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DIGITAL STUDIO CAMERA SYSTEM

PHASE ONE

System Assembly Guide

Edition 3.0

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For Your Safety:

Read this manual carefully before turning on your system.

- If any component of your system becomes wet or damaged, remove power by unplugging the power unit from the wall socket.
- Keep these instructions handy for reference by you or others.
- If you receive a shock while using this equipment, remove power and contact a licensed electrician immediately.
- Follow all instructions and warnings dealing with your system.
- Never try to open any of your Phase One units; electrical shock may result. If your units require service, contact your licensed Phase One dealer.

Warning: Electrical equipment may be hazardous if misused. Always supervise children when electrical equipment is present.

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Section 1 Hardware Description

Each Phase One system has three basic components: a camera back, a power unit, and software for your computer.

The camera back contains the electronics and mechanics for image capture: a color linear array CCD, a stepping motor for scanning, an analog to digital converter and control electronics.

Camera back models are available for a range of medium and large format studio cameras. The camera back is mounted on a camera similar to a normal film back. See the camera back manual in this binder for more information about the operation, care, and cleaning of your camera back.

Internally, the camera back produces12 bits of data for each color, resulting in 36 bits of data for each pixel. Most computer applications use 24 bit TIFF files, so the amount of data must be reduced. Phase One software does this as the shot is taken , thus saving time. By applying tonal and gradation settings made via the Phase One application program, image data is reduced in such a way that the most pertinent information is retained in the resulting 24 bit TIFF file.

The camera back sends its final output to the computer ready for storage and further image processing. Transfer of data is via the cable connecting the camera back to the computer. The data is transferred according to the SCSI standard.

Easy to use processing software enables you to control the system from your computer. Refer to the *Software Reference Manual* in this binder for a complete description of the software.

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Section 2 The Camera Back External Features

Referring to Fig.1

- On LED: This green LED will light when the unit is powered.
- Busy LED: This yellow LED will flash when the unit is scanning.
- SCSI Connector: The SCSI cable fits to this connector to connect the Camera Back to other units in the SCSI chain.

  Many devices that use the SCSI bus standard have two SCSI connectors. This is because it is a “daisychained” bus. Additional units (such as external hard disks) are added by connecting them with an incoming and an outgoing SCSI cable in the chain. However, for correct electrical performance, each end of the chain must be terminated. The camera back is designed to be a terminator, therefore the camera back must be connected as the last unit in the chain.
- SCSI Address Selector: This switch defines the SCSI bus address for the camera back. Each device connected to the SCSI bus responds to signals sent to its address, which must be unique to each device.
- SCSI Terminator On / Off switch: This switch is used to turn the SCSI terminator on or off. The switch should generally be left in the on position.

