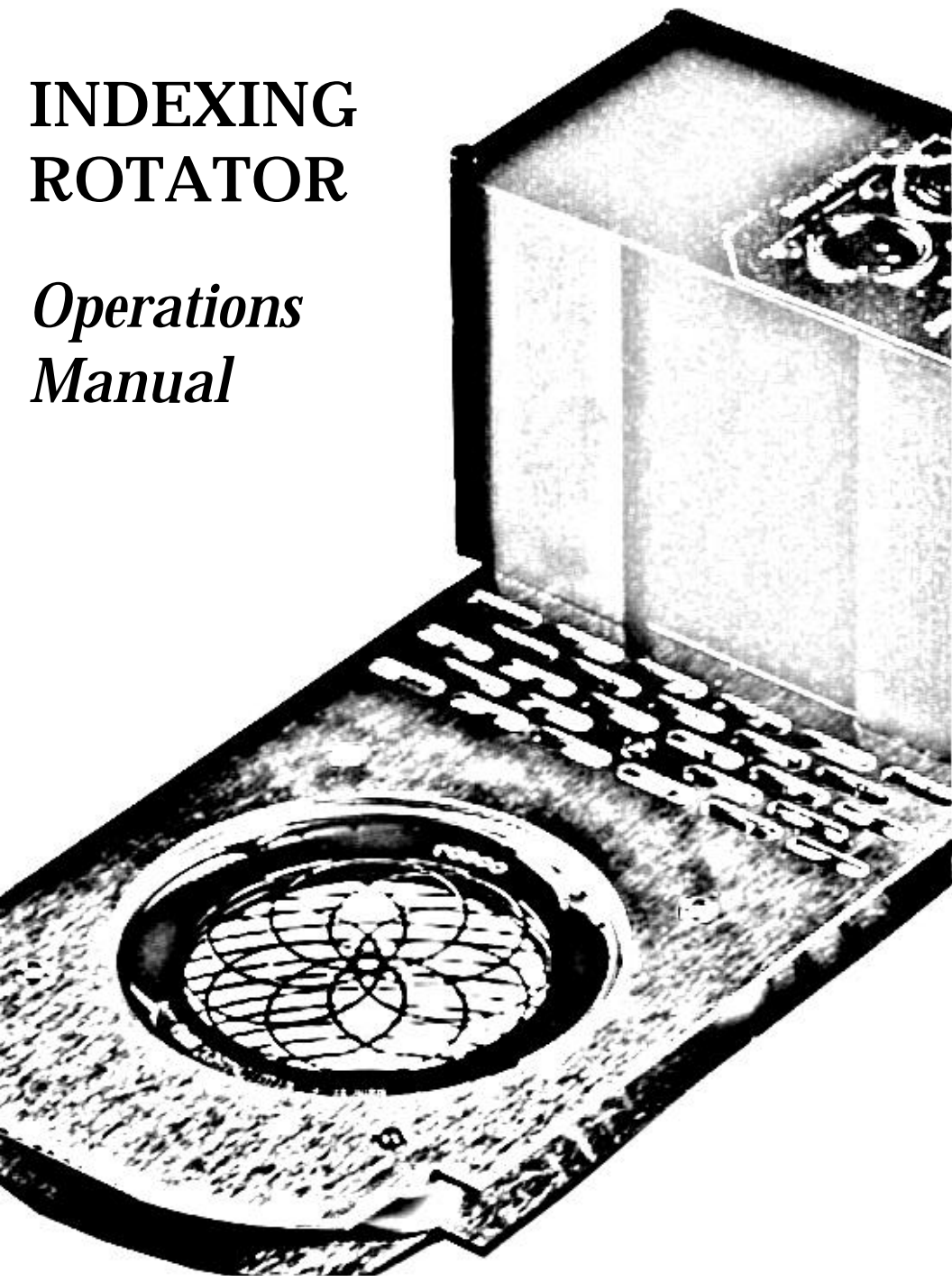


**ROSCO**

# INDEXING ROTATOR

## *Operations Manual*



# Table of Contents

Introduction .....	1
Fitting .....	2
Using Glass Gobos in Indexing Rotators .....	2
Connection .....	3
Calibration .....	4
Setting the DMX Address .....	4
Operating Modes .....	5
Mode 1 – Rotator Emulation .....	5
Mode 2 – Standard DMX Operation .....	6
Mode 3 – Enhanced DMX Operation .....	7
Programming Hints .....	7
Stand Alone Operation .....	8
Power Supply Compatibility .....	9
Cable Wiring Details .....	10

## Introduction

The Rosco Indexing Rotator is a digital version of the popular Double and Single Gobo Rotators that allow you to rotate 1 or 2 gobos at variable speeds and in both directions in the gate of most modern theatrical fixtures.

