



# KP-320

## 15-in. Two-Way Bass Reflex With 12-in. Passive Radiator

The KP-320 is a high-output, two-way system with a hybrid Tractrix high-frequency horn section, a 15-in. (38-cm) woofer, and a down-firing 12-in. (30-cm) passive radiator. This unique system design allows extended low-frequency response and higher output from an enclosure which is 30 percent smaller and lighter than conventional vented designs.

### Tractrix Technology™

The high-frequency section features the new Klipsch hybrid horn design that is based on the Tractrix equation. This horn provides maximum energy transfer from the compression driver to the air, allowing the speaker to deliver higher output and lower distortion. The horn has good polar control that results in consistent coverage. The large mouth area limits reflections for smoother frequency response and a lower crossover point to the woofer.

The passive radiator allows the KP-320's enclosure to be tuned much lower without the use of long vents that require more room inside the cabinet. This in turn reduces the size of the enclosure. The 12-in. passive radiator has a much larger radiating area than a typical vent so it couples better to the air at low frequencies. It even reduces the possibility of woofer over-excursion by limiting the woofer travel when the system is driven too hard below the tuning frequency.

The passive radiator's proprietary suspension allows up to 1.2-in. (3-cm) of peak-to-peak excursion. It can move a lot of air without the associated noise of some vented designs. The passive radiator, coupled with the K-48-K woofer and its large 96-oz. (2.7-kg) magnet, allows the KP-320 to deliver well-damped and powerful low-frequency output.

#### Electrical Specifications

Frequency response (Hz) (3 m, half-space anechoic)	49 to 15,000 +/-4 dB, -10 dB at 38 Hz
Power handling (W) (AES standard. Continuous pink noise 40 Hz to 10 kHz, 1,600 W peaks)	300 (37 V)
Maximum continuous output (dB) (at 1 m with 300 W input)	126
Dispersion angle	See graph
Directivity	See graph
Sensitivity (dB SPL) (at 1 m with 2.83 V input)	101
Nominal impedance (ohms)	8, 4.6 minimum at 138 Hz
Maximum long-term calculated acoustic output power (W)	9.6
Woofer half-space reference efficiency (%)	2.40
Enclosure tuning (Hz)	48
Crossover frequency	800 Hz with 12 dB/octave roll-off (woofer), 6 dB/octave roll-off (tweeter), KLiP circuit tweeter protector.

#### Mechanical Specifications

Enclosure volume ft. <sup>3</sup> (m <sup>3</sup> )	2.93 (0.85)
Components Woofer Midrange/tweeter Passive radiator	K-48-K, 15 in. (38 cm) with die-cast aluminum frame K-62 hybrid Tractrix horn/compression driver KD-14, 12 in. (30 cm)
Input Connections	Parallel locking Neutrik D-shell 1/4-in. phone jacks (XLR optional) and parallel red/black five-way binding posts. Input is fused (4-A woofer, 1-A tweeter).
Enclosure	All sides 3/4-in. (1.9-cm) nine-ply void-free plywood, internally braced, lined with acoustical foam. Grille is metal. Woofers attached with cast steel clamps.
Finish	Textured black paint or raw birch
Dimensions, in. (cm)	Enclosure without trim: 31 1/2 (80) high, 18 7/8 (48) wide, 13 3/4 (35) deep. Shipping: 36 (91) high, 23 1/2 (60) wide, 18 1/8 (46) deep.
Weight, lb. (kg)	71 (32.2) net, 79.5 (36.1) shipping
Options:	KP-320-A is fully featured with textured, water-resistant, black paint, metal-reinforced grille, two handles, edge- protecting trim, and Ultimate Support socket. KP-320-B has textured, water-resistant, black paint. KP-320-BBR version is unpainted single-face furniture-grade birch cabinet for field application of finish
Accessories	KP-200-TS tripod stand

**KLIPSCH KP-320**

**Figures & Graphs**

In all cases, 0° is on axis, grid spacing is 6 dB, and center of display is 30 dB down. Data was gathered in 10° increments using Techron TEF®.