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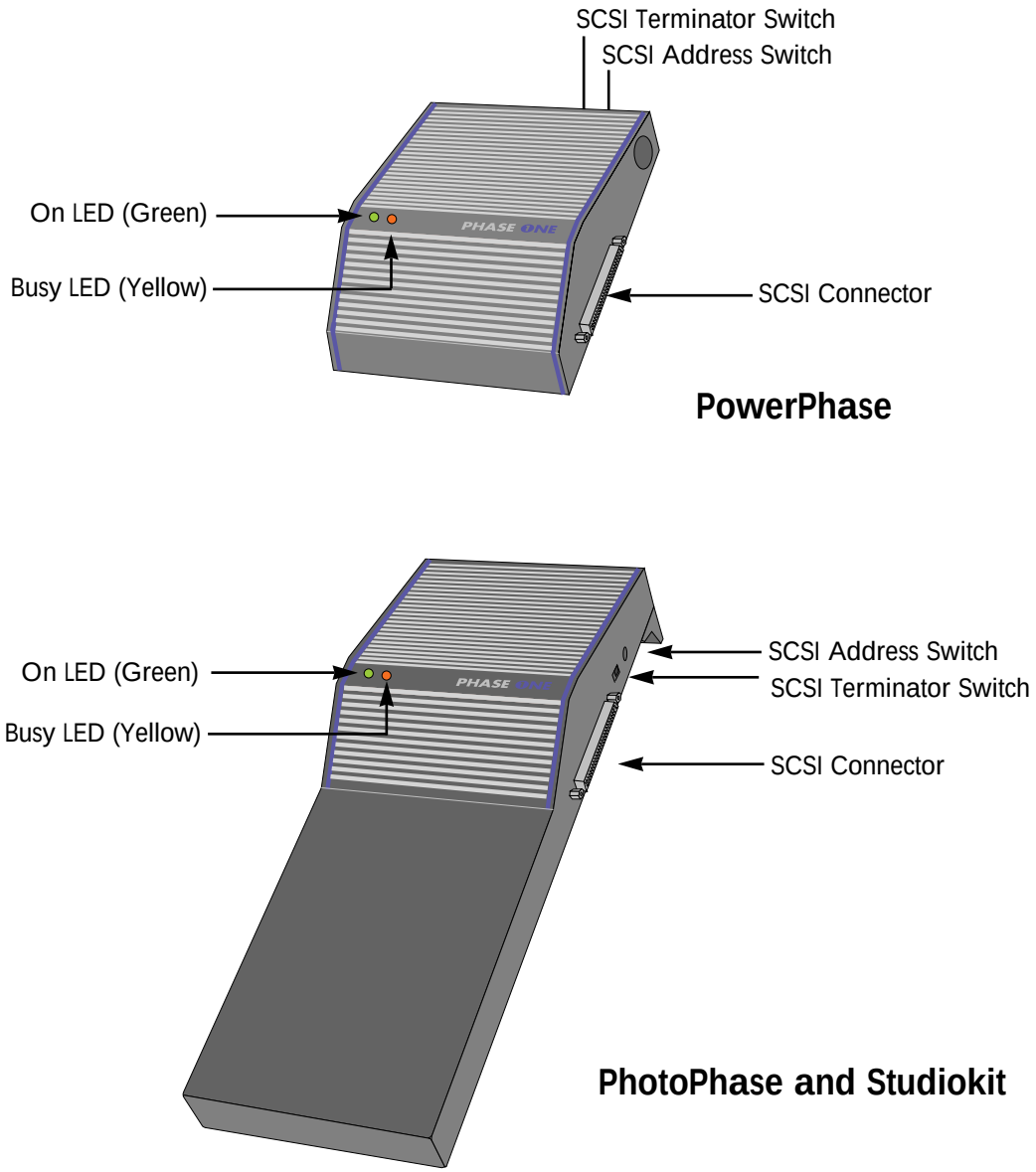


Fig.1. External features of Phase One Digital Camera Backs

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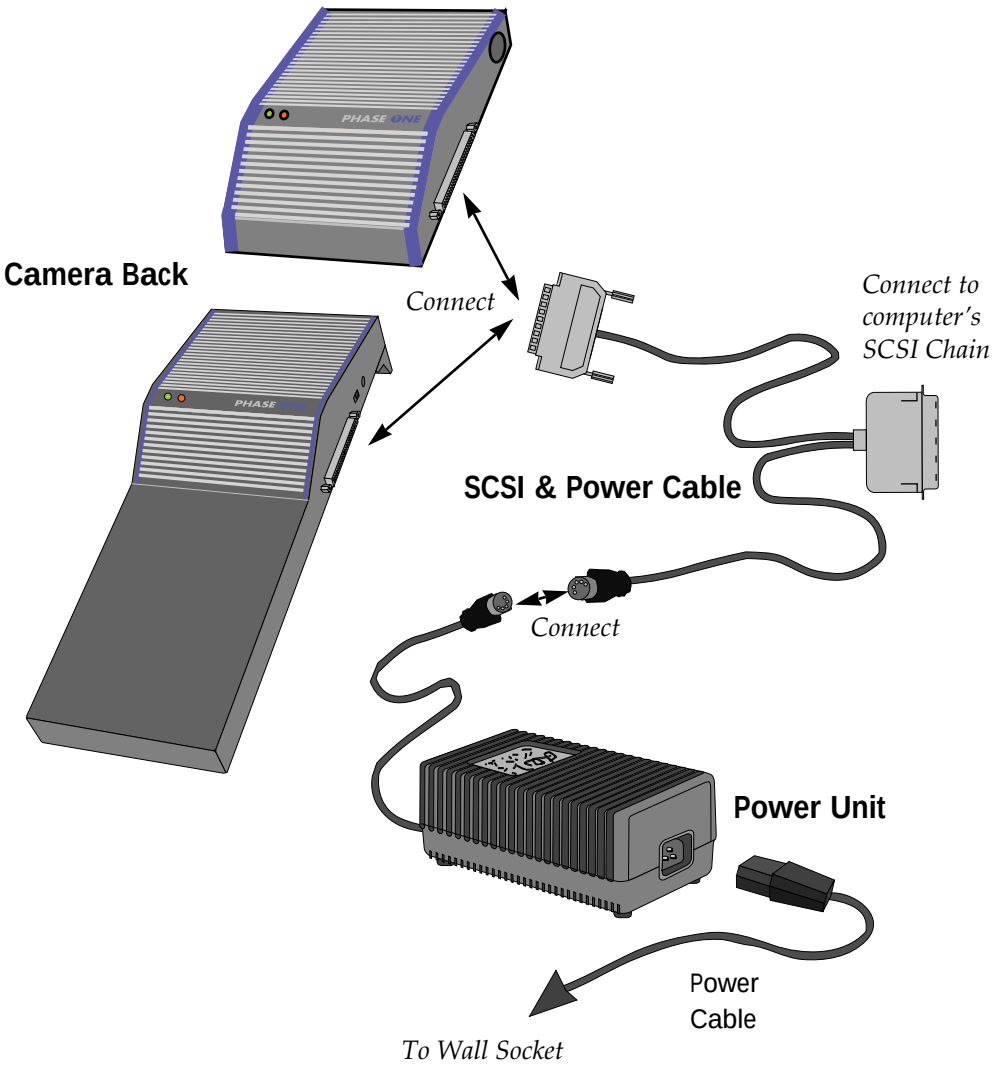


