TANNOY®

USER MANUAL

VQ 60
VQ 100
VQ DF
VQ MB

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Congratulations on the purchase of your new VQ loudspeaker. You now own one of the finest professional audio products available. Performance of your VQ loudspeaker in terms of accuracy & perceptive sound quality is second to none as you will discover. The VQ series of products was developed to provide the sound reinforcement system designer with essential tools for creating loudspeaker systems with exceptional pattern control and high output. This series provides an array of devices ideally suited to a variety of live sound reinforcement and high level foreground music venues.

Please read this user manual to get the optimum performance from your new VQ loudspeaker system.

1 INTRODUCTION

The VQ full range products utilize a unique driver technology to radiate a coherent single point source for superior dispersion control when coupled to our single horn. This advanced design aligns the acoustical centres of the transducers providing a single coherent wavefront emanating from the throat.

The driver uses two concentric annular ring diaphragms. The larger of the two has a 3.5” voice coil and reproduces frequencies from 400Hz to 7 kHz. Another major advantage here is that there is no crossover anywhere near the vocal region ensuring the most natural and phase coherent reproduction at this critical area. The 2” HF diaphragm takes over at 7kHz to 22kHz by way of a passive or an active crossover. The external casting features extensive heatsinking ensuring good heat transfer for high power handling and very low power compression.

The VQ 60 is a full range, three-way loudspeaker system designed for applications which require very high output capability with class leading pattern control. The VQ 60 is perfectly suited for use in arrays or singly in demanding high SPL music or speech applications. Unlike line array solutions, the VQ 60 can produce enough power and clarity to be used individually maintaining your building's aesthetics. With low frequency extension to 90Hz, the VQ 60 can be combined with various subwoofers for extended bandwidth. The VQ 60 can be configured for use in Bi-Amp or Tri-Amp mode, in conjunction with a suitable digital signal processor (DSP).

The VQ 100 is a full range, three-way loudspeaker system designed for applications which require high output capability with class leading pattern control. The VQ 100 features a wide and exceptionally well defined dispersion characteristic.For a variety of uses, a single VQ 100 can produce more power and clarity over it’s 100 degree beamwidth area than many arrayed solutions using multiple cabinets. With low frequency extension to 90Hz, the VQ 100 can be combined with various subwoofers for extended bandwidth. The VQ 100 can be configured for use in Bi-Amp or Tri-Amp mode, in conjunction with a suitable digital signal processor (DSP).

The VQ DF (Down Fill) is a dedicated two way down-firing Mid/High loudspeaker designed to seamlessly integrate with the VQ full range and VQ MB loudspeakers matching their exact footprint. The down firing configuration allows the VQ DF to be tight packed without the need for any complex fly-ware. With a coverage pattern of 80 x 50 degrees, the VQ DF will provide even coverage to the areas immediately below the main flown loudspeakers. For full range use the VQ DF can also be used along with the VQ MB.The VQ DF can be configured for use in Single or Bi-Amp mode, in conjunction with a suitable digital signal processor (DSP).

The VQ MB duplicates the low frequency performance of the VQ 60 & VQ 100 full range loudspeakers, it is intended for use as a flown or ground stacked, high power low/mid frequency module used in conjunction with full range or mid/high systems in the VQ series. Two (12 in) low frequency transducers, offer high power handling and low power compression for high continuous SPL capability. A newly designed LF loading design provides the highest possible sensitivity for low/mid frequency output (105dB/w). The VQ 60 and VQ 100 provide consistent beamwidth down to about 500Hz. This usually is sufficient for many applications, but often the situation calls for extended vertical pattern control for additional gain before feedback in the lower midrange to mid-bass region and/or improved direct-to-reverberant ratio in the mid-bass range for live rooms. The addition of one or more VQ MB devices to the array will extend the vertical pattern down to the 250Hz range and lower by taking advantage of the basic acoustical principles of spaced sources.

2 UNPACKING

Every Tannoy VQ product is carefully tested and inspected before being packaged and leaving the factory. After unpacking your loudspeaker, please inspect for any exterior physical damage, and save the carton and any relevant packaging materials in case the loudspeaker again requires packing and shipping. In the event that damage has been sustained in transit notify your dealer immediately. If this loudspeaker has to be returned to Tannoy, contact the Service Department for a Return Authorization Number. Use the original shipping carton and packing materials where possible. Tannoy will not be responsible for damage caused by inadequate packing.

3 CONNECTORS/CABLING

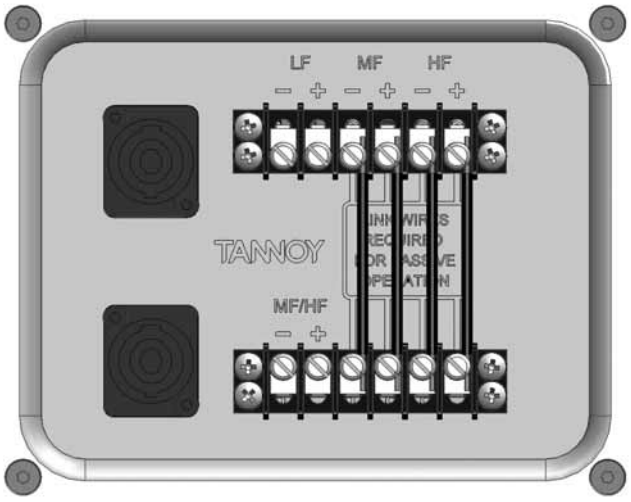
Input Connector Panels

Note : The VQ 60 and VQ 100 are configured as standard for Bi-Amp operation.
Tri-Amp operation is possible using the Barrier strip input terminals. See 'Barrier Strip Connections' on the following page for further details.

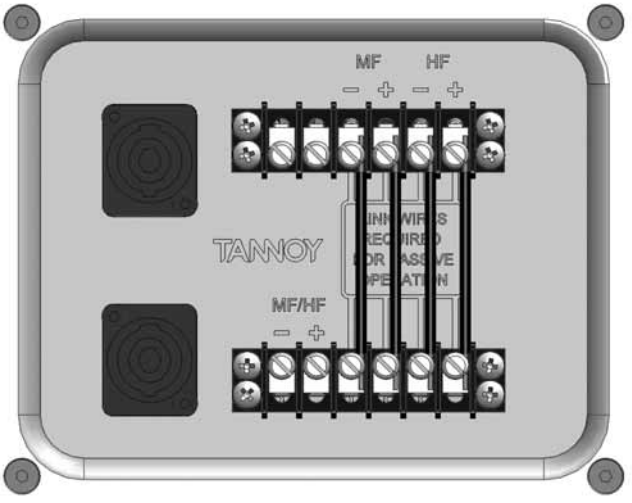
The VQ DF is configured as standard for single amp operation. Bi-Amp operation is possible using the Barrier strip input terminals. See 'Barrier Strip Connections' on the following page for further details.

The VQ MB is configured for single amp operation.

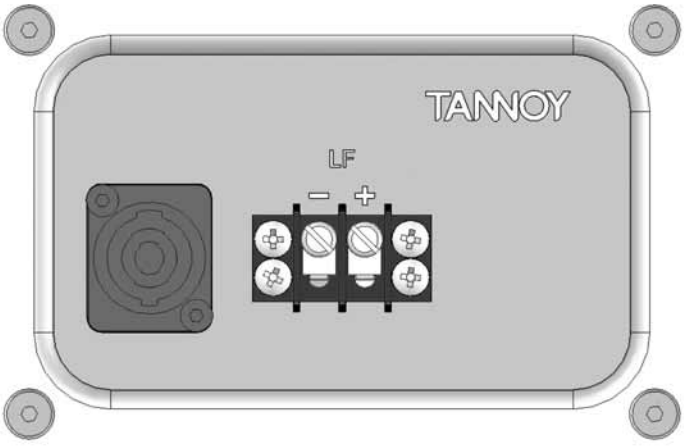
VQ 60 / 100



VQ DF



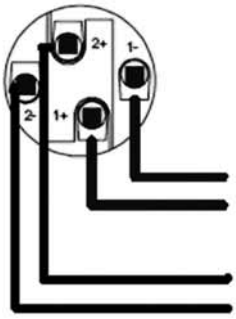
VQ MB



The VQ 60, VQ 100 and VQ DF are fitted with 4-pole Neutrik Speakon‘ connectors and barrier strip for fixed installations.

Speakon Connections -
Speakon has the following advantages over EP and XLR type connectors:

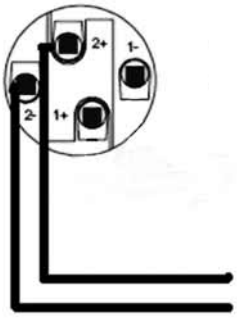
All terminations are solderless; this makes life easier at the time of installation or when field servicing is required. Contacts will accept 6 sq. mm wire with an outside diameter of up to 15mm and a current rating of 30 Amps. The pins of the 2 Speakon sockets identified input/output on the rear of the input panel are paralleled within the enclosure to facilitate the connection to additional VQ loudspeakers (Except the VQ MB). Tannoy has adopted the standard professional audio wiring convention for the VQ product.



VQ 60 and VQ 100 Speakon Connections

LF Negative (-ve)
LF Positive (+ve)

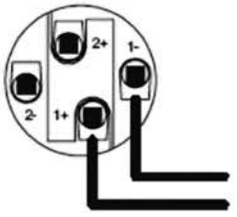
MF/HF Positive (+ve)
MF/HF Negative (-ve)



VQ DF Speakon Connections

MF/HF Negative (-ve)
MF/HF Positive (+ve)

No connections on pins
1+ and 1-



VQ MB Speakon Connections

LF Negative (-ve)
LF Positive (+ve)

No connections on pins
2+ and 2-

Barrier Strip Connections

The barrier strip accommodates bare wire, tinned leads or spade connectors. The barrier strips are specifically designed for utilization in fixed/permanent installations. The VQ 60 and VQ 100 are configured for Bi-amp operation; by removing the 4 link wires between the two barrier strips on the termination panel tri-amp operation is possible. The VQ DF is configured for single amp operation; by removing the 4 link wires between the two barrier strips on the termination panel bi-amp operation is possible.