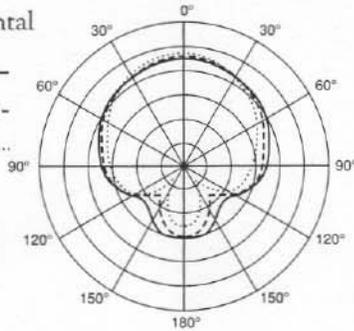
**1/3 Octave Polar Plots**

Horizontal

315 Hz

400 Hz

500 Hz

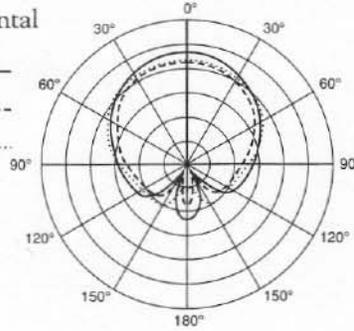


Horizontal

630 Hz

800 Hz

1 kHz

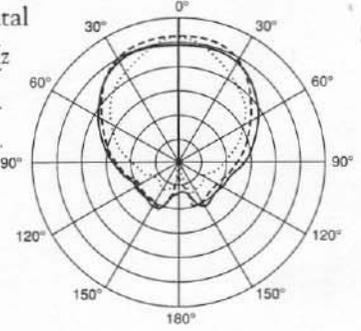


Horizontal

1.25 kHz

1.6 kHz

2 kHz

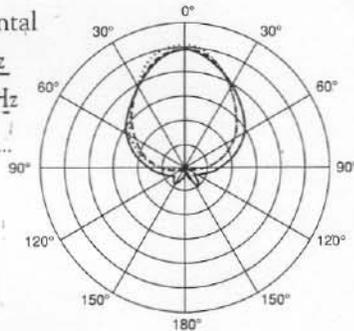


Horizontal

2.5 kHz

3.15 kHz

4 kHz

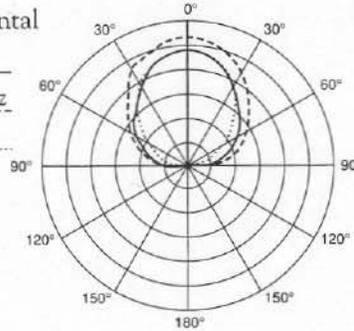


Horizontal

5 kHz

6.3 kHz

8 kHz

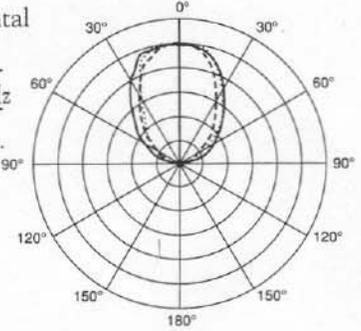


Horizontal

10 kHz

12.5 kHz

16 kHz

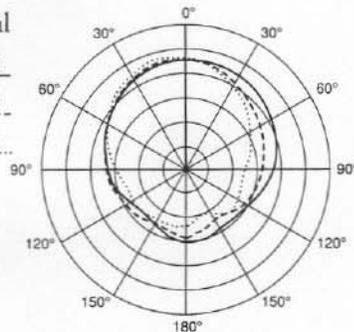


Vertical

315 Hz

