Strand Lighting

The Strandbook

THE EASY REFERENCE CATALOGUE TO ALL THAT'S BEST IN

- Film Lighting
- Television Lighting
- Stage Lighting
- Architectural Lighting

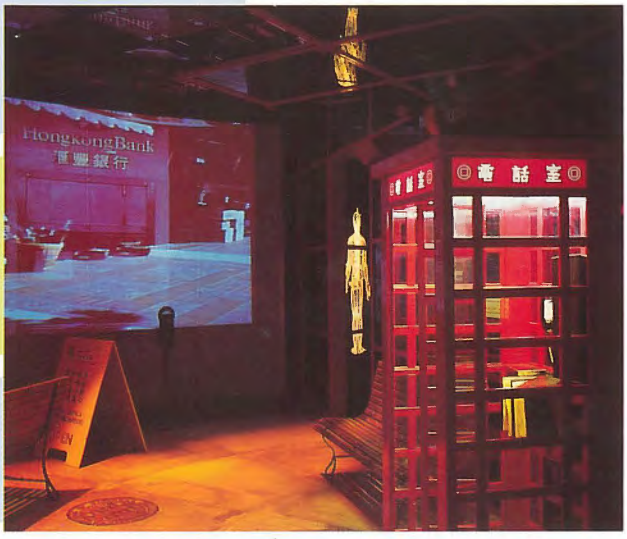
second edition

STRANDBOOK CONTENTS

The magnificent International Congress Centre, Berlin – Strand provide several facilities including lighting control by Strand Galaxy 3.

At Glyndebourne Festival Opera Strand provide lighting control through a Galaxy 3. Pictured here is a scene from "Albert Herring".
Conductor: Graeme Jenkins
Original production by Peter Hall
Designer: John Gunter
Lighting revived by Keith Benson

The A P Novosti television studio, Moscow, where Strand Quartzcolor luminaires are complemented by a Gemini 2 Control System and PIP dimmers.



The Museum of Civilisation, Toronto, Canada.

STRANDBOOK

Strand have designed the Strandbook to be a comprehensive catalogue of all Strand Lighting products, as well as a reference manual for anybody interested in stage, studio or architectural lighting

To help you find a known product there is a brand name index at the back. Alternatively, if you are not sure which product suits your needs, turn to the relevant section such as stage, television or architectural and browse through until you find what suits your requirements. Each product has an item number which you will need to use when making enquiries or placing an order with Strand.

The item number corresponds to the separate Price List. For example, to obtain the price of Cantata 18/32, (the item number is 22 618 32), turn to the Price List (which is arranged in exactly the same order as this catalogue), find the Cantata section, and then the 18/32 - this gives you the price for the luminaire.
Data sheets are available on all Strand and Quartzcolor luminaires, manual control desks, dimmer packs and racks, the smaller memory lighting systems, and associated accessories for both stage and studio use.
Data sheets are also available for Architectural Lighting; including luminaires, controls and dimmers.

In the interests of developing their product range further, Strand Lighting Limited reserve the right to alter the specification of any item in this catalogue at any time.

Strand Lighting

▲ *All Yorkshire TV's three studios are controlled by Galaxy boards, linked to Strand PIP dimmers. A fourth Galaxy is used for outside broadcasts or as a stalls control in the studio.*

Right at your fingertips: the world's best and most comprehensive range of entertainment lighting.

The concept of carrying details of the full Strand Lighting range, and much valuable supplementary information as well, all between the covers of a single publication has been voted a great success by customers and other readers.

Now, in this second edition of Strandbook, you have in convenient form the latest data on the world's finest lighting equipment for stage, studio and architectural applications.

It meets every requirement from low-cost luminaires for small productions to engineered lighting and control systems for major theatres, TV and film studios and numerous other installations and buildings.

Strand has always been in the forefront for product innovation, and the 90's will bring new technological challenges and triumphs. Strand research and development will ensure that there is continuous product improvement across the range, as well as revolutionary advances with totally new products and systems.

Buying from Strand, or its authorised distributors and dealers, is an assurance of having the best products on the market with the best advice and service from the world leader in the field.

For you that means excellent performance always with sure reliability and safety, and true economy in operation.

▲ *The opulent Elgin Theatre and the associated Winter Garden, Toronto, Canada uses Strand controls and luminaires.*

▲ *Shopping Mall - a combination of low voltage lighting with colour and projected effects using Strand luminaires.*

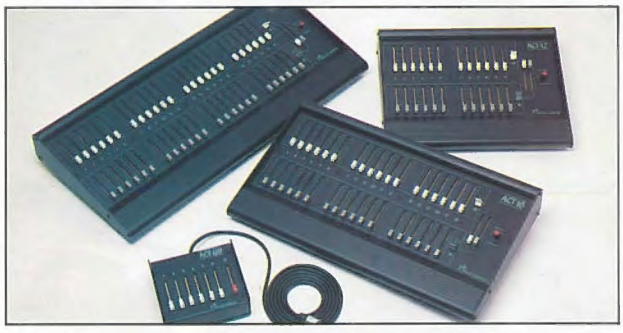
▶ *The newly opened West Yorkshire Playhouse in Leeds. Strand Galaxy desks provide control of Strand and other luminaires in both of its theatres.*

▲ *Dynamic rock lighting created with the aid of Showchangers luminaires.*

STRAND CONTROLS TODAY

The Strand range of lighting controls and dimmers extends from compact and versatile portable dimmer packs with local fader control to the sophisticated Galaxy 3 memory lighting system with 999 channels controlling up to 1536 dimmers.

ACT MANUAL DESKS



Straightforward manual control for systems up to 24 dimmers. Act 12, 18 and 24 provide the following features:

- Two scene preset operation
- Split dipless crossfader with fade time ability
- Dead blackout switch on each scene
- Analogue control output

Act 6D offers six manual faders and a master.

ACT CONTROL DESKS

Act 6D Control, single Preset Desk with master fader **04 620 06**

12-channel, 2-preset Act desk **04 620 12**

18-channel, 2-preset Act desk **04 620 18**

24-channel, 2-preset Act desk **04 620 24**

Accessories

Pair of wall mounting brackets for any Act or Tempus desk, except Act 6 **04 374 02**

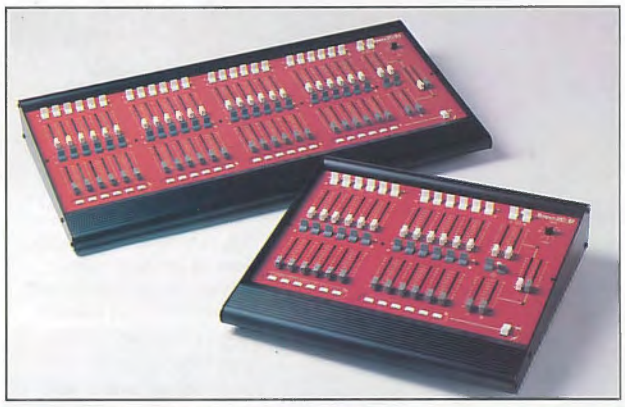
Act or Tempus Desk 5 metres of 6-channel control extension cable with mating plug and socket **04 350 06**

Act or Tempus Desk 19 metres of 6-channel control extension cable with mating plug and socket **04 351 01**

Twin 8-pin control socket box wired to terminals **04 372 1T**

Quad 8-pin control socket box wired to terminals **04 373 15**

TEMPUS 2G



More advanced two scene preset operation with the additional benefit of grouping.

- Two scene preset controls in 12,18, 24 or 36 channels
- Two group faders per scene
- Blackout switches for each scene
- Group selection switches on each channel
- Flash buttons with on or off selection
- Split dipless crossfader with fade time ability
- Grand Master

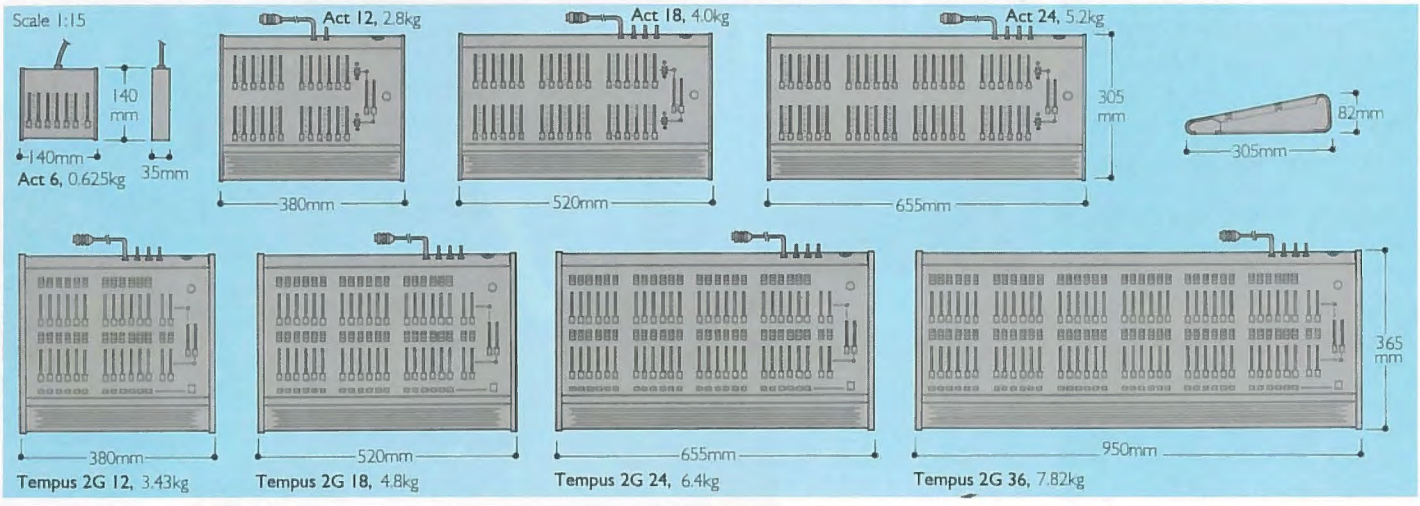
TEMPUS 2G CONTROL DESKS

12-channel, 2-preset 4-group Tempus 2G desk **04 412 02**

18-channel, 2-preset 4-group Tempus 2G desk **04 418 05**

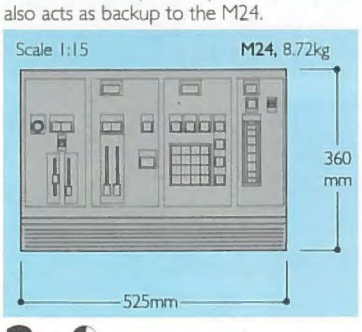
24-channel, 2-preset 4-group Tempus 2G desk **04 424 00**

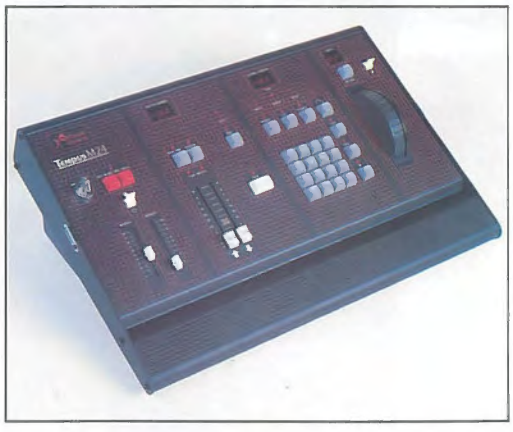
36-channel, 2-preset 4-group Tempus 2G desk **04 436 09**



TEMPUS M24

Well-established, small to medium sized memory system for up to 120 channels. Optional special effects desk also acts as backup to the M24.





- 24 to 120 channels
- Up to 199 memories
- Digital address of channels and memories
- Wheel for level setting
- LED displays for Level, Channel and Memory information
- Blind recording and modification
- Fade time recording over-ride
- Mutiplexed output
- Optional monochrome VDU and cassette for library storage
- Optional manual desks for setup and recording

M24 CONTROL DESK

Portable control desk, **with moulded cover, 5 metres of multiplex mains cable, video and tape recorder cables, and handbook.**

24 channels, 199 memories
48 channels, 199 memories
60 channels, 185 memories
72 channels, 155 memories **03 700 00**

96 to 120 channel, 199 Memory M24 **03 700 00/120**

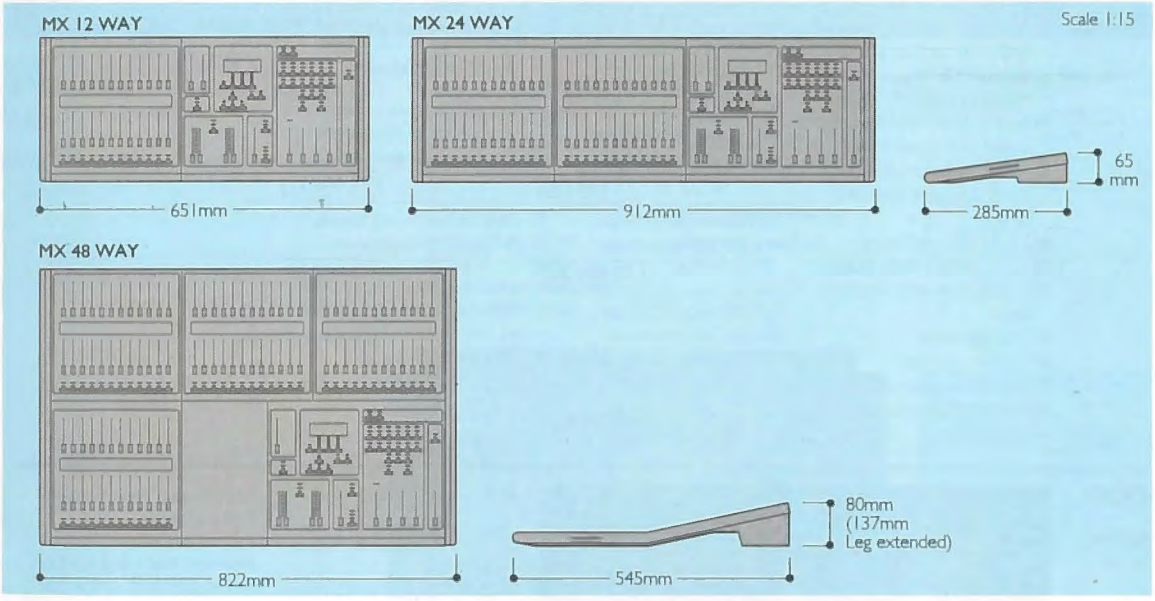
73 to 120 channel expansion kit for M24 **03 702 00**

FOR WORLDWIDE DISTRIBUTION SEE PAGES 94 & 95

MX 12, 24 & 48

A new comprehensive approach to the needs of the smaller venue: clubs, studios and theatres will find this new manual/memory control desk a versatile and attractive player.

- 12, 24 or 48 channels of two scene preset faders
- Electronic patching for up to 512 dimmers
- Flash buttons operate in solo, pile-on, inhibitive and at selected levels
- Split crossfader with LED display
- Rapid recording of up to 192 scenes in four pages for playback on scene masters or via the Sequence Fader
- Live or Blind memory modification
- Split time fader for timed crossfades between two scene presets or Sequence Fader
- Unique "Hold" feature for two scene operation in combination with Scene Master operation
- 24 real time programmable Effects with pre-programmed or improvised control Pre-programmed Effect Types including Chase, Build, Cycle, Flicker, Random and Audio/MIDI input
- MIDI interface permitting playback of lighting states and effects from musical instruments
- Menu driven 4 x 20 LCD backlit display
- Software selectable multiplexed outputs all provided as standard SMX, DMX512, D54, AMX192
- Optional Memory Card for library storage
- English, French and German language software included as standard



Each MX desk is supplied with 2m D54 control cable and power supply with moulded plug appropriate to local requirements.

MX12 UK	**04 900 12UK**
MX12 European	**04 900 12EC**
MX12 Australian	**04 900 12AS**
MX24 UK	**04 900 24UK**
MX24 European	**04 900 24EC**
MX24 Australian	**04 900 24AS**
MX48 UK	**04 900 48UK**
MX48 European	**04 900 48EC**
MX48 Australian	**04 900 48AS**

Accessories

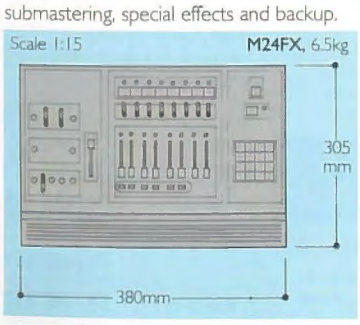
Memory card: 64K RAM card for library storage of all scenes and effects **04 900 00**

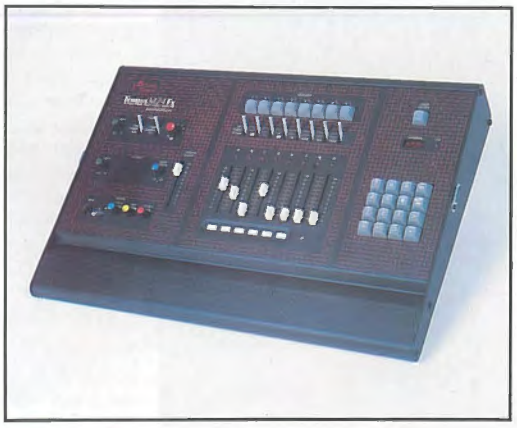
24 Channel Demultiplexer: 0 to -10V control (via silicon diode and 10kOhm resistor). May be converted to +10V control. Switch selectable to control dimmer numbers 1 to 24 or 25 to 48. **Supplied with mains lead** **04 601 00**

Demultiplexer Adaptor Cable: 25 pin D-type connector to four 6-way Blecon connectors, three metres **04 601 10**

TEMPUS M24FX

Designed to operate either independently as a special effects desk, or in combination with M24 for submastering, special effects and backup.





- Eight faders for group control
- Flash buttons for six faders
- Eight three position switches for fader mode selection
- Chase, Flash and Sound to Light input
- Effects master
- Digital keypad for channel address

M24FX CONTROL DESK

To complement the M24 control desk. **Provided with moulded cover, 5 metres of multiplex cable, mains lead and handbook.**

M24FX 120 channels	**03 703 08**

M24/M24FX Accessories

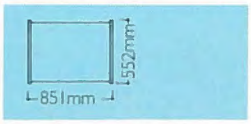
VDU	**73 088 51**
Mux XLR Socket Box	**03 799 01**
Mux XLR Looping Socket Box	**03 799 02**

LIGHTBOARD M

The overwhelmingly popular manual and memory system, ideal for multi-purpose installations.

- 96 or 144 digitally addressable channels
- Electronic patching for up to 768 dimmers
- 24 or 48 completely overlapping submasters with flash and solo
- Two scene preset manual faders in modules of twelve channels, up to the maximum of 144
- Split dipless crossfader, timed or manual
- Timed X-fader with programmable waits and delays
- Up to 200 memories
- Two special effects faders
- 8 programmable function keys
- 3½" disc drive
- Colour monitor
- Internal backup system
- Full range of optional equipment

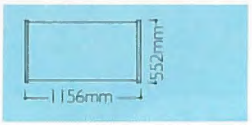
All consoles shown below provide 96 digitally addressable channels. Two scene preset control is provided by the indicated number of faders.



Plan measurements apply to the following two consoles.

Two scenes of 36 faders, 24 subs, 200 memories **73 088 13**

Two scenes of 48 faders, 24 subs, 200 memories **73 088 14**



Plan measurements apply to the following six consoles.

Two scenes of 60 faders, 24 subs, 200 memories **73 088 15**

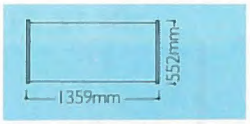
Two scenes of 72 faders, 24 subs, 200 memories **73 088 16**

Two scenes of 84 faders, 24 subs, 200 memories **73 088 17**

Two scenes of 48 faders, 48 subs, 200 memories **73 088 24**

Two scenes of 60 faders, 48 subs, 200 memories **73 088 25**

Two scenes of 72 faders, 48 subs, 200 memories **73 088 26**



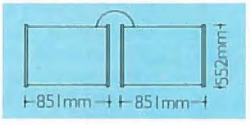
Plan measurements apply to the following three consoles.

Two scenes of 96 faders, 24 subs, 200 memories **73 088 18**

Two scenes of 84 faders, 48 subs, 200 memories **73 088 27**

Two scenes of 96 faders, 48 subs, 200 memories **73 088 28**

The following consoles provide 144 digitally addressable channels. Two scene preset control is provided by the indicated number of faders.



Plan measurements apply to the following four consoles.

Two scenes of 108 faders, 24 subs, 140 memories **73 088 19**

Two scenes of 120 faders, 24 subs, 140 memories **73 088 20**

Two scenes of 132 faders, 24 subs, 140 memories **73 088 21**

Two scenes of 144 faders, 24 subs, 140 memories **73 088 22**

Please note that 48 submasters are only possible in systems of 96 channels or less.

Each console is complete with internal back-up, full colour VDU, 3½" disc drive for library storage, mains cable, control cables, plotlamp and a box of 10 diskettes.

Accessories

Designer's Control, providing all channel access, level setting and memory recording functions. Includes control cable and battery charger **73 081 64**

Printer **73 088 52**

Colour VDU (additional) **73 088 50**

Monochrome VDU **73 088 51**

Vinyl cover for 851mm consoles **73 088 93**

Vinyl cover for 1156mm consoles **73 088 94**

Vinyl cover for 1359mm consoles **73 088 95**

LIGHTBOARD M JUNIOR

A new version with everything but the faders! Smaller, more portable, but still powerful.

- 96 or 144 digitally addressable channels
- Electronic patch to 768 dimmers
- 24 submasters which may act as channel controls
- Two dipless crossfaders, one manual, one timed with programmable waits and delays
- Special effects package with dual faders
- Colour monitor
- 3½" disc drive
- Up to 200 memories
- Internal backup

LBM/Jr. with 96 channels, 200 memories, 24 submasters, disc, colour monitor, mains and control cables, plotlamp, and a box of 10 diskettes. **73 088 91**

LBM/Jr. with 144 channels, 140 memories, 24 submasters, disc, colour monitor, mains and control cables, plotlamp, and a box of 10 diskettes. **73 008 10/144**

Accessories

Designer's Control for channel and memory functions. Includes control cable and battery charger. **73 081 64**

Printer **73 088 52**

Colour VDU (additional) **73 088 50**

Monochrome VDU **73 088 51**

Vinyl cover **73 088 93**

GEMINI 2+

GEMINI 2+ MEMORY CONTROL

Portable console for control of 360 channels and 384 dimmers, providing special effects, backup, library storage and colour monitor as standard. **Supplied with 5 metres of data cable, 2 metres of mains cable and operator's handbook**

03 811 00

Accessories

Designer's Control for wired or infra-red operation, provides channel control, recording and playback facilities. **Supplied with a set of connectors, battery charger and 13 amp socket**

07 550 02

Infra-red Receiver, for use with Designer's Control

07 552 03

Rigger's Control for control of individual channels for focusing. **Supplied witth a set of connectors, battery charger and 13 amp socket**

07 540 05

Rigger's socket box

07 024 0T

Printer for hard copy printout of all recorded information

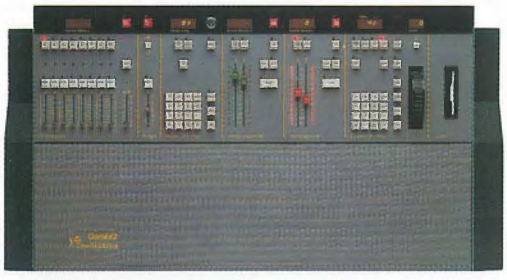
03 860 00

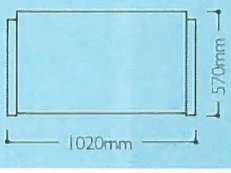
Updated version of the popular memory control, now more powerful than ever.

- ***NEW*** 360 channels with proportional patching to 384 dimmers
- ***NEW*** Optional second colour monitor may be connected to show additional channel information or a tracking Memory List Display
- ***NEW*** Larger memory capacity
- ***NEW*** PALS Automated Fixture Remote GO command
- ***NEW*** Any dimmer may be directed to act as a Non Dim

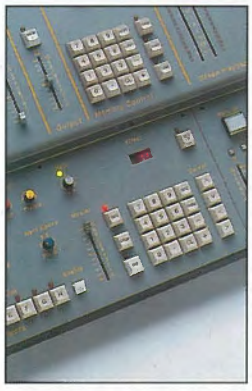
Standard Features

- Two split crossfaders, timed or manual
- Comprehensive, user programmable special effects
- Integral disc storage
- Comprehensive backup provided as standard





Cutout Dimensions:
Recess length: 895mm
Recess depth: 455mm



DESIGNER-CREATED EFFECTS

Fully Programmable effects are a special feature of Gemini 2+. Six effect types available for producing up to 99 separate effects. Using the special keypad and the VDU for setting up, effects may be linked to the start of a fade and all parameters of the event can be programmed, including the type of effect, starting and stopping, and the memories and channels which take part in each step of the effect.

INDEPENDENT BACK-UP

Ready for use beneath the removable cover on the console is the separately-powered integral electronic back-up system. Ten presets of eight groups of dimmers can be programmed with the auxiliary keypad, or transferred from Gemini's output.

LIGHT PALETTE 90

A completely new approach to this popular North American control desk. In additiion to a distinctive new look, distributive processing allows a maximum of 4000 dimmers and control channels.

- AMX192, DMX512 and SMX output provided as standard
- Up to 600 cues and 128 simultaneous fades
- 24 or 48 fully overlapping programmable submasters
- Improved special effects package
- Menu driven programmable operating defaults
- Preset or Tracking operation
- Flexible configuration
- Programmable macros for single stroke commands
- 64 dimmer and channel profiles
- Optional dual electronic backup system
- Full range of accessories

Light Palette 90 Tower – all major electronics are contained in plug-in boards. One tower allows up to 3 consoles and 3 hand-held remotes to operate simultaneously, plus provides connections for a printer, automated fixture console, and reserve port.

Features	GALAXY 3	LIGHT PALETTE 90	GEMINI 2+	LIGHTBOARD M, LBM/Jr
No. of Channels	999	Up to 4000	360	96 or 144 addressable channels
No. of Dimmers	1536	Up to 4000	384	768
No. of Memories	200 average	600 average	200 average	200 or 140
Electronic Patch	Full proportional	Full proportional	Full proportional	Full proportional
No. of Playbacks	8 wheels max. (thea.) 4 faders max. (studio)	8 timed or manual	2 split crossfaders timed or manual	2 crossfaders, 1 timed 1 timed or manual
No. of Submasters	20 preset masters with inhibit flash & over-ride	24 or 48	8 with inhibit and flash	24 or 48 pile-on with selectable flashbuttons
Special Effects	99 effects 256 steps Level and speed over-ride	999 effects 99 steps Submaster control	99 effects 256 steps Level and speed over-ride	Up to 200 effects 84 steps 2 playbacks Rate over-ride
Displays	Up to 4 discrete high resolution colour VDUs	2 high resolution colour VDUs	1 high resolution colour VDU 2 optional	1 colour VDU
Library Storage	Dual 3 1/2" discs	3 1/2" disc	3 1/2" disc	3 1/2" disc
Back-up	Programmable memory back-up or dual electronics	Dual electronics	Dimmer to faders patch	Channels to fader patch Full tracking option
Options	Printer Stalls control Rigger's control Remote monitors	Printer Remote desk Hand-held control Remote monitors	Printer Stalls control Hand-held control, wired or infra-red	Printer Hand-held control Remote activation of up to 8 pre-programmed commands
Additional	Alpha keypad Pan, tilt, focus module Internal clock Dimmer fault reporting Learn profile Channel format Profile Auto mod Record track	Alpha keypad Profile Channel format Bankloading of submasters User selectable default fade time SMX, DMX or AMX output protocol Macro keys Tracking or preset operation	Bankloading submasters Memory list display Local channel and displays	8 Macro keys Memory list display Remote submasters

GALAXY 3

MX	M24/M24FX	TEMPUS 2G	ACT DESKS
12, 24 or 48 in 2 scenes	24 or 120	12, 18, 24, 36 in 2 scenes	12, 18, 24 in 2 scenes
512	24 to 120	12 to 36	6 to 24
48/96/192	155/185/199	–	–
Full proportional	–	–	–
2 split crossfaders with dual fade time control	1 split timed or manual	1 split crossfader	1 split crossfader with fade time controller
12, 24 or 48	8 group faders	4 group faders	–
24 effects 48 steps 6 programmed types Sound to light and MIDI interface	8 faders	–	–
4 x 20 LCD	1 monochrome VDU	–	–
Memory card (optional)	Cassette	–	–
–	FX Module	–	–
24 Channel demultiplexer Memory card	–	–	–
SMX/DMX512 or D54 output Memory paging on subs Live or blind memory modification 2 patch tables	Multiplex output Local displays	–	–

The international leader for professional lighting control, now offering bi-directional reporting with the new EC90 intelligent, digital dimmer – featured on pages 10 & 11 of this catalogue

- A wide range of modules to permit custom configuration for studio or theatre application
- 999 dimming control channels plus an additional 99 for automated lights
- Control of up to 1536 dimmers
- Completely modular for custom configuration
- Up to 20 preset masters with LED displays, flash, boost and inhibit capability
- Full integration with EC90 for status and fault reporting to the lighting operator
- Full integrated control of PALS automated luminaires, including pan, tilt, colour, focus and iris
- Fully proportional patch
- Improved high resolution video displays
- Improved special effects
- Completely redesigned electronics for greater speed and data integrity

Accessories

Designer's Control, available for hard-wired or infra-red operation. Provides channel access, memory recording and playback facilities. **Supplied with a set of connectors, battery charger, and 13 amp socket**

07 550 02

Infra-red Receiver, for use with Designer's Control

07 552 03

Rigger's Control – a rugged hand-held controller for channel access during focusing. **Supplied with a set of connectors, battery charger and 13 amp socket**

07 540 05

Rigger's socket box

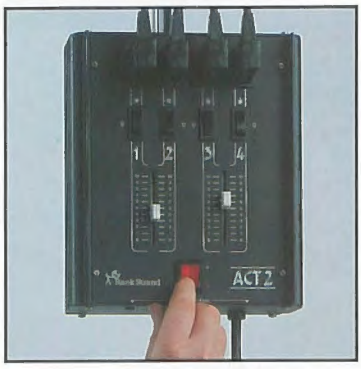
07 024 0T

Stalls or Studio Control – selected control modules may be housed in a portable desk for access to level setting and memory recording during rehearsals

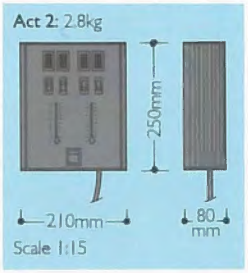
Printer – provides hard copy printout of all recorded information. Now date and time stamped.

Geographic Button Mimic – a custom panel matching the circuit layout of the stage. Each button illuminates when the circuit is active and flashes while under control.

ACT 2 DIMMER PACKS



A low priced lighting system with dimmers and control faders integrated in one compact unit.



- 2 dimmers in a single package
- Dims up to four 650W loads or two 1200W loads
- Requires, mains supply of only 13 amps
- Simple installation

ACT 2

ACT 2 dimmer with 5 metres of cable, four CEE22 6 amp plugs, two spare fuses **04 030 08**

Accessories

Mounting plate **04 027 09**

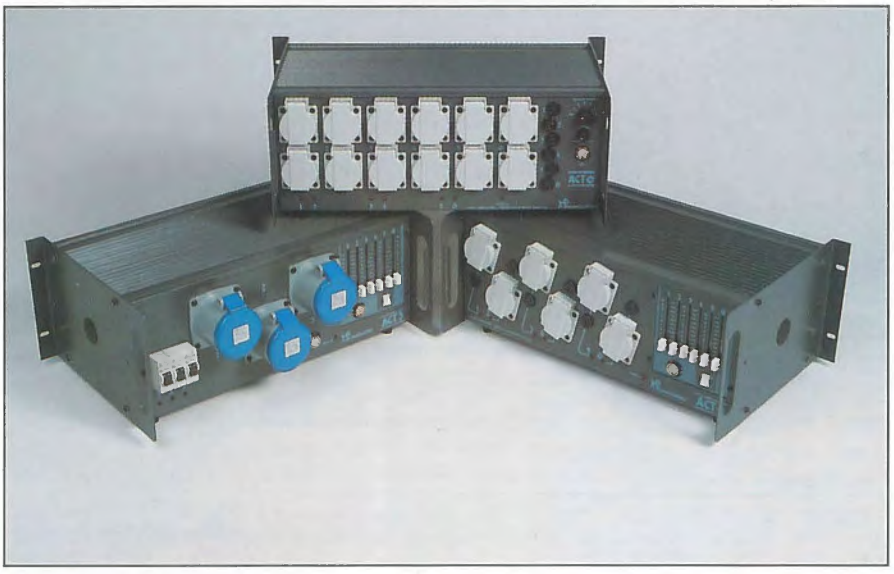
Pack of ten CEE22 6 amp plugs **04 031 03**

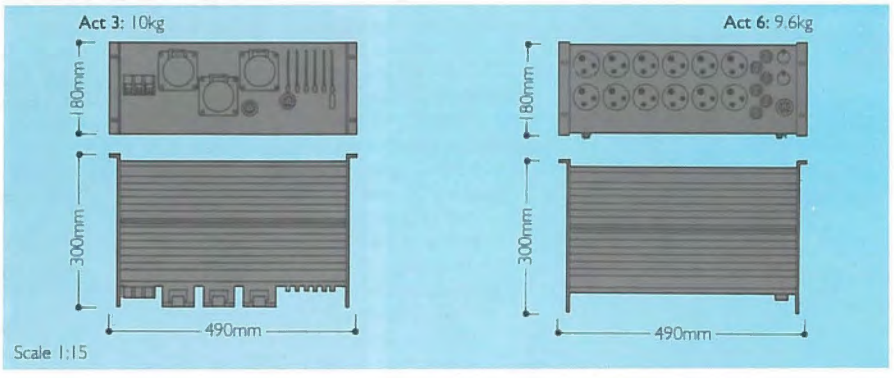
Pack of ten 6.3 amp HRC fuses **08 006 40**

ACT 3 AND ACT 6 DIMMER PACKS

Economical portable dimmers in a rugged rack mounting case.

- Six 10A or three 25A dimmers in a rugged economical package





- Choice of analogue or multiplex input
- Act 6 Analogue now available with dual sockets
- Easily convertible for rack mounting
- Fuse continuity indicators
- Thermal over-temperature fuse protection
- Designed for RCCB protected mains suplies
- Meets BS 800 and VDE 0875 RFI standards
- Fully rated for continuous operation
- Wide choice of output socket types
- Compatible with all Strand control products

ACT 3 25A

3 x 25A dimmer pack for 220/240V 3 phase, neutral and earth supply. Strapping bar provided for conversion to single phase operation. CEE17 32A socket outlet provided for each dimmer output, protective circuit breakers, a six lever local control with disable switch and socket for a Tempus desk, and a control output socket to connect to a slave ACT 3 **04 031 34**

ACT 3 25A MULTIPLEX

3 x 25A dimmer pack for 220/240V 3 phase, neutral and earth supply. Strapping bar provided for conversion to single phase operation. CEE17 32A socket outlet provided for each dimmer output, protective circuit breakers and a local switch and a control output socket to connect to a slave ACT 3 **04 031 36**

ACT 3 25A SLAVE

3 x 25A dimmer pack for 220/240V 3 phase, neutral and earth supply. Strapping bar provided for conversion to single phase operation. CEE17 32A socket outlet provided for each dimmer output, protective circuit breakers and a 3 way control link cable to connect the Slave to a Multiplex or Analogue ACT 3 **04 031 38**

ANALOGUE CONTROL DIMMER PACKS

ACT 6 Analogue is now available with dual sockets, the ability to take either positive or negative analogue control input and several new versions.

ACT 6 15A

6 x 10A dimmer pack for 220/240V single phase and neutral plus earth supply, with dual 15A sockets for each dimmer output, and rotary level and selection switches for output testing **04 050 10**

ACT 6 SCHUKO

6 x 10A dimmer pack for 220/240V three phase and neutral plus earth supply, with dual Schuko sockets for each dimmer output, and rotary level and selection switches for output testing **04 050 20**

ACT 6 16A CEE17

6 x 10A dimmer pack for 220/240V three phase and neutral plus earth supply, with dual CEE17 10A sockets for each dimmer output, and rotary level and selection switches for output testing **04 050 30**

ACT 6 CEE22

6 x 10A dimmer pack for 220/240V three phase and neutral plus earth supply, with dual CEE22 10A sockets for each dimmer output, and rotary level and selection switches for output testing **04 050 40**

ACT 6 BLANK

6 x 10A dimmer pack for 220/240V three phase and neutral plus earth supply, with a blank plate for custom socket configuration, and rotary level and selection switches for output testing **04 050 00**

MULTIPLEX CONTROL DIMMER PACKS

ACT 6 15A MULTIPLEX

6 x 10A dimmer pack for 220/240V single phase and neutral plus earth supply, with local switch and master fader control, multiplex input/output connectors and channel selector switch, and a single 15A socket for each dimmer output **04 045 05**

ACT 6 16A CEE17 MULTIPLEX

6 x 10A dimmer pack for 220/240V three phase (or single phase) neutral and earth supply, with local switch and master fader control, multiplex input/output connectors and channel selector switch, and a single 16A CEE17 socket for each dimmer output **04 047 50**

ACT 6 SCHUKO MULTIPLEX

6 x 10A dimmer pack for 220/240V three phase, and neutral plus earth supply, with local switch and master fader control, multiplex input/output connectors and channel selector switch, and a single Schuko socket for each dimmer output **04 047 06**

ACT 6 MULTIPLEX CONVERSION KIT

(to adapt analogue packs) **04 032 11**

Accessories

For standard analogue control of packs refer to the Act and Tempus range of manual fader desks. For multiplex control, see the new MX Control Range, M24, M24FX, Lightboard M, Gemini 2+ or Galaxy memory controls

MULTIPLEX INTERFACE UNITS

A range of interface units which convert the multiplex output of the new MX Control Range, M24, M24FX, Lightboard M, Gemini 2+ and Galaxy memory control systems into analogue signals.

24 CHANNEL DEMULTIPLEXER

This new economy demultiplexer permits control of 24 analogue dimmers. A second box can be connected for control of a total of 48 dimmers. The 24 channel demultiplexer is designed to produce the Strand standard -10V control voltage, but the unit can be converted to produce +5, +10, +12, -5 or -12 volt. Each demultiplex box is provided with mains and 0.5 metre daisy chain data cables.

24 channel demultiplexer, 24 dimmers **04 601 00**

F&D MULTIPLEX INTERFACES

24 channel Fader & Dimmer interface unit for use with systems in which a manual control desk is included and/or dimmers which have a non-standard control input voltage are used.

24 channel F&D interface to connect to Tempus dimmer racks and control desks **03 710 09**

24 channel F&D interface with Tempus type connectors, but adapted for systems with -15V control voltage **03 714 00**

24 channel F&D interface with D type connectors for dimmers and control with -10V control voltage. D type connectors and control cables are not included **03 711 04**

24 channel F&D interface with D type connectors for dimmers and control with +10V control voltage. D type connectors and control cables are not included **03 713 05**

24 channel F&D interface with D type connectors for dimmers and controls with -15V control voltage. D type connectors and control cables are not included **03 715 00**

PERMUS DEMULTIPLEX UNIT

24 channel chassis-mounted interface unit for installation using multiplexed controls and Permus dimmers. Although the unit is designed to mount inside a Permus dimmer rack, it is also suitable for other dimmers using the Strand standard -10V control voltage. A kit of parts comprises demultiplex interface, mains supply cable, dimmer control cables and instruction leaflet.

24 channel Permus Demultiplex Kit **06 020 00**

AN INTRODUCTION TO MULTIPLEXING

Multiplexed control is a term frequently encountered in the technical literature of stage lighting equipment, including this catalogue. The following summary may be a helpful layman's guide to the subject.

WHAT IS IT?

Multiplexing is a widely-used technique which allows large numbers of electrical signals to be transmitted along a single wire in sequence. In lighting control, this technique is applied to control levels for dimmers. Signals representing different dimmer levels can be transmitted one after the other hundreds of times a second along the same wire.

WHAT'S THE ADVANTAGE?

In traditional or analogue lighting control systems, each channel is connected directly to its dimmer by its own dedicated wire. The larger the number of dimmers, the more wires are required, With multiplexing, no matter how many dimmers there are, connection is made to all of them using only one control wire. So costs are saved with complex systems.

WHY IS IT NECESSARY?

Because of new technology, systems are now much larger than they used to be – several hundred dimmers may be controlled from one source. Also, for operational reasons, controls are now frequently operated remotely from dimmers which are located in an electrical equipment room convenient for incoming power. Wiring up by conventional means can result in expensive and unwieldy installations.

HOW DOES IT WORK?

Control channels and the desk electronics generate low voltage multiplexed signals which determine the dimmer levels and so the brightness of the light. The levels for each dimmer are transmitted in turn along the control wire. At the dimmers, a demultiplexer decodes the signals and routes the correct control to each dimmer in turn. The rapid retransmission of the dimmer signals ensures that lighting levels keep up with changes as they are required, as for a fade, or when a channel potentiometer is moved. Between signals, the demultiplexer holds the levels so there is no drifting.

WHERE DOES IT APPLY TO STRAND CONTROLS?

With the exception of the very simple ACT and Tempus 2G desks, all of Strand's controls utilise multiplex technology for efficiency and installation cost benefits. Permus dimmer racks accept either analogue or muitiplexed control signals for compatibility with Strand multiplexed controls or the analogue controls of other manufacturers. Separate demultiplexers are available to permit use of Strand consoles with older, analogue dimmers.

WHAT IS MEANT BY A DIMMER PROTOCOL?

Most manufacturers now use a multiplexed signal between their larger control systems and dimmers, but the number of dimmers. speed of transmission, type of connectors and decoding required by the dimmers vary depending on the manufacturer. Although the principles of multiplexing remain the same, these variations in the communications between control and dimmer are referred to as the 'communications protocol' used by each system.

Recently, there have been attempts to standardise the communications protocol used in the lighting industry to allow equipment from a variety of manufacturers to be used together. In 1986. the United States Instititute for Theatre Technology adopted two standards known as AMX192 and DMX512, which were in common use in the States, and have subsequently become worldwide standards.

These two protocols however, are subject to limitations which make them inappropriate for lighting applications now becoming more common, such as control of automated lighting and the ability of the new EC90 dimmers to inform the lighting control system of faults in the lighting circuit.

THE NEXT STEP IN MULTIPLEXING: SMX

In response to on going development in these and other areas, Strand has developed a new multiplexed protocol called SMX which attempts to address the limitations of previous protocols. Its major features include faster operation, the ability to check for errors in transmitted information, bi-directional communication and expandability. It has been designed specifically to handle the more complex lighting systems being incorporated in professional venues while remaining compatible with DMX512. For those requiring more information, full technical specifications are available from Strand Lighting.

EC90

The benefits of a true digital dimmer coupled with unique reporting capability. EC90 breaks new ground in dimming technology.

- Digitally controlled thyristor firing ensures stability, precision and lack of drift over the life of the dimmer
- Three specification levels to meet all budgets and requirements
- A choice of economical, hard-wired dimmers, plug-in modular or intelligent modular dimmers in rugged steel racks
- Dimmer modules completely enclosed in electrically safe, high temperature, engineering grade moulded plastic
- SMX, DMX512, D54 and AMX192 multiplexed protocols all supported as standard
- Up to 48 +10V analogue inputs available for auxiliary controls
- Dual multiplex input available as option
- Meets EC55014 European harmonised RFI suppression standards
- Optional Programming Terminal provides access to many diagnostic and user programmable features

USER PROGRAMMABLE FEATURES

Internal microprocessor based control offers a range of features not previously found in dimmers. Some features offered only with EC90 Modular or EC90*plus*.

- Selection of dimmer laws stored in the dimmer rack: Square, S Curve, Linear Power, Fluorescent, or Non Dim. Any dimmer may be set to any curve
- Creation of custom dimmer curves to match existing dimmers
- Electronic patching
- Adjustable maximum output voltage for use of 120V lamps
- Storage of up to 32 backup states
- Dimmer response speed
- Response on control signal failure

RACK PROCESSOR

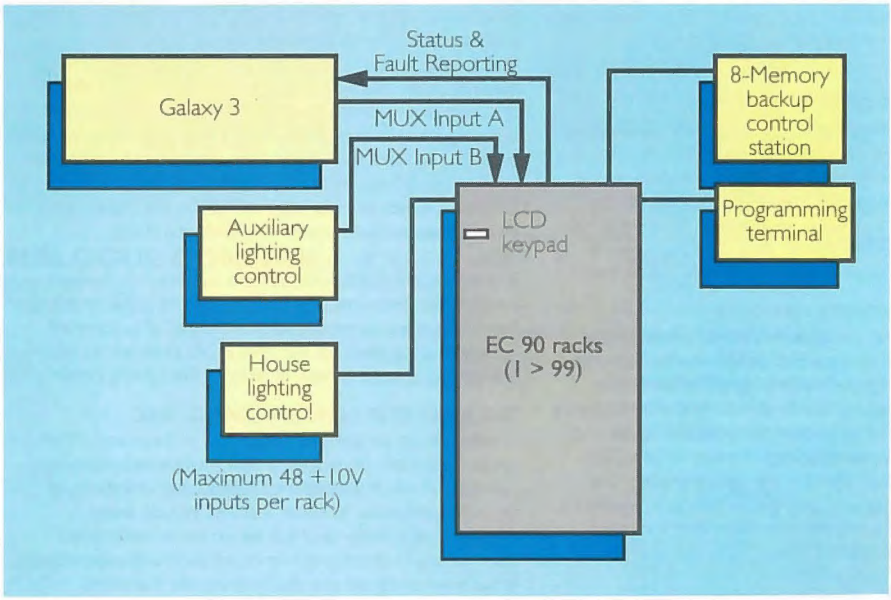
Modular interchangeable processor modules provide basic access to rack set up configuration and status reporting through 16 character LCD display.

PROGRAMMING TERMINAL

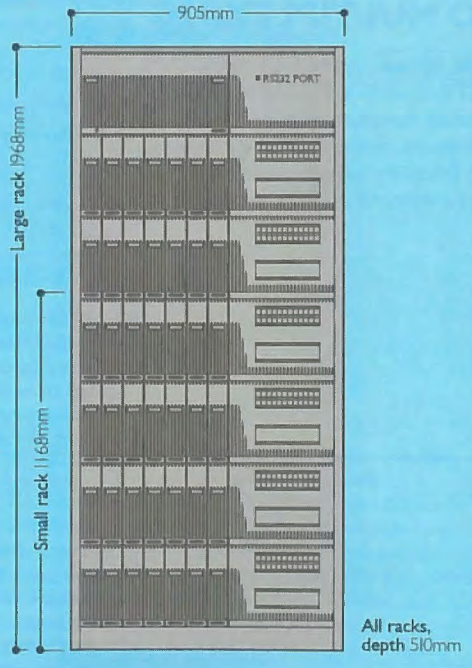
Standard lap top portable computer with custom software provides access to all user programmable features and reports fault conditions.

SYSTEM CONFIGURATION DIAGRAM

This diagram depicts a typical EC90 system installation.



Scale 1:20



Weights

Rack type	High Density	Modular	EC90*Plus*
Large rack, empty	N/A	200kg	200kg
Large rack, loaded	450kg	324kg	450kg
Small rack, empty	N/A	130kg	130kg
Small rack, loaded	250kg	190kg	250kg

EC90 VARIANTS

EC90HD

Fully digital firing and software controlled features never before in a dimmer, all in an economical high density dimmer rack. Up to 144 10 amp dimmers in a single rack.

EC90MD

Easily replaceable, electrically safe plug-in dimmer modules housed in flexible crates for mixing dimmer ratings in a single rack.

EC90*plus*

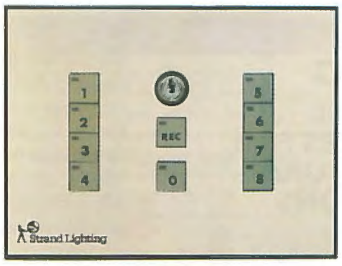
Everything offered by HD and MD, *plus* sensing and reporting of status and faults to Galaxy 3.

EC90 PLUG-IN MODULE

Completely enclosed in electrically safe, high temperature engineering grade plastic.

GALAXY 3 REPORTING

Total integration between EC90*plus* and Galaxy provides the lighting operator with EC90 status and fault reporting in the control room.



BACKUP CONTROL WALL STATION

Access to eight recorded backup states and blackout. A record function and lockout keyswitch is provided.

FEATURES TABLE

FEATURE/RACK	EC90HD	EC90MD	EC90MD*plus*
Large rack capacity	144 – 10A 72 – 25A	72 – 16A 36 – 32A	72 – 16A 36 – 32A 18 – 50A
Small rack capacity	72 – 10A 36 – 25A	36 – 16A 18 – 32A	36 – 16A 18 – 32A 9 – 50A
Control Inputs (auto sensing)			
SMX	●	●	●
DMX512	●	●	●
D54	●	●	●
AMX192	●	●	●
+10V Analogue	●	●	●
Digitally fired thyristors	●	●	●
Dual multiplex input (optional)	●	●	●
RS232 port for connection of programming terminal	●	●	●
Rack processor & LCD for programming and reporting		●	●
Plug-in modules		●	●
Hard-fired dimmers			●
Broadcast quality filters			●
Cable compensation			●
Storage of 32 backup states	●	●	●
Hard copy printout (via programming terminal)	●	●	●
User selectable functions			
Maximum output voltage	●	●	●
Dimmer law	●	●	●
Custom identifier	●	●	●
Electronic patch	●	●	●
Response to control signal failure		●	●
Dimmer response speed		●	●
Status reporting: (to Galaxy 3)			
Maximum output voltage per dimmer			●
Custom identifier			●
Electronic patch			●
Response to control signal failure			●
Dimmer response speed			●
Fault reporting: (to Galaxy 3)			
No load (blown lamp)			●
No output volts (tripped circuit breaker)			●
Excess DC			●
No control			●
Over-temperature			●

ARCHITECTURAL LIGHTING

THEATRICAL TECHNIQUES FOR ARCHITECTURAL APPLICATIONS

An essential part of any stage or television production is the creative use of light to produce the required atmosphere and mood. This can be equally valuable in many other applications such as hotels, restaurants, churches, museums, conference centres, atria, offices and retail to name just a few. Not only can light create the right atmosphere, it can also create an image, a corporate statement or, simply a relaxed rather than formal environment.

Strand Lighting's architectural luminaires, lighting controls and dimmers, are the key to realising these benefits.

▲ *The 'Restaurant Canopy' - Sheraton Park Tower Hotel, London, where Strand Architectural Dimmers and Controls are used to regulate light levels.*

▲ *A typical boardroom setting where scenes can be set using Strand Architectural luminaires and dimming controls*

LIGHTING CONTROL & DIMMING

Effective architectural lighting can be achieved by the use of several circuits each contributing different directional properties to the lit scene. Merely switching these circuits is inadequate. Instead, it is essential to balance the lighting contribution from each by adjusting their intensities to create "scenes" and thus match the conditions best suited for different tasks, events or functions.
Balanced lighting requires a dimmer per circuit and a means of control.

For the simplest scheme, **Finesse** is a dimmer with integral control. **Finesse** fits into a 2 gang back-box, and is designed to replace a conventional light switch without any additional wiring. Specifically for use with low voltage lighting it has features such as "soft-start", an automatic top set to extend lamp life, and assymetry protection to protect transformers against potential damage. An alternative version is available for conventional tungsten loads.

The next stage is to remotely mount the dimmers and have local control stations.
Manual control stations offer the most basic control with a fader per channel, linked with low voltage multicore cable to the dimmers which would be either **Unidim, Multidim** (manual) or **Permus Racks.**
Preset versions of **Multidim** enable four preset levels to be set up at the dimmer and recalled from pushbutton control stations or remotely (up to 15 metres) using a hand held infra-red controller. Other options are 'Take Control', 'Up, Stop,Down' and Photocell control.

More about the dimmers.
Unidim is a permanently wired, self contained "hard-fired" dimmer for manual control of tungsten, low voltage or fluorescent lighting loads.
Multidim is a modular system of plug-in dimmers with a choice of manual or preset control, with separate versions for tungsten/low voltage and fluorescent loads. A range of installation accessories are also available for multiple **Multidim** installations.
For large schemes requiring many circuits, **Permus Racks** provide the most economical solution and can be supplied in a variety of configurations which include fluorescent dimmers, additional electronics to allow preset control stations to be used, and de-multiplex versions for interface to the **Premiere** control system.

Microdimmer is a microprocessor-based dimmer with in built memory which allows the operator to create and record the lighting scenes remotely. The control stations can combine both faders, for balancing the contribution from up to six dimmers, and pushbuttons for recalling the four presets in addition to full and off, ie a total of six scenes. **Microdimmer** can be used stand alone as local pushbutton controls are duplicated on the front of the dimmer.

Moodmaster is a sophisticated control station that again combines faders and pushbuttons but expands scenesetting to eight presets with a maximum of twelve manual dimmers such as **Unidim** or **Multidim** (manual).

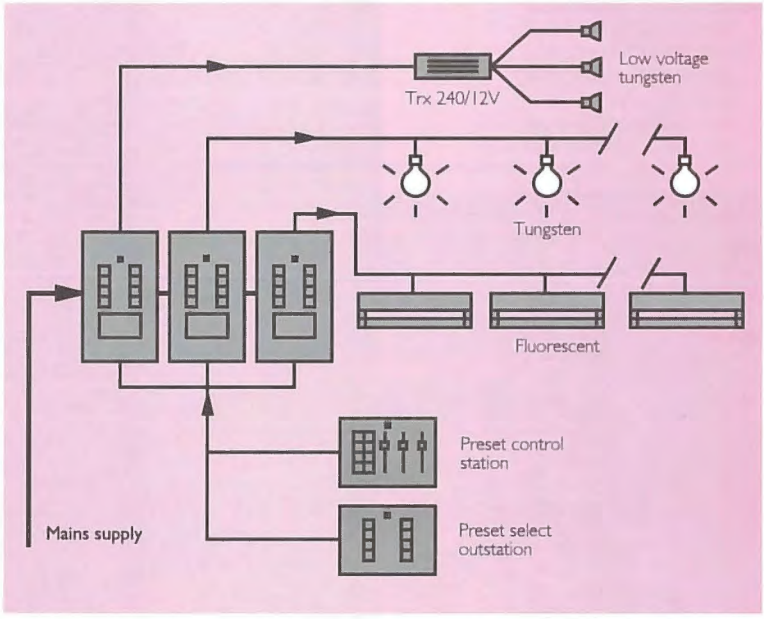
For more extensive applications, the **Premiere** lighting control system used with **Permus** or other manual dimmers (in conjunction with a demultiplex unit) is a building wide system that allows maximum flexibility but simplicity of use.

A wide variety of control stations are available from a simple single pushbutton to a sophisticated command station with alpha numeric display, the control functions of each button being user definable. The system can have up to 64 control stations controlling up to 128 channels with 128 presets per channel. Disk storage, PC interface, and astronomical time clock are just some of the additional features which make this the most flexible control system available.

ARCHITECTURAL LUMINAIRES

Architectural luminaires form an integral part of the interior environment, so Strand Lighting have introduced products employing modern, efficient light sources which reflect the high quality design standards such spaces demand.
Strand Spotlights provide directional accent lighting by exploiting the beam properties of the compact dichroic lamp. Available in various styles to suit the surroundings, they are semi-perforated to capture the visual sparkle from the faceted lamp. **Strand Stalk Spots** feature the minimal luminaire concept of revealing the lamp; with optional shades the dramatic sparkle of the lamp is emphasised.
Mini Punchlite includes a filter holder for directional colour

The versatile Strand Variable Beam Profile Minispot



A Schematic Example of a Lighting Control & Dimming System – please note that this is based on Microdimmer and can be treated as representative of a basic approach to dimming and control

effects whilst the **Minispot** series of miniature theatrical luminaires includes an open spot, a barn-door option, and a variable beam profile which introduces the greatest flexibility for creative lighting with pattern projection, framing and ability to utilise colour.
Strand Downlights complete the low voltage halogen range. The optically precise **Darklight** provides a tightly controlled beam, free of direct source glare to create mood or dramatic effect, where glare or reflections can be distracting.
A selection of adjustable and eyeball downlights permit the beam direction to be changed for wall washing or highlighting applications.

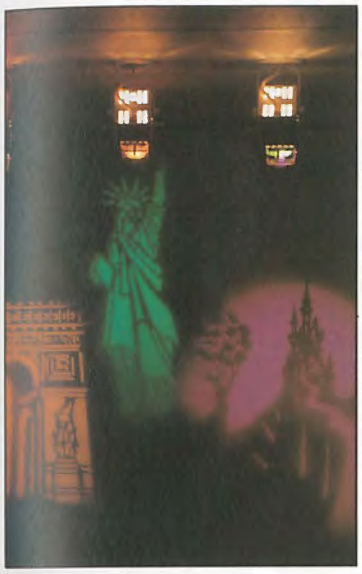
Mains voltage luminaires include **Hilite,** which combines the advantages of a long-life discharge lamp with the optical performance of a theatre luminaire, and the **Miniflood** which uses a 150 watt linear lamp, ideal for illuminating ceilings and atria.

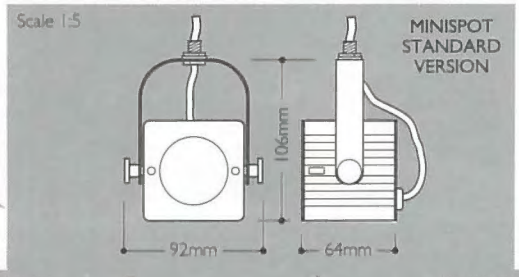
MINISPOT

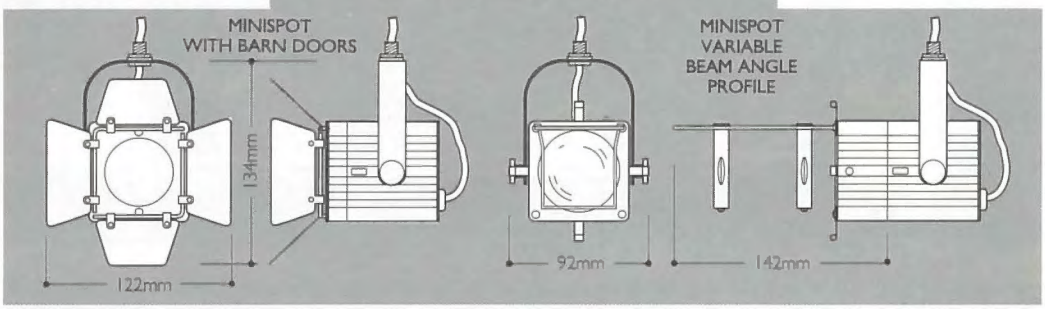
A range of low voltage theatrical style spotlights, which require remote transformers. Minispots are designed for use with 50W and 75W 12V dichroic tungsten halogen lamps and are suitable for use with Strand Architectural Dimmers.

Description	Cat N°.
Minispot (Standard Version)	19 300 00
Minispot complete with barn doors	19 310 10
Minispot variable beam angle profile	19 320 20
Minispot effects projector	19 330 30

Accessories	Cat N°.
Ceiling Plate – Standard version	19 280 01
Ceiling Plate – Slimline version	19 280 02
Colour, effects and pattern accessories – details on request	

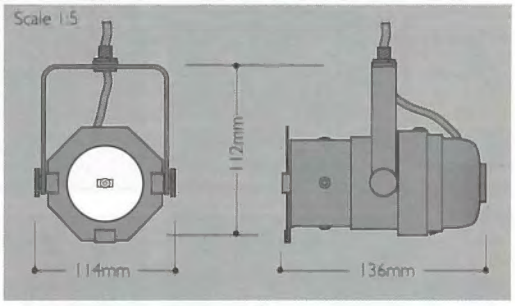






MINI-PUNCHLITE

A miniature version of Strand's Punchlite designed for use with a 50W 12V dichroic tungsten halogen lamp, and suitable for use with Strand Architectural Dimmers.

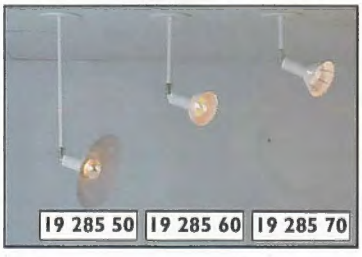


Description	Cat N°.
Mini-Punchlite – black	19 500 00
Mini-Punchlite – polished	19 500 22
Mini-Punchlite – pearl grey	19 500 11

STRAND ARCHITECTURAL SPOTLIGHTS

A range of open faced spotlights in various styles, which require remote transformers.
All the products* are designed for use only with 50W 12V dichroic tungsten halogen lamps, and are suitable for use with Strand Architectural Dimmers.