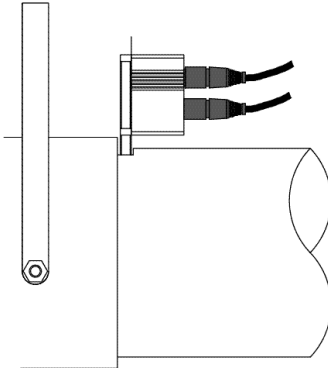
The Indexing Rotator combines the functions of the gobo rotator, manual controller and DMX controller into one small unit and also gives the added functionality of being able to index the gobo to a pre-determined position at any time.

The stepper motor technology, which is used in the Indexing Rotator insures completely silent operation when in use, even at high rotation speeds.

## Fitting

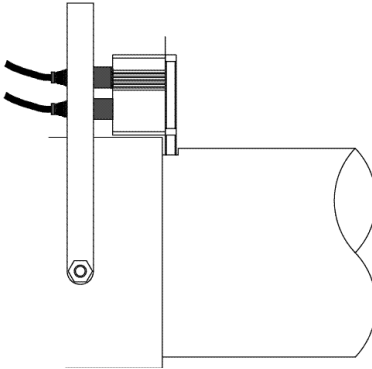
It is important to ensure that the Indexing Rotator is fitted correctly in each fixture. Due to the heat from the lamp housing the Indexing Rotator should be positioned so that the motor housing faces towards the lens train and not over the lamphouse.

These units should not be run continuously for long periods, at full intensity in 1.2k fixtures, as heat damage may result. Particular care must be taken if the fixture is pointing upward as this places the Indexing Rotator's motor directly above the lamp housing where it can become very hot.



### Correct Fitting

With motor box over lens tube



### Incorrect Fitting

With motor box over lamp housing

## Using Glass Gobos in Rosco's Indexing Rotator

There are two versions of the Indexing Rotator, the Double and the Single. The Double Indexing Rotator can hold two gobos, either glass or metal or one of each while the single can only hold one gobo of either type. Glass gobos are subject to the usual special precautions.

When using metal gobos in the Double Indexing Rotator, it is possible to adjust their separation. Bringing the gobos close together enables both to be in sharp focus; separating them allows one to be used off-focus to 'animate' the other. Separating the

gobos also stops mechanical interference of gobos buckled by the heat of the fixture (this may occur with some of the more “open”gobo designs). Separation is controlled by the positioning of the gobo retaining rings. The gobos can be spaced apart by inserting the ring under a gobo rather than on top. This gives three levels of spacing. (When using glass gobos, the retaining rings should be omitted.)

## Connection

Connection of the Indexing Rotator is via a 4 pin XLR type connector. The cable, which connects to the unit, carries both the power for the unit and the DMX data signal which is required for remote operation.

This 4 pin configuration is also used by a large number of other devices such as color scrollers and the Rosco I-Cue Intelligent Mirror, which can simplify the installation process and also save on the number of power supplies required in the venue.

The Indexing Rotator has two 4-pin connectors on its front panel (fig. 1), one for power and data in and the other for power and data out to other units.

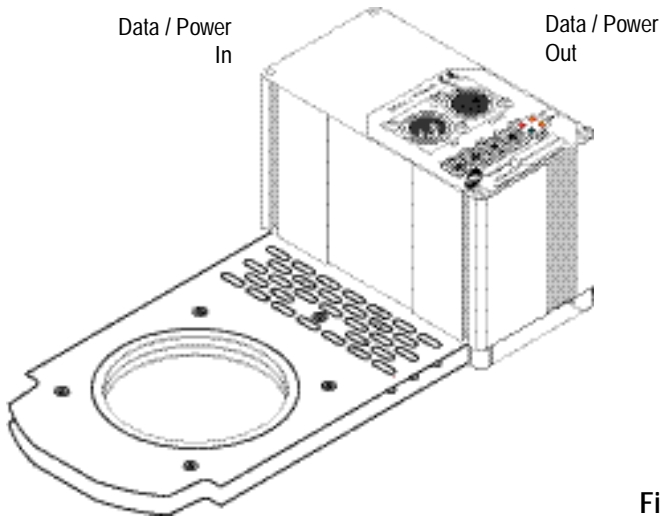


Fig. 1

Because each Indexing Rotator has its own individual DMX address setting, it is possible to daisychain Indexing Rotators by linking out of one unit and into another. It is also possible to place a mixture of Indexing Rotators and other devices on the same chain (fig. 2), as long as you do not exceed the total power of the power supplies.

