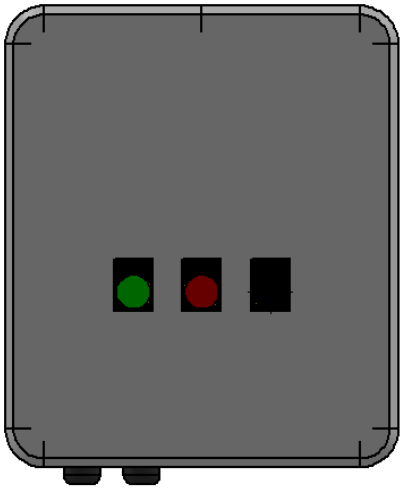
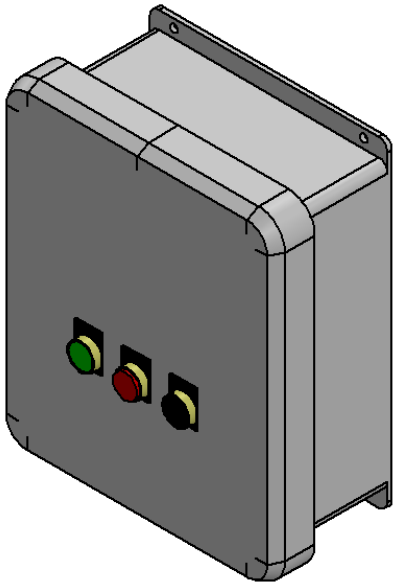
READ THIS MANUAL CAREFULLY. OBSERVE WARNINGS AND PRACTICE CAUTION WHEN INSTALLING, OPERATING, OR MAINTAINING YOUR GOFF'S PRODUCT.

RELAY CONTROL SYSTEM

ELECTRICAL CONNECTIONS, MOTOR ADJUSTMENTS, AND ACCESSORY WIRING

MODEL 2000





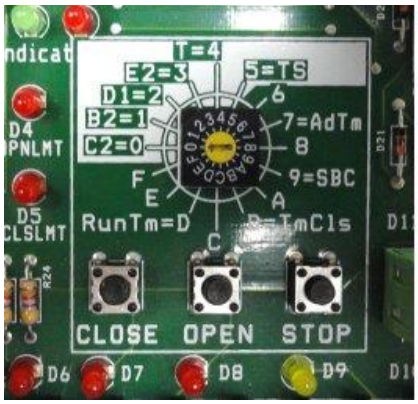
ELECTRICAL CONNECTIONS:

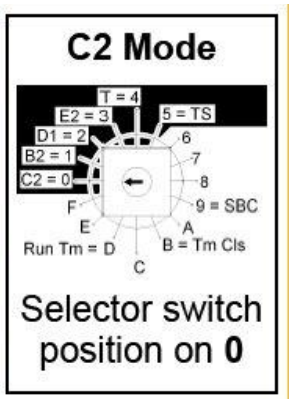
There are two independent and unique aspects of the wiring configuration for your Motorized Vertical Curtain Door. These are the 115VAC 60Hz power wiring and the low-voltage control wiring. While the low-voltage side of the control system can be configured and properly wired by anyone who has a rudimentary understanding of electrical circuitry, the power wiring should be performed by an electrical professional and done in such a manner to conform to all local and national wiring codes and regulations.

115VAC POWER WIRING:

The external operator requires 115VAC, 60Hz with a current draw of 5A (1/2 HP PSC inductive motor). Make sure that the branch circuit and conductor size can support this load requirement. Low voltage can cause erratic behavior and operator overheating.

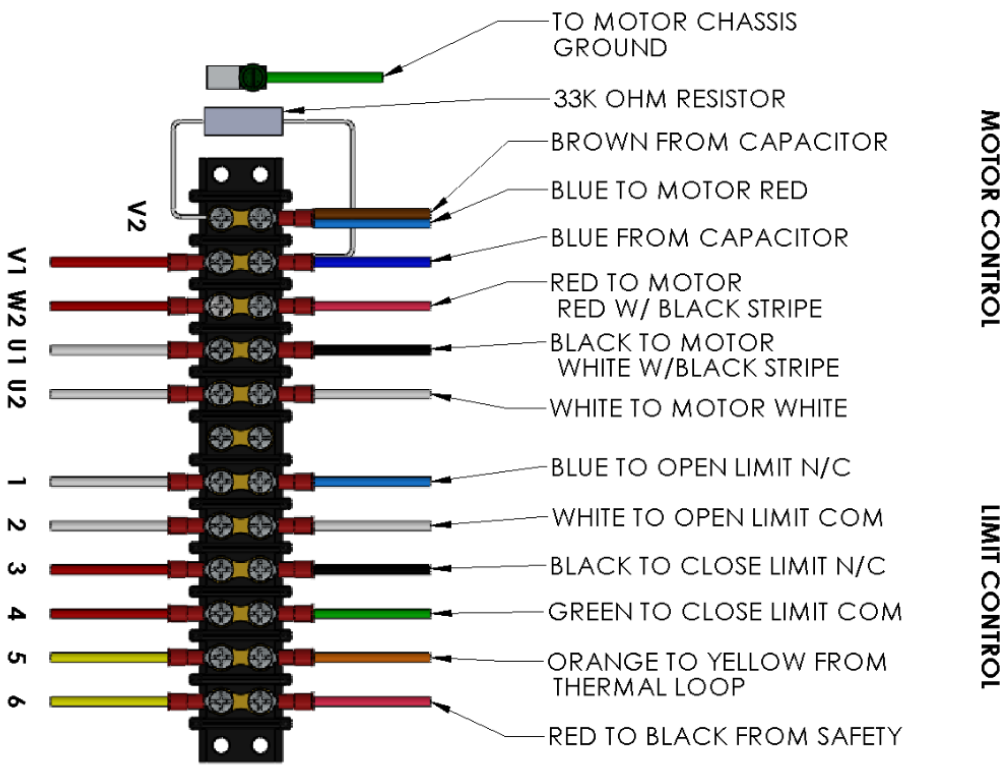
Locate the rotary selector switch on the printed circuit board and ensure that it is set to "C2" (position 0) as shown in the following photo:





