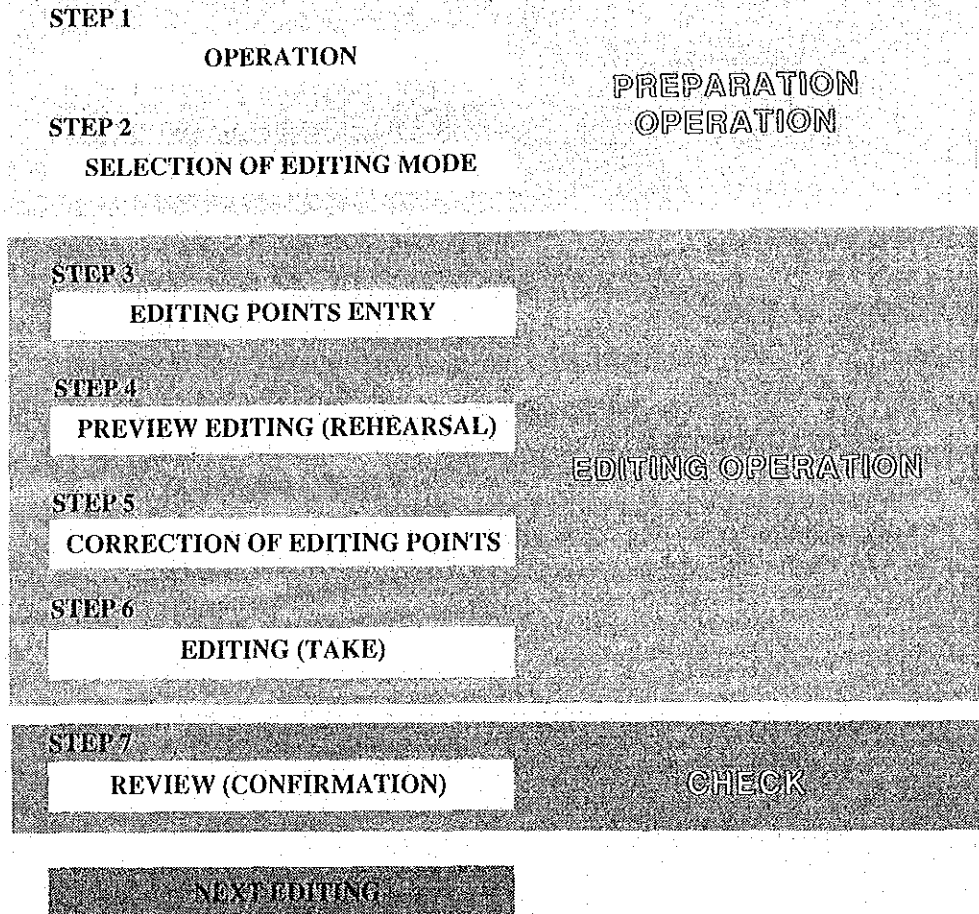


5-5 Editing Using the Editing Controller

Various models of editing controllers have been developed along with the development of the VTR. Some are like personal computers, storing many memory functions. But the underlying principle remains the same. The following shows the editing procedures for using an editing controller.



STEP 1 PREPARATION

Necessary connections are made and checked in the first stage. Normally cords are supplied when one purchases the equipment. However, special cables such as the 24 pin cable connector or the 36 pin cable connector are required for connecting from the player VTR to the controller, and from the recorder VTR to the controller. From the player VTR connect audio and video outputs to audio and video inputs on the recorder VTR. The BNC cable or the dubbing cable are used for video, and the RCA pin jack from audio in most cases.

STEP 2 SELECTION OF EDITING MODES

There are two modes of editing to be selected: assemble editing and insert editing.

In assemble editing, set the ASSEM button to ON, so that audio-1, audio-2, and video can be all assembled.

In insert editing, choose only the desired insert mode by setting the appropriate INSERT buttons—VIDEO, AUDIO-1, and AUDIO-2 to the ON position. While editing, one can reset each button to either ON or OFF whenever necessary.

STEP 3 EDITING POINTS ENTRY

The editing points are entered into both the player VTR and the recorder VTR in this stage. First, play back the player and locate the start of scene to be edited. Then, press the STILL button to freeze the picture at this point. The point is entered as the start of editing [IN POINT] by pressing the ENTRY button and the PLAYER MEMORY OUT button if necessary.

Also, the same procedure can be applied to the recorder; play back the recorder and locate the point [IN POINT] at which the picture should be entered by pressing both the ENTRY button and the RECORDER MEMORY IN button at the same time.

STEP 4 PREVIEW EDITING

Editing can be rehearsed by pressing the EDIT-PREVIEW button to check the editing points. Make sure that both the player and the recorder are set at the STILL mode when pressing the EDIT-PREVIEW button.

The controller will automatically preroll both tapes on both VTRs at the same distance (normally backspace 5 seconds from the editing point) and start forward, and thus preview the editing (rehearsal) at IN POINT and finish previewing at OUT POINT; however, nothing will be edited on the recorder.

STEP 5 CORRECTION OF EDITING POINTS

If the editing appears smoothly at the proper spot in preview, then start editing. If it is wrong, correct the editing points. If total correction is necessary, apply the editing entry procedure here again, so that the editing points preentered before will be automatically erased.

The number of frames can be corrected by pressing the EDITING POINT SHIFT button. Press the IN button on the VTR when correcting IN POINT, or the OUT button on the VTR when correcting OUT POINT. This can be done on either VTR wherever the correction is needed. While keeping the IN or the OUT button pressed, press + or - of the SHIFT button. The point will be shifted one frame forward or back, each time one presses + or - of the SHIFT button.

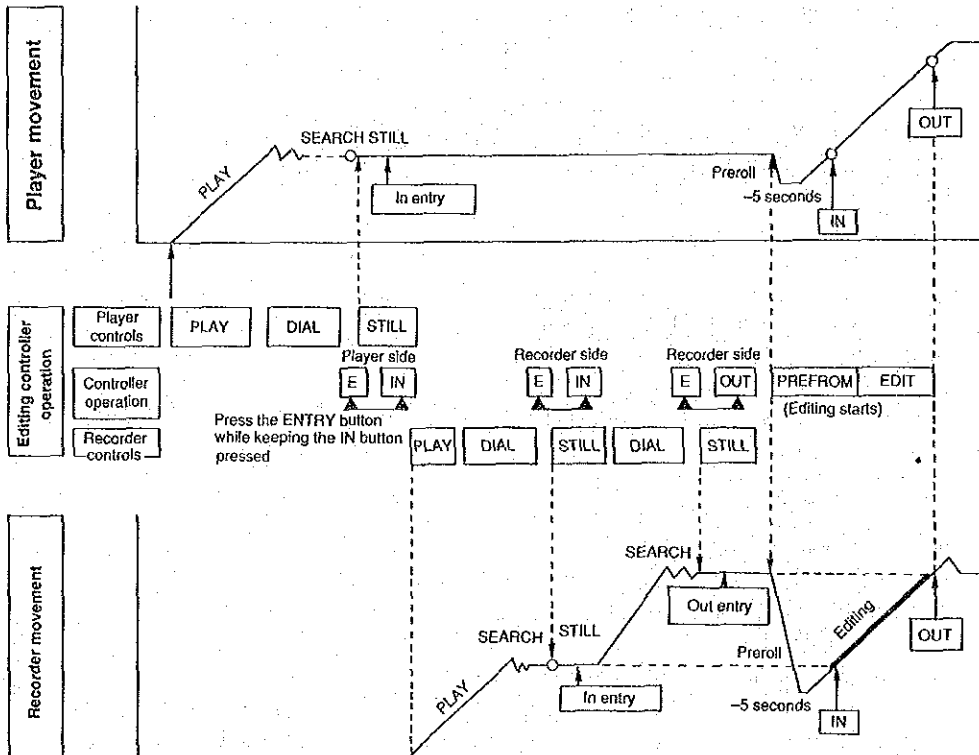
STEP 6 EDITING (TAKE)

Editing can be effected by pressing the PERFORM button (the EDIT button in some controllers). Make sure that both the player and the recorder are set to STILL when pressing the PERFORM button. The editing will automatically start and be finished at OUT POINT along the same procedure applied to preview the editing by pressing the preview button.

STEP 7 REVIEW

Review the editing to see how well it has done. It is suggested that each editing be checked since a VTR takes time to reprogram the editing points later on. When one presses the REVIEW button, the tape on the recorder will automatically be rewinded 5 seconds back from IN.

Fig. 5-4 Automatic editing controller operation and the VTR movement



5-6 VTR Maintenance

VTRs are highly sophisticated, but not difficult to operate. They are quite durable and can continue to run for hours. Yet, the following must be avoided: humidity, heat, and vibration, just as it is the case for any other electric machinery. Some basic maintenance may be necessary. Here, one will learn how to clean the head and how to adjust the pictures.

(1) Head cleaning

If the picture on the TV monitor is, either partly or wholly, poor and snowy, and that happens suddenly but the sound remains good, then the head may need cleaning.

There are two ways by which to clean the head, one of which is using the cleaning cassette.

The other using the cleaning kit consists of a small bottle of cleaning fluid and sticks covered at the ends with chamois. To use, first moisten the stick with cleaning fluid. Then touch the head with the stick to clean the head. Never move the stick up and down since this may damage the head. Move the stick slowly side to side. Also, clean the whole head cylinder and the tape path. Always use a stick to clean the head, but one can use a swab to clean the tape path. Cleaning the head with a stick necessitates the removal the upper cover of the VTR, and this first step might be quite an-

Fig. 5-5 Snowy picture

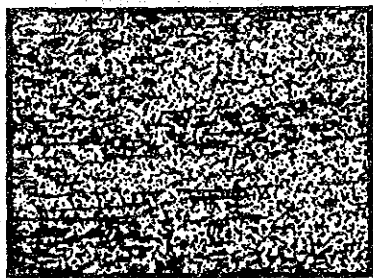
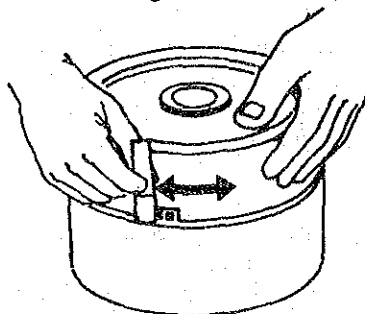


Fig. 5-6 Head cleaning kit



Fig. 5-7 Cleaning the video head using cleaning bar



noying. However, the heavy dirt will not come out easily by using a cleaning cassette unless a stick is used to clean the head.

If cleaning fluid is not accessible, one may substitute absolute alcohol for it. For a stick, one can easily make this oneself by covering a piece of plastic or plywood at the end with the chamois cloth.

One can clean the head more easily by using the cleaning cassette, so access to it is always suggested. Do not use the cleaning cassette for a long period of time. Excessive use of the cassette will cause friction of the head, thus shortening its life span. Thirty seconds of running time is the limit for one time usage. Do not rewind the cassette at the end of each use. Upon running up the cassette to the end, rewind it to the start. The cleaning cassette can be reused 5~6 times in this way.

(2) Picture adjustment

1) Tracking maladjustment

If noisy strips appear on one part of the screen in the playback of the tape made on other VTR, that means the picture band used for recording and the tracking band of the playback head are not properly aligned. Tracking control may need to be adjusted. Turn the tracking control to the left or right until the strips go off the screen. Some VTRs have the tracking meter. Maximum deflection will indicate proper tracking.



Fig. 5-8 Tracking maladjustment

2) Dropout

If linear white noise appears on the screen, this will be dropout. Dropout of magnetism compressed on the tape causes this problem. Dropout can be corrected by using the dropout compensator in some VTRs, but not totally corrected. TBC (time base corrector) can be also used to correct dropout.



Fig. 5-9 Dropout

The tape that has been played many times develops dropout. It would be better to use a new tape when something important is being recorded.

3) Color lock misadjustment

VTRs have an extra control called Color Lock, Color Phase, or Color Hold. This control is generally pre-adjusted at the factory. So use this control only if necessary. When the picture suddenly loses color or vertical bands of color appears, it is time to adjust the color lock control.



Fig. 5-10 Color lock misadjustment

4) Flag waving

If the picture bends at the top of the screen, skew control on the VTR may need adjustment, or adjust the horizontal hold control on the TV monitor.



Fig. 5-11 Flag waving

Video Shootings

6

6-1 Stable Camera Work

Videos always meet the audience. Be sure to have a good screen to put in the program, so that the audience can fully understand it without any disturbances on the screen. They will be annoyed about bad pictures, wrong focus, or shaky screen if one does not handle the camera properly during recording. The subject taken might be left off the screen as it moves. Make a good observable screen with stable camera work.

(1) How to hold the portable camera

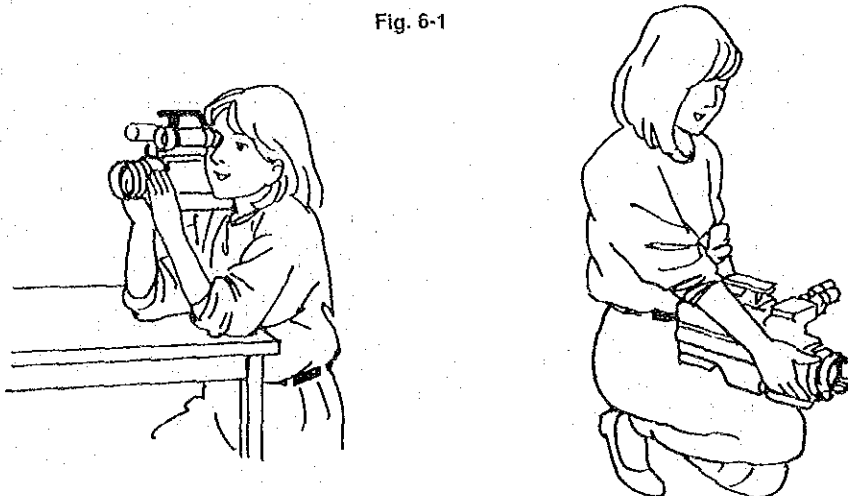
Basically, use both hands, balancing with parts of one's body. Keep this triangle support in mind when one holds one's camera in a position. Needless to say, the operation may differ due to the type of one's camera and either right- or left-handedness; however, the following steps can be applied for one's stable camera work.

First, open ones legs to the same width as one's shoulder, or perhaps slightly wider. Stand in a comfortable position and put the camera on one's shoulder along with one's left hand over it. Steady one's waist to bear

its weight. Do not make any space between one's right elbow and body to hold the camera stable. Also, avoid wearing slippers which may shake one's stance. When one is ready to look into the finder of the camera, use also the other eye to check the surroundings of one's target subject.

It is likely that portable cameras will move easily. Also, different angles require different positions, as one can see the figures shown here. Therefore, one is encouraged to practice shooting with one's portable camera at any angles.

Fig. 6-1

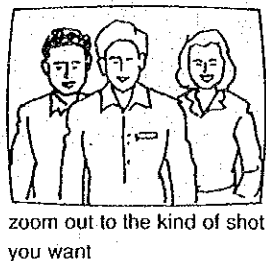
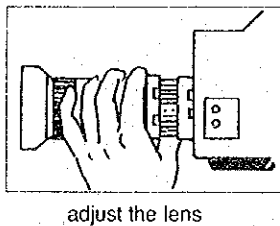
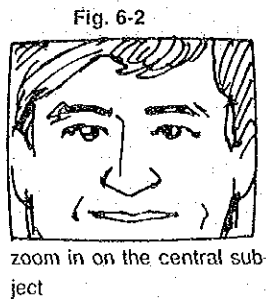


(2) How to focus the camera

Start one's camera work by focusing the camera. Seeing that the pictures which are out of focus may lose the interest of audience, focusing is an important step with which to start one's camera work.

