EM25/EM75/EM105/EM185

EM200/EM250

COMPACT LOUDSPEAKER SYSTEMS

USER'S GUIDE

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1.0 INTRODUCTION

Thank you for purchasing a Martin Audio EM Series loudspeaker system. The EM Series is a range of powerful and compact loudspeakers which have been designed to suit a wide variety of permanent installations.

The trapezoid shape of the enclosures allows them to be used singly or arrayed in multiples so that both small scale distributed systems and large scale clusters can be configured. Specific uses include sound reinforcement, theatre sound, music playback in night-clubs and audio-visual presentations.

The EM Series is made up of the EM25 , EM75, EM105 and EM185 full-range systems and the EM200 and EM250 sub-bass systems. Please refer to the product data sheet for full description and specifications.

The EM25 and EM75 are 2-way systems with internal passive crossovers. The EM105 and EM185 are 3-way systems which require a 450Hz electronic crossover (included in the EMX2 controller) for bi-amplification for the low and mid/high sections.

For optimum performance, it is recommended that EM Series systems are used with their dedicated electronic controllers - the EMX1 for the EM25/75, and the EMX2 for the EM105/185. Please refer to the system controller user's guide for detailed information on connections and use. The EM25 or EM75 may be used without a control unit provided the maximum recommended amplifier power is not exceeded, care is exercised in use and amplifier clipping is avoided.

2.0 UNPACKING

Each Martin EM Series system is built to the highest standards 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 responsibility for damage to any returned product through the use of non-approved packaging.

3.0 AMPLIFICATION

With the exception of the EM25, EM Series loudspeakers are designed to be used with a professional standard power amplifier capable of producing 400-550 watts per channel into 4 ohms. The EM25 is designed to be used with an amplifier with a power output of 150-250 watts per channel into 4 ohms.

Lower power amplifiers than those recommended may be used if care is taken to avoid amplifier clipping.

The use of higher power amplifiers is discouraged. All EM Series loudspeakers have more than sufficient headroom when driven as recommended. Incautious use of very high power amplifiers with excessive gain can make it possible to drive past the EMX controller limiters and destroy the system drive units.

Care should also 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 electronic crossover etc. have stabilised. When powering down the system, reverse the sequence and switch off the amplifiers first.

3.1 CONNECTING TO AN AMPLIFIER

The panel at the rear of EM Series enclosures is fitted with a Neutrik Speakon NL4MPR connector, wired as follows:

	EM25, EM75 EM200, EM250	EM105, EM185
PIN 1-	Gnd/Common	LF Gnd/Common
PIN 1+	Positive	LF Positive
PIN 2-	N/C	MF/HF Gnd/Common
PIN 2+	N/C	MF/HF Positive

3.2 CABLE LENGTHS

When connecting EM Series 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. Table 1 gives an indication of the maximum permissible cable runs for various conductor cross-sectional areas driving 4, 8 and 16 ohm loads.

Conductor CSA	Maximun Cable Run		
	4()	8()	16()
1.0mm²	11m	22m	44m
1.5mm²	17m	34m	68m
2.0mm²	22m	44m	88m
2.5mm²	29m	58m	116m
4.0mm²	44m	88m	176m
6.0mm²	66m	132m	264m

To work out the actual return resistance R for cable run of length L, with each conductor having cross-sectional area A, use the formula:

$$R = \frac{2 \times 0.017 \times L}{A}$$

4.0 PHASING

EM Series loudspeakers are wired so that a positive voltage on connector pins 1+ (and pins 2+ for the EM105 and EM185 mid/high sections) causes the loudspeaker cones to move forwards. When connecting several loudspeakers to one or more amplifiers, it is important to maintain consistent polarity throughout the entire system. Correct phasing between two adjacent loudspeakers will produce an increase in output compared to a single unit - particularly at low frequencies. Opposite phasing will reduce the low frequency output of two loudspeakers compared to a single unit. To check for correct phase between two speakers, feed one speaker with pink noise or an appropriate low frequency tone and listen for an increase in combined output when an adjacent speaker is connected in parallel.

