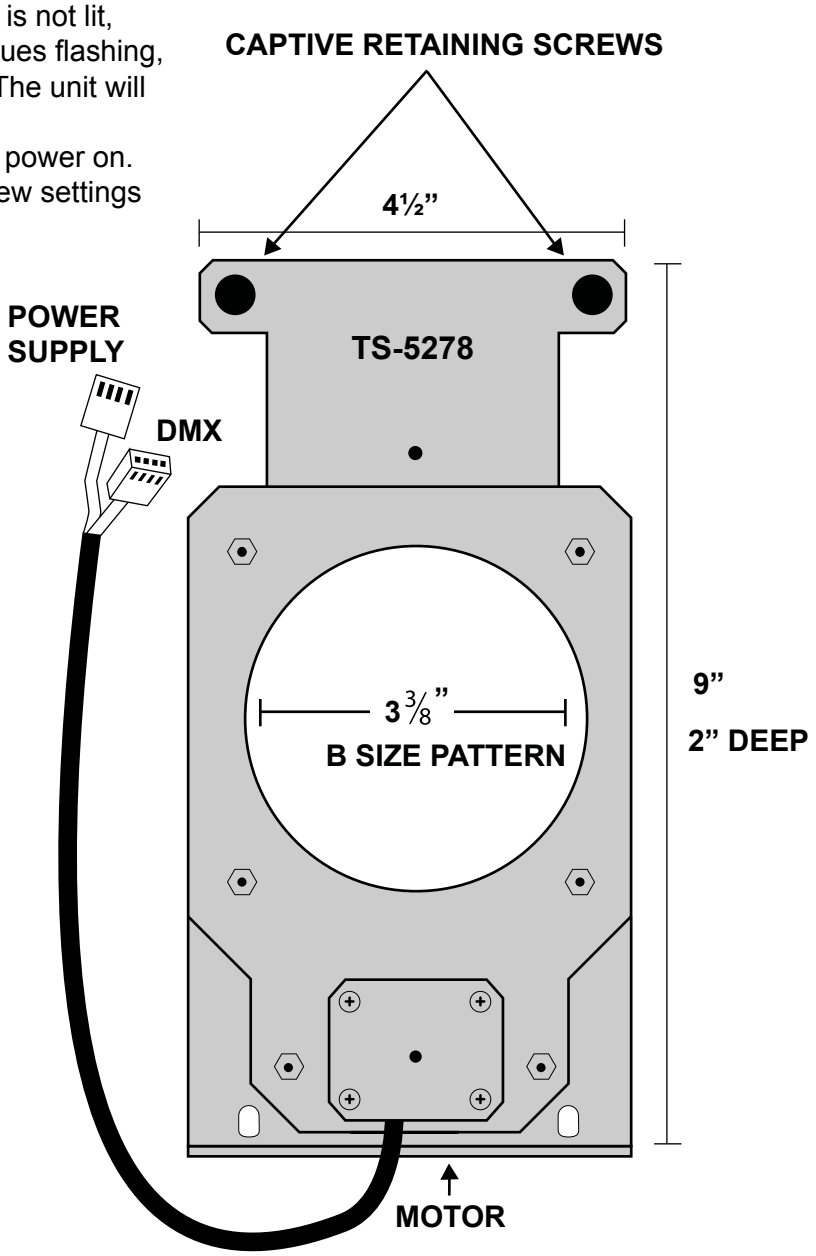
GAM PRODUCTS, INC.
4975 West Pico Blvd. TEL: [323] 935.4975
Los Angeles, CA 90019 FAX: [323] 935.2002
www.gamonline.com

