

Subject: 19HR VENT SOLENOID VALVE
Reference:
Mail Keys:
Distribution:

Cent. FER 83-3

1.0 PURPOSE

To transmit a procedure for checking and if necessary, replacing the vent solenoid valve.

2.0 MACHINES AFFECTED:

Any 19HR's that have suffered repeated vent solenoid diaphragm failures.

3.0 INFORMATION:

The vent solenoid valve serves two specific functions. In the cooling only mode, a small amount of cooled and desuperheated vapor is routed through the inactive booster stage to prevent it from overheating. While cooling the stage, the refrigerant is slightly compressed and discharged into the heating condenser at a very low pressure. In this mode (damper closed), the vent solenoid is energized by action of the damper actuator outer auxiliary switch and opens to vent the superheated discharge gas in the heating condenser to the cooler. If the vent valve does not open during this mode, the heating condenser becomes pressurized and the booster goes into a low load surge and overheats.

In the heating mode (damper open beyond 16°), the vent solenoid valve de-energizes and closes to prevent the hot condensed liquid in the heating condenser from entering the cooler causing it to take an alternate route through the economizer. If a liquid tight seal is not created by the vent valve, hot liquid refrigerant bypasses into the cooler increasing cooler load (similar to a H.G.B.P.) and decreasing efficiency (KW/TON). This causes the guide vanes to open further making the compressor work harder to maintain leaving chilled water temperature. If the leakage is severe enough such that the false load plus the cooler load exceeds the capacity or KW of the compressor, the overloads will trip.

PROCEDURES

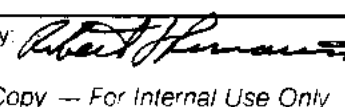
4.0 CHECKING SEALING INTEGRITY:

Start machine and run in heating mode. Vent valve should de-energize by the time the damper actuator rotates 16°. Allow machine to pick up heating load then feel lines on each side of vent valve. Line upstream of valve (from heating condenser) should feel very warm to hot (equivalent to condensing temperature). Line downstream of vent valve (to cooler) should feel cool to room ambient. If line feels hot or very cold, or if frosting is evident, vent valve is leaking through and should be replaced.

Prepared by:



Approved by:



Date: 3/2/83

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5.0 PREPARATION FOR REPLACING VENT SOLENOID VALVE:

Replacement of the valve requires cutting, fitting and welding of the vent piping and pulling an additional wire from the damper actuator's outer auxiliary switch. Use the following chart to obtain the materials needed for the conversion. The frame size of the heating condenser determines the proper selection column. The heating condenser frame size is determined by the character in the #11 position of the machine model code ("2" or "3"). The numbers in the column under frame size are the quantities of the part needed for the conversion.

CHART I

ITEM	MANUFACTURERS PART NUMBER AND/OR DESCRIPTION OF ITEM	FRAME SIZE	
		2	3
1	Jamesbury 5150-31-2200-TT 2" Flanged Ball Valve	1	1
1-A	Jamesbury EJ50 115V Electric Actuator	1	1
1-B	Jamesbury LK563 Linkage Package	1	1
2	2-1/2 x 2 Weld Reducer	2	2
	3 x 2 Weld Reducer		
3	2" Slip-on Weld Flange	2	2
4	2" Gasket	2	2
5	2-1/2" Weld Ring	2	2
	3" Weld Ring		
6	5/8-11 x 2-1/2 Bolt with Nut & Washer	8	8
7	18 Ga. Control Wire	*	*

*Per job requirement

6.0 REPLACING VENT SOLENOID VALVE:

Refer to Diagram I and Chart I.

- 6.1 Assemble items 1, 1-A, and 1-B per Manufacturer's instructions.
 - 6.2 Weld slip-on flanges to reducers per Diagram I.
 - 6.3 Fit items 1 through 5 together per Diagram I and measure overall length.
 - 6.4 Cut rectangular flange off stubout pipe from heating condenser sump. Square off and bevel pipe for butt weld.
 - 6.5 Measure and cut vent pipe to cooler so that total distance between cuts equals overall length measured in Step 5.3 + gap required for weld rings. Square off and bevel pipe for butt weld.
 - 6.6 Assemble and tack items in vent line so that actuator is laying on its side.
 - 6.7 Carefully inspect parts for proper assembly, orientation and squareness of flanges. Weld into place using full depth penetration.
- 7.0 LEAK CHECK WELDS AND FLANGE CONNECTIONS:
Correct leaks prior to proceeding.