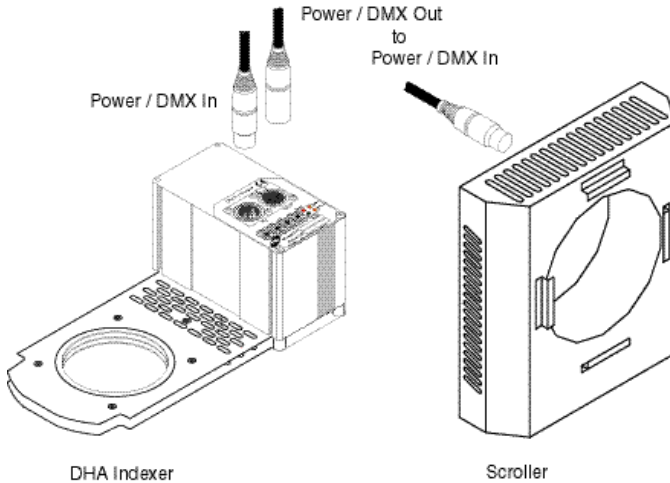


Fig. 2

The Indexing Rotators have an automatic safety device built in so that if a unit develops a fault it will automatically cut itself out of the chain to avoid interfering with other devices.

If an Indexing Rotator is the last unit in a chain it will automatically terminate the DMX so a terminating plug is not required.

## Calibration

For the indexing system to work correctly and accurately the Indexing Rotator needs to know the position that the gobos are in at any time. To do this the unit performs an automatic calibration when it is first powered up; this usually involves the Indexing Rotator rotating both gobos through 360° once. As soon as this has completed, normal operation will be resumed.

During operation the unit will automatically re-calibrate itself at regular intervals to insure accuracy, but this will not be noticeable to the operator and will not interfere with normal operation.

## Setting the DMX Address

Each Indexing Rotator has a set of 3 wheels, which are used to set the DMX address of that unit. The first wheel sets the 100's and also the stand-alone mode, the second sets the 10's and the third sets the 1's. Example: to set a DMX address of 346 the first wheel should be set to 3, the second to 4 and the third to 6 (fig. 3). (DMX addresses between 513 and 599 are not used.)

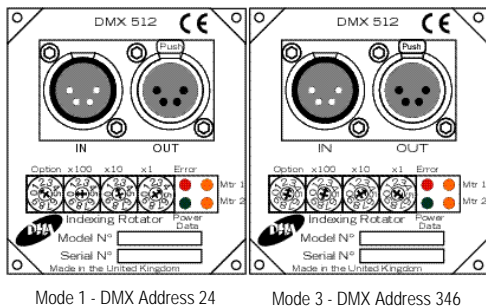


Fig 3

## Operating Modes

The Indexing Rotator and the Double Indexing Rotators have a number of modes of operation. Modes 1 – 3 are for DMX operation and are selected by setting the DMX mode switch to the appropriate position. Mode switch settings 4 – 9 and 0 are not used and setting the switch to these positions will cause the unit to operate in mode 1. The other modes are used for stand-alone operation when there is no DMX signal present, and are accessed by setting the 100's switch of the DMX address to any value above 5.

When a mode change is made the unit will immediately switch to that mode so the unit does not have to be restarted. If necessary the unit will re-calibrate automatically. In the following descriptions of the modes, tables are shown for both gobos in a double Indexing Rotator. If you are using a Single Indexing Rotator, then ignore all the details for gobo 2.

### *Mode 1 – Rotator Emulation*

- This mode emulates the operation of the standard range of Rosco Gobo Rotators when used with the DC/DMX controller but with the added functionality of indexing.
- The rotation speed of each gobo is controlled by two channels of DMX, channel 1 controlling the forward rotation and channel 2 controlling reverse rotation.
- Setting both channels to the same non-zero level will stop the gobo in an index position represented by the channel level – i.e. both channels at 1% will stop the gobo at 0° rotation; both channels at 50% will stop the gobo at 180° rotation.
- Motion will be stopped and indexing implemented whenever the two channels are within 1% of each other, this is to avoid problems caused by voltage fluctuations. All indexing will take place at approximately 5RPM.
- Channels 3 and 4 will control the second gobo in a similar fashion.

## Mode 2 – Standard DMX Operation

Mode 2 provides basic control of rotation speed/direction and index position similar to that used by many moving lights, using just one DMX address for each gobo.