Power and ground are connected to the operator as shown in the following photo (Photo 19):

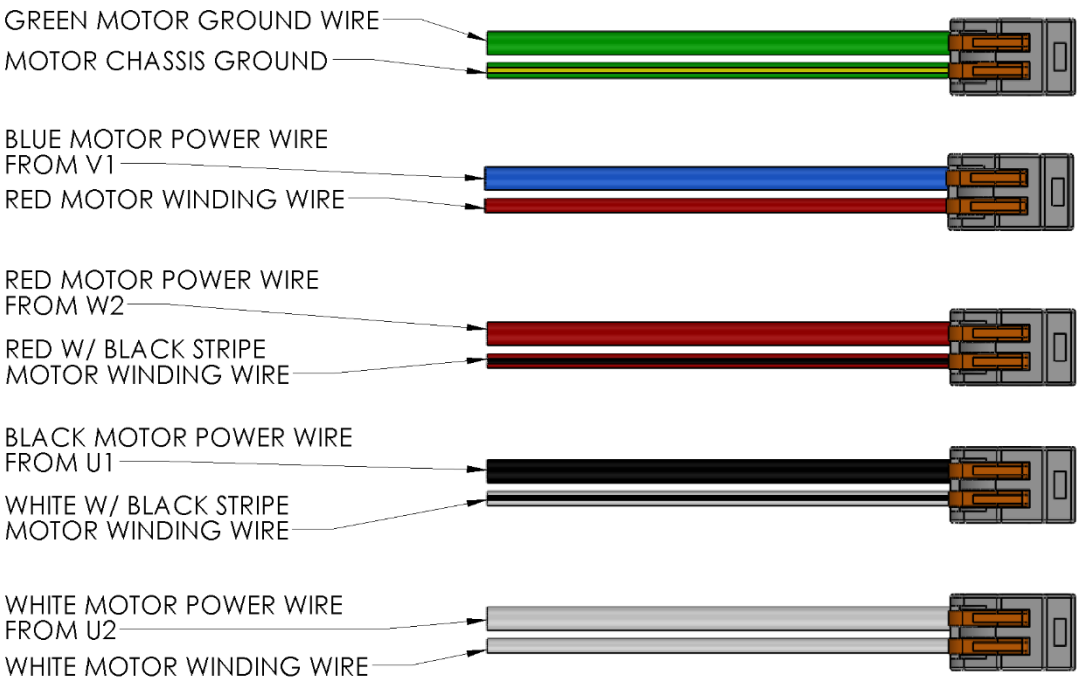
CONTROL PANEL / MOTOR CONNECTIONS:



The following schematic shows your Motor and Limit Control wire connection points within the control panel:

These two cables then run up to your motor and connect to your Motor Winding wires, and Limit Switches respectively. See diagram on next page.

