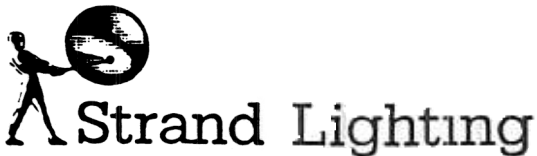


Colour Call

Lighting Scroller

Operator's Manual



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Glossary of Terms

DMX512	U.S.I.T.T. standard (DMX 512) standard for the Digital multiplex transmission of dimmer levels.
Gel	Special filter material used to add tints or colours to lanterns. Light Emitting Diode.
Multiplex	Means of transmitting dimmer level data down a single signal cable. A protocol that is used on Strand's PALS luminaires
PSU	Power Supply Unit
RS485	Standard for serial transmission of data
Saturated Gel	Filter material that is particularly deep in colour (see Gel)
U.S.I.T.T	United States Institute of Theatre Technology

General

Colour Call's design has been used in theatre, musicals, and television venues world-wide. This Scroller provides you with quick response for musicals and rehearsals, whilst quiet enough for use within theatre, and sturdy enough to stand the rigours of touring.

Considerable attention has been paid to the reliability of these units. Scrollers are increasingly used in Television where lighting designers wish to have greater flexibility, particularly in light entertainment.

Colour Call has the following features:-

- It is one of the fastest scrollers on the market with an operating speed of 11 colour frames per second for the par size Colour Call (CC1), and 11 frames in two seconds for the 2/5 Kw Colour Call (CC2).
- Removable gel scrolls on CC1 for easy filter replacement, especially useful in repertory theatre and hire situations.
- Accepts the universally available DMX control signal as well as PALS Digital control and Analog 0 to + 10 volts to enable connection to most lighting desks.
- Twin speed fan for extended filter life or extra-quiet operation.
- Step-less slow fades of up to four minutes are now possible with the PALS protocol, (when using Galaxy Nova or the PALS personal computer). This provides the lighting designer with the opportunity to fade live between adjacent frames.
- Extra safe Low-voltage (24V) operation.
- Easy-load and calibration facilities.
- Direct-drive scroll position sensor, removes the requirement for scroll detection at power-up.
- High resolution fade processing (equivalent to 11 bits).
- Stand alone functionality, provides continuous scroll and step chase facilities for display and exhibition purposes.
- Rugged 5-pin XLR control/power connectors.

Par sized Colour Call, CC1, is supplied with two adapter plates that fits many different luminaires. It also has an accessory holder for Alto barndoors.

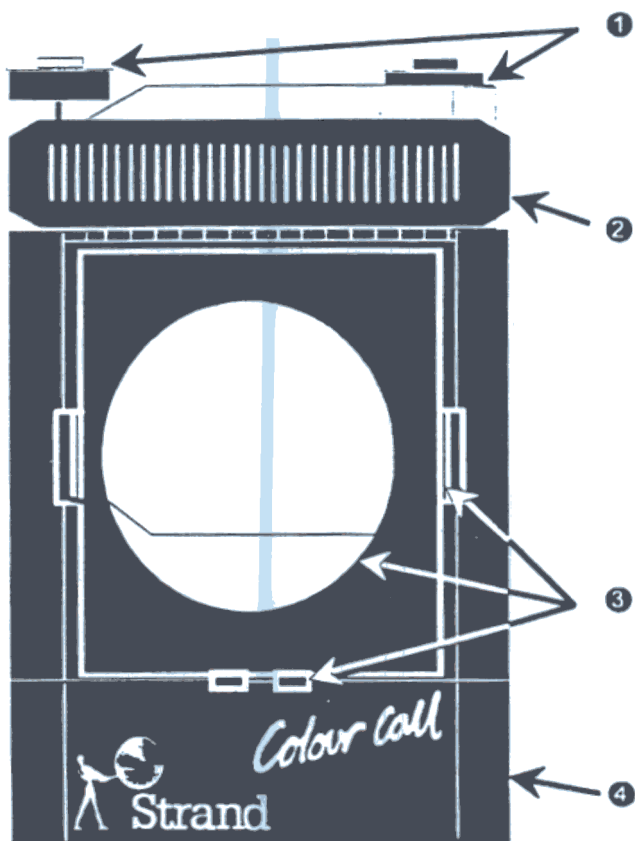
The 2/5 Kw Colour Call, CC2, is supplied with universal adapter brackets for use on many types of Strand studio luminaires. A barndoor mounting is provided as standard.

Diagnostic indicators on the base of each Colour Call show, power, signal level and valid Digital data.

Guide to Colour Call

The diagrams below and overleaf indicates the location of features.

ParSizeCC1 (Front View)



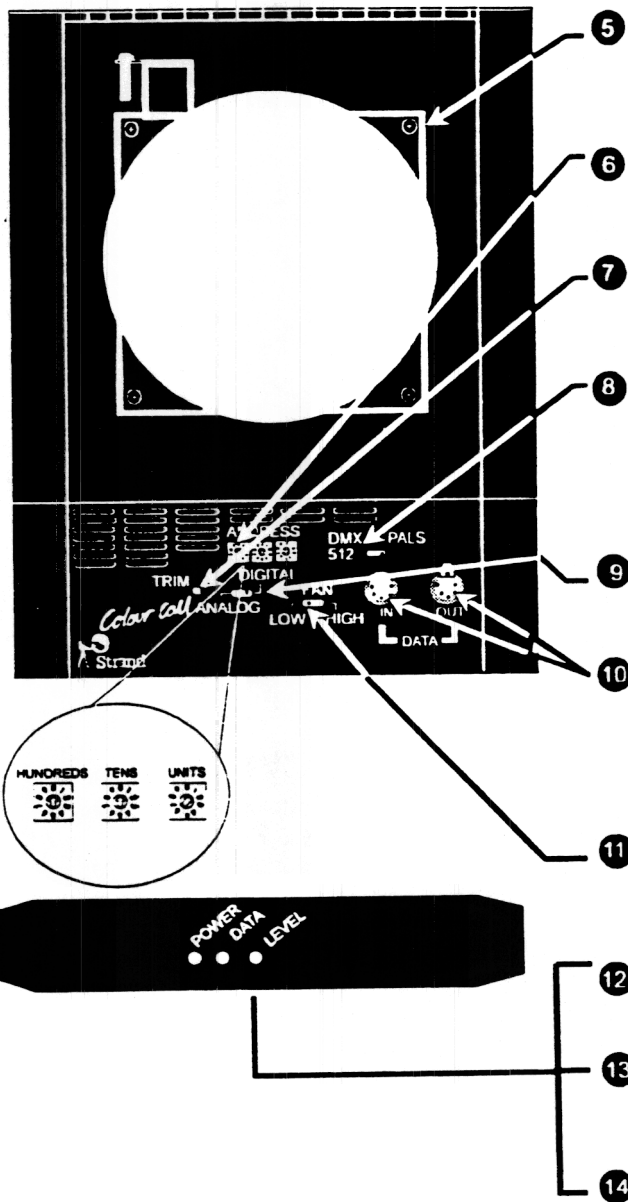
1 Spring-loaded scrolls that automatically keeps the gel string taut to reduce noise when scrolling.

2 Removable gel scrolls accessed through hinged lid. Even when Colour Call is rigged, scrolls can be easily changed.

3 Accessory holder, designed for Cadenza barndoors, that are held safely in place with a retaining screw.

4 Robust but light aluminium body designed for long life.

Rear / Bottom Views



5 Two adapter plates provided as standard.

6 Address switches select a separate Digital channel for each Scroller.

7 Trim allows you to change the operating length of gel string from 2 to 16 frames.

8 Switch to select either DMX or PALS Digital protocols, the Analog/Digital switch must be selected to Digital for either protocol to operate.

9 Switch to select either Analog 0 to +10 volts or Digital control signals.

10 Standard 5-pin XLRs to allow both the control signal and 24V dc power to be linked from one Colour Call to the next.

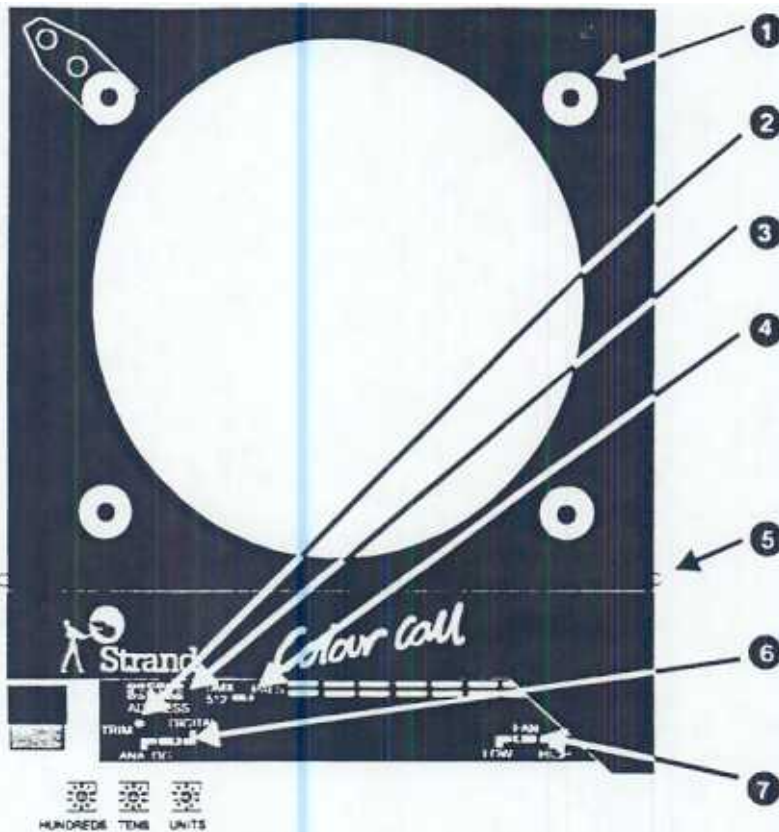
11 Fan control switch to select between high and low speeds.

