

DISCONTINUED PZMS

11-30-05

This document has information on discontinued Crown Pressure Zone Microphones, taken from the Crown *Mic Memo* newsletter. All these PZMs (except the PZM-20RM and PZM-20RMG) have an XLR output in which one pin is ground, another pin is B+, and another pin is high-impedance unbalanced audio out. In order to operate, these PZMs required a **PZM interface** (described later).

The models described are:

PZM-30GP	5"x 6" boundary mic with emphasized high frequencies
PZM-6LP	2" x3" boundary mic with emphasized high frequencies
PZM-2LV	lavalier mic
PZM-20RM	flush-mounted mic with built-in interface, black finish
PZM-20RMG	flush-mounted mic with built-in interface, gold finish
PZM-31S	5" x 6" boundary mic with flat frequency response
PZM-3LV	lavalier mic
PZM-3LVR	redundant lavalier mic
PZM-2.5	directional PZM with the capsule mounted in a plexiglass corner
PZM-12SP	early version of the Sound Grabber

The specifications given for the PZM-2LV and PZM-20RMG apply to the other PZMs.

This document also covers the **PZM interfaces**. Each PZM interface had these functions:

- Convert the high-impedance unbalanced PZM output to low-impedance balanced.
- Convert phantom power to +/- 18VDC for powering the PZM, or supply +/- 18VDC from two 9V batteries.

PA-18 active interface with battery/phantom powering

PX-18 passive transformer interface with battery/phantom powering

PX-T passive transformer interface in a tube

PX-TL passive transformer interface in a tube, with a mini XLR connector for PZM-2LV, PZM-3LV, and PZM-3LVR microphones.

PZM MEMO

Sept. 1980

Ken Wahrenbrock, Senior Editor

PZM MODELS NOW AVAILABLE FROM CROWN

The PZM microphones have now been re-engineered at Crown for quantity production, and in the process have undergone quite a face lift. They are handsome looking products!

Two models, in a choice of black or gold, are now available; and two more are moving towards an early release date.

Crown Model 3OGP [now PZM-30D] is designed as a general purpose PZM with a 5 x 6 inch plate and an XLR connector.

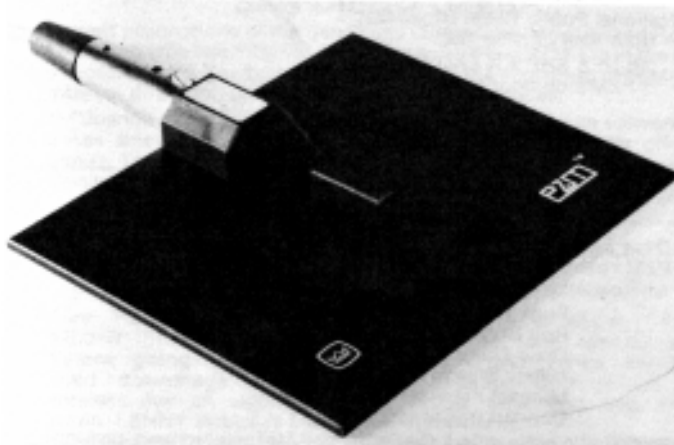


Fig. 1. Crown PZM-30GP

Crown Model 6LP [now the PZM-6D] is a smaller PZM with a 2 x 3 inch plate and an XLR connector at the end of a cable. The 6LP is suitable for all applications but is most useful where minimum size may be required for aesthetic or practical reasons.

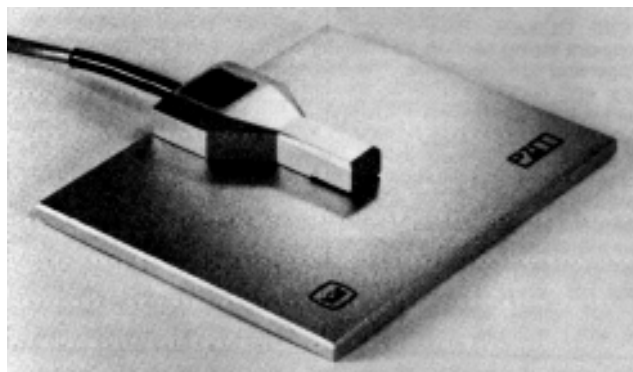


Fig. 2. Crown PZM-6LP

Crown Model 2LV [discontinued] is a lavalier or clip-on PZM and will be available from production about January 1, 1981.

