

EEV AND CONTROLLER

In the product of YSAA, Electronic Expansion Valves (EEVs) are selected as the expansion device, which now rated at full stroke (100% open) with no reserve capacity, can control refrigerant flow down to 10% of rated capacity. Sporlan EEVs are designed for compatibility with all current halocarbon refrigerants (HCFCs and HFCs including R-410A), in addition to subcritical CO₂.

The EEV is driven by a step motor. All valves currently offer 2500 steps of stroke. In current designs, the electronics controlling the valve are separate from the valve itself.

EEV VALVE AND WIRING

EEV is a device to control the flow rate of liquid refrigerant so that the set suction superheat can be achieved when compressor is running. The EEV is driven by a step motor. The torque is transmitted and enlarged by a set of gears to a lead screw that drive a valve core to open/close a valve port. The sight glass can be used to check the refrigerant charge and observe the movement of valve core.

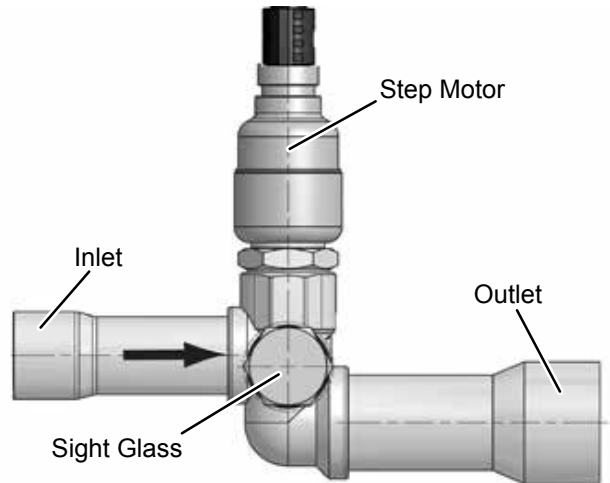
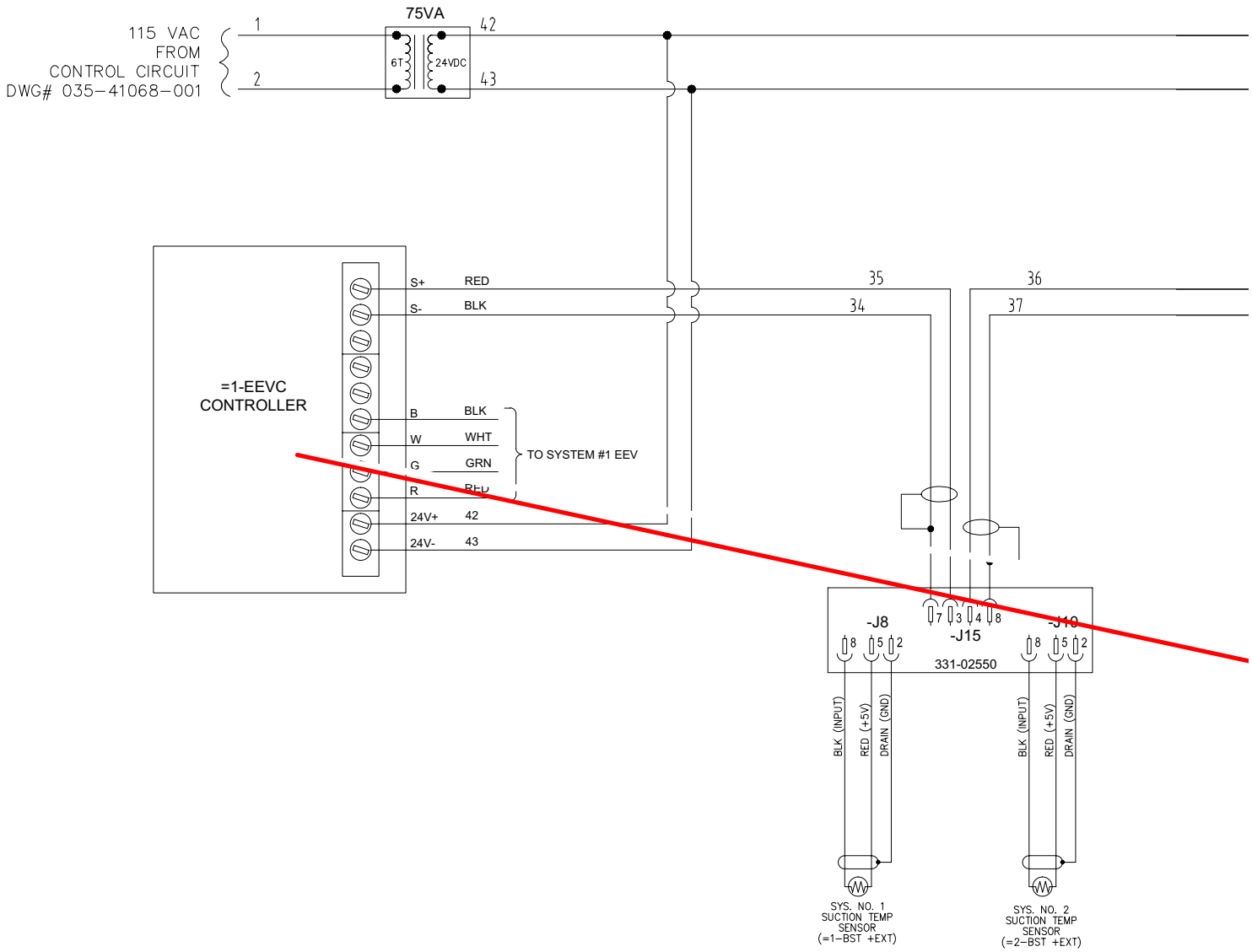