12 POWER indicator (red) shows when 24V DC power is present.

13 DATA indicator (Green) shows when Digital control is received.

14 LEVEL indicator (yellow) mimics the channel level

**2/5Kw CC2
(Front View)**



1 Barn door guides (one each corner)

2 Trim allows you to change the operating length of gel string from 2 to 16 frames.

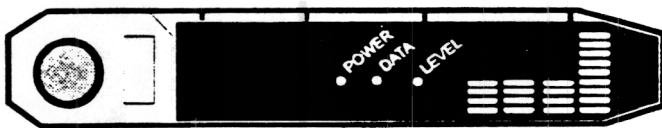
3 Address switches select a separate Digital channel for each Scroller.

4 Switch to select either DMX or PALS Digital protocols, the Analog/Digital switch must be selected to Digital for either protocol to operate.

5 Sprung loaded lugs (one each side) for front cover removal.

6 Analog/Digital Switch selects either Analog 0 to +10 volts or Digital control signals.

7 Fan control switch to select between high and low speeds.

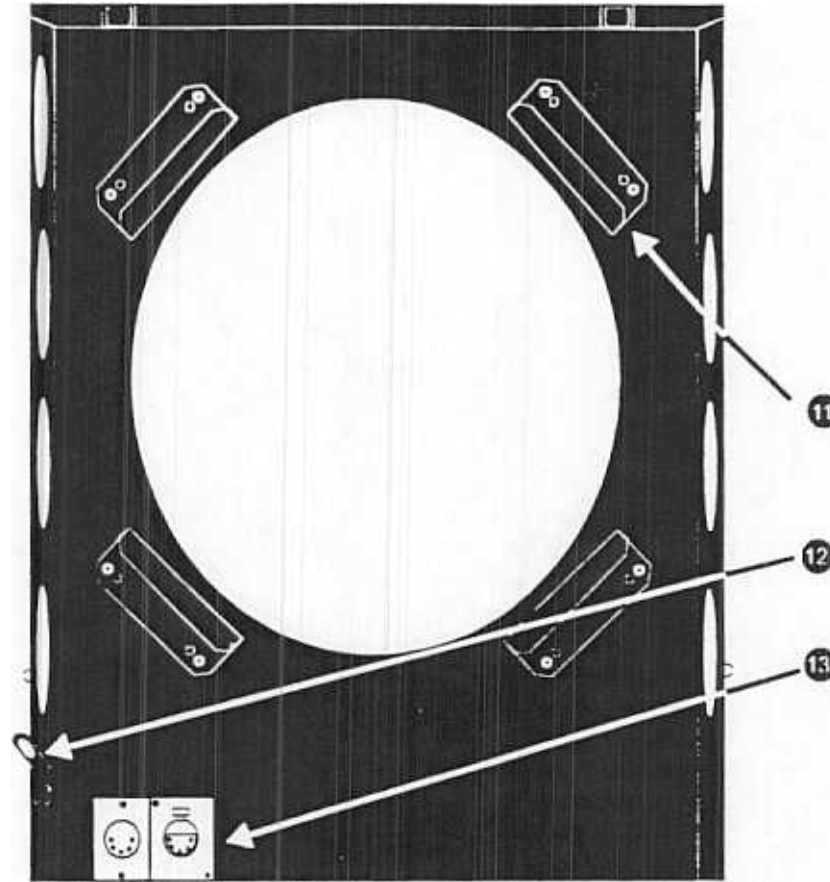


8 POWER indicator (red) shows when 24V DC power is present.

9 DATA indicator (Green) shows when Digital control is received.

10 LEVEL indicator (yellow) mimics the channel level.

Rear View



11 Fixing brackets (one each corner). See note below.

12 Anchor bracket for attaching safety wire.

13 Standard 5-pin XLRs to allow both the control signal and 24VDC power to be linked from one Colour Call to the next.

*The fixing brackets can be mounted in various positions as detailed in **Attaching to Luminaires** on page 35*

System Introduction

Colour Call can be controlled remotely using standard lighting control desks. It is designed to accept two Digital control signals, DMX512 and PALS, as well as Analog control of 0 to +10 volts. Analog signal connections are shown separately in this manual.

Digital Control

The advantages of a Digital system are as follows:-

- Many channels can be placed on one transmission cable.
- Lower cabling costs for large numbers of channels.
- The control information within the cable is less prone to distortion.

DMX 512

Two types of Digital protocol can be received by Colour Call, DMX 512 and PALS. DMX 512 is the most common Digital protocol. Many lighting boards now have the capability to transmit DMX 512. Galaxy Nova, Light Palette 90 family, Lightboard M, Impact, MX and GSX all have the capability to output DMX 512. Customers may find that it is possible to upgrade their current Gemini and Galaxy boards to output DMX. Your local Strand Service department will advise you on how this can be accomplished.

Colour Call when receiving DMX, should have the Digital/Analog switch in the Digital position, and the DMX/PALS switch selected to DMX. The position of the gel will be determined by the level of the control channel, speed of movement depends on the fade time set by the lighting board.

DMX was designed as a dimmer control system so you may notice that on slow fades, the gel moves in discrete steps. This is unavoidable as the DMX signal has only 256 discrete positions, and Colour Call will only move once it has received a change in level.

Please Note the following points

- *Care should be taken when using most lighting control boards. Use of either the blackout switch or grand master will effect the position of the gel, as these two controls were designed to affect the level of all channels.*
- *If the black out switch is used in a performance then all the scrollers will rapidly move to frame Zero. Not only will this disturb the lighting state after the blackout, it will create an obtrusive noise as scrollers move to frame zero. However, Strand's Light Palette 90 (latest software), the GSX family of control consoles, or Galaxy Nova using PALS protocol do not exhibit these undesirable features.*

PALS

Colour Call is compatible with the Precision Automated Lighting System, PALS. Although the signal is electrically similar to DMX 512, the protocol was designed to be significantly more suited to the task of moving lights and moving accessories, like Colour Call. The PALS protocol can take advantage of the high resolution fade processing of Colour Call. This allows step-less fades of up to four minutes on Galaxy Nova and 99 seconds on the PALS personal computer.

The combination of Galaxy Nova and Colour Call provides a completely integrated system. The Galaxy's channel control is able to select frames of colour on a particular intensity channel, using the colour attribute of the same channel. This removes the tiresome requirement, on most DMX boards, of selecting a separate colour channel. Galaxy Nova's output screen can be alternated between intensity levels and their associated colour frame numbers, allowing the operator quick cross reference to the colour as well as channel level.

The colour position is independent of both blackout switches and grand master levels, removing the danger that the lighting plot changes colour whilst the total level is reduced. Colour fade times can be set independently of the intensity fade times, giving you even greater flexibility.

Analog Control

The Colour Call Scroller will accept 0 to + 10 volts Analog control signal. Although these scrollers have been designed to work on an Analog signal, they perform even better on Digital. If Analog is the only suitable signal then check your control is 0 to + 10 volts, as many European Strand desks will only output 0 to -10 volts.

Please read the section "Analog System" see page 22 prior to installation.

Changing Gels

Changing gel in a Colour Call rigged on a luminaire is neither slow nor difficult. Colour Call has two removable bobbins onto which the gel string is attached. Exchanging two sets of scrolls is made easy with and top access on the Par size the unit. This is especially useful on Front of House luminaires. Instructions on how to do this are detailed in **Installing Gel Strings**

Adjustable Gel Length

Eleven frames of coloured gel are usually enough for most lighting applications both in theatre and television. Each Colour Call is factory-set for 11 frames as this number is easy to control on standard memory and manual lighting control desks.

This type of operation, where each 10% change represents a new colour, is easy to remember and plot. If required, Colour Call will allow less than eleven frames to be installed, two if necessary. Six frames are suggested as a compromise as each 20% change on the fader scale represents a new colour.

Setting the number of frames on Colour Call is also very simple, see the section on **Installing Gel Strings**. There are exceptional circumstances where more than 11 colour frames are required. The Colour Call CC1 and CC2 will cater for these needs by allowing up to sixteen colour frames to be included.

