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The Martin Experience

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Martin Audio – WAVEFRONT TOURING SERIES



This equipment conforms to the requirements of the EMC Directive 89/336/EEC, amended by 92/31/EEC and 93/68/EEC and the requirements of the Low Voltage Directive 73/23/EEC, amended by 93/68/EEC.

Standards Applied	EMC Emission	EN55103-1:1996
	Immunity	EN55103-2:1996
	Electrical Safety	EN60065:1993

1 INTRODUCTION

Thank you for purchasing a Martin Audio Wavefront Touring system. The W8 and W8S are highly efficient touring products suitable for a wide variety of medium and large scale live sound applications.

2 UNPACKING

Each Martin Audio loudspeaker is built to the highest standard and thoroughly inspected before it leaves the factory. After unpacking the system, examine it carefully for any signs of transit damage and inform your dealer if any such damage is found. It is suggested that you retain the original packaging so that the system can be repacked at a future date if necessary.

Please note that Martin Audio and its distributors cannot accept any responsibility for damage to any returned product through the use of non-approved packaging.

3 OVERVIEW

This guide covers the W8, a 3-way touring system capable of use down to 80Hz and the W8S Hybrid™ sub-bass.

3.1 W8

The W8 is a highly efficient 3-way touring sound enclosure which achieves full-frequency performance down to 80Hz. Its 55 degree horizontal dispersion pattern and trapezoid footprint allow it to be arrayed to suit a variety of touring venues. Each W8 houses twin 12" (305mm) drivers on a vertically splayed dual-driver low-mid horn which covers the frequency band from 80Hz to 750Hz. Frequencies above 750Hz are produced by a unique combination of 6.5" (165mm) high-mid horn and 1" (25mm) exit high frequency device. The sophisticated high-mid horn reproduces the 750Hz-3.3kHz band and has been specifically developed to overcome the power and distortion limitations of traditionally used large format compression drivers. The result is a remarkably clean, transparent sound which can produce extremely high levels without distress. The high-mid and high frequency sections of the W8 can be driven actively from separate amplifier channels, or passively using a single amplifier channel. Active or passive operation is selected by a switch on the rear panel.

3.2 W8S

The W8S is a matching sub-bass system designed for use with the W8 in situations where low frequency enhancement is required. Its unique Hybrid™ horn/reflex design combines the efficiency and fast transient performance characteristics of a folded horn with the low frequency extension of a bass reflex enclosure. The horn and reflex sections are entirely separate – the horn being powered by a 15" (385mm) driver and the reflex section by a powerful 18" (450mm) device. This combination of horn and reflex technology within a single enclosure results in a dynamic sub-bass with an efficiency of 104dB.

4 SAFETY FIRST

It is important that loudspeaker systems are used in a safe manner. Please take some time to review the following points concerning safe use of Wavefront Touring Series loudspeakers.

Professional loudspeakers are capable of producing extremely high sound levels and should be used with care. Hearing loss is cumulative and can result from levels above 90dB if people are exposed for a long period. Never stand close to loudspeakers driven at high level.

4.1 Stacking

Ensure that the floor or stage is level and solid.

Do not stack speakers too high outdoors where winds could topple the stack.

Be aware that speakers producing very high power levels can move or creep. To avoid this, place friction material between the floor and speaker and between each speaker.

4.2 Flying

Flying Systems should only be assembled from safety approved load-rated flying bars and fittings by trained and experienced crew, working in association with professional riggers. All arrays must be flown from secure and appropriately load rated rigging points. Seek help from architects, structural engineers or other specialists if in any doubt.

Wavefront Touring enclosures are fitted with MAN load certified flying points and are designed to be flown using either the MAN Transformer flying system or the MAN Installer/Tourer (IT) flying system. Both comply with the 12:1 safety factor as specified by the German VGB70 standard. Please refer to the Transformer or IT user guide for complete information on using these systems. It is essential that every MAN flying system user has the opportunity to read the user guide and we would strongly recommend that every user be properly trained in the safe use of the flying system before constructing and deploying the system in a working situation.

