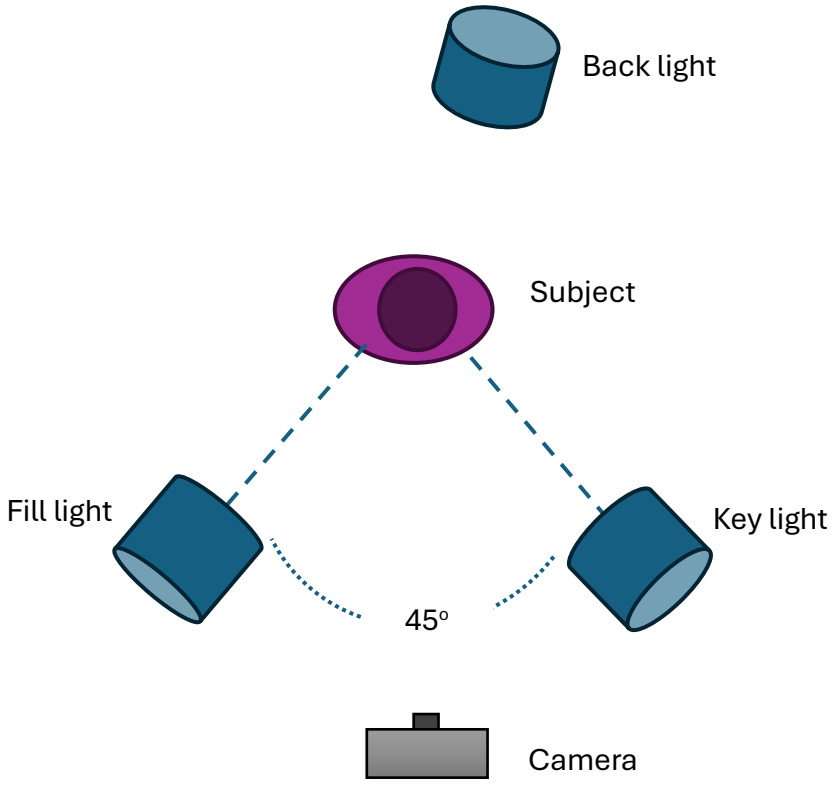
DIY Studio Lighting

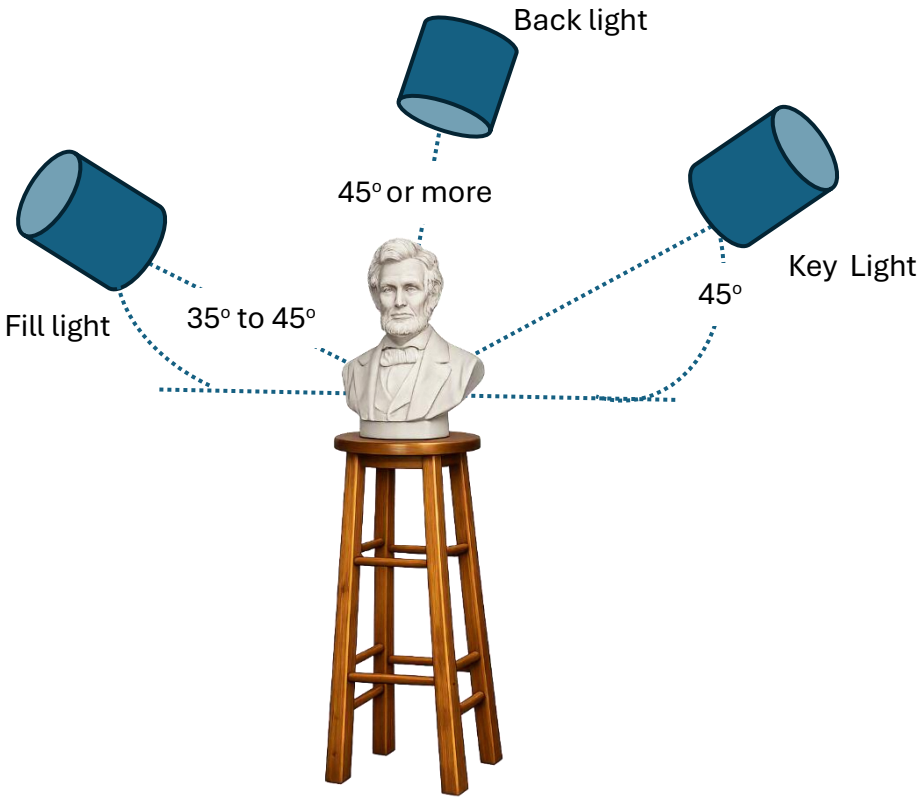
Simple do-it-yourself studio lighting

Basic Front View

This is a basic front view of a typical photo lighting setup. The key light can be thought of as the “sun”. It is the primary source of light. The fill light is used to manage the shadows that are naturally caused by the key light. The back light provides three-dimensionality to the setup. Additional details are on the next page.



