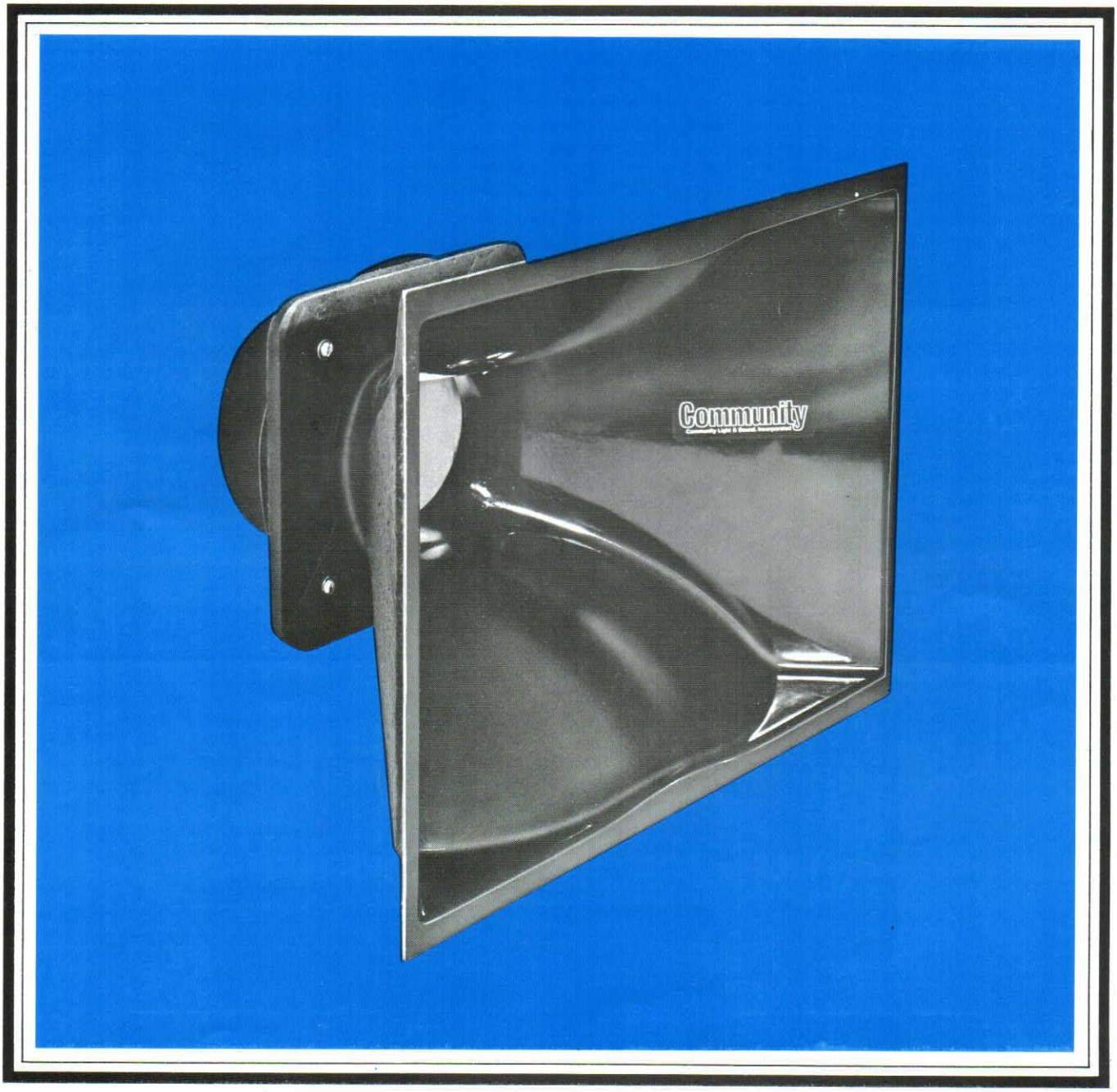
Community

Boxer Series

M80 RADIAL MID-BASS HORN



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Introduction

The M80 is an exponential/radial horn designed for use with a 12-inch or 10-inch loudspeaker (driver) between 250 Hz and 1000 Hz. Part of the Community BOXER Series, the M80 includes a rear compression chamber to house the driver. The M80 may be used as it comes from the factory, or with a wooden enclosure (not supplied by Community).