Crown Model 2ORM [now the PZM-20RG] is intended for recessed mounting, with the XLR connector beneath the plate. Small stubs surround the cantilever to prevent sheets of paper from slipping underneath the transducer. This model is now in R&D and will be handled on a special order basis. This special order policy will continue until demand for the model increases. Also available from Crown are two power supplies for the PZM system, an active (PA-18), and a transformer (PX-18) version [discontinued]. Both versions can be used in phantom or battery modes.



Fig. 2. Don Eger (left), Crown PZM Project Manager, and Ken Wahrenbrock check out the PZM test facility prior to the tour by the representatives.

PZM EXTENDED BASS MODEL ADDED

Crown has added the PZM 31S [now the PZM-30D] to its line, offering a somewhat different frequency response curve to users. The new mike offers deeper bass response, as well as a warmer high end (in contrast to the 30GP and 6LP, which have a bright, crisp high end). Suggested applications include piano and kick drum miking, as well as close miking situations.

The 31S is now in production, and is available in a silver and black color scheme. The plate of the 31S is 15cm x 13cm (6x5in.).

NOTE: Some of the news items in this issue may have reference to experimental models of the PZM microphone which have not yet been completely engineered for production. We do encourage your consideration and evaluation of these developmental models, but not all of them may result in production models available for general sale. Watch these columns for notice of new PZM models available from Crown.

BAKER'S KEYBOARD LOUNGE GOES PZM FOR PIANO

The oldest jazz club in the USA was the scene of an interesting demo by T.S. Taylor. The pianist was using a three mike setup which provided adequate sound. He insisted that the lid of his Steinway be left off.

T.S. crawled under the piano, used some duct tape for mechanical isolation on one of the horizontal support members and mounted a PZM about 2½ inches away from the sounding board. He wanted to test the location.

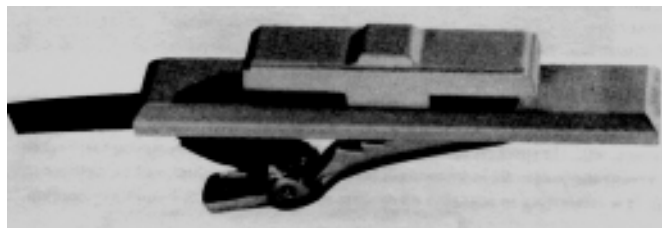
The piano tuner came in, saw no microphones and proceeded to tune the piano. He was unaware that the PZM was feeding the monitor system, but not the house system at the moment T.S. was chatting with him and smiled at his comment that "old Betsey" was sounding especially good that day. The humidifier and all were finally matched.

T.S. went back and clicked off the PZM. It created a "howl to awake hibernating bears." Richard, the tuner, yelled, "T.S. what are you doing to me?" He forgot all about the Steinway for 45 minutes while T.S. took him step by step through PZM technology and applications. After the education, Richard's response was, "Turn it back on; I'll never be able to get it tuned without it now."

August, 1982

Ken Wahrenbrock, Senior Editor

NEW CROWN CLIP-ON MICS



PZM-3LVR

Two new PZM mikes have been added to the Crown line, both clip-on versions.

The 3LVR [now replaced by the CM-10], a redundant mike, has been designed by Crown to be used particularly in broadcasting situations. The 3LVR includes two separate PZM microphones mounted on a clip-on bar, 5.0cm long by 1.0cm wide. The mike is available in either black or champagne and includes separate cabling for each mike, carried in a common sleeve.

The power supply for the 3LVR is also new and includes two separate active supplies with separate in and out connections for each mike.

THE EDITOR'S CORNER: PZM ANNIVERSARY

A discussion of the Pressure Recording Process by Ed Long and Ron Wickersham at a Syn-Aud-Con Seminar in the San Francisco area in January, 1978, triggered the development of PZM's.