** With the exception of the Mini-Cube Spotlight which uses only a 20W 12V dichroic tungsten halogen lamp.*



Accessories	Cat N°.
Ceiling Plate – Standard version	19 280 01
Ceiling Plate – Slimline version	19 280 02

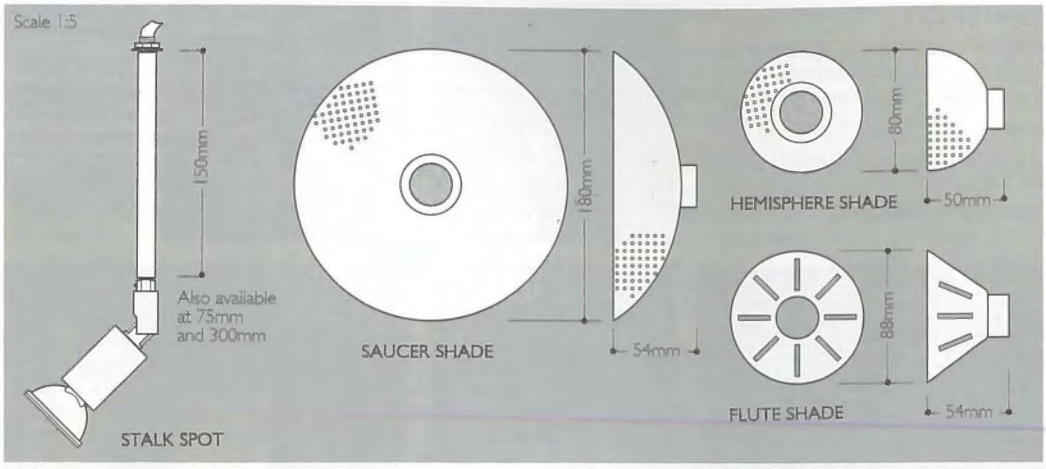
Description	Cat N°.
Cube Spotlight	19 284 10
Mini-Cube Spotlight *	19 284 15
Eyeball Spotlight	19 284 40
Bullet Spotlight	19 284 20
Stalk Spot (75mm)	19 285 20
Stalk Spot (150mm)	19 285 00
Stalk Spot (300mm)	19 285 10

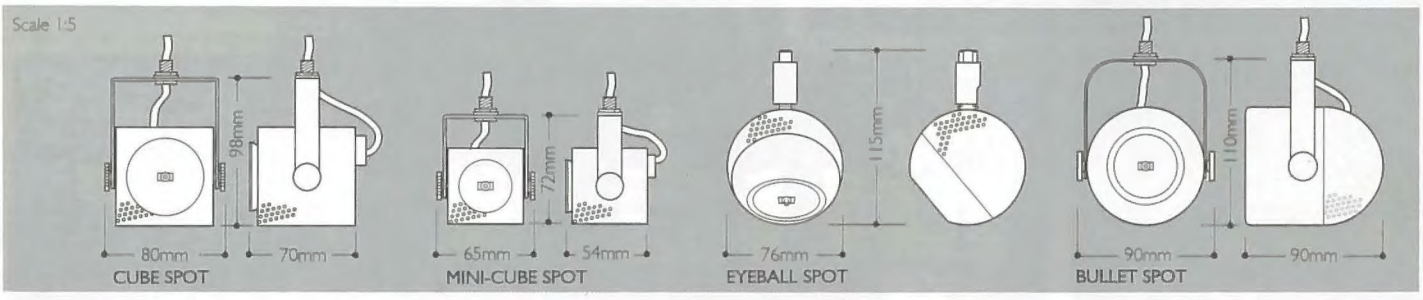
** Uses 20W 12V dichroic tungsten halogen lamp only*

Accessories for Stalk Spot	Cat N°.
Perforated Saucer Shade Attachment, 180mm Ø	19 285 50
Perforated Hemisphere Shade Attachment, 80mm Ø	19 285 60
Ventilated Flute Shade	19 285 70
Ceiling Plate – Standard version	19 280 01
Ceiling Plate – Slimline version	19 280 02

See page 14 for Dimensional Drawings of Strand Architectural Spotlights

STRAND ARCHITECTURAL SPOTLIGHTS
(Dimensional Drawings)





STRAND ARCHITECTURAL DOWNLIGHTS

A range of recessed downlights suitable for use with most common suspended ceiling systems. They require a remote transformer. All the products are designed for use only with 50W 12V dichroic tungsten halogen lamps, and are suitable for use with Strand Architectural Dimmers.

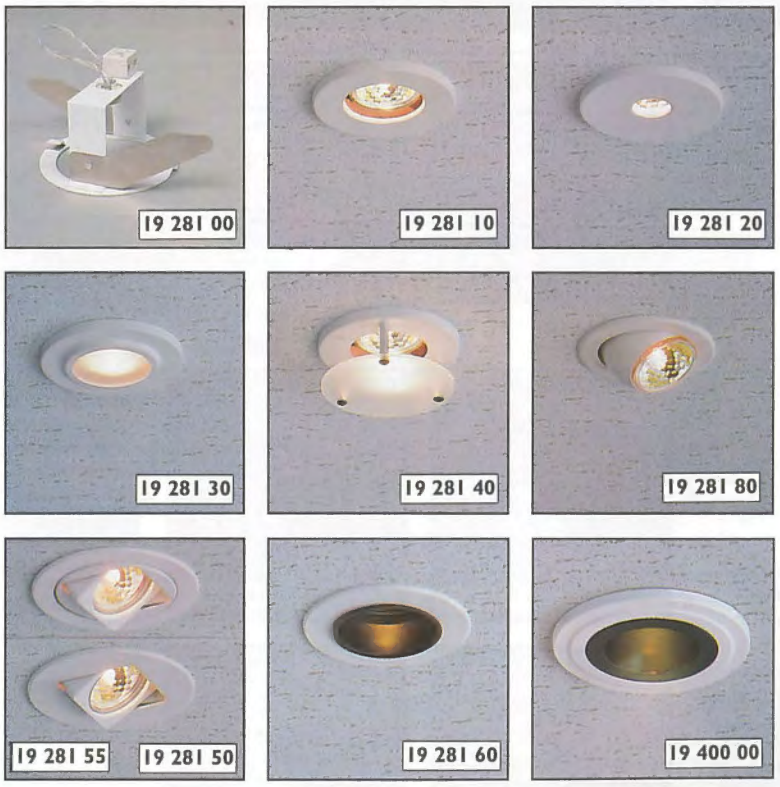
STANDARD FIXED DOWNLIGHTS
These feature a range of interchangeable bezel designs which fit a common lamphousing. They are as follows: Standard, Pinhole, Clear Glass, and 'Floating' Glass.

RECESSED EYEBALL DOWNLIGHT
An adjustable downlight with 45° of tilt about the vertical, and 355° of rotation – suitable for most general and spotlighting applications.

WALL WASHER
These adjustable downlights enable the beam of light to be tilted by ±45° from the vertical – suitable for spotlighting applications or wallwashing – a second version can also rotate by 350°.

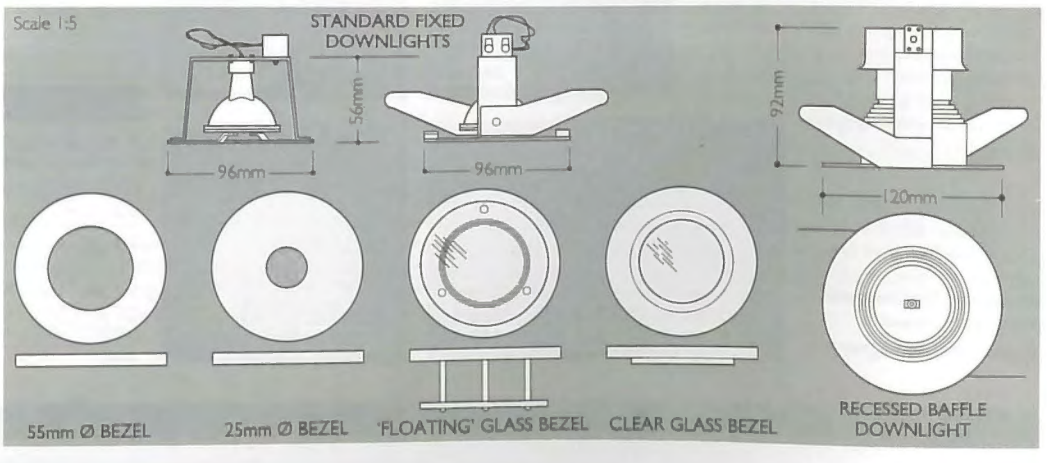
RECESSED BAFFLE DOWNLIGHT
A useful general purpose downlight with a low brightness baffle providing good cut-off from lampglare at normal viewing angles.

RECESSED DARKLIGHT
A new low voltage downlight with a precisely angled conical black reflector to give a controlled downward cone of light with minimal glare – making the luminaire aperture appear dark except when viewed from directly below.



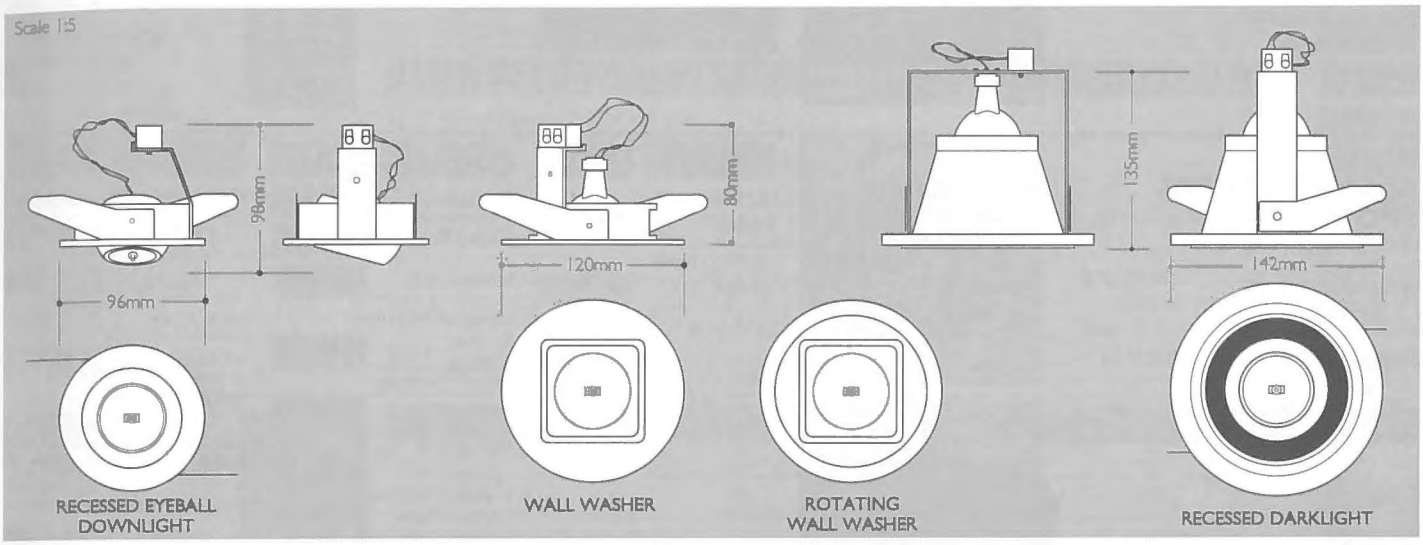
Description	Cat N°.
Downlight Lamp Housing (for use with a choice of attachments)	19 281 00
— 55mm Ø aperture bezel ring attachment	19 281 10
— 25mm Ø aperture bezel ring attatchment	19 281 20
— Clear Glass bezel ring attachment	19 281 30
— 'Floating' Glass bezel ring attachment	19 281 40
Recessed Eyeball Downlight	19 281 80
Recessed Wall Washer	19 281 50
Adjustable Wall Washer	19 281 55
Recessed Baffle Downlight	19 281 60
Recessed Darklight	19 400 00

Dimensional Drawings of Downlights continue on Page 15



STRAND ARCHITECTURAL DOWNLIGHTS

(Dimensional Drawings continued)



LAMPS

A range of low voltage lamps with an integral dichroic coated reflector which produces a "cool beam" by directing most of the heat backwards through the reflector. The lamps have a good colour rendering and range from a very narrow spot (to allow selective highlighting of individual pieces and displays) to a wide flood (for area lighting). The multifaceted reflector produces a visually attractive sparkle which is utilised in the Strand Architectural Spotlight range.

Lamp Description and Specification												Cat N°.
Beam Angle ½ Peak Angle	Voltage	Wattage	Lamp cap	Life Average	Peak Beam cd	Diameter mm	Length mm	Colour K	Operating Position	Filament Type	Bulb Finish	
50mm Lamps												
38	12	50	GX5.3	3000	1550	50.7	44.5	3000	Universal	Transverse	Frosted	34 950 58
21	12	50	GX5.3	3000	3700	50.7	44.5	3000	Universal	Transverse	Clear	34 950 50
10	12	50	GX5.3	3000	12000	50.7	44.5	3000	Universal	Transverse	Clear	34 950 49
75mm Lamps												
38	12	75	GX5.3	3000	2250	50.7	44.5	3000	Universal	Transverse	Clear	34 349 03
24	12	75	GX5.3	3000	7500	50.7	44.5	3000	Universal	Transverse	Clear	34 349 04
12	12	75	GX5.3	3000	16000	50.7	44.5	3000	Universal	Transverse	Clear	34 349 02
35mm Lamps												
30	12	20	GZ4	3000	600	35.3	35	2900	Universal	Transverse	Clear	34 935 62
17	12	20	GZ4	3000	1760	35.3	35	2900	Universal	Transverse	Clear	34 935 51
10	12	20	GZ4	3000	5500	35.3	35	2900	Universal	Transverse	Clear	34 935 52

Lamp Life: the average life figures shown above are statistical averages. Lamp life can be greatly increased by reducing the supply voltage with a suitable Strand dimmer.

Lamp Handling: Hold dichroic lamps by the outer reflector rim only. Do not touch the inner quartz envelope with bare fingers. Any impurities could cause the envelope to fracture.

Transformers: these lamps must be used in conjunction with a low voltage transformer specifically designed for lighting applications.

Note: Refer to Dichroic Lamps Data Sheet for performance details of all these lamps.

TRANSFORMERS FOR LOW VOLTAGE ARCHITECTURAL LUMINAIRES

For use with Minispot, Architectural Spotlights and Downlights.

Refer to Strand Technical Guidance notes on installing low voltage lighting.

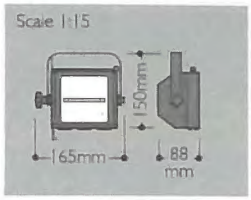
Description	Dimensions					Cat N°.
	Ø	H	W	L	Wt	
50VA Transformer (Potted)	63	89	–	–	0.8	19 500 50
50VA Transformer (Boxed)	–	70	140	265	2.0	19 510 50
100VA Transformer (Boxed)	–	70	140	265	2.46	19 511 00
150VA Transformer (Boxed)	–	70	140	265	2.88	19 511 50
200VA Transformer (Boxed)	–	70	140	265	3.00	19 512 00

Other ratings can be supplied on request.

FAX: 081-568 2103 TELEX: 27976 ☎ 081-560 3171

MINI-FLOODLIGHT

A miniature cyclorama-style floodlight which comes complete with colour frame for creating special lighting effects. It utilises an economical 150W T3 Q/CL lamp.



Description	Cat N°.
MINI-FLOODLIGHT Cyclight	19 600 00

Accessories	Cat N°.
150W T3 Q/CL Lamp	34 960 00

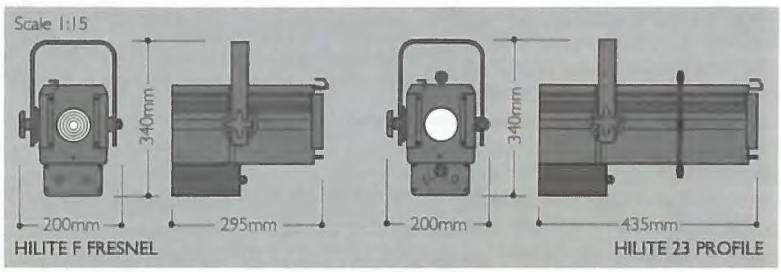
HI-LITE ARCHITECTURAL SPOTLIGHTS

A range of High Intensity Discharge spotlights using long-life compact 'white' light sources. (For 150W MBI-T or HQI-T lamps).
These luminaires are not suitable for dimming.
Lamp not supplied – must be ordered separately

Description	Cat N°.
HILITE F Fresnel Spotlight	19 910 10
HILITE 23 Profile Spotlight	19 910 23
150W MBI-T Lamp	34 931 59

Accessories	Cat N°.
Safety Chain	26 064 18
Ceiling Plate	26 872 02
Hook Clamp	26 483 07
Universal Mounting Bracket	26 866 07
Stand Mounting Socket	26 865 01
Barndoor & Frame	23 200 04
Colour Frame	27 806 0T
Colour Frame Wheel	23 868 40
Adaptor for above	23 868 25

Accessories	Cat N°.
Colour Wheel Controller	
— 2 Wheel	23 891 02
— 4 Wheel	23 892 08
— 6 Wheel	23 893 03
Iris Diaphragm	23 363 17
Wide Angle Lens	27 800 4T
Spares List	Available on request



FINESSE

Professional grade recessed two-gang wall box dimmer for local control. 800VA inductive (ie low voltage halogen) or 1kW tungsten. Incorporates softstart, lamp save and asymmetry protection features.

Description	Dimensions H	W	D	Rating	Type	Cat N°.
Finesse LV	110	147	35	800VA	Inductive Load	09 012 05
Finesse B	110	147	35	1000W	Tungsten Load	09 013 06

UNIDIM

Universal* surface mounted Unit Dimmer for use with remote Manual type Control Stations.

**Universal = Fluorescent, Inductive or Tungsten lighting loads.*

All dimmers meet BS800 and VDE 0875 requirements.

Description	Dimensions H	W	D	Rating	Load Type	Cat N°.
5A Unidim	216	112	75	5A	Tung/Ind/Fluor	09 751 05
10A Unidim	216	112	91	10A	Tung/Ind/Fluor	09 752 10
20A Unidim	216	172	97	20A	Tung/Ind/Fluor	09 753 20

Control Stations – Description	Cat N°.
1-Gang Slider Outstation	09 401 01
2-Gang Slider Outstation	09 402 02
3-Gang Slider Outstation	09 403 03
6-Gang Slider with Master Outstation	09 406 06
1-Gang Rotary Outstation	09 400 00
Take Control Outstation (Fader plus Take Push)	09 408 01
Photocell (including mounting bracket)	09 200 07
Amplifier and Setting Panel (for Photocell)	09 201 02

MICRODIMMER

Universal* 4 Preset Surface Mounted Unit Dimmer, for local or optional remote control, singly or in groups for scene setting. Features four recordable presets, instant ON, fade to black-out, raise and lower buttons and adjustable fade rates per function.

**Universal = Fluorescent, Inductive or Tungsten lighting loads.*

All dimmers meet BS800 and VDE 0875 requirements.

Description	Dimensions H	W	D	Wt.	Rating	Load Type	Cat N°.
5A Microdimmer	216	112	77	1.75	5A	Tung/Ind/Fluor	09 502 05
10A Microdimmer	216	112	92	1.85	10A	Tung/Ind/Fluor	09 503 10
20A Microdimmer	216	170	97	3.20	20A	Tung/Ind/Fluor	09 504 20

	Cat N°.
Preset Select Control Station	09 611 08
Preset Select Control Station with Bargraph	09 612 18
Preset Select Control Station with 1 Fader	09 613 01
Preset Select Control Station with 2 Faders	09 614 02
Preset Select Control Station with 3 Faders	09 615 03
Preset Select Control Station with 4 Faders	09 616 04
Preset Select Control Station with 6 Faders	09 617 06

MULTIDIM

Plug-in Modular **Preset** Dimming System for Remote Control.

	Dimensions H	W	D	Wt.	Cat N°.
6A (1.5kW) Preset Tungsten	270	135	210	3.5	09 804 06
16A (4kW) Preset Tungsten	270	135	210	4.0	09 824 08
32A (7.5kW) Preset Tungsten	270	135	210	5.5	09 844 08
6A Preset Fluorescent	270	135	210	3.5	09 814 07
16A Preset Fluorescent	270	135	210	4.0	09 834 09
32A Preset Fluorescent	270	135	210	5.5	09 854 32

Control Stations – Description	Cat N°.
1-Gang Preset Outstation (4 Pushbutton)	09 411 04
2-Gang Preset Outstation (8 Pushbutton)	09 412 08
3-Gang Preset Outstation (12 Pushbutton)	09 413 12
6-Gang Preset Outstation (24 Pushbutton)	09 416 24
1-Gang Up/Stop/Down Outstation (3 Pushbutton)	09 409 03
Infra-red Transmitter	09 470 04
Infra-red Receiver (4 Presets)	09 471 00

MULTIDIM

Plug-in Modular **Manual** Dimmers for Remote Control.

Description	Dimensions H	W	D	Wt.	Cat N°.
6A (1.5kW) Manual Tungsten	270	135	210	3.5	09 800 01
16A (4kW) Manual Tungsten	270	135	210	4.0	09 820 03
32A (7.5kW) Manual Tungsten	270	135	210	5.5	09 840 05
6A Manual Fluorescent	270	135	210	3.5	09 810 02
16A Manual Fluorescent	270	135	210	4.0	09 830 04
32A Manual Fluorescent	270	135	210	5.5	09 850 12

Control Stations – Description	Cat N°.
1-Gang Slider Outstation	09 401 01
2-Gang Slider Outstation	09 402 02
3-Gang Slider Outstation	09 403 03
6-Gang Slider with Master Outstation	09 406 06

Control Stations – Description	Cat N°.
1-Gang Rotary Outstation	09 400 00
Take Control Outstation (Fader plus Take Push)	09 408 01
Photocell (including mounting bracket)	09 200 07
Amplifier and Setting Panel (for Photocell)	09 201 02

MULTIDIM ACCESSORIES

To simplify installation of a group of Multidim Modules.

	Applications	Cat N°.
Strand Rail (Mounting Plate 1 Metre)	Wall Fixing for Dimmer Modules	09 874 07
Mains Connection Box	Mains input for Multidimmer Installation	09 872 06
Busbar Connecting Set	Links between Modules and to Mains Box	09 871 00
Multi-Phase linking Kit	Links Earth and Neutral in 3-Phase Installation	09 873 01

PERMUS – DIMMER RACKS

Floor-standing dimmer Racks for larger installations

**Note: Permus Racks can be supplied to special order with fluuorescent dimmers or a mixture of fluorescent and tungsten dimmers. Requires PSU fitted to support remote manual control station.*

DESCRIPTION	DIMENSIONS H	W	D	Wt.	TYPE	Cat No.
24 x 25A Rack	1475	1040	190	187	Tungsten*	06 024 25
24 x 10A Rack	1475	1040	190	90	Tungsten*	06 024 10
12 x 25A Rack	1475	1040	190	90	Tungsten*	06 012 25
12 x 10A Rack	1475	1040	190	65	Tungsten*	06 012 10
6 x 25A Rack	1475	1040	190	65	Tungsten*	06 006 25

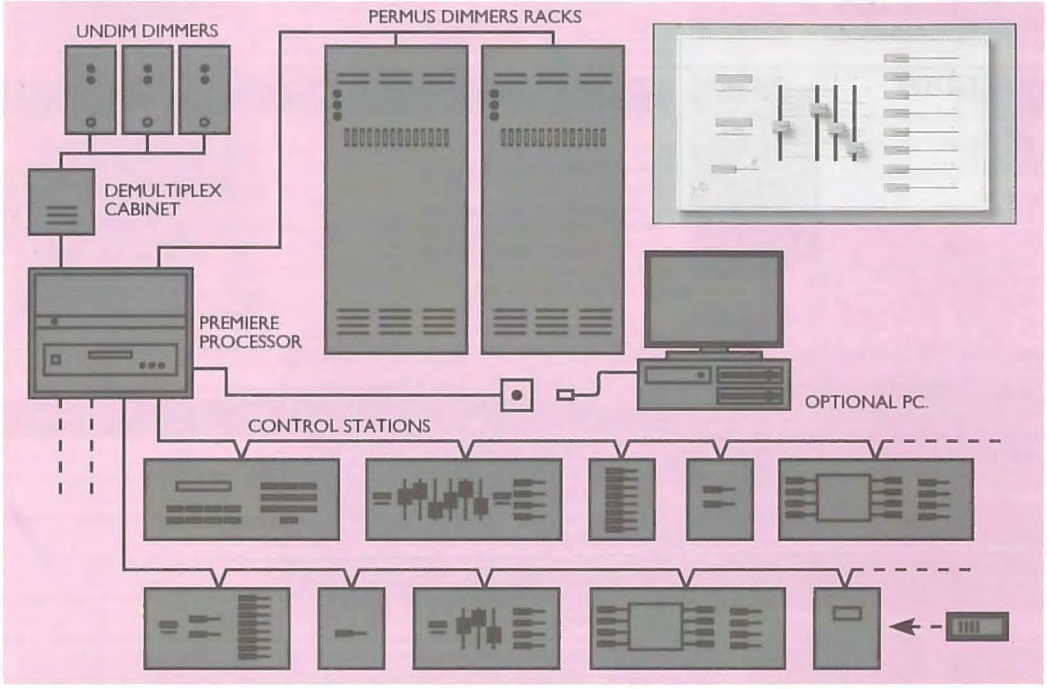
CONTROL STATIONS

- Suitable for use with Multidim manual control stations
- Versions of Permus can also be supplied for use with Multidim preset control stations or Programmable Control Stations. These require special Permus versions.

PREMIERE

Programmable Lighting Control System

Larger systems which call for more facilities are catered for by Premier, a fully programmable system which has the flexibility to match the most diverse applications. Features include 128 channels each with a possible 128 presets, controlling up to 512 dimmers.
With up to 64 control stations ranging from a simple single push–button to a sophisticated menu driven command station with alpha numeric display, the system can be custom designed to suit the user's needs. Other facilities include astronomical time clock, disc storage, automatic events, up to 32 rooms per system, local programming via standard control stations or off site with a PC based configuration program. The system also has an RS232 Building Management interface.



MOODMASTER

Intelligent Control Station **(supplied to special order only).** Programmable slider stations with presets. Individual fade speed per preset (up to 240 seconds), lock-out, record inhibit feature, non-volatile memory.
Note: All measurements are in millimetres and weights are in kilogrammes.

DESCRIPTION	No of Channels	No of Presets	DIMENSIONS H	W	D	Wt.	Cat No.
Moodmaster	6	8	118	214	165		09 480 60
Moodmaster	9	8	118	254	165		09 480 90
Moodmaster	12	8	118	254	284		09 480 20
Moodmaster	Preset Stn	4	118	73	284		09 484 00
Moodmaster	Preset Stn	8	118	73	284		09 480 00

ACCESSORIES	Cat No.
Used with Unidim or Multidim (manual) Dimmers	
Moodmaster Dimmer Interface Unit	09 490 00

FLUORESCENT DIMMING BALLASTS

Fluorescent lamps can only be dimmed when controlled through suitable dimming ballasts. Usually, fluorescent luminaires need to be converted for dimming by employing a circuit compatible for the type of tube used and matched to an approiate dimmer module.
For further information consult the Strand Guide to Fluorescent Dimming.

Notes:

1 Universal Dimming Transformers (09 212 40) can also be used with T12 lamps.

2 High Frequency Electronic Ballasts can be supplied as an alternative. Consult Strand Lighting for details.

3 Please refer to Data Sheets for full details.

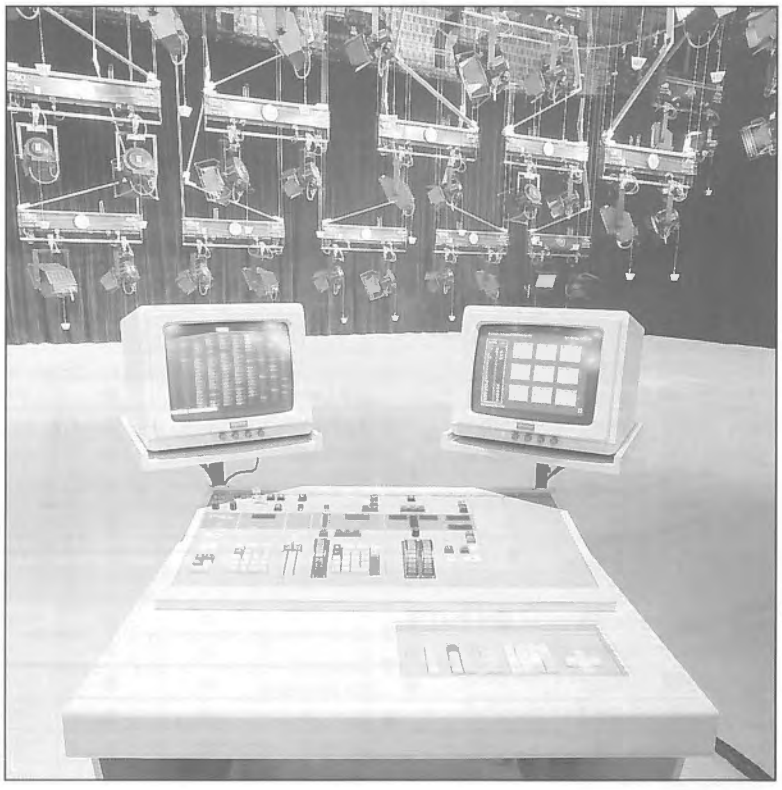
FLUORESCENT TUBE T	Ø(mm)	Length	Watts	BALLAST Wt.	Cat No.	CHOKE Wt.	Cat No.	SUPPLY VOLTS
T12	38	600	2 x 20	1.5	09 320 06	–	–	240V, 50Hz (High Voltage Cathodes) (220V versions can be supplied)
T12	38	1200	1 x 40	1.5	09 320 06	–	–	
T12	38	1500	1 x 65	2.75	09 310 09	–	–	
T12	38	1800	1 x 75/85	2.75	09 300 01	–	–	
U-Tube	–	525 x 129	1 x 40	1.6	09 350 08	–	–	
T8	26	600	1 x 18	0.48	09 212 40	0.57	09 213 12	240V, 50Hz (220V versions can be supplied)
T8	26	1200	1 x 36	0.48	09 212 40	0.65	09 213 14	
T8	26	1500	1 x 58	0.48	09 212 40	1.12	09 213 15	
T8	26	1800	1 x 70	0.48	09 212 40	1.12	09 213 16	

AUTOMATED LIGHTING SYSTEMS

Recent advances in the fields of robotics and microprocessor-based controls have enabled Strand to lead the way in the developing automated lighting market. Strand now offers two automated systems; PALS or Precision Automated Lighting System, to meet the need for quiet, precise, and repeatable focusing, and Showchangers for dynamic and special lighting.

PALS – PRECISION AUTOMATED LIGHTING SYSTEMS

A PALS system can bring new economies and creative possibilities to all kinds of productions. Most professional luminaires in the Strand and Quartzcolor ranges can now be supplied as motorised units. Motor drive assemblies, processor board and drive electronics are safely and compactly housed in a rectangular section steel yoke.



PALS Lighting Rig in Studio 1 at VTO–Medienzentrum Studio Complex, Hannover, showing Galaxy Studio remote lighting control on the studio floor.

SHOWCHANGERS

Showchangers provide the designer with the capicity to create smooth, dynamic lighting looks with a wide range of speeds. Based on the PAR-64 lamp, the versatile features of Parscan 2 make it ideal for multi-function venues and hire companies.

Showchangers in use recently at one of Stevie Nicks' Wembley concerts. The rig was engineered by Meteorites Productions.

AUTOMATED LIGHTING SYSTEMS
THE PAL SYSTEM

PALS TECHNICAL FEATURES

PALS – the Precision Automated Lighting System – offers just what its name implies: high resolution and repeatability of positioning. The light will return precisely to its recorded position as instructed by either the PC Controller or Galaxy 3.

PALS MOTORISED LUMINAIRES

Motorised luminaires in the Strand and Quartzcolor ranges are equipped with Colour Changers as detailed below

- Rigid steel yoke to house motor drive assemblies and electronics
- 16 bit on-board microprocessor
- Available functions include pan, tilt, focus, or iris and colour
- Low voltage DC servo motors
- Clutch protection to prevent damage when moved manually

PALS Quartzcolor studio and Strand theatre luminaires

COLOUR CHANGERS

Selected luminaires can be provided with quiet scroll-type colour changers

- 10 colours plus clear
- Two versions available:
  Optional – for use with automated yokes.
  Independent – for use with non-automated luminaires
- Variable speed
- Each colour change provided with 10 colour gel string

DISTRIBUTION SYSTEM

Each PALS system requires a simple distribution system to provide power and data to the luminaires

- 3-way and 10-way power supplies for providing 24V DC to motors
- Data distribution box to amplify and protect the control signal
- All data transmitted over high speed digital communicatons protocol

PC Controller and VDU

PC CONTROLLER

Custom application software and interface card with an IBM PS/2 Model 30 personal computer are provided by Strand as a compact, efficient control system for PALS luminaires

- 99 channels each controlling four functions
- 20 megabyte hard disc for cue storage
- Library storage provided by 3½" diskette
- Dedicated keyboard for luminaire positioning and cue recording
- On-line help for immediate access to command instructions
- Recorded times
- Cue editing
- Auto follow and delays for creation of special effects
- Coloured display of channels and numerical positioning

GALAXY 3 MOTION CONTROL PANEL

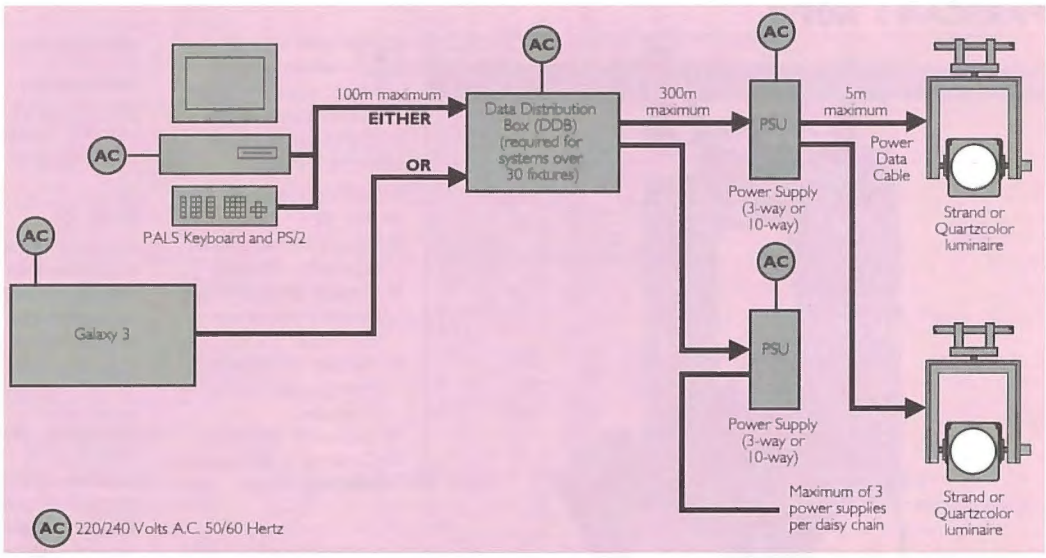
The new Galaxy 3 console offers integrated recording and playback of dimming and motion cues when fitted with specialised electronics and motion control panel

- Up to 99 channels of control, each with 12 functions
- Electronic patching for moton and dimming channel assignment
- Position control provided by four high resolution wheels
- VDU display of all aspects of luminaire positioning
- Dedicated keypad for lumlnaire call-up and position or colour setting
- LED windows for immediate unit and positional reference
- Blind plotting or modification
- Local recording of motion cues
- User-selectable home positions for each luminaire

Galaxy 3 Motion Control Panel

FOR STRAND FILTERS SEE PAGES 87-91

PALS SYSTEM DRAWING



PALS FUNCTION AVAILABILITY & ORDERING

Key to Chart

- ● **Standard Features**
- * **Optional Colour Changer**
  Nominal 200mm Colour Changer
  Nominal 250mm Colour Changer
  Nominal 380mm Colour Changer

† **When ordering** Luminaires with Optional Colour Changer add **/C** to Item Number

FIXTURE	WATTS	PAN	TILT	FOCUS	IRIS	SWITCH	COLOUR*	ITEM No †
QUARTZCOLOR STUDIO								
Polaris Fresnel	1000W	●	●	●				20 526 00
Castor Fresnel	2000W	●	●	●			380mm	20 527 00
Pollux Fresnel	5000W	●	●	●			380mm	20 528 00
Pollux Bambino	5000W	●	●	●			380mm	20 568 00
Arturo Softlight	2500W	●	●			●		20 413 50
Arturo Softlight	5000W	●	●			●		20 441 00
STRAND THEATRICAL								
Cantata 11/26	1200W	●	●		●		200mm	20 611 26
Cantata 18/32	1200W	●	●		●		200mm	20 618 32
Cantata 26/44	1200W	●	●		●		200mm	20 626 44
Cantata PC	1200W	●	●	●			200mm	20 628 02
Cantata F	1200W	●	●	●			200mm	20 628 00
Cadenza 9/15	2000W	●	●		●		200mm	20 421 00
Cadenza 12/22	2000W	●	●		●		200mm	20 420 01
Cadenza 19/32	2000W	●	●		●		200mm	20 424 03
Cadenza PC	2000W	●	●	●			250mm	20 524 08
Cadenza F	2000W	●	●	●			250mm	20 522 07
Punchlite	1000W	●	●				200mm	20 100 00
Beamlite	500W	●	●	●			250mm	20 100 05
Beamlite	1000W	●	●	●			250mm	20 100 10

Accessories

PALS IBM PS/2 controller **20 920 10**

VDU for IBM PS/2 **
IBM PS/2 CPU/keyboard **
IBM VDU stand **
IBM PS/2 manuals **
PALS keyboard **

** IBM PS/2 accessories included with part number. Items will be consolidated for shipping with other items ordered.

PALS keyboard kit **20 920 00**

Distribution box **20 910 40**

Power supply – 10-way **20 910 10**

Power supply – 3-way **20 910 03**

200mm colour changer – independent **20 900 10/***

250mm colour changer – independent **20 900 20/***

380mm colour changer – independent **20 900 30/***

* Add number for correct adaptor plate

– all Cantatas	/1
– Cadenza profiles	/2
– Punchlite	/3

* Add number for correct adaptor plate

– Cadenza F & PC	/1
– Beamlite 500	/2
– Beamlite 1000	/3

* Add number for correct adaptor plate

– Iris Cyc	/1
– Castor	/2
– Pollux	/3

DDB-Keyboard Cable

1 metre	20 910 80
3 metre	20 910 81
8 metre	20 910 82
15 metre	20 910 83
30 metre	20 910 84
60 metre	20 910 85
100 metre	20 910 86

PC-DDB Cable

1 metre	20 910 50
3 metre	20 910 51
8 metre	20 910 52
15 metre	20 910 53
30 metre	20 910 54
60 metre	20 910 55
100 metre	20 910 56

Power Data Cable

2 metre	20 910 70
5 metre	20 910 75

PC 'Y' Cable

1 metre	20 910 00

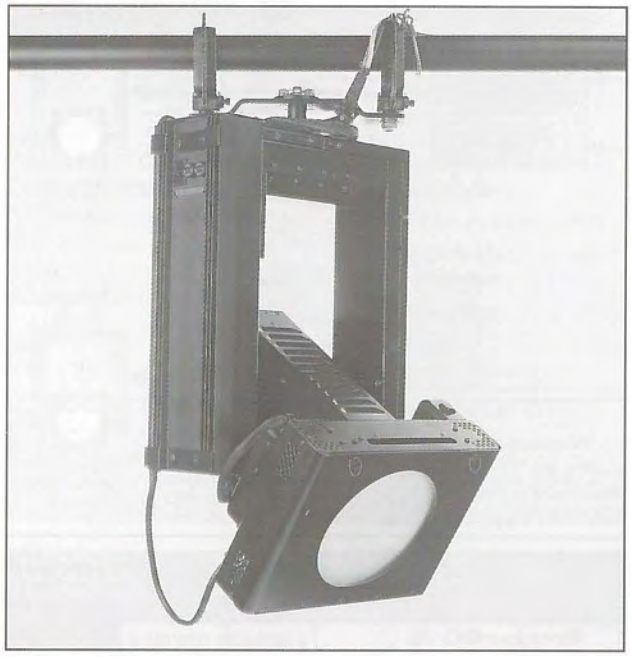
DDB-PSU Cable

3 metre	20 910 90
8 metre	20 910 92
15 metre	20 910 93
30 metre	20 910 94
60 metre	20 910 95
100 metre	20 910 96

Daisy Chain Data Cable

1 metre	20 910 60
3 metre	20 910 61
8 metre	20 910 62
15 metre	20 910 63
30 metre	20 910 64

PARSCAN 2 1000W



Designed for high reliability, greater accuracy, quiet operation and wider speed ranges, the Parcan 2 offers the following features

- 360° rotation
- 200° tilt
- Integral 16 frame scroll type colour changer
- Modular electronics for ease of replacement and repair
- Variable speed setting from 2.5 seconds to 3 minutes
- Low noise operations
- Confirms to all European safety regulations

Motorised Par 64 spotlight with integrated colour changer provided with six colour starter gel string **76 054 15**

Accessories

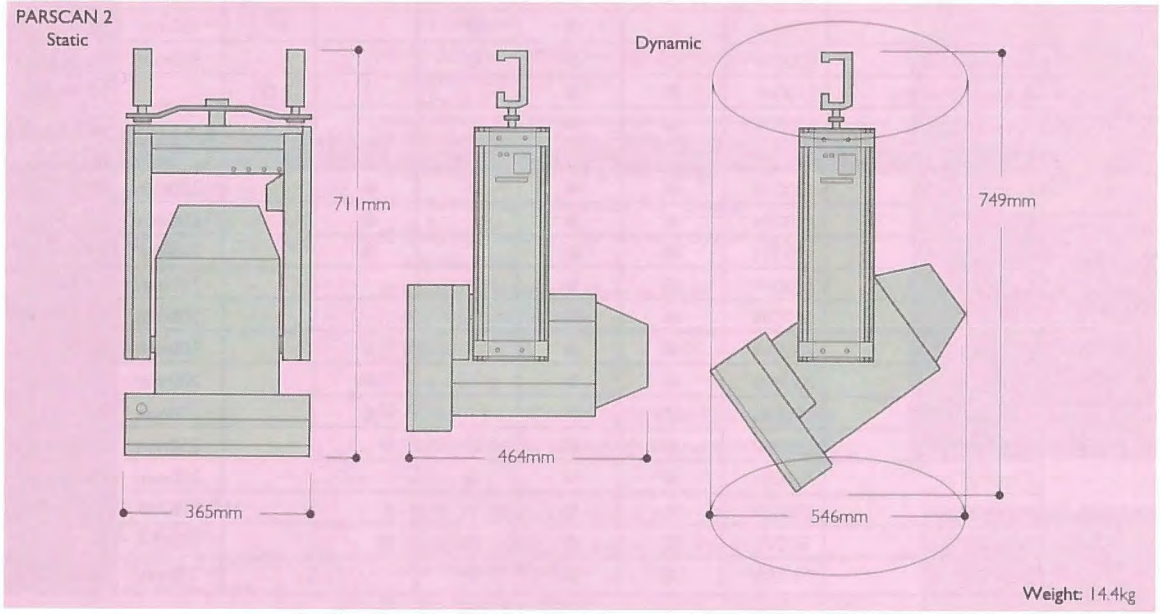
Power Supply Unit
20V DC power supply for use with Parscan 2, capable of driving up to six Parscans **76 055 75**

Buffer Box
Required for installations with more than 6 Parscans. Provides the electronic isolation circuits required to maintain signal data over large Showchanger rigs **76 055 61**

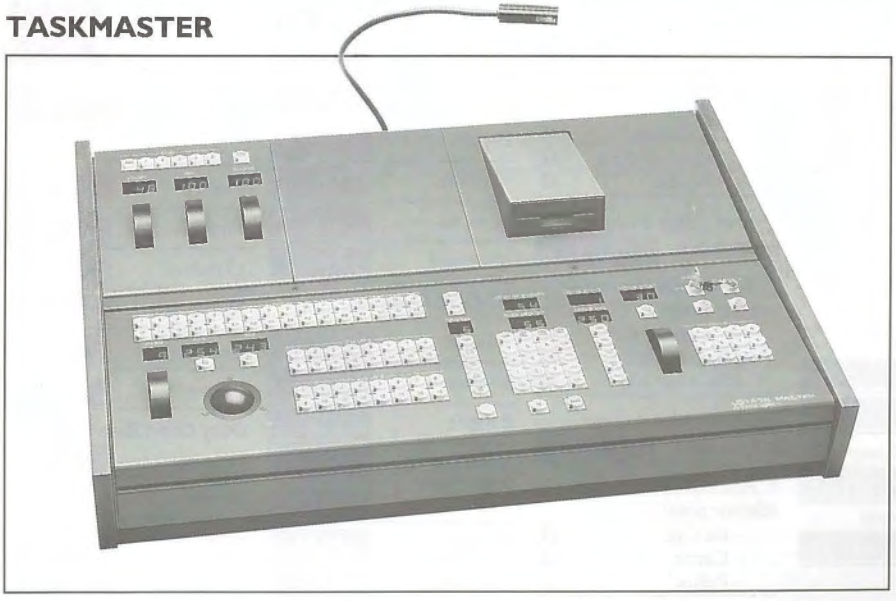
Splitter
Enables up to seven data cables to be paralleled together (1 input to 6 output) to provide a 'star' type of system **76 055 52**

Cables
Standard multicore data cables which transmit multipexed data, low voltage power from the control to each Parscan 2.

3 metre cable	**76 355 10**
8 metre cable	**76 355 11**
15 metre cable	**76 355 12**
30 metre cable	**76 355 13**



TASKMASTER



A control console specifically designed for fast and efficient programming and operation of the Parcan 2.

- 99 channels
- 250 memories
- 32 programmable groups
- 12 programmable chases
- Trackball position control with single axis lockout
- LED windows for display of luminaire, position, and memory numbers
- Hold function for channel or groups
- 3 1/2" disc drive for library storage

Taskmaster memory control system for Showchangers, complete with disc drive, and 1metre of mains cable **76 056 42**

STAGE LIGHTING
A GUIDE TO LIGHTING THE SMALLER SCALE PRODUCTION

Whatever the scale of a production – amateur or professional – lighting like other design processes is based on a sequence of logical decisions plus a good measure of creative inspiration.

This brief guide offers a sequence of step-by-step decisions to form the basis of a lighting process for the smaller scale production. It has been prepared by a lighting designer with experience of working on productions of all types and sizes. Strand hope that it will be especially helpful to amateur groups, small touring companies and educational theatre.

PLANNING

Read Script at least twice (first for overall 'feel' and then for detail) concentrating on text rather than the stage directions which the director may well ignore – especially those in an 'acting edition'. If a musical, listen to the music until absorbed.

Discuss with the director, choreographer, set and costume designers, how the script will be staged and the contribution to be made by the lighting. Will light select acting areas? And/or will it establish shifts in atmosphere? Are there any particularly special effects?

Decide Style of the 'lighting look'. Will it be softly diffuse or have stabbing beams? How directional? How selective? How atmospheric? Will the colours be subtle tints? Or more strongly romantic hues? Or more saturated contrasty statements? Or a penetrating white? How naturalistic?

Establish Priorities for the allocation of resources. There is rarely enough equipment or time to meet all the requirements of our ideals. How vital is that two minute special effect? Enough to justify removal of two lights from two hours of general use?

Divide Stage by Areas for independent selection determined by the production's requirements (at actor eye level which does not correspond to the area of lit floor). Musicals may have symmetrical areas of uniform size but drama areas are rarely symmetrical in size, shape or distribution.

Divide Stage by Colours if colour is to be a variable. Which areas in a drama need both warm and cool toning? Can some be neutral? In a musical where do we need more saturated 'reds' and 'blues' (and 'ambers'?) in addition to face 'neutrals'.

Determine Essential Specials where the light beam's size or shape is so critical that one of the generally set area lights will not suffice. Also determine essential special effects. Double check priorities.

Choose Lighting Positions to give the best available angles for lighting the chosen areas in the chosen colour ranges. And position the specials and the effects.

Allocate Lighting Instruments starting with the ideal type for each position, then reallocating to make the best use of equipment actually available.

Select Colours by converting general 'warm', 'cool', 'reddish', 'bluish', 'amber', 'hot', 'fruity' etc into specific colour filter numbers.

Complete Paperwork including lighting layout plan; equipment, colour and cable lists; cue synopsis.

Communicate Intentions to electrics crew, stage manager, scene designer and director by giving them photocopies of lighting plan and cue synopsis. Point out to them anything vital that they might otherwise overlook.

Check Intentions by comparing the observed action at rehearsal during each cue state with the planned areas, colours, specials as noted in the cue synopsis.

Prepare Equipment by checking all adjustments for free movement and positive locking. Clean and flash-out all spotlights. Don't forget accessories. Visual check of all cables for insulation breaks and loose clamping at plugs and sockets.

IN THE THEATRE

Rig as plan, paying particular attention to mechanical safety. Fit barndoors, masks, gobos, colours etc. Flash-out, checking plan numbers correspond to dimmerboard numbers.

Focus each light to predetermined position on stage, checking actor lights by moving around all positions which are intended to be lit by a particular spotlight. Check for required beam edge quality – normally soft and, as far as possible, 'lost' on set.

Plot each cue state by selecting appropriate lights and balancing their intensities on the dimmers to give the required lighting pictures. Use a 'body' to walk the actor positions and do not hurry the writing down of the levels.

Rehearse any difficult cues before the dress rehearsals. After these rehearsals, some rebalancing and refocusing is almost inevitable.

Perform with maximum concentration. If anything goes wrong, correct very very slowly and smoothly. If nervous actors head for black spots, try to help them – but slowly and smoothly.

Get-out carefully after the final performance. Put away all equipment as you would hope to find it next time.

Conduct Post Mortem with the rest of the production team to compare hopes with reality, so that next time . . .

THE CONTRIBUTION OF LIGHTING

The overriding priority just has to be **visibility.** Having decided what we want the audience to see, we must ensure that they see clearly and without strain – if in any doubt, up half a point in brightness!
But this can be a **selective visibility** concentrating the audience attention on chosen parts of the stage action.
The lighting can contribute to the **atmosphere** of a scene. In a naturalistic play this can mean a light quality that conveys the season of the year, the time of the day and the state of the weather. Or it can be emotional messages from colour tonings of cool sadness to warm happiness. Or perhaps the menace of contrasts between light and shade.

Light should always **enhance** the look of a production, helping to reveal the form, colour and texture of all components of the stage picture whether scenic elements or actors.
And Lighting's contribution can be totally **fluid** – particularly in terms of *selectivity* and *atmosphere* – whether by sudden dramatic contrasts or subtle subconscious shifts of emphasis.

LIGHTING THE ACTOR

Perhaps the most fundamental problem in lighting an actor is that the most selective light (and the one throwing minimum shadow behind the actor) is the one that shines vertically down. Yet this does not reach the actor's eyes and teeth (Fig 1).
To enable the actor's face to be seen, light must come from a position to the front of the actor (Fig 2).
So when considering the size and shape of stage areas to be lit, it is important to remember that we are referring to light at the actor's face level – and that this does not normally correspond with the lit area of stage floor.

Thus an actor may stand within a pool of light on the stage floor yet his face will miss the light (Fig 3).
Or indeed the actor may stand outside that pool of light while his face is fully lit (Fig 4).
So we must think in section, as well as in plan!

Fig 1

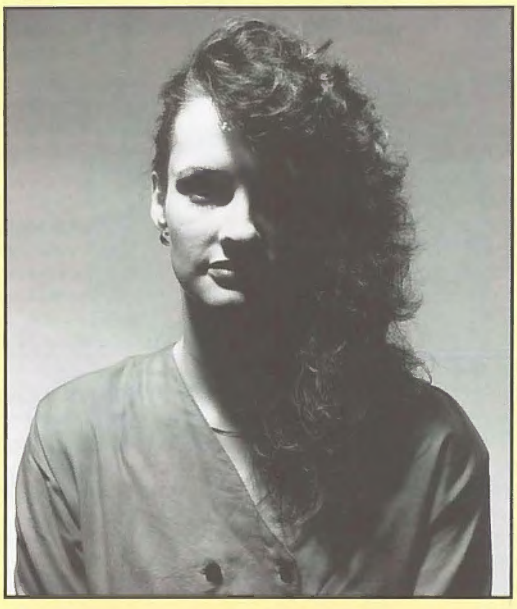


Fig 2

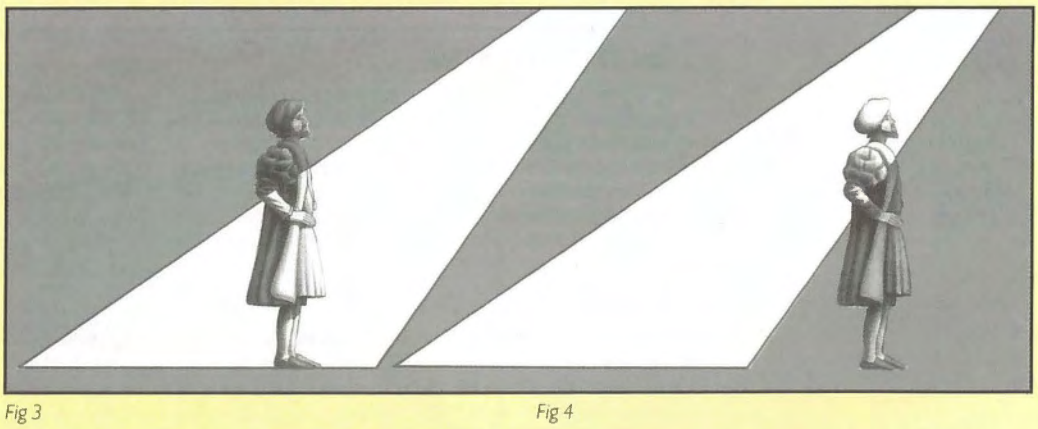


Fig 3

Fig 4

SOME PITFALLS

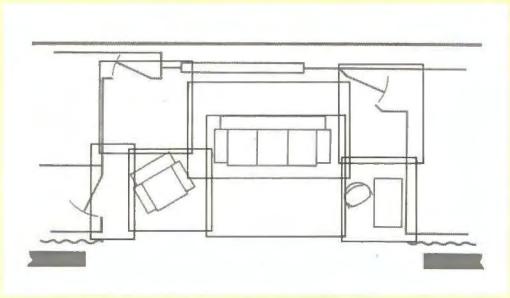
Concentrating on a few moments of special effects at the expense of general lighting for the whole evening . . . dividing the stage into too many tightly defined areas for the amount of available equipment . . . failing to overlap areas, upstage and downstage in addition to left and right . . . choosing colours, especially in a musical, that do not give a sufficiently contrasty palette . . . placing too much faith in logic and realism rather than theatricality . . . focusing with beam edges that are too hard and therefore too noticeable . . . being too ambitious for the time available to rig, focus, plot and rehearse.

DIVIDING THE STAGE

DIVIDING BY AREA

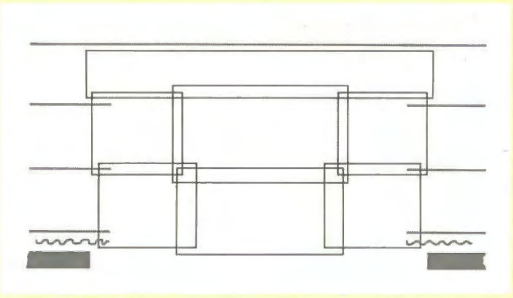
Once decisions have been made about the kind of contribution that we expect lighting to make to the production that we are planning – and these contributions have been put into some sort of order of priority – we need to break down the stage area into the segments over which we require independent selective control. The required breakdown may be symmetrical, in which case the stage plan will be divided into something that resembles a series of areas of different sizes corresponding to the placing of the action. Of course it could well be that there is no need for division into what it is useful to call *production areas:* all the stage may be in use all the time. In this case a simple division into centre and sides will allow balancing for maximum 'enhancement' of the look of the scene.

Note: Adjoining areas overlap – both side to side and back to front. And remember to remember that these are areas where an actor's head is to be lit – they are unlikely to be the same as the light patterns on the floor.



AREA PLANNING FOR A PLAY

In this naturalistic play – possibly but not necessarily in a box set – the areas are determined to a considerable extent by the positions of furniture and doors. And the lighting is expected to make some logic in terms of practical light fittings (table lamps, wall brackets, etc) and the natural sunshine and moonshine coming through windows (including those in the audience's 'fourth wall'). In this particular example, we have a play where it is desirable to focus attention at various times on the sofa, the armchair, the table (with that essential tool of modern drama, a telephone) and the doors. These doors are tremendously important in any drama: some of the key appearances and speeches are made there. But for a long intimate scene on the sofa, it is useful to concentrate on that sofa and loose peripheral areas like the doors. Consider the seven areas shown here in terms of possible combinations: the *area palette* gives the director a wide range of selectivity of audience vision – whether a subconscious fluidity (slow cues that are not obvious) or an area selection obviously linked to the switching of the practical lamps.



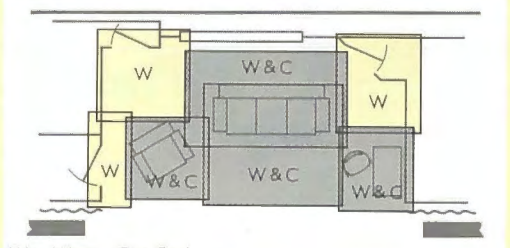
AREA PLANNING FOR A MUSICAL

Musicals tend to have many scenes and many selective and atmospheric light changes within these scenes. Therefore, unless there are many – very many – lights available, the breakdown into areas has to be very general. In this example the breakdown is symmetrical because, as in so many musical productions, the settings consist of a symmetrical series of wings leading to a backcloth, possibly a skycloth. With the addition of cloths and scenic pieces, the method of staging gives a flexible masked acting area with the possibility of sufficient open space for dancing and lots of entrances for a large chorus to get on and off quickly. In most musicals the big moments are staged in the downstage areas: to help both musical balance and the 'putting across' of numbers to the audience. For the same reasons, much of the essential action takes place centre stage. The most common selective lighting cue is to 'concentrate centre', usually downstage centre, by 'losing the edges'. This suggests a minimum of three areas across the stage – certainly at the front of the stage, and probably also midstage. However, it is often quite practical to consider the whole width of the rear of the stage as one area. This provides a seven area combination that offers an *area palette* giving the director considerable selectivity with the possibility of progressive tightening from back to front and from sides to middle.

DIVIDING BY COLOUR

Does our chosen lighting style for the production include a fluid use of colour? After establishing a breakdown of the stage into areas, the next step is to consider whether any areas need to have controllable variations in colour. Or whether some of the adjoining areas could be grouped together for more general variations from a less selective colour wash.

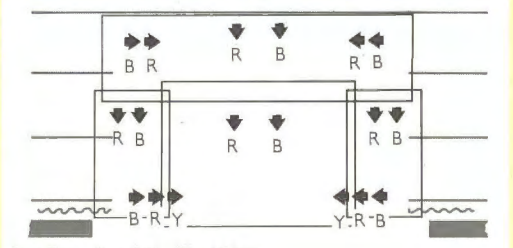
Note: When working on plans it is useful to define the selected areas and indicate basic colour range by initials such as W, C, N for warm, cool and neutral: or possibly R, O, Y, G, B, A, for red, orange, yellow, green, blue amber in the case of a musical. (To help simplify our plans here, the neutral lights have been coded N. Actual colour filter selection is best postponed until after the position and type of light has been decided).



W = Warm C = Cool

COLOUR PLANNING FOR A PLAY

In a naturalistic play, colour is often used to create a fluid atmosphere that can shift from warm cheerfulness to cool sadness. If an area is lit with some lights in warm tones and some in cools, the dimmers of the control board can be used to achieve a whole series of options from an extreme of the warm colour alone through the neutrality of both together, to the other extreme of cool colour alone. Which (if any) of the areas need to have this kind of 'double cover' of colour tones? In this example, discussion with the director has established that such a *colour palette* seems necessary around the central areas and the desk, whereas the upstage corners and downstage right can manage on a warm tint only – although perhaps one that is a little closer to a compromise neutral than the warms in the mixable areas. In such a naturalistic production the actual colour tints chosen are likely to be quite subtle.



B = Blue R = Red Y = Yellow

COLOUR PLANNING FOR A MUSICAL

The dialogue scenes of a musical require the subtle colour tones that are appropriate for a naturalistic play. However, the musical numbers, particularly when solo singers can be given isolating visibility from tightly focused follow spots, usually call for strongly atmospheric colouring. And many dance sequences, where the body is relatively more expressive than the face, respond well to positive use of quite strong colour. This example shows a much used technique where the colour is applied in rather broader washes than the areas selected for scene location. The front half of the stage is divided into three areas, each lit from above in rather saturated colours: a hot and cold rather than a warm and cool. The rear half is treated as one area, also with a hot and cold from above. From the side comes further washes, probably in slightly less saturated hues. These may divide the stage into bands: in this case an upstage band and a downstage band, possibly splitting the stage into left and right but just as likely covering the full width. With relatively neutral colour from the front, saturated colours from above and intermediate colours from the side, we have a *colour palette* that offers considerable scope.

SPECIALS

The major proportion of a stage lighting rig is focused to form a palette of areas and colours whose various combinations will provide the desired fluidity of selectivity and atmosphere. However, there are certain lights whose function is so 'special' that they cannot make a significant contribution when mixing the basic palette.

FOR THE ACTOR

Specials usually consist of spotlights set so tightly that the spaces they light cannot be considered as areas. They are often for moments when an actor has to be picked out (perhaps only head and shoulders) on an otherwise blacked-out stage. They need to be listed in a priority order for close scrutiny and reduction to essentials.

FOR SPECIAL EFFECTS

There may be a request for equipment to produce clouds, flames, water, lightning, etc. When listing it is always prudent to remember that such effects can draw attention away from the actor rather than positively support a performance. And if the effect is essential, then the effect of light reflected from fire or water is often more telling than a pictorial representation of the actual fire or water.

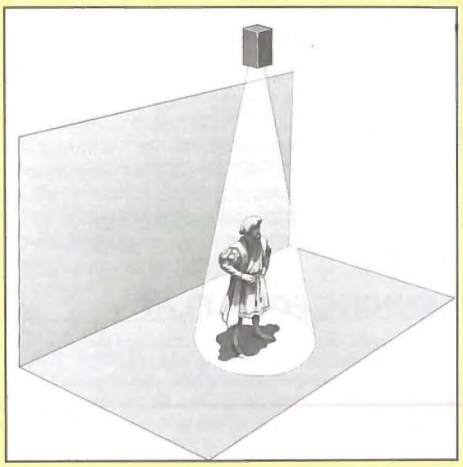
FOR THE SCENERY

The proportion of the rig focused on the scenery will be very small. With the exception of skys and back or front cloths, scenery normally gets sufficient general wash from the reflected light bouncing off the stage floor from the lights that have been set for the actors. Indeed, as discussed in the following pages, many of the basic problems of lighting design arise from difficulties in stopping actor light hitting directly on the scenery. Successful lighting of scenery depends on augmenting the diffuse reflected general light by selective highlighting of chosen scenic elements, or parts of these elements. This can vary from bold gashes to soft emphasis. Again, to be listed and reduced to essentials after a debate based on priorities and available resources.

