



User Manual

Goboram II requires Coloram II
Power Supply software
version 2.0 or greater.



ADVANCING THE ART OF LIGHTING

4590 - The Goboram II Gobo Changer

Goboram II software version: 3.0

Goboram II User Manual part number: 453-08-05

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CONTENTS

Safety Information.....	3
Introduction.....	3
Quick Start.....	4
User Tips and Recommendations.....	5
The Goboram II and The Coloram II System.....	6
Using The Goboram II	7
Controls and Indicators	7
Menu Tree and Explanation.....	7
Operating Modes	9
DMX Channel / Level Chart.....	9
Set the Operating Channel	10
Time to Destination Table.....	11
Head-Foot Cable Restrictions.....	13
Fan Speed Control	14
Error Messages	15
Installing The Goboram II.....	15
Installing the Gobos	18
Power Supply.....	18
Quantity of Goboram IIs per Power Supply	18
Cables	18
Coloram II Power/Signal Cable.....	18
DMX Cable	19
Specifications.....	19
Parts list.....	19
Warranty information.....	21

IMPORTANT SAFETY INFORMATION

SAVE THESE INSTRUCTIONS

READ AND FOLLOW ALL INSTRUCTIONS

This manual gives step-by-step instructions for the preparation, setup and operation of the Goboram II Gobo Changer.

There is a potential risk of fire, electric shock or injury to persons if the product is not used as instructed.

This product is to be used in an indoor environment only and is not intended for residential use.

Introduction

The Goboram II is a dual motor, belt-drive gobo (pattern) changer/rotator. The Goboram II's three-gobo capacity and DMX compatibility affords the designer economy and versatility, particularly when space is limited. The lightweight gobo changers slide easily into the modified effects slot of the light fixture. The Goboram II allows you to select and/or combine the following functions:

1. Select among any of three gobo patterns (B size)
2. Index each pattern - - - coarse and fine position adjustment
3. Rotate each pattern - - - either direction with a full range of speeds

Quick-Start

Follow these steps to get the Goboram II operational quickly.

1. Connect the Equipment

- a. Insert the Goboram II into a modified effects slot of a light fixture with the electronics below the light.
- b. Connect the Goboram II to the Coloram II Power Supply using the 4-pin Coloram II power/signal cable.
- c. Connect the Coloram II Power Supply to 115/230VAC power and to the DMX source.

2. Setup the Goboram II Gobo Changer

See the Menu Tree on page 7 for these steps:

- a. Set the Goboram II to a starting channel of 1 (it will use 3 channels)
- b. Set (move) Path to SHRT (shortest path)
- c. Set TmCh (time to destination channel) to OFF (for 3 channel mode)
- d. Set the Fan to NORM (high speed)

3. Setup the Power Supply

- a. Set the Power Supply to a starting channel of 1

4. Set DMX Levels to spin gobo #2

See the DMX Channel / Level Chart - Figure 2:

- a. Set DMX channel 1 at 50% (to select gobo #2)

- b. Set DMX channel 2 at 75% (to select medium speed rotation – change this level to change the spin direction and speed)
- c. Set DMX channel 3 at 100% (to select spin mode)

5. Set DMX Levels to index (static position) gobo #1

See the DMX Channel / Level Chart - Figure 2:

- a. Set DMX channel 1 at 0% (to select gobo #1)
- b. Set DMX channel 2 at 25% (to select an index position)
- c. Set DMX channel 3 at 0% (to set "fine index" to 0)

User Tips/Recommendations

1. Power up the Goboram II (by plugging it into the Coloram II Power Supply) before the light is turned on because the heat from the light fixture can damage the unit.
2. Do not allow the Goboram II to be positioned off-center of a gobo while the gobo is stationary and the light is on for more than about one minute. The light can cause internal belt damage.
3. For the smoothest slow translate or index (rotate then stop) move, set the speed with the "time to destination" feature rather than a timed fade at the lighting control console.