RCS MOTOR POWER WIRING

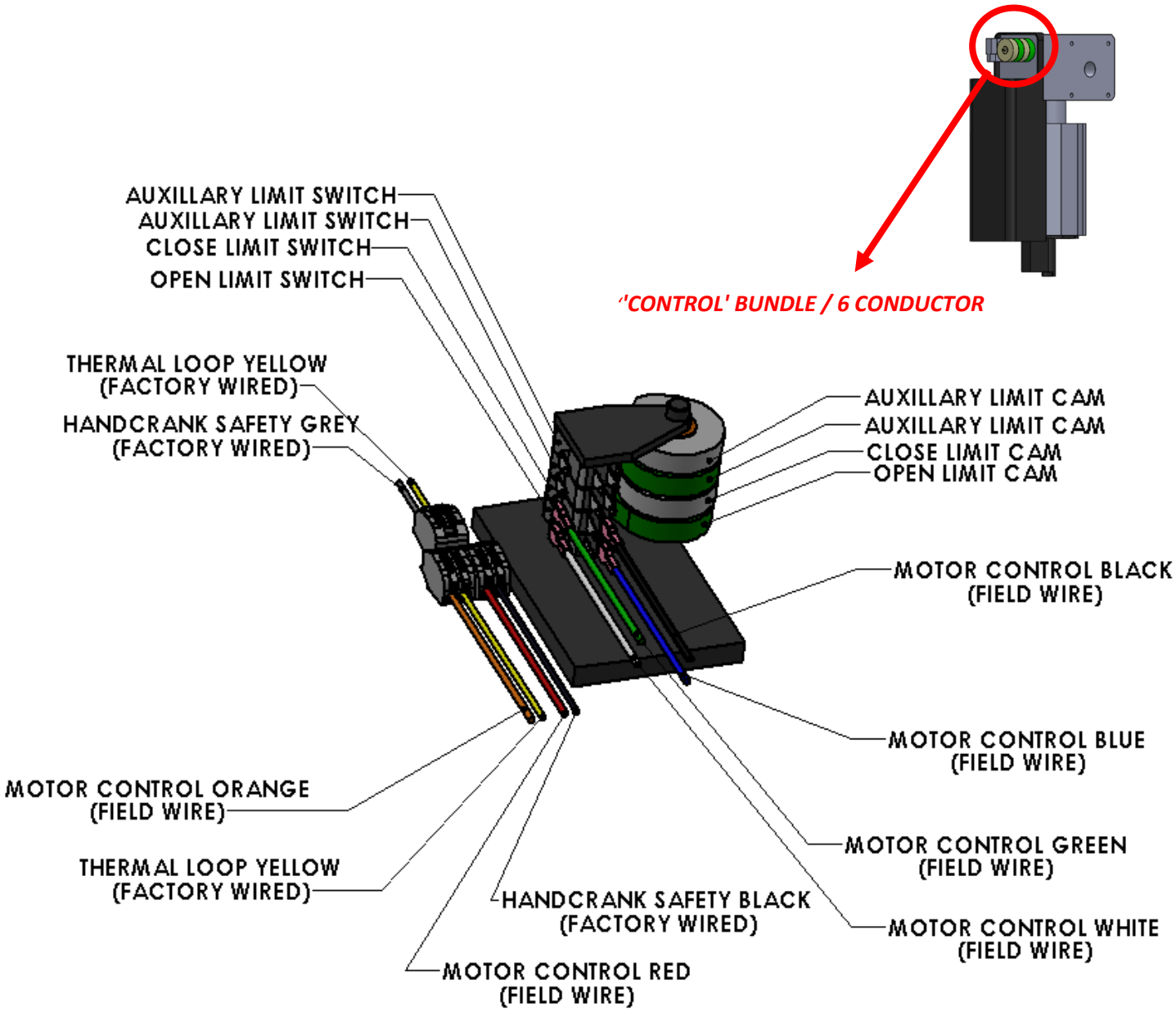


The operator supports NEMA-1 and NEMA-4 3-button control stations with N/O "Open" and "Close" buttons. The "Stop" buttons must be N/C. The low-voltage control connections for the primary (first) station should be made with the 4-conductor "Thermo Wire" that was included with your kit. Although the color codes are arbitrary, Goff's has selected the following standard:

<u>LIMIT & INTERNAL SAFETY SWITCH</u>:

- Locate the 6 conductor wire marked 'control' and remove the insulative material, preparing each conductor to make the following connections; (SEE NEXT PAGE FOR DIAGRAM)
    - Blue from 6 conductor to N/C side (right) of open limit switch
    - Black from 6 conductor to N/C side (right) of close limit switch
    - White from 6 conductor to COM side (left) of open limit switch
    - Green from 6 conductor to COM side (left) of close limit switch

    Middle column on limits not used
    - Orange from 6 conductor to yellow thermal protection wire
    - Red from 6 conductor to black from hand crank safety switch
    - Gray from hand crank safety switch to its own connector