GOES TwinSpin
THE DUAL PATTERN ROTATOR

GOES INDEXING TWINSPIN™ (1 MOTOR) OPERATING INSTRUCTIONS

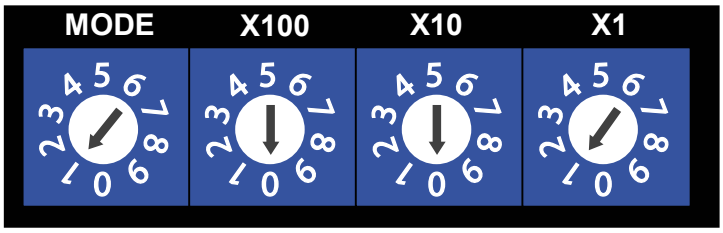
- The Indexable TwinSpin™ **(TS-5278)** is a twin rotator for two gobos driven from one motor and can be fitted with one or two gobos. The gobo on the flat side of the rotator is fully indexed and the second gobo follows all the actions of the first one in reverse.
- Using the four 10-position switches on the Dual Power Supply, you can select mode of operation and channel (see charts below).
- There are five programmable DMX controlled modes and four built-in pre-programmed effects which do not require a DMX signal.
- The GAM indexing rotator is controlled by the DMX 512 protocol and is powered by 24 Volts DC from the required Dual Power Supply (see separate Dual Power Supply instructions and installation sheet).
- Once powered, the Dual Power Supply will show a red power LED to indicate the power is on. The unit also has a green LED which indicates the status of operation.
- At power on, the unit will initialize to find the home position of the gobos. This takes about two seconds during which time the green data LED will flash. Once the home sensing is complete, the flashing will stop. If the green data LED is not lit, then there is no DMX signal present. If the LED continues flashing, it means there has been a fault detecting the sensor. The unit will operate but without the correct index positioning.
- Mode and channel switches can be operated with the power on. A small delay will take place to correctly accept any new settings on the switches.
- Check that the motor and detector connectors are plugged into the Dual Power Supply (see separate installation instructions).



INSTALLING PATTERNS

Lay TwinSpin™ on table to install the patterns in the gobo holders using the provided retaining rings. Older warped patterns should be installed with the bent parts bowed away from each other so they won't catch when rotating. If the retaining ring is not properly secured and slips, the TwinSpin™ may jam and stop turning. Turn off motor and light as soon as possible and free the jam. Be sure to optically align lamp in fixture for a smooth flat field (see manufacturer's instructions for lamp alignment). See GOES TwinSpin™ installation instructions for more details.

MODE AND CHANNEL SWITCHES LOCATED ON DUAL POWER SUPPLY



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MODE 1 OPERATION -- MODE SWITCH = 1 -- 1 CHANNEL OPERATION

- Speed and position control on a single fader
- Set DMX address - This number will correspond to channel control for the rotator
- The indexing gobo is controllable according to the following table:

FADER %	HEXADECIMAL	FUNCTION
100%	255 = FF	STOP
76 to 99%	193 to 254	0.1 to 25 Rpm counterclockwise
75%	191 to 192	STOP
51 to 74%	129 to 190	25 to 0.1 Rpm clockwise spin
50%	128	STOP
0 to 49%	0 to127	Index 0 to 359 degree at 5 Rpm shortest route

All indexing takes place at 5 Rpm.

MODE 2 OPERATION -- MODE SWITCH = 2 -- 2 CHANNEL OPERATION

- Separate speed and position control
- Set DMX address
- The indexing gobo is controllable according to the following table:

FADER % **Speed - channel 1**	**HEXADECIMAL**	**FUNCTION** **1. Speed and direction of continuous spin**
100%	255 = FF	STOP
50 to 99%	129 to 254	25 to 0.1 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	0 to 127	0.1 to 25 Rpm clockwise spin
0%	0	STOP - at position set by indexing fader
FADER % **Speed - channel 2**	**HEXADECIMAL**	**FUNCTION** **Index / Position of gobo**
1 to 100%	0 to 255	Index position (8 bit) 0 - 359 degrees
0%	0	Continuous rotation as set by speed channel

- If the indexing channel is set to zero, then the gobo will continuously rotate according to the setting of the speed channel.
- In Index Mode (channel 2 is set above 1%), the gobo will take the shortest route to its position.
- The speed of indexing is set by channel 2 and for index mode, the speed-control-channel stop positions are not used.
- 0% is full speed indexing
- 50% is 0.1 rpm indexing
- 100% (full) is full indexing

MODE 3 OPERATION -- MODE SWITCH = 3 -- THREE CHANNEL OPERATION

- Separate speed control and 16 bit position control
- Set DMX address
- The indexing gobo is controllable according to the following table:

FIRST CHANNEL %	**HEXADECIMAL**	**FUNCTION** **1. Speed of indexing** **2. Speed and direction of continuous spin**
100%	255 = FF	STOP
50 to 99%	129 to 254	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
0%	0	STOP
SECOND CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position coarse**
1 to 100%	1 to 255	Index position coarse (8bit) 0 - 359 degrees
0%	0	Continuous rotation controlled from first channel
THIRD CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position fine**
0 to 100%	0 to 255	Index position fine (16 bit)

Three channel selection operates the gobo indexing in 16 bit mode for smooth low speed tracking operation. Ideal when using desk fade timing for live movement. Indexing takes the shortest route to the set position and uses the speed set bythe first channel of gobo control. If the speed /direction channel is set to zero then indexing will take place at 5 Rpm.

MODE 4 OPERATION -- MODE SWITCH = 4 -- 4 CHANNEL OPERATION

- Operates in 16 bit indexing mode and uses an extra channel to activate the index position while gobo is rotating. Rotate and stop control is a one channel operation.
- Set DMX address
- Indexing gobo is controllable according to the following table:

FIRST CHANNEL %	**HEXADECIMAL**	**FUNCTION** **1. Speed and direction of indexing** **2. Speed and direction of continuous spin**
51 to 100%	129 to 255	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
0 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
SECOND CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position coarse**
0 to 100%	0 to 255	Index position coarse (8 bit) 0 - 359 degrees
THIRD CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position fine**
0 to 100%	0 to 255	Index position fine (16 bit)
FOURTH CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Stop at index position or continuous rotation control**
60% to 100%	153 to 255	Indexing by set direction
40% to 59%	102 to 152	Continuous rotation
0 to 39%	0 to 101	Indexing by shortest direction

- When indexing the speed and or direction is selected by channel 1
- In index mode the speed-control-channel stop positions are not used
- 0% is full speed indexing
- 50% is 0.1 rpm indexing
- 100% (full) is full indexing

MODE 9 OPERATION -- MODE SWITCH = 9 -- 3 CHANNEL OPERATION

- This mode is equal to DHA/Rosco Mode 3
- Operates indexing gobo in 16 bit mode for smooth tracking operation when using desk timing for live movement
- Set DMX address
- Indexing gobo is controllable according to the following table:

FIRST CHANNEL %	**HEXADECIMAL**	**FUNCTION** **1. Speed and direction of indexing** **2. Speed and direction of continuous spin**
50%	128	STOP
50 to 99%	129 to 254	0.1 to 25 Rpm counterclockwise spin
50%	128	STOP
1 to 49%	1 to 127	25 Rpm to 0.1 clockwise spin
0%	0	STOP
SECOND CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position coarse**
1 to 100%	1 to 255	Index position coarse (8bit) 0 - 359 degrees
0%	0	Continuous rotation controlled from first channel
THIRD CHANNEL %	**HEXADECIMAL**	**FUNCTION** **Index position fine**
0 to100%	0 to 255	Index position fine (16 bit)

Index mode is running whenever the second control channel is above zero. Indexing occurs at the speed and direction set by the first channel of each gobo control. If the speed / direction channel is set to zero then indexing will take place at 5 Rpm and will take the shortest route to the next set position.

STANDALONE MODES

- No DMX required. Self generated movements are set with address switches
- Four modes of operation

SET MODE SWITCH = 0

Operation is set by the following table parameters:

Index gobo	X100	X10	X1
clockwise	0	Set 0-99 for speed control	
counterclockwise	1	Set 0-99 for speed control	

SET MODE SWITCH = 5

Function: pendulum sway
Index gobo rotatesback and forth is a smooth motion similar to a swinging pendulum
X100 switch 0 - 9 sets the gravity of the pendulum
X10 switch 0 - 9 sets the maximum speed of the pendulum

SET MODE SWITCH = 6

Function: Random roll forward and backwards
X100 switch 0 - 9 sets the time taken per cycle
X10 switch 0 - 9 sets the dwell time (while stopped) on the change of direction
X1 switch 0 - 9 sets the speed of the gobo rotation

SET MODE SWITCH = 7

Function: Timed roll forward and backwards
X100 switch 0 - 9 sets the time taken per cycle
X10 switch 0 - 9 sets the dwell time (while stopped) on the change of direction
X1 switch 0 - 9 sets the speed of the gobo rotation