The Goboram II and The Coloram II System

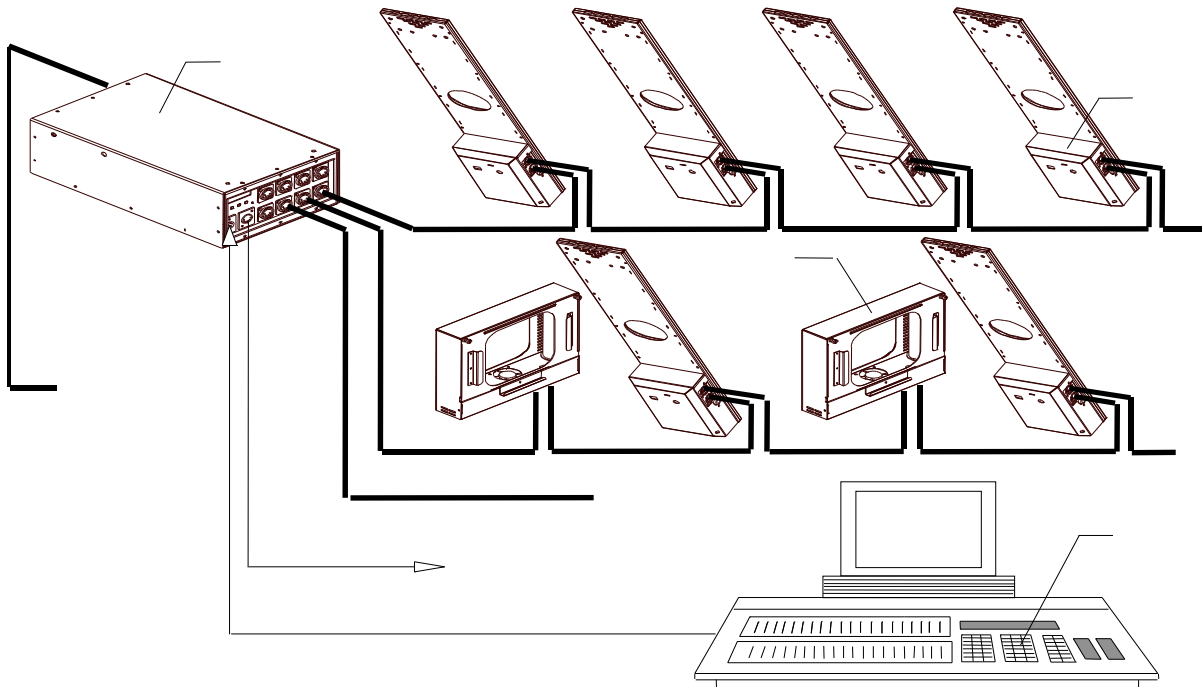
The Coloram II System consists of one or more Goboram II Gobo Changers and/or one or more Coloram II compatible products and a Coloram II Power Supply.

The DMX512 control signal from the lighting board is connected to the Power Supply and can continue on to more Coloram II Power Supplies or other DMX controlled devices. The Coloram II Power Supply sends both power and control signal to the Goboram II on a single cable.

Note: The Goboram II is compatible with all Coloram II Power Supplies equipped with software version PS2.0 or greater and set to the 24 channel (CR2) mode.



Caution: The Coloram II System is not compatible with the Forerunner System. Do not connect Coloram II Color Changers or Goboram II Gobo Changers to Forerunner Power Supplies, or Forerunner Color Changers to Coloram II Power Supplies. Damage from such action will not be covered by Forerunner or Coloram II warranties.



Using The Goboram II

Controls and Indicators

The Goboram II has controls and indicators as follows:

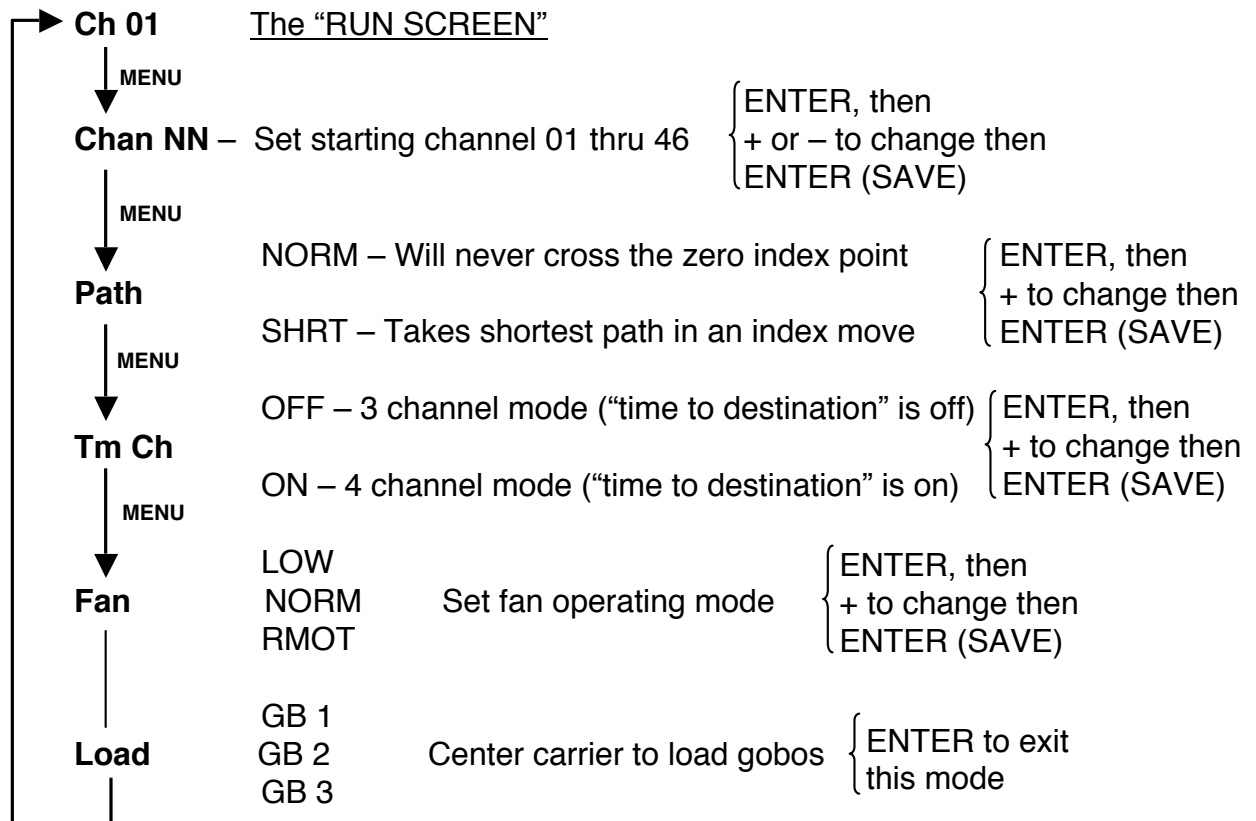
1. Four character LED display
2. Four push buttons: MENU, - , + , ENTER (select/save)
3. Indicator LEDs:
 - short path mode (Yellow LED)
 - control signal present (Green LED -- flashes)
 - power (Red LED)

The MENU button advances you through the menu items such as "Chan", "Path", etc. The ENTER button "selects" the menu item and "saves" the change made.

The display, yellow and green LEDs have an Auto power-off feature. They will automatically go dark after 1 minute of no pushbutton activity. If, however, an error message is displayed or a menu item has been changed and ENTER has not been pressed, the display will remain on.

Menu Tree

The Goboram II menu tree is as follows:



Menu Tree Explanation:

1. Ch 01 - this "run screen" is the screen showing during normal operation.
2. Ch NN - this screen allows you to set the first of the three (or four) operating channels from 01 thru 46. This is the 1st (or 2nd, 3rd, ... 46th) channel within the block of power supply channels.
3. Path - this determines the path taken on an index move
 - selecting NORM assures that the Goboram II will never cross the zero index point to get to a new index position
 - selecting SHRT assures that the Goboram II will take the shortest rotational path to a new index position
4. TmCh - this enables or disables the "time to destination" channel.
 - select OFF to disable it and operate in a 3 channel mode.
 - select ON to enable it and operate in a 4 channel mode.
5. Fan - this sets the fan speed
 - select LOW for slow (and quieter) fan speed
 - select NORM for high (and noisier) fan speed
 - select RMOT for remote control via the light console. You can remotely select LOW or NORM fan speed but, unlike most other Coloram II products, **YOU CANNOT TURN THE FAN OFF** on the Goboram II. This is because of the very high temperatures encountered in the effects slot of a light fixture.
6. Load - this mode is used to center each of the three gobo carriers so the gobos can be loaded. Select GB 1, GB 2, or GB 3 to center each of the gobo carriers.

*Note: Unlike most other Coloram II products, **YOU CANNOT TURN THE FAN OFF on the Goboram II.***



WARNING:

DO NOT TURN THE LIGHT ON UNLESS THE GOBORAM II IS POWERED.
This is because of the very high temperatures encountered in the effects slot of a light fixture.



