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## **Safety Reverse Converter** **Training & Troubleshooting Guide** **Technical Support: 800-736-6466**

### **I. Inspection prior to quotation/installation**

- A. Do all 3 three button controls work properly?
- B. What accessories are on machine? Do they all work? Ex. edge, photo cells, radio controls, timer to close, etc.
- C. Is it a 110V or 24VAC control circuit? Does it have 24V transformer in the motor assembly?
- D. Is a wiring diagram available? Can it be removed and copied, if necessary?

### **II. Determine**

- A. Type and model of commercial operator. This is helpful, but not necessary.
- B. Type and model of obstruction sensor to be used. Photo beam, door edge, loop, etc.
- C. Floor cut-out options (see below for explanation). Are there unused common and n/c terminals on the close limit switch? Can you add another close limit switch? Or will installation require a magnetic switch on top corner of door?
- D. Where to mount the SRC and any other control boxes for the sensor(s).
- E. How many wires to run and where to run.
- F. If conduit is necessary for local electrical code.
- G. If voltage to 3 button station is 110V or 24VAC.

### **III. Identify wire connection points for SRC**

- A. Power–Blue to one leg and Orange to other leg of 24VAC (load side) transformer.
- B. Close limit switch–Red and White in series with contactor side of switch.
- C. Open–Yellow and Green to terminals used for the open button of the 3 button station (common & open).
- D. Obstruction Sensor–Brown and Black to common and n/o outputs of obstruction sensor.

### **IV. Suggested ideas**

- A. Wiring–18-20 gauge stranded.
- B. Mount SRC box within 2 feet of operator so you can use existing SRC wiring.

### **V. Theory of Operation**

- A. Sensor detects obstruction; for example, when a photo beam is broken.
- B. Sensor sends signal to SRC through Black and Brown wires.
- C. Relay in SRC activates Red and White wire to stop door through the closed limit switch connection.
- D. 1 1/2 seconds later, second relay activates Yellow and Green wire in SRC to open door.
- E. Door will not close until obstruction is removed.

## VI. Definitions

- A. N/O–Normally Open–the state of a switch when it is in its resting (non-activated) state. In the N/O position, electrical current does not run through it. When the switch is activated it then closes (completes) the circuit.
- B. N/C–Normally Closed–the state of a switch when it is in its resting (non-activated) state. In the N/C position, electrical current runs through it. When the switch is activated it then opens (breaks) the circuit.
- C. Mag Switch–Magnetic Switch–a two part switch composed of
  1. one part which has no wires and attaches to the top corner of door, on the same side that the wires are running from the reversing sensor.
  2. second part which has wires and is mounted within 2-3 inches from the first part where activation is to occur. This part attaches to door frame.For the SRC, the magnetic switch needs to be normally closed. The electrical current runs through the switch while the door is moving (magnets are apart). When the door fully closes the magnets come into proximity which activates the magnetic switch and opens the circuit. When the circuit opens, it does not allow the sensor to send an electrical signal to the Brown SRC wire. The magnetic switch wires are connected in series, that is between the output of the obstruction sensor and either (not both) the Brown or Black SRC wire. (See installation diagram.)
- D. SRC–Safety Reverse Converter–a device that when wired to a normally open sensor and a commercial overhead door operator will stop and reverse the door when sensor is activated.
- E. Down or Closed Limit Switch–A micro switch in an operator that is activated when the door is closed.
- F. Floor Cut out–a condition where the Safety Reverse Converter will not open a completely closed door when the obstruction sensor is triggered.
- G. Obstruction Sensor–Any type of normally open device that will trigger the SRC. Typical devices: photo-electric, electric or pneumatic bottom door edge, loop detector.

## VII. Troubleshooting (call us anytime before getting too far along: 800-759-4235.)

- A. How far into the installation are you?
- B. What seems to be the problem?  
Jump to problems/solutions if you want.
- C. What type of obstruction sensor are you using? Are they installed and powered?
- D. Where are you obtaining the 24VAC to power the SRC?
- E. What else is being powered by that transformer? Radio control? photo beam?
- F. Do the three button station(s) work properly, that is, a momentary contact activates each button? If not, did they prior to SRC installation?
- G. Does door reverse (by triggering obstruction sensor) from a stopped mid-way position?
- H. Does door reverse (by triggering obstruction sensor) from fully closed position?

## VIII. Problem/Causes/Solutions

### A. Door doesn't reverse when sensor triggered.

*Solution:* 1. Review where connections are made. See III above.

*Solution:* 2. Isolate SRC from obstruction sensor and evaluate each item. Disconnect sensor wires from SRC's Black and Brown. As door is closing, touch Black and Brown; door should stop and reverse. If not, problem is in SRC or wiring. If does, troubleshoot obstruction sensor. Check continuity of sensor. When triggered, meter should show continuity. When not triggered, it should show open circuit. Sensor needs to be N/O.

### B. Door runs through down limit. Keeps running when hits floor.

*Solution:* 1. Check for proper placement of Red and White wires  
2. Readjust down limit switch  
3. Replace down limit switch

### C. Door reverses when hits floor.

*Cause:* 1. No floor cut out switch in place  
2. Defective floor cut out switch  
3. Floor cut out switch out of adjustment  
4. Something activating sensor  
5. Floor cut out switch wired incorrectly

### D. Door won't stop from 3 button station while closing.

*Cause:* 1. Bad stop button  
2. If there are other 3 button stations, check to see that all stops are wired in series  
3. Did someone place a jumper in circuit erroneously?

### E. Door doesn't shut off when fully open.

*Cause:* 1. Up limit out of adjustment  
2. Up limit faulty

### F. Door reverses when stopped mid way, but not when closing.

*Solution:* Check placement of SRC Red and White wires. You must break the electrical circuit (wire) the down limit switch and contactor. Insert the red and white SRC wires in series with that break. Red and White are not connected together.

*Cause:* If above doesn't fix problem, check where SRC is receiving power. The SRC must be powered as door is traveling. This problem is common in the Kinnear operator. It is possible to obtain 24 volts from some place in the circuit, where the 24V drops out when the motor runs. Therefore SRC is not powered. But when motor stops it re-powers and works fine.

*Solution:* Power SRC with separate 24VAC transformer or wire directly to transformer.

### G. Radio controls don't work after adding SRC.

*Cause/Solution:* Low voltage. Check for 24 volts coming into receiver and SRC. May have to add auxiliary transformer.

### H. Door opens when power is interrupted and then restored.

*Solution:* Check sensor with continuity tester. The sensor cannot be in a closed state while it reinitializes (re-powers) for a longer period of time than the SRC's re-initialization or power up period (3/4 of a second).

**I. Control circuit is 110V. No 24VAC Transformer.**

*Solution:* Add a 30-40VA 24VAC transformer to power SRC and other accessories. The SRC's 5 amp relays will then work in a 110V circuit.