Channel	Gobo	Level (decimal)	Level (percent)	Function
1	1	0	0	index 0°
		127	49%	index 360 °
		128	50%	stop
		129	51%	spin fast clockwise
		190	74%	spin slow clockwise
		191-193	75%	stop
		194	76%	spin slow counter clockwise
		254	99%	spin fast counter clockwise
		255	100%	stop
Channel	Gobo	Level (decimal)	Level (percent)	Function
2	2	0	0	index 0°
		126	49%	index 360 °
		127-129	50%	stop
		130	51%	spin fast clockwise
		190	74%	spin slow clockwise
		191-193	75%	stop
		194	76%	spin slow counter clockwise
		254	99%	spin fast counter clockwise
		255	100%	stop

All indexing will take place at approximately 5rpm.

## **MODE 3 – ENHANCED DMX OPERATION**

Mode 3 uses 3 channels of DMX for each gobo and allows for 16 bit indexing which is accurate to 0.1

This mode also allows for independent control of direction and speed of indexing.

Channel	Motor	Level (decimal)	Level (percent)	Function
1	1	0	0%	stop
		1		spin fast clockwise
		127		spin slow clockwise
		128	50%	stop
		129		spin slow counter clockwise
		254		spin fast counter clockwise
		255	100%	stop
2	1	0	0%	continuous rotation
		1 – 255		index position coarse
3	1	0 – 255		index position fine
4	2	0	0%	stop
		1		spin fast clockwise
		127		spin slow clockwise
		128	50%	stop
		129		spin slow counter clockwise
		254		spin fast counter clockwise
		255	100%	stop
5	2	0	0%	continuous rotation
		1 – 255		index position coarse
6	2	0 – 255		index position fine

Indexing will take place at the speed and direction set by channel 1 (or channel 4 for gobo 2) unless it is set to zero, in which case indexing will take place at approx. 5 rpm.

### **Programming Hints**

1. When programming indexing positions into cues always try to make sure that indexing occurs in the same direction. This will eliminate the backlash, which is inherent in the gears of the Indexing Rotator, and will allow for much more accurate indexing.
2. When creating a cue containing an index position, always give that cue a fade time of 0 seconds. This will give you a smooth motion to the index position. If the speed at which the indexing occurs is important then put the unit into mode 3 and use the first channel to set the speed of index.



3. Try to avoid sudden stops and starts of the gobos as this can create unwanted noise and affect the accuracy of the unit. Where possible fade, the speed of rotation up to the desired level and then back down again to stop.
4. To insure accuracy when indexing the gobos, they must be held tightly in the Indexing Rotator. This may mean putting in extra spacers to secure the gobos.

## Stand - Alone Operation

Stand-alone operation allows the unit to be used when there is no DMX signal available or where only simple continuous rotation is required.

Stand-alone operation is selected by setting the 100's wheel of the DMX address to position 6,7,8 or 9. When in stand-alone mode the DMX mode switch is ignored. See table below for details of each setting. In stand-alone mode the 10's wheel of the DMX address is used to set the speed of gobo 1 and the units wheel is used to set the speed of gobo 2 (in the double Indexing Rotator)

100's Wheel Setting	Function
0-5	DMX operation
6	both gobos rotate clockwise, 10's wheel sets speed of gobo 1, units wheel sets speed of gobo 2
7	both gobos rotate counter clockwise, 10's wheel sets speed of gobo 1, units wheel sets speed of gobo 2
8	gobo 1 rotates clockwise, gobo 2 counter clockwise, 10's wheel sets speed of gobo 1, units wheel sets speed of gobo 2
9	gobol 1 rotates counter clockwise, gobo 2 clockwise, 10's wheel sets speed of gobo 1, units wheel sets speed of gobo 2

The available speeds are as follows:

Wheel Setting	Single Double Indexing Rotator	Indexing Rotator
0	0 RPM	0 RPM
1	0.2 RPM	0.14 RPM
2	0.28 RPM	0.26 RPM
3	0.5 RPM	0.5 RPM
4	1 RPM	1 RPM
5	2 RPM	2 RPM
6	3 RPM	3 RPM
7	5 RPM	5 RPM
8	10 RPM	7 RPM
9	20 RPM	10 RPM

## **Power Supply Compatability**

The following Power Supply Units (PSU's) are compatible with Rosco Indexing Rotators. Please check with the PSU manufacturer for the amount of units you can use on one PSU.

*Wybron* - Forerunner PSU

*Rainbow* - Mini, Maxi, Micro PSU

*AC Lighting* - Chroma Q PSU

*Christie Lites* - Color Q PSU

## Cable Wiring Details

DMX and 24V DC power supply connection shall be made via a 4-pin XLR connector, with loop-through output. The pin connections are listed below:

Pin 1:	Power / Data Ground*
Pin 2:	Data –
Pin 3:	Data +
Pin 4:	+24V

DMX termination and line regeneration is provided in each unit, in order to avoid the need for end-of-line termination. A relay is provided to bypass the DMX buffer in the event of power failure.



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