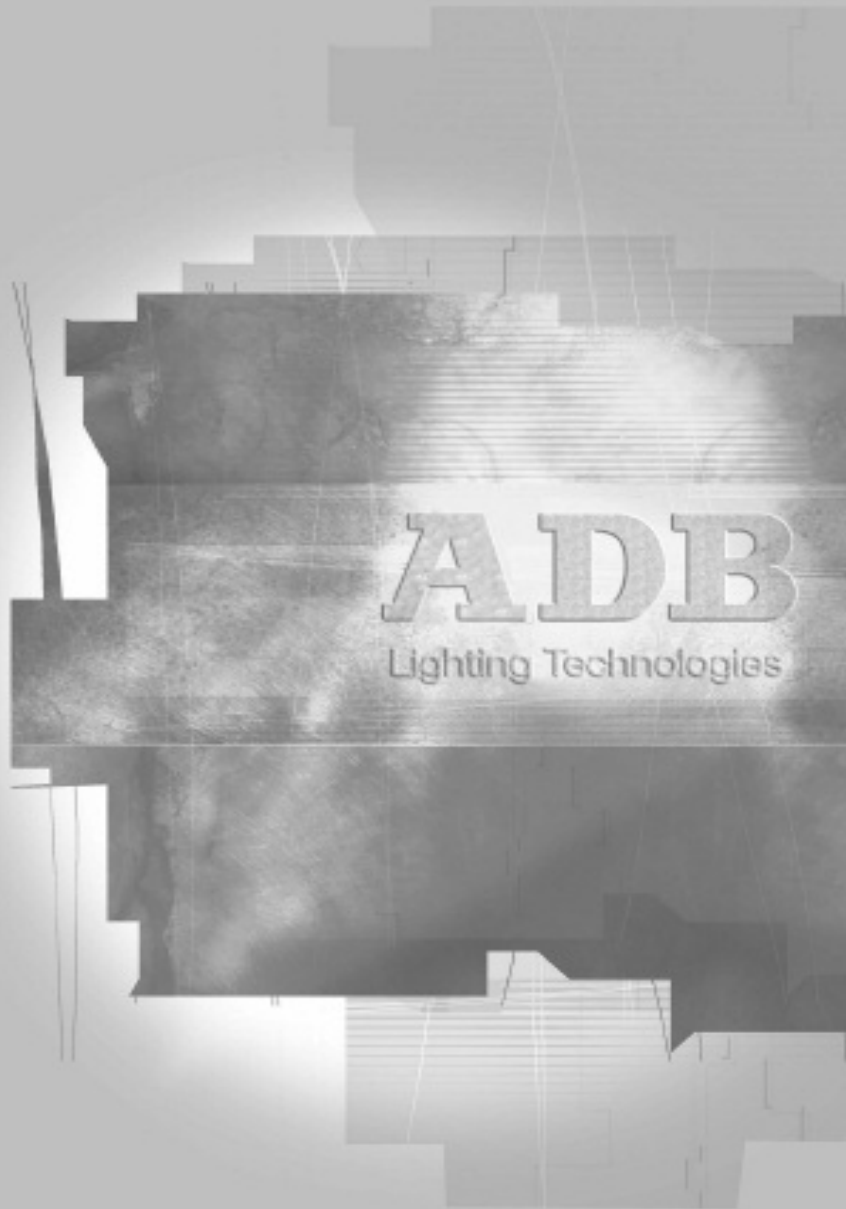


# WARD Colour Changer - CC/W

User Manual  
Issue 2.0



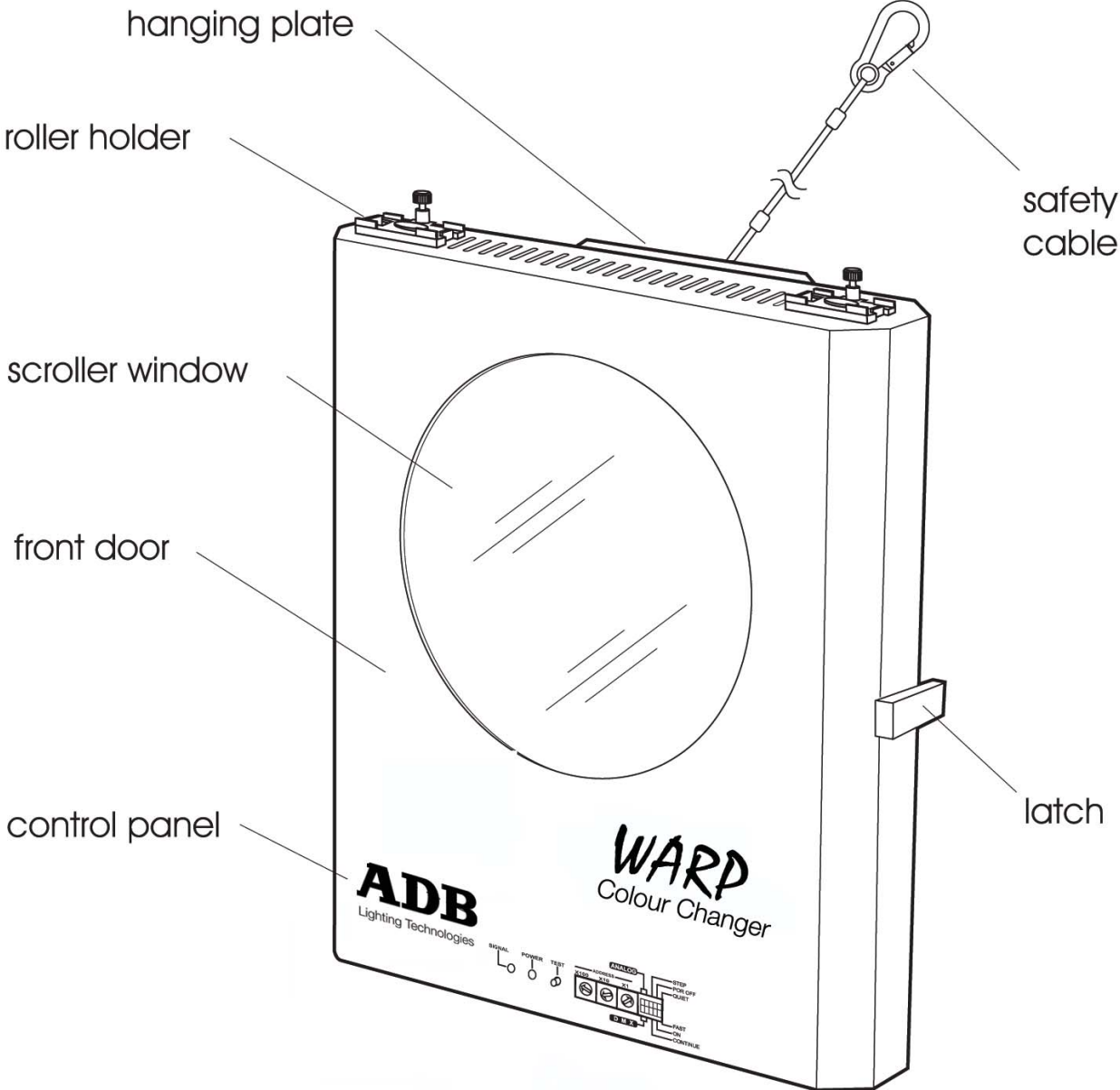
**ADB**  
Lighting Technologies



# Index

<b>INDEX</b> .....	<b>1</b>
<b>1. PRODUCT OVERVIEW</b> .....	<b>2</b>
<b>2. PRODUCT DESCRIPTION</b> .....	<b>3</b>
2.1. CONSTRUCTION.....	3
2.2. MOTOR AND FAN .....	3
2.3. COLOUR FILTERS .....	3
2.4. SCROLLING MODES .....	3
2.5. COLOUR CHANGING SPEED .....	3
2.6. RESET .....	3
2.7. SYSTEM CONFIGURATION .....	4
2.7.1. Adding the <i>CC/WARP</i> .....	4
2.7.2. DMX mapping for the <i>CC/WARP</i> .....	4
2.7.3. Removing the <i>CC/WARP</i> .....	4
2.7.4. Pin out definition of the 4 Pin output connector of <i>WARP/M</i> and <i>CC/WARP</i> .....	4
<b>3. OPERATION</b> .....	<b>5</b>
3.1. LED INDICATORS .....	5
3.2. TEST BUTTON.....	5
3.3. ROTARY ADDRESS SWITCH.....	5
3.3.1. Fan speed.....	6
3.3.2. Continuous /step mode.....	6
3.3.3. Power on reset.....	6
3.3.4. Fast / quit mode .....	6
<b>4. SPECIAL OPERATION MODE</b> .....	<b>7</b>
4.1. REMOTE RESET ADDRESS .....	7
4.1.1. Remote reset address - setup (999).....	7
4.2. AUTO TRACE MODE (8XY).....	7
4.3. GEL STRING MOVEMENT SPEED SETTING (9XX).....	7
4.4. RESTORE TO FACTORY DEFAULT SETTING (600).....	7