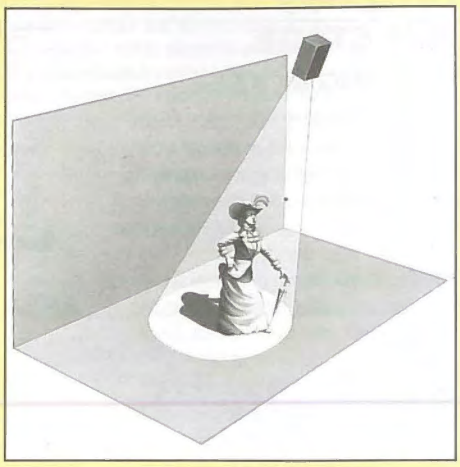
CHOOSING LIGHTING POSITIONS

LIGHTING FROM THE FRONT

Consider the effect of a light starting as a vertical downlight on an actor, then moving in a frontal plane until its beam becomes horizontal and then carries on to light from below. How visible will be the actor's face, particularly eyes and teeth? To what extent will face and body be modelled or flattened? What area of stage will be selected and what will be the size and direction of shadows cast on floor and scenery?



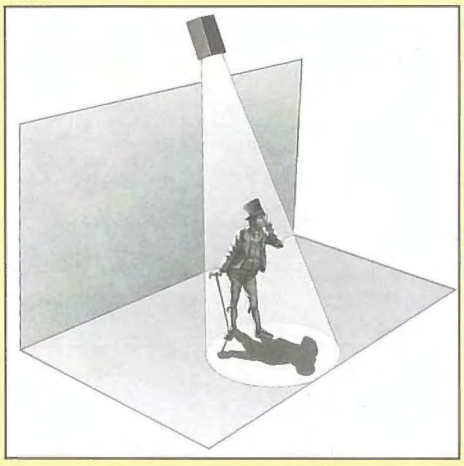
A vertical beam is the most selective light possible. The lit area of stage, and the shadow cast upon it, need be no wider than the widest part of the actor. However, the actor's eyes will be black pools and a highlighted nose will shade the mouth.



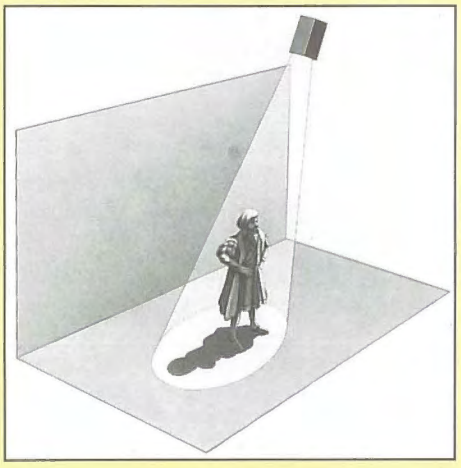
If the light comes from a little forward of the actor, it will start to reach the eyes and mouth (provided that she keeps her chin up and is not defeated by a hat brim!). However, the lit area, and shadow cast, starts to extend upstage from the actor – ie the light is slightly less selective.

LIGHTING FROM THE BACK AND SIDE

Now consider a light from behind. Then a light or lights from a series of side angles (ie lights at right angles to those considered above). Once again the criteria is visibility, modelling, selectivity and shadows.



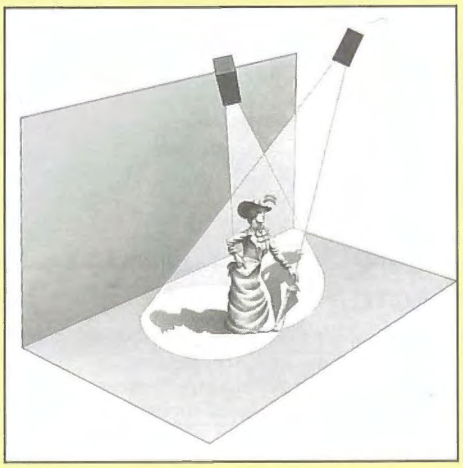
A light source behind the actor does not illuminate the face, but it helps to give depth to the stage by separating the action from the scenery through creating a haze and highlighting head and shoulders. The shadow of the actor is cast forward, helping the selection of areas. Since the light does not fall on the face, strong colours can be used.



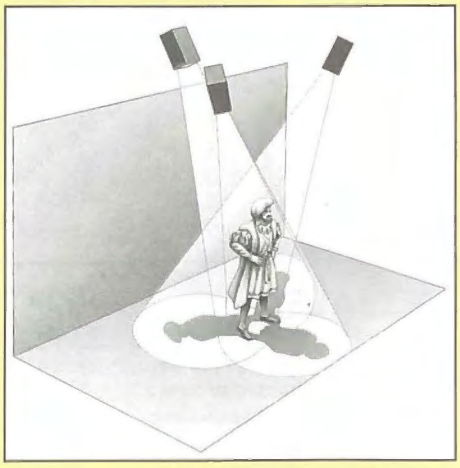
If the light comes from a little to one side of the actor, it will start to reach the eyes and mouth on that side. The area lit, and the shadows cast, will extend along the stage floor on the other side.

FINDING THE COMPROMISE

We normally seek to light an actor for maximum visibility and maximum modelling, with minimum shadow. Additionally, in many productions, we need to select as tight an area as possible. Which combination of angles offers the optimum compromise?

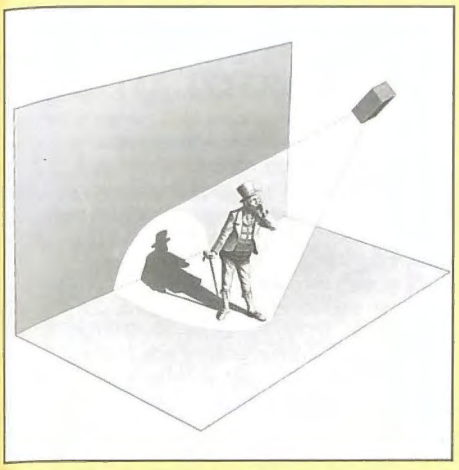


The basic compromise that has long been the standard approach is a pair of beams crossing on to the actor (one for each side of the face) from positions which are both forward and to the side of the actor. The suggested angle is often around 45 degrees in both directions – ie midway between vertical and horizontal; and midway between front and side. However, to restrict the shadows cast and to give a better 'join', the lights are often positioned closer to the vertical and to the centre.

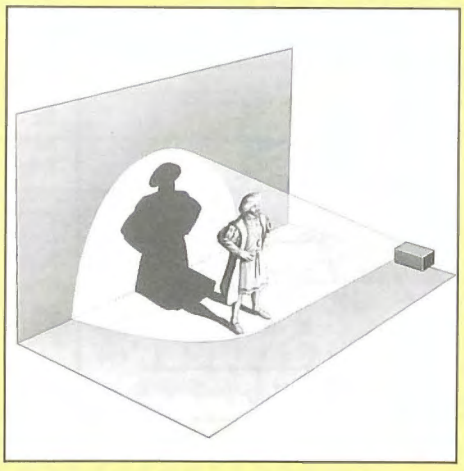


A backlight added to the basic crossed pair brings depth to the scene and generally enhances the 'look' of the actor. The backlight can be used for strong atmospheric colour if required, while the crossed pair maintain a more natural tint on the actor's skin tones. *Note:* The actor is now lit by three beams with a 120° separation between them.

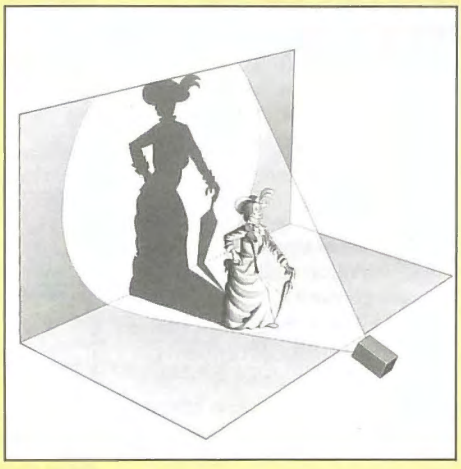
FOR STANDS SEE PAGES 82 & 83



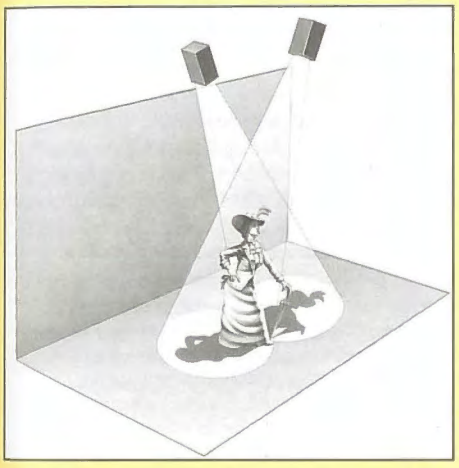
As the lighting comes increasingly from the front, the actor's eyes and teeth receive more light. But the area lit extends further and further upstage, reducing the selectivity and increasing the likelihood of the actor's shadow hitting the scenery.



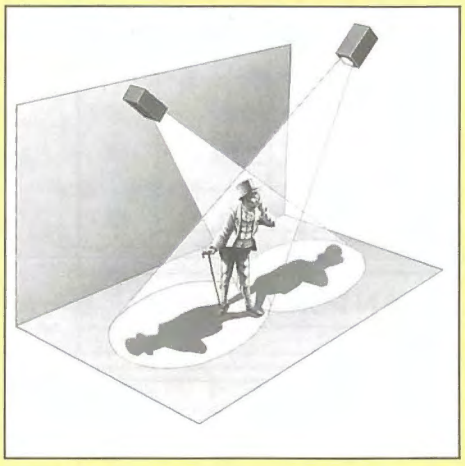
As the light becomes more and more frontal, the actor's features become flattened (and so also does three-dimensional scenery). The lit area and the actor shadows increase until, when the light is horizontal, there is a lit corridor for the entire depth of the stage, and the actor shadows become actor length.



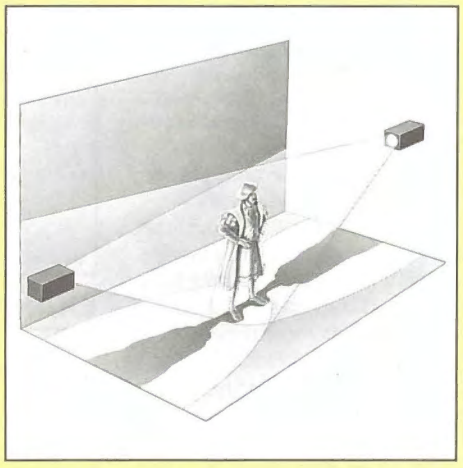
Light from below projects an actor shadow that looms above the actor, rising and falling as she moves towards and away from the light source. When this is the only lighting angle, the effect on the face is not at all natural. But a little from below, usually just reflected light, can help to soften the harshness of light from above.



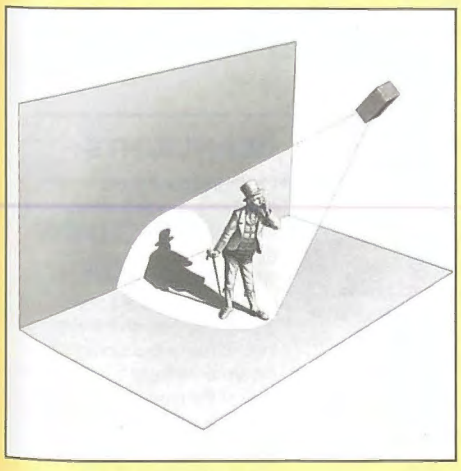
Add a second light source from the other side, and both sides of the face will receive light. However, there is now a second shadow, and the selected area of stage floor extends to both sides of the actor.



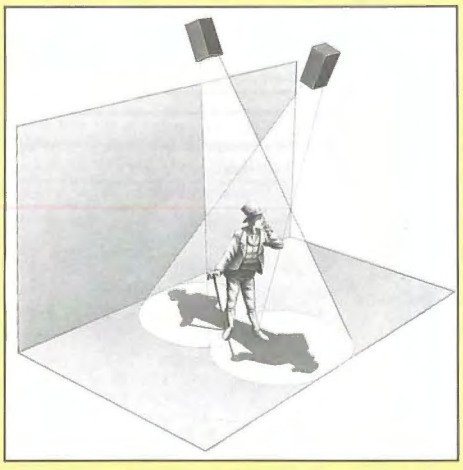
As the side lighting comes from an increasingly lower angle, the shadows will lengthen to both sides of the actor and a larger corridor will be selected across the stage. As the light hits the face from a lower angle, it will light more into the eyes and teeth, although there will still be a tendency towards a central dark line where the beams meet down the centre of the face.



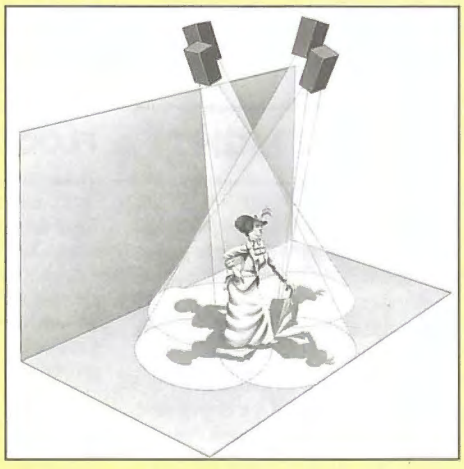
As the angle lowers, side light has an increasingly modelling effect on the actor's face and body. This is particularly important in dance. When the light becomes horizontal there will be a lighting corridor across the whole stage. By focusing just clear of the floor, it is possible to lose shadows into the wings, and the light will only be apparent when an actor stands in it.



The problem with 'crossed pair' lighting (with or without a backlight) is the extent of the spread of light on floor and scenery beyond the area where the actor's head is lit (remember that head is usually about five feet *above* the floor). Although a single beam can be flat, it can also be quite tight.



This flatness can be enhanced quite considerably by adding a backlight – and the selectivity is still a tightly controlled upstage/downstage corridor without side spillage.

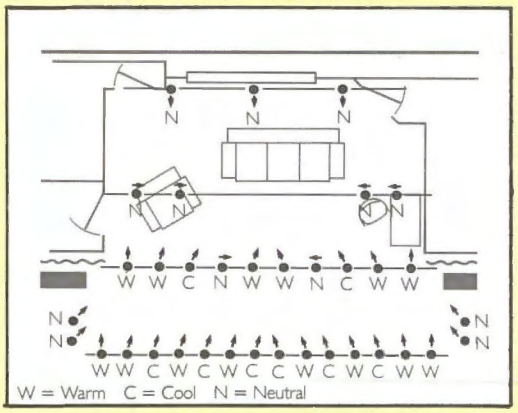


For modelling, side lights can be added and, although they will spread the lit area, they can be at quite steep angles since they do not need to make a major contribution to visibility. *Note:* T
four beams with a 90° separation between them.

THE DECISION PROCESS

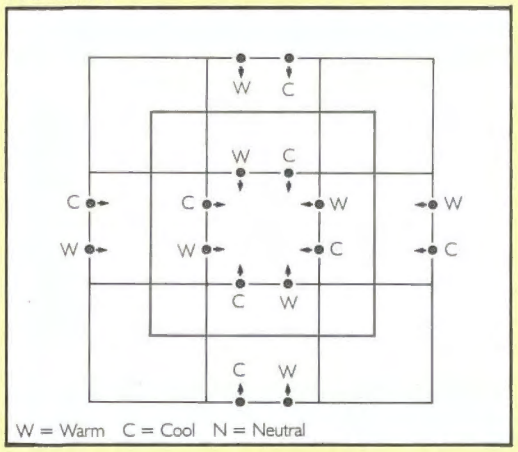
So how does one decide where to put the spotlights? On many stages and in many auditoria there is not much choice: but, to make the best use of the positions available, it is necessary to start from an ideal and compromise that ideal to fit reality. By WHERE we mean *where to put the light* and *where to point it.* Traditional advice involves a lot of crossing of light beams – partly to help model/sculpture the actor by introducing a partially side-light angle and partly because lighting diagonally across a stage provides a bigger spread of light from each lamp: an important bonus when equipment is in short supply. But crossing the beams opens out the area lit and can cast excessive shadows on side wall or masking. And so, with spotlights becoming increasingly versatile as to beam width, there is every reason to consider using the traditionally discredited method of lighting the actor with light coming straight in from the front. Of course if this is the only light, yes it will be flat. (And if the available positions are so low that an actor shadow will be thrown on to the sky, then better to come diagonally – priorities again!) But with the addition of some backlight (even if it is nearly vertical) and some side light, the front-lit actors will come alive and the areas/shadows brought more under control. There need not be precise side lighting for every area: it can often be quite general since it is frequently more important in the big wide areas than in smaller tighter areas (more important, that is, in ***priority*** terms!).
In the examples shown here, the traditional crossing method has been used for the play, while the actors in the musical are lit 'flat frontal'. But it could be vice versa. Whichever way, ***the next stage in the planning is to establish where the lights go and where they point.***

EXAMPLE PLAN FOR A PLAY



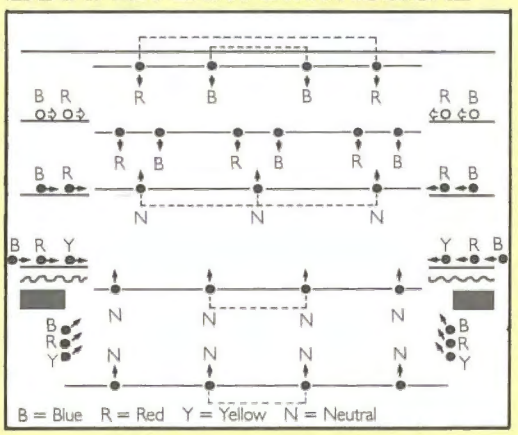
For each area of our play we need two lights: one for each side of the actors' faces. When an area requires a full colour control of cool and warm, the number will double to four spots – a crossed pair in warm and a pair in cool. A spot bar immediately behind the proscenium arch will give a suitable angle for lighting the upstage areas, but for the downstage areas a position in the auditorium is necessary. Red and blue have been used to indicate warm and cool filters in the spots. Green indicates more neutral washes which have been added from back and sides. Not enough equipment? Well, do we *really* need all these areas? And so many of them with both warm and cool? (Back to priorities?) Or rather than a pair, we could use a single straight in – but if so, we must make it really straight in because a single crossing beam does not do much for the other side of the face!

EXAMPLE PLAN FOR 'IN THE ROUND'



For staging in the round, light needs to come from all sides. And it should be evenly balanced to avoid favouring one segment of audience to an extent that is not really permissible in a staging form so democratic as theatre-in-the-round. To avoid hitting into audience eyes, light has to come from both within the acting area and from outside it. Angles can be closer to the vertical than in other forms of staging because the audience is closer to the actors and thus visibility is 'easier'.

EXAMPLE PLAN FOR A MUSICAL



In this musical the actors' visibility light is provided by spots in a neutral colour hitting straight in. The front areas are covered from the auditorium, the midstage areas from a bar just inside the proscenium, and the upstage areas from a midstage bar. If the stage is very wide, two or more lamps may be required for each area as indicated. Strong colour comes from near vertical backlights and medium colour from the wings (on stands, booms or ladder-frames to be discussed under 'rigging').

Note: For clarity, these plans only include actor lights. The play would require light outside the window and on the door backings, while the musical is likely to need a colour mix for the backcloth and possibly specials for elements of scenery.

TYPES OF LIGHT

Having chosen where the lighting instruments are to be placed, how do we choose which type to use in each position? Choice is complicated by lighting equipment being so robust that, in addition to the range in today's catalogue, many earlier models are still in use. However, lighting instruments group into families and it is convenient to consider our requirements in terms of what each family offers in terms of beam size, beam shape, and beam quality.

FLOODS

The beam size, shape and quality emitted by a flood is fixed: there are no adjusting knobs. The light is therefore suitable for lighting skys and cloths. It is not selective enough for lighting actors. *Coda* units may be single or grouped in 3s or 4s for colour mixing: they have a reflector which is specially designed to ensure an even wash over a large area from a short throw.

SOFT SPOTS

Prism Convex (PC) spots allow control of the beam size, and the beam may be roughly shaped by a rotatable barndoor. The quality is even and soft-edged, with less light-spill outside the main beam than in the case of a fresnel. Fresnels have a very soft edge. The beam angle is adjustable and its shape roughly containable by a 4-leaf rotatable barndoor. The extent of the spill outside the main beam makes them unsuitable for longer throws, particularly from the auditorium.

PROFILE SPOTS

Profile spots give precise control of the beam. Shapes in all sizes can be produced by an iris diaphragm (for round edges) and shutters (for hard edges). For more complex shapes, special masks can be cut. Edge quality can be adjusted from very soft to very hard by moving the lens, while the quality of the whole beam can be textured by a metal pattern plate called a *gobo*. The number in the profile's name indicates the beam angle.
Whereas standard profile spots have a fixed beam angle which is narrowed by shuttering, *variable beam profiles* use a pair of lenses whose differential movement gives a wide range of beam angles and edge qualities. The shutters are then only required for shaping.
Adjustments are faster and more efficient use is made of the lamp's output. The number in a variable profile's name indicates the range of available angles.

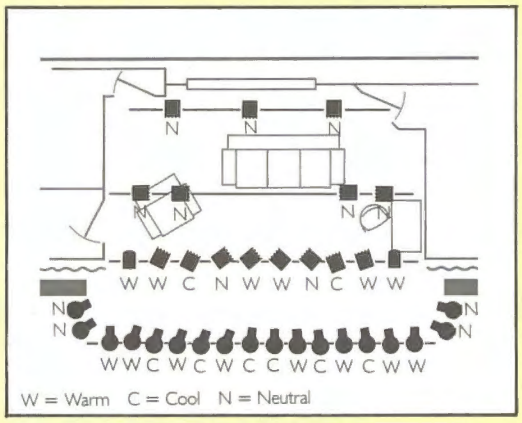
BEAMLIGHTS

Most lighting instruments produce a conical beam so that the spread widens as the throw increases. Beamlights use a parabolic reflector (and no lens) to produce a near parallel beam which is more intense than a lens spotlight of the same wattage.
One of the most important developments of the past decade. The optics are within the glass envelope of the lamp. Various angles of a squashed near-parallel beam are available. The intensity produces a depth-enhancing haze in the air. So intense that effective with deep colours. The basis of all rock lighting.

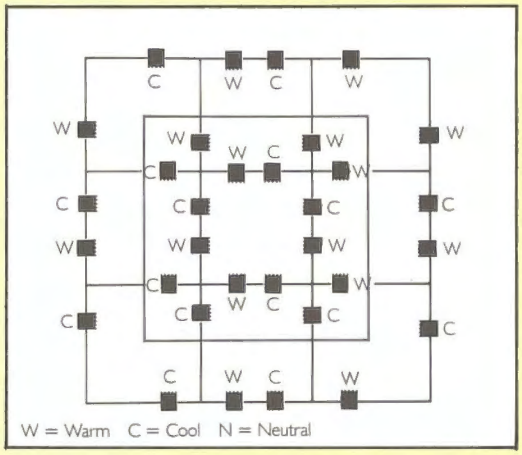
FOR SPOTLIGHTS SEE PAGES 34-41

DECIDING WHICH LIGHTS TO USE

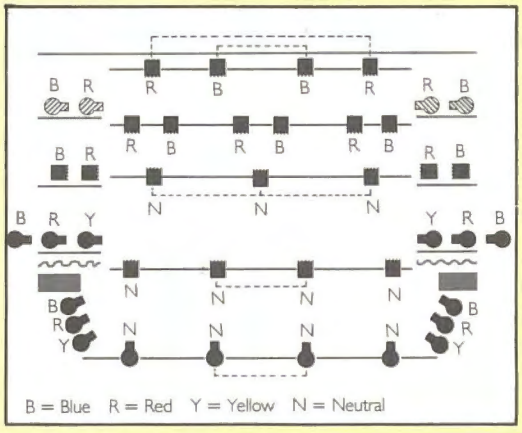
Deciding which instruments to use obviously depends to a large extent on what is available – meaning another exercise in listing priorities. For 'foh' (front of house) throws of any distance in the auditorium, profiles are essential, both to avoid undesirable lighting up of the auditorium from scatter light, and to allow sufficiently precise control of the beam to prevent spillage on to the proscenium. However, in a small hall there is a lot of merit in considering fresnels or PCs (well barndoored) at close range when a lot of spread is possible from a few lamps. For onstage use, fresnels and PCs come into their own with fast-to-set soft edges – profiles are the most versatile instruments but they inevitably take longer to focus. For backlight, fresnels and beamlights are favourite, while floods are to be thought of only for wide expanses of scenery. (Use for actor light only in situations of extreme desperation). For theatre-in-the-round, barndoored fresnels give the required smoothness and spread. Existing installations in most theatres and halls are likely to be based on fresnels and profiles: anyone buying new equipment should look seriously at including a goodly proportion of the new generation PCs giving smooth soft-edge beams without stray scatter light. And at the versatility of the variable beam profiles.



This plan shows instruments being allocated to our play in a very orthodox way: profiles for the front-of-house and fresnels for onstage. If a couple of PCs were available, they would be a useful alternative on the ends of the stage spot bar: this is a position where any scatter light shows up badly on the side walls of the set. Whether 500 or 1000W units are required will depend mainly on length of throw, perhaps with the changeover around 6 to 8 metres. However, it is important always to remember that the actual level of light intensity is not so important as the BALANCE.

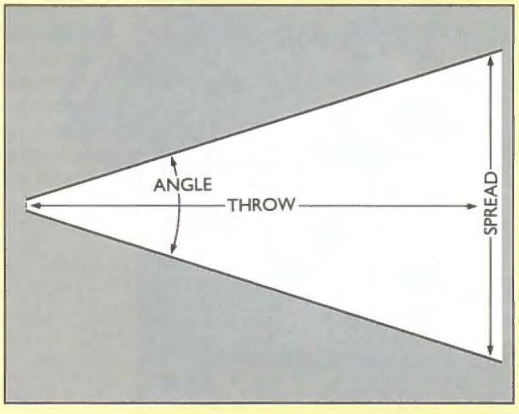


Fresnels have been allocated everywhere because they have a good smooth spread (profile edges can be very difficult in small theatres in the round). Every spot must have a barndoor to contain spill from the audience eyes. Each become a pair of spots since this is the only way that it is possible to light fully to the sides of the acting area. Too many spots? Then perhaps just one cover in a neutral shade (thereby halving the number on the plan) and utilising a couple of pairs of straight downlighters to add colour toning in warm or cool.



The actor face lights are profiles from the front and fresnels onstage, with the second bar being less powerful units – face light is rarely important upstage in a musical. The backlights are fresnels, although parcans would be nice if available. For the sidelighting, profiles have been used downstage to contain the light in a tight corridor across the front – often advisable when frontcloths or running tabs are in use. Midstage sidelighting is fresnels for a good spread, while the optional upstage sidelight is again profiles to keep the light clear of the skycloth.

WHICH BEAM ANGLE

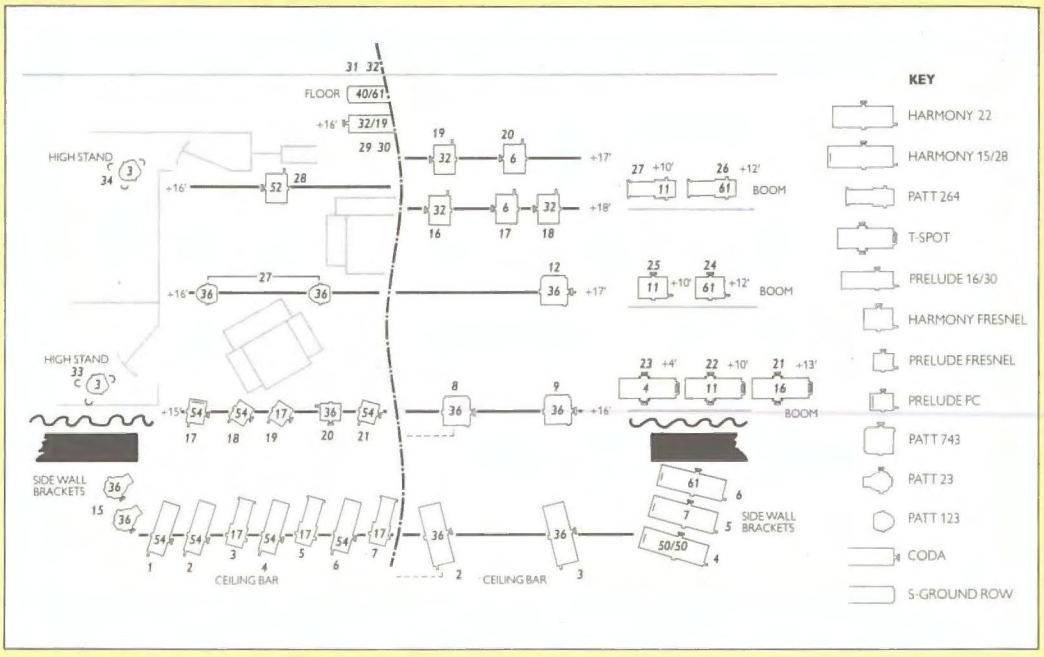


To find the required beam angle, the simplest way is to draw at a suitable scale like ½" or ¼" to the foot (25 or 50 to 1 if you are metricated) the throw and required spread distances, then measure the angle with a protractor.

THE RIG PLAN

THE PLAN is the kernel of any lighting design. It shows, at minimum:

- The POSITION of each light.
- The TYPE of light in each position.
- Any ACCESSORIES, such as barndoors or gobo, required by any particular light.
- The DIMMER which will control each light.



The plan should be drawn to scale (½" to 1' or 1:25). This helps accurate indication of light positions. And if scale symbols are used for these lights, there is a check on space problems: if it can be drawn on the plan, there will be room for it on the stage. Any shapes may be used to indicate lights, but plans are more easily read if the symbol resembles the outline shape of the light. Either way, the plan should certainly include a key showing the type of lighting instrument represented by each symbol.

Colour and dimmer are indicated by number: the usual convention is to write the colour number inside the symbol and the dimmer number alongside the symbol.

Lights fixed to horizontal bars are easy to show in plan: the bar can be drawn in the position that it will occupy over the stage and its height indicated by a note (such as + 14') written at the end of the bar. Lights fixed to vertical bars, or stacked on a series of brackets, are more difficult to draw – they must be indicated diagrammatically. Foh lights in the auditorium are usually drawn much closer to the stage than their scaled real distance which would make the plan inconveniently large. The easiest method is to work on tracing paper over a ground plan of the scenery and stage.

A good procedure is:

(1) Establish all lighting positions with **X**s
(2) Convert these **X**s to symbols of available (and/or acquirable) lighting instrument types, drawing them pointing in the approximate direction of proposed light travel.
(3) Write colour numbers inside symbols.
(4) Add dimmer numbers alongside symbols.
(5) Trace through key features of the set and stage – it is usually possible to trace through (in spaces clear of lighting drawing) enough to relate the positions of lights to the geography of the setting and stage.

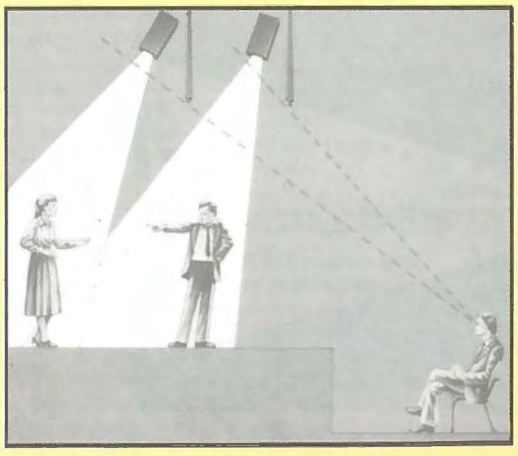
This will bring the plan to a point where it can be used to prepare and rig the equipment. The lighting designer's own copy will grow many extra markings to indicate precisely where the lights are to be pointed – markings so detailed that they would only confuse if included on all copies of the plan.

LISTS

From the plan, lists are prepared of the required number of:

TYPES OF LIGHT
LENGTHS OF CABLE
ACCESSORIES
COLOUR FILTERS

SECTION DRAWINGS



Will there be borders to mask the lights (and other things) hanging above the stage? If so, draw a section to check that all the light beams will be able to reach all desired parts of the actors and the scenery. Usually (but not always) the heights of the borders and lighting bars can be adjusted. Only a section will determine what these relative heights should be, and only a section will determine how effective the masking arrangements will be for an audience eye in the front row.

FOR STRAND STAGE LUMINAIRE STENCIL SEE PAGE 33

FOCUSING

Focusing is probably the most important part of the whole lighting operation. Not even the most sophisticated marvel of a microprocessor control desk can fill in that dark spot where the lights have not been properly overlapped. Nor can a hard edge be softened or a disturbing spill on to a border be shuttered off. Focusing involves tricky ladder work so that there is every incentive to get it right first time – although, inevitably, it will be necessary to get at the odd spotlight between rehearsals for a little fine adjustment.

FOCUSING IN COMFORT

If you stand with your back to the light that you are focusing, (1) You will avoid being blinded (2) You will be able to see what the actor's light is doing to the scenery.

No clear shadow of head, therefore head *is not lit.*

Clear shadow of head, therefore head *is lit.*

If the lighting designer is shorter than the actor, make an allowance – check by raising hand.

WHAT CAN WE ADJUST?

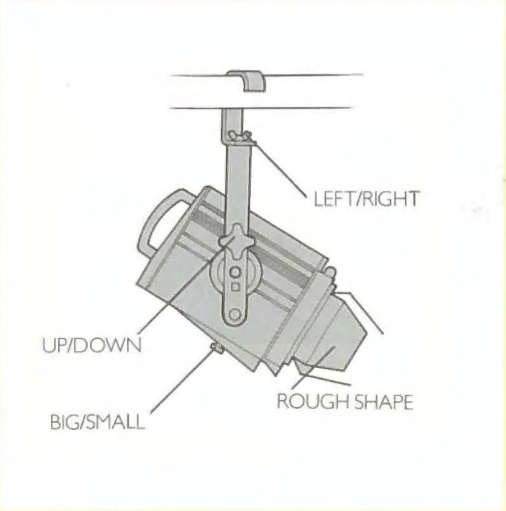
ON ALL LIGHTS
Left/Right & Up/Down

ON SOFT SPOTS
Bigger/Smaller
+ *with optional Barndoor*
Rough shaping (& control of spill)

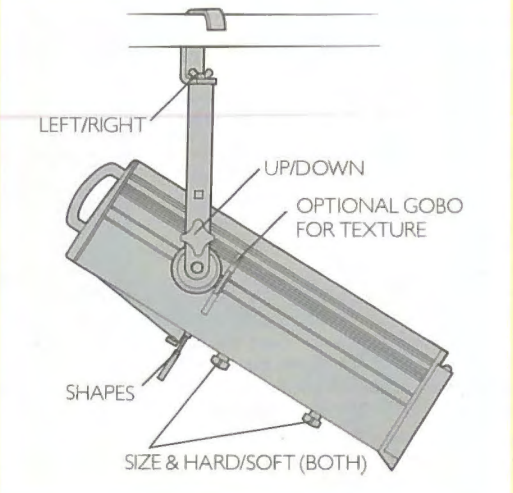
ON PROFILE SPOTS
Round size by optional Iris
Shaped size by Shutters
Texture by optional Gobo
Beam edge quality by Lens
+ *on Variable Beam Profile Spots*
Size and edge quality by differential movement of two Lenses
Shape by Shutters

The most difficult types of light are the basic Profile Spots since there is an interaction between shutters (or iris) and lens movement. Although adjusting the lens is principally a means of making the edge of the beam harder or softer, it will also change the size. Therefore it is usually necessary to adjust shutters and lens alternately to get the desired combination of size and edge quality.
Most profiles have an adjustment whereby the light can be adjusted so that it is either smooth across the whole spread of the beam, or 'peaked' to be brighter in the middle with the amount of light falling off towards the edge. For most purposes it is easier to light with an even brightness across the beam and so it is recommended that anyone beginning to work with light should use an even beam until through experience they discover a need for a 'peaky' beam.

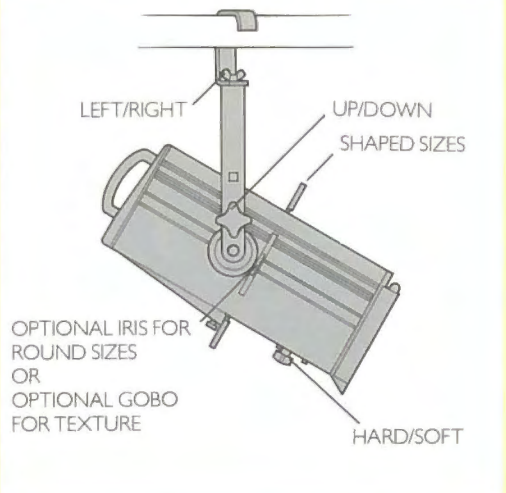
SOFT SPOT



VARIABLE ANGLE PROFILE SPOT



FIXED ANGLE PROFILE SPOT



THE CONTROL BOARD

By means of the 'board', the lighting designer can control:

- the **composition** of the stage picture – by selecting the appropriate combinations of individual lights.
- the **balance** of this picture – by selecting the level of brightness of each of these lights.
- the **fluidity** by which one picture is replaced by another.

What was once called a switchboard, or more properly a dimmerboard, is now formally called a Lighting Control. Which is fine so long as we take care to remember that our 'Lighting Control' only controls which lights we use and how bright they are. 'Lighting Controls' do not control where we put the lights, which lights we put there and where we point them. Most of us however still talk about our lighting control as 'the board' whether we use our knees, our fingers or a microprocessor to work it.

DIMMING AND DISTRIBUTION

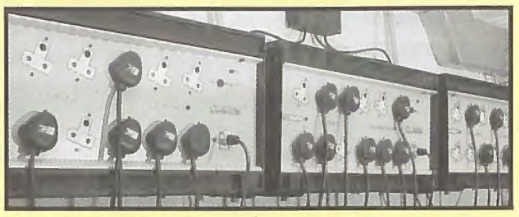
Modern boards are two-part:

- the ***desks*** whose controls we push, slide or turn to produce the desired changes in the intensity of the lights
  and
- the ***dimmers*** which interpret the instructions from the controls so that the appropriate amount of electricity is passed to each light.

Fortunately the connection between desk and dimmers is slender cabling; from a maximum of one 8-core cable for each group of six dimmers in portable manual systems to a minimum of the single twin-core screened cable that can transmit all the required data between a memory system and its dimmers. This allows the desk to be positioned wherever it is convenient for the operator to have a good view of the stage. The dimmers can then be placed in their most convenient position to distribute 'controlled' electricity from the mains supply to the individual lights. This is normally a backstage position which is within the manufacturer's recommended extremes of temperature and:

- adjacent to a suitable mains supply switch-fuse.
- clear of actor and scenery movements.
- accessible for fuse changes.

For permanent installations of any size, the dimmers are normally mounted in racks with permanent wiring to numbered sockets suitably located around the stage and auditorium. For temporary installations (and some of the smaller fixed ones) portable dimmer packs are used, each pack having six dimmers with a pair of output sockets to each dimmer. Temporary cables can then be run from those socket outlets to the lights. It is essential that such an arrangement is kept tidy, with plugs clearly labelled and tape used to harness together cables which are proceeding in the same direction. Even the smallest stage lighting installation uses what is, by domestic standards, a lot of electricity. The function of dimmers (secondary to their artistic function) as a power distribution system must not be underestimated. Safety and efficiency go hand-in-hand.



Tempus Dimmer Rack

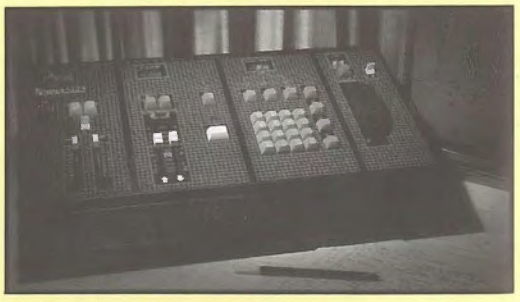
Permus Dimmer Rack

PRESETTING

The operation of today's boards is based on presetting. The intensity levels of the lights which compose the next picture are preset in preparation for the change. On manual systems the levels are filed as written numbers on a paper plot from which the individual dimmer levers can be set by hand at each performance. On memory systems, the data is filed in an electronic store from which it can be recalled instantly by fingering a simple control. On Cue, the change is effected by operating masters which replace the existing lighting state with the new one. Operation of these masters is so simple that the board operator can devote total attention to the timing of the change.

MANUAL PRESETTING

While manual presetting boards offer facilities undreamed of in the not-so-far-distant days of simple directly-operated resistance dimmers, their operation still requires a lot of work that is both time-consuming and error-prone. Although presetting allows cues to be performed smoothly and with accurate sensitive timing, the individual dimmer levels for each cue must still be written down at rehearsal – and re-set from the written plot for each cue at each performance. However, the rapid development of micro-processing techniques is bringing instant electronic memorising of plots within the financial resources of smaller and smaller installations. In particular, the M24 extension of the Tempus range means that memory is no longer just a dream for many of those who light the amateur stage. This is not the place to go into the details of operation. Suffice it to say that once a cue state has been established by a rapid selection and balancing of lights via a keyboard of familiar pocket calculator format (or by standard preset levers if you prefer), the levels can be instantly filed . . . and just as instantly recalled . . . and just as instantly adjusted if necessary. The time-wasting drudgery is removed but that essence of any live performance, the timing of a cue's progress, is completely under the operator's control.



M24 Control Desk

Abridged from 'Lighting the Amateur Stage' parts 1 & 2 by Francis Reid, published by Strand Lighting.

Francis Reid is also author of 'The Stage Lighting Handbook', 'The Staging Handbook', 'Theatre Administration' and 'Designing for the Theatre'. For further reading also see 'Stage Lighting' by Richard Pilbrow and 'The Art of Stage Lighting' by Frederick Bentham.

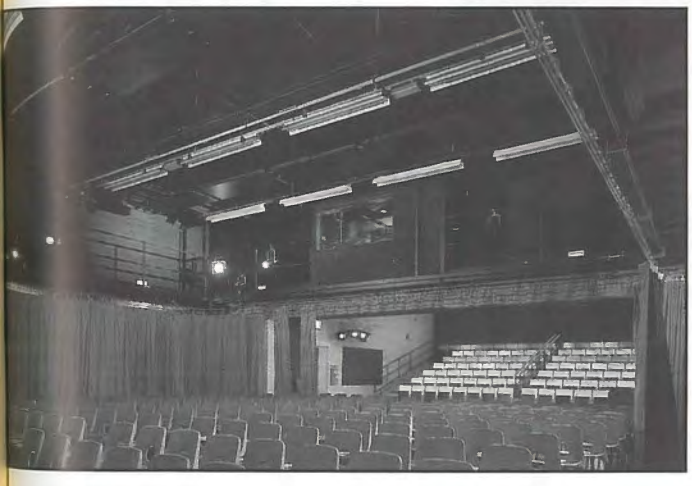
STRAND THEATRE LIGHTING

The most comprehensive range of luminaires available for the professional and amateur stage.

Throughout the world of entertainment, Strand is the first name for excellence in stage lighting equipment, offering the largest range available. It extends from compact and economical lights perfect for small budget productions, amateur and touring companies, and community centres, to high performance luminaires of many types for versatile lighting and effects in the largest theatres and opera houses.

Every product incorporates Strand's unique knowledge of stage lighting requirements and extensive manufacturing expertise in this field.

The scene of Giulietta's studio in Venice during 'Aspects of Love' at the Prince of Wales Theatre, London W1. There are 40 scene changes throughout the show. The lighting effects are made possible by using Strand's Precision Automated Lighting System.



Brimsham Green School, Yate, Wiltshire. Stage Lighting, manual lighting control and dimmer packs, and retractable seating by Strand.

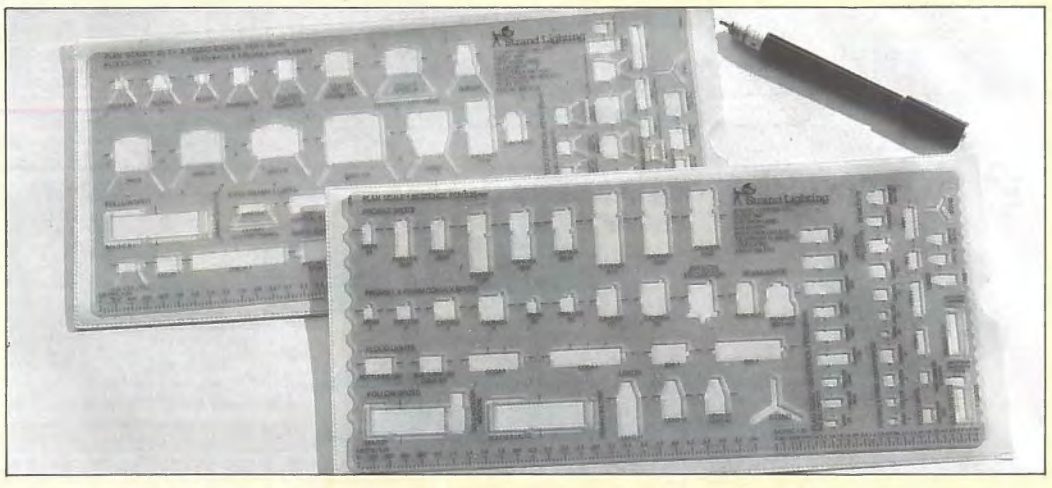
The Royal Shakespeare Company's Swan Theatre at Stratford upon Avon is Strand equipped from the luminaires to the dimmers and the Galaxy Memory Lighting System.

STAGE AND STUDIO LUMINAIRE STENCILS

These useful aids to drawing rig plans come in scales of 1:25 and 1:50. They are made of flexible plastic and are complete with PVC storage pockets.

Stage Luminaire Stencil
88 361 01

Studio Luminaire Stencil
88 361 05



QUARTET 650W SPOTLIGHTS

Setting new standards in luminaire design and construction, Quartet is destined to become the definitive range of spotlights where professsional lighting standards are a pre-requisite but where the budget is limited.

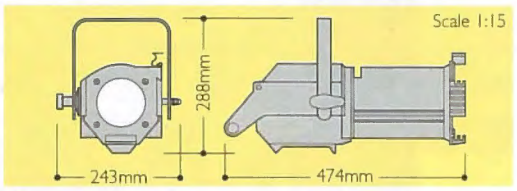
The basic construction of pressure die casting will provide the same durability and quality of the old Strand Patterns 23 and 123, yet with the flexibility to provide the performance and facilities required by today's demanding users.

QUARTET 22/40 650W PROFILE

22 400 20 4.8kg

A variable beam angle profile spot with a very useful range of 22° to 40° and with the added facility of beam distribution adjustment between peaky and flat field. Fitted with unique toggle action lens locking providing ultra smooth lens adjustment.

Supplied with 650W 240V RSE/26 lamp (220V may be specified), 1.5 metres of heat resistant power cable and fibre colour frame.



Quartet 22/40
Performance guide based on RSE/26 650W lamp

	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	2400	1.7	1080	2.6	600	3.4	320	4.3
W	1350	2.9	600	4.4	340	5.8	220	7.3

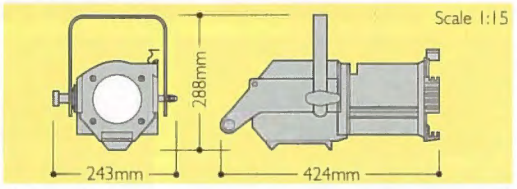
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

QUARTET 25 650W PROFILE

22 400 23 4.4kg

The fixed angle profile spot of the range provided good performance at 25° and at a budget price yet including the beam distribution adjustment and toggle action focus adjustment of the variable profile.

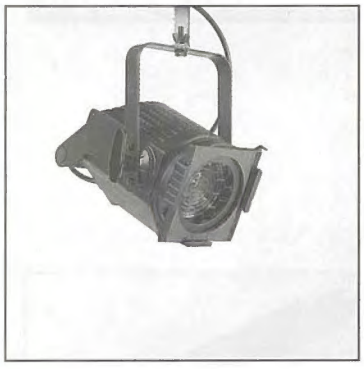
Supplied with 650W 240V RSE/26 lamp (220V may be specified), 1.5 metres of heat resistant power cable and fibre colour frame.



Quartet 25
Performance guide based on RSE/26 650W lamp

4m		6m		8m		10m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
2190	1.8	975	2.7	550	3.6	350	4.4

Ø = Diameter
For full photometric information refer to data sheet.

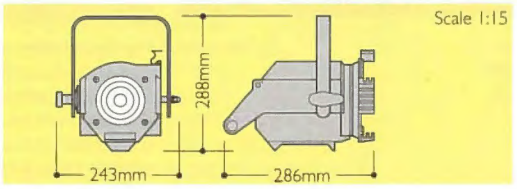


QUARTET F 650W FRESNEL

22 400 01 3.1kg

The soft edge beam of this model is of a high output and adjustable between 10° and 40.5° half peak angles.

Supplied with 650W 240V RSE/26 lamp (220V may be specified), 1.5 metres of heat resistant power cable and fibre colour frame.



Quartet F
Performance guide based on RSE/26 650W lamp

	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3420	0.7	1520	1.0	850	1.3	550	1.7
W	700	2.8	310	4.1	175	5.5	110	6.9

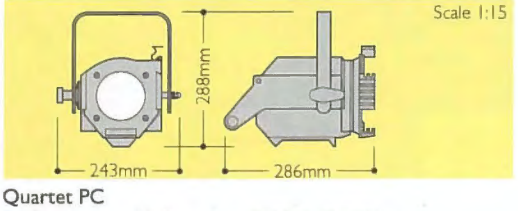
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

QUARTET PC 650W PRISM CONVEX

22 400 05 3.3kg

The same high performance and smooth adjustment as Quartet F but tighter more controlled beam from 7.5° to a good 55° at widest.

Supplied with 650W 240V RSE/26 lamp (220V may be specified), 1.5 metres of heat resistant power cable and fibre colour frame.



Quartet PC
Performance guide based on RSE/26 650W lamp

	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3850	0.5	1700	0.7	975	1.0	625	1.2
W	450	3.7	700	5.6	110	7.4	70	9.3

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories for Quartet Spotlights

18 leaf Iris diaphragm, (for Profiles) **23 400 01**

Gobo (pattern) holder to take M size gobos (for Profiles) **23 400 02**

Four door rotatble barndoor (for F & PC) **23 400 03**

Additional 150mm² fibre colour frame **27 400 01**

150mm² metal colour frame **27 260 03**

Hook clamp **26 483 07**

Safety chain **26 064 18**

Lamps

RSE/26 650W 240V Lamp **34 231 00**

220V Lamp **34 231 19**

RSE/18 500W 240V Lamp **34 218 12**

220V Lamp **34 218 20**

M40 500W 240V Lamp **34 350 12**

220V Lamp **34 350 20**

Note: For details of alternative lamps which may be used in Quartet spotlights, refer to Section 6.

PRELUDE 650/500W SPOTLIGHTS

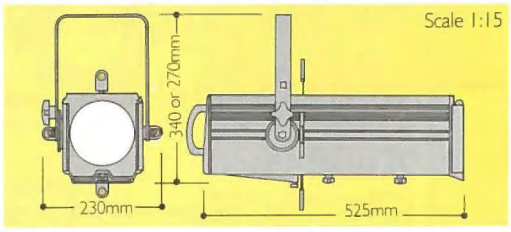
Providing the beam qualities required in small to medium size theatres, this integrated range of spotlights is a popular choice with lighting designers. The profiles are supplied complete with four beam shaping shutters, and have provision for an iris diaphragm. Construction is rigid and strong.

PRELUDE 16/30 650/500W PROFILE

22 402 08 6.5kg

A very useful range of beam angles, 16° to 32° giving either variable spread over a fixed throw or a fixed spread over variable throws.

Supplied with 650W, 240V RSE/26 lamp (220V may be specified), colour frame and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified)



Prelude 16/30 Performance guide based on RSE/26 650W lamp, set at peaky field

	4m		8m		12m		16m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3375	1.12	850	2.24	375	3.36	225	4.48
W	1675	2.3	425	4.6	200	6.9	125	9.2

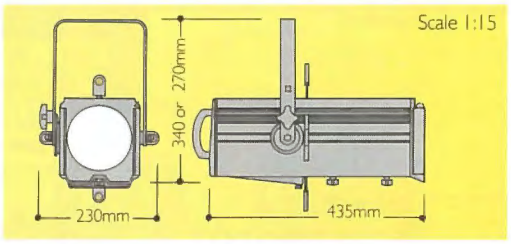
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

PRELUDE 28/40 650/500W PROFILE

22 405 04 6.3kg

Versatile medium to wide angle variable spot with beam angles from 28° to 40°.

Supplied with 650W, 240V RSE/26 lamp (220V may be specified), colour frame and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified)



Prelude 28/40 Performance guide based on RSE/26 650W lamp, set at peaky field

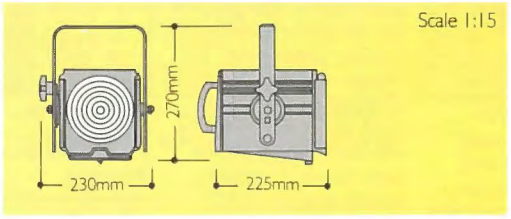
	4m		8m		12m		16m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	2300	2.0	575	4.0	275	6.0	150	8.0
W	1600	2.9	400	5.8	200	8.7	100	11.6

PRELUDE F 650/500W FRESNEL

22 500 01 3.5kg

For a circular soft-edged beam variable from a tight spot of 9° to a medium angle flood of 40°.

Supplied with 650W, 240V RSE/26 lamp (220V may be specified), colour frame and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified)



Prelude F Performance guide based on RSE/26 650W lamp

	4m		8m		12m		16m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3500	0.63	875	1.26	400	1.89	225	2.52
W	750	2.9	200	5.8	100	8.7	50	11.6

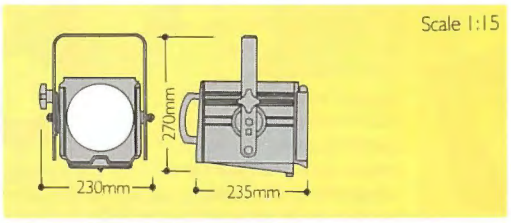
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

PRELUDE PC 650/500W PRISM CONVEX

22 502 02 3.6kg

Bridges the different edge qualities of the Fresnel and Profile spots, and provides a variable-spread beam of 7.5° to 55° with diffused edges.

Supplied with 650W, 240V RSE/26 lamp (220V may be specified), colour frame and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified)



Prelude PC Performance guide based on RSE/26 650W lamp

	4m		8m		12m		16m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3425	0.52	875	1.04	400	1.56	225	2.08
W	450	4.16	125	8.32	50	12.48	—	—

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories for Prelude Spotlights

25mm mesh wire lens guard **27 228 08**

Four-door rotatable barndoor (for F & PC) **23 201 0T**

Iris Diaphragm, 18 leaf (for Profiles) **23 502 08**

Gobo (pattern) holder to take B size gobos (for profiles) **23 865 02**

Additional 150mm² colour frame **27 260 03**

Hook clamp **26 483 07**

Safety chain **26 064 18**

Lamps

RSE/26 650W
240V lamp **34 231 00**
220V lamp **34 231 19**

Note: For details of alternative lamps which may be used in Prelude spotlights, refer to Section 6.

Alternative Power Cables

1.5 metre spotlight power cable fitted with UK 15 amp 3 pin plug **35 002 22**

1.5 metre spotlight power cable fitted with European Schuko plug **35 002 21**

1.5 metre spotlight power cable with bare ends **35 002 20**

CANTATA 1200W SPOTLIGHTS

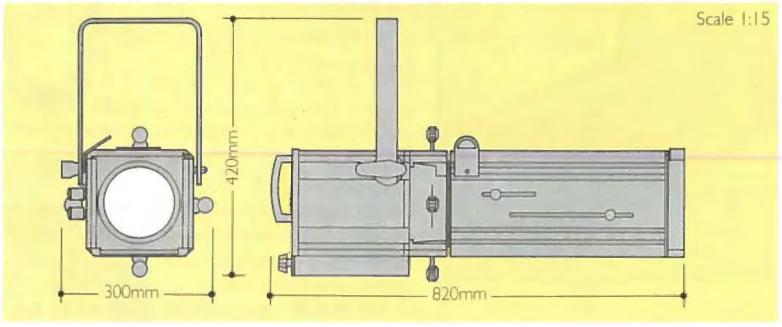
Cantata is the first range of luminaires to be designed for the new 1200W RSE/29 tungsten halogen lamp. By incorporating a larger diameter lens and a specially designed reflector, up to 50% increase in useable light has been achieved over previous 1000W profile spots.
This performance has been matched with improved operational features including a fully rotatable gate assembly through 360°, detachable lens tubes, simple to use peaky/flat field beam adjustment and an improved tilt clamp arrangement. A two-position lamp base permits use of either the new 1200W lamp or the conventional 1000W lamp. The range comprises three variable spread spotlights with overlapping beam angle ranges between 11° and 44°, a followspot, a fresnel and a prism convex spotlight.

CANTATA 11/26 1200W PROFILE

22 611 26 12.8kg

A narrow to medium angle variable spread spotlight, with a beam spread of 11° to 26°.

Supplied with 1200W, 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified)



Cantata 11/26
Performance guide based on RSE/29 1200W lamp, set at peaky field

	5m		10m		15m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	10200	0.95	2550	1.9	1150	2.85	650	3.8
W	5175	2.3	1300	4.6	575	6.9	325	9.2

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

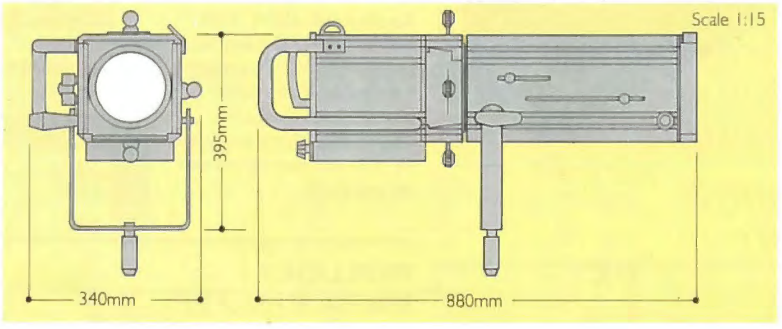
Supplied with 1200W 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard, and 3 metres of detatchable power cable fitted with in-line switch and 15amp plug (European Schuko or open ended alternatives may be specified).

CANTATA FOLLOWSPOT 1200W

22 511 26 13.5kg

22 411 26 (includes 4-colour magazine) 15kg

A valuable addition to the immensely successful Cantata range. This followspot is ideally suited for use in clubs, schools, small theatres etc. It is based on the Cantata 11/26 and comes complete with black-out iris, 29mm spigot for stand mounting, specially adapted tilt mechanism for smooth movement; in addition to all the other normal Cantata features.



Accessories for Cantata Followspots

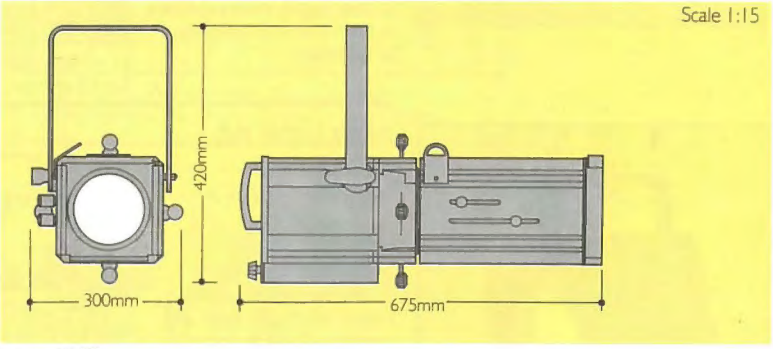
4-Colour magazine hand operated	**23 879 40**
Set of sights	**27 525 19**
Folding Braced stand	**26 897 04**

CANTATA 18/32 1200W PROFILE

22 618 32 12.0kg

This unit offers a spread of medium range beam options between 18° and 32°.

Supplied with 1200W, 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified)



Cantata 18/32
Performance guide based on RSE/29 1200W lamp, set at peaky field

	5m		10m		15m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	7050	1.55	1775	3.1	800	4.65	450	6.2
W	3500	2.8	875	5.7	400	8.6	225	11.4

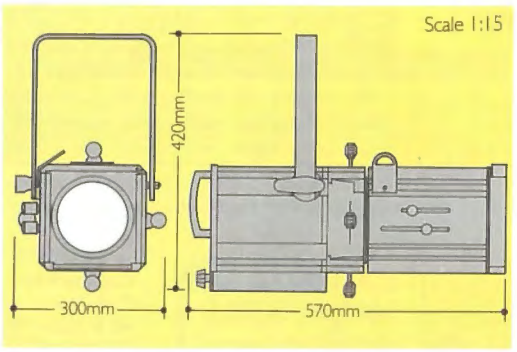
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

CANTATA 26/44 1200W PROFILE

22 626 44 11kg

Beam options from 26° to a wide 44° are provided by this medium to wide angle profile spot.

Supplied with 1200W, 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified)



Cantata 26/44
Performance guide based on RSE/29 1200W lamp, set at peaky field

	5m		10m		15m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	4275	2.3	1075	4.6	475	6.9	275	9.2
W	2275	4.0	575	8.0	275	12.1	150	11.4

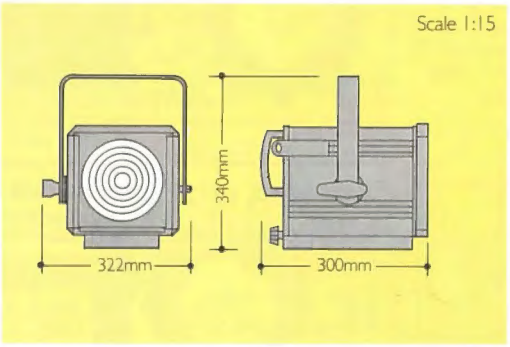
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

CANTATA F 1200W FRESNEL

22 628 00 5.8kg

This compact spotlight has a soft edge beam variable from a tight spot of 7.5° to a wide angle flood of 50°.

