

ARRI 

LIGHTING HANDBOOK

THIRD EDITION

How to Get The Most
From Your New ARRI Kit

by Bill Holshevnikoff

ARRI[®]

LIGHTING HANDBOOK

Images and Text © 2012
by Bill Holshevnikoff

3rd Edition Compiled and Edited by Tobin Neis

For more detailed information about the
lighting techniques described in this booklet,
please go to **www.poweroflighting.com**

ARRI INC.

617 Route 303, Blauvelt, NY 10913

Ph: 845-353-1400 Fx: 845-425-1250

600 North Victory Blvd., Burbank, CA 91502

Ph: 818-841-7070 Fx: 818-848-4028

e-mail: lighting-info@arri.com

www.arri.com

LIGHTING THEORIES AND TECHNIQUES:

There have been dozens of books throughout the past decades that have discussed “standard” lighting setups for interviews, talk shows, dramas and countless other productions. This handbook is designed to help you create the best possible images with your new Arri Lighting Kit and help you to use these tools when lighting location or studio productions.

CHOOSING A LIGHT SOURCE:

Arri Kits contain a variety of lighting fixtures. The two basic types of instruments are the open-faced instrument and the Fresnel-lensed instrument. Both types of light sources provide a focusable, even beam field of light that can be used to create a wide variety of light qualities and moods for your productions.



ARRILITE OPEN-FACE



ARRI FRESNEL

LIGHT QUALITY can be characterized by how “hard” or “soft” the shadow produced by an instrument appears. The quality of light produced by an instrument is determined by the physical size (not the intensity) of the light source. In general, the larger, more diffused the light source, the softer the light quality. Typically, a diffusion material, such as frost or a silk, might be placed in front of a lighting instrument to increase the working (physical) size of a light source. (When light transmits through a diffusion material, the illuminated diffusion material then becomes the acting light source.)



ARRILITE WITH FROST



ARRILITE WITH SOFTBANK

A sharp, well-defined shadow edge (hard light), like that of the sun, is most often produced by a small light source, such as one of the instruments contained in this kit. A softer, less-defined shadow edge (soft light) like that of a cloudy day, is most often produced by a larger, more diffused light source, such as a Softbank (available with some Arri Kits).



HARD LIGHT



SOFT LIGHT

If you do not have a Softbank, there are many other ways to create softer light qualities with the instruments contained within this kit. Attaching frost to the barndoors will soften the light quality slightly. Placing a large diffusion panel (silk) in front of the source, or bouncing the light off of a white wall, ceiling or white card, will produce a dramatically softer light quality.



ARRILITE BOUNCING OFF
OF FOAM CORE BOARD

Again, the physical size of the light source is directly related to the quality of light produced. So, ideally, one should consider the appropriate light quality for a shot or scene prior to setting up the lighting. For example, hard light may not be considered a natural light quality for many interior scenes (such as an office with four white walls and overhead fluorescent lighting).

HARD LIGHT VS. SOFT LIGHT:

There is no rule as to when to use hard or soft light for a shot or scene. Creating a particular light quality is subjective and there is no correct or incorrect method. There are, however, characteristics that are inherent to both hard and soft light, and one must constantly weigh the pros and cons of each prior to lighting a scene.

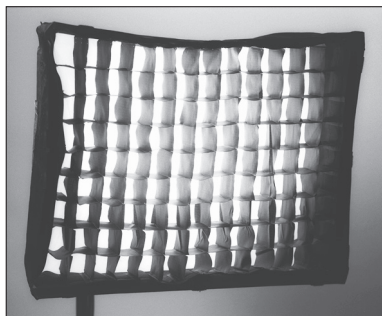
In general, hard light is easily controlled through the use of the barndoors on the fixture, and it can be used to produce dramatic shadows and attractive lighting effects for film or video. When lighting people for interviews with hard light, one must carefully consider the placement of the light source in order to produce appealing results on camera. An ill-placed Fresnel or open-faced instrument can produce unkind results on even the most photogenic persons.

Fresnel-lensed lights produce an attractive light quality and an extremely even field of light, and are the most popular instrument choice when hard lighting is required for studio and location work.

While Arrilites also produce an even beam field, these instruments generally are not used to light people directly. The Arrilite instrument is most often used to create a fill light source, by bouncing light off of walls, ceilings or bounce boards (on location); to use with diffusion frost or behind a Softbank; or to light background areas. When used as a direct source (no diffusion), the glass lens on a Fresnel produces a more pleasing quality of light than an open-faced instrument. In addition, open-faced lights may create multiple shadows as the light from the reflector is at a slightly different angle than the direct light from the lamp.