If several speakers are arranged in an array, use a speaker (A) at the edge of the array as a reference and compare it to the speaker next to it (B). Then disconnect A and use B as a reference for the next speaker (C) - and so on until the whole array is checked out. Note that for the EM105 and EM185 a low section should be compared with an adjacent low section and a mid/high section with an adjacent mid/high. If an electronic phase checker is available, it can be also used to check the relative phase of the system elements.

If polarity inconsistencies are discovered, check that the cabling is correct before looking further. It may also be necessary to check the polarity of the amplifiers if they are from more than one manufacturer as absolute polarity can vary between brands.

5.0 FULL-RANGE OPERATION

In most instances the EM25, 75, 105 and 185 systems may be used to cover the full frequency range, either distributed singly throughout a building or flown in multiple arrays. The EMX1 and EMX2 controllers provide appropriate, system-specific low frequency equalisation for full-range operation.

6.0 ADDING SUB-BASS

Where additional extreme low frequency output is required, either the EM200 or EM250 sub-bass systems driven from a separate amplifier can be added. In this case, the EMX1 or EMX2 controller should be switched to its sub-bass mode by means of the switch on the rear panel. The sound balance of the complete system can be set up by using a screwdriver to adjust the sub-bass balance control accessible through the top cover. Because the crossover point is low (120Hz) the sub-bass systems are essentially non-directional, allowing them to be sited away from the main system where necessary.

7.0 EQUALISATION

EM Series loudspeakers combined with their respective EMX electronic controller exhibit an essentially flat on-axis frequency response, making additional system equalisation unnecessary. Additional equalisation to compensate for a particular acoustic environment may be performed where required. Large scale EM Series arrays may also benefit from a degree of equalisation to reduce the effect of the low frequency build-up of multiple enclosures in certain acoustic environments.

MARTIN AUDIO products are warranted against manufacturing defects in material or craftsmanship over a period of 12 months from the date of purchase. This warranty is in addition to your statutary rights. MARTIN AUDIO cannot. however, be held responsible for failures caused by abuse, unauthorised modifications, improper operation or damage caused elsewhere within your system. The determination of the cause of failure will be made by MARTIN AUDIO LTD or its authorised service agent or distributor based upon physical inspection of the failed parts. Due to our policy of continuous improvement all specifications are subject to change without notice.

8.0 EM SERIES ARRAYS

Nominal coverage pattern for EM Series systems is 70° horizontal x 40° vertical (50° vertical in the case of the EM25). The 70° horizontal angle has been found to be the optimum figure to meet the requirements of both single use and use in multiple arrays. A range of Martin accessories is available to enable arrays to be built up easily and safely.

8. EM SERIES ENCLOSURE FITTINGS

EM25 4 x M6 inserts in base, 4 x M6 inserts in rear for Omnimount™ Series 75 universal mounting system.

EM75 4 x M8 inserts in base for Omnimount™ Series 100 universal mounting system. 2 x M8 inserts on each side, top, base and rear for Martin link bars, flying yoke, eyebolts and ATM™ flying hardware. 35mm (1⅜'') pole-mount socket fitted in enclosure base. 32mm (1¼'') and 29mm (1⅛'') options also available.

EM105 2 x M8 inserts on each side, top, base and rear for Martin link bars, eyebolts and ATM™ flying hardware.

EM185 2 x M8 inserts on each side and rear; 3 x M8 inserts on top and base for Martin link bars, eyebolts and ATM™ flying hardware.