The prototype PZM first saw the light of day in May, 1978, so with this issue of the PZMemo we celebrate a 4th anniversary. From a very primitive beginning with the models roughly assembled, the acceptance has been phenomenal. The universal enthusiasm and reaction to something quite different by recording engineers in reinforcement, radio and television has been delightful to observe.

When we realize that there has been more than fifty years of exploration, use and study of free field microphony with much literature including textbooks on the basics of microphone construction and use even with particular instruments, we realize there are many interesting and exciting research and writing projects ahead.

Who will explore the best way to mike particular instruments with PZM's? Who will research the most realistic symphony or opera recording methods with PZM's? Who will test and report objectively on the difference between free field M-S classical recording and PZM M-S recordings?

Who will find the breakthrough to use the clarity of PZM's with parabolic reflectors for distance recording for sports? The youngster is forty-eight months old and still developing. Can anyone prognosticate where it will be in another year? Help it grow by sharing what you have learned.

The 3LVR, as with all PZM microphones, is based on all the principles of the Pressure Recording Process developed by Long and Wickersham. In this configuration, a small precision calibrated pressure capsule is mounted facing a boundary plate. The invention practically eliminates problems caused by comb filtering and results in remarkably increased sensitivity and reach. The design also provides a hemispherical pickup pattern, based on the boundary, with no off-axis decrease in sensitivity.

The 3LV, a companion introduction to the 3LVR, is a single-mike version of the 3LVR and is an efficient investment for voice reinforcement in situations where the redundancy of the 3LVR may not be necessary. The 3LV is also available in black or champagne and can be used with existing PZM "L" type power supplies. active or passive. or with optional L" adapter into any Crown PZM supply.

Both the 3LVR and the 3LV includes built-in clip which fastens to fabric or any other thin support. Neckties or lapels are ideal mounting surfaces. Because of pressure-zone properties and sensitivities of the PZM design, either mike can be mounted under neckties or other parts of clothing with little loss of signal quality or clarity.

The PZM-3LV [now the CM-10] is now available from Crown inventory, and demo units have been sent to dealers. The 3LVR is expected to go into production in August, with literature for both units available at about the same time.

PZM CHALLENGE 1982

We are pleased to devote much of this issue of *PZMemo* to reporting on the 1982 PZM Challenge contest which was developed by Crown as another way (in addition to *PZMemo*) of sharing PZM technology.

The beginning

On February 1, 1982. Crown mailed to all names on the *PZMemo* mailing list, to all PZM dealers, and to editors of professional audio magazines a notice of the PZM Challenge, which was actually two contests. The "Open" Contest could be entered by anyone except Crown employees and their families. The other was a Crown "Dealer" contest, open only to Crown dealers and their employees.

Entrants were asked to submit excerpts from original stereo recordings made using two or more PZM microphones as the principal pickups.

The categories

Three categories were established in each contest: classical, popular and environmental sounds. Unfortunately, no entries were received in the environmental category: we can only speculate that PZM users have been having too much fun recording musical events to pay attention to sound effects.

Prizes were established for each category in each contest, with a grand prize to be selected in each contest. Provision was also made for honorable mentions to be awarded to those entries which, in the opinion of the judges, were of more than average interest.

39 entries

The contest closed on May 1, 1982. with a total of thirty-nine entries received. Each entrant received a T-shirt decorated with a PZM Challenge emblem. The entries were well distributed among dealer and open, popular and classical.

The judging

Judging took place on May 6, 1982, in a room especially equipped for accurate playback, with the speakers carefully positioned and equalized. Special care was taken to prevent the judges from knowing whether entries were submitted on cassette or reels. It is interesting to note that no cassette entry won prizes or honorable mention.

The judges were:

Greg Bogantz, Engineer, RCA Records, Indianapolis. IN. Greg is in charge of disc mastering technology for RCA and has spent many years of careful listening and engineering in the recording field. He is a graduate of Purdue University.

Michael Stoll, President, Reproductions Technology, Inc., Elkhart, IN. Mike is the founder of RTI, a manufacturer of industrial reel-to-reel tape recorders, and a recording engineer with several discs to his credit.

Robert J. Pickrell, Manager, Elkhart County Symphony Association, Elkhart, IN. Bob has been involved with the production of musical events for most of his adult life and is currently in his 13th year as manager of the Elkhart County Symphony Association. He is a graduate of Chicago-Conservatory College. Chicago, Illinois.

