

# PAG ™

Professional Broadcast Equipment

## *Paglight*

Professional Camera Light



Instruction Manual







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# SECTION 1

## INTRODUCTION

Paglight is a revolutionary camera light which has been designed, without compromise, to suit the requirements of professional ENG/EFP camera operators, answering the many requests for an all embracing, single operator camera light.

This unique product is the world's first camera light capable of both tungsten halogen and metal-halide arc light output. Its versatility has been achieved as a result of the PAG-designed plug-in lamp holder feature.

### **PLUG-IN LAMP HOLDERS**

There are four plug-in lamp holder options available. The Standard, Softstart and PowerMax Control/VariLux options all utilise tungsten halogen bi-pin lamps. The PAG PowerArc unit enables the Paglight to be instantly converted from tungsten halogen to a metal-halide arc light. This option makes the Paglight the most versatile camera light ever to be presented to the Broadcast Industry. The PowerArc utilises a 24W lamp whilst having an output equivalent to 100W of halogen light, but at daylight colour temperature.

The interchangeable lamp holders plug into the back of the lamp body and are locked in position. A release button enables them to be quickly and easily withdrawn. Now, variants of unit type or wattage can be changed without the need to handle the quartz envelope, minimising the risk of personal injury or damage to the lamp itself. A selection of lamp holders can be kept in the camera bag, each in its own lamp protector, which is moulded in high strength heat-resistant polymer. Colour-coded wattage label kits are available for easy identification.

## **COOL-RUNNING**

The Paglight is constructed principally from a specially developed glass-reinforced engineering polymer. The advantages of this material are its high strength, impact resistance and temperature stability. Using this modern material we were able to create an aesthetically pleasing design which is also functional and light weight.

Integral to the lamp head is a clever heat dissipation system which ensures that the light is both cool running and compact (see Fig. 1, Page 6). This is achieved by a series of chambers and ventilation channels. The rear chamber houses the precision diecast finned heat-sink of the lamp holder. Cool air passes through the fins and prevents heat conduction to the rear section. The second chamber is lined with a bright aluminium heat reflector which projects heat from the lamp base forward, through the cool air flow, and onto the back of the main parabolic reflector. The reflector has a special heat absorbent coating. The temperature is stabilised at this point because the main reflector is suspended in an area of the lamp head where air flows freely. The suspension unit for the main reflector and safety glass is a polished, two part precision diecasting situated at the front of the light. These castings are point contact only and are designed with ventilation slots to assist with the cooling of the safety glass, and to maintain the correct lamp chamber temperature for the quartz halogen cycle process.

## **FULLY-FOCUSABLE**

The engineering qualities of the materials used are such that it was possible to incorporate close tolerance moving parts within the design, enabling the Paglight to be fully focusable. The focusing mechanism moves the position of the light source within the scientifically designed parabola of the reflector. A smooth transition from spot to flood is achieved with an even spectral distribution, minus the black holes and flaws commonly observed with competitors systems. (See polar diagrams of spectral distribution in Section 3, Pages 9-11, Figs. 2-6).

## **THE LAMP HEAD MOUNTING**

An integral part of the lamp head is its base support system. This multi-directional mounting allows the light to be adjusted vertically through 100° or horizontally through 180°. The pivot points are friction adjustable to maintain the desired position in all situations of use. At the front of this unit is the ON/OFF rocker switch.

## **DETACHABLE POWER BASE**

Paglight incorporates a low-profile detachable Power Base secured by a positive locking system. It enables the Paglight to be quickly withdrawn from the camera, allowing the camera to be stowed, without the need to remove the base and associated wiring. Paglight Power Bases are available with a variety of lead lengths and connectors, enabling Paglight to be powered from most battery mounts or camera power outputs (see Fig. 7, Page 15).