Fig.2. Overview of Hardware

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Section 3 System Connections

This section gives the procedure for assembling the hardware of your system. An overview of the Phase One hardware is shown in Fig.2.

Note: Your camera back may differ in appearance to that shown in Fig.2, but the same features will be present.

1. Arrange your studio.

Set up your computer where it will be close to your camera, but not in your way.

2. Mount an infrared filter onto your camera.

You must use an optical filter that reduces infrared when you use a Phase One camera back. A suitable filter, the AR1, is included with your camera back. This filter is an all round filter designed for use with most light types. Read Section 4 of this guide for more information about this and other filters available from Phase One.

Place the filter into the filter holder of your camera, just as you would any other photographic filter.

3. Make sure your computer and camera are turned off.

Always turn your computer and camera off before connecting or disconnecting any cables to or from it.

4. Connect and Terminate the SCSI Cable.

Connect the small end of the SCSI cable to the SCSI connector on the camera back. “Finger tighten” the thumbscrews to secure both connections, but be careful not to over tighten them.

Connect the large end of the SCSI cable to the SCSI connector on the last unit in your SCSI bus chain.

Set the SCSI termination switch on your camera to “On”.

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5. Set the SCSI Address.

In order for your personal computer to communicate with other devices on the SCSI bus, each device must be assigned its own unique SCSI address.

The SCSI standard allows for eight unique addresses, numbered 0 - 7. Address 0 is often defined as the computer's own hard disk drive. Address 7 is nearly always defined as the SCSI bus controller. Six more devices may therefore be added to the SCSI bus.

If two or more units on the SCSI bus are assigned the same address, then there will be a conflict and the bus will “hang”. Your system will not respond to any commands.

Firstly, choose an address for the camera back that is between 1 - 6, and that is not in use by any of the other units on the bus. You can find out what other units are on the SCSI bus by referring to your SCSI documentation.

Secondly, use a small screwdriver to turn the address selector switch until the arrow points to the SCSI address you have chosen for the camera back (see Fig.3).

6. Mount the camera back onto your camera.

Insert the Phase One Camera Back into your camera just as you would a normal film cassette/back. See the camera back manual in this binder for detailed instructions.

7. Connect the Power Cables.

Connect the power cable from the SCSI connector to the Power Unit (see Fig.2).