WARNING:

DO NOT ALLOW THE GOBORAM II TO BE POSITIONED BETWEEN GOBOS WHILE THE GOBOS ARE STATIONARY AND THE LIGHT IS ON. *This can cause damage to the internal belts.*

Operating Modes

The Goboram II has two operating modes:

1. The three channel mode allows you to select among three gobo patterns, spin them and index them (spin then stop at any position.)
2. The four channel mode offers all the features of a three channel mode plus setting a "time to destination" in selecting a different gobo pattern or in moving from one index position to another. This capability eliminates the need to program a timed fade in the lighting console.

The Goboram II determines gobo selection, index position, rotational speed and direction according to the DMX512 levels it receives from the control console. The following "DMX channel / level" chart shows the functions and DMX levels of the three/four control channels for the Goboram II.

Note: The Goboram II requires three or four consecutive DMX channels for control.

DMX Channel / Level Chart

Channel 1		Channel 2		Channel 3		Channel 4 (if enabled)	
Gobo Select		Spin	Coarse Index	Fine Index or Select Spin		Time to Destination	
100%	Gobo 3	100% fast ↻	360 deg	96 - 100%	Spin Mode	100%	Full Speed
50%	Gobo 2	51% stop	180 deg	95%	4 deg	99%	0.3 sec.
0%	Gobo 1	49% slow ↻ fast	0 deg	Index Mode		1%	60 sec.
		0%	0 deg	0%	0 deg	0%	Full Speed

Figure 2

Set the Operating Channel

Each Goboram II is assigned a DMX channel to which it will respond from the lighting console. Valid DMX addresses are 001 - 512.

Set the operating channel with the push-button / display via the CHAN selection. The Goboram II channels can be set from 1 to 46 except for channel setting restrictions listed below.

First, set the first channel for the block of DMX channels chosen for the power supply -- do this on the power supply. Then, set the gobo changer for the first, second, etc. channel of the block of power supply channels.

For example, if you want a gobo changer to respond to DMX channel 105 (first channel), first set the power supply channel block to start on channel 105 and then set the gobo changer to channel 1-- the first channel in the block of power supply channels.

Set the power supply starting DMX channel by using the SETUP menu. If talkback is enabled on the power supply, the starting power supply channel is limited to 1, 4, 7, 10, 13, etc.

As with Coloram II, the Goboram II channel setting formula is:

$$\text{DMX channel} = \text{Goboram II starting channel} + \text{power supply starting channel} - 1$$

Example: DMX channel (10) = Goboram II channel (4) + power supply starting channel (7) - 1

Or, in a different form:

$$\text{Goboram II starting channel} = \text{DMX channel} - \text{power supply starting channel} + 1$$

Channel Setting Restrictions:

For each model power supply, the Goboram II channel setting restrictions are as follows:

Model 20240 - Coloram II 24-Way Power Supply (600 watt)
- set the Goboram II to any channel from 1 to 46

Model 19012 - Coloram II 12-Way Power Supply (300 watt)
- set the Goboram II to any channel from 1 to 22

Model 19060 - Coloram II 6-Way Power Supply (150 watt)
- set the Goboram II to any channel from 1 to 10

If you set the Goboram II to the last channel of a power supply (e.g. channel 24 of Model 19012) the DMX values of the additional channels (beyond channel 24) will default to 0%. The Goboram II will not work properly with this setting.

Power Supply Channel Setting Restrictions:

The power supplies receive and retransmit position data for blocks of channels as follows:

Model 20240 - Coloram II 24-Way Power Supply (600 watt)
- a block of 48 channels

Model 19012 - Coloram II 12-Way Power Supply (300 watt)
- a block of 24 channels

Model 19060 - Coloram II 6-Way Power Supply (150 watt)
- a block of 12 channels

Note: If the power supply is set to TALKBACK = ON, the power supply starting channels are limited to 1, 4, 7, 10, 13, etc.