Some video cameras have the automatic focusing function; however, this kind is still limited to home use only. Also, video cameras are equipped with rather narrow finders, thus one may find it difficult to adjust the focus on one's subject. There probably are not a few cases where zooming may cause the depth of focus to be shallow, leaving the subject out of focus.

If the camera has a zoom lens, first zoom in on the subject as close as possible. Then, adjust the lens so that one can zoom out to the kind of shot one want by turning the zoom ring.

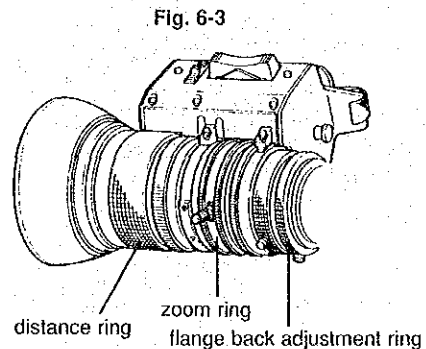


• Flange Back Adjustment

The flange back adjustment holds the subject in focus at the lens and camera distance. One can obtain one's subject in focus even while zooming in and out. However, incorrect flange back adjustment may leave the subject out of focus.

The flange back adjustment is done as follows. First, point one's camera at a distant subject such as buildings and trees. Here, be sure to select the infinite focus. Then, zoom out the subject and adjust it in focus by turning the zoom ring at a maximum wide angle. Finally, adjust this focus also by turning the flange back adjustment ring. Repeat this procedure until one obtains accurate focusing. The subject in a long distance will remain in focus while being zoomed up to wide angle.

One may not be able to find a distant subject to point one's camera at. If this happens, measure the distance to anything in the surrounding to be 3 meters and set the distance ring at 3 meters when zooming.



(3) Types of camera shots

The appearance of a scene can be judged only when viewed through the camera lens. How the camera sees the subject is important, not how the scene appears to the director, to a person in the scene, or to others.

Camera shots are defined according to the way the subject is framed in the viewfinder. This can be done in four ways:

- Distance—long, medium, close-up
- Angle—high, low
- Point-of-view—objective, subjective
- Camera movement (or changing lens)—pan, tilt, dolly, zoom

Basic Shots

Three types of scenes are common in photography:

- The long shot (LS)—a general view of the setting and the subject. It provides an orientation for the viewer, by establishing all elements in the scene, and if important, shows size proportions relating to the subject.
- The medium shot (MS)—a closer view of the subject, elimination of unnecessary background and other details
- The close-up (CU)—a concentration on the subject, or on a part of it, excluding everything else from view

When the subject is the same, three successive shots assume relations to each other.

LS, MS, and CU do not mean any specific distances. A long shot of a building may be taken from a distance of hundreds of yards, whereas a long a few feet. One may be close-up to a building when one is across the street, but one may need to get within a foot or so of the equipment to take a close-up.

Although LS-MS-CU is a fundamental sequence, it is not to be rigidly followed in successive sequences, and there is no set rule for the use of these three basic shots. The visual effect desired should determine the sequence.

Sequences need variety; without variations, the media may become monotonous. A still-picture sequence can include a number of relatively similar successive shots, while a video recording or film requires more diversity so it does not lose its pacing or impact.

For straightforward explanation the LS-

MS-CU sequence may be satisfactory. For a lower pace, gradually increasing interest, LS-MS-MCU-CU may be used. For suspense or drama, consider CU-CU-CU-LS.

Although the subject does limit the kinds of shot that are called for in the script, two photographers covering the same subject may film the three basic scenes differently, each imparting his or her own interpretation and emphasis. To say that one version is right and the other wrong would most likely depend on personal preference.

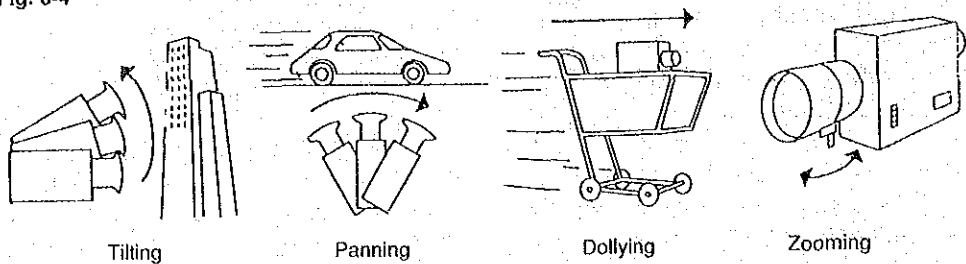
At the two ends of the LS-MS-CU sequence one can introduce extremes if they are important to one's story—extreme long shot (ELS) and extreme close-up (ECU). Also, there are situations in which one may designate a scene between two basic shots—a medium long shot (MLS) or a medium close-up (MCU).

Angle and Position Shots

Variety, emphasis, and dramatic effect can be accomplished through the use of camera angles. The normal or neutral camera position is at about eye level for a person standing. A camera in a higher position, looking down on the subject, makes a high-angle shot that gives the illusion of placing the subject at an inferior position, reducing its size and slowing its motion. A camera in a lower than normal position, looking up at a subject, makes a low-angle shot that seems to give the subject a dominant position, exaggerating its height and speeding up movement. High- and low-angle shots can be used to eliminate undesirable background or foreground details.

The camera may be placed in the position of the observer's eyes, or in other words, that of an audience. This is an objective camera position. The camera may also be placed in the position of the subject's eyes to see the performance of an operation or the behavior of an object as the subject sees it. This is a subjective camera

Fig. 6-4



position. In the latter, the photographer may shoot over the subject's shoulder, with the camera at a high angle.

In summary, there is a variety of filming shots at one's disposal:

- Basic shots—long shot, medium shot, close-up
- Extremes—extreme long shot, extreme close-up
- High-angle and low-angle shots
- Objective and subjective camera positions

The moving camera shots are used when a subject moves and one follows the action. Also, when a subject is too large to be included in a single, set shot, or when one wants to visually relate two separate subjects, a moving camera shot is acceptable. These possibilities include:

- Panning—a horizontal movement of the camera
- Tilting—a vertical movement of the camera
- Dollying—a movement of the camera away from or toward the subject (dollying the camera parallel to the subject is called trucking)
- Zooming—a continuous change in focal length of the camera lens during a scene that simulates the effect of camera movement toward or away from the subject

These techniques are generally overused, often unnecessary, and frequently poorly executed. If a subject in a

scene moves, the camera might logically follow the action. This is a good use of camera movement. Or, if a scene is too broad to be caught by the motionless camera, a pan (panorama) may show its size and scope. Or one may pan or tilt it if it is important to connect two subjects by relating them visually. But do not pan across nonmoving subjects which can be handled satisfactorily by a longer still shot or by two separate scenes.

Closely related to pans and tilts is the use of a zoom lens—zooming. Here the same cautions apply about overuse. A series of straight cuts (MS to CU) could often be more effective. Save the zoom shot until one feels a real need and a shot that makes an important contribution to the continuity of one's film.

The dolly shot is the most difficult of the moving-camera shots to perform smoothly and effectively. A scene shot as the camera is held in a moving car is one example of a dolly shot. Or the camera, on a tripod, can be attached to some device with wheels—a wagon, an office chair, a grocery cart, or a motorized factory truck—and slowly pushed or pulled in relation to the subject.

When panning, tilting, dollying, or zooming, apply these practices:

- Attach one's camera to a tripod, make sure it is level, and adjust the head for smooth movement (a long handle on the head is desirable for good control).
- Always start a moving shot with the camera held still for a few seconds and end the shot in the same way.

- When shooting a moving subject, try to "lead" the subject in the frame slightly.
- Always rehearse the shot a few times before starting to record.

In summary there is a variety of filming shots at one's disposal:

- Basic shots—long shot, medium shot, close-up

- Extremes—extreme long shot, extreme close-up
- High-angle and low-angle shots
- Objective and subjective camera positions
- Pan, tilt, dolly, and zoom shots

Terminology of each framing of shots are shown below.

Fig. 6-5



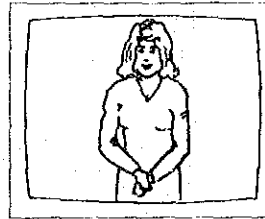
Big close-up, also called **Very close-up head shot** shots for face only



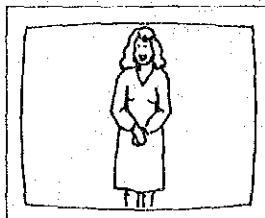
Close-up also, called **Head and shoulder shot** extends head shot from hair to shoulder



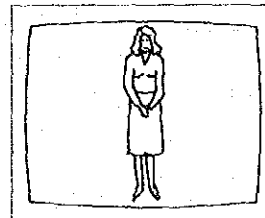
Bust shot, also called **Medium close-up** shots above bust line (frequently used)



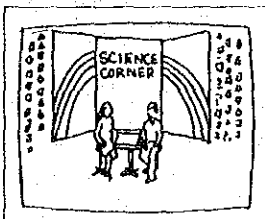
Waist shot also called **Mid shot** shots above waist line; preferred when the figure is standing



Knee shot, also called **Medium shot** preferred to shot more than one with backgrounds



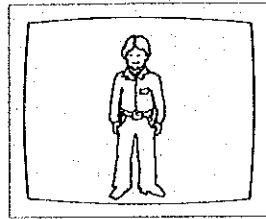
Full lens shot shots for the whole body



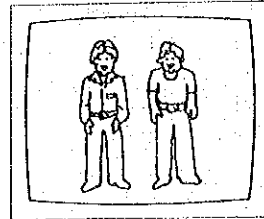
Full shot shots for the whole setting; used for beginning and ending of a program

The terminology may differ in countries. The following descriptions are commonly used in the English-speaking countries, and shots are classified by the number of people included, such as one shot (1S) for one person, two shot (2S) for two persons, and so on.

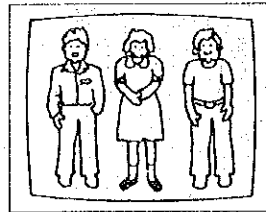
Fig. 6-6



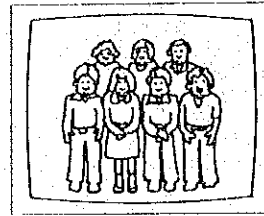
One shot (1S)



Two shot (2S)



Three shot (3S)



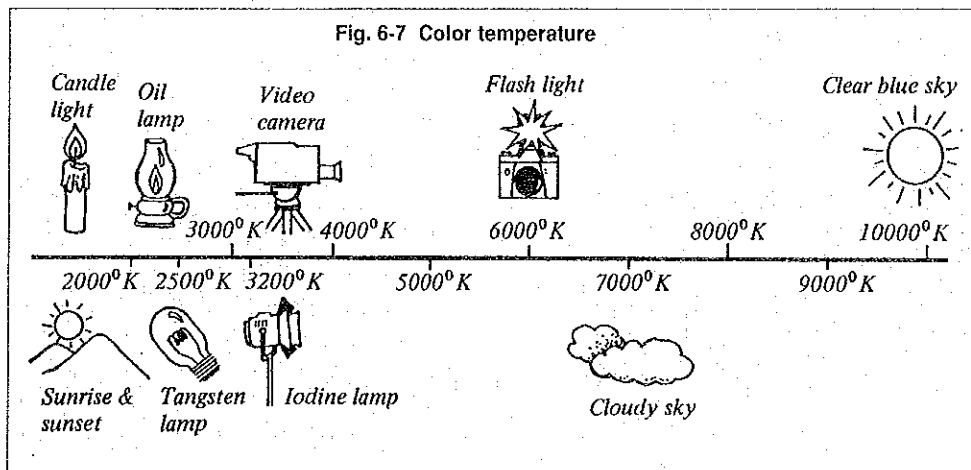
Group shot (GS)
more than three

(4) Color temperature

Color temperature refers to the color quality of light, and is expressed in units of 'K' (Kelvin). We sense any kind of light, such as sun, tungsten, candle, and so on. Each looks a single, solid color by itself; however, consists of various wavelengths of colors. Therefore, what we call the color temperature is said to be the mixture ratio of colors.

Let us have a look at some examples. When one puts an iron into a fire, it changes its color to red, and gradually to pale blue. Furthermore, the spectrum confirms a long wavelength of red color under low temperature and a short wavelength of blue under high temperature. Other extremes are sun heat and candle light. The former has a high light source, thus a short wavelength. And the latter has a low temperature, thus a long

Fig. 6-7 Color temperature



wavelength of red. Lamps for photography or tungsten lamps have an in-between temperature of those lights above.

According to Kelvin, some of color temperature are; 0K(absolute zero) - dark black, 800K- dark red, 1200K - orange, 1300K - yellow, 2000K - candle light, 5000K - 6000K - flash light, and 10000K - sun heat. Theoretically, the maximum color temperature is 20000K. And the color temperature preferred for video cameras and photography is about 2000K - 10000K.

Normally, video cameras are adjusted at 3000K. Slide films differ in lighting, such as daylight or tungsten lamp. As for video cameras, select a color temperature conversion filter appropriate to the surrounding light. Suppose that ones video camera, which is adjusted at 3200K is used outdoor under the sun. Convert this temperature into 5600K. Filter conversion is a general adjustment, and more accurate adjustment

for lighting can be done by the white balance.

White Balance

Seeing that various kinds of light affect ones recording, one will need to adjust the white balance in order to obtain an optimum color reproduction:

Stability of the white balance has been improved, and that makes it possible to record some scenes indoor all day long without additional adjustment of the white balance. Sunlight may affect the outdoor recording since a color temperature changes as the sun moves. However, from nine a.m. to three p.m., the temperature remains about the same; therefore one needs not be nervous about readjusting the white balance. (Refer to the section on camera operation for the white balance adjustment procedure).

6-2 Audio for Video Program Production

A video program comprises an image and a sound, and a sound plays an influential (or an important) role. A good sound, which means a comfortable narration to the ear, a beautiful sound, and a sound effect are necessary in order to produce a good video program.

(1) Required equipment

Various kinds of recorders are needed for video program production. Basic ones can be used along with instructional tape materials and slides.

1) Open reel recorder

There are two types of recorders: cassette recorder and open reel recorder. Cassette recorder may be more efficient than an open reel recorder. But, only an open reel recorder can be used to splice tape. It is convenient to use two open reel recorders when recording a narration, then editing, and mixing it with music and sound effect in order to make a master tape.

2) Record player

A record player is a most important musical source. A manual record player is convenient in order to start the music at the most proper time.

3) Cassette deck and cassette recorder

A cassette deck and a cassette recorder are indispensable items for sound effect recording and outdoor recording, and also when duplicating into a cassette tape.

4) CD (compact disk)

CD is much more convenient than any other sound maker. Various kinds of CDs are available these days.

Table 6-1 Features of various microphones

Type	Name	Characteristics	Directivity	Sensitivity [1V/ μ bar]	Output impedance
Galvanic electric type (dynamic)	Moving coil	Tough and easy to handle Wide dynamic range	○ ○	-70 ~ -80dB (600)	Approx. 20 Ω is transferred to 600 Ω ~ 50 Ω with a transformer
	Ribbon	Good frequency characteristic Poor at mechanically	○ 8 ○	-70 ~ -80dB (600)	Slight ohm is transferred to 600 Ω with a transformer
Electro-static type	Condenser	Good frequency characteristic Impedance conversion and bias supply circuits are necessary	○ 8 ○	-60 ~ -70dB (600)	Output is transferred to 600 Ω with impedance conversion circuits
	Electret condenser	Good frequency characteristic Bias supply is unnecessary but impedance conversion circuits are necessary	○ ○	-65 ~ -75dB (600)	Output is transferred to 600 Ω with impedance conversion circuits
Piezo-electric type	Crystal	Small and light, good sensitivity Strong impedance The characteristic gets low at high temperature and high humidity	○	-45 ~ -65dB (high impedance)	Over 100k Ω
Carbon type	Carbon	Good sensitivity Much noise and characteristic is unstable so as to popularize telephones	○	-40 ~ -60dB	Over 100 Ω ~ over 10k Ω

5) DAT (digital audio)

DATs are available in Japan, but not in foreign countries due to problems involving copyrights. A DAT is much easier to handle than a cassette.

