



**VINCENT**  
LIGHTING SYSTEMS

*Entertainment & Architectural Lighting & Rigging*

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# FUNDAMENTALS OF TV & VIDEO LIGHTING

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*This guide is intended to give you an understanding of the general lighting process. It is a learning tool only, and is in no way, meant to be substituted for training in lighting and electronics.*



*Goodyear Studio, Eaton High School*

The evolution of television from the electronic transmission of pictures into a mass communications and artistic medium required the development of an entirely new lighting design art form. Although derived from the basic principles of still photography, the fundamentals of television lighting have evolved into a much more dynamic form to meet the needs of this uniquely demanding medium. The original requirement of providing enough light on the subject to produce a picture of transmission quality has progressed from the black and white "snows of times past" into a new age of technical excellence. In fact, television has become an artistic medium as much through the development and proper application of appropriate lighting fixtures and control systems as through camera improvements. Now, improved media formats including 4K and HD are increasing the need for superior lighting.

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## LIGHTING FIXTURES FOR TV STUDIOS

The average television studio requires six basic types of lighting fixtures.

### KEY LIGHTS

Key lights provide the main source of illumination on the subject in a studio set. Because of two important design features, the Fresnel spotlight is the standard key light. First, its beam may be controlled from a narrow spot to a wide flood focus. This adaptable focus capability allows for exact control of the area of coverage and a change in the intensity level without changing the mounting position of the fixture. The beam shape can be further controlled by the use of barn-doors. Secondly, because of its lens system, the Fresnel spotlight produces a soft-edged beam which blends easily with other fixtures illuminating the subject and the set. This soft edged beam is the single most important feature of this lighting fixture in television lighting.

### BACK LIGHTS

Back lights are used to separate the subject from the background, thus providing the illusion of depth. Located above the camera plane and directly behind the subject, the backlight must be mounted carefully to avoid direct light on the camera lens and unwanted spill and shadows on the set. Because it must have the same qualities of control and focus as the key light, the typical back light is also a Fresnel spotlight.

### BASE LIGHTS



*Ohio Channel Studio*

Base lights establish the overall light level on the studio set. The scoop or floodlight is the most commonly used fixture for base lighting. A large wattage unit which is relatively uncontrollable in terms of focus, the base light must produce a soft edged field of light so that multiple units can be easily blended. Base lights may also be used to provide a color mixture on the set, if required. Ideally, base lights should have an adjustable focus mechanism to provide some measure of beam spread control.

### FILL LIGHTS

The terms "base light" and "fill light" are nearly interchangeable. Fill lights, however, are secondary light sources which provide a diffused output similar to base lights. They cover and blend the shadows created by the key light and reduce excessive contrast ratios.

## SET/CYCLORAMA LIGHTS

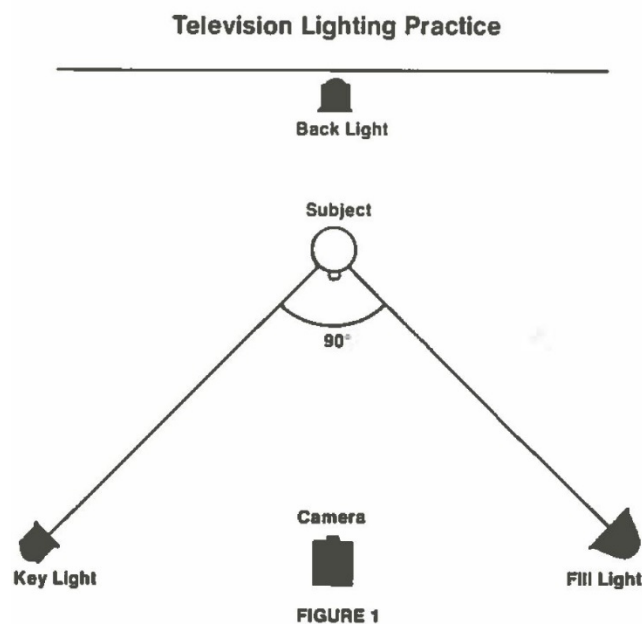
Set and cyclorama lights are designed to create smooth lighting on a backdrop or cyclorama. They are used to intensify the background illumination level, to balance the picture, to blend with the overall set, or to create a special mood. When individually circuited with multiple units, provided with color media and controlled by dimmers, Cyclorama Lights can provide many possible tints and shades through effective color mixing, thus giving subtle variations in the overall lighting design of any set.

## EFFECT LIGHTS

Effect lights provide projected images on a subject or background in order to add interest or to create a special mood. The profile spotlight is the most commonly used unit for this purpose. It consists of a concentrated high-powered light source, a precision lens system employing lenses of various focal lengths, four way framing shutters and a drop-in template slot to allow a pattern to be placed within the fixture “gate” for most effective projection. These instruments are capable of being framed to an area as well as providing the sharp pattern projection required to cut through the overall light level.

