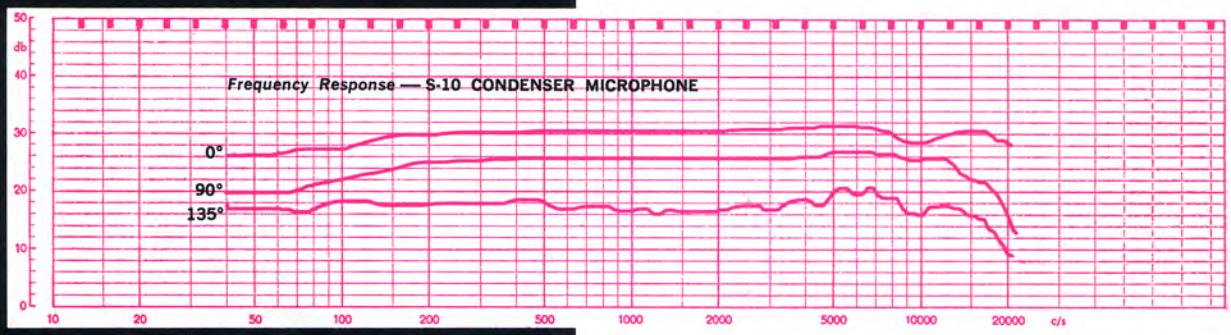
Introducing

S-10

SYNCRØN

SOLID STATE / CONDENSER MICROPHONE

Cardioid Pattern / Self Contained with Lifetime Polarization



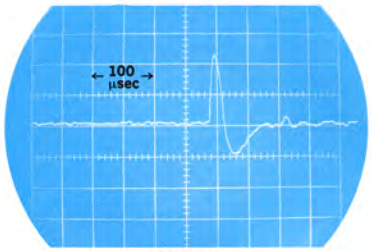


FIGURE 1

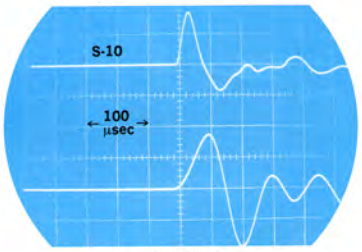


FIGURE 2

WHY CONDENSER ... ?

Many dynamic microphones entering the market in recent years appear to have all the qualities of condensers. In some cases their frequency curves show linear responses from 30 to 18,000 Hz. They also claim performance comparable to condensers due to new diaphragm materials. Why is it then that professional recording studios are filled with condenser microphones? Why is it that the condenser microphone is used as a standard measuring tool against which all other types are compared? Why is there such a startling difference between the condenser and other types in A-B comparisons?

Much of the answer lies in the microphone's response to *transients* — the attack of a bow on a string, the strike of a drum, the nuances of a human voice.

A dynamic microphone diaphragm must be massive in order to achieve a low enough resonant frequency to reproduce the lower end of the audio range. This is true for all magnetically operated microphones, including ribbons. The ribbon type achieves its low resonant frequency by its great compliance which results in a fragility too great for many applications.

Condenser types, on the other hand, have resonant frequencies well above the audio spectrum, permitting the lowest possible diaphragm mass. The condenser's diaphragm is not required to move a voice coil as in the dynamic nor is it surrounded by a large magnetic structure as in the ribbon, *it is free to follow the sharpest audio transients.*

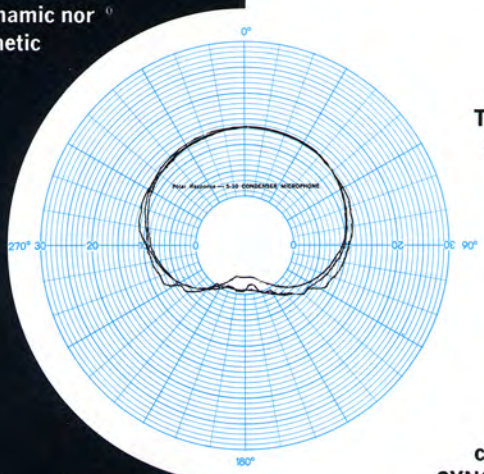
THE DIFFERENCE

In order to measure the transient response of a microphone, it is necessary to subject it to the severest of all acoustic transients — the shock wave, in this case produced by an electrical discharge. The acoustic transient produced has a risetime of less than one micro-second. By observing the output of a microphone subjected to such a shock wave, its transient response can be determined.

