YORK
BY JOHNSON CONTROLS

Service Information

File In/With:	SI0284
Supersedes SI0284 (514)	REV 315
Equipment Affected:	OptiView Control Panel on Trane Chillers

Trane Tri-State Vane Actuator Replacement for Trane OptiView Retrofits

GENERAL

Competitive OptiView retrofits for Trane chillers require the Trane tri-state vane actuator (as shown below) in order to interface with the OptiView panel.

LD18187

In mid-2013 Trane stopped supplying the tri-state vane actuator. To continue support of the Trane OptiView retrofits, we've identified and can source a tri-state style actuator. The use of this OEM actuator requires other unit modifications as noted below.

There are two major differences between the Trane tri-state vane actuator and our recommended replacement. First, the Trane actuator contains internal limit switches. The limit switches perform two functions. At the full open vane position the limit switch opens to remove the open signal from the actuator. Without the limit switch the actuator motor could continue to see voltage at the wide open vane position and eventually burn out. At the closed vane position the limit switch performs the same function while also giving an indication of closed vanes which allows the chiller to start without a load.

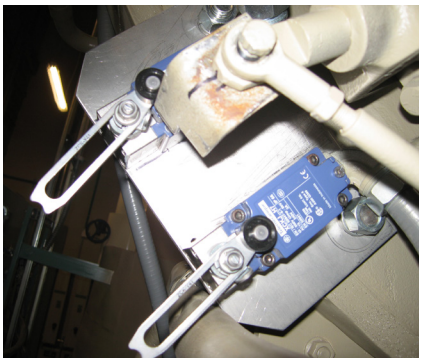
Work on this equipment should only be done by properly trained personnel who are qualified to work on this type of equipment. Failure to comply with this requirement could expose the worker, the equipment and the building and its inhabitants to the risk of injury or property damage.

The instructions on this service bulletin are written assuming the individual who will perform this work is a fully trained HVAC & R journeyman or equivalent, certified in refrigerant handling and recovery techniques, and knowledgeable with regard to electrical lock out/tag out procedures. The individual performing this work should be aware of and comply with all Johnson Controls, national, state and local safety and environmental regulations while carrying out this work. Before attempting to work on any equipment, the individual should be thoroughly familiar with the equipment by reading and understanding the associated service literature applicable to the equipment. If you do not have this literature, you may obtain it by contacting a Johnson Controls Service Office.

Should there be any question concerning any aspect of the tasks outlined in this bulletin, please consult a Johnson Controls Service Office prior to attempting the work. Please be aware that this information may be time sensitive and that Johnson Controls reserves the right to revise this information at any time. Be certain you are working with the latest information.

Product Technical Support

The replacement actuator requires the installation of two external limit switches, four relays, four resistors, and a field fabricated bracket. Connection of the vane linkage to the switches must be as noted below. Attachment of the vane linkage further out on the limit switch arm reduces the sensitivity of the switch and will cause issues with the switch incorrectly indicating full open or fully closed vane position. NOTE: Trane models CVHF may require minor grinding of the actuator arm where it fits into the Trane Vane Linkage (clevis) for propare fit.