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VQ 60/100 Bi-amp – Connect LF amplifier to LF +/- on top row of barrier strip.
Connect MF/HF amplifier to MF/HF +/- on bottom row of barrier strip.

VQ 60/100 Tri-amp - Connect LF amplifier to LF +/- on top row of barrier strip.
Connect MF amplifier to MF +/- on top row of barrier strip.
Connect HF amplifier to HF +/- on top row of barrier strip.

VQ DF Single Amp - Connect MF/HF amplifier to MF/HF +/- on bottom row of barrier strip.

VQ DF Bi-amp - Connect MF amplifier to MF +/- on top row of barrier strip.
Connect HF amplifier to HF +/- on top row of barrier strip.

VQ MB - Connect amplifier to LF +/- terminals

Note that looping out to additional loudspeakers will have the effect of reducing the load on the amplifier. Avoid loading amplifiers too low. If the amplifier is rated for 4 ohms minimum, don't give it a 2 ohm load. Even when the amplifier is rated down to 2 ohms remember that in order to keep up with the power the circuit will have much higher current than before and the wiring will have to handle it. Not only will the wiring losses grow but the damping factor of the system will be degraded. It might be better to run separate cables from the amp to the speakers or divide the load across two amplifier channels.

Cable choice consists mainly of selecting the correct cross sectional area in relation to the cable length and the load impedance. A small cross sectional area would increase the cables series resistance, inducing power loss, and response variations (damping factor).

Connectors should be wired with a minimum of 2.5 sq. mm (12 gauge) cable. This will be perfectly satisfactory under normal conditions. In the case of very long cable runs the wire size should exceed this. The following table shows the change in resistance, sensitivity loss and damping factor due to the effects of cable diameter and length for two nominal impedance loads (4ohms & 8ohms). Use this table to determine a suitable cable diameter for the length of run you require. For resultant damping factor, values greater than 20 are generally considered adequate for high quality sound reinforcement systems.

Cable Run		Diameter of conductor		Cable Resistance	Wire Loss (dB)		Damping Factor*			
m	ft	mm	awg	ohm	4ohm Load	8ohm Load	4ohm Load		8ohm Load	
5	16	1.5mm	15	0.10	0.2	0.1	40	✓	80	✓
		2.5mm	10	0.04	0.1	0	108	✓	216	✓
		4mm	6	0.01	0	0	255	✓	510	✓
		6mm	3	0.01	0	0	494	✓	988	✓
10	33	1.5mm	15	0.20	0.4	0.2	19	×	41	✓
		2.5mm	10	0.07	0.2	0.1	55	✓	111	✓
		4mm	6	0.03	0.1	0	136	✓	272	✓
		6mm	3	0.01	0	0	282	✓	563	✓
25	82	1.5mm	15	0.49	1	0.5	8	×	16	✓
		2.5mm	10	0.18	0.4	0.2	23	✓	45	✓
		4mm	6	0.07	0.1	0.1	57	✓	114	✓
		6mm	3	0.03	0.1	0	123	✓	246	✓
50	164	1.5mm	15	0.98	1.9	1	4	×	8	×
		2.5mm	10	0.35	0.7	0.4	11	×	23	✓
		4mm	6	0.14	0.3	0.1	29	✓	58	✓
		6mm	3	0.06	0.1	0.1	64	✓	127	✓
100	328	1.5mm	15	1.95	3.5	1.9	2	×	4	×
		2.5mm	10	0.70	1.4	0.7	6	×	11	×
		4mm	6	0.27	0.6	0.3	15	×	29	✓
		6mm	3	0.12	0.3	0.1	32	✓	65	✓

*The resulting damping factor figures are derived using a good quality professional amplifier

4 POLARITY CHECKING

It is most important to check the polarity of the wiring before the speaker system is flown. A simple method of doing this without a pulse based polarity checker for LF units is as follows: Connect two wires to the +ve and -ve terminals of a PP3 battery. Apply the wire which is connected to the +ve terminal of the battery to the speaker cable leg which you believe to be connected to pin 1+ of the speaker connector and likewise the -ve leg of the battery to pin 1-.

If you have wired it correctly the LF drive unit will move forward, indicating the wiring is correct. All that remains now is to connect the +ve speaker lead to the +ve terminal on the amplifier and the -ve lead to the -ve terminal on the amplifier. If however the LF driver moves backwards, the input connections need to be inverted.

There are also commercially available polarity checkers that can be used (IviePAL™, NTI™). If you are commissioning a system using a spectrum analyzer such as SMAART™, SYSTUNE™, CLIO™, MLSSA™ by checking the impulse response for the first positive swing. Be sure that EQ and crossover filtering has been removed before checking.

If problems are encountered, inspect the cable wiring in the first instance. If you are using amplifiers from more than one manufacturer, check the polarity at the amplifiers as well as the loudspeakers.

5 AMPLIFICATION & POWER HANDLING

As with all professional loudspeaker systems, the power handling is a function of voice coil thermal capacity. Care should be taken to avoid running the amplifier into clip (clipping is the end result of overdriving any amplifier). Damage to the loudspeaker will be sustained if the amplifier is driven into clip for any extended period of time. Headroom of at least 3dB should be allowed. When evaluating an amplifier, it is important to take into account its behavior under low impedance load conditions. A loudspeaker system is highly reactive and with transient signals it can require more current than the nominal impedance would indicate.

Generally a higher power amplifier running free of distortion will do less damage to the loudspeaker than a lower power amplifier continually clipping. It is also worth remembering that a high powered amplifier running at less than 90% of output power generally sounds a lot better than a lower power amplifier running at 100%. An amplifier with insufficient drive capability will not allow the full performance or the loudspeaker to be realized.

It is important when using different manufacturers amplifiers in a single installation that the have very closely matched gains, the variation should be less than +/- 0.5dB. This precaution is important to the overall system balance when only a single active crossover is being used with multiple cabinets; it is therefore recommended that the same amplifiers be used throughout.

On the specifications pages you will find the VQ loudspeakers power handling capacity quoted in three categories:-
Average (RMS), Programme, & Peak
We recommend using the programme power listed in the loudspeaker specifications to choose the correct amplifier. To realize the VQ loudspeakers full potential, the amplifiers rated continuous power should be equal to the loudspeakers programme power at its nominal impedance.

VQ Series Recommended Amplifier Power

VQ60/100	Power Requirement
Low Frequency	2000W into 4 ohms
Passive MF/HF	400W into 8 ohms
Mid Frequency	400W into 8 ohms
High Frequency	200W into 8 ohms
VQ DF	
Passive MF/HF	400W into 8 ohms
Mid Frequency	400W into 8 ohms
High Frequency	200W into 8 ohms
VQ MB	2000W into 4 ohms

6 LOUDSPEAKER MANAGEMENT SYSTEMS

Tannoy VQ series loudspeakers are designed to be used with an electronic signal processor which provides crossover, equalization, delay and dynamic functions. We strongly recommend the use of the Tannoy Vnet SC1 controller, as the VQ range of loudspeakers were voiced with this unit. Also, small discrepancies can be evident between various manufactures filter coefficients.

In its basic configuration the Tannoy VNET SC1 is a powerful '2 in 6 out' digital system controller provides multiple X-Over, EQ, Delay and Limiting options. Using DSP-based digital crossovers with 96kHz sampling rates, this versatile controller will enable simple configuration and optimization of loudspeakers in terms of speaker management and room EQ functionality.

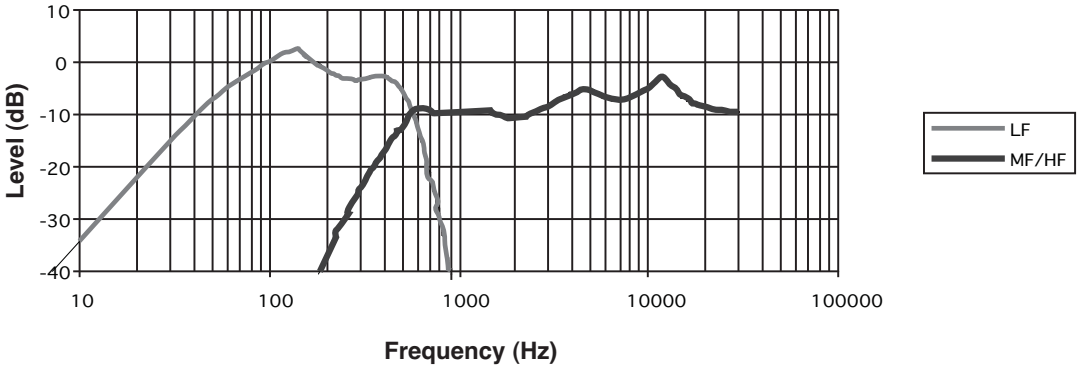
Two versions of the VNET SC1 are available – one with a VNET™ network card and one without.
The 'network enabled' version facilitates VNET™ networking capability with two network ports provided for connection to any Tannoy VNET™ system. See www.tannoy.com for more a more detailed specification on the VNET SC1.

However, you may still wish to use an alternative loudspeaker management system. The necessary system parameters which must be adhered to for optimum system performance are shown in the tables in the following pages.