The use of softer light sources can be more forgiving when lighting people, but softer, diffused sources can be much more difficult to control. Diffused light disperses in many directions, and although the light quality may be desirable for a particular shot or scene, the uncontrolled spill light from a diffused source can ruin even the best of shots. Much of lighting has to do with directing the

viewer's eye around the screen, and when spill light from your main light sources contaminates the background of your shot, the lighting can appear haphazard and lose visual impact. Once again, careful consideration of your light placement will dramatically improve the result.



SOFT EGG CRATE ON SOFTBANK

When working with a Softbank, control of the diffused light can be achieved with a product called a Soft Egg Crate (manufactured by LightTools). This product is a collapsible fabric egg crate that can be quickly attached to the front of a Softbank. The use of an egg crate on a Softbank provides the user with instant control of spill light with little light loss.

LIGHT SOURCE INTENSITY: The intensity of the light source you choose for a shot is an important decision. Brighter is not necessarily better. Depth-of-Field (f-stop = depth of focus) and f-stop selection with your camera should be a conscious decision each time you begin lighting a shot.

Many of the newest video cameras are extremely light sensitive. Lighting a scene with too much light forces you to close down the iris to a deeper f-stop (f-8 – f-11) to properly expose the scene. This creates a very deep focus range (depth of field) in your shot. Selective focus is not an option unless you are shooting at the very longest telephoto lens setting on your digital video camera.

Selective focus is a simple method of focusing the viewer's attention on a particular subject or area in the frame. Using smaller lighting instruments and less light allows you to expose your scene at an iris setting of perhaps f-2.0 or f-2.8. Shooting with an open iris (aperture) creates a shallower depth-of-field and allows you to utilize selective focus as a creative tool in image-making.

Additionally, you can down-lamp your Arri instruments to use lower wattage bulbs. For example, the Arri 650 Fresnel also can use a 500 or 300W lamp. This provides you with the wider beam-field of the larger Fresnel while still working with lower light output. Many videographers now choose the more compact ARRI D Softbank kits, which use smaller, lower wattage fixtures. Shooting at lower light levels with the newer cameras allows the use of instruments as small as a 150W Arri Fresnel. Used in conjunction with proper lighting techniques, shooting with a shallow depth-of-field can enable you to create more of a film-look when shooting with your video camera.

A NOTE ON COLOR: The color of the tungsten lighting fixtures in your Arri Kit is rated at 3,200 degrees on the Kelvin temperature scale. Although the light from these instruments may appear as white light on video or film, it is actually a very warm-colored light relative to the color of daylight. Choosing a tungsten film stock or setting your video camera for tungsten (3,200K) will give you proper color rendering when lighting with these fixtures. Be careful when white balancing your camera that you are

balancing your camera for the light in your subject area. Proper white balance will ensure accurate skin tones in your video productions.

Sometimes, you may be shooting in an area with existing ambient light and the color of that ambient light may differ dramatically from the color of light generated by the instruments in your Arri Kit. The color of fluorescent light in office areas, commercial light in retail or industrial settings and ambient daylight all differ greatly from the color of light created by your tungsten lights. In these cases, it may be necessary to color correct your lighting instruments to match the color of the ambient light in your scene.

Your Arri lights can be color corrected through the use of color correction gels which can be attached directly to the barndoors of your instruments. Just be aware of the fact that using gels on your lights can greatly reduce the output of light (i.e. full CTB (daylight) correction gel can reduce output by as much as 85%). Also, gels can burn when set too close to the lamp or lens on your lights. Careful use of correction gels can help you to manipulate and match the color of the existing light in your scene.

There is a great deal of information available on the subject of color correction gels (see Power of Lighting videos at the back of this booklet) and you should gain an understanding of this subject if you wish to better your lighting practices.

Additionally, you might consider supplementing your lighting package with additional Arri lighting instruments designed specifically for production use in daylight settings. Arri HMI (daylight balanced) instruments are used daily in motion picture and video production work around the world. See your local Arri equipment dealer or visit the Arri website for more information. www.arri.com

SOME BASIC DEFINITIONS:

THE FOUR PRIMARY LIGHT SOURCES:
KEY, FILL, SEPARATION & BACKGROUND

IN THIS SECTION, THE “LIGHTING EVOLUTION” OF IMAGES SHOWS THE SINGLE EFFECT OF EACH OF THESE FOUR SOURCES IN A TALKING HEAD SHOT.

KEY LIGHT: The key light is the primary light source for the subject area of the image. The key light is the main source of illumination and often establishes a light quality, whether hard or soft, for the shot or scene. When lighting people for on-camera interviews, the object of the key light is to illuminate the person in an attractive manner and reveal the shape of the person’s face through shadow form (modeling). An Arri Fresnel is often the choice for a key light source (due to the ease of use and light control). Softbanks also are a popular key light source for interviews.

