



R5

3-way compact precision point source loudspeaker

Product User Manual
v1.1 April 2024



emaoustics

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DECLARATIONS OF CONFORMITY



This declaration applies to:

10M605 – R5 compact 3-way precision passive point source loudspeaker

This declaration also applies to all product variants, provided that they conform to the original technical specification and have not been subject to any non-factory modifications.

We herewith declare that the products listed above are in conformity with the provisions of the respective directives including all applicable amendments.

Details of the applicable declarations can be downloaded from our website www.emacoustics.co.uk on the individual product pages.

WEEE Declaration



This product and its packaging constitute the applicable product according to the WEEE directive. Please ensure that at the end of the working life of this product, it is disposed of sensibly in accordance with local and national recycling regulations.

The packaging supplied with this product is recyclable.

Please retain all packaging, however if disposing of this packaging please ensure that you comply with local recycling regulations.

WEEE Producer Registration Number WEE/HH0101WU.

1.0 - Introduction

Thank you for purchasing this highly acclaimed product from EM Acoustics. This product has been designed and rigorously tested to give you the utmost in sonic performance and many years of reliable, trouble-free operation. Please take the time to read this user manual thoroughly to ensure you get the best performance from your system and to ensure you set it up correctly and safely. If you have any questions or are in any doubt whatsoever about any aspect of your new product, please do not hesitate to contact us directly or your local EM Acoustics representative.

The R5 is a revolutionary 3-way loudspeaker, intended for a wide variety of audio applications - from theatrical use through to corporate A/V, speech reinforcement and even small scale live music reinforcement. The ultra-compact and slim enclosure houses a pair of 5" neodymium LF drive units and a 1.5" diaphragm, 1" exit annular HF compression drive unit coupled to a rotatable constant coverage waveguide. Two waveguides are supplied with the R5 - 80° x 50° fitted as standard and 110° x 50° supplied loose. These three drive units are linked with a completely new type of passive crossover network, designed from the ground up to work in conjunction with the FIR (Finite Impulse Response) processing in the DQ Series advanced system amplifiers. This means the R5 exhibits a level of frequency and phase response previously unattainable, all within a lightweight and discreet physical package.

This manual contains all the information you should need on topics of set up, amplifier connection and basic service. If you feel we have missed anything, or you have a question not covered by this manual, please visit our website www.emacoustics.co.uk and send us a message or give us a call - we're only too happy to help.

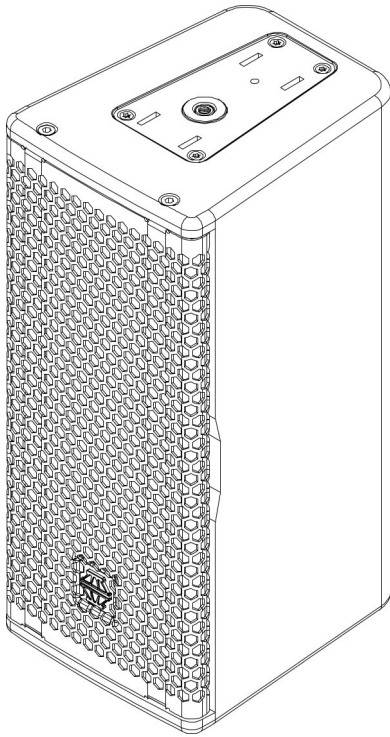
Unpacking

Please take care when unpacking your loudspeaker system. Once unpacked, please inspect each enclosure thoroughly for any transit damage and in the case of any damage please notify your carrier immediately. It is the responsibility of you, the consignee, to instigate any claim. Please retain all original packaging in case of future re-shipment.

2.0 - R5 & Accessories

R5

3-way compact precision point source loudspeaker



FEATURES & BENEFITS

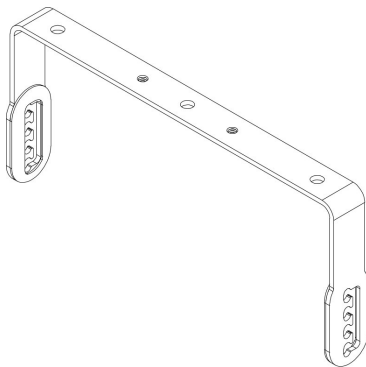
- Signature EM Acoustics "maximum headroom" design approach ensures consistency of performance regardless of SPL level.
- Quick-release flying system for touring applications.
- Multiple M8 threaded flying points for temporary and permanent installation.
- Enclosure coated with 3-step polyurethane process - ensuring the cabinets are not only weather resistant but more resilient to impact damage.
- Various rigging accessories available.
- Connections on NL4.
- Single DQ Series amplifier channel required.

KEY SPECIFICATIONS

ENCLOSURE TYPE:	3-way passive, reflex loaded
DRIVE UNITS:	LF/MF: 2 x 5" / HF: 1" exit annular compression driver
FREQUENCY RESPONSE:	80Hz - 20kHz +/-3dB
NOMINAL DISPERSION:	80° x 50° rotatable (narrow) 110° x 50° rotatable (wide)
MAXIMUM SPL:	118dB continuous, 124dB peak
NOMINAL IMPEDANCE:	8 ohms
DIMENSIONS (HxWxD):	400 (15.8) x 172 (6.8) x 210 (8.3) mm/(ins)
NET/SHIPPING WEIGHT:	7/8.2kg (15.4/18lbs)

FC-R5h

Horizontal flying cradle

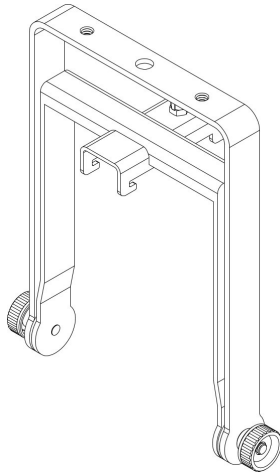


The FC-R5h is a simple and effective means of mounting the R5 horizontally in both temporary and permanent applications.

It is secured to the cabinet by means of two M8 hand knobs into the top and bottom of the loudspeaker to mount it in a landscape format. Multiple 13mm diameter holes are provided for attachment in installation or via a hook clamp or similar. Two M10 threaded fittings are provided to allow mounting onto a 35mm loudspeaker stand using the Cradle Pole Adapter.

The FC-R5h is designed to support one single R5 loudspeaker.

Weight (including fixings) 1.1kg / 2.4lbs

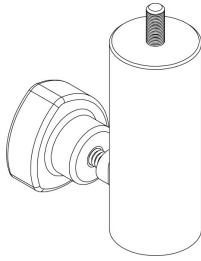
FC-R5v**Vertical flying cradle**

The FC-R5v is a simple and effective means of mounting the R5 vertically in both temporary and permanent applications.

It is secured to the cabinet by means of a quick-release keyhole plate in the top of the loudspeaker to mount it in a portrait format. A single 13mm diameter fixing point is provided at the top of the outer yoke for attachment either in installations or via a hook clamp or similar. Two M10 threaded fittings are provided to allow mounting onto a 35mm loudspeaker stand using the Cradle Pole Adapter.

The FC-R5v is designed to support one single R5 loudspeaker.

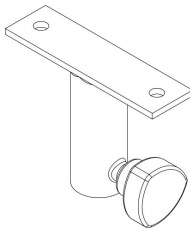
Weight (including fixings) 1.75kg / 3.9lbs

PM-61 Stand Adapter**Simple stand mounting**

For simple mounting on a loudspeaker stand or pole, the R5 is packaged with a screw-in 35mm adapter. The adapter attaches via the central M8 threaded point in the bottom of the R5.

The stand adapter is designed to support one single R5 loudspeaker.

Weight (including fixings) 0.75kg / 1.7lbs

Cradle stand adapter**Stand mounting with flying cradles**

To allow the mounting of the R5 on a stand yet keeping the ability to tilt the loudspeaker, the R5 cradles can both be used with this optional accessory. Using the supplied M10 fixings, the cradle stand adapter attaches to the flying cradle allowing it to be mounted directly onto a loudspeaker stand.

The cradle pole adapter is designed to support one single R5 loudspeaker.

Weight (including fixings) 0.5kg / 1.1lbs

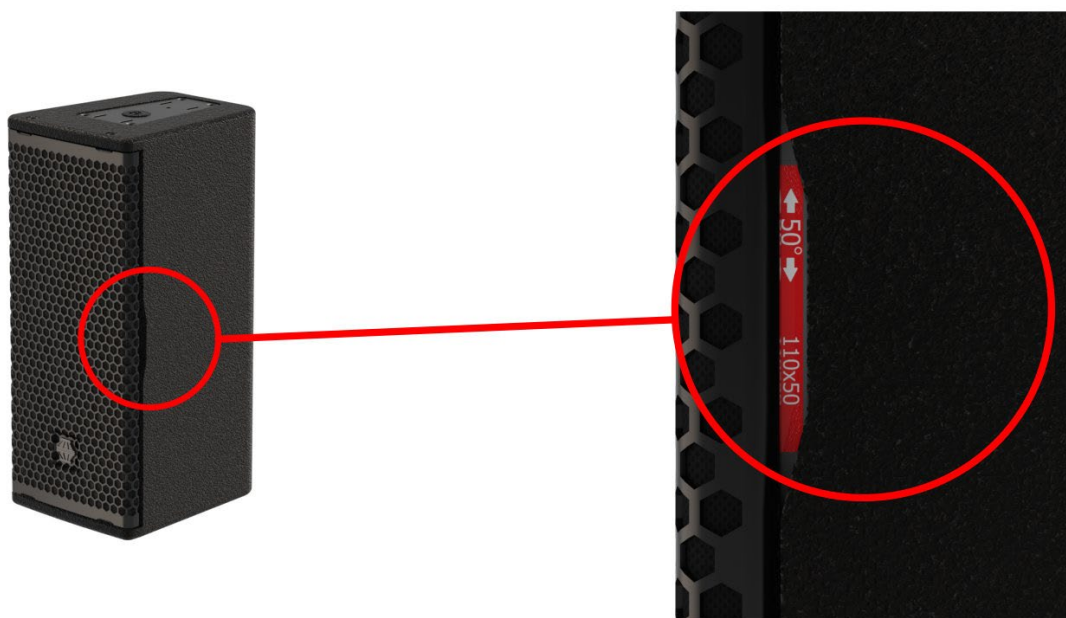
2.1 - Determining the installed waveguide and orientation

There are two waveguides supplied with the R5 loudspeaker, and each waveguide is rotatable meaning there are four possible waveguide dispersion combinations.

To make identifying which waveguide is installed simple and quick, there is a viewing recess in the enclosure on each side where the grille meets the enclosure woodwork.

Simply look in this small recess, and the identifying label will show which waveguide is fitted and its orientation.

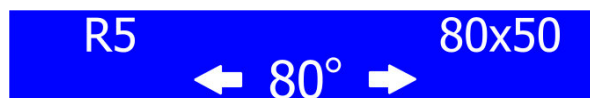
The 80x50 waveguide has blue indicator labels, and the wider 110x50 waveguide has red indicator labels.



NOTE:

The arrows indicate the dispersion in the direction shown - in the example above, the label indicates that the 110° x 50° horn is fitted and is oriented so it is 50° in the vertical plane (and therefore 110° in the horizontal plane).

