

VSX SERIES

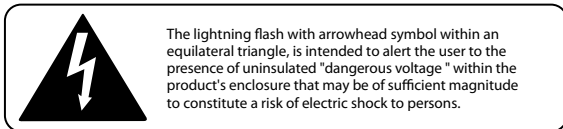
High-performance **subwoofers**



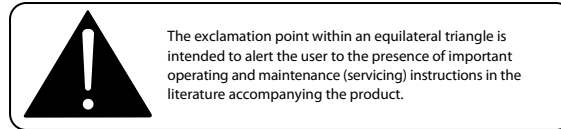
TANNOY[®]

Operation Manual

Important Safety Instructions



1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers that produce heat).
9. Only use attachments / accessories specified by the manufacturer.
10. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart / apparatus combination to avoid injury from tip-over.
11. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



SAFETY WARNING

Do not remove any covers, loosen any fixings or allow items to enter any aperture.

SAFETY WARNING

Objects filled with liquids should not be placed on this apparatus.

AVERTISSEMENT DE SECURITE

Ne retirez pas les couvercles, ne desserrez pas les fixations et ne laissez aucune pièce s'introduire dans les ouvertures.

AVERTISSEMENT DE SECURITE

Ne placez pas d'objets contenant du liquide à proximité de l'appareil.

Table of Contents

2. Introduction.....	4
3. Unpacking.....	4
4. Preliminary Recommendation.....	4
5. Cables and Connectors.....	5
6. Polarity Checking.....	6
7. Amplification & Power Handling.....	6
8. Equalisation and Positioning.....	7
9. Active Crossover Settings.....	7
10. Rigging and Safety Procedures.....	8
11. SECUR ET – VEB Eyebolt.....	9
12. Dimensions.....	9
13. Technical Specifications.....	12
14. Service Parts & Accessories.....	13
15. Warranty.....	14
16. Declaration of Conformity.....	15

2. Introduction

Designed, engineered and built in the United Kingdom, the VSX Series from Tannoy comprises of three band-pass and two direct-radiating subwoofers for demanding professional and commercial sound applications. Within the VSX Series, system designers can choose from a variety of sizes, power levels and low frequency characteristics to suit particular requirements.

As indicated by their respective suffixes, VSX 8.2BP, VSX 10BP and VSX 12.2BP are band-pass devices, while VSX 15DR and VSX 18DR are direct radiating models. The three band-pass models incorporate Tannoy's latest engineering philosophies in band-pass enclosure design, optimising tonal balance and harmonic output through precisely engineered enclosure geometry and innovative transducer design.

For ease of installation, connections are on integrated, recessed termination panels equipped with both NL4 speakON® and barrier strip connectors. The speakON connectors are angled and recessed to allow flush mounting to a wall or ceiling.

All VSX Series subwoofers are housed in rugged, durable birch ply enclosures with ergonomic Integrip™ carry handles and an integrated pole-mount recess. Coupling VSX Series subwoofers to VX and VXP Series full-range loudspeakers via the optional VTH pole mount facilitates portable PA applications without need for tripod stands.

3. Unpacking

Each Tannoy VSX Series subwoofer is carefully tested and inspected prior to shipment. After unpacking, please check for any exterior physical damage, and save the carton and any relevant packaging materials in case the unit again requires packing and shipping. In the event that damage has been sustained in transit, notify your dealer and the shipping carrier immediately.

4. Preliminary Recommendation

VSX Series subwoofers can produce high sustained output levels for long periods of time. If users are in close proximity, these levels could lead to permanent hearing damage. Because Tannoy loudspeakers have a natural-sounding, flat frequency response and very low distortion, users may not be aware of the potential hazard. For continuous exposure to high levels, we recommend use of a sound level meter to ensure noise levels are within safety limits. The meter should be capable of integrating levels over a period of exposure in conformance with noise control standards.

5. Cables and Connectors

Inputs are provided on both NL4 speakON connectors and barrier strip terminals. Two inputs of each type are provided, with each set wired in parallel, to enable connection of an additional subwoofer to the same amplifier output. The speakON connectors will accept wire up to 4 mm sq CSA (AWG 11) with an outside diameter of up to 15 mm and a current rating of 30 A.

The pins of the two speakON sockets identified as input / output on the rear of the input panel are paralleled within the enclosure. Tannoy have adopted the conventional wiring standard for the VSX Series product: pin 1+ is positive pin 1- is negative. For a worldwide list of Neutrik® distributors see www.neutrik.com.