8.2 EM SERIES ACCESSORIES

EM75
- HTK CT01 Wall Bracket
- HTK CT02 15° Swivel
- HTK CT05 M8 Eyebolt
- HTK EM03 Flying Yoke
- HTK EM06 Link Bar (2 reauired per enclosure)
- HTK EM09 Rapid Link
- HTK 192 32mm (1¼'') Top Hat
- HTK 193 29mm (1⅛'') Top hat

EM105
- HTK CT05 M8 Eyebolt
- HTK EM07 Link Bar (2 required per enclosure)
- HTK EM09 Rapid Link

EM185
- HTK CT05 M8 Eyebolt
- HTK EM08 Link Bar (2 required per enclosure)
- HTK EM09 Rapid Link

Mounting hardware is available through your local MARTIN AUDIO distributor or:

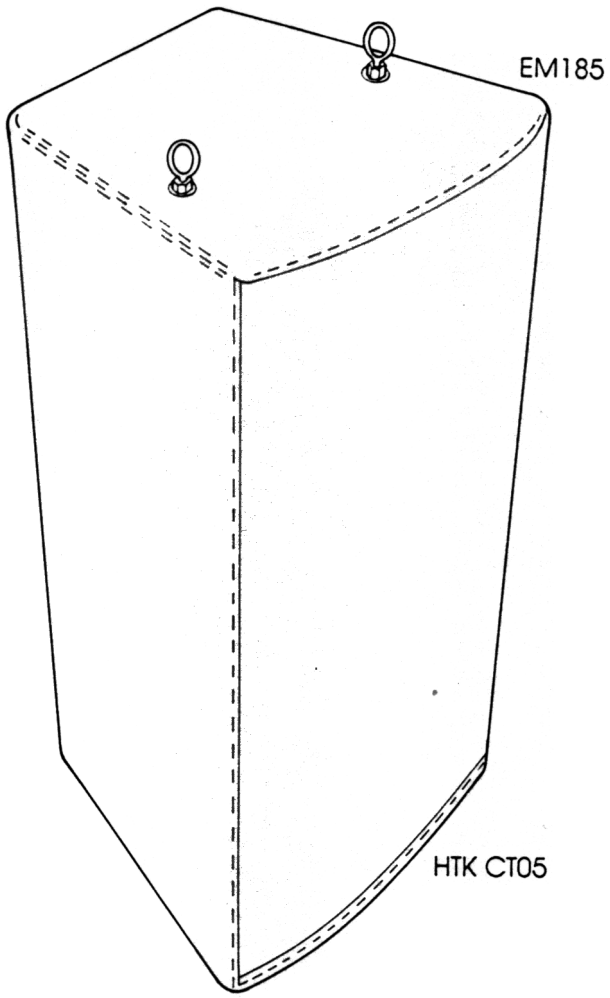
Omnimount™ mounting systems are available from:

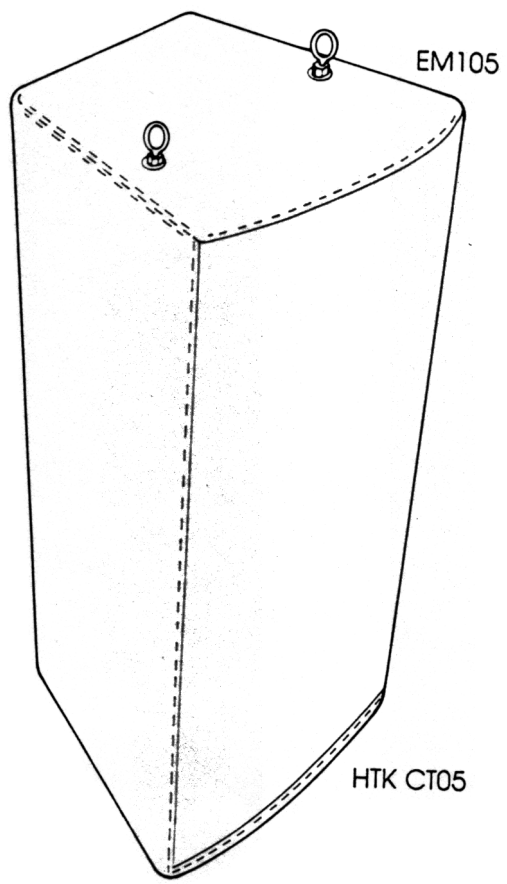
Omnimount™ Systems
10840, Vanowen Street
North Hollywood
California, 91605-6406
USA
Tel: 818 766 9000
Fax: 818 766 9437

or its network of distributors worldwide.

