

HOW TO USE YOUR "CINE-VOICE"

16MM SOUND-ON-FILM
RECORDING CAMERA

(READING TIME 12 MINUTES)



Behrend's Inc.
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AURICON DIVISION

BEKNDT-BACH, INCORPORATED
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HOLLYWOOD 38, CALIFORNIA

TECHNICAL ADVISORY SERVICE

The Technical Advisory Service Department of Berndt-Bach, Inc. will provide technical consulting service and information on all phases of motion picture work, without charge, to owners of Auricon Motion Picture Equipment. Please call on us at any time to assist with your photographic and sound-recording talking picture problems.

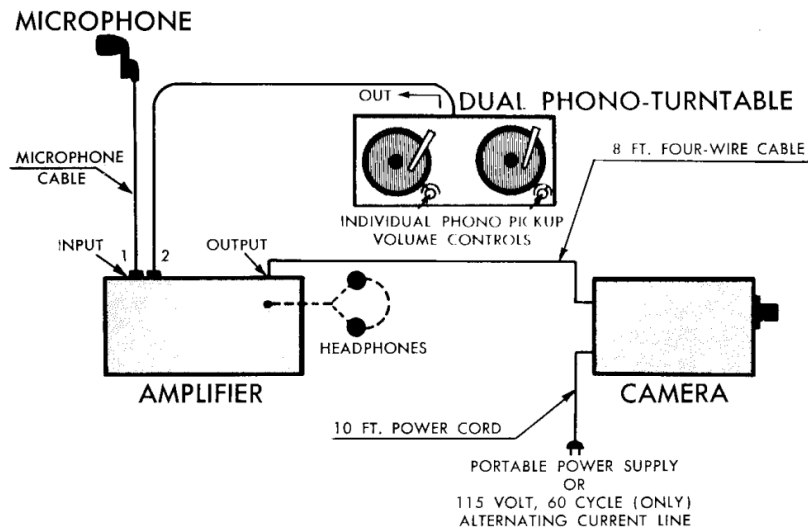
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16MM SOUND-ON-FILM RECORDING CAMERA

EQUIPMENT CHECK: The equipment should be set up and tested in the following manner: Plug the AC power cord into the "Cine-Voice" Camera and connect to a 115 volt 60 cycle outlet such as a standard wall plug in your home. If there is a question as to the voltage or frequency (cycles), the local electric company where you pay your light bill will furnish the necessary information. The Camera is turned on with the switch on the back. After making sure that the Camera runs satisfactorily, connect the monitor Headphones, Microphone and Camera cables as shown in the diagram. The cables are equipped with different types of plugs to insure proper connections. Turn the Amplifier "On" by turning the "Sound Track Exposure Knob" clockwise only until a distinct click is heard. (Further advancement of the Knob will turn on the sound-track exposure lamp, the use of which is explained later under "Sound Track Exposure.") Rotate the "Microphone Volume Control Knob" clockwise until sound entering the Microphone is heard in the Headphones. The sound should be natural and undistorted, and the "Visual Volume-Indicator Meter" will register the level. The louder the sound, the farther the meter will swing.



CONNECTIONS FOR CINE-VOICE SOUND CAMERA

GENERAL: 16mm sound motion pictures are photographed in the same manner as silent pictures. Silent pictures are made on film having sprocket holes on both edges which is known as double-perforated film. Sound pictures are made on film having sprocket holes on only one edge, which is known as single-perforated film, and the sound track is recorded on the non-perforated edge. The cost of the single-perforated film for your Auricon "Cine-Voice" Sound-on-Film Camera is the same as for the double-perforated type used in silent cameras. Therefore, it costs no more to make sound movies than it does to make silent movies, and the films can be shown on any standard 16mm sound projector.

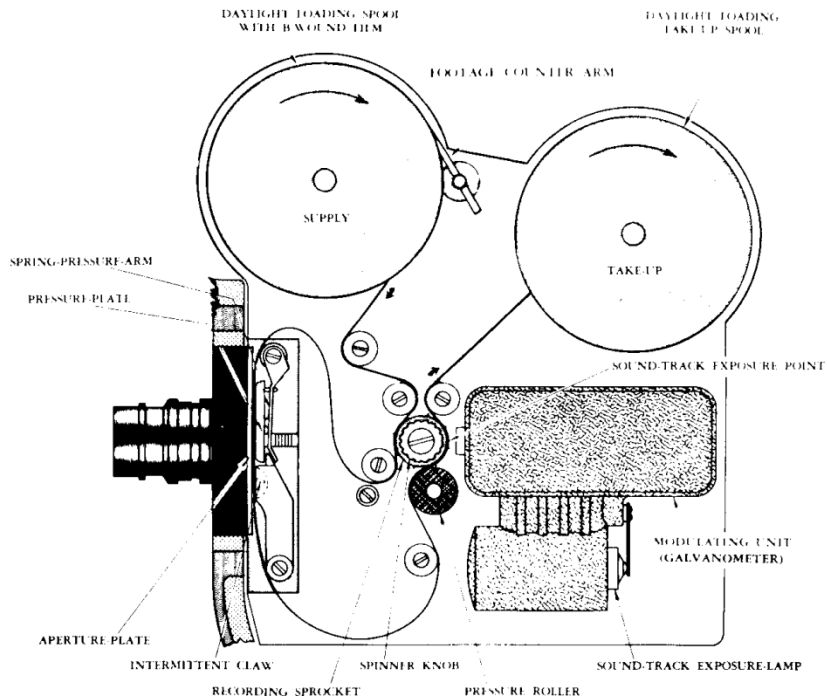
TYPE OF FILM: There are many types of films available for use in your Auricon Camera. We recommend the use of standard reversal type films, either Black & White or Kodachrome. These films are processed by the Manufacturer, and the cost of processing is included in the price of the film. They can be supplied by your Dealer, and will be processed by any one of the laboratories listed in the pamphlet that comes with the film.