6) Microphone

There are various types of microphones. We will discuss them in the following section.

(2) Microphone

Sound quality depends a lot on microphones. Sound is conveyed by the vibration of the air. And microphones convert sound into an electrical current. Microphones can be divided into three types: dynamic microphones, condenser microphones, and ribbon microphones, according to their functions.

The microphones used by businesses for ordinary recording are electret-condensed type and moving coil type. A moving coil type is one of the dynamic types. Those

microphones have good quality and are compact. Microphones are divided into two parts: non-directional (omni-directional) one and uni-directional one. A non-directional microphone is easy to handle, while a uni-directional is mainly used for an interview.

(3) Recording of narration

A narration should be done at a low speed in whatever language.

A microphone which can only accept a narrow angle of sound and reject all noises coming from other angles is called a super uni-directional microphone, also known as a shotgun microphone. It is attached to a camera when used.

Evaluate a test recording before deciding on a narrator. A natural voice which is comfortable to the ear may prove to be difficult to catch when recorded. It is better not to be nervous about mistakes and to conduct a recording of the narration to the accompaniment of the image that is common.

And it is better to leave everything to the narrator and let him operate in his own way once the recording of the narration is started.



Fig. 6-8 Non-directional microphone (Omni-direction)

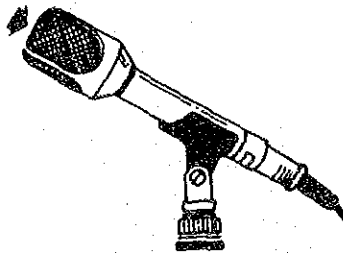


Fig. 6-9 Uni-directional microphone (Cardioid)

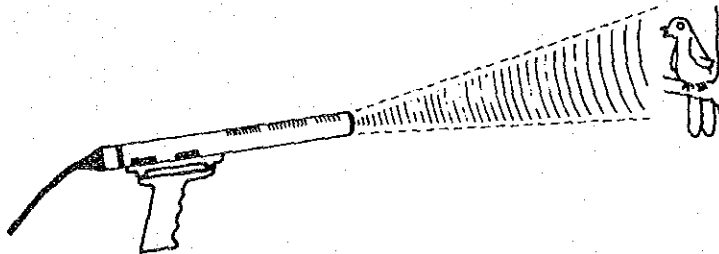


Fig. 6-10 Super uni-directional microphone (Shotgun)

(4) Microphone Position

In earlier television programs, the microphone did not normally appear in the picture. The main reasons were:

- The size of microphones were much bigger and tended to distract attention, for example, in dramas and theatrical performances.
- The equipment would obstruct the audience's view of things on a table.

Today, microphone are more sophisticated and less cumbersome. Moreover, viewers are also more aware of microphones and are not so distracted by the sight of such equipment appearing on the screen. Therefore, we are not so inhibited in showing a microphone on screen, provided it is placed in a suitable position for audio recording.

One Speaker - One Microphone

In this case, the microphone should face the mouth of the speaker. The ideal distance from the mouth to the microphone is between 20 to 30 cm, but this will also depend upon the recording conditions. See the following chart for guide.

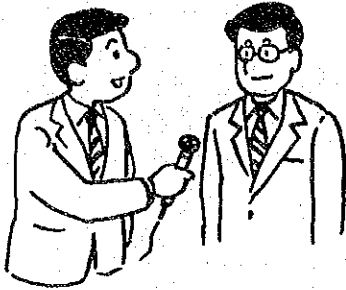
Table 6-2

Conditions of Recording	Gap between Mike to Mouth
Quiet place (studio, inside house)	30 to 50 cm
Echoing place (classroom made of concrete) Auditorium	15 to 20 cm
Noisy place (outside, town)	5 to 15 cm

Placing the microphone too close to the speaker results in the microphone picking up unsavory snort and lip noises. If the microphone is too far from the speaker the

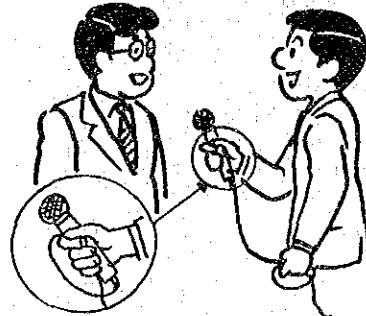
microphone will pick up ambient noises. Avoid speaking from the side of the microphone or with one's back against the microphone. Recently quality has been very poor.

Fig. 6-11 Handling the microphone
The following techniques will help develop ones skill in handling a microphone.

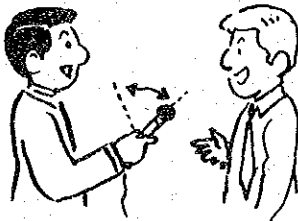


Face to face Position

This is an "uneasy" position. The interviewer is a little too far away from the person and has to stretch out his arm.

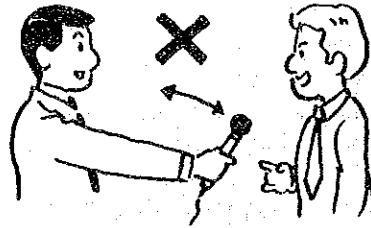


A more comfortable style. Notice the fixed elbow position. Only wrist action is involved.



Side by side position

Arm and microphone position are fixed. There is no unnecessary movement involved.



Outdoor / noisy location

The microphone is closed to both persons in such locations. The microphone cable is looped around the hand to avoid dropping.

(5) Sound effect

It is common to record an image and a sound at the same time when recording a video program. Do not forget to record background sounds because an image always accompanies background sounds. For sounds deemed improper, other sound effects should be substituted.

One should pay attention not only to the images but also to the sounds.

(6) Music

There are some effects accompanying music. They are:

- 1) Informing the beginning point and the end point to the audience

- 2) Playing a role as a bridge between two scenes
- 3) Emphasizing an atmosphere
- 4) Expressing a feeling

Music dictates whether the program is successful or not. There are three key points when using music.

They are:

- 1) Why is music necessary?
Music should be something that can fascinate the audience. And if the image itself can attract the viewers enough, the use of music is not necessary. Background music is normally not used for the most important portion of an educational TV pro-

gram, for example. In general, music with vocals should not be used as BGM, because for the most part music is background to the narration.

- 2) Do not use a famous tune

Everyone already has his or her own impression of the music if it is famous. For instance, no one can concentrate on the image of a program if Beethoven's 9th symphony is played.

- 3) Pay attention to cultural differences

Choose a music which is the most suits the contents of a program. Therefore, one must make sure of the situation in which the music is to be used.

6-3 Lighting

Lighting is one of the most important aspects in slide production and video production. In another words, it can be said that image recording means to the recording of the color and shape of a subject by creating shades.

Yet, it seems that lighting is not regarded as an important factor in video program production when offering technical cooperation to foreign countries. Of course it is a fact that video cameras produced recently are highly sensitive, and even in a 400-lux room, a very clear images can be taken with them. But a lighting system to light up an object has to be used so as to create clear and beautiful images. At least one light is necessary for an indoor shot, and three lights are indispensable upon shooting a human subject.

(1) Key points

- 1) Take as much advantage of the sunlight as possible

It is best to use lighting equipment, but it is rather troublesome to use in a hot district. Therefore, it may also be important to use the sunlight instead of lighting equipment when taking documentary films. And in this case, one should not forget to place the camera with its back facing windows from which the sunlight is coming. Otherwise the subject in the room will become dark.

2) Safety

A lot of accidents can occur during a shooting. Lighting equipment may fall to the ground, and should it land on somebody,

serious injury may result. In order to prevent such accidents, it is better for someone to always be located beside the equipment, or the equipment be tied to a certain, preferably immobile object. And it is also recommended that the cord be fixed, with masking tape as to prevent somebody from tripping.

(2) Basic points for lighting

As shown in Fig. 6-12, 13, there are three kinds of lighting used to light up a human subject. They are a key light, a fill light, and a back light. The fill light is used to fill the shadows created by the key light. And the back light is responsible for most of the dimensionality of the picture; without it the image will be flat and dull.

1) Key light

The key light is the basic light used to light up the subject and to create depth through shadows. The key light is placed 20~40° to the side and between 30~40 up from the subject. Use a flat light and light the whole scene evenly.

2) Fill light

The fill light is used to fill and soften the shadows created by the key light. Therefore, it should be placed on the other side of the key light (on the camera side) to cover the dark parts created by the key light. The power of the fill light should be weaker than that of the key light. And of the power is the same as that of the key light, it should be placed a bit further away from the subject. The key light and the fill light should have power enough to light the subject up well.

3) Back light

The light which is placed on the other side of the key light (on the camera) or behind the subject is called the back light. This light brings out the characteristics of the subject clearly with light from the behind. One can create a well-taken and beautiful image on a screen by using the back light. The back light is the key point and has a big influence on lighting. The back light is placed to face the camera; therefore, please keep in mind not to align the lens of the camera directly. Besides those three lights, there are some other lighting. They are the set light, the top light, and the horizontal light. The set light is used to light up the whole scene. And the horizontal light is used to light and add solar to cyclorama stage. All of them are used in a professional video studio.

Fig. 6-12 Basics for lighting human subject

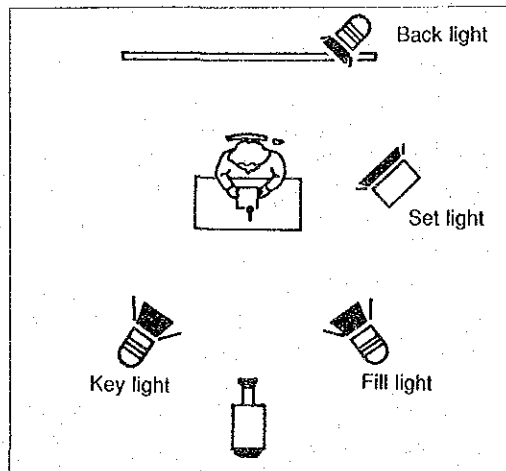
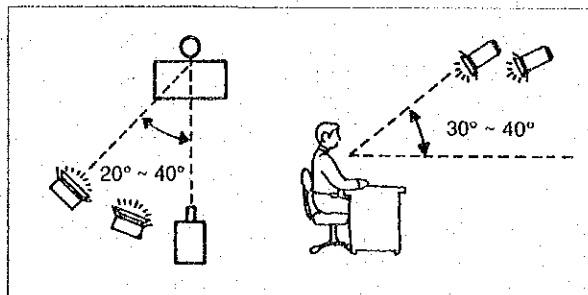


Fig. 6-13 Setting point of key light

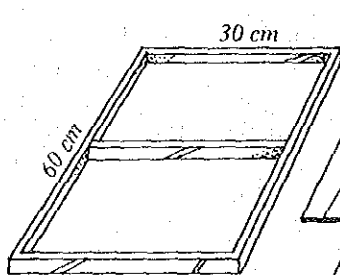


(3) Outdoor lighting

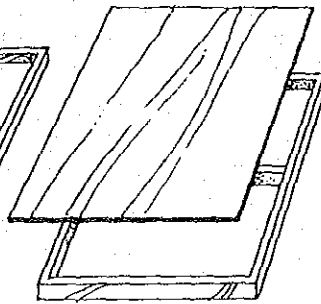
Certain types of outdoor shooting requires some lighting. For example, if a presenter is standing under a tree or a lightly shaded area, light reflection from a "reflector" is sufficient. This lighting is equivalent to fill lighting.

Commercially produced reflections are quite difficult to obtain, but it is easy enough to make a simple reflector ONEself. The diagrams and instructions below will help one.

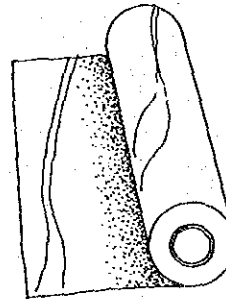
Fig. 6-14 Ways to use the reflector



Construct a wooden frame 30cm x 60cm.

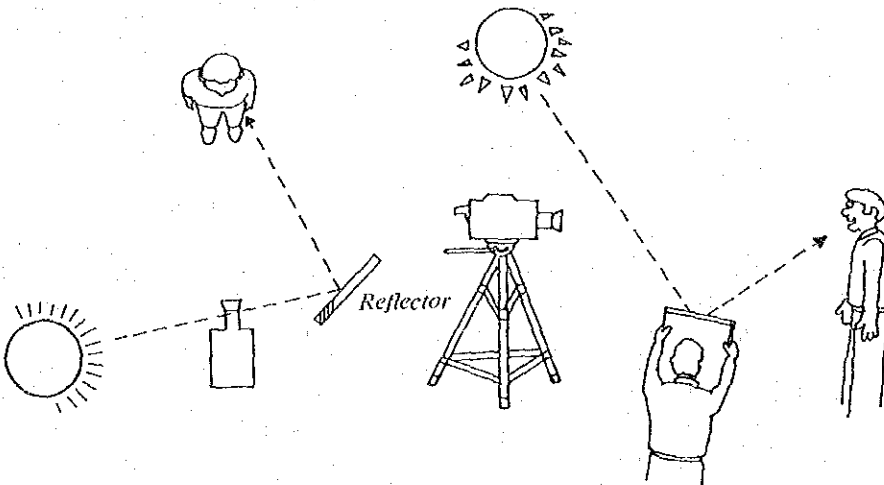


Nail a piece of plywood of same dimensions on to the frame.



Glue and cover the frame with lightly creased aluminum foil.

Fig. 6-15 How to make a simple reflector



7

Video Production Procedures

Video material production means an editing (mixing) job integrating narrated speech or music, and then completing a production. There are many different areas comprising the whole. We deal here with 13 different areas.

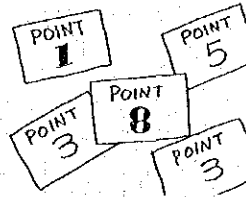
(1) Planning

Making the program intention and purpose clear, in addition to making the required decision on the titles, length of the program, the theme, the estimated budget, the schedules, the composition of staff members. Most important of all is making the purpose crystal clear.

Most people find merits in the video products in terms of knowledge acquisition. The merits, however, also range beyond it. The quality of evoking emotions, the quality of fascinating the viewers, or the quality of facilitating viewer understanding of the subjects involved. These points should be duly taken into account in advance of planning. It is important to make a plan by which such messages as 'why this is made', or 'what this is about' readily come across to the viewers.

Such items as title, objective, subject, format, budget, schedule, staffers, machines to be used are all important ones to be dealt with in a clear planning.

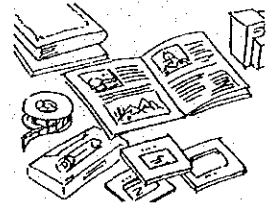
Table Six is an example in English of a planning paper. Of particular importance in this planning paper is the title. Title in other words may be called "the face of a program." So, prior to the final decision on the title, it is advisable for a producer to consult with his local counterpart on a title so that the words used in the title may not sound improper in local usage.



As for the objective, a unified understanding of it by the people concerned is a must, since a lack of it might bring about confusion among them, leading to an overly extended content or disorder in the progress. Budgeting is also an important factor, particularly in view of a low figure expected for such budgets from local authorities. So, securing a sufficient budget from the beginning is no less important than the other factors.

(2) Material collection and survey

Once the objective has been set, the next step is to collect materials which could be utilized for the production. These materials include relevant books, photographs, pictures, films, videos, recordings and others such as devices for experiments. Survey for collection of such materials should be made as extensively as possible.

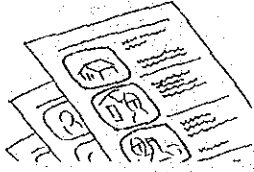


(3) Selection of materials

Program's outline is set after the processes of material selection (out of the materials collected or available at hand) have been completed. The members concerned up to this stage of the production are called "content planners". Their selection processes are very important to the context of the whole production.