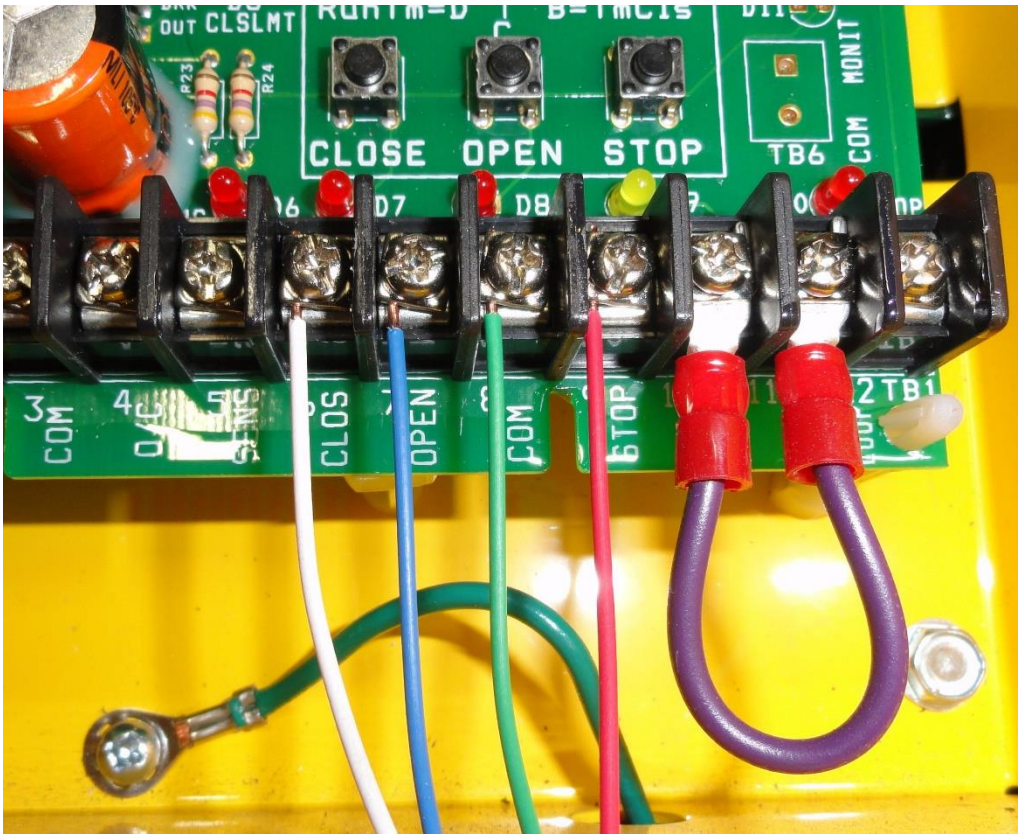


ACCESSORY CONNECTIONS:

The operator supports NEMA-1 and NEMA-4 3-button control stations with N/O “Open” and “Close” buttons. The “Stop” buttons must be N/C. The low-voltage control connections for the primary (first) station should be made with the 4-conductor “Thermo Wire” that was included with your kit. Although the color codes are arbitrary, Goff’s has selected the following standard:

The operator supports NEMA-1 and NEMA-4 3-button control stations with N/O “Open” and “Close” buttons. The “Stop” buttons must be N/C. The low-voltage control connections for the primary (first) station should be made with the 4-conductor “Thermo Wire” that was included with your kit. Although the color codes are arbitrary, Goff’s has selected the following standard:

Green	-	(8) COM
Red	-	(9) STOP
Blue	-	(7) OPEN (UP)
White	-	(6) CLOS (DOWN)



Single-station control installations are performed by simply running the control wiring between the control station and the operator, and attaching the appropriate wires to the screw terminals as indicated in the following photos:

Additional NEMA-1 and NEMA-4 control stations (along with Pull Cord and RF Interfaces) can be added to the Goff's operator. Please see the "Addendum" at the end of these assembly instructions for further wiring information.

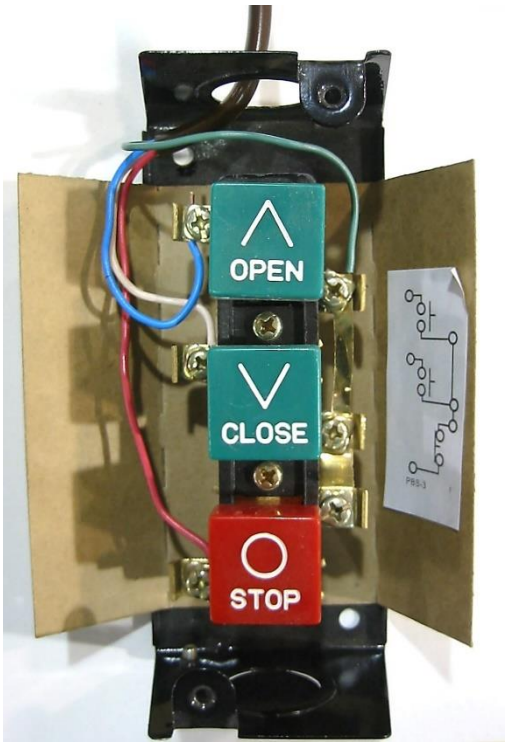


PHOTO-EYE:

The OEM cable for the photo-eye will not be long enough to reach the external operator in many installations. We have included a junction box, cover, glands, wire nuts, and some additional 4-conductor wire so that an extension can easily be fabricated.

The wiring convention for the photo-eye is as follows:

Brown	-	(1) 24Vac (Power)
Blue	-	(2) 24Vac (Power)
Black	-	(5) SENS
Orange	-	(3) COM
White	-	Not Used

Remove the protective rubber cap from the photo-eye head unit and open the clear plastic door. Set the slide switch to "Dark Operation" (DK) by sliding it to the "left".

Enable power to the operator and observe the LEDs on the photo-eye head unit. The RED and YELLOW LEDs should be illuminated. When the crossbeam is broken (blocked) the RED LED should go out and the GREEN LED should illuminate. Adjust the mechanical alignment of the head unit and the sensitivity of the circuit to ensure reliable and robust operation. Close the clear plastic door and re-install the protective rubber cap.

SETUP AND OPERATION:

After the power wiring has been installed (and power has been enabled to the unit) it will be necessary to set the curtain door end-stop positions. Care should be exercised during these operations to avoid damage to the assembly and ensure a long service life of the unit. The door will open with only a momentary pressing of the "Open" button, but it will be necessary to press and hold the "Close" button in order to get the door to move down. This functionality will be changed when you do the final programming.