6.1 VQ 60 BI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Low (2x12")	Mid/High PSW™
Gain	**(dB)**	0	-10
Delay	**(ms)**	0.7	0
Polarity		Positive	Positive
HPF *	**Freq (Hz)**	70	450
	Slope (dB/oct)	12	24
	Filter Shape	Butterworth	Linkwitz-Riley
LPF	**Freq (Hz)**	500	out
	Slope (dB/oct)	48	
	Filter Shape	Linkwitz-Riley	
PEQ 1	**Freq (Hz)**	149	600
	Level (dB)	+4	+3
	Type	Parametric	Parametric
	Q/Bandwidth	3.0/0.479	8.54/1.71
PEQ 2	**Freq (Hz)**	278	2100
	Level (dB)	-6	-2
	Type	Parametric	Parametric
	Q/Bandwidth	2.4/0.597	5.04/0.286
PEQ 3	**Freq (Hz)**	1220	4600
	Level (dB)	-15	+4
	Type	Parametric	Parametric
	Q/Bandwidth	5.04/0.286	2.0/0.714
PEQ 4	**Freq (Hz)**		6000
	Level (dB)		-3dB
	Type		Parametric
	Q/Bandwidth		3.6/0.40
PEQ 5	**Freq (Hz)**		12000
	Level (dB)		+4
	Type		Parametric
	Q/Bandwidth		5.04/0.286

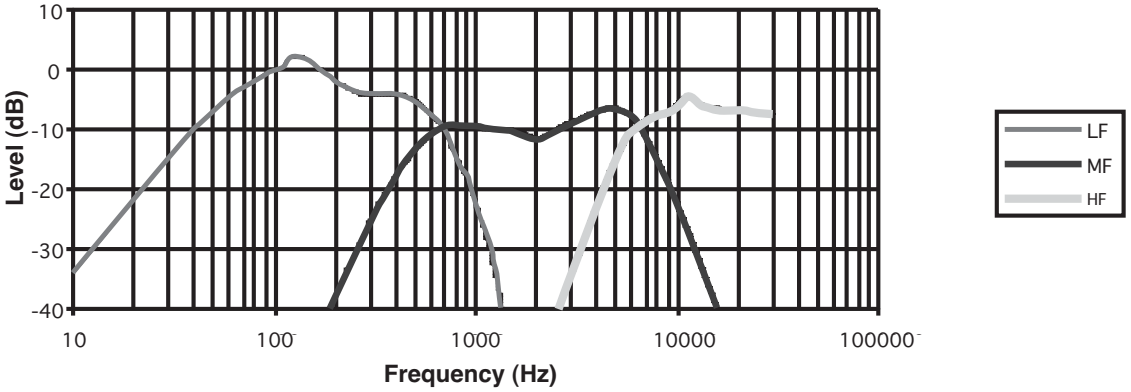
Electrical Transfer Function - Biamp VQ 60



6.2 VQ 60 TRI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Low (2x12")	Mid PSW™	High PSW™
Gain	(dB)	0	-10	-6
Delay	(ms)	0.7	0	0.21
Polarity		Positive	Positive	Positive
HPF *	Freq (Hz)	70	450	7000
	Slope (dB/oct)	12	24	24
	Filter Shape	Butterworth	Linkwitz-Riley	Linkwitz-Riley
LPF	Freq (Hz)	500	7000	out
	Slope (dB/oct)	48	24	
	Filter Shape	Linkwitz-Riley	Linkwitz-Riley	
PEQ 1	Freq (Hz)	149	2100	11000
	Level (dB)	+4	-2	+3
	Type	Parametric	Parametric	Parametric
	Q/Bandwidth	3.0/0.479	5.04/0.286	8.45/0.171
PEQ 2	Freq (Hz)	278		
	Level (dB)	-6		
	Type	Parametric		
	Q/Bandwidth	2.4/0.597		
PEQ 3	Freq (Hz)	1220		
	Level (dB)	-15		
	Type	Parametric		
	Q/Bandwidth	5.04/0.286		
PEQ 4	Freq (Hz)			
	Level (dB)			
	Type			
	Q/Bandwidth			
PEQ 5	Freq (Hz)			
	Level (dB)			
	Type			
	Q/Bandwidth			

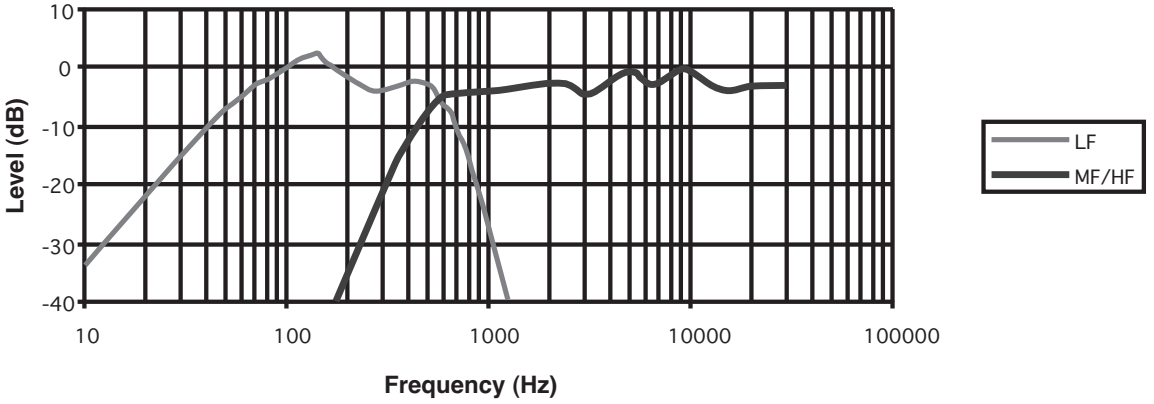
Electrical Transfer Function - Triamp VQ 60



6.3 VQ 100 BI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Low (2x12")	Mid/High PSW™
Gain	**(dB)**	0	-4
Delay	**(ms)**	1.12	0
Polarity		Positive	Positive
HPF *	**Freq (Hz)**	70	500
	Slope (dB/oct)	12	24
	Filter Shape	Butterworth	Linkwitz-Riley
LPF	**Freq (Hz)**	500	out
	Slope (dB/oct)	24	
	Filter Shape	Butterworth	
PEQ 1	**Freq (Hz)**	149	3250
	Level (dB)	+4	-2.8
	Type	Parametric	Parametric
	Q/Bandwidth	3.0/0.479	4.04/0.356
PEQ 2	**Freq (Hz)**	278	5200
	Level (dB)	-6	+4.4
	Type	Parametric	Parametric
	Q/Bandwidth	2.4/0.597	5.43/0.265
PEQ 3	**Freq (Hz)**	450	6000
	Level (dB)	+3	-2.4
	Type	Parametric	Parametric
	Q/Bandwidth	2.79/0.515	4.8/0.30
PEQ 4	**Freq (Hz)**	1220	9380
	Level (dB)	-15	+3
	Type	Parametric	Parametric
	Q/Bandwidth	5.04/0.286	4.35/0.331
PEQ 5	**Freq (Hz)**		15000
	Level (dB)		-2.4
	Type		Parametric
	Q/Bandwidth		5.84/0.247

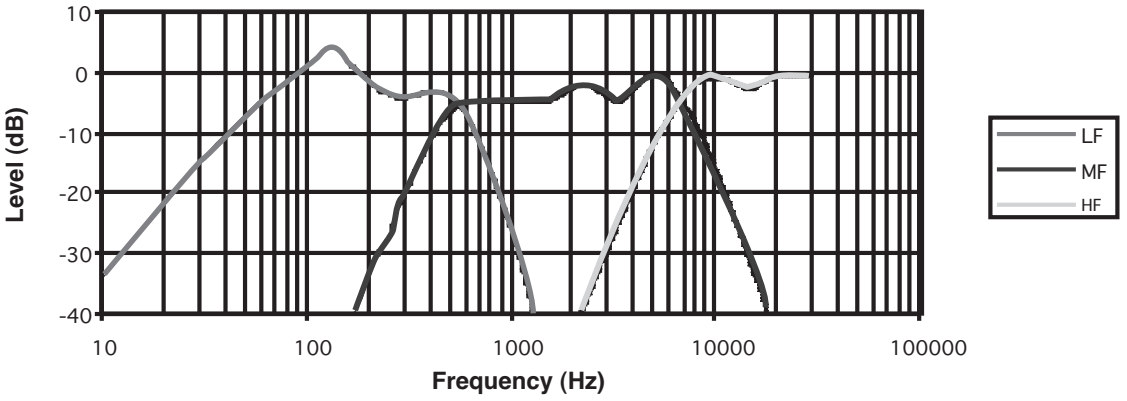
Electrical Transfer Function - Biamp VQ 100



6.4 VQ 100 TRI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Low (2x12")	Mid PSW™	High PSW™
Gain	(dB)	0	-4	0
Delay	(ms)	0.2698	0	0.0505
Polarity		Positive	Positive	Positive
HPF *	Freq (Hz)	70	500	7000
	Slope (dB/oct)	12	24	24
	Filter Shape	Butterworth	Butterworth	Butterworth
LPF	Freq (Hz)	550	7000	out
	Slope (dB/oct)	48	24	
	Filter Shape	Butterworth	Butterworth	
PEQ 1	Freq (Hz)	149	2400	15000
	Level (dB)	+4	+3	-2.4
	Type	Parametric	Parametric	Parametric
	Q/Bandwidth	3.0/0.479	3.23/0.445	5.84/0.247
PEQ 2	Freq (Hz)	278	3340	
	Level (dB)	-6	-4.6	
	Type	Parametric	Parametric	
	Q/Bandwidth	2.4/0.597	3.48/0.413	
PEQ 3	Freq (Hz)	1220	5200	
	Level (dB)	-15	+5	
	Type	Parametric	Parametric	
	Q/Bandwidth	5.04/0.286	3.0/0.479	
PEQ 4	Freq (Hz)			
	Level (dB)			
	Type			
	Q/Bandwidth			
PEQ 5	Freq (Hz)			
	Level (dB)			
	Type			
	Q/Bandwidth			

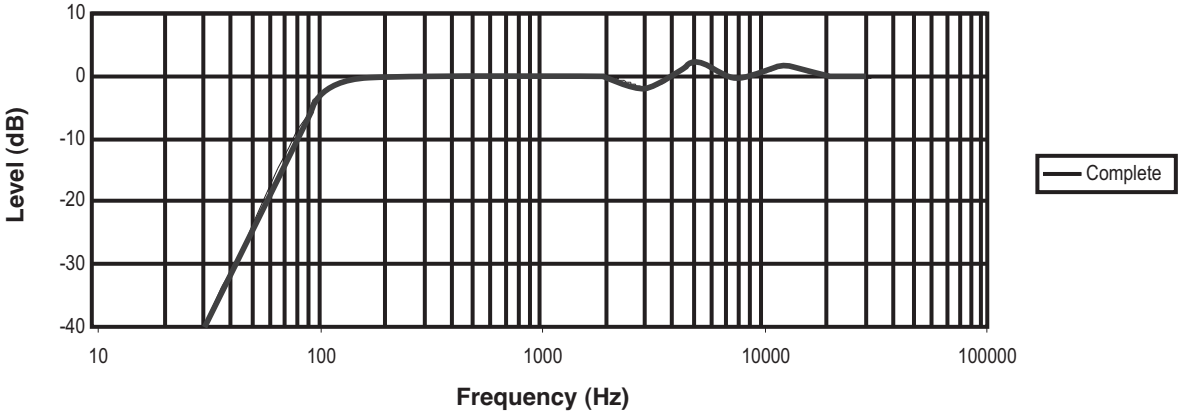
Electrical Transfer Function - Triamp VQ 100