They have to access each 'episode'

(scenes, complete units of experiments, also called story) in terms of its conformity to the objective. They are also responsible for making decisions on whether it has varieties or singularities and whether it is susceptible to filming.



(4) Composition of the script

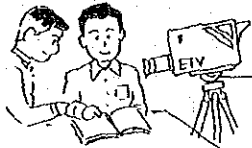
The script is an alignment of episodes selected and filmed. Instructions on pictures, voices and sound effects are written into the script. The script could be said to be equivalent to the draft in architecture.

The quality of a script greatly affects the entire quality of a program. In the case of a documentary production or of reportage, film shooting usually starts after the general outline of the story has been defined. Script is composed based on the shot pictures.



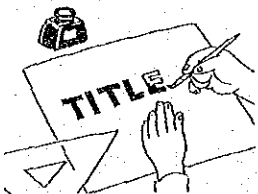
(5) Preparation for shooting

Make a shooting schedule. Preparations for experiments, acquisition of materials required, advance arrangement with the places where the shooting is scheduled, scheduling for studios and classrooms, adjusting the schedules set by the staffs, schedules for the performers, issuing orders for stage sets are the items to be checked up on even in a production by a small group of people.



(6) Art

Principal works in this field consists of making the title cards, superimposing cards, making graphs or charts. It is nowadays possible to compose a title or to superimpose on the



video pictures by means of word processors or personal computers. Such machines, their operationability being greatly improved, should be aggressively availed of.

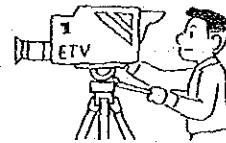
(7) Experimental devices and materials

Securing devices or equipment and materials suitable for shooting eventually leads to an experiment or performance easily and readily understand. Experimental equipment are generally for the purpose of study or of actual experimental research. They are simply not manufactured for the purpose of displaying themselves. Since most of the equipment are, by nature, of somber color, select those that are beings. A lot of materials is required for such a job. One measure expedient, if it is permissible for the occasion, is to follow and record one particular transformation, in the case of a production by a limited number of staffers. There is no set procedure in video production. One should choose and employ such methods as are most suitable for individual productions.



(8) Recording

Rare are the cases in which machines end up being free of any mechanical troubles after the completion of video recording. Some mechanical troubles are bound to occur. So, while doing best for a perfect shooting and recording, one should also be prepared to settle for the second best.



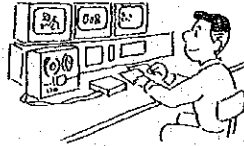
Recording is a job of great exertion, and performers can be at their best only in a relaxed atmosphere throughout. It is better not to be too particular over slight lapses.

An important thing to keep in mind while recording is to have the performers start their performances five seconds after the tape started to run and to stop the VTR five seconds after the performances have

come to an end. This procedure is necessitated by the consideration for the editing job that comes later. Tape running is stabilized during these five seconds in the beginning and the second five-second period is required for the tape to come into motion in auto-editing.

(9) Editing

TV stations employ several cameras while recording in their program productions, simultaneously doing the dubbing job of titling, of music, of speech, of narration, and then complete a program and air it then and there. This is something we cannot hope to copy.



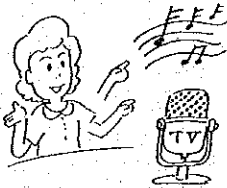
It would be realistic, in a production by a limited number of staffers, to do recording, editing, dubbing of narration speech and mixing music along the progressive stages, not all at one time.

For the portion shot outdoors or in studio, editing can be done while carrying on superimposing, including that of title, and dubbing of narrated speech.

One thing to note: do not hesitate to cut off those scenes that may disturb the entire balance of the whole program. One is apt to be reluctant to cut off one's own shots, thus rendering the whole program redundant to the eyes of viewers. Editors should be watchful for a balanced content as seen from the eyes of the viewers.

(10) Adjustment

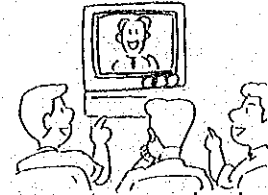
In the case of video, dubbing of narrated speech, sound effects, or music is left to be done later since the voices of the performers are simultaneously recorded. In the dubbing procedure, it is advisable to insert music between the changes of titles or of the scenes for a short duration and not to insert it as a long background music. One method



to accentuate the effects from the scenes shot is to keep the live sound from the scenes alive.

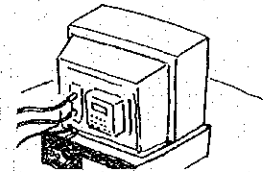
(11) Preview

The program, after having undergone dubbing procedure, is ready for viewing by the production members and other people. There should be, perhaps, some spelling mistakes in titles, for example, or an improper speech, or higher level of volume in BGM. It is not possible, in video, to replace one part with another. However, it is possible to adjust some mistakes by employing inserting editing method.



(12) Presentation

One should not forget to check in advance on the machines before presenting a video in classroom. A common mistake for a two-channel video set is the failure to connect both channels to the TV set. When narration and music are separately connected, either music or narration is not heard in such a case.



(13) Evaluation

Determine if the completed program has the original purpose. A method commonly and widely employed for such evaluation is to distribute evaluation forms or questionnaires among the viewers and have them check the relevant checking items. Another is to distribute a blank sheet of paper, (about 8 × 15cm) among the viewers and have them make their own comments, one on each paper, or more comments on more pieces of paper. This method provided one with a commentary that one could not hope to get from the former one, the evaluation forms.



Tips For Video Production

8

Video program production is something enjoyable. However, it is also true that the same enjoyable video production calls for more than an ordinary effort when it has to be done in a foreign land and, in consequence, requires the cooperation of the local people concerned.

Experience counts most in the production of good quality programs, but let us discuss here three other elements which are also vital in the production. The first is the role to be played by the producer, the second 'the formative evaluation', the third 'open system' that concerns proper uses of the machines and equipment.

(1) Role by producer

A producer is pivotal to the processes of video production and his role is a really difficult one. Any professional starting on video-related production is supposed to play out the producer's role and, concurrently, oftentimes that of a director.

What is the job of a producer and how should he approach to the job? To put it simply, his job is to supervise all aspects of works carried out by the production staffers and to help them complete a production. In assigning himself this kind of job, he must set the following priorities:

- Producing a program best suited to his purpose
- Giving necessary guidance and leadership to his staffers and performers
- Assuming the final decision-making power on himself in production-related matters
- Strictly observing the schedules
- Staying within the budgetary limits

Many unexpected problems or troubles are certain to occur in the processes of production, mechanical ones, troubles in human relationship, weather problems, to cite a few examples. Overcoming these or other problems calls for the capability of being cool and collected under whatever

circumstances in which he finds himself and of making judicious decision.

Expertise supported by experiences in every area of video production is also an integral part of a capable and efficient producer. In the case of producing educational, training programs, understanding and knowledge of the subjects involved are also required of the producer.

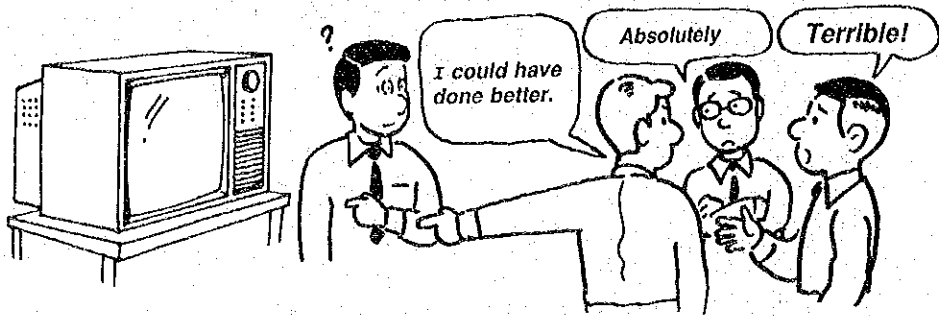
A producer also has to be open-minded, willing to listen to the voices from his staffers or from the performers while being able to clearly enunciate the purpose or ideas in his mind to them. There should not be any limit to exchanging opinions so far as it is understood leading eventually to a good production.

It should be noted that, in the case of educational program production, a producer often takes on the role of a director.

An interesting aspect of his position is that the position, in its functioning, obliges him to serve his entire staff members while supervising them at the same time.

It seems, however, that a local producer fails in this part of the functioning, failing in consequence in adjusting conflicts in views between him and his men. Generally, and regrettably, those local people in positions of responsibility are quick to issue orders to their subordinates but are slow to listen or to respond to their voices. One may say that

Fig. 8-1



they even seem to be offering tremendous resistance to the adoption of suggestions made by their subordinates.

It could be said, therefore, that a producer has as much to learn from his field experiences as from his textbooks in order to become a good one.

Many societies in developing countries are more conscious of educational backgrounds and of diplomas than Japan is. It is generally assumed in such societies that those holding master's degrees or diplomas in fields such as educational engineering or audio-visual education are capable of producing or directing productions on account of this alone. These people, based on such assumption, are then assigned to the producer's or director's post, even though they have no previous experience producing or directing productions.

In the mean time, those having experience but no diplomas are shied and not valued much. This may explain why so many equipment from Japan, once the professionals leave them behind, are not put to adequate uses and are left idle.

(2) Formative evaluation

Effecting its original purpose is basic in an educational, training program. A program's success or failure depends on whether the production has been executed along the line of the purpose and whether the original intention has been satisfied. Evaluation is conducted through forms of questionnaires and of evaluation lists after the program has been completed. This type

of evaluation, which primarily concerns a completed program, is called "summative valuation."

This type of evaluation is especially essential for big, important program productions in that it enables the people concerned to adjust, if necessary, any deviation from the pre-determined course and thereby helps them to bring about a desired effect in the end.

"Sesame Street" is an example that applied this method of evaluation to its production and commanded a great success.

In the production of educational training programs, formative evaluation specifically refers to:

- a. Conducting interviews or test prior to starting production, in order to find out the extent to which the staffers and trainees know about the program objective, or to find out what other information or knowledge they are in need of, or to elicit from them problem areas as seen from them.
- b. Listening to their opinions or views on phrases, and words used in the narrated speech.

A production requires a lot of time and an enduring devotion of one's energy to complete. So, stopping on the way to determine if the progress has been on course may have beneficial effects upon the successful completion of a project.

(3) Open system

One thing that particularly struck us when we went around the local audio/visual educational centers was that those

centers which were active in production were also the ones where their equipment was incessantly put to productive uses not only by the centers' staff members but also by those not directly related to the centers. At those center, people conduct seminars on developing new equipment or hold training sessions, releasing their studios and their video equipment to all people interested for their uses.

In other words, these centers open up their facilities so that people may have access to the resources inside the centers and avail themselves to the resources and the facilities.

Open system refers to the system in which accesses to the center's resources are not limited to specified groups or persons as a closed system is. ("Open system," and "closed system" are both terms tentatively employed here).

It is true that the sophisticated audio/

visual equipment is highly valuable in those societies and are hard to replace by new ones once they are out of working condition. As the result, people are understandably apt to be cautious in the handling of those machines, reluctant to let other people use them.

However, one should know that any machine, whatever it is, finds its meaning in its employment, and, being left unused, eventually ends up depreciated, both physically and functionally. The sight of unused machines or equipment in a studio reminds one of museum pieces. With more people engaging themselves in productive uses of the machines, the center's staff members are bound to become more productively stimulated. An open system requires its own budget to function, but the system, in a sense, calls for the staff members' open-mindedness more than anything else to function.

9

Script Writing

How to Write a Script

"Ideas come to life."

A script is a process to bring ideas to life. The ideas are structured in a form at, so that one can perceive them with one's senses. *There are no rules to follow when writing a script*; however, use of a sheet like the one shown here is suggested. The sheet consists of three columns; video, audio, and instruction. One draws in simple pictures for the scenes in the video column, and place screen sizes, camera positions and operations, scene connections, indications for music and sound effects, and so on in the instruction column. The audio column is used for the narration and speech. Keep these suggestions in mind while writing a script.

(1) Balancing the episodes of the program

A program is a number of episodes. It is better to make each episode equal in length, otherwise, the program may be not well-balanced as a whole. Especially when an action or demonstration scene is inserted into the program, decide which part will be selected and how it will be presented in depth for the audience.

(2) Arranging the program order

Various ideas serve to visualize the program. They may be the studio or outdoor recording, puppet show, shadow still picture, experiment, demonstration, drawing, title, and so on. When one arranges these ideas in order, consider how they should be presented for the audience to watch the content and understand it. When the live objects, such as the scenes re-

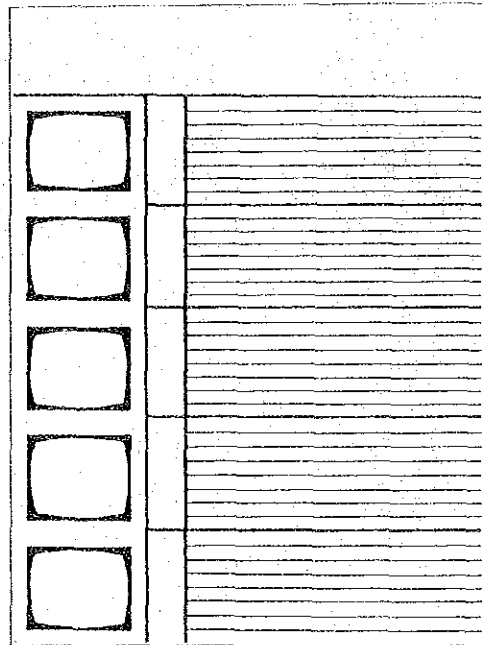


Fig. 9-1 Script sheet

corded in the studio or outdoor, or photographed, are continued, it is a common technique to break them with illustrations or charts in order to give the audience time to think about the problem presented on the screen. On the other hand, use the live subject scenes (except human beings) after a series of graphics or narration. It is necessary that live subjects and abstract subjects are well interconnected.

(3) Screen effects

The video program consists of the visual and the audio, and the former has more

effects to keep the audience interest. That is to say, the screen talks and not much explanation in words may be needed to cover the content. When speech is necessary for the important points or summaries, present titles or flip cards as well. For the introduction, use a caption to present the name on the screen with the speech or the narration. Seeing that the visual explains more in a video medium, narration should be rhythmic and clear without decorating the words.

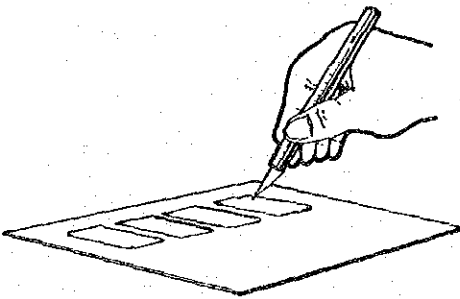
(4) Sound effects

When writing a script, much attention is given to the narration and screen, and its relationship, so music or sounds tend to be ignored. However, sounds have more effects to add a reality to the screen. For example, in the experiment scene, the various sounds are produced from the chemicals, burners, or chemical reaction. These sounds can be more effective than music in supporting the screen.

Fig. 9-2 How to make one's own script sheet maker

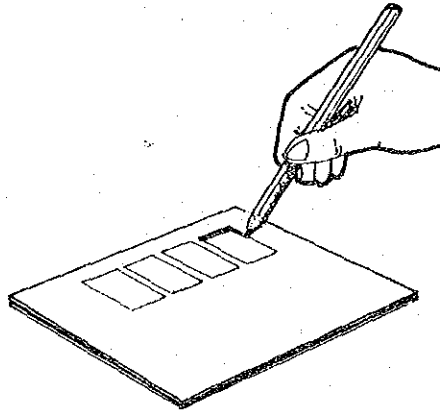
Step 1

First take a piece of A4 size cardboard and cut 4 rectangular holes down the left side of the board. These 4 rectangular holes are now the template of the T.V. screen.