Why Mid-Bass?

A traditional two-way loudspeaker system consists of a high-frequency horn and compression driver with a 15-inch (or 18-inch) woofer in a horn-loaded or bass-reflex enclosure. The most obvious deficiencies of this two-way system are usually in the very high and very low frequency ranges. A less obvious, but probably more critical, deficiency occurs in the midrange. This midrange deficiency is due to a roll-off in power response from the 15-inch woofer above about 300 Hz (above about 200 Hz for an 18-inch woofer).

Because a 15- or 18-inch woofer begins to beam at midrange frequencies, an on-axis frequency response curve of this two-way system will mask its midrange deficiency. The deficiency shows up, however, in an off-axis frequency response, or when the woofer is installed in a well-designed bass horn, like the Community Boxer Bass Horn, which minimizes high-frequency beaming.

One solution to the problem would be to "equalize it out". A better solution is to add the missing frequencies with the Community M80 Mid-Bass Horn. The M80, with a high-performance 12-inch or 10-inch loudspeaker/driver, supplements the response of the 15-inch woofer, in the range above 250 Hz. This can dramatically improve the system's midrange performance and it allows a mid/high-frequency crossover point as high as 1000 Hz. This higher crossover point can further improve system performance by reducing the load on the high-frequency horn and compression driver, lowering its throat distortion and increasing its effective power capacity. As a result, overall system maximum SPL may be significantly increased.

Entertainment System Applications

Moving up to a three-way? Super tweeters can add "sizzle", subwoofers can add "boom", but the M80 adds midrange, and midrange is where the *music* is! Don't get us wrong, we have nothing against super tweeters or subwoofers, in fact, we make some very good products to cover those frequency ranges. But we urge you to try the M80 as the *first* step in improving your two-way system. The M80 can help bass instruments sound cleaner, more "punchy"; it can help vocals and instruments sound less harsh, more natural; and, the M80 can help decrease overall system distortion because the 15- or 18-inch woofer, and the high-frequency compression driver aren't being force-fed with frequencies they can't reproduce.

As part of our BOXER Series, the M80 may include a wooden enclosure for easy stacking (not supplied by Community) or, because of its fiberglass rear compression chamber (included), the M80 can be used "as is" for hanging clusters or "flown" concert systems.

Commercial System Applications

Because it improves system midrange performance, the M80 can dramatically improve a voice reinforcement system. The M80 extends pattern control as much as an octave below the typical mid/high-frequency horn. This can reduce articulation loss, especially in a reverberant room. The M80 can further improve the clarity and naturalness of a system by reducing the distortion produced in the high-frequency response of a 15- or 18-inch woofer or the low-frequency response of many compression drivers. Because of its flat front and light weight (24 pounds less driver), the M80 is easy to hang or box mount, and, because of its fiberglass construction, including a fiberglass compression chamber for the driver, the M80 is great for outdoor voice-reinforcement systems. In fact, the M80 is an ideal way to upgrade a typical one-way paging system, to reduce distortion and improve naturalness.

Design of the M80

The M80 is an exponential horn with a 182 Hz flare rate and an 80° radial layout. We chose the exponential/radial design because it allows us to produce a compact horn with high efficiency, excellent pattern control, smooth frequency response, low distortion and effective driver loading down to 250 Hz. The 80° horizontal design angle allowed us to maintain the BOXER Series 28½" wide format for the M80 and helps a system designer maintain a consistent directivity match from high to low frequency components. Together, these design features add up to a horn with great objective performance and unmatched subjective sound quality.