In order to portray this shock wave as accurately as possible a special pressure condenser microphone was built using an extremely small, light diaphragm with linear frequency response well beyond 200,000 Hz. Figure 1 shows the characteristics of the shock wave as measured by this special microphone in an anechoic chamber.

Figure 2 is a dual beam presentation of the response of two microphones to the same shock wave at the same instant. The upper trace shows the response of the new SYNCRØN S-10 condenser microphone. It shows a risetime of 15 micro-seconds and an insignificant amount of ringing and overshoot. The lower trace shows the response of a leading cardioid dynamic microphone at the same instant. The risetime is 40 micro-seconds and a significant amount of ringing and overshoot is evident.

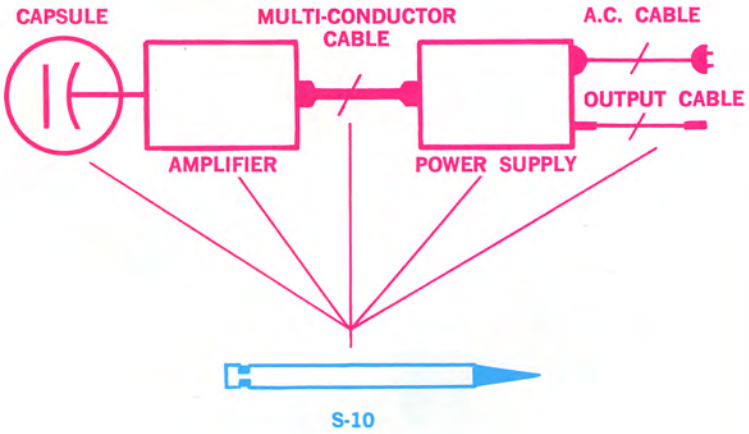
Comparisons of the S-10 with virtually all leading dynamic microphones have produced essentially the same results as shown here — graphic proof that frequency response curves do not tell the whole story . . .



UNIPOLAR RESPONSE

The S-10's on-axis frequency response shows all the smoothness and wide range expected of condenser microphones. Just as important, the frequency response for off-axis sounds is very linear. The polar pattern pictured here indicates a deviation of no more than 2 dB. from the on-axis response for frequencies of up to 10 kHz. These curves were produced by an actual S-10 microphone in an anechoic chamber and are not artists' conceptions. Each S-10 microphone produced is tested under identical conditions and an individual response curve is furnished with it. For a nominal charge, S-10 owners may return their microphones to SYNCRØN at any time for verification of this performance

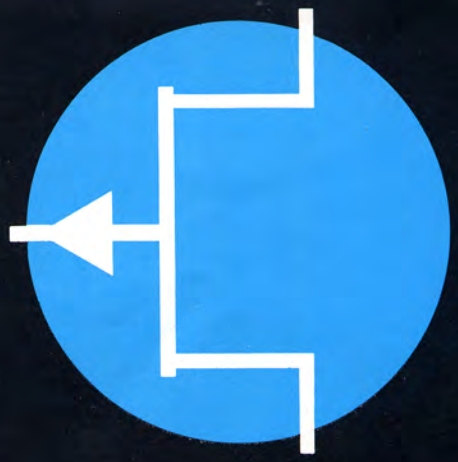
SELF-CONTAINED



SYNCRØN's employment of the latest semiconductor and battery technology obsoletes elaborate condenser microphone "systems". The external power supply is eliminated, enabling the S-10 to be used with the ease of a dynamic microphone. The condenser element is *permanently* polarized at a potential of 62 volts. Electronic circuitry is powered by a single inexpensive mercury battery encased in the microphone body. Battery life is 1,000 hours minimum with simple insert replacement. The S-10 can be used with assurance on critical "no second chance" pickups. There's no tube filament to suddenly burn out. The end of battery life is signaled by a slight increase in distortion, giving the user several hours advance warning at replacement time.

THE SOUND

The first and final analysis of microphone quality concerns *sound*. The clear superiority of condensers has been proven through the years with their universal use by recording centers, film studios, broadcast operations, orchestras, vocalists, and everyone sensitive to highest fidelity. The S-10 fulfills the really important requirements: superiority in the lab and superiority in the studio.