## **ROTATABLE FILTER HOLDER**

An accessory ring can be fitted to the front of the Paglight, which will accommodate dichroic filters, a frosted diffuser, and two barn doors (parallel or tapered). Alternatively a four barn door set-up may be used. The accessory ring can be rotated 360° and secured in the desired position. Filters are available that convert tungsten halogen output to match daylight or convert the PowerArc output to match tungsten halogen.

## **ADDITIONAL FILTER SETS**

The PAG Softlight Diffuser creates a soft even light ideal for use with the PowerArc unit. The set includes filter holders which are designed to slide onto the parallel barndoors. The filter holders have hooks onto which are hung the Softlight Diffuser or any of the colour correction filters supplied in this set. The filter holder assembly can be easily removed and reapplied when necessary.

## **MOUNTING OPTIONS**

There are a number of options available for mounting the Paglight directly to the camera. The Paglight is supplied with a 1/4" Whit. male to male stud adaptor (Model 9971) and a camera shoe plate 1/4" Whit. (Model 9972).

Other mounting options, available separately, include a camera mounting clamp, which features a 1/4" Whit. bush (Model 9807). A handle with a 1/4" Whit. stud and a 1/4" Whit. bush enables the Paglight to be hand held or mounted to the camera in an elevated position.

The Extender Arm allows the Paglight to be lifted clear of the microphone, to avoid the casting of shadows. It can also be used to position the Paglight to the left or right of centre, allowing the subject to be lit from the side.

PAG also produces a range of Mounting Adaptors which enable the Paglight, to be mounted to any camera, tripod, lighting rig or gaff grip (see Page 14).

## **PAGLIGHT KITS**

The Paglight PowerArc Field Kit includes the PowerArc, two standard plug-in lampholder options and many other components of the Paglight system which enable you to gain maximum benefit from the revolutionary Paglight design (see Section 4, Page 16).

Paglight Kits are available that incorporate a Pagbelt battery belt, with integral overnight charger, a standard lamp unit, an XLR-4 Power Base, a rotatable accessory kit, a handle and spare lamp, housed in a fully fitted flight case (contact the PAG Sales Department or your nearest PAG Agent for more information).

***Paglight accessories can be purchased on-line at [www.pagstore.com](http://www.pagstore.com)***

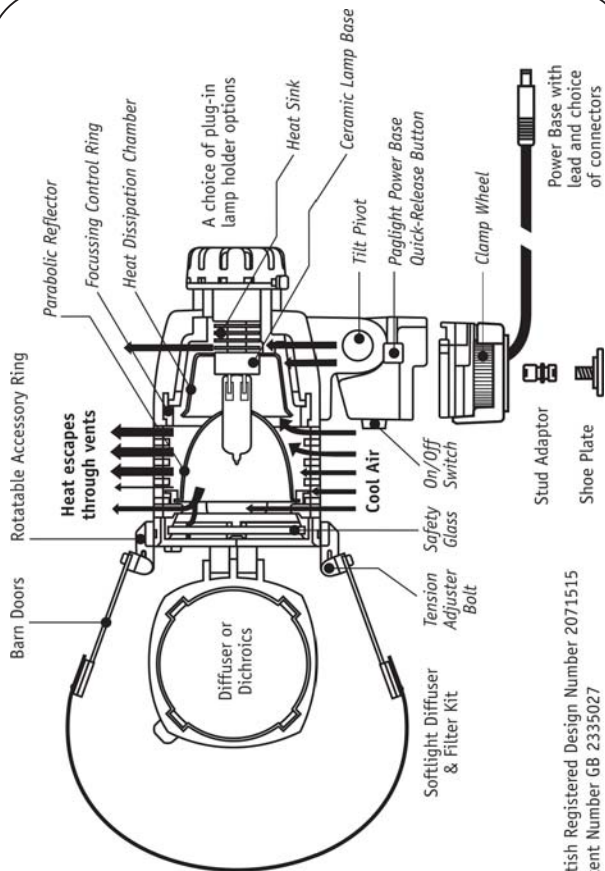


Fig. 1

British Registered Design Number 2071515  
 Patent Number GB 2335027

## SECTION 2

# SAFETY

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### **PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE USE.**

Low voltage DC input only. Do not connect to incorrect supplies (see Specifications, Section 3, Page 8).