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## FIXTURE PLACEMENT



Most basic lighting designs for television use a triangular approach to the locations of the fixtures (Figure 1). If the back light fixture is placed directly behind and above the subject and the camera is directly facing the subject, the key light would be placed at a 45 degree angle to the subject and at a 45 degree angle above the camera plane. The fill light is placed opposite the key light at a lower angle, though at times it might be located straight on the subject. There is no steadfast rule concerning the locations of the key and fill lights relative to the side of the subject; it depends entirely upon the decision of the lighting director and the location of camera positions. The final location of these two fixtures depends upon the nature of the subject and the final effect desired.

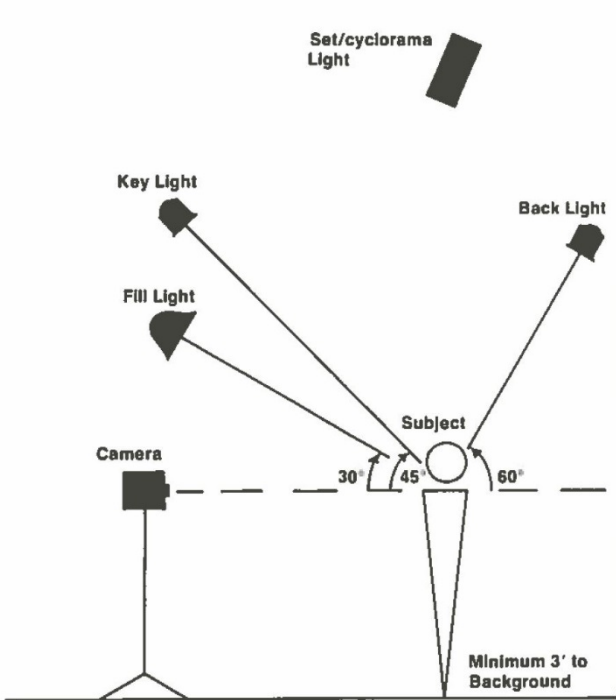


FIGURE 2

In order to be effective, the back light should be located from 60° to 75° above the horizontal, behind the subject (Figure 2). This angle allows for unwanted shadows to fall out of the camera viewing area. The subject should always be a minimum of three feet in front of the set, and more if possible, to provide the illusion of the third dimension through proper separation from the background. The key and fill lights should be located in positions as indicated by a combination of Figures 1 and 2. The set/cyclorama light should be positioned to allow for smooth illumination of the background.

The lighting levels of the various lighting fixtures are determined by the requirements of the scene. The ratio of the levels of the various units is important in determining the

overall picture quality. As a general rule, if the base and fill lights are 50 foot-candles, the key light should be 150 foot-candles and the back light 100 foot-candles. These are only starting points in lighting for television and the exact ratios depend upon the subject matter as it relates to the set, the camera in use and the exact effect desired by the lighting director. As more subjects and cameras are added, the lighting requirements are increased. Each subject in this situation needs his own key, fill and back light, and in many instances each subject requires key and back lights from two or more sources, depending on the camera shots. The approach described above is most commonly referred to as “three point lighting”.

In some circumstances, especially with multiple cameras in use, the lighting director might use a “four point” lighting approach, where four Fresnels are mounted above, to the side and behind the subject, creating a square, with the subject in the middle. This allows for any camera angle to capture the subject with the appropriate key, fill and back lights. In addition, this gives the lighting director more flexibility and allows the subject (or talent) to have more freedom of movement within the camera shots.

An important consideration in lighting for television is the initial equipment layout in the studio to meet specific production program requirements. If this pre-planning is done, then the lighting director's work will be easier and the final result will be more effective.

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## CONTINUOUS EVOLUTION OF TV LIGHTING



*Mid-Michigan Community College*

Obviously, this short discussion can only cover a few of the most basic principles of television lighting in a very general way. These principles are based on “tungsten” lighting technology, but these basics still apply in the use of newer fluorescent sources and the newest LED sources now commonly used for photographic, motion picture and television lighting. As the art and technology of television lighting continue their rapid development, we can look forward to the continued growth of television as a more artistic communication, entertainment, and cultural medium.

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## WANT TO LEARN MORE?

Just as no two performances are exactly alike, there is no one proper way to light a stage or performance area. Every lighting system is unique in its intention, scale, and capabilities. Please contact the friendly staff at Vincent Lighting Systems at 1-800-922-5356 or [info@vls.com](mailto:info@vls.com), for help in selecting the perfect lighting package or system for your studio.

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## ABOUT VINCENT LIGHTING SYSTEMS

### **RELIABLE**

Vincent Lighting Systems provides reliable entertainment and architectural lighting and rigging products that are inspected, maintained and tested for compliance with industry standards prior to delivery. Our reputation for reliability is backed with a commitment to providing on-time delivery, a personal equipment operation guarantee and after-hours project, rental and production support.

### **PROFESSIONAL**

Every customer of Vincent Lighting Systems can count on a dedicated team of certified and degreed lighting professionals with an accumulated 500+ years of industry expertise, all fully focused on delivering the utmost professional experience.

### **CREDIBLE**

Since 1978, the award-winning professionals at Vincent Lighting Systems have met the needs of entertainment and architectural lighting customers with the broadest range of equipment and products from more than 100 industry manufacturers. We have managed more than 10,000 projects and productions, including specialty architecture, bridges, theatres, schools, studios, houses of worship, weddings and corporate events.