4.5. HOW TO GET THE BEST PERFORMANCE .....	8
<b>5. MAINTENANCE</b> .....	<b>9</b>
8.1. CLEANING .....	9
8.2. HOW TO MAKE A GEL STRING .....	9
8.3. HOW TO REPLACE A GEL STRING.....	10
<b>6. SPECIFICATIONS</b> .....	<b>11</b>
<b>7. STANDARDS</b> .....	<b>12</b>
7.1. SAFETY STANDARDS .....	12
7.2. RADIO INTERFERENCE STANDARDS.....	12
<b>8. PERSONAL NOTES</b> .....	<b>13</b>

# 1. Product overview



## 2. Product description

### 2.1 Construction

The housing of the *WARD Colour Changer* is made of sturdy aluminium plate to reduce weight. Outer finish is a scratch resistant matt black epoxy powder coating.

### 2.2 Motor and Fan

The scrolling of the gel string is controlled by 2 DC Servo Motors which are mounted directly to the plastic rollers. The motors are operated simultaneously to provide torque which enables fast, smooth quiet and accurate positioning of the colour filter. Tension on the filter is also maintained at the optimum level. DC fans provide excellent cooling for gel string extended life.

### 2.3 Colour Filters

Standard gel string, supplied, has a capacity of 16 frames (15 colours + clear).

### 2.4 Scrolling Modes

There are three scrolling modes available: Continuous, Step and Auto Trace.

- **Continuous Mode**  