6.5 VQ DF SINGLE AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Mid/High PSW™
Gain	(dB)	
Delay	(ms)	
Polarity		
HPF	Freq (Hz)	>400
	Slope (dB/oct)	24
	Filter Shape	Linkwitz-Riley
LPF	Freq (Hz)	out
	Slope (dB/oct)	
	Filter Shape	
PEQ 1	Freq (Hz)	2990
	Level (dB)	-2.5
	Type	Parametric
	Q/Bandwidth	5.04/0.286
PEQ 2	Freq (Hz)	5000
	Level (dB)	+3
	Type	Parametric
	Q/Bandwidth	5.44/0.265
PEQ 3	Freq (Hz)	6500
	Level (dB)	-1
	Type	Parametric
	Q/Bandwidth	4.0/0.36
PEQ 4	Freq (Hz)	13000
	Level (dB)	+2
	Type	Parametric
	Q/Bandwidth	6.0/0.24
PEQ 5	Freq (Hz)	
	Level (dB)	
	Type	
	Q/Bandwidth	

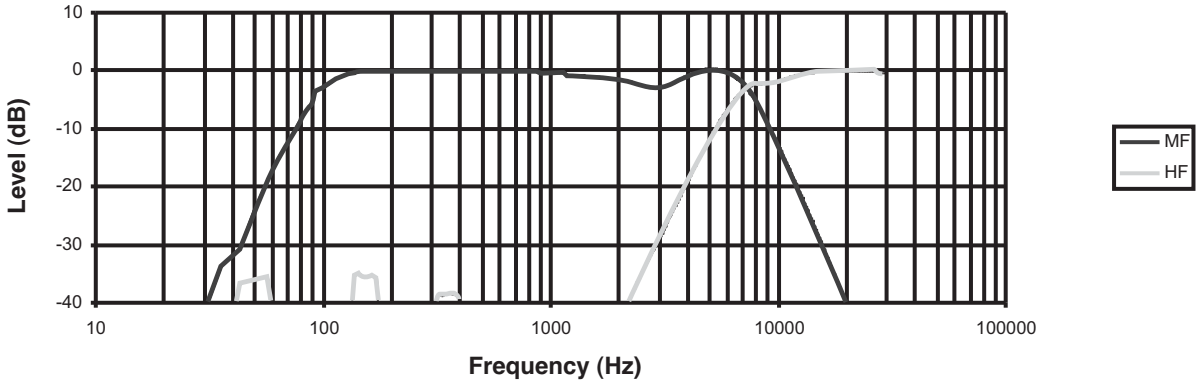
Electrical Transfer Function



6.6 VQ 60 TRI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Mid PSW™	High PSW™
Gain	(dB)	-4	0
Delay	(ms)		0.505
Polarity		Positive	Positive
HPF	Freq (Hz)	>400	7000
	Slope (dB/oct)	24	24
	Filter Shape	Linkwitz-Riley	Butterworth
LPF	Freq (Hz)	7000	out
	Slope (dB/oct)	24	
	Filter Shape	Butterworth	
PEQ 1	Freq (Hz)	2990	13000
	Level (dB)	-2.5	+2
	Type	Parametric	Parametric
	Q/Bandwidth	5.04/0.286	6.0/0.24
PEQ 2	Freq (Hz)	5000	
	Level (dB)	+3	
	Type	Parametric	
	Q/Bandwidth	5.44/0.265	
PEQ 3	Freq (Hz)		
	Level (dB)		
	Type		
	Q/Bandwidth		
PEQ 4	Freq (Hz)		
	Level (dB)		
	Type		
	Q/Bandwidth		
PEQ 5	Freq (Hz)		
	Level (dB)		
	Type		
	Q/Bandwidth		

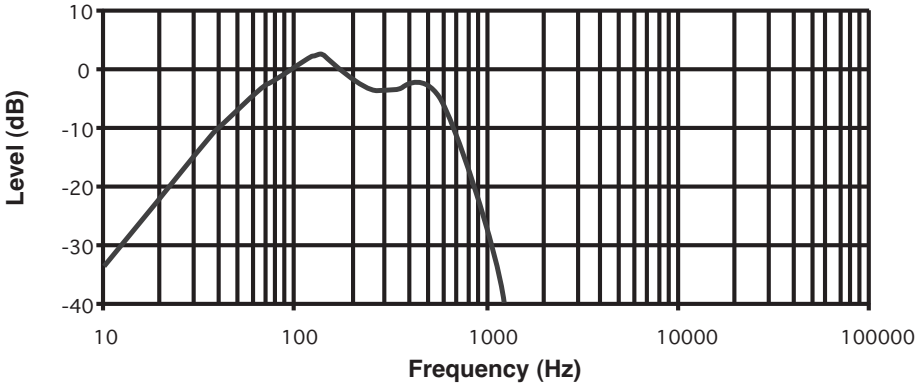
Electrical Transfer Function - Triamp VQ DF Biamp



6.7 VQ 100 BI-AMP SYSTEM PARAMETERS

Parameter	Unit/Name	Low (2x12")
Gain	(dB)	
Delay	(ms)	
Polarity		Positive
HPF *	Freq (Hz)	70
	Slope (dB/oct)	12
	Filter Shape	Butterworth
LPF	Freq (Hz)	500
	Slope (dB/oct)	48
	Filter Shape	Linkwitz-Riley
PEQ 1	Freq (Hz)	149
	Level (dB)	+4
	Type	Parametric
	Q/Bandwidth	3.0/0.479
PEQ 2	Freq (Hz)	278
	Level (dB)	-6
	Type	Parametric
	Q/Bandwidth	2.4/0.597
PEQ 3	Freq (Hz)	1220
	Level (dB)	-15
	Type	Parametric
	Q/Bandwidth	5.04/0.286
PEQ 4	Freq (Hz)	
	Level (dB)	
	Type	
	Q/Bandwidth	
PEQ 5	Freq (Hz)	
	Level (dB)	
	Type	
	Q/Bandwidth	

Electrical Transfer Function



6.8 OTHER SPEAKER MANAGMENT CONSIDERATIONS

*70Hz is the minimum recommended HPF setting on the VQ 60, VQ 100 and VQ MB.

When choosing a HPF frequency to crossover with subwoofers the following considerations should be given:-

Distance of the Sub from the VQ - If the sub has to be a distance from the VQ then we would recommend a low crossover point. With the VQ 60 & 100 the lowest recommended crossover point would be 90 Hz. Using too high a crossover point on the sub means that you may easily 'localize' the subwoofer; we want to avoid this. If the VQ is sitting on top of the subwoofer then you can afford to raise the crossover point to say 120Hz. This will also free up amplifier headroom on the VQ amplifier allowing more headroom on the mid-bass.

Boundary Conditions – As an example, if the subwoofer is used in a corner, the three effective boundaries will contribute massively to the level at the low end and may sound overpowering. This will require some low frequency 'cut' using parametric eq. The opposite phenomenon will be experienced if the subwoofer is flown; you may have to apply some 'boost' at specific frequencies.

When applying crossover filters and shapes.... Linkwitz, Butterworth, 12dB/oct, 48dB/oct etc...
Again, the placement of the units has a great bearing on the resultant parameters you use. For instance, if a VQ 60 is used next to a boundary it's low frequency roll off characteristic will change, so a different slope may be required. Delay may have to be applied to applied to match the arrival times of the two speakers.

For other configurations or subwoofers, it will usually be necessary to determine the signal delay settings by measurement.

7 RIGGING & SUSPENSION

The VQ hardware covered in this guide has been designed to offer quick, simple, and secure solutions for mounting specific VQ loudspeakers. This hardware has been designed and manufactured with a high safety load factor for its specific role. To ensure the safest possible use of the hardware covered in this guide, it must be assembled in strict accordance with the instructions specified. The information in these manuals relating to the assembly and the safe use of these accessories must be understood and followed.

The installation of VQ loudspeakers using the dedicated hardware should only ever be carried out by fully qualified installers, in accordance with all the required safety codes and standards that are applied at the place of installation.

WARNING: As the legal requirements for flying change from country to country, please consult your local safety standards office before installing any product. We also recommend that you thoroughly check any laws and bylaws prior to commencing work.

VQ hardware has been designed for use with VQ series loudspeakers only, and is not designed or intended for use with any other Tannoy Commercial products, or any other devices from other manufacturers. Using Tannoy Professional hardware for any purpose other than that indicated in this guide is considered to be improper use. Such use can be very dangerous as overloading, modifying; assembling in anyway other than that clearly stated in the manual, or damaging the VQ hardware will compromise safety. The component parts of any VQ hardware device must only be assembled using the accessory kits supplied and in strict compliance with the user manual. The use of other accessories or non-approved methods of assembly may result in an unsafe hardware system by reducing the load safety factor. Welding, or any other method of permanently fixing hardware components together or to the integral fixing points in the cabinet should never be used.

Whenever a VQ loudspeaker is fixed to a surface using a VQ hardware device, the installer must ensure that the surface is capable of safely and securely supporting the load. The hardware employed must be safely, securely, and in accordance with the manual, attached both to the loudspeaker and also to the surface in question, using only the fixing holes provided as standard and covered in the manual. Secure fixings to the building structure are vital. Seek help from architects, structural engineers or other specialists if in any doubt.

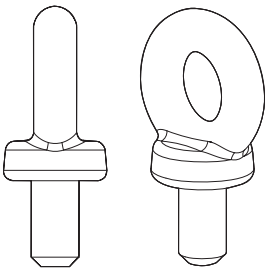
All loudspeakers flown must, be provided with an independent, correctly rated and securely attached secondary safety – in addition to the principle hardware device. This secondary safety must prevent the loudspeaker from dropping more than 150mm (6”) should the principle hardware device fail.