Construction

Because of the compound curves involved, it is virtually impossible to construct an exponential/radial horn out of wood (most wooden horns are

designed with a straight, not radial, expansion). Thus, in order to take maximum advantage of the performance of a radial horn, we build the M80 out of balsa-reinforced, hand-laminated fiberglass, using a proprietary, one-piece, molding technique that allows us to produce a mathematically correct horn that is rigid and virtually resonance free, yet surprisingly compact and lightweight.

Recommended Community Systems Using the M80

The M80 is part of the Community BOXER Series and fits naturally into systems made up of other BOXER products, including the BBH Boxer Bass Horn, the S90/365 (2" throat) and S90/428 (1" throat) "Super 90" horns, and the SQ90 (1" throat) High-Frequency Horn. The BOXER products are all 28½" wide, except the SQ90, which is 11" wide. All have flat fronts and fit easily into a user or dealer supplied wooden enclosure. Besides the BOXER products, the M80 may be used with other Community Radial horns, such as the ABH90 or BRH90 or in just about any loudspeaker system which could benefit from an improvement in midrange performance.

Choosing a 12" or 10" Driver for the M80

The M80 is designed to supplement the performance of a 15- or 18-inch loudspeaker above 250 Hz. Thus, the mid and high frequency performance of the 12-inch or 10-inch driver is more important than its low frequency performance. Ideally, the M80's driver should have a light moving mass, stiff suspension and high magnetic flux density. These features will show up in the driver's performance specifications as high sensitivity and smooth upper range frequency response. Obviously, a low distortion driver is preferable to a high distortion driver, and power capacity is important. We urge you to consult your Community Dealer for their recommendations.

Introduction to the Specifications

We publish these specifications because we want you to know as much as possible about the M80. We believe the numbers accurately reflect the M80's objective performance. However, the M80's most important "specification", its subjective sound quality, can only be experienced through a live listening test. We urge you to make such a test, at your Community Dealer, as soon as possible.

M80 Specifications

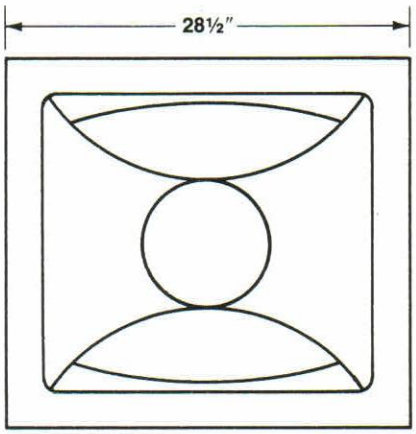
Performance

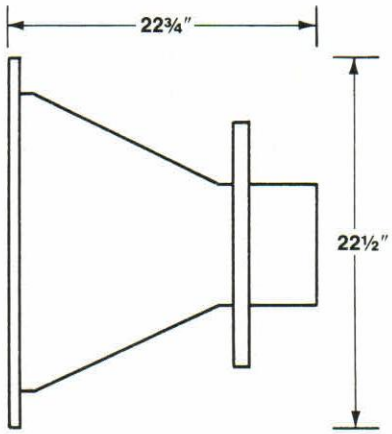
Flare Rate:	182 Hz
Operating Range:	250 Hz to 1000 Hz Nominal (Driver dependent)
Frequency Response:	Driver dependent (HF response primarily limited by moving mass and magnetic flux density of driver. LF response purposely rolled off below 250 Hz by the M80's compression chamber and flare rate.)
Power Capacity:	Driver dependent (Primarily limited by maximum driver LF displacement.)
Coverage Pattern:	80° Horizontal 40° Vertical (Nominal coverage angles; horizontal coverage is very consistent; vertical coverage narrows somewhat with increasing frequency.)