When choosing cable type, it is important to select the correct cross sectional area in relation to the cable length and the load impedance. A small cross sectional area will increase the cable's series resistance, inducing power loss and response variations (damping factor). Connectors wired with 2.5 sq. mm (13 gauge) cable will be satisfactory under normal conditions; with very long cable runs, the wire size should be increased. Please refer to the following table for guidance:

Cable Run (m)	C.S.A. of each conductor (mm ²)	Cable resistance ohms	% Power loss into 8 ohm load	% Power loss into 4 ohm load
10	2.5	0.14	1.7	3.5
	4	0.09	1.1	2.2
	6	0.06	0.73	1.5
25	2.5	0.14	1.7	3.5
	4	0.09	1.1	2.2
	6	0.06	0.73	1.5
60	2.5	0.14	1.7	3.5
	4	0.09	1.1	2.2
	6	0.06	0.73	1.5
100	2.5	0.14	1.7	3.5
	4	0.09	1.1	2.2
	6	0.06	0.73	1.5

6. Polarity Checking

Checking the polarity of the wiring before the speaker system is mounted or flown will help ensure satisfactory performance. If you do not have a pulse based polarity checker, you may check as follows:

Connect two wires to the + and - terminals of a PP3 (9 V) battery. Apply the wire connected to the positive (+) terminal of the battery to the speaker cable leg which you believe to be connected to pin 1+ of the speaker connector; likewise connect the negative (-) terminal of the battery to pin 1-. If you have wired it correctly, the LF drive unit will move forward. At this point, connect the positive (+) speaker lead to the + terminal on the amplifier and the negative (-) lead to the - terminal on the amplifier.

However, if the LF driver moves backwards with the battery test, the input connections need to be inverted before connecting the amplifier. If problems are encountered, inspect the cable wiring. Note that different amplifier manufacturers may utilise different pin configurations and polarity conventions; if you are using amplifiers from more than one manufacturer, check the polarity at the amplifiers as well as at the loudspeakers.

7. 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 overdriving the amplifier into clipping. Damage to the loudspeaker will be sustained if the amplifier is driven into clipping for any extended period of time. Headroom of at least 3 dB should be allowed.

When evaluating an amplifier, it is important to take into account its behaviour 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 that is continually clipping. A high-powered amplifier running at less than 90% of output power generally sounds superior to a lower power amplifier running at 100%. An amplifier with insufficient drive capability will not allow the full performance of the loudspeaker to be realised. (See technical specifications section for recommended amplifier power.)

When using amplifiers from different manufacturers in a single installation, make certain that all have very closely matched gains. (Variation should be less than +/- 0.5 dB.) This precaution is important to the overall system balance when only a single active crossover is being used with multiple cabinets. When possible, it is recommended that the same amplifiers be used throughout.

8. Equalisation and Positioning

VSX Series subwoofers require no equalisation or correction to overcome system limitations. As a result, they will only need equalisation to compensate for difficult acoustic environments. Excess equalisation can reduce system headroom, and introduce phase distortion resulting in greater problems than it cures. If equalisation is required then it should be applied gently and smoothly. Violent equalisation will be detrimental to the overall sound quality.

In the frequency band over which subwoofers operate, behaviour is essentially omnidirectional. Therefore, the efficiency of a VSX Series subwoofer may be further enhanced if the unit is placed against a wall, as radiation in the forward plane will be doubled (due to the addition of the reflected rear directed energy) and a 6 dB increase in sound pressure will be realised. If placed in a corner, once again the sound pressure level will increase by a further 6 dB.

9. Active Crossover Settings

Recommended filter settings for all VSX Series subwoofers are included in the Tannoy TDX 1 System Controller. When using an OEM active crossover or digital system controller, the following settings are recommended for low pass and high pass filters.