5 AMPLIFICATION

Wavefront Touring loudspeakers are designed to be used with professional power amplifiers capable of producing the following power outputs into 4 ohms:

W8	450-650W
W8S	550-1000W

Care should be taken to avoid amplifier clipping. It is important to understand that a low power amplifier driven into clipping is more likely to damage a loudspeaker than a higher power amplifier used within its ratings. This is because music signals have a high peak-to-average "crest" factor. When an amplifier is severely overdriven, its output waveform is clipped (its peaks are squared off) – reducing the crest factor. In extreme cases, the waveform can approach that of a square wave. An amplifier is normally capable of producing far more power under these conditions than its undistorted rated power output. The use of very high power amplifiers with outputs greater than those recommended is discouraged.

Care should be taken to avoid switch-on surges, which can result in momentary power peaks in excess of specified ratings. When powering up a sound system it is important to switch on the amplifiers after the mixer and control electronics have stabilised. When powering down the system, reverse the sequence and switch off the amplifiers first.

6 CONNECTIONS

The rear panels of the W8 and W8S are fitted with two Neutrik Speakon NL8 connectors and two EP8 female connectors. All connectors are wired in parallel.

<u>EP8</u>	<u>NL8</u>	<u>W8 Active</u>	<u>W8 Passive</u>
1	-1	Low Mid -	Low Mid -
2	+1	Low Mid +	Low Mid +
3	-2	High Mid -	High Mid/High -
4	+2	High Mid +	High Mid/High +
5	-3	High -	N/C
6	+3	High +	N/C
7	-4	N/C	N/C
8	+4	N/C	N/C

<u>EP8</u>	<u>NL8</u>	<u>W8S</u>
1 & 3	-1 & -2	18" sub -ve
2 & 4	+1 & +2	18" sub +ve
5 & 7	-3 & -4	15" low -ve
6 & 8	+3 & +4	15" low +ve

7 CABLE LENGTHS

When connecting loudspeaker systems to an amplifier, it is recommended that the return resistance of the cable used is less than one tenth of the nominal impedance of the system or systems in parallel. The table below gives an indication of the maximum permissible cable runs for various conductor cross-sectional areas.

<u>Conductor CSA</u>	<u>Maximum Cable Run</u>		
	4 ohms	8 ohms	16 ohms
1.0mm ²	11m	22m	44m
1.5mm ²	17m	34m	68m
2.0mm ²	22m	44m	88m
2.5mm ²	29m	58m	116m
4.0mm ²	44m	88m	176m
6.0mm ²	66m	132m	264m

8 SYSTEM CONFIGURATIONS

Wavefront Touring enclosures can be used with dedicated analogue controllers such as the Martin Audio MX5 which performs system specific equalisation, crossover and limiter functions. More complex set-ups will benefit from the use of a digital controller such as the Martin Audio DX1. Wavefront Touring systems can also be used with BSS and XTA digital controllers.

Whichever controller is used, it is important that it has fast attack limiters to prevent amplifiers from clipping. This requires that the controller's limiter thresholds be set to match the sensitivity of the amplifier. A system operated in this way with amplifiers having a power rating as recommended and used by experienced professional sound engineers should be sufficiently protected from overdriving. It is suggested that you refer to the controller's user guide for further information on how to set limiter thresholds.

The nominal horizontal coverage pattern of the W8 is 55 degrees. This has been found to be the optimum figure to meet the requirements of both small scale and larger scale use. The optimum horizontal inter-cabinet angle between enclosures is 35 degrees between cabinet centre-lines. With the rear edges touching, this is equivalent to a 10" (250mm) gap between cabinet fronts.

Butting up the cabinet sides is not recommended. It will reduce the horizontal splay angle to 15 degrees which, though giving increased level on-axis, will result in greater interference between adjacent enclosures. Widening the splay angle to 45 degrees will increase the overall dispersion but results in some loss of level on-axis.

The normal crossover point between the W8 and W8S is 120Hz. For simplicity, the separate horn and reflex sections can be driven with the same signal and amplifier channel. This will result in effective summation of the separate sections up to the crossover point of 120Hz. However, if the W8S is run with signal delay on the 18" and separate amplifier channels, a further 3dB or so of output will be available in the 120-180Hz region because of improved summation.

Wavefront Touring systems combined with the appropriately configured controller exhibit an essentially flat on-axis frequency response. Equalisation to compensate for a particular acoustic environment may be performed where required. Where loudspeakers are arrayed, they may benefit from a degree of equalisation to reduce the effect of the low/mid build up and tilting of the response inherent in the use of multiple arrayed enclosures.