Mechanical

DIMENSIONS

Height:	22½" (57.2 cm)
Width:	28½" (72.4 cm)
Depth:	22¾" (57.8 cm) assembled
Driver Mounting Flange:	Accepts standard 12-inch loudspeaker frame. Must be redrilled for 10-inch loudspeaker.
Weight:	24 pounds (10.9 kg) (M80 horn and compression chamber only)
Construction:	Balsa-reinforced, hand-laminated fiberglass; wooden driver mounting flange.
Finish:	Gloss black
Connectors:	Dual (female) banana receptacles, standard ¾" spacing.





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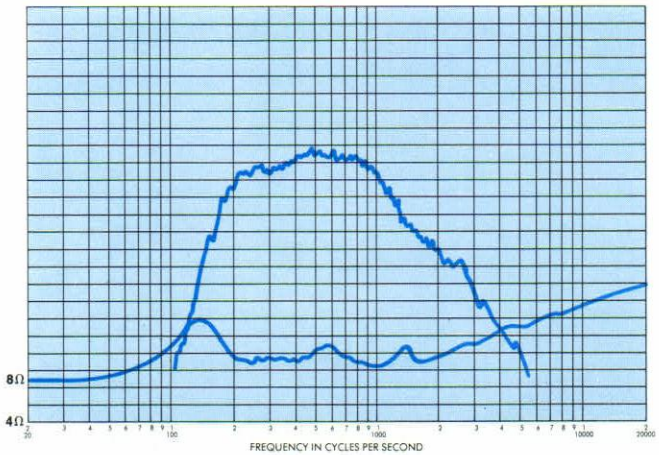
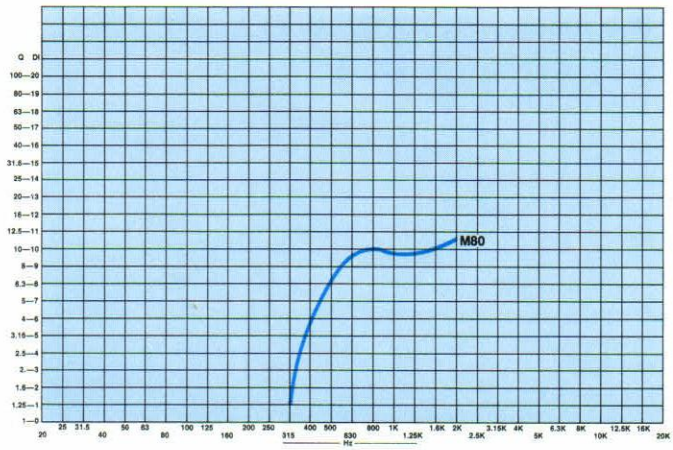
Frequency Response and Impedance



"Q" vs Frequency



Architect's and Engineer's Specifications

The horn shall be an exponential flare, radial horn designed for use with a (insert "12-inch" or "10-inch") loudspeaker/driver and constructed of balsa-reinforced, hand-laminated fiberglass. The horn shall include a flat front and flange for enclosure mounting. The horn shall include a fiberglass compression chamber to provide acoustic loading for the loudspeaker/driver.

The horn shall meet the following performance and design specifications. Flare Rate: 182 Hz; Operating Range: 250 Hz to 1000 Hz; Nominal Coverage Pattern: 80° Horizontal by 40° Vertical.

The horn shall meet the following mechanical specifications. Dimensions: 22½" H x 28½" W x 22¾" D; Weight: 24 pounds. The loudspeaker/driver mounting flange shall be constructed of wood and shall be designed to accept a (insert "12-inch" or "10-inch") loudspeaker/driver.

The horn shall be the Community Light and Sound M80 Radial Mid-Bass Horn.

Ordering Information

Model #	Included	Accessories Required	Accessories Optional	Notes
M80	horn flare, compression chamber, hardware kit	10"* or 12" loudspeaker not supplied by CL&S	wooden enclosure not supplied by CL&S	*redrill mounting flange for 10" speaker

Community Light & Sound
5701 Grays Avenue
Philadelphia, PA 19143