Step 2

To make one's own script sheet, place one's cardboard template over A4 sheets of paper and with a ballpoint pen mark out the T.V. "screens" on to the sheets. One now has one's own script sheet.



10 Video Title Making

How to Make a Video Title

It is necessary to have various kinds of titles available for video programs. They can provide a wide range of choices: from the production titles (main title, end title and staff title) to the so-called flip charts such as letters for commercial use, charts, graphs, comments, illustrations and so on. Here one will learn the main points and ideas to be covered, and the tools required when planning titles. There are no certain rules to be applied; however, what is important is to design a title or a flip to be easily understood and look good.

(1) Proportion of the TV screen

The proportional ratio of vertical and horizontal measurements in media is referred to as the aspect ratio, and the TV screen is standardized at 3:4 (3 by 4) aspect

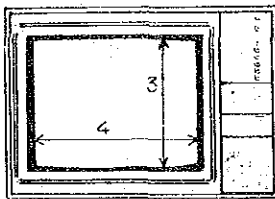


Fig. 10-1
Aspect ratio of TV

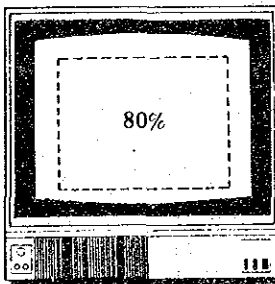


Fig. 10-2
Safe title area

ratio, which is longer in length than slides and photographs. Some care in preparation should be given to this ratio. For title, long horizontal lines appear aligned around the center of the screen, thus creating a bad balance of lettering. And letters tend to be small in such a form.

(2) Safety zone

Different TV monitors have different screen areas, and the central axis of the screen is not placed in the right position, somewhat around the position. Therefore, the safety zone, that is the area within which any size monitor can hold to present the visual is said to be approximately 80% of the viewfinder, so that it will be placed in the safety zone of the screen.

(3) Points on making titles

Titles serve to introduce the viewer to the subject of the program and arouse interest to watch the program. First, a title should be clear and simple, so that the viewer can read it easily. Also, color should be applied in order to harmonize the letters with the background. For satisfactory legibility, it is suggested that more bright and vivid colored letters be selected against that of the background. It is also a good idea to introduce an illustration suggestive of the title in the background.

For the subtitle, make the letters smaller in order to separate it from the main title.

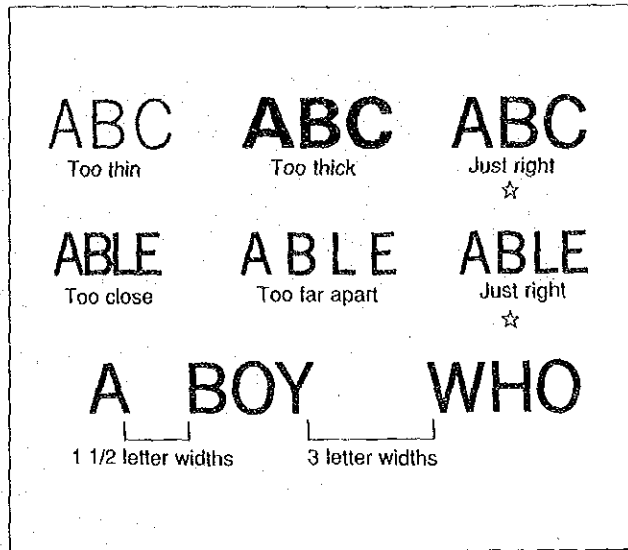
Select the paper in neutral color such as light blue and beige since extremes of the primary color may interfere with the purpose of the letters.

For the letter style, round Gothic, pointed Gothic, or Mincho type is preferred for Japanese, and a Gothic or Sans-serif type for English.

Limit outlines to five lines, each containing 10 to 12 letters for Japanese, 15 to 16 for English.

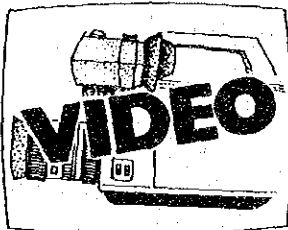
Extremely thick letters, either Japanese or English, reduce legibility. Also, English letters need appropriate spaces between them. If they are too close, they will not form themselves into words. Allow 1 1/2 letter widths for the space between words and 3 widths between sentences.

Fig. 10-3 Letters and space for title

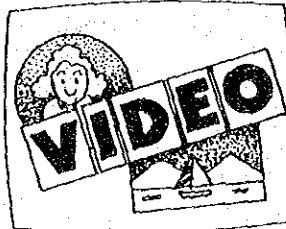


(4) Some points for title drawing

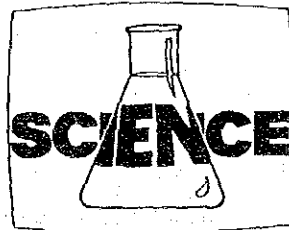
Fig. 10-4 Drawing title



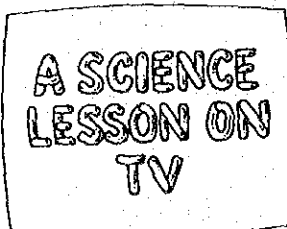
Make use of illustration for titles. Avoid if it is confusing.



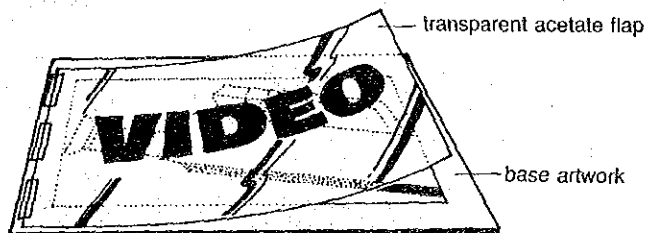
Give clarity to titles when pictures and illustrations from magazines are used.



Real objects can be used in making titles. Here one could apply the super-impose method.



Clay and plasticine are some items which provide a three dimensional effect in titles.



The lettering on a transparent flap can be applied to various pictures onto which it is overlapped. This overlay technique is useful to check the title with different pictures in size and position by watching TV.

Fig. 10-5 Letter drawing

ABC

Freehand

One could draw as one wishes, but practice is necessary.

ABC

Stencil

Stencil lettering guides cost less and offer a variety of styles and sizes. They are easily used but one needs some experience to use them effectively.

ABC

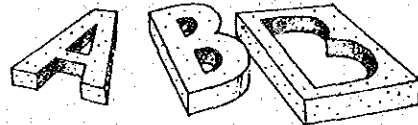
Dry Transfer Type

Dry transfer letters come in sheets of many sizes, styles, and colors. Collecting various kinds of them may cost a lot, but they are excellent for titles.

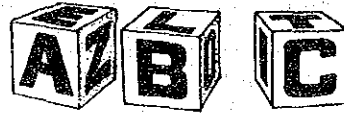
Fig. 10-6 Three dimensional materials

Three dimensional materials provide shadow effects with different lighting angles. Usually shadows are made under the right side by shooting the item over the left.

Cut polystyrene with a knife and make letters. Polystyrene letters are useful for titles. One could also color them.



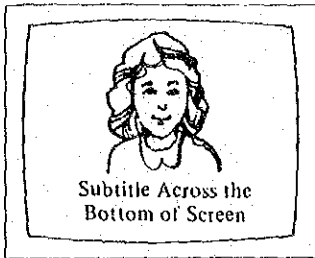
Drawing letters on wooden blocks adds a fresh touch to title making.



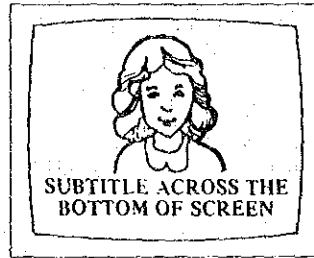
One could use cut-out plastic letters and create them to be good materials for titles



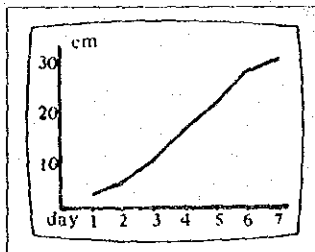
Fig. 10-7 Do's and don't's on making flip charts



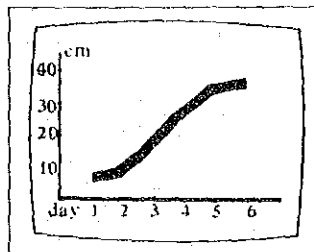
POOR
The subtitle has too many small words the line.



GOOD
A short and precise subtitle is much better.



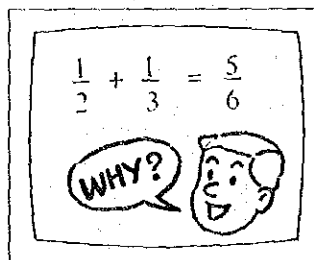
POOR
Emphasis is not obvious in this graph.



GOOD
The heavier line indicates emphasis.

$$\frac{1}{2} + \frac{1}{3} = \frac{5}{6}$$

POOR
This equation appears confusing and illogical.



GOOD
Introducing some cartoon is useful in relaxing the viewer.

A Very Long Title
Designed to Fill the Screen

POOR
Small type size and long lines makes reading difficult.

A VERY
LONG TITLE
DESIGNED TO
FILL THE SCREEN

GOOD
A much larger and clearer type size.

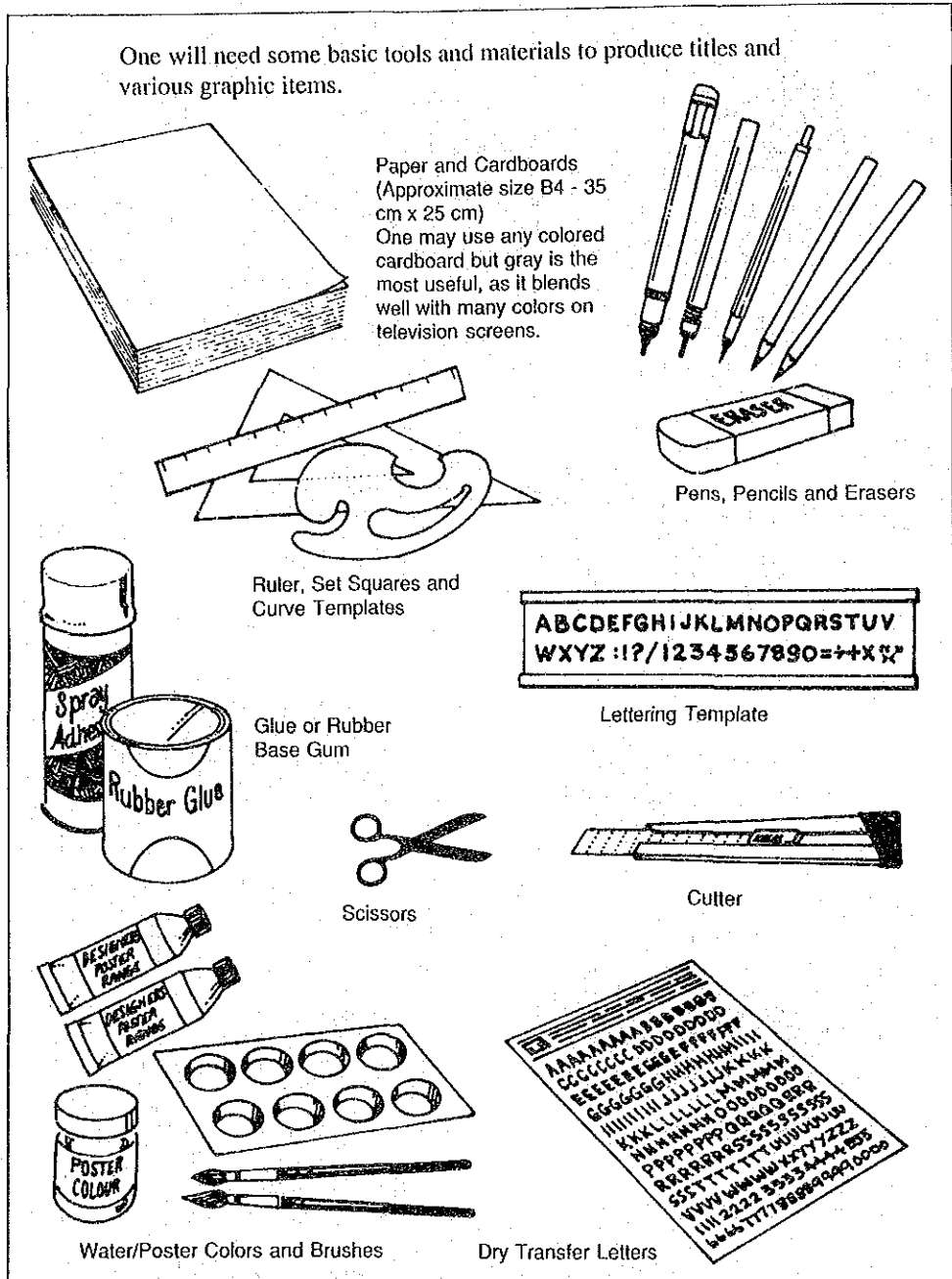
THE END

POOR
The type size and heading is too small.

**THE
END**

GOOD
Larger heading to fill up the screen.

Fig. 10-8 Necessary Tools for Title Making



Word processors are useful for making Japanese titles. Various models have been developed better for the functions and letter styles. Word processors are quick for use but have less selections of letter styles than other lettering materials.

Editing 11

The effect of an instructional video program depends a lot on the editing. What is difficult in editing is the selection of editing scenes and editing points. Let us now discuss selection of editing scenes and editing points.

(1) Matching actions

Editing at the point where two subjects are in the same action is called a matching action. The point of a scene at which the tape is edited is called an editing point. And there are some key points when editing. They are:

1. Angle

Shooting from the same angle will create rather jerky movements and produce what is called a jump shot. So, the angle should be properly changed at an editing point.

2. Action tempo

The difference between both editing scenes makes the action rather clumsy (or awkward).

3. Size of images

If the editing scenes are extremely close-up, the viewers get confused. They fail to catch the continuity of the edited scenes. And extreme difference in the size of scenes makes editing difficult.



Fig. 11-1 Medium shot

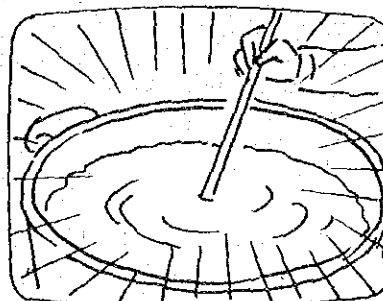
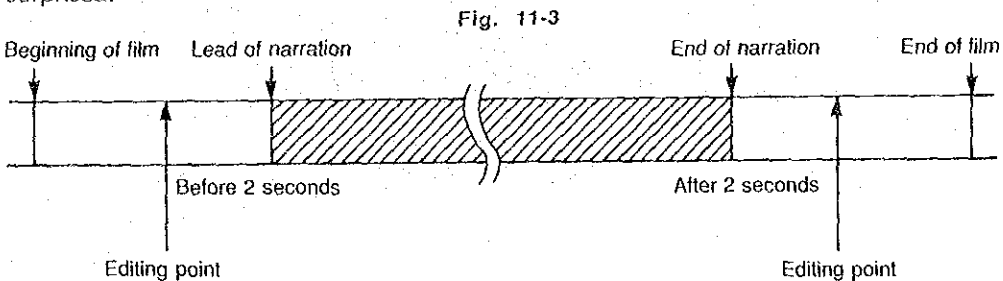


Fig. 11-2 Close-up shot

(2) Editing point

The editing point should be 1.5 seconds or 2 seconds before the subject starts to speak and 2 seconds after he finishes speaking. A sudden start surprises the audience surprised.



(3) Screen direction

If a person or an object moves from left to right, make sure the action is the same in the next scene. A sudden shift in direction will confuse the audience and give the impression that the subject is returning.

