat Sink Ali "Type B"	(R2)	HH13706	1
8	nxm10000065897000	Cap 10uF Mcap EVO Silver/Gold Oil	C4	CC64661	1
7	nxm10000081652000	CAP 4u7 1200VDC Mcap S/G/O	C1	CC60429	1
6	nxm10000081661000	CAP 47uF 400VDC Mcap	C3	CC13847	1
5	nxm10000081654000	CAP 0.01uF 400VDC MKP1840M	C2,C5,C6	CC68780	3
4	nxm10000080327000	CABLE TIE 530mm x 9mm	(L1)	CC14540	1
3	nxm10000081755000	CABLE TIE 250mm x 4.8mm	(L2)	CC58914	2
2	nxm10000081688000	804 D3 HF/MF HARNESS ASSEMBLY	-	ZX10227	1
1	nxm10000081147000	804 D3 HF/MF CROSSOVER PCB	-	CC65641	1
ITEM No	PART NAME	DESCRIPTION	CCT REF	PART No	QTY

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## 24.LF Crossover Drawing & Circuit



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# Bowers & Wilkins TECHNICAL SUPPORT

## 25. LF Parts List

11	nxm10000056202000	Terminal Spade Male 6.3mm Gold	J1	TT06920	1
10	nxm10000056212000	Terminal Spade Male 5.2mm Gold	J2	TT07645	1
9	nxm10000065931000	Spacer, SRS8-7-01	-	HH31742	4
8	nxm10000056161000	RES 0R33, NRX11W 5% WIRE WOUND ROTEL	R1	RR25548	1
7	nxm10000088339000	INDUCTOR 2.0mH 1.8mm WIRE, AIR CORE	L1	ZL11053	1
6	nxm10000081939000	INDUCTOR 1.0mH 1.8mm WIRE, AIR CORE	L2	ZL02682	1
5	nxm10000088260000	CAP 150uf 100V 5% ELECTROLYTIC	C1	CC10030	1
4	nxm10000081654000	CAP 0.01uf 400VDC MKP1840M	C2	CC68780	1
3	nxm10000080327000	CABLE TIE 530mm x 9mm	(L1,L2)	CC14540	3
2	nxm10000081948000	804 D3 LF HARNESS ASSEMBLY	-	ZX10235	1
1	nxm10000081148000	804 D3 LF CROSSOVER PCB	-	CC65668	1
ITEM No	PART NAME	DESCRIPTION	CCT REF	PART No	QTY

## 26. Final Functional Test (Stethoscope Examination of Speakers)

### Aim of the Test

The stethoscope functional test can quickly reveal any air leaks or flaws following a repair to a loudspeaker. The only sound coming from a loudspeaker enclosure should be from the driver components themselves, not the surfaces or seams of the speaker cabinet. We normally hear in stereo as a result of our ears being placed at two separate points in space separated by several inches. When you use the stethoscope both of your ears hear from the same single point at the position of the listening piece. You are now listening not in stereo, but rather in mono mode which allows a greater accuracy in examining a particular sound source.

### Performing a Stethoscope Examination on a Speaker

For the following tests you should remove the chest piece from the end of the stethoscope and listen via the tube only.

There are two options for carrying out this test:

#### Option 1

Drive the speaker via an amplifier and signal generator set in the low bass region, say 20 to 60 Hz, to listen for air leaks at the enclosure seams, driver mounting edges, and jack plates. The smallest air leak will be heard clearly. Follow the same procedure as in Option 2.

#### Option 2

Start by playing your choice of music (frequency) through the speaker you wish to examine and keep the volume moderate.

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# Bowers & Wilkins TECHNICAL SUPPORT

Next place the earpieces of the stethoscope in your ears and place the listening tube around the piece on the Speaker Cabinet that you wish to examine.

Place the listening tube several inches in front of each driver in a multi-way speaker system you can hear each individual driver to a great extent.

Pan between the drivers as shown in Figure: 58, by moving the listening piece between the woofer and tweeter.

This allows very sensitive panning between drivers to listen for phase effects . . . such as a notch in the frequency response at crossover. Carefully move the listening tube about the surface of the enclosure noting the sound level remains consistent.

Figure: 58



Once these tests are complete and no leaks are found the Speaker is ready for its final clean before being returned to the customer.

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## 27. Cleaning

The cabinet surfaces will usually only require dusting. If you wish to use an aerosol or other cleaner, apply the cleaner onto the cloth, not directly onto the product and test a small area first, as some cleaning products may damage some of the surfaces.

Avoid products that are abrasive, or contain acid, alkali or antibacterial agents. Marks on the paint surface may be removed with a dilute perfume-free soap solution.

Remove any remaining streak marks by spraying with a proprietary glass cleaner and lightly wiping dry with a microfiber cloth. Do not use cleaning agents on the drive units and avoid touching them as damage may result.

