



LOU BURROUGHS

MICROPHONE FACTS

for the operating engineer

from *Electro-Voice*®



PAUL FRANKLIN

ELECTRO-VOICE, INCORPORATED
BUCHANAN, MICHIGAN 49107
616/695-6831

July, 1964

THE MODEL 668 AND HOW IT GREW

After the Electro-Voice Model 642 ultra-directional microphone had established itself in the TV and motion picture industries, we began to have requests for a companion microphone to allow a wider acceptance angle for working close to the subject in tight sets under conditions where the use of a 642 is impractical.

To be preferred, this new microphone had to fill a number of requirements: it had to be light-weight so it could be fishpoled easily; output level had to be increased or at least equal to that of the highest unamplified unit then in use; the microphone had to include variable response to match numerous microphones in use and to help solve acoustic and ambient noise problems; there should be a built-on shock mount and adequate wind screen protection to eliminate noise from fast pans; smoother frequency response and improved front-to-back ratio were also necessary goals.

The engineers making these requests were: Joseph Kelly, V.P. of Operations, Glen Glenn Sound Co.; Waldon O. Watson, Director of Sound, Revue Studios; and Bruce H. Denney, Head, Sound Engineering Department, Paramount Pictures Corporation. We owe a great deal to Joe, Watty, and Bruce for their help and the time of several of their sound men in testing and evaluating the prototypes we submitted.

After two and one-half years of intensive effort, most requirements had been met and the final product began to take shape. At this time thirty prototypes were constructed and passed around to ABC and CBS network stations and motion picture studios for broader evaluation. At the end of an additional six months of final tests, a summary of comments received from the field indicated enthusiasm for the Model 668 beyond anything we had imagined.

Joe Kelly was the engineer most eager for the development of the 668 and was also its most critical judge.

Due to the fact that Glen Glenn was in greater need of new boom microphones than the others, Joe was supplied ten of the preproduction run and as a result, the first complete answers from the field have come from Glen Glenn, making the case history part of this letter the story of Glen Glenn and the 668.

Following are some of the preliminary field test reports turned in to Joe by various sound mixers.

Memo to: Joseph D. Kelly

From: Cam McCulloch

Date: 1/18/64

Subject: Electro-Voice Microphone

Regarding the Electro-Voice microphone which we tested Friday, January 17th, I would say that in normal pickup of voice, the unit is satisfactory and has a very quiet mounting and good ability to respond at considerable distance from the voice source.

This test was made under adverse conditions: large crew on a cement floor. I would be interested in tests you make under better conditions.

Memo to: Joseph D. Kelly

From: Dick Pietschmann

Date: 7 February, 1964

Subject: E-V 668 Microphone

The subject microphone was used in production of a Ford training film. The film was photographed and recorded in sets erected on a stage which formerly was an old theatre and converted for motion picture production use. The stage was "boomy" and very little has been done with acoustic treatment to correct this condition.

Initially, our regular microphone was used for the first scene which took place in a corridor set. Rather high AC hum and "boominess" were noted and it was decided to substitute an E-V 668 microphone in an effort to eliminate the problem. Use of the E-V 668 microphone resulted in decided improvement in the conditions encountered.

The first day's shooting was completed with the E-V 668 with the 80 cycle cutoff in the "ON" position and the 8,000 cycle cutoff in the "OFF" position. For the second day's shooting, I decided to use the 8,000 cycle cutoff in the "ON" position. This resulted in improved dialogue quality in my opinion. The production was completed with the microphone set for the equalization indicated.

Refer to specification sheet for information on equalizer settings described here.

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The above observations are the result of comparisons under adverse studio conditions. A more conclusive test could be made under controlled conditions comparing the E-V 668 with two makes of microphones with which we have had long experience.

Memo to: Joseph D. Kelly

From: E. Campbell

Date 17 February, 1964

Subject: Electro-Voice 668 Mike

This is to report on my opinion of the E-V 668 after having used it for one day at MPO Studio to record two commercials; the product being "Head and Shoulder's" shampoo.

The microphone was set at 50 ohms impedance with the high boost, the 80 cycle and 8 kc cutoff in.

I found the hanger to be very good and could not detect any boom rumble whatsoever, nor was there any wind noise caused by panning the boom.

On close-up shots, the 668 did a fine job of controlling the pick-up of camera noise. I believe the low-frequency rumble of a camera dolly moving in was lower on the E-V 668 than our present production mike.

As a production microphone, I believe this would be a very fine and reliable microphone.