Time to Destination Table

The Goboram II time to destination table is as follows:

DMX percent	DMX decimal	Time to destination (seconds)
0	0	0
1	3	60.1
2	5	59.6
3	8	58.9
4	10	58.4
5	13	57.7
6	15	57.2
7	18	56.5
8	20	56
9	23	55.3
10	26	54.6
11	28	54.1
12	31	53.4
13	33	52.9
14	36	52.2
15	38	51.7
16	41	51
17	43	50.5
18	46	49.8
19	48	49.3
20	51	48.6
21	54	47.9
22	56	47.4
23	59	46.7
24	61	46.2

DMX percent	DMX decimal	Time to destination (seconds)
25	64	45.5
26	66	45
27	69	44.3
28	71	43.8
29	74	43.1
30	77	42.3
31	79	41.9
32	82	41.1
33	84	40.7
34	87	39.9
35	89	39.5
36	92	38.7
37	94	38.3
38	97	37.5
39	99	37.1
40	102	36.3
41	105	35.6
42	107	35.1
43	110	34.4
44	112	33.9
45	115	33.2
46	117	32.7
47	120	32
48	122	31.5
49	125	30.8
50	128	30.1
51	130	29.6
52	133	28.9
53	135	28.4
54	138	27.7
55	140	27.2
56	143	26.5
57	145	26
58	148	25.3
59	150	24.8
60	153	24.1
61	156	23.4
62	158	22.9
63	161	22.2
64	163	21.7
65	166	21
66	168	20.5
67	171	19.8
68	173	19.3
69	176	18.6
70	179	17.9
71	181	17.4
72	184	16.7
73	186	16.2
74	189	15.5
75	191	15
76	194	14.3
77	196	13.8
78	199	13.1
79	201	12.6
80	204	11.9
81	207	11.1

DMX percent	DMX decimal	Time to destination (seconds)
82	209	10.7
83	212	9.9
84	214	9.5
85	217	8.7
86	219	8.3
87	222	7.5
88	224	7.1
89	227	6.3
90	230	5.6
91	232	5.1
92	235	4.4
93	237	3.9
94	240	3.2
95	242	2.7
96	245	2
97	247	1.5
98	250	0.8
99	252	0.3
100	255	0

Head-Feet Cable Restrictions

HEAD-FEET is defined as "the sum of cable lengths from each gobo changer to a single power supply output".

The HEAD-FEET parameter is a method of accounting for the voltage drop in the power/signal cable caused by the current drawn by each color changer.

To help understand this issue, think of it as water pressure (voltage) in a hose (cable) where you have multiple water sprinkler heads (color changers). If the hose (cable) is too long or you have too many sprinkler heads (color changers), the water pressure (voltage) will be too low.

The maximum HEAD-FEET for the Goboram II gobo changers is **1500 head-feet**.

Note: Do not exceed 1500 "head-feet" when designing Goboram II cable runs.

"Head-Feet" Example:

Goboram II GoboColoram II Power Supply 100'20'20'20' Coloram II cable 1234 Changer

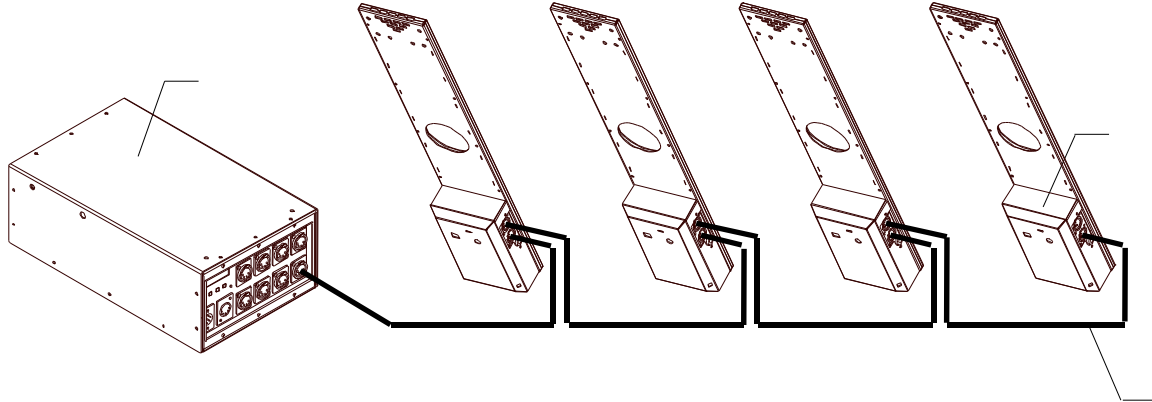


Figure 3

The amount of cable from the Power Supply to:

1st Goboram II	100'
2nd Goboram II	120'
3rd Goboram II	140'
4th Goboram II	<u>160'</u>

520 "head feet"

Fan Speed Control

Set the fan speed control with the push button/display via the FAN menu item. See the menu tree.