Once the number of frames are set, Colour Call does not lose the frame calibration on power-down, unlike other scrollers which rely on a noisy 30-40 second start-up procedure to determine the gel string length. This is due to the direct drive position sensing. Optical sensing, used on other scrollers, become unreliable when saturated gel or fog machines are used.

Back Plates

The Colour Call Scroller range is designed to accommodate a variety of luminaires.

Colour Call CC1 is supplied with two back plates: a Cantata back plate and a Alto/Cadenza back plate. The Cantata back plate will fit all Cantata spotlights, 6" Leko® and other luminaires with 185mm (7.3") colour runners (e.g. Patt 764).

The other back plate will fit all Alto and Cadenza luminaires, Solo follow spots, and Punchlites. However, when the Cadenza/Alto back plate is mounted in a 90° orientation it will also fit most standard parcans, 8" and 10" Leko®. For those who want the accessory lock available on some parcans, a dedicated 10" back plate is optionally available.

Other back plates are available for other luminaires. Harmony and T-Spots can be fitted with special mounting pillars to accommodate a Colour Call CC1.

On Alto and Cadenza PC & F luminaires the beam angle is restricted when in the flood position. Do not focus these luminaires into the flood position as the heat built-up on the gel scrolls can become so great the gel will melt. Check that the light does not directly fall onto the scrolls, if it does narrow the beam angle.

Colour Call CC2 is supplied with four mounting brackets that will allow the Scroller to be fitted to different studio luminaires including Castor, Pollux Bambino, Pollux, Vega and many other luminaires.

Power Supply

The unit will power up to twenty four Colour Call CC1 scrollers, or twelve Colour Call CC2 scrollers. The power is fed to a splitter box and distributed from there to each unit in combined power/data cables.

The power supply can be fitted with a hook-clamp to be mounted in a truss. The Power unit is short circuit protected, and will allow mains to change between 200/260 volts (230V setting), or 100/130 volts (120v setting).

When ordering power supplies, ensure that the correct item number is chosen for the voltage required for the location. Check that the voltage selection switch is in the correct position prior to applying power.

The 230V power supply can be used on mains supplies of between 220 and 250 Volts. (supplied with European colour-coded cable).

The 115V power supply can be used on mains supplies of between 100 and 120 Volts. (supplied with U.S. colour-coded cable).

Splitter Box

There are two types of splitter box depending upon the use of Digital or Analog control. The system configuration will depend on which type of splitter box is chosen. The system configuration will be described later in this manual. The splitter boxes obtain power from separate power supplies. On all splitter boxes there is an input for the control signal, and another input for 24 volts from the power supply.

There are several 5 pin XLRs allowing connection to the scrollers. The splitter boxes can be fitted with a hook clamp to be mounted on to a truss, or suitably sized barrel.

Cooling

Colour Call has a two speed fan included to extend the life of the coloured gel. The low speed setting enables quiet operation whilst still cooling the gel sufficiently. The high speed setting provides extra cooling for saturated colours and further extends the life of all filters. The high speed operation should be used where saturated colours are used for prolonged periods.

Safety Bonds

Cadenza and Cantata luminaires have a built-in safety clip for retaining accessories. Colour Call is supplied with back plates that can lock the accessory clip into a closed position so that it forms secure anchorage. A secondary safety bond is supplied on each scrollers for use on luminaires that do not have clips for retaining accessories. All power supply boxes and splitter boxes are supplied with secondary anchorage points so that they can be rigged safely. Heavy duty safety bonds should be used to connect the 2/5Kw Colour Call to its luminaire.

Rigging a Colour Call Scroller System

The units are mounted on the lighting instruments of your choice. You can mount the splitter box and the power unit in a truss with hook clamps. The power is fed into the splitter box and distributed from there to each unit.

The distribution system and the splitter box depends on the type of control signal used Digital or Analog (0-10V). The cables used for distribution to the units are of the same sort in both systems. Standard five pin XLR connectors are used.



Caution

Users must for their own, and other people's safety use the secondary safety anchorage points, when installing the equipment above head height.

Stand Alone Features

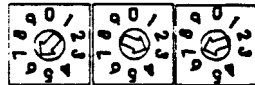
Colour Call has some unique features that allow the unit to be used without a dedicated control system although a 24V power supply, splitter box and interconnecting cables are required.

Independent Scroll Mode

This feature allows you to select simple visual effects and is exceptionally useful for trade shows and some architectural situations. There are ten frame speeds available from 0.2 sec to 2 minutes, and ten delay times from zero seconds to 2 minutes. One hundred different combinations of the delay and fade time are available. This mode is calibrated for 11 frames.

The Scroller will function a frame by frame bounce chase stopping for a period of time at each frame barrier (11 frames fitted), when the address switches are in the range 600 to 699. The Colour Call will operate the chase on its own ignoring any MRL(or DMX) signal.

The chase contains two parameters, the movement time of one complete frame, and a delay time that occurs at the end of each frame. The time taken to move each frame will be set by the "units" switch and called "frame time". The time between each frame will be set by the "Tens" switch and called "Delay time".

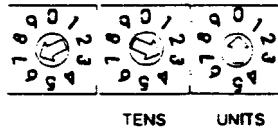


Delay Frame

Digit	Delay time	Frame time
0	0 second	0.2 second
1	0.5 second	0.5 second
2	1 second	1 second
3	2 seconds	2 seconds
4	4 seconds	4 seconds
5	8 seconds	8 seconds
6	15 seconds	15 seconds
7	30 seconds	30 seconds
8	1 minute	1 minute
9	2 minutes	2 minutes

e.g. The side figure shows the switches set at 637. This means that the frame will remain stationary for a 2 second period (**Delay** set at 3) and then take 30 seconds to move to the next frame (**Frame** set at 7).

Continuous Cycle Mode

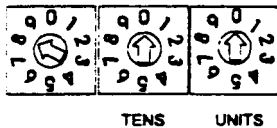


This facility enables you to continuously scroll from end to end without having to employ a control desk. Scroll time can be selected from 10 seconds to 99 seconds inclusive.

When the address switches are in the range 700 to 799 then the Scroller will continuously move the gel from end to end with out stopping at each frame. The time taken to traverse from end to end will be determined by the settings on the "tens" and "units" address switches

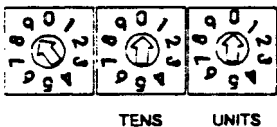
The number on the address switches will equal the chase time in seconds, except for addresses below 710. The minimum time to traverse from end to end under continuous cycle is 10 seconds, the maximum time 99 seconds. e.g. the side figure shows 30 seconds.

Easy Load



This feature enables you to change gel scrolls independently of channel level. This is particularly useful when changing gels whilst the Colour Call is in situ. Address "800" on the selection switches instructs the Colour Call to move in 10 seconds to the beginning of the scroll. Selecting any other address in the range 801 to 899 will stop the scrolling motion.

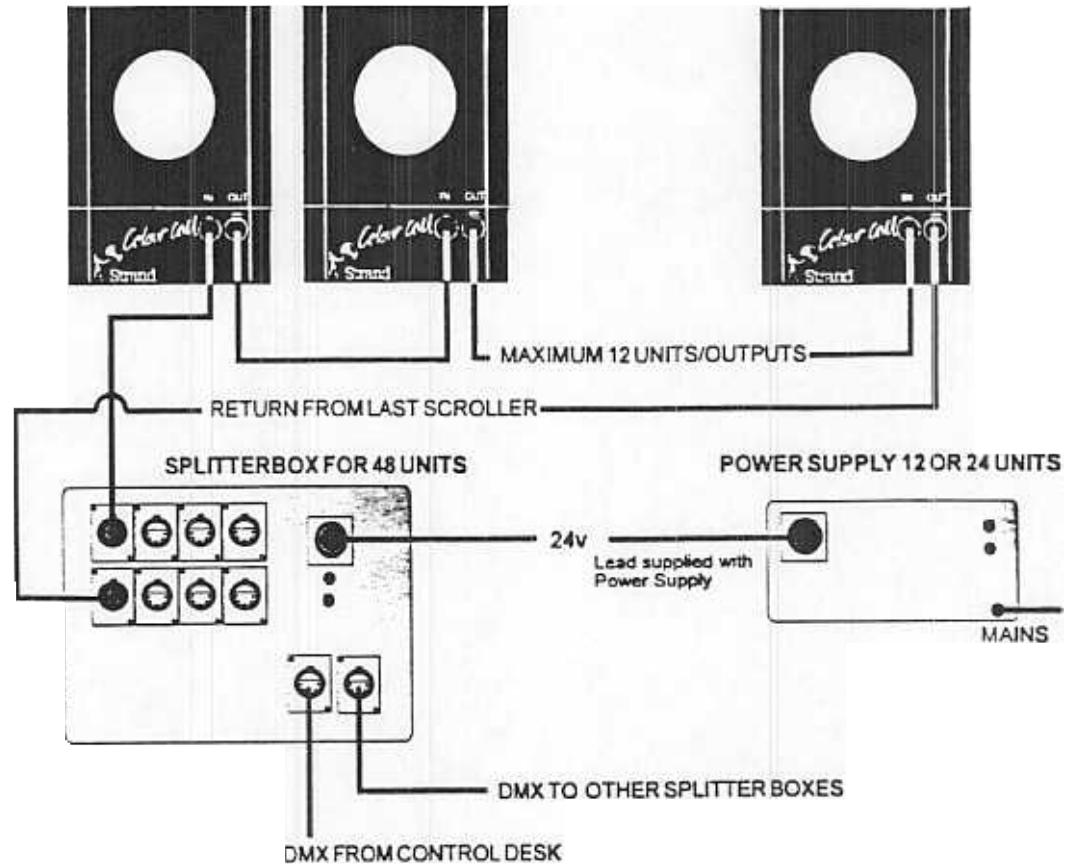
Quick Trim



Changing the length of gel string has been made even easier whilst the Scroller is in the lighting rig, and has been made possible when a control desk is not available. Selecting the address 900 will instruct the Scroller to move in 10 seconds to the last frame.