LENSES AND PICTURE EXPOSURE: Standard 16mm "C" mount lenses of any focal length may be used in the Auricon "Cine-Voice" Camera. Cine Kodak bayonet-mount lenses also may be used if equipped with a "C" mount adapter.

The shutter opening is 175 degrees, which provides an exposure of 1/50th of a second. The camera speed is 24 frames per second or 36 feet per minute. This is the standard speed for all 16mm sound-on-film cameras and projectors.

Your dealer will be glad to assist you in determining the best lens for your purpose. Normally a 1 inch focal length lens provides the best results for ordinary use.

FILM GATE: The film gate in the Camera is directly behind the picture-taking lens, and consists of the "Aperture-Plate" and "Pressure-Plate." It should be inspected (and cleaned if necessary) after each roll of film has been used. Normally, many rolls of film may be run without cleaning the gate, but certain types of film have "soft" emulsions, and particles of emulsion may gather around the chrome steel balls in the gate. If the particles of emulsion cannot be removed with a small brush or cloth, a toothpick should be used to dislodge them. *Never use a knife or metal object to clean the gate.* The film "Pressure-Plate" may be removed by raising the "Spring Pressure Arm" which holds it in place in the film gate. In replacing the "Pressure-Plate," place it in the gate and let the "Spring Pressure Arm" down gently. The slotted hole in the Arm will slip over the pin in the back of the "Pressure-Plate," and hold it firmly in place.



Threading of Film in Cine-Voice Camera

THREADING THE CAMERA: The Auricon "Cine-Voice" Camera uses 100 foot rolls of 16mm single-perforated film on daylight-loading spools. This is the same type of film used in 16mm silent cameras,

except that it has sprocket holes on only one side of the film instead of on both sides.

To thread the "Cine-Voice," raise the footage-indicator arm and put the full spool of film on the spindle marked "Supply," and thread the film through the Camera following the threading lines on the center-plate. The take-up spool should also be checked to see that it is not bent, or has rough edges that will prevent film from winding smoothly. The Camera may be turned by hand with the knurled Spinner-Knob on the Sprocket. After the Camera is threaded, several feet of leader film should be run through with the motor, to check for proper film movement and take-up action. When you are sure the Cine-Voice Camera is properly threaded, put the door on and tighten both locking Thumb Screws. Now run about five feet of film through the Camera to use up the leader supplied on the film, as this is not used for taking pictures; the purpose of the leader is to prevent the balance of the roll of film from being fogged during loading. The Camera should be loaded and unloaded in subdued light to prevent possible edge fog to the sound track on the film. *Never* load or unload the Camera in direct sunlight.

FOOTAGE INDICATOR: The footage indicator on the back of the "Cine-Voice" Camera shows the amount of unexposed film on the spool. Do not take pictures after the footage indicator has reached zero, as the last few feet of film will be the "Leader," and is removed after processing.