	VSX 10BP		VSX 8.2BP		VSX 12.2BP		VSX 15DR		VSX 18DR	
	LPF	HPF	LPF	HPF	LPF	HPF	LPF	HPF	LPF	HPF
VX 5.2	110 Hz 24 dB Butterworth 4.6 ms	93.1 Hz 24 dB Butterworth 0 ms	109 Hz 24 dB Linwitz-R 0 ms	109 Hz 24 dB Linwitz-R 2.01 ms	N/A	N/A	121 Hz 24 dB Linwitz-R 0 ms	108 Hz 24 dB Linwitz-R 0 ms	N/A	N/A
VX 6	110 Hz 24 dB Butterworth 3.24 ms	100 Hz 24 dB Butterworth 0 ms	109 Hz 24 dB Linwitz-R 0 ms	118 Hz 24 dB Linwitz-R 2.85 ms	N/A	N/A	123 Hz 24 dB Linwitz-R 0 ms	116 Hz 24 dB Linwitz-R 0 ms	N/A	N/A
VX 8	N/A	N/A	109 Hz 24 dB Linwitz-R 0 ms	114 Hz 24 dB Linwitz-R 0.8 ms	N/A	N/A	118 Hz 24 dB Linwitz-R 0.3 ms	110 Hz 24 dB Linwitz-R 0.8 ms	N/A	N/A
VX 8.2	N/A	N/A	109 Hz 24 dB Linwitz-R 0 ms	114 Hz 24 dB Linwitz-R 1.7 ms	N/A	N/A	118 Hz 24 dB Linwitz-R 0.89 ms	108 Hz 24 dB Linwitz-R 0.8 ms	N/A	N/A
VX 12	N/A	N/A	109 Hz 24 dB Linwitz-R 0 ms	110 Hz 24 dB Linwitz-R 1.9 ms	104 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 1.7 ms	115 Hz 24 dB Linwitz-R 0.6 ms	106 Hz 24 dB Linwitz-R 0.8 ms	115 Hz 24 dB Linwitz-R 0.35 ms	106 Hz 24 dB Linwitz-R 0.8 ms
VX 12HP	N/A	N/A	N/A	N/A	108 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 1.7 ms	N/A	N/A	115 Hz 24 dB Linwitz-R 0.16 ms	106 Hz 24 dB Linwitz-R 0.8 ms
VX 12Q	N/A	N/A	N/A	N/A	108 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 1.7 ms	N/A	N/A	115 Hz 24 dB Linwitz-R 0.16 ms	106 Hz 24 dB Linwitz-R 0.8 ms
VX 12.2Q	N/A	N/A	N/A	N/A	108 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 0.76 ms	N/A	N/A	115 Hz 24 dB Linwitz-R 1.04 ms	102 Hz 24 dB Linwitz-R 0 ms
VX 15HP	N/A	N/A	N/A	N/A	108 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 1.27 ms	N/A	N/A	115 Hz 24 dB Linwitz-R 0.68 ms	106 Hz 24 dB Linwitz-R 0 ms
VX 15Q	N/A	N/A	N/A	N/A	108 Hz 24 dB Linwitz-R 0 ms	91.4 Hz 24 dB Linwitz-R 1.27 ms	N/A	N/A	115 Hz 24 dB Linwitz-R 0.68 ms	106 Hz 24 dB Linwitz-R 0 ms

Notes: Greyed boxes denote combinations which are not recommended due to imbalance between Subs and Full range speakers. Settings indicated assume even acoustic levels on Sub and Full range speaker. In reality Subs tend to be operated above these levels, affecting the overall result. Delays are set for optimal phase coherence when the Sub and Full range speaker have their pole mount lined up. Settings assume that individual bands do not include any other filters (e.g. EQ) close to the crossover region.

10. Rigging and Safety Procedures

The Tannoy Professional hardware covered in this guide has been designed to offer quick, simple, cost effective and secure solutions for mounting specific Tannoy Professional 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 Operation Manuals relating to the assembly and the safe use of these accessories must be understood and followed. The installation of Tannoy Professional loudspeakers - using the dedicated hardware - should be carried out only by fully qualified installers, in accordance with all the required safety codes and standards that apply at the place of installation.

WARNING: As the legal requirements for mounting, suspending, hanging, flying or rigging equipment 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 installation.

Tannoy Professional hardware has been designed for use with specific Tannoy Professional loudspeakers, and is not designed or intended for use with any other Tannoy Professional products, or any other devices. 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: overloading, modifying, damaging, or assembling in a manner other than that clearly stated in the Operation Manual will compromise safety. The component parts of any Tannoy Professional hardware device must only be assembled using the accessory kits supplied and in strict compliance with the Operation 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 Tannoy Professional loudspeaker is fixed to a surface using a Tannoy Professional hardware device, the installer must ensure that the surface is capable of safely and securely supporting the load. The hardware employed must be safely and securely attached both to the loudspeaker and also to the surface in question in accordance with the Operation Manual, 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 in theatres, nightclubs, conference centres or other places of work and entertainment must be provided with an independent, correctly rated and securely attached secondary safety restraint in addition to the principal hardware device. This secondary safety restraint must prevent the loudspeaker from dropping more than 150 mm (6") should the principal hardware device fail.