Supplied with 1200W, 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified)



Cantata F
Performance guide based on RSE/29 1200W lamp

	5m		10m		15m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	4950	0.6	1250	1.3	550	2.0	325	2.6
W	775	4.6	200	9.3	850	14.0	50	18.6

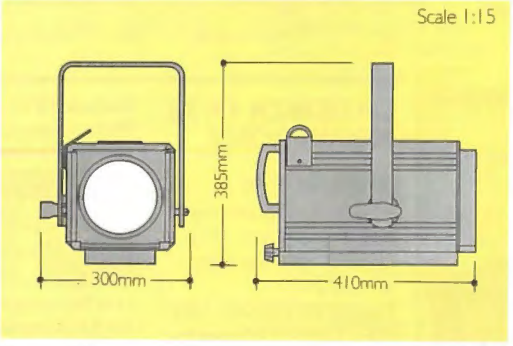
N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

CANTATA PC 1200W PRISM CONVEX

22 628 02 7.2kg

Providing tighter lighting than the fresnel, the PC's diffused beam is variable from a narrow 4.2° spot to a wide angle flood of 49°.

Supplied with 1200W, 240V RSE/29 lamp (220V may be specified), colour frame, integral wire mesh guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified)



Cantata PC
Performance guide based on RSE/29 1200W lamp

	5m		10m		15m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8250	0.35	2075	0.7	925	1.05	525	1.4
W	575	4.6	150	9.2	75	13.8	50	18.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Interchangeable Lens Tubes

For operational flexibility, the Profile versions of the Cantata feature interchangeable lens tubes to a common lamp housing.

Cantata Profile lamp housing with lamp and power cable

22 600 00

11/26 Profile lens tube complete with filter holder **22 600 26**

18/32 Profile lens tube complete with filter holder **22 600 32**

26/44 Profile lens tube complete with filter holder **22 600 44**

Accessories for Cantata Spotlights

Four leaf rotatable barndoor (for F & PC) **23 216 00**

18 leaf Iris diaphragm (for Profiles) **23 602 00**

Gobo (pattern) holder to take B-size gobos (for profiles) **23 866 00**

Additional 185mm² Colour Frame **27 262 04**

Hook Clamp **26 483 07**

Safety Chain **26 064 18**

Lamps

RSE 29/1200W
240V Lamp **34 221 22**
220V Lamp **34 221 21**

Note: RSE/19 and RSE/70 1000W lamps are also approved for use in Cantata.

For details of these and other alternative lamps, refer to Section 6.

Alternative Power Cables

1.5 metre spotlight power cable fitted with UK 15 amp 3-pin plug **35 002 22**

1.5 metre spotlight power cable fitted with European Schuko plug **35 002 21**

1.5 metre spotlight power cable with bare ends **35 002 20**

FOR CLAMPS AND BRACKETS SEE PAGE 80

CADENZA 2000W SPOTLIGHTS

These powerful 2000W luminaires provide high intensity lighting with the accurate control and flexibility necessary for large-scale theatre productions. They combine outstanding optical performance with robust mechanical construction, ease of operation and maximum safety.

NEW Cadenza Profiles now available with fully rotatable gate assembly which moves through 360°

22 421 50	Cadenza 9/15
22 420 50	Cadenza 12/22
22 424 50	Cadenza 19/32

Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), colour frame, integral wire mesh lens guard, integral 18-leaf Iris diaphragm and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified).

CADENZA 9/15 2000W PROFILE

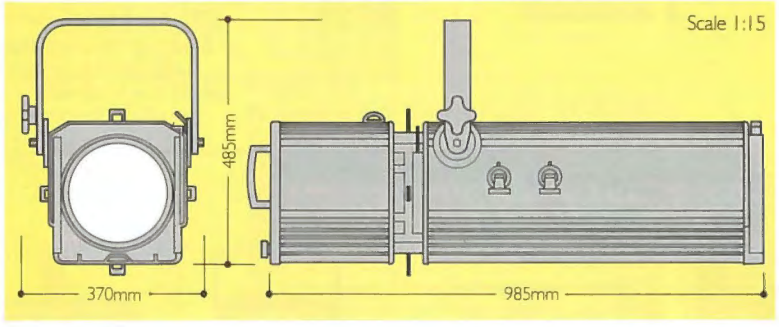
22 421 00 24.0kg

Variable narrow angle spot, 9° to 15°, with plenty of punch for really long throws.

Cadenza 9/15
Performance guide based on RSE/79 2000W lamp, set at peaky field

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8850	1.26	2225	2.52	1000	3.78	575	5.04
W	3875	2.1	975	4.2	450	6.3	250	8.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.



Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), colour frame, integral wire mesh lens guard, integral 18-leaf Iris diaphragm and 1.5 metres of detachable power cable fitted with 15 amp plug. (European Schuko or open end alternatives may be specified).

CADENZA 12/22 2000W PROFILE

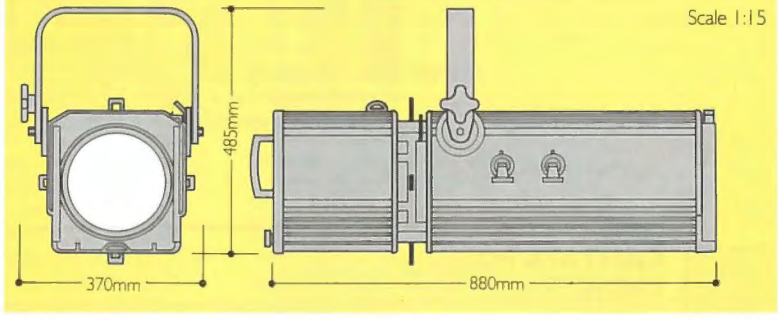
22 420 01 22.8kg

Narrow to medium angle variable spread spot 12° to 22°. Ideal for long throws from the auditorium lighting bridge.

Cadenza 12/22
Performance guide based on RSE/79 2000W lamp, set at peaky field

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	6750	1.7	1675	3.4	750	5.1	425	6.8
W	2825	3.1	725	6.2	325	9.3	175	12.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.



CADENZA 19/32 2000W PROFILE

22 424 03 22.2kg

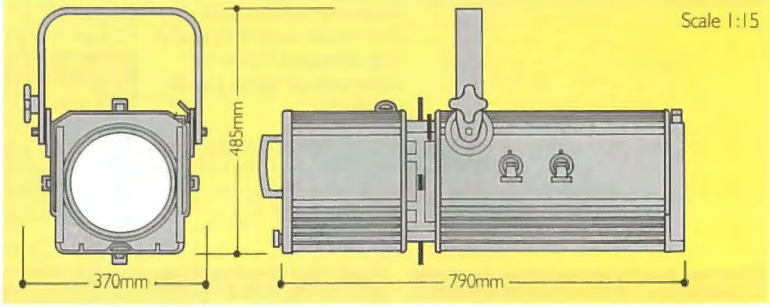
Medium to wide angle variable spot 19° to 32°, useful for many stage lighting jobs.

Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), colour frame, integral wire mesh lens guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified).

Cadenza 19/32
Performance guide based on RSE/79 2000W lamp, set at peaky field

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3375	2.7	850	5.4	375	8.1	225	10.8
W	1250	4.6	325	9.2	150	13.8	100	18.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.



Accessories for Cadenza Spotlights

Four-door rotatable barndoor (for F & PC) **23 210 01**

Pattern (gobo) holder (for Profiles) **23 864 07**

Additional 245mm² colour frame **27 264 05**

Hook clamp, heavy duty **26 874 03**

Safety chain **26 064 18**

T.V. spigot with M.12 stem **26 860 04**

Cranked fork (for Profiles) **26 858 00**

Lamps

RSE/79 2000W
240V lamp **34 232 06**
220V lamp **34 232 14**

Alternative Power Cables

1.5 metre spotlight cable fitted with UK 15 amp 3 pin plug **35 002 22**

1.5 metre spotlight power cable fitted with European Schuko plug **35 002 21**

1.5 metre spotlight power cable with bare ends **35 002 20**

Note: For detailed information on lamps refer to Section 6.

CADENZA F 2000W FRESNEL

22 522 07 12.2kg

A powerful spot with soft, indeterminate edges and a wide range of beam angles 7° to 62°.

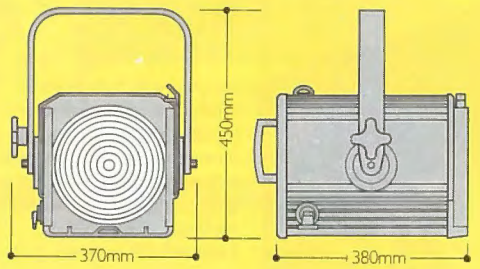
Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), colour frame, integral wire mesh lens guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified).

Cadenza F
Performance guide based on RSE/79 2000W lamp

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	5475	1.0	1375	2.0	625	3.0	350	4.0
W	450	9.6	125	19.2	50	28.8	25	38.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Scale 1:15



CADENZA PC 2000W PRISM CONVEX

22 524 08 15.2kg

Diffused edge widely-variable beam 4° to 61°, for tighter lighting than the fresnel.

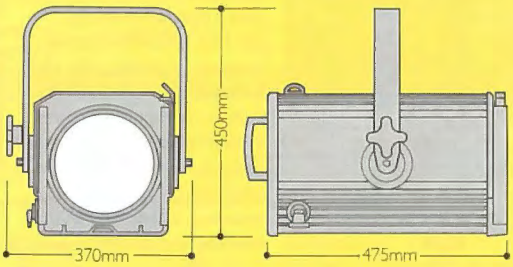
Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), colour frame, integral wire mesh lens guard and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified).

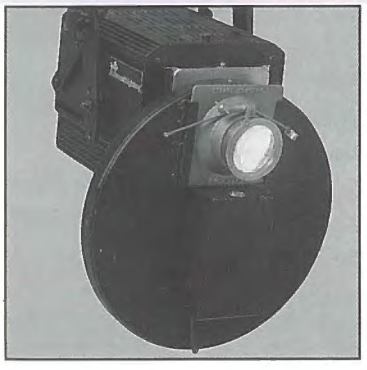
Cadenza PC
Performance guide based on RSE/79 2000W lamp

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8925	0.6	2250	1.2	1000	1.8	575	2.4
W	375	9.4	100	18.8	50	28.2	25	37.6

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Scale 1:15





CADENZA EP 2000W EFFECTS PROJECTOR

22 524 10 14.5kg

The Cadenza Effects Projector provides the lighting designer with the means of projecting stationary or moving effects onto the acting area or backing of his/her choice, with the flexibility to project standard effects or custom made slides.

Supplied with 2000W, 240V RSE/79 lamp (220V may be specified), 150mm diameter 3-lens condenser system and glass heat filter, and 1.5 metres of detachable power cable fitted with 15amp plug. (European Schuko or open end alternatives may be specified).

Note: The majority of projected moving effects require an effects spot, a moving effects attachment, and an objective lens. Scene projection requires a slide carrier and a turntable front instead of an effects attachment.

Accessories for Cadenza EP

Turntable front only for slide carrier **24 154 04**

Metal slide carrier for two 3¼ x 4" or 3¼" square slides **24 156 05**

Objective Lenses

Commercial quality, slide focusing and with backplate.

6.5cm (2½") focal length **24 151 08**

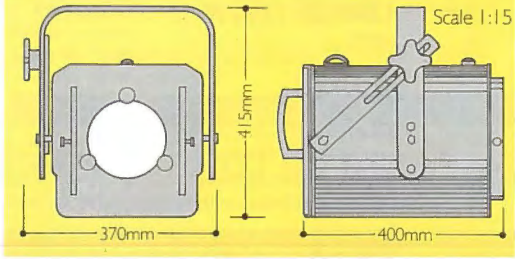
10cm (4") focal length **24 153 09**

15cm (6") focal length **24 155 0T**

Adjustable metal mask **24 343 00**

Beam divertor mirror for above **24 346 07**

Scale 1:15



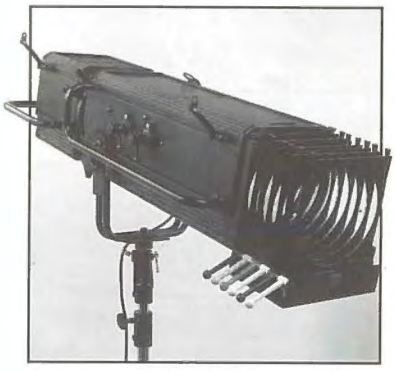
Moving Effects Attachment

Disc Type
475mm diameter case
220/240V AC motor drive

Thunder clouds	**24 653 01**
Fleecy Clouds	**24 134 0T**
Storm Clouds	**24 135 05**
Rain	**24 136 00**
Snow	**24 137 06**
Running Water	**24 138 01**
Smoke	**24 140 05**
Flames	**24 141 00**
Chromosphere	**24 667 00**
Psychedelic	**24 723 04**
Chromotrope	**24 725 05**
Forked Lightning, hand operated	**24 148 09**

SOLO FOLLOW SPOTS

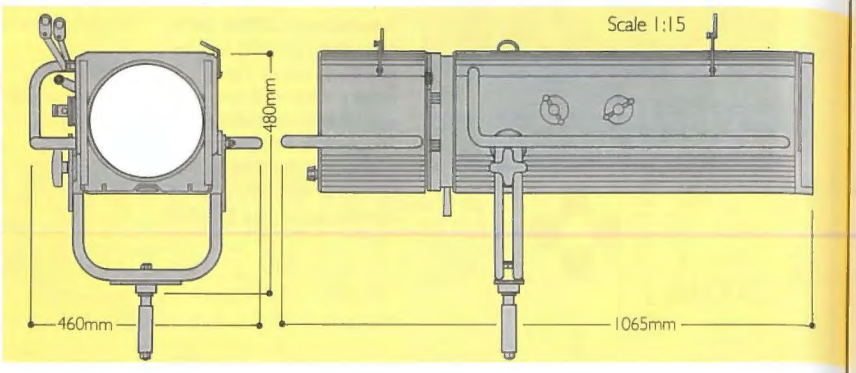
These robust luminaires feature a variable spread lens system giving beam angles from 9° to 15°. Peaky/flat field adjustment, controlled by a rotary knob at the rear of the housing, maintains excellent beam qualities at all settings. Front and rear sights are provided for aligning the beam before opening the iris or shutter.



SOLO 2K 2000W FOLLOW SPOT

22 525 00 30.5kg,
colour magazine 3.0kg

Supplied with built-in iris diaphragm, colour frame, horizontal strip shutters, 3 metres of power cable with in-line switch, fork with T.V. spigot, adjustable balance for stand mounting. 2000W 240V RSE/79 lamp included.



SOLO CSI/CID 1000W FOLLOW SPOT

22 526 00 42.5kg,
ballast 18.5kg,
colour magazine 3.0kg

Supplied with automatic EHT starter unit (220/240V 50Hz input) and external ballast with 3 position switch for stand-by, half and full power. 5 metres of power cable and 2 metres of cable to ballast. Built-in iris diaphragm, colour frame, horizontal strip shutters, fork with TV spigot, adjustable balance for stand mounting. CSI or CID lamp included (specify type required).

Solo 2K
Performance guide based on RSE/79 2000W lamp, set at peaky field

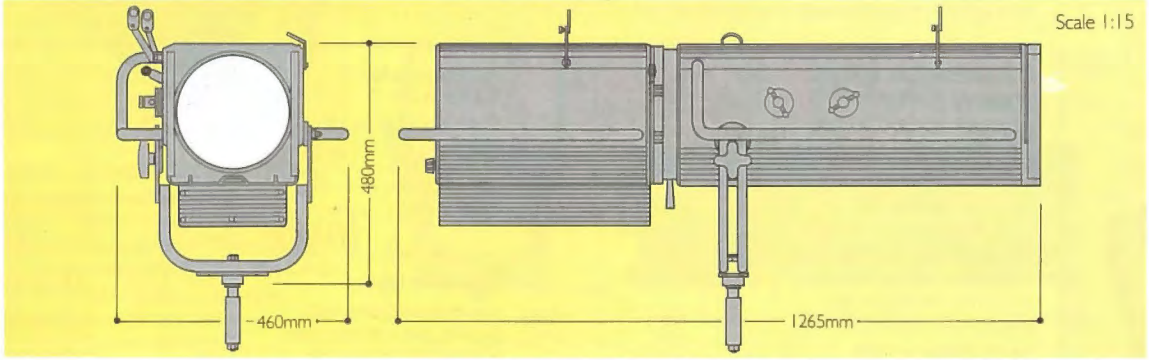
	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8850	1.26	2225	2.52	1000	3.78	575	5.04
W	3875	2.1	975	4.2	450	6.3	250	8.4

N = Narrowest W = Widest Ø = Diameter

Solo CSI
Performance guide based on CS1 1000W lamp, set at peaky field

	12m		24m		36m		48m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	11825	1.8	2975	3.6	1325	5.4	750	7.2
W	7100	3.2	1775	6.4	800	9.6	450	12.8

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheets.



Accessories for Solo Follow Spots

6-colour magazine, hand operated **23 879 90**

Folding, braced stand **26 897 04**

Additional 245mm² colour frame **23 525 10**

Mechanical dimming shutter assembly for Solo CSI/CID **23 525 00**

Lamp for Solo 2K

2000W RSE79
240V lamp **34 232 06**
220V lamp **34 232 14**

Lamps for Solo CSI/CID

1000W CSI Discharge lamp **34 213 07**

1000W CID 'daylight' Discharge lamp **34 227 06**

Note: For detailed information on lamps refer to Section 6.

PANI FOLLOWSPOTS

The Pani HMV range of daylight follow spots offers two narrow angle HMI luminaires with high efficiency elliptical mirror lens system for stage or outdoor work, and the powerful 2500 Zoom CID for long distance projection.

PANI HMV 1200/20 1200W HMI

38 220 03
10.5° max. beam spread, 200mm dia. P.C. lens, built-in iris diaphragm, 4 beam shaping shutters, black-out disc, external ballast unit

PANI HMV 1200/35 1200W HMI

38 235 08
6.5° max. beam spread, 230mm dia. P.C. lens, built-in iris diaphragm, 4 beam shaping shutters, black-out disc, external ballast unit.

Accessories for Pani HMV 1200/20 & HMV 1200/35

Manually operated dimming shutter **38 250 05**

Hand operated 4-colour magazine **38 250 06**

T.V. spigot M10 **26 869 03**

Lamp

1200W HMI **34 527 50**

PANI HMV 2500 Zoom 2500W CID

38 250 00
6°/16° variable spread beam. 20-50cm focal length zoom lens, built-in iris diaphragm, 4 beam shaping shutters, black-out disc, external ballast unit.

Accessories for Pani HMV 2500 Zoom

Manually operated dimming shutter **38 250 01**

Hand operated 6-colour magazine **38 250 02**

Lamp

2500W HMI **34 228 01**

Note: For detailed information on lamps refer to Section 6.

FOR CANTATA FOLLOWSPOT 1200W SEE PAGE 36

LEKO 1000W SPOTLIGHTS

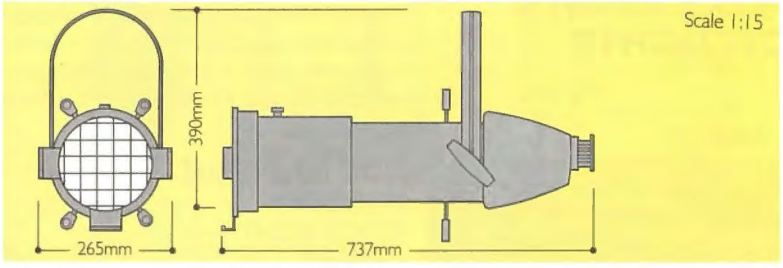
These versatile 1000W hard-edge spotlights have proved their worth in major stage productions on both sides of the Atlantic.

LEKO 11 (8" x 13") 1000W PROFILE

77 021 13 7.7kg

A narrow beam ellipsoidal reflector spotlight with a 14° cut-off, with single 8" diameter lens, focal length 13".

Supplied with 1000W, 240V CP77 lamp (220V may be specified), heat resisting fibre colour frame and 1.5 metres of fitted power cable with 15 amp plug (alternatively open ends may be specified).



Leko 11 Performance guide based on CP77 1000W lamp, set at peaky field Ø = Diameter

5m		10m		15m		20m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
8650	1.2	2175	2.4	975	3.6	550	4.8

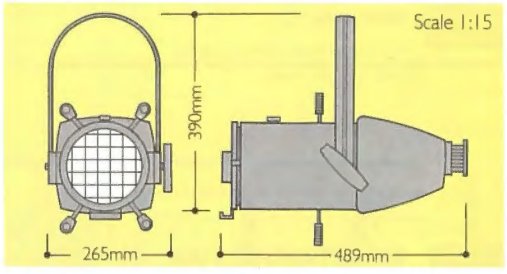
For full photometric information refer to data sheet.

LEKO 18 (6" x 16") 1000W PROFILE

77 022 16 6.5kg

A narrow beam ellipsoidal reflector spotlight with a 21° cut-off, using dual 6" diameter lenses, focal length 16".

Supplied with 1000W, 240V CP77 lamp (220V may be specified), heat resisting fibre colour frame and 1.5 metres of fitted power cable with 15 amp plug (alternatively open ends may be specified).



Leko 18 Performance guide based on CP77 1000W lamp, set at peaky field Ø = Diameter

5m		10m		15m		20m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
4600	1.85	1150	3.7	525	5.55	300	7.4

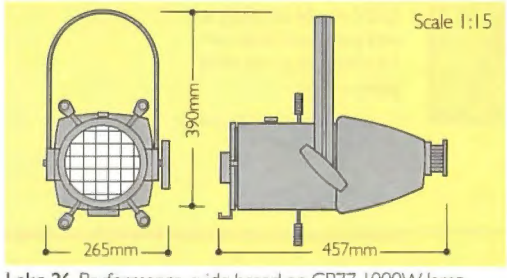
For full photometric information refer to data sheet.

LEKO 26 (6" x 12") 1000W PROFILE

77 022 12 6.5kg

An ellipsoidal reflector spotlight with a medium beam of 30° cut-off with dual 6" diameter lenses, focal length 12".

Supplied with 1000W, 240V CP77 lamp (220V may be specified), heat resisting fibre colour frame and 1.5 metres of fitted power cable with 15 amp plug (alternatively open ends may be specified).



Leko 26 Performance guide based on CP77 1000W lamp, set at peaky field Ø = Diameter

5m		10m		15m		20m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
3625	2.7	925	5.4	425	8.1	225	10.8

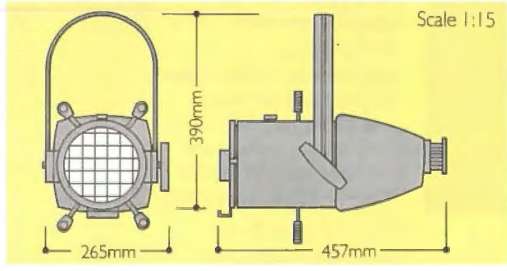
For full photometric information refer to data sheet.

LEKO 40 (6" x 9") 1000W PROFILE

77 022 09 6.9kg

A wider angled ellipsoidal reflector spotlight with 45° cut-off, using dual 6" diameter lenses, focal length 9".

Supplied with 1000W, 240V CP77 lamp (220V may be specified), heat resisting fibre colour frame and 1.5 metres of fitted power cable with 15 amp plug (alternatively open ends may be specified).



Leko 40 Performance guide based on CP77 1000W lamp, set at peaky field Ø = Diameter

5m		10m		15m		20m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
2900	4.1	725	8.2	325	12.3	200	16.4

For full photometric information refer to data sheet.

Accessories for Leko Spotlights

Iris kit for Leko **77 013 54**

Pattern (gobo) holder **77 013 42**

Colour frame for Leko 11 **77 011 10**

Colour frame for Leko 18, 26 or 40 **77 011 08**

High hat (snoot) for Leko 11 **77 013 33**

High hat (snoot) for Leko 18, 26 or 40 **77 013 32**

Lamps

CP77, 1000W
240V lamp **34 531 01**
220V lamp **34 531 02**

NOCTURNE & CODA FLOODLIGHTS/ CYCLIGHTS

These complementary ranges of Flood/Cyc lights for linear halogen lamps, provide a choice of symmetrical or asymetrical light distribution. Nocturne has a symmetrical distribution with extra intensity in the centre for more directional lighting or increased throw. Coda has an asymmetrical light distribution which ensures even colour wash when mounted close to the top of a Cyc or Backcloth.

Nocturnes are available as single units only, in either 500W or 1000W ratings. Coda is available with a rating of 500W, in single, triple and quadruple units as well as a single 1000W version.

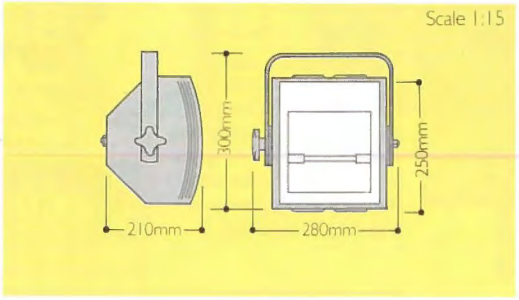
NOCTURNE 500 MkII 500W
FLOODLIGHT

22 720 11 3.75kg

Medium angle symmetrical flood

Supplied with 500W Class K1 240V long life linear lamp (220V may be specified) and wire guard, and fitted with 1.5 metres of power cable (open ends).

For performance details please refer to data sheet.



Accessories for Nocturne 500 Mk II Floodlight

Wire guard and holder for safety glass	**23 856 19**
Safety glass (requires holder 23 856 19)	**27 720 00**
Non-rotatable barndoor	**23 212 02**
Additional colour frame	**27 261 09**

Lamps
Nocturne 500
K1 (Frosted), 500W,

240V lamp	**34 275 01**
220V lamp	**34 275 1T**

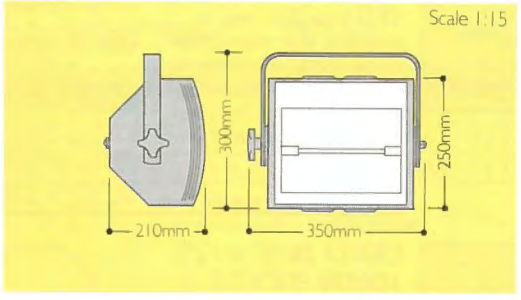
NOCTURNE 1000 MkII 1000W
FLOODLIGHT

22 721 11 4.3kg

Medium angle symmetrical flood

Supplied with 1000W Class K4 240V long life linear lamp (220V may be specified) and wire guard, and fitted with 1.5 metres of power cable (open ends).

For performance details please refer to data sheet.



Accessories for Nocturne 1000 Mk II Floodlight & Coda 1000 Mk II Cyclight

Wire guard and holder for safety glass	**23 856 00**
Safety glass (requires holder 23 856 00)	**27 721 00**
Colour frame extension (cannot be used with barndoors)	**23 856 20**
Extra colour frame for extended holder	**23 856 22**
Non-rotatable barndoor	**23 211 07**
Additional colour frame	**27 263 08**

Additional Accessories

Hook clamp	**26 483 07**
Safety chain	**26 064 18**

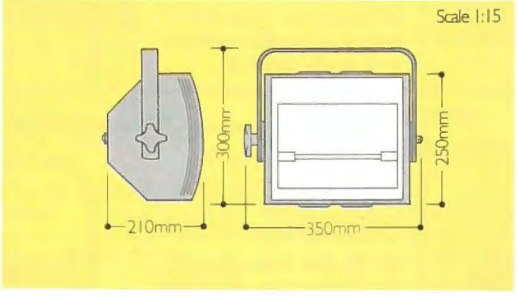
CODA 1000 MkII 1000W
FLOODLIGHT

22 711 00 4.3kg

Medium angle with asymmetrical distribution.

Supplied with 1000W Class K4 240V long life linear lamp (220V may be specified) and wire guard, and fitted with 1.5 metres of power cable (open ends).

For performance details. please refer to data sheet.



Lamps
Nocturne & Coda 1000
K4 (Frosted), 1000W,

240V lamp	**34 271 18**
220V lamp	**34 271 26**

For details of other lamps which may be used with Nocturne Floodlights refer to Section 6.

CODA 500/1 MkII 500W
CYCLIGHT

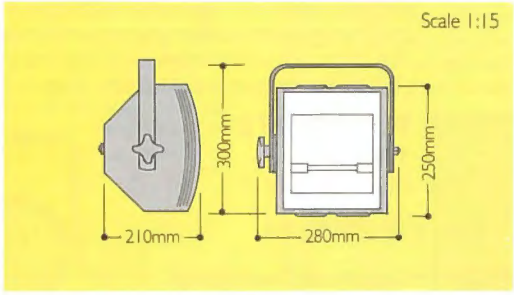
22 711 11 3.75kg

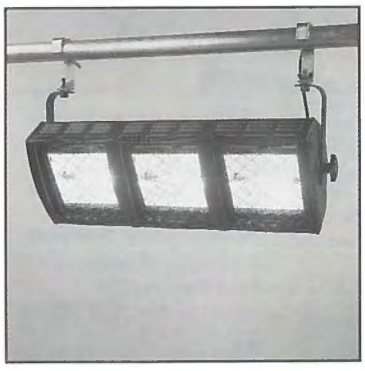
Single flood with asymmetrical distribution

Supplied with 500W Class K1 240V long life linear lamp (220V may be specified) and wire guard, and fitted with 1.5 metres of power cable (open ends).

Can be used at 1m to 1.75m from a backing at 1m to 1.75m centres to give even illumination from the top or bottom of the backcloth.

For performance details please refer to data sheet.





CODA 500/3 MkII 500W
CYCLIGHT

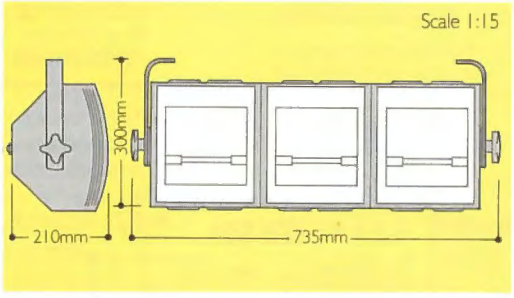
22 713 11 8.1kg

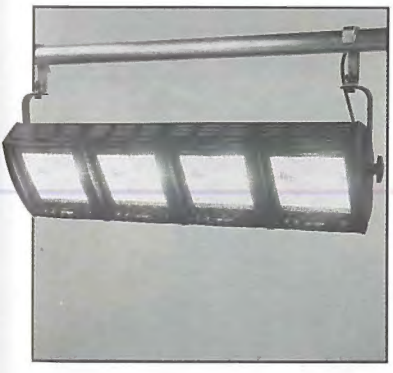
3-Compartment cyc light/pattern

Supplied with 500W Class K1 240V long life linear lamps (220V may be specified) and wire guards, and fitted with 1.5 metres of power cable (open ends).

Can be used at 1m to 1.75m from a backing at 1m to 1.75m centres to give even illumination from the top or bottom of the backcloth.

For performance details please refer to data sheet.





CODA 500/4 MkII 500W
CYCLIGHT

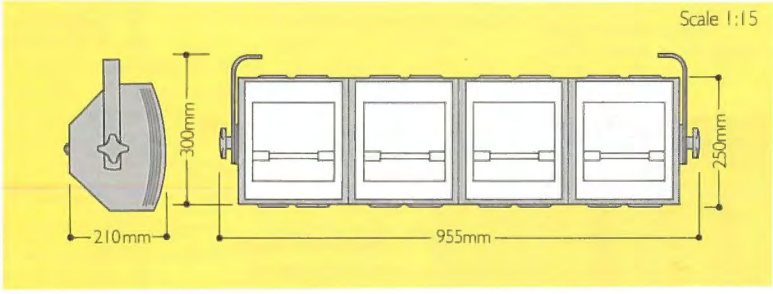
22 714 11 10.1kg

4-Compartment cyc light/pattern

Supplied with 500W Class K1 240V long life linear lamps (220V may be specified) and wire guards, and fitted with 1.5 metres of power cable (open ends).

Can be used at 1m to 1.75m from a backing at 1m to 1.75m centres to give even illumination from the top or bottom of the backcloth.

For performance details please refer to data sheet.



Accessories for Coda/1 Mk II, Coda/3 Mk II, Coda/4 Mk II Cyc/Backlights

Wire guard and holder for safety glass **23 856 19**

Safety glass (requires holder 23 856 19) **27 720 00**

Additional colour frame **27 261 09**

Non-rotatable barndoor **23 212 02**

Additional cable gland (one per unit required when interlinking units with 9-core cable) **23 855 05**

9-core cable, 1.5mm² for Coda 500/3, Coda 500/4 (per metre) **35 051 02**

Swivel crossbar for corner top suspension for Coda 500/3 **26 253 00**

Swivel crossbar for corner top suspension for Coda 500/4 **26 254 00**

9 pin connectors can be supplied.

Additional Accessories

Hook clamp **26 483 07**

Safety chain **26 064 18**

Lamps

K1 (Frosted), 500W, 240V lamp **34 275 01**

220V lamp **34 275 1T**

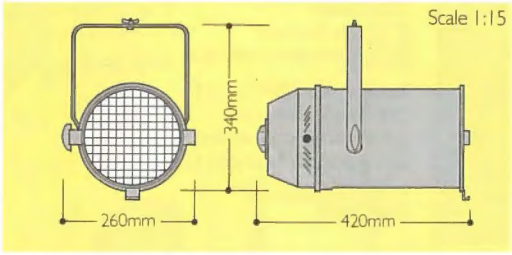
BEAMLIGHTS 1000/500W

Punchlites produce that extra punch of light when the need is for high intensity lighting or effects over long throws, even when strong colour filters are in use. The beam spread is pre-determined by the choice of 1000W Par 64 fixed-beam halogen lamp.

PUNCHLITE 1000W BEAMLIGHT

22 100 00 1.8kg

Supplied with 1 metre power cable, colour frame, integral wire guard and lampholder for CP60, CP61, CP62 Par 64 lamps.



Punchlite
Performance guide based on CP/60, CP/61, CP/62 lamps

	8m		16m		24m		32m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
CP60	4300	1.7x1.3	1075	3.4x2.6	500	5.1x3.9	275	6.8x5.2
CP61	3600	2.0x1.4	900	4.0x2.8	400	6.0x4.2	225	8.0x5.6
CP62	1800	3.1x1.5	450	6.2x3.0	200	9.2x4.5	125	12.4x6.0

Ø = Diameter
For full photometric information refer to data sheet.

Accessories for Punchlite

Lamp rotation cap **23 100 00**

Additional 245mm² colour frame **27 000 00**

Hook clamp **26 483 07**

Safety chain **26 064 18**

PAR 64 Lamps

1000W Class CP/60, 12 x 9° 240V lamp **34 260 07**

1000W Class CP/61, 14 x 10° 240V lamp **34 261 02**

1000W Class CP/62, 24 x 11° 240V lamp **34 262 08**

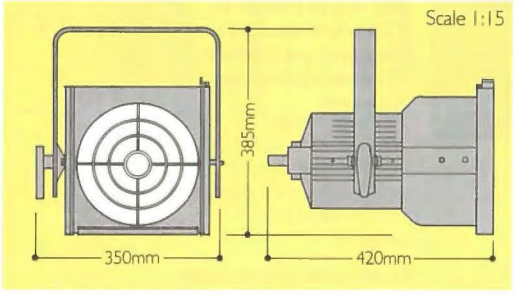
The new Beamlites with their integral transformers mounted axially to the lamp, make neat, compact units, producing a 5° beam spread of very high intensity to create dramatic lighting effects over very long throws.

Low voltage Beamlights are widely used in large theatres in continental Europe for general lighting, and are now finding increasing favour with U.K. lighting designers.

BEAMLITE 500

22 100 05 Low voltage 24V 500W Beamlight 13.0kg.

Supplied with integral toroidal transformer, 1.5 metres fitted power cable, colour frame and spill rings.



Beamlite 500
Performance guide based on E40 500W lamp

12m		24m		36m		48m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
3825	1.15	975	2.3	425	3.45	250	4.6

Ø = Diameter
For full photometric information refer to data sheet.

Accessories for Beamlites

Spare 365mm² fibre colour frame (Beamlite 1000) **27 100 10**

Spare 275mm² fibre colour frame (Beamlite 500) **27 100 05**

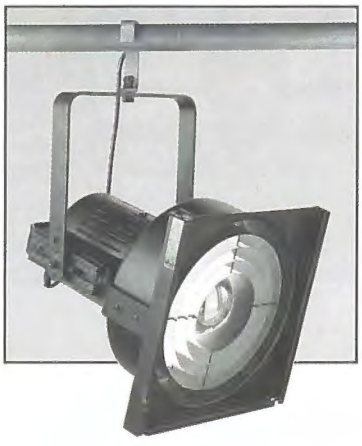
Hook clamp, heavy duty **26 874 03**

Safety chain **26 064 18**

Lamps

1000W K39d base internally crown silvered 24V lamp (Beamlite 1000) **34 262 40**

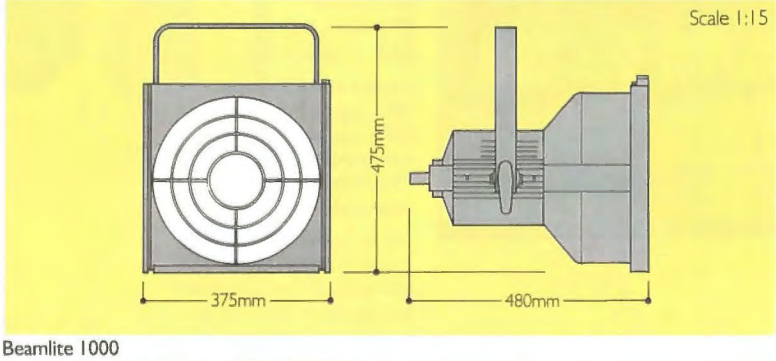
500W E40 base internally crown silvered 24V lamp (Beamlite 500) **34 262 25**



BEAMLITE 1000

22 100 10 Low voltage 24V 1000W Beamlight 17.0kg

Supplied with integral toroidal transformer, 1.5 metres fitted power cable, colour frame and spill rings.



Beamlite 1000
Performance guide based on K39d 1000W lamp

12m		24m		36m		48m	
Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
9325	1.1	2350	2.2	1050	3.3	600	4.4

Ø = Diameter
For full photometric information refer to data sheet.

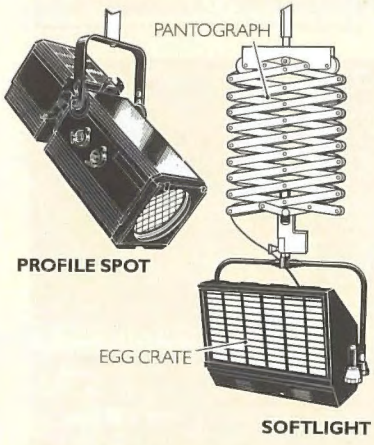
FOR CLAMPS AND BRACKETS SEE PAGE 80

LIGHTING FOR TELEVISION

Originally developed from film lighting, television lighting has now become an art form in its own right. New ideas and purpose-designed equipment have made possible new standards and effects that meet the unique challenge and potential of the medium. Nevertheless, the underlying principles of good lighting remain much the same as ever, and success depends on adherence to simple rules which are just as applicable to television as to film-making, photography or painting.

In colour television productions, effective lighting of scenery and costume is especially important if costume and set designers are to achieve their aims. The concentration of the eye onto a small picture automatically leads to much closer examination of detail in a scene than would be the case if life-size.

GLOSSARY OF TERMS AND DEFINITIONS USED IN TV, FILM AND VIDEO LIGHTING



ASPECT RATIO
The ratio of the width to the height of a TV screen or viewed image.

BACK LIGHT
A luminaire used to light the subject from the rear to help separation from backings and to increase the three dimensional effect.

BARNDOOR
Movable shutters fixed to a luminaire (usually a spotlight) to control and shape the light beam.

BARREL
A metal tube, usually 48mm diameter, for suspending luminaires (scaffold tube).

BASE LIGHT
The basic level of flood lighting intensity required to satisfy the medium used.

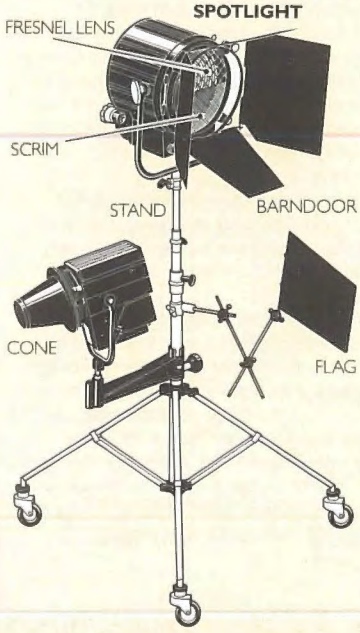
CATENARY
A flexible power feeder suspended at several points to enable movement of a lighting suspension unit e.g., pantograph. Note: usually seen on overhead mobile cranes.

CHANNEL
The circuit from the fader on the console to its associated dimmer.

COLOUR TEMPERATURE
A method of specifying the colour of a source which emits light in a continuous spectrum. Expressed in Kelvin units, the range used in lighting is from 2600K (white light with a high red content) to 6000K (white light with a high blue content). N.B. Cannot be used with discharge sources although sometimes used as a guide to approximation of colour.

CONE
A tube placed in front of a spotlight to give a smaller beam of light.

CROSS BARREL
Used between barrels to allow accurate positioning of luminaires.



C.S.I.
A discharge lamp which tends towards a tungsten source for colour balance (4000K approximately).

CYCLORAMA
A backing mounted in a studio to provide a continuous surface and an illusion of infinity.

DIFFUSER
Sheets of frosted plastic or spun glass fibre used to soften the shadows produced by the light beam.

DIMMER
An electronic device used to reduce current flow to a lamp and therefore allowing its light intensity to be adjusted.

DROP ARM
Used to hang a luminaire lower than the normal suspension system permits.

EGGCRATES
A device consisting of small cross baffle plates to restrict the spread of the light beam on a softlight.

EXTENSION BAR
Used to extend barrels to accurate positioning of luminaires.

FADER
A control potentiometer for indirectly setting the current output of a dimmer and thus varying the light intensity.

FILLER
Used to control shade areas: usually a soft light but can be controlled hard light.

FLAG
A sheet of metal or card mounted a short distance in front of the luminaire to give a sharp cut off to the light beam.

FLOODLIGHT
A luminaire that only has a reflector to control the beam and has a wide angle distribution. (Soft light and cyclorama light).

FOLLOW SPOT
A narrow angle focusing hard edge spotlight used to follow moving artists.

FRESNEL LENS
A convex lens built up in steps to reduce its thickness, thus reducing its size and weight.

GOBO
A mask placed in the gate of a profile spot to shape the beam. It is a simple form of outline projection.

HARD LIGHT
A luminaire that produces strong shadows, normally a spotlight.

H.M.I. (C.I.D.)
A discharge lamp which is daylight colour balanced (5600K).

KEY LIGHT
A principal modelling light, usually the fresnel spot.

LUX (Lumens/m^2)
The unit of measurement of the incident light arriving at a surface. (Old system used foot candles; 1 f.c. = 10.76 lux.)

MASTER/GROUP MASTER
Usually refers to a lighting control system fader which overrides a group of individual faders.

PANTOGRAPH
A spring balanced cross-armed device for varying the height of luminaires.

PICK-UP-TUBE
The name sometimes used for camera tube (generally denotes photo-sensitive device).

PRESET (BLIND MODE)
A facility on lighting control systems that enables a lighting plot to be set up without affecting the lights already operative.

PROFILE SPOT
A luminaire used to project shapes or patterns.

SATURATED RIG
A lighting installation where luminaires are used in large numbers to avoid the need for physical movement thus reducing rigging time and manpower.

SCRIM
A fine mesh used in front of a spotlight to attenuate the whole or part of the light beam.

SOFTLIGHT
A luminaire designed to produce virtually shadowless light; used to control contrast.

SPOTLIGHT
A luminaire with a focusing system to concentrate the light beam and give greater control.

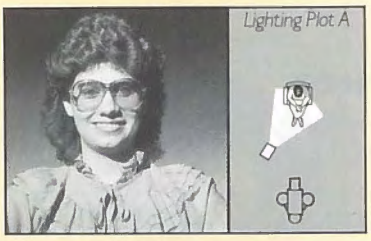
STAND
A tripod device which allows varying fixed heights of luminaires above floor level.

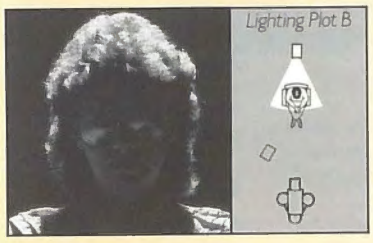
TELESCOPE
A device made from retractable tubes that is used to suspend luminaires at varying heights in the studio.

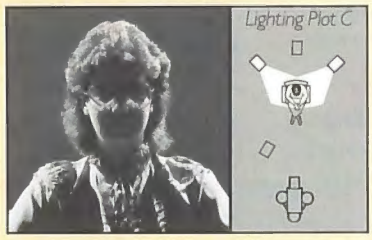
TUNGSTEN HALOGEN
Describes a family of lamps with either hard glass or quartz envelopes, **tungsten** filaments and **halogen** (usually iodine or bromine) fillings.

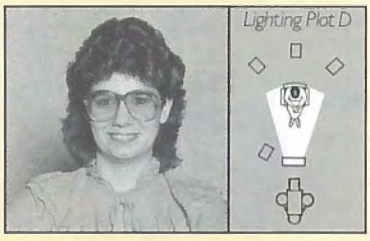
VOLTAGE DROP
That loss of volts which occurs through energy wastage when a current passes through a cable or electronic device.

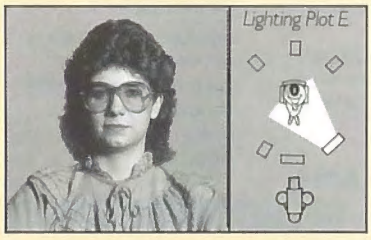
GENERAL LIGHTING

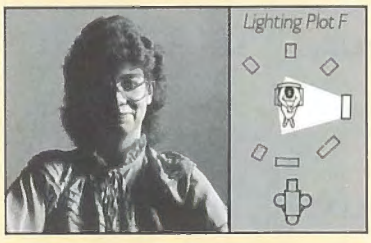

Lighting Plot A

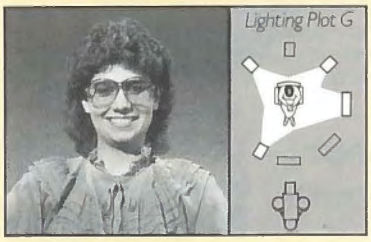

Lighting Plot B


Lighting Plot C


Lighting Plot D


Lighting Plot E


Lighting Plot F


Lighting Plot G

THEORY

To help the reader it will be useful to examine some of the properties of light and how light behaves.
Lighting in its most basic form consists of sunlight and light from the sky. Most of our lives we see fairly well balanced lighting created by the sun and sky. An instance of unbalanced lighting are the pictures from the 'Apollo' moon shots where only the sun provides light and the pictures are of high contrast due to the absence of sky or 'fill' light.
Light always travels in straight lines, but it can be deviated by reflection, in mirrors, etc. and more importantly, it can be refracted when passing between air and glass. All lenses rely on refraction to focus rays of light, either in a camera or, more relevant to this booklet, in a luminaire.
Light is modified by reflection and, in general, the TV camera is responding to that reflected light. This modification by reflection is important because it gives the shape and texture as we view the scene. We are also very much concerned with the colour of the light sources. Sunlight and incandescent lamps behave in a similar way because they are black body radiators. What is a black body radiator? Imagine a piece of black metal being heated: first it glows deep red when it is radiating mainly in the red end of the spectrum, through white heat to an intense blue at the far end of the spectrum.
The balance of the colour temperature depends mainly on the relative amounts of red and blue, the colour temperature being expressed in Kelvin units, which are based on Celsius units, starting at Absolute Zero or −273 Celsius. Thus the medium red of an electric fire is around 2000K; in other words about 1737C.
Sunlight, which tends to red, is 4800K; a blue cloudless sky is about 10000K upwards. We normally use a mixture of both sun and sky; standard European daylight is around 5600K. The best way of understanding the range of light is to think of incandescent lights of 3200K as a pale pinkish white and daylight as a pale bluish white. We, of course, never see it that way because our brain takes care of the colour difference. The television camera can be lined up to accept incident light over a wide range, but if lined up for 3200K will reproduce daylight of 5600K as a slightly blue picture.
Some sources in use today, namely the discharge sources, such as fluorescent and mercury or sodium street lights, are not black body radiators and emit light in several narrow bands. Although strictly speaking these devices cannot have a colour temperature, they can have an equivalent which is called the correlated colour temperature. Much research has been done to improve the colour rendering properties of discharge sources and the HMI and CID lamps are good examples of modern lamp technology.
It is evident that we require light when working in the studio but on what parameters is the lighting based? There are several factors which dictate how lighting is applied.

i) There is a minimum quantity of light required that will enable the camera to work successfully. This is computed from the level of illumination required on the pick-up-tubes to give a good picture with allowances being made for the camera's optical system.
ii) The scene and action (day, night, sun, dull etc.)
iii) The angles and distances of the lights to the subject.

We must remember that the sun gives us almost constant illumination irrespective of where we are. Our distance to the sun (150,000,000km) is much greater than relative distances between objects or people. With our local light sources we have to take into account the inverse square law, which states that the light falls off at a rate determined by the reciprocal of the square of the distances, i.e., double the distance and we get one quarter of the light.
A picture can be obtained by illuminating all parts of the scene in a uniform manner, but the results are flat and uninteresting, e.g. a dull overcast day!
One reason for the disappointing result is that television is a two-dimensional system, unlike human vision which gives us three dimensional images. The human eye allows us to see shape, form and depth. For television, we have to create depth and this can only be achieved by lighting in conjunction with the subject matter. It is important to realise that it is not the light that creates the picture, but the shadows created by the light. An object uniformly lit would have no substance or shape. In the studio we can create the illusion of day or night, interior or exterior. One other aspect of lighting is to create atmosphere; having satisfied the technical requirement, we can use our lighting to stimulate emotion. Where a bright feeling is required, low contrast lighting together with fairly bright colours may sometimes be used. Where a sombre atmosphere is required high contrast lighting is employed, creating dark shadows and possibly only picking out the main points of interest. (Orson Welles' film – "Citizen Kane", is the supreme example of highly dramatic lighting).
From experience we can draw conclusions that the sun is a relatively small source (in area) of light and creates hard shadows; on the other hand the sky is a large area of illumination and creates very soft shadows, if any at all. Sunlight at dusk becomes diffused by dust in the atmosphere and this softens the effect a little. At dawn the atmosphere is free of dust and this results in hard light of high contrast. The mood created by light is affected by the colour of that light. Direct sunlight at mid-day is yellow and in the evening it becomes red (due to the scattering of blue light by dust in the air). The sky tends to let red light pass outwards and reflect blue light back to the earth. A subject lit by sunlight will appear warm, whereas if lit from the north sky, it will tend to take on a cold appearance.
As we will now find out in television our sun will be the spotlight and our sky will be a softlight.

PRACTICE

BASIC LIGHTING

The following descriptions apply to the lighting of people; however, it will be readily appreciated that all objects can be treated in a similar way and thus any picture is built up.

Illustrations and diagrams of Lighting Plots A,B,C,D,E,F, and G are on the left of this page.

The Key (A)

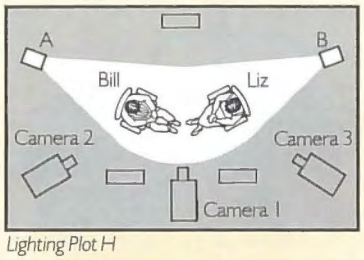
Why do we call it the 'key' light? Because it is the principal light and tends to be the key to the whole picture; it establishes the mood and character of the picture, and generally is capable of producing acceptable results when used on its own – it does not however contribute a great deal to the depth of the picture. The key tends to be used at a vertical angle of 30° but can be within the range of 20° to 45°. The range of horizontal incidence that gives satisfactory results is within 45° either side of normal. When the horizontal and vertical angles of incidence are both approximately 30° then usually good results are obtained. Typical light levels are 1000-2000 lux.

Backlight (B&C)

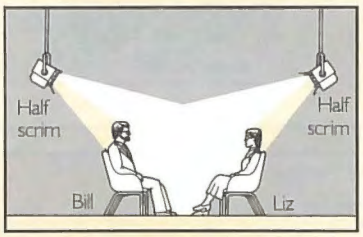
The backlight is used to enhance separation and depth; the angle of backlight to the subject should preferably not exceed 45° in the vertical plane and can be varied more than the key. It is more difficult to get a good backlight angle in the television studio due to the fact that the subjects have to be positioned quite a long way into the studio and this is generally impractical. The ratio of intensity of backlight to key light is generally 1:1 but strong backlight can sometimes be effective in creating mood and drama. Twin backlights are usually advantageous for subjects with long hair.

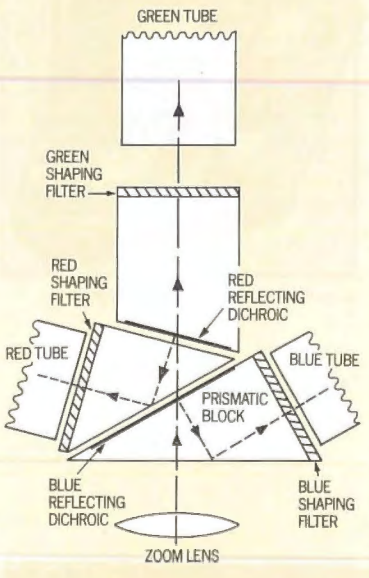
Fill light (D, E & F)

Fill light is often regarded as a base light upon which the modelling is built. Certainly the cameras have to have a definite level of light to work well, but it is found that modern cameras tolerate high contrast scenes extremely well, and base light does not have the importance that it did in the past. It is much better to light the scene and artists for effect as individual items built to a total, rather than flood the area with soft light and then add modelling keys.
Fill light also tends to be thought of as a soft source and, in general, is the most useful. This is not necessarily true for all situations. It is often found that a side hard light gives a very satisfactory result and spill light from keys is often carefully controlled to do just this.
A point to be borne in mind is that soft light is not shadowless light and the position of the soft light is most important. It is used generally to reduce the contrast created by the key light. The soft light has a level of approximately 500 lux.
A soft light used from the front can be used to control contrast but not often used in television. A soft light at 45° to the subject, would give a double key effect. A soft light from the side, used with our 30°/30° keylight gives the best result as you will see from our final illustration. When all the lights have been built up (Plot G) the final result can be very pleasing.



Lighting Plot H





Having lit one person, it is now possible, with a little modification, to light two people in a fairly typical TV situation – the two-way interview.

Cameras 2 and 3 give cross shots of the subjects and camera 1 gives the wide shot. As can be seen in Plot H, 'A' is Liz's key and acts as Bill's backlight. 'B' is Bill's key and Liz's backlight. The two softlights are used for filler and the background is generally illuminated.

STUDIO OPERATIONS

In colour studio operations the incident lighting levels tend to be between 1000 to 2000 lux. Generally a figure of 1500 lux incident is considered adequate for most purposes and dependent upon the lighting level, it is normal for cameras to work at about f2 to f4. The general height for luminaires is 3 to 4 metres from the studio floor level and plotted at 3.5 to 4.5 metres horizontal (around 4 to 5 metres actual distance).
When single point suspension, i.e. monopoles or pantographs on track, are used, then each luminaire is independent for setting of its position. For flexibility when using barrels with two luminaires suspended they are rigged with their own pantographs so that differential heights can be easily achieved.
The luminaires are generally used in the flood mode which gives the coverage required. However, by varying the focus (spot/flood) the light output is changed and this can be a method of controlling the light beam without the dimmer and has the added advantage of not changing the colour temperature.
Dimmers used in television studios normally have a square law light output which means the square of the fader setting from 1-10 gives the percentage light output, i.e., level '6' = 36%. The tungsten lamps used in television studios have a colour temperature of approximately 3200K at full voltage. It is normal when using the television lighting dimmer system to align the channel controllers to position '7' which means the dimmer supplies current to operate the lamp at 49% output, with a colour temperature of approximately 2950K. The reasons for this are that in normal operating conditions a tolerance of plus or minus one stop about the mean gives satisfactory control of light level, i.e. level '5' = 25%, level 10 = 100%. It has also been found that the +/− 200K colour temperature variation is acceptable in the majority of cases. It must be pointed out, however, that this variation when applied to the human face may be less; much depends on the texture and colour of the skin. This means, in practical lighting terms that the lighting can be varied, from its maximum to as low as 2750K (approximately 25% light output), without noticeable colour picture change; thus enabling a wide range of control to allow balancing between the light sources giving optimum results to the transmitted picture.
In the example shown, it is clearly impossible to balance for Liz's backlight without reducing Bill's key. To reduce the light falling on Liz it is usual to use a scrim, which is fitted in front of the lower half of the lens. This has the effect of attenuating the lower portion of the light beam. The effect within a luminaire's light beam with respect to fall-off can be likened to the depth of field of a lens. As we go further away from the source so the relative intensity levels over set distances become less variable. When close to the luminaire the changes of intensity are rapid and dramatic. A luminaire produces 2000 lux at 4m distance; to go from 4m to 3m changes the light level from 2000 lux to 3550 lux, a difference of **1550 lux for 1m distance change**. When we go to 5m we get a light level of 1280 lux which is a difference of **720 lux for a 1m distance change**.
It can therefore be seen that it is much better to use slightly more powerful wattage luminaires over a reasonable distance to achieve a certain light level than to use lower powered luminaires closer to the subject. Although this latter technique can produce high light levels the rate of change of light is exaggerated by the movements of the subjects.

THE TELEVISION CAMERA

The camera has to analyse the reflected light from a scene which is a mixture of **Red**, **Green** and **Blue**, the primary colours, in some combination:
Magenta (Purple), **Red+Blue**; **Yellow**, **Red+Green**; **Cyan** (Turquoise), **Blue+Green**.
The above combinations are the more straightforward ones and obviously others are more complex. However, all coloured surfaces can be broken down into the three component parts. Colour distortion can take place when the scene is illuminated with a source of light either deficient in some colour or with an excess e.g. fluorescents have a high green spectral component.

At present no commercially available professional quality camera tube is capable of producing the three separate signals required for colour television. It is thus a fundamental requirement that three separate tubes be employed. The use of three colour tubes and the consequent splitting of light that must occur makes the colour camera optically more complex.
Basic requirements of the colour separation system:
i) Light falling on the three tubes must have a common entrance pupil, i.e., each tube face must 'see' exactly the same scene in order to avoid parallax problems.
ii) Division of light must be affected with minimum loss, thus avoiding either excessive lighting levels in the studio or 'noisy' pictures produced by low light levels on the camera tubes photosensitive surface.
The camera pick up tube has a sensitivity which requires a certain amount of light just as the film in our still camera requires an amount to satisfy its ASA (ISO) rating. Below this level, noise (under-exposure in film) will become apparent. Above this level, over-exposure will occur. In both cases we control the amount of light entering and hence the exposure with an iris.
These requirements led to the development of special optical systems for colour cameras. The most obvious one being the use of zoom lenses to ensure a single path from the viewed scene to the camera electronics.
In television the aperture of the iris in the studio has been generally determined by the depth of field commensurate with production requirements. Camera iris settings in the range of f2 to f4 with today's cameras, require an incident scene light level of 1000 to 2000 lux so that the camera's basic sensitivity is satisfied and good quality, relatively noise free pictures are produced.

OUTSIDE BROADCAST LIGHTING

Lighting for outside broadcasts falls into two categories:
i) Large scale floodlighting of sports events, church interiors, etc., generally achieved by discharge luminaires;
ii) light entertainment and music programmes where the lighting is required to be the same as the studio.
In the early days of outside broadcast lighting, very simple rigs were employed, using a few luminaires on temporary scaffolding. The luminaires, which were powered directly from the mains supply either singly or sometimes switched in groups, were generally cumbersome and heavy. Carbon arcs were used but created rigging problems and so manufacturers were encouraged to look for alternatives. The breakthrough came with CSI and HMI discharge lamps which enabled smaller luminaires to be used with high light outputs. Although useful in many situations, such as (i), the fact that these sources cannot be dimmed successfully sometimes limits their use.
Outside broadcasts have become extremely complex and lighting directors now expect light sources of all types, capable of being dimmed, together with sophisticated lighting consoles to cater for outside broadcasts as in (ii).
In recent years, due to the complexity of the lighting rigs and to improve safety a British Standard (BS 5550) on location lighting was introduced which covers both the film and television industries.
Today our lights are as small as possible, supplied from sophisticated dimmers and distribution systems, complete with all known safety features. The consoles are generally portable derivatives of studio types, capable of dealing with all lighting situations up to and including large scale productions such as the Eurovision Song Contest, etc.

6kW HMI Spotlight

STUDIO LUMINAIRES

1kW Fresnel Spotlight

2kW Open Spotlight

2kW Profile Spot

WHAT IS A SPOTLIGHT?

It is a light source where the light beam is shaped; controlled by a curved reflector and/or a lens and may be divided into three groups:

Fresnel spotlight
This produces a fairly hard edged beam whose width is controlled by the spot/flood mechanism which operates by moving the lamp/reflector combination with respect to the lens. The fresnel lens is a convex lens which has been segmented and flattened to reduce weight and help with heat dispersion; it generally has a dimpled rear surface to break up lamp filament images.

Open spotlight
In the open spotlight spot/flood is achieved by moving either the lamp or the reflector in relation to the other. The edge of the light beam is not so well controlled or defined but the luminaire has a higher light output relative to the Fresnel lens type.
In both types of spotlight barndoors will be used to block the path of the light and thus confine the light beam to those areas we require to light for effect. Barndoors give a soft shadow, the character of which varies between spot and flood particularly with open spotlights.