WARNING: Do not under any circumstances use a loudspeaker's handles to support the weight of the loudspeaker except for their intended use: hand carrying. The handles are not rated to support the load of the loudspeaker for temporary or permanent installation.

The VQ range of loudspeakers is intended to be suspended or ground-stacked. This section details how to physically configure VQ flyware and arrays. The following are the recommended methods for most situations. Specific situations may require other methods. It is the user's responsibility to determine the viability and safety for alternate methods and implement them accordingly.

7.1 FLYING A SINGLE VQ CABINET USING EYEBOLTS

The simplest method of flying a single VQ cabinet is with a pair of M10 shoulder eyebolts on the top, using a third eyebolt on the rear of the cabinet to tilt the cabinet.



VEB FORGED EYEBOLT

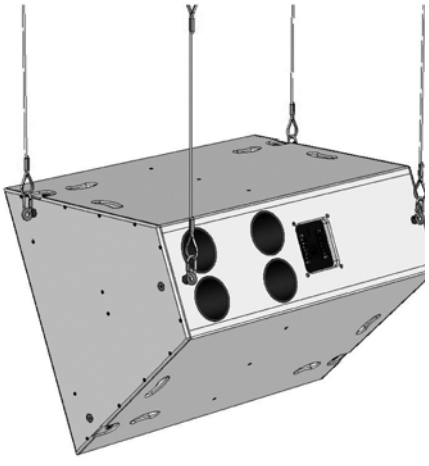
VQ loudspeakers can be flown with high quality VEB M10 eyebolts with collar to BS4278:1984. The loudspeakers are equipped with internal steel braces, which also double as the flying points, and accept VEB M10 eyebolts.

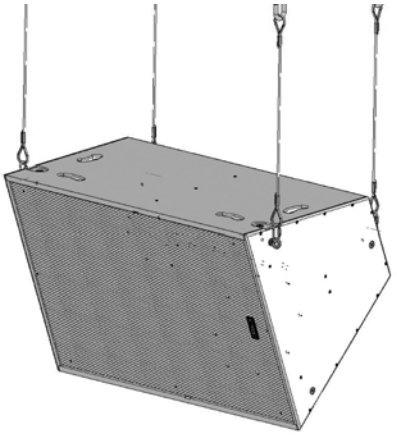
To install the VEB M10 eyebolts remove the original M10 counter sunk screws from the locations you wish to install the VEB M10 eyebolts. Then replace these counter sunk M10 screws with the VEB M10 eyebolts. The M10 insert on the rear of the cabinet also accepts a VEB M10 eyebolt and should be used for tilting the loudspeaker to the desired angle.

IMPORTANT: It is imperative for safety reasons that a minimum of two eyebolts linked to two independently fixed straps are used per cabinet. Never suspend one enclosure from the other using eyebolts.

Never attempt to use formed eyebolts i.e. formed from a steel rod and bent into an eye.

Flying a single VQ cabinet in a landscape orientation using EBS forged Eyebolts

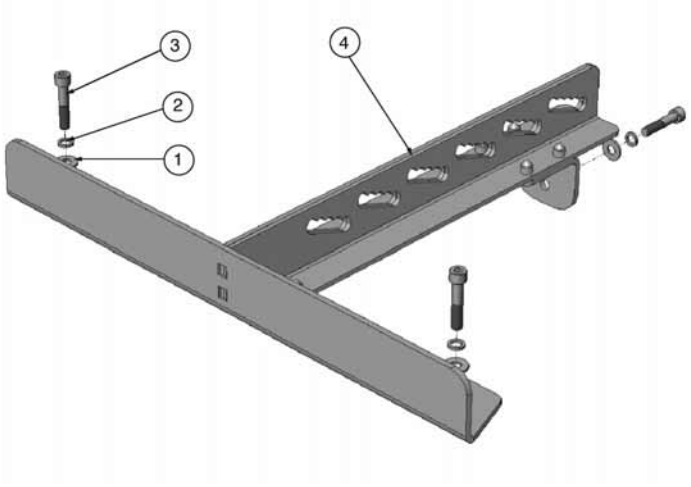




7.2 VQ FLYING BRACKET (SINGLE POINT HANG FLYING BRACKET)

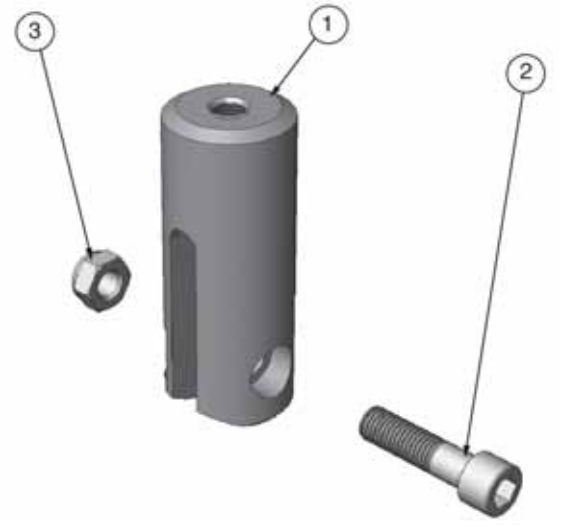
For safe, flexible and simple flying, the VQ Flying bracket is designed to suspend the VQ cabinet from a single pivot point. This allows precise adjustment of aiming angles with the cabinet in situ. The flown VQ loudspeaker must be provided with an independent, correctly rated and securely attached secondary safety – in addition to the principle hardware device. This secondary safety must prevent the loudspeaker from dropping more than 150mm (6") should the principle hardware device fail.

Note: All fixings should be thread-locked and torqued to 25Nm.



Item No.	Description	Quantity
1	M10 Plain Washer	3
2	M10 Spring Washer	3
3	Screw M10 x 50mm	3
4	Bracket Flying - VQ	1

The rod end is used in conjunction with the VQ flying bracket. Two types of rod end are available. One is designed to accept ½" UNC threaded rod, and the other accepts 12mm threaded rod. (Threaded rod supplied by user).



Item No.	Description	Quantity
1	Rod End – VQ _" UNC or 12mm	3
2	Screw M12x45 Cap Head	3
3	M12 Nyloc Nut	3

Remove the front two countersunk M10 screws located on the top of the cabinet and the top M10 countersunk screw on the top rear of the cabinet. Assemble the flying bracket as shown. **(See fig. 1)**

IMPORTANT: Only the screws, fasteners, shake proof and plain washers supplied should be used to assemble the VQ flying bracket. Note: All fixings should be thread-locked and torqued to 25Nm.

When fixed in position the rod end can be moved along any of the five serrated edges within each slot to fine tune the loudspeakers tilt angle. **(See fig. 2)** Threaded rod used should be no more than 300mm (12") in length. The user is responsible for supplying the correct threaded rod. The minimum specifications for the threaded rod are:-

USA - Grade B7 (1438lbs, 650kgs for ½" rod based on a safety factor of 10:1)
Metric - Grade 10.9 (1459lbs, 660kgs for 12mm rod based on a safety factor 10:1)

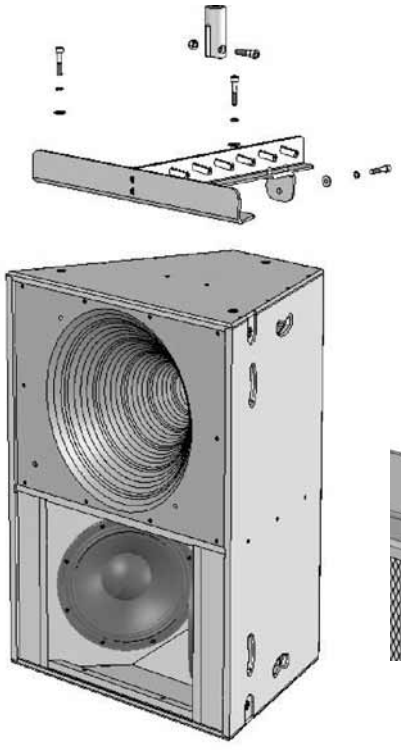
Use the appropriate nuts to lock the rod end to the threaded rod (supplied by user). Use a Nyloc nut at the top of the threaded rod to secure the pole clamp (supplied by user).

The Tannoy VPC pole clamp can be attached to the threaded rod if flying the VQ loudspeaker from an overhead bar or truss. The threaded rod can also be attached to suitably rated Uni-Strut.
Always use Nyloc nuts to secure the threaded rod to the pole clamp or Uni-Strut.

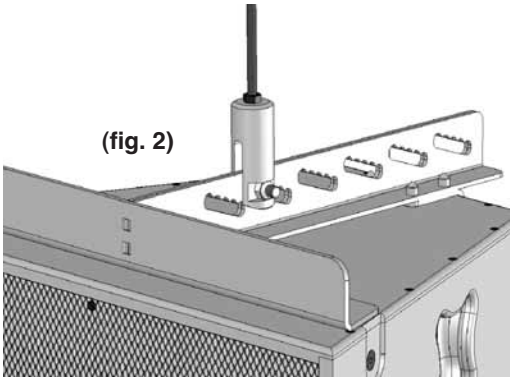
The rigging of a flown sound system may be dangerous unless undertaken by qualified personnel with the required experience and certification to perform the necessary tasks.
Fixing of hanging points in a roof should always be carried out by a professional rigger and in accordance with the local rules of the venue.