LIMIT & INTERNAL SAFETY SWITCH:

- Locate the 6 conductor wire marked 'control' and remove the insulative material, preparing each conductor to make the following connections; (SEE NEXT PAGE FOR DIAGRAM)
    - Blue from 6 conductor to N/C side (right) of open limit switch
    - Black from 6 conductor to N/C side (right) of close limit switch
    - White from 6 conductor to COM side (left) of open limit switch
    - Green from 6 conductor to COM side (left) of close limit switch
    - Orange from 6 conductor to yellow thermal protection wire
    - Red from 6 conductor to black from hand crank safety switch
    - Gray from hand crank safety switch to its own connector

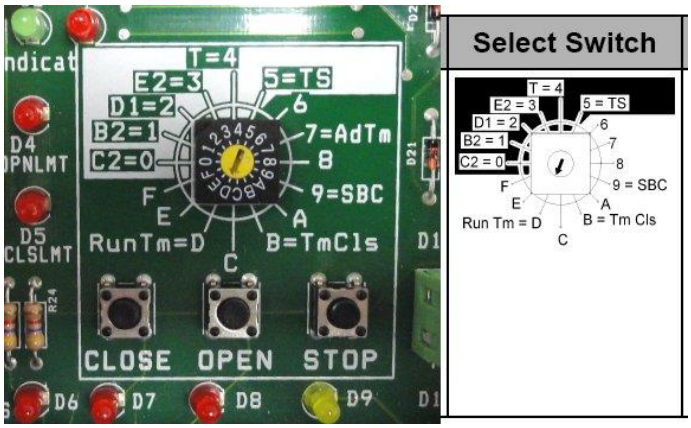
Middle column on limits not used

FINAL PROGRAMMING:

Fully close the door.

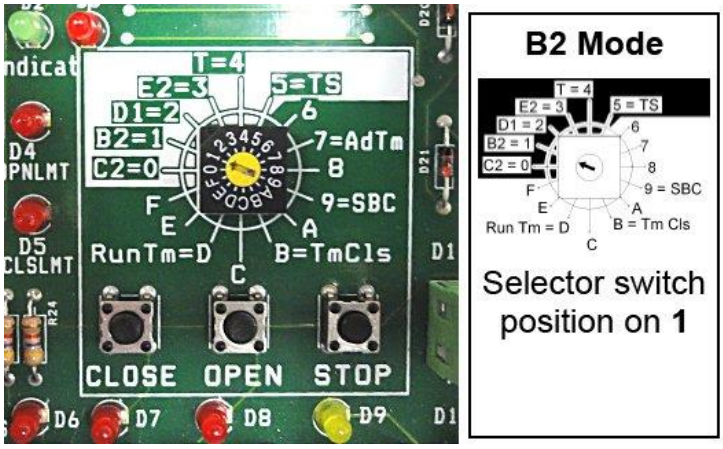
All programming changes on the operator must be made with the door in the fully closed position! Verify that the door is fully closed and that the close LED is illuminated.

The Maximum Run Timer (MRT) helps to protect the door and operator from damage should there be a bind or other problem. It does this by limiting the amount of time that the operator will run continuously. To set the time, position the rotary switch on the printed circuit board to the "D" (Run Tm) position as shown in the following photo:



Press the "Open" button and allow the door to reach the fully opened position. The MRT is now set. Immediately proceed to the next step.

Convert the operator from "Constant Pressure to Close" (C2) configuration to "Momentary Pressure to Close" (B2) by setting the rotary switch on the printed circuit board to the "1" position as shown in the following photo:



The assembly, installation, and set-up of your Goff's Motorized Curtain Door is now complete, and it is ready for typical operation. Re-secure the corner screws on the "Box Valence" of the door and install the cover on the operator. It is a virtually maintenance free unit and should give you years of reliable service.

Operational Note: Larger door are equipped with an internal torsion spring counterbalance system. These doors can be identified by a "hitch pin" and tag installed on the non-operator end of the roll-tube center shaft. This pin is to remain installed during the normal operation of the door. It should only be removed for maintenance/service purposes, and ONLY when the door is in the fully open position. Removing the pin when the door is closed or partially closed may cause damage to the system and personal injury.

We want to thank you again for your business and the opportunity to partner with your firm on this project. Please don't hesitate to contact us if you have any questions regarding these instructions or encounter any problems with the installation or performance of your door.

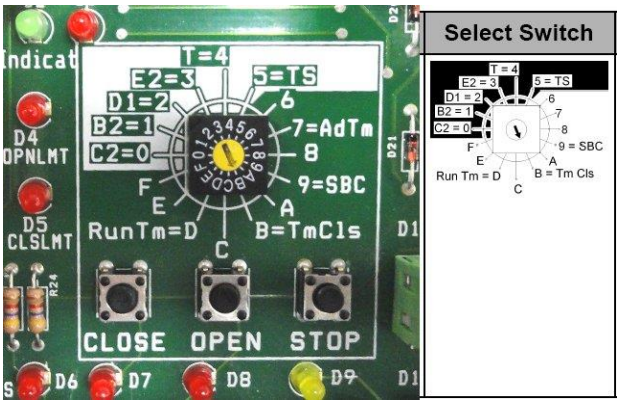
Addendum

USING THE BUILT-IN AUTO-CLOSE TIMER (TTC):

The Auto-Close Timer (Timer to Close) will automatically close the door from the fully open position (only) after a preset amount of time has expired. To program the delay (dwell) time (the factory default is 5 seconds), perform the following operations:

Fully close the door and verify that the Close LED is illuminated.

