LOU BURROUGHS

MICROPHONE FACTS

for the operating engineer

from Electro-Voice®

ELECTRO-VOICE, INC.
BUCHANAN, MICHIGAN
PHONE OX 5-6831

The uses being made of microphones have been so greatly diversified and extended by new Electro-Voice developments that we have decided to devote this issue of Microphone Facts to a description of some new models and accessories. By acquainting yourself with these new products and their uses you will discover some applications for which you may have immediate use.

THE NEW 654A

Our popular Model 654 microphone has been re-designed to make it even more versatile than before, thus keeping step with the ever-broadening variety of uses being made of microphones.

Replacing both the Model 654 and the 646, the new 654A is provided complete with lanyard and adapter (neck cord assembly); a Model 300 stand adapter is furnished to permit use on a stand. Without either adapter it is an ideal hand-held unit. The 654A, one of the first two E-V microphones to be clad in the new, improved finish, wears a durable coat of gold-flecked gray epoxy. The new finish, a warmer tone than the one formerly used, is highly resistant to chipping and peeling. A Cannon XLR snap-latch connector adds to the new microphone's utility.

The familiar grille shape has been altered to accept an additional dust and pop filter which gives it longer life and greater protection against diaphragm damage. This filter is made of our new Acoustifoam®., a material found to be superior to any other for this purpose. The output level, frequency response, and polar pattern of the 654A are identical to those of the 654. Further information on this new microphone may be found on the enclosed data sheet.

THE NEW 649B

From the time we originated the first lavalier microphone, the size and weight have been steadily reduced without sacrifice of frequency response and level. With the introduction of the model 649B much has been accomplished in these respects. The length has been reduced to about half that of the 649A, and the diameter remains the same. The weight has been reduced from 53 grams to 31 grams. The output level and frequency response of the 649B remain the same as those of the 649A. The grille screen has been flattened to reduce the possibility to rubbing against clothing to cause noise.

We are continually searching for ways to improve. The 649B and 654A, for example, feature the new chip- and peel-resistant epoxy finish. In addition, a new spring wire lanyard adapter was designed to minimize the size and weight of the 649B and to allow for the complete detaching of the lanyard.

A data sheet on this new microphone, giving additional information, is enclosed. The 649B may be inspected at your local distributor, where it is now in stock.

THE DEVELOPMENT OF ACOUSTIFOAM

A Superior Wind Screen Material

After a two-year effort to produce a wind screen material superior to any now in use, we feel that we have found, in the new Acoustiofam exactly what we were looking for. During this development program a large number of materials were tested and discarded. Most of them produced sounds all their own when wind passed over their surfaces. All types of cloth tested were found to have this fault. The fact that these materials had to be stretched over some kind of supporting frame caused the surface to be rigid and tuned to a frequency audible to the microphone it surrounded. This problem was common to all cloth-covered rigid-frame types.

After these investigations, we realized that a new material would have to be developed to reduce this surface noise to be able to produce an effective reduction in wind noise beyond that already accomplished.

In Acoustifoam, a soft, porous material proved to be the solution to several problems. Through the use of Acoustifoam and our model 513 filter it has been possible to eliminate practically all the microphone pickup of wind screen surface noise. Due to the soft, low-resonant quality of the new material, a large percentage of surface noise was held below 100 cps, and by using a 513 filter to eliminate response below 100 cps, the surface noise problem has been solved to a greater extent that was possible in the past.

For controlling noise caused by wind striking the diaphragm, Acoustifoam again proved superior. Due to the thickness and the labyrinth of connecting holes in the material, the pulsing action of gusty wind is so greatly reduced that it does not cause distortion of sound reaching the microphone. Also, the thickness of Acoustifoam made it unnecessary to employ a costly supporting metal frame as would have been necessary with cloth.

During our tests of cloth-covered wind screens we found that cloth dense enough to materially reduce wind blast was so dense that a cavity was formed around the microphone, seriously altering its directivity. Most cloth wind screens almost completely destroyed the directivity of the microphone. Another great advantage of Acoustifoam is the elimination of any cavity effect that would degrade polar response or directivity of a unidirectional microphone.

MODEL 327 WIND SCREEN

The model 327 is the long-awaited screen for the model 642, full details on which will be found in the enclosed data sheet. The cross section sketch shows how it is assembled. As you see, the only metal supports are the shock absorber frame, number 324, and the number 74321 coupler for joining the front and center Acoustifoam sections.

There are three Acoustifoam sections, replacements for which may be purchased as a complete kit or in separate sections.

The 327 will not alter the response or directivity of the 642 in any way. Because of this, we find several users who do not remove it when working indoors as it provides excellent mechanical and dust protection.

The new windscreen, expected to be available in November, will sell for $60.00, user net.

