MIS R30: Functional Description
Wiring Diagram #114731
Partial Stroke
05/09/11

Shafer Partial Stroke System

Wiring Diagram 114731

05/09/11

Partial Stroke System

Wiring Diagram #114731

Description: Energize opening solenoid to open.
Energize closing solenoid to close.
Partial stroke test feature.

To Open the Valve:

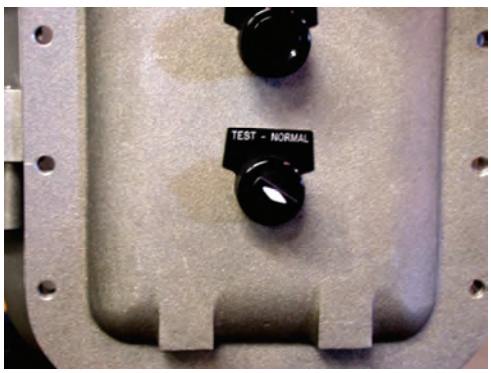
1. Apply power to “OPENING POWER” (terminals 15 & 16)
    a. This will energize the coil of relay R-2 causing the contacts to change.
    b. The “OPENING POWER” will run through R-2 contacts 5 & 9 and contacts 8 & 12. to opening limit switch “ZSOB”. Power will run through “ZSOB” to the opening solenoid.
    c. Solenoid will be de-energized at the end of the opening stroke when opening limit switch “ZSOB” contacts change.

To Close the Valve:

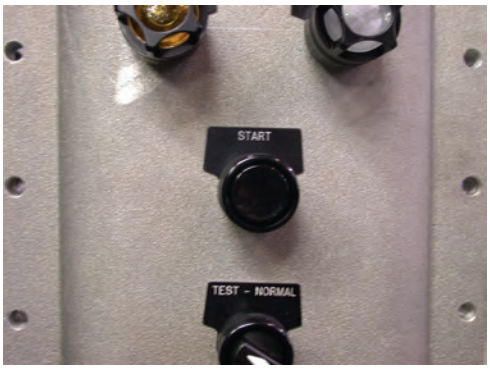
1. Apply power to “CLOSING POWER” (terminals 13 & 14)
    a. This will energize the coil of relay R-3 causing the contacts to change.
    b. The “CLOSING POWER” will run through R-3 contacts 6 & 10 and contacts 8 & 12 to closing limit switch “ZSCB”. Power will run through “ZSCB” to the closing solenoid.
    c. Solenoid will be de-energized at the end of the closing stroke when the closing limit switch “ZSCB” contacts change.

Partial Stroke Test:

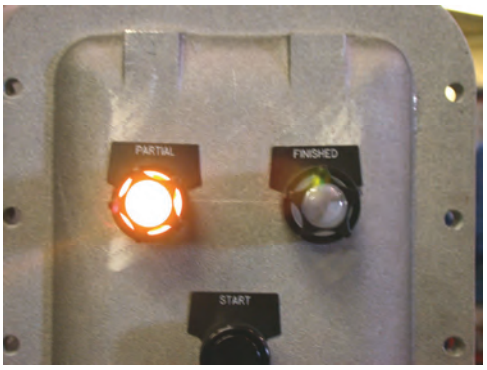
1. Power needs to be available going to “PARTIAL STROKE POWER” (terminals 17 & 18)
2. Adjust closing speed control to appropriate setting. (**NOTE**: This will vary depending on actuator and valve combination. It will also depend upon pressure in the pipeline. Therefore, the appropriate setting must be determined once the actuator and valve are installed in the field. The speed control should be set so valve will close slow enough to eliminate coasting)
3. Turn selector switch from “NORMAL” to TEST”.
    a. This will make contacts 1 & 2 of selector switch.



4. Push “START” button.



   a. This will energize relay R1 which will make and hold contacts 5 & 9 of R1.
   b. It will also energize the coil of relay TDR-1. Upon being energized its contacts will change. Contacts 15 & 18 will be made.
   c. “PARTIAL STROKE POWER” will then be able to flow through R-3 contacts 1 & 9, TDR-1 contacts 15 & 18, R-3 contacts 2 & 10, R-3 contacts 4 & 12, the closing solenoid, and closing limit switch “ZSCC” set to change contacts after 5 degrees into the closing stroke.
5. When the valve reaches 5 degrees, the contacts of limit switch “ZSCC” change and cause the closing solenoid to be de-energized. The contacts of “ZSCD” also change and allow power to flow through lamp “A” (labeled as “PARTIAL”)which indicates valve has reached partial stroke.



6. TDR-1 is a time delay relay. Contacts 15 and 18 will be made until specified time has elapsed (The time is adjustable on the relay. It is factory set for 7 seconds). When the time has been reached, the contacts of TDR-1 will change. This will make contacts 15 & 16 of TDR-1.
   a. “PARTIAL STROKE POWER” will then be able to flow through R-3 contacts 1 & 9, TDR-1 contacts 15 & 16, R-2 contacts 1& 9, R-2 contacts 4 & 12, the opening solenoid, and the opening limit switch “ZSOC” set to change contacts when valve is full open.
7. When the valve returns to full open, the contacts of “ZSOC” change and cause the opening solenoid to be de-energized. The contacts of “ZSOD” also change and allow

8. power to flow through lamp marked “W” (labeled as “FINISHED”) which indicates valve has returned to the open position.

9. Return selector switch to “NORMAL”.
    a. This will reset relay TDR-1.
10. Return closing speed control to normal setting.

Partial Stroke Override Feature:

If at any time a closing signal is received from “CLOSING POWER” (terminals 13 & 14) it will override the partial stroke test. R-3 will be immediately energized. This will cause the contacts to change. The closing operation will then take place as described under the heading “To Close the Valve”.

If any further information is required, please feel free to contact:

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