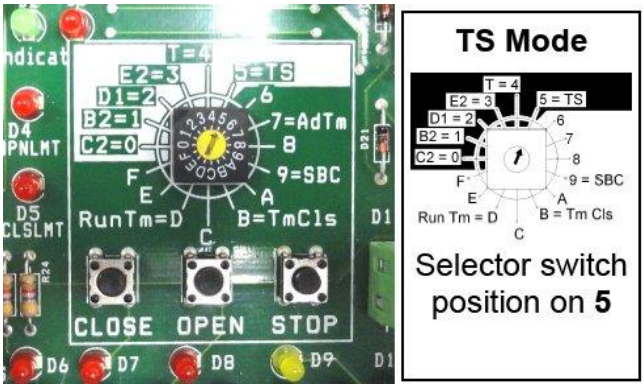
Set the rotary switch on the printed circuit board to the “B” (Tm Cls) position as shown in the following photo:



Press the “Stop” button to reset the delay time to 0 (zero) seconds.

Every press of the “Open” button will add 15 (fifteen) seconds to the delay and every press of the “Close” button will add 1 (one) second to the total time.

When the time delay has been set, enable the TTC mode by setting the rotary switch on the printed circuit board to the “5” (TS) position as shown in the following photo (Photo 29):



The door will now operate in TTC (Auto-Close Timer) mode.

To disable the TTC mode (without altering the programmed delay time), fully close the door and set the rotary switch on the printed circuit board to the "1" (B2) position. The TTC mode can be re-enabled by setting the rotary switch back to the "5" (TS) position when the door is fully closed.

To suspend the TTC **FOR ONE CYCLE ONLY**, press the "Stop" button 3 times and then the "Close" button 3 times while the door is in the fully closed position.

ADDING WIRED CONTROL STATIONS:

Additional hard-wired control stations can be added to your external operator system. There is no limit to the number of stations that can be attached to the unit. The first (primary) control station is wired to the operator with 4-conductor wire while all subsequent stations require 5-conductor connections.

The "Open" and "Close" buttons on your control stations are N/O (Normally Open) and must be wired in PARALLEL. The "Stop" buttons are N/C (Normally Closed) and must be wired in SERIES (daisy chain).

NEMA-4:

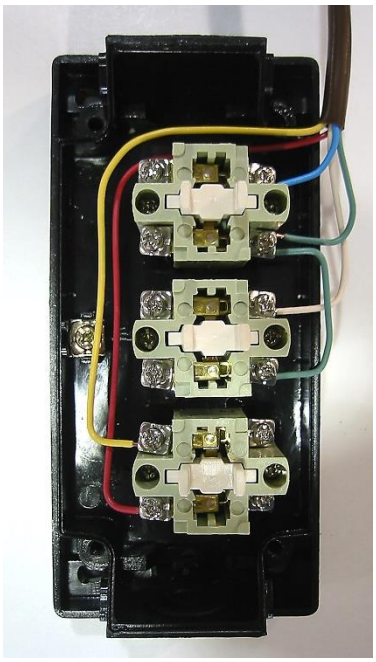
Although the color codes are arbitrary, Goff's has selected the following standard:

Green	-	Common
Red	-	Stop
Yellow	-	Stop Return
Blue	-	Open (UP)
White	-	Close (DOWN)

Remove the cover of the NEMA-4 station and note the location of the N/O and N/C terminals for each button. The N/O terminals are located closer to the base and are on the “right” side of the station. The N/C terminals are raised and are on the “left” side.

Use a short piece of green wire from the 5-conductor “Thermo Wire” and jumper between one of the N/O terminals on the Open button and one of the N/O terminals on the Close button. Also connect the free end of the green wire in the 5-conductor bundle to one of these terminals.

Connect the rest of the wires as shown in the following photo. Note that the yellow and red wires go to the N/C terminals on the Stop button.



Route the cable through one of the station knockouts and carefully reinstall the cover. Make sure that the cover is installed properly and that the buttons work freely.

Locking NEMA-4:

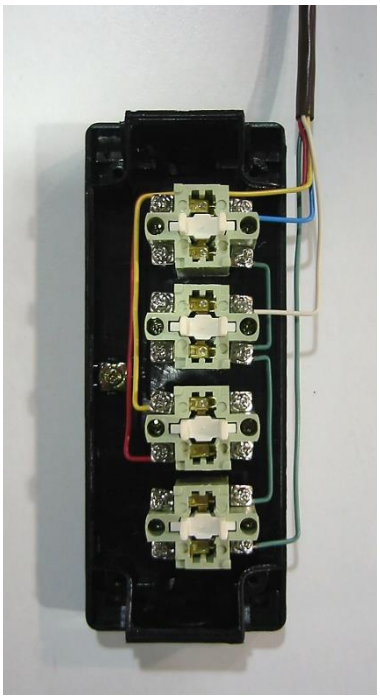
Although the color codes are arbitrary, Goff's has selected the following standard:

Green	-	Common
Red-	Stop	
Yellow	-	Stop Return
Blue	-	Open (UP)
White	-	Close (DOWN)

Remove the cover of the Locking NEMA-4 station and note the location of the N/O and N/C terminals for each button. The N/O terminals are located closer to the base and are on the "right" side of the station. The N/C terminals are raised and are on the "left" side.