11. SECUR ET – VEB Eyebolt

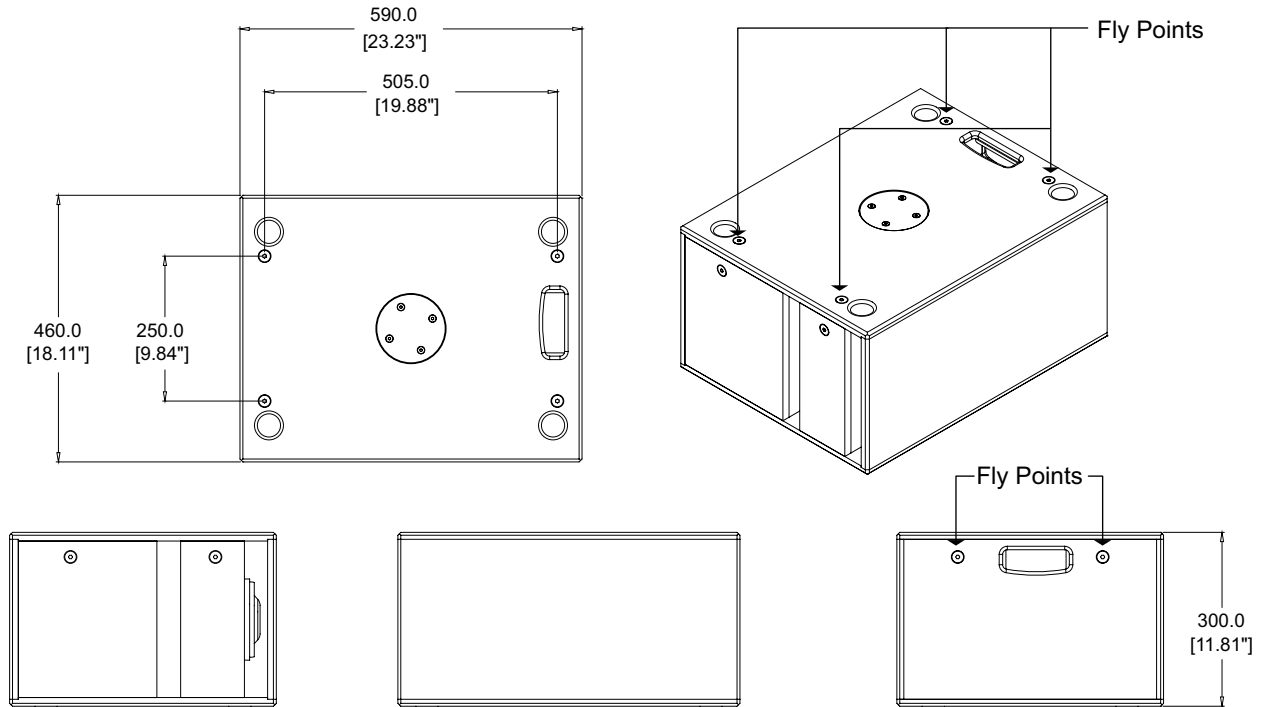
Tannoy VSX subwoofers can be flown with high quality VEB M10 eyebolts with collar to BS4278:1984. The loudspeaker is equipped with internal angle plates, which also double as the flying points, and directly accept VEB M10 eyebolts.

To install the VEB M10 eyebolts, remove the original M10 counter sunk screws from the locations where VEB M10 eyebolts are to be installed. Replace these counter sunk M10 screws with the VEB M10 eyebolts.

Important: It is imperative for safety reasons that two eyebolts, each linked to two independently fixed straps, are used per cabinet. VEB eyebolts should be installed into the fly points as indicated in the following illustrations. Never suspend one enclosure from another to form an array or cluster using these fittings. Never attempt to use formed eyebolts (formed from a steel rod and bent into an eye).