When the Scroller is at its end stop or approaching the end stop the Scroller can be calibrated using the TRIM potentiometer. Selecting 901 to 999 will immediately stop the Scroller motion. Re-selecting address 900 will initiate a new 10 second motion fade, but the speed will be reduced due to the new starting position.

DMX System



The Digital data (DMX or PALS) from the lighting board is fed into the input connector on the splitter box. The splitter box should be connected to a stand alone Power Supply using the cable supplied with the Power Supply (see diagram). The 24 volt power is combined with the control signal within the splitter box and distributed to the Colour Call scrollers in 4 optically isolated Scroller Loops.

Scroller Loops

Each Scroller loop is made by connecting a Data/Power cable from one of the 'outputs' (labelled Out 1-4) to the first Scroller in the chain. Then a string of scrollers are 'daisy chained' together using the "Data in" and "Data out" on each Scroller. The "Data out" socket on the last Scroller in the chain is connected to the associated "Return" on the splitter box.

Ensure the 'RETURN' used to terminate each loop is directly below the OUT connector used to start the loop.

Each Scroller loop can support up to 12 CC1 (Par size) Colour Calls or 6 CC2 (2/5Kw) Colour Calls. The total length of the Scroller loop should not exceed 100 metres (300 feet), see section on **Power Cables/Connections**.

If the correct Data/Power cable is not used then the size of the loop will be significantly restricted and reliability problems possibly encountered. Remember to set the correct channel address with the switches at the rear of each Scroller.

Number of Scrollers on a Loop

The number of scrollers on a splitter box should not exceed the rated quantity of its power supply. It is preferable to have each Scroller loop loaded with a similar number of Colour Calls, this will increase system reliability.

Return connection

The return connection from the last Scroller back to the splitter box performs two functions:-

- 1 Provides a reliable method of terminating the DMX or PALS signal correctly.
- 2 Forms a power loop, which enables the current for the Scroller motors to flow from both ends of the cable. This reduces the voltage drop at the end Scroller.

In exceptional circumstances, (e.g. when only one Scroller is connected to the splitter box), the return cable can be replaced by inserting a 5 pin XLR plug into the "Data Out" of the last Scroller. **This terminating plug must have a 100Ω resistor connected between pins 2 & 3.**

Digital Splitter Box

The Digital Splitter Box receives either DMX 512 or PALS signals from the control desk. The Digital signal, along with 24V D.C power, is distributed to four 'daisy-chain' Scroller loops. Up to 12 Colour Call CC1 scrollers (or 6 Colour Call CC2s) are allowed on each 'daisy-chain' loop.

All output connectors on the splitter box are 5-pin XLRs. Each splitter box is fitted with a data line output which transmits the Digital signal to the next splitter box in the chain.

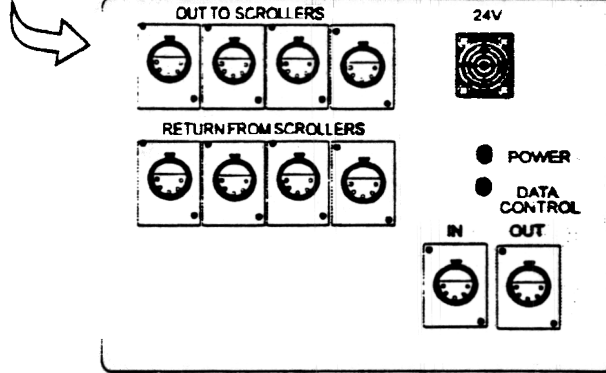
The Digital protocols DXM512 and PALS are based on a RS485 electrical specification. Like most Digital signal transmission lines RS485 requires correct line termination for reliable operation. Therefore line terminators have been incorporated in the Digital Splitter box. All the Scroller 'daisy chain' loops are automatically terminated when the return from the last Scroller is connected into the Digital Splitter box.

Up to 32 splitter boxes can be 'daisy chained' together using the "Control In" and "Control Out" connectors on the splitter boxes. The last splitter box in the chain should be terminated using the termination selector at the side of the splitter box. (See the section on **Termination Selector**, page 18).

The control cable recommended to connect between the control desk and a splitter box or between two splitter boxes is: Belden 9829 or STC's equivalent cable type: FB0S2P24. **This cable should not be used as Data/Power cable to daisy chain Colour Call scrollers.**

Digital Splitter Box

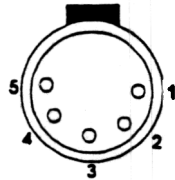
TERMINATION SELECTOR



HEIGHT: 165mm / 6.5"
 WIDTH: 230mm / 9"
 DEPTH: 60mm / 2.5"
 WEIGHT: 2.2kg. / 5lbs
 CURRENT: 0.1 A

DMX512 Connector XLR 5p Female Connector

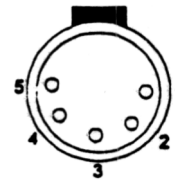
Pin 1: Screen
 Pin 2: Data -
 Pin 3: Data +



USITT protocol from control desk

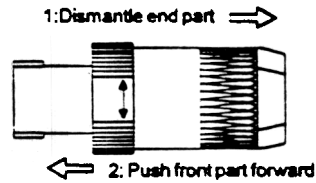
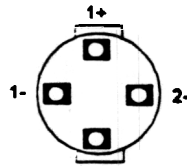
Power / Data Daisy Chain Cable XLR 5p Female Connector

Pin 1: Screen
 Pin 2: Data -
 Pin 3: Data +
 Pin 4: 0V(24V return)
 Pin 5: +24Volts D.C



24V Connector Neutrik NL4 connector

Pin 1-: 24V-
 Pin 1+: 24V+
 Pin 2-: Mains Earth
 (for DMX use)



Termination Selector

A termination selector has been provided so that when several Digital Splitter boxes are 'daisy chained' together the last Splitter box in the chain can be terminated. The last Splitter box in every installation should have the termination switch set in the "yes" position.

If the DMX512 signal is daisy chained to other equipment that receives DMX then termination should occur in that equipment. This is the only situation where no Digital Splitter box is terminated.

The design of the Digital splitter box ensures that in the event of a power failure on one box, no detrimental affect occurs on any other splitter boxes or dimmers down line.

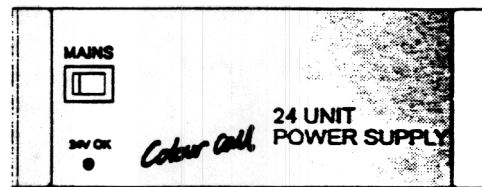
Digital Splitter Boxes are powered by separate Colour Call power supplies. In the unlikely event of a power supply failing, it will affect only those scrollers driven by that splitter box.

Power Supply /Splitter Units

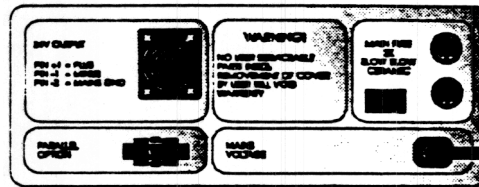
The power supply will supply 24 Colour Call CC1s or 12 CC2s via splitter boxes.

The supply unit must be used in conjunction with a splitter box.

Hook or C clamps can be attached allowing power supplies to be mounted in trusses.



HEIGHT: 85mm / 3.5"
WIDTH: 215mm / 8.25"
DEPTH: 330mm / 13"
WEIGHT: 3.8kg / 8.5 lbs.
FUSE: 5AT 6.3x22mm
CURRENT: 230V - 2.5A
115V - 4.4A



The Power Supply Unit must be connected to a mains outlet with Mains Earth. Do not connect to a dimmer circuit.

The Power supply is a light weight switched mode construction allowing mains to alter between 230 volts +/- 15%, or 115 volts +/- 15% depending on the factory setup.

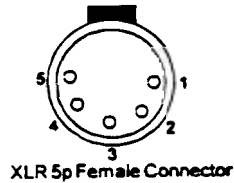
Power Cables/Connections

It is essential that all customer made cables conform to our specifications as follows:-

- The gauge must be at least 1.5mm² or AWG16.
- Cables should be screened, and the screen must NOT be connected to the case of the connectors. A screen touching the case of the connector is always hazardous to the function of both Analog or Digital Scroller systems, because it creates an unwanted earthloop.
- Each pin must be insulated with some kind of tubing. Any short circuit within the connector will ruin the functioning of the system and might even destroy other components in the equipment. In a DMX system a short circuit between pin 5 and pins 2 or 3 will destroy the output line driver, as 24V will be fed back to the output of the line driver circuit.