The criteria

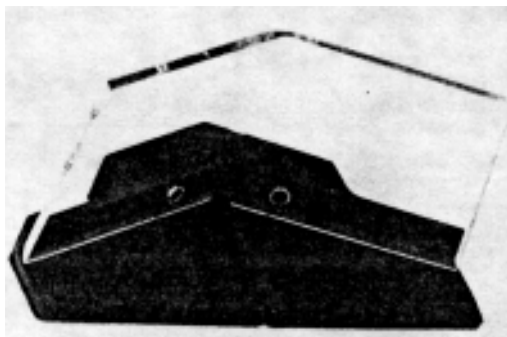
The basic criterion for judging was the perception by the judges of the fidelity of the recording process. Given the musical production and the aims of the recording engineer, did the recording provide a faithful rendition of what was actually going on during the performance? Music content and the quality

Since then I've used PZMs in recording (perfect ambience mike, not my favorite for drums); live (great for piano and brass if the pattern can be shaped so as not to pick up other sounds); and theater (four mikes placed all-the-way downstage, on plexiglass, aiming away from the audience - this approaches miraculous performance for monitoring and foldback purposes).

Farrell Winter Sueslosky, Independent Productions, Long Beach, CA

TWO NEW PZMICROPHONES FROM CROWN

PZM-2.5 [since replaced by the PCC160]



PZM-2.5

This is Crown's first directional PZM, highly recommended for stage-floor pickup of drama, musicals, and opera. The mike capsule is mounted in the corner of three reflective surfaces that shape the polar pattern. Stage dialog is emphasized while audience noise and orchestra sounds are rejected. The 2.5 provides 10dB of forward gain for outstanding "reach." It greatly reduces pickup of room acoustics and feedback. Self-noise is virtually inaudible.

Electronics in the base adapt the unit for phantom powering. The output is balanced, low impedance. The clear plexiglass boundaries are nearly invisible from a distance, and are carefully sized to enhance speech articulation.

PZM-12SP [now the PZM-30D]