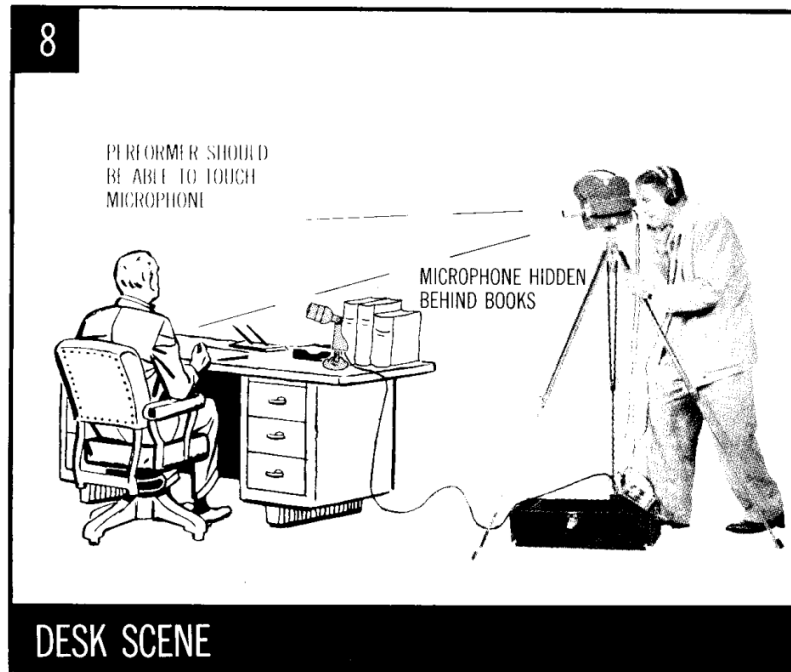
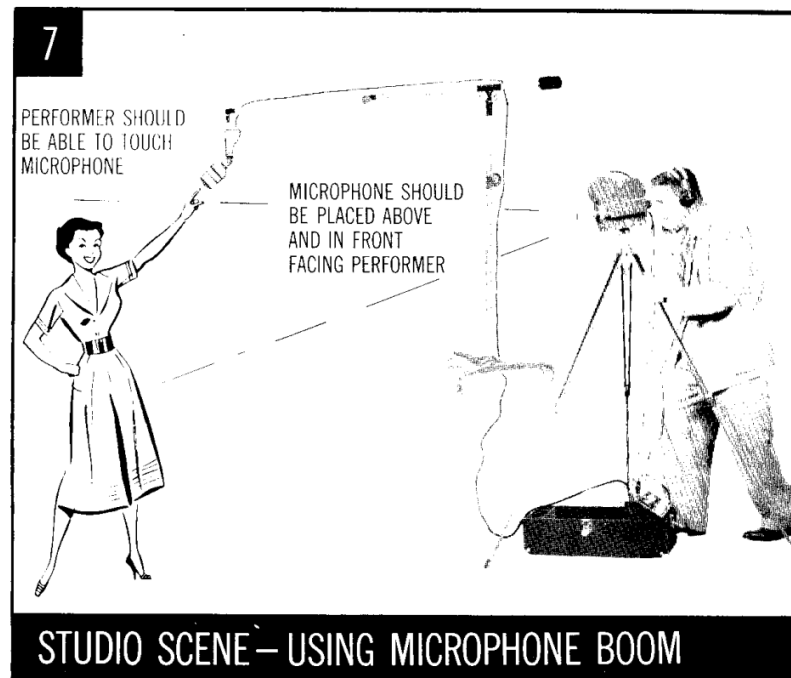
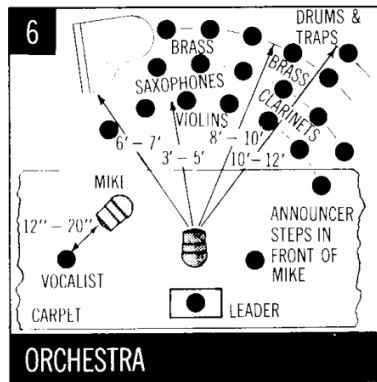
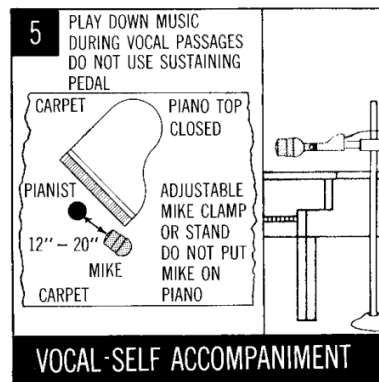
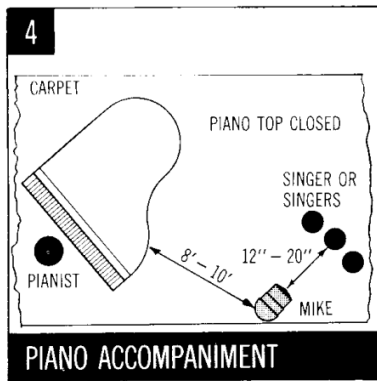
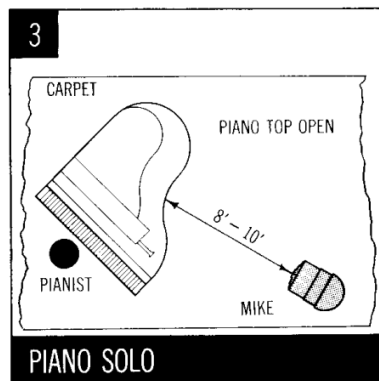
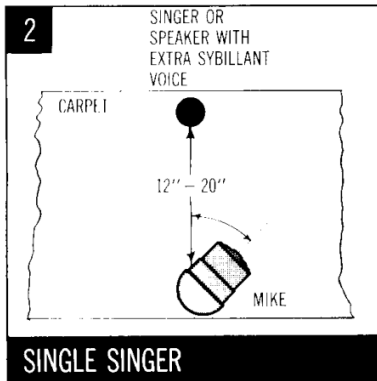
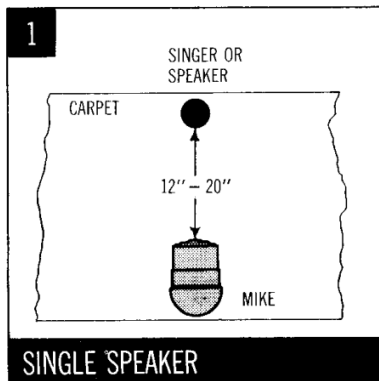
FINDER: Four mattes are furnished for use in the Finder, providing a field for 17mm, 1 inch, 2 inch and 3 inch lenses. The Finder without a matte provides a field for a 15mm lens. The matte corresponding to your lens should be inserted in the slot in the front of the Finder. For example, the 1 inch matte is used with a 1 inch lens.

LUBRICATION: The Auricon "Cine-Voice" Camera has five oil holes identified by red markings. Use one or two drops of light machine oil in these holes about once a year or after 5000 feet of film has been run through the Camera. Tilt the Camera up when oiling the mechanism located at the lens mount. Wipe any excess or spilled oil off immediately, as it will gather dust and deteriorate the Camera finish.