Yet the subject moving in only one direction will make the program monotonous. So, if directions must be changed between two scenes, include a brief transitory action sequence. Then a new direction in the following scene seems plausible to the viewers.



Fig. 11-4

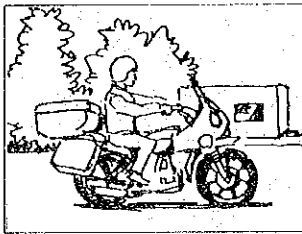
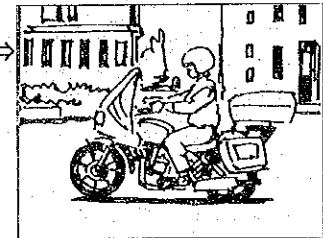
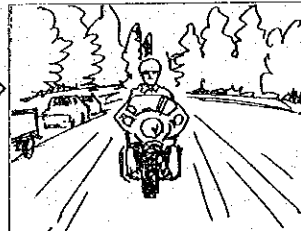


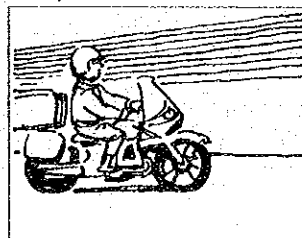
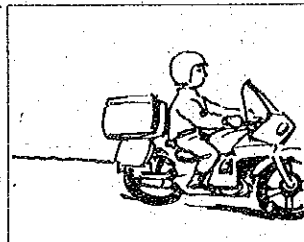
Fig. 11-5



(4) Frame in and frame out

When action leaves the frame on one side, it must enter the next scene from the opposite side of the frame for proper continuity. If the moving subject enters from the side where it left, the audience will receive the impression that the subject has turned around and is returning to the starting point.

Fig. 11-6



(5) Reaction

It is easy to edit if the reaction of the audience is recorded, as for a lecture or performance. A lecture is apt to be long. In order to make it short, you can cut at a proper scene by inserting reactions of the listeners. And, in the classroom scene, the reaction of the students allows the viewers to feel the atmosphere.

(6) Transition

One of the features in video program production is the shortening of a long scene. There are other ways to film a long scene and edit it instead of shooting from different angles. They are cut-ins and cut-aways.

They are called transition shot or bridge shot. There are various kinds of ways in transition. A very common technique is close-up. Flip chart or title is also used.

Fig. 11-7

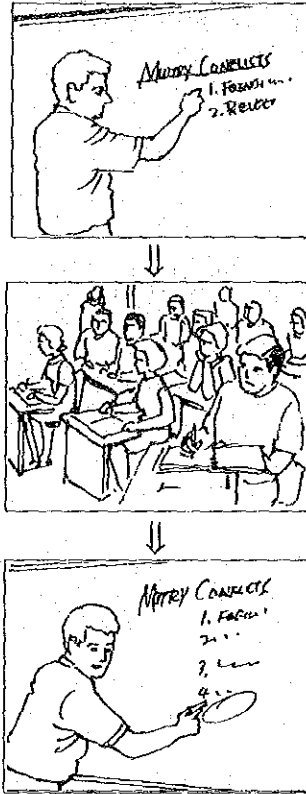
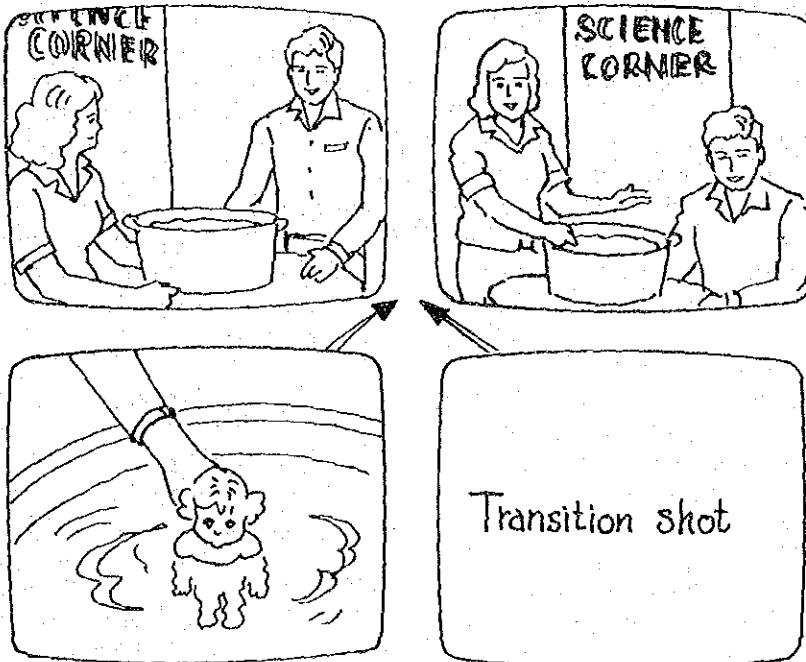


Fig. 11-8 Transition shot



GLOSSARY

A

Action: Any performance in front of the camera for recording.

Alternating Current or AC: An electric current that alternates or reverses its direction of flow periodically.

Ambient Noise: Surrounding noise, noise coming from around.

Amplifier: A piece of equipment for increasing the strength of an electric current/voltage/power.

Angle of View: Generally, the coverage of a lens; its horizontal (or vertical) angle.

Animation: Technique using artwork to give an illusion of motion.

Audio Head: The electromagnetic head (unit) which comes into contact with an audio or video tape in order to make a recording and/or playbacks; it receives the audio signal, pulses that signal onto the magnetic tape, and/or induces that signal back off the tape for reproduction.

Audio-In: Input jack which delivers an audio signal to a particular piece of equipment; an input receptacle which receives an audio signal.

Aspect Ratio: The proportional ratio of horizontal and vertical measurement. The TV screen is standardized at a 4:3 (four by three) aspect ratio or format and 2:3 for slides.

Assemble Editing: A method of electronic editing. Various segments of program are pieced together serially, like adding on sections to extend the railway.

Audio Dub: The sound portion of a tape is erased and replaced with a new sound track.

Audio Mixer: An electronic unit capable of accepting a number of audio signals from various sources (microphones, tape, decks, turntables) and combining them at relative signal levels to form one composite signal; a unit which "mixes" together various sounds into one total sound and enables the operator to control the level of each sound and the overall level of the total sound.

Audio-Out: Output jack which carries an audio signal from a particular piece of equipment; an output receptacle which delivers an audio signal.

Audio Track: That portion of the video tape on which audio signal is recorded.

Automatic Level Control (ALC) or Automatic Gain Control (AGC): An electronic circuit that adjusts the incoming signal to a predetermined level; an automatic volume control.

AV: Abbreviation for Audio Visual.

B

Background or B/G: A term that usually refers to background music, which are played at a level that is subdued, and

below the level of the dialogue of the performers.

Back Light: Light placed behind objects and performers in a scene. Back light is accenting their shoulders and the tops of their heads in order to give depth and dimension to the picture.

Barn Doors: Barn doors are hinged flaps at the side or top of studio light units; can be moved to direct the light and to shade camera from the light.

Base Light: Uniform, diffuse illumination sufficient for a television picture with; adequate signal-to-noise ratio at desired lens aperture, and which may be supplemented by other lighting.

Beam: An electron gun in a camera or picture tube emits a flow of electrons called a beam. The beam creates the scanning lines as it sweeps the tube's target area.

Betamax: The name for the 1/2-inch cassette video format developed originally by Sony.

Black Level: The bottom level of the picture signal, below which are the sync, blanking and other control signals that do not appear as picture information.

Blank Tape: Video tape with no recorded signal on it. It may be fresh tape, or bulk-erased tape.

Brightness: The intensity of objects (highlights) on a TV screen.

Brightness Control: A television receiver control that allows for the adjustment of relative brightness of the screen.

Burning (also called Sunburn): Destruction or damage to a certain portion of

the vidicon target area; caused by exposure to a light source that is too intense; also the result of an image impressed on the target area which appears as black spots during display. The damage may be just temporary or may be permanent.

Burst Signal: Color burst; a set of high frequency pulses at the beginning of each line which determines the phase of the color signal.

C

Camera Angle: The angle the camera makes to its subject; a high angle, low angle, wide angle.

Camera Tube: The electronic device positioned within the VIDEO camera which converts the scene focused by the lens into an electrical video signal (see VIDICON).

Cannon Connector: A particular brand of audio jack which features three leads—two for the signal, and one for the overall system grounding; a very secure type of connecting jack often found on high quality microphones, video monitors, and VTRs.

Capstan: A rotating shaft on the VTR which is turned by a motor and which, in turn, governs the speed of the tape as it proceeds from the supply to the take-up reel.

Carrier: A radio wave on which sound, vision or other signals are impressed or modulated so that information they contain can be transmitted.

CCTV: See Closed Circuit Television.

Close-Up (CU): A fairly tight shot of the performer or the subject matter.

Closed Circuit Television: A television system in which the pictures are not broadcasted to the general public.

Coaxial Cable: A specially designed cable used to carry one or more channels of TV signals. It makes possible the transmission of high video frequencies with very low loss of power, and with little or no interference.

Coaxial Connector: A specially designed cable connector used in cable TV and other 75-ohm cable applications.

Color Bars: Color pattern for adjusting VTR and TV monitor. The patterns put on the beginning a video recording around 30 sec. before starting a programme.

Color Convention Filter: Colored filter that changes the colour temperature of light.

Commentary: Explanatory talk that accompanies a tape (also called narration).

Compatibility: Video-tape recorders which are capable of playing tape-recordings made on another machine are said to be compatible. There is no standard format for VTRs as with say 16 mm film or audio cassette: VHS and Betamax has no compatibility.

Composite Video Signal: Video signal containing both picture and sync information.

Condenser Microphone: A microphone that uses a condenser (a small electrical component) to create the signal. One of the standard microphones used in broadcast. It has good sensitivity to a wide range of sound volume and pitch. Disadvantages include fragility, being

easily affected by excessive shock, heat, and humidity, and the fact that this particular kind of microphone operates only with batteries or with some external power supply; also called Capacitor Microphone or Electrostatic Microphone.

Continuity: The logical relationship of the scene and the next scene. Does one scene lead to the next scene smoothly in action and narration or not?

Contrast: Ratio of light and dark portions on TV picture.

Copy Stand: A vertical stand for close-up photography. It's made positioning a camera accurately.

Control Room: The room in which the director and technical personnel control the production activity of a studio. they select the camera to be aired, and also shade the picture and perform other electronic functions.

Corner Insert: A second video picture signal inserted into a corner area of the first video picture signal.

Credit Title: One kind of title which listed of personnels and organizations of the media project.

Crossfade: A transition utilizing rapid fade to black and fade into next scene (symbolized X).

Cue or Q: (Noun) The signal to do something. (Verb) To give this signal by gesture, voice, or warning light.

Cut: (a) A command which stops all actions in actual production, or (b) a visual technique where the picture changes abruptly from one to an entirely different one; for example,

"quick cuts", where many different visuals appear rapidly one after the other.

D

DC: See Direct Current.

Decibel (dB): The ratio of two values of power, used in comparing intensities of sound, and levels on circuits, amplifiers, etc. Number of decibels is expressed as ten times the logarithms, base 10, of the power ratio.

Depth of Field or Depth of Focus: The range of distance over which focused detail can be accepted as sharp.

Direct Current: An electric current that always flows in the same direction only.

Director: The person in the television production who has charge of all matters of action and composition in the production, and who supervises the efforts of technicians, cameramen, etc. (abbreviate to D).

Dissolve: One picture melts into another. Actually fade-out of one picture and the fade-in of another. Dissolves may be produced slowly or rapidly.

Documentary Program: a program of fact or a program dealing with a topic of sociological significance which makes use of non-actors. It is made from real or reconstructed situation and essence.

Dolly: (Noun) Dolly wheels on the feet of a tripod; (Verb) To move the camera in vision across the floor.

Dolly Shot: A shot recorded as the video

camera mould toward or away from the subject.

Drop-Out: Loss of a portion of the video picture signal due to lack of magnetic coating on sections of the tape.

Drop-Out Compensator: Circuitry which means senses signal loss produced by drop-out and substitutes missing information with signal from the preceding line—if one line drops out of a picture, it is filled in with the preceding line, resulting in no drop-out on the screen. Drop-out compensators are built into a number of VTRs presently on the market.

Dub or Dubbing: To make a copy of a recording using two VTRs.

Dynamic Microphone: This is rugged, relatively inexpensive, and quite trouble free. Its name comes from the fact that its signals is generated by a moving (hence the word "Dynamic") coil of wire and a magnet; also called moving-coil microphone.

E

Earth: Connection to a conductor at zero potential to the ground.

Edit: The cutting and splicing of tape or film to eliminate or join segments of the production. (See Electronic Editing)

Editing Control Unit: A machine which can control the two VTRs for editing. This can give precise location or beginning point of editing.

Education Media: All audio-visual and printed materials which are used for instructional purposes.

Eight-Pin Connector: A type of jack commonly used for the VTR-to-monitor connection; provides a full set of audio and video connections—one ground and one lead each for audio-in, audio-out, video-in and video-out.

Electret Condenser Microphone: An improved version of the Condenser Microphone that needs only a tiny power supply to operate; used alone or built into the video camera. (See Condenser Microphone).

Electronic Editing: In video-tape, a process where different pictures and sound elements (live or pre-recorded) are edited together without physically cutting the tape.

Electronic Viewfinder: Viewfinder; viewfinder monitor. A small TV screen attached to the video camera which allows the operator to view a given scene exactly as it is being viewed by the camera.

Emulsion: A coating placed over the cellulose base of motion picture or still film. It is sensitive to light and is made from silver salts and gelatin.

Erase: To remove the recorded signal from a magnetic tape by exposing it to a powerful magnetic field, so that the tape can be used again.

Erase Head: Either an audio or video head which erases the signal on a video tape prior to the recording of a new signal on that tape; simply, an electromagnet which disturbs the signal previously recorded on the tape.

Eye Line: The direction in which a person is looking.

Exposure: The adjustment of the reflected light values from a subject (by lighting,

aperture control, filtering) to produce a particular reproduced brightness or clarity.

F

Fade: A fade-in, or a fade-out, refers to the gradual increase (or decrease) in the video level of the picture. In other words, the picture emerges from black, or recedes into black.

Field: One complete trace of the scanning beam across the face of the picture. Two fields are required to make one "frame", the scanning beam alternatively scanning the odd and the even lines.

Fill Light: Supplementary illumination to partially fill in the shadow or contrast range created by the key light and creates an overall brightness to the scene.

Filter: A transparent material whose ability to transmit light varies with its design; used to exclude certain wavelengths or types of light; every coloured VIDEO camera has color temperature conversion filter.

Fixation: To convert unused halides to a soluble silver complex, so they can be removed by washing process.

Flat Lighting: Lighting a scene or set with overall brightness which does not provide contrasts or highlights.

Flip-card: Titles and artwork are done on flip-cards which are normally B4 size (35 cm x 25 cm).

Floor Manager or Floor Director: A person who works on the studio floor during production and follows the

director's orders with regard to the direction of on-camera talent. He also prepares the set for production efforts. (abbreviate to FD).

FM: See Frequency Modulation.

Focus: Adjustment of lens to produce a sharp clear image.

Frame: (a) A total single picture which runs 1/25 (PAL, SECAM) 1/30 (NTSC) second in actual television transmission and 1/24 second in film. (b) A command to a cameraman to establish desired composition of video.

Frash (Electronic Frash): Artificial light with same color temperature of sunlight. It is brief, cut very bright illumination. (1/5000, 1/10000 sec)

Freeze-Frame: A single frame is "frozen" (stop action) on a TV screen frame by frame for continuous viewing.

Frequency Modulation: A method of modulation in which the frequency of a carrier is made to vary by another signal. This type of transmission is practically free from interference from other stations or from atmospherics.