By default, the R5 ships from the factory with the 80x50 waveguide fitted, and the dispersion pattern 80° horizontal x 50° vertical when the loudspeaker is in a portrait format. In this format, the label showing in the viewing recess would be:



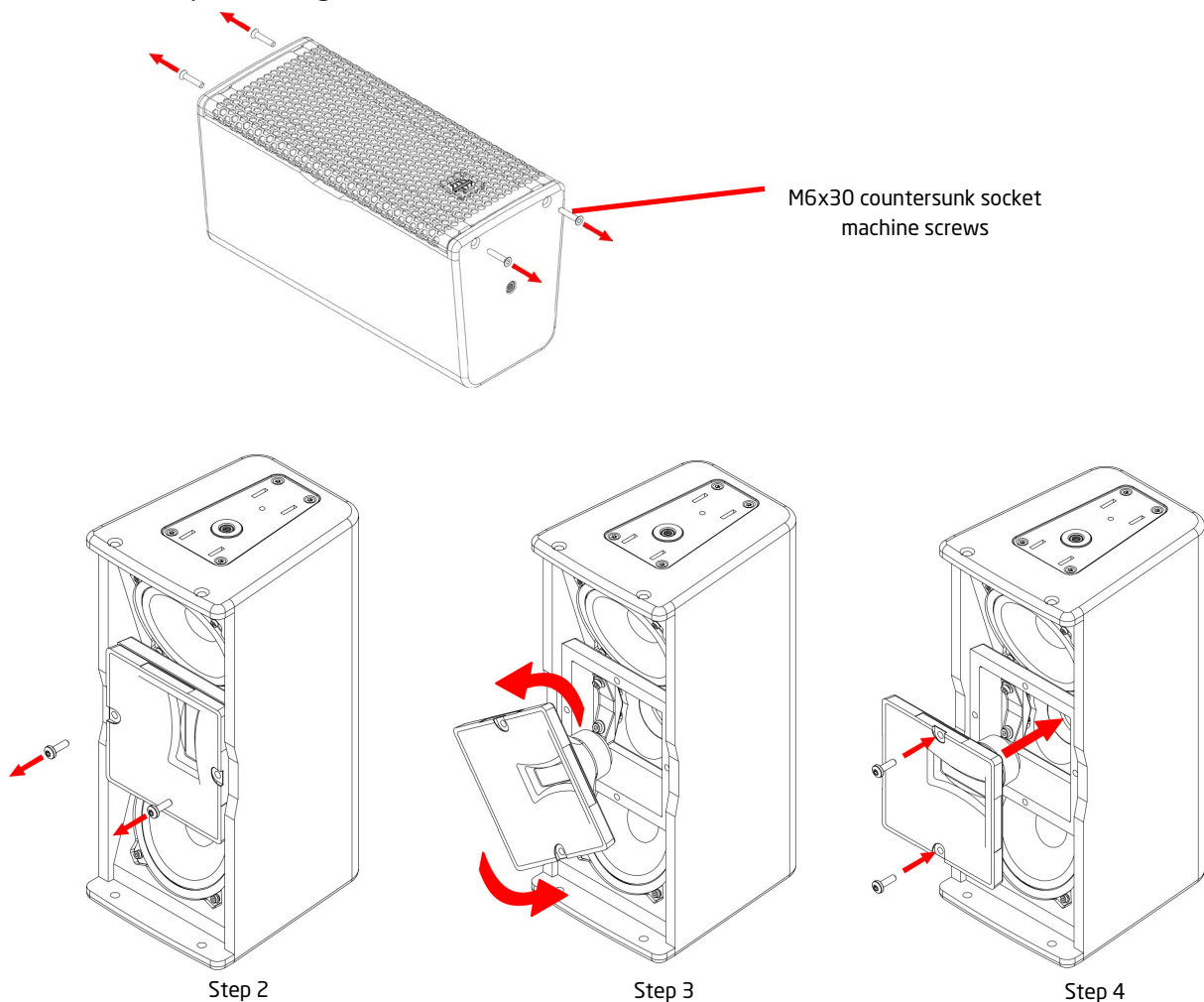
2.2 - Rotating the HF waveguide

The high frequency waveguide of the R5 can be easily rotated to provide appropriate dispersion in both portrait and landscape formats.

By default, the R5 ships from the factory with the dispersion pattern 80° horizontal x 50° vertical when the loudspeaker is in a portrait format.

To rotate the waveguide:

1. Use a 4mm Allen key to remove the four M6 countersunk machine screws that secure the grille (two top, two bottom) and lift the grille clear.
2. Using a 4mm Allen key, remove the two M6 x 16mm button head socket screws that secure the waveguide.
3. Lift the waveguide up from the enclosure to rotate through 90 degrees to the desired orientation - the label on the side of the waveguide denotes the dispersion.
4. Once in the correct orientation, replace the M6x16 button head socket screws and retighten.
5. Replace the grille.



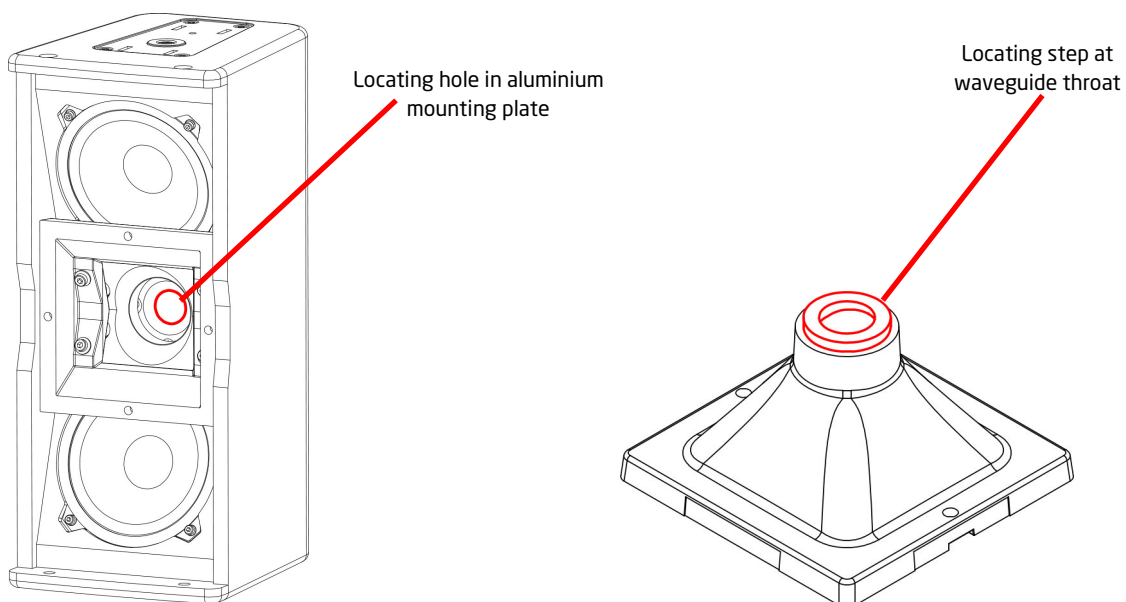
2.3 - Changing the HF waveguide

The R5 is supplied with two waveguides for maximum flexibility - a narrow dispersion (80° x 50°) and a wide dispersion (110° x 50°).

By default, the R5 ships from the factory with the dispersion pattern 80° horizontal x 50° vertical when the loudspeaker is in a portrait format.

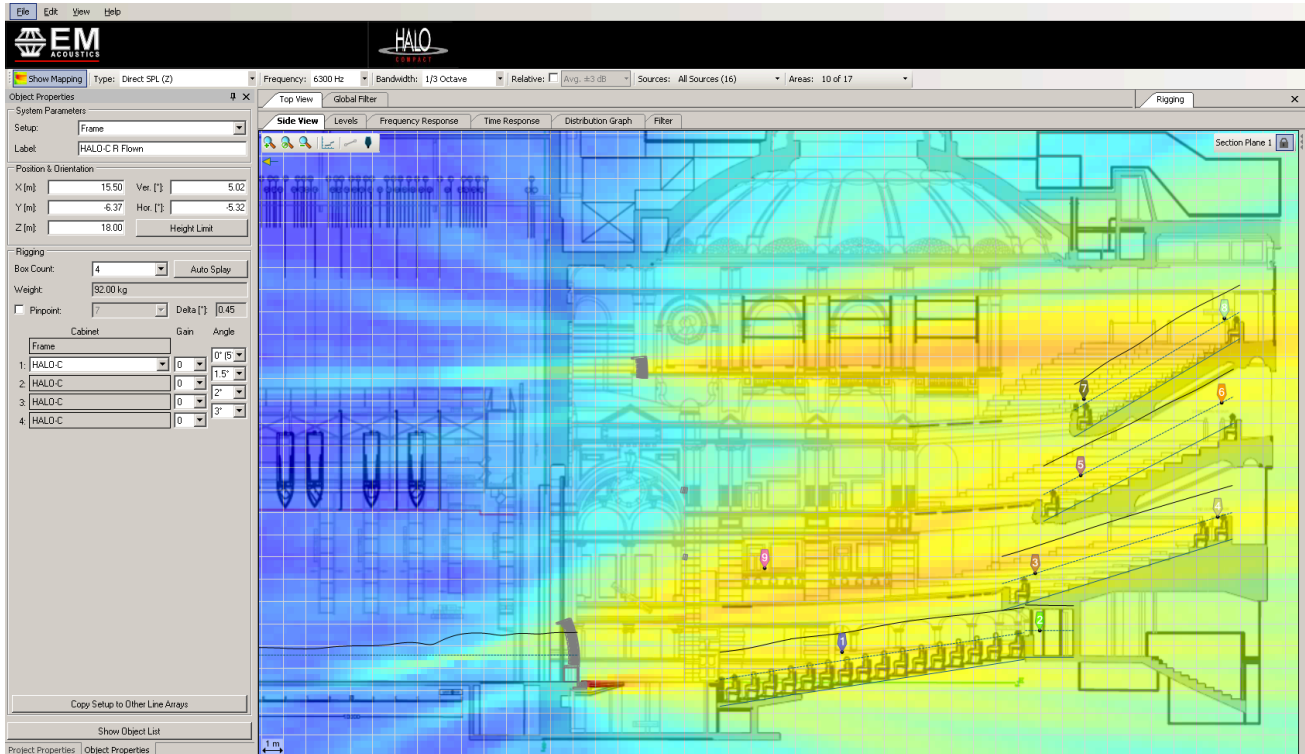
To change the waveguide:

1. Follow steps 1 & 2 in chapter 2.2 to remove the grille and the waveguide securing bolts.
2. Lift the waveguide clear of the enclosure - the drive unit is secured internally to the loudspeaker, and as such the waveguide is free to be removed once the bolts are removed.
3. Fit the alternative waveguide into the enclosure - note that there is a precise fit at the throat of the waveguide with the aluminium mounting plate in the enclosure, so ensure this is located properly before attempting to retighten the bolts.
4. With the waveguide in the correct orientation, replace the M6x16 button head socket screws and retighten.
5. Replace the grille.



3.0 - Simulation

Ease Focus 3



For acoustic reasons it is advised that users familiarize themselves with Ease Focus 3 - this system provides the user with accurate simulations for setting up R5 loudspeakers.

Ease Focus 3 can be downloaded for free from the AFMG website at <http://focus.afmg.eu> and is currently available as a stand-alone application for Windows (XP or Higher) only. It can also be downloaded directly from the [EM Acoustics website](#) with all the current product files embedded.

Tutorials for Ease Focus 3 are available from with the application itself.

For training on the design and implementation of R5 loudspeakers including the specific use of Ease Focus 3, please contact your local distributor.

4.0 - Safety Considerations

General Considerations in use

Loudspeaker systems are potentially dangerous objects if used incorrectly. Please ensure that you read this section fully, and contact EM Acoustics or your local dealer should you be in any doubt over correct operation procedures.

Personal Injury

Never stand in the immediate vicinity of loudspeakers when in use at high level. Professional loudspeaker systems are capable of producing sound pressure levels which can cause permanent damage to human hearing. Levels in excess of 90dB can cause hearing damage if people are exposed to them over a long period of time, so care and attention must be used for both staff and audience members.

When deploying loudspeaker systems on the ground or when flown, please take careful note of the following important safety considerations:

- Only use accessories and flying hardware supplied or approved by EM Acoustics for flying or transporting loudspeaker systems. Pay close attention to specific instructions, especially those considering maximum load capabilities as detailed in the appropriate user manuals or on the legend labels on the accessories themselves.
- Ensure all additional accessories, fasteners and secondary safeties are of an appropriate size, working load limit and safety factor.
- All loudspeakers and accessories should be regularly inspected for signs of wear and tear, and any damaged parts should be replaced.
- All load bearing parts and assembly bolts on accessories should be regularly checked to ensure they are tight and not worn.

Stand Mounting

When mounting loudspeakers on a stand, please take note of the following important considerations:

- Ensure your stand height is locked off and the tripod legs are positioned so as to be stable.
- Check the weight loading of your stands before attempting to mount the loudspeaker.
- Do not stack a second loudspeaker on top of the stand-mounted one.
- Ensure cables are run so as to leave enough slack to enable neat wiring, and thus reduce the risk of the speaker being pulled over. Loose cables should be covered or taped down wherever possible to reduce trip hazards.
- If stands are being used outdoors, it may be necessary to add ballast to the base of the stand to prevent it toppling over.
- When using poles on top of subwoofer systems, please observe similar precautions.