Strand Power/ Data Daisy Chain Cable

This cable was designed to give ultimate performance in a DMX system. The cable consists of two heavy gauge leads, 1.5mm² or AWG16 (approximately) for the power feed and a twisted screened pair of leads for the signal. The twisted pair has a double screen and meets the USITT and RS485 standards fully.



Pin 1	(Screen)	Data Screen
Pin 2	(Twisted Pair)	Data -
	(Twisted Pair)	Data +
Pin 4	(Thick Lead)	0V (24V return)
	(Thick Lead)	+24 Volts DC

Standard DMX Line Cable

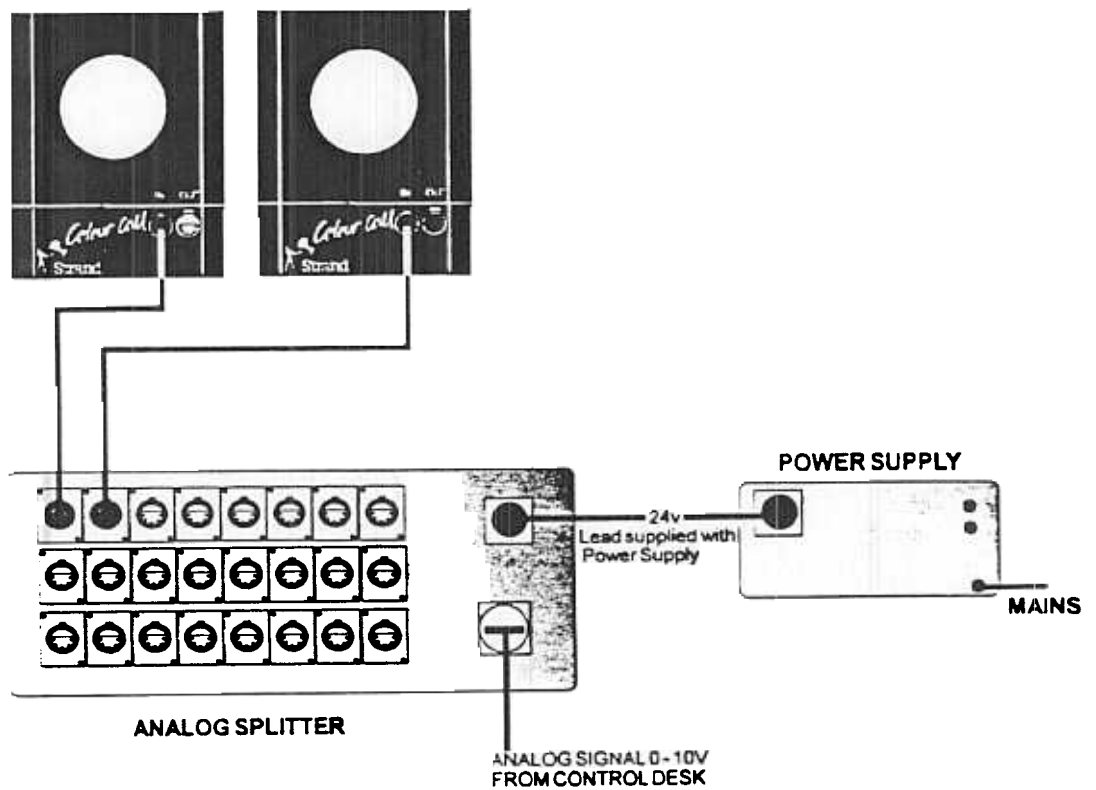
The USITT standard specifies two different types of cables, these are Alpha 5271 and Belden 9841.



Pin 1	(Screen, both ends)	Signal Earth
Pin 2	(Lead 1 of twisted pair)	Data -
	(Lead 2 of twisted pair)	Data +

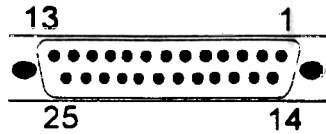
Analog System

The system is designed to distribute Analog control signals which vary between 0 volts and +10 volts. The splitter box combines each individual control channel with the 24 volt DC supply for the Colour Call motors. This power/control signal is distributed by the splitter box in a star configuration to a maximum of 24 individual Colour Call CC1 or 12 CC2 scrollers.



The splitter box has a 25 way chassis mounted plug to connect up to 24 ways of Analog control.

When Analog control is used, the Analog/Digital switch must be in the Analog position. Although Analog control of Colour Call is possible, Digital distribution and control of any type of Scroller is far superior, and should be used if possible.



25 D type pin configurations are as follows:-

- Pins 1 to 24 Control channels 1 to 24 respectively
- Pin 25 Control 0 Volts return.

Analog Difficulties

Most Analog lighting control desks were only designed to communicate with permanently installed dimmers. In many cases the advent of Digital dimming or peripheral equipment had not arrived. Analog control is adequate for Analog dimming, but please note the following problems associated with this control and the work around solutions when using Colour Call.

- **Problem:** Many of the scrollers will not be able to reach the end of the final frame.
 - **Cause:** The control voltage will drop along the length of the control wire.
 - **Solution:** Keep the total length of the control cable as short as possible, preferably less than 50 metres. The trim pot on Colour Call will allow you to adjust each individual unit to compensate for voltage drops. Some control boards will allow limited adjustment of the Analog output, but if this is necessary be aware that this adjustment will also affect the control to the installed dimmers.
-
- **Problem:** Some scrollers fail to reach the end of their final frame.
 - **Cause:** Each channel output of an Analog lighting board, will vary in maximum level from its neighbour.
 - **Solution:** Use the trim pot on each Colour Call to compensate for the difference between neighbouring control signals, whilst the Colour Calls are rigged.

Once each Colour Call has been adjusted for a particular channel it should not be moved to neighbouring channels, without re-adjustment.

- **Problem:** The Scroller gel jitters. If the condition is allowed to persist it will accelerate mechanical and electrical wear.
- **Cause:** Small voltage variations on the output of the control desk or multiplex/Analog decoder.
- **Solution:** Check that the control 0 volts is only connected to Mains Earth at the control board and not to the dimmer Mains Earth as well. If there is any doubt regarding earth loops make the control 0 volts float free of Mains Earth.

If a multiplex/Analog decoder is being used, check its installation with the manufacturer, earth loops may be present upon its multiplexed line.

Making Gel Strings

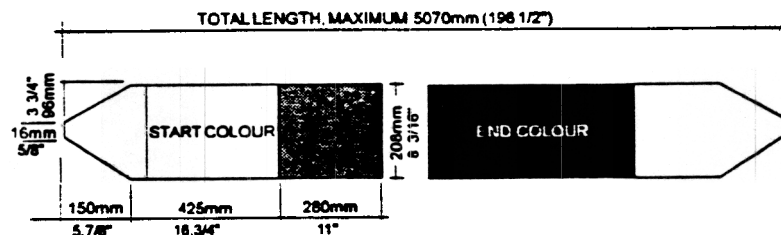
All scrollers are dependant upon well made gel strings. In many countries there are professional gel string manufactures, which usually provide excellent service.

If you wish to make your own gel strings, please take due care and pay attention to the details below. It is recommended that gel strings are always made with polycarbonate filter as this lasts longer than polyester, and the additional cost of polycarbonate is less significant when considering the labour content of a gel scroll. Strand recommends the use of its Chromagel range of filters.

If polyester filter is used, try not to mix them with the polycarbonate type as they expand at different rates.

Par Size Colour Call (CC1)

The par size Colour Call can have any number of gel frames from two to sixteen. The gel string always consist of two tapered lead-in frames. Dimensions of the string are shown in the diagram below.



Any additional frames can be sandwiched between the leaders. The size of each frame can be changed for special effect, but the total length of the gel string including the leaders must not exceed 5070mm.

Changing colour will be made easier on most lighting desks when the gel string has eleven frames. The gel will advance by one complete frame every 10% step.

- 1 Use the cutting templates that are available from Strand Lighting or cut the gel to the specified size using a guillotine or sharp knife. Ensure that all corners of the frames are square, and butting edges are straight.
- 2 Align filters correctly by butting two frame edges together (no overlapping).

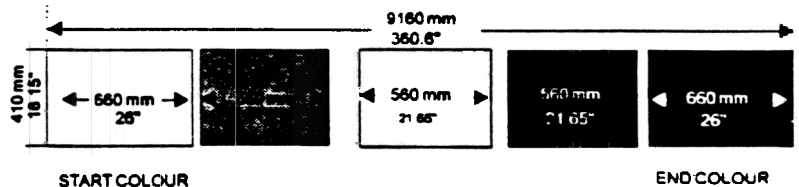
- 3 Join the two butted edges together with high temperature clear sticky tape, available from Strand.
Only tape one surface of the gel string. Trim the excess joining tape at the sides of the gel string.
- 4 Repeat step 3 until all the frames have been joined in the correct order. Check that sides of the gel string have a straight edge with no kinks or bows. It is surprisingly easy to produce a banana shape.