A maximum of VQ 60 + VQ MB + VQ DF (350lbs, 160kg) can be flown from a single threaded rod. This combination carries a safety factor of 8:1. **(See fig. 3)**

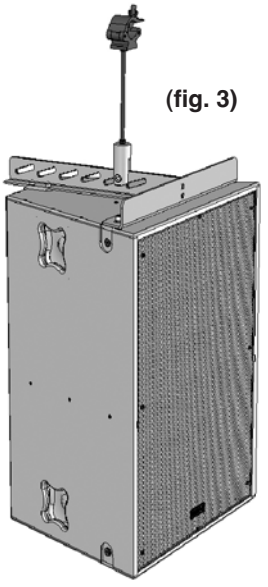
(fig. 1)



(fig. 2)



(fig. 3)

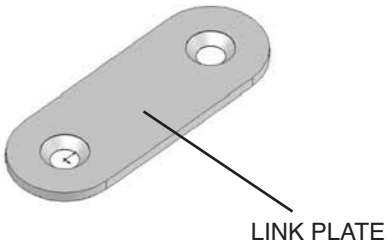


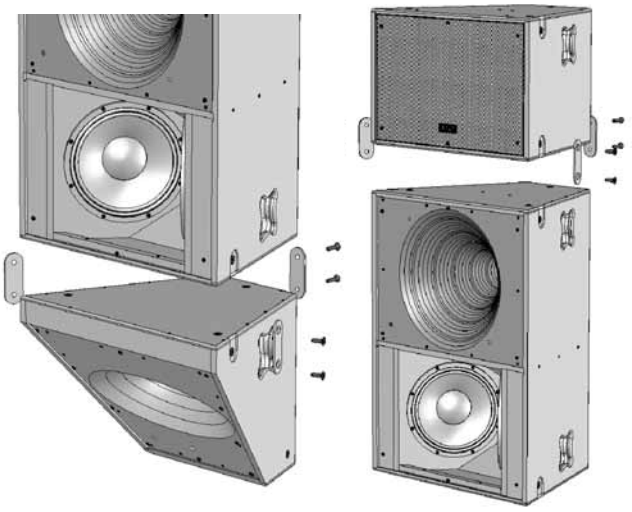
7.3 VQ LINK PLATE

The VQ link plate is used to join a VQ DF or VQ MB to a VQ 60 or VQ 100 cabinet. Three link plates are used to connect each cabinet. The Link plates are supplied as standard with each VQ DF and VQ MB.

Remove the M10 countersunk screws as shown in the diagram opposite. Use the same screws to fix the link plate in place. The link plate will sit flush in the cabinet indentations. Two longer M10 bolts are supplied with the link plates. These bolts should be used to fix the rear link plate in position.

Note: All fixings should be thread-locked and torqued to 25Nm

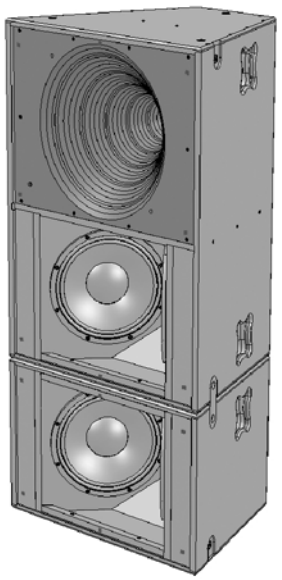


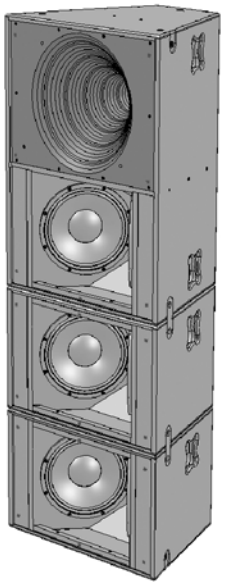


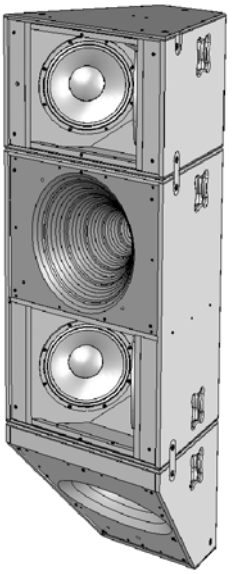
7.4 USING THE VQ MB FOR ADDITIONAL PATTERN CONTROL

The VQ link plate is used to join a VQ DF or VQ MB to a VQ 60 or VQ 100 cabinet. Three link plates are used to connect each cabinet. The Link plates are supplied as standard with each VQ DF and VQ MB.

Remove the M10 countersunk screws as shown in the diagram opposite. Use the same screws to fix the link plate in place. The link plate will sit flush in the cabinet indentations. Two longer M10 bolts are supplied with the link plates. These bolts should be used to fix the rear link plate in position.







7.5 ARRAYING VQ 60

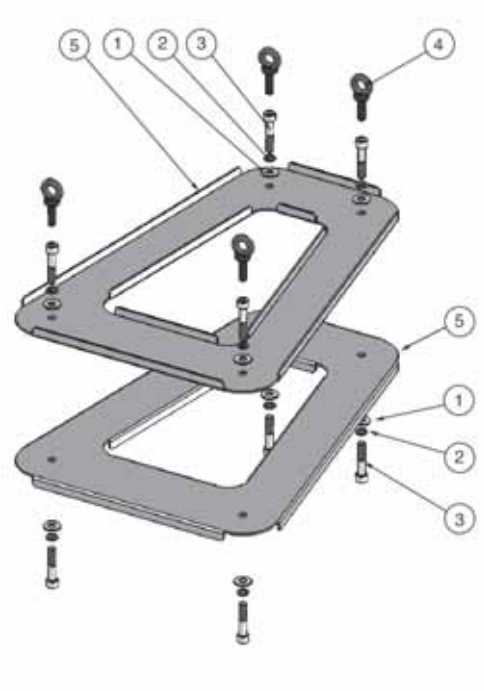
A single VQ 100 can produce more power and clarity over its 100degree beamwidth area than many arrayed solutions using multiple cabinets, a great advantage when considering your building aesthetics. A VQ 100 is not designed to be arrayed.

Two VQ 60's can be arrayed to produce a well defined horizontal coverage angle of 120 degrees.

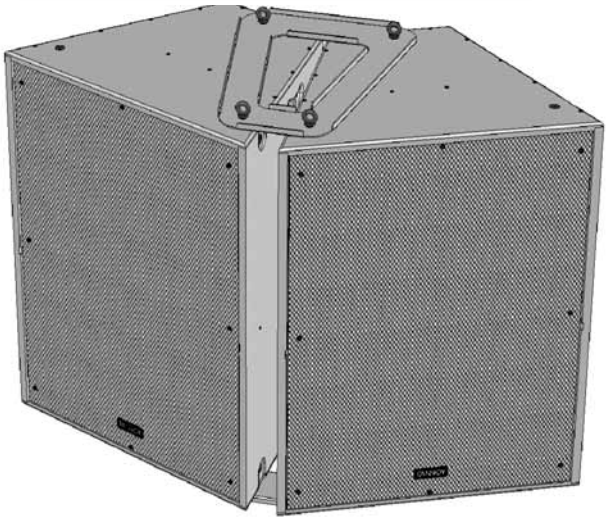
The VQ array plate is designed to optimally array two VQ 60 cabinets. To fit the plate, set the boxes on the ground with the rear edge of the cabinets touching. Remove the two M10 countersunk bolts and replace with either the M10 screw or the supplied eyebolts. Locate the four M10 eyebolts from the fixings kit supplied and insert these through the array plate into the rigging points in the cabinet. These will be used to pick up the array.Repeat the same procedure at the bottom of the cabinets, use the M10 screw. If flying in a landscape orientation the M10 screw can be used on both array plates.

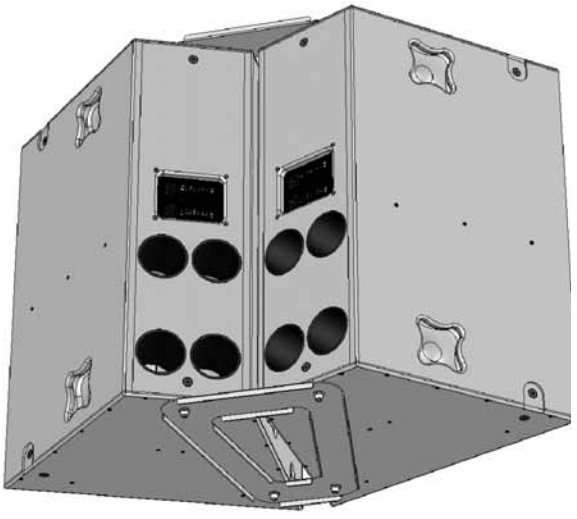
Note: All fixings should be thread-locked and torqued to 25Nm

Two independent pick-up points are recommended for suspending the array. The main pickup points are the two rear eyebolts. The two front eyebolts may be used as safety points.

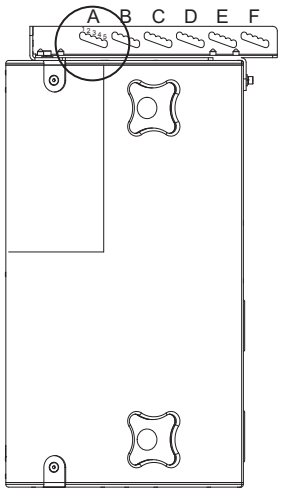


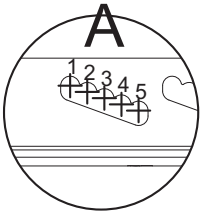
Item No.	Description	Quantity
1	M10 Plain Washer	8
2	M10 Spring Washer	8
3	Screw M10 x 50mm	8
4	Eyebolt M10	4
5	Array Bracket	2





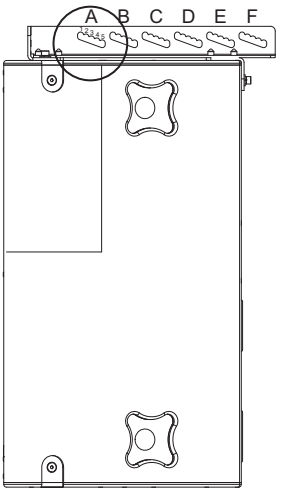
VQ 60





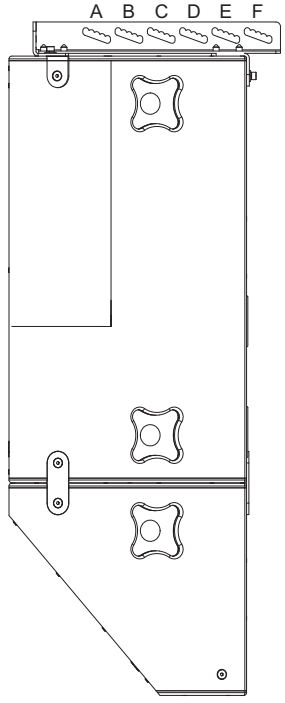
	A	B	C	D	E	F
1	-5.5°	3.0°	11.3°	19.3°	26.5°	32.9°
2	-4.2°	4.4°	12.8°	20.7°	27.8°	34.1°
3	-2.7°	5.9°	14.3°	22.1°	29.2°	35.4°
4	-1.3°	7.4°	15.8°	23.6°	30.5°	36.6°
5	0.2°	8.9°	17.3°	25.0°	31.8°	37.8°