Use a short piece of green wire from the 5-conductor "Thermo Wire" and jumper between one of the N/O terminals on the Open button and one of the N/O terminals on the Close button. Make another jumper between the Close button terminal and the top N/O terminal on the Lock. Connect the free end of the green wire in the 5-conductor bundle to the bottom N/O terminal on the Lock.

Connect the rest of the wires as shown in the following photo. Note that the yellow and red wires go to the N/C terminals on the Stop button.



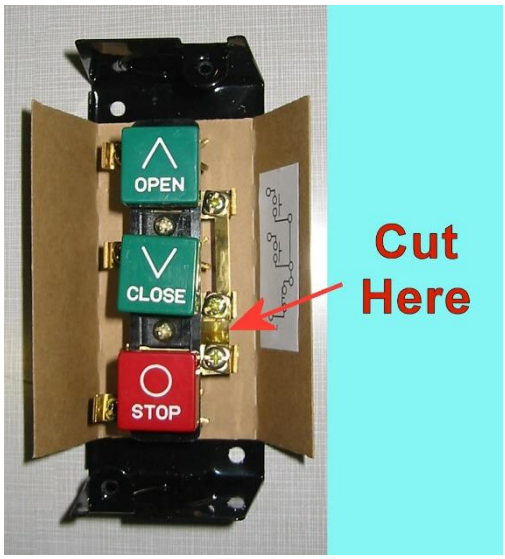
Route the cable through one of the station knockouts and carefully reinstall the cover. Make sure that the cover is installed properly and that the buttons work freely.

NEMA-1:

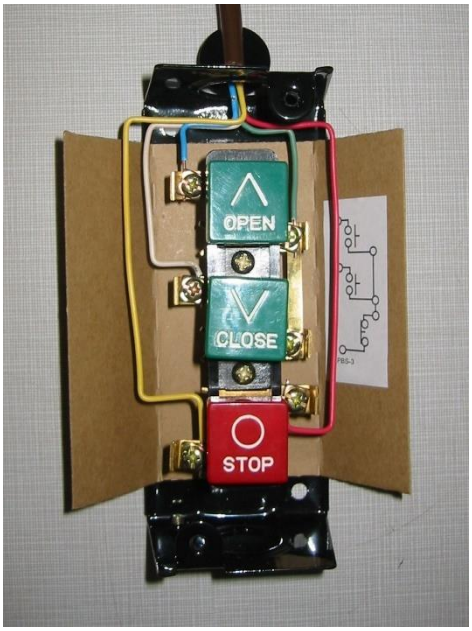
Although the color codes are arbitrary, Goff's has selected the following standard:

Green	-	Common
Red	-	Stop
Yellow	-	Stop Return
Blue	-	Open (UP)
White	-	Close (DOWN)

Remove the cover of the NEMA-1 station and cut the bonding strip between the Close and Stop button terminals. See the following photo:



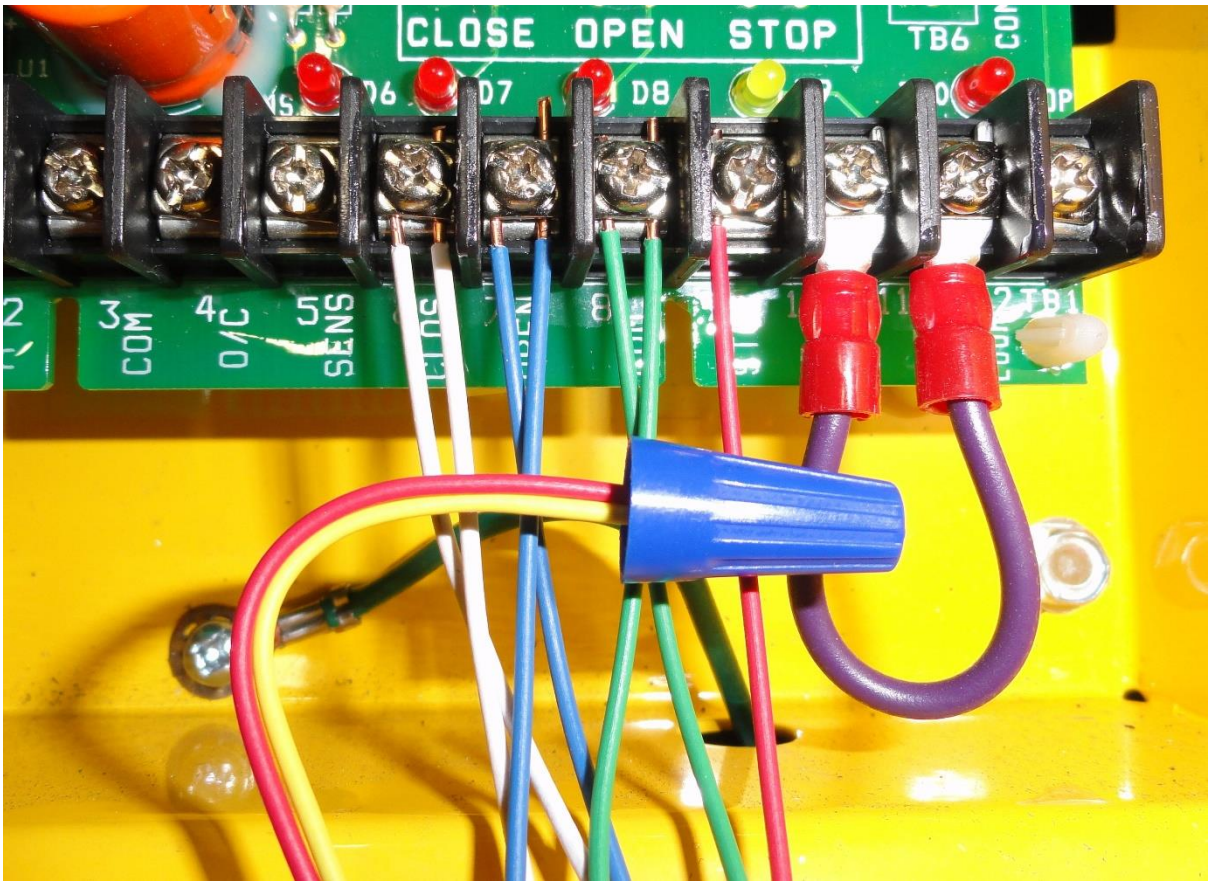
Connect the wires as shown in the following photo. Note that the yellow and red wires go to the N/C terminals on the Stop button