Hint 1: When preparing spare rolls take care to store rolls with the joining tape outwards and the end colour outward. It is then easier to mount the gel string on the spool with the black knob as described in step 4 of *Installing Gel Strings*.

Hint 2: Dark coloured filters will react to heat and be deformed earlier than lighter coloured filters. This can affect the positioning of the other frames if the darker frames are placed as the last frames, thus being rolled up most of the time. Therefore it is a good idea to place darker frames closer to the start colour than to the end colour.

2/5Kw Colour Call (CC2)

The 2/5Kw size Colour Call can have any number of gel frames from 2 - 16. The gel string always consists of two lead-in frames as shown in the diagram below. Any additional frames will be sandwiched between the leaders. The size of each frame can be changed for special effect, but the total length of the gel string including the leaders shall not exceed 9160 mm.



Changing colour will be made easier on most lighting desks when the gel string has eleven frames. The gel will advance by one complete frame every 10% step.

- 1 Cut the gel to the specified size using a guillotine or sharp knife. Ensure that all corners of the frames are square, and butting edges are straight.
- 2 Align filters correctly by butting two frame edges together (no overlapping).
- 3 Join the two butted edges together with high temperature clear sticky tape, available from Strand. Only tape one surface of the gel string. Trim the excess joining tape at the sides of the gel string.
- 4 Repeat step 3 until all the frames have been joined in the correct order. Check that sides of the gel string have a straight edge with no kinks or bows. It is surprisingly easy to produce a banana shape.

Hint 1: When preparing spare scrolls take care to store scrolls with the joining tape outwards and the end colour outward.

Hint 2: Dark coloured filters will react to heat and be deformed earlier than lighter coloured filters. This can affect the positioning of the other frames if the darker frames are placed as the last frames, thus being rolled up most of the time. Therefore it is a good idea to place darker frames closer to the start than to the end of the scroll.

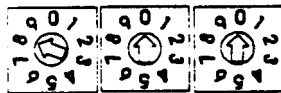
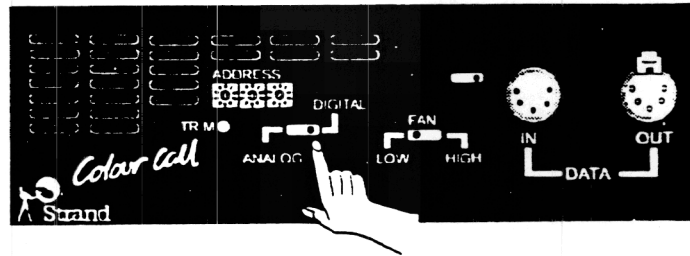
Installing Gel Strings

Some unique features have been added to Colour Call scrollers to allow the scrolls to be fitted easily without having to connect a lighting desk. Most users will find that the local control facilities are especially useful when changing gel strings whilst the Colour Call is rigged, or when a crew of technicians are changing gels simultaneously.

Fitting Gel scrolls to a Par Size Colour Call (CC1)

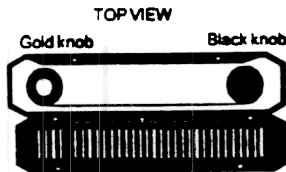
You might like to set up a small system which only consists of one scroller, so that the gels can be easily loaded on the bench. This will not be required once you are practised at the technique.

- 1 Set the Digital/Analog switch to Digital on the back of the unit.



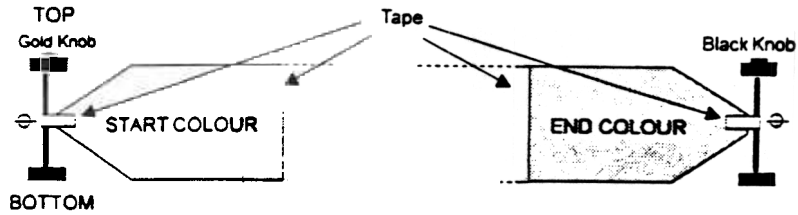
- 2 Select 800 on the address switches.

- 3 Apply power to the Scroller, ensuring that the Colour Calls are connected correctly to the chosen system, (See Digital System or Analog System), and wait for the spindles to stop moving.

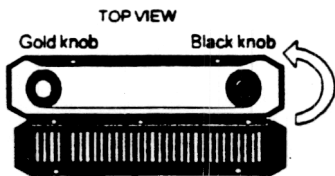


- 4 Remove the two bobbins from the Colour Call by unfastening the lid. Remember which side the Gold and Black knobs go.

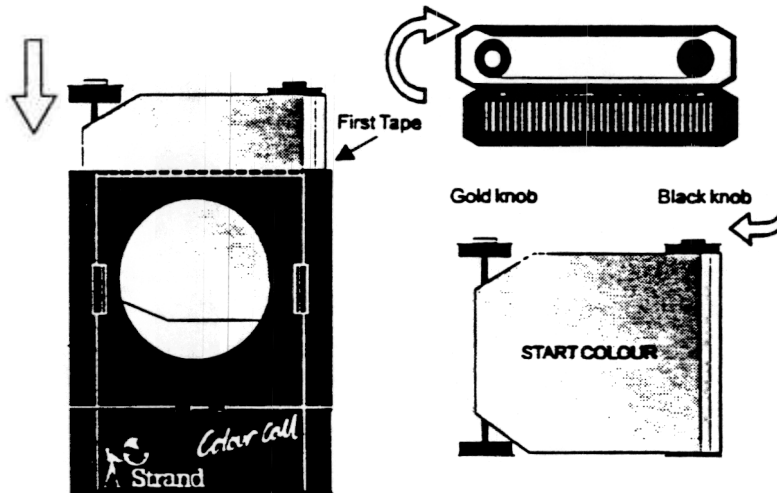
- 5 Take the previously prepared gel string and attach the taper of the lead-in frames to the plastic centre of the bobbins with a piece of heat resistant tape (approx. 13mm X 100mm). Note that the tape on both bobbins should fasten over the gel as shown in the diagram overleaf:-



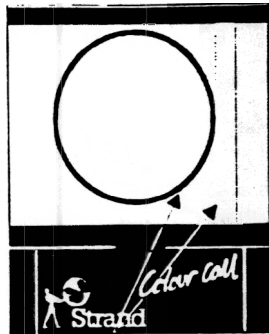
Make sure that the tape joining each frame is on the outside of the gels before proceeding to the next step.



- 6 Wind the bobbin with the black knob anti-clockwise (viewed from the top) so that the all the gel string, except the start lead-in frame, is wound onto that bobbin. Wind the tapered end of the lead-in frame clockwise onto the bobbin with the gold knob.
- 7 The tape joint between the first and second filter frames should be aligned as shown in the figure below:-



- 8 Lower both bobbins onto their respective spindles as shown above. Make sure only the bobbin with the black knob has locked around the spindle socket pin inside the Scroller. Hold the black knob whilst lifting and turning the gold knob two and half turns clockwise to tension the gel string. Be careful not to over tighten.



Tape just clears aperture

Once the tensioning is complete, seat the bobbin with the gold knob into position. If your gel string has more than 11 colours, follow the procedure detailed in **Calibrating Gel Rolls**, page 37.

Take care not to force the gold knob anti-clockwise when tensioning the gel scroll, as this might break the tensioning spring.

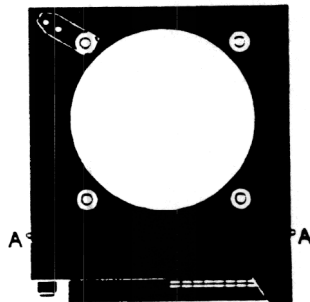
Check that the join between the first and second filter frames is aligned as shown and also check that the bobbins are firmly pressed down on their base. The knobs on the bobbins should not be touching the lid of the Scroller, when it is closed.

Fitting Gel scrolls to a 2/5Kw Size Colour Call (CC2)

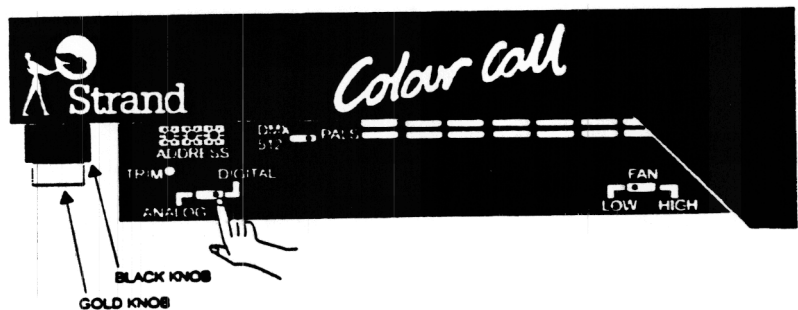
You might like to set up a small system, which only consists of one Scroller, so that the gels can be easily loaded on the bench.

It is advisable to read the whole of this procedure prior to starting step one. Then follow the instructions one step at a time.