# Bowers & Wilkins TECHNICAL SUPPORT

## 28. Product Test List:

### Passive Loudspeakers

- Sweep Frequency Test

20 Hz – 20 kHz (3 volts, all products) check for distortion & balance between left & right speaker

- Spot Frequency Test

4 volts – Book shelf

5 volts – Floor standing

6 volts – Headed (800 series)

- a) Between 20 – 50 Hz, check for air leaks around all joints & fixtures.
- b) At 30 Hz, check for internal leaking into midrange cavity (check MR driver is not moving)
- c) Between 20 – 500 Hz, check for rattles, buzzing & any other unwanted noise.
- d) Check for correct phase of all drive units.
- e) For Dipole, check functionality of dipole switching at 200 Hz

### Headphones

- Listen for unwanted noise between 20 Hz – 20 kHz (using hygienic ear cup)

### Active devices – Subwoofers & Docking stations etc.

- Set product to half volume & follow procedure as per above instructions, from (a) to (d)
- Check functionality of the following:
  - a) Ethernet, Auxiliary, USB, Component & Headphone Output
  - b) Silent audio track, check for hum at 1 Meter
  - c) Flash test ALL mains power supply units
  - d) Soak test for 1 week with audio signal all units returned more than once.
  - e) Check functionality of GUI as per user manual

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## 29. Test Result Sheet:

Reason for return:		<input type="checkbox"/> In Warranty	
		<input type="checkbox"/> Out of Warranty	
		<input type="checkbox"/> Chargeable	
PAT Testing Required	No	Date done:	N/A
Received packaging re-useable - - Yes / No		Serial no.	

1. Tools and Equipment Required	
Part Number	Description
	1 x Amp
	1 x CD Player
	1 x 800 D3 Tool Kit
	1 x Other Tools as specified
	1 x Stethoscope
	1 x Signal Generator
	Latex Gloves

Documents Required	
Document Number	Description

2. Cosmetic Inspection: Tick the box to confirm check done and add comments in notes if required			
Check Cabinet for Damage	<input type="checkbox"/>	Check Flow Port	<input type="checkbox"/>
Check Tweeter/Grille	<input type="checkbox"/>	Check Terminal Tray	<input type="checkbox"/>
Check the Mid-Range	<input type="checkbox"/>		
Check the Upper & Lower Bass	<input type="checkbox"/>		
Notes:			
Date:		Operator:	

1 <sup>st</sup> Review Before Service/Repair: Commercial / Sales / Technical			
Carrier informed of damage	<input type="checkbox"/>	Claims form raised	<input type="checkbox"/>
Customer informed of damage	<input type="checkbox"/>	Customer quoted	<input type="checkbox"/>

Authorisation:	Date:	
----------------	-------	--

Repairs performed and replacement parts used (List the quantity, part number and serial numbers):
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3. Functional Test:	Add initials to the box
Connect 804D3 Speakers to Amp/CD Player and check for Sound	Yes/No
Check audio for Tweeter/Mid- Range & Bass Units output is working	Yes/No

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# Bowers & Wilkins TECHNICAL SUPPORT

<b>5. Speaker Bi-Wiring</b>	
Check RH/LH speakers are working Bi-wire Yes/No	
<b>10. Tweeter &amp; Motor Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
Does the Grille need replacing? Yes/No (LH/RH or Both)	
<b>12. Tweeter Unit Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>13. Mid-Bass Speaker Assembly</b>	
R/H Speaker does it need replacing? Yes/No (LH/RH or Both)	
L/H Speaker Does it need replacing? Yes/No (LH/RH or Both)	
<b>14. Draw Bar Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>15. 5"MF Cabinet Tube Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>16. Bass Unit Speaker Assembly</b>	
R/H Speaker does it need replacing? Yes/No (LH/RH or Both)	
L/H Speaker Does it need replacing? Yes/No (LH/RH or Both)	
<b>17 &amp; 18. 6"MF Cabinet Tube Assembly</b>	
Does one or two need replacing? Yes/No (LH/RH or 1,2,3 or 4)	
<b>19. Terminal Tray Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>20. HF Crossover Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>21. LF Crossover Assembly</b>	
Does it need replacing? Yes/No (LH/RH or Both)	
<b>11. Final Functional Test</b>	
Connect 804D3 Speakers to Amp/CD Player and check for Sound Yes/No	
Check audio for Tweeter/Mid- Range & Bass Units output is working Yes/No	
Check RH/LH speakers are working Bi-wire Yes/No	
Check RH/LH Tweeters/Mid-Range/Bass speakers for leakage using a Stethoscope Yes/No	
Check RH/LH Terminal Links are fitted Yes/No	

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# Bowers & Wilkins TECHNICAL SUPPORT

**2<sup>nd</sup> Review During Service and Testing:** Commercial / Sales / Technical

Note: Additional parts

Customer informed of damage       Customer quoted

<b>Authorisation:</b>		<b>Date:</b>	
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<input type="checkbox"/> <b>Results Recorded</b>	<b>Date:</b>		<b>Checked by:</b>	
<input type="checkbox"/> <b>Clean 804D3 Speakers</b>	<b>Date:</b>			

Successful completion of repair and all documentation completed	<b>Management Signature:</b>	
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