Position of the key light can range from directly above the camera lens to completely behind the subject, depending upon the desired results. Seeing the effects of the key light shadows on the subject’s face will help you to determine the best height and location for this light. When lighting for multiple cameras, it is usually best to place the key lights for optimal results on the close-up camera positions for each subject. Regardless of the quality of light you choose, the light from the key source should be confined to the subject area if you hope to achieve a



KEY LIGHT ONLY

dramatic lighting effect for the image. If a less dramatic effect is desired, the spill light from the key source can be allowed to illuminate the background area as well.

FILL LIGHT: The fill light is an additional light source designed to fill in the shadow areas created by the key source. Ideally, the fill light source is a larger, diffused soft light source that will fill in the shadow area to the desired density (light level) without producing a second, opposing shadow on the subject(s). Think of your fill lighting as ambient light for the shot or scene, and as your visual mood indicator. The less fill light, the more dramatic the

FILL LIGHT



KEY & FILL LIGHTS

lighting. Regardless of whether your key source is hard or soft light, using a hard light source for a fill light can create an unnatural double-shadow effect on the talent/subjects. Use of a large silk, a Softbank, dense white diffusion material on the barndoors, or bouncing the light off of a white surface (wall, bounce board, etc.) can produce a natural and effective fill light source. When shooting only a close-up of a single person, often the spill light from your key source can be directed at a large, white bounce card for a soft, shadowless fill light (see examples). The position of the fill light can vary greatly, but normally fill light sources are set either near the camera lens or at a position opposite the key light source.

SEPARATION LIGHT (HAIR LIGHT): The separation light, or hair light, is designed to help visually separate the subject(s) from the background. A separation light is not always necessary, but without the use of this light, it is possible that the subject could blend with the background. Use of a separation light also helps to bring out color and texture in the subject's hair. Brightness of the separation light can equal the brightness of the key light source, but for interviews, the separation light is usually less bright than the key. Position of this source can range from directly behind and above the subject to just outside of the frame line to create a side rim-light. As is true with almost all light placements, the effect of the separation light is dramatically altered by its position. Experiment with different light qualities and placements to find your own favorite look.

SEPARATION LIGHT

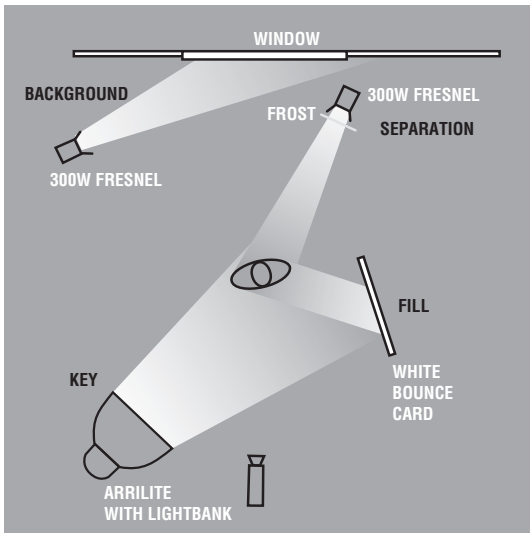


KEY, FILL & SEPARATION LIGHTS

BACKGROUND LIGHT: The background light can be the first or final light to be set for a scene or shot, depending upon the importance of the background lighting in the scene and your lighting style. If careful consideration has been given to the control of spill light in the subject area, the effect of your background light can be quite dramatic. The addition of a background light also can help to add texture, color and/or added separation for the subject(s) from the background. Direction of the background light also can help to support key light direction and motivation (i.e. light from a window, etc.). Both Fresnels and Arrilites can be used effectively to light background areas.



KEY, FILL, SEPARATION & BACKGROUND LIGHTS



NEW LIGHTING TECHNOLOGIES:

Lighting instruments for the majority of film and television production have remained basically the same for many years. Fresnel-lensed lights and open-faced instruments have been the backbone of the craft since its inception. Studio soft lights were also an important addition to the lighting industry. Over the past 30 years, HMI lights and fluorescent instruments have made their impact on filmmaking and television, and have changed the ways of our business. Most recently, LED fixtures are providing another new lighting tool for the image-making professional.

Today's "camera" comes in many forms ... and digital is paving the way for the future of image capture. The latest technologies used in lighting instrument design also have allowed for the development of some new tools -- high-output, compact HMI and LED instruments from ARRI Lighting. These new lighting fixtures are creating yet another new chapter in ARRI's legacy in the film industry. This booklet is designed to help you to better understand HMI and LED technology and the ARRI Lighting fixtures available for you and your production needs.

HMI® TECHNOLOGY

The HMI lamp - Hydrargyrum (mercury), medium-arc, iodide - originated in Germany in the 1970s as a more efficient replacement of the carbon arc light. An HMI lamp uses mercury vapor mixed with metal halides in a quartz-glass envelope, with two tungsten-coated electrodes of medium arc separation. The light from an HMI source approximates the look and color of raw sunlight. Unlike traditional tungsten lighting instruments using incandescent bulbs, HMIs use ballasts to regulate the electrical supply to the lamp head, and power is fed via a head-feeder cable. ARRI Lighting's HMI lights are high-output sources that produce a daylight spectrum with a color temperature of approximately 5600 degrees Kelvin, and currently the instruments range from 125 watts to 18,000 watts.