1. LOW - low fan speed for quietest operation
2. NORM - high fan speed for longest gobo life
3. RMOT - remote fan speed selection via the lighting console. Select the fan speed channel at the power supply and control the Goboram II fan speed via the DMX level of the fan speed channel.

Fan speed (when enabled at the power supply) is remotely controlled with the following DMX levels:

51% to 100% = fan at normal (high) speed
0% to 50% = fan at low speed

Note: Unlike most other Coloram II products, YOU CANNOT TURN THE FAN OFF on the Goboram II. This is because of the very high temperatures encountered in the effects slot of a light fixture.

Error Messages

The Goboram II can display error messages as follows:

1. Roll Call -- this is displayed when the power supply is plugged in and the Goboram IIs are waiting for the power supply to request each Goboram II to "report in".
2. Low Volt (low voltage) -- there is less than 17VDC at the Goboram II. This is a warning that the voltage is dangerously low. This is normally a "head-feet" cable problem.
3. Shut Down -- there is less than 16 VDC at the Goboram II and the unit has shut down because it cannot work properly below this voltage. This is normally a "head-feet" cable problem or the user has commanded a "shut down" from the power supply. This message may also be displayed if the Goboram II has failed its initialization sequence.
4. Mtrs Errs (Motors Errors) -- both motors cannot get to their commanded position because the motors are jammed or the rotary encoder has failed.
5. Mtr1 Err (Motor 1 Error) -- motor #1 cannot get to its commanded position because the motor is jammed or the rotary encoder has failed.
6. Mtr2 Err (Motor 2 Error) -- motor #2 cannot get to its commanded position because the motor is jammed or the rotary encoder has failed.
7. Cnfg Fail (Nonvolatile RAM failure) -- the memory device which saves the menu settings after power down has failed.

Installing the Goboram II

To get your Goboram II Gobo Changer up and running, follow these hookup and checkout procedures.

1. **Attach the gobo changer to the lamp**
 - A. Attach the gobo changer mounting bracket to the effects slot of the light fixture using the supplied screws.
 - B. Slide the gobo changer into the effects slot of the light fixture and secure it with the two thumb screws in the mounting bracket.
 - C. The barrel of the light fixture allows you to position the gobo changer with the gobos changing either horizontally or vertically. However, Goboram II

operates most effectively with the fan, which is located in the electronics enclosure, blowing air vertically (as hot air naturally rises).

Note: Some light fixtures may require a modification to the barrel assembly to accommodate the Goboram II.

2. Attach the safety cable

- A. A safety cable is attached to the corner of the Goboram II Gobo Changer. Run this cable around the pipe or truss from which you hang the light fixture and clip it to itself (fig. 4).

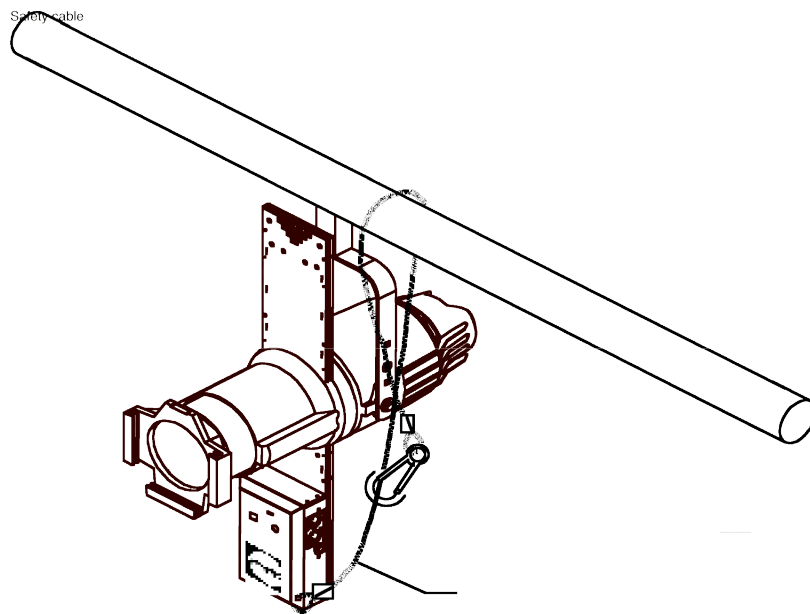


Figure 4

3. Connect the Goboram II to the Coloram II Power Supply

Connect the gobo changers to the power supply using the Coloram II 4-pin power/signal cable.