The separate components that make up the 327 are as follows:

#324	Shock Absorber	36.90 net
#326	Wind Screen Kit	26.10 net
Individual wind screen components		
#74468	Front Acoustifoam section	6.38 net
#74469	Center " "	7.72 net
#74470	Rear " "	7.50 net
#74321	Wind screen assembly ring with #28041 rubber harness attached	4.50 net
#327	Complete Shock absorber and Wind screen assembly	60.00 net
#28041	Rubber shock absorber harness	2.25 net

Refer to the enclosed assembly instruction sheet.

MODEL 355 WIND SCREEN

The model 355 wind screen was designed for use on the microphones listed on the enclosed data sheet. It is made entirely of Acoustifoam, as the cross section sketch shows. The sleeve was made large enough to cover the entire length of a 655C for hand-held use. Because of this design feature, a ring worn on the finger will not click against the microphone case, and noise from contact with other hard materials will be reduced.

When a microphone is to be mounted on a stand and the model 300 stand adapter is attached, the sleeve will need to be shortened to any desired length up to about two inches. It will require this much length to hold the ball part securely.

The 355, now available at your distributor for $6.60 net, was designed to greatly reduce wind blast when used with the model 513 filter. The model 355 wind screen will in no way affect the response of any microphone with which it may be used.

ACOUSTIFOAM IN BULK

Acoustifoam is also available in sheets, 56" x 72" x 1/4" for those who wish to construct their own wind screens. The net price will be thirty cents per square foot, or $8.40 for the full sheet. Acoustifoam is in stock, ready for delivery.

Cordially yours,

ELECTRO-VOICE, INC.

Lou Burroughs

L. R. Burroughs
Vice President
Broadcast and Recording Equipment

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FEATURES

- Versatile—use in hand, on stand, or as lavalier
- Rugged—for use under any operating conditions
- Professional Quality— smooth response, from 50 to 15,000 cps

The Electro-Voice Model 654A is a dynamic, omnidirectional type microphone designed for professional use, FM, AM, and TV broadcasting, studio remote, PA, and recording. Its slim design is made possible without the necessity for closely associated auxiliary equipment. Wide frequency response, broad pickup range, and light weight make it ideal for TV staging and for pass-around use in audience participation. Used with the convenient accessory neckcord, the 654A is ideal for lavalier use. This microphone can be worked from any direction with only negligible frequency discrimination.

The Model 654A is supplied with lavalier neckcord and the Model 300 stand adaptor; thus, it can be used with equal convenience in the hand, on a stand, or as a lavalier.

This microphone features the exclusive nonmetallic Electro-Voice Acoustalloy® diaphragm which permits smooth response over a wide frequency range and withstands high humidity, temperature extremes, corrosive effects of salt air, and severe mechanical shocks. It is practically indestructible with normal use.

The case of the Model 654A is extruded aluminum, reinforced at the connector end by a steel insert. This rugged construction makes possible dependable operation under all conceivable operating conditions. The microphone is finished in nonreflecting grey.

SPECIFICATIONS

Type: Dynamic
Frequency Response: Uniform from 50 to 15,000 cps
Polar Pattern: Omnidirectional, becoming slightly directional with increase in frequency
Output Level: -57 db; 0 db equals 1 mw/10 dynes/cm^2
EIA Sensitivity Rating: -151 db
Impedance: Matches all low impedances, 50 through 250 ohms. Line Balanced to ground and phased
Diaphragm: Electro-Voice Acoustalloy ® protected by magnetic shield
Magnetic Circuit: Alnico V magnet in a non-welded circuit
Cable Connector: Cannon XLR-3-11
Finish: Non-reflecting grey
Case Material: Extruded Aluminum
Dimensions: 6-15/16" x 1-1/8" dia.
Net Weight: 7 oz., less cable
Cable: 18 ft., 3-conductor shielded, synthetic rubber jacketed, broadcast type
Standard Accessories: Model 300 stand clamp (Adapts to 1/2" or 5/8" -27 pipe thread) lavalier neckcord.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The microphone shall be an omnidirectional, dynamic type with uniform response from 50 to 15,000 cps. The diaphragm shall have a magnetic shield to prevent dirt and magnetic particles from reaching the diaphragm. The microphone shall match all standard low im-

pedances, 50 through 250 ohms. Line shall be balanced to ground and phased.

The output level shall be -57 db with 0 db equalling 1 mw/10 dynes/cm^2. EIA sensitivity rating shall be -151 db. The magnetic circuit shall be non-welded and shall employ an Alnico V magnet.

The case shall be extruded aluminum. The microphone shall have a diameter of 1-1/8", a length of 6-15/16"; and a net weight of 7 ounces, less cable. Finish shall be non-reflecting grey. An 18-ft., three-conductor, shielded, synthetic rubber jacketed broadcast-type cable shall be provided. Built-in cable connector shall be a Cannon XLR-3-11 or equivalent.

The microphone shall be equipped with a stand clamp with 1/2" pipe thread, a 5/8" -27 thread adaptor, and a lavalier neckcord.

Electro-Voice Model 654A is specified.