This section of the booklet will explain the line of ARRI HMIs – the ARRILUX POCKET PARs and POCKET LITEs, and the kits available for use on-location or in the studio.

125 POCKET PAR

ARRI's smallest, most compact HMI, the 125 watt POCKET PAR is ideal for close-ups or set-ups where space is limited. The 125 POCKET PAR offers superb punch and is invaluable for both direct lighting and for use with reflectors. ARRI's custom-designed dichroic, glass faceted reflector and matching spread lenses ensure maximum beam control in all situations. A wide variety of accessories are available for innumerable lighting design applications.



200 & 400 POCKET PARs

The low-heat 200 & 400 watt POCKET PARs are perfect for small spaces, close-up work or more difficult confined set-ups. Both fixtures offer superb punch and are invaluable for direct lighting in daylight environments, can be used with a Chimera Lightbank or Lanterns, or used as bounced fill light. ARRI's custom-designed dichroic, glass faceted reflector and matching spread lenses ensure maximum beam control in all situations. A wide variety of accessories are available for innumerable lighting design applications.



200 & 400 POCKET LITEs

The ARRI 200 & 400 watt POCKET LITEs are lensless instruments, offering a smooth, even-field beam ideal for location production work on-the-go. The low-heat POCKET LITEs are perfect for working in tight quarters and confined locations. Both the 200 & 400 watt fixtures offer superb punch and are invaluable for direct lighting with a Chimera Lightbank, or as bounced fill light. A wide variety of accessories are available for innumerable lighting design applications.

POCKET PAR Kits

125W, 200W & 400W POCKET PAR kits are available in both AC and DC configurations. At the heart of each kit is the low-heat POCKET PAR HMI fixture. A wide variety of accessories are included in each kit to create innumerable lighting design applications. In addition to the four-lens set, is a four leaf barndoor, a wire scrim set, 25' head-to-ballast cable, hand grip for the fixture, a 3/4 CTO daylight-to-tungsten conversion filter, a hot-strike HMI bulb, and a Chimera XS (16 x 22") Video Pro Bank with speed ring. The hard-sided, reinforced kit case ensures safe transport and storage. Add a light stand to complete your kit!

LED TECHNOLOGY

LEDs – Light Emitting Diodes – were developed in the early 1960s, and are quickly becoming a viable light source in the film and television industries. There are many advantages to using LEDs over incandescent light sources, including lower energy consumption, longer lifetime, smaller size, and greater durability and reliability. However, they require precise heat management and the color rendering index (CRI) must be considered in fixtures used in production.



ARRI's LED Caster Series are high output, low heat, low power consumption lighting units with a tuneable white light source. The special optical design provides single shadow rendering and adjustments over a range of color temperatures. The ARRI Caster Series offers a Color Rendering Index (CRI) of 90, ensuring more vivid and lifelike colors on digital and film media.

There are two versions in the LED Caster Series, the LoCaster and the BroadCaster. Each LED instrument offers high output, yet very low power consumption while in a housing that only weighs 2lbs. Both units utilize the same optical principles and the same housing, yet consume only 35W of power. On the LoCaster, power, dimming and the color temperature may be manually adjusted with onboard controllers. This unit is adjustable in color temperature from 2800 Kelvin to 6500 Kelvin. The LoCaster or BroadCaster can be powered by the use of several AC Power Supply options or any DC source from 11 - 36V (20 - 36V for optimal performance).

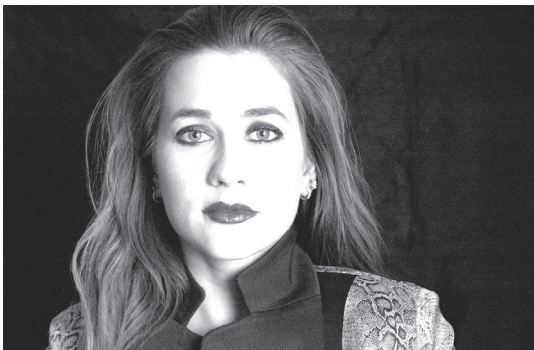
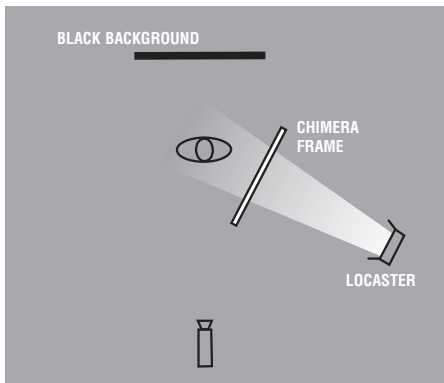
The advantage of the BroadCaster is that multiple units can be assigned for remote control via a DMX protocol and console. The optional intensifier is a valuable accessory which doubles the light output while creating a tighter beam of light (to 33°). Both the LoCaster and BroadCaster may be orientated in either horizontal or vertical mode.