4. Connect the power supply to AC power

Plug the AC cord into a non-dimmed power circuit. The Coloram II Power Supply automatically accommodates 100 - 132 VAC (50/60 Hz) and 170 - 240 VAC (50/60 Hz).

Power at the power supply is indicated by a red LED display which can be viewed from the stage. Power is also indicated by an LED on the front of each gobo changer (fig. 5).

All connected gobo changers will automatically "calibrate" the gobo position by doing the following actions:

1. Searching for gobo carrier #3 (carrier #1 visible in aperture)
2. Searching for the index pin in gobo carrier #3
3. Parking gobo #1 in the aperture.



Caution: Do not power the power supply from a dimmer. Severe damage will result, and is not covered by product warranty.

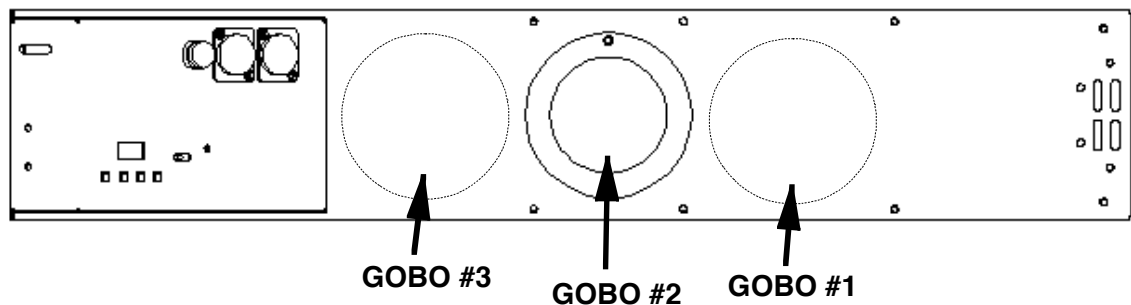


Figure 5

5. Set the Coloram II Power Supply/Goboram II channels

See the section "Using The Goboram II - Set the Operating Channel"

6. Set the Goboram II operating mode

See the section in this manual entitled "Using The Goboram II - Operating Modes".

7. Connect and set the DMX512 source levels

Connect the DMX512 signal source to the DMX input connector on the front of the power supply using standard DMX cable. Valid DMX signal will be indicated by the words "DMX OK" on the power supply display. The gobo changers will now position their gobos according to their respective DMX signal levels.

See the section in this manual entitled "Using the Goboram - DMX Channel / Level Chart".

Installing the Gobos

1. Select the "Load" function on the Goboram II menu to have the Goboram II automatically position the gobo carriers for loading.
2. Align the top of the gobo with the "gobo carrier top locator" - the closely spaced pair of holes - in the gobo carrier. These two holes mark the top backside of the gobo.
3. Attach the gobo retaining clip to three pins in the gobo carrier over the gobo.



Caution: Damage caused by carriers being forced is not covered under product warranty.

Power Supply

The power supplies for the Goboram II gobo changer are the various models of the Coloram II Power Supply.

Quantity of Goboram IIs per Power Supply

Model 20240 - Coloram II 24-Way Power Supply (600 watt)
- use 16 Goboram IIs maximum

Model 19012 - Coloram II 12-Way Power Supply (600 watt)
- use 8 Goboram IIs maximum

Model 19060 - Coloram II 6-Way Power Supply (600 watt)
- use 4 Goboram IIs maximum

The limitation of the quantity of Goboram IIs is the number of power supply channels, not electrical power capability (with Goboram IIs in 3 channel mode.)

Cables

Coloram II Cable

The Coloram II cable uses 4-pin XLR connectors on either end and consists of two 14 AWG conductors and a 22 AWG twisted, shielded pair.

XLR Pin #	Wire Color	Function	Size
1	White	24 Volts DC	14 AWG
2	Green	Data -	22 AWG
3	Red	Data +	22 AWG
4	Black	Ground	14 AWG

DMX512 Control Cable

The DMX control cable from the lighting board to the power supply is a five conductor cable with 5-pin XLR connectors on each end. The wiring pin out is specified by the USITT DMX512/1990 standard.