8. Plug-in the Power Unit.

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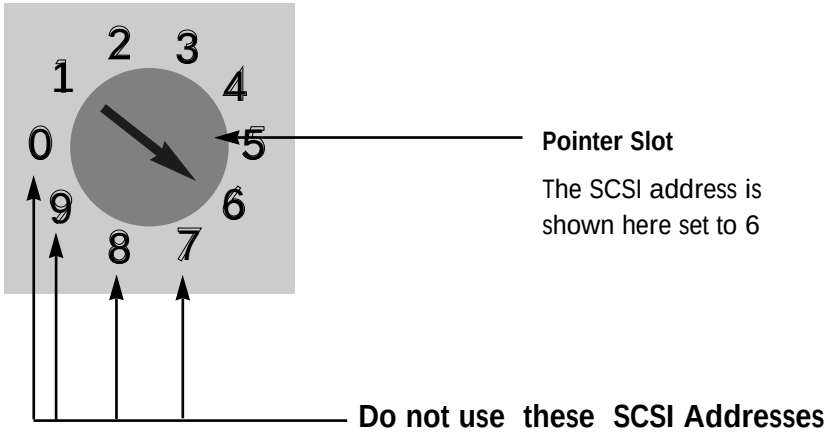
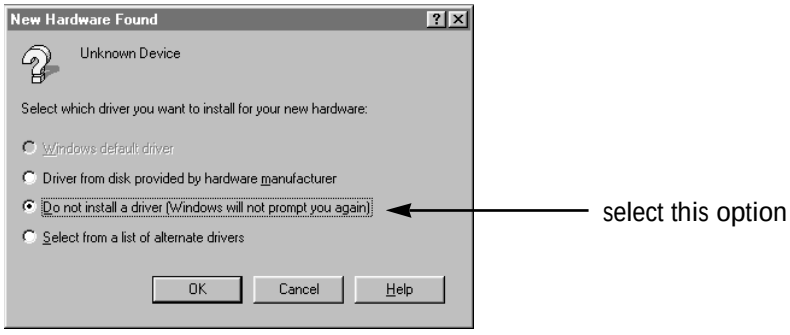


Fig.3 SCSI Address Selector Switch

9. Turn on your camera and computer.

Note for Windows 95 Users Only

The first time you turn your computer on after connecting the camera, Windows 95 will be aware that the camera is connected, but will not know how to treat it. An “Unknown Device” message box will appear.



Select the “Do not install a driver (Windows will not prompt you again)” option and click on OK.

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The correct driver for the camera will be installed when you install the software on your computer.

10. Install and run the software.

Install and run the Phase One Software; see the *Phase One Software Installation Guide* in this binder for instructions.

11. Proceed to the Phase One Tutorial Guide.

The *Tutorial Guide* introduces you to all of the basics of taking pictures with your system.

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Section 4 Optical Filters

The CCD sensors used in Phase One camera backs are extra sensitive to infra-red light. Unless infra-red light is filtered out before reaching the CCD sensors, there will be an unnatural color rendering in your pictures. Therefore, you must use a filter that removes infra-red light when you take digital pictures.

Phase One offers the following filters:

- **AR1— Infra-red Filter for all lights**

  This filter is included with the system. The AR1 filter provides adequate infra-red cutoff for all the lights recommended for use with Phase One camera backs, including fluorescent, HMI, tungsten etc. The AR1 filter is preferable to the IR10 filter when you tilt the film plane or lens (as is possible with some technical cameras). This is because its filtering properties remain constant even when light is not perpendicularly incident to the plane of the filter (unlike the IR10 filter).

- **IR10 — Infra-red Filter for all lights**

  The IR10 filter provides adequate infra-red cutoff for all the lights recommended for use with Phase One camera backs, including fluorescent, HMI, tungsten etc. This filter is very flexible in terms of light choice, but its filtering characteristics change when viewed at extreme angles (as is possible with “technical” cameras). Extremely short focal lengths may also cause color casts to appear at the edges of your shot. However, the angles and focal lengths used in most everyday work will not significantly affect the filter.

- **TG1 Tungsten Filter**

  Phase One has developed the TG1 filter to be used with their digital camera backs and Tungsten lights. The camera back is “daylight balanced”, so the TG1 filter makes optical color correction before the

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digital image is prepared. This results in pictures with very bright, crystal clear colors and perfect color rendition when using Tungsten lights.

Furthermore, the TG1 filter has been developed with very low attenuation of light in the visible range and is very efficient in reducing infra-red light. A separate infra-red filter is therefore not necessary when using a TG1 filter.