ATM™ flying hardware is available from:

ATM
20960 Brant Avenue
Carson
California 90810
USA
Tel: 213 639 8282
Fax: 213 639 8284


EM185
HTK CT05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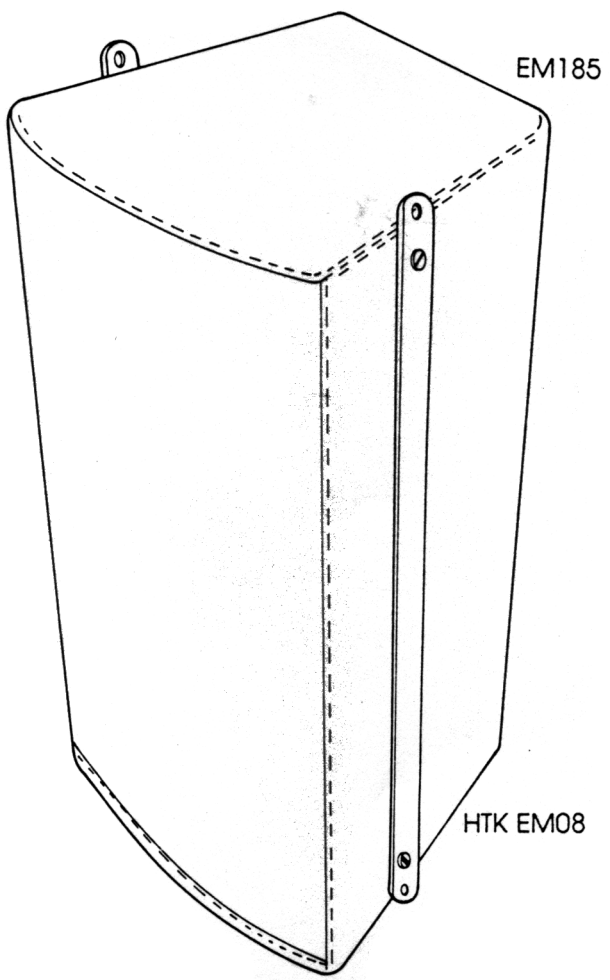