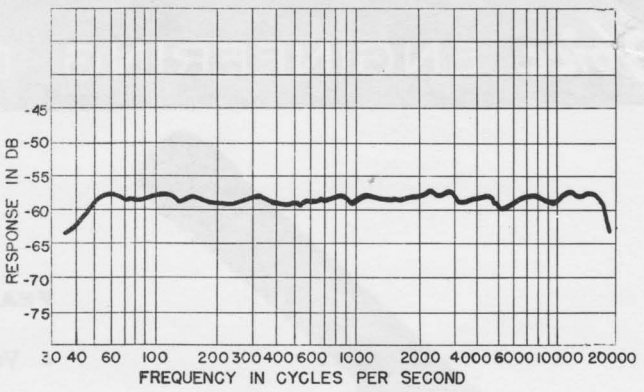


Figure 2

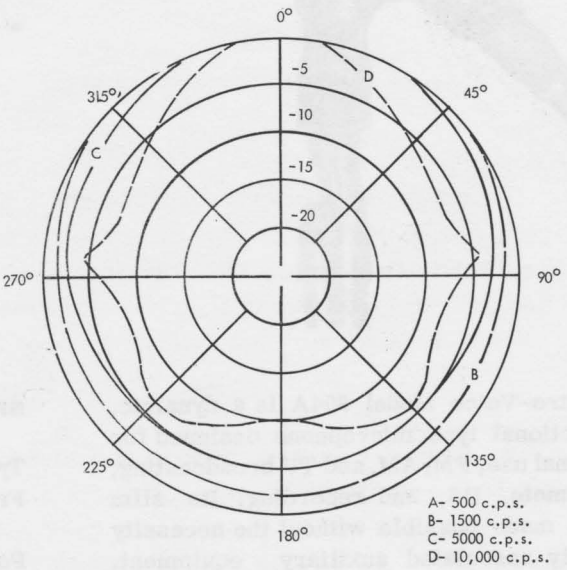


Figure 3

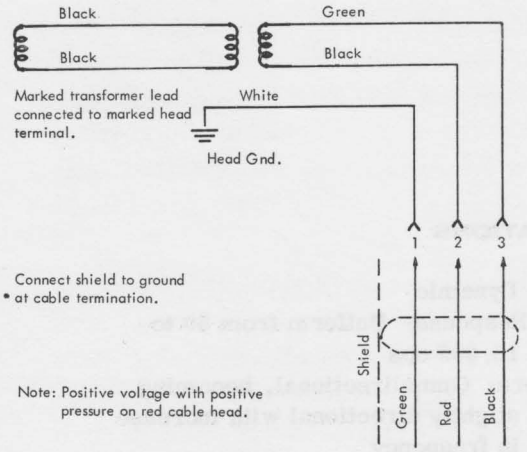


Figure 1

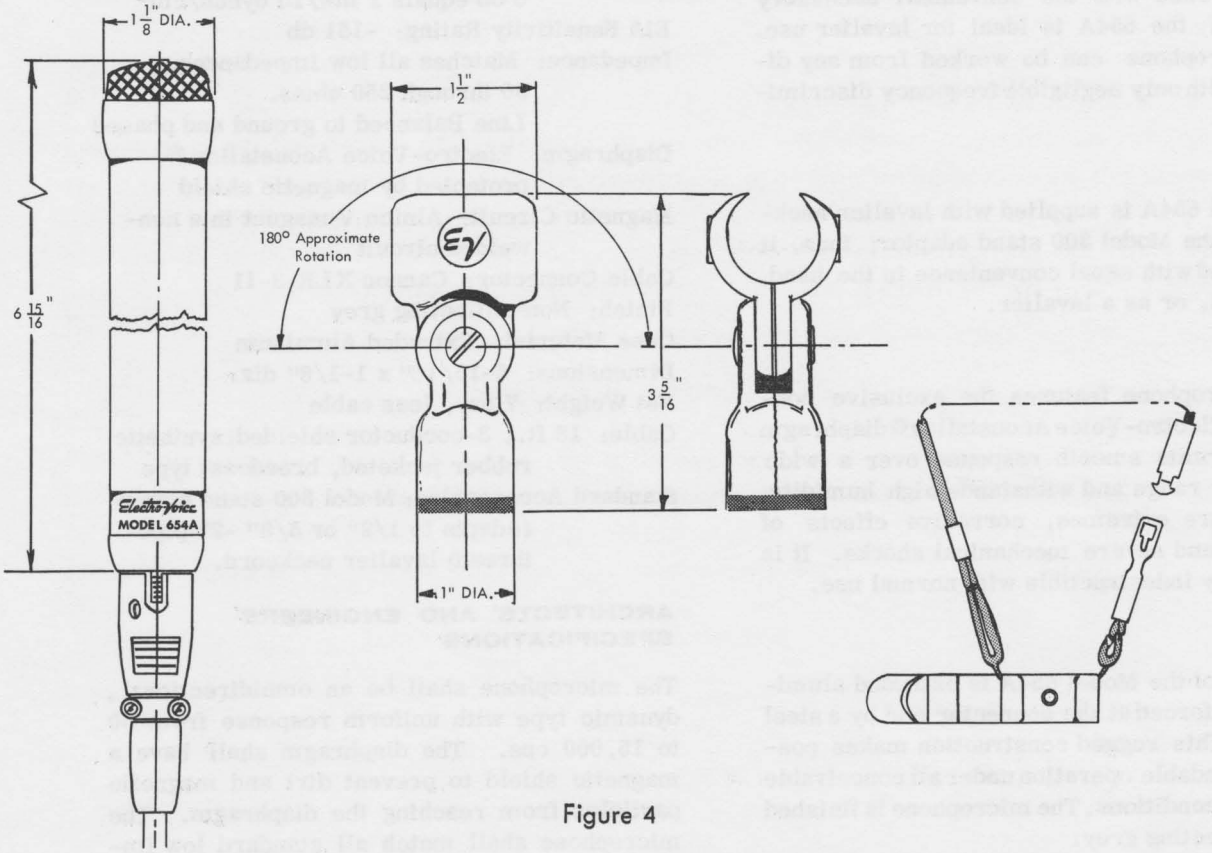
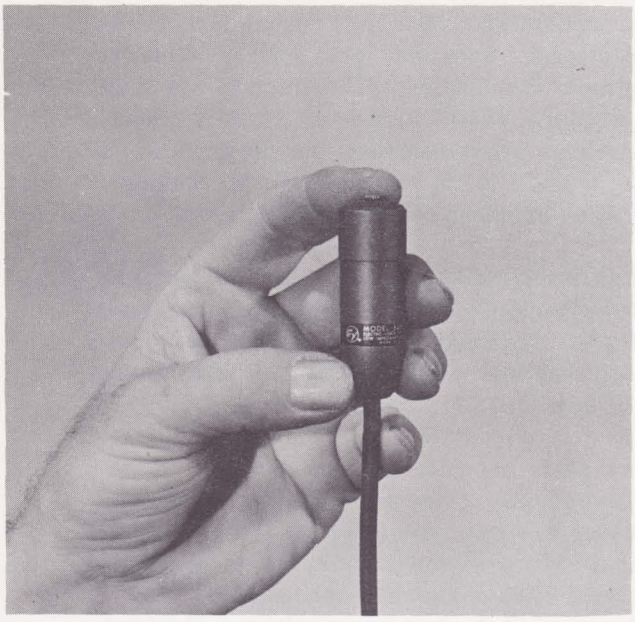


Figure 4

MODEL 649B MICROPHONE



FEATURES

- Miniaturized, high quality dynamic
- Easy to use
- Unobtrusive
- Rugged

SPECIFICATIONS

Type: Dynamic
Frequency Response: See Figure 2
Impedance: Matches all low impedance 50 through 250 ohms. Line balanced to ground and phased
Output Level
Low Impedance: -61 db
(0 db = 1 mw/10 dynes/cm^2)
EIA Sensitivity Rating: -155 db
Polar Pattern: Omnidirectional (See Figure 3)
Diaphragm: Acoustalloy®
Magnetic Circuit: Employs Alnico V and Armco magnetic iron in a nonwelded circuit
Case: High tensile, lathe-turned aluminum
Finish: Non-reflecting gray
Dimensions
Diameter: 3/4 inch
Length: 2-1/4 inch (See Figure 1)
Net Weight: 31 grams, less cable and neck cord assembly
Cable: 30-foot, two conductor, shielded, brown synthetic rubber jacketed cable
Cable Connector: No connector at microphone terminal
Standard Accessories: Neck cord assembly, belt clip, stand adapter, and protective suede pouch

WARRANTY

The model 649B, like all Electro-Voice professional microphones, is guaranteed UNCONDITIONALLY against malfunction for two years from date of purchase. Within this period, Electro-Voice will repair or replace, at no charge, any 649B microphone exhibiting malfunction, regardless of cause, including accidental abuse. In addition, all Electro-Voice microphones are warranted without time limit against defects in workmanship and materials. Defective products will be repaired or replaced at no charge if returned to the factory prepaid.

DESCRIPTION AND APPLICATIONS

The Electro-Voice model 649B miniature lavalier microphone is the smallest, lightest-weight, wide-range, dynamic microphone manufactured today. Originally created for TV, this miniature microphone can be held in the hand, mounted on a stand, or hung on a neck cord leaving hands of the announcer or performer free. It is excellent for audience participation, man-in-the-street interviews, panel shows ... wherever microphone concealment, individual mobility, or free movement of the hands is desired. No closely associated auxiliary equipment is required.

The model 649B features the exclusive Electro-Voice Acoustalloy® diaphragm. This nonmetallic diaphragm withstands high humidity, temperature extremes, corrosive effects of salt air, and severe mechanical shocks. It is practically indestructible with normal use.