Memo to: Joseph D. Kelly

From: Slim Haughton

Date: 22 February, 1964

Subject: E-V 668 microphone

We used the 668 microphone for one week during the production of the TV series - "The Greatest Show on Earth". While we did not have an opportunity to use it for exterior shooting, we did have several occasions to use it on interior shots involving large numbers of extras and players where the background noise made the recording of foreground dialogue very difficult. At all times the 668 dropped the background down without altering the quality of the foreground dialogue enabling us to get the dialogue without having to have the production department change their background action. The 668 definitely does hold background down without any loss of quality to the desired dialogue. The stage where we were shooting has a number of "hot spots" where we normally get hum pickup of 120 cycle hum due to AC wiring, etc. At no time did we get any in

Refer to specification sheet
for information on equalizer
settings described here.

the "usual spots" when we were using the 668 microphone. I would like to use them again on three stages which have an unusual hum condition that makes shooting very difficult. I believe the 668 would experience no difficulty in cleaning up the hum situation on these stages.

After trying all equalization steps on the 668, I felt the steps for recording on the channel I was using to be the best as follows: Hi-Pass = Off, Lo-Pass = Off, Steps = B & 1. This seemed to me to be the best equalization for the type of production we were shooting.

Trust this information will help you, Joe.

These were the reports turned in after the first initial trials. The next reports were made after several hours of use on top-ranking productions.

Memo to: Joe Kelly

From: Victor Appel

Date May 8, 1964

Subject: Electro-Voice 668 microphone

I have used two of the new E-V 668 microphones on production of the Ben Casey TV series for a period of four weeks. The overall results are excellent and I find the following items to be of particular advantage.

- 1) By using the 80 cycle cut-off, I can more carefully evaluate off-stage rumble, etc. There seems to be less intermod present under high level rumble conditions (traffic, etc.).
- 2) The microphone works well on a fishpole because it is lightweight.
- 3) The lightweight is also an advantage when used on a microphone boom because in panning, less weight has to be overcome on fast moves. The counter-balance weight is reduced on the boom, thus making it easier to lift the boom-arm for change of height.
- 4) The fine hanger and wind screen design makes the mike excellent for use in fast panning or racking in and out.
- 5) The small size makes it very useful in close quarters such as inside cars, etc.



GLEN GLENN SOUND COMPANY

6624 ROMAINE STREET, HOLLYWOOD 38, CALIFORNIA, HOLLYWOOD 9-7221

May 12, 1964

Mr. Lou R. Burroughs
Electro-Voice, Inc.
Buchanan, Michigan

Dear Lou:

I was very happy to meet both you and Dick Schnepf when Joe Kelly brought you on the set. Sorry we didn't have more time to chat.

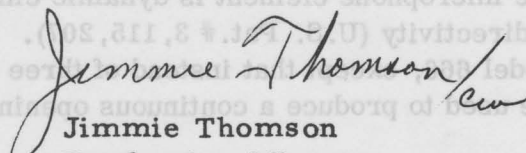
We have just finished the first six one hour T. V. shows for the new NBC series John F. Kennedy's "Profiles in Courage" in which we used your new "Electro-Voice 668 microphone" and, I am happy to report, with good success.

Because it is small and lightweight, it is easy to handle on a fish pole and also easy to hide behind a vase or picture so as to get out of camera view. On some of the large sets, they used open cameras and we were able to use all the sound track without picking up the camera noise. On location, on our back lot, with Highways on both sides and surrounded by factories, our dialogue turned out good requiring no looping.

On another location in Franklin Canyon, we were able to record a song by two men in a Buckboard Wagon from a distance of 200 feet away.

Thanks again for this new tool to help us in our work here at Glen Glenn's, where our sound is just a little better than the others.

Sincerely,


Jimmie Thomson
Production Mixer

JT/cw
encl.

The last report from Joe was by phone to the effect that Leon Leon, the sound mixer on "My Three Sons" had completed his tests, recorded one complete sequence and is very happy with the 668.

After completion of production tests at Glen Glenn, I was notified that the 668 would be adopted as their standard production microphone together with the model 642. Other boom units will be eliminated as soon as possible.

Soon after hearing from Joe, the following news release was made.

A NEWS RELEASE FROM GLEN GLENN SOUND CO.

On March 2, 1964, sound history was made. The new Electro-Voice model 668 microphone was placed in production on the Desilu-Culver City lot. On this date, two E-V 668's were employed in the production of the NBC production "Profiles of Courage" by the Glen Glenn Sound Company of Hollywood.