If for any reason the gel jams the mechanism, electronic shut down of the motor will occur automatically. This ensures the motor driver and motor do not burn out. The POWER Led on the under-side of the Scroller will flash indicating an automatic shut down has occurred. The Scroller may be reset, once the obstruction has been removed, by powering down for 10 seconds.



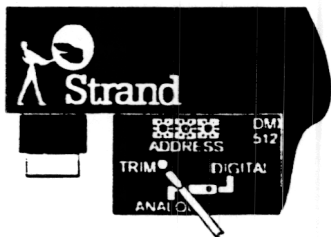
- 1 Open the front of the Colour Call mechanism by pressing the fastenings (A) one each side of the Scroller. Slide the front upwards and then forwards. This provides easy access to the aluminium bobbins on either side of the luminaire.
- 2 Set the Digital/Analog switch to Digital.



- 3 Apply power to the Scroller, ensuring that the Colour Calls are connected to the chosen system (see Digital System or Analog system).

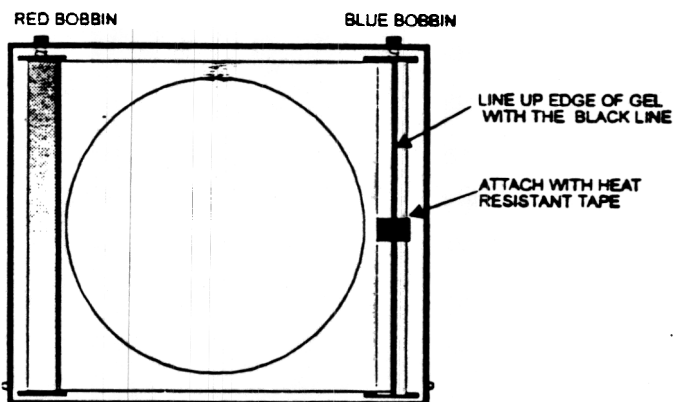


- 4 Select 800 on the address switches. This will cause the Scroller to rotate the bobbins, until they reach their start position.



- 5 Turn the trim potentiometer anti clockwise 20 turns, using a suitably sized screwdriver.

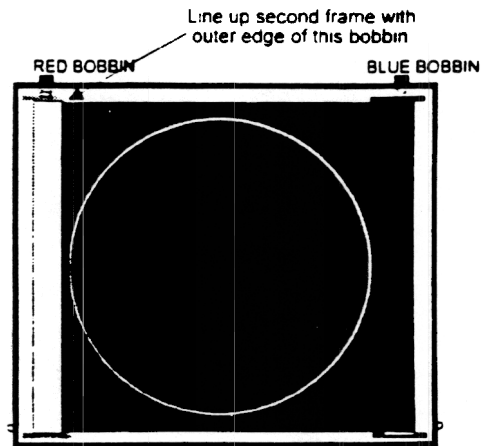
- 6 Turn off the scroller and attach the first frame of the gel string to the blue bobbin, using the heat resistant tape. Line up the edge of the filter with the black line marked on the bobbin. (see diagram below).



Ensure that the gel is mounted square, otherwise the gel will continually drift towards the edge of the bobbins.

- 7 Re-apply the power to the scroller, whilst address 800 is still selected. Wait 10 seconds until the scroller has stopped moving, press the black outer knob upwards and turn it clockwise, so that the join between the start frame and second frame is aligned with the outer edge of the red bobbin, (see diagram overleaf).





Release the black knob when the gel is positioned correctly. This has now set the zero point.



8 Select address 900. The bobbins should move slowly before stopping.

9 Turn the trim potentiometer gently clockwise. The colour Cail should wind up the loose gel string. Continue to turn the trim potentiometer until all but the last frame is wound onto the blue bobbin. Sufficient gel should be left to allow the free end to be attached to the red bobbin.

If the gel crinkles as it winds on to the blue bobbin, unwind the gel using the trim potentiometer until the crinkles are removed. Then continue to proceed with step 9.

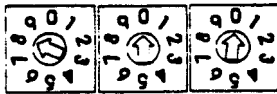
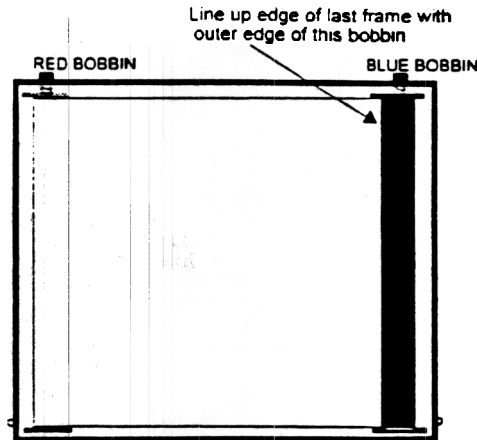
10 Attach the loose end of the filter to the red bobbin, taking care to align the edge of the gel string with the black line.



11 Whilst holding the black outer knob stationary, wind up the slack by simultaneously pressing and turning the gold knob anti-clockwise.

Once all the slack has been removed, tension the scroll by turning the gold knob anti-clockwise a further 7 times.

- 12 Using the Trim potentiometer, align the join between the last and penultimate frame with the outer edge of the blue bobbin. Turn the potentiometer slowly, as aggressive movement may cause the gel to be torn from the red bobbin.



- 13 Now select address 800, the scroller will take approximately 10 seconds to reach the start frame. If you wish to stop the scroller at any time, select address 801. Selecting address 800 from the new position will cause the scroller to move more slowly to the start frame.

- 14 Check the tension of the gel string. If the gel requires more tension repeat step 11.

- 15 Whilst the Colour Call is at address 800 and is stationary, check the join between the first frame and the second frame is aligned with the outer edge of the red bobbin. If it is not repeat step 7.



- 16 Check the last frame alignment by selecting address 900 and waiting 10 seconds for the bobbins to stop. Ensure the join between the last and penultimate frame is aligned with the outer edge of the blue bobbin.

- 17 The scroll is now correctly installed.



You may like to check the scroll is operating smoothly by selecting address 710. The scroller will now continually scroll backwards and forwards from end to end. If the scroller is left to scroll on its own for 5 minutes, it will help the gel to find its natural position. It will also show up any noise problems due to badly made scrolls.

- 18 Replace the front of the scroller by sliding the front down over the spring clips at the side of the scroller body. The spring clips will require depressing to help manoeuvre the cover into place. Make sure the cover engages over the top lugs and fits into the locating holes in the base of the scroller. Once the cover is home the spring clips should engage in the locating holes.



Caution

Ensure the front cover is securely fastened and both spring clips have properly engaged. Do not rig the Colour Call if the cover is not securely fastened.

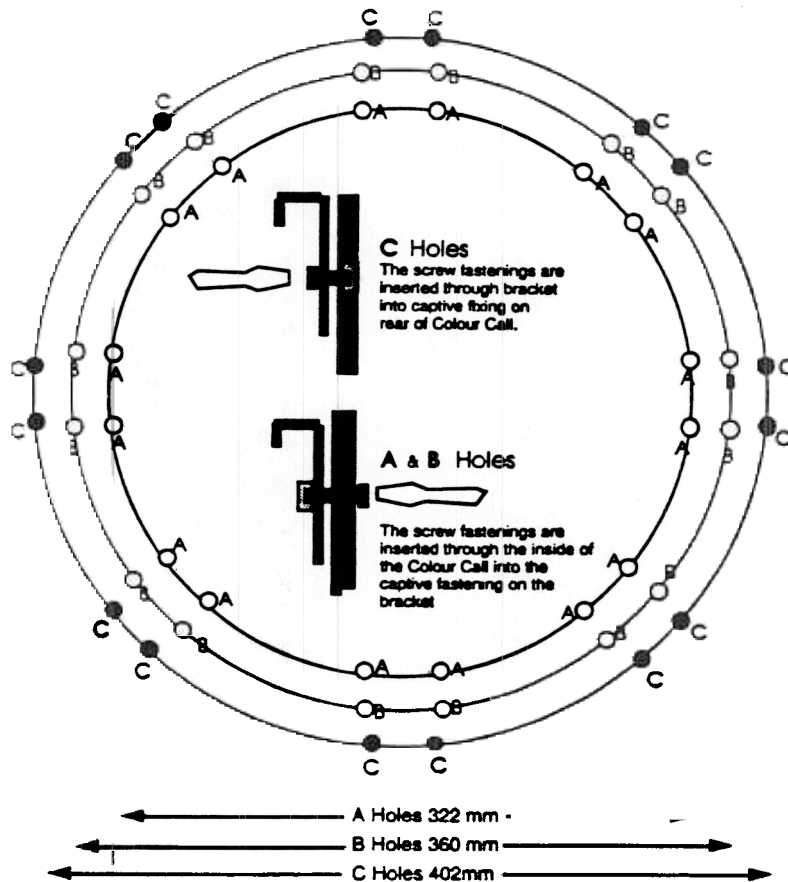
- 19 Now select the correct digital address that you wish the Colour Call to respond. Make sure you have selected the correct protocol using the DMX/PALS switch.