Also available are 'Hybrid' kits in various configurations which combine the LoCaster LED fixtures with our proven small tungsten Fresnels.





Both of these images were created with the ARRI LoCaster punched through a Chimera diffusion panel. The manipulation of contrast and image exposure against a simple, black background provides two dramatically different HD images.

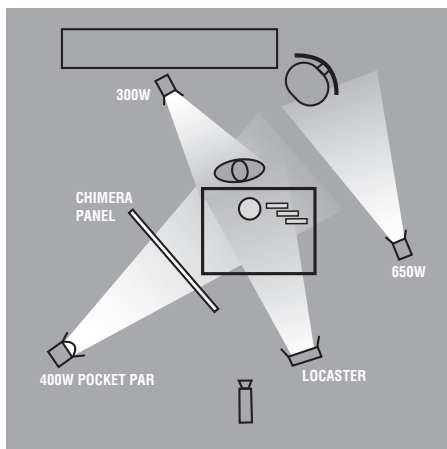


Talent - Katie Chonacas



TECHNICAL DATA:

- 1 - 400w ARRI PocketPar
- 1 - Chimera diffusion panel
- 1 - ARRI LoCaster (eye light)
- 1 - ARRI 300w Fresnel - 1/2 CTB gel (backlight)
- 1 - ARRI 650w Fresnel - 1/2 CTB gel (background)



Artists of all types are constantly working to create a 3-dimensional image on a 2-dimensional plane (motion picture screen, television screen, paper, etc.). The following information will help you better identify and manipulate the separate components of reflected light.

THEORY OF 3-DIMENSIONAL CONTRAST

The Theory States: A single light source directed at a single object of a single density normally will produce three separate densities: the diffused value, the specular highlight and the shadow. The presence of these three densities can reveal shape, form, texture, density and depth.

DIFFUSED VALUE The true tone or natural brightness of an object. Accurate reproduction of the diffused value often determines a proper exposure. The diffused is a constant, objective value, while the shadow and specular are variable and subjective.

SPECULAR HIGHLIGHT The mirrored image of a light source on an object. The specular highlight is always brighter than the true tone of the object. A properly placed specular highlight will reveal shape and texture on an object.

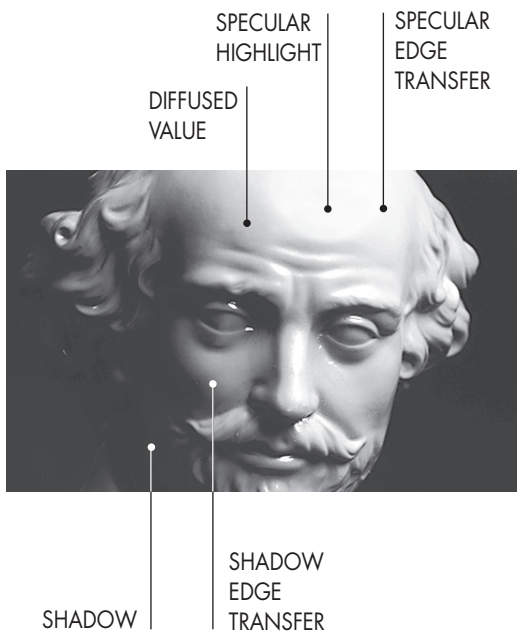
SHADOW The area on a 3-D object that receives no illumination from the primary light source. The shadow is always lower in brightness than the true tone of the object. A properly placed shadow will reveal shape and form on an object.

SHADOW EDGE TRANSFER The area of transition between the diffused value and the shadow. It is the primary indicator to determine the quality of light produced, i.e. hard or soft light.

SPECULAR EDGE TRANSFER The area of transition between the diffused value and the specular highlight. The specular edge transfer usually defines the surface texture of an object. The smoother the surface, the harder the edge transfer.

RULE OF THUMB The larger the light source, the softer the light quality.