Ground Stacking

- Ensure that the floor or stage surface can withstand the weight of the system.
- Wherever possible, avoid high stacks and use ratchet straps to secure loudspeakers together. Please also remember that vibrations from subwoofer systems can shake other loudspeakers out of place, which may present a toppling hazard. The use of ratchet straps and non-slip material is recommended to prevent this.

Rigging and Suspension

Please see Chapter 5 for further information on the detailed rigging options for your loudspeaker system.

WARNING: The overhead suspension of loudspeakers is a very serious issue with potentially lethal consequences should anything go wrong. Rigging should only be carried out by experienced personnel following safe working practice. Should you be in any doubt whatsoever, please contact your local dealer who will be able to refer you to a suitable rigging company.

To ensure the highest standards of safety, the following information on array assembly must be exactly followed and understood.

Only use EM Acoustics recommended rigging hardware and accessories, which are specifically designed for the purpose. Do not use these accessories for any other loudspeaker system – the components are specifically designed to work with this product and are not interchangeable with any other EM Acoustics loudspeaker product (unless where specifically stated) or any other loudspeaker system. The use of EM Acoustics accessories with other manufacturers' systems may compromise the safety standards and EM Acoustics is in no way liable for any loss, damage or injury caused by such practice.

Do not modify or alter the R5 loudspeaker or accessories, nor use them in any way other than that described in this manual. Rigging components supplied with the R5 are in no way interchangeable and should not be used as such.

The component parts of the R5 and its accessories should only be assembled in the manner described in this manual, using the fasteners and fixings stated herein. The use of fasteners and methods of assembly not described in this manual may result in an unsafe assembly and as such EM Acoustics will not be responsible for any loss, damage or injury caused by such practice. Welding, drilling or any other means of modifying any part of the flying hardware or permanently fixing components to each other is strictly forbidden.

Rigging assemblies must only be assembled using the appropriate parts and fixings as described in this manual, explicitly following the assembly instructions given herein. Rigging components must only be fixed to the R5 loudspeaker, using the correct cabinet location points, assembly methods and fasteners specifically described within this manual.

Walls, floors and ceilings must be capable of supporting the actual load placed upon them. The rigging hardware must be safely and securely fixed to both the loudspeaker system and the supporting structure.

Secondary Safeties

It is imperative that all loudspeakers flown in any given environment should be provided with a second, independent and properly rated safety suspension point in addition to the principle load bearing means of suspension. Steel wire ropes or steel chains of an approved construction and load rating only may be used as secondary safeties. Plastic covered steel chains may not be used as secondary safeties under any circumstances. Also ensure that all local and national laws are complied with when determining your primary and secondary suspension points.

Safety Inspections

Carefully inspect all flying system components prior to use for defects or signs of damage prior to installing or mounting your loudspeaker. If any components damaged or **you suspect them to be damaged, DO NOT USE THEM.**

Regular scheduled tests - which are much more rigorous than visual inspections - of all rigging components must also be carried out. Safety legislation, and test/inspection requirements, will vary from country to country and as such it is the user's responsibility to ensure that local regulations are adhered to. In most cases, annual independent tests & inspections carried out by a suitably approved and qualified inspector will be required.

EM Acoustics recommends detailed logbooks be kept of all inspections and load tests to ensure an accurate record is kept of the testing for each EM Acoustics rigging accessory.

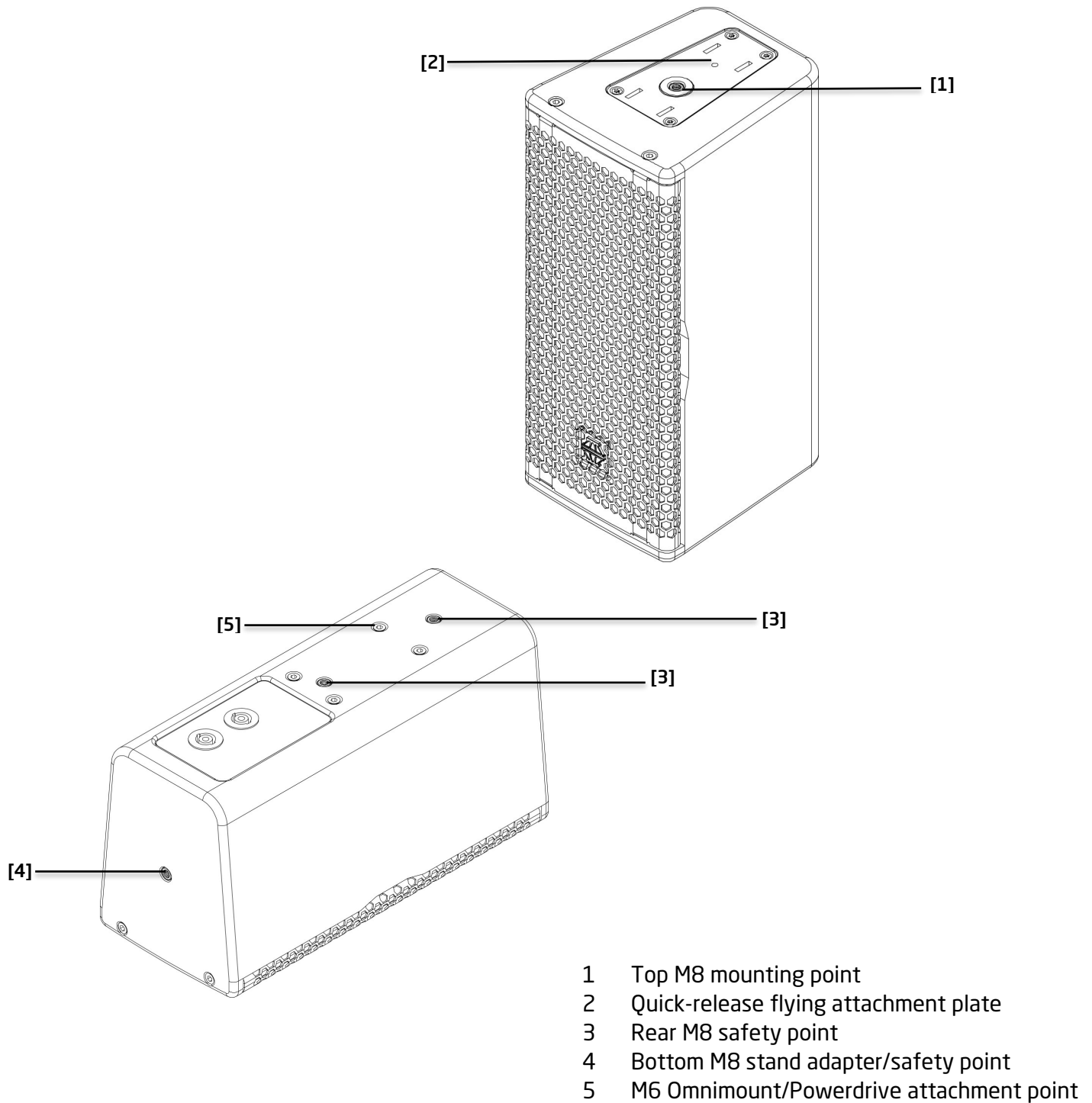
When flying any loudspeaker system, always wear protective headwear, footwear and eye protection in accordance with local regulations.

Material Damage from Magnetism

Loudspeakers produce a static magnetic field at all times - even when not in use. Certain devices are susceptible to external magnetism, and as such a safe distance should be maintained to prevent damage. It is recommended that a safe distance of 0.5m (1.5ft) is maintained from loudspeakers when stored, transported and in use, from devices such as computer hard drives, magnetic media, bank cards to remove the risk of corruption. Larger distances may be required for some older cathode ray tube displays.

5.0 - Rigging & Mounting Options

5.1 - R5 Cabinet Overview



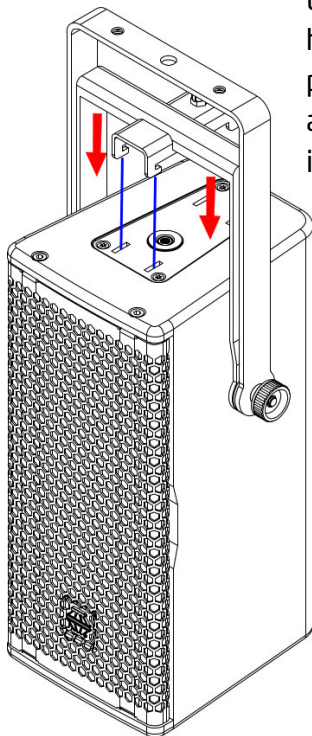
5.2 - Using the FC-R5v

The FC-R8v is intended to mount the R5 vertically - either using a hook clamp or similar from above, or a pole mount adapter to mount on a stand yet allowing enclosure tilt (see chapter 5.6). The procedure for attaching the FC-R5v to the loudspeaker is the same regardless of the mounting orientation.

The FC-R5v uses steel machined parts to bear the load, and a quick release sprung plunger to secure the cradle in place.

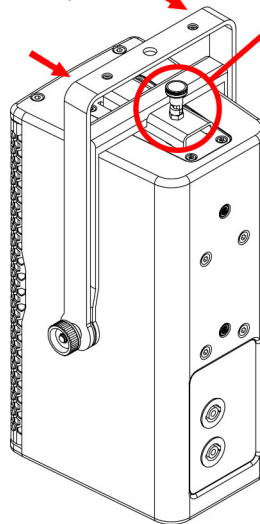
Step 1

Line the FC-R5v up so the metal hooks are over the slots in the flying plate. Press the FC-R5v down gently, and this will lift the plunger up from its normal rest position.



Plunger in raised position

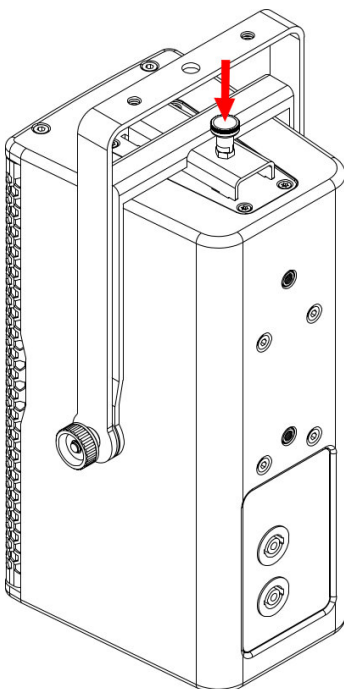
Step 2



Slide the FC-R5v to the rear of the loudspeaker - when the plunger moves over the locking hole, the spring will force the locking pin into place. You will hear a "click" when this occurs, and the plunger will return to its normal rest position.

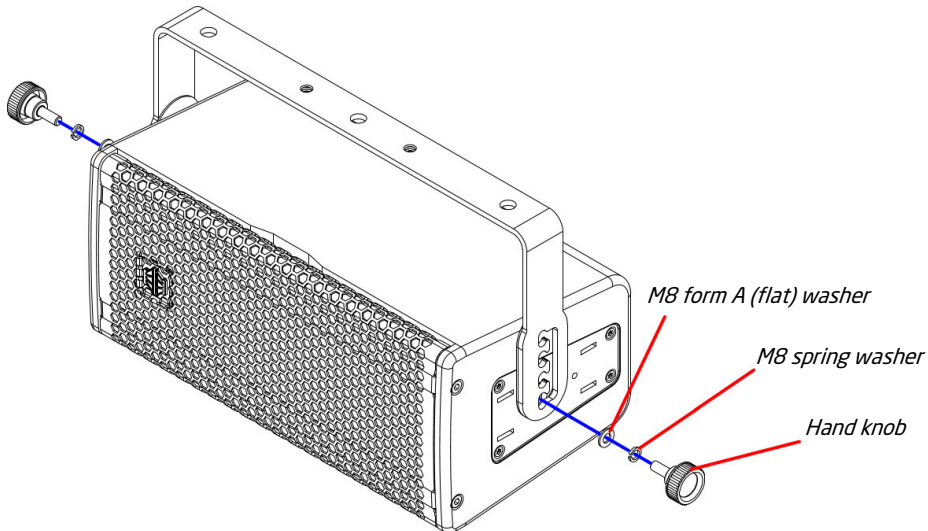
Step 3

The FC-R5v is now ready to be lifted - using a hook clamp or similar from the central pickup point on the outer yoke. To remove, simply lift the plunger and slide the bracket forwards.



