

## SRM450

■ The Mackie Designs SRM450 is a full range, portable, active loudspeaker system providing high output, wide dispersion, and low distortion performance in a compact, composite molded enclosure. Two amplifiers independently power a high precision 12-inch professional woofer and 1.75-inch diaphragm titanium compression driver with a 1-inch exit throat. A sophisticated electronic control system provides phase correction, crossover, and five modes of thermal and active system protection.

■ The SRM450 is fitted with a specially designed horn assembly that combines both an exponential and conical geometry. With the addition of a multi-cell horn throat aperture, the complete assembly provides unparalleled dispersion characteristics. The result is super smooth, low-distortion linear audio performance across the entire specified coverage angle of 90 degrees.

■ A servo feedback circuit has been added to the low-frequency amplifier in order to provide extended bass response and woofer control. This design provides simultaneous positive and negative signal feedback information from the woofer's magnetic circuit to the low-frequency amplifier. This loop locks the two devices together and provides extreme control of the woofer mass. The result is extended linear movement of the woofer cone resulting in very high SPL low-frequency output levels.

■ Careful attention has been given to the ergonomic features of the system. The center of gravity, handle locations, handle design, position of fly-points, and ease of use have been carefully thought out. There is also an integrated pole mount on the bottom of the cabinet and a weather-resistant steel grille. The asymmetrical trapezoidal cabinet has been designed to provide an ideal floor monitoring position.

■ The SRM450 features a number of unique control features including a single microphone and line-level control in addition to a high-pass filter for floor monitoring applications, an AC timed turn off function that is ideal for fixed or remote installations, and a contour switch for low-level or background-level sound reinforcement applications.

■ The SRM450 cabinet is constructed of high pressure injected polypropylene. The enclosure features ample amounts of reinforcement ribbing and structural strengthening resulting in a strong, super-rigid design providing ideal acoustical characteristics.

## Active 2-Way Sound Reinforcement Speaker System

**SRM450**

### Features

- **Bi-amplification with 300 watts rms low-frequency and 100 watts rms high-frequency power**
- **127 dB peak SPL**
- **Wide dispersion, studio-quality high-frequency horn with multi-cell aperture throat**
- **Large format exponential/conical high-frequency horn mouth**
- **State of the art RCF Precision 1.75-inch titanium compression driver**
- **Servo feedback controlled RCF Precision 12-inch high-efficiency, light mass woofer**
- **Single mic/line level control**
- **High-pass switch for floor monitoring applications**
- **Contour switch provides ideal low to medium level music playback equalization**
- **Timed turn-off AC switch**
- **Complete electronic and component protection circuitry**
- **Electronic equalization and phase alignment**
- **Professional trapezoidal enclosure design**
- **Built-in pole mount cup on bottom**
- **Tilts on its side for use as a stage monitor**
- **Correctly weight-balanced with two comfortable side handles for easy carrying and set up**

### Applications

- Live and playback applications
- Small to medium sized portable PA systems
- Corporate events
- Houses of worship

## SRM450 Specifications

## System Acoustic

Frequency Response (-3 dB)	55 Hz-18 kHz
Frequency Range (-10 dB)	45 Hz-20 kHz
Directivity Factor; Q (DI)	9.95 (9.98), averaged 2 kHz to 10 kHz
Max SPL Long-term	124 dB
Max SPL Peak	127 dB
Crossover	Linkwitz-Riley, 24 dB/octave @ 1600 Hz

## Audio

Input	Bal./unbal. Female XLR
Loop-through (parallel w/input)	Bal./unbal. Male XLR
Input Protection	RFI and level protected
Level Control	Rotating knob (off to +40 dB)
Sensitivity (center detent)	Line: +4 dBu Mic: -36 dBu
Maximum Input Level	+22 dBu
Low-Cut Frequency	75 Hz second-order high-pass filter
Acoustic Contour Equalization (peaking)	+3 dB @ 100 Hz +3 dB @ 12 kHz
Accessory Interface	±15 VDC, normalized signal I/O
Operating Temperature Range	-10°C to 45°C (14°F to 113°F)

## Amplifiers

Total Amplifier Power	400 watts continuous*
High Frequency	100 watts*
Type	Class AB
Rated THD	.03%
Low Frequency	300 watts*
Type	Class G with parametric servo feedback
Rated THD	0.03%