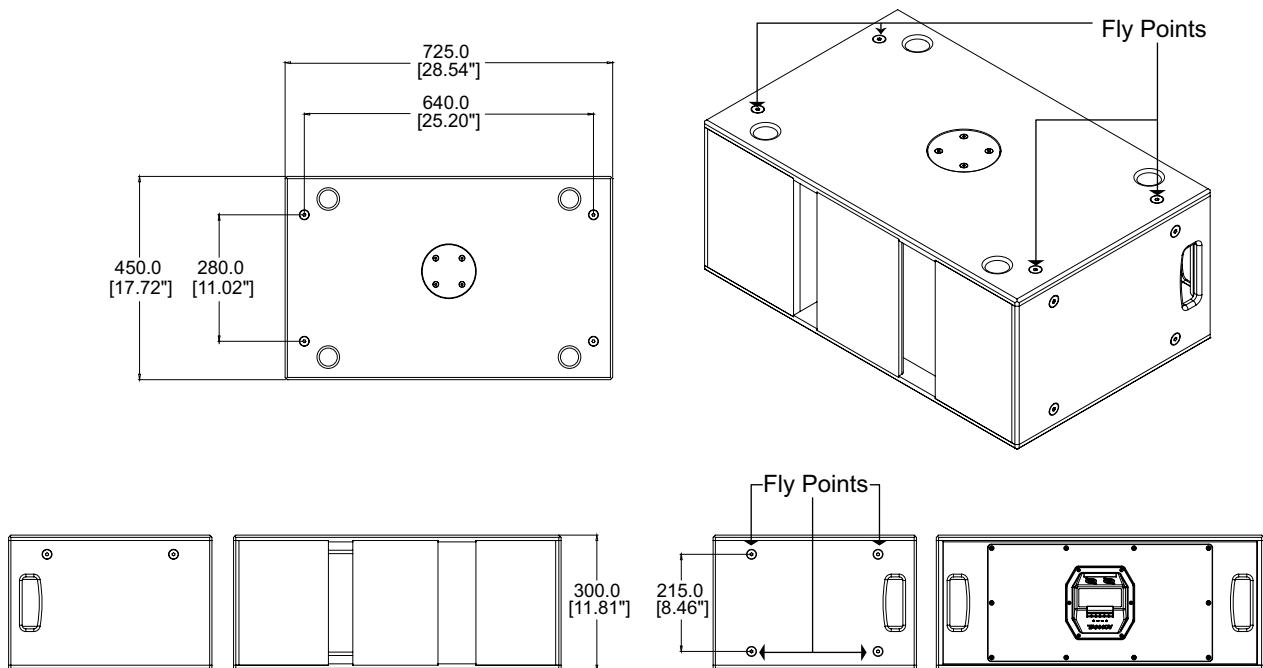
12. Dimensions

VSX 10BP

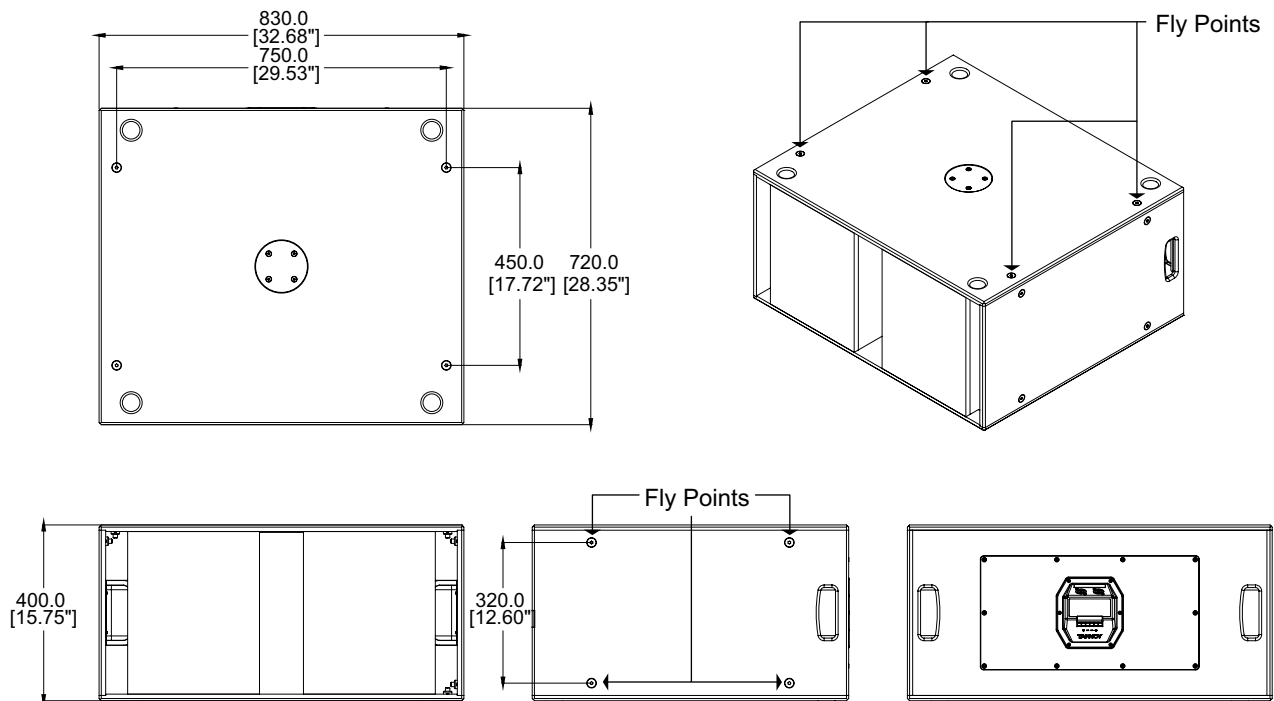


12. Dimensions

VSX 8.2BP

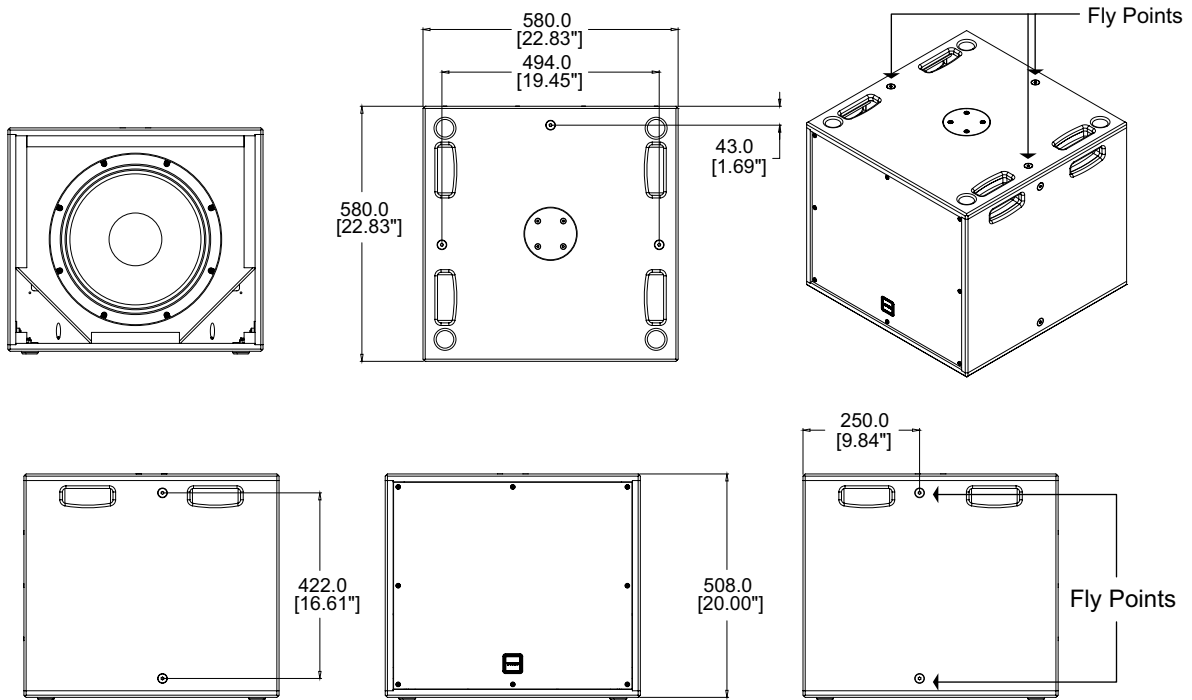


VSX 12.2BP

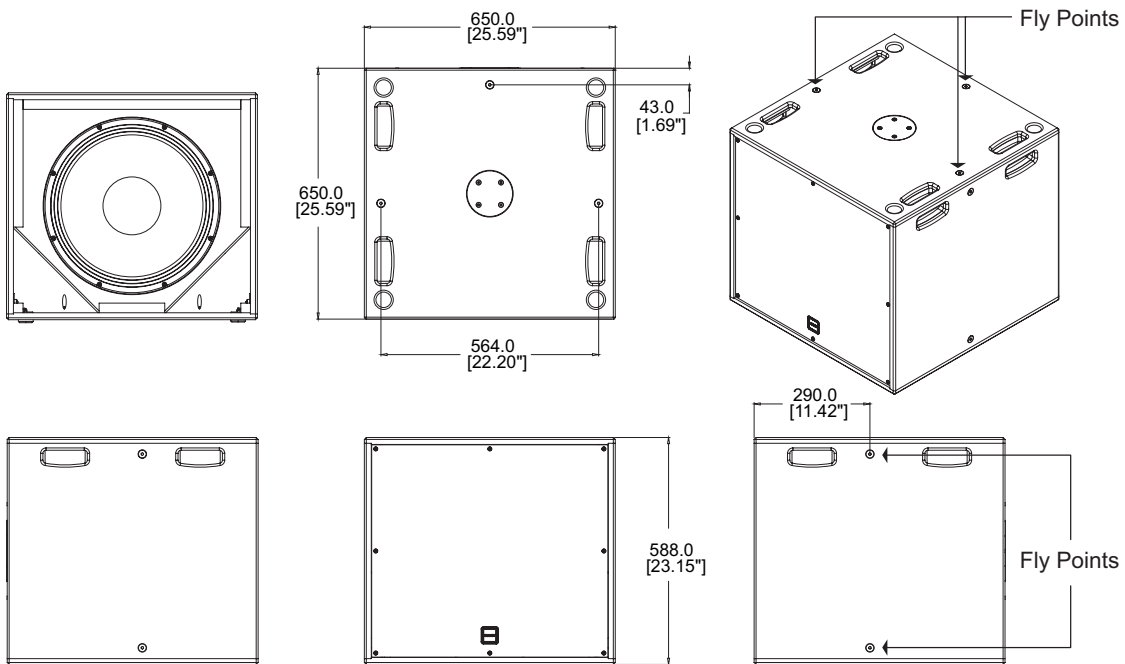


12. Dimensions

VSX 15DR



VSX 18DR



13. Technical Specifications

	VSX 10BP	VSX 8.2BP	VSX 12.2BP	VSX 15DR	VSX 18DR						
Performance											
System type	Band-Pass Subwoofer	Band-Pass Subwoofer	Band-Pass Subwoofer	Direct Radiating Subwoofer	Direct Radiating Subwoofer						
Frequency response (-3 dB) ⁽¹⁾	42 Hz - 110 Hz	46 Hz - 160 Hz	40 Hz - 160 Hz	45 Hz - 3 kHz	40 Hz - 3 kHz						
Frequency response (-10 dB) ⁽¹⁾	36 Hz - 130 Hz	38 Hz - 200 Hz	35 Hz - 200 Hz	36 Hz - 4 kHz	32 Hz - 4 kHz						
System sensitivity (1 W @1 m) ⁽²⁾	93 dB (1 W = 2.83 V for 8 ohms)	97 dB (1 W = 2.83 V for 8 ohms)	100 dB (1 W = 2 V for 4 ohms)	97 dB (1 W = 2.83 V for 8 ohms)	99 dB (1 W = 2.83 V for 8 ohms)						
Power Handling											
Average ⁽²⁾	200 W	400 W	800 W	800 W	1000 W						
Programme	400 W	800 W	1600 W	1600 W	2000 W						
Peak	800 W	1600 W	3200 W	3200 W	4000 W						
Recommended amplifier power	400 W @ 8 ohms	800 W @ 8 ohms	1600 W @ 4 ohms	1600 W @ 8 ohms	2000 W @ 8 ohms						
Rated maximum SPL ⁽²⁾											
Average	116 dB	123 dB	129 dB	126 dB	129 dB						
Peak	122 dB	129 dB	135 dB	132 dB	135 dB						
Nominal impedance	8 ohms	8 ohms	4 ohms	8 ohms	8 ohms						
Driver complement	250 mm (10") Bass driver	2 x 200 mm (8") Bass drivers	2 x 300 mm (12") Bass drivers	1 x 380 mm (15") Bass driver	1 x 460 mm (18") Bass driver						