Avoid the possibility of water ingress. This could cause the lamp to rupture forcibly.

The Paglight is not intended for any use other than video lighting purposes.

Do not disassemble the Paglight or any of the lamp holder units. There are no user-serviceable parts. Incorrect reassembly may result in a safety hazard.

Do not operate if the fixed safety glass is cracked or broken.

Do not leave the Paglight switched on while unattended. Do not obstruct the cooling vents or operate near combustible materials. Allow the Paglight to cool before storage.

Always turn-off the Paglight before removing or replacing any of the plug-in lamp holder units.

The PowerArc generates high voltages when striking. Do not insert a damaged or misaligned lamp into the Paglight.

For optimum performance never handle the lamp's quartz envelope directly. Should you inadvertently handle the quartz envelope you must clean it carefully with methylated spirit or industrial alcohol, using a lint free cloth.

## SECTION 3

# SPECIFICATION

### **HALOGEN LAMPS:**

Type: Low voltage halogen capsules, long life (2000 hours at 12V).

Voltage: Nominal 12V.

Watts: 20W (M76)

35W (M75)

50W (M32)

75W (M73)

100W (M28)

Colour Temperature: 3200°K at 12V (5600°K with dichroic filter).

Filament: Axial filament with centre 30mm from end of pins.

Base: Type GY6.35.

### **POWERMAX/VARILUX LAMP HOLDER:**

Input Voltage: Maximum 20V DC.

Output Voltage: Regulated 12V DC.

Maximum consumption: 100W nominal.

### **PAG POWERARC (LAMP):**

Type: Low wattage, single-ended short-arc metal-halide lamp.

Wattage: 24W.

Colour Temperature: 5600°K.

Lumens: 1850.

Warm-up Time: 20 seconds to 90% of full output.

30 seconds to normal colour temperature.

### **PAG POWERARC (BALLAST):**

Input Voltage: 10V-16V DC. 32W.

Output Voltage: Striking 3000V, running 60V.

### PAGLIGHT BASE CONNECTIONS:

XLR-4: Pin 1 negative, Pin 4 positive, Pins 2 & 3 (no connection).  
PP90: Centre pin negative.

### GENERAL:

Voltage: Nominal 12V to 14.4V battery supply.

Maximum Power Rating: 100W lamp with 13.2V battery.

### SPECTRAL EMISSION CURVES:

Tests conducted with long life lamps, without dichroic filter using a 13.2V battery.