F-Stop: A calibrated control (f 1.4, f 2, f 3.5, f 4, etc.) which indicates the amount of light passing through a lens to the target area; a control which can be adjusted to vary the size of the lens iris.

G

Gain: Amount of signal amplification; turning up the gain means increasing the strength of the signal, turning down the gain, decreasing the strength; used

in both audio and video to denote the relative strength of the signal in question.

Gap: The small space in an audio or video head across which the magnetic field is produced when recording and induced on playback; the audio and video heads are small, horseshoe-shaped electromagnets and the gap is the space which this tape must contact for good recording/playback.

Generation: Term for a copy or dub of a film or tape. The master tape or film is considered first generation. A copy from the master is considered second generation, and a copy of the first copy is third generation, and so on.

H

Hardware: This term refers to ETV equipment such as video camera and video recorder.

Head: Audio or video, the tiny unit that transfers audio and video signals onto a magnetic tape and picks up recorder information from a tape as it moves past the head.

Head Alignment: The positioning of the audio or video heads so that they describe the correct path at the correct angle across the video tape; heads that are out of alignment won't record or play back properly.

Head-Drum Assembly: That portion of the VTR in which the video heads and their related mechanical and electronic controls are located. In helical scan the head drum assembly is the large circular unit around which the tape wraps as it passes the video heads.

Helical Scan Video Tape Recording: A type of video recording in which the video heads and the tape meet at such an angle that the resulting pattern on the tape is a long, diagonal series of tracks from the video heads, each diagonal stripe containing the full information for one field of video picture; named after the helical path the tape describes between supply and take-up reels.

Hyperfocal Distance: The minimum distance at which a lens records a subject sharply when focused at infinity.

Hz: Abbreviation for Hertz (inventor of wireless telegraphy) now adopted as the unit of frequency in place of c/s (cycles per second).

I

Insert: A general effects term, meaning the introduction of a secondary signal into an already existing picture; accomplished by keying, wiping or crossfading.

Insert Edit: The insertion of a segment into an already recorded series of segments on a video tape; the inserted segment replaces one which must be of the exact length. Insert edits demand that the segment be edited in (as in assembly editing) and then edited out at the end of the segment, since already recorded video information exists following the edited-in segment on the original tape.

Interactive Video: Combine video or videodisc with computer, such that video is programmed showing the appropriate scene depend on learners choice.

Iris: Iris diaphragm; an adjustable set of metal leaves over the aperture of a lens, used to control the amount of light passing through the lens. Iris openings are measured in f-stops.

K

Kelvin: Also expressed as degrees Kelvin or K; the unit of measurement of the temperature of light. In color recording, light temperature affects the color values of the lights and the scene that they illuminate.

Key-Light: Main light of the subject. It is similar to the sun in that it puts most of the light on the subject and creates the main shadows that are seen.

L

Lens Flare: Non-image forming light reflected from lens surfaces that degrades the quality of the image.

Lens Shade: Lens attachment that shades the front element from flare.

Level: The average intensity of a video or audio source, as indicated on a VU (Volume Unit) meter.

Limiter: A circuit which shapes a signal sent through it to conform to certain preset tolerances; used in both audio and video to regulate signal flow and prevent overamplification, distortion, and the introduction of spurious noise.

Lip Synchronization (Lip Sync): (a) The recording of picture and sound simultaneously so that the sound is heard and corresponds with the observed lip movements.

Live: When what the viewer sees on television is actually taking place at the very same moment; a production which is telecast *simultaneously* with its performance, versus video taped or filmed production which is prepared prior to telecast.

Location: A shooting site other than a studio; remote or removed from the studio, for example outdoor or classroom.

M

Master: The original video-tape recording or filmed production of a finished product; also referred to as "mother"

Master VTR: When duplicating tapes, that deck which plays the original tape is called the master VTR; that which records signal from the original onto a blank tape to produce the copy is called the slave VTR.

Mixer: Electronic device for mixing (combining) two or three more signals.

Mixing: The process combining audio or video sources.

Monitor/TV Monitor: TV set without receiving circuitry used to directly display the composite video signal from a camera, video tape recorder, or special effects generator.

Montage: (a) A composite picture made by combining several separate pictures. (b) The production of a rapid succession of images to illustrate an association of ideas.

Multi-Image: Simultaneous slide projection of multi picture on one or more screens for make special image.

N

Narrator: The performer, usually off-camera, who delivers lines of narration in a program

Network: A system of cables and other equipment used to carry radio or television signals between studio centres throughout an area.

Neutral Density Filter: A filter placed over a lens to reduce the brightness of a scene.

Noise: Any unwanted signal present in the total signals both an audio and video; term to describe one signal interfering another; usually created by some malfunction of either a component or circuitry which is part of the signal path; a signal inherent in certain audio or video components.

Normal Lens: A lens with a focal length equal to the diagonal of the image format. It produces an image which appears to have normal perspective and angle of view.

Non-Composite Video Signal: A video signal containing picture and blanking information but no sync signals.

NTSC: The name given to the American colour television system. Abbreviation for National Television system Committee which developed this colour system.

O

Off-the-Air: This term usually refers to video recording a telecast TV program by receiving the RF (radio frequencies) off-the-air.

Omni-Directional Microphone: A microphone whose pickup pattern is such that it is sensitive to sound waves coming at it from every direction. But the sound coming from the side is cut at high frequency.

P

PAL: Abbreviation for phase alternation line; British-German color TV standard.

Parallax: The difference between the image on film through the lens and viewed through a viewing finder.

Pan/Panning: To move the camera about its axis, normally panning is used for a horizontal movement, tilt for movement in the vertical plane. (This word comes from panorama.)

Pedestal: Black level. The minimum level which the blackest portions of the displayed signal are allowed to each.

Perspective: The relationship of size and shape of three-dimensional (solid) objects represented in flat surface.

Picture Search: The facility to "Speed-up" by as much as ten times the playback of a video tape in fast forward and rewind. This "fast-motion" enables you to locate a particular point on a video cassette quickly and conveniently.

Picture Signal: The picture information part of the composite video signal; the portion of the video signal above the pedestal.

Pinch Roller: A rubber roller which "pinches" or presses the video tape to the capstan. Together with the capstan the pinch roller pulls the tape through the tape path on the video tape recorder.

Playback: The operation of reproducing a VIDEO or tape recorder. There is a control position marked 'play' on every VIDEO recorder.

Playback Head: Audio or video head used to obtain the signal from the video tape. Some heads are capable of playback and record, other of playback only; the video heads of most helical scan VTRs are both record and playback heads.

Post Production: After shooting, the work involving editing and finishing.

Pre-Production: all activities prior to staging, especially calculation of man power and equipment.

Q

Q: See Cue.

R

Random Access: Retrieval of recorded information wherever it happens to be located on a video tape or disc.

Reel: A hub with flanges on which video tape or film is wound.

Ribbon Microphone: The microphone is which there is a single flat flexible ribbon of aluminium, or aluminium alloy mounted between the poles of permanent magnets. It moves back and forth in proportion of the air vibration, and the magnet poles on either side of it cause it to generate currents. Also called Velocity Microphone.

RF: Abbreviation for Radio Frequency; the kind of signal that goes through your TV antenna wire.

RF Adaptor: RF amplifier; RF modulator. A unit which accepts the composite video signal and modulates a carrier frequency to produce a predetermined TV bandwidth, thus producing a broadcast signal.

Rotary Erase Head: A set of heads on the rotating video head assembly which erases the video signal during recording and editing; usually positioned one scan line in front of the video heads; produces cleaner edits than a stationary erase head.

Rush: Segment of video tape or film, perhaps shot on location, which will become part of a final production. Also called Raw Footage.

S

Safe Title Area: Eighty percent of the TV screen, from the center of the screen; that area of the display screen (and therefore of the camera scanning area) which will reproduce legible title credits no matter how it is adjusted.

Scenario: A script or idea breakdown for a television program describing story and action.

Scene: Several shots arranged or ordered to create a unit in time.

Secam: A color TV system developed in France. The name comes from the French words "so(e,)quential o(a,)mo(e,)maire". These words describe the basic principles of the system. The coloring signal are transmitted sequentially, not together, and they are stored, briefly in a device called a memory.

Sequence: The program equivalent of a chapter in a book, composed of

several scenes combined to develop one incident, one experience, one subject, etc.

Set Light: Illuminates the background behind the performers.

Shot: The individual scene which is from a video camera.

Shotgun Microphone: A very Uni-Directional Microphone that looks like a shotgun barrel.

Skew: The tape tension between supply reel and first rotary idler of tape path around head assembly of a VTR; if the top of TV picture appears to bend, skew must be maintained properly or picture instability will result.

Slave VTR: A video tape recorder used to record a copy of a video tape from another (master) video tape recorder.

Slide: Projection transparency.

Slow Motion: The facility to slow down a pre-recorded cassette during playback. It is useful for motion analysis.

Sneak: A gradual introduction of a sound, a dissolve, music, etc., so that its presence isn't immediately obvious to the audience.

Software: The term, in the context of ETV, describes the programmes on video.

Special Effects: Wipe, split screen, corner insert, key matte, or any other alteration of the picture, more exotic than a fade or dissolve, is considered a special effect.

Special Effects Generator (SEG): A unit that makes special effects.

- Splicing Tape:** The special self-adhesive tape made for splicing magnetic tape.
- Split Screen:** An electronic effect in which two different pictures appear side by side on the same screen. It can be accomplished with the use of a special-effects generator.
- Stand By:** The cue which indicates to performers and crew that taping is about to begin. It is preceded by the request of "Quiet in the studio, please".
- Stop Bath:** Chemical bath which stop development by neutralizing developer, normally used autic acid.
- Studio:** A room for the production of television programmes which in its construction embodies electrical accommodations, acoustical elements and is suitable equipped with lights, cameras, etc.
- Sub-Carrier:** In some color TV systems, a carrier which is modulated with color information. The modulated color subcarrier is added to the other components of the vision signal and then transmitted with them by modulating a vision carrier.
- Super-Impose:** To overlap the image from one source over the image from another source. It is also called a "super".
- Switcher:** 1. A control unit that permits selection of one camera's picture over another, when two or more cameras are used. 2. The person who operates the switching equipment.
- SVR:** Abbreviation for Super Video Recorder. This format developed by Philips and Grundig that is today obsolete.
- Switching:** Choosing a single picture between two or more cameras.

Sync: An abbreviation for the word "synchronization". It refers to the process of producing synchronizing signals, or timing pulses, which keep various television circuits in phase with one another.

Sync Generator: A pulse generator which produces the sync signals necessary to integrate the functioning of various pieces of video equipment in relation to each other and the video signal.

T

Take-Up Reel: A reel on to which the tape is wound during the forward movement of the tape.

Talk-Back: (1) Phone circuit earphones used for communication between the director and the crew on the floor. (2) Loudspeaking device for communication between studio and control room.

Tally Light: The red light on a TV camera that lights up to indicate that it is the taking camera.

Tape Path: The circuit the tape runs from supply to take-up reel past the erase head, video heads, audio/control track head, and between capstan and pinch roller.

Tape Transport: Those mechanical components of the video tape recorder which move the tape from supply reel to take-up reel and back.

Technical Director: The person in charge of the electronic portion of the recording session. He may also do switching for the director. (abbreviate to TD).

Telecine Machine: A machine for replaying film on television.

Termination: The insertion of a load at the end of a line carrying a signal; a video terminator is a 75-ohm resistor placed at the end of a line to keep the signal from bouncing back along the line; 600 ohms is commonly used to terminate an audio line.

Test Pattern: A specially made pattern of lines or circles that is used for setting focus, linearity, registration, balancing, and otherwise lining up a television camera.

Thyrister Flash: An automatic electric flash which cuts off the flash light when exposure is correct.

Tilt: A vertical camera movement, tilting either up or down (in contrast to panning left or right).

Tone: A term used for describing the quality of image in terms of density or colour.

Track: An area on the tape containing a record. Used like VIDEO track and audio track.

Tracking: The angle and speed at which the tape passes the video heads. When recorded tape is played, the VTR listens to the signal on the control track and uses it to adjust the speed of its motors and the spinning video head. This precise control is necessary to ensure that the spinning video head follows exactly the same path and speed when it plays back the picture that the video head recorded.

Transparency: Positive image which produced on slide film in black and white or colour.

Tripod: A three-legged stand on top of which a camera is mounted.

Tripod Head: The top portion of a tripod where its legs meet and the camera is mounted; friction- or fluid-head tripod designs are available.

Trucking: Moving the camera left or right on a tripod with dolly wheels or moving your body while holding a portapak camera. (It contrasts with dollying in or out.)

TTL: Abbreviation of through-the-lens in which a suitable light metering system within the camera body measures exposure from image light passing through-the-lens.

TV Monitor/Receiver: A combination monitor and TV receiver capable of accepting composite video signals directly from source or those video signals broadcast as RF; also capable of producing a composite video signal output from a broadcast input signal, allowing user to record "off-the-air".

U

UHF: Abbreviation for Ultra High Frequency - any frequency between 300 MHz and 3000 MHz.

U-matic: The 3/4-inch video tape format originally developed by Sony and now adopted as the universal format.

Uni-Directional Microphone: Microphone pick-up pattern which accepts only sound coming in front of it.

V

VCR: Abbreviation for Video Cassette Recorder. The term VCR is usually used to represent all video cassette recorders.

VHF: Abbreviation for Very High Frequency—any frequency between 30 MHz and 300 MHz.

VHS: Abbreviation for Video Home System, the 1/2-inch format developed by JVC (Victor Company of Japan).

Video: Television and the technical equipment and events involved in creating television. A term meaning "to do with vision signals". The word is Latin for "I see".

Videodisc: Electro-mechanical system that uses a record/disc from which recorded audio and video materials can be played back and viewed on a TV screen.

Video 2000: The 1/2-inch format developed jointly by Philips and Grundig.

Vidicon: A vacuum tube capable of changing light images into electrical voltage variations corresponding to the brightness of those images; a particular type of cathode ray pickup tube used in some video cameras, containing a cathode assembly and a target area coated with antimony trisulfide; the least expensive and most generally reliable pickup tube presently available.

Visual Literacy: Skills in interpreting, judging, responding to, and using visual representation which an individual develops.

Viewfinder: A small TV monitor built into the camera that enables the cameraman to see precisely what is being aired or recorded.

Volume Unit Meter (VU Meter): A meter generally associated with the monitoring of the amplitude of a video or audio signal.

W

Waveform Monitor: Special oscilloscope used to display the video waveform.

Wide Angle Lens: A lens with an angle of view wider than that considered subjectively normal by the human eye (i.e. more than about 50°), a lens that has a very wide angle of view.

Wind-Screen: Similar to a pop filter; a heavy foam rubber microphone cover, used outdoors to cut down on audible noise created by wind blowing across the top of the microphone.

Wipe: The removal or wiping off of one shot by the use of travelling lines, patterns, or design; i.e. left to right, top to bottom.

Z

Zoom: (Noun) A multipurpose lens that is continuously variable (and in focus) everywhere from a wide angle to a telephoto position. (Verb) To manipulate the lens to do this. To "zoom in" means to go for a shot in which the subject of interest slowly becomes larger in the picture. To "zoom out" means to pull back to a much wider shot.

Zoom Ratio: A mathematical expression of the two extremes of focal length available on a particular zoom lens.