Recommended crossover											
	80 Hz - 110 Hz, 24 dB / octave Recommended High-pass filter - 40 Hz, 24 dB / octave	80 Hz - 150 Hz, 24 dB / octave Recommended High-pass filter - 40 Hz, 24 dB / octave	80 Hz - 150 Hz, 24 dB / octave Recommended High-pass filter - 38 Hz, 24 dB / octave	80 Hz - 500 Hz, 24 dB / octave Recommended High-pass filter - 40 Hz, 24 dB / octave	80 Hz - 300 Hz, 24 dB / octave Recommended High-pass filter - 35 Hz, 24 dB / octave						
Distortion											
10% full power (28.3 V)	Harmonics		Harmonics		Harmonics		Harmonics		Harmonics		
		2nd	3rd	2nd	3rd	2nd	3rd	2nd	3rd	2nd	3rd
	50 Hz	2.24%	1.95%	3.72%	3.10%	1.38%	0.62%	1.22%	1.18%	1.11%	0.48%
	100 Hz	1.17%	0.47%	0.40%	0.35%	1.29%	0.14%	0.40%	0.30%	0.41%	0.44%
1% full power (8.9 V)											
	50 Hz	0.67%	0.57%	0.52%	0.91%	0.32%	0.18%	0.47%	0.50%	0.37%	0.93%
	100 Hz	0.42%	0.49%	0.19%	0.15%	0.29%	0.16%	0.15%	0.17%	0.11%	0.15%
Construction											
Enclosure	61 litres, 15 mm birch plywood, internally braced	79 litres, 15 mm birch plywood, internally braced	194 litres, 15 mm birch plywood, internally braced	138 litres, 18 mm birch plywood, internally braced	206 litres, 18 mm birch plywood, internally braced						