The Electro-Voice 668 microphone is a result of three years of diligent and unswerving effort by Lou Burroughs, vice president of Electro-Voice, and Joe Kelly, vice president of Glen Glenn Sound, and represents a breakthrough in the design of a new directional microphone. Maintaining excellent quality, the Electro-Voice 668 possesses durability never believed possible in a directional "mike".

"The extremely fragile ribbon microphone is destined to become a tool of the past with the introduction of the 668", said Mr. Kelly. "Among other things, rough handling will not affect the sound quality as it does in the present ribbon mikes and it will no longer be necessary to remove the microphone from the set because a gunshot must be fired. The 668 has proven itself outdoors beyond our greatest expectations. During the filming of exteriors for "Profiles of Courage" at the Desilu-Culver lot, we were able to record excellent dialogue without wind noise and yet keep annoying and hindering street and background sounds to an acceptable minimum."

You have read of its performance, now some information on what it is.

THE WHAT AND WHY OF THE 668

The microphone element is dynamic employing the familiar Variable-D® principle of directivity (U.S. Pat. # 3,115,207). The unit is similar in construction to the model 666, except that instead of three discrete rear apertures, two slotted tubes are used to produce a continuous opening for superior front-to-back ratio.

An increase in efficiency of the magnetic structure has made it possible to match the output of the highest-level, unamplified professional-type microphone now in use.

Now we come to one of the outstanding features; the built-in equalizer (refer to specification sheet). I can imagine a good many of you are now asking, "who needs it, we already have an equalizer?" This may be true, but it's not quite the same.

ELECTRO-VOICE AND THE NATIONAL POLITICAL CONVENTIONS

For the third successive time, E-V microphones were chosen for the network audio pool operations at both the Republican and Democratic conventions. 654's will cover the convention floor, 666's and 642's will take care of the music. A 643 will also be there, but I don't know just where it will be used. On the lectern, you will see a pair of 668's in use for the first time for this purpose.

YOU AND THE 668

We are now producing the 668 and shortly, our distributors will have them in stock or will get them at your request, for test and evaluation. Remember, it is never necessary to obligate yourself to keep an E-V microphone before you have determined if it fills your need and solves your problem. You will never know how superior an E-V microphone can be and how it can up-grade your sound until you have tried one in your trouble-spot.

Should your distributor be reluctant to supply a 668 or any other professional microphone for test, please let me know and I will personally follow-up.

Arrange now to try the most modern and effective boom microphone ever developed-- the Electro-Voice model 668.

PARTS LIST

- | | |
|------------------------------------|-------------|
| 1. Wind Screen - front section | 75872 |
| 2. Shock Ring - inner | A75556 - EE |
| 3. Wind Screen - mid section | 75871 |
| 4. Shock Ring - inner (Same as #2) | A75556 - EE |
| 5. Wind Screen - rear | 75870 |
| 6. Cord - suspension | 75610 |
| 7. Filter Cap Sub assembly | 83471 |
| 8. Filter Cap Sub assembly | 83471 |
| 9. Nameplate | 48297 |
| 10. Label | 531156 |
| 11. Cable, sub assembly | 83469 |
| 12. Bail | 75557 - EE |
| 13. Shock Ring - outer | 75558 - EE |
| 14. Bolt, wing 1/4 - 20 | 20050 - EE |
| 15. Washer, friction | 38249 |
| 16. Screen grille | 72302 - EE |
| 17. Screw, Gulmite | 6306 - CL |

In the case of the 668, curves #1 and A combine to make up the basic response of the microphone unit without equalization. If the unit was set at flat response (positions 1 and B) and a rising high end was desired, the pin located in B position would be moved to A and a gain in level, along with the rising high end, would be the result. A total of 36 variations of response are available--using all possible combinations.

In the case of a flat response microphone and the usual remote equalizer, a loss in level of 5 db from 1 kc down would be the result, since this portion of the spectrum would have to be reduced in level in order to arrive at the rising high end. Therefore, the signal-to-noise ratio is improved with the 668, but with a normal flat microphone, it is degraded when used with external equalization.