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Section 5 Luminaire Guide

Phase One digital camera backs have ASA ratings of 800 and above. These faster equivalent film speed allow you to shoot with less light than conventional digital cameras, thus eliminating the need to change your lighting equipment.

Phase One's new Flicker Suppression Technology, built into the camera back, opens up a world of lighting possibilities that were previously unavailable to the digital photographer. Previously, high frequency and stable light sources were required for digital photography techniques. Our flicker suppression technology allows Phase One digital cameras to be used with low frequency sources, such as ordinary fluorescent lighting and 250 Watt modeling lights found in many strobe lighting systems.

One of the important things to keep in mind when selecting light sources is the color temperature of the light. You will in general receive the best results with equipment that makes light falling on the CCD sensor appear to have a natural daylight spectrum.

The list below shows examples of lighting equipment that will provide good results when used with Phase One camera backs:

- **Tungsten Lamps**

  Tungsten (halogen) lamps will provide good results even with a standard AC power supply.

  Tungsten lights provide a light that is relatively weak in the blue area of the spectrum. To compensate for this we recommend you use the TG1 Tungsten Filter from Phase One. With the TG1 filter you can produce images with excellent color quality very close to the colors you would achieve by using much more expensive lighting equipment.

  See also Section 6 that details the Phase One Studiokit tungsten lamp.

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- **StudioKit Fluorescent Studio Lights**

  These high frequency lights are excellent value and have been especially designed for use with Phase One digital cameras. They are available from your Phase One dealer..

- **Balcar Fluxlite**

  Like the StudioKit lights, these fluorescent television lights flicker at an extremely high frequency. They also provide a natural daylight spectrum.

  Balcar makes two models of fluorescent daylight lamps, both models work fine for providing wide, “soft” light.

- **Burst Lights Corona**

  This fluorescent tube lighting system with large 440 W lights supplies the equivalent of 2kW of incandescent lighting at 5200K. As with the other fluorescent lights, Coronas provide wide, “soft” light.

- **Grigull Fluorescent Lights**

  Like the other fluorescent lights we have tested and recommended, the Grigull lights have been shown to provide illumination that will not vary between camera back scan lines. The Grigull lights provide “soft”, wide illumination with a natural daylight spectrum. They are ideal for general area lighting.

- **Videssence Vidlights**

  These constant light supplying lamps work well, provided that you use the 55-watt 5500K VIDEO Daylight lamps. Three models exist, holding 2, 4, or 6 lamps respectively. All three models work fine.

  These lights can be used to provide wide, “soft” light or patterned “semispot” light (with accessory kit).

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- **ARRI Compact 1200W**

  These lights provide a constant, non-flickering level of light and a natural daylight spectrum (approximately 5500K). They must be used with an ARRI Electronic Ballast 1276130.F, which supplies a highly rectangular switching current, so that the light level remains constant.

  These compact lights provide spot or flood lighting.

- **Broncolor HMI Lights**

  When used with a Broncolor electronic ballast, then these lights also work for the same reason as the ARRI Compact lights.

  These can be used with a reflector as large area spot lights, or through a diffuser to provide softer light.

Contact Phase One or your Phase One dealer for more information about any of the light sources listed above.

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Section 6 Phase One Tungsten Lights

Phase One's new Flicker Suppression Technology opens up a world of lighting possibilities that were previously unavailable to the digital photographer. Previously, high frequency and stable light sources were required for digital photography techniques. The flicker suppression technology allows the digital back to be used with low frequency sources, such as ordinary fluorescent lighting and 250 Watt modeling lights found in many strobe lighting systems.

Phase One includes a medium wattage lighting system in its list of standard accessories. This system, from Lowel-Light, has been chosen to compliment the camera back and the needs of digital photography. The lights use tungsten bulbs and the maximum permitted wattage is 750W. The actual wattage depends upon your mains supply. In countries where 220V/240V is used, the bulb draws 650W. In countries with a supply of 110V, the bulb draws 750W.

Section 3.1 Notes and Warnings

The following notes and warnings should be read and understood *before* you begin to use the Lowel lights. Failure to do so can be dangerous and cause fires.