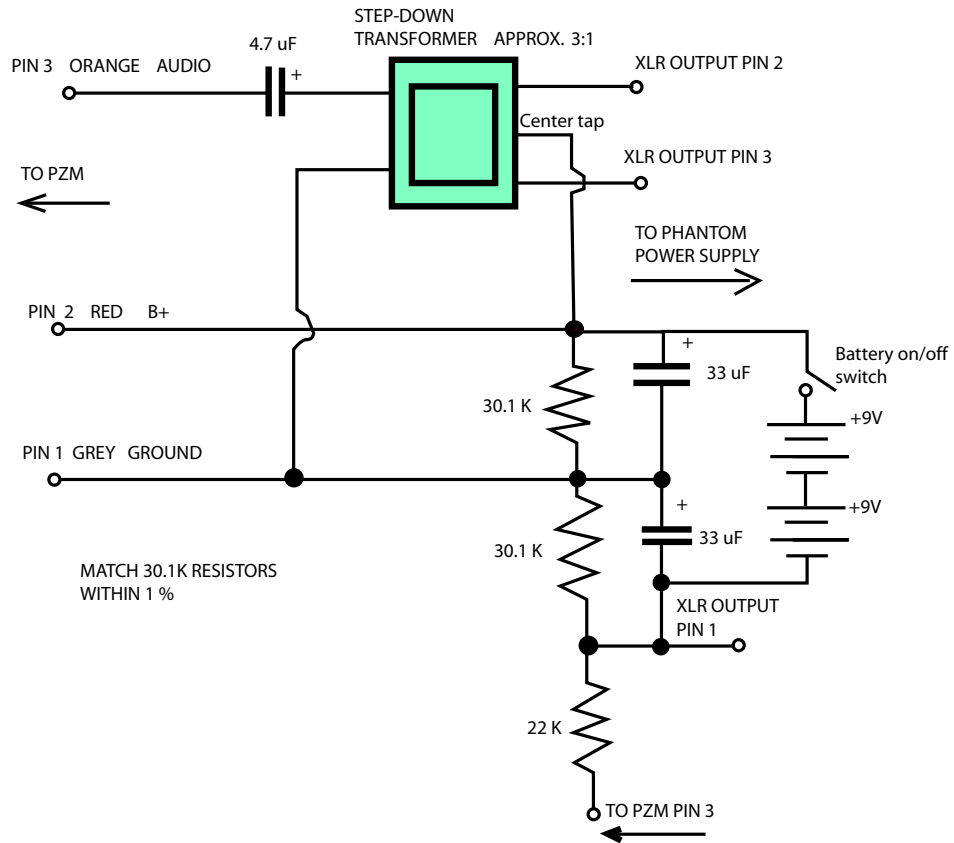
PZM-12SP

The PZM-12SP has a bright, crisp sound like the PZM-30GP, but is designed for somewhat different applications. Since it weighs very little, the 12SP can be safely attached to ceilings or suspended panels. And it includes a handle for easy stand mounting - say, over drums.

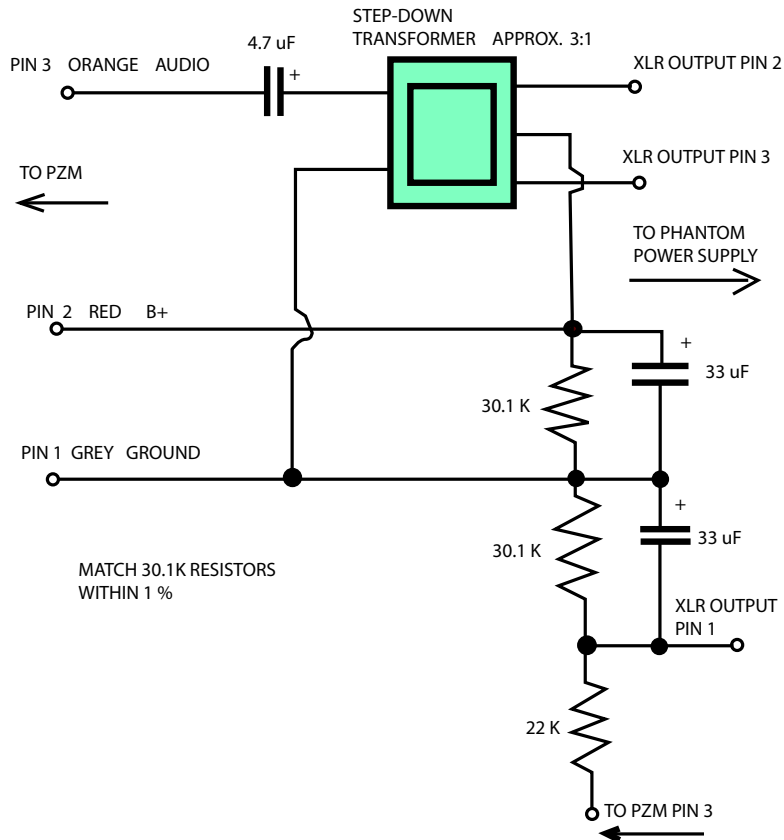
The housing and plate are made of conductive carbon-filled nylon, which provides better RF shielding than other lightweight alternatives. Being non-resonant, this material doesn't "ring" when subjected to shock. The integral handle permits the microphone to be hand-held, stand-mounted, or simply laid on any hard surface. Built-in electronics adapt the unit for phantom powering.