Finish	Textured black or white paint (custom colours on request)	Textured black or white paint (custom colours on request)	Textured black or white paint (custom colours on request)	Textured black or white paint (custom colours on request) Powder coated perforated steel grille, Airnet cloth behind	Textured black or white paint (custom colours on request) Powder coated perforated steel grille, Airnet cloth behind						
Connectors	2 x speakON NL4MP and Barrier strip	2 x speakON NL4MP and Barrier strip	2 x speakON NL4MP and Barrier strip	2 x speakON NL4MP and Barrier strip	2 x speakON NL4MP and Barrier strip						
Fittings	8 x M10 Flying inserts (landscape mounting portrait only if ground stacked) 1 x Integrip carrying handle	12 x M10 Flying inserts (portrait or landscape mounting) 2 x Integrip carrying handles	12 x M10 Flying inserts (portrait or landscape mounting) 2 x Integrip carrying handles	12 x M10 Flying inserts (portrait or landscape mounting) 4 x Integrip carrying handles	12 x M10 Flying inserts (portrait or landscape mounting) 4 x Integrip carrying handles						
Dimensions	Blanking plate for optional VTH pole mount W: 460 mm (18.1") H: 300 mm (11.8") D: 590 mm (23.2")	Blanking plate for optional VTH pole mount W: 725 mm (28.5") H: 300 mm (11.8") D: 450 mm (17.7")	Blanking plate for optional VTH pole mount W: 830 mm (32.7") H: 400 mm (15.7") D: 720 mm (28.3")	Blanking plate for optional VTH pole mount W: 580 mm (22.8") H: 508 mm (20.0") D: 580 mm (22.8")	Blanking plate for optional VTH pole mount W: 650 mm (25.6") H: 588 mm (23.1") D: 650 mm (25.6")						
Weight	18.5 kg (40.8 lbs)	25.5 kg (56.3 lbs)	40.5 kg (89.3 lbs)	35.5 kg (78.4 lbs)	45 kg (99.2 lbs)						