ELEMENTS OF 3-DIMENSIONAL CONTRAST

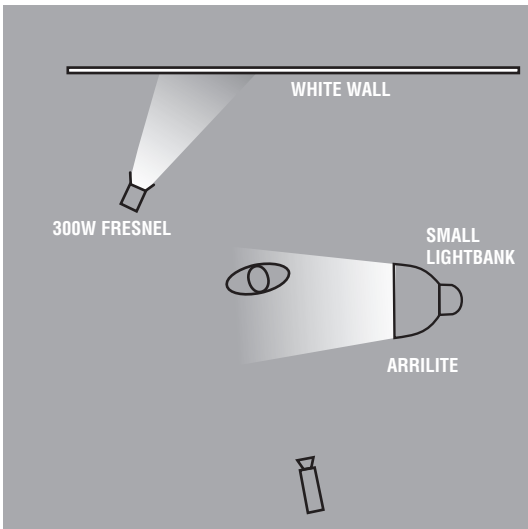


THE FOLLOWING PAGES SHOW IMAGES AND DIAGRAMS THAT WILL PROVIDE YOU WITH BASIC LIGHTING SETUPS THAT YOU CAN ACHIEVE WITH YOUR ARRI KIT FOR A VARIETY OF STUDIO AND LOCATION PRODUCTIONS.



TECHNICAL DATA

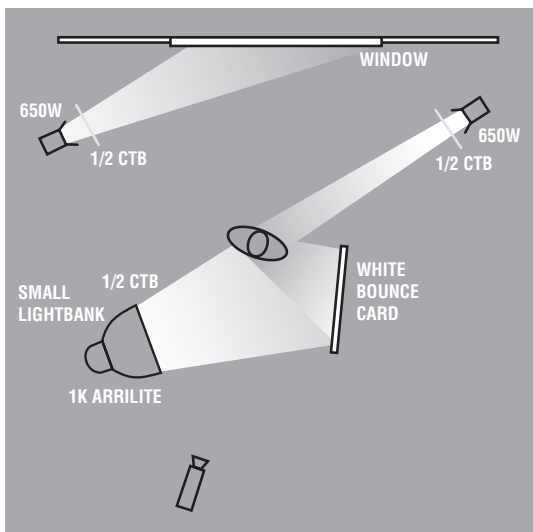
- 1 - Small Softbank
- 1 - 750 watt Arrilite (inside Softbank)
with double wire scrim
- 1 - 300 watt Arri Fresnel





TECHNICAL DATA

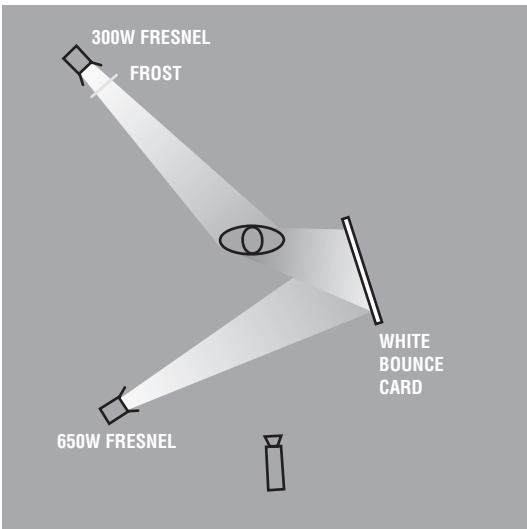
- 1 - Small Softbank
- 1 - 750 watt Arrilite* (inside Softbank)
- 2 - 650 watt Arri Fresnels*
- *1/2 CTB correction gel on all sources





TECHNICAL DATA

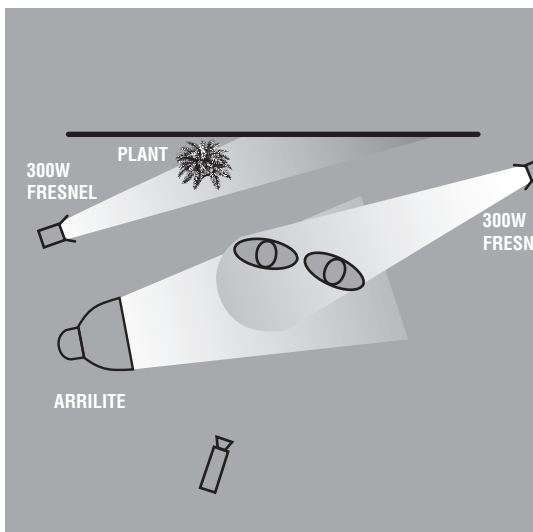
- 1 - 650 watt Arri Fresnel (bounced off white board)
- 1 - 300 watt Arri Fresnel
(GAM 1050 frost on front of barn doors)





TECHNICAL DATA

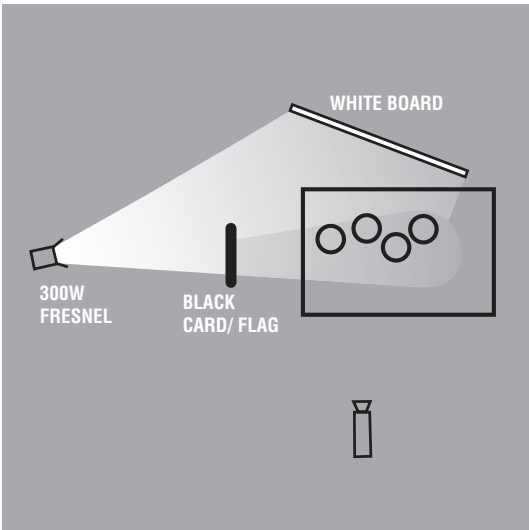
- 1 - Small Softbank
- 1 - 750 watt Arrilite (inside Softbank)
- 2 - 300 watt Arri Fresnels