MICROPHONE PLACEMENT: The recording of sound motion pictures is just as easy as making a phonograph record on a home recorder. If a few basic rules are followed, excellent results will be obtained. Always place the Microphone as close to the speaker as possible. This is especially important if pictures are recorded in large halls or rooms that have a noticeable echo. The average living room generally has good acoustics and is excellent for recording sound.

The Microphone should be placed or held just outside of the picture. When photographing a subject sitting at a desk or table, the Microphone and Desk Stand may be placed behind some books or a vase of flowers, to hide it in the picture. Excellent recordings can be made outdoors, as there will be no echo to affect the sound quality. However, undesirable sounds such as traffic or airplane noises may be present in some localities. If a more professional appearance is desired in

making films, the Auricon Microphone Boom may be purchased to swing the Microphone overhead in the manner used by professional studios.

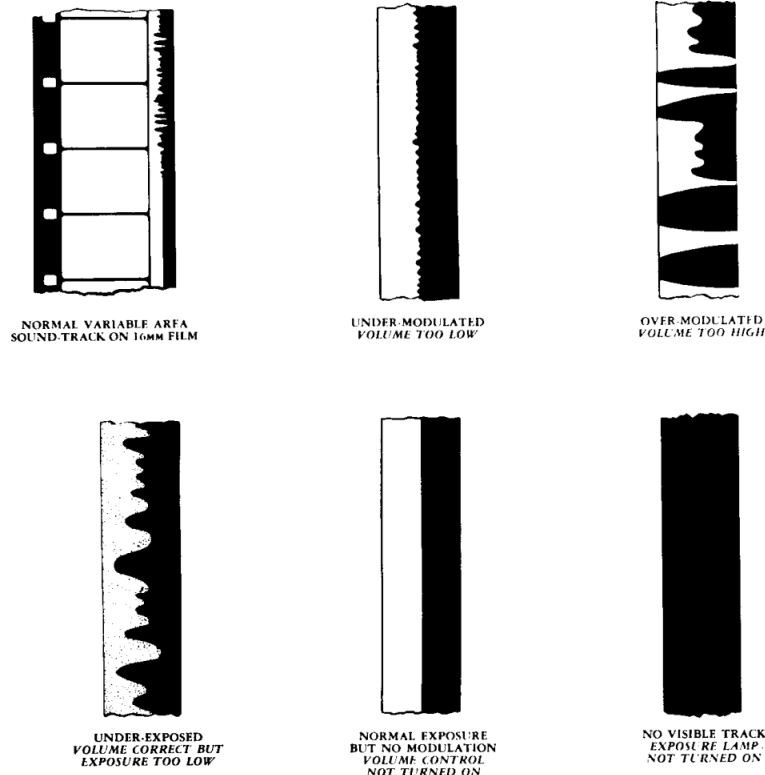


SOUND TRACK EXPOSURE: The sound is put on the film by a hair-line of light, which comes from the Galvanometer (Modulator Unit) and is focused on the film as it passes around the sprocket. The focus is very critical and under no condition should the Galvanometer be moved, as all adjustments are made and locked at the factory. The light source in the Galvanometer is a small bulb rated at 7 volts, .2 amperes. The sound currents from the Amplifier causes the hair-line of light to increase and decrease in length. As the film moves past the line of light, a track is recorded on the film which varies in width (or area) and is known as a Variable-Area Sound-Track. The intensity of the light reaching the film is controlled by the "Sound-Track Exposure Knob," and is indicated by the reading on the "Sound-Track Exposure Meter." The "Sound-Track Exposure Knob" turns the

amplifier "on." If the Knob is turned only enough to throw the switch, rehearsals may be heard in the Headphones without the Exposure-Lamp burning, thus extending the life of the Batteries and Lamp. *However, always remember to turn the Lamp "on" to the proper exposure number on the Meter, before recording.*

Sound-track exposure will vary with processing, and tests should be made to determine the best exposure for your film and processing. For example, Cine Kodak Super-X film will require an exposure of approximately 16 on the "Sound-Track Exposure-Meter." However, some laboratories may process the film so that 15 is slightly better than 16. Therefore, for optimum results, a test recording should be made at exposures of 14, 15, 16, 17 and 18, announcing on each test: "This is Auricon 14; we are testing for sound . . ." etc. Run the film after processing and choose the exposure that gives the best sound with the least distortion. Over-exposure will cause an increase in background noise and distortion, and "S" sounds will be blocked. Under-exposure will cause loss of volume. Let us assume 15 and 16 sound equally good. Then choose 15½, as this will be the average, and will allow for possible variations in processing.

The following sound-track exposures are based on test films processed by reversal to the film manufacturers' specifications. If films are processed by independent laboratories or at home, the sound-track exposure may vary as much as two points from the figures listed below, and a test as described in the preceding paragraph should be made to determine the best exposure.



16mm Sound-Tracks — Reversal Processing

Film	Sound-Track Exposure
Kodak: Super-X	15
Super-XX	14
Kodachrome Type A	19
Kodachrome Daylight	19½
DuPont: Type 901	15
Type 914	16
Type 930	15
AnSCO: Triple S Pan Reversible	14
Hypan Reversible	16
Supreme	16
Color Daylight Type	19½
Color Tungsten Type	19½

BATTERIES: Portable plug-in type batteries are used to operate the "Amplifier" and "Sound-Track Exposure Lamp." They are located in the battery compartment under the Amplifier. The Batteries are standard types commonly used in portable radios and are obtainable at your local radio stores. A battery diagram will be found on the bottom of the Amplifier Chassis.