Annex:
Chart for
the Global Electrical Usage Situations

ASIA

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Afghanistan	220	50	Um 1 Um 2 Um 3		648~1,278	3,965~9,755 15,255 17,655	
India	230 220	50	Um 1		531~1,602	3,025~17,705 (3,295~17,875)	107.1
Indonesia	127 220	50	Um 1 006P		540~1,602	2,260~15,150 (11,790, 15,150)	88.0~107.4
Korea (REP)	220 100	60	Um 1 Um 2 Um 3		540~1,566	5,975~15,575	88.3~107.7
Kampuchea	220 120	50	Um 1		917 1,360	6,090~11,938	
Korea (DEM)	220	60	Um 1 Um 3		657~1,081	2,300~11,6801 (3,015~15,230)	
Singapore	230	50	Um 1 Um 2 Um 3 006P		630~1,368	3,915~17,880	88.9~96.8
Srilanka	230	50	Um 1 Um 2 Um 3 006P		531~1,602	4,870~17,825 (6,005~17,850)	87.5~108.7
Thailand	220	50	Um 1 Um 2 Um 3 Um 4 006P		531~1,602	4,380~11,950	8.0~105.0
China (People's Rep. of)	220	50	Um 1 (Um 2)		531~1,602	2,310~17,710	91.55 95.6 98.2
TAIWAN	110	60	Um 1 Um 2 Um 3 Um 4 006P		549~1,539	3,215~11,705 (5,980~17,720)	100.5~107.9
Japan	100	50 60	Um 1 Um 2 Um 3 Um 4 006P		531~1,602	3377.5~15,260 (5,965~17,810)	76.0~90.0
Nepal	220	50	Um 1		684~792	5,005, 7165	
Bangladesh	230	50			558~1,413	4,879~6,200	100.0~106.5
Pakistan	230	50	Um 1 (Um 2) Um 3		540~1,584	4,790~11,815 (5,105~21,765)	
Sabah	230	50	Um 1 Um 2 Um 3		567~1,476	4,970 5,980	93.5 95.7
Burma	230	50	Um 1		954	4,725~9,730	102 104
Philippines	220 115	60	Um 1 Um 2 Um 3 Um 4 006P			3,286~21,670 531~1,476	89.1~105.5
Bhutan	220	50				3,395 7,040	

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Brunei	240	50	Um 1 Um 2 Um 3 006P		594~972		92.3~96.9
Vietnam	110 120 220	50	Um 1		570~1,050	4,243~10,060 (6,426~15,010)	99.9
Hong Kong	200	50	Um 1 Um 2 Um 3 006P		567~1,251	3,940	
Macau	110 220	50	Um 1 Um 2 Um 3 006P		735 900		95.6 98.0
Malaysia (Peninsular)	240	50	Um 1 Um 2 Um 3 006P		576~1,314	4,845~9,750 11,900, 15,295	97.2 95.0
Sarawak	230	50	Um 1 Um 2 Um 3 006P		549~1,206	3,385~7,270	
Maldives					1,485		104.2
Mongolia	220	50	Um 1 (Um 2)	164 209 227	882~1,395	3,960~7,260 11,855	72.15
Laos	220	50	Um 1 Um 2 Um 3 006P		580~1,090	4,285~7,385	97.5

OCEANIA

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Australia	240 250	50	Um 1 Um 2 Um 3 006P		531~1,603	4,920~9,680 11,880~15,425	92.1~107.9 89.7~106.1
Kiribati	240	50			846	14,802	
Guam	120 110	60	Um 1 Um 2 Um 3 006P		576, 612 801	(7,105~15,420)	89.5~100.3
Cook Islands					630 864	11,760	91.5 103.3
Saipan Islands	110	60			936 864	9,695	93.3 103.3
Samoa (American)	120	60	Um 1 Um 2 Um 3 006P		585 648		101.1
Samoa (Western)	230	50	Um 1		540~1,404		

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Solomon Islands	240	50	Um 1 Um 2 Um 3 006P		945 1,035	5,020 9,545 1,386	
Tahiti Island	127	60	Um 1 Um 2 Um 3		738	6,135 9,750 11,825 15,170	
Tuvalu	240	50			621		
Tonga	240	50	Um 1		1,017		
Nauru (REP)					1,323		
New Caledonia	220	50	Um 1 Um 2 Um 3 006P		666	3,355 7,170 11,710	93.5 96.4 99.0
New Zealand	230	50	Um 1 Um 2 Um 3 006P		531~1,593	(9,520~17,770)	89.0~92.7
Norfolk Island	240	50	Um 1 Um 2 Um 3 006P		1,566		93.9
Vanuatu	240	50	Um 1 Um 2 Um 3 006P		1,125	3,945 7,260	98.5
Papua New Guinea	240	50	Um 1 Um 2 Um 3 006P		585~1,593	2,376~6,140 9,520~11,880	100.3 100.5
Fiji	240	50	Um 1 Um 2 Um 3 006P		558~1,485		90.6 96.0
Midway Island					920		94.0

MIDDLE EAST

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
United Arab Emirates	230 220 240	50	Um 1 Um 2 Um 3 Um 4 006P		657~1,575	5,960~15,435 17,770~21,700	92.0~98.0
Yemen (PE. DEM. PEP)	220	50	Um 1 Um 2 Um 3		981~1,206 1,593	4,853 6,135 7,190 11,770	

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Israel	230 220	50	Um 1 Um 2 Um 3 (006P)		531~1,575	5,880~25,640	88.8~103.8
Iraq	220	50	Um 1 Um 2 Um 3 006P		558~1,377	3,367~15,200	
Iran	220	50	Um 1 Um 2 Um 3		531~1,602	(3,775~15,315)	88.1~106.7
Oman	220	50	Um 1 Um 2 Um 3 006P		702 1,035 1,242	5,695~21,550	94.3 99.9
Qatar	240	50	Um 1 Um 2 Um 3 006P		531~1,602	9,905~17,910	97.5
Cyprus	240	50	Um 1 (Um 2) Um 3		531~1,602	3,990~15,270	87.98~105.0
Kuwait	240	50	Um 1 Um 2 Um 3 006P		540 1,134 1,341 1,341	6,044~17,895	92.0 98.8
Saudi Arabia	220 127	50 60	Um 1 Um 2 Um 3 006P		549~1,521	5,870~21,395	88.4~100.0
Syria	220 115	50	Um 1 (Um 2) Um 3		567~1,488		
Turkey	220	50	Um 1 (Um 2) Um 3	182 200 245	630~1,580	6,340 6,900	88.0~99.2
Bahrain	230 110	50	Um 1 Um 2 Um 3		612 801 1,584		90.9~101.0
Jordan	220	50	Um 1 Um 2 Um 3 006P		801 855 1,485	7,155 9,530 9,560 11,920	99.0 103.0
Lebanon	(220) 110	50	Um 1 Um 2 Um 3 Um 4 006P		585~1,476	6,215~6,550	93.2~105.0

AFRICA

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Algeria	110 127 220	50	Um 1 Um 2 Um 3	254	531	6,145~11,955	88.3~101.45
Angola	220	50	Um 1		702~1,367	3,355~11,955	88.3~101.45
Burkina Faso (Upper Volta)	220	50	Um 1		747 1,008 1,341	4,815 7,230	92.0 99.0
Uganda	240	50	Um 1 (Um 2)		531,602	5,027 7,195 6,030~15,325	
Egypt	220	50	Um 1 Um 2 Um 3		558~1,593	6,175~21,465	89.5~97.0
Ethiopia	220 127	50	Um 1		855~990	5,990~9,560	
Cape Verde (REP)	220	50			1,502	3,931 6,025 7,155	89.1~98.0
Ghana	230	50	Um 1		3,365~7,295		
Canary Island	220	50	Um 1 Um 2 Um 3 006P		621~1,341	11,815 15,365	88.7~103.0
Gabon	220	50	Um 1		548~1,602	4,777~21,6965	87.86~96.54
Cameroon	220	50	Um 1 Um 3		900~1,448	3,970~7,240	88.3 88.81 88.0
Gambia	230	50	Um 1		648~909		94.1 96.0
Guinea (P.P.R.)	220	50	Um 1		1,295 1,386 1,404	4,910 6,155 7,125 9,650 15,310	89.0
Guinea Bissau (REP)					1,034	5,475	
Kenya	240	50	Um 1 Um 2 Um 3		557~1,494	4,804~9,725	91.51 92.9 95.1 95.6
Ivory Coast	220	50	Um 1 Um 2 Um 3		1,241~1,578	7,215 11,920	87.9~95.4
Comoros (FED)	220	50			702 1,089	3,331 7,260	88.63 91.9 95.86
Congo (P. R.)	220	50	Um 1 Um 2 (Um 3)		863 1,476 1,520	6,115 15,190	98.95
Zaire (REP)	220	50	Um 1 (Um 2) (Um 3)		1,448 15,245	3,390~7,205 93,088.9 96.8	
Zambia	220	50	Um 1		549~1,458	3,346~9,505 11,880 17,895	92.16~94.5

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Sierra Leone	230	50	Um 1		864 1,206	5,980	
Djibouti (REP)	220	50			1,170	4,780	
Zimbabwe	230	50			585~1,368	3,306~6,045	97.78~106.9
Sudan	240	50	Um 1		540~1,500	5,039 11,855	91.0
Swaziland	230	50			882~1,377	3,223~9,705	93.02 95.06
Seychelles	230	50	Um 1 Um 2 Um 3		6,030~17,875		
Equatorial Guinea	220	50			4,925~6,250 15,106		
Senegal	127 220	50	Um 1 Um 2 Um 3		765~1,539	4,890~7,210	
Somalia (DEM. REP)	110 220	50	Um 1 (Um 2) (Um 3)		693	7,200	
Tanzania	230	50	Um 1 Um 2 Um 3		531~1,215	4,785~9,749	
Chad	220	50	Um 1		840	4,904 5,288 7,120	94.0
Central Africa (REP)	220	50	Um 1		1,440	5,034 7,220	87.78
Tunisia	220 127	50	Um 1 Um 2 Um 3		585~1,566	7,225 7,280 11,730 11,750	92.0 94.0 95.0
Togo	220	50	Um 1 Um 2 Um 3		1,395 1,503	3,322 5,047 6,155 7,265	
Nigeria	230	50	Um 1 (Um 2) Um 3		531~1,458	3,326~7,285	88.63~99.15
Western Sahara	115 230	50					
Niger	220	50	Um 1		801~1,593	3,260~9,705	89.15~97.92
Burundi	220	50	Um 1 Um 2 Um 3		116	3,300 6,140	87.69~99.2
Benin	220	50	Um 1 (Um 2) (Um 3)		936 1,476	5,025 4,870 7,190	92.9 95.5
Botswana	220	50			621 972	3,356~7,255	90.70 90.36
Madagascar	220 110 127	50	Um 1		639~1,602	2,495~9,715 11,735~21,485	
Malawi	230	50	Um 1		540~1,278	3,380 5,995	92.12 92.7
Mali	220	50	Um 1		540 1,431	5,600~9,635	87.69 91.65

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
South Africa	•220 230 250	50	Um 1 Um 2 Um 3 006P		576~1,404	(3,230~17,770)	87.6~107.9
Mauritius (ISLAMIC REP)	240	50	Um 1 Um 2 Um 3 006P		684 819 1,517	4,845 9,710	
Mauritania	220	50	Um 1		1,350	4,845 7,245 9,610	
Mozambique	220	50	Um 1 (Um 2) (Um 3)		557~1,493	3,212~9,637 11,818~15,295	87.0~98.01
Morocco	•115 220 127	50	Um 1 (Um 2) (Um 3)	209	540~1,493	11,920~17,815	87.9~98.8
Libya	•127 230	50	Um 1 Um 2 Um 3 006P		675~1,484	3,200~17,895	87.9~98.4
Liberia	120		Um 1 Um 2 Um 3 006P		630 711	6,090 3,230~11,940	93.4 98.926
Rwanda	220	50	Um 1 (Um 2) (Um 3)			6,055 3,330 7,225~21,500	89.06
Lesotho	230	50			891	6,190 9,515 4,800	87.77
Reunion	220	50	Um 1 Um 2 (Um 3)		603 666 729		

N.C.S. AMERICA

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
U.S.A.	120	60	Um 1 Um 2 Um 3 Um 4 006P		540~1,580	5,85~21,610	88.1~107.9
Alaska	120 240	60			550~1,550	6,025~11,850	90.5~105.9
Argentina	220	50	Um 1 Um 2 Um 3 006P		540~1,580	6,060~15,345	
Uruguay	220	50	Um 1 Um 2 Um 3 006P		540~1,600	4,970~15,275	
Ecuador	127 120 110	60	Um 1 Um 2 Um 3		540~1,600	3,220~17,890	
El Salvador	110	60	Um 1 Um 2		540~1,500	5,987 9,555	
Canada	120	60	Um 1 Um 2 Um 3 Um 4 006P		540~1,580	5,965~15,260 (3,925~21,695)	89.9~105.9
Guyana (REP)	110 115	50 60	Um 1 Um 2 Um 3		560 700 760 1,010	5,950	100.0 102.0 104.0
Guiana	220	50	Um 1 Um 2 Um 3		1,060 1,070	3,385~6,170	91.5~99.5
Cuba	110	60	Um 1 Um 2 Um 3 006P		550~1,590	4,765, 5,025, (6,060~17,705)	90.3~103.0
Guadeloupe	220	50	Um 1 Um 2 Um 3 006P		640 1,420		97.0
Guatemala	120 127	60	Um 1 Um 2 Um 3		550~1,600	2,390~9,760	68.2 89.4~108.0
Greenland	220	50			570~1,080	3,999	90.5~102.1
Grenada	220	50			535		
Costa Rica	120 110	60	Um 1 Um 2 Um 3		530~1,600	4,832 9,645	89.9~107.9
Colombia	120 150 110	60	Um 1 Um 2 Um 3		540~1,600	3,705~9,635	
Jamaica	110	50	Um 1 Um 2 Um 3		550~770		90.5~105.7

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Surinam	127	60	Um 1 Um 2 Um 3 006P		600~1,030	5,005 (17,755)	89.7~103.1
S.T.Vincent & The Grenadines	230	50			705 1,450		
ST.Lucia	240	50			625 660 840 1,210		
Chile	220	50	Um 1 Um 2 Um 3 006P		540~1,600	6,020~15,150	
Trinidad & Tobago	•115	60	Um 1 Um 2 Um 3 006P		540~1,460		95.1 100.0 105.0
Dominica (COM)	240	50			595 1,060 1,210		99.1 102.1
Dominican (REP)	110	60	Um 1 Um 2 Um 3 006P		540~1,600	6,049, 9,755	
Nicaragua	120	60	Um 1 Um 2 Um 3		540~1,540	6,018~6,200	
Haiti	220 •110	60	Um 1 Um 2 Um 3 (006P)		640~1,500	4,930 6,156	
Hawaii	•120	60	Um 1 Um 2 Um 3 Um 4 006P		550~1,540		88.1~98.9
Virgin Is.	120	60	Um 1 Um 2 Um 3 (006P)		1,230~11,610		89.1~106.2
Bahamas	120	60	Um 1 Um 2 Um 3 006P		810 1,240 1,540	107.1 107.9	
Barbados	120 110	50	Um 1 Um 2 Um 3		790,900	98.190.7	
Panama	120 110	60	Um 1 Um 2 Um 3 006P		550~1,570		
Paraguay	220	50	Um 1 Um 2 Um 3		570~1,480	5,935~15,200	

AREA	POWER SOURCE			RADIO			
	AC		DRY BATTERY	LW (KHz)	MW (KHz)	SW (KHz)	FM (MHz)
	(V)	(Hz)					
Brazil	220 110 ~127	50 60	Um 1 Um 2 Um 3 006P		540~1,590	2,310~17,885	88.1~105.3
Puerto Rico	120	60	Um 1 Um 2 Um 3 006P		550~1,600		
Venezuela	120	60	Um 1 Um 2 Um 3 006P		540~1,580	3,215~15,060	
Belize	110	60			830, 1,530 1,580 930 •940	3,285	88.3~101.0
Peru	220	60	Um 1 Um 2 Um 3 006P		560~1,590	3,037~10,243	
Honduras	110	60	Um 1 Um 2 Um 3		550~1,600	3,251~6,075	
Bolivia	220 110	50	Um 1 Um 2 Um 3		580~1,600	3,310~9,716	
Mexico	127	60	Um 1 Um 2 Um 3 006P		540~1,600	2,390~17,765	99.9 104.0

(Courtesy of Sony Corporation)

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