### PAGLIGHT 100W:

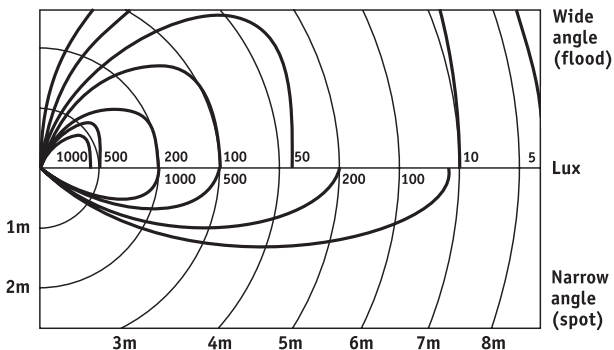


Fig.2

### PAGLIGHT 75W:

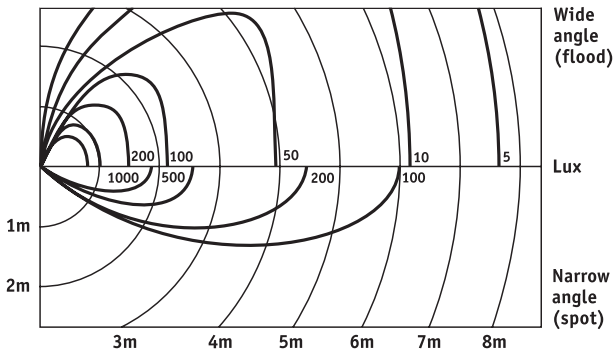


Fig. 3

### PAGLIGHT 50W:

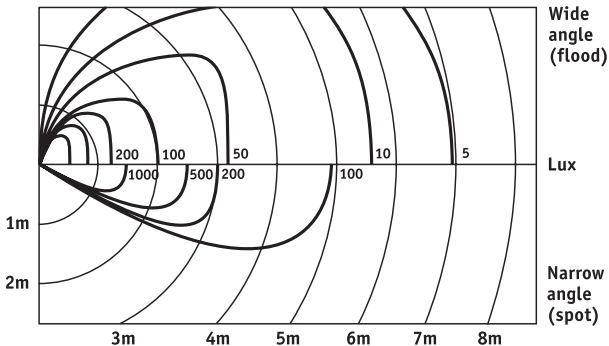


Fig. 4

### PAGLIGHT 35W:

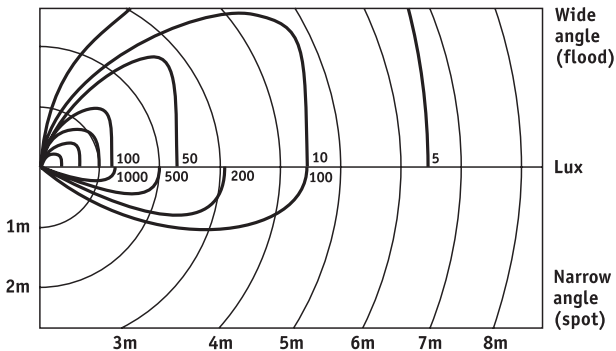


Fig. 5

### PAGLIGHT 20W:

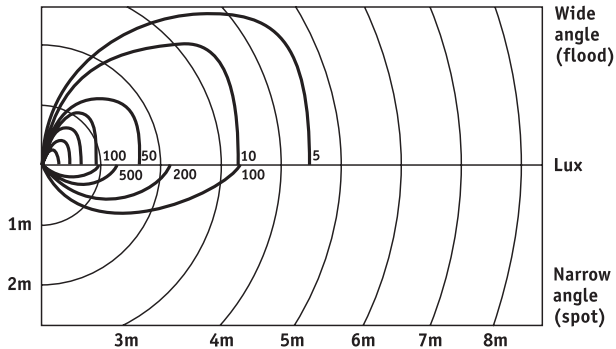


Fig. 6

## SECTION 4

# PAGLIGHT SYSTEM

### **PAGLIGHT OPTIONS:**

*Paglight is available with a choice of lamp holders, a Power Base with a choice of lead and connector, a camera shoe plate (1/4" Whit.) and a male to male stud adaptor (1/4" Whit.). Accessory kits, lamps and protectors are sold separately.*

### **Paglight XLR-4 (1.5m lead & XLR-4 connector):**

9956 Paglight XLR-4: Standard lamp holder.

9947 Paglight XLR-4: PowerMax Control/VariLux lamp holder.

### **Paglight PP90 (500mm lead & PP90 connector):**

9964 Paglight PP90: Standard lamp holder.

9944 Paglight PP90: Softstart lamp holder.

9946 Paglight PP90: PowerMax Control/VariLux lamp holder.

### **Paglight Snap-on (500mm lead & Snap-on compatible connector):**

9965 Paglight Snap-on: Standard lamp holder.

9945 Paglight Snap-on: Softstart lamp holder.

9948 Paglight Snap-on: PowerMax Control/VariLux lamp holder.

### **Paglight SX (150mm lead & Sony SX compatible connector):**

9966 Paglight SX: Standard lamp holder.

### **PAGLIGHT SYSTEM:**

*Components of the Paglight system may be purchased separately. See Fig. 7, Page 15 for an illustration of the Paglight System.*

### **Lampholders:**

9950 Standard lamp holder and lamp protector.

9938 Softstart lamp holder and lamp protector.

- 9958 PAG PowerMax Control/VariLux lamp holder and lamp protector.
- 9955 PAG PowerArc lamp holder and lamp protector.
- 9968 Lamp protector.