5.3 - Using the FC-R5h

The FC-R5h is intended to mount the R5 horizontally. To fit, lie the R5 on its side and line the flying cradle up with the mounting holes in the desired location (see 5.3.1 below). Secure to the R5 using the supplied M8 locking knobs.

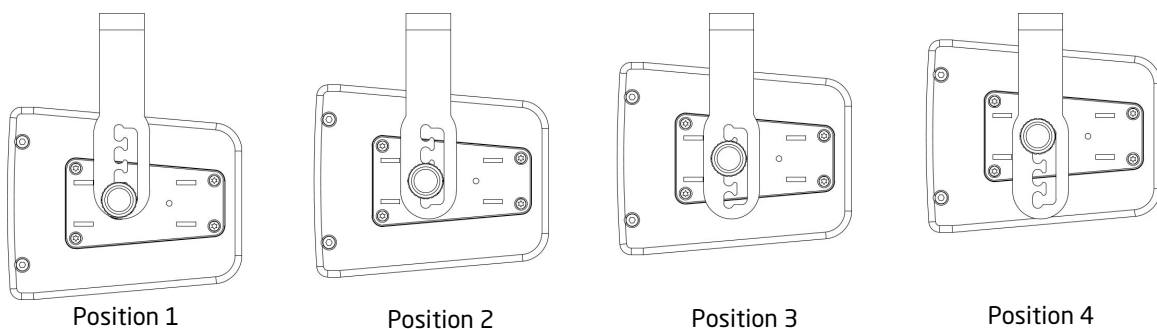


Ensure that the washers are in the correct order - form A (flat) in contact with the frame, and then the spring washer between the flat washer and the locking knob. Tighten the handles on both sides to lock the desired angle for the R5.

Always ensure that a secondary safety is used when suspending any loudspeaker.

5.3.1 - Drop height adjustment on the FC-R8h

Different location lugs to secure the R5 to are provided on the FC-R5h mounting yoke. Position 1 (closest to the end of the yoke arms) allows full 360° rotation of the loudspeaker, and positions 2-4 offer a closer fit to the yoke, but with reduced rotational ability of the loudspeaker itself.

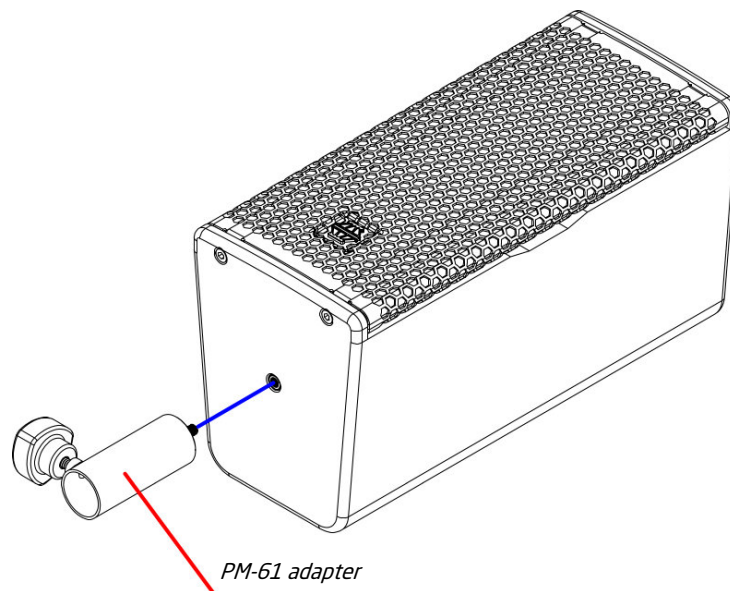


Note that the different locations are linked by a slot, so the position can be adjusted by simply loosening the grip knobs and sliding the R5 to the rear of the bracket so it can move freely. Slide forward into the desired location so the grip knob threads rest on the bracket, and tighten to lock the angle. This technique works whichever way up the bracket is used.

5.4 - Using the PM-61 Stand Adapter

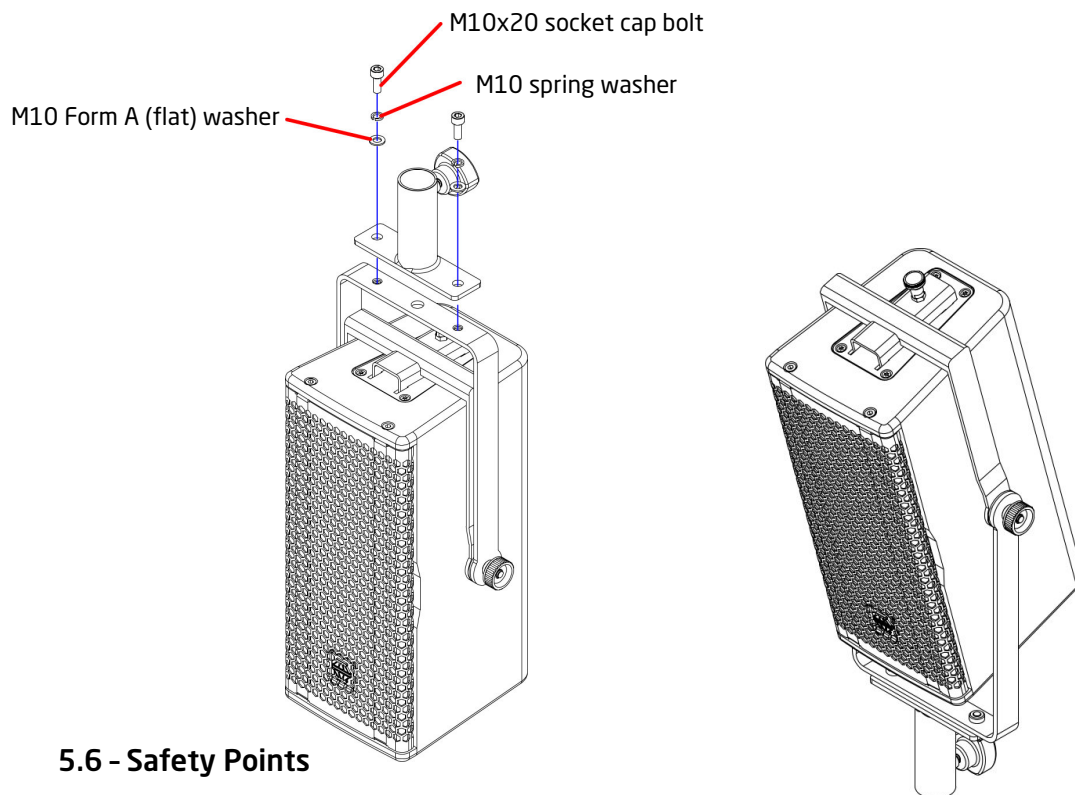
The R5 is supplied with the PM-61 stand adapter, allowing the user to mount the R5 directly onto a standard 35mm loudspeaker stand or distance pole. To fit, simply lie the R5 on its back or stand it on its top, line the PM-61 up with the M8 mounting hole on the base of the enclosure.

Screw the PM-61 into the bottom of the R5 until the rubber grip disc at the top mates with the bottom of the R5 enclosure, and the assembly is tight.



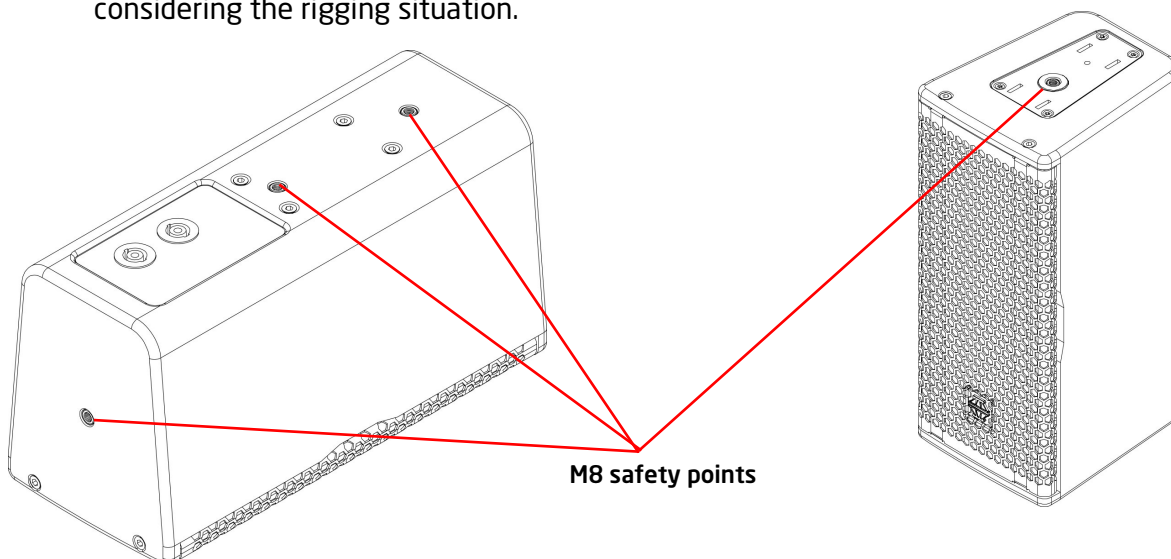
5.5 - Using the Cradle Stand Adapter

The Cradle Stand Adapter allows the use of both the FC-R5v and FC-R5h flying cradles to mount on loudspeaker stands, to give tilt as well as pan. To use, simply fit the desired flying cradle as described above, and then secure the Cradle Stand Adapter to the outer yoke of the cradle using the supplied fixings into the captive threaded fittings in the yoke.



5.6 - Safety Points

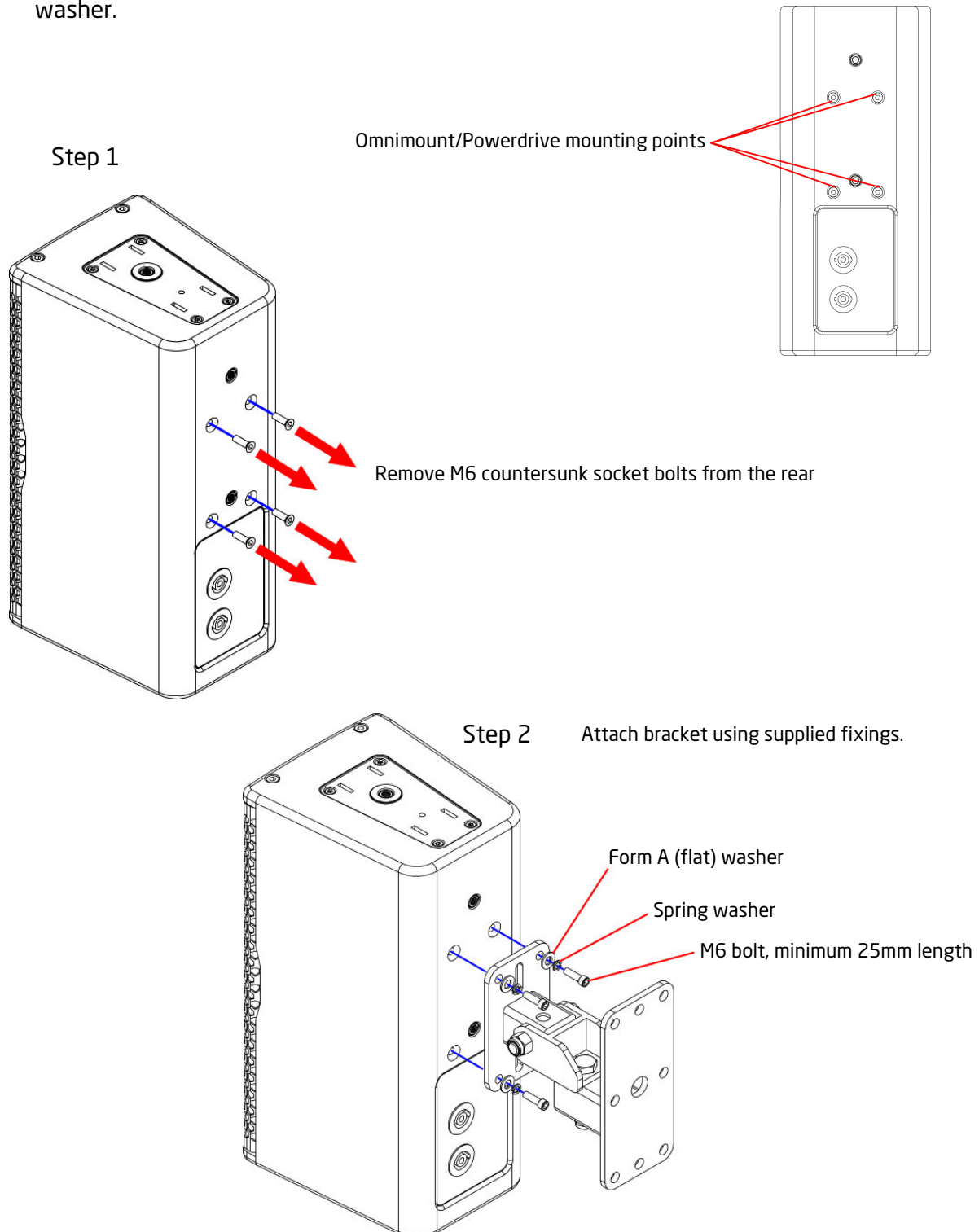
Any flown loudspeaker must always have a secondary safety fitted. There are four M8 threaded points that can be used as safety points - one on the top, one on the bottom, and two on the rear. A simple M8 forged shoulder eyebolt can be screwed into any of these points. Safeties should always be arranged so that the loudspeaker cannot drop in the event of a primary attachment point failing so select the most appropriate safety point considering the rigging situation.