BATTERY TEST SWITCH: This Switch is located on the Amplifier panel between the two Meters. The left position provides the "A" Battery test, the center position is for normal recording and the right position provides a "B" Battery test. To test the Batteries, the Amplifier must be turned "on" and the Amplifier-to-Camera Cable connected.

The "A" Battery is the 1.5 volt Battery which lights the tube filaments. Its condition is checked by turning the "Battery-Test-Switch Knob" to the "A" Battery position. The lower scale on the "Sound-Track Exposure Meter" marked "A" and "B" Battery test will register the condition of the Batteries. The "A" Battery should read on or slightly above the line separating the "Discard" and "Good" section of the Meter scale. If the reading is *definitely* below the line the "A" Battery should be replaced.

The "B" Batteries are the two .45 volt Batteries with "snap" type terminals. They are tested by turning the "Battery Test Switch" to the "B" Battery position. Their condition is read on the Battery test scale in the same manner as the "A" test described above. It will be noted that new "B" Batteries will read higher than new "A" Batteries on the meter scale. This is normal and is due to the difference in voltage between the two types of Batteries.

The two 6 volt Batteries provide the current for the "Sound-Track Exposure-Lamp." These Batteries have reached the end of their useful life when it is no longer possible to obtain the desired "Sound-Track Exposure Meter" setting, even though the "Sound-Track Exposure Control Knob" is rotated all the way to the right.

CONTROLLING VOLUME: The volume or loudness of the recorded sound-track must be regulated so that the sound track on film will not be wider than the scanning beam of the sound-projector optical-system. On the "Cine-Voice" Camera Amplifier, the loudness registers on the "Volume-Indicator Meter" which is calibrated "Low," "Correct Range" and "Over." For correct recording, the needle should swing to the top of the "Correct Range" and may occasionally go into the "Over" portion of the scale on extra-loud sounds. The volume is controlled by turning the "Microphone-Input Volume-Control Knob" to the desired position. Headphones are supplied for checking the quality of the sound being recorded. The volume of the sound being recorded should be judged by the "Volume-Indicator Meter" and not by Headphone listening, as the ear cannot correctly judge the volume.

RECORDING FROM PHONOGRAPH RECORDS: Music can be recorded from records by connecting a phono-turntable pickup with a volume control to the Hi-Impedance Phono-Input on the Cine-Voice Camera Amplifier. A spare plug is furnished with the Amplifier for this purpose. We suggest the plug to phono-pickup connections be made by your local radio serviceman. The volume control on the turntable should be adjusted for proper "Recording Volume" as described in the preceding paragraph.

MICROPHONE INPUT TONE-CONTROL: In order to record voices so they will sound natural when reproduced at loud volume, it is usually necessary to record the extreme low frequency sounds at a lower volume than the higher frequencies. The "Microphone Input Tone Control" when turned to the "Speech" position, lowers the volume of the low frequencies but does not affect the high frequencies. Therefore, for normal speech recording the "Control" should be turned to the "Speech" position. However, when recording children

with thin voices, they may sound better if the control is moved to the "Speech with Music" or "Singing with Music" position. This will increase the volume of the low frequencies and give the voice more "body." Since it is sometimes difficult to get children to "speak up" while they are being photographed, changing the "Tone-Control" as described above is very helpful.

When recording musical instruments the "Tone-Control" should be moved to the "Music" position. The "Speech with Music" and "Singing with Music" positions provide proper balance in the sound when voice and music are being recorded at the same time.

The "Tone Control" regulates only the sounds picked up by the microphone. It does not affect the sound from phonograph records being fed into the "High-Impedance Phono-Input." The "Tone Control" can be changed from "Speech" to "Music" while recording, if desired.

EXPOSURE LAMP: The Sound-Track Exposure Lamp in the Cine-Voice Galvanometer is rated at 7 volts, .2 amperes. This lamp has a special pre-focused base and can be obtained from your Dealer or at the Auricon factory.

To change the Lamp, disconnect the Camera-Cable from the Amplifier, then slide the spring lamp contact toward you and remove the lamp. Do not bend the spring further than necessary to slide it off the lamp contact.

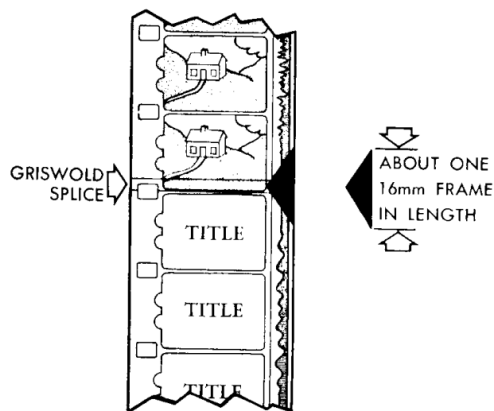
PORTABLE POWER SUPPLY UNIT: In order to use the Auricon "Cine-Voice" Camera in locations away from standard power lines, the Auricon "Portable Power-Supply Unit," Model PS-14, is available to furnish the necessary 115 volt, 60 cycle "House Current." The unit consists of a 6 volt DC to 115 volt AC converter mounted in an attractive carrying case, 7 inches square, weighing 10 pounds. Large battery clips are provided for connecting the unit to your car battery or any 6 volt storage battery. The battery clips can be connected to battery terminals without regard for negative or positive.