Overhead View Diagram



Terms

- Key light – Imagine this as the primary "sunlight" from the front left or front right of the subject. Typically, about 45° above subject's horizontal plane.
- Fill light – Used to remove, reduce, or otherwise control shadows caused by the key light. Usually, 35° to 45° above subject's horizontal plane. Note that this is a "rule of thumb". In practice it may be as low as directly on the subject's horizontal plane.
- Back light – used to great a "glow" on the back of the subject to enhance the three dimensions of the subject. This light tends to be relatively high, above 45° the subject's horizontal plan.

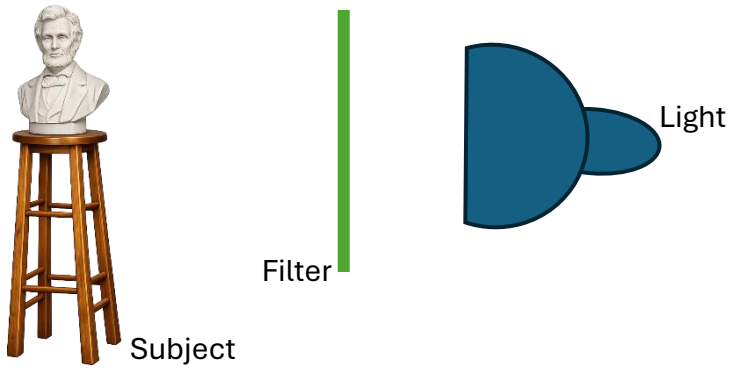
Filters to Control Light

Professional filters are made of polyester or other synthetic sheets. For home use similar filter materials include Tyvek, muslin, cotton sheet material, and even wax paper. Ripstop nylon is commonly used by professionals. Dense filters are used to reduce light, and the "coarseness" of the material can be used to manage shadows.

Professional automotive photographers prefer cloudy days for taking pictures of cars and trucks. This is because details show up better when the light is diffused by clouds and shadows are reduced. Experiment with different filter materials to get the effect you want.

Filters can be hung in front of the lights. Diffusing can be controlled by moving the filter closer or farther away from the light. If the lights are not too hot, filters can be attached to the light itself. But, beware of fire!

Here's a diagram of a typical filter set up:



The filter can be hung in front of the light using any sort of device. For instance, it is perfectly acceptable to hang a filter from a yardstick, broom stick, old curtain rod, or any similar device.

Equipment

A typical light is illustrated below.



Hover Image to Zoom

Woods 60-Watt 6 ft. 18/2 SPT-2 Incandescent Portable Clamp Work Light with 5.5 in. Reflector.

Available at Home Depot for $9.98.

Clamp-on lights like the one shown above come in different sizes. This one handles up to a 60w bulb. That is for incandescent bulbs, of course. Incandescent bulbs are very difficult to find, so a lower wattage LED bulb will work well. If a wider reflector is desired, check for one that handles up to 300 watt incandescent bulbs. Wider reflectors will tend to give a less directed and softer beam.

It is OK to mix and match lights. For instance, the key and fill lights could be wider than the back light.

These lights can be clamped to nearly any surface including the backs of chairs. Chairs make extremely stable “tripods”.

It is important to note that lights like the one discussed here can be used in conjunction with natural light. For example, if the primary light is from the sun, clamp-on lights can be used to remove or reduce dark areas.