5.7 - Using Powerdrive or Omnimount fittings

R5 loudspeakers are compatible with Powerdrive Series 75 or Omnimount Series 30 installation brackets.

Using a 4mm Allen key, remove the four M6 countersunk socket head bolts on the rear of the R5. The mounting bracket can then be attached using the bolts supplied with the bracket - they must be M6 thread, minimum 25mm in length. Ensure flat washers are in contact with the bracket, and the spring washer is in between the bolt head and the flat washer.



6.0 - Powering the System

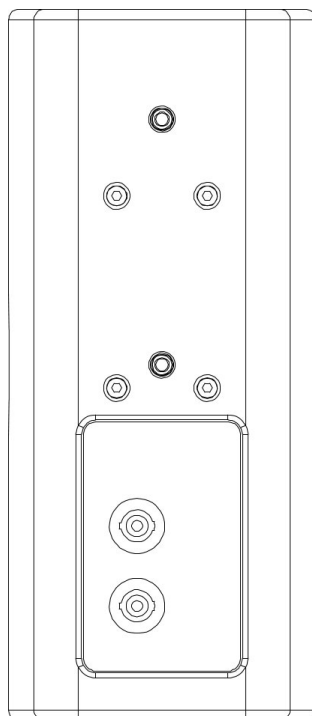
The R5 makes use of FIR (Finite Impulse Response) processing, and as such requires specific proprietary DSP settings that are only available within the DQ or Di Series amplifiers, or the DSC48 system controller. These complimentary electronics packages also provide all necessary high pass, limiting and protection systems to ensure the best performance out of the R5.

The R5 should not be used with any other amplification or processing platform.

6.1 - Amplifier and Processing Requirements

6.1.1 - Connections

The R5 requires only a single amplifier channel. Inputs to the R5 enclosure are on Neutrik SpeakON NL4 as illustrated below.



Two-core cable should be used for connecting R5 loudspeakers, and the connections are as follows:

SpeakON connection	1+	1-	2+	2-
Drive unit connection	LF +	LF -	Link Through	Link Through

6.1.3 - Amplifier Requirements

The R5 is a highly efficient loudspeaker, however appropriate available power is critical to ensure full system headroom. It is good practice to ensure that your amplifier can deliver at least double the RMS power handling of the loudspeaker to ensure full headroom, and as such the amplifier requirement is:

Product	RMS Power Handling	Recommended Min. Amplifier Power
R5	300W @ 8 ohms	600W @ 8 ohms

A loudspeaker is far more likely to be damaged by an under-powered amplifier working too hard, than an over-powered amplifier working well within its limits.

All of the DQ and Di Series advanced system amplifiers can be used to power the R5 with some considerations shown below.

The following table shows the maximum number of R5 that can be connected per channel on the various different amplifiers:

Amplifier	Recommended R5/channel (for full headroom)	Max R5/channel (*at reduced max SPL)
DQ6	2	3*
DQ10	4	4
DQ20	4	4
Di06	1	2*
Di10	2	3*
Di20	3	4*

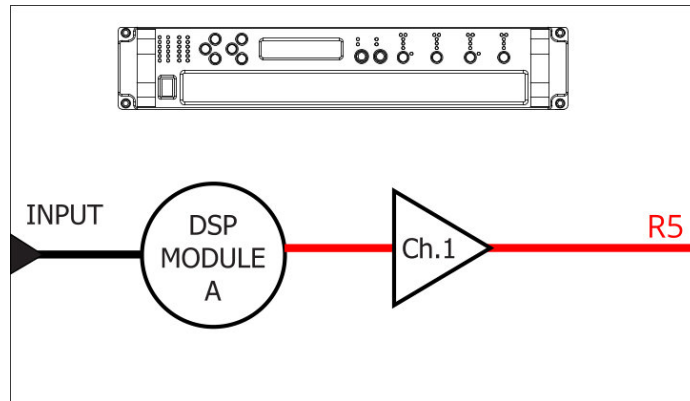
6.1.4 - Processing Requirements

Whilst the R5 is a passive loudspeaker, it is designed to be part of a system in conjunction with a DQ or Di Series amplifier, or DSC48 controller. These intelligent electronic platforms provide not only protective settings to prevent damage to your R5 loudspeaker, but also make use of the state-of-the-art Finite Impulse Response (FIR) processing. Using the R5 without recommended electronics will produce unpredictable performance and must not be done.

6.2 - Presets and Settings

6.2.1 - Standard R5 presets

When used with a DQ or Di Series amplifier R5 loudspeakers require only a single amplifier channel, and as such the preset recalled will only require one output from your amplifier.



Two standard presets are in the EM Acoustics preset library - one for the narrow (80x50) waveguide, and one for the wide (110x50). Whilst the difference is subtle, please ensure the correct preset is loaded for the waveguide that has been installed for optimum performance.

6.2.2 - Geometric Delay

Appropriate delay will need to be applied to account for physical location differences between different elements of your system - for example time-aligning subwoofers to the main system. The use of SMAART or similar can make this task a great deal simpler and faster.

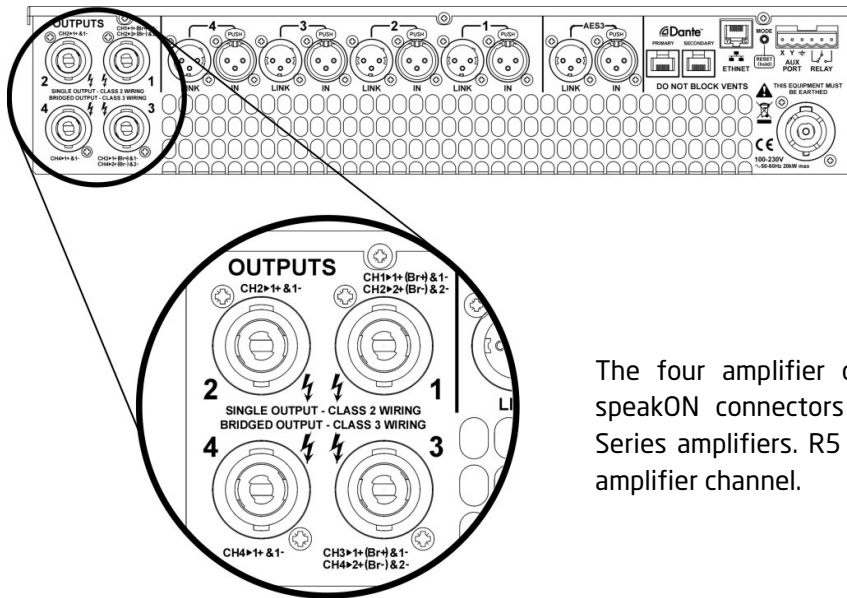
6.2.3 - Applying EQ

The presets are intended to be a starting point for your system and will almost certainly require tuning on-site dependent on room characteristics, the rest of your system design and the system voicing you are aiming for. The R5 is designed with a significant amount of system headroom, so applying EQ is perfectly acceptable within sensible limits.

6.3 - Use with the DQ & Di Series Advanced System Amplifiers

The R5 is designed to be used with DQ or Di Series advanced system amplifiers, as not only are they state-of-the-art amplifiers, but the onboard DSP provides appropriate processing to allow the R5 to perform as intended. Please refer to the relevant amplifier User Manual for detailed information on using the amplifiers and the System Engineer software.

6.3.1 - Connections



The four amplifier channels appear on four speakON connectors on the rear of the DQ Series amplifiers. R5 loudspeakers require one amplifier channel.

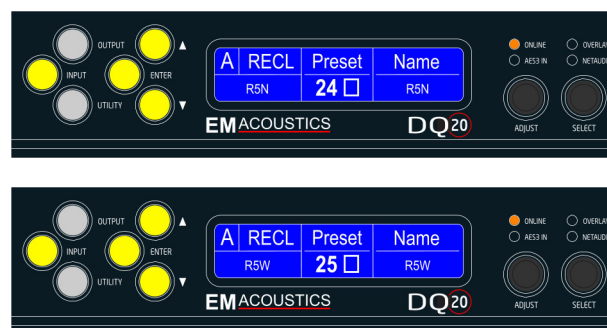
6.3.2 - Preset Recall

The R5 presets are pre-installed on EM Acoustics' amplifiers (ensure you have the latest preset library installed on your amplifier), and as such can be used following the normal preset recall procedure. The presets available are:

R5N.flat 80° x 50° waveguide R5 preset

R5W.flat 110° x 50° waveguide R5 preset

As mentioned above, these presets are intended to be a starting point and additional work may be required depending on the venue, the style of content and the end result you are looking for.



6.4 - System Connectivity

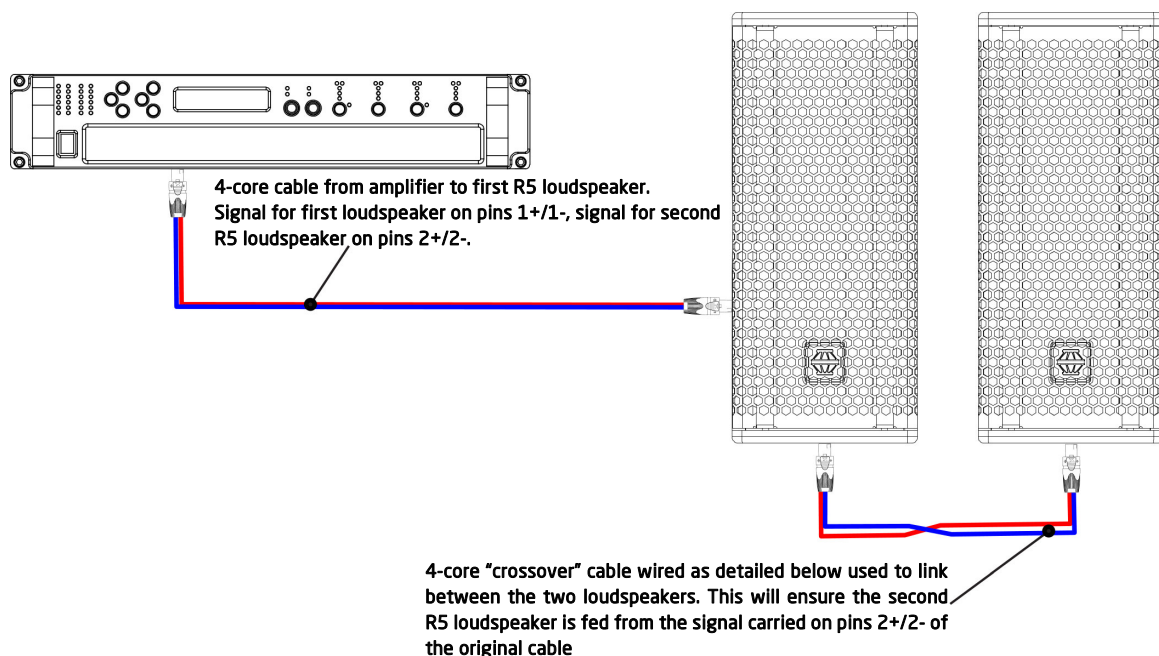
6.4.1 - Cable Length and Specification

All cables add to the system impedance, and as such careful selection is required depending on your amplifier setup and overall system impedance. Cables with a cross sectional area of less than 2.5mm² should not be used. Recommended maximum cable lengths are given below:

Conductor Area	Maximum Recommended Cable Length		
	2 ohms	4 ohms	8 ohms
2.5mm ² (14 AWG)	15m	30m	60m
4.0mm ² (12 AWG)	20m	40m	80m
6.0mm ² (10 AWG)	30m	60m	120m

6.4.2 - Crossover Cable Use

The use of a pin-swap or "crossover" cable can allow for neater cable solutions when sending different amplifier signals to the same location. Because pins 2+/2- are linked through inside all EM Acoustics loudspeakers, using a 4-core cable to one loudspeaker (carrying two different signals) allows a crossover cable to be used to link out of the first loudspeaker into another, thereby feeding it from a separate signal.