SOLID STATE

The S-10 Field Effect Transistor circuitry has noise performance superior to tubes — and the obvious solid state advantages of longevity, small size, and low power consumption without the necessity of resorting to complicated RF circuits. Microphonics and heat generation are entirely eliminated. In addition, the inherent linearity of the FET makes possible a dynamic range unequalled by tubes or transistorized RF circuits, thus eliminating the need for costly overload protection devices. The S-10 is not encumbered by over-design or trick circuits. The emphasis is on simplicity, quality, and reliability.

CONVENIENCE

Battery replacement is accomplished easily in a matter of seconds without the use of tools. The single mercury battery — Mallory TR-126 or equivalent — is easily obtained locally. Substitution of a three-wire shielded cable adapts the S-10 for remote on-off switching, and the addition of an S-104 battery bypass enables operation via an external source of 8-9 volts when inaccessibility or continuous service are factors.

SYNCRØN

S-10 Microphone SPECIFICATIONS

Type:	Pressure gradient, condenser
Frequency Response:	40 — 20,000 Hz ± 3db
Capsule Capacitance:	60 pf
Diaphragm:	Mylar
Directional Characteristic:	Cardioid at all frequencies, 20 db front-to-back ratio
Overload Protection:	None needed
Total harmonic distortion:	Less than 0.5% to 124 db SPL at all frequencies
Output Level, 200 ohm load:	−53 dbm re 10 dyne/cm²
Noise:	Less than 27 phon, (DIN 45405) Less than 23 db SPL (DIN 5045)
Output Impedance:	200 ohms nominal, characteristics unaffected by any load from 30 ohms to ∞
Amplifier:	Field Effect Transistor
Microphone Connector:	4 pin XLR type (serves as on-off switch)
Cable:	2 wire shielded, stripped and tinned, 20 feet
Power Supply:	Single TR126 mercury battery, life — 1000 hours
Mount:	5/8" — 27 swivel stand mount
Finish:	Satin nickel
Dimensions:	7/8" diameter x 7 3/8" long
Weight:	9 oz. with battery

PRICE: $260.00 with battery, carrying case, swivel mount, and cable.

Data subject to change without notice.

Litho in U. S. A. 670609

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ACCESSORIES

S-101 WINDSCREEN

Prevents wind noise and effectively reduces plosive speech sounds without affecting microphone characteristics. 100% nylon construction. Weight: 1/5 oz. Diameter: 2 inches.

Price: $14.95

S-102 DESK STAND

A heavy brass casting provides maximum stability on three padded legs. Unique swivel band permits finger-tip positioning — 360° horizontally, 150° vertically. Rich textured vinyl finish. 4 1/4" high, 10 1/2" long, 7 1/4" wide. Weight: 1 3/4 lbs.

Price: $19.95.

S-103 SUSPENSION

Eliminates vibration and shock problems. Used on floor stands, booms, and desk stands. Construction: brass. 4" diameter. Equipped with swivel mount 5/8" — 27 thread. Weight: 8 oz.

Price: $29.95

SYNCRØN AND THE FIELD EFFECT TRANSISTOR

Syncrøn Corporation was formed by a group of young engineers from broadcasting, recording, and acoustical instrumentation fields with a common primary interest — quality condenser microphones. With all the fast-breaking developments of the space age, somewhere they felt, in the melange of power supplies, tubes, fuses, cables, expensive foreign connectors and high price tags, there must be a better way.

With the United States' active leadership in Field Effect Transistor technology it was only natural that an American company would be the first to use the Field Effect Transistor successfully in a condenser microphone. Upon the introduction of commercial FETs in early 1963, Syncrøn built the first condenser microphones to use such devices. The cost of the FETs that would meet Syncrøn's rigid requirements was extremely high, so the microphones remained in the laboratory where they were subjected to nearly a year of intensive field-testing. The inevitable price break came in 1964 whereupon Syncrøn introduced its FET condenser microphone — the first commercial product to employ a Field Effect Transistor in any form. Syncrøn engineers have continually worked to perfect the use of the Field Effect Transistor in condenser microphones. The Syncrøn S-10 is the result of this clear leadership in modern condenser microphone development.

SYNCRØN

VEGA ELECTRONICS CORPORATION
2115 DE LA CRUZ BLVD. • SANTA CLARA • CALIFORNIA 95050
A Subsidiary of Computer Equipment Corporation (408) 243-9777