- Use the lights only for photographic purposes.
- The lights run hot when turned on. Do not interfere with the ventilation around the lights or allow the black part of the reflector to be within 0.5m of any potentially flammable material.
- Always allow at least 5 minutes for the light to cool before storing.
- Only use one diffuser on a lamp.

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- Never touch the bulb's quartz glass
- Always fit the correct bulb. Never exceed 750W.
- Always assemble the light with the power cable disconnected.
- Follow the instructions given in this manual and the manufacturer's instructions enclosed with the lights.

Section 3.2 Assembling a Light

Referring to Fig.4.

1. Remove the light from its sleeve

2. Mount and lock the light on a stand

Use the *stand lock knob* on the *stand mounting bracket* to firmly attach the light to a stand. A stand is not included with Studiokit, but the light is designed to fit stands with a top stud diameter of 16mm (5/8"). Be aware that the lights load the stand eccentrically, so you may have to use stand weights to ensure stability.

3. Set the light horizontal

Release the *tilt lock handle*, tilt the light to horizontal and relock the tilt handle.

4. Unfurl the Reflector

Release the Velcro strap around the folded reflector, and fix the strap to itself to prevent it hanging loose. Unfurl the reflector until it is loose.

5. Open the Reflector

Remember never to touch the bulb's glass.

Loosen the *thumbscrew*. Whilst holding the stand firmly, grip the

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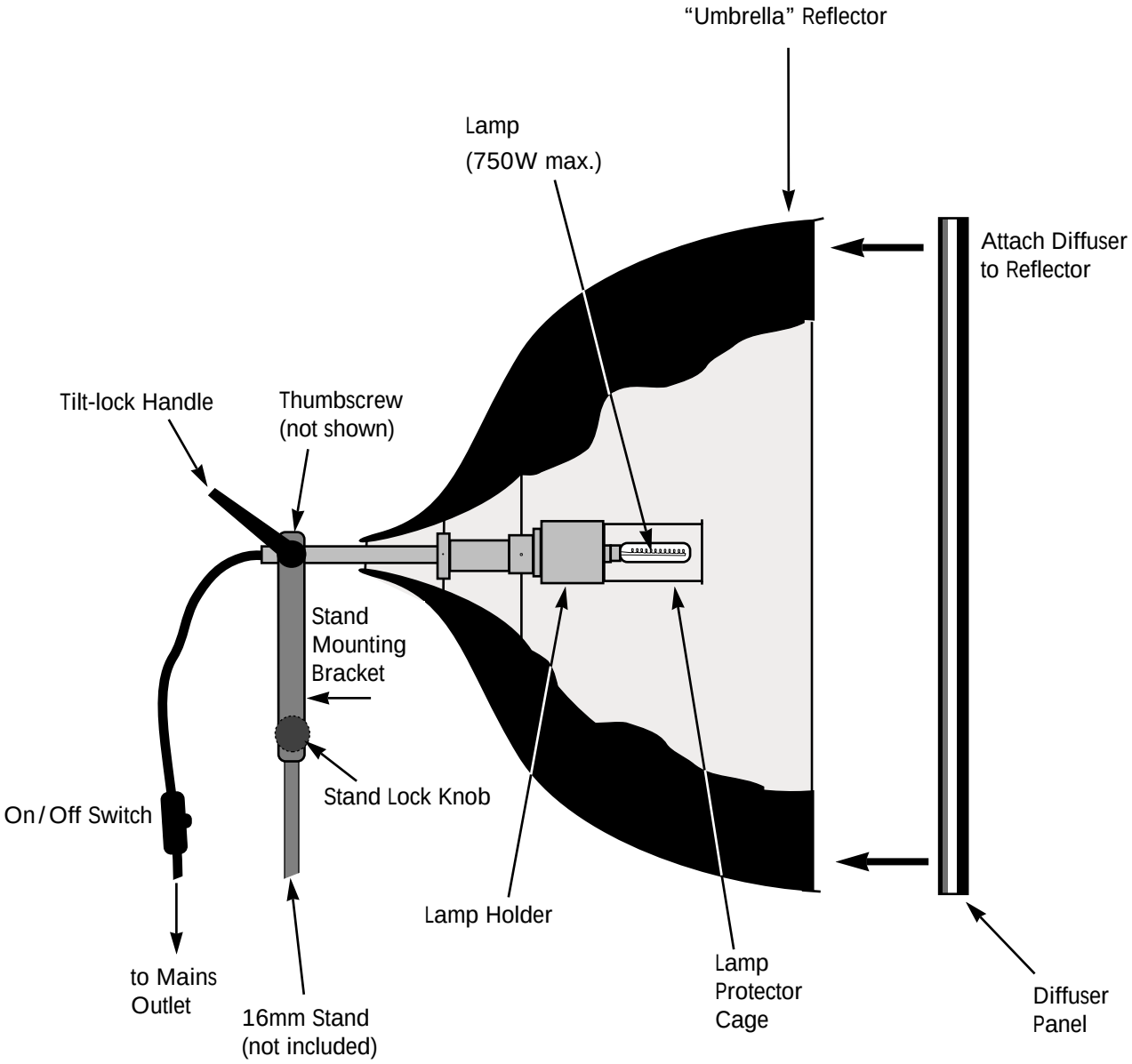