400 Hz

500 Hz

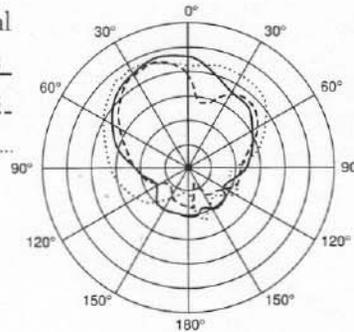


Vertical

630 Hz

800 Hz

1 kHz

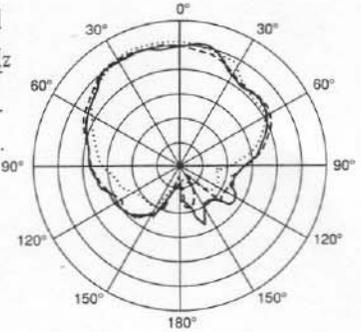


Vertical

1.25 kHz

1.6 kHz

2 kHz

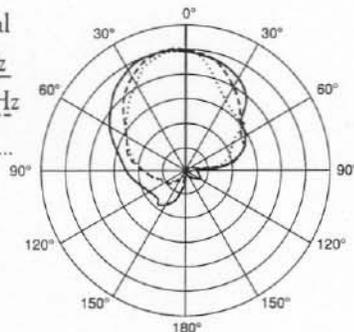


Vertical

2.5 kHz

3.15 kHz

4 kHz

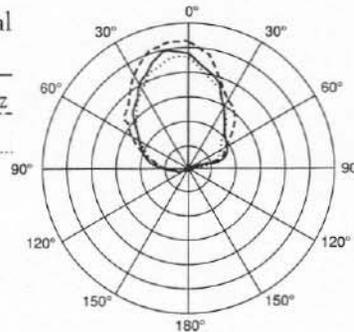


Vertical

5 kHz

6.3 kHz

8 kHz

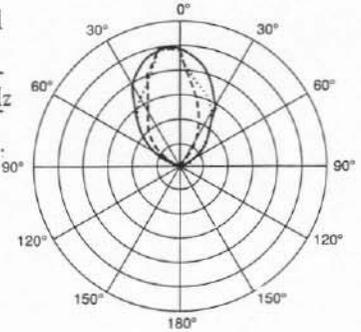


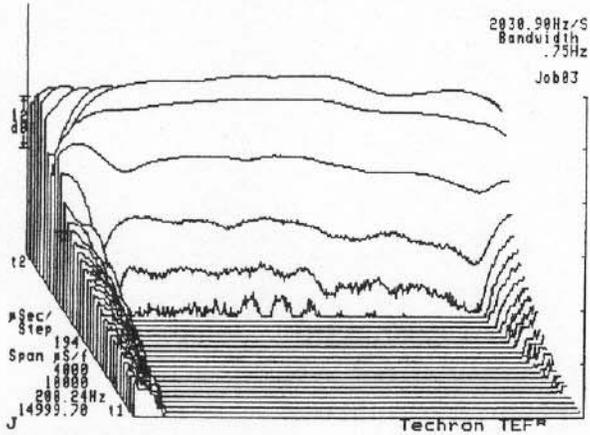
Vertical

10 kHz

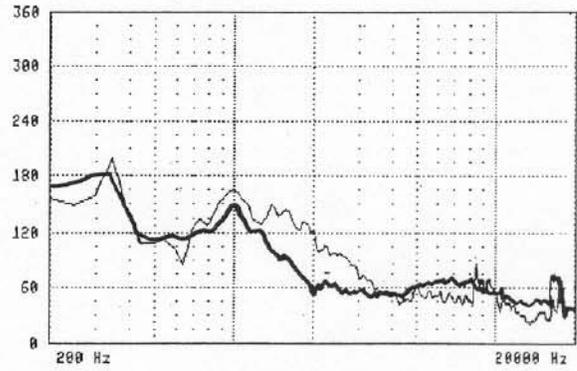
12.5 kHz

16 kHz

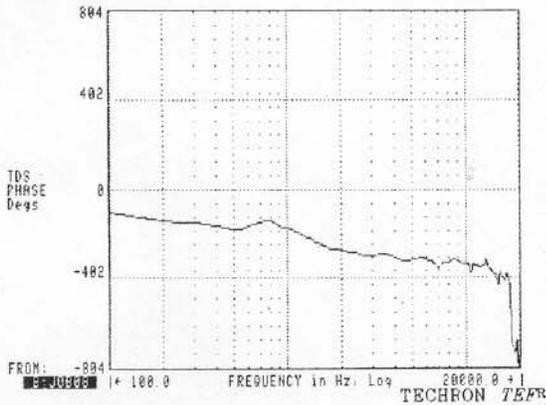




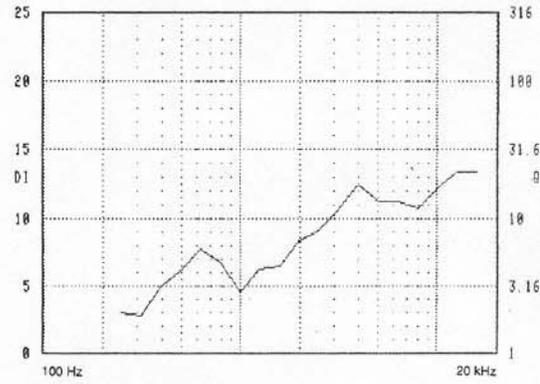