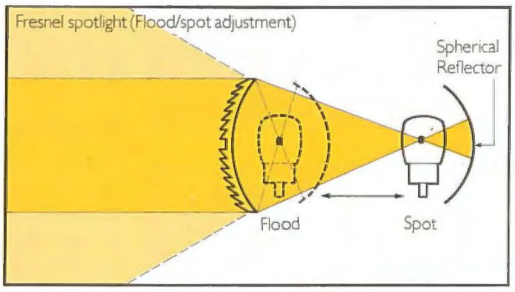
Profile and Followspots
These have optics capable of producing hard edged beams and generally work by adjusting their lenses.

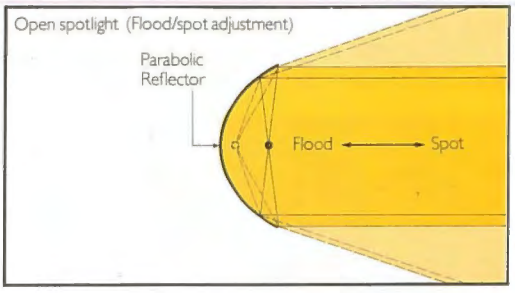
SOFTLIGHTS

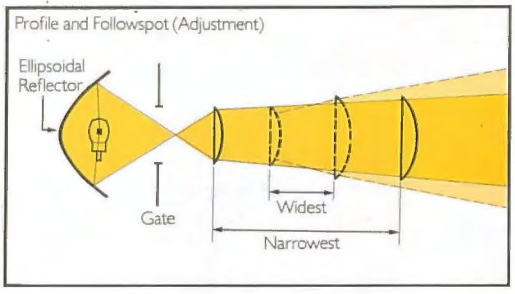
Although in theory softlights should be as large as possible, there are obvious practical constraints; there are two forms of softlights:

Softlight for filler
This is made as large in area as practicable and relies upon a simple indirect reflective system to scatter light in a fairly random manner.

Floodlights for Cyclorama lighting
Although in general cyc lights are considered a floodlight, very good results are obtained when the optical system is refined. This enables luminaires such as the 'IRIS' unit to be used close to the cyc cloth yet illuminate very evenly. It is also important that their overlap characteristics are well controlled, particularly so with a groundrow unit.







5kW Softlight

4-compartment Cyclorama Toplight

SPECIALISED LUMINAIRES

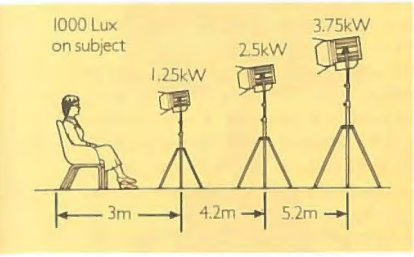
2.5/5kW Dual-Purpose Spot/Softlight

DUAL PURPOSE

Recent years have seen the development of the dual purpose luminaire; this device is a combination of a hard and soft source in one unit and is available in dual wattage versions as well. By its very nature the dual purpose luminaire offers far greater flexibility than conventional luminaires and saves time during rigging and studio operations. However, for the best results these luminaires should be used with a saturated grid. (This is where at least one luminaire is rigged per suspension point over the whole studio.)
It has been suggested that the need to keep the physical size and weight of these luminaires to a minimum to enable easy handling and rigging, means that the soft light is a compromise; this is not always the case as some manufacturers design these units using lightweight metals, pressed to give great strength and giving a similar light output to a conventional softlight. Because of its dual function the luminaire is more complex than the conventional hard and soft sources in general use, and together with the increase in weight may pose limitations in handling and design of the studio suspension system. In use with properly designed saturated grids the advantages can outweigh the disadvantages.

FOR STUDIO LUMINAIRES SEE PAGES 53 - 68

2.5-5kW Dual Wattage Luminaire



DUAL WATTAGE

Dual filament lamps are produced so that either filament can be used independently or, by addition, different power combinations are achieved, i.e. 1.25kW and 2.5kW filaments when combined give 3.75kW and spread of light is 3:1.

There can be advantages in rigging by using dual wattage luminaires as it allows the same luminaire to be used as a standard throughout the studio rig. Also where marginal lighting levels are reached the lighting director can easily make the necessary changes. One drawback of dual wattage luminaires is that their physical size is dictated by the ventilation requirements of the highest wattage used.

The chart shows the usable range of light output for the various wattage combinations in use at the present time. It is assumed that the dimmer has been set to '7' so that plus or minus one stop is available.

Although the optical system of dual spots tends to be a compromise for the two filaments, in practice that has not proved to be noticeable. Softlights can sometimes have differing characteristics dependent upon switch modes but most modern luminaires have overcome this problem.

Two points in favour of the dual wattage are:

i) with one luminaire in use maintenance spares are kept to a minimum.

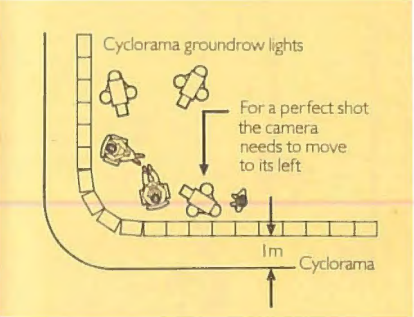
ii) lighting mode changes can easily be accommodated without re-rigging which saves valuable studio time.

CONSTRUCTION AND HANDLING

With modern lighting the number of luminaires in use imposes a considerable load upon the supporting structure. It is therefore essential to keep the weight to a minimum, and this is also desirable when handling luminaires. It can be shown that maintenance and damage increases with the weight of the luminaire, imposing a strain on the operating staff. Ideally, luminaires should be within the handling capability of one or two men. A 5kW spot weighing 17kg can be handled by one man, but when this weight is excceeded, two men are required.

Luminaires have been substantially reduced in weight in recent years without affecting durability or performance. With the increased requirement for lighter luminaires have come associated problems, other than the robustness of the luminaire, as their compact size demands an efficient ventilation system to ensure adequate convection cooling of the lamp.

To aid rigging and handling of luminaires, pole operation is usually employed in the studios. Functions such as pan, tilt, spot/flood and barndoor adjustments can be made from the studio floor with a specially made operating pole to avoid using step ladders to manually make these adjustments.



CYCLORAMA LIGHTS

Why are cycloramas so important? They offer, after the initial cost, an inexpensive and reliable method of providing a multiplicity of backings which would be costly and more inhibiting with conventional 'flats'.

Four compartment groundrow units are usually placed 1m from the cyc spaced at 1.22m centres and four compartment top units are placed 3m from the cyc spaced at 2.5m centres. Generally the floor units will use 625W lamps and top units 1250W lamps

To light from the cyc bottom in four colours approximately 2000W per metre is required. A small studio, e.g., 100m^2, with cyc on three sides, i.e., 25m of cyc, would require 50kW; if only two colours are used, then the figure of approximately 25kW is still quite substantial. Top cyc lighting at the quoted distance will also require 2000W per metre for four colours.

In the case of studios up to 200m^2 bottom cyc lighting poses a problem with regard to floor space. To have a studio with cycs on three sides with units placed 1m away from the cloth in a 100m^2 studio means 35% of floor area is lost. This loss can give problems with camera shots (see illustration) and it should be borne in mind when planning small studios. Having made this point, it must always be remembered that the lighting director needs the artists at least 1m away from the cyc. so that backlights can be used effectively. For these reasons top cyc lighting is preferred in studios up to 200m^2.

Multicolour cyc lighting on a grand scale is more often used with large open space sets such as light entertainment and music productions. In this type of production the cyc top lighting often predominates. With other types of production, such as drama, the requirement for cyc lighting is very much reduced and the need is usually to light backings to windows and the studio exteriors. Owing to the increased complexity of lighting of artists and sets in drama type productions groundrow cyc lighting is used, thus saving valuable grid space.

PROFILE AND FOLLOW SPOTS

The fresnel spot, although a focusing source, produces a beam with a soft edge. Whether by accident or design, this feature is essential to good overall lighting, allowing one source to merge with another, without apparent changes. There is also a requirement for luminaires with a hard edged beam for effects purposes.

In the studio, there are occasions when certain effects have to be simulated e.g., sunlit window pattern projected on a wall; either a full sized window is used with a fresnel spot, or the profile spot can be employed. The profile spot can be likened to the normal photographic projector with a similar optical system for the projected hard edged images. In the case of the window quoted in the example, a simple cut out shape of the window is made, usually from metal foil, placed in the gate (which is too hot for plastic materials) and projected by the correct angle optics to the surface where the effect is required. Thus a very good effect can be obtained without the need to occupy valuable studio space. One point to be borne in mind is that the projector has to have good wide angle optics at close range rather than narrow angle optics at a longer distance. If not, any movement however slight, will be magnified. This highlights one of the drawbacks of profile spots. They must be stationary to be effective – it is most disturbing to see projected patterns wandering.

The window cutout mentioned is a dramatic use of the profile spot. It should, however be obvious to the reader, that any shape can be used and projected to give visual interest to the television picture. Although focused shapes have been discussed, very good effects can be achieved by partial defocusing of the image.

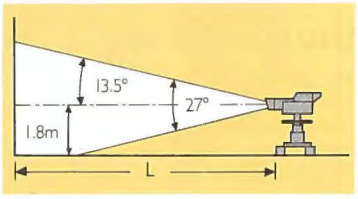
The follow spot can be regarded as the 'elder brother' of the profile spot, but in this case a pattern is not projected. The follow spot has very narrow angle optics which allow it to be used over long distances as the following key light on the main artist.

Both the profile and follow spots are usually supplied with integral framing shutters to give straight edges to the beam and an iris to vary the circular size of the beam. They will also accept colour frames on the front of the optics to allow the use of colouring material or in some cases colour correction filters.

2kW Profile Spot

1kW CSI/CID Followspot

GENERAL STUDIO DESIGN



DESIGN CONSIDERATIONS

It is extremely important to get the operating heights within the studio correct and therefore the following suggested system gives very good results. It is never satisfactory to try to fit equipment into a 'box' as an afterthought.

CYCLORAMA HEIGHTS

Camera viewing aspect ratio = 4:3
Assume 36° lens used this gives vertical angle of shot = 27°
Assume lens height of 1.8m
Cyclorama height = (L x tan 13.5°) + 1.8m
Cyclorama heights (m) for studios with maximum dimension (m) of:

Studio	Cyc. ht	Studio	Cyc. ht.
6	3.2	20	6.6
8	3.7	22	7.1
10	4.2	24	7.6
12	4.7	26	8.0
14	5.2	28	8.5
16	5.6	30	9.0
18	6.1	32	9.5

STUDIO HEIGHTS

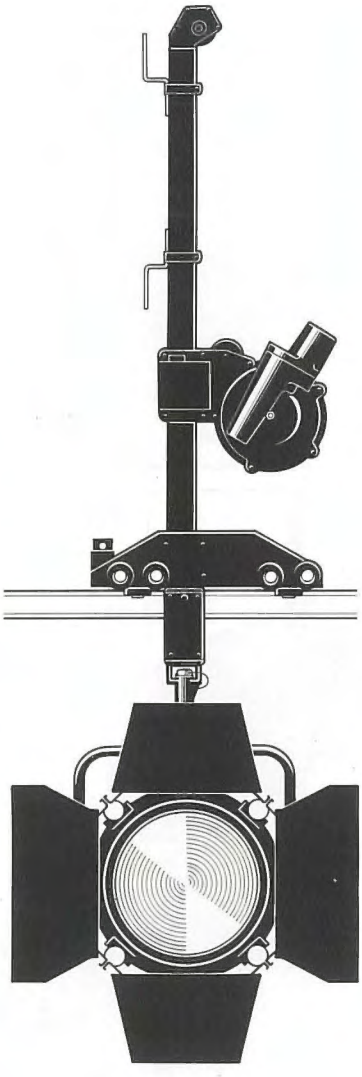
Studios are usually constructed with floor dimensions in the ratios varying from 5:4 to 3:2. Generally the proportions approximate to Length 5.5: Width 4: Height 3.
For example:

Studio dimensions	= 30m x 24m
Cyclorama height for 30m	= 9m
Height allowance for luminaires and pantographs for suspension system	= 2m
Therefore grid height	= 11m
Allowance above grid for maintenance	= 2.5m
Allowance for air conditioning and services above grid maintenance area	= 2.5m
Total studio height	= 11 + 2.5 + 2.5 = 16m

The example quoted is for a conventional studio with a barrel grid. The figures still hold for monopole grids but if no access is required above the grid then the total height could be reduced.

SUSPENSION

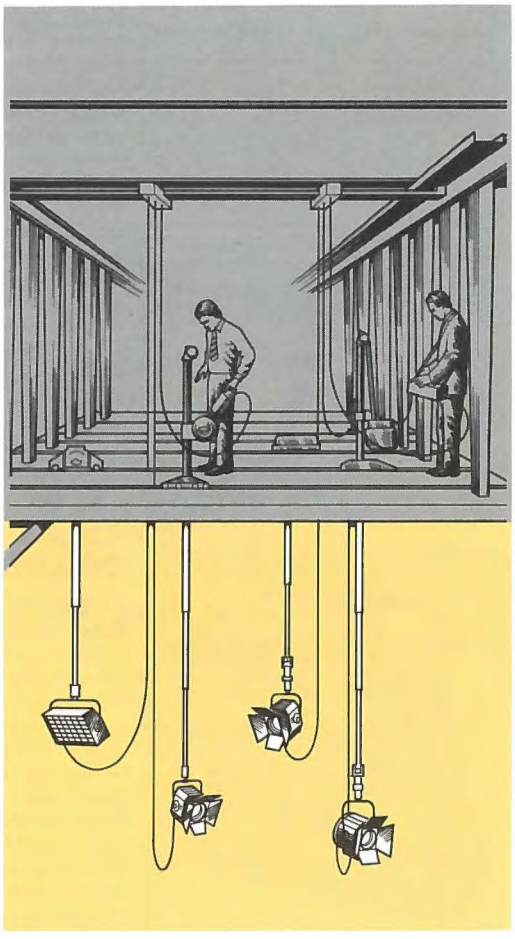
Where monopole single point suspension is used, great flexibility is offered and luminaires can be hung anywhere in the studio. The main requirements being sufficient suspension units and power outlets, together with enough luminaires for the largest production requirement.
If the studio is equipped with pantographs running along fixed barrels which allow no sideways movement, then additional bars and suspension have to be provided as in barrel grids.
With barrel grids, due to their inherent fixed nature, additional bars are required for peripheral lighting for the studio sides and also for the cyc lighting system. It is also important to provide for the maximum number of barrels and it has been found in practice that 2.4m barrels at 1.2m spacings offer the best coverage allowing for the size of dual source luminaires.
Barrel grids often operate on the saturated principle to give high productivity in utilisation.



TYPES OF SUSPENSION

MONOPOLES

Single point suspension usually involves an overhead lighting grid which provides a working platform for the studio electricians, with the luminaires suspended from the grid on a telescopic device which permits variation in height and freedom of movement for positioning the luminaire at the required place in the set.
The overhead grid is an integral part of the studio construction and is incorporated in the design of the studio from the outset. The grid is divided into sections by continuous slots that run the length of the studio at intervals of around 1m. In some designs a number of additional slots are provided running across the width of the studio to facilitate transfer of telescopes from one main slot to another.
The telescopes are made to fit the width of the slots and are provided with wheels to enable the unit to be moved along the grid platform to any position in the studio. A winch is provided on the top section of the telescope above the grid platform, to enable the luminaire to be raised or lowered to the required height. The winch is operated by means of an electric or air powered hand tool or by a hand operated crank.
The rigging crew work on the grid platform and move the luminaires above the sets to the positions indicated by the lighting director. The grid also carries the main electrical distribution system. Loading of the luminaires and maintenance is undertaken by moving the telescope to the edge of the grid where access is obtained via a peripheral gallery.



ROLLER PANTOGRAPH

This suspension system consists of long pantographs suspended from runs of fixed barrel across the studio with no lateral transfer possible. No access is provided above the grid and all operations have to be carried out at floor level. Generally economical to install, it offers a high degree of flexibility. Recent systems use motorised pantographs for enhanced operation.

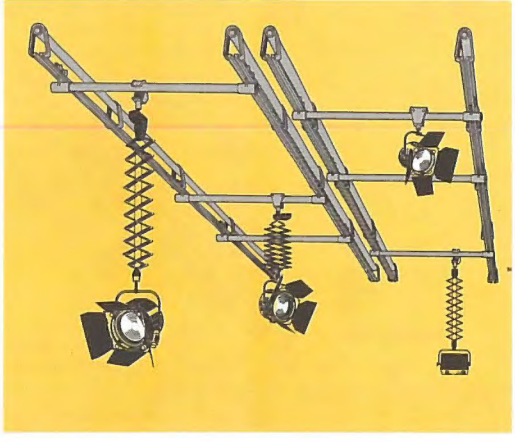
FOR SUSPENSION EQUIPMENT SEE PAGES 84-86

THE MOTORISED HOIST

The motorised hoist is the main rival in larger studios to the overhead single point suspension grid. It consists of a length of barrel (48mm scaffold) supported by wire ropes connected to a motor winch mounted in the studio roof.
Power outlets for connecting the luminaires can be mounted into a frame above the barrel and power cables housed in a collapsible tray which folds and unfolds as the barrel height is altered. The barrels are usually 2.4m long and the luminaires attached to them by means of clamps or on small wheeled trolleys which give the additional possibility of lateral positioning of the luminaire.
The hoists are placed at regular intervals along the length and across the width of the studio to enable luminaires to be fixed at almost any required position. It is usual to rig two luminaires on each barrel.
As all the luminaires normally remain on the barrel, de-rigging the studio at the end of a production can simply consist of raising all barrels to maximum height through a single master control.
This system gains maximum advantage when the number of different types of luminaire are reduced and the installation density of luminaires is increased compared to the requirements of the single point suspension system (i.e., the saturated grid). The dual source luminaire is particularly suited to this type of suspension.
Medium sized studios can be fitted with handwinched hoists, which are similar in conception to the motorised hoist but the suspension cables are diverted through roof mounted pulleys to winches mounted on the studio wall either operated from floor level or from a gantry.
Raising or lowering of the hoist is achieved through the use of a hand operated handle or a power tool similar to that used with the single point suspension telescope.

TRACK & BARREL SYSTEM

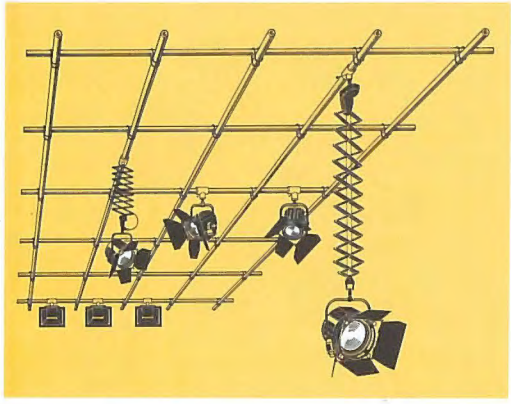
Smaller studios, particularly those of limited height, are ideally suited to the track and barrel system. This comprises pairs of tracks (similar to that used for industrial sliding doors) mounted directly under the studio ceiling. The number of pairs of tracks is determined by the studio width.
The barrel is fitted with a roller carriage at each end which runs in the tracking, enabling the barrel to be moved along the length of the studio.
The luminaires are rigged on the barrel by means of a roller trolley which allows them to move the length of the barrel or on a pantograph which gives the additional facility of individual height adjustment.
Power distribution is generally achieved by mounting sockets on trunking between the adjacent pairs of tracks. The luminaires can remain connected to these sockets with the trailing power cables supported by a supplementary catenary system.



Track and Barrel System

FIXED BARREL SYSTEM

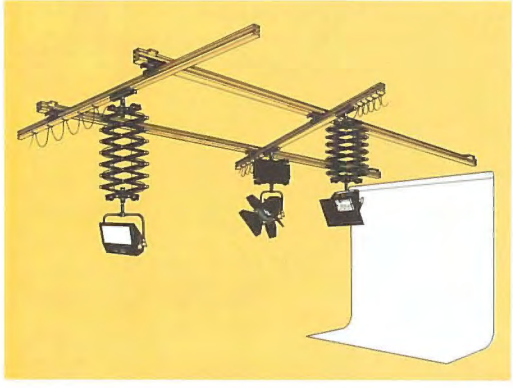
This is the simplest form of installation and one that is adequate for presentation studios or small to medium sized studios where a fixed lighting installation can be used, as for example when the same sets are used for each production or with very little change in the scene.
At its simplest, the fixed barrel system comprises scaffold barrels mounted across the full width of the studio just below the studio ceiling. The luminaires are attached to the barrels with clamps and little or no attempt is made to provide facilities for height variation or lateral movement.



Fixed Barrel System

LIGHTRIG SYSTEM

This suspension system is a variation on the track and barrel grid, but it is much more flexible as the traversing tracks can be adjusted diagonally across the primary track, providing a greater combination of luminaire positions, with the added advantage that fewer traversing tracks are required.
Moreover, the traversing track can travel through its supporting carriages to provide an extended overhang outside the normal primary supports, as well as extra positions for luminaires in inaccessible places.
LightRig is a flexible system, ideal for small studios where the height is comparatively restricted.



Lightrig System

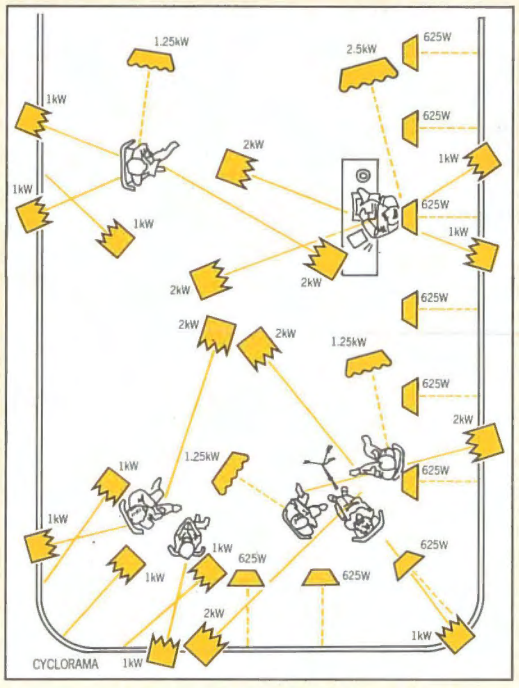
ANCILLARY LIGHTING

Although generally the studio will be rigged with the necessary luminaires, there are occasions when other luminaires will be used. Certain effects can only be achieved by luminaires at studio floor level, e.g., fireflicker, water rippling. As well as effects, it is often desirable to use soft and hard sources at floor level. In particular, softlights can be at their most effective when square to a subject.
When planning the studio this must be taken into account and it is therefore necessary to supply floor stands to support the equipment. Other than these lights at floor level, there is the need to rig luminaires on the top of scenery flats which will require special clamps.

STUDIO LAYOUTS

100m² INTERVIEW SITUATIONS

The plot for the 100m² studio is a very basic one using 2kW and 1kW fresnel spotlights, together with lower wattage softlights for a simple talks programme.



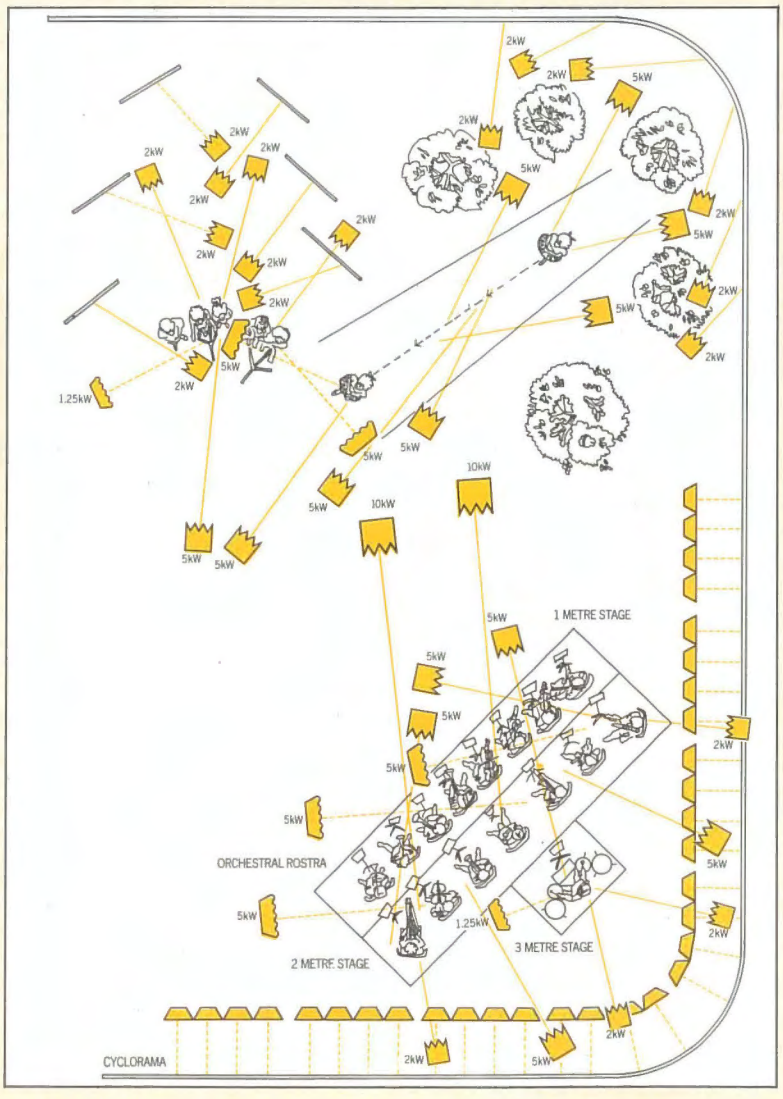
SUGGESTED EQUIPMENT

Minimum power required: 65kW

16 x 2kW Fresnel spots
10 x 1kW Fresnel spots
6 x 1.25/2.5kW Softlights
4 x 1.25kW Softlights
4 x 1kW Profile spots
6 x Floor stands
Cyc: 16 x 625W single compartment top units
Lighting control system as appropriate

400m² A TYPICAL MUSICAL PRODUCTION

The plot for the 400m² studio shows a mixture of straightforward fresnel spots at 10kW, 5kW and 2kW. The programme is that of an orchestra with guest singers, some of whom use the roadway, surrounded by trees depicted in the upper right. In the upper left of the studio plan we have a set composed of small 'flats' with a group of singers performing.



SUGGESTED EQUIPMENT

Minimum power required: 340kW

3 x 10kW Fresnel spots
25 x 5kW Fresnel spots and
20 x 2kW Fresnel spots
or:
45 x 2.5/5kW Dual wattage Fresnel spots
12 x 1kW Fresnel spots
12 x 2.5/5kW Softlights
8 x 1kW Profile spots
12 x Floor stands
Cyc: 16 x 1.25kW 4-compartment top units
or:
40 x 625W 4-compartment groundrows
Lighting control system as appropriate

KEY TO STUDIO LAYOUTS

Fresnel spotlight

Softlight

Cyclorama light

FOR STRAND STUDIO LUMINAIRE STENCIL SEE PAGE 33

STUDIO, PORTABLE & LOCATION LIGHTING

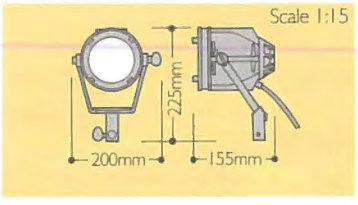
International leadership in TV, film and video lighting

Under the famous Quartzcolor brand name, Strand is the world's largest specialist manufacturer of lighting equipment for the television and film industries. Whether the need is for a single portable spot or a comprehensive saturated rig for a large studio, the answer is in the international Quartzcolor range. Developed over the years in close co-operation with lighting designers and cameramen, Quartzcolor luminaires and accessories ensure reliability and unsurpassed lighting performance.

The news studio at Sky Television, West London, equipped by Strand with Quartzcolor luminaires and M24 memory lighting system.

PORTABLE LIGHTING

The versatile Pulsar, Redhead and Blonde variable beam floodlights are the indispensable workhorses of the television and film lighting engineers, light to handle and efficient in operation. Other purpose-designed luminaires in this range ensure that all studio and location needs in portable equipment are met.



PULSAR MkII 650W VARIABLE BEAM FLOODLIGHT

61 313 01 1.8 kg

The compact Pulsar 650W floodlight has a strong, lightweight housing of heat-resisting polyester/glass fibre. The beam is variable between 37° and 72°, operated by a focus control at the back of the unit. A reliable and versatile lamphead, it is also featured in a number of Quartzcolor portable kits. **Supplied with accessory holder, 3.5 metres of power cable and in-line switch; also A1/233 650W/240V lamp in U.K. only.**

Pulsar II
Performance guide based on A1/233 650W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	3500	2.00	1975	2.68	1275	3.35	875	4.00
W	925	4.36	525	5.81	350	7.27	250	8.72

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories

4 Leaf rotating barndoor **66 313 10**

Outrig colour frame **66 313 40**

Full double scrim (50% transmission) **66 933 12**

Full single scrim (66% transmission) **66 933 20**

Half double scrim **66 933 39**

Half single scrim **66 933 47**

Safety glass in mount **66 932 68**

Dichroic 'Daylight' filter in mount **66 932 5T**

Umbrella support **66 313 60**

Hand grip **53 140 31**

'Rankpak' reflector pack **53 140 4T**

Kit case (lockable) for 3 heads & accessories **66 313 53**

Note: We recommend the use of safety glass or dichroic filter with the Pulsar luminaire.

Lamps

A1/233 (DYR) 650W (mains)
240V lamp **34 312 30**
220V lamp **34 312 49**

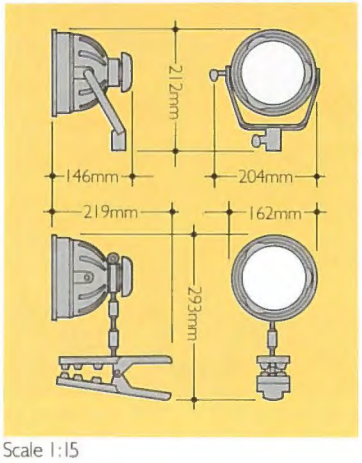
DYG 250W (battery)
30V lamp **34 312 57**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Small gaffer grip **66 198 17**
Table stand **66 020 50**
Mercury stand **67 236 56**
Spartan stand **67 257 56**



Scale 1:15

REDHEAD 800W VARIABLE BEAM FLOODLIGHT

61 314 24 Stirrup Mount, Barndoor and Accessory Holder 1.94kg

61 314 22 Stirrup Mount 1.33kg

61 314 30 Clamp Mount 1.72kg

This lightweight 800W variable beam flood was the industry's first lamphead to be constructed from heat-insulating polyester/glass fibre material. The Redhead has an easy-to-use focusing mechanism for varying beam angle from 42° to 86° with even distribution of light. The unit accepts linear quartz lamps, 800W 220/240V or 650W 120V, and can also be used with 30V 250W lamps for battery operation.

All models supplied with 3.5 metres of power cable, and in-line switch; also DXX 240V 800W lamp in U.K. only.

Accessories

Accessory holder* **66 314 40**

4 Leaf rotating barndoor* **66 314 67**

Outrig colour frame **66 314 59**

Wire guard* (N.B. Stops any other accessory being fitted) **66 314 75**

Safety glass in mount* **66 945 61**

Dichroic 'Daylight' filter in mount* **66 945 53**

Full double scrim* (50% transmission) **66 948 25**

Full single scrim* (66% transmission) **66 948 17**

Half double scrim* **66 949 20**

Half single scrim* **66 949 12**

Hand grip **53 140 31**

'Rankpak' reflector pack **53 140 4T**

Outfit case (for 4 heads and accessories) **53 142 32**

Outfit case (for 3 heads and accessories) **53 142 30**

Wire mesh guard **66 314 51**

Lamps

DXX (P2/13) 800W
240V lamp **34 413 81**
220V lamp **34 413 14**

Note: Redhead luminaires should only be operated when fitted with either safety mesh, safety glass or dichroic filter.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Spartan stand **67 257 56**

Apollo stand **52 052 04**

Small gaffer grip **66 198 17**

** Accessories suitable for use with Pinza Clamplight in conjunction with accessory holder 66 314 40*

Redhead 800W
Performance guide based on P2/13 800W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	4750	2.3	2525	3.17	1625	3.88	1125	4.66
W	725	5.6	425	7.46	275	9.33	200	11.19

N = Narrowest W = Widest
For full photometric information refer to data sheet.

'AMERICAN' REDHEAD 1000W 120V VARIABLE BEAM FLOODLIGHT

61 314 06 With Stirrup Mount, 3.5 metres power cable, and in-line switch.

61 314 14 With Clamp Mount, 3.5 metres power cable and in-line switch

Lamp

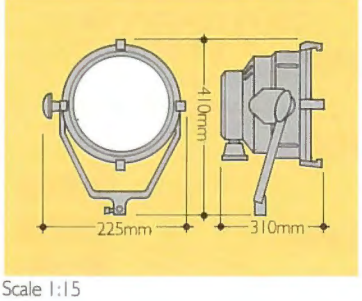
DXW 1000W 120V lamp **34 413 65**

'FIREBRIGADE' REDHEAD 250W

61 914 00

This luminaire is a 24V 250W version of the standard 'Redhead' and comprises lamphead, toughened safety glass in mount.

Supplied with A1/223 24V 250W lamp.



Scale 1:15

BLONDE 2000W VARIABLE BEAM FLOODLIGHT

61 315 01 3.85kg

The Quartzcolor Blonde 2000W is a versatile variable beam floodlight widely used for ENG, TV outside broadcasting and location filming. A moving reflector mechanism minimises lamp filament vibration when varying the beam from 23° spot to 70° flood, and so ensures maximum lamp life.

Supplied with accessory holder, 5 metres of power cable, and in-line switch; also FEX 240V 2000W lamp in U.K. only.

Accessories

4 Leaf rotating barndoor **66 315 38**

Wire guard **66 315 62**

Safety glass in mount **66 315 70**

Dichroic 'Daylight' filter in mount **66 315 2T**

Full double scrim (50% transmission) **66 954 20**

Full single scrim (66% transmission) **66 954 12**

Half double scrim **66 955 26**

Half single scrim **66 955 18**

'Rankpak' reflector pack **53 140 4T**

Single outfit case (for 1 head and accessories) **53 150 12**

Double outfit case (for 2 heads and accessories) **53 150 20**

Wire mesh guard **66 315 71**

Lamps

2000W FEX (P2/27)
240V lamp **34 427 80**
220V lamp **34 427 72**

Note: Blonde luminaires should only be operated when fitted with either safety mesh, safety glass or dichroic filter.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Trojan stand **52 005 04**

Hercules stand **52 008 00**

Large gaffer grip **66 229 16**

Blonde
Performance guide based on FEX 2000W lamp

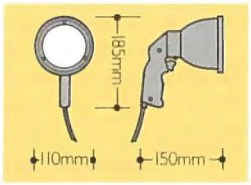
	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	13500	1.63	6000	2.44	3375	3.26	2175	4.07
W	1575	5.6	700	8.4	400	11.2	275	14.0

N = Narrowest W = Widest
For full photometric information refer to data sheet.

FOR CABLES AND CONNECTORS SEE PAGES 78 & 79

MEGALUX 250W BATTERY OPERATED HANDLAMP

61 279 02 0.5kg



Scale 1:15

Weighing only 0.5kg, Megalux is a compact, general purpose handheld light for 30V battery operation. The light is switched on by pressing the trigger on the pistol grip handle. It is released by a catch on the back of the handle.
Supplied with integral pistol grip and trigger switch, 2.5 metres power cable.

Megalux
Performance guide based on FBV 250W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	1375	1.27	775	1.7	500	2.12	350	2.54
W	475	4.43	275	5.91	175	7.39	125	8.86

N = Narrowest W = Widest
For full photometric information refer to data sheet.

Accessories


Two leaf barndoor **66 302 0T**


Safety glass/ UV Filter **66 302 20**


Dichroic 'Daylight' filter **66 302 18**


Dichroic filter mount **66 302 26**

16mm adaptor socket for stand **66 043 19**

16mm adaptor spigot for stand **66 043 00**

Strand 30V battery with 5 pin connector **53 080 20**

Strand charger **53 080 30**

Kit case **53 279 10**

5 pin connector **53 081 36**

Lamp

FBV 250W 30V battery lamp **34 325 0T**

Note: We recommend the use of a safety glass or dichroic filter with the Megalux luminaire.

Recommended Stands

(For full description of Stands refer to Section 6)

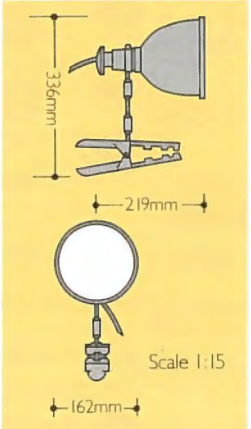
Table stand **66 020 50**

Mercury stand **67 236 56**

Spartan stand **67 257 56**

PINZA 500W CLAMPLIGHT

61 338 02 1.5kg



A compact versatile fill light, the Pinza is ideal for use in situations where space is limited, or for use as a camera light. Provided with a flexible arm and clamp, the Pinza can quickly be attached to any convenient mounting.
Supplied with flexible arm and clamp, and 3.5 metres power cable with in-line switch.

Accessories


4 Leaf barndoor with integral wire guard **66 153 53**

Cone (front diameter 40mm) **66 155 46**

Cone (front diameter 80mm) **66 155 89**

Note: The accessory holder 66 314 40 for the 'Redhead' 800W when fitted to the Pinza allows the use of most 'Redhead' accessories. See page 54 for details.

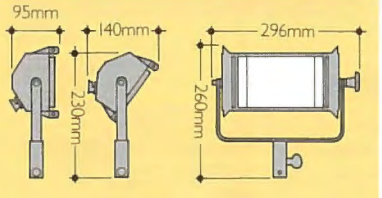
Lamp

P2/1 500W 240V lamp **34 401 40**

Note: We recommend the use of a safety wire guard with the Pinza luminaire.

IADI FILL MkII 1000W FLOODLIGHT

60 259 02 2.3kg



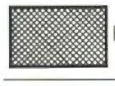
Scale 1:15

Featuring a special profile reflector, the Iadi Fill floodlight provides a wide angle, even fill beam which is ideal for lighting large areas in restricted locations. Accessories include clip-on aluminium reflectors for beam intensification, opal glass and wire scrims. *See page 66 for Iadi Fill Cyclight.*
Supplied with barndoor, wire guard, yoke with 16mm female sockets and 3.9 metres power cable with double pole in-line switch.
For performance details please refer to data sheet.

Accessories


Reflectors to fit barndoors (set of 4) **66 259 20**


Full double scrim **66 259 21**


Full single scrim **66 259 22**


Opal glass diffuser in mount **66 259 29**

Dichroic daylight filter in mount **66 259 25**

Wire guard **66 259 26**

'Rankpak' reflector pack **53 140 4T**

Outfit case (for 3 heads and accessories) **53 142 30**

Lamps

P2/20 1000W (linear)
240V lamp **34 413 02**
220V lamp **34 413 04**

P2/11 800W (linear)
240V lamp **34 366 01**
220V lamp **34 366 03**

K1 500W (linear) frosted
240V lamp **34 275 01**
220V lamp **34 275 1T**

Recommended Suspension & Stands

Spartan stand **67 257 56**

Apollo stand **52 052 04**

Small gaffer grip **66 198 17**

29mm spigot to 16mm socket adaptor for use with 64 925 80 **66 042 05**

16mm spigot adaptor used with the above **64 925 80**

Adjustable 'sky hook' with two spigots **53 043 17**

Magic arm set **52 143 01**

Table stand with 16mm spigot **66 020 50**

PORTABLE LIGHTING KITS

For speedy set-ups with the right lighting for the job, on location or in the studio, select from this extensive Strand Quartzcolor range of twelve compact, portable kits. Each comes complete with lampheads, lamps and accessories.

KITS 1-6

For demanding ENG assignments of every kind, the Strand Quartzcolor range provides a ready answer with this wide choice of portable kits. With everything safely stowed in its robust case, you can take off quickly and set up without delay. In addition to the accessories listed for each kit, a 'bounce' light umbrella can also be provided, if required.

REDHEAD KITS

Take your choice of three kits featuring the versatile 800W Redhead variable beam floodlights. Redhead Kit 3 is a purpose designed case that accepts lights fully assembled with accessory holders and folded barndoors, so saving time on location. The Redhead's heat-insulating housing means there's no need to wait for a cooling-down period.

BLONDE KITS

Travel with a Blonde kit for powerful lighting indoors or out. The single kit has a 2kW lamphead whilst the double kit offers two lampheads, complete with the normal accessories to ensure that you get maximum versatility for minimum weight.
The De luxe outfit cases provide full protection in transit and are easy to carry.

To keep the case size to a minimum, stands are not included in these kits.

KIT 1

61 004 05 | 14.0kg

Dimensions:
W560mm x H240mm x D450mm
3 Pulsars & Accessories

3 PULSARS **61 313 01**

Lightweight 650W Pulsar floodlights meet a wide range of location and studio requirements.

Accessories

3 Barndoors **66 313 10**

- 3 Safety glasses in mounts **66 932 68**
- 1 Scrim full double **66 933 12**
- 1 Scrim full single **66 933 20**
- 1 Scrim half double **66 933 39**
- 1 Scrim half single **66 933 47**

3 Mercury stands **67 236 56**

1 Rankpak reflector pack **53 140 4T**

3 A1 / 233 (DYR)-650W lamps
240V **34 312 30**
220V **34 312 49**

1 Deluxe outfit case **66 313 53**

KIT 2

61 004 10 | 13.5kg

Dimensions:
W560mm x H240mm x D450mm
2 Pulsars, 1 Mizar & Accessories

2 PULSARS **61 313 01**

Easy to operate, the Pulsar has a control knob at the rear for beam adjustment between 37° and 72°.

Accessories

2 Barndoors **66 313 10**

- 2 Safety glasses in mounts **66 932 68**
- 1 Scrim full double **66 933 12**
- 1 Scrim full single **66 933 20**
- 1 Scrim half double **66 933 39**
- 1 Scrim half single **66 933 47**

2 A1 / 233 (DYR)-650W lamps
240V **34 312 30**
220V **34 312 49**

1 MIZAR **60 250 11**

A compact 300W/ 500W fresnel focusing keylight, easy to conceal.

Accessories

1 Barndoor **66 313 10**

1 Wire guard **66 025 40**

2 Mercury stands **67 236 56**

1 Gaffer grip **66 198 17**

1 Rankpak reflector pack **53 140 4T**

1 CP / 82-500W lamp
240V **34 349 65**
220V **34 349 57**

1 Deluxe outfit case **66 313 53**

KIT 3

61 004 20 | 13.5kg

Dimensions:
W560mm x H240mm x D450mm
1 Pulsar, 2 Mizars & Accessories

1 PULSAR **61 313 01**

Adjustments can easily be made with the lamp in operation as the housing is in heat-resisting fibreglass.

Accessories

1 Barndoor **66 313 10**

- 1 Safety glass in mount **66 932 68**
- 1 Scrim full double **66 933 12**
- 1 Scrim full single **66 933 20**
- 1 Scrim half double **66 933 39**
- 1 Scrim half single **66 933 47**

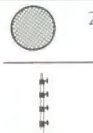
1 A1 / 233 (DYR)-650W lamp
240V **34 312 30**
220V **34 312 49**

2 MIZARS **60 250 11**

The hinged construction of the Mizar housing makes it quick and easy to change lamps.

Accessories

2 Barndoors **66 313 10**



2 Wire guards **66 025 40**

2 Mercury Stands **67 236 56**

1 Gaffer grip **66 198 17**

1 Rankpak pack reflector **53 140 4T**

2 CP / 82-500W lamps
240V **34 349 65**
220V **34 349 57**

1 Deluxe outfit case **66 313 53**

FOR STANDS SEE PAGES 82 & 83

KIT 4

61 008 10 16.5kg

Dimensions:
W800mm x H260mm x D400mm
2 Pulsars, 1 Iadi Fill & Accessories

2 PULSARS 61 313 01

Colour is integral in the moulding of the Pulsar's tough housing so it will not deteriorate or wear.

Accessories

2 Barndoors 66 313 10

2 Safety glasses in mounts 66 932 68

1 Scrim full double 66 933 12

1 Scrim full single 66 933 20

1 Scrim half double 66 933 39

1 Scrim half single 66 933 47

2 A1 / 233 (DYR)-650W lamps

240V 34 312 30

220V 34 312 49

1 IADI FILL LIGHT 60 259 02

This robust floodlight provides wide angle, even fil lighting and is ideal where height and distance are restricted.

Accessories

1 Set of 4 reflectors 66 259 20

1 Opal glass 66 259 29

1 Scrim full double 66 259 21

1 Scrim full single 66 259 22

1 P2 / 20-1000W lamp

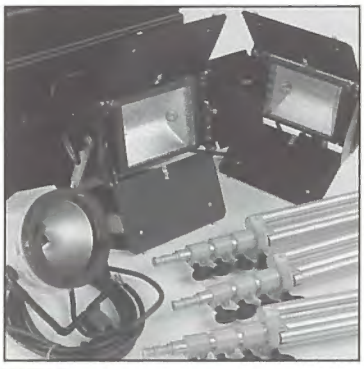
240V 34 413 02

220V 34 413 04

3 Spartan stands 67 257 56

1 Rankpak reflector pack 53 140 4T

1 Deluxe outfit case 53 142 30



KIT 5

61 008 12 17.0kg

Dimensions:
W800mm x H260mm x D400mm
1 Pulsars, 2 Iadi Fills & Accessories

1 PULSAR 61 313 01

Call it the Pulsar or call it the Mini-Redhead – it's the same compact, convenient luminaire!

Accessories

1 Barndoor 66 313 10

1 Safety glass in mount 66 932 68

1 Scrim full double 66 933 12

1 Scrim full single 66 933 20

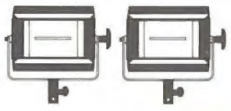
1 Scrim half double 66 933 39

1 Scrim half single 66 933 47

1 A1 / 233 (DYR)-650W lamp

240V 34 312 30

220V 34 312 49



2 IADI FILL LIGHTS 60 259 02

Aluminium reflectors clip to barndoors for increasing beam intensity or widening beam angle.

Accessories

1 Set of 4 reflectors 66 259 20

1 Opal glass 66 259 29

1 Scrim full double 66 259 21

1 Scrim full single 66 259 22

2 F2 / 20-1000W lamps

240V 34 413 02

220V 34 413 04

3 Spartan stands 67 257 56

1 Rankpak reflector pack 53 140 4T

1 Deluxe outfit case 53 142 30

KIT 6

61 008 14 21.5kg

Dimensions:
W1000mm x H290mm x D350mm
2 Redheads, 2 Iadi Fills & Accessories

2 REDHEADS 61 314 22

These 800W units are a familiar sight in studios and on location – the first lampheads of their kind to have a robust, lightweight fibreglass housing.

Accessories

2 Accessory holders 66 314 40

2 Barndoors 66 314 67

2 Safety glasses in mounts 66 945 61

1 Scrim full double 66 948 25

1 Scrim full single 66 948 17

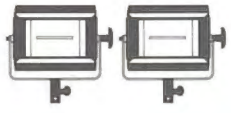
1 Scrim half double 66 949 20

1 Scrim half single 66 949 12

2 DXX-800W lamps

240V 34 413 81

220V 34 413 14



2 IADI FILL LIGHTS 60 259 02

With its range of accessories, the Iadi Fill is a self-contained lighting system on its own!

Accessories

1 Set of 4 reflectors 66 259 20

1 Opal glass 66 259 29

1 Scrim full double 66 259 21

1 Scrim full single 66 259 22

2 P2 / 20-1000W lamps

240V 34 413 02

220V 34 413 04

3 Spartan stands 67 257 56

1 Gaffer grip 66 198 17

1 Rankpak reflector pack 53 140 4T

1 Deluxe outfit case 53 142 32

For full description of stands refer to Section 6.

FOUR REDHEAD KIT

61 001 09 20.5kg

Dimensions:
W1000mm x H290mm x D350mm
4 Redheads & Accessories

4 REDHEADS **61 314 22**

The heat insulating characteristics of the housings mean that beam adjustments can comfortably be made during operation.

Accessories

4 Accessory holders **66 314 40**

4 Barndoors **66 314 67**

4 Safety glasses in mounts **66 945 61**

1 Scrim full double **66 948 25**

1 Scrim full single **66 948 17**

1 Scrim half double **66 949 20**

1 Scrim half single **66 949 12**

3 Spartan stands **67 257 56**

1 Gaffer grip **66 198 17**

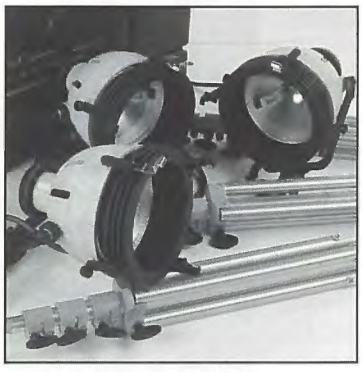
1 Rankpak reflector pack **53 140 4T**

4 DXX-800W lamps

240V **34 413 81**

220V **34 413 14**

1 Deluxe outfit case **53 142 32**



THREE REDHEAD KIT

61 001 11 16.0kg

Dimensions:
W800mm x H260mm x D400mm
3 Redheads & Accessories

3 REDHEADS **61 314 22**

With so many features, no wonder the Redhead is the popular 'maid of all work' for a wide range of lighting requirements!

Accessories

3 Accessory holders **66 314 40**

3 Barndoors **66 314 67**

3 Safety glasses in mounts **66 945 61**

1 Scrim full double **66 948 25**

1 Scrim full single **66 948 17**

1 Scrim half double **66 949 20**

1 Scrim half single **66 949 12**

3 Spartan stands **67 257 56**

1 Rankpak reflector pack **53 140 4T**

3 DXX-800W lamps

240V **34 413 81**

220V **34 413 14**

1 Deluxe outfit case **53 142 30**

For full description of stands refer to Section 6.

BLONDE KIT

61 002 04 10.0kg

Dimensions:
W400mm x H360mm x D380mm
1 Blonde & Accessories

1 BLONDE **61 315 01**

For powerful location lighting this is the answer! The 2000W Blonde is a high intensity focusing quartz light.

Accessories

1 Barndoor **66 315 38**

1 Safety glass in mount **66 315 70**

1 Scrim full double **66 954 20**

1 Scrim full single **66 954 12**

1 Scrim half double **66 955 26**

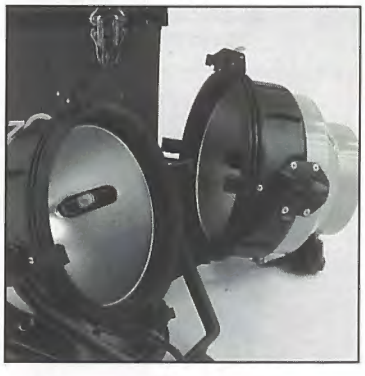
1 Scrim half single **66 955 18**

1 FEX-2000W lamp

240V **34 427 80**

220V **34 427 72**

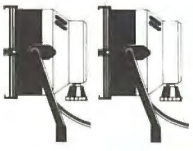
1 Deluxe outfit case **53 150 12**



DOUBLE BLONDE KIT

61 002 12 18.0kg

Dimensions:
W780mm x H380mm x D400mm
2 Blondes & Accessories



2 BLONDES **61 315 01**

Beam can be varied from 23° spot to 70° flood, and built-in design features help to prolong lamp life.

Accessories

2 Barndoors **66 315 38**

2 Safety glasses in mounts **66 315 70**

1 Scrim full double **66 954 20**

1 Scrim full single **66 954 12**

1 Scrim half double **66 955 26**

1 Scrim half single **66 955 18**

2 FEX-2000W lamps

240V **34 427 80**

220V **34 427 72**

1 Deluxe outfit case **53 150 20**

BATTERY KITS

A Quartzcolor battery kit gives you 'go-anywhere' lighting with independence from conventional power sources. The Strand 30V nickel cadmium battery is supplied with a charger, and provides 45 minutes of continuous lighting. Choose between the 250W Pulsar lamphead and the 250W Megalux handlamp.

PULSAR 30V BATTERY KIT

61 004 30 15.0kg

Dimensions:
W400mm x H350mm x D270mm

1 PULSAR **61 313 01**

Accessories

1 Barndoor **66 313 10**

1 Safety glass in mount **66 932 68**

1 Dichoic filter **66 932 5T**

5 pin connector **53 081 36**

1 Hand grip **53 140 31**

1 Battery **53 080 20**

1 Charger **53 080 30**

1 DYG-250W 30V lamp **34 312 57**

1 Kit case **53 279 10**

MEGALUX 30V BATTERY KIT

61 006 00 13.0kg

Dimensions:
W400mm x H350mm x D270mm

1 MEGALUX **61 279 02**

Accessories

1 Barndoor **66 302 0T**

1 Dichroic filter **66 302 18**

1 Filter mount **66 302 26**

5 pin connector **53 081 36**

1 Battery **53 080 20**

Charger **53 080 30**

1 FBV-250W 30V lamp **34 325 0T**

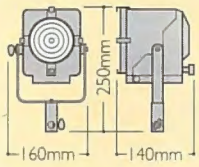
1 Kit case **53 279 10**

STUDIO LIGHTING

This brilliant Quartzcolor range covers every spotlight requirement from the smallest focusing fresnel luminaire rated at 300/500W to powerful 10kW luminaires for the largest studios and productions. In particular, there is a comprehensive choice in the widely used 2000W to 5000W range of luminaires.

Included in this range are luminaires for near shadowless fill lighting with constant colour temperature, top lighting for evenly-illuminated cyclorama, and single or multi-compartment groundrows for additional light at ground level or for graduated colour changes in the cyclorama.

Scale 1:15



MIZAR MkII 300/500W FRESNEL SPOTLIGHT

60 250 11 1.8kg

This compact 300/500W spotlight is the smallest focusing fresnel luminaire in the Quartzcolor range, and a very convenient lamphead in ENG kits. Particularly suited to situations where lighting detail, key light or special effects are required, but with the source concealed.

Supplied with 3.5 metres of power cable with in-line switch.

Mizar

Performance guide based on CP82 500W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	6000	0.68	3375	0.91	2160	1.13	1500	1.36
W	1300	2.86	750	3.81	475	4.77	325	5.72

N = Narrowest W = Widest

For full photometric information refer to data sheet.

Accessories

4 Leaf rotating barndoor **66 313 10**

Colour frame **66 253 10**

Wire guard **66 025 40**

Full double scrim (50% transmission) **66 933 12**

Full single scrim (66% transmission) **66 933 20**

Half double scrim **66 933 39**

Half single scrim **66 933 47**

Cone (variable 30-50-70) **66 255 01**

Note: We recommend the use of a safety wire guard with the Mizar luminaire.

Lamps

CP/81 300W
240V lamp **34 349 49**
220V lamp **34 349 30**

CP/82 500W
240V lamp **34 349 65**
220V lamp **34 349 57**

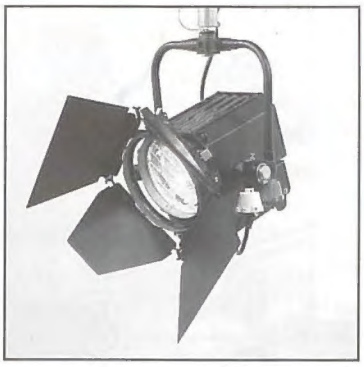
RSE/18 500W
240V lamp **34 218 12**
220V lamp **34 218 20**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Small gaffer grip **66 198 17**
Table stand **66 020 50**
Mercury stand **67 236 56**
Spartan stand **67 257 56**



POLARIS MkII 1000W FRESNEL SPOTLIGHT

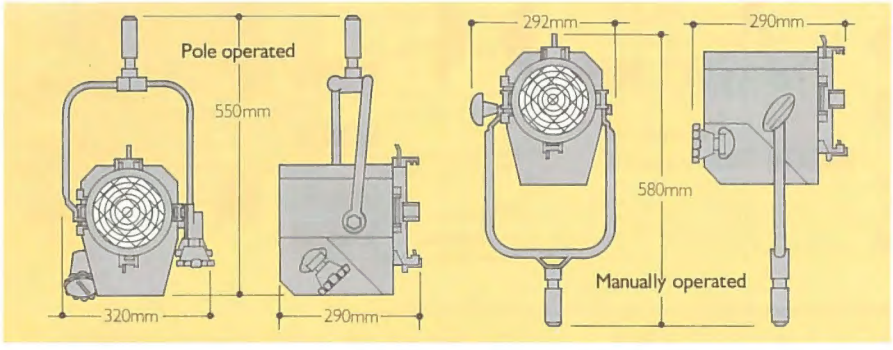
60 526 00 Manual, 5.0kg

60 526 10 Pole Operated, 6.0kg

The Polaris is a compact fresnel spotlight developed to meet the operational needs of the exacting lighting director or cameraman. The barndoor rotates 360° and the large blades provide accurate hard edge beam control.

Supplied with 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.

Scale 1:15



Accessories

4 Long-leaf rotating barndoor **66 526 17**

8 Leaf rotating barndoor **66 526 37**

Colour frame **66 526 16**

Outrig colour frame **66 526 66**

Wire guard **66 526 80**

Full double scrim (50% transmission) **66 526 81**

Full single scrim (66% transmission) **66 526 82**

Half double scrim **66 526 83**

Half single scrim **66 526 84**

Cone (front diameter 55mm) **66 526 91**

Cone (front diameter 75mm) **66 526 92**

Cone (front diameter 105mm) **66 526 93**

Lamps

CP/40 1000W
240V lamp **34 340 23**
220V lamp **34 340 15**

CP/93 1200W
240V Lamp **34 341 01**
220V Lamp **34 341 02**

CP/39 650W
240V Lamp **34 339 25**
220V Lamp **34 339 33**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Atlas stand **67 785 09**

Hercules stand **52 008 00**

Note: For accessories to fit earlier models referer to data sheet.

Polaris Performance guide based on CP40 1000W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8200	0.58	4600	0.77	2950	0.96	2050	1.16
W	1200	3.6	675	4.8	432	6.0	300	7.2

Performance guide based on CP93 1200W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	13500	0.52	7600	0.70	4860	0.87	3375	1.05
W	1800	3.4	1025	4.5	650	5.7	450	6.8

N=Narrowest W=Widest Ø= Diameter
For full photometric information refer to data sheet

CASTOR MkII 2000W FRESNEL SPOTLIGHT

60 527 00 Manual, 12.5kg

60 527 30 Pole Operated, 13.5kg

CASTOR MkII 1250/2500W

(Weights and dimensions as Castor 2000W)

60 527 10 Manual

60 527 20 Pole Operated

Safety shutter for G38 socket can be fitted to Castor 2kW spotlights at extra cost.

The Castor is a light-weight, compact fresnel spotlight suitable for studio or outside location. It is available with Bi-Post or 4 Pin lampholders, the latter for use with twin filament lamps where either or both filaments can be selected for choice of light output at constant colour temperature.

Supplied with a 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.

Specification continues on page 61.

Accessories

4 Long-leaf rotating barndoor **66 527 17**

8 Leaf rotating barndoor **66 527 37**

Colour frame **66 027 59**

Wire guard **66 027 67**

Outrig colour frame **66 527 66**

Full double scrim (50% transmission) **66 279 39**

Full single scrim (66% transmission) **66 279 12**

Half double scrim **66 279 47**

Half single scrim **66 279 20**

Cone (front diameter 110mm) **66 277 11**

Cone (front diameter 150mm) **66 277 2T**

Cone (front diameter 195mm) **66 277 38**

Lamps

CP/41 2000W
240V lamp **34 341 29**
220V lamp **34 341 10**

CP/30 1250/1250W
240V lamp **34 330 26**
220V lamp **34 330 18**

CP/22 1250/1250W
240V lamp **34 322 46**
220V lamp **34 322 38**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Atlas stand **67 785 09**

Hercules stand **52 008 00**

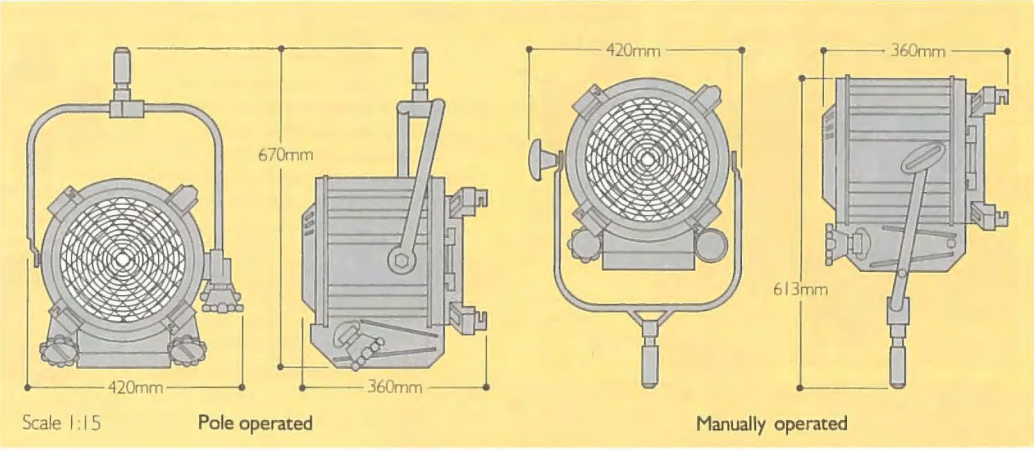
Castor 2000W
Performance guide based on CP41 2000W lamp

	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	15000	0.66	6675	0.99	3750	1.33	2400	1.66
W	2500	3.5	1125	5.2	625	7.0	400	8.7

N=Narrowest W=Widest Ø=Diameter
For full photometric information refer to data sheet.