8.0 MAKING ELECTRICAL CONNECTIONS:

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Run wire from Terminal "R" on damper outer auxiliary switch to the "OPEN" terminal on the actuator. Connect the yellow wire from terminal 54 to the "CLOSE" terminal on the actuator and the white wire from L2 to ground. Refer to Fig. II for wiring detail. If necessary, readjust outer auxiliary switch and actuator limit switches for proper operation of the valve.

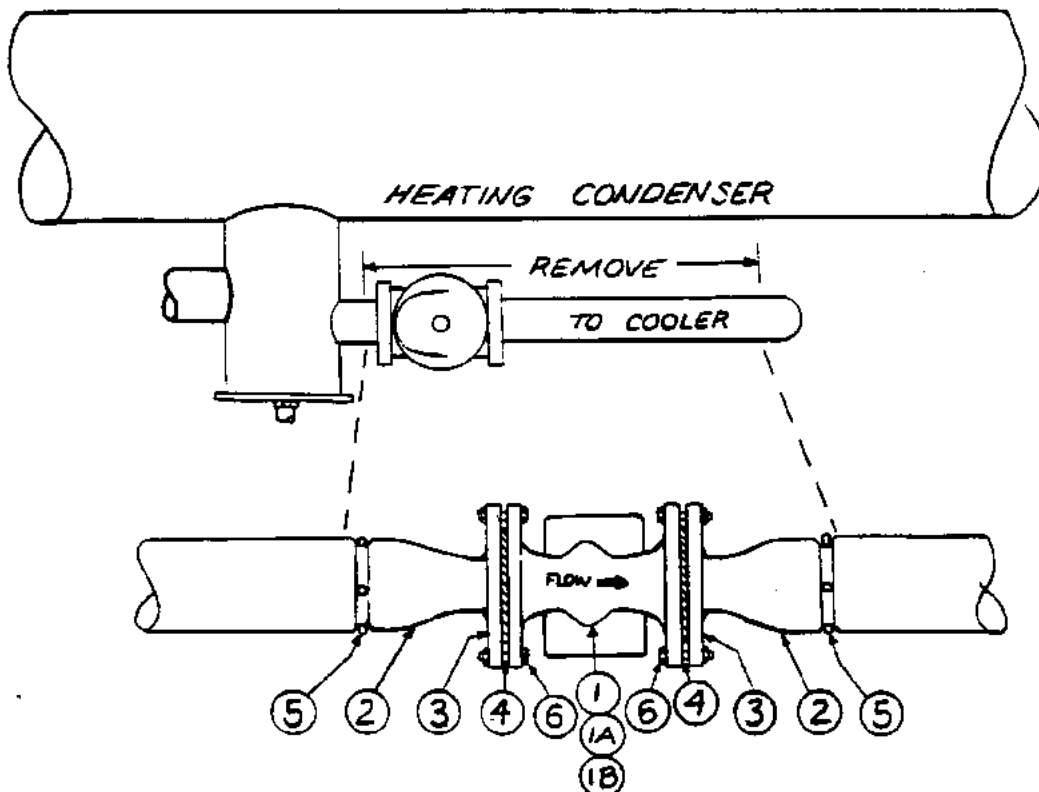


FIG I - ASSEMBLY

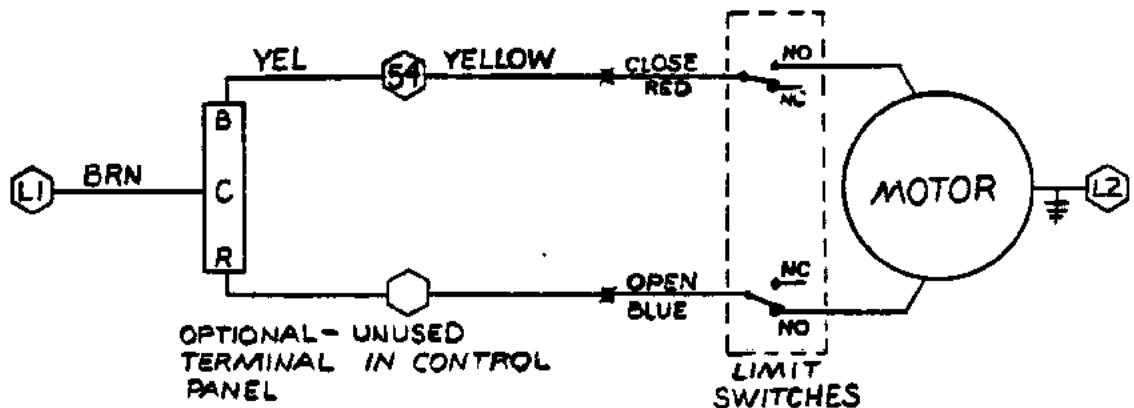


FIG II - WIRING