3-D Time Energy Frequency



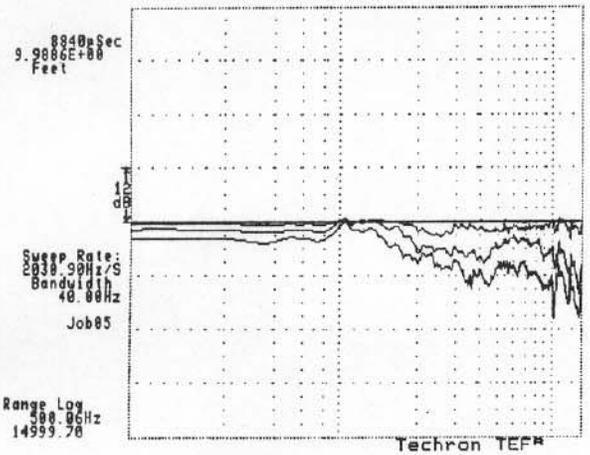
Coverage Angle vs. Frequency — Horizontal  
 ..... Vertical



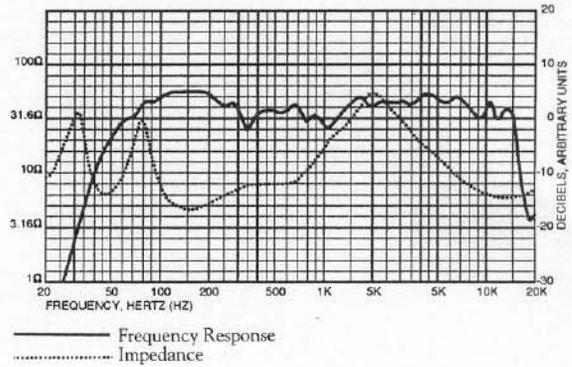
Acoustic Phase vs. Frequency



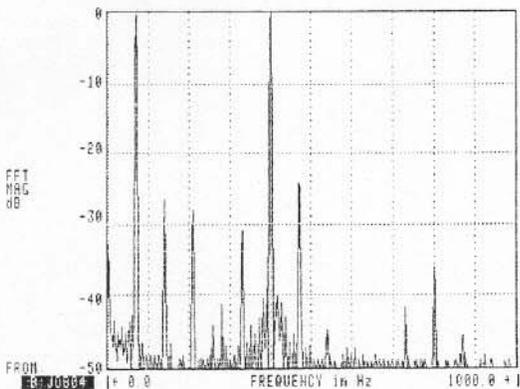
Q and Directivity Index



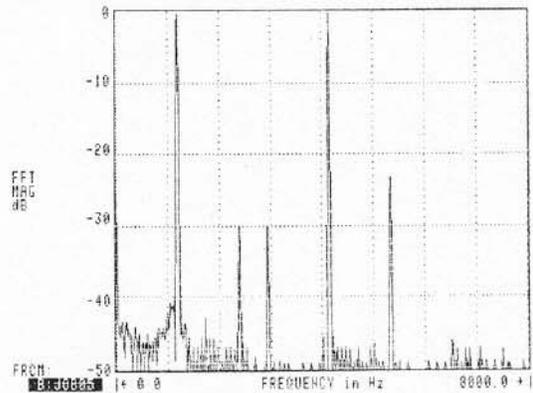
Normalized Off-Axis Response



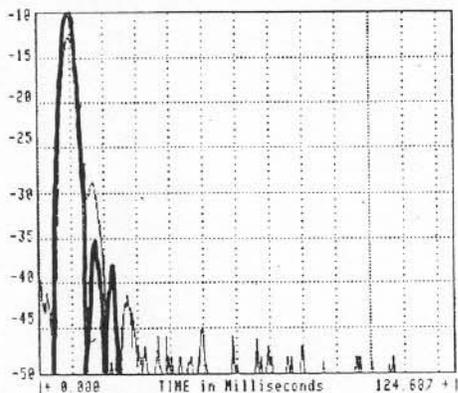
— Frequency Response  
 ..... Impedance



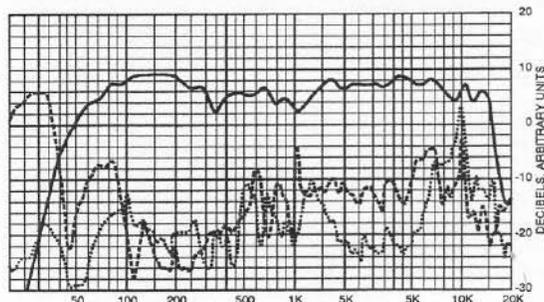
Modulation Distortion (fundamentals at 115 dB/1M)  
 f1 = 70 Hz f2 = 400 Hz