Crossover cable specifications

Connector A Pin	Connector B Pin
1+	2+
1-	2-
2+	1+
2-	1-

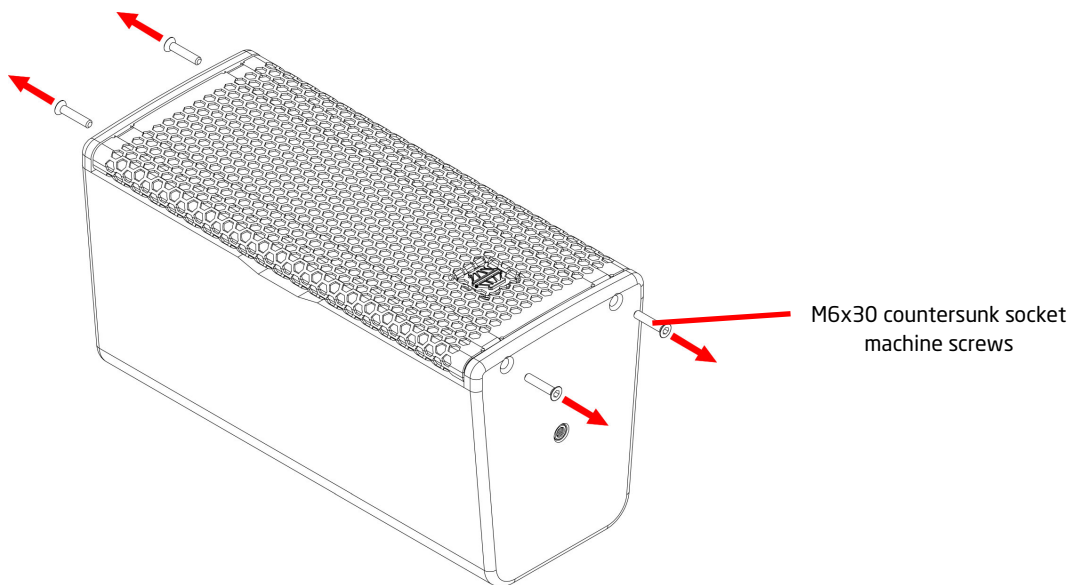
7.0 - Servicing Information

All R5 components can be removed for service purposes if required, using the minimum of tools.

7.1 - R5: Removing the grille

TOOLS REQUIRED: 4mm Allen key

1. Lie the enclosure on its' back and remove the two M6x30 countersunk socket screws from each end using a 4mm Allen key, and then lift the grille clear of the cabinet.

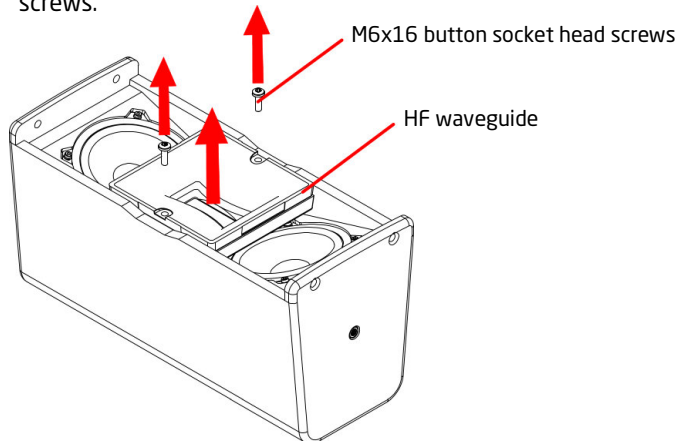


2. To replace the grille, position the grille on the front of the R5 and ensure the threaded fittings on the grille are lined up with the mounting holes - gentle pressure may be required. Replace all of the M6x30 countersunk socket screws and ensure they are all started in their threads before beginning to tighten. Ensure they are all tightened evenly so that the grille sits straight and does not rattle. Be careful not to over-tighten as this will distort the grille.

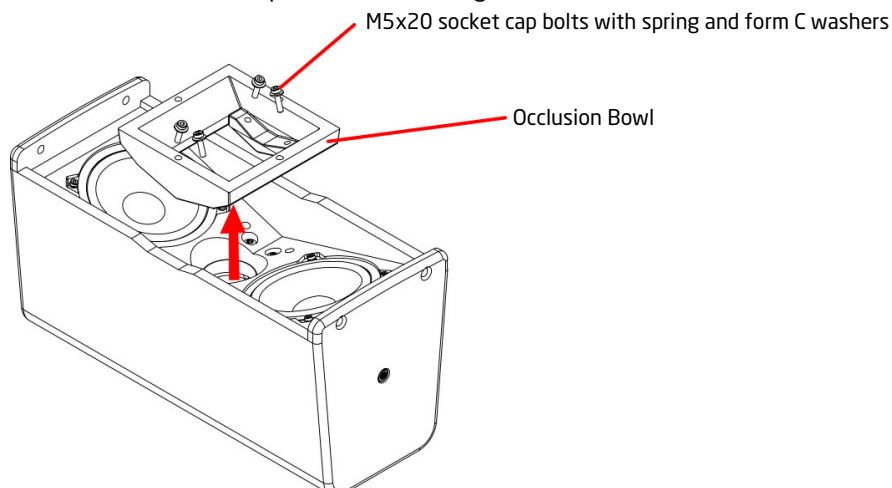
7.2 - R5: Removing the LF/MF drive units

TOOLS REQUIRED: 3mm & 4mm Allen keys

1. Complete step 7.1 above to remove the grille.
2. Using a 4mm Allen key, remove the two M6x16 button head socket screws that secure the HF waveguide. Remove the waveguide from the enclosure and ensure that you collect the machine screws.

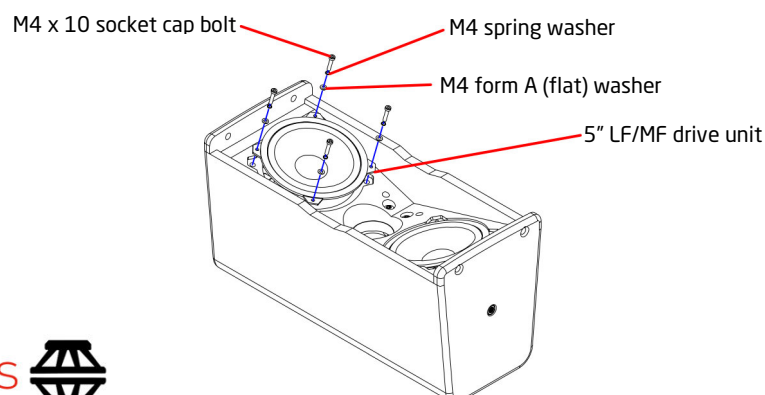


3. Using a 4mm Allen key, undo the four M5x20 socket cap bolts that secure the occlusion bowl to the enclosure, ensuring to collect the washers as well. With these bolts removed, the occlusion bowl can be removed which will expose all the securing bolts for both 5" drive units.



4. Using a 3mm Allen key, undo the four M4x10 socket cap bolts that secure the drive unit you want to remove. Ensure you remove the spring & flat washers as well as each bolt, then lift the drive unit clear of the enclosure and disconnect the cables. Note the polarity for future reconnection:

Top (MF) driver - red cable to the positive (red) driver terminal, blue cable to the negative (black) terminal.
Bottom (MF) driver - brown cable to the positive (red) driver terminal, blue cable to the negative (black) terminal.

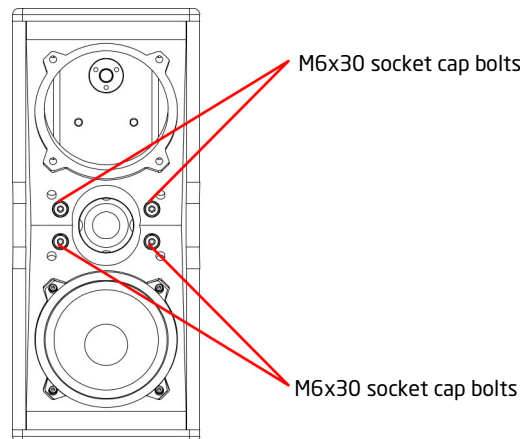


5. To replace the drive unit, ensure the 5" gasket is intact and complete - replace if necessary. Reconnect the cables to the drive unit (note the polarity detailed above) and then sit the drive unit into its mounting location, ensuring that the mounting holes line up.
6. Replace the M4x10 socket cap machine screws with their flat & spring washers and ensure all machine screws are started in their threads before tightening. Tighten opposing bolts, working around the drive unit until all bolts are appropriately tightened. Be careful not to overtighten as this will distort the drive unit chassis.
7. Replace the occlusion bowl in the enclosure. Ensure it is the correct orientation - there are cutouts in the underside to account for the excursion of the 5" drive units. Press down in the centre of the bowl to compress the gasket and allow the mounting holes to line up. Replace the four M5 socket bolts (with their spring and larger flat washers) and start each bolt by hand, before tightening down to ensure the bowl is fixed in place.
8. Replace the waveguide into the enclosure - note that there is a precise fit at the throat of the waveguide with the aluminium mounting plate in the enclosure, so ensure this is located properly before attempting to retighten the bolts.
9. With the waveguide in the correct orientation, replace the M6x16 button head socket screws and retighten.
10. Replace the grille as described above.

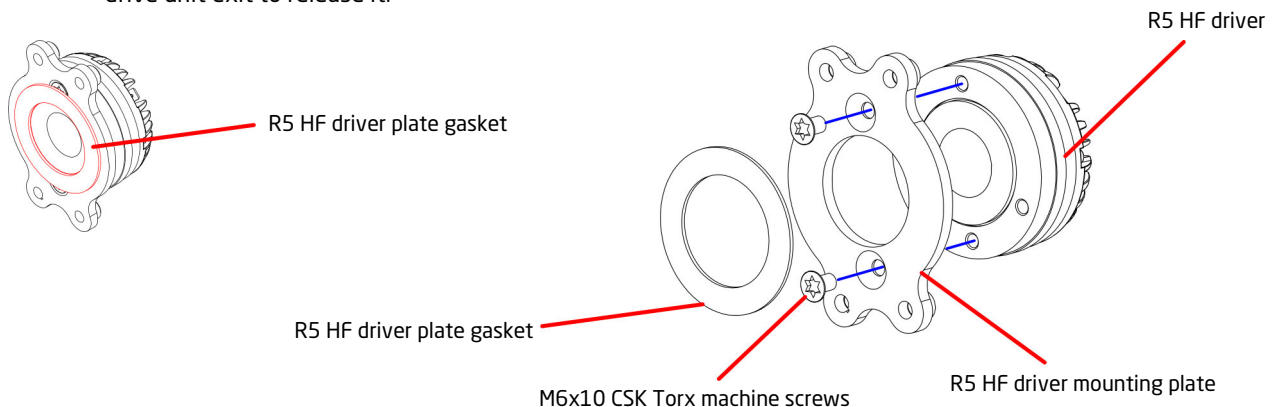
7.3 - R5: Removing the HF drive unit

TOOLS REQUIRED: 3mm, 4mm & 5mm Allen keys, TX30 Torx driver

1. Complete step 7.1 above to remove the grille, and step 7.2 above to remove the HF waveguide, occlusion bowl and the **upper** 5" drive unit.
2. Reaching through the 5" baffle hole to support the HF driver, use a 5mm Allen key to undo the four M6x30 socket cap bolts that secure the HF driver mounting plate. Once these bolts are removed, the HF driver & plate assembly can be carefully removed out through the 5" driver baffle hole.
IMPORTANT NOTE: If you find it too difficult to get the driver past the MHF crossover board, use a PZ2 screwdriver to undo the four screws that secure the crossover board so that can be removed as well.