The 649B is equipped with three specially designed accessories intended to increase the usefulness and mounting convenience of the microphone - a newly designed lavalier cord assembly, a belt clip, and a stand mounting adapter. The lavalier cord assembly is supplied attached to the microphone, ready for use. Note that the flexible plastic cord adapter may be removed from the microphone, if desired, by firmly pulling it over the front of the microphone. Alternately, it may be pushed free of the microphone and allowed to slide down the cable, the neck cord being retained separately for future use. In this case, the cord adapter will be retained permanently and cannot be lost since it cannot escape from either end of the cable. (In the event the cord is misplaced, an ordinary shoestring may be employed after simply tying a knot in each end.)

The belt clip, when used in conjunction with the

lavalier cord assembly, provides effective control of cable placement and prevents unwanted mechanical noise from being transmitted up the cable to the microphone. After inserting the cable in the clip as shown in Figure 1, simply attach it to the belt at one side. It may also be clipped over the edge of a pocket, etc..

The stand mounting adapter may be used to attach the 649B to any conventional microphone stand with 5/8"-27 thread. The built-in swivel permits adjustment of the microphone to any desired angle. Design of the adapter allows the microphone to be inserted or removed readily as desired.

A protective suede pouch is also provided to shield the microphone from filings, airborne magnetic particles, etc., when not in use.

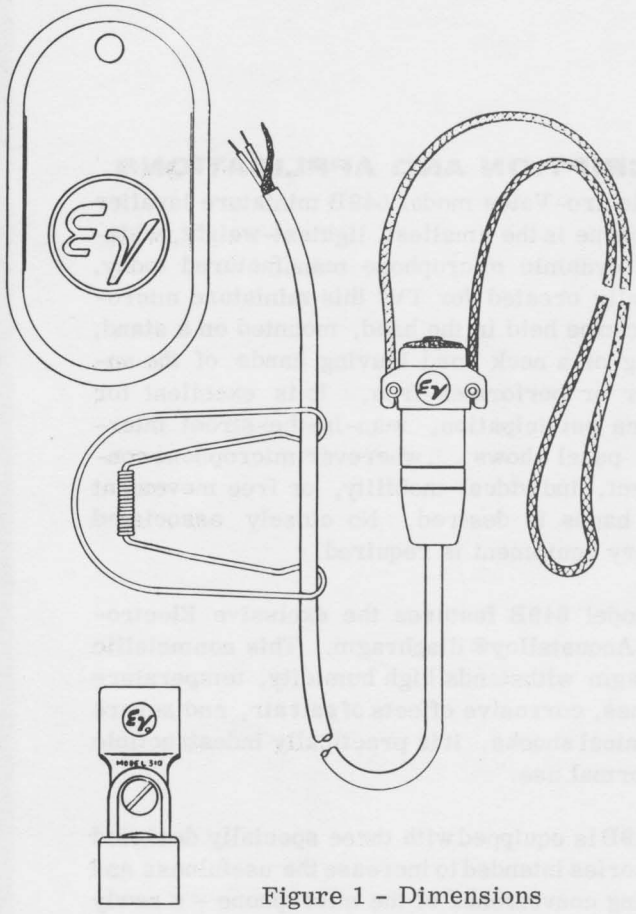


Figure 1 - Dimensions

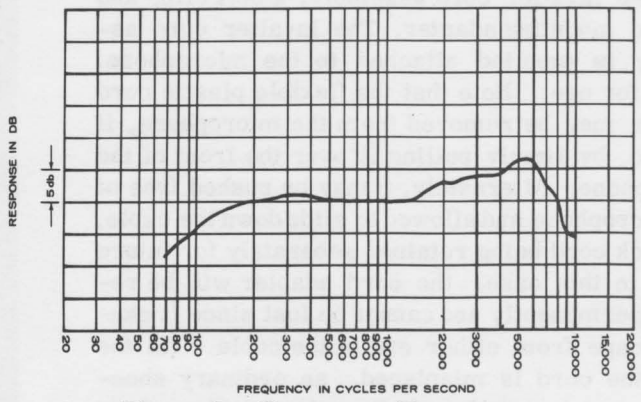


Figure 2 - Frequency Response

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The microphone shall be the Electro-Voice model 649B or equivalent. The microphone shall be an omnidirectional, dynamic type with nonmetallic Acoustalloy® diaphragm. The microphone shall have a magnetic shield to prevent dust and magnetic particles from reaching the diaphragm. A response from 70 to 10,000 cps shall be obtained. Line shall be balanced to ground and phased.

The output level shall be -61 db with 0 db equalling 1 mw/10 dynes/cm^2. EIA sensitivity rating shall be -155 db. The magnetic circuit shall be a non-welded circuit and employ Alnico V and Armco magnetic iron.