Fig.4 Overview of Phase One Lighting System

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lamp holder and push towards the stand until the reflector is fully open and you hear a click.

Never pull on the cable to open the reflector. Doing so will damage the light and may cause an electrical short circuit.

6. Tighten the Thumbscrew.

Always ensure that the thumbscrew is tight before using the light. Failure to do so could cause the reflector to collapse, damaging the light and increasing the chances of a fire.

7. Attach the Diffuser Panel

Always operate the light with a diffuser panel fitted.

Attach the *diffuser panel* by placing it over the front of the light, inserting the ends of the reflector frame through the grommets of the diffuser. Secure the diffuser with the Velcro patches located around the reflector.

Remember never to use more than one diffuser at a time, otherwise the light will overheat.

8. Connect the Power Cable

Plug the power cable into a wall outlet.

Note: Depending upon the bulb wattage and the supply voltage, the light can draw up to 6.5 Amps. When using two lights, this current will double. Ensure that the socket outlet you use is able to supply the maximum current.

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Section 3.3 Storage

Always allow at least 5 minutes to pass before packing a light. The light is very hot when in use. Failure to have a cool-down time will damage the reflector and reduce the life of the bulb.

Packing a light after use is the reverse process of assembly. Use the steps described in Section 3.2 for guidance.

Section 3.4 Lamp Replacement

Warnings:

- Always unplug the light before lamp replacement.
- Avoid touching the quartz glass with bare fingers.
- Never exceed the maximum wattage of the light (750W).

1. Choose the Correct Replacement Lamp

You should try to replace the lamp with exactly the same model as that fitted by the manufacturer. If you are unable to do this or wish to choose a different wattage, use the tables published by the manufacturer to select your replacement. The tables were included in the lighting kit's instruction sheet.

In spring 1996, the following lamps (designated here by their international code) were recommended for use with the LC-66 model:

- For 110/120V systems: EHC, EHD, EHF and EHG
- For 220V systems: JCV220V-500WBM, FKR/220
- For 240V systems: JCV240V-500WBM, FKR/240

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2. Remove the Existing Lamp

Gently remove the lamp from the lamp holder, taking care not to apply too much pressure to the glass envelope, particularly where the glass joins the lamp-base.

Thoughtfully dispose of the old lamp.

3. Insert the Replacement Lamp

Gently remove the replacement lamp from its packaging, taking extreme care not to touch the quartz glass with your bare fingers.*

Most lamps are packed with a pvc sheath over the glass envelope. Try to keep this sheath in place during the whole replacement procedure, but remember to remove it before applying power.

Carefully insert the lamp into the lamp holder, making sure to push the connecting pins fully home. The connecting pins on the lamp's base are part of the heat removal process. To ensure maximum heat transfer and maximum lamp life, always ensure the lamp is seated correctly in the lamp holder.

Section 3.5 Using Other Light Sources

You can if you wish use other light sources with Studiokit. One of the important things to keep in mind when selecting light sources is the color temperature of the light. You will in general receive the best results with equipment that makes light falling on the CCD sensor appear to have a natural daylight spectrum.

* Natural oils from your fingers will be absorbed by the glass if you touch it, causing the glass to be less transparent. The ultimate effect of this is to raise the internal temperature of the lamp, radically reducing its life. Should you inadvertently touch the glass, use a solvent cleaner to remove any traces of oil and dirt.

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