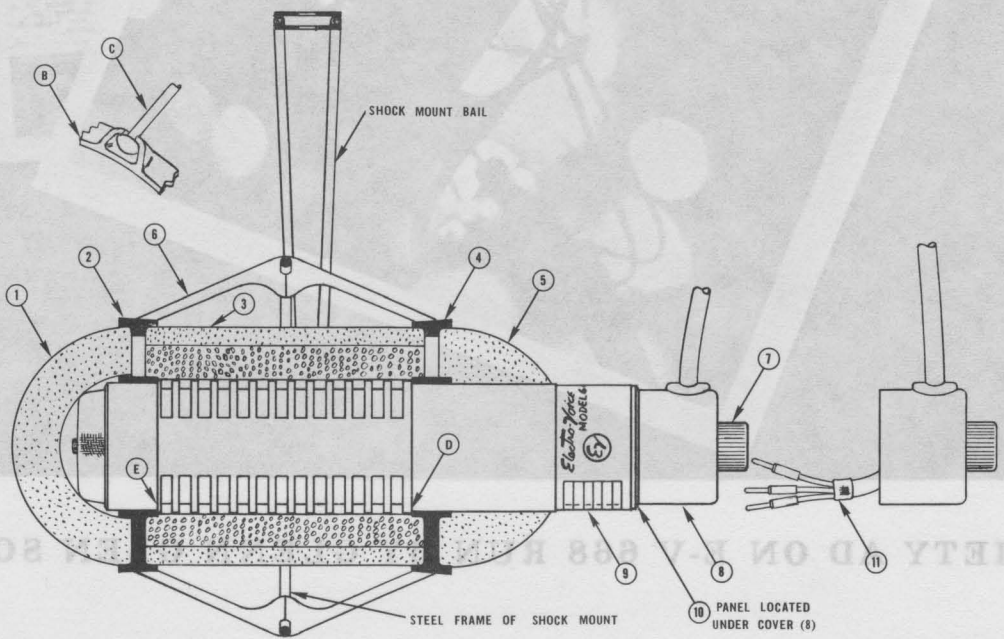
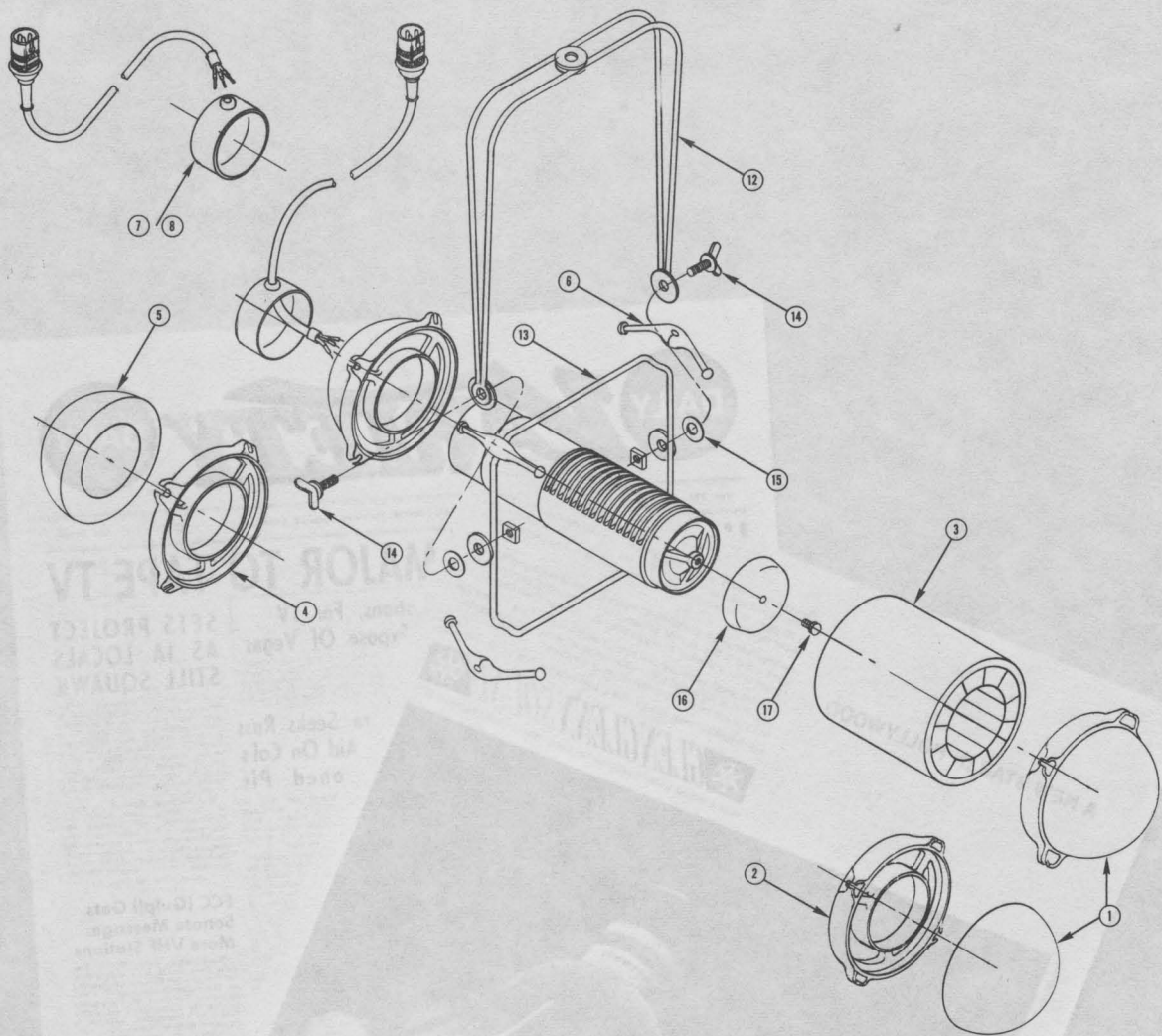
Refer now to the cross section drawing attached. The shock mount and windscreen are built on as part of the microphone and may be dismantled in less than 30 seconds, making the replacement of damaged parts a fast and simple operation. On the print, windscreen #1 is cemented to aluminum casting #2, #3 is the sleeve section of the windscreen that slips over the microphone and is held securely between front and rear aluminum shock mount rubber suspension rings, #2 and #4. Rear ring #4 is cemented to windscreen rear section #5, this section mounts from the rear and both front and rear sections are spaced apart by stop shoulders D and E. The entire assembly is held together by four suspension rubbers evenly spaced around the microphone, one of which is shown at #6. Section B of #2 shows the suspension rubber retainer cup into which the button head of #6 is secured as shown at C. By releasing the button heads on both ends of the suspension rubbers the entire assembly may be quickly removed and replaced.