The case shall be made of high-tensile, lathe-turned aluminum. The microphone shall have a diameter of 3/4 in., a length of 2-1/4 in., and a net weight of 31 grams without cable or neck cord assembly. Finish of the microphone shall be non-reflecting gray. A 30-foot, two conductor, shielded, brown, synthetic rubber-jacketed cable shall be provided. The microphone shall be supplied with a neck cord, belt clip, stand adapter, and protective suede pouch.

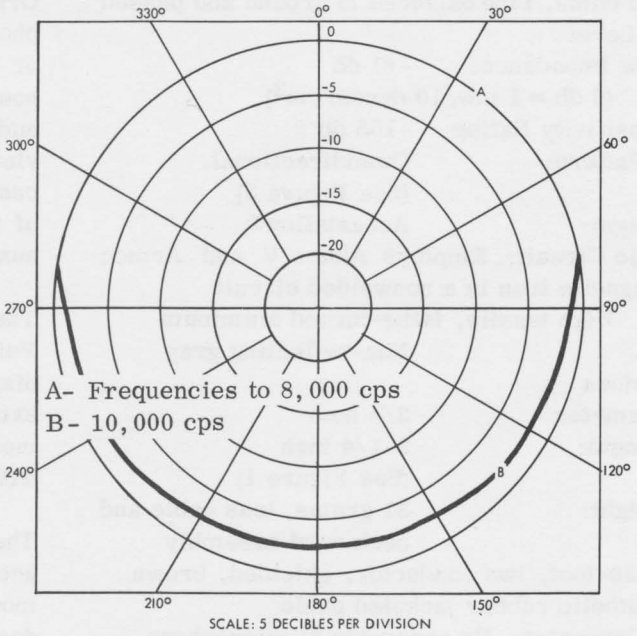


Figure 3 - Polar Pattern

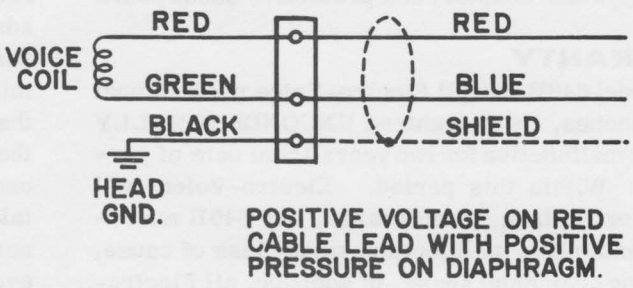
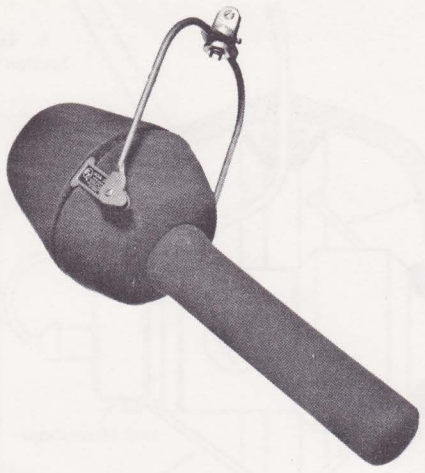


Figure 4 - Schematic

Model 327 Windscreen



FEATURES

- Reduces wind effect
- Does not change frequency response
- Provides protection against mechanical shock damage

The Electro-Voice Model 327 is composed of the Model 324 Shock Absorber and the Model 326 Wind Screen Kit.

The Model 327 is designed for use with the Model 642 microphone. It will eliminate wind blast (distortion of sound caused by wind) when used in conjunction with the Model 513 filter. The wind screen sections are fabricated of Electro-Voice Acoustifoam*. Acoustifoam as it is used in the Model 327 will have no effect on the frequency or polar response of a Model 642 Microphone.

The Model 327 also provides excellent protection from dust and air borne iron particles. Direct sunlight will, in time cause Acoustifoam to change its color. This does not in any way affect its performance, and should not be cause for concern. If this windscreen becomes soiled or contaminated, it may be cleaned by rinsing in clear water. If severely soiled, use a mild soap, rinse in clear water, and gently squeeze out excess water.

While packed in its carton, Acoustifoam may be compressed until its original shape is changed. It will rapidly regain its form when removed from the confines of the carton.