3. Once the HF driver and mounting plate assembly are outside of the enclosure you can disconnect the HF cables. To remove the driver itself, remove the gasket that covers the mounting bolts and then using a TX30 Torx drive bit, remove the two countersunk M6x10 Torx machine screws around the HF drive unit exit to release it.



4. To reinstate the HF drive unit assembly, first check the cables are correctly connected (white cable to positive (red) terminal, yellow cable to negative terminal) and then insert it through the LF drive unit hole and locate the mounting plate in place. Use the four M6x30 socket cap bolts with their washers to secure it in place.
5. Follow steps 5-10 in 7.2 above to replace the 5" LF drive unit, occlusion bowl, waveguide and grille.

Appendix A - Technical Specifications

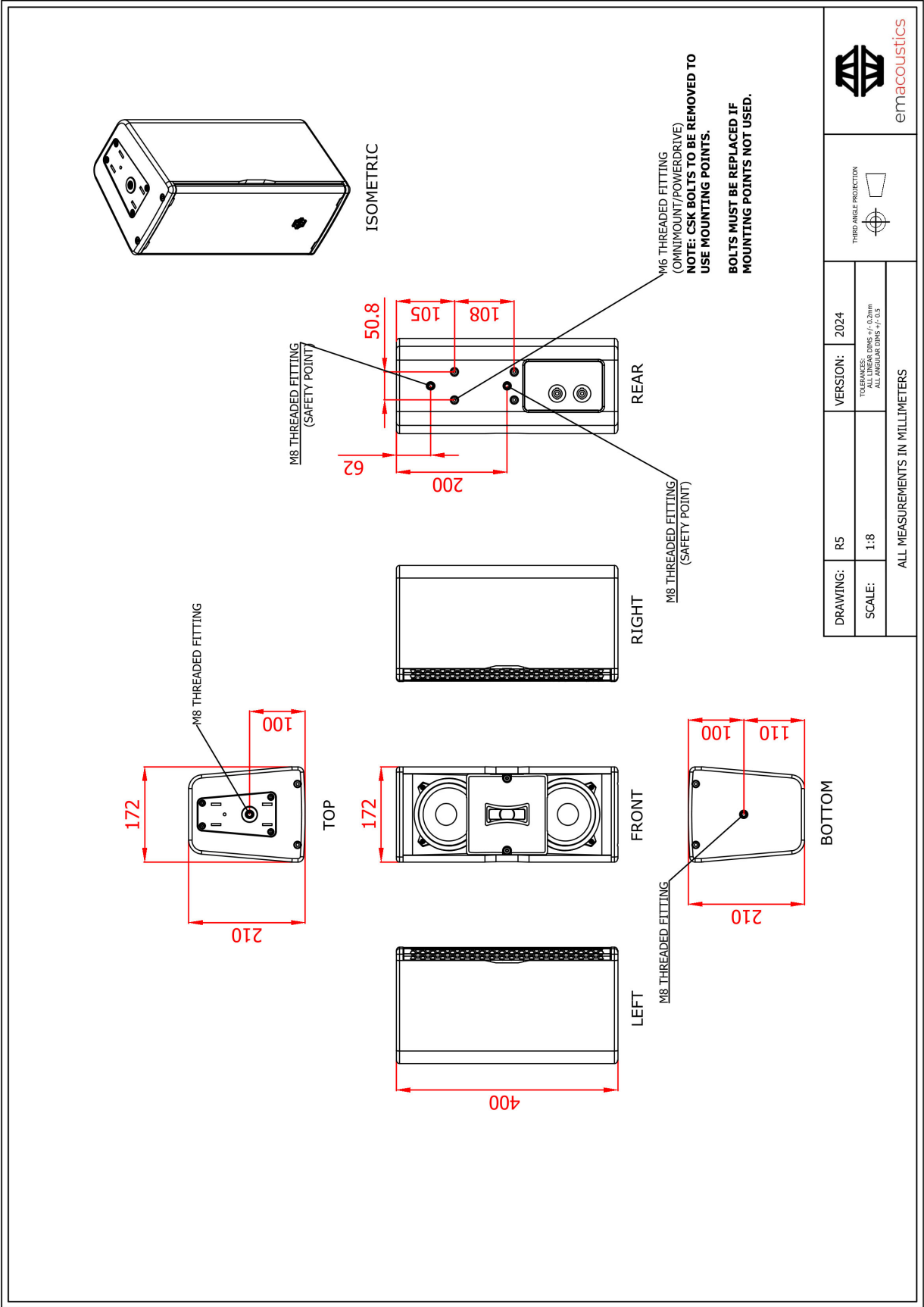
R5 compact 3-way precision passive point source loudspeaker

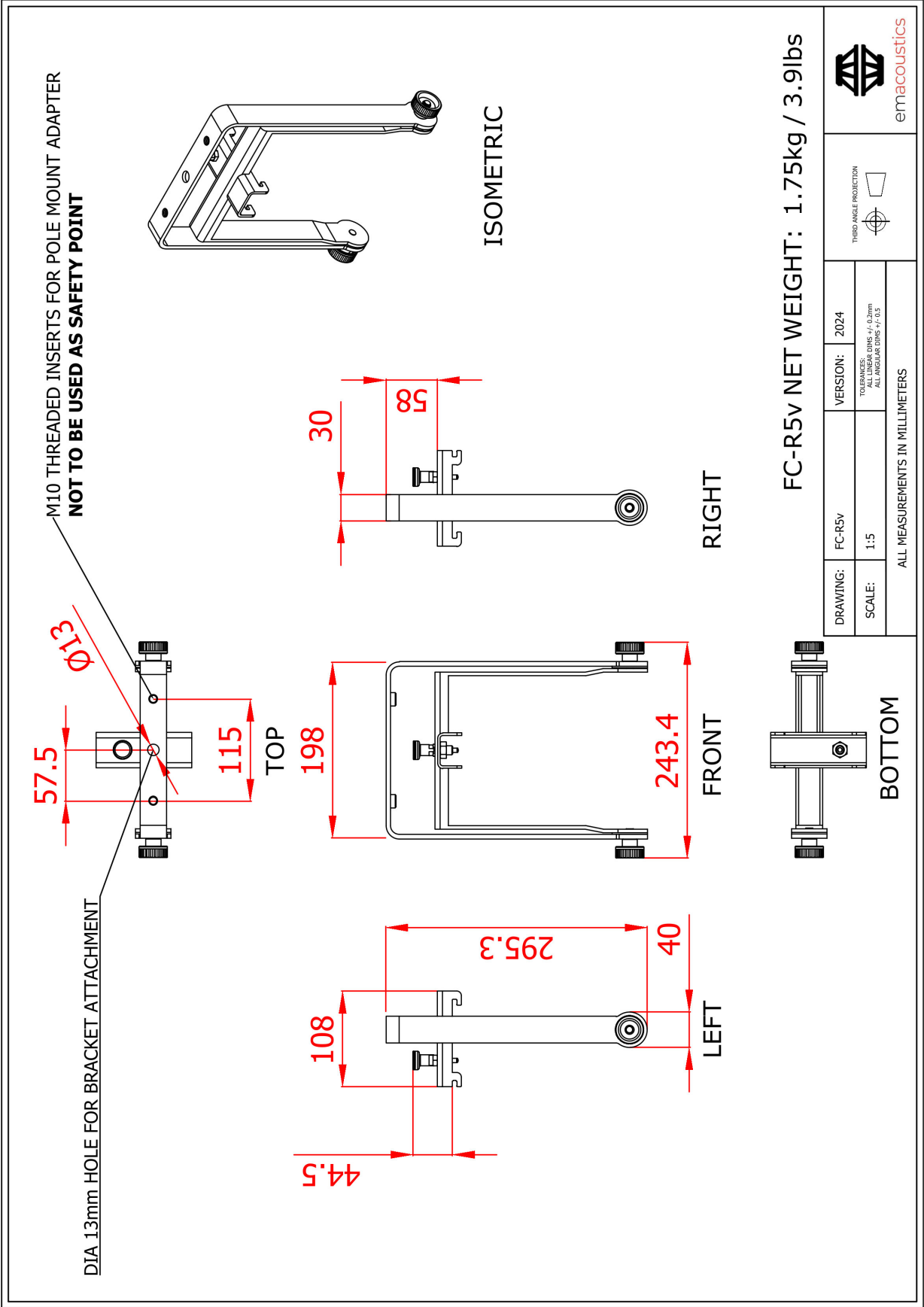
Dimensions (HxWxD):	400 x 172 x 210mm (15.8" x 6.8" x 8.3")	
Net/Shipping Weight:	7/8.2kg (15.4/18lbs)	
Frequency Response (+/- 3dB) ¹ :	80Hz - 20kHz	
Dispersion ³ :	80° x 50° rotatable (narrow waveguide) 110° x 50° rotatable (wide waveguide)	
Drive Units:	2 x 5" (127mm) neodymium LF/MF drive unit 1" (25mm) exit neodymium HF annular compression drive unit	
Power Handling:	300W RMS, 600W program	
Maximum SPL:	118dB continuous, 124dB peak	
Nominal Impedance:	8 ohms	
Crossover:	2-stage asymmetric internal passive	
Enclosures/channel (full SPL):	DQ6: 2 DQ10: 4 DQ20: 4	Di06: 1 Di10: 2 Di20: 3
Connectors:	2 x Neutrik SpeakON™ NL4	
Enclosure:	12mm (1/2") & 24mm (1") multi-laminate birch plywood, rebated, screwed and glued. Finished in impact and weather-resistant textured polyurethane	
Rigging & Hardware:	Quick-release flying plate 2 x M8 threaded mounting points (1 top/1 bottom) 2 x M8 threaded safety point on rear 4 x M6 threaded points for Omnimount™ Series 30/Powerdrive™ Series 75 products Supplied with PM-61 stand adapter	
Grille:	Hex-punched stainless steel backed with acoustically transparent fabric	
Options:	Colours/Weather Protection	
Accessories:	FC-R5v vertical flying cradle FC-R5h horizontal flying cradle Cradle stand adapter	