Attaching to Luminaires

The 2/5Kw Colour Call will fit most Studio and Film luminaires in the Strand range between 2Kw and 5Kw.

The universal adapter has been designed to accommodate luminaires with side ears as well as diagonal barndoor rollers.

Four U shaped brackets are provided with fixing holes. The brackets should be fixed to the Colour Call prior to loading the gel scroll. Holes are provided on the reverse side of the Colour Call to allow the brackets to be mounted in a wide variety of fixing diameter.



In positions A and B the fixing screws are inserted from the inside of the Colour Call and screwed into the outer threaded holes on the U shaped bracket.

In Position C the screws are inserted through the U shaped bracket into the captive threads on the rear of the Colour Call chassis.

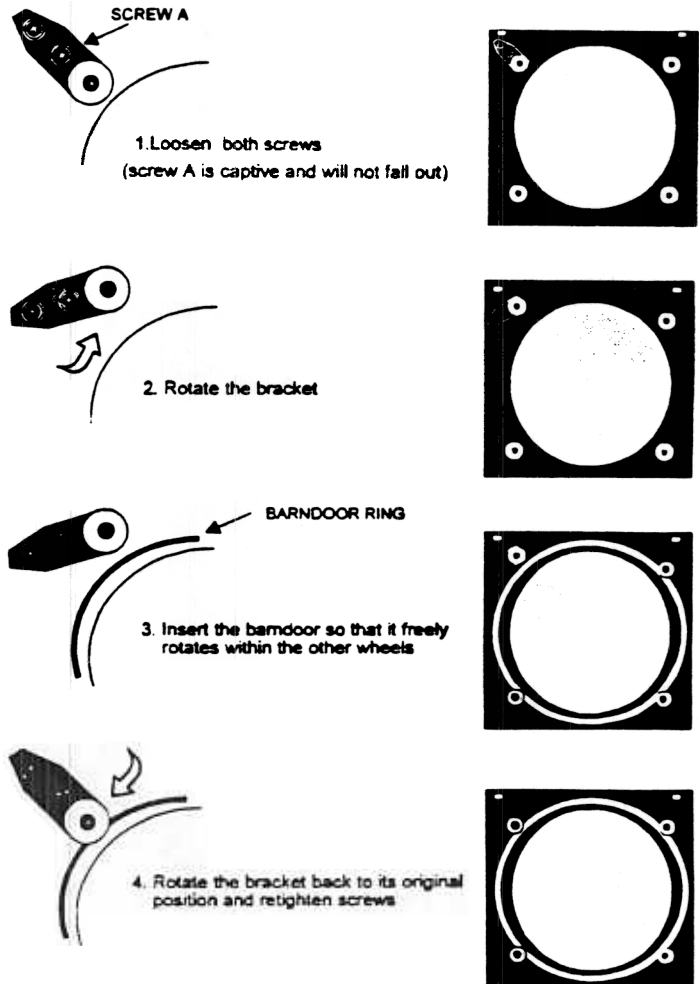


Caution

The screws holding on the U shaped brackets to the Colour Call should be checked for tightness, as part of periodic maintenance. The use of "thread lock" is recommended when it is known that the Colour Calls are permanently installed or are to be used on one type of lantern.

Fitting Barndoors

The four wheels fitted to the front cover will only accommodate a Pollux barndoor, as shown in the diagrams below.

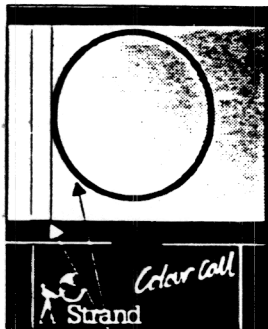
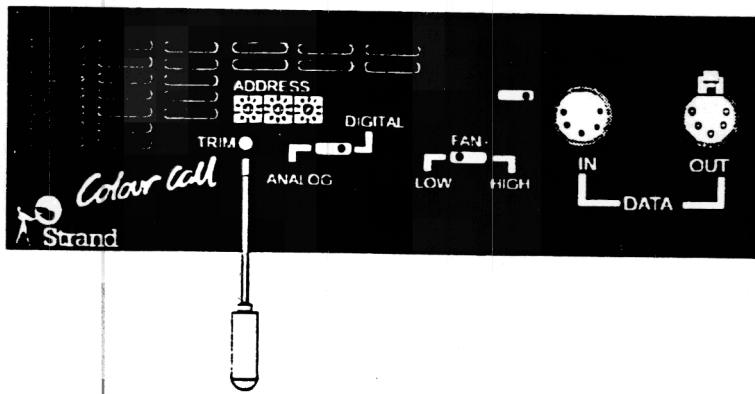


Calibrating Gel Rolls

The scrollers are factory calibrated for a gel string of 11 colours. However, you may wish to take advantage of Colour Calls ability to accept up to 16 colour frames, or reduce the number to as few as two frames.

This procedure must be followed when ever the length of the scrolls are changed for Colour Call CC1.

- 1 Check the bobbins have been correctly installed by applying power to the Colour Call and setting the address switches to 800. (see Installing Gel Strings, page 28)
- 2 Insert a small screw driver into the pot labelled "trim" on the back of the Scroller and turn this pot fully anti-clockwise. This pot may have to be turned up to 15 times before the distinctive, clicking of the end stop is felt.



Tape just clears aperture

- 3 Select address 900 using the same screwdriver and turn the TRIM adjustment clockwise until the join between the penultimate frame and last frame is as shown in the side figure

The longer the gel string the more clockwise adjustment is required.

- 4 Check that you have loaded your scroll correctly by selecting address 800. Once the first frame is visible check the alignment of the join between the first and second frame. Then send the gel to the last frame by again selecting address 900. You may wish to stop the gel movement using address 901.
- 5 Once your gel has been loaded correctly. Select the correct DMX or PALS channel, using the address switches. Check the position of the DMX/PALS switch. Close the lid of the Colour Call CC1.

You can control the movement of the gel string by using the address switches as follows:-

Address	Function
800	Scrolls to first frame in 10 seconds
801 to 899	Stop
900	Scrolls to last frame in 10 seconds
901 to 999	Stop

Once you have perfected local control of the Scroller it may be possible for you to change gel strings without using step 2 of the procedure, therefore saving considerable time turning the TRIM pot clockwise and anti-clockwise. However, if the Colour Call has been set up for more frames than you are currently installing, then proceed with caution. Allowing Colour Call to race to the last frame, in these circumstances, will cause the gel to be ripped of the bobbin.

Troubleshooting

Here are some hints on troubleshooting a Colour Call Scroller system. Remember that the warranty will be void if unauthorized personnel open the housing of the equipment.

All systems:

Scrollers do not move at all

If motors receive less than 18V they will automatically be shut off.

- Check the 24V LED on the PSU (Power Supply Unit).
 - If it is off the PSU is delivering less than 18V.
 - The lamp in the PSU mains switch indicates that there is power to the PSU. Check fuses at PSU back.
 - Check POWER LED on bottom of Colour Call units. It will not be lit if less than 18V reaches the unit.
 - If PSU is o.k and Colour Call POWER LED is off, check Power/Control cable for short circuits or loose leads.
 - If Colour Call POWER LED flashes it means that the Auto Motor Shut Off function is activated. Check the Scroller and gel roll are not jammed, by turning off the power and rotating the bobbins manually. Re apply power if O.K.
-

Digital system:

Scrollers are juddering

A corrupt DMX signal can create a juddering effect in the scrollers.

- Make sure the return connection from the last Scroller is connected.
- If several scrollers are linked to an output, try disconnecting one or two and see if the fault disappears.
- Disconnect any other DMX 512 receivers to see if fault disappears, making sure that only the last Digital splitter box is terminated (Termination selector to YES).

Protocol converters when connected between a control desk and a Digital Scroller often create "bit jitter" within the DMX signal due to "noise" on the incoming signal. This jittering may result in a position variation from 13mm to half a colour in a Scroller.

Try a lighting board that outputs DMX512 to see if the problem disappears. If you are using a Strand Lighting desk enquire with a Strand Lighting representative about the possibility of converting the desk to DMX output. Avoid using a protocol converter.

Speed difference between first and last scrollers

- Ensure that the correct specification of Power/Data daisy chain cable is used between splitter box and the scrollers. If the conductor size is too small for the quantity of scrollers used, voltage will be dropped along the line. Replace the cable with the correct cable obtainable from Strand Lighting.

Scrollers stay in position but will not move

- Check DMX transmission cables and lighting board. If DMX data is faulty or missing the Colour Call will stay in its position until new DMX data is received.

Analog system: Check that the Analog 0 volt signal is not connected to Mains Earth and or trussing as follows :-

Scrollers are juddering, chasing or moving to sound.

- Disconnect the signal multi-cable at the controlling device (lighting board). Measure with an ohm meter between signal earth in the multi-cable and mains earth, trussing etc.
- Do not power two splitter boxes from one PSU. This will create earth loops that mostly cause problems.

Scroller goes to zero position

If Analog control signal is missing the scrollers will return to their zero position. There is no position memory in the Analog mode.

Notes