The movement of the gel string is divided into 100 steps, and its position is proportional to the intensity level of the signal on the control channel.
- **Step Mode**  
The movement of the gel string is divided into 16 steps, each step corresponds to a separate colour. For approximately every 6.7% change of intensity level of the signal on the control channel, the gel string will change one colour.
- **Auto Trace Mode**  
The unit continuously steps through each colour from the first to the last one, and then back to the first colour on the string.

### 2.5 Colour changing speed

By employing DC servo motor control technique, fast colour changing speed is achieved. Minimum time required to scroll from end to the end is 1.5s. In some applications, noise is of more concern than speed. In this case scrolling speed can be reduced to minimize the noise of mechanical movement. For example, the slowest speed is 20s, and is achieved by setting the Gel string Movement setting to (9XX).

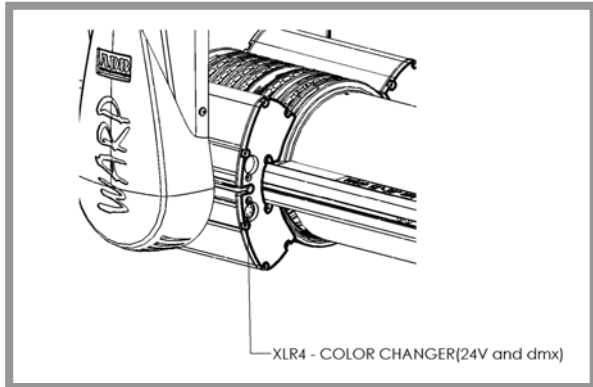
### 2.6 Reset

The colour changer automatically resets when power is applied. During reset, the gel string rolls to the starting end first, then to the other end, then back to the starting end again to enter the ready state.