FOR STRAND FILTERS SEE PAGES 87-91

CASTOR MK II 2000W & 5000W FRESNEL SPOTLIGHTS (continued)



POLLUX MkII 5000W FRESNEL SPOTLIGHT

60 528 00 Manual, 16.5kg

60 528 30 Pole Operated, 16.5kg

POLLUX 2500/5000W

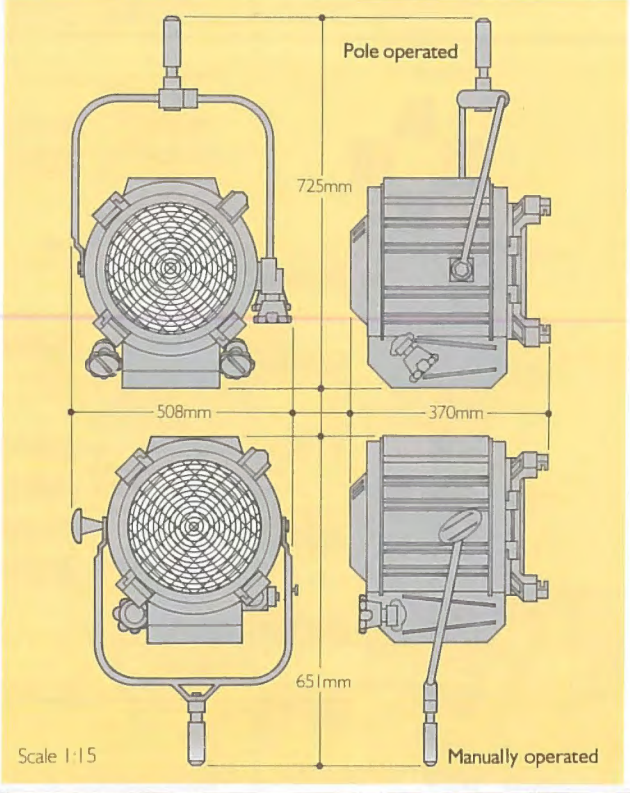
(Weights and dimensions as Pollux 5000W)

60 528 10 Manual

60 528 20 Pole Operated

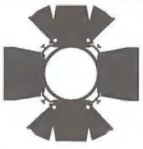
This is a light-weight fresnel spotlight, suited for use in both studio or outside locations. The Pollux is available with Bi-Post or 4 Pin lampholders, the latter for use with twin filament lamps where either or both filaments can be selected for choice of light output at constant colour temperature.

Supplied with 4-leaf rotating barndoor or, colour/ diffuser frame, wire guard and 7 metres of power cable.



Accessories

4 Long-leaf rotating barndoor **66 528 17**



8 Leaf rotating barndoor **66 528 37**

Colour frame **66 028 54**

Outrig colour frame **66 528 66**

Wire guard **66 029 68**

Full double scrim (50% transmission) **66 289 36**

Full single scrim (66% transmission) **66 289 1T**

Half double scrim **66 289 44**

Half single scrim **66 289 28**

Cone (front diameter 155mm) **66 287 19**

Cone (front diameter 225mm) **66 287 27**

Cone (front diameter 275mm) **66 287 35**

Safety shutter for G38 socket can be fitted to Pollux 5kW spotlights at extra cost.

Lamps

CP/29 5000W	
240V lamp	**34 329 28**
220V lamp	**34 329 1T**
CP/46 5000W	
240V lamp	**34 346 42**
220V lamp	**34 346 34**
CP/57 1250/2500W	
240V lamp	**34 357 45**
220V lamp	**34 357 37**
CP/58 1250/2500W	
240V lamp	**34 358 40**
220V lamp	**34 358 32**
CP/20 2500/2500W	
240V lamp	**34 320 45**
220V lamp	**34 320 37**
CP/32 2500/2500W	
240V lamp	**34 332 27**
220V lamp	**34 332 19**
CP/30 1250/1250W	
240V lamp	**34 330 26**
220V lamp	**34 330 18**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Luminaire safety bond (50kg)	**53 630 29**
T.V. hook clamp	**26 594 04**
Atlas stand	**67 785 09**
Hercules stand	**52 008 00**
Goliath stand	**52 069 0T**

Pollux 5000W

Performance guide based on CP29 5000W lamp

	6m		10m		14m		18m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	13900	1.31	5000	2.2	2550	3.06	1550	3.93
W	2100	6.8	750	11.31	400	15.84	250	20.4

N = Narrowest W = Widest Ø = Diameter

For full photometric information refer to data sheet.

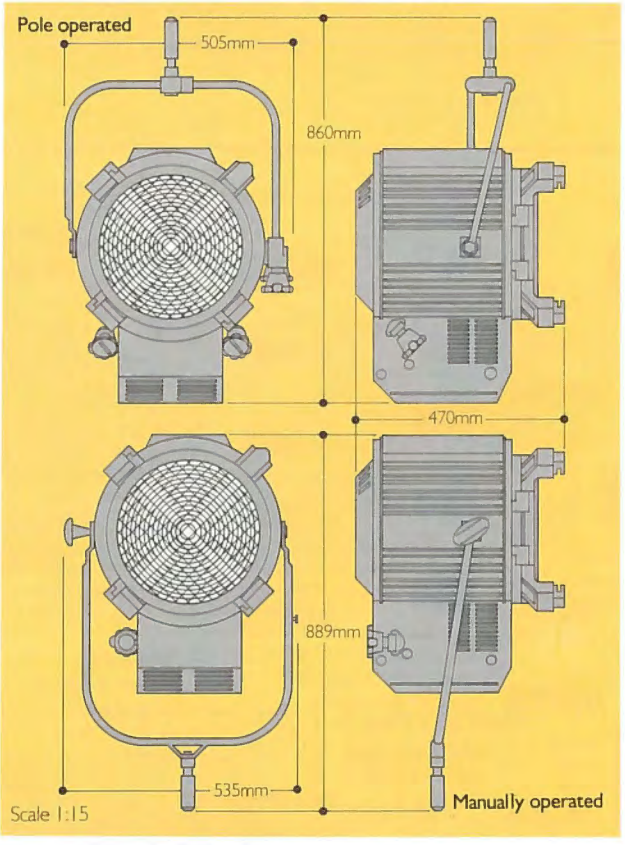
For Pollux 2500/5000W photometric information see appropriate data sheet.

VEGA MkII 10KW
FRESNEL SPOTLIGHT

60 529 00 Manual, 22.5kg

60 529 30 Pole Operated, 24.0kg

Specialist attention has been given in the design of this 10kW fresnel spotlight to an efficient ventilation system and to reduction of weight without loss of strength. The light weight and small size of the Vega enables it to be used without the need for heavy duty floor stands or special suspension arrangements in studios.
Supplied with 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.



Accessories

4 Long-leaf rotating barndoor **66 528 17**

8 Leaf rotating barndoor **66 528 37**

Colour frame **66 028 54**

Outrig colour frame **66 528 66**

Wire guard **66 029 68**

Full double scrim (50% transmission) **66 289 36**

Full single scrim (66% transmission) **66 289 1T**

Half double scrim **66 289 44**

Half single scrim **66 289 28**

Cone (front diameter 155mm) **66 287 19**

Cone (front diameter 225mm) **66 287 27**

Cone (front diameter 275mm) **66 287 35**

Safety shutter for G38 socket can be fitted to Vega spotlights at extra cost.

Lamps
CP/83 10,000W
240V lamp **34 349 81**
220V lamp **34 349 73**

Recommended Suspension & Stands
(For full description of Stands refer to Section 6)

Luminaire safety bond (50kg) **53 630 29**
T.V. hook clamp **26 594 04**
Atlas stand **67 785 09**
Goliath stand **52 069 0T**
Samson stand **52 083 01**

Vega
Performance guide based on CP83 10kW lamp

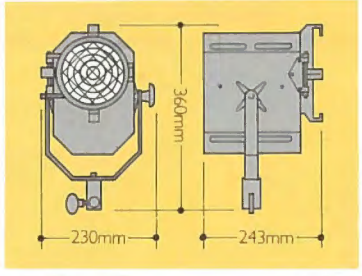
	8m		12m		16m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	19550	1.4	8700	2.1	4900	2.8	3125	3.5
W	2675	7.3	1200	10.95	675	14.6	425	18.23

N = Narrowest W = Widest
For full photometric information refer to data sheet.

BAMBINO 1000W
FRESNEL SPOTLIGHT

60 660 08 Manual, 3.9kg

The lightweight Bambino 1000W fresnel spotlight is the ideal choice in situations where physical size is a problem and where lighting directors have previously had to compromise by using smaller wattage spotlights.
Supplied with 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.



Bambino 1000W
Performance guide based on CP40 1000W lamp

	3m		4m		5m		6m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	8000	0.63	4500	0.84	2900	1.05	2000	1.26
W	1400	3.68	800	4.9	525	6.13	350	7.35

N = Narrowest W = Widest
For full photometric information refer to data sheet.

FOR LAMPS SEE PAGES 74-77

Accessories

4 Leaf rotating barndoor **66 662 10**

Colour frame **66 663 10**

Wire guard **66 664 16**

Full double scrim (50% transmission) **66 667 12**

Full single scrim (66% transmission) **66 667 20**

Half double scrim **66 667 39**

Half single scrim **66 667 47**

Lamps
CP/40 1000W
240V lamp **34 340 23**
220V lamp **34 340 15**

Recommended Suspension & Stands
(For full description of Stands refer to Section 6)

Luminaire safety bond (50kg) **53 630 29**
T.V. hook clamp, requires 29mm spigot 66 042 05 and 16mm spigot convertor 28 651 00 **26 594 04**
Large gaffer grip **66 229 16**
Trojan stand **52 005 04**
Hercules stand **52 008 00**

BAMBINO MkII 2000W FRESNEL SPOTLIGHT

60 567 00 Manual 5.7kg

60 567 30 Pole Operated, 6.1kg

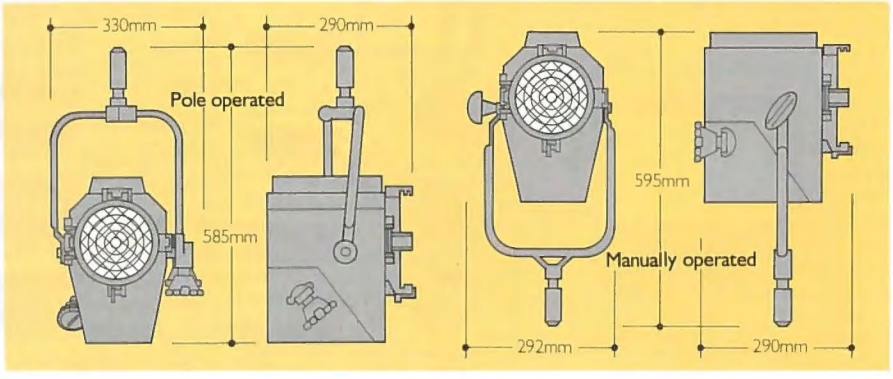
Another space and weight saving spotlight with the choice of manual or pole operation.
Supplied with 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.

Bambino 2000W
Performance guide based on CP41 2000W lamp

	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	11575	0.7	5150	1.05	2900	1.4	1850	1.75
W	1425	4.53	650	6.79	375	9.05	250	11.31

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Scale 1:15



Accessories

4 Long-leaf rotating barndoor **66 526 17**

8 Leaf rotating barndoor **66 526 37**

Colour frame **66 526 16**

Wire guard **66 526 80**

Full double scrim (50% transmission) **66 526 81**

Full single scrim (66% transmission) **66 526 82**

Half double scrim **66 526 83**

Half single scrim **66 526 84**

Cone (front diameter 55mm) **66 526 91**

Cone (front diameter 75mm) **66 526 92**

Cone (front diameter 105mm) **66 526 93**

Lamps

CP/41 2000W
240V lamp **34 341 29**
220V lamp **34 341 10**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**

Hercules stand **52 008 00**

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

BAMBINO MkII 5000W FRESNEL SPOTLIGHT

60 568 00 Manual, 9.0kg

60 568 30 Pole Operated, 9.5kg

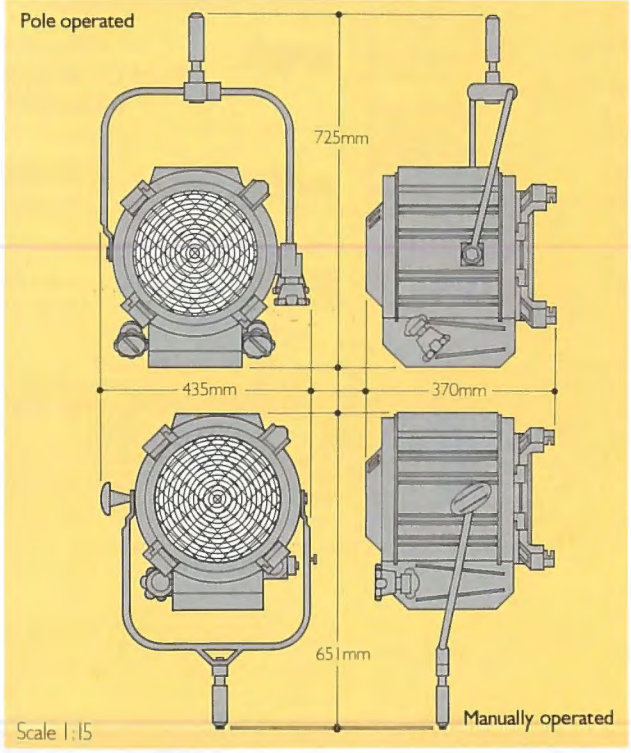
BAMBINO MkII 2500/5000W SPOTLIGHT

(Weights and dimensions as Bambino 5000W)

60 568 10 Manual

60 568 20 Pole Operated

The Bambino 5000W is available with Bi-Post or 4 Pin lampholders, the latter for use with twin filament lamps where either or both filaments can be selected for a choice of light outputs at a constant colour temperature.
Supplied with captive 4-leaf rotating barndoor, colour/diffuser frame, wire guard and 7 metres of power cable.



Scale 1:15

Accessories

4 Long-leaf rotating barndoor **66 527 17**

8 Leaf rotating barndoor **66 527 37**

Colour frame **66 027 59**

Wire guard **66 027 67**

Full double scrim (50% transmission) **66 279 39**

Full single scrim (66% transmission) **66 279 12**

Half double scrim **66 279 47**

Half single scrim **66 279 20**

Cone (front diameter 110mm) **66 277 11**

Cone (front diameter 150mm) **66 277 2T**

Cone (front diameter 195mm) **66 277 38**

Outrig colour frame **66 527 66**
(requires conversion kit)

Lamps

CP/29 5000W
240V lamp **34 329 28**
220V lamp **34 329 1T**

CP/46 5000W
240V lamp **34 346 42**
220V lamp **34 346 34**

CP/57 1250/2500W
240V lamp **34 357 45**
220V lamp **34 357 37**

CP/58 1250/2500W
240V lamp **34 358 40**
220V lamp **34 358 32**

CP/20 2500/2500W
240V lamp **34 320 45**
220V lamp **34 320 37**

CP/32 2500/2500W
240V lamp **34 332 27**
220V lamp **34 332 19**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**

Hercules stand **52 008 00**

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Bambino 5000W
Performance guide based on CP29 5000W lamp

	6m		10m		14m		18m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	15300	1.47	5500	2.46	2825	3.44	1700	4.42
W	3625	6.25	1300	10.4	675	14.58	400	18.74

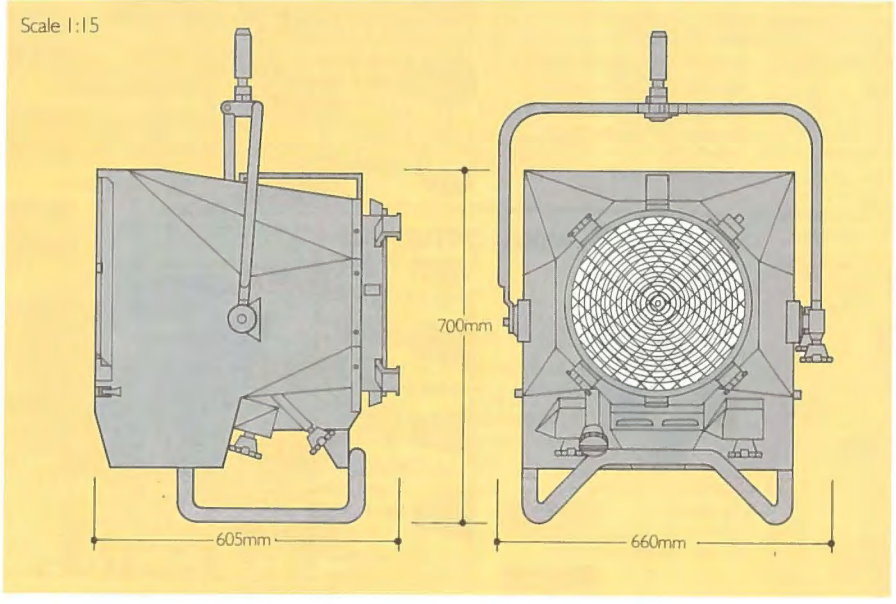
N = Narrowest W = Widest
For full photometric information refer to data sheet.

For Bambino 2500/5000W photometric information refer to appropriate data sheet.

GIANO
2500/5000W
FRESNEL
SPOTLIGHT/ SOFTLIGHT

60 200 07 Pole Operated, 24.0kg

In one mode, Giano is a conventional focusing fresnel but by rotating the luminaire to the opposite end a soft even fill light is obtained. This is achieved by using a twin filament 2.5/5kW tungsten halogen lamp for the keylight and four 1250W tungsten halogen lamps for the softlight. It is possible to switch from full to half power in either mode thereby reducing the intensity by 50% without change of colour temperature.
Meeting the two major lighting requirements of television in one dual-purpose luminaire, Giano provides the flexibility to enable the majority of lights in a studio to remain permanently rigged with their mode changed for each production.
Supplied with 4 metres of power cable, 'Spot' side complete with 4 leaf rotating barndoor, colour frame and wire guard. 'Soft' side complete with colour frame.
For performance details please refer to data sheet



Accessories 'Spot' side

4 Long-leaf rotating barndoor **66 069 40**

Colour Frame **66 028 54**

Wire guard **66 029 68**

Outrig colour frame **66 029 5T**

Full double scrim (50% transmisssion) **66 289 36**

Full single scrim (66% transmisssion) **66 289 1T**

Half double scrim **66 289 44**

Half single scrim **66 289 28**

Cone (front diameter 110mm) **66 287 19**

Cone (front diameter 150mm) **66 287 27**

Cone (front diameter 195mm) **66 287 35**

Accessories 'Soft side'

Narrow beam eggcrate **66 502 61**

Wide beam eggcrate **66 501 61**

Colour frame **66 501 65**

Lamps
Spot

CP/20 2500/2500W
240V lamp **34 320 45**
220V lamp **34 320 37**

CP/32 2500/2500W
240V lamp **34 332 27**
220V lamp **34 332 19**

CP/57 1250/2500W
240V lamp **34 357 45**
220V lamp **34 357 37**

CP/58 1250/2500W
240V lamp **34 358 40**
220V lamp **34 358 32**

Lamps
Soft

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/10 625W (linear)
240V lamp **34 410 26**
220V lamp **34 410 18**

Recommended Suspension

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Giano (spot side)
Performance guide based on CP32 5000W lamp

	6m		10m		14m		18m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	15625	1.04	5625	1.75	2875	2.5	1600	3.14
W	1950	6.92	700	11.54	375	16.2	225	20.78

N = Narrowest W = Widest
For full photometric information refer to data sheet.

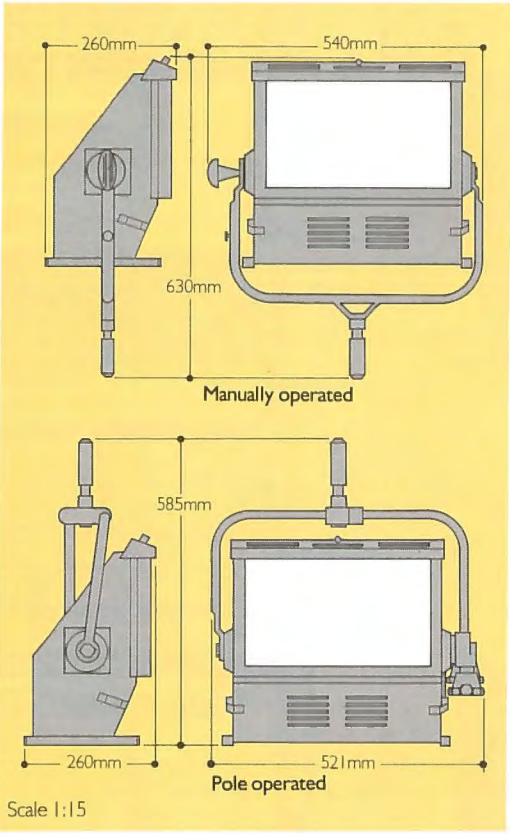
ARTURO ARGENTO MkII 1250W SOFTLIGHT

62 413 00 Manual, 8.0kg

62 413 10 Pole Operated, 9.0kg

Designed for the small studio or as a location fill light, the Arturo 1250W softlight provides virtually shadowless diffused illumination. Alternative lamps enable the unit to be operated with powers of 625W, 1000W or 1250W, using 189mm linear tungsten halogen lamps. **Supplied with colour frame and 3.5 metres of power cable with in-line switch.**

For performance details please refer to data sheet.



Scale 1:15

Accessories

Colour frame **66 413 05**

Narrow beam eggcrate **66 413 28**

Wide beam eggcrate **66 411 28**

Lamps

P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**

Hercules stand **52 008 00**

Goliath stand **52 069 0T**

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

ARTURO ARGENTO MkII 1250/2500W SOFTLIGHT

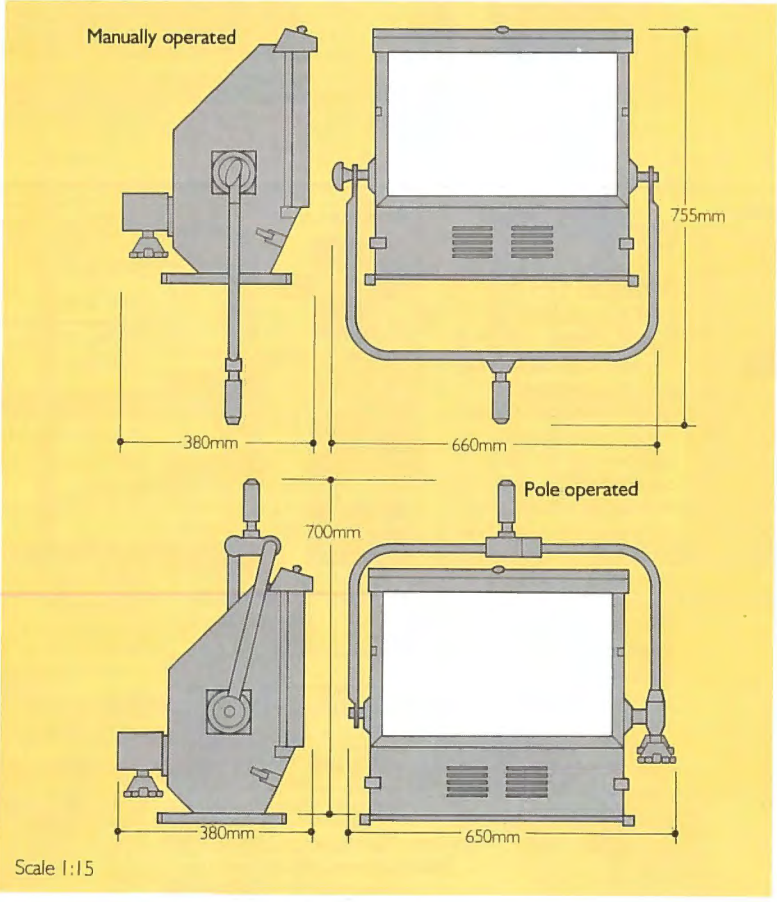
62 413 50 Manual, 11.9kg

62 413 60 Pole Operated, 13.5kg

The Arturo 2500W is a dual power, indirect softlight using two 189mm linear tungsten halogen lamps rated at 625W, 1000W, or 1250W. Switching allows lamps to be used singly or as a pair to provide alternative outputs of 625/1250W or 1000/2000W and 1250/2500W dependent on lamps fitted.

Supplied with colour frame and 5 metres of power cable.

For performance details please refer to data sheet.



Scale 1:15

Accessories

Colour frame **66 413 55**

Narrow beam eggcrate **66 413 78**

Wide beam eggcrate **66 411 78**

Lamps

P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**

Hercules stand **52 008 00**

Goliath stand **52 069 0T**

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Bianco versions of Arturo Argento 1250W and 1250/2500W units can be supplied to special order.

ARTURO ARGENTO MkII 2500/5000W SOFTLIGHT

62 441 00 Manual, 19.5kg

62 441 01 Pole Operated, 20.5kg

The Arturo 5000W is a variable power softlight employing four 189mm linear tungsten halogen lamps, in pairs in the base of the luminaire.

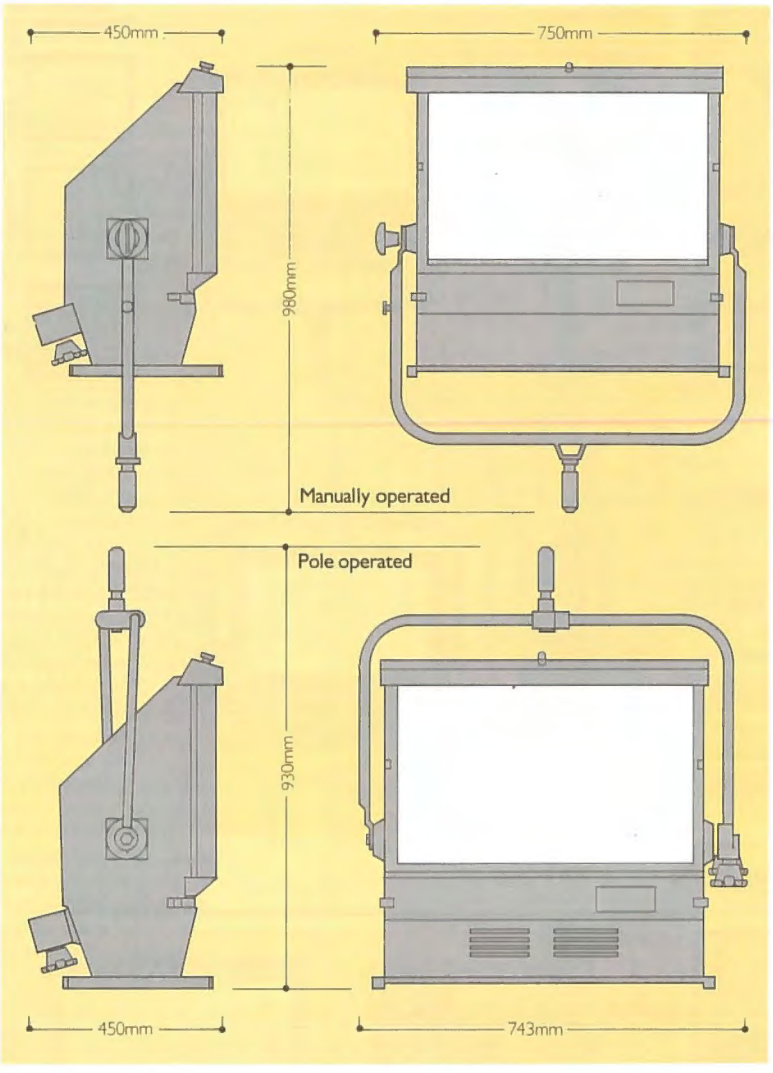
The lamps are switched in pairs to provide full or half power. A choice of different wattage lamps from 625W to 1250W makes the Arturo 5000W capable of being used as a dual power softlight at any of the following ratings:

1250/2500W, 2000/4000W, 2500/5000W.

Supplied with colour frame and 7 metres of power cable.

Bianco versions of Arturo Argento 2500/5000W units can be supplied to special order.

For performance details please refer to data sheet.



Accessories

Colour frame **66 410 01**

Narrow beam eggcrate **66 410 28**

Wide beam eggcrate **66 412 28**

Lamps

P2/10 625W (linear)
240V lamp **34 410 26**
220V lamp **34 410 18**

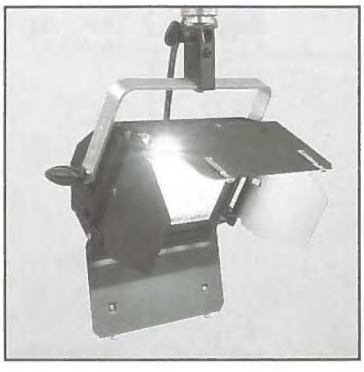
P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**
Hercules stand **52 008 00**
Goliath stand **52 069 0T**
Luminaire safety bond (50kg) **53 630 29**
T.V. hook clamp **26 594 04**



IADI CYC MkII 1000W CYC LIGHT

60 259 52 2.3kg

With its unique reflector, ladi Cyc is designed to be used for top or bottom lighting of cycloramas or backings, and it allows a wider spacing between units than other conventional Cyc lights. Accessories include clip-on aluminium reflectors for beam intensification, opal glass and wire scrims.

See page 55 for ladi Fill Floodlight.

Supplied with barndoors fitted with colour filter retaining clips, wire guard, yoke with 16mm female socket, 3.9 metres of power cable with double pole in-line switch.

For performance details please refer to data sheet.

Accessories

reflectors to fit barndoors (set of 4) **66 259 20**

Full double scrim **66 259 21**

Full single scrim **66 259 22**

Opal glass diffuser in mount **66 259 29**

Dichroic daylight filter in mount **66 259 25**
Wire guard **66 259 26**
'Rankpak' reflector pack **53 140 4T**
Outfit case (for 3 heads and accessories) **53 142 30**

Lamps

P2/20 1000W (linear)
240V lamp **34 413 02**
220V lamp **34 413 04**

P2/11 800W (linear)
240V lamp **34 366 01**
220V lamp **34 366 03**

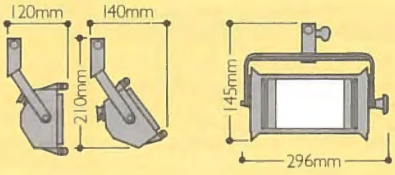
K1 500W frosted (linear)
240V lamp **34 275 01**
220V lamp **34 275 1T**

Recommended Suspension & Stands

Spartan stand **67 257 56**
Apollo stand **52 052 04**

Small gaffer grip **66 198 17**
29mm spigot to 16mm socket adaptor for use with 64 925 80 **66 042 05**
16mm spigot adaptor used with the above **64 925 80**
Adjustable 'sky hook' with two spigots **53 043 17**
Magic arm set **52 143 01**
Table stand with 16mm spigot **66 020 50**

Scale 1:15



FOR LAMPS SEE PAGES 74-77

IRIS 4, 3 and 2 CYCLORAMA TOP LIGHTING
(Pole Operated)

63 356 5T Iris 4, 24.0kg

63 356 52 Iris 4, Split Stirrup version

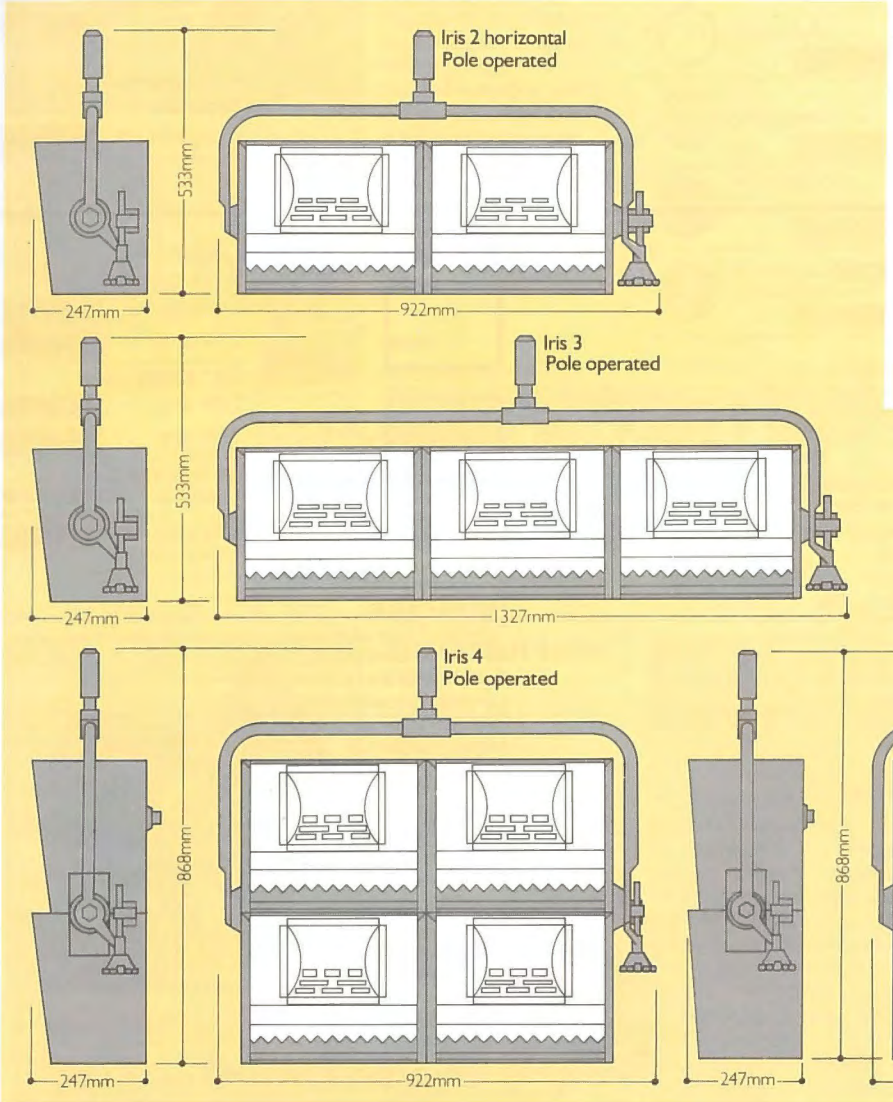
63 356 84 Iris 3, 19kg

63 357 47 Iris 2, Vertical, 12.5kg

63 357 42 Iris 2, Split Stirrup version

63 357 55 Iris 2, Horizontal 12.5kg

The Iris, with its unique multi-curve reflector, enables even illumination to be achieved from top lights only.
Its compact construction with advanced optical design enables the units to be widely spaced. A new extension to the flexibility of the Iris system is a split yolk whereby the top and bottom compartments of Iris 4 and Iris 2 can be tilted independently to give enhanced distribution over higher cycloramas or where groundrows are excluded.



Scale 1:15

IRIS 4 Pole Operated
Four colour unit, with wire guard, colour frame and 7 metres power cable for each compartment
63 356 5T

Split Stirrup version **63 356 52**

IRIS 3 Pole Operated
Three colour unit, with wire guard, colour frame and 7 metres power cable for each compartment
63 356 84

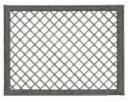
IRIS 2 Pole Operated – Horizontal
Two colour unit, with wire guard, colour frame and 7 metres power cable for each compartment
63 357 55

IRIS 2 Pole Operated – Vertical
Two colour unit, with wire guard, colour frame and 7 metres power cable for each compartment
63 357 47

Split Stirrup version **63 357 42**

Accessories


Colour frame **66 337 68**


Wire guard **66 337 76**

Lamps

P2/10 625W (linear)
240V lamp **34 410 26**
220V lamp **34 410 18**

P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

Note: For detailed information on lamps refer to Section 6.

Recommended Suspension

Luminaire safety bond (50kg) **53 630 29**

T.V. hook clamp **26 594 04**

Note: Standard pole operation on Iris units covers Tilt Stirrup only. Pan and Tilt stirrup available to special order.

All Iris units are supplied with individual lengths of power cable to each compartment. Iris 4, 3 and 2 units can be supplied with a standard 9-pin connector if required – available to special order.

A multicore feeder cable fitted with female 9-pin connector at lamp end and other end open, to fit above, is also available to special order.

For performance details please refer to data sheet.

IRIS 1 CYCLORAMA TOP LIGHTING

63 337 26 Manual, 7.8kg

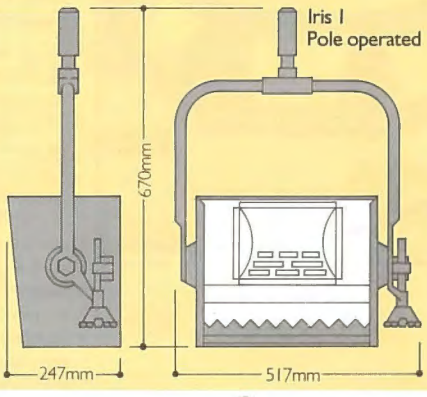
63 337 34 Pole Operated 7.8kg

The Iris 1 is a single compartment unit, and is intended for situations where colour mixing is not required or for small studios where there is not sufficient space for larger units.

IRIS 1 Pole Operated
One colour unit, with wire guard, colour frame and 5 metres power cable
63 337 34

IRIS 1 Manual
One colour unit, with wire guard, colour frame and 5 metres power cable
63 337 26

For performance details please refer to data sheet.



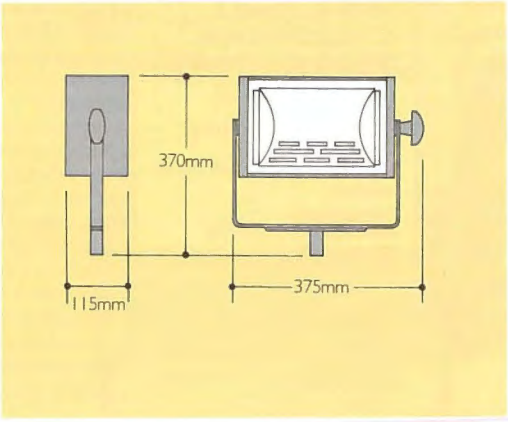
MINI IRIS

63 336 04 Manual 3.0kg

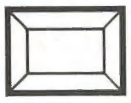
This unobtrusive unit is designed for TV presentation suites, ENG locations, audio visual and still studios. Extremely compact but using the same reflector system developed for all the Iris range it is ideal for backcloths and concealed backlighting.

Supplied with manual stirrup only and 3.5 metres of power cable.

For performance details please refer to data sheet.



Accessory



Outrig colour frame **66 346 19**

Lamps

P2/10 625W (linear)
240V lamp **34 410 26**
220V lamp **34 410 18**

P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**

Recommended Suspension

Large gaffer grip **66 229 16**

ORION GROUNDROW

63 333 42 Orion Single, 4.5kg

63 340 00 Orion Rigid 4, 14.5kg

63 339 44 Orion Hinged 4, 17.5kg

The Orion groundrow range of three floor standing units is designed to light cycloramas and backcloths using linear tungsten halogen lamps. The Orion can also be used in conjunction with the Iris top cyclorama light to provide an even higher level of illumination, or to produce the effect of different colours on the lower part of the cyclorama to those produced by the toplights.

Orion 1 is a single light compartment cyclorama groundrow with 5 metres 3 core mains cable. It is particularly useful for concealment in studio sets to provide additional lighting for specific areas, or lighting small backings.

Supplied with wire guard, colour frame and 5 metres of power cable.

There are two types of Orion 4. One has four compartments mounted into a rigid spine. The articulated version is hinged to adjust around the curve of a cyclorama. Orion rigid and hinged four-compartment units have a 9-pin male plug input and a short tail 9-core cable output for plugging into the next unit.

Supplied with a wire guard and colour frame for each compartment.

For performance details please

Accessories

Colour frame **66 340 14**

Wire guard **66 340 12**

Rubber cover to protect female connectors **66 340 10**

FEEDER CABLE

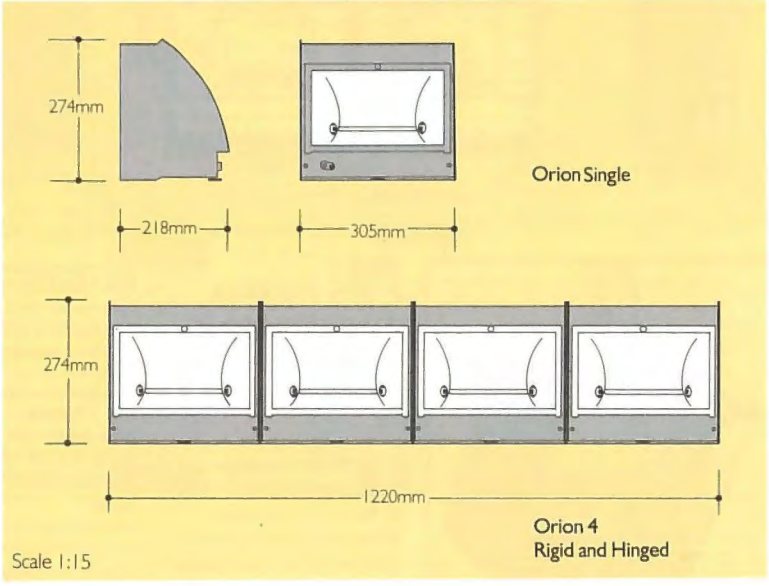
7-metres 9 core cable 2.5mm² per core intended to supply four circuits at 5kW (25 Amps) per circuit on 220/240V terminated at one end in a 9 pin female connector to plug into the first Orion unit and the other end terminates in four 2.5mm² 3 core cables with open ends **64 340 47**

Lamps

P2/10 625W (linear)
240V lamp **34 410 26**
220V lamp **34 410 18**

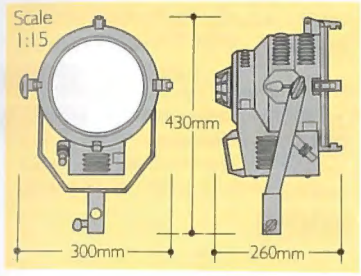
P2/7 1000W (linear)
240V lamp **34 407 43**
220V lamp **34 407 35**

P2/12 1250W (linear)
240V lamp **34 412 27**
220V lamp **34 412 19**



HMI DAYLIGHT LIGHTING

Out on location in daylight conditions, correct balanced lighting is provided by Quartzcolor HMI discharge lamps and ballasts. Lamps have a colour temperature of 5600°K which matches daylight. Features of this range include high light outputs, short warm-up times and instant hot restrike.



SHAULA 575W HMI VARIABLE BEAM OPEN FACE FLOODLIGHT

65 400 00 4.5kg,
Ballast 14.0kg

The Shaula is a lightweight and compact high intensity focusing HMI floodlight, ideal for film location, ENG, and TV outside broadcast use.
Supplied with safety glass in holder, accessory holder, 4-leaf rotating barndoor, igniter unit and 5 metres of cable lamphead to ballast, and ballast unit 575W, 220/240V 50Hz with 5 metres of power cable.

Accessories

4 Leaf rotating barndoor **66 315 38**

Colour frame **66 431 65**

Wire guard **66 315 62**

Full double scrim (50% transmission) **66 954 20**

Full single scrim (66% transmission) **66 954 12**

Half double scrim **66 955 26**

Half single scrim **66 955 18**

Wire mesh guard **66 315 71**

'Rankpak' reflector pack **53 140 4T**

Dichroic 'daylight' filter in mount **66 315 2T**

Safety glass in mount **66 431 00**

Fresnel lens to provide tighter control of beam spread **66 431 90**

Single outfit case (for 1 head and accessories) **53 150 12**

Extension cable, 8 metres, lamphead to ballast **66 206 23**

Extension cable, 15 metres, lamphead to ballast **66 206 25**

Lamp

575W HMI **34 526 39**

Recommended Suspension & Stands

(For full description of Stands refer to Section 6)

Trojan stand **52 005 04**

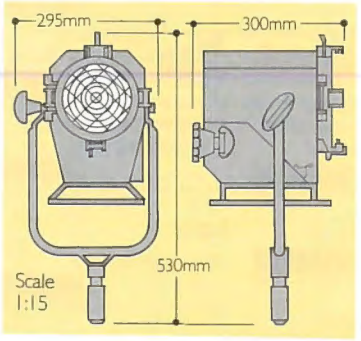
Hercules stand **52 008 00**

Large gaffer grip **66 229 16**

Shaula
Performance guide based on HMI 575W lamp

	2m		4m		6m		8m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	52500	0.66	13125	1.33	5850	1.98	3300	2.66
W	5250	3.01	1325	6.02	600	9.03	350	12.04

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.



SIRIO MkII 575W HMI FRESNEL SPOTLIGHT

65 506 00 10.5kg,
Ballast 14.0kg

A compact 575W spotlight with a light output comparable with a filtered 2000W tungsten source. Ideal for small locations and for "bounce" lighting to boost general illumination.
Supplied with high volt igniter unit, 4 leaf rotating barndoor, wire guard, colour frame and 7.5 metres of cable lamphead to ballast, and ballast unit 575W 220/240V 50Hz with 5 metres of power cable.

SIRIO BAMBINO 1200W MSR

Their compact size makes these daylight Fresnels ideally suited to location work where their efficient optical design based around the single ended MSR and HMI lamps gives superb output. In conjunction with a Quartzcolor 1200W Electronic Ballast these daylight luminaires can be efficiently dimmed for added flexibility. The Sirio Bambino 1200W makes use of the accessories from the standard Sirio 575 HMI.

Available in 1991 NEW

Accessories

4 Leaf rotating barndoor **66 526 17**

3 Leaf rotating barndoor **66 526 37**

Colour frame **66 526 16**

Wire guard **66 526 80**

Full double scrim (50% transmission) **66 526 81**

Full single scrim (66% transmission) **66 526 82**

Half double scrim **66 526 83**

Half single scrim **66 526 84**

Cone (front diameter 55mm) **66 526 91**

Cone (front diameter 75mm) **66 526 92**

Cone (front diameter 105mm) **66 526 93**

Extension cable, 8 metres, lamphead to ballast **66 206 23**

Lamp

575W H.M.I. lamp **34 526 39**

Recommended Stands

(For full description of Stands refer to Section 6)

Hercules stand **52 008 00**

Atlas stand **67 785 09**

Note: For detailed information on lamps refer to Section 6.

Sirio 575W
Performance guide based on HMI 575W lamp

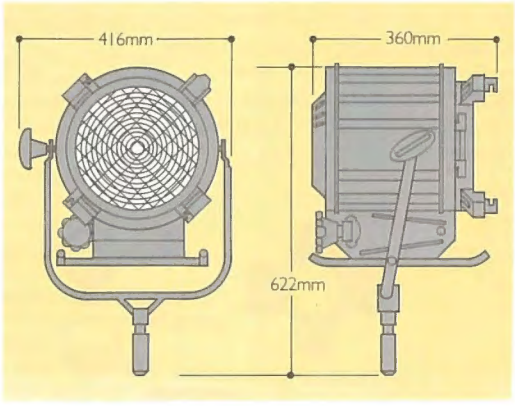
	4m		6m		8m		10m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	12500	0.56	5550	0.84	3125	1.12	2000	1.4
W	1300	3.48	575	5.22	325	6.96	225	8.7

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

SIRIO MkII 1200W HMI FRESNEL SPOTLIGHT

65 507 00 18.0kg,
Ballast 20.0kg

The Sirio 1200W spotlight has a light output approximately that of a filtered 5000W tungsten source. It is ideal as a general purpose high intensity variable beam spotlight which can be powered from most domestic supplies.
Supplied with high voltage igniter unit, 4 long-leaf rotating barndoor, colour frame, wire guard and 7.5 metres cable lamphead to ballast, and ballast unit 1200W 220/240V 50 Hz with 3.5 metres of power cable.



SIRIO BAMBINO 2500W MSR

This 2500W daylight Fresnel will provide the equivalent of 10kW of daylight corrected tungsten light from a luminaire little larger than a 2kW Castor. Like the Sirio 575W this luminaire can also be effectively dimmed when used in conjunction with a Quartzcolor electronic ballast The Sirio 2500W makes use of accessories from the standard Sirio 1200W HMI.

Available in 1991

NEW

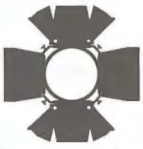
Sirio 1200W
Performance guide based on HMI 1200W lamp

	4m		8m		12m		16m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	46875	0.49	11725	0.98	5225	1.47	2950	1.96
W	2950	4.1	750	8.2	350	12.3	200	16.4

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories

4 Long-leaf rotating barndoor
66 527 17



8 Leaf rotating barndoor
66 527 37

Colour frame
66 027 59

Wire guard
66 027 67

Full double scrim (50% transmission)
66 279 39

Full single scrim (66% transmission)
66 279 12

Half double scrim
66 279 47

Half single scrim
66 279 20

Cone (front diameter 110mm)
66 277 11

Cone (front diameter 150mm)
66 277 2T

Cone (front diameter 195mm)
66 277 38

Extension cable, 8 metres, lamphead to ballast
66 207 29

Lamp

1200W H.M.I. lamp
34 527 50

Recommended Stands

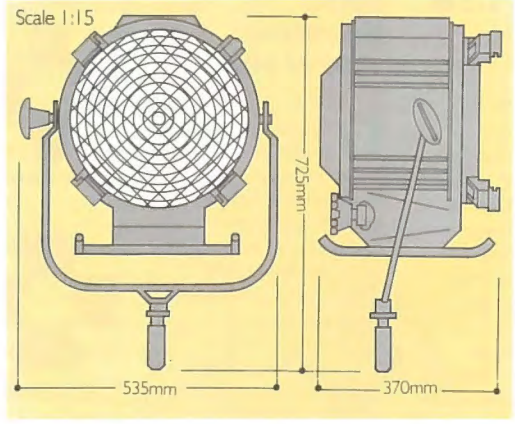
(For full description of Stands refer to Section 6)

Hercules stand **52 008 00**
Atlas stand **67 785 09**

SIRIO MkII 2500W HMI FRESNEL SPOTLIGHT

65 508 00 24.0kg,
Ballast 30.0kg

Particularly suitable for illuminating large areas or balancing strong sunlight, this model has a light output that equals 10kW of filtered tungsten light.
Supplied with high volt igniter unit, 4 long-leaf rotating barndoor, colour frame, wire guard and 7.5 metres cable lamphead to ballast, and ballast unit 2500W 220/240V 50Hz with 3.5 metres of power cable.



Sirio 2500W
Performance guide based on HMI 2500W lamp

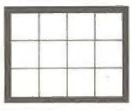
	8m		12m		16m		20m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	17200	1.19	7650	1.78	4300	2.3	2750	3.0
W	1575	9.8	700	14.7	400	19.6	250	24.5

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories

4 Long-leaf rotating barndoor
66 528 17

8 Leaf rotating barndoor
66 528 37



Outrig colour frame
66 528 66

Colour frame
66 028 54

Wire guard
66 029 68

Full double scrim (50% transmission)
66 289 36

Full single scrim (66% transmission)
66 289 1T

Half double scrim
66 289 44

Half single scrim
66 289 28

Cone (front diameter 155mm)
66 287 19

Cone (front diameter 225mm)
66 287 27

Cone (front diameter 275mm)
66 287 35

Extension cable, 8 metres, lamphead to ballast
66 208 24

Lamp

2500W H.M.I. lamp
34 528 3T

Recommended Stands

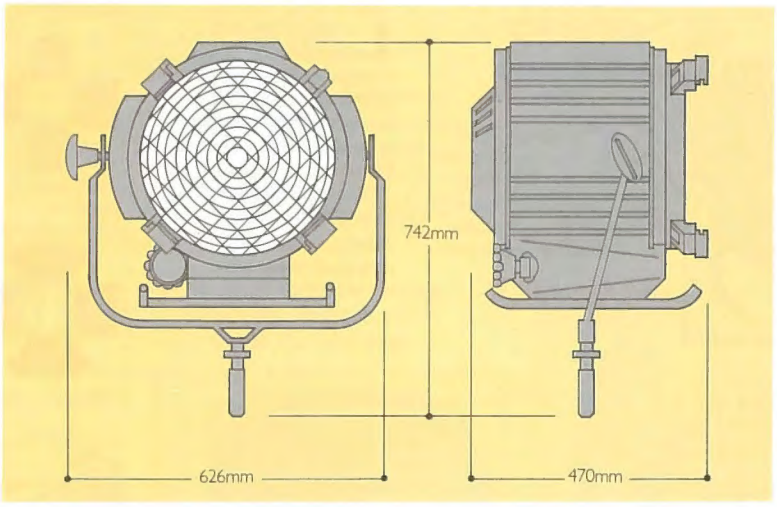
(For full description of Stands refer to Section 6)

Atlas stand **67 785 09**
Goliath stand **52 069 0T**
Samson stand **52 083 01**

SIRIO MkII 4000W HMI
FRESNEL SPOTLIGHT

65 509 00 29.0kg,
Ballast 61.5kg

Designed to produce maximum punch lighting for outside locations, the Sirio 4000W will equal approximately 14kW of filtered tungsten light with a quarter of the power consumption.
Supplied with high volt igniter unit, 4 long-leaf rotating barndoor, colour frame, wire guard and 7.5 metres cable lamphead to ballast, and ballast unit 4000W 220/240V 50Hz with 3.5 metres of power cable.



Sirio 4000W
Performance guide based on HMI 4000W lamp

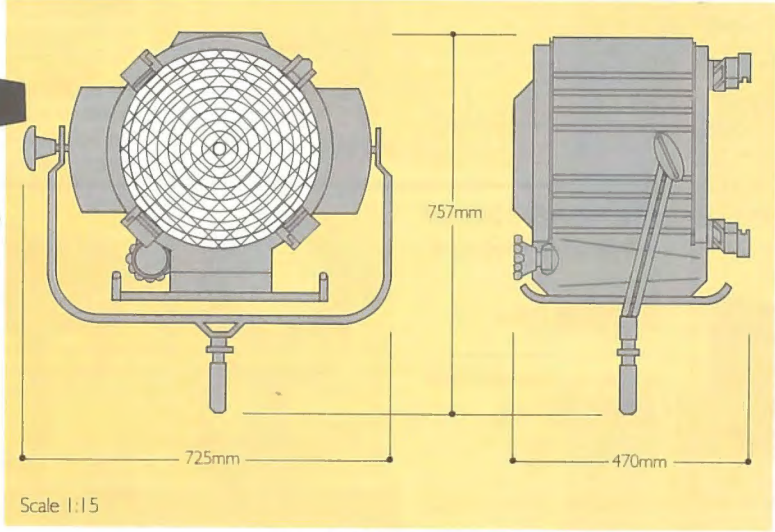
	10m		14m		18m		22m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	29000	1.48	14800	2.1	8950	2.66	6000	3.26
W	1900	9.86	975	13.8	600	17.75	400	21.7

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

SIRIO Mk II 6000W HMI
FRESNEL SPOTLIGHT

65 530 00 31.0kg,
Ballast 69.0kg

This unit equals 25kW of filtered tungsten light and is comparable with the Brute Arc lamp but uses a fraction of the power.
Supplied with high volt igniter unit, 4 long-leaf rotating barndoor, colour frame, wire guard and 0.7 metres cable lamphead to ballast, plus 8 metre extension cable and ballast unit 6000W 220/240V 50Hz with 3.5 metres of power cable.



Sirio 6000W
Performance guide based on HMI 6000W lamp

	14m		18m		22m		26m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	24500	1.84	14800	2.36	9925	2.88	7000	3.41
W	1500	12.47	925	16.03	625	19.59	450	23.15

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Accessories

4 Long-leaf rotating barndoor
66 528 17

8 Leaf rotating barndoor
66 528 37

Colour frame
66 028 54

Outrig colour frame
66 528 66

Wire guard
66 029 68

Full double scrim (50% transmission)
66 289 36

Full single scrim (66% transmission)
66 289 1T

Half double scrim
66 289 44

Half single scrim
66 289 28

Cone (front diameter 155mm)
66 287 19

Cone (front diameter 225mm)
66 287 27

Cone (front diameter 275mm)
66 287 35

Extension cable, 8 metres, lamphead to ballast
66 209 2T

Lamp
4000W H.M.I. lamp
34 529 35

Recommended Stands
(For full description of Stands refer to Section 6)

Atlas stand	**67 785 09**
Goliath stand	**52 069 0T**
Samson stand	**52 083 01**
Gladiator stand	**67 256 61**

Accessories for Sirio 6000W as above except for those listed below.

Extension cable, 8 metres, lamphead to ballast
66 300 20

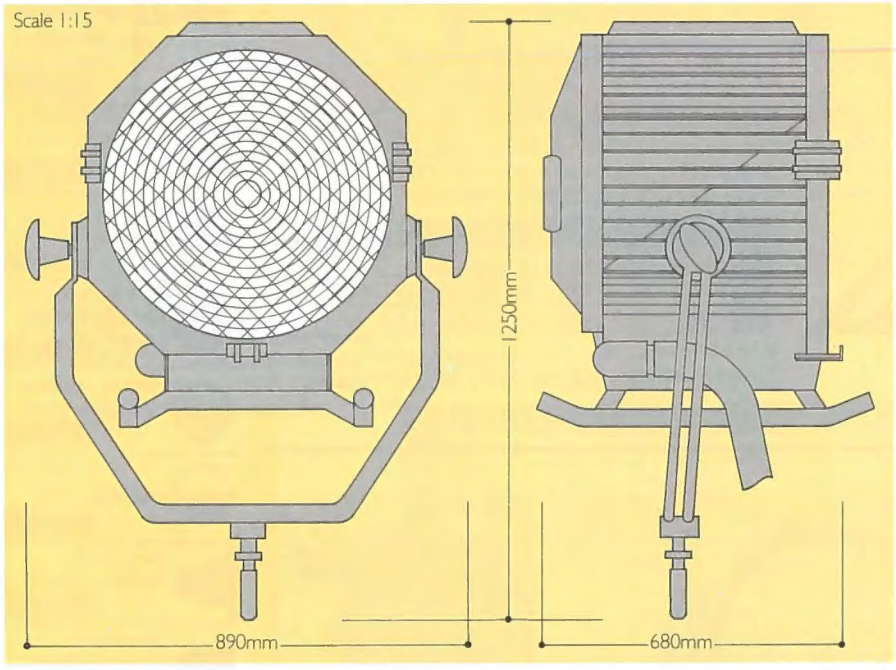
Lamp
6000W H.M.I. lamp
34 530 03

SIRIO 12kW HMI
FRESNEL SPOTLIGHT

65 312 00 84.5kg
Ballast 163.0kg

Offering ideal daylight colour matching, the powerful Sirio 12kW has been developed specially for large scale film productions and TV outside broadcasts.

Supplied with high volt igniter unit, 4 long-leaf rotating barndoor, colour frame, wire guard and 0.7 metres of supply cable with connector, plus 8 metres of extension cable lamphead to ballast, and ballast unit 12000W 208/220/240/380/415V 50/60Hz single or two phase operation, with 5 metres of power cable.



Accessories

4 Long-leaf rotating barndoor **66 301 04**

8 Long-leaf rotating barndoor **66 301 08**

Colour frame **66 301 01**

Wire guard **66 301 02**

Full double scrim (50% transmission) **66 301 91**

Full single scrim (60% transmission) **66 301 92**

Half double scrim **66 301 93**

Half single scrim **66 301 94**

Extension cable, 8 metres, lamphead to ballast **66 312 08**

Extension cable, 15 metres, lamphead to ballast **66 312 15**

Lamp

12kW HMI lamp **34 531 00**

12kW ILC Daymax lamp **34 531 10**

Recommended Stand

Gladiator stand **67 256 61**

Sirio 12kW

Performance guide based on HMI 12kW lamp

	16m		20m		24m		28m	
	Lux	Ø	Lux	Ø	Lux	Ø	Lux	Ø
N	39000	1.67	25000	2.00	17400	2.51	12800	2.93
W	1900	16.65	1250	20.82	850	25.00	650	29.2

N = Narrowest W = Widest Ø = Diameter
For full photometric information refer to data sheet.

Dimensional drawing of 12kW ballast not shown. Dimensions are as follows: Width 650mm Height 915mm Depth 555mm

QUASAR 1200W HMI/CID PARLIGHT

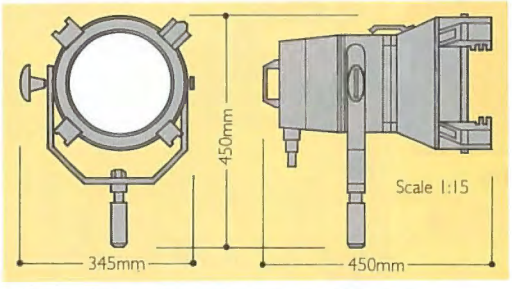
Head Only
65 450 00 10.0kg

System with Compact Ballast
65 450 10 30.0kg
(Ballast 20.0kg)

System with Electronic Ballast
65 450 15 23.0kg
(Ballast 13.0kg)

The new Parlight from Quartzcolor is ruggedly built and easy to use for location work. It accepts either the HMI or CID 1200W sealed beam lamp, and is compatible with both the 1200W standard or new electronic flicker-free ballasts from Quartzcolor.

Supplied with holder for beam angle modification lenses, high voltage igniter unit, 8 metres of cable lamphead to ballast unit.



Quasar Performance guide

The performance of the Quasar is dependent on the type of lamp used as well as the grade of lens. The table below should be used as an approximate guide only.

	10m		14m		18m		22m	
	Lux	V x H	Lux	V x H	Lux	V x H	Lux	V x H
VNS	12,000	1.4 x 1.9	6,100	2.0 x 2.7	3,700	2.5 x 3.5	2,500	3.1 x 4.2
N	10,000	1.6 x 2.1	5,100	2.2 x 2.9	3,100	2.8 x 3.8	2,100	3.5 x 4.6
M	4,600	2.1 x 4.2	2,350	2.9 x 6.0	1,400	3.8 x 7.7	950	4.6 x 9.4
W	1,500	3.9 x 11.0	750	5.4 x 15.5	450	7.0 x 20.0	300	8.5 x 24.5

VN = Very Narrow N = Narrow M = Medium W = Widest

Accessories

4 Long-leaf rotating barndoor **66 450 75**

Extension cable 8 metres **66 207 29**

Extension cable 15 metres **66 207 25**

Set of 4 lens holders **66 450 95**

Lamps

1200W GTE Sylvania Britebeam HMI PAR 64 5600°K (complete with set of lenses) **34 641 20**

1200W Osram HMI Par 64 5600°K (without lenses) **34 641 23**

Set of 4 lenses for the above **34 641 24**

1200W Thorn CID Par 64 5500°K (without lenses) **34 641 21**

Set of 4 lenses for the above **34 641 22**

Recommended Stands and Suspension Equipment

Atlas stand **67 785 09**

Hercules stand **52 008 00**

SUPER QUASAR 2500W MSR/HMI-SE

PARLIGHT

The ruggedness and reliability of the 1200W Par 64 Quasar have been adapted to create Super Quasar.
Super Quasar makes use of a superbly effecient optical design based on a single-ended MSR or HMI lamp to give an incredibly powerful narrow beam of light.
The beam spread, like Quasar, can be adjusted by drop-in lenses.