**Lamps:**

- 9930 12V 20W lamp.
- 9931 12V 35W lamp.
- 9912 12V 50W lamp.
- 9932 12V 75W lamp.
- 9911 12V 100W lamp.
- 9967 Arc Lamp.
- 9969 Wattage Label Kit (standard). Colour-coded wattage ID labels 20W, 35W, 50W, 75W & 100W for standard lamp holders.

**Filters and Barn Doors:**

- 9959 Rotatable Accessory Kit (all inclusive).  
Comprises rotatable accessory holder, 1 pair of parallel barn doors, 1 dichroic filter and 1 diffuser.
- 9953 Rotatable Accessory Holder (ring only).
- 9951 Dichroic Filter. Converts nominal colour temperature from halogen (3200°K) to daylight (5600°K).
- 9973 PowerArc Conversion Filter. Converts nominal colour temperature from daylight (5600°K) to halogen (3200°K).
- 9952 Diffuser.
- 9954 Parallel barn doors (pair).
- 9963 Tapered barn doors (pair).
- 9983 Softlight Diffuser & Filter Set.  
Comprises: 2 filter holders, 2 Softlight diffusers, 2 full CT blue filters, 2 half CT blue filters & 2 full CT orange filters.
- 9979 Softlight diffusers x 6.
- 9984 Filter holders x 2.
- 9980 Full CT blue filters x 6.
- 9982 Half CT blue filters x 6.
- 9981 Half CT orange filters x 6.

**Power Bases:**

- 9957 Paglight Power Base PP90 with 500mm lead.
- 9943 Paglight Power Base PP90 with 1m lead.
- 9986 Paglight Power Base PP90 with 150mm lead.

- 9960 Paglight Power Base XLR-4 with 1.5m lead.
- 9961 Paglight Power Base Snap-on compatible with 500mm lead.
- 9962 Paglight Power Base Sony SX compatible with 150mm lead.
- 9987 Paglight Base Locking Adaptor.

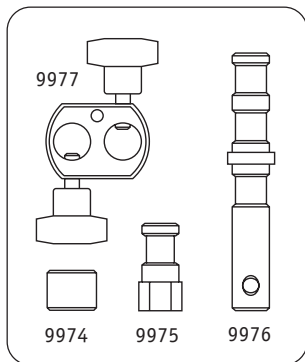
**Mounting Options:**

- 9971 Male to male stud adaptor 1/4" Whit.
- 9972 Camera Shoe Plate 1/4" Whit.
- 9906 Handle 1/4" Whit. stud to bush. Length 127mm.
- 9807 Paglight Camera Clamp to 1/4" Whit.
- 9985 Spigot Adaptor 1/2" dia. to 1/4" Whit.
- 9990 Paglight Extender Arm 1/4" Whit.

**Mounting Adaptors:**

*These handy spigots and spigot adaptors enable the Paglight to be mounted to any camera, tripod, lighting rig or gaff grip.*

- 9974 Thread Adaptor 3/8" Whit. to 1/4" Whit.
- 9975 Spigot Pin 1/2" dia. to 1/4" Whit.
- 9976 Spigot Pin 5/8" dia. to 1/4" Whit.
- 9977 Multi-Configuration Spigot Adaptor: In-line or 90°, 5/8" to 5/8" to 1/2" dia. & 1/4" Whit.
- 9978 Mounting Adaptor Kit: Comprises: 9971, 9974, 9975, 9976 & 9977.