The colour changer can also be reset from a control console. This feature makes life easier when the colour changer is installed on a truss at the ceiling of the studio.

## 2.7 System Configuration

The XLR4 connector on the motor-house provides DMX data and Power Supply (24V DC / 1A) for *CC/WARP*.



### Adding the *CC/WARP*

- Insert the changer into the *WARD/M*.
- Connect the safety cable.
- Connect the XLR4 cable<sup>1</sup>.
- Set the DMX address of the changer to 1.
- **Rebalance the *WARD/M*<sup>2</sup>**
- Power up the *WARD/M*.

### DMX mapping for the *CC/WARP*

*WARD/M* remaps the changer address. The changer becomes a part of the *WARD/M* personality. *CC/WARP* has 3 parameters.

Channel 1	Colour (Position of String)
Channel 2	Fan Speed
Channel 3	Reset

In this case External 1 becomes colour, External 2 Fan Speed and External 3 enables a reset.

### Removing the *CC/WARP*

After you have removed the changer, you must rebalance the *WARD/M*.

### Pin out definition of the 4 Pin output connector of *WARD/M* and *CC/WARP*

PIN number	Connector
1	COM
2	DMX -
3	DMX +
4	24 Vdc/1A
Case	Shield ground

<sup>1</sup> XLR4 cable with each *CC/WARP* ( ideal length to fit to *WARD/M* unit)

<sup>2</sup> See user manual *motorised WARP*

## 3. Operation

For normal operation, set the DIP switches to the desired configuration and set the rotary address switch to the desired DMX address. Set power and the unit is now ready to work.

### 3.1 LED Indicators

LED	Description
Red power LED	Red LED lights up when DC power is applied to the unit.
Green signal LED	Green LED lights up when the unit receives proper DMX signal. It flashes at short «ON», long «OFF» interval when the gel string breaks. It flashes at short «OFF», long «ON» interval when the motor is jammed

### 3.2 TEST Button

This switch button is used to test the unit. When used together with the DIP switches and address switches, it sets the different operation modes available. After replacing the colour filter (gel string) roller or adjusting a wrongly positioned gel string, press this button to RESET the unit. The gel string will then scroll to the starting end, then to the other end, and finally back to the starting end again, stopping at the control signal position.

### 3.3 Rotary address switch

For DMX operation, it is necessary to set the address of each colour changer to match the dimmer number set on the control console. The address can be set between 1 to 512, by means of the 3 rotary switches (X100, X10&X1).



## Operation

### FAN SPEED

Switch 1	Description
Off	<b>LOW</b> fan speed
On	<b>HIGH</b> fan speed

### CONTINUOUS /STEP mode

Switch 2	Description
Off	<b>STEP</b> mode The movement of the gel string is divided into 16 steps, and each step corresponds to a separate colour. For approximately every 6.7% change of intensity level of the signal on the control channel, the gel string will change one colour
On	<b>CONTINUOUS</b> mode The movement of the gel string is divided into 100 steps, and its position is proportional to the intensity of the signal on the control channel

### POWER ON RESET

Switch 3	Description
Off	<b>Power on reset disable</b> The gel string scrolls to the starting end to enter the ready state. If there is a control signal from the console, it will go to the desired position.
On	<b>Power on reset enable</b> The gel string scrolls to the starting end then to the other end, then back to the starting end again. If there is a control signal from the console, it will go to the desired position.

### FAST / QUIET mode

This mode will only operate if gel string movement speed setting is «900». This switch optimizes the gel string scrolling speed with quietness of operation.

Switch 4	Description
Off	<b>QUIET</b> mode The colour changer is set to scroll the gel string at low speed, 2.5 s. Noise from moving gel string is reduced to the minimum.
On	<b>FAST</b> mode The colour changer is set to scroll the gel string at high speed, 1.5 s. Noise from moving gel string might be generated.