\*Rated power is continuous rms wattage into transducer's rated impedance @ 1 kHz for the HF amplifier and @ 100 Hz for the LF amplifier

## High Frequency Section

Diaphragm Size	1.75 in/44.5 mm
Horn Exit Diameter	1.0 in/24.5 mm
Power Handling	100 watts rms (long term) <sup>1</sup>
Sensitivity	106 dB (1W@1m)
Frequency Range	1000 Hz to 20 kHz
Nominal Impedance	8 ohms
Diaphragm Material	Damped titanium
Magnet Type	Ferrite

## Horn Design

Horizontal Coverage	90° 1 kHz to 20 kHz avg.
Vertical Coverage	45° 2.8 kHz to 20 kHz avg.
Type	Exponential and conical
Mouth Size	12.0 in x 7.0 in/ 30.5 cm x 17.8 cm
Throat size	1.0 in/2.5 cm

<sup>1</sup> Measured on-axis in the far field, referenced back to 1 watt rms from maximum power and to 1 meter distance using the inverse square law.

## Low Frequency Section

Number of Drivers	1
Woofers Diameter	12 in/300 mm
Voice Coil Diameter	2.5 in/63 mm
Power Handling	450 watts rms (long term) <sup>1</sup>
Sensitivity	98 dB (1W@1m)
Frequency Range	45 Hz to 3000 Hz
Magnet Type	Ferrite

## Construction Features

Basic Design	Asymmetrical Trapezoidal
Material	Polypropylene
Finish	Grey, textured finish
Handles	Two on sides, one on top
Grille	Perforated metal with weather-resistant coating

## Line Input Power

Power Consumption	320W with musical program and Peak LED blinking
US Recommended amperage service	120 VAC, 60Hz 2.5 amps
Europe Recommended amperage service	230 VAC, 50Hz 1.25 amps
Japan Recommended amperage service	100 VAC, 50/60Hz 3.0 amps
AC connector	3-pin IEC 250 VAC

## Control System Function

Electronic Crossover	
Phase Alignment	
Equalization	
Parametric equalization	

## Safety Features

Protection	Low Frequency Dynamic Bass Protection, Independent LF and HF Compressors, Power Supply and Amplifier Thermal Protection
Display LEDs	Signal Present, Peak, Power ON, and Thermal (Cool Down Auto Reset)

## Physical

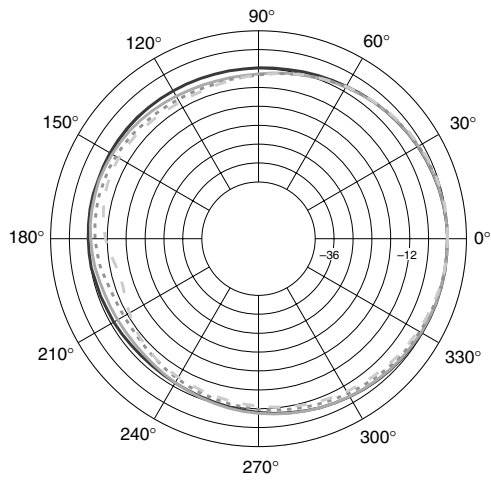
Height	26.0 in/660 mm
Width Front	15.4 in/390 mm
Depth	14.8 in/376 mm
Weight	51.0 lb/23.2 kg

## Options

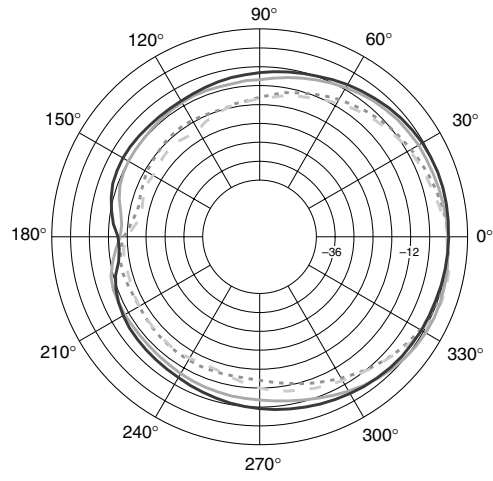
PA-A1 Eyebolt (M10 x 1.5 mm x 20 mm)
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# SRM450 Active Speaker System