Modulation Distortion (fundamentals at 115 dB/1M)  
 f1 = 1.2 kHz f2 = 4.15 kHz



Midrange Arrival Time  
Woofer Arrival Time



Harmonic Distortion (at .1 of rated power, 13.4V)  
 ----- 2nd harmonic (raised 10 dB)  
 ..... 3rd harmonic (raised 20 dB)

## KLIP Circuit

The new KLIPSCH Limiter Protection (KLIP) circuit automatically protects the HF section from being over-driven. The KLIP circuit uses a semiconductor to monitor input to the tweeter. When the input exceeds the safe power-handling limit, the circuit reduces the level to the tweeter by 10 dB. As soon as the input level decreases to a safe level, output returns to normal. The KLIP circuit allows the speaker to deliver all of its usable output on musical peaks and does not degrade sound quality. In combination with separate fuses for the low and high-frequency section, the KLIP circuit makes the KP-320 the best-protected speaker available.

## Stackable and Packable

The Model KP-320-A has a socket that allows it to be mounted on a stand or in combination with the Klipsch KP-115-SW subwoofer. The KP-115-SW utilizes a single 15-in. woofer with a top-mounted socket for use as a base when mounting the main speakers in the air. Connecting the two systems with 1 1/2-in. (3.8-cm) tubing eliminates the need for a tripod.

The KP-320-A also stacks with the KP-115-SW. When the KP-115-SW is turned on its side, it is the same width as the KP-320, and the optional corner protectors on the two cabinets interlock. The KP-320 is rack-mountable in 18 rack spaces, and the KP-115-SW is rack-mountable in a 14 rack spaces.

## Architectural Specifications

The loudspeaker system shall be a two-way consisting of a 15 in. (38 cm) K-48-K woofer, a K-62 1.5 in. (3.8 cm) compression driver mated to hybrid Tractrix horn, and a KD-14 passive radiator. The woofer shall have a die-cast aluminum frame and the voice coil shall be 3 in. (7.6 cm) in diameter with a Kapton form. The convex compression driver diaphragm shall be 1.5-in. (3.8 cm) diameter and the passive radiator shall be 12-in. (30 cm) in diameter and have a Kevlar composite cone with a rubberized plastic surround.

The system sensitivity shall be 101 dB SPL, with 2.83 V input, measured at a distance of 1 m in a half-space anechoic environment. The maximum continuous output shall be 126 dB SPL at 1 m at the maximum continuous power input 300 W (37 V). **The KP-320 is easily biamped.** The crossover should be 800 Hz with at least 12 dB/octave slopes. Maximum continuous power is 400 W for the woofer and 75 W for the tweeter. Frequency response shall be 49 Hz to 15 kHz +/-4 dB. Nominal impedance shall be 8 ohms.

The cabinet shall be constructed of 3/4-in. nine-ply, furniture-grade, void-free plywood, single-face birch on mahogany with fir cores. All edges to be internally braced. The grille shall be metal-reinforced. Dimensions shall not exceed 31 1/2 in. (80 cm) high, 18 7/8 in. (47.9 cm) wide, and 13 3/4 in. (34.9 cm) deep. Net weight shall not exceed 71 lb. (32.3 kg). The loudspeaker system shall be a Klipsch KP-320 manufactured by Klipsch Professional.

## Transferable Limited Five-year Warranty

Klipsch KP-320 speaker systems have a transferable limited five-year warranty against defects in materials and workmanship. A copy of the warranty is shipped from the factory with each unit.

Please contact your nearest Klipsch franchised dealer or Klipsch Professional if you have any questions about the coverage of the warranty or service under the warranty.

Tractrix Technology is a trademark of Klipsch & Associates.

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P R O F E S S I O N A L