## 4. Special operation mode

### 4.1 Remote reset address

If during normal operation the positioning of the gel string is incorrect, it is possible to bring it back to the correct position by sending a RESET signal from a control console. This function is especially useful if the unit is installed in a difficult to reach position. In order to be reset from a console, the unit must receive a signal of FULL intensity level, maintained for a period of more than 1 second at the Remote Reset Address.

Note: The factory-set default RESET address is 000. This effectively disables the Remote RESET function because DMX does not support address 000).

#### Remote reset address - setup (999)

Set the address switches to «999», and press the «TEST» button to enter this mode. The «signal» LED will then flash at 10 times per second. Set the desired RESET address and press the «TEST» button again to confirm this address. The unit will then reset.

**Remember to set the address switches back to the normal operation address, and then switch the unit off and on again, or the unit will not operate properly. Beware that WARP/M remaps the changers address. The changer becomes a part of the WARP/M personality. External 3 become for example reset. (8 external parameters available on WARP/M)**

### 4.2 Auto trace mode (8XY)

The unit steps through each colour continuously from the first to the last colour and then back to the first one. Set the address switches to 8XY and press the «TEST» button to enter this mode. The value XY adjusts the speed of each stepping, the smaller the value, the faster the stepping. «X» represents the speed of movement from starting end to the final end while «Y» represents the speed of movement from the final end to starting end. When the value XY is changed, it is necessary to press the «TEST» button or turn POWER OFF and then ON to make the change effective.

### 4.3 Gel string movement speed setting (9XX)

16 different levels of speed of the gel string are available on CC/WARP changers. Set the address to 9XX and press the «TEST» button to set the speed. The value XX (00-15) adjusts the speed of the gel string movement, the smaller the value, the faster the speed. For example the speed of the gel string ranges from 1.5s to 20s.

**Remember to set the address switches back to the normal operation address, and then switch the unit off and on again, or the unit will not operate properly.**

### 4.4 Restore to factory default setting (600)

Set the address to 600 and press the TEST button to restore the factory default settings.

Factory default settings	
Remote Reset Function	Disable
Gel string Movement Speed	Maximum

## Special operation mode

**Attention:** A factory reset may become necessary in cases when the Colour Changer does not function correctly. E.g. in case the ventilators are not controllable and run constantly.

### 4.5 How to get the best performance

1. Maximum ambient temperature is 50° C.
2. This unit is suitable for indoor operation only
3. Always dim the light to the colour changer when not in use
4. Make sure you set the Normal Operation Address and Remote. RESET Address before operation.
5. Make sure you restore the Normal Operation Address after setting different modes of operation.
6. Remember to press the «TEST» button when changing a setting.
7. The unit stops automatically when the gel string breaks or when the motor is jammed. In this case the «SIGNAL» LED blinks.