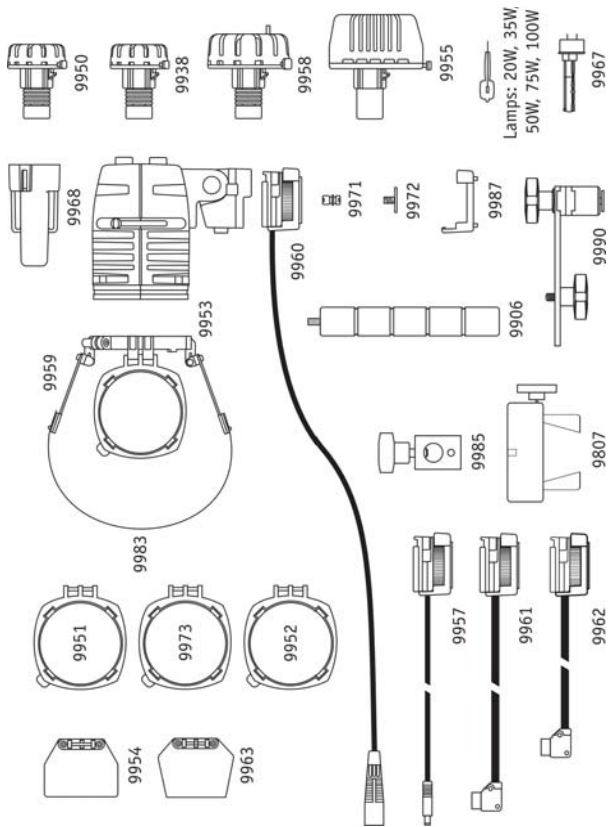
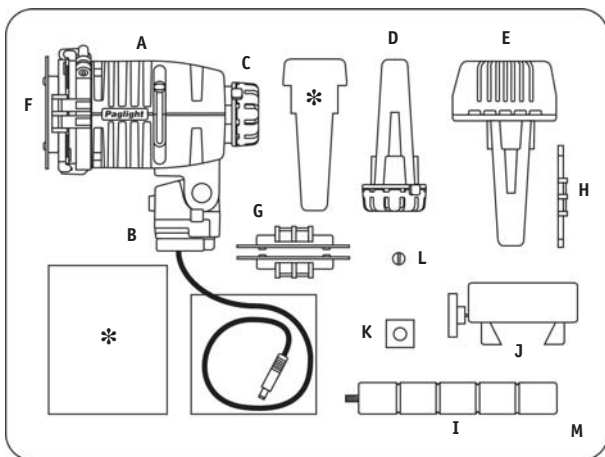


Fig. 7

## PAGLIGHT POWERARC FIELD KIT:

Model No. 9825



- |   |   |
|---|---|
| <b>A</b> Paglight   | <b>G</b> Tapered barn doors             |
| <b>B</b> Choice of Power Base   | <b>H</b> PowerArc Conversion Filter     |
| <b>C</b> Standard lamp holder<br>(choice of lamp)   | <b>I</b> Handle                         |
| <b>D</b> Standard lamp holder<br>and protector<br>(choice of lamp)  | <b>J</b> Camera Clamp                   |
| <b>E</b> PowerArc unit, lamp and<br>protector   | <b>K</b> Camera Shoe Plate              |
| <b>F</b> Accessory Kit<br>Comprising: accessory holder,<br>1 pair of parallel barn doors,<br>1 dichroic filter and 1 diffuser | <b>L</b> Stud Adaptor                   |
|   | <b>M</b> Fitted Flight Case             |
|   | * Storage space for additional<br>items |

## SECTION 5

# OPERATION AND MAINTENANCE

### **HALOGEN LAMP HOLDERS:**

12V halogen lamps are available in a range of wattages: 20W, 35W, 50W, 75W and 100W, and may be used with the Standard, Softstart and PowerMax Control/VariLux lamp holders.

Standard lamp holders can be identified using the Wattage Identification Label Kit. Lamp wattages can then be exchanged instantly without the need to handle the glass bulb.