Route the cable through one of the station knockouts and carefully reinstall the cover. Make sure that the cover is installed properly and that the buttons work freely.

The other end of the 5-conductor "Thermo-Wire" is attached to the control terminals at the external operator. The blue (Open) wire connects to the same terminal as the blue wire from the primary control station (Terminal #7). The white (Close) wire will connect to Terminal #6, and the green wire (Common) connects to Terminal #8.

In order to connect the Stop buttons in series, disconnect the red wire from the primary control station from Terminal #9. Use the included blue wire nut to fasten it to the yellow wire of the station that you are adding (5-conductor bundle). Connect the red wire for the new station to Terminal #9. Your connections should resemble the following photo.



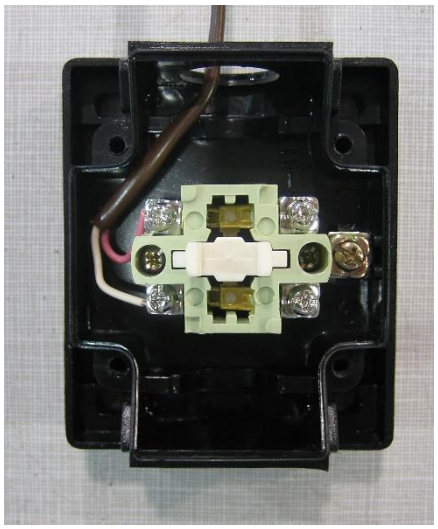
The wiring for the additional control station is now complete. You can continue to add control stations by following this same procedure. Connect the blue, white, and green wires to the corresponding terminals in the operator. Disconnect the red wire from the previous station from the #9 Terminal, connect it to the yellow wire for the new station (wire nut), and connect the red wire for the new station to Terminal #9.

ADDING PULL CORD OR SINGLE BUTTON CONTROL STATIONS:

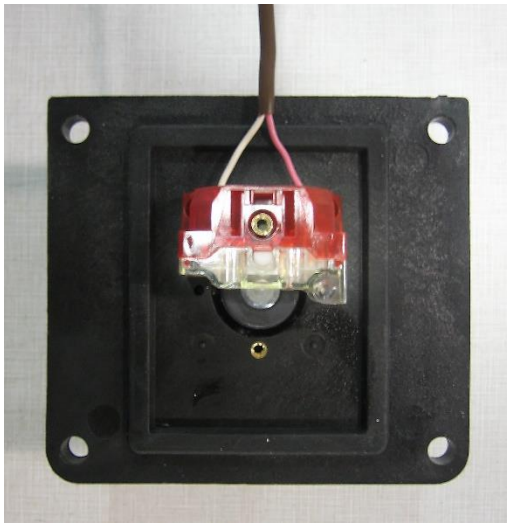
The External Operator supports N/O (Normally Open) Pullcord Switches, N/O Single Button Control Stations, and any other N/O dry contact. All N/O switches should be wired in PARALLEL and the wiring junctions can be made either at the switches (daisy-chain) or at the External Operator (Homerun). Switches should be connected using two-conductor wiring (supplied) and terminated at the External Operator at the #3 (COM) and #4 (O/C) terminals. Color codes are not important.

Switch Wiring:

Control wiring should be attached to the NEMA-4 Single Button Control Station at the lower two N/O terminals (#'s 13 & 14) as shown in the following photo:



Control wiring should be attached to the Pullcord Switch Stations at the two N/O terminals as shown in the following photo:



Banner Photo-Eye Wiring:

This is a through-beam safety device. The receiver will have 5 wires however, this system only utilizes 4.

- Transmitter
  - Brown – 24VDC
  - Blue – 0VDC
- Receiver
  - Brown – 24VDC
  - Blue – 0VDC
  - Yellow - Common
  - White – SENS (NC signal wire)
  - Black – *NOT USED*

WARNING

ALL INSTALLATION INSTRUCTIONS MUST BE FOLLOWED, AND REQUIREMENTS MET. FAILURE TO DO SO WILL ALTER THE PERFORMANCE AND/OR CONSISTENCY OF YOUR DOOR'S OPERATION