FIGURE 52 - ELECTRONIC EXPANSION VALVE (EEV)

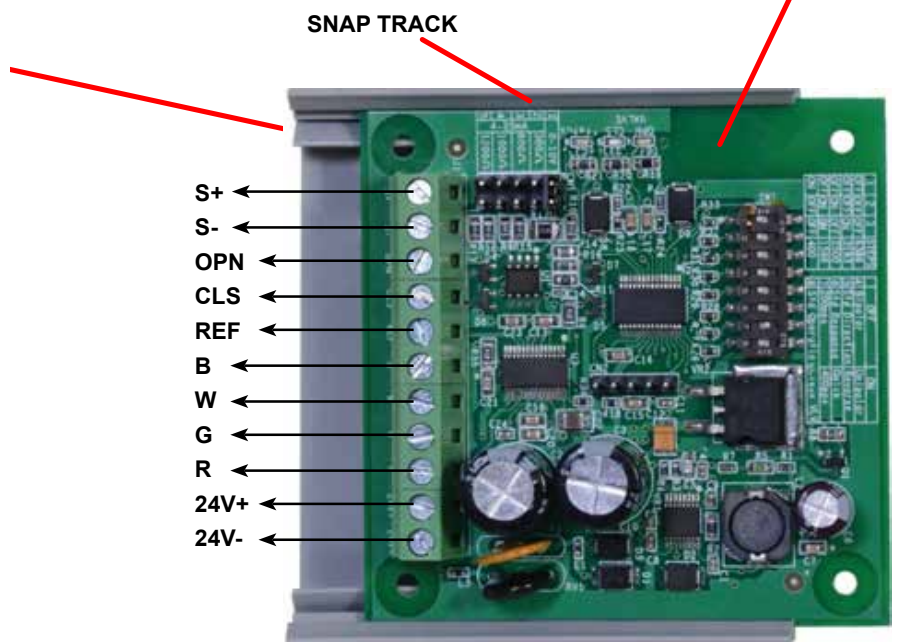