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PX-18 SCHEMATIC

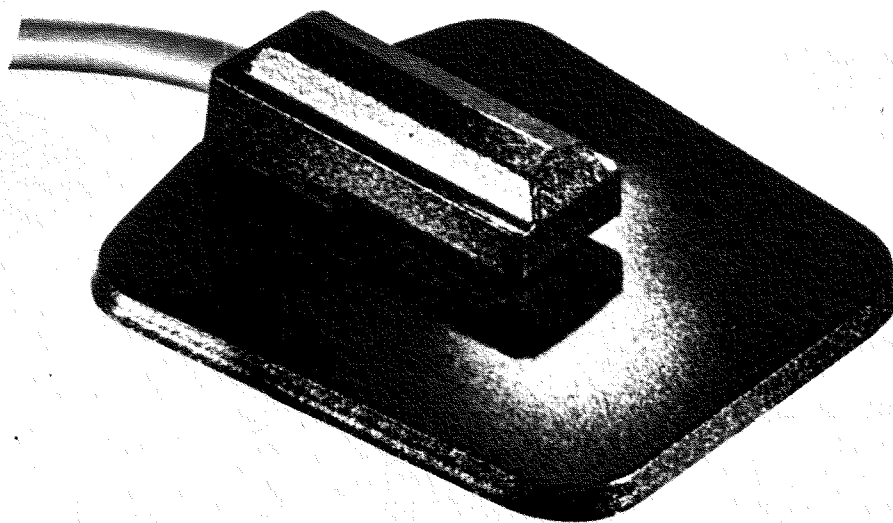


PX-T SCHEMATIC





PZM-2LV PRESSURE ZONE MICROPHONE



PZM-2LV PRESSURE ZONE MICROPHONE

Crown PZM technology has now been expanded to include two convenient clip-on models. Broadcasters and interviewers will especially benefit from its sonic accuracy and excellent reach. These new microphones are also appropriate for instrument pickup or for stage miking when visibility is a problem.

The Crown 2LV can be clipped to any convenient article of clothing. The capsule and plate rotate to four detented positions so the cord will always hang straight down. The baked finish on the 2LV is a non-reflective, scratch resistant gray.

The design of the 2LV microphone, like all Crown PZMicrophones, is based on the Pressure Recording Process™ (PRP™) in which pick-up depends on pressure waves created in the boundary layer defined by the plate. Those familiar with PRP will recognize that the small plate size of these mikes creates a response curve that rolls-off below 300Hz. In normal use, the planes of the body to which the mike is clipped can extend this boundary, reducing the roll-off.

For voice communication (300 to 3KHz), the 2LV provides significant advantages. Two-person interviews can be conducted with one mike, and the interviewer need not worry about mike

position — the 2LV has a hemispheric pickup and will faithfully reproduce both voices.

The Crown PZM clip-on mikes are also resistant to microphonics and can be mounted behind articles of clothing (lapels, scarves, neckties, etc.) with only slight attenuation.

On stage, the 2LV can be used for pickup in areas where an ordinary mike would be too noticeable. For example, the mike can be clipped to a piece of scenery. The microphones are available for wireless miking, either for actors or for mounting on scenery. In addition, the 2LV can be used as instrument pickups.

Power supplies for the PZM-2LV clip-on offer the user and engineer a choice of configurations.

The PX-TL supply has a belt clip for attachment to the user's clothing and a male XLR connector for wiring into a mixer. For maximum mobility, the 2LV includes a Switchcraft #TA4F connector to interface with wireless transmitters.

The PX-18BL is a Crown PX-18B power supply (see applicable specification sheet) with an adapter permitting its use with the 2LV. This power supply also can operate as battery or phantom (switch selectable).

PX-TL TUBULAR Transformer Supply

Weight: 2 ounces.

Dimensions: .750 diameter x 4.00 long (10.16cm x 1.90 cm)

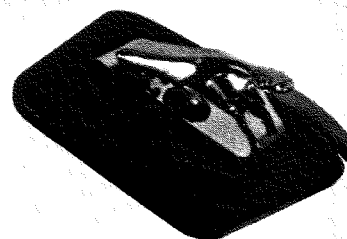
Construction: Steel tube for best shielding and durability possible.

Circuit: High performance active circuit to produce signals with the least possible distortion.

Output: Balanced normally terminated by 1000 ohms or greater.

Phantom Supply: 48 volts for best performance but will operate from 18 to 48 volts.

Connectors: XLR type female input, male output.



clip & rotating disc
assembly

General Specifications

Frequency Response: 50Hz to 15KHz.

Polar Pattern: Hemispherical.