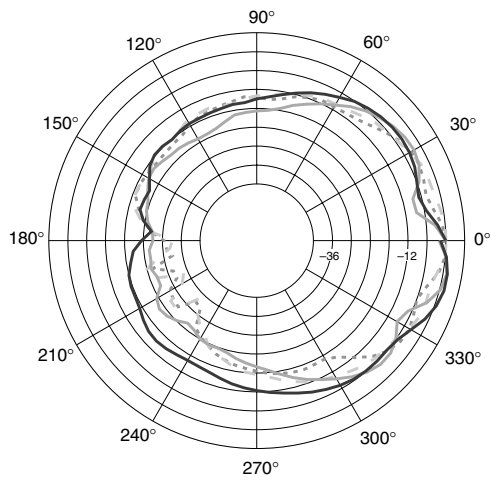
## SRM450 Vertical Polars



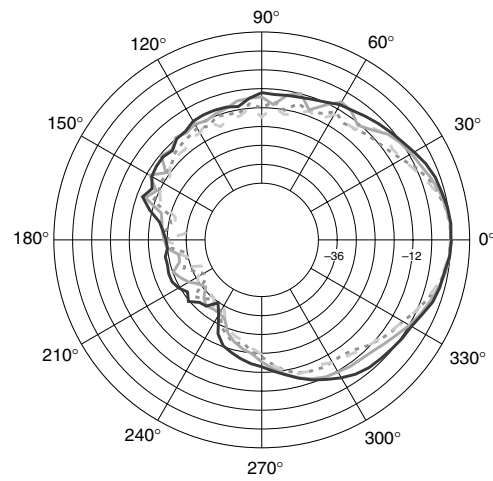
- 200Hz
- 250Hz
- ... 315Hz
- - 400Hz



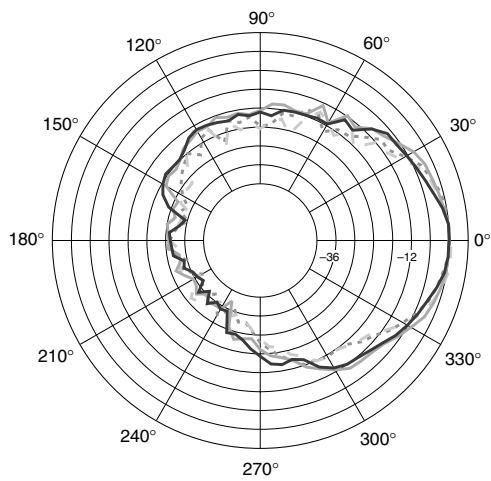
- 500Hz
- 630Hz
- ... 800Hz
- - 1kHz



- 1.25kHz
- 1.6kHz
- ... 2kHz
- - 2.5kHz

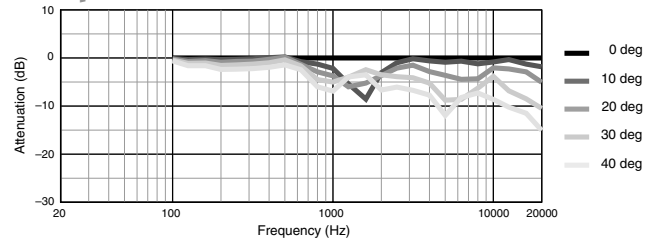


- 3.15kHz
- 4kHz
- ... 5kHz
- - 6.3kHz

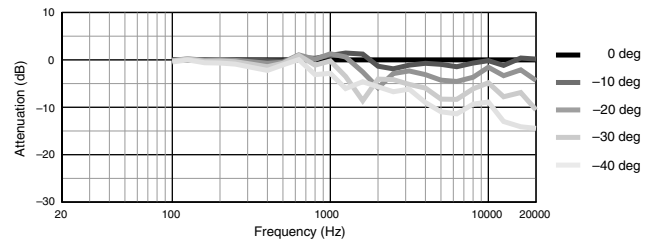


- 8kHz
- 10kHz
- ... 12.5kHz
- - 16kHz

## SRM450 Vertical Off-Axis Frequency Response (UP)

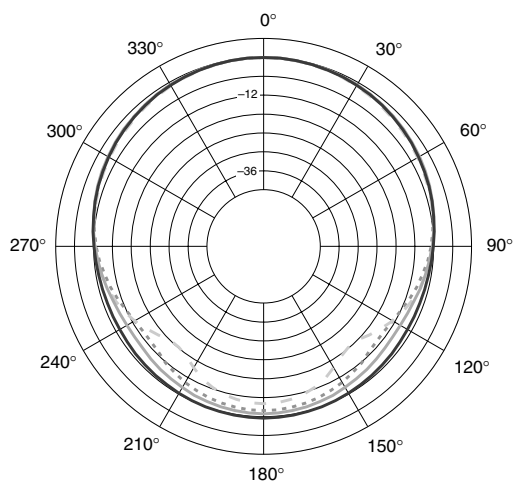


## SRM450 Vertical Off-Axis Frequency Response (DOWN)

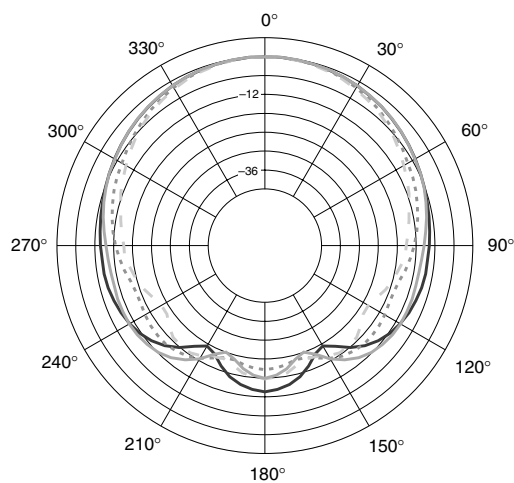


# SRM450 Active Speaker System

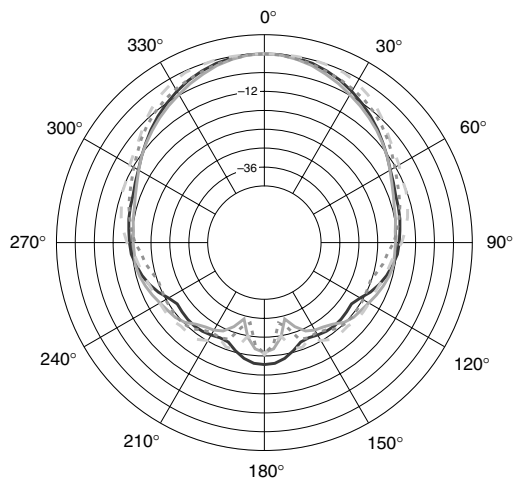
## SRM450 Horizontal Polars



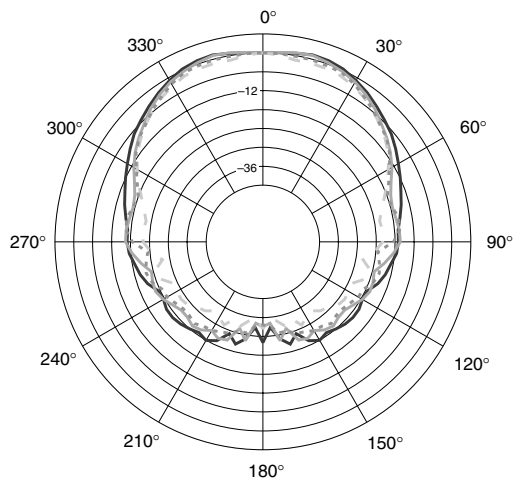
- 200Hz
- 250Hz
- 315Hz
- - - 400Hz



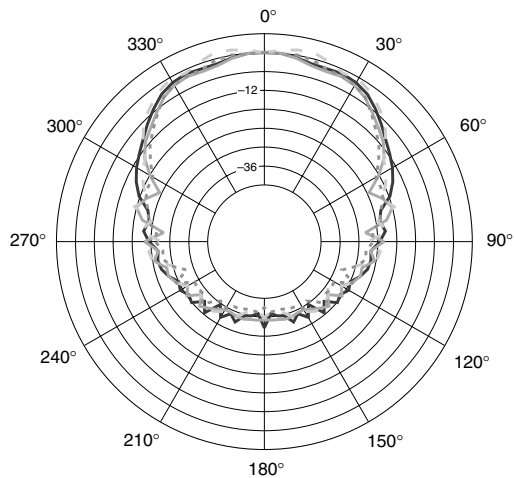
- 500Hz
- 630Hz
- 800Hz
- - - 1kHz



- 1.25kHz
- 1.6kHz
- 2kHz
- - - 2.5kHz

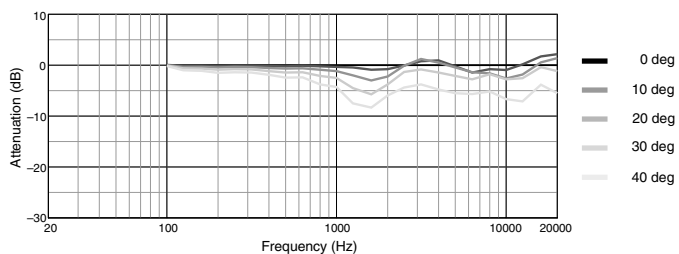


- 3.15kHz
- 4kHz
- 5kHz
- - - 6.3kHz



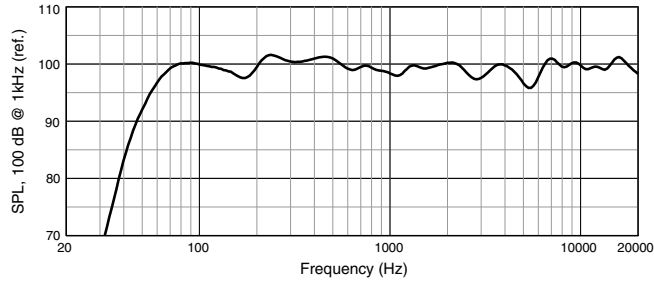
- 8kHz
- 10kHz
- 12.5kHz
- - - 16kHz

## SRM450 Horizontal Off-Axis Frequency Response

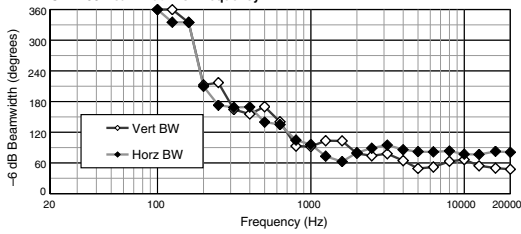