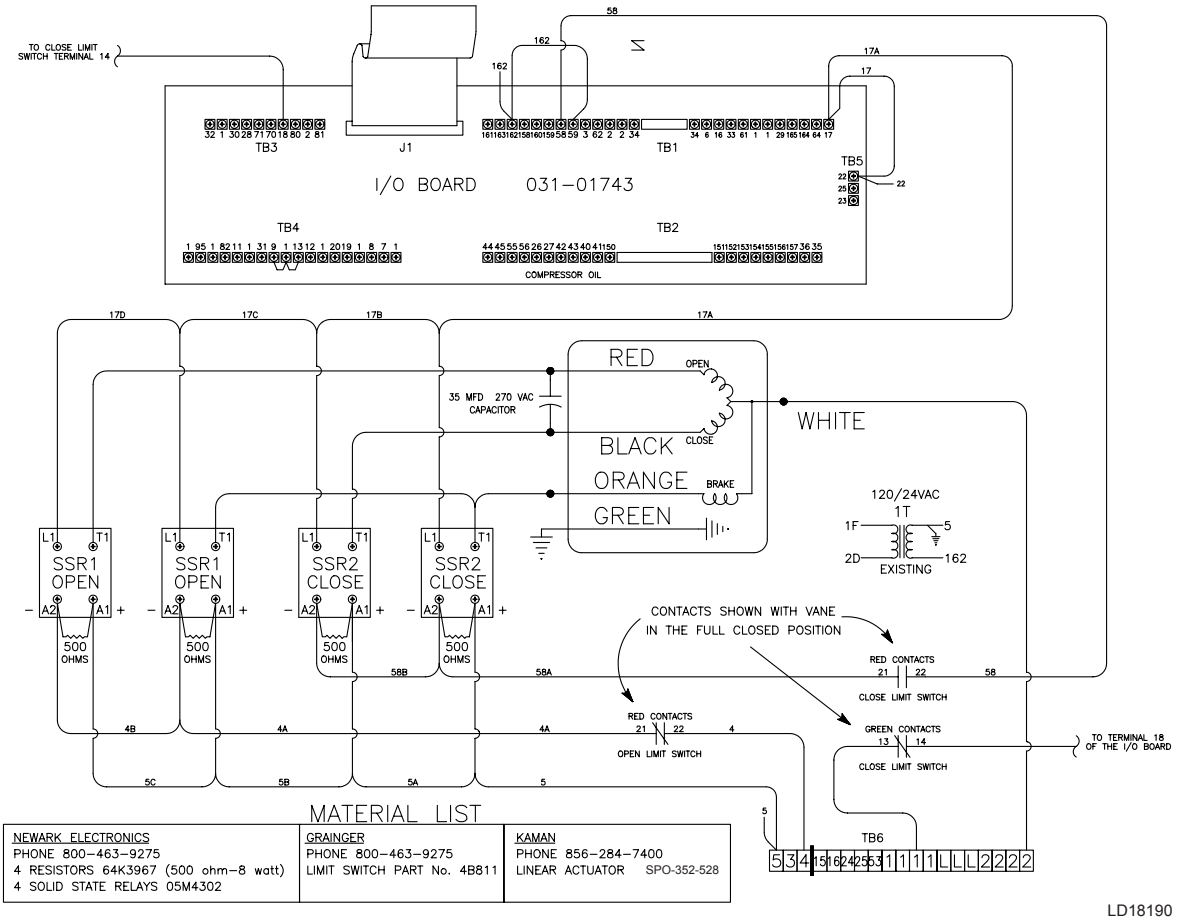
LD18188

Correct Placement of Limit Switches

LD18189

Incorrect Placement of Limit Switches

Wiring of the limit switches is as follows:



LD18190

The second difference between the Trane and the OEM vane actuator is the speed of the stroke. The Trane actuator has a slower opening and closing speed. To account for this difference, we have made software changes to allow additional adjustment of the load/unload pulse duration.

When replacing an existing Trane tri-state vane actuator on a unit with an OptiView and the 031-02430-000 microboard, you will also need to update the OptiView software to the latest version. The program card part number is 031-03071-001. On units that have an OptiView with a 031-01730-000 microboard, the microboard will need to be replaced with the 2430 microboard (331-02430-701). The 331-02430-701 microboard ships pre-programmed therefore a program card is not required. Reference SI0285 for additional information.

SOFTWARE SETTINGS

For the best and closest control of the leaving chilled water temperature, we recommend the following settings as a starting point for the vane actuator control. In particular, Pulse Time and Pulse Period may need to be fine tuned to provide stable operation. Settings are inputted on the Evaporator Screen.

- Load Rate: 3.00 F/Min
- Sensitivity: 10%
- Pulse Time: 0.1 Sec
- Pulse Period: 2.0 Sec

LD18191

INSTALLATION

The Kaman actuator, as received, requires the linkage connection to be rotated 90 degrees for connection to the Trane linkage. To rotate the connection the gear cover must be removed and the connection rotated as shown in the photo below.

LD18233

REQUIRED PARTS

The following parts are required in order to complete the retrofit.

- Vane Actuator
  - Source: Kaman Industrial Technologies, 195 Borrelli Blvd, Suite B, Paulsboro, NJ, 08066, (856) 284-7400
  - Model Number: SPO-352-528 (Kaman Industrial Technologies)
- Limit Switches (quantity of 2)
  - Source: Grainger
  - Model number: 4B811 (Schneider Electric Limit Switches)
- Solid State Relays (quantity of 4)
  - Source: Newark Electronics, (800) 463-9275
  - Model number: 05M4302
- Resistors (quantity of 4)
  - Source: Newark Electronics, (800) 463-9275
  - Model number: 64K3967 (500 ohm, 8 watt) or one of the following, 38C5602 (500 ohm, 10 watt), 02F1682 (500 ohm, 11 watt), 64K3737 (500 ohm, 12 watt)
- Mounting Bracket (field fabricated)

If you have any questions, please contact Tom Brown at thomas.a.brown@jci.com or (717) 771-6359.