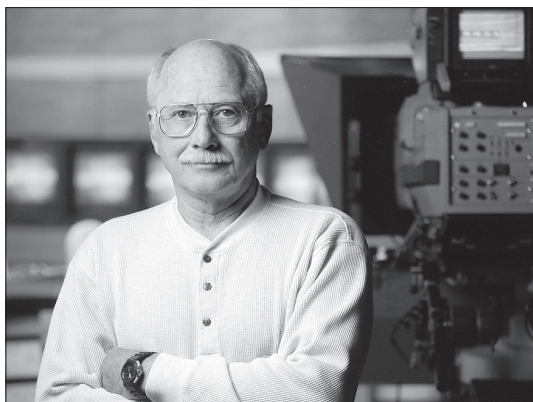




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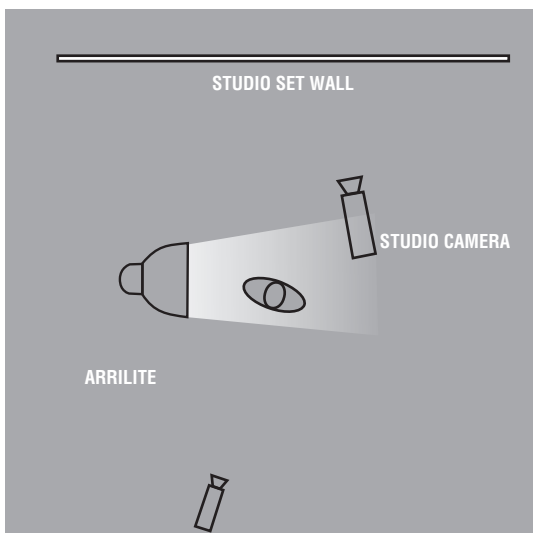
1 - 300 watt Arri Fresnel





TECHNICAL DATA

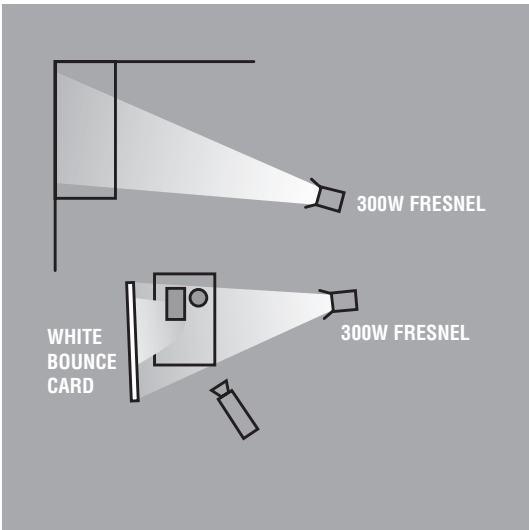
- 1 - Small Softbank
- 1 - 750 watt Arrilite (inside Softbank)
with double wire scrim





TECHNICAL DATA

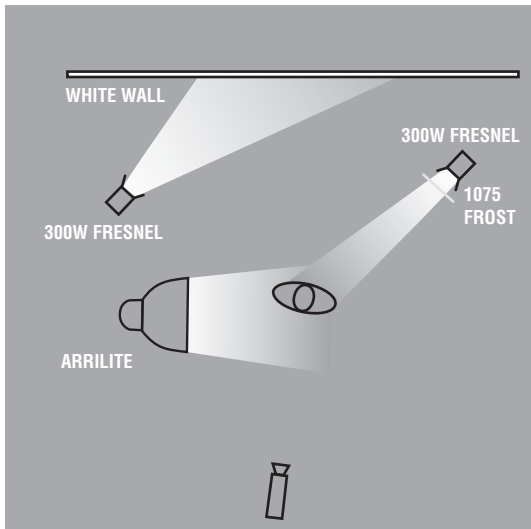
2 - 300 watt Arri Fresnels





TECHNICAL DATA

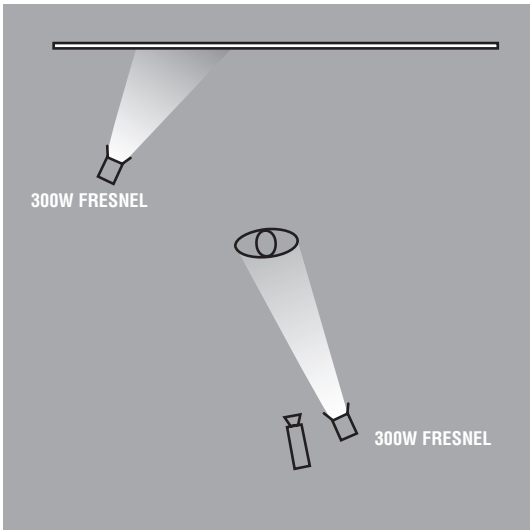
- 1 - Small Softbank
- 1 - 750 watt Arrilite (inside Softbank)
- 2 - 300 watt Arri Fresnels
(GAM 1075 frost inside barndoors of separation light)