# SRM450 Active Speaker System

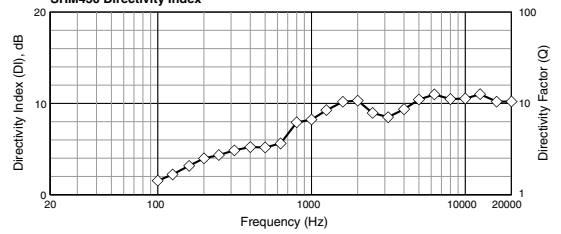
SRM450 Frequency Response On-Axis



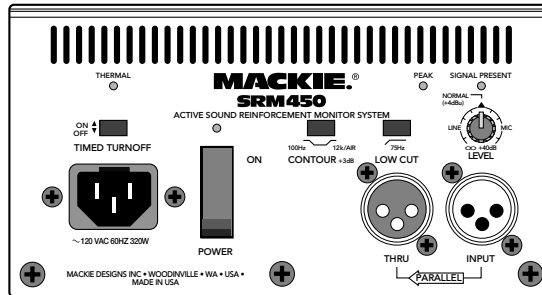
SRM450 Beamwidth vs. Frequency



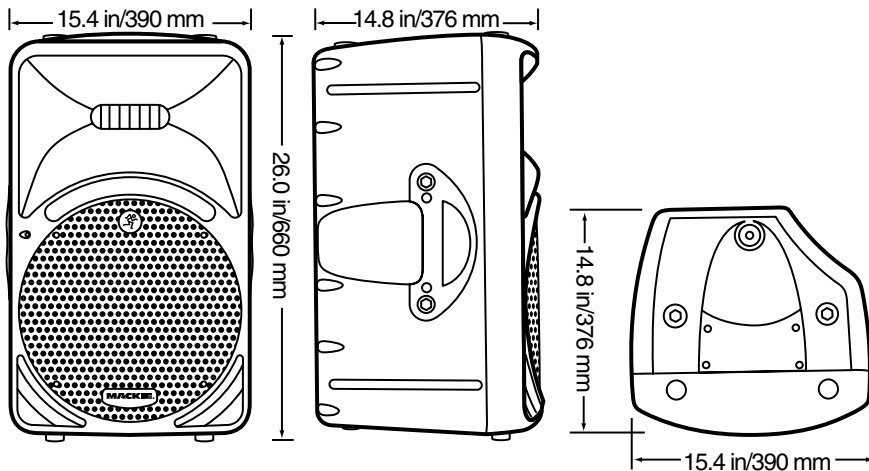
SRM450 Directivity Index



## SRM450 Input Panel



## SRM450 Dimensions



# SRM450 Active Speaker System

## Architects' and Engineers' Specifications

The active two-way, full-range loudspeaker system shall incorporate one 12-inch low-frequency (LF) transducer and a 1-inch exit/1.75-inch diaphragm compression driver high-frequency (HF) transducer. The LF driver shall be mounted in a vented polypropylene molded enclosure tuned for optimum low-frequency response. The HF transducer shall be loaded on a multi-cell horn aperture and mounted on a combination exponential and conical horn.

The system shall have a nominal coverage pattern of 90° (horizontal) x 40° (vertical). System frequency response shall vary no more than  $\pm 3$  dB from 55 Hz to 18 kHz measured on axis. The loudspeaker shall incorporate a Class G low-frequency amplifier capable of delivering 300 watts rms over a frequency range of 20 Hz-2000 