The Portable Power-Supply Unit should be turned "on" before the Camera is turned "on," to avoid starting the unit "under load." If the "Cine-Voice" Camera is operated at some distance from the storage battery, a heavy duty extension cable (such as sold in hardware departments for electric lawn mowers) should be used on the 110 volt camera side of the Portable Power-Supply. Extensions should *not* be used on the 6 volt battery-connecting leads.

EDITING SOUND FILMS: In order to record sound on 16mm film without variations (commonly known as "wows" or "flutter") a fly-wheel is incorporated in the "Cine-Voice" Camera to provide smooth, steady film motion. Therefore, the Camera cannot be stopped instantaneously on a single frame like small silent cameras that are spring-driven and have no flywheel. When the "Cine-Voice" Camera is turned off, a few frames of film will run through before the Camera slows to a stop. Also it may stop with the shutter open, which will fog the frame of film in front of the lens. This is of no particular disadvantage as it is usually necessary in editing to cut out a small portion

of film between scenes to get the proper "continuity" and "timing" so the scenes will fit together smoothly in the finished picture.

The sound track is recorded (and reproduced by the projector) 26 frames ahead of the corresponding picture. When no sound has been recorded the sound track appears along the non-perforated edge of the film as a straight, clear line. Sound on the track can be identified by sharp peaks and valleys appearing in the clear line. When cutting the film between scenes, the start or beginning of the scene should be cut at a point on the film about one inch before sound appears in the sound track. The end of the scene should be cut about 8 or 9 inches after the last portion of sound is visible in the sound track. The scenes or sections of film can then be spliced together to make up the complete movie.



"BLOPING" SOUND-ON-FILM TRACKS (SILENCING SPLICES): Splices across a motion picture sound-track vary the density of that particular area of track and often a transparent hair-line is also left at the splice. The increased density and the hair-line cause a "popping" sound in the loudspeaker as each splice passes through the sound projector. To eliminate this objectionable noise, the splice can be silenced or "blooped," as it is called by motion picture film editors.

Black cellophane tape, available at most stationery stores, is excellent for "blooping" splices. After the film splice has been made, cut a triangular strip of tape slightly wider than the space between the picture frame and film edge and about one 16mm picture frame in length, as illustrated above. Use scissors or a razor blade to cut the triangle of tape.

Stick the triangular "bloop" of cellophane tape on the glossy side of the film, centering the peak of the triangle at the center of the splice. Any excess tape that hangs over the film's edge should be trimmed away.

Negative and reversal films should be "blooped" after editing and before prints are made. The black cellophane tape "bloop" silences

the splice by covering it up, in-so-far as the sound reproducing photo-electric cell in the projector is concerned. The "bloop" itself is not heard, as it represents an artificial sound-wave too low in frequency to reproduce over the projector sound system.

In splicing, a straight splice such as is made by the Griswold Splicer, is preferred. One edge of this splice falls between picture frames; the other edge of the splice should be placed in the lower part of the picture frame, which is usually the darkest area of the picture (being floor, grass, water, etc.) and is less noticeable on the screen during projection of the picture.

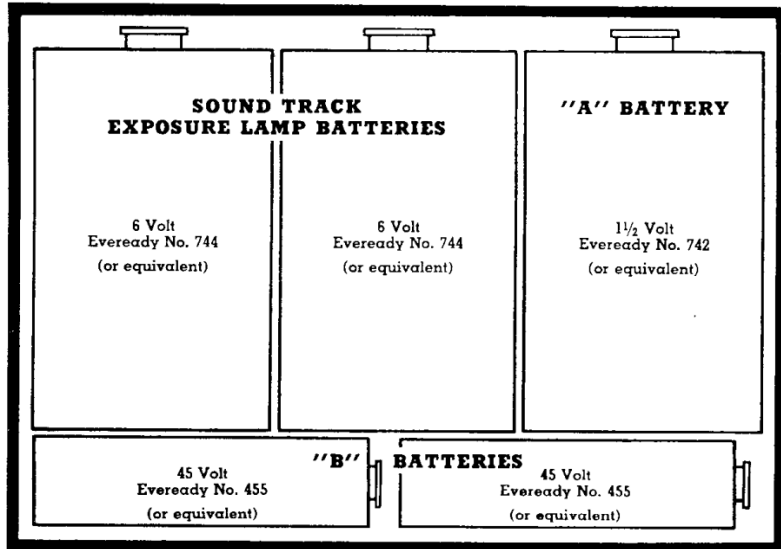
Battery Replacement Instructions

SOUND TRACK EXPOSURE LAMP BATTERIES (two 6-Volt Dry Cells) should be replaced when it is no longer possible to obtain the desired exposure number on the Sound Track Exposure scale of the meter, although the Sound Track Exposure control knob is advanced all the way. However, if batteries are new and it is not possible to obtain maximum exposure (full deflection of the needle on the Sound Track Exposure scale), the Sound Track Exposure Lamp has aged beyond its useful life and should be replaced.