XLR Pin #	Function
1	Common
2	Data -
3	Data +
4	Talkback -
5	Talkback +

Specifications

Power requirements: 24 VDC @ 1 Amp

Fan: Two speeds - normal and low speed (cannot be turned off)

Fuse: 2 Amp Slo Blo

Gobo capacity: 3 gobos

Gobo compatibility: B size round - metal or glass

Gobo rotation speed: Variable - up to 7 rotations/minute

Gobo-to-gobo speed: 3 seconds (adjacent gobos)

Fixture compatibility: Source Four and Shakespeare S6

Display: 4 character LED

Push buttons: 4

LED Indicators: power, control signal and short path mode

Power supply compatibility: any Coloram II Power Supply with software
2.0 or greater

Signal termination: Not required

Size: Dimensions of 25.26"/641.61mm high x 4.75"/120.65mm wide x
5.57"/141.48mm deep.

Weight: 4.5lbs./2.04 kg

Parts list

To order any of the following items, contact your authorized WYBRON dealer.

The Goboram II Gobo Changer and Accessories

4590	Goboram II Gobo Changer
453-01-11P	Goboram II mounting bracket for Source Four
453-01-15P	Goboram II mounting bracket for Shakespeare S6
453-08-05	User Manual
SCRPH632025P	Screws for mounting bracket to Source Four light fixture
SCRPH832037P	Screws for mounting bracket to Shakespeare 600 light fixture
453-08-01P	Milled barrel for Source Four light fixture

Coloram II Power Supply and accessories

20240	Coloram II Power Supply - 24 Way
1900-01-05P	Power Supply hanger bracket
SCRWC252075	Wing screw for Power Supply hanger bracket to pipe
SCRSC2520037	Socket cap screw for hanger bracket to Power Supply

Coloram II System Cable

7042-3	3' power/signal cable
7042-5	5' power/signal cable
7042-10	10' power/signal cable
7042-15	15' power/signal cable
7042-25	25' power/signal cable
7042-50	50' power/signal cable
7042-75	75' power/signal cable
7042-100	100' power/signal cable

Warranty information

WYBRON, INC. warrants to the original owner or retail customer that for a period of one year from the date of delivery of a portable system or the energization of a permanently installed system (up to a maximum of 18 months from delivery) its products will be free from defects in materials and workmanship under normal use and service.

Warranty does not cover any product or part of a product subject to accident, negligence, alteration, abuse, misuse or any accessories or parts not supplied by WYBRON, INC.. Warranty does not cover "consumable" parts such as fuses, lamps, or patterns. WYBRON, INC.'s warranty does not extend to items not manufactured by us. Freight terms on warranty repairs are FOB WYBRON, INC. factory or designated repair facility. Collect shipments or freight allowances will not be accepted.

WYBRON, INC.'s sole responsibility under this warranty shall be to repair or replace, at WYBRON, INC.'s option, such parts as shall be determined to be defective on WYBRON, INC.'s inspection. WYBRON, INC. will not assume any responsibility for any labor expended or materials used to repair any equipment without WYBRON, INC.'s prior written authorization. WYBRON, INC. shall not be responsible for any incidental, general or consequential damages to property, damages for loss of use, time, profits or income, or any other charges.

The owner's obligations during the warranty period under this warranty are to notify WYBRON, INC. at WYBRON, INC.'s address within one week of any suspected defect, and return the goods prepaid to WYBRON, INC. at their factory or authorized service center.

This warranty is contingent on the customer's full and timely compliance with the terms of payment set forth in said purchase order. This warranty is expressly in lieu of any and all other warranties expressed or implied including the warranties of merchantability and fitness for a particular purpose and of other obligations and liabilities on our part. The owner acknowledges that no other representations were made to him or relied upon by him with respect to the quality and function of the goods sold.

This written warranty is intended as a complete and exclusive statement of the terms thereof. Prior dealings or trade usage shall not be relevant to modify, explain or vary this warranty. Acceptance of, or acquiescing in, a course of performance under this warranty shall not modify the meaning of this agreement even though either party has knowledge of the performance and a chance to object.



ADVANCING THE ART OF LIGHTING