VQ 100



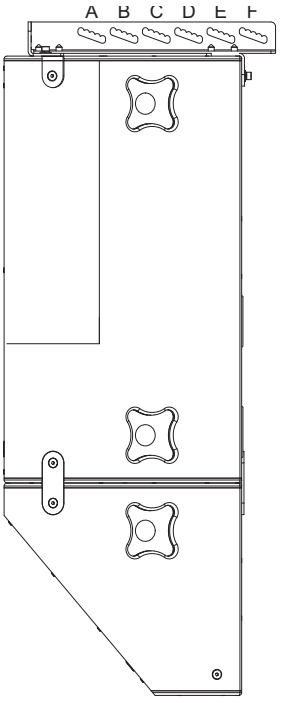
	A	B	C	D	E	F
1	-2.8°	5.3°	13.2°	20.6°	27.3°	33.4°
2	-1.4°	6.7°	14.6°	21.9°	28.6°	34.5°
3	0.0°	8.1°	16.0°	23.3°	29.9°	35.7°
4	1.3°	9.6°	17.4°	24.6°	31.1°	36.8°
5	2.8°	11.0°	18.8°	26.0°	32.4°	38.0°

VQ 60 & VQ DF



	A	B	C	D	E	F
1	-4.9°	1.4°	7.6°	13.6°	19.4°	24.7°
2	-3.9°	2.4°	8.7°	14.7°	20.4°	25.7°
3	-2.8°	3.5°	9.8°	15.8°	21.5°	26.7°
4	-1.8°	4.6°	10.9°	16.9°	22.5°	27.7°
5	-0.7°	5.7°	12.0°	18.0°	23.6°	28.7°

VQ 100 & VQ DF



	A	B	C	D	E	F
1	-4.9°	1.4°	7.6°	13.6°	19.4°	24.7°
2	-3.9°	2.4°	8.7°	14.7°	20.4°	25.7°
3	-2.8°	3.5°	9.8°	15.8°	21.5°	26.7°
4	-1.8°	4.6°	10.9°	16.9°	22.5°	27.7°
5	-0.7°	5.7°	12.0°	18.0°	23.6°	28.7°

7.7 CENTRE OF GRAVITY LOCATIONS

Product Number	Product Name	Centre of Gravity	
		Y (vertically)	Z (horizontally)
8001 4800	VQ-60	444.4mm (17.5in)	302.6 (11.91in)
8001 4810	VQ-MB	216.6mm (8.53in)	311.2 (12.25in)
8001 4820	VQ-100	481.3 (18.95in)	326.9 (12.87in)
8001 4830	VQ-DF	188.8 (7.43in)	266.9 (10.51in)
8001 4840	VQ Net-60	438.8 (17.28in)	292 (11.5in)
8001 4850	VQ Net-100	472.8 (18.61in)	313.4 (12.34in)
8001 4860	VQ Net-DF	187.3 (7.37in)	245.5 (9.67in)
8001 5390	VQ Net-MB	216.8 (8.54in)	290.4 (11.43in)

Please note that Datum faces for these coordinates are the top and rear panels for all cabinets.

8 WARRANTY

No maintenance of the VQ loudspeaker is necessary other than routine checks.

VQ loudspeaker products are covered by a 5 year warranty from the date of manufacture subject to the absence of misuse, overload or accidental damage. Claims will not be considered is the serial number has been altered or removed. Work under warranty should only be carried out by a Tannoy dealer or service agent. This warranty in no way affects your statutory rights. For further information please contact your dealer or distributor in your country. If you cannot locate your distributor please contact Customer Services, Tannoy Ltd at the address given below.

Customer Services, Tannoy Ltd., Rosehall Industrial Estate, Coatbridge, Strathclyde ML5 4TF, Scotland

Telephone:	01236 420199	(National)
	+44 1236 420199	(International)
Fax:	01236 428230	(National)
	+44 1236 428230	(International)
E-mail:	prosales@tannoy.com	

DO NOT SHIP ANY PRODUCT TO TANNOY WITHOUT PREVIOUS AUTHORISATION

Our policy commits us to incorporating improvements to our products through continuous research and development. Please confirm current specifications for critical applications with your supplier.

9 OPERATING & SERVICING

It is the responsibility of the user to ensure the loudspeaker is used within its operational capabilities in order to avoid damage. Damage to a loudspeaker or the onset of damage is normally easy to detect – you can hear it.

Normal causes of loudspeaker failure can be attributed to the following:-

1. Amplifier Clipping (Normally associated with using an underpowered amplifier)

2. Voltage levels being applied to the speaker which is in excess of the recommended programme power.

3. Mechanical noise coming from the speaker (i.e. over excursion)

4. High levels of distortion

DO NOT drive any of your electronic equipment into clipping, particularly the power amplifiers.

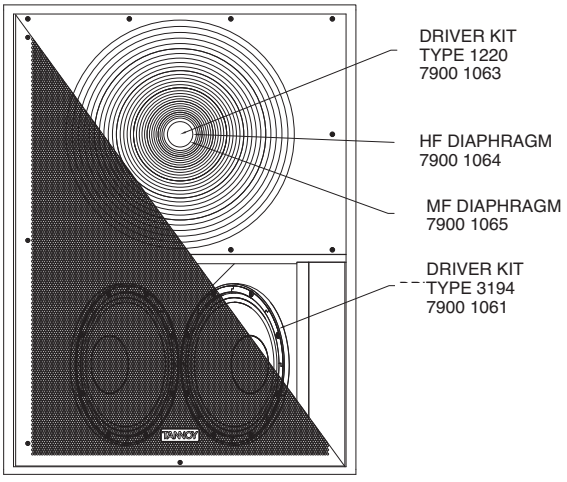
Avoid sustained microphone feedback.

Avoid extreme boosts on equalizers and DSP loudspeaker management systems as these can cause excessive input to the drivers at the boosted frequencies. Generally, cutting frequencies is preferred to correct for frequency response problems. This will keep power levels within a predictable amount.

Tannoy VQ loudspeakers are capable of levels that can permanently damage hearing.
Take precautions so that audiences are not exposed to such levels (in excess of 100dBA). Due to the very low distortion content from these loudspeakers, they may be producing SPL levels well in excess of what you think they are. It is advisable to monitor the levels with an SPL meter.

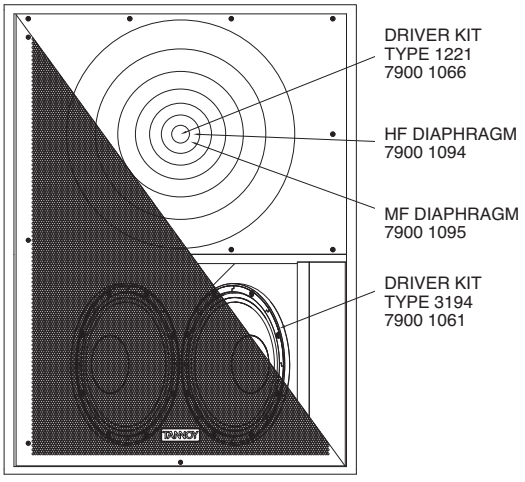
10 SERVICE PARTS AND ACCESSORIES

VQ 60



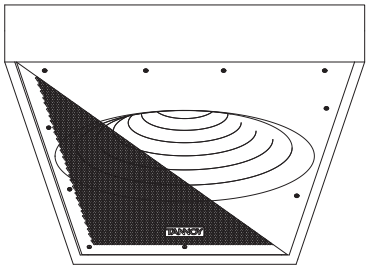
GRILLE ASSEMBLY WITH TANNOY BADGE (RECTANGULAR) - 7900 1067
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1172 BLACK
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1173 WHITE

VQ 100



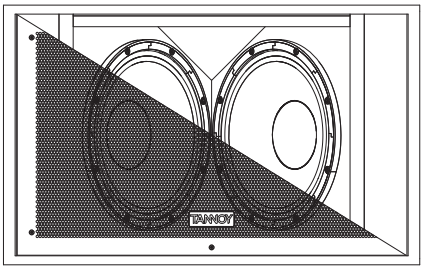
GRILLE ASSEMBLY WITH TANNOY BADGE (RECTANGULAR) - 7900 1067
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1172 BLACK
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1173 WHITE

VQ DF



DRIVER KIT - TYPE 1221 -7900 1066
HF DIAPHRAGM - 7900 1094
HF DIAPHRAGM - 7900 1095
GRILLE ASSEMBLY WITH TANNOY BADGE (RECTANGULAR) - 7900 1069
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1159 (BLACK)
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1164 (WHITE)

VQ MB



DRIVER KIT TYPE 3194 - 7900 1061
GRILLE ASSEMBLY WITH TANNOY BADGE (RECTANGULAR) - 7900 1068
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1168 BLACK
GRILLE ASSEMBLY WITH VQ BADGE (SQUARE) - 7900 1169 WHITE

ACCESSORIES

Part No.	Description
8001 5250	VQ FLYING BRACKET
7900 1055	VQ LINK PLATE
8001 5260	VQ ROD END
8001 2820	VEB FORGED EYE BOLT M10 (PACK OF 3)
8001 2850	VPC POLE CLAMP