Hz. The system shall incorporate a Class AB 100 watt rms amplifier specifically designed to power the HF driver over the range of 1500 Hz-20 kHz. The amplifiers shall be mounted on an aluminum heatsink, which shall be mounted on the rear of the speaker system, and shall be convection cooled.

Thermal protection shall be provided by a thermal sensor mounted on the heatsink, which monitors the heatsink temperature and triggers the thermal protection circuit should the temperature exceed 158° F (70° C). The Thermal LED shall light and the input signal to the amplifiers shall be muted until the heatsink cools to a safe operating level, at which point the thermal protection circuit auto-resets and normal operation resumes.

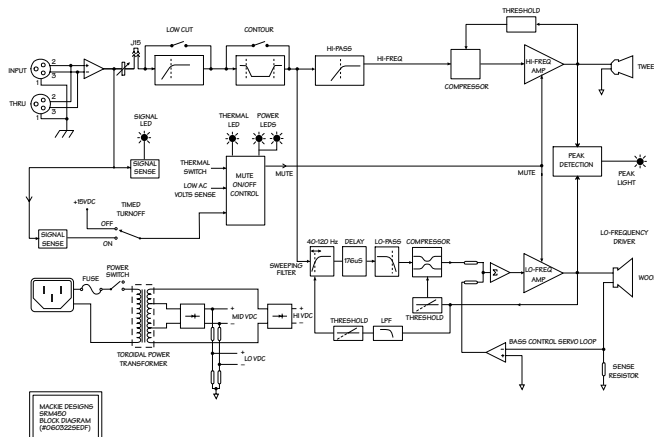
Overload protection for the LF driver shall be provided by a dynamically variable high-pass filter, the corner frequency of which shall slide from 40 Hz to 120 Hz as the LF amplifier output approaches clipping. Additional protection shall be provided for both the LF and HF drivers by a compressor circuit, which monitors the low-frequency and high-frequency amplifier outputs and reduces the gain as the amplifiers approach clipping.

The system shall include an XLR input connector, an XLR loop-through signal connector, a level control capable of providing up to 40 dB of gain to accommodate both microphone and line-level signal levels, a sound contour switch providing +3 dB of equalization at 100 Hz and 12 kHz, a high-pass switch for filtering out frequencies below 75 Hz, and a timed turn-off switch for self shut-down.

The loudspeaker enclosure shall have an asymmetrical trapezoidal shape and shall incorporate 10 integrated M10 fly points, two side handles, and a top relocation handle. The enclosure shall be molded from polypropylene material. The front of the loudspeaker shall be covered with a powder coated, weather-resistant perforated steel grille.

The active two-way full-range loudspeaker system shall be a Mackie Designs SRM450.

## SRM450 Block Diagram



Electronic files for this product available at:  
[www.mackie.com](http://www.mackie.com)

This Specification Sheet	SRM450_SS.PDF
Owner/Operator's Manual	SRM450_OM.PDF
CADD files	SRM450.DXF

# MACKIE®

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Part No. 091-221-00 Rev. A 4/03