1. Average over stated bandwidth. Measured at 1 metre on axis.

2. Unweighted pink noise input, measured at 1 metre in half space.

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

New materials or manufacturing methods introduced through Tannoy's policy of continuous research and development may result in variances; however, performance will meet or exceed published specifications, which Tannoy reserves the right to alter without prior notice.

14. Service Parts & Accessories

Part number	Description
7900 1344	VSX 8.2BP Bass Driver
7900 0756	VSX 10BP Bass Diver
7900 1291	VSX 12.2BP Bass Driver
7900 1073	VSX 15DR Bass Driver
7900 0599	VSX 18DR Bass Driver
7900 1345	VSX 12.2BP Recone Kit
7900 1074	VSX 15DR Recone Kit
7900 0603	VSX 18DR Recone Kit
8001 2860 VTH	Secur ET – Top Hat (Black)
8001 2870 VTH	Secur ET – Top Hat (White)
8001 2820 VEB	Secur ET – Eyebolts M10

15. Warranty

No maintenance of the VSX Series loudspeakers is necessary.

All Tannoy VSX Series professional 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 if the serial number has been altered or removed. Work under warranty should only be carried out by a Tannoy Professional 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 or check at www.tannoy.com/pro

Customer Services, Tannoy Ltd., Rosehall Industrial Estate, Coatbridge, Strathclyde, ML5 4TF, Scotland
Telephone: +44 1236 420199
Fax: +44 1236 428230
E-Mail: prosales@tannoy.com

Do not ship any product to Tannoy without previous authorisation.

Tannoy is committed to a policy of continuous product improvements through research and development. Though performance will equal or exceed published specifications, new materials or manufacturing processes could introduce variances. For extremely critical applications, please confirm current specifications with your supplier.

16. EU Declaration of Conformity

(in accordance with ISO/IEC 1750-1)

Document No: CE-VSX-1

We: Tannoy Ltd
Rosehall Industrial Estate, Coatbridge, ML5 4TF, United Kingdom

In accordance with the following Directive(s):

2004/108/EC	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of the use of certain hazardous substances (RoHS)

Hereby declare that:

Type of equipment	Professional loudspeakers
Range name	VSX
Models	VSX 10BP, VSX 8.2BP, VSX 12.2BP, VSX 15DR, VSX 18DR

Is/are in conformity with the requirements of the following documents:

Ref. No	Title	Edition
BS EN 55103-1	Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Emissions	2009
BS EN 55103-2	Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Immunity	2009

Name: Philippe Robineau
Position: Director of Engineering
Done at: Coatbridge
Date: 2/10/2012



Director of Engineering
Tannoy
02 October 2012



tannoy.com/pro

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. All specifications are subject to change without notice.
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