9 WARRANTY

Martin Audio Wavefront Touring Series products are warranted against manufacturing defects in materials or craftsmanship over a period of 5 years from the date of original purchase. During the warranty period Martin Audio will, at its discretion, either repair or replace products which prove to be defective provided that the product is returned in its original packaging, shipping prepaid, to an authorised Martin Audio service agent or distributor.

Martin Audio Ltd. cannot be held responsible for defects caused by unauthorised modifications, improper use, negligence, exposure to inclement weather conditions, act of God or accident, or any use of this product that is not in accordance with the instructions provided by Martin Audio.

Martin Audio is not liable for consequential damages.

This warranty is exclusive and no other warranty is expressed or implied. This warranty does not affect your statutory rights.

10 TECHNICAL SPECIFICATIONS

W8

TYPE	3-way full-range trapezoid, switchable active/passive HF
FREQUENCY RESPONSE	120Hz-18kHz \pm 3dB
LOW FREQUENCY LIMIT	-10dB @ 80Hz
DRIVERS	2 x 12" (305mm) low-mid horn 1 x 6.5" (165mm) high-mid horn 1 x 1" (25mm) exit HF compression driver
RATED POWER	Low-mid: 400W AES, 1600W peak High-mid (/HF): 150W AES, 600W peak HF: 60W AES, 240W peak
RECOMMENDED AMPLIFIER	450-650W into 4 ohms
SENSITIVITY	Low-mid: 106dB High-mid (/HF): 108dB HF: 107dB
MAXIMUM SPL	129dB continuous, 135dB peak
IMPEDANCE	Low-mid: 8 ohms nominal High-mid (/HF): 16 ohms nominal HF: 16 ohms nominal
DISPERSION	55 degs horizontal x 30 degs vertical (-6dB)
CROSSOVER	750Hz, 3.5kHz
CONNECTORS	2 x Neutrik NL8, 2 x EP8
DIMENSIONS (inc wheels)	(W) 562mm x (H) 1066mm x (D) 925mm (W) 22.0ins x (H) 42.0ins x (D) 36.5ins
WEIGHT	90kg (198lbs)
SHIPPING DIMENSIONS (inc wheels)	(W) 580mm x (H) 1070mm x (D) 930mm (W) 22.8ins x (H) 42.1ins x (D) 36.6ins
SHIPPING WEIGHT	95kg (209.4lbs)

W8S

TYPE	Hybrid™ sub-bass/horn trapezoid
FREQUENCY RESPONSE	40Hz-150Hz ± 3dB
LOW FREQUENCY LIMIT	-10dB @ 30Hz
DRIVERS	1 x 15" (380mm) horn loaded 1 x 18" (460mm) reflex loaded
RATED POWER	800W AES, 3200W peak
RECOMMENDED AMPLIFIER	550-1000W into 4 ohms
SENSITIVITY	104dB
MAXIMUM SPL	131dB continuous, 137dB peak
IMPEDANCE	8 ohms nominal per driver
CROSSOVER	150Hz or below
CONNECTORS	2 x Neutrik NL8, 2 x EP8
DIMENSIONS (inc. wheels)	(W) 562mm x (H) 1066mm x (D) 925mm
(inc. wheels)	(W) 22.0ins x (H) 42.0ins x (D) 36.5ins
WEIGHT	90kg (198lbs)
SHIPPING DIMENSIONS	(W) 580mm x (H) 1070mm x (D) 930mm
(inc wheels)	(W) 22.8ins x (H) 42.1ins x (D) 36.6ins
SHIPPING WEIGHT	93kg (205lbs)

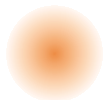
NOTES (Wavefront 8 Series)

Sensitivity measured in half-space conditions at 1 metre with 1 watt input, using band limited pink noise. SPL measured at 1 metre using band limited pink noise.

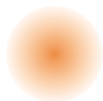
Finish: Slate textured paint. Protective grilles: Perforated steel grey with 48% free air flow. Cabinet construction: Birch ply.

Due to our policy of continuous improvement all specifications are subject to change without notice.

Wavefront Touring Series w8/w8s



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The Martin Experience

Century Point, Halifax Road, Cressex Business Park, High Wycombe, Buckinghamshire HP12 3SL, England.

Telephone: +44 (0)1494 535312 Facsimile: +44 (0)1494 438669

Web: www.martin-audio.com E-mail: info@martin-audio.com

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Wavefront Touring Series w8/w8s

User's Guide



ENGLISH



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