SPECIFICATIONS

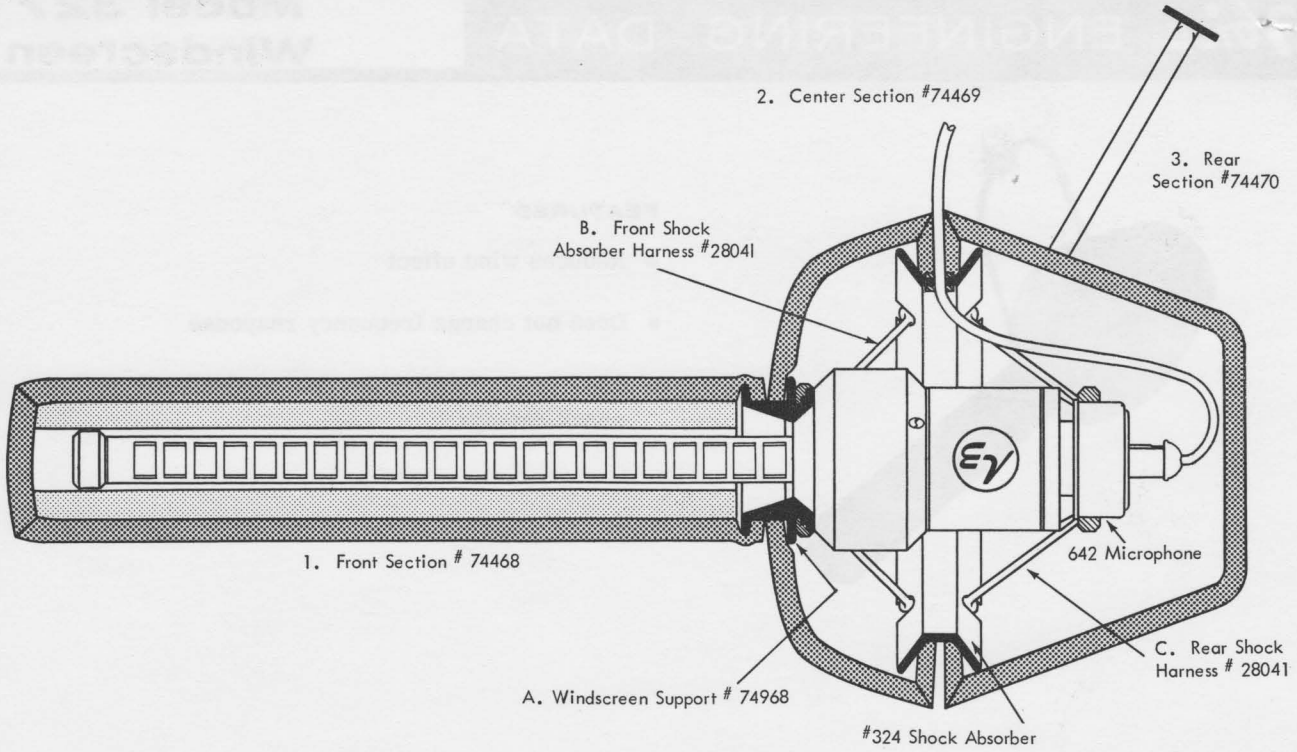
MATERIAL:	Acoustifoam*
COLOR:	Charcoal Gray
WEIGHT:	1 1/2 lbs.

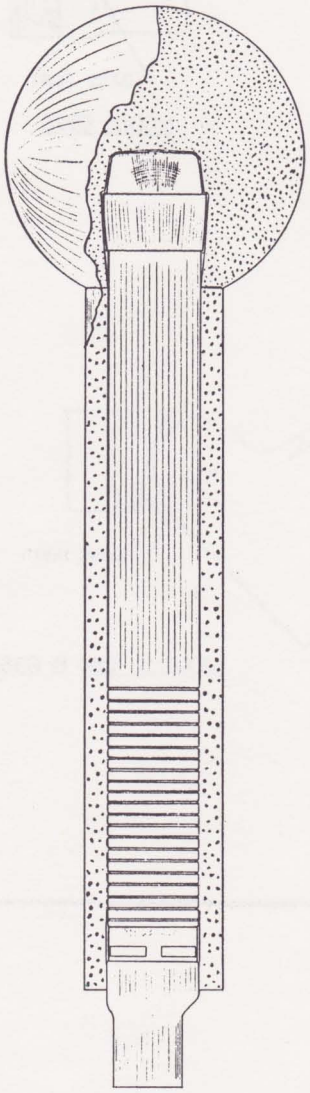
1. Insert windscreen support into front shock absorber harness.
2. Suspend Model 642 Microphone between front and back (B&C) of shock harnesses.
3. Apply center section of windscreen (#2) as indicated.
4. Slip front section (#1) into place over microphone.
5. Place rear section (#3) over back of microphone.

IMPORTANT

TO ACCOMPLISH THE GREATEST POSSIBLE WIND BLAST REDUCTION, IT IS RECOMMENDED THAT A MODEL 513 FILTER BE EMPLOYED IN CONJUNCTION WITH THE 327. THE MODEL 513 IS A LOW-FREQUENCY CUT-OFF FILTER WHICH PROVIDES HIGH ATTENUATION TO FREQUENCIES BELOW 100 CPS. WITH THIS COMBINATION WIND BLAST REDUCTION OF UP TO 80% MAY BE ANTICIPATED.