HTK CT05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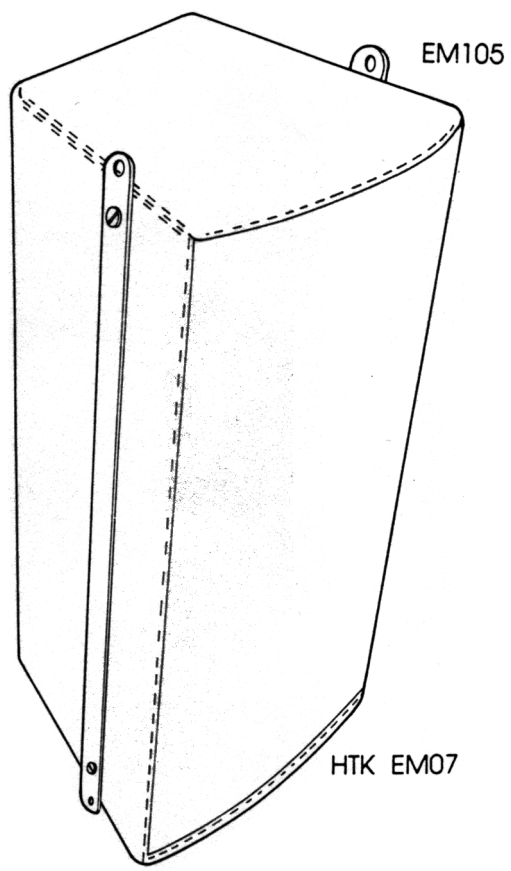
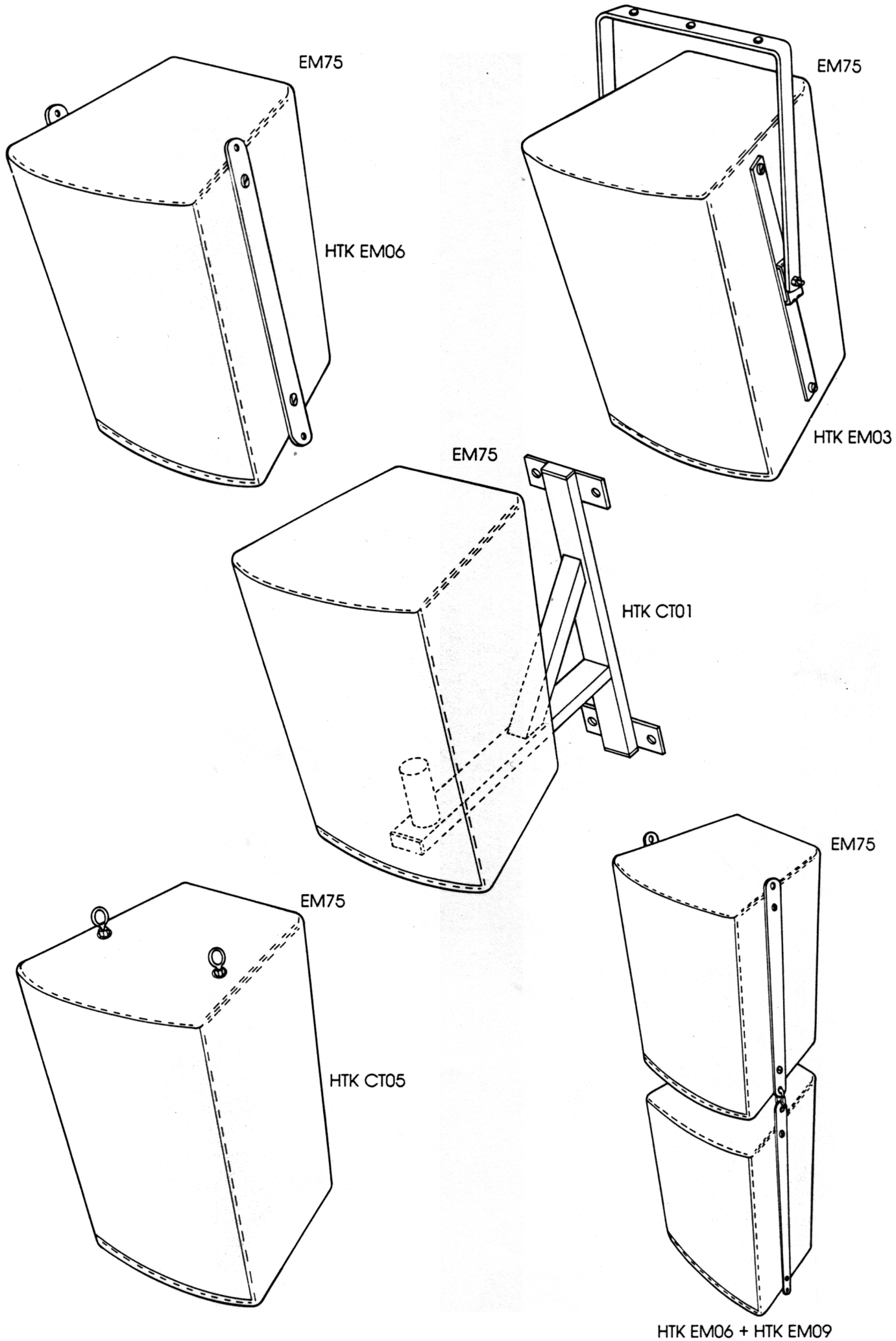
HTK EM08


EM105
HTK EM07


EM75
HTK EM06
EM75
HTK EM03
EM75
HTK CT01
EM75
HTK CT05
EM75
HTK EM06 + HTK EM09