11.1 VQ 60 TECHNICAL SPECIFICATIONS

System

Frequency Response (-3dB) (1)	115Hz - 23kHz
Frequency Range (-10dB) (1)	90Hz - 27kHz
System Sensitivity (1W @1m) (2)	
Bi-Amp	
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)
Passive MF/HF (450Hz - 23kHz)	115dB (2.83V @ 8 Ohms)
Tri-Amp	
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)
MF (450Hz - 7kHz)	115dB (2.83V @ 8 Ohms)
HF (7kHz - 23kHz)	115dB (2.83V @ 8 Ohms)
Dispersion (-6dB)	60 degrees conical
Driver Complement	
LF	2 x 300mm (12.00”) Low Frequency Transducers, Semi Horn Loaded
MF/HF	Dual Concentric™ Compression driver loaded into a single PSW™ Waveguide
Crossover	Bi-amp 450Hz (active) 7kHz (passive) Tri-amp 450Hz, 7kHz (active)
Directivity Factor (Q)	21.2 averaged 1kHz to 10kHz
Directivity Index (DI)	13.3 averaged 1kHz to 10kHz

Rated Maximum SPL (2)

	Average	Peak
Low Frequency	135dB	141dB
Mid Frequency	138dB	144dB
High Frequency	135dB	141dB
Passive MF/HF	138dB	144dB

Power Handling (3)

	Average	Peak
LF @ 4 Ohms	1000W (63.3V)	2000W
MF @ 8 Ohms	200W (40V)	400W
HF @ 8 Ohms	90W (27V)	180W
Passive MF/HF @ 8 Ohms	200W (40V)	400W

Recommended Amplifier Power

Low Frequency	2000W into 4 Ohms
Mid Frequency	400W into 8 Ohms
High Frequency	200W into 8 Ohms
Passive MF/HF	400W into 8 Ohms

Nominal Impedance

Low Frequency	4 Ohms (4.1 Ohms Minimum)
Mid Frequency	8 Ohms (7.0 Ohms Minimum)
High Frequency	8 Ohms (8.7 Ohms Minimum)

Construction

Enclosure	18mm (0.71") birch plywood. Vented and internally braced.
Grille	Powder coated perforated steel grille
Finish	Black or white textured paint (custom colours on request)
Connectors	Barrier Strip
Fittings	8 x Recessed carrying handles 12 x M10 flying inserts
Dimensions	925mm x 694mm x 515mm (36.42" x 27.32" x 20.28")
NET Weight	77kg (170.0 lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre
(3) Accelerated Life Test (EIA RS426-B)\

A full range of measurements, performance data, CLF and Ease™ Data can be downloaded from www.tannoy.com

Full independent verification of published specifications carried out by NWAA Labs, California can also be obtained from the downloads section of www.tannoy.com Tannoy operates a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications, which Tannoy reserves the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications.

11.2 VQ 100 TECHNICAL SPECIFICATIONS

System

System Type	3-Way Full Range - Point Source
Frequency Response (-3dB) (1)	115Hz - 23kHz
Frequency Range (-10dB) (1)	90Hz - 27kHz
Operating Modes	Bi-Amp (LF,MF/HF) User Configurable Tri-Amp (LF, MF,HF) User Configurable

System Sensitivity (1W @1m) (2)

Bi-Amp	
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)
Passive MF/HF (450Hz - 23kHz)	110dB (2.83V @ 8ohms)
Tri-Amp	
LF (80Hz - 450Hz)	105dB (2.0V @ 4 Ohms)
MF (450Hz - 7kHz)	111dB (2.83V @ 8 Ohms)
HF (7kHz - 23kHz)	110dB (2.83V @ 8 Ohms)

Dispersion (-6dB)	100 degrees conical
Driver Complement	
LF	2 x 300mm (12.00”) Low Frequency Transducers, Semi Horn Loaded
MF/HF	Dual Concentric™ Compression driver loaded into a single PSW™ Waveguide
Crossover	Bi-amp 450Hz (active) 7kHz (passive) Tri-amp 450Hz, 7kHz (active)
Directivity Factor (Q)	8.5 averaged 1kHz to 10kHz
Directivity Index (DI)	9.3 averaged 1kHz to 10kHz

Rated Maximum SPL (2)

	Average	Peak
Low Frequency	135dB	141dB
Mid Frequency	134dB	140dB
High Frequency	133dB	139dB
Passive MF/HF	134dB	140dB

Power Handling (3)

	Average	Peak
LF @ 4 Ohms	1000W (63.3V)	2000W
MF @ 8 Ohms	200W (40V)	400W
HF @ 8 Ohms	90W (27V)	180W
Passive MF/HF @ 8 Ohms	200W (40V)	400W

Recommended Amplifier Power

Low Frequency	2000W into 4 Ohms
Mid Frequency	400W into 8 Ohms
High Frequency	200W into 8 Ohms
Passive MF/HF	400W into 8 Ohms

Nominal Impedance

Low Frequency	4ohms (4.1 Ohms Minimum)
Mid Frequency	8ohms (6.0 Ohms Minimum)
High Frequency	8ohms (8.6 Ohms Minimum)

Construction

Enclosure	18mm (0.71") birch plywood. Vented and internally braced.
Grille	Powder coated perforated steel grille
Finish	Black or white textured paint (custom colours on request)
Connectors	Barrier Strip
Fittings	8 x Recessed carrying handles 12 x M10 flying inserts
Dimensions	925mm x 694mm x 515mm (36.42" x 27.32" x 20.28")
NET Weight	65kg (143.3 lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre
(3) Accelerated Life Test (EIA RS426-B)\

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11.3 VQ DF TECHNICAL SPECIFICATIONS

System

System Type	2-Way Mid/High - Point Source
Frequency Response (-3dB) (1)	400Hz - 23kHz
Frequency Range (-10dB) (1)	350Hz - 27kHz
Operating Modes	Single Amplified Bi-Amp (MF,HF) - User Configurable

System Sensitivity (1W @1m) (2)

Single Amplified	
Passive MF/HF (450Hz - 23kHz)	110dB (2.83V @ 8 Ohms)
Bi-Amp	
MF (450Hz - 7kHz)	110dB (2.83V @ 8 Ohms)
HF (7kHz - 23kHz)	110dB (2.83V @ 8 Ohms)

Dispersion H x V (-6dB)	80 x 50 degrees
Driver Complement	
MF/HF	Dual Concentric™ Compression driver loaded into a single PSW™ Waveguide
Crossover Frequency	Single Amplified - 7kHz (passive) Bi-amp 7kHz (active) Recommended HighPass Filter @ 450Hz
Directivity Factor (Q)	13.4 averaged 1kHz to 10kHz
Directivity Index (DI)	11.3 averaged 1kHz to 10kHz

Rated Maximum SPL (2)

Mid Frequency	134dB (average) 140dB (peak)
High Frequency	133dB (average) 139dB (peak)
Passive MF/HF	134dB (average) 140dB (peak)

Power Handling (3)

	Average	Peak
MF @ 8 Ohms	200W (40V)	400W
HF @ 8 Ohms	90W (27V)	180W
Passive MF/HF @ 8 Ohms	200W (40V)	400W

Recommended Amplifier Power

Mid Frequency	400W into 8 Ohms
High Frequency	200W into 8 Ohms
Passive MF/HF	400W into 8 Ohms

Nominal Impedance

Mid Frequency	8 Ohms (6.5 Ohms Minimum)
High Frequency	8 Ohms (8.5 Ohms Minimum)

Construction

Enclosure	18mm (0.71") birch plywood.
Grille grille	Powder coated perforated steel
Finish	Black or white textured paint (custom colours on request)
Connectors	Barrier Strip
Fittings	2 x Recessed carrying handles 9 x M10 flying inserts
Dimensions	460mm x 694mm x 497mm (18.11" x 27.32" x 19.57")
NET Weight	28kg (61.7 lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre
(3) Accelerated Life Test (EIA RS426-B)\

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11.5 VQ MB TECHNICAL SPECIFICATIONS

System

System Type	Mid Bass - Vented
Frequency Response (-3dB) (1)	115Hz - 500Hz
Frequency Range (-10dB) (1)	90Hz - 600Hz
System Sensitivity (1W @1m) (2)	105dB (2.0V @ 4 Ohms) 105dB (2.0V @ 4 Ohms)
Driver Complement	2 x 300mm (12.00”) Low Frequency Transducers, Semi HornLoaded
Rated Maximum SPL (2)	
Average	135dB
Peak	141dB
Power Handling (3)	
Average	1000W (63.3V)
Peak	2000W
Rec Amplifier Power	2000W into 4 Ohms
Nominal Impedance	4 Ohms (4.1 Ohms Minimum)

Construction

Enclosure	18mm (0.71") birch plywood Vented and internally braced
Grille grille	Powder coated perforated steel
Finish	Black or white textured paint (custom colours on request)
Connectors	Barrier Strip & 1 x NL4
Fittings	2 x Recessed carrying handles 12 x M10 flying inserts
Dimensions	433mm x 694mm x 515mm (17.05" x 27.32" x 20.28")
NET Weight	37.0kg (81.6lbs)

Notes:
(1) Average over stated bandwidth. Measured at 3 metres on axis, then referred to 1 metre
(2) Unweighted pink noise input, measured at 3 metres in an anechoic chamber, then referred to 1 metre
(3) Accelerated Life Test (EIA RS426-B)\

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12 DECLARATION OF CONFORMITY

The following apparatus is manufactured in the United Kingdom by Tannoy Ltd of Rosehall Industrial estate, Coatbridge, Scotland, ML5 4TF and conform(s) to the protection requirements of the European Electromagnetic Compatibility Standards and Directives relevant to professional apparatus used in commercial light industrial environments. The apparatus is designed and constructed such that electromagnetic disturbances generated do not exceed levels allowing radio and telecommunications equipment and other apparatus to operate as intended, and, the apparatus has an adequate level of intrinsic immunity to electromagnetic disturbance to enable operation as specified and intended.

Details of the Apparatus:	Tannoy Contractor Loudspeaker Model Number: VQ 60 VQ 100 VQ DF VQ MB
Associated Technical File:	EMCVQ60 EMCVQ100 EMCVQ-DF EMCVQ-MB
Applicable Standards:	EN 55103-1 1996 Emission EN 55103-2 1996 Immunity
Electrical Safety:	EN 60065: 1993

CE

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