As with all MSR based products from Quartzcolor dimming can be achieved when operated from a Quartzcolor "Flicker-Free" Electronic Ballast.

Available in 1991

NEW

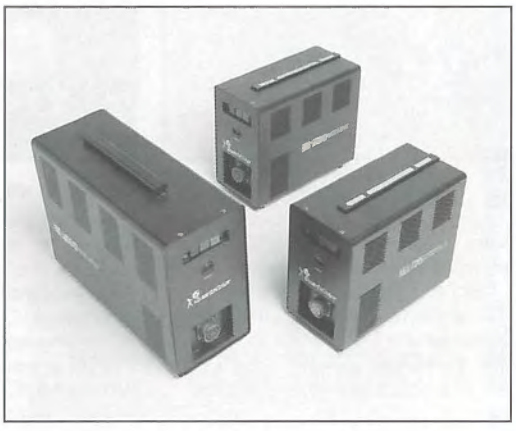
BALLASTS

ELECTRONIC BALLASTS

A full range of Electronic Ballasts can now be offered to operate Quartzcolor daylight luminaires from 575W up to 12kW.

- All of these electronic ballasts will provide "flicker-free" operation at all camera speeds and shutter angles.
- Built-in dimmers give colour temperature balancing on standard HMI lamps and intensity dimming with stable colour temperature on MSR and single ended HMI lamps.

The latest range of Quartzcolor ballasts are designed for trouble-free operation of all luminaires in the Quartzcolor daylight range.



ELECTRONIC BALLASTS

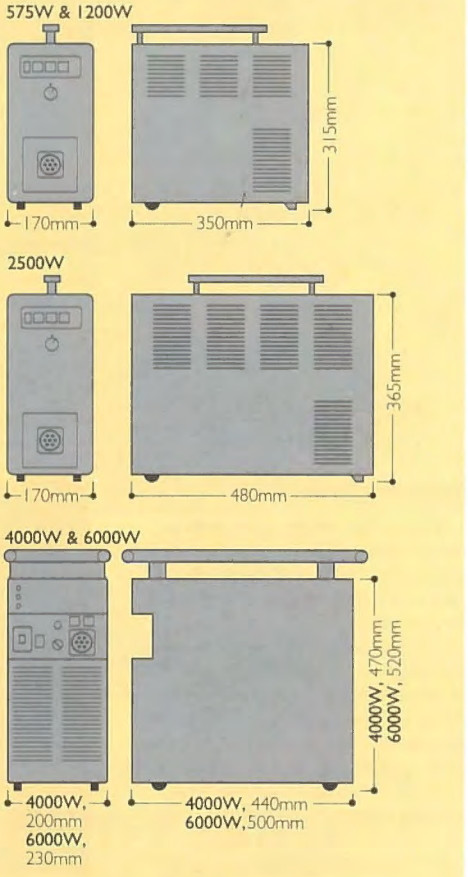
575W
65 206 87 12.5kg

1200W
65 207 80 13.0kg

2500W
65 208 76 23.6kg

4000W
65 209 76 30.0kg

6000W
65 300 76 35.0kg



COMPACT BALLASTS

Complementing the new Electronic Ballasts is a range of Compact Ballasts which are conventional magnetic ballasts but incorporate advances in design to give smaller, lighter units for convenience in location work.

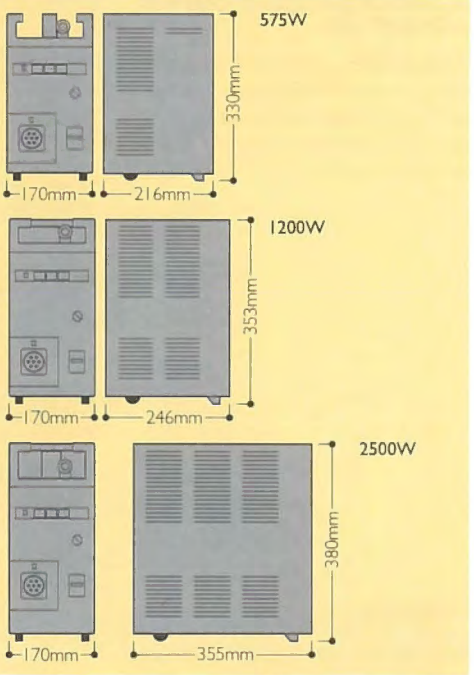
- Switching at either lamphead or ballast.
- Switch selectable for local or remote operation.
- Standard or low noise operation.
- Compatible with all equivalent rated Quartzcolor luminaires including the Par 64 HMI/CID Quasar.
- Supplied as part of standard daylight luminaires systems, but can be supplied separately.

COMPACT BALLAST

575W
65 206 76 14.0kg

1200W
65 207 72 20.0kg

2500W
65 208 22 30.0kg

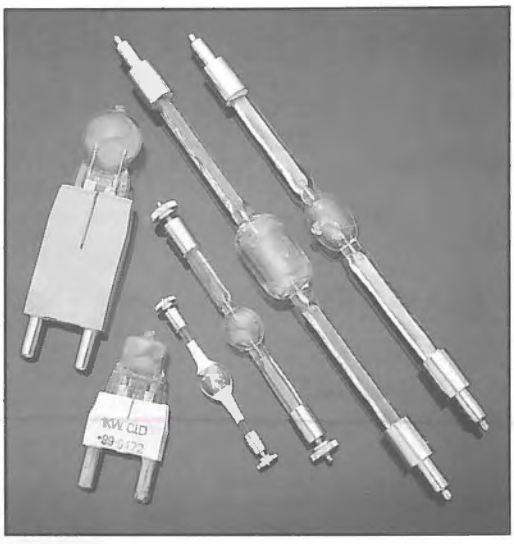


LAMPS

Strand and Quartzcolor luminaires provide optimum performance and safety when fitted with the lamps for which they were designed. A complete range of incandescent and discharge lamps is available from Strand to suit every luminaire and application.

Incandescent lamps

With few exceptions, quartz halogen is now the standard incandescent lamp format for theatre and studio lighting, providing efficiency, durability and consistent colour temperature throughout lamp life. There are two types: CP Class with colour temperature of 3200°K – primarily for studio use where high colour temperature is essential; and T Class – the standard theatre lamp with colour temperature of 3050°K but with longer life.

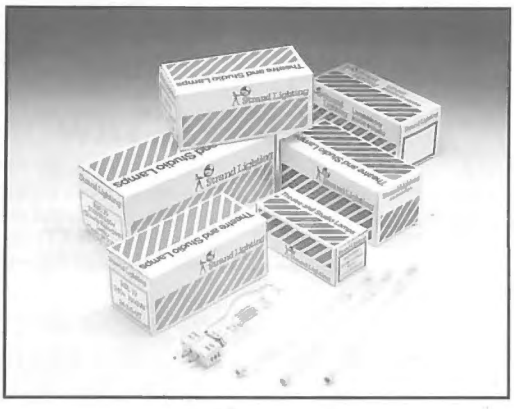


Discharge lamps

These provide much higher efficiency than incandescent lamps but cannot be dimmed effectively. There are three main types used in theatre, TV and motion picture lighting: HMI – with a colour temperature of 5600°K to match daylight lighting for location work; CID – with a colour temperature of 5500°K also for matching daylight; and CSI – with a colour temperature of 4000°K, more suited to the general studio and theatre colour temperature of 3200°K.

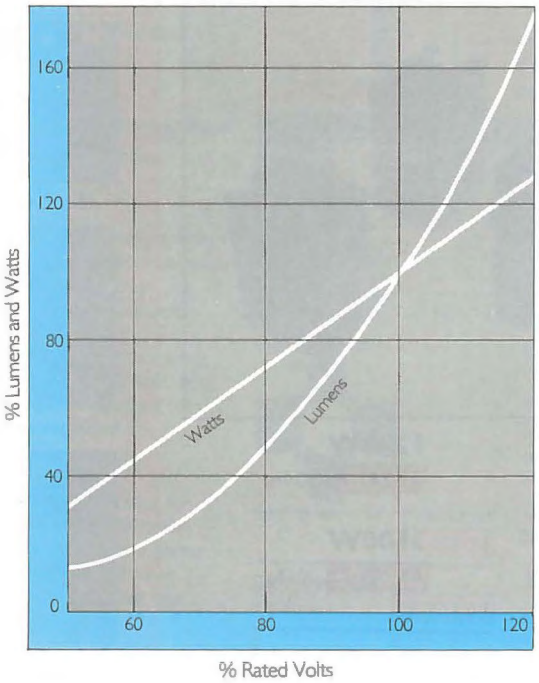
Architectural Lamps

A range of low voltage lamps with an integral dichroic coated reflector which produces a "cool beam" by directing most of the heat backwards through the reflector.
The lamps have a good colour rendering and range from a very narrow spot (to allow selective highlighting of individual pieces and displays) to a wide flood (for area lighting). The multifaceted reflector produces a visually attractive sparkle which is utilised in the Strand Architectural Spotlight range.

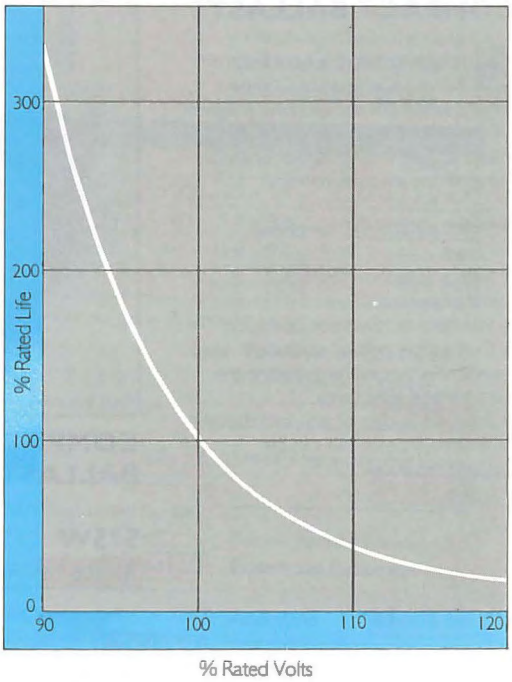


INCANDESCENT LIGHT OUTPUT AND LAMP LIFE

It is important to note that the light output of incandescent lamps increases with higher voltages but lamp life is shortened. The adjacent tables show this relationship.



Variation of light output and wattage with applied voltage for a typical tungsten halogen lamp.



Typical life variation against operating voltage.

FOR OUR UNIQUE NETWORK OF UK DISTRIBUTORS SEE PAGE 93

LAMP RECOGNITION GUIDE

These diagrams illustrate the different lamp types used in Strand luminaires and provide a quick aid to identification. For more information see the table on the next page.

ARCHITECTURAL PERFORMANCE CONES

50mm 50W Dichroic Lamps

M58 38° **34 950 58**

TD	BD	IP
1m	0.7	1550
2m	1.4	390
3m	2.1	170
4m	2.8	100

M50 21° **34 950 50**

TD	BD	IP
1m	0.4	3700
2m	0.7	930
3m	1.1	410
4m	1.5	230

M49 10° **34 950 49**

TD	BD	IP
1m	0.2	12000
2m	0.3	3000
3m	0.5	1330
4m	0.7	750

50mm 75W Dichroic Lamps

M61 38° **34 349 03**

TD	BD	IP
1m	0.75	2250
2m	1.5	562
3m	2.2	250
4m	2.8	140

M82 24° **34 349 04**

TD	BD	IP
1m	0.5	7500
2m	0.9	1875
3m	1.3	833
4m	1.75	469

M60 12° **34 349 02**

TD	BD	IP
1m	0.25	16000
2m	0.5	4000
3m	0.75	1778
4m	1.0	1000

35mm 20W Dichroic Lamps

M62 30° **34 935 62**

TD	BD	IP
1m	0.6	600
2m	1.1	150
3m	1.65	67
4m	2.25	38

M51 17° **34 935 51**

TD	BD	IP
1m	0.4	1760
2m	0.75	440
3m	1.0	196
4m	1.25	110

M52 10° **34 935 52**

TD	BD	IP
1m	0.25	5500
2m	0.40	1375
3m	0.50	611
4m	0.75	344

TD = Throw Distance (m)
BD = Beam Diameter (m)
IP = Illuminance Peak (Lux)

ARCHITECTURAL LAMP RECOGNITION GUIDE

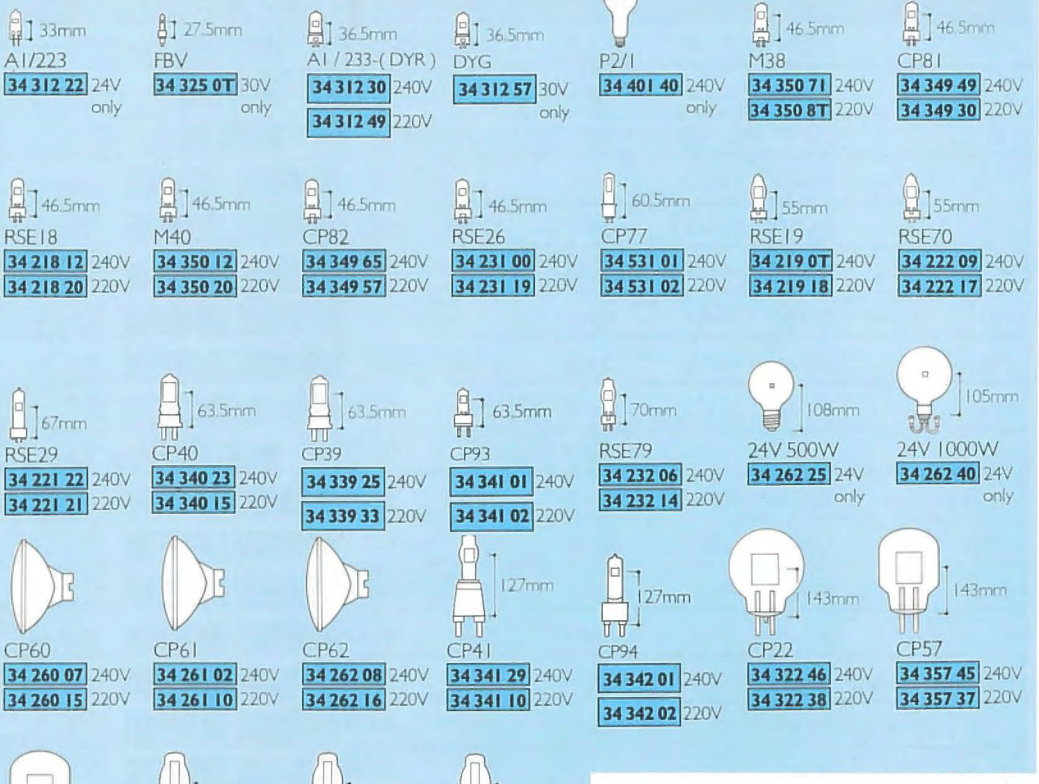
MBI-T
34 931 59

T3 Q/CL
34 960 00

50mm* Dichroic Low Voltage Lamp

35mm* Dichroic Low Voltage Lamp

* See lamp table on pages 76 & 77 for full information



Lamp Type	W	Base	Lumens	Colour Temp°	Rated Life (hrs)	Item No. 240V	Item No. 220V	Product Guide Stage	Product Guide Studio
A1/223	250W	G6.35	8,500	N/A	50	34 312 22 24V only		*Firebrigade Redhead*	
DYG	250W	GY9.5	8,000	3400	15	34 312 57 30V only			*Pulsar (Battery Kit)*
FBV	250W	Mini Screw	7,000	3400	6	34 325 0T 30V only			*Megalux*
M38*	300W	GY9.5	5,000	–	2000	34 350 71	34 350 8T	Quartet	
CP81*	300W	GY9.5	6,600	3200	150	34 349 49	34 349 30	Quartet Prelude	*Mizar*
RSE18* (T Class)	500W	GY9.5	11,000	3050	500	34 218 12	34 218 20	Quartet, Prelude	*Mizar*
M40*	500W	GY9.5	8,500	–	2000	34 350 12	34 350 20	Quartet	
CP82*	500W	GY9.5	12,500	3200	150	34 349 65	34 349 57	Quartet, Prelude	*Mizar*
P2/1	500W	E27	11,500	3200	100	34 401 40	–		*Pinza*
24V	500W	E40	12,000	–	50	34 262 25 24V only		Beamlite	
RSE26 (T Class)	650W	GY9.5	15,000	3050	400	34 231 00	34 231 19	Quartet, Prelude	
A1/233 (DYR)	650W	GY9.5	16,500	3200	75	34 312 30	34 312 49		*Pulsar*
CP39	650W	G22	16900	3200	100	34 339 25	34 339 33		*Polaris, Bambino*
RSE19* (T Class)	1000W	GX9.5	21,000	3050	750	34 219 0T	34 219 18	Cantata	
RSE70* (CP Class)	1000W	GX9.5	25,000	3200	200	34 222 09	34 222 17	Cantata	
CP40	1000W	G22	26,000	3200	200	34 340 23	34 340 15		*Polaris, Bambino 1000W*
CP77	1000W	GY9.5	26,500	3200	300	34 531 01	34 531 02	Leko	
CP60 Par64 12x9°	1000W	EMEP	–	–	300	34 260 07	34 260 15	Punchlite	
CP61 Par64 14x10°	1000W	EMEP	–	–	300	34 261 02	34 261 10	Punchlite	
CP62 Par 64 24x11°	1000W	EMEP	–	–	300	34 262 08	34 262 16	Punchlite	
24V	1000W	K39d	23,000	–	70	34 262 40 24V only		Beamlite	
RSE29 (T Class)	1200W	GX9.5	30,000	3050	400	34 221 22	34 221 21	Cantata	
CP93	1200W	G22	30,000	3200	200	34 341 01	34 341 02		Polaris
CP22 Hard Glass	1250/1250W	GX38q	27,000/56,000	3200	100	34 322 46	34 322 38		*Castor 1250/2500W*
CP30	1250/1250W	GX38q	27,000/56,000	3200	300	34 330 26	34 330 18		*Castor 1250/2500W Pollux 2500/5000W*
RSE 79 (CP Class)	2000W	GY16	52,000	3200	250	34 232 06	34 232 14	Cadenza, Solo2K	
CP41	2000W	G38	54,000	3200	400	34 341 29	34 341 10		*Castor 2000W, Bambino 2000W*
CP57 Hard Glass	1250/2500W	GX38q	26,000/59,000/ 87,000	3200	100	34 357 45	34 357 37		*Pollux 1250/2500W, Giano, Bambino 2500/5000W*
CP58	1250/2500W	GX38q	27,000/59,000/ 91,000	3200	300	34 358 42	34 358 32		*Pollux 1250/2500W. Bambino 2500/5000W, Giano*
CP20 Hard Glass	2500/2500W	GX38q	59,000/127,000	3200	100	34 320 45	34 320 37		*Pollux 2500/5000W, Bambino 2500/5000W. Giano*
CP32	2500/2500W	GX38q	59,000/127,000	3200	300	34 332 27	34 332 19		*Pollux 2500/5000W, Bambino 2500/5000W, Giano*
CP94	2,500W	G22	63,750	3,200	400	34 342 01	34 342 02		Castor
CP29	5000W	G38	135,000	3200	400	34 329 28	34 329 1T		*Pollux 5000W, Bambino 5000W*
CP46 Hard Glass	5000W	G38	137,500	3200	400	34 346 42	34 346 34		*Pollux 5000W, Bambino 5000W*
CP83	10,000W	G38	290,000	3200	500	34 349 81	34 349 73		*Vega*
P1/8	250W	R7s	8,000	3400	12	34 408 14 30V only			*Redhead*
K1	500W	R7s	9,500	2900	2000	34 275 01	34 275 1T	Noctume 500, Coda	*Iadi*
P2/10	625W	R7s	15,500	3200	200	34 41026	34 410 18		*Iris, Orion, Giano, Arturo*

Lamp Type	W	Base	Lumens	Colour Temp°	Rated Life (hrs)	Item No. 240V	Item No. 220V	Product Guide Stage	Product Guide Studio
P2/11	800W	R7s	22,000	3200	150	**34 366 01**	**34 366 03**		*Iadi*
DXX (P2/13)	800W	R7s	20,000	3200	75	**34 413 81**	**34 413 14**		*Redhead*
K4	1000W	R7s	21,000	3000	2000	**34 271 18**	**34 271 26**	Coda 1000, Nocturne 1000	
P2/7	1000W	R7s	26,000	3200	200	**34 407 43**	**34 407 35**		*Iris, Orion, Arturo, Giano*
P2/20	1000W	R7s	25,500	3200	300	**34 413 02**	**34 413 04**		*Iadi*
DXW	1000W	R7s	28,000	3200	150	**34 413 65** 120V only			*American Redhead*
P2/12	1250W	R7s	35,000	3200	200	**34 412 27**	**34 412 19**		*Iris, Orion, Arturo, Giano*
FEX (P2/27)	2000W	R7s	50,000	3200	300	**34 427 80**	**34 427 72**		*Blonde*
CSI	1000W	G22	90,000	4000	500	**34 213 07**		SoloCSI/CID	
CID	1000W	G22	70,000	5500	500	**34 227 06**		Solo CSI/CID	
CID PAR 64	1200W	G38	–	5500	1000	**34 641 21**			*Quasar*
HMI PAR 64						(Sylvania)	(Wotan)		*Quasar*
	1200W	G38	–	5600	1000	**34 641 20**	**34 641 22**		
CID	2500W	G38	200,000	5500	350	**34 228 01**		Pani HMV 2500 ZOOM	
HMI	575W	–	49,000	5600	750	**34 526 39**			*Sirio 575W, Arturo 575W,Shaula 575W*
HMI	1200W	–	110,000	5600	750	**34 527 50**		Pani HMV 1200/20,1200/35	*Sirio 1200W, Arturo 1200W*
HMI	2500W	–	240,000	5600	500	**34 528 3T**			*Sirio 2500W, Arturo 2500W*
HMI	4000W	–	410,000	5600	500	**34 529 35**			*Sirio 4000W HMI*
HMI	6000W	–	630,000	5600	350	**34 530 03**			*Sirio 6000W*
HMI	12000W	–	1,100,000	5600	–	**34 531 00**			*Sirio 12kW*
MSR	1200W	G38	110,000	5,000	800	**34 541 00**			*Sirio Bambino 1200W*
MSR	2500W	G38	225,000	5,000	500	**34 541 01**			*Sirio Bambino 2500W Super Quasar*

Lamp Type	W	Beam Angle	Base	Pk Beam Candelas	Colour Temp°	Rated Life (hrs)	Item No. 240V	Product Guide Architectural
M58 50mm diameter Low Voltage	50W	38	GX5.3	1550	3000	3000	**34 950 58** (12V only)	All low voltage luminaires except Mini Cube
M50 50mm diameter Low Voltage	50W	21	GX5.3	3700	3000	3000	**34 950 50** (12V only)	All low voltage luminaires except Mini Cube
M49 50mm diameter Low Voltage	50W	10	GX5.3	12000	3000	3000	**34 950 49** (12V only)	All low voltage luminaires except Mini Cube
M62 35mm diameter Low Voltage	20W	30	GZ4	600	2900	3000	**34 935 62** (12V only)	Mini Cube low voltage luminaire only
M61 75mm diameter Low Voltage	75W	38	GX5.3	2250	3000	3000	**34 349 03** (12V only)	Minispot low voltage luminaire only
M82 75mm diameter Low Voltage	75W	24	GX5.3	7500	3000	3000	**34 349 04** (12V only)	Minispot low voltage luminaire only
M60 75mm diameter Low Voltage	75W	12	GX5.3	16000	3000	3000	**34 349 02** (12V only)	Minispot low voltage luminaire only
M51 35mm diameter Low Voltage	20W	17	GZ4	1760	2900	3000	**34 935 51** (12V only)	Mini Cube low voltage luminaire only
M52 35mm diameter Low Voltage	20W	10	GZ4	5500	2900	3000	**34 935 52** (12V only)	Mini Cube low voltage luminaire only

Lamp Type	W	Base	Lumens	Colour Temp°	Rated Life (hrs)	Item No. 240V	Product Guide Architectural
T3 Q/CL (K12)	150W	R7s	2,700	2,900	2,000	**34 960 00**	Mini-Floodlight
MBI-T	150W	G12	12,000**	3,000	6,000***	**34 931 59**	Hilite F, Hilite 23

** These lamps may also be used with discontinued spotlights – please refer to price list ** up to 100hrs (10,000 lumens up to 2,000hrs) *** Objective Life*
All objective life ratings and lumen outputs are those provided by the lamp manufacturers.Note: Should you require a lamp(s) not specified in this table, please submit details for a quotation.

CABLES AND CONNECTORS

Multicore Cables

30/.25mm copper stranded conductors, numbered cores Butyl insulated and Nyplas sheathed overall.

9-core, 1.5mm² (per metre) **35 051 02**

15-core 1.5mm² (per metre) **35 053 03**

25-core, 1.5mm² (per metre) **35 055 04**

PVC Flexible Cable

Copper stranded conductors, PVC insulated, 3-core colour-coded, made circular with wormings and PVC sheathed.

6 amp, 0.75mm² (50 metre coil) **35 602 17**

10 amp, 1mm² (50 metre coil) **35 603 12**

10 amp, 1mm² (100 metre coil) **35 603 12/2**

15 amp, 1.5mm² (50 metre coil) **35 604 18**

15 amp, 1.5mm² (100 metre coil) **35 604 18/2**

Power Cable

80/0.4mm copper stranded conductors, vulcanised rubber insulated, 3-core colour coded and rubber sheathed.

63 amp, 10mm² 3-core flexible cable (per metre) **35 605 06**

Luminaire Cable

Nickel-plated copper conductors, toughened silicon rubber (TSR) insulated, 3-core colour coded, and TSR sheathed 15 amp 1.5mm² (1.5 metre length) **27 020 05**

1.5 metre luminaire power cable with bare ends **35 002 20**

1.5 metre luminaire power cable with European Schuko plug **35 002 21**

1.5 metre luminaire power cable with U.K. 15A 3-pin plug **35 002 22**

Silicon rubber 3-core cable (per metre) **35 003 07**

Luminaire power input connector **35 004 02**

Control Cables

Twin-screened Multiplex cable **35 607 00**

25 Core 1A metre control cable **35 606 00**

8 x 10A control cable **35 600 24**

Tempus 8-core cable **35 600 11**

12 x lamp control cable **35 601 11**

UK theatre standard connectors to BS 546

5 amp, 3-pin rubberclad flex-socket **35 610 05**

5 amp 3-pin rubberclad plugtop **35 611 00**

15 amp, 3-pin rubberclad flex socket **35 612 06**

15 amp, 3-pin rubberclad plugtop **35 613 01**

European standard connectors to IEC 309 (BS 4343)

A standard connector system for the TV and Film industry is available from 16 amp to 125 amp rating with the advantage of being splashproof and easy to wire with heavy conductors. With protected pins and mechanical interlock, these connectors are virtually indestructible in normal use and are available in the following formats:

2 pin + earth for single phase;
4 pin + earth for three-phase and neutral;
3 pin + earth for balanced three-phase (Delta).

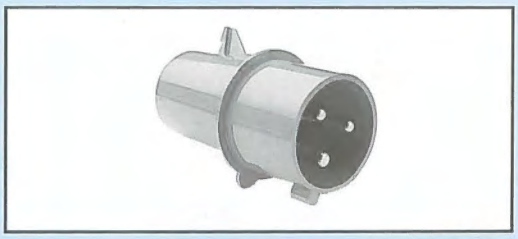
16 amp 2P+E flex socket **35 270 6T**

16 amp 2P+E through panel socket **35 270 78**

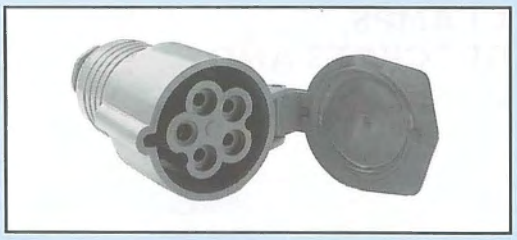
16 amp 2P+E plug top **35 270 51**

32 amp 2P+E flex socket **35 423 26**

32 amp 2P+E through panel socket **35 073 24**



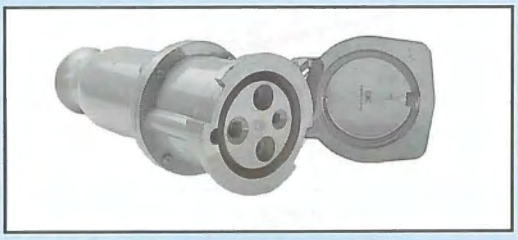
32 amp 2P+E plug top **35 403 21**



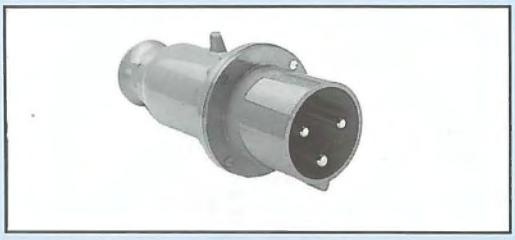
32 amp 4P+E flex socket **35 425 35**

32 amp 4P+E through panel socket **35 075 33**

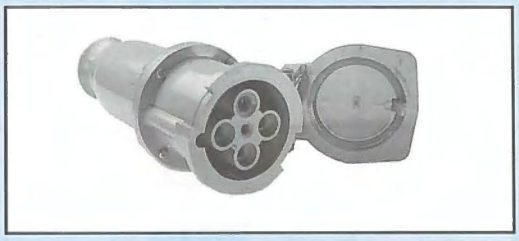
32 amp 4P+E plug top **35 405 30**



63 amp 2P+E flex socket **35 427 30**

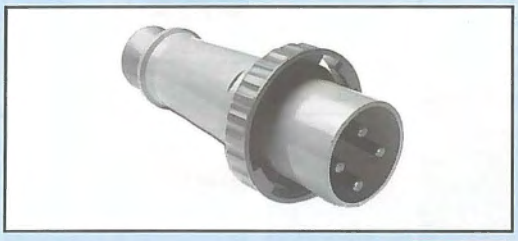


63 amp 2P+E plug top **35 432 37**

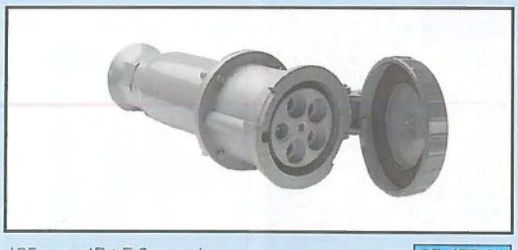


63 amp 3P+E flex socket **35 427 28**

63 amp 3P+E through panel socket **35 077 26**



63 amp 3P+E plug top **35 407 23**



125 amp 4P+E flex socket **35 432 36**

125 amp 4P+E through panel socket **35 062 3T**

125 amp 4P+E plug top **35 432 40**

CLAMPS, BRACKETS AND BARRELS

When suspending luminaires – whether from standard 48mm (1⅞") barrel, ceiling or wall – this range of reliable fixing devices will meet most requirements for the stage and other lighting applications. Barrel is available in plain lengths, or ready wired to order complete with flex or fixed socket outlets.

Clamps & Brackets

A safety chain should always be used in addition to the primary suspension.

Safety chain, 635mm long with twin clip hook **26 064 18**

Hook clamp for 48mm external diameter pipe **26 483 07**

26 483 07 **26 874 03**

Hook clamp, heavy duty, for 48mm ext. dia. pipe, recommended for 2kW luminaires **26 874 03**

Hook clamp, accepts 29mm T.V. spigot **26 594 04**

29mm T.V. spigot with M.10 metric thread **26 869 03**

29mm T.V. spigot with M.12 stem **26 860 04**

Boom bracket for vertical 48mm pipe **26 255 07**

M10 thread to 16mm socket mounting adaptor **26 865 01**

Wall bracket for 2 small spots, one above, one below. *Not suitable for Cantata and Cadenza ranges.* **26 238 09**

Heavy Duty Wall Bracket **26 877 18**

Ceiling Fixing Saddle **26 259 09**

Ceiling Plate (for Hilite Architectural Spotlight **26 872 02**

M.10 bolt, washer and wingnut, packet of 10 **27 233 08**

Bracket for rigid fixing of 48mm ext. dia. pipe to wall **26 631 09**

Clamping plate to join 48mm ext. dia. pipe end to end **26 629 05**

Plain Barrel

A choice of two lengths of the standard 48mm (1⅞") external diameter alloy pipe. Lengths are easily joined end to end or at right angles using the special clamps available.

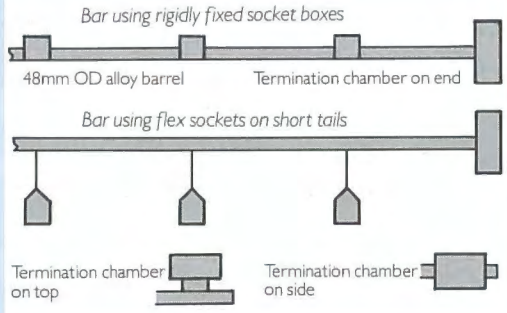
3-metre (9.8ft length) **26 655 3T**

4-metre (13.1ft. length) **26 655 48**

Internally-wired Barrels

These consist of 48mm ext. dia. alloy pipe with PVC insulated wiring brought to each equidistant luminaire position and terminated in 5 or 15 amp 3-pin flex sockets, or 3-pin shuttered sockets fixed to the bar, and supplied with mating rubberclad plugtops. The other end of the wiring is connected to a numbered terminal box. Constructed in two or more lengths joined by a clamping plate.

Available to special order



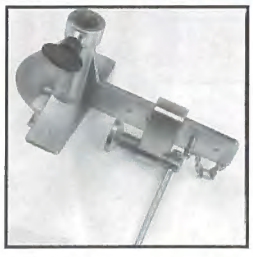
GRIP EQUIPMENT

This dependable equipment from Strand is in universal use for television and studio lighting suspension. It includes clamps and adaptors, quick-fixing gaffer grips, portable telescopic pole suspension, and other lighting accessories. Strand work closely with lighting designers, cameramen and riggers in maintaining a range that meets most studio and location needs.

Standard T.V. hook clamp with 29mm socket (fits 48mm barrel) **26 594 04**

Luminaire safety bond 50kg (for all Quartzcolor luminaires) **53 630 29**

Scaffold clamp with 29mm and 16mm sockets (fits 48mm barrel) **53 620 13**



Adjustable scenery clamp/set clamp with 29mm socket **66 172 01**

C clamp **66 173 07**

requires adaptor with 29mm socket **66 173 15**

or adaptor with 16mm spigot **66 173 23**

Barrel clamp with 29mm and 16mm sockets (fits 48mm barrel) **66 062 18**

Barrel clamp with 29mm and 16mm sockets (fits 38mm barrel) **66 062 0T**

Magic arm set comprising: 500mm Univeral positioning arm with 16mm spigot at each end (centre lever locks all movements) **52 143 01**

Superclamp with 16mm socket and jaws adjustable from 13mm to 55mm. Can be used with Magic arm set **52 035 06**

Joining stud for two Superclamps **52 061 06**

Double Superclamp (2 Superclamps fixed at right angles) **52 038 02**

Universal swivelling C clamp with 29mm and 16mm sockets and 16mm spogot (adjustable jaws from 28mm to 78mm) **52 137 01**

Adaptor Spigots & Sockets

16mm spigot – 16mm spigot **64 925 80**

16mm spigot – 29mm spigot **66 043 70**

16mm socket – 29mm spigot **66 042 05**

16mm socket – 16mm socket **66 257 10**

16 mm socket – 29mm socket **66 032 16**

Operating Poles

For use with all Quartzcolor pole-operated luminaires.

1.5 metres	**66 325 00**
2.5 metres	**66 322 04**
3.5 metres	**66 323 0T**
4.5 metres	**66 324 05**

STANDARD CLAMPS AND ADAPTORS

The wide choice of clamps for standard barrel and other fixings, together with the range of adaptor spigots and sockets, ensures maximum versatility for speedy positioning of lighting wherever it is needed.

GAFFER GRIPS

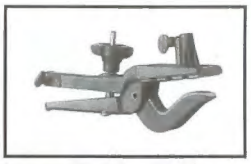
Simple to fit and remove, gaffer grips are indispensable accessories for quick and secure fixing of luminaires to barrel, beams or other structures in the studio, theatre or on location. The types available offer the alternatives of 16mm spigot or 16mm socket fittings.

'Sky hook' adjustable gaffer grip with 16mm socket on jaw and 16mm spigot on handle (jaws adjustable from 25mm to 65mm) **53 043 09**

'Sky hook' as above, but with 16mm spigot on both jaw and handle **53 043 17**

Small gaffer grip with 16mm socket **66 198 09**

Small gaffer grip with 16mm spigot **66 198 17**



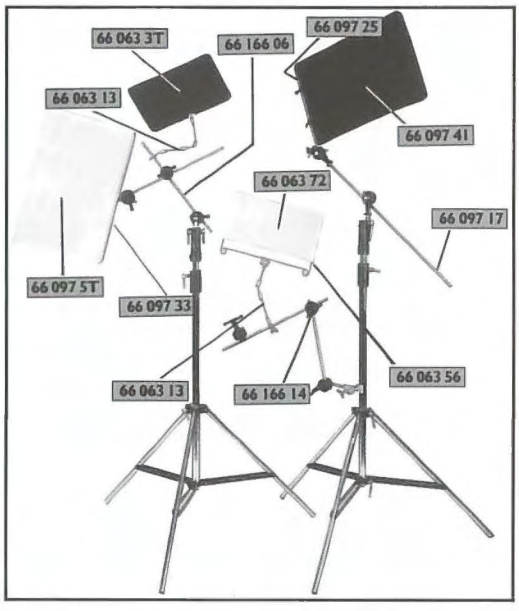
Large gaffer grip with 16mm socket **66 229 08**

Large gaffer grip with 16mm spigot **66 229 16**

Handgrip for Pulsar and Redhead **53 140 31**

FLAGS, NETS AND VEILS

This range of lighting accessories used by the TV cameraman and the still photographer meets studio and location needs for black flags, nets, cloths and veils together with frames and fixings.



Ball socket flag arm **66 063 13**

Black flag 250mm x 400mm **66 063 3T**

Net 250mm x 400mm **66 063 72**

Net holder 250mm x 400mm **66 063 56**

Single flag arm with 16mm spigot **66 097 17**

Double extension flag arm with 29mm spigot **66 166 06**

Double extension flag arm with 'C clamp' **66 166 14**

Cloth frame 400mm x 600mm **66 097 25**

Black cloth fits cloth frame **66 097 41**

Veil frame 400mm x 600mm **66 097 33**

Single veil fits veil frame **66 097 5T**

Double veil fits veil frame **66 097 68**

See pages 82 & 83 for details of stands

BARRICUDA POLE SYSTEM

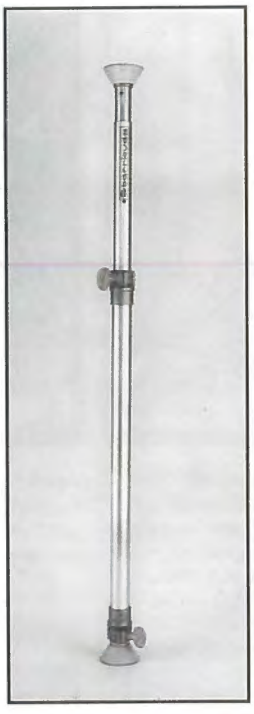
Designed primarily for portable lighting applications, the Barricuda system makes it quick and easy to support a number of lamps at a time without using numerous tripod stands.

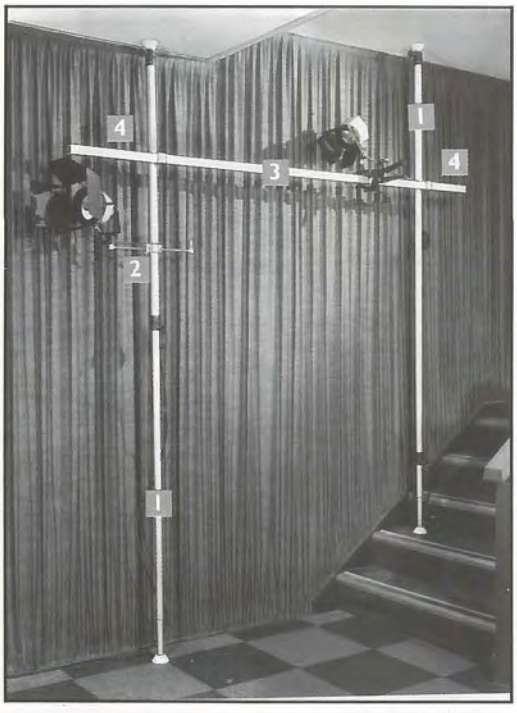
The Barricuda telescopic pole is adjusted and set up either horizontally between two walls, or vertically between floor and ceiling. Crossbars and other accessories can be added to provide the suspension system required.

Poles are anodised aluminium alloy and come complete with rubber pressure pads at both ends.

System elements

1. Barricuda telescopic pole
2. Two-light support
3. Crossbar
4. Crossbar supports





Barricuda pole 1.00m to 1.65m **66 006 08**

Barricuda pole 1.63m to 2.81m **66 005 02**

Barricuda pole 2.65m to 4.70m **66 004 07**

Two light support with 2 x 16mm spigots **66 018 14**

Extension poles
1.00m **66 037 05**
1.50m **66 038 00**

Crossbars
1.20m **66 017 00**
2.40m **66 016 05**
3.60m **66 015 0T**

Crossbar support
1 pair **66 014 04**

STANDS

The comprehensive Strand range of stands covers all theatre, studio and portable lighting applications.
The majority of stands are equipped to accommodate either 16mm sockets or 29mm spigots of studio luminaires. Multi-head stands have both types of fixings. Stands for theatre use are generally supplied with either a 29mm or a 19mm socket to take a range of spigot adaptors which are fitted to the M10 or M12 suspension bolt on the fork of the luminaire.
In the event of any problem in specifying the best stand and correct fitting for any application, Strand staff are ready to advise.

Model	Description	Item Number
Low stand	Low lightweight tripod stand, folding radially, with clamp for 19mm outside diameter plain or stepped shank spigot adaptor.	26 875 09
Folding cast-base stand	General purpose single extension telescopic stand with die-cast, heavy-alloy base.	26 896 09
Tall double-extension stand	Tall stand, of braced, but folding, construction with two extension tubes for high mounting of a lightweight luminaire.	26 898 0T
Folding braced stand	Adjustable height, braced stand providing rigid support, without excessive weight or bulk, for follow spots, effects, projectors etc.	26 897 04
Table stand	A lightweight circular stand. The base is drilled in three places to allow rigid fixing.	66 020 50
Mercury stand	Compact, lightweight, 4-lift stand of aluminium construction.	67 236 56
Spartan stand	Light alloy stand ideal for the 800W Redhead with all accessories, or similar lampheads.	67 257 56
Apollo stand	Compact stand ideal for use with the protable range of Quartzcolor lampheads.	52 052 04
Trojan stand	Lightweight tubular stand specifically designed for portable equipment.	52 005 04
Hercules stand (multi-head)	Folding stand with castors. Metal parts are chrome plated to protect against corrosion. As above, but without castors.	52 008 00 52 008 01
Atlas stand	A double-extension folding stand with braked wheels. Extremely sturdy steel construction suitable for the rigours of location working.	67 785 09
Goliath stand (multi-head)	Largest in the range of light alloy stands which accepts luminaires with 29mm spigot, ideal for 10kW tungsten and 4kW HMI spotlights.	52 069 0T
Samson stand	A heavy duty wind-up stand suitable for 10kW tungsten and 6kW HMI spotlights. Chrome plated to protect against the weather and supplied with braked wheels.	52 083 01
3-section wind-up stand (multi-head)	A 3-section pole; both of the two risers extend simultaneously at an elevation of 4.4cm per handle turn. Adjustable levelling on one leg.	52 087 00
Gladiator stand	A very heavy duty stand of steel construction with aluminium castings, suitable for all HMI spotlights up to 12kW, and arc lamps. The cranking system lifts both extensions simultaneously. The automatic clutch and safety break system prevents the stand from reversing under load. Supplied with braked wheels.	67 256 61

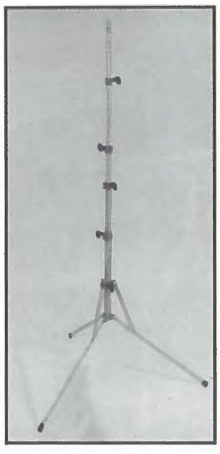
Low stand
Recommended for use with Minim, Prelude, Cantata, Punchlite, Nocturne (all require M.10 spigot) and Leko luminaires.

Folding cast-base stand
Recommended for use with Minim, Prelude, Cantata, Punchlite, Nocturne (all require M.10 spigot) and Leko luminaires.

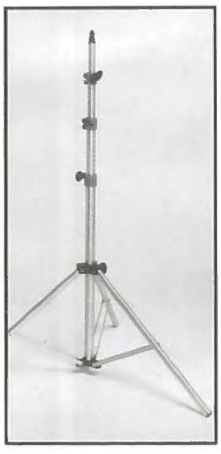
Tall double-extension stand
Recommended for use with Minim, Prelude, Punchlite, Nocturne luminaires (all require M.10 spigot)..

Table stand
Recommended for use with Megalux (requires adaptor 66 043 19), Pulsar, Mizar and Iadi Fill luminaires.

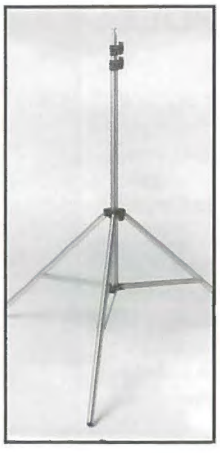
Folding braced stand
Recommended for use with Cadenza, Cadenza EP (both require M12 spigot), Cantata Followspot (requires M10 spigot), and Solo luminaires.



Mercury stand
Recommended for use with Megalux (requires adaptor 66 043 19), Pulsar, Redhead and Mizar luminaires.



Spartan stand
Recommended for use with Megalux (requires adaptor 66 043 19), Pulsar, Redhead, Mizar and Iadi Fill luminaires.



Apollo stand
Recommended for use with Redhead and Iadi Fill luminaires.

Trojan stand
Recommended for use with Blonde, Bambino 1000W and Shaula luminaires.

FOR PRICES OF ALL STRAND PRODUCTS SEE SEPARATE PRICE LIST

Socket/Spigot	Minimum/ maximum height (mm)	Tripod spread (mm)	Max load approx. (kg)	Dimensions folded-length diameter (mm)	Weight (kg)	Accessories for specific stands
19mm socket	Height 115	305	50.0	—	1.1	—
19mm socket	1330/2380	375	20.0	1280/80 & 430/110	7.8	—
19mm socket	1500/3800	500	25.0	1545/170	9.1	—
29mm socket	900/1500	525	50.0	1070/175	6.5	—
16mm spigot	Height 75	Diameter 135	—	—	0.16	—
16mm spigot	490/1900	1000	4.0	485/80	0.95	—
16mm spigot	690/2400	1020	5.0	755/70	1.25	—
16mm spigot	880/2500	902	5.0	860/96	1.25	—
16mm spigot	1030/2900	900	10.0	1000/108	2.0	800mm extension **66 048 10**
16mm/29mm sockets and 16mm spigot	1180/2200	990	30.0	1160/100	7.5	—
29mm socket	1250/2620	1000	30.0	1200/200	9.0	1000mm extension **66 049 03** Support arm (low level bracket) with 16mm & 29mm sockets **66 231 01**
16mm/29mm sockets and 16mm spigot	1440/3700	1270	40.0	1440/140	7.0	Set of 3 braked wheels **52 069 04** Set of 3 unbraked wheels **52 069 06**
29mm socket	1390/2470	1000	45.0	1652/300	17.5	—
16mm/29mm sockets and 16mm spigot	1670/3050	1280	40.0	1800/230	21.3	—
29mm socket	1620/3610	1700	120.0	1830/475	55.0	—

Adaptors and Accessories for Stands

Spigot adaptors with M.10 metric thread or stem are necessary for mounting Minim/ Prelude/Cantata/Nocturne/ Coda luminaires on telescopic stands. Cadenza spotlights require spigot adaptors with M.12 metric thread.

Spigot adaptor M.10 thread **26 873 08**

Spigot adaptor M.12 thread **26 859 06**

29mm T.V. spigot
with M.10 metric thread **26 869 03**
with M.12 metric thread **26 860 04**

Adaptor, 16mm spigot – 16mm spigot **64 925 80**

Adaptor, 16mm spigot – 29mm spigot **66 043 70**

Adaptor, 16mm socket – 29mm spigot **66 042 05**

Adaptor, 16mm socket – 16mm socket **66 257 10**

Adaptor, 16mm socket – 29mm socket **66 032 16**

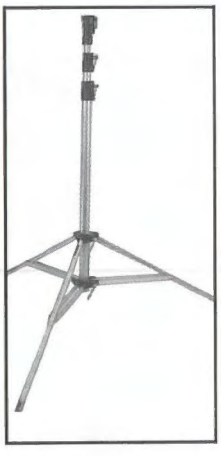
Crossbar, drilled with 4 holes to accept M.10 bolts, for mounting 4 lightweight luminaires, complete with 1⅛" spigot, for use with a floor stand. **26 857 07**

T-bar light support with 16mm socket, to mount two portable luminaires with gaffer grips, for use with Trojan, Spartan and Apollo stands. **66 096 03**

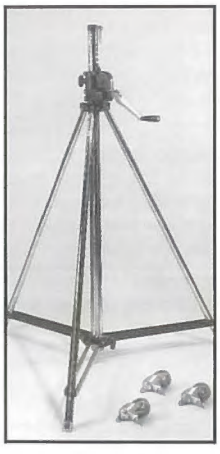
Note: Separate data sheets are available for stage and studio stands.

Hercules stand
Recommended for use with Blonde, Polaris, Bambino 1000W, Castor, Pollux, Bambino 2000W, Bambino 5000W, Shaula, Arturo 1250W, Arturo 2500W, Arturo HMI 575W, Arturo HMI 1200W, Sirio 575W and Sirio 1200W luminaires.

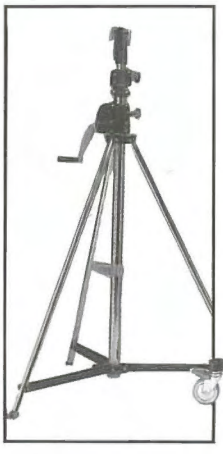
Atlas stand
Recommended for use with Polaris, Castor, Pollux, Bambino 2000W, Vega, Bambino 5000W, Arturo 1250W, Arturo 2500W, Arturo HMI 575W, Arturo HMI 1250W, Sirio 575W, Sirio 1200W, Sirio 2500W and Sirio 4000W luminaires.



Goliath stand
Recommended for use with Pollux, Vega, Arturo 5000W, Arturo HMI 575W, Arturo HMI 2500W, Sirio 2500W, Sirio 4000W, and Sirio 6000W luminaires.



Samson stand
Recommended for use with Vega, Sirio 2500W, Sirio 4000W, and Sirio 6000W luminaires.



3-section wind-up stand
Recommended for use with Pollux, Vega, Arturo 5000W, Arturo HMI 575W, Arturo HMI 2500W, Sirio 2500W, Sirio 4000W, and Sirio 6000W luminaires.

Gladiator stand
Recommended for use with Sirio 6000W and Sirio 12kW luminaires.

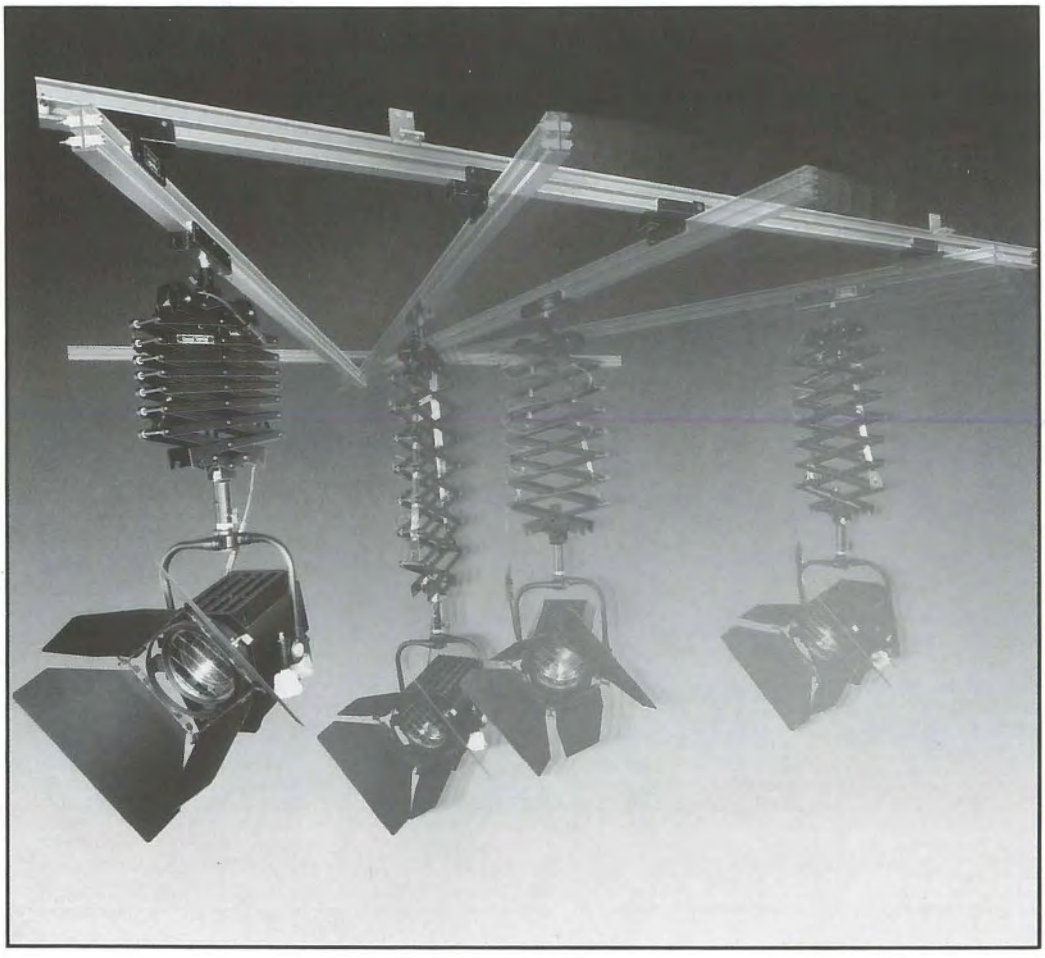
FOR GRIP EQUIPMENT SEE PAGES 80 & 81

LIGHTRIG SUSPENSION SYSTEM

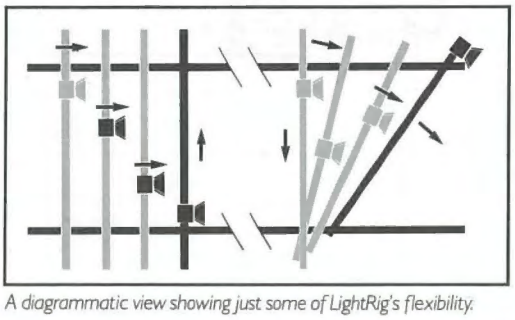
The versatile suspension system for the smaller TV and video studio.

LightRig is a versatile studio suspension system for the smaller studio which is practical, flexible and economical – adaptable to every lighting requirement!

Cross beams are articulated and pivot on their bogie-type carriages making them capable of moving to any diagonal position. They are also free to extend in either direction beyond the parallel fixed track. Luminaires can thus be placed in any required position in the studio, reaching even the most inaccessible corners. With the use of pantographs, lights can also be set to any height.



- Position lights **anywhere** in the studio
- No cross-bar jamming – rails glide on smooth-running carriages
- Ideal where floor space and ceiling height is restricted
- Floor left free of cables and lighting stands
- Curved rail for corners and cycloramas
- Leave rigged and connected for next job – speed turn- round
- Full range of accessories ensures maximum flexibility
- Economical system with robust, quality-built parts



A diagrammatic view showing just some of LightRig's flexibility.

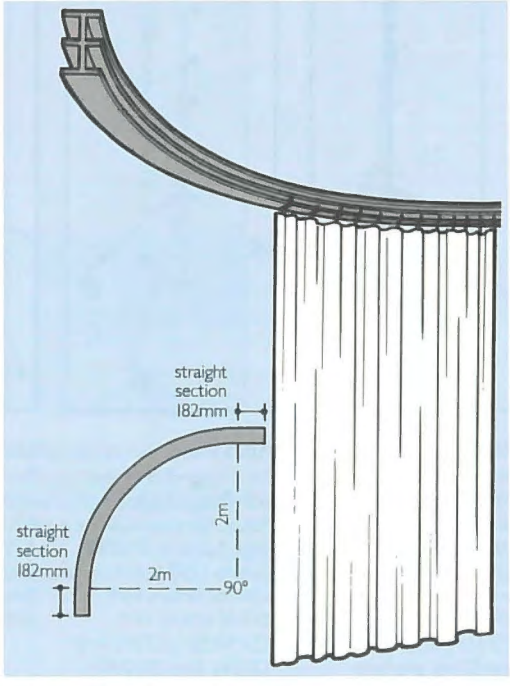
A basic LightRig system comprises two parallel lightweight fixed tracks equipped with free-running double carriages that support movable cross-beams. The design of the carriages allows for cross-beam movement up and down the track, or diagonally across the track by moving only one carriage. A cross beam may also be pulled out to overhang beyond the fixed track area.

Luminaires are supported from single 6 wheel carriages fitted with a standard male spigot. These make possible free movement of lights along the length of the cross beams. Lights may also be suspended from the fixed track, if required, for movement in two directions only.

To prevent uncontrolled fast movement of equipment along the tracks, the supporting carriages and luminaire support carriages incorporate pre-set friction brakes.

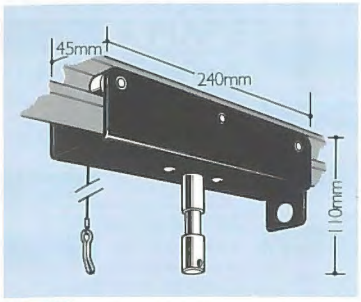
LIGHTRIG CURVED TRACK

The fixed track can be made to turn through 90° by using the special curved quadrant rail which has a 2m radius. There is a short straight section of rail at each end for joining to straight track. In conjunction with the curtain runners, curved rail may be used for cyclorama cloths as well as lighting.