The Softstart lamp holder is designed for use with suitable Lithium-Ion batteries, capable of powering both a medium-consumption broadcast camera and a light of up to 35W (check with the battery manufacturer). Lithium-Ion batteries incorporate electronic over-current protection that may be triggered by the high current pulse that occurs when a tungsten-filament light is turned on from cold. The Softstart lamp holder overcomes this effect. This lamp holder will not be required if the camera is fitted with PAG System RTI, and the Softstart feature is enabled, or when using the regulated light socket on a Sony digital camera.

Halogen lamps, typically specified for 12V operation, are over-run when they are used with 13.2V or 14.4V camera batteries, and consume far more power than they are designed to. The specified wattage of a 12V halogen lamp is correct only at 12V, and rises proportionally with the supply voltage. A fully charged 13.2V Nickel-Cadmium battery can present over 16V at the terminals, and a 12V '100W' lamp connected to such a battery can actually consume over 135W of power. The result is reduced camera run time, shortened lamp filament life, and incorrect colour temperature. It is also possible for the camera low-voltage cutout to be triggered as a result of the voltage depression caused by the unnecessarily

heavy load on the battery. For these situations we recommend the use of the PowerMax Control/VariLux lamp holder, which incorporates a voltage control circuit. The PowerMax unit efficiently regulates the running voltage of the Paglight while conserving the unused battery power, thereby extending available run-time by as much as 25%. In addition to this, colour temperature remains constant and lamp filament life is dramatically improved.

The VariLux feature of PowerMax enables you to control the light output, which unlike other systems, further conserves battery power. The manual control features a detent position which corresponds to the mid-point in the brightness range. NOTE: The PowerMax is not suitable for use with the 30W regulated light outputs of Sony SX cameras.

#### **PLUGGING A LAMP HOLDER UNIT INTO THE PAGLIGHT:**

**IMPORTANT:** First turn-off the Paglight.

To avoid the risk of breakage when inserting any lamp holder into the lamp body, ensure that the lamp is correctly aligned through both reflectors. Gently engage the unit into the body of the Paglight. When it is fully home the securing latch will lock.

To ensure compliance with the EMC Directive 89/336/EU a suppressor is supplied with the PowerArc unit. This should be clipped around the supply cable as close to the unit as possible.

#### **REMOVING A LAMP HOLDER UNIT FROM THE PAGLIGHT:**

**IMPORTANT:** First turn-off the Paglight.

Pressing the release button, gently withdraw the lamp holder from the rear of the Paglight keeping it straight until the quartz envelope is clear of the lamp body. Remember that the lamp may be very hot. In the interests of safety, the unit should be placed in a PAG Lamp Protector immediately following withdrawal from the Paglight.

This will also protect the lamp during storage and transportation.

#### **CHANGING HALOGEN LAMPS:**

Allow the old lamp to cool before removing it from the lamp holder.

The halogen lamp is a push fit into the lamp holder. Gently push the lamp into the lamp holder taking great care not to twist or bend the pins. Do not handle the lamp envelope directly. If it is touched inadvertently, clean it with a lint-free cloth moistened with methylated spirit. Finger marks cause hot spots in the lamp, leading to reduced life and possible rupture of the glass.

### **CHANGING POWERARC LAMPS:**

**IMPORTANT:** See the instructions supplied with the arc lamp or PowerArc Unit before fitting. Remove the quartz arc lamp from the packaging without touching the quartz envelope itself. The arc lamp is a push fit into the lamp holder. Carefully holding the arc lamp by its base flange and without touching the quartz envelope, align the indexing slot of the flange with that of the PowerArc lamp holder. Gently push the arc lamp into the lamp holder taking great care not to twist or bend the pins.

### **THE LAMP HEAD:**

The lamp head incorporates a tilting facility with a friction locking mechanism. From the horizontal, the lamp head can be adjusted upwards by 85° and downwards by 15°. The friction lock includes an adjustment lever which can be 'parked' in any orientation.

Focusing is provided by a lever on each side of the lamp body, and is continuously variable from narrow to wide angle, thereby increasing or decreasing intensity (see Spectral Emission Curves Figs. 2-6, Pages 9-11).