Electrical Impedance: with PX-TL, PX-TLB, PX-18BL - 150 ohm balanced,

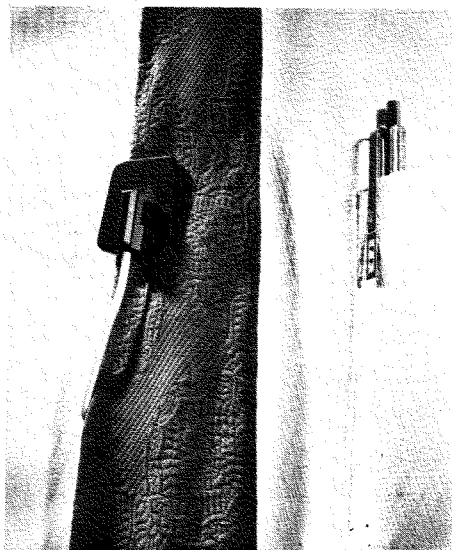
Normal Loading Impedance: 1000 ohms.

Total Harmonic Distortion: 3% at 150dB-SPL.

Signal To Noise: Less than 26dB-SPL (equivalent acoustic input).

Sensitivity: Open circuit voltage Sv - 76dB, 0dB = 1 volt per microbar; power level SP -53dBm, 0dBm = 1 milliwatt per 10 microbars; EIA rating GM -148dB, 0dB = EIA Standard SE-105 August, 1949.

Cable Length: Cord from mike to supply is 3.5 feet.



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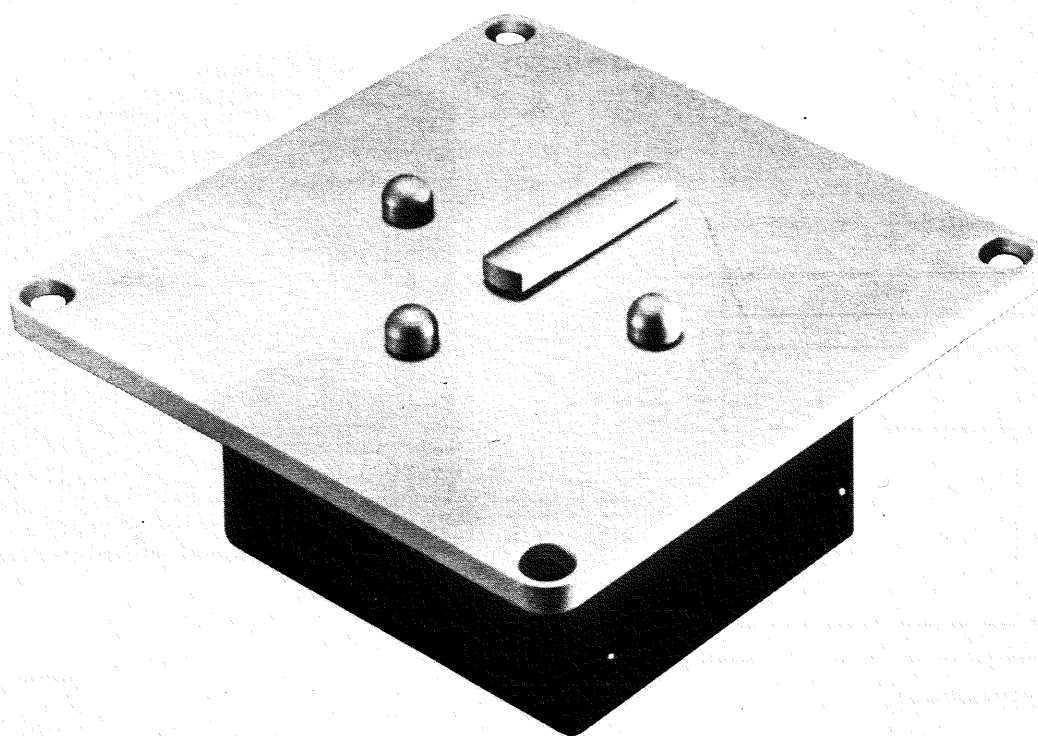
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PZM-20RMG PRESSURE ZONE MICROPHONE



PZM-20RMG PRESSURE ZONE MICROPHONE

The Crown PZM-20RMG microphone is intended for permanent installation in pulpits, lecterns, tables, podiums, judicial benches, desks or other furniture. It eliminates the unsightly and obtrusive appearance of conventional microphones and cables. The 20RMG also optimizes the boundary-layer effect, the key to the Pressure Recording Process™ on which the PZM design is based. Low-frequency response is noticeably improved over a free-field mounting, since the table or podium surface becomes a direct extension of the plate.