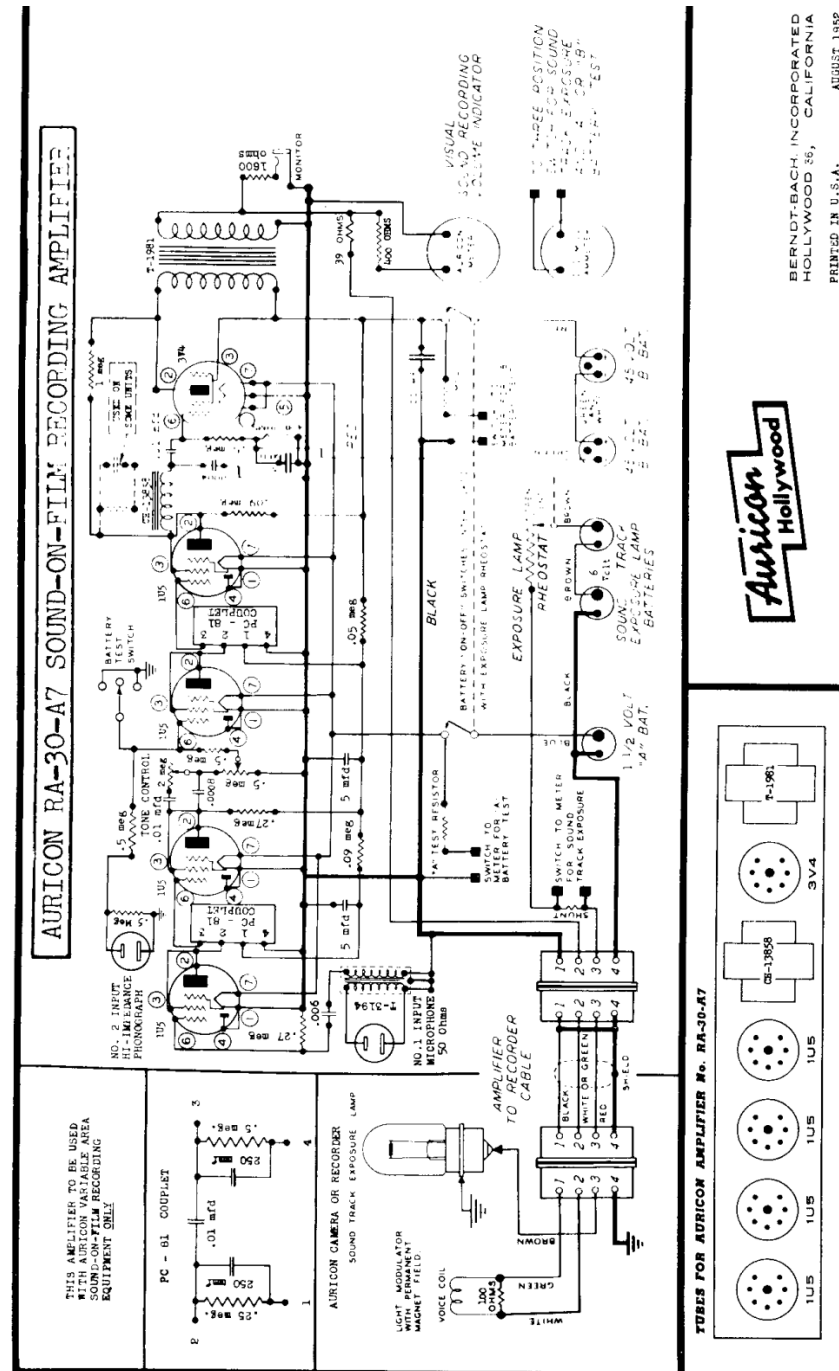
"A" BATTERY (1½-Volt Dry Cell) should be replaced when meter on Amplifier panel reads on the "Discard" side of the Battery Test scale, since this is the point where voltage falls below good operating conditions.

"B" BATTERIES (45-Volt Dry Cells) should be replaced when meter on Amplifier panel reads on the "Discard" side of the Battery Test scale, or when a continuous high-pitched squeal is heard in the Monitor earphone. It is false economy to operate batteries after they have reached the end of their useful life, since batteries are inexpensive in comparison with film costs.

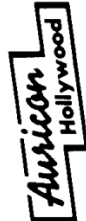
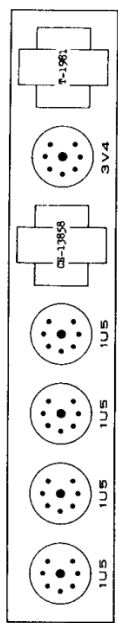


BATTERIES FOR AMPLIFIER No. RA-30-A7

BATTERY PLUGS ARE NOT INTERCHANGEABLE AND THUS PREVENT INCORRECT CONNECTIONS. IF THE PLUG WILL NOT ENTER RECEPTACLE, THE BATTERY IS OF AN INCORRECT VOLTAGE FOR THAT PLUG.