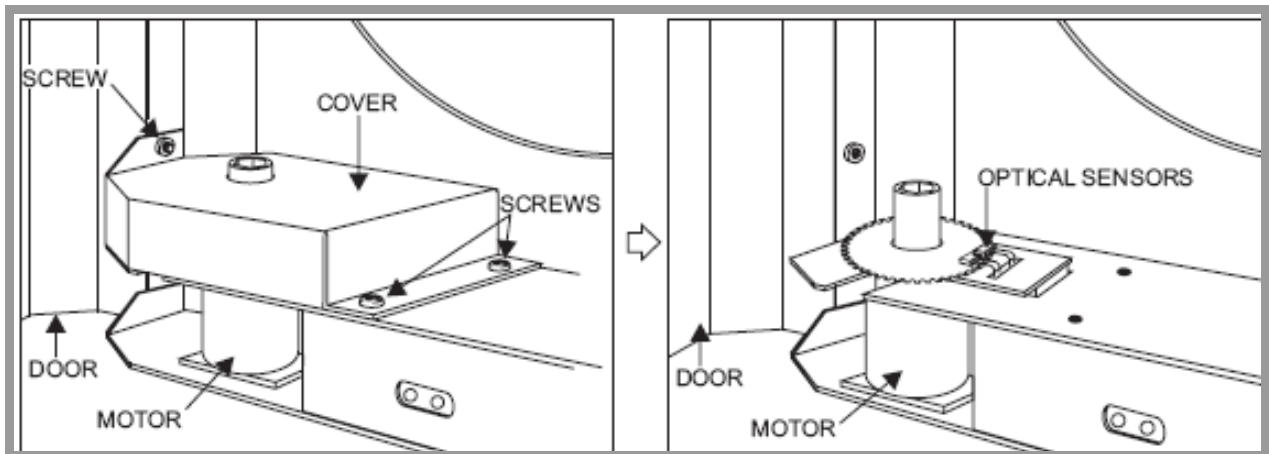
## 5. Maintenance

### 5.1 Cleaning

The colour changer uses optical encoding to calculate the position of the colour filter. If dust accumulates on the optical devices, the accuracy in the positioning of the colour filter will be degraded.

Refer to the following steps to clean the optical encoding units if needed:

1. Open the front door of the changer.
2. Slacken the 3 screws holding the cover of the motor on the left.
3. Remove the cover.
4. Remove dust in this area. Be very careful not to disrupt the alignment of the optical sensors.
5. Re-install the cover.
6. Close the front door.



### 5.2 How to make a gel string

In order to make your own gel string, follow the chart here below for the correct size of each filter. Note that the first and the last filter are different

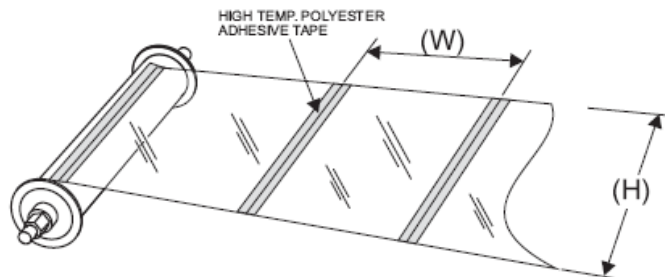
Model	Colour filter size (mm)	
	Filter No.1 & 16	Filter No.2 to 15
CC/W	505 (W) x 197 (H)	315 (W) x 197 (H)

STANDARD GEL STRING FOR CCNVARP - 16 FRAMES, LEE REF. NR

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE	LEE
256	130	176	020	101	179	128	048	026	192	126	115	089	119	181	201

## Maintenance

Use High Temperature Transparent Polyester adhesive tape (e.g. 3M #853) to join the colour filters side by side. Make sure that there is a good adhesion by pressing firmly on the tape against the filters. Join the first and the last colour filter to the rollers. You can use the reference line marked on the roller for alignment. Please note that the tape should be taped on the side facing you on the rollers.