A toughened, heatproof safety glass is provided at the front of the light. This provides protection from flying glass in the unlikely event of a quartz lamp envelope forcibly rupturing. Never operate the light if this glass is broken or missing.

The lamp head is designed around a clever heat dissipation system, which allows external parts of the light to operate at a far lower temperature than other models currently on the market.

However, halogen lamps operate at very high temperatures (the quartz envelope can reach 900°C), and considerable heat can still be projected from the front of the light, especially when using high wattage lamps. Do not operate the light with the barn doors fully closed. Do not operate the light in the vicinity of highly combustible materials, especially explosive heavy vapours. Never leave the light turned on while unattended. Do not obstruct the airflow through the cooling vents.

### **THE PAGLIGHT POWER BASE:**

The Paglight Power Base incorporates a swivelling facility with a captive locking mechanism. Use the 1/4" Whit. stud or Camera Shoe Plate to fit the Power Base directly to the camera. Always tighten the locking wheel firmly; this will secure the base while retaining the swivelling facility. Paglight Power Bases are available with the following connectors:

- ▶ PP90 plug: for connection to the PP90 socket of the PAGlok connector.
- ▶ XLR-4: for connection to an XLR-4 output.
- ▶ Snap-on connector (2-pin D-Tap type): for connection to a Sony camera light output or Anton-Bauer battery mount light output.

The lamp head is quickly detachable from the low-profile Power Base, allowing the camera to be stowed in its flight case without the need to remove the base and wiring. The Paglight is removed from the Power Base by depressing the release catch and sliding the lamp head rearwards.

### **FILTERS AND BARN DOORS:**

An accessory ring fits onto the front of the light, and accepts a range of snap-in filters and barn doors (parallel and tapered). The accessories include dichroic filters and a frosted diffuser. The ring will accommodate any four accessories, available either as a complete kit, or individually. Accessories are a snap-fit onto the ring, and may be assembled in any permutation. To adjust the position of the accessory ring, slacken the screw, rotate the ring to

the desired position, and re-tighten the screw. To remove the ring, unscrew the screw completely, and expand the ring over the front rim of the light. The barn doors and filters feature screws to adjust the tension of the hinges.

**SERVICE:**

If a fault develops, do not disassemble the light or its ancillaries. The electronics assemblies do not require periodic maintenance, and contain no user-serviceable parts. Unqualified personnel should not attempt further investigation. Any such interference will invalidate the guarantee, may give rise to a fire hazard or the risk of electric shock, and could cause more damage than the original fault.

In order to maintain the PAG quality standard for which this product was originally selected, seek advice from your nearest PAG Dealer or direct from PAG Ltd. London by telephoning +44 (0)20 8543 3131.

## SECTION 6

# WARRANTY

Notwithstanding any provision of any agreement the following warranty is exclusive: PAG Limited warrants each Paglight (with the exception of glass parts) it manufactures to be free of defects in material and workmanship under use and service for **TWO YEARS** from the date of purchase. This warranty extends only to the original purchaser. This warranty shall not apply to fuses or any product or parts which have been subject to misuse, neglect, accident or abnormal conditions of operation.

In the event of failure of a product covered by this warranty, PAG Ltd. will repair and calibrate equipment returned to an authorised service facility within the period of the warranty, provided the warrantor's examination discloses to its satisfaction the product was defective. The warrantor may, at its option, replace the product in lieu of repair. With regard to any equipment returned within this period, said repairs or replacements will be made without charge. If the failure has been caused by misuse, neglect, accident or abnormal conditions of operation, repairs will be billed at a nominal cost. In such a case, an estimate will be submitted before work is started, if requested.

The foregoing warranty is in lieu of all other warranties, express or implied, including but not limited to any implied warranty or merchantability, fitness or adequacy for any particular purpose or use. PAG Limited shall not be liable for any special, incidental, or consequential damages, whether in contract, tort, or otherwise.

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