Unlike conventional microphones, the 20RMG has a hemispherical pick up. This characteristic, together with its unusual reach, offers the opportunity to reduce the number of microphones needed for conference or interview areas. Tables seating up to eight people will usually require only one 20RMG

microphone. The microphone also allows greater freedom of movement on the part of speakers.

The 20RMG includes small projections on the plate which serve as guard-posts to prevent pieces of paper from sliding under the capsule. The sensitivity of the microphone is high enough that covering it with one or two pieces of paper will only faintly attenuate the sound. Large items placed near the mike may tend to shape the pick up area, attenuating pickup from sources behind the obstruction.

The 20RMG fits a $4\frac{1}{2} \times 4\frac{1}{2}$ cutout with $\frac{1}{4}$ " radial corners. A standard $\frac{1}{4}$ " router can be used to make the recess.

Power supply for the Crown 20RMG is built into the mike chassis and is phantom type only. An active supply is not available for the 20RMG. The mike is supplied with a male XLR connector.

General Specifications

Frequency Response: 50Hz to 15KHz.

Polar Pattern: Hemispherical.

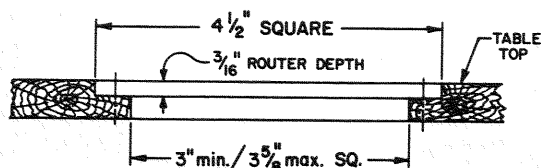
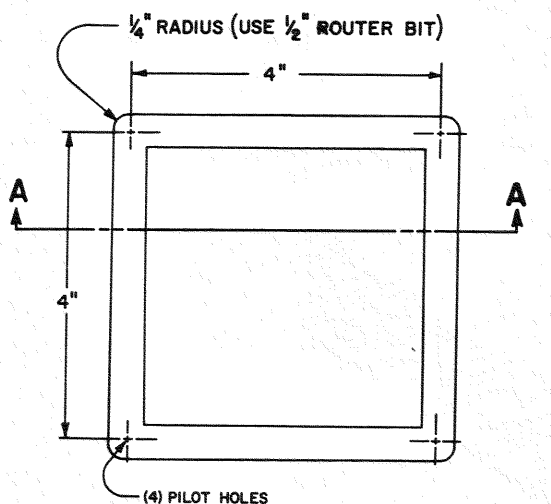
Electrical Impedance: 150 ohm balanced.

Normal Loading Impedance: 1000 ohms.

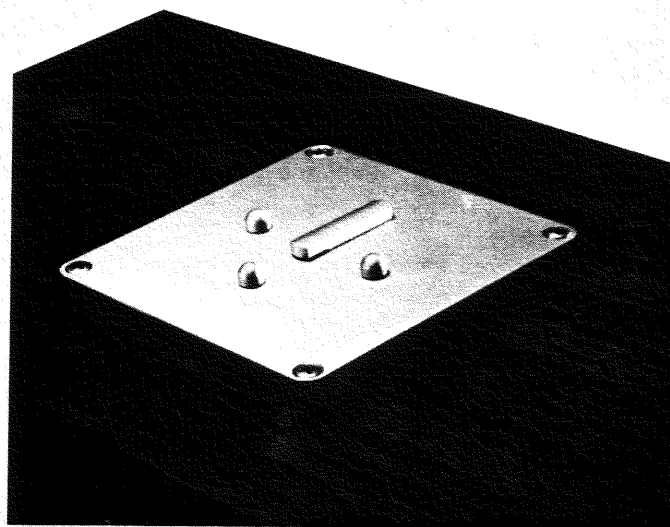
Total Harmonic Distortion: 3% at 150dB-SPL.

Signal To Noise: Less than 26dB-SPL (equivalent acoustic input).

Sensitivity: Open circuit voltage Sv - 76dB, 0dB = 1 volt per microbar; power level SP -53dBm, 0dBm = 1 milliwatt per 10 microbars; EIA rating GM -148dB, 0dB = EIA Standard SE-105 August, 1949.



SECTION **A-A**
PZM-20RMG SUGGESTED MOUNTING




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