The variable-response program panel is located inside the rear of the microphone case. Unscrew knob #7 to remove cover #8 for access to program panel. All frequency-response curves and possible variations are shown by the curves located on nameplate band #9. Refer to Fig. 1 on specification sheet. Select the desired response by number and letter as indicated on the curves and place gold-plated pins in the corresponding jacks in program panel #10. Refer to Fig. 4 on specification sheet. Cable termination and impedance changes are also made on panel #10 by placing the three cable pins #11 in the proper jacks. Refer to Fig. 5 on specification sheet. Since the cable is attached through jacks it is a simple matter to replace damaged cable with a spare in a matter of seconds.

WHAT YOU MAY EXPECT OF THE 668

From what I have seen and the information I have received from the field, you may expect to increase your working distance around 25 to 50% over that of other cardioid types. Joe Kelly says that under the majority of their working conditions, the 668 is generally used at 8 feet and seldom closer than 3 feet. You will be able to work the 668 at the very minimum distance without fear of breath pops. You will be able to use the 668 under hum conditions where most other microphones fail.

Due to the lightweight of the 668 (1 pound, 11 ounces) you will be able to remove from 10 pounds to as much as 30 pounds of counter balance weight from your boom (depending on the weight of your present unit)--thus making it more maneuverable.



DAILY VARIETY DAILY

Vol. 124

June 18, 1964

Ten Cents

A NEW STAR IN HOLLYWOOD...

This star is different... it is the EV 668... jointly developed by Glenn Glenn Sound and Electro-Voice. It is the first radical improvement in 20 years of a microphone designed specifically for motion picture sound recording.

We have been privileged to introduce the EV 668 Microphone to Hollywood... and it has already proven itself by amazing performances turned in on a number of productions recorded by Glenn Glenn Sound.

Guns, shot, wind, explosive directors, or what have you, the EV 668 can take it! It is lightweight, has excellent rear cancellation characteristics and can be used either indoors or outdoors.

For information on the EV 668's performance, call us or come by.



6424 ROMANE STREET, HOLLYWOOD, CALIF. 90028 / HOLLYWOOD 9-7221



MAJOR TO TAPE TV

Options, For TV
Expose Of Vegas

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FCC (Gulp!) Gets Senate Message: More VHF Stations

Washington, June 17. — Sen. John Pastore (D-R.I.) used a Senate Commerce Committee hearing on the reappointment of FCC Commissioner Frederick W. Ford today to put the committee on notice that the committee expects a stronger drop-in stance. Pastore is from Providence, which long has wanted another VHF station. Pastore, Chairman of the Communications Subcommittee, said a report of the full committee by confirmation of Ford for a seven-year term. Little or no trouble in the committee is not expected on Page 10)

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VARIETY AD ON E-V 668 RUN BY GLENN GLENN SOUND