*Electro-Voice Trademark


2. Center Section #74469
3. Rear Section #74470
B. Front Shock Absorber Harness #28041
1. Front Section # 74468
642 Microphone
C. Rear Shock Harness # 28041
A. Windscreen Support # 74968
#324 Shock Absorber



MODEL 355 WINDSCREEN
(on 655 microphone)

FEATURES

- Reduces wind effect
- Does not change frequency response
- Provides protection against shock damage

The Model 355 Wind Screen is designed for use with Models 655C, 654, 654A, 646, 636, 623, 647, and 926 and is fabricated of Electro-Voice Acoustifoam.' The 355 is designed to reduce wind blast without altering frequency response of the microphone. It provides three-fold protection for your microphone; not only reduces wind noise but also protects the microphone against damage from dust and magnetic particles and prevents possible damage from being dropped or struck during hand-held use.

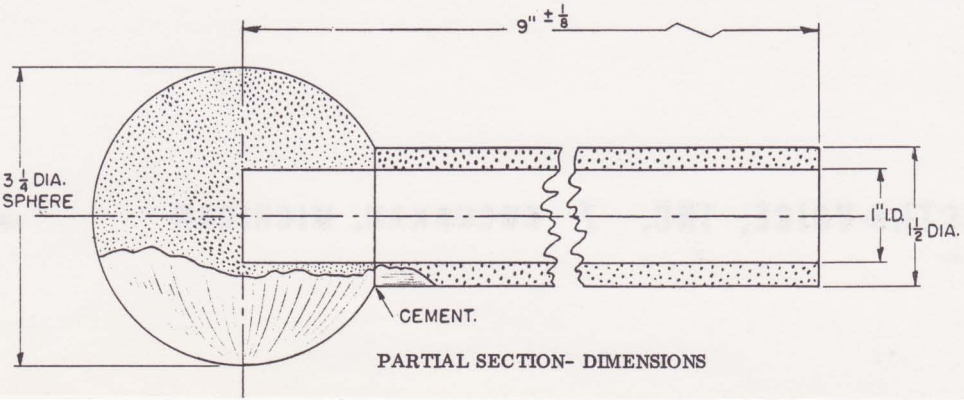
Acoustifoam' cannot be made color fast and may be affected by direct sunlight. This color change, however, will not affect the life of Acoustifoam' and will not reduce its effectiveness as a wind screen.

The length of the sleeve was made to cover the longest Electro-Voice microphone, the Model 655C, and is intended to be cut to desired length for other models. Where it is to be used hand-held it can be left unaltered to cover the entire length of the microphone. When the microphone is to be used on a stand the sleeve will need to be reduced in length sufficiently to allow the Model 300 stand adapter to be used on those models requiring this unit.

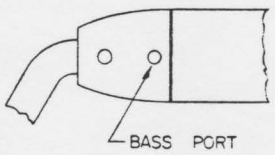
All models except the 647, 623, 926, and 654A employ bass resonance tubes that terminate in a small hole on the outside of the microphone case. It is absolutely essential that this hole be sealed when used in wind or the wind screen will be only partially effective. The location of the holes on various models will be found in the accompanying diagrams. Use any type pressure-sensitive tape convenient to effect this seal.

IMPORTANT

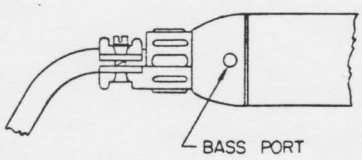
TO ACCOMPLISH THE GREATEST POSSIBLE WIND BLAST REDUCTION, IT IS RECOMMENDED THAT A MODEL 513 FILTER BE EMPLOYED IN CONJUNCTION WITH THE 355. THE MODEL 513 IS A LOW FREQUENCY CUTOFF FILTER WHICH PROVIDES HIGH ATTENUATION TO FREQUENCIES BELOW 100 CPS. WITH THIS COMBINATION AN IMPROVEMENT OF UP TO 80% MAY BE ANTICIPATED.



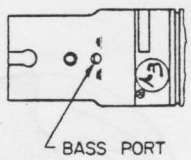
PARTIAL SECTION- DIMENSIONS



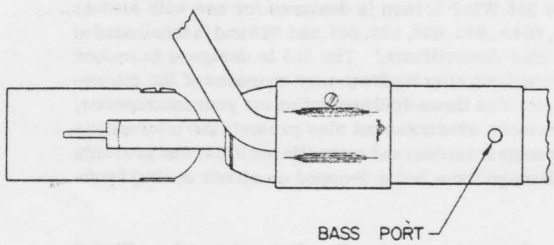
MODEL 646 (EARLY PRODUCTION)



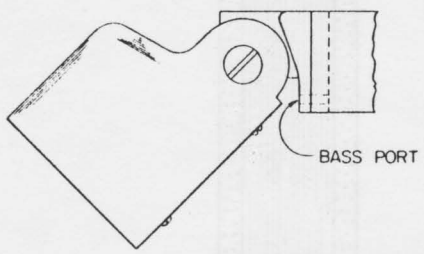
MODEL 646 (LATE PRODUCTION)



MODEL 655C



MODEL 655



MODELS 654 & 636

LOCATION OF BASS PORTS