TUBES FOR AMPLIFIER No. RA-30-A7

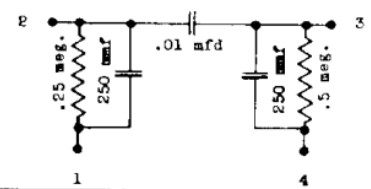


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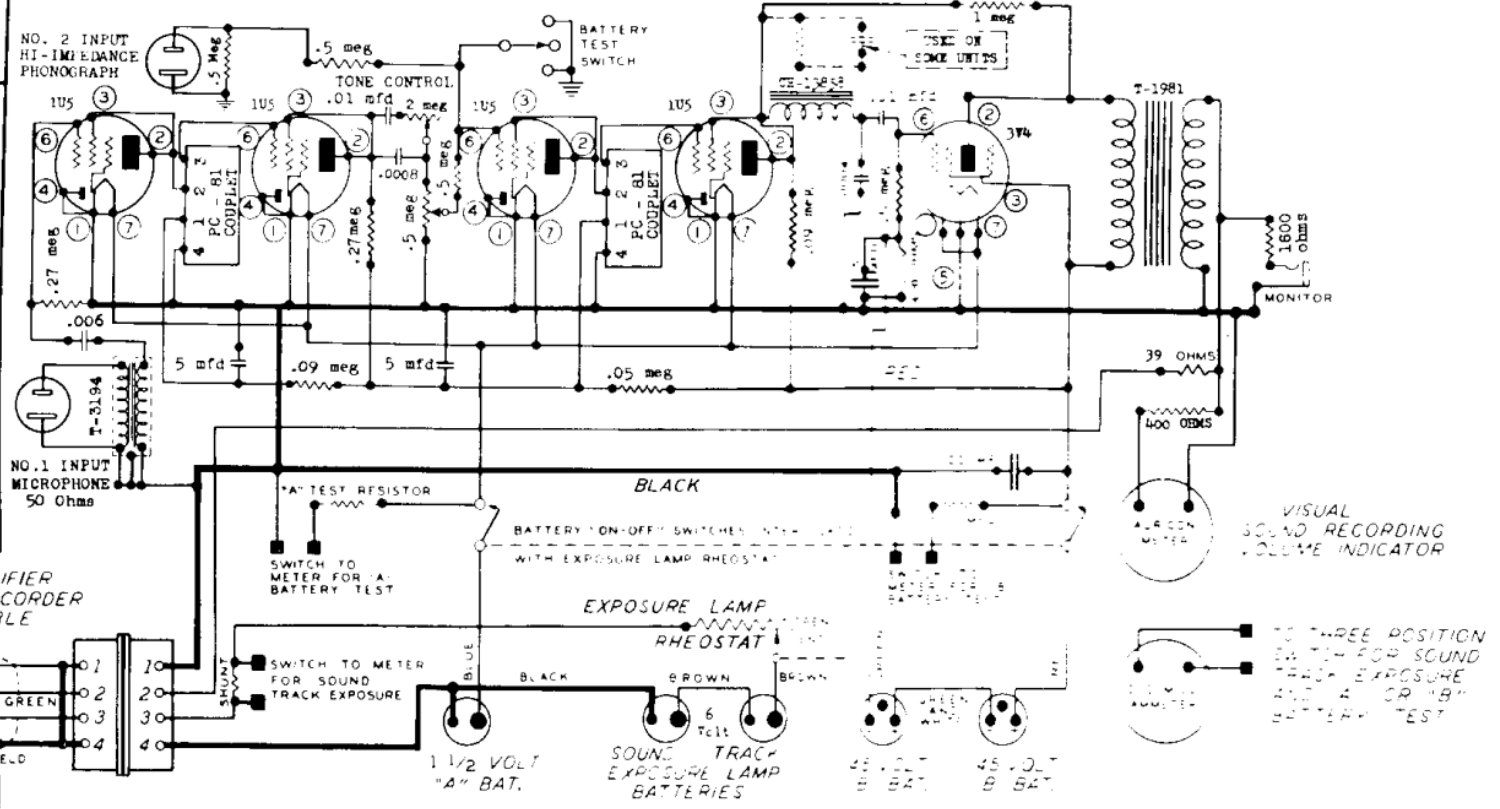
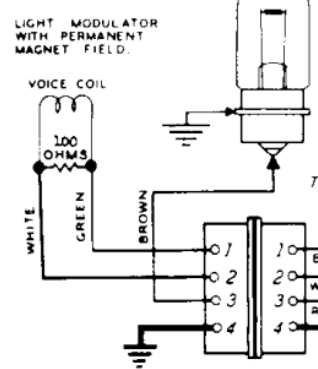
AURICON RA-30-A7 SOUND-ON-FILM RECORDING AMPLIFIER

THIS AMPLIFIER TO BE USED WITH AURICON VARIABLE AREA SOUND-ON-FILM RECORDING EQUIPMENT ONLY

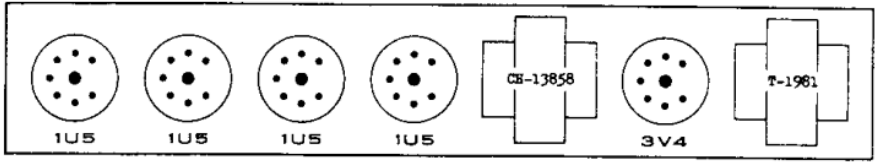
PC - 81 COUPLER



AURICON CAMERA OR RECORDER SOUND TRACK EXPOSURE LAMP



TUBES FOR AURICON AMPLIFIER No. RA-30-A7



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