TECHNICAL DATA

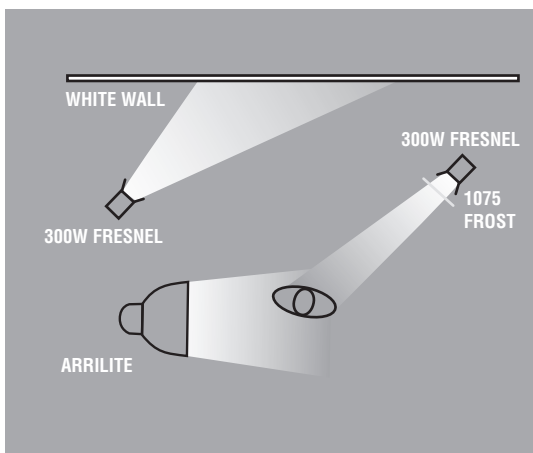
2 - 300 watt Arri Fresnels





TECHNICAL DATA

- 2 - 300 watt Arri Fresnels
(GAM 1075 frost on bottom half of barndoors on each key light)
- 2 - C-stands with grip arms
- 1 - Small Softbank
- 1 - 750 watt Arrilite (inside Softbank)
with double wire scrim





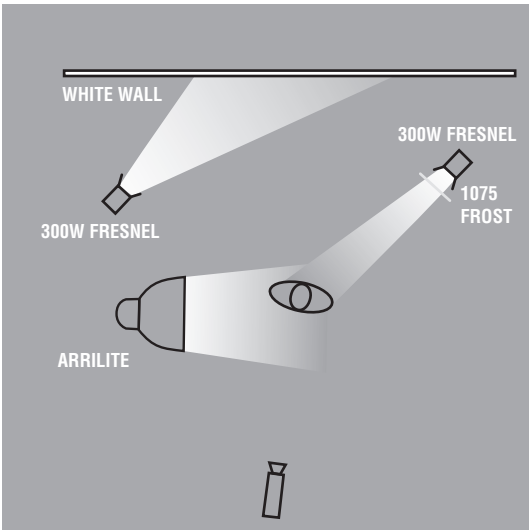
TECHNICAL DATA

1- Small Softbank

1 - 750 watt Arrilite (inside Softbank)

1 - 300 watt Arri Fresnel (GAM #340 amber gel)

1 - 650 watt Arri Fresnel (GAM #340 amber gel)

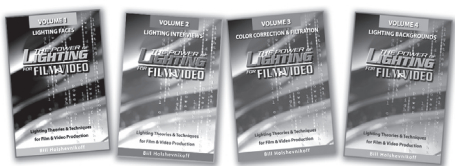


NOTES:

NOTES:

THE POWER OF LIGHTING DVDs

by Bill Holshevnikoff



LIGHTING THEORIES & TECHNIQUES FOR FILM & VIDEO PRODUCTION

VOLUME I - "LIGHTING FACES": A comprehensive look at the art of lighting people. You'll learn how to use hard and soft light, and simple lighting techniques for lighting different skin tones, people with eye glasses, and balding heads. Discover which type of lighting instruments will give you the look you want, how to determine contrast ratios, and much more! (50 mins)

VOLUME II - "LIGHTING INTERVIEWS": This program provides detailed information for lighting a variety of interviews ranging from single-camera news and location setups to multi-camera studio programs. Learn to improve your EFP lighting, understand HMI (daylight balanced) lighting, and discover how to make your studio interviews look their best, regardless of the number of on-camera talent. (45 mins)

VOL III - "COLOR CORRECTION & FILTRATION": This program examines the light and color spectrum as it relates to shooting film and tape. You'll see how to use color correction gels and filters to make your location lighting look its best. Learn to gel windows quickly, color correct for fluorescent lighting, mercury vapor lights and much more. Also, discover the art of filtration and see how the use of some basic filters can change the look of your productions. (55 mins)

VOL IV - "LIGHTING BACKGROUNDS": Every shot has a background, and too often the importance of backgrounds is overlooked. This program provides detailed lighting diagrams and dozens of images to demonstrate just how important background lighting can be. See the tools and techniques used to light both interior and exterior locations and studio sets. Light control techniques and background treatments are explored in depth. (45 mins)

IMPROVE THE LOOK OF YOUR PRODUCTIONS DRAMATICALLY

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