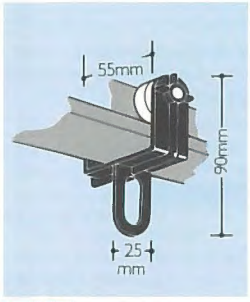


REMEMBER TO QUOTE ITEM NUMBERS WHEN ORDERING

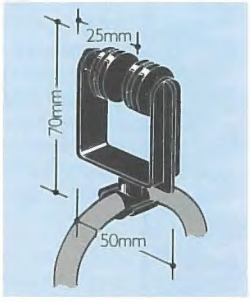
LIGHTRIG COMPONENTS



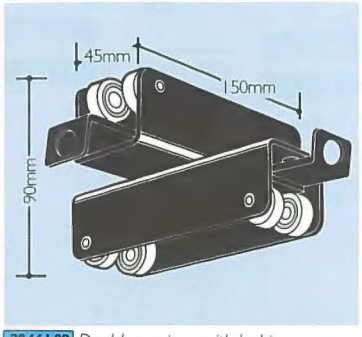
28 659 00 *6-wheel carriage to mount luminaires, with brake and safety pin*



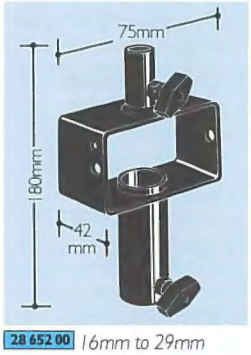
28 634 00 *Curtain runners (in sets of 10)*



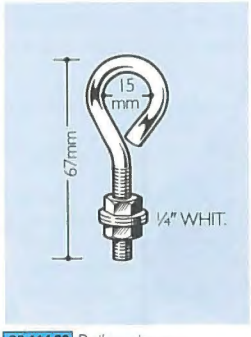
28 607 00 *Cable transfer runner (in sets of 5)*



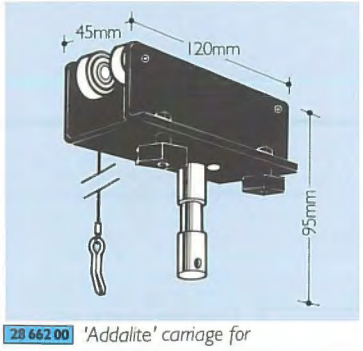
28 661 00 *Double carriage with locking and double brake*



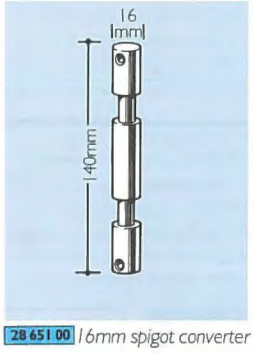
28 652 00 *16mm to 29mm spigot converter*



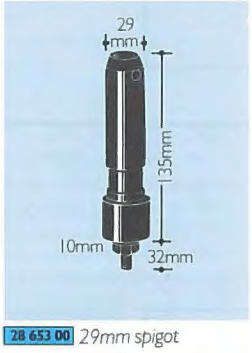
28 664 00 *Rail towing eye*



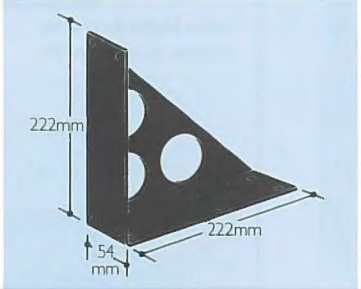
28 662 00 *'Addalite' carriage for extra luminaire fitting*



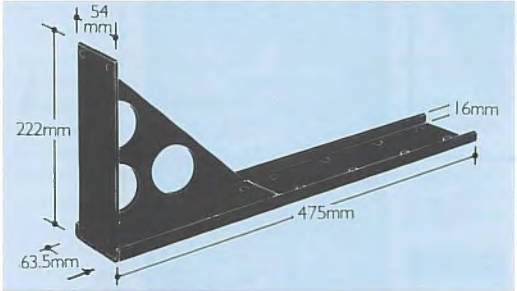
28 651 00 *16mm spigot converter*



28 653 00 *29mm spigot*



28 642 00 *Rail Side Mount Bracket*



28 646 00 *Triple Side Mount Bracket*

2m LightRig Rail, 3kg **28 656 10**

3m LightRig Rail, 4.5kg **28 600 10**

4.5m LightRig Rail, 6.75kg **28 601 10**

Radius Corner Rail 1.5kg per metre **28 631 10**

End Stops, (set of four) **28 606 00**

6 Wheel Carriage with brake, safety pin, and 16mm spigot. 0.5kg **28 659 00**

6 Wheel Carriage with brake, safety pin, and 29mm socket. 0.65kg **28 679 00**

'Addalite' Carriage, 16mm Spigot, 0.3kg **28 662 00**

'Addalite' Carriage, 29mm socket 0.3kg **28 680 00**

203mm Rail Joining Plate, 0.28kg **28 633 00**

Rail Clamp with light spigot, 0.25kg **28 635 00**

Cable Transfer Runner (set of 5), 0.01kg **28 607 00**

Lockable Double Carriage with double brake, 0.42kg **28 661 00**

Cable Fixing Kits (10 bonds and hooks)

Small bonds **28 618 00**

Large bonds **28 625 00**

Curtain Runners (set of 10), 0.01kg **28 634 00**

Safety Cable, 0.01kg **28 619 00**

Rail Towing Eye, 0.02kg **28 664 00**

29mm Spigot, 0.67kg **28 653 00**

16mm to 29mm Spigot Converter, 0,5kg **28 652 00**

16mm Spigot Converter, 0.175kg **28 651 00**

Safety Pin, 0.01kg **28 654 00**

Universal Rail Mount Bracket Assembly, 0.63kg **28 605 00**

Rail Side Mount Bracket, 1kg **28 642 00**

Triple Side Mount Bracket, 2kg **28 646 00**

Short Fixing Kit, 0.21kg **28 629 00**

Back to Back Rail Clamp, 0.42kg **28 632 00**

Scaffold Clamp, 0.35kg **28 626 00**

Adjustable Drop Ceiling Supports (top and bottom) 75mm adjustment, 1.4kg **28 657 00**

Fixed Drop Ceiling Supports (top and bottom), 1.1kg **28 636 00**

305mm Drop Ceiling Support Tube, 0.27kg **28 637 00**

610mm Drop Ceiling Support Tube, 0.54kg **28 638 00**

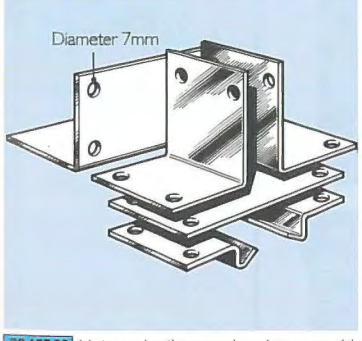
915mm Drop Ceiling Support Tube, 0.81kg **28 639 00**

Adjustable Girder Clamp, 1.43kg **28 650 00**

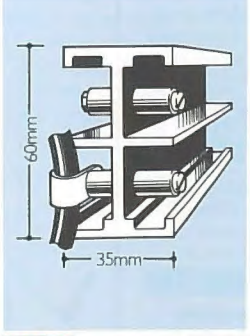
12m Mains Lead, 10 Amp with CEE connector, 1.1kg **28 627 00**

STRAND DESIGN SERVICE

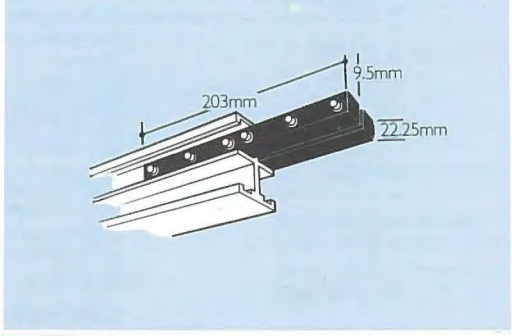
If you require advice or assistance in planning your LightRig suspension system, please take advantage of the Strand design service. A system can be designed to suit you if you send full details of your studio and requirements.



28 605 00 *Universal rail mount bracket assembly (clamping bolts provided)*



28 606 00 *End stops (in sets of 4)*

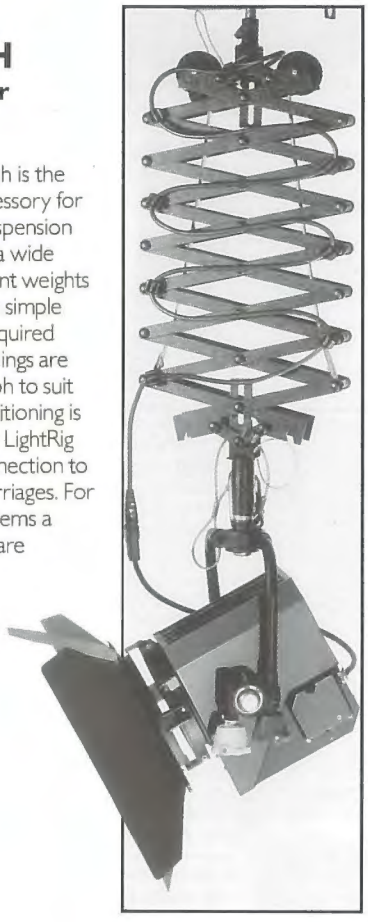


28 633 00 *203mm rail joining plate for longer runs (for fixed tracks only).*

LIGHTRIG PANTOGRAPH

Suspension system for varying loads

The LightRig Pantograph is the ideal light support accessory for use with Strand's LightRig suspension system. It may be used with a wide range of luminaires of different weights and sizes and makes possible simple adjustment of lights at any required height. Counter-balanced springs are used to set-up the Pantograph to suit the load so that accurate positioning is possible. Fixing to the Strand LightRig track system is by direct connection to the spigot on the LightRig carriages. For use on other suspension systems a number of mounting fixings are available.



LightRig Pantograph
Comprises the following: 17mm female socket at the top, 30mm female socket at the bottom, 29mm plug to convert bottom to 16mm female, 16mm spigot converter to change bottom to 16mm male, Spring removal key (springs ordered separately). Weight with four springs 4.9kg **28 655 00**

Accessories

Spring Type T1, 0.36kg **28 610 00**

Spring Type T2, 0.36kg **28 611 00**

Spring Type T3, 0.36kg **28 612 00**

Spring Type T4, 0.36kg **28 613 00**

Extra Spring Removal Key **28 614 00**

12m Mains Leads, 10 Amp with C.E.E. connector, 1.1kg **28 627 00**

6 Wheel Carriage with brake and safety pin, 0.5kg **28 659 00**

'Addalite', 0.24kg **28 662 00**

Standard TV Hook Clamp, with 29mm Socket (fits 48mm barrel), 1kg **26 594 04**

Barrel Roller Trolley with 29mm Socket (Nylon Wheels, fits 48mm barrel), 2.1kg **53 690 22**

Universal Swivelling Clamp with 29mm and 16mm Sockets & 16mm Spigot, 1.62kg (Adjustable jaws from 28mm to 78mm) **52 137 01**

29mm spigot with 16mm socket, 0.275kg **66 042 05**

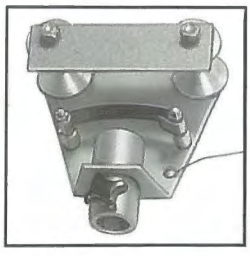
16mm to 16mm Spigot Converter, 0.175kg **28 651 00**

Safety Cable, 0.01kg **28 619 00**

Safety pin, 0.01kg **28 654 00**

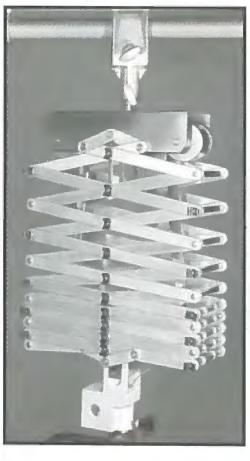
STUDIO SUSPENSION ACCESSORIES

Pantographs and drop arms are used in conjunction with barrel roller trolleys for speedy location of lighting at required levels in the studio. Standard 29mm TV spigot and socket fittings ensure easy interchangeability. In addition to standard units, any special drop lengths of pantographs or fixed arms are available to order.



Barrel roller trolley with 29mm socket (nylon wheels, fits 48mm barrel) **53 690 22**

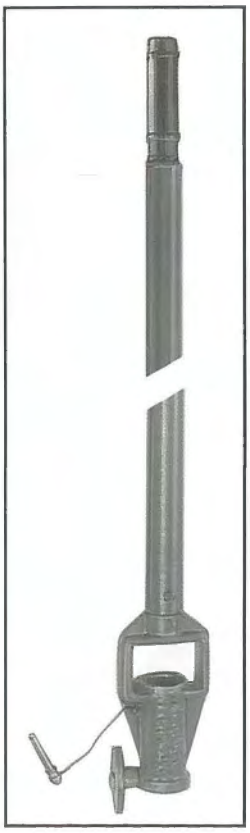
Barrel roller trolley with 29mm socket (metal wheels, fits 48mm barrel) **To special order**



2 Spring pantograph for loads 5kg to 20kg with 29mm spigot at top and 29mm socket at base (maximum drop 3.6m) Shown suspended from standard TV hook clamp (26 594 04) **53 690 06**

4 Spring pantograph for loads 20kg to 50kg with 29mm spigot at top and 29mm socket at base (maximum drop 3.6m) **53 690 14**

Other length pantographs available to special order



Drop arm 1 metre, with 29mm spigot at top and 29mm socket at base **53 610 32**

Other length drop arms available to special order.

FOR GRIP EQUIPMENT SEE PAGES 80 & 81

STRAND FILTERS
FILTER MATERIAL USED FOR TELEVISION

Filter materials used for Television fall generally into two categories. They could be informally known as Filters for Lighting Design and Filters for Lighting Control. There are links between the two categories and, of course, some overlap on their use.

Perhaps the most important link is that of safety. All filter material used for Television (and, I suspect, for professional theatre) must conform to the appropriate British Standard (BS 3944: 1965) for flame retardent properties and subsequent behaviour under excessive temperature conditions. It is also extremely important that the stability of colour or filter effect is maintained over a wide range of operational situations.

Filters for lighting design, the category containing the whole colour range – reflective, diffusion and textured material – are probably most easily understood by the layman. The selection of these is determined by a combination of the following.

First, though not necessarily in any order of priority, the personal choice of the Lighting 'Person' (actual titles vary throughout Television!). Second, integration with other design considerations namely, set, costume and make-up and, thirdly, specific programme requirements.

This category, because it is based on intangibles and subjective judgements may be discussed very briefly or in depth for ever! consequently, for the sake of brevity, I have chosen the former.

Filters for lighting control require detailed selection against a broad technical understanding of the potential problems to be solved. For ease of explanation, typical requirements are described separately, however, it is important to understand that final selection will be based on different combinations of any or all of the following types and that situations – especially on location – can change rapidly.

a. Control of overall light level.
b. Control of relative light levels.
c. Control of light source colour temperature.
d. Control of quality of light source.
e. Control of reflected light.

a. A neutral density filter may be used to control the level of light entering the camera. As its name suggests, it affects coloured light transmission uniformly. Other means of control of final exposure namely lens iris opening, selection of film stock emulsion speed for film cameras, and setting of electronic gain for video cameras, and exposure time, may introduce undesirable or inconvenient factors. For practical reasons the filter would usually be fitted to the camera but could be associated with the light source illuminating the scene.
b. In spite of the march of technology the Television medium is still limited in its handling of contrast, and though constantly improving, control of relative lighting levels in the original scene is essential for good results. In this respect film cameras are considerably 'better natured' than current types of video cameras. To achieve the required limitation of this contrast a small number of practical options are available. Incandescent sources may be supplied via dimmers although then there may be colour temperature variations to be considered. With discharge sources normal dimming as used with incandescent sources is not yet practicable, consequently use of neutral density filter is the commonest method of reducing light output although some use is made of variable shutter devices. Sources over which we have no control, the most obvious being daylight, filtering either by N.D. material or by perforated types is a common method.
c. With the advent of colour in television, an added complication was the often undesirable effects of mixed colour temperature sources. Although it took some time to assess the range of acceptable differences, it is necessary to limit these differences usually by careful initial selection of sources and then by filtering. It is interesting to note that what was considered to be a problem at the outset is now used quite specifically as part of the lighting person's armoury!

Here the video camera has some advantages. In the film camera the colour response is governed by the selection of the appropriate film emulsion specification though, of course, this can be modified during 'grading' and processing. In the video camera the colour response can be adjusted over a fairly wide range at will either manually or automatically giving rise to the need to constantly 'White Balance' if light conditions vary. The process of 'White Balance' adjusts the proportions of red, green and blue by allowing electronic gain. Frequent use of light sources of different colour temperatures is unavoidable particularly on location. The most common example encountered is the mixture of incandescent and daylight or HMI, CSI, CID types. Usually the initial approach is to endeavour to match the minority source to the majority source for reasons of time, cost and effort. However, it is rarely that simple for a number of reasons. Here are just some of them!

Any form of filtering introduces losses, and losses of output may not be acceptable. As a 'full correction' of incandescent to daylight for example equates with 1 F Stop, in effect half of your available light is lost! To increase the initial light level to allow for that loss may not be practical because of limitations in power supply or it may not be possible structurally to install that amount of equipment, or there may not be enough time available to install that amount of equipment. Perfect matching of correction filters to sources with very uneven colour output is extremely difficult and in practice with multiple sources is at best a compromise. Because of their uneven colour rendering discharge sources even when 'corrected' may have unacceptable or unflattering effects on some artistes' complexions and some architectural surfaces, particularly some types of stonework and woodwork. Often a practical compromise involves partial correction of one source and partial correction of another, for example, half correction on a window and half correction on the artificial light source. It is vital to understand that it is the overall resultant colour temperature that has to be within the acceptable range for the camera.
d. The quality of light used for Television is an extremely important factor. In this context 'quality' is defined by its relative 'softness' or 'hardness', usually assessed by characteristics of shadows cast, diffusion type filter may be used to soften hard light sources, this process being extended by using even larger areas of filter material illuminated by a choice of sources, since 'softness' is achieved by increasing the area of the source relative to the subject being illuminated.
e. Polarising filter is often used to reduce undesirable reflections from windows and car windscreens for instance. It is also possible under some circumstances to obtain a variable neutral density effect on, say, a window by applying polarising filter to the window and also to the camera and adjusting the relationship of the filters by revolving the camera filter thereby altering its relationship to the window filter. There are, unfortunately, some operational limitations imposed by this method, not the least being the loss of 2-2 1/2 stops minimum!

It may be of interest to note that development of the solid state digital video camera may eventually render filter for lighting control redundant!

To conclude, and in the meantime some thoughts perhaps for filter manufacturer's 'back room boys'. An ideal specification for correction filters would contain the following.

1. Wide variable range of density – controlled electronically and therefore possibly remotely.
2. Wide variable range of colour, colour correction controlled electronically and therefore possibly remotely.
3. Wide range of sizes available.
4. Instantly changeable from flexible to rigid and matt or glossy surface.
5. Inexpensive!
6. Practitioners should *not* hold their breath.

Reprinted from *Strandlight*, Spring 1988, published by Strand Lighting. The author, Clive Potter is Head of Lighting Television OBs, BBC, TV.

STRAND FILTERS

Strand Filters have been developed to provide an answer to every filter application and every type of operating condition today. The widest choice of colours is available, there is also a comprehensive range of correction filters and diffusion media. Whichever range you select you can be sure of reliable quality and excellent value for money.
A choice of ranges – to suit all budgets.
Available from stock – extensive distribution.
Supplied in rolls or as cut sheets.

Ordering Information
To order a roll or a full sheet of Strand Filters, specify the appropriate order code, and add the colour number as a suffix.

Compact swatch books providing colour references and transmission curves are available for Strand Filters.

STRAND COLOUR FILTERS

Tough, heat-resistant thin film polyester material. Dye coated both sides.
All filters conform to stringent safety standards – BS 3944:1965.

Roll 7.62m x 1.22m (25' x 4') **3210/xxx**

Sheet 1.22m x 0.55m (48" x 21") **3220/xxx**

401 Yellow
402 Light Amber
403 Straw
404 Medium Amber
405 Orange
406 Red (Primary)
407 Light Rose
409 Light Salmon
410 Middle Rose
411 Dark Pink
413 Magenta
415 Peacock Blue
416 Blue Green (Cyan)
417 Steel Blue
418 Light Blue
419 Primary Dark Blue
420 Deep Blue
421 Pea Green
422 Moss Green
424 Primary Dark Green
426 Mauve
427 Smokey Pink
428 Bright Pink
429 Heavy Frost
430 Clear
432 Medium Blue
434 Golden Amber
435 Deep Golden Amber
436 Pale Lavender
437 Special Lavender
438 Pale Green
439 Deep Green
441 Bright Blue
442 Pale Violet
443 Pale Navy Blue
444 Azure Blue
447 Apricot
448 Bright Rose
451 Gold Tint
452 Pale Gold
453 Pale Salmon
454 Pale Rose
456 Pale Chocolate
457 Pink
458 Deep Orange
459 No Colour Straw
461 Slate Blue
462 Bastard Amber
464 Medium Red
465 Daylight Blue
466 Pale Red
470 Deep Lavender
474 Dark Steel Blue
476 Light Salmon Pink
479 Chrome Orange
480 Dark Lavender
481 Congo Blue
482 Light Red
483 Moonlight Blue
484 Cosmetic Peach
486 Cosmetic Silver Rose
488 Cosmetic Highlight

STRAND CORRECTION FILTERS

Tungsten Light Conversion		
201 Full C.T.B.	Converts Tungsten to photographic daylight 3200°K to 5700°K	
202 Half C.T.B.	Converts Tungsten to daylight 3200°K to 4300°K	
203 Quarter C.T.B.	Converts Tungsten to daylight 3200°K to 3600°K	
218 Eighth C.T.B.	Converts Tungsten to daylight 3200°K to 3400°K	
Daylight Conversion		
204 Full CTO	Converts Daylight to Tungsten light 6500°K to 3200°K	
205 Half CTO	Converts Daylight to Tungsten light 6500°K to 3800°K	
206 Quarter CTO	Converts Daylight to Tungsten light 6500°K to 4600°K	
223 Eighth CTO	Converts Daylight to Tungsten light 6500°K to 5550°K	
Daylight Conversion with Neutral Density		
207 Full CTO + .3ND	Converts Daylight to Tungsten 6500°K to 3200°K and reduces light 1 stop	
208 Full CTO + .6ND	Converts Daylight to Tungsten 6500°K to 3200°K and reduces light 2 stops	
209 .3ND	Reduces light 1 stop without changing colour	
210 .6ND	Reduces light 2 stops without changing colour	
211 .9ND	Reduces light 3 stops without changing colour	
Arc Correction (Carbon Regular)		
212 L.C.T. Yellow (Y1)	Reduces colour temperature of low carbon arcs to 3200°K	
213 White Flame Green	Corrects White Flame carbon arcs by absorbing Ultra Violet	
Arc Correction (Compact Source)		
236 HMI (to tungsten)	Converts HMI to 3200°K for use with tungsten film	
237 CID (to tungsten)	Converts CID to 3200°K for use with tungsten film	
Tungsten to Fluorescent Correction		
219 Fluorescent Green	Converts tungsten to fluorescent light (used in conjunction with Camera Correction Filter)	
Ultra Violet Absorption		
226 UV Filter	Strongly absorbs ultra violet light	
Diffusion Media		
214 Full Tough Spun	Softens light and reduces intensity	**Rolls only**
215 Half Tough Spun	Softens light and reduces intensity	**Rolls only**
229 Quarter Tough Spun	Softens light and reduces intensity	**Rolls only**
216 White Diffusion	Softens light	
250 Half White Diffusion	Creates soft light effects	
251 Quarter White Diffusion	Creates soft light effects	
217 Blue Diffusion	Softens light. Increases colour temperature	
228 Brushed Silk	Directional soft light effects	
220 White Frost	Used for soft light effect	
221 Blue Frost	Used for soft light effect	
224 Daylight Blue Frost	Soft light effect with Tungsten Correction (Using full C.T.B.)	
225 Neutral Density Frost	Soft light effect with N.D. (2 stops)	
253 Highland Frost	Light frost effect	
Reflection Media		
270 Silver Black Scrim	Perforated reflector producing a very soft reflection. Silver on one side, black on the other. (Useful in windows)	**Rolls only**
271 Mirror Silver	Produces a hard reflection	**Rolls only**
272 Soft Gold Reflector	Produces soft reflection. White backed reflector	**Rolls only**
273 Soft Silver Reflector	Produces a soft reflection. White backed	**Rolls only**

The standard 25-sheet pack with carrying handle protects filters in transit, and also acts as useful storage container afterwards for cut filters. Rolls are packed in polythene sleeves and colour-coded for easy identification of filter type.

STRAND CHROMOID COLOUR FILTERS

Top quality range for high temperature conditions. Also recommended where routine filter replacement is difficult.
Made in body-dyed polycarbonate.
All filters conform to stringent safety standards BS 3944:1965.

Roll 15.24m x 0.61m (50' x 2') **312 0006/xxx**

Sheet 0.61m x 0.55m (24" x 21") **312 008/xxx**

Pack of 25 sheets **312 0000/xxx**

Ordering Information
To order a roll, sheet, or pack of 25 sheets of Chromoid, specify the appropriate order code, and add the colour number as a suffix.

101 Yellow
102 Light Amber
103 Straw
106 Primary Red
108 Rose Tint
110 Middle Rose
111 Rose
112 Deep Rose
113 Magenta
114 Ruby
115 Peacock Blue
116 Blue Green
117 Steel Blue
119 Primary Dark Blue
121 Pea Green
122 Moss Green
123 Light Green
124 Primary Dark Green
126 Mauve
127 Smokey Pink
130 Clear
131 Soft Edge
134 Golden Amber
135 Fire
136 Light Lavender
137 Lavender
140 Night Blue
141 Brilliant Blue
144 Azure Blue
145 Daylight Blue
146 Chrome Yellow
149 Canary
150 Pale Yellow
151 Lime Yellow
152 Pale Gold
154 Pale Rose
157 Pink
158 Deep Orange
159 No Colour Straw
161 Slate Blue
162 Turquoise
163 Surprise Blue
164 Medium Red
167 Steel Tint
170 Lavender Blue
171 Lilac
172 Surprise Pink
175 Pale Golden Rose
176 Light Salmon Pink
178 Salmon
180 Red Silk
181 Blue Silk
182 Green Silk
183 Amber Silk
84 Tough Silk
85 Matt Silk
86 Warm Blue
87 Nile Blue
88 Deep Lilac
89 Lavender Tint
90 Pink Tint
91 Middle Blue
92 Caspian Blue
93 Blue
94 Western Green
95 Scarlet
96 Medium Purple
97 Light Golden Amber
98 Pale Golden Amber
99 Tough Frost
100 Light Frost

COLOUR CHANGE UNITS

REMOTE OPERATED 5-COLOUR CHANGE WHEEL

23 868 40

The rim driven Colour Change Wheel has five colour apertures any of which can be remotely selected to stop in front of the lens of a spotlight.

24 Volt AC extra-low voltage, rim drive motor. Backplate fits Quartet/Cantata/Prelude spotlights

Five Strand Filters colours (Nos, 404, 411, 441, 436, 452) are fitted to above.

Adaptor to fit Hilite 23 Architectural Spotlight **23 868 25**

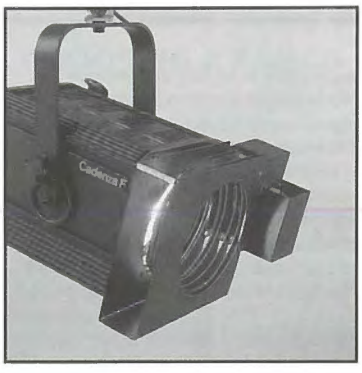
REMOTE CONTROL BOXES 220/240V AC INPUT

24 volt output, for five positions or continuous control from thumbwheel switch for each colour wheel. 6 and 4-unit boxes have presetting facilities with internally lit switches.

2-unit 240/24V control box, for 2 wheels **23 891 02**

4-unit 240/24V control box, for 4 wheels **23 892 08**

6-unit 240/24V control box, for 6 wheels **23 893 03**



SEMAPHORE 4-COLOUR CHANGE UNIT

These motor driven, random-access Semaphore Colour Change Units have four semaphore frames. Any one, or more, can be remotely selected at the associated control box to travel in front of the lens of a spotlight.

Small 24V AC semaphore 4-colour change unit to fit Cantata range (will also fit Harmony and other old Strand 1000W luminaires by removal of adaptor plate). **23 781 00**

Adaptor to fit existing colour change unit to Cantata **23 868 35**

Large 24V AC Semaphore 4-colour change unit to fit Cadenza range (will also fit old Strand 2000W luminaires by removal of adaptor plate). **23 881 05**

Adaptor to fit existing colour change unit to Cadenza **23 857 06**

SEMAPHORE REMOTE CONTROL BOX

220/240V AC input, 24V output for random access selection of any one or more colour frames, or open white by 5 heavy duty latching pushes for each semaphore change unit.

6-unit control box, for 6 semaphore units **23 888 03**

6-unit semaphore, slave control box **23 888 11**

Semaphore control boxes can be used with illuminated pushes. If required the lamps should be ordered separately. Set of five 24V lamps, for illuminating pushes in semaphore control box (6 sets needed per box) **27 859 02**

HOW TO CHOOSE COLOURS

USING COLOUR IN A STAGE PRODUCTION

The simplest motive for using coloured light on the stage is to enhance the look of the scenery, costumes and actors. This could be, for example, just a straightforward warming to provide a sympathetic rosy cosy glow for a comedy. Or adding the delicate grey steels which provided Brecht with his clear white light. (Unfiltered open white light being rather warm, Brecht, like the detergent manufacturers, adopted the traditional laundry technology of the blue bag which makes whites whiter than white.) However, light is usually coloured to provide a means of not only establishing an atmosphere but controlling that atmosphere during the time sequence of the performance. This is done by mixing colours: perhaps the most classic case is the double-covering of acting areas in a play with two sets of spotlights, one coloured cool and the other warm, so that the emotional toning of the scene can be varied as the drama unfolds.
These colours are produced by filtering the light.

Filtering colours

When we place a piece of Strand Filter in front of a spotlight, we feel as if we are adding colour to that light. Put a blue in we say, as if we were adding blue. But take out all colours except blue would be a more accurate request. Certainly for a deeply saturated blue. For a paler blue we might say, take out all colours except the blue, some of the green and a trace of everything else. Or for a different pale blue tint, leave only all the blue, some of the red and a bit of everything else.
It is important to remember that when we place a filter in front of a light we are taking colour away . . . filtering it out. Unfiltered light ('open white' we usually call it) contains all the colours of the spectrum. When filtering it, we emphasise certain of these colours by removing the rest.
Pigments, whether in the material of the scenery, the costumes or the actors' skin, will respond to their own colour in the light. So the lighting of any scene, costume or face in a sympathetic way will require the choice of filters which pass these colours. On the other hand, pigments will not respond at all unless they receive some of their own colour in the light. Therefore we cannot expect coloured light to put colour into an object if that colour is not already present in pigment form. Without pigment, the object may take on some illusion of colouring but it will be in a way that is dead rather than vibrant.
The more a filter removes colours from the light, the more that filter will emphasise the pigments which respond to the colours which remain in the filtered light. However, the use of increasingly deep filters, while leading to increasingly positive colour statements, is also likely to produce a deadening of the visual effect, this is due to any lesser pigments that may be present being starved of their colours in the light.
Thus the paler tints are generally the most sympathetic filters since, in addition to passing all of their particular colour, they pass varying amounts of the remainder of the spectrum.
Flesh tones in particular have a broad pale sensitivity which needs a full light spectrum for a sympathetic response. Any emphasis with filtering can be done with only the most delicate tints. And so we should try to choose filters which pass:

a lot of the main colour that we want to emphasise for atmospheric effect, ***plus***
some of the other colours which are appropriate for stimulating a vibrant response.

Therefore the key to successful filter choice is to devote as much concern to the colours which are being filtered out as to the colours which are being allowed to pass through.

Colour mixing

In choosing a filter, it is relatively easy to predict the effect of a single light. We can try the effect by shining filtered light on a piece of scenery or a piece of costume fabric or an actor's face. Or if the set and costumes are going to be executed faithfully from the designs, we can experiment with filtered light on the drawings and or models. Our eye will tell us which filters produce the most sympathetic response.

But prediction of the effect of several overlapping filtered lights is not so easy. Fortunately, however, their effect is additive. That is, while filtering a light removes parts of the spectrum, an overlap of various colours from various filtered lights will tend to put the spectrum together again. So overlapping of coloured lights moves us towards near white neutrality.
Indeed this is the basis of the colour mixing that we use to produce a range of colours from two or three complementary colours. Although mixing of the primaries (red, blue and green) will produce any colour, this is a method now only occasionally used since not only do the deeply saturated filters waste light but the crossfade between colours is via a sequence of intermediates that can perhaps best be described as unsubtle.
For the face lights in a play we might choose a pair of tints which will mix to provide a subtle range from a palest cool steel through neutral to a slightly warm golden rose. Whereas, for the atmospheric sculptural washes in a musical, we might opt for a range of middle saturation pink, blue and amber which will offer several quite colourful combinations yet also add up to a near-white neutral.
Like everything else in lighting, we have to decide what visual effect we want to achieve and then find a technical means of doing it. There is a progression through four key questions requiring answers . . .

Planning filter choice

How is colour to be used in this production?
to enhance the clarity of white light?
to enhance the visual quality of the performers and their stage environment?
to support the progress of the action with appropriate changes of atmosphere?
or??

How naturalistic will the colours be?
approximating to sunshine, moonshine, and practical lamps?
considerably heightened but still with a natural logic?
non-naturalistic?
or??

How contrasty will the colour palette be?
delicate tints?
strong tones?
heavy saturates?
or??

What are the colour characteristics of the set & costume designs?
do the cools tend towards blues with a greenish or with a reddish content?
do the warms tend towards pinks or golds?
or??

The filter palette

This questioning process enables a gradual narrowing down of choice towards a relatively small palette of filters which will be appropriate for a particular production.

SOME FILTER TIPS

- Never choose a filter by its name. Look at the colour of the light transmitted through it by holding a sample up to light. Or, better still, project light through the filter and check response on designs, material, flesh, etc.
- Blues with a green content can be rather unbecoming on actors' faces: try to avoid in extended moonlight scenes.
- Lavenders are particularly sympathetic to faces. They also have the uniquely useful quality of not only blending well with other lights but taking on something of their character, thus they tend to appear warm or cold according to the predominant trend of the colouring of the other lights.
- The high intensity of the light produced by parcans allows use of the most heavily saturated filters. Note that the colour from a parcan will be considerably paler than the light from a conventional lens spotlight of similar wattage.
- If atmospheric colour is concentrated in the backlights and some of the side lighting, neutrals and pale tints can be used from the front to provide a visibility which is sympathetic to face and costume without diluting the overall colour effect.
- A slight colour differential between left and right sides can be used to help increase the sculptural modelling of an actor. This can be particularly valuable if dimmer sharing prevents directional keying by means of an intensity imbalance.
- When using break-up gobos to texture the light, slightly different gels in overlapping lamps will increase the depth of texture. It also helps to use split-colours in each spot (ie two half size pieces of filter butt-joined in the frame).
- A floor which has a fine spatter of paint colour will be much more responsive to filtered light than a plain floor. This is particularly so with a black floor.
- It is difficult to light white cycloramas to a dark blue. Cyc cloths should have a very pale blue pigmentation which will aid response to blue light but not upset response to the rest of the spectrum.
- Use slightly different blues at the bottom of a sky to those at the top. Normally slightly paler at the bottom but even when they have the same saturation, the difference produces a gradation of colour up the cloth, enhancing the feeling of horizon and making the sky seem deeper and further away.
- Colour-changing mechanisms (wheels, scrollers etc) enable us to change remotely the filter in a light, but they do not remove the need for double-covering with twinned lights for cross-fading and palette-mixing.

FILTER CHART

Strand colour swatch books list filters by their numbers. This assists filter management since colours are always referred to by these numbers; both on plans and in conversation. However when choosing firters it is logical to find first the colour then the depth of saturation and finally the appropriate shade. This chart groups Strand Filters according to colour, with subdivision into strengths and then into shades.

While it is hoped that this chart will lead towards a choice, final selection can only be from the swatch book.

Where colours in both the Strand ranges are identical, or virtually identical, they are shown on the same line. Strand Filter 200 series contain colour correction filters which have a precise role in adjusting light for the technologically sensitive eyes of film and video: they have been included in this chart when they also offer a useful tint for the human eye

(236 and 237 will also be found useful for adjusting the colour of follow spots with discharge lamp sources, particularly when touring to theatres with different types of follow spot.).

DIFFUSION FILTERS

For diffusion of the light beam, there are frosts which uniformly soften the light (particularly its edge) and silks which not only soften but spread it in one direction (that direction being selected by the way in which the filter is cut and positioned in its frame). For plain diffusion (ie without colour filtering),

Strand Filters 253 and Chromoid 131 are gentle soft-edging frosts while 228 and 84 are directionally spreading softening silks.

For heavier frosting consider Chromoid 100 and 99 or Strand Filters 429.

To assist coverage of cycloramas when space is tight, there is a Chromoid group which combine saturated filters with a directional diffuser: these are 180 (red silk), 181 (blue silk), 182 (green silk), and 183 (amber silk). And Strand Filters has a group (484, 486 and 488), known as cosmetics, which combine subtle tints with a gentle frost.

CHOOSING A RANGE

Choose the appropriate filter range by weighing cost against type of use.

Standard **Strand Filters** are economical for normal theatre, studio and film use.

Choose **Chromoid** for prolonged use in the latest high efficiency spotlights with halogen lamps. Its additional cost will be offset by its extended life.

Strand Filters is available in

Rolls 762m x 1.22m (25' x 4')

Full Sheets 1.22m x 0.55m (48" x 21")

Chromoid is available in

Rolls 15.24m x 0.61m (50' x 2')

Sheets 0.61m x 0.55m (24" x 21")

Pack of 25 sheets

BLUES – A full range of blues from the most delicate through progressive saturation to intense primary: choice is by depth of saturation and by variation in red/blue content.

218 203 202	– – –	The palest of the blue tints. Passing more red than green, they offer a light which is delicate and cool yet sympathetic to flesh.
– – 201	167 145	These tints are slightly stronger but still provide a blue with a bias towards a reddish content.
417 418 –	117 – 87	Similar strength but biased towards green rather than red and consequently less sympathetic to facial flesh tones.
461 474	161 –	More positive blues. Cooling the scene yet sympathetic to faces, they are particularly useful for sustained operatic moonlight.
– – – 465	86 163 91 –	Stronger blues for sculpting rather than facial visibility. Useful in cross and backlights. This group will enhance sets and costumes which have reddish blue pigments.
443 441 444 483	– 141 144 –	Again for dimensional sculpting rather than facial visibility. But sympathetic to sets and costumes with tendencies towards greenish-blue pigmentation.
432 – –	91 92 140	Saturated, yet not deepest, blues with a reddish tendency. Useful for sky floods and in backlights, particularly parcans or the more powerful fresnels.
415 416 –	115 116 162	Similarly saturated blues with a quite positive bias towards green. Can be particularly useful in a groundrow mix, whether suggesting water or just strengthening the illusion of a horizon.
– 419 420	93 119 –	The deepest most saturated blues for tops of cycloramas, and for backlighting with parcans.

REDS – So saturated that use is normally restricted to atmosphere: only used on flesh for a very special effect.

406 482	106 –	The deepest most saturated reds (406 is primary). Normally only usable in positive statements, such as a parcan downlight mix in music theatre.
464 – 466	164 135 –	A little paler but still concentrated. Note the slight blue content of 466.
–	114	Saturated ruby (enriched with a touch of blue)

ROSES – Paler than the reds but still powerful, and not for faces.

428 448 – 413	– – 95 113	Group of mid-saturation reds whose varying blue content indicates a progress towards magenta.

PINKS – Sympathetic warm tints used when the general warm toning of the set and costumes inclines towards pinks and reds rather than golds and ambers.

– – 410 411 –	90 108 110 111 112	Pinks with a blue component, getting progressively deeper. The darkest are rather strong for the faces in a naturalistic play but perhaps more possible in a musical.
407 409 457 476 –	– – 157 176 178	Pinks with a tendency towards gold rather than blue.
453 454	– 154	Pale Pink tints with a hint of gold. 454 is a classic warm component of warm cool emotional mixing in near naturalistic drama.
427 456	127 –	Pinks with a chocolate-brown feel. Emitted light is a pale tint, but beware light intensity losses through deceptively deep filters.

YELLOWS – Simulate sunlight and the quality of warmth associated with it, especially when the sky is clear.

– 212	150 –	Palest yellow tints for delicate sunlight.
401 –	101 149	Strong saturated yellows, particularly unflattering to flesh.
–	146	Strongly saturated chrome for bold occasional use.

STRAWS – The straws also suggest sunlight warmth but perhaps of a less direct kind.

459 223 – 403 206 205	159 – 98 103 – –	A series of pale straw tints with varying tendencies towards yellow or amber. Although all are sufficiently pale to be acceptable on flesh, straws can have a somewhat deadening effect on faces.

GOLDS – The golds are the main alternative to pinks for a warmth that is sympathetic to facial skin tones.

462 451 452	– – 152	Pale gold tints provide warm actor light and fall sympathetically on sets and costumes where the warms are predominantly gold rather than pink.
236 204 447	– – –	Stronger gold tints with an apricot tendency, often used for warm interiors.
237 –	– 175	Palish gold tints with a tendency to rose (or can be considered as pale pinks with a tendency to gold).

AMBERS – Strong positive colours needing particular care in use. Orangey ambers tend to be more sympathetic than the yellowish ones, but choice will depend on set and costume pigments.

402 404	102 –	Medium strength ambers with a tendency towards yellow. Potential to deaden skin and costumes requires care in use.
– 479	97 –	Medium strength ambers with a more golden component. Richer and potentially less damaging than the more yellow ambers.
405 434 458	– 134 158	Rather saturated ambers with tendency towards gold which aids a sympathetic response from sets and costumes when used as a back and side sculptural light.

GREENS – Generally disaster on flesh, particularly darker skin tones. The palest can be used as a component of sunlight and gaslight, but most greens are strictly for scenery.

213	–	Palest green tint. A hint of yellow.
438	–	A little stronger.
–	151	Similar strength but more limey.
219	–	Mid saturation with considerable blue tendency.
421 422 –	121 122 123	Similar saturation but without the blue. 421 is the paler and yellower of the two.
– 424 439	94 124 –	Stronger saturated greens with 94 showing blue tendencies. (439 is primary).

NEUTRAL LAVENDERS – As face tints, the lavenders tend to appear cold or warm according to the main colour toning of the scene.

– 436 470	89 136 170	Classic pale lavenders (Cinemoid 36 is the legendary surprise pink), sympathetic to faces and appearing cool or warm according to surrounding colour.
– –	171 172	Lilac lavenders with a slightly more blue content.
437 442	137 –	Rather more violet but still neutral in their capacity to marry with both cold and warm surrounding tonings.

DEEP LAVENDERS AND PURPLES – Used only for particularly strong positive statements. When required for atmospheric washes these colours can be relatively easily achieved (but without such depth of intensity) by mixing a palette of reds and blues.

480 –	– 88	Deep lilac lavenders for sculpting.
481	–	Very saturated purple including a lot of blue.
– 426	96 126	Richly saturated positive purples.

STRAND LIGHTING ENGINEERING SERVICE

The Strand Lighting Engineering Service team provides comprehensive technical support to Strand's customers worldwide. It comprises a network of Service Agents throughout the UK, overseas Service Agents, and overseas Strand Service bases. The team is led and supported by Engineering Service Department based in Isleworth. Each service centre is staffed by trained engineers and technicians.

The support services available can be summarised as follows:-

Technical Advice
The answering of queries and providing any information or assistance required regarding the application, installation, or use of Strand products.

Installation and Commissioning
For the more complex control systems, a Strand Service Engineer will ensure that all equipment is correctly installed and operates according to specification.

Training
This is provided by the main service bases. Standard courses are provided on current 'memory' control systems, according to a published schedule. Alternatively, specific courses may be arranged to fulfil particular customer requirements.

Spare Parts
A wide range of spare parts for equipment can be supplied to order.

Repairs and Maintenance
Right across the range – from Minim to Galaxy 3 – if operating problems are experienced, the Strand Service Team can resolve them. Depending on the exact nature of the problem, repairs may be carried out 'on the bench' at a service centre, by the supply of 'exchange' parts, or on site by a trained Service Engineer.

CUSTOM ENGINEERING

The Strand product range is the most comprehensive available, but there will always be customer requirements that call for modification of a standard product or even a special design from scratch.

Strand has had a 'specials' department dedicated to solving customers' more unusual needs for the past twelve years. If you have a requirement in TV, theatre or architectural lighting that cannot be met by the standard range, Strand's Custom Engineering Department will evaluate, advise, design, build and test to meet individual specifications.

Strand believes that special products call for a special approach – in concept, design and manufacture. Therefore, all non-standard projects are handled quite separately from normal manufacturing.

Custom Engineering Department is located at Isleworth where all the technical resources of the world's largest supplier of lighting equipment can be applied to a project. These include immediate on-site access to experienced Sales and Project Teams, Product Managers, Research and Development Specialists and, of course, those front line problem solvers, the Service Engineers.

Any special requirement can be handled, from simple socket boxes to full dimmer distribution systems, from small manual fader desks to the largest lighting memory controls.

Fully integrated systems for theatres and television studios of any size can be developed for the industry. These can incorporate all types of equipment including static and automated luminaires, hoists, retractable seating, communications, house lights, mimic and patch panels, dimmer fault displays and other products.

Whatever the special need, however unusual, talk to Strand's Sales Department, which together with Custom Engineering solves problems economically and has satisfied customers worldwide!

PROJECT SERVICES

As the largest and most experienced company in the business, Strand is able to bring to its customers the benefits of a comprehensive, efficiently-coordinated sales organisation which is second to none.

▲ *Queen Elizabeth's School, Mansfield, Notts. Mid-19th century class room converted to a video studio with the aid of drapes, lighting grid, luminaires, Tempus control and dimmer packs supplied and installed by Strand.*

The computerised sales office provides an informed and helpful professional free planning service, ensuring customer satisfaction from initial enquiry, through the preparation of quotations, and to the experienced management and completion of projects.

Quotations are professionally presented complete with details of standard products and any special items, all necessary drawings, schemes and plans, and supporting literature.

When a quotation has been sanctioned by the customer, the various orders involved in the project are progressed, and the delivery, installation and commissioning are efficiently organised to meet the customer's schedule and convenience.

Satisfied Strand customers include the BBC, LWT, ITN. YTV, Sky Television, many West End theatres, and arts centres, leisure centres, colleges and schools through the UK, Europe and the Middle and Far East.

◀ *Strand's Project Services ensured that the custom made Galaxy 3 memory lighting system was built to LWT's specification, installed and commissioned.*

▼ *Royal Concert Hall, Nottingham. Acting as specialist sub-contractors, Strand supplied and installed stage lighting, a Galaxy memory lighting control, and a stage sound system.*
Photograph by Christine Ottewill.

GENERAL INFORMATION U.K.

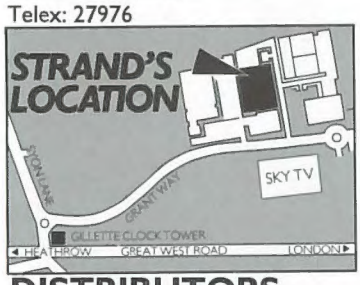
Goods are offered subject to the Company's Terms and Conditions of Business obtainable upon request. Posession of the appropriate price list is not in itself an offer to sell.

Orders

Orders should be directed to:

Strand Lighting Limited
Grant Way, Syon Lane
Isleworth, Middlesex TW7 5QD

Telephone: 081 560 3171
Fax: 081 568 2103
Telex: 27976



PRICES

Prices are in £ Sterling and include domestic packing but not carriage. Special packing and export packing/crating are extra. All orders for delivery within the United Kingdom which are for less than £750.00 pre-VAT will be forwarded to the local Strand dealer who will supply direct.
Prices and specifications are subject to change without notice and do not include VAT or any such charges.

DELIVERY

Prices do not include carriage. Carriage costs within the United Kingdom are charged at cost or at the predetermined rates established by Strand Lighting Limited. All export shipping costs and freight are for the account of the Buyer. Strand Lighting Limited responsibility ceases upon delivery of shipments to the carrier, and buyers are warned to immediately notify the carrier in writing of any loss or damage to goods in transit.

TERMS OF PAYMENT UNITED KINGDOM

In respect of equipment for eventual delivery in the United Kingdom payment is due prior to delivery except for established account holders for whom our terms are strictly 30 days nett.

OVERSEAS

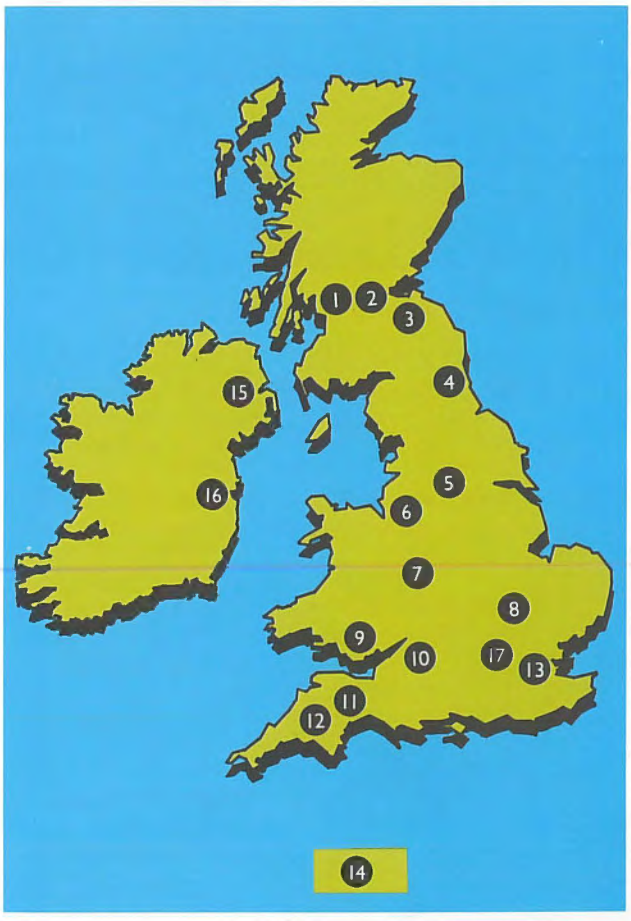
In respect of equipment for eventual delivery outside the United Kingdom and where not otherwise specified, payment shall be made prior to shipment by an irrevocable letter of credit confirmed for payment by a British bank in London.

COLLECTIONS

For immediate collection visit Strand's Counter Sales at Isleworth or the nearest distributor. Payment at Strand Counter Sales may be by cash, cheque with Bankers' Card or an official order charged against an existing account.

To help us handle your order without delay please use the 7-digit item number and follow the procedure outlined.

DISTRIBUTORS, SALES COUNTERS AND OFFICES



1 Northern Light
79 Loanbank Quadrant,
Govan, Glasgow G51 3HZ
Telephone: 041 440 1771
Fax: 041 445 4406

2 Caithness Stage & Lighting Limited
3 Wellington Street, Paisley,
Strathclyde PA3 2JQ
Telephone: 041 887 0949
Fax: 041 887 1175

3 Northern Light
39-41 Assembly Street,
Leith, Edinburgh EH6 7RG
Telephone: 031 553 2383
Fax: 031 553 3296

4 Sound Electronics (Newcastle) Ltd.,
201-215 Jesmond Road,
Newcastle upon Tyne,
Tyne & Wear NE2 1LA
Telephone: 091 281 4248
Fax: 091 281 1194

5 Futurist Theatrical Hire Limited
Hoyle Head Mills,
New Street, Earlsheaton,
Dewsbury, W. Yorkshire
WF12 8JJ
Telephone: 0924 468183
Fax: 0924 458667

6 A.S. Green & Company Limited Stage Products
Winchester Road, Haydock
Lane Industrial Estate,
Haydock, Merseyside
WA11 9XQ
Telephone: 0942 718347
Fax: 0942 718219

7 Midland Theatre Services Limited
Junction 1 Industrial Estate
Dartmouth Road,
Smethwick, Birmingham
B66 1AX
Telephone: 021 525 4545
Fax: 021 525 2413

8 Ancient Lights Limited
Unit 2, The Old Maltings,
135 Ditton Walk,
Cambridge CB5 8QD
Telephone: 0223 410249
Fax: 0223 411300

9 Light Relief
Ellar House,
Alexandra Industrial Estate,
Wentloog Road, Rumney,
Cardiff, CF3 8EE
Telephone: 0222 779555
Fax: 0222 778575

10 Stage Electrics
Unit 9, Victoria Road,
Portway, Avonmouth,
Bristol, BS11 9DB
Telephone: 0272 827282
Fax: 0272 822180

11 Stage Electrics
Cofton Road, Marsh Barton,
Exeter, Devon EX2 8QW
Telephone: 0392 55868
Fax: 0392 410592

12 Stage Electrics
Unit 2,
Parkway Industrial Estate,
Plymouth, Devon PL6 8LH
Telephone: 0752 269444

13 L.H.S. Limited
The Business Village,
Broomhill Road,
Wandsworth,
London SW18 4JQ
Telephone: 081 871 5132
Fax: 081 877 1940

13 Luff Light & Sound Ltd.,
Unit 1, Chiltonian Estate,
203 Manor Lane,
London SE12 0TX
Telephone: 081 318 6767
Fax: 081 318 1627

14 Commercial Electronics
Jersey International House,
40 Seaton Place, St Helier,
Jersey, Channel Islands
Telephone: Jersey Central
0534 35348
Fax: 0534 34573

15 G.E.P. Limited
8 Lorne Street, Belfast,
Northern Ireland BY9 7DU
Telephone: 0232 664411
Fax: 0232 664831

16 Stage Lighting Centre
Glansevern House,
108 Pearse Street,
Dublin 2, Eire
Telephone: 0001 710208
0001 770880
0001 710414
Fax: 0001 770397

17 Strand Lighting Limited
Grant Way, Syon Lane
Isleworth, Middlesex
TW7 5QD
Telephone: 081 560 3171
Fax: 081 568 2103
Telex: 27976

Please refer to the Price List for list of Service Agents in the U.K.

STRAND WORLDWIDE SALES AND SERVICE

Strand Lighting Limited is an international company with subsidiaries, affiliates and representation worldwide. All customers, wherever they may be, have the assurance of full support from Strand's international sales and service network.

STRAND LIGHTING SUBSIDIARIES WORLDWIDE

1 United Kingdom

Strand Lighting Limited
Grant Way, Syon Lane,
Isleworth
Middlesex TW7 5QD
United Kingdom

Tel: 081 560 3171
Telex: 27976
Fax: 081 568 2103

2 Australia

Strand Lighting
264-270 Normanby Road
South Melbourne
Victoria 3205
Australia

Tel: (03) 646 4522
Fax: (03) 646 5020

3 Canada

Strand Lighting
2430 Lucklow Drive 15
Mississauga
Ontario L5S 1V3
Canada

Tel: (416) 677 7130
1-800-387-3403
Telex: 06-968645
Fax: (416) 677 6859

4 France

Strand Lighting France S.A.
26 Villa des Fleurs
92400 Courbevoie
Paris
France

Tel: (1) 47 88 66 66
Telex: 611921 F/Strand F
Fax: (1) 43 33 71 75

5 Hong Kong

Strand Lighting Asia Limited
802-4 Houston Centre
63 Mody Road
Kowloon
Hong Kong

Tel: 3-685161
Telex: 44953
Fax: (852) 3-694890

6 Italy

Strand Lighting SpA
Divisione Trading
Via Paola Albera 82
00181 Roma
Italy

Tel: 06 785 3544
Telex: 620178 Luxian
Fax: 06 780 9018

7 USA

Strand Lighting
18111 South Santa Fe Avenue
PO Box 9004
Rancho Dominguez
California 90224
USA

Tel: (213) 637-7500
Telex: 664 741
Fax: 213-632-5519

8 USA

Strand Electro Controls
2975 South 300 West
Salt Lake City
Utah 84115
USA

Tel: (801) 487 6111
Fax: (801) 466 1003

9 West Germany

Strand Lighting Gmbh
Salzbergstrasse 2
3340 Wolfenbuttel-Salzdahlum
West Germany

Tel: (05331) 3008-0
Telex: 95641
Fax: (05331) 78883

STRAND LIGHTING EUROPEAN DISTRIBUTORS

Belgium

A ● ◆ S.A. Luxillag N.V.
54-56 Houtweg,
1140 Brussels
Belgium

Contact: Mr G Galli

Tel: (32-2) 242 96 60
Telex: 65367 SOPLUX-B
Fax: (32-2) 242 11 54

Denmark

B ● ◆ Teadan Aps
Stoberivej 5
3660 Stenlose
Denmark

Contact: Mr B Jensen

Tel: 42 173525
Telex: 42516 TEADAN dK
Fax: 42 172066

Finland

C ◆ Carlo Casagrande & Co Oy
Kalevankatu 4
PO Box 3
SF 00101 Helsinki
Finland

Contact: Mr C Casagrande

Tel: +358 0 640 711
Telex: 121677
Fax: +358 0 644488

C ● G. W. Berg & Co Oy
Vaaksyntie 4
PO Box 43
SF 00551 Helsinki
Finland

Contact: Mr J Berg

Tel: +358 0 750 450
Telex: 124885
Fax: +358 0 701 2849

France

D ● Eclalux
14 Rue JB Clement
94200 Ivry-sur-Seine
France

Contact: Mr L Israel

Direction Tel: (1) 46 72 76 36
Commercial Tel: (1) 46 70 83 44
Telex: 203 428 F/ECLALUX
Fax: 46 58 67 56

Greece

E ● ◆ Omikron Commercial & Technical Corp. SA
20 Solomou Street
Athens 106-82
Greece

Contact: Mr N Tsonopoulos

Tel: 363 7979
Telex: 219559 OMIK GR
Fax: 363 6761

Holland

F ● ◆ Mechalectron INT. B.V.
Overijsselhaven 30
3433 P H Nieuwegein
Holland

Contact: Mr H C Schmidt

Tel: 03402-61414
Telex: 70858
Fax: 03402-67056

Norway

G ● ◆ A/S Elpag
Borggatta 7,
Postbox 2816 Toyen
0608 Oslo 6
Norway

Contact: Mr J F Larsen

Tel: 02-682510
Fax: 02-68 2440

FOR PRICES OF ALL STRAND PRODUCTS SEE SEPARATE PRICE LIST

GENERAL INFORMATION
STRAND SUBSIDIARIES AND OVERSEAS DISTRIBUTORS

Portugal

H ○ ◇ Maquinas
De Precisao LDA
Rua Da Boavista 45-47
1200 Lisbon
Portugal

Contact: Mr J Costa Cabral
Mrs Marques

Tel: (3511) 66 60 86
Telex: 12141 MAQPRE P
Fax: (3511) 66 39 68

Spain

I ◇ Kremesa
Malcampo 23
28002 Madrid
Spain

Contact: Mr M Barba

Tel: 416 21 00
Telex: 46081 KREM E
Fax: (1) 413 2814

I ○ Sadilsa
C/Zabaleta 48-50
28002 Madrid
Spain

Contact: Mr V Serer

Tel: (1) 415 04 58
Fax: (1) 416 24 54

Sweden

J ○ ◇ Madeco AB
Magasin 3
115 56 Stockholms Frihamn
Sweden

Contact: Mr M Derback

Tel: 08-783 66 60
Telex: 17981 CINE S
Fax: 08-660 53 45

Turkey

K ○ ◇ Nefan Ticaret Ve
Sanayi Limited Srketi
Ciragan Caddesi 15/2
Besiktas
Istanbul
Turkey

Contact: Mr A Fresko

Tel: 160 14 47 – 160 45 14
Telex: 26304
Fax: 160 2309

○ = Studio Lighting experts
◇ = Stage Lighting experts

INDEX
BRAND NAMES

Strand Lighting

▲ *Varna Opera House, Bulgaria, sports Strand luminaires and control by a Gemini 2.*

Continuous innovation and product improvement...

That's why Strand is the right range for the future as well as for today!

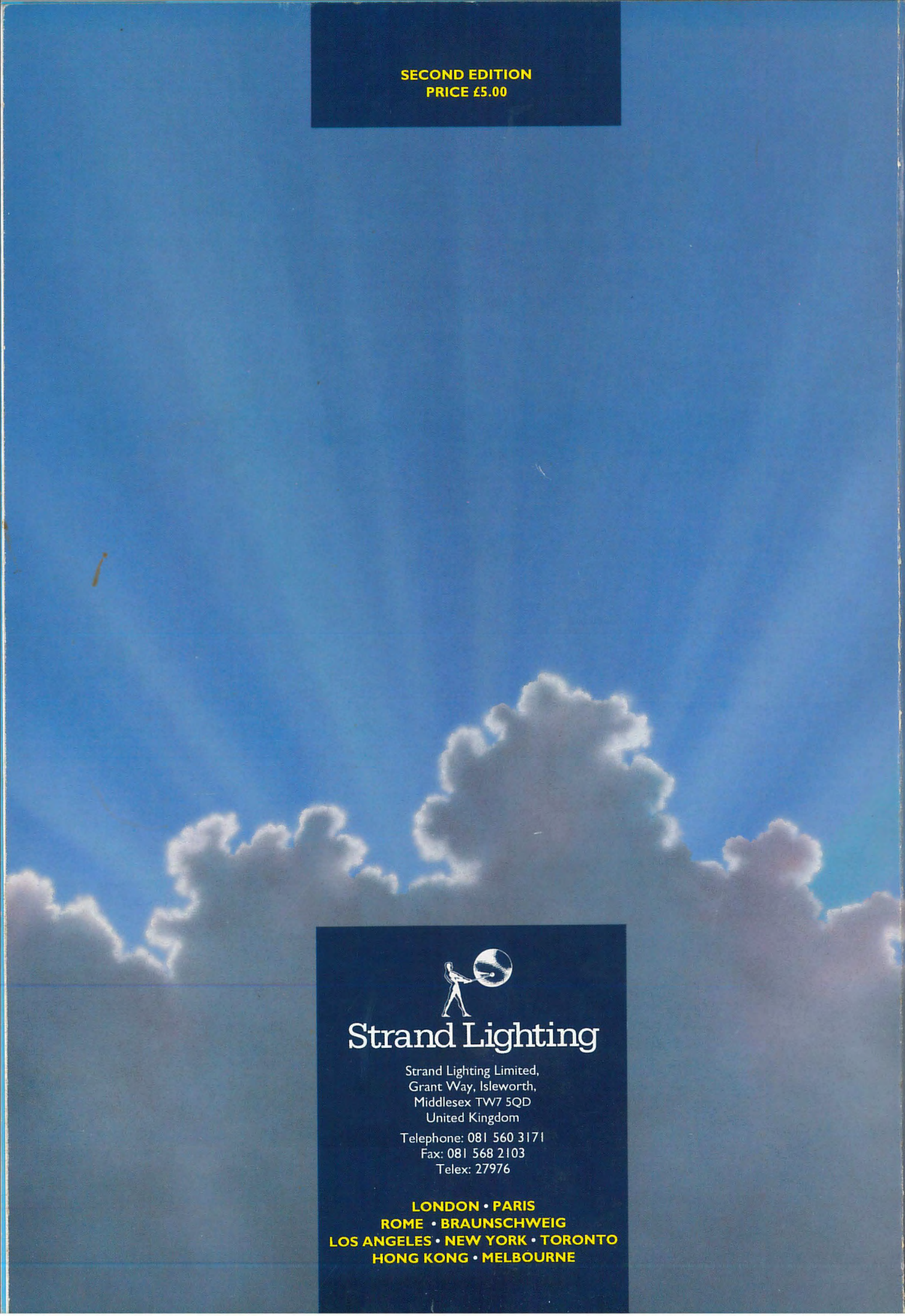
▲ *Canolfan Stiwdio Newydd Barcud, with Strand Galaxy 3 lighting control, Quartzcolor luminaires and Permus dimmers.*

▼ *The Hong Kong Cultural Centre is a new addition to one of the world's most famous harbour skylines. Strand have been heavilly involved, providing lighting control through 3 Galaxy 3s (one 450-way and two 120-way), 496 STM dimmers, and a great many luminaires including Preludes, Cadenzas, Cantatas and assorted floods, spots and colour changers.*

▲ *Vizir's Hall at the One Thousand and One Congress Centre, Marrakesh – lighting controls, dimmers and several hundred luminaires by Strand Lighting SA,France.*

▶ *Quartzcolor lighting provided the lighting at the draw of the 1990 Football World Cup in the Palazza dello Sport in Rome.*

SECOND EDITION
PRICE £5.00



Strand Lighting

Strand Lighting Limited,
Grant Way, Isleworth,
Middlesex TW7 5QD
United Kingdom

Telephone: 081 560 3171
Fax: 081 568 2103
Telex: 27976

LONDON • PARIS
ROME • BRAUNSCHWEIG
LOS ANGELES • NEW YORK • TORONTO
HONG KONG • MELBOURNE

Designed and produced by Barrie James West Associates Limited. Printed in England SL 233M151090