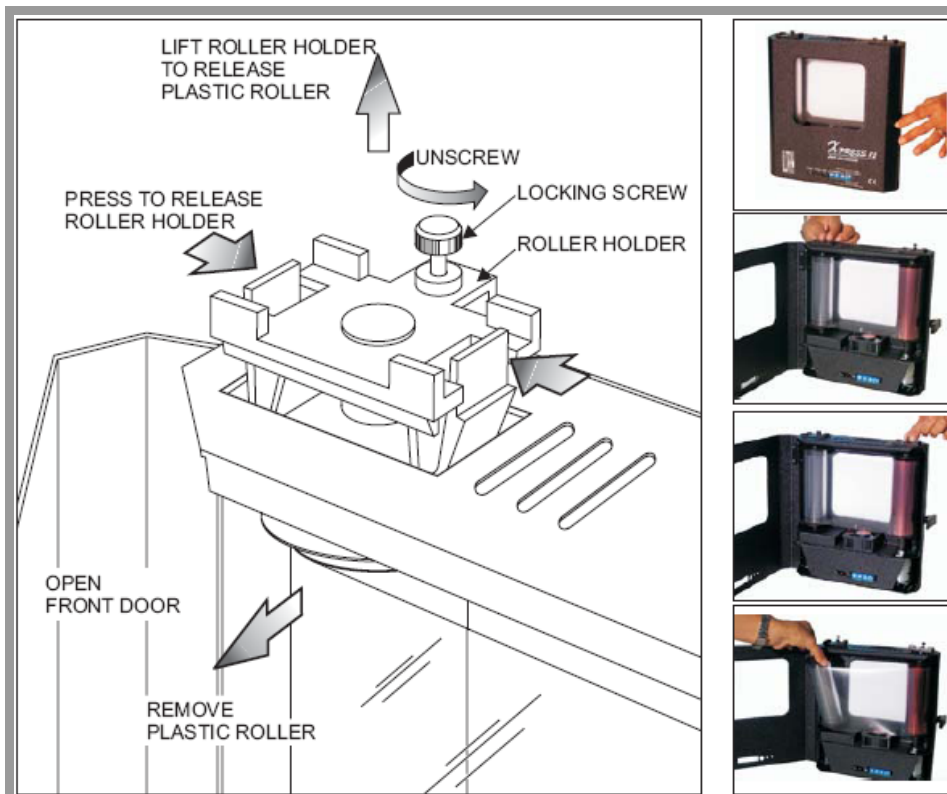


### 5.3 How to replace a gel string

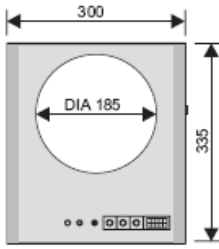
Each gel string is mounted on 2 plastic rollers.

#### To replace a gel string:

1. release the latch to open the front door.
2. slacken the locking screw at the top of the roller holder.
3. release the roller holders at the top of the 2 plastic rollers.
4. remove the existing gel string from the rollers.
5. install the new gel string.
6. press down the roller holders to engage the 2 plastic rollers.
7. fasten the locking screw.
8. slightly turn the plastic rollers to ensure that they can freely rotate
9. close the front door.



## 6. Specifications

Power consumption	200 W max.
Control input from <i>CC/W</i>	Output to <i>CC/W</i> colour changers ( <i>CC/W</i> - 4 Pin XLR male connector)
Operating environment	Indoor use only (NOT Waterproof)
Operating environment temp	0° C - 50° C
Size	
Weight	2.3 kg
Front aperture Ø	Ø 185 mm

## 7. Standards

### 7.1 Safety standards

<b>Safety standards</b>	Conforms to council directive 73/23/EEC (Low Voltage Directive) of CE marking 99
EN60598-1	Luminaires Part 1: general requirements and tests
EN60598-2-17	Luminaires Part 2 : particular requirements section 17: luminaires for stage lighting, television, film and photographic studios (outdoor and indoor)

### 7.2 Radio interference standards

<b>Radio interference standards</b>	Conforms to council directive 89/336/EEC (EMC directive) of CE marking 99
EN55103-1	Electromagnetic compatibility product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use; Part 1: emission
EN55103-2	Electromagnetic compatibility product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use; Part 2: immunity.
EN61000-3-2	Electromagnetic compatibility (EMC); Part 3: limits; Section 2 : limits for harmonic current emissions (equipment input current 16 Ampere per phase
EN61000-3-3	Electromagnetic compatibility (EMC); Part 3: limits; Section 3 : limitation of voltage fluctuations and flicker in low-voltage supply for equipment with rated current 16 Ampere

## 8. Personal Notes







ADB - Your Partner for Light

---

<b>Belgium</b>	<b>N.V. ADB-TTV Technologies S.A.</b> (Group Headquarters) Leuvensesteenweg 585, B-1930 Zaventem Tel : +32.2.709.32.11, Fax : +32.2.709.32.80, E-Mail : adb@adblighting.com
<b>France</b>	<b>ADB S.A.S.</b> <b>Sales Office:</b> 92, Avenue Jean Jaurès F-92120 Montrouge Tel : +33.1.41.17.48.50, Fax : +33.1.42.53.54.76, E-Mail : adb.fr@adblighting.com <b>Factory &amp; Group Logistics Centre:</b> Zone industrielle Rouvroy F-02100 Saint-Quentin Tel : +33.3.23.06.35.70, Fax : +33.3.23.67.66.56, E-Mail : adb.fr@adblighting.com

**ADB**  
Lighting Technologies

[www.adblighting.com](http://www.adblighting.com)

M-6043-E-06r Subject to modifications