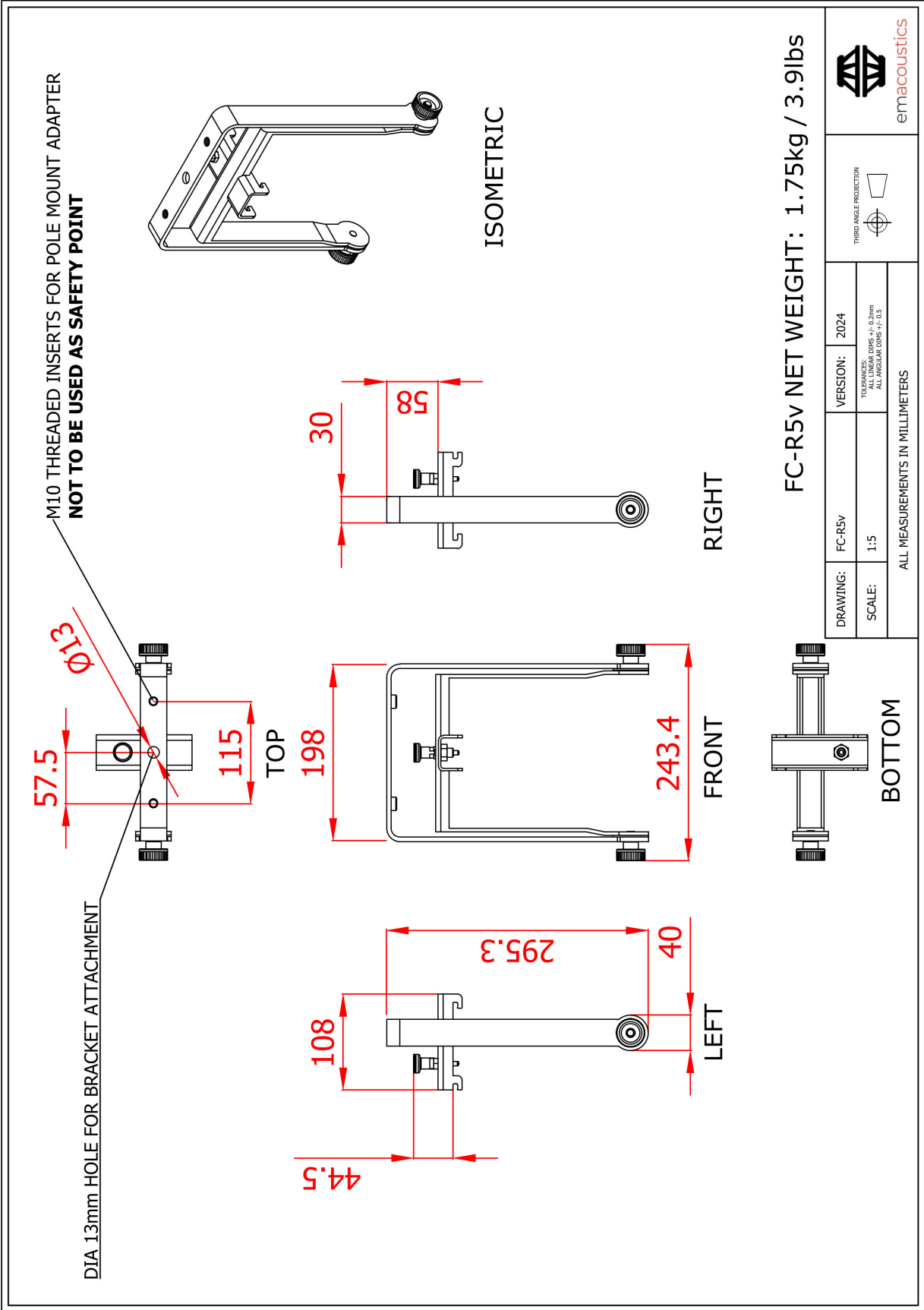
Notes on measurement conditions:

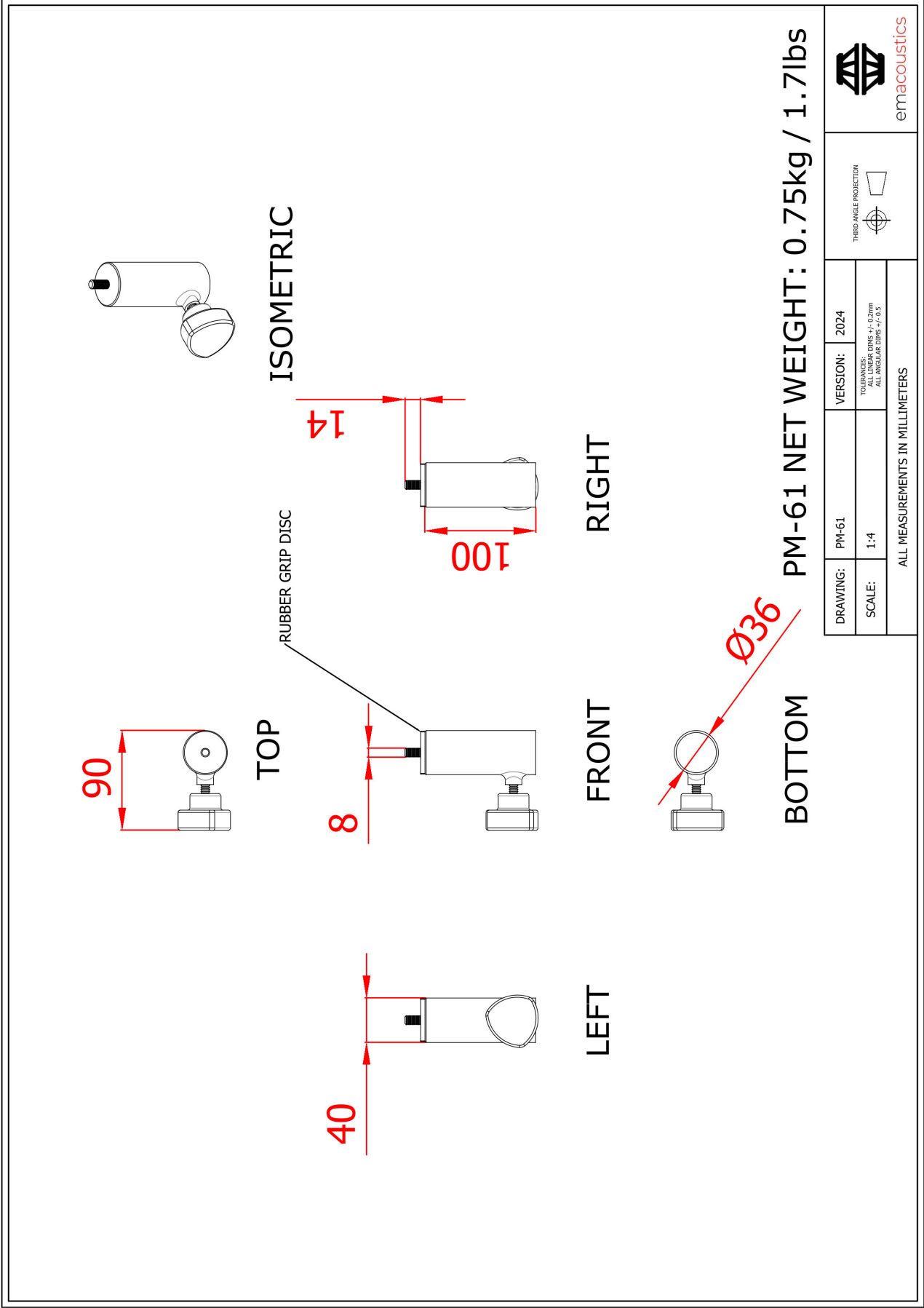
¹Measured on-axis at 2m in an anechoic environment and referenced to 1m. ²Measured in half-space at 2m with 4W sine wave input and referenced to 1m. ³Nominal dispersion, measured in an anechoic environment and averaged over stated bandwidth. ⁴Calculated and verified by subjective listening test of familiar program material.

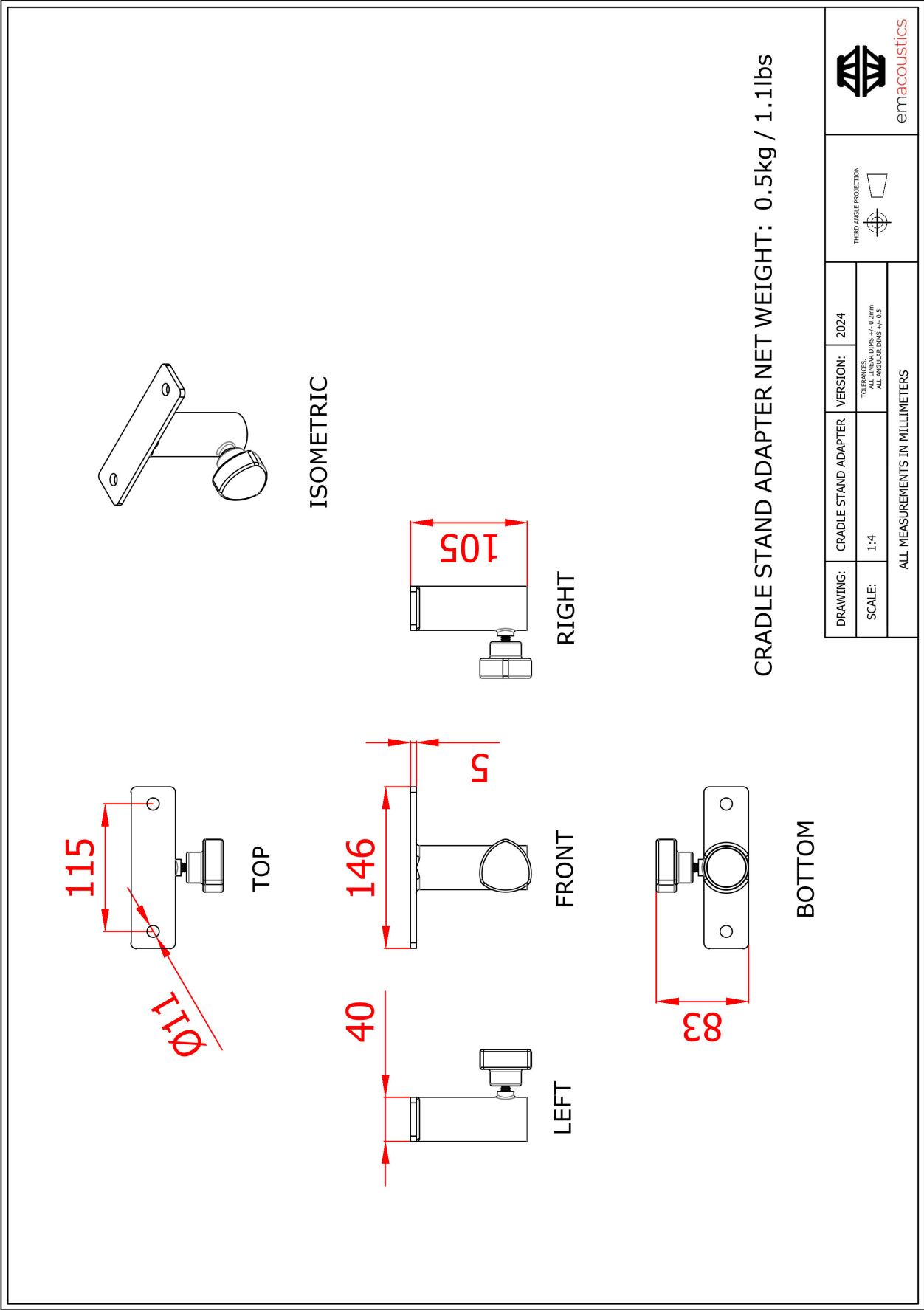
Appendix B - Technical Drawings











Appendix C - Spare Parts List

Order Code	Description
01A0025	DU-503-16 replacement 5" neodymium LF/MF drive unit
01B017	CDU-1005-16 replacement 1" neodymium HF compression drive unit
04A089	RFG-R5 replacement grille/fabric for R5
07A504A	PX-R5-MHF replacement mid/high passive crossover assembly for R5
07A504B	PX-R5-LF replacement low/mid passive crossover assembly for R5

Appendix D - Warranty Information

Limited Warranty

This EM Acoustics loudspeaker product is warranted to the original end-user purchaser and all subsequent owners for a period of **five (5) years** from the original date of purchase.

Warranty Coverage

This warranty covers defects in materials and workmanship. It does not include:

- Damage or failure caused by accident, misuse, neglect, abuse or modification by any person other than an authorised EM Acoustics representative.
- Damage or failure caused by operating the loudspeaker product contrary to the instructions contained within this manual.
- Damage caused during shipment.
- Claims based on any misrepresentation by the seller.
- Products which contain anything other than the original components (or EM Acoustics factory supplied spare parts).
- Products on which the serial number has been removed, altered or defaced.

Returning your EM Acoustics loudspeaker

Should your EM Acoustics loudspeaker develop a fault, please return it (freight prepaid) in its original packaging, along with proof of purchase to your local dealer or to:

EM Acoustics (Returns Department), Building 19.11, Dunsfold Park, Cranleigh, Surrey, GU6 8TB, UK

including a description of the suspected fault. Serial numbers must be quoted in all correspondence relating to the claim. EM Acoustics or its representatives are in no way liable for any loss or damage in transit, and hence it is recommended that the sender insure the shipment. EM Acoustics will pay for return freight should the repair be covered under warranty.

EM Acoustics' liability is to the replacement or repair (at our discretion) of any defective components, and as such are not liable for any incidental and consequential damages including (without limitation) injury to persons, damage to property or loss of use.

This warranty is exclusive and no other warranty is expressed or implied. This warranty is also in addition to - and in no way detracts from - your statutory rights as a consumer.