About Fluorescent Lighting

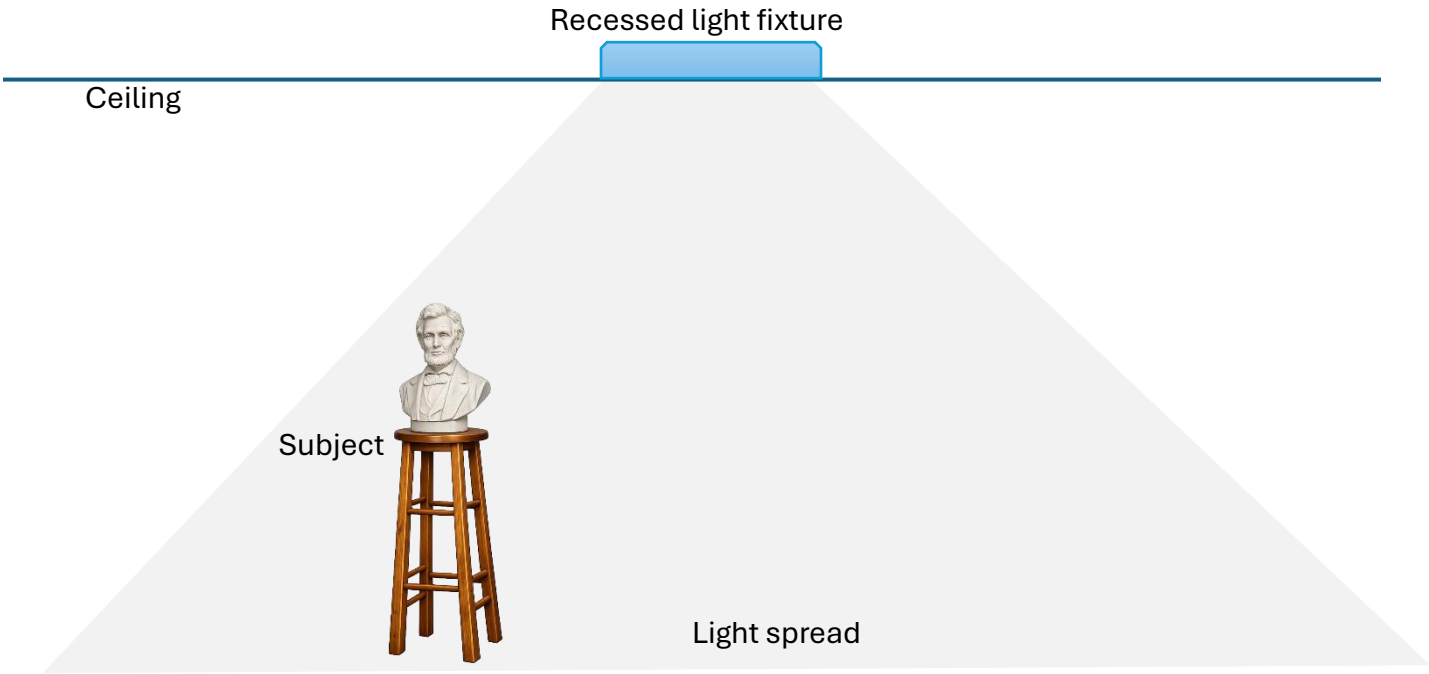


Fluorescent lighting tends to be dismissed by professional photographers. But for most “regular folks” it cannot be avoided. In fact, fluorescent lights have certain advantages. They tend to create naturally soft illumination. As an example, the photograph on the right was taken under light provided by 4-foot recessed fluorescent fixture.

The photograph could be improved by using a fill light, but otherwise it looks good.

Recessed fluorescent lights are designed to provide a wide light spread. The exception are fluorescent fixtures with square baffles instead of simple flat diffuser lenses. The trick is to find the “sweet spot” in the light spread. That is the place where the subject looks the best.

The following diagram illustrates lighting a subject under fluorescent lights.



About Reflectors

Reflectors are most commonly used in place of fill lights. Reflectors can be made from any almost anything. The primary characteristic is the ability to reflect light. I often use white Foamcore. However, the silver windshield reflectors for cars work extremely well. In fact, “back in the day” a professional reflector available from a well known photo product manufacturer and sold for $45 was identical to an $8 reflector from an auto parts store.

The trick to using the reflector is finding a position where it will reflect the light into the dark areas of your subject.

About Backdrops

When the natural surroundings, either indoors or outdoors, are not acceptable for photography, it may be necessary to use a backdrop. Professional backdrops come in many different styles ranging from realistic paintings to abstract “cloud” effects.



The professional backdrop illustrated above is made from painted muslin. They can be made at home if one has an artistic nature and the space to do the painting.



However, less fancy backdrops can be made with much less effort. Colored cloth, such as muslin or canvas, are available from the local fabric store. Foamcore can be purchased in many different colors. Plain paper on rolls, such as butcher paper, kraft paper, and wallpaper, are easy to use.

The photo of the model car uses two sheets of white styrene plastic. The car is sitting on one sheet, and the other sheet is the backdrop.

A popular type of backdrop is the “infinity backdrop”. This style creates the illusion of the subject existing in a space that does not differentiate between the floor and the background.

Infinity backdrops feature a vertical back that extends onto the floor with a smooth curve marking the transition from vertical to horizontal. The blue backdrop in the image above has this transition. The photo of the model car does not have an infinity effect because you can clearly see the line separating the vertical from the horizontal.

Softlights vs. Pinpoints

A basic principle in lighting involves lighting for reflecting surfaces as opposed to lighting for sparkly surfaces. As an example, grocery store lighting in the produce department is generally soft and flat with reduced shadows and has careful color correction. Those peppers always look greener on the shelf compared to when they are in your cart.

Jewelry must sparkle and be highly reflective. Specialty lighting in jewelry cases and displays enhance the effect. Check your local jewelry store. I bet they have lots of spotlights and recessed lighting on the ceiling.

If your subject needs softlights, consider bouncing the light off reflectors or through filters. Test by changing the distance between the subject and the filter and the distance between the filter and the fixture.

For shiny surfaces that need reflection consider using small lights with unfrosted bulbs or even Christmas lights out of sight from the camera.

Examples

This model is lit with overhead lights only. Notice the darkness of the car's side and the bright highlights on the hood. The dark sides cause the details to be missed.



In this example the car's side has been lit using a reflector. Note that details can be seen more easily.



The fill lights in this example are too strong giving a “blown out” effect. The lighting stands out too much causing it to be obvious instead of subtle.



With a key light only, this model is much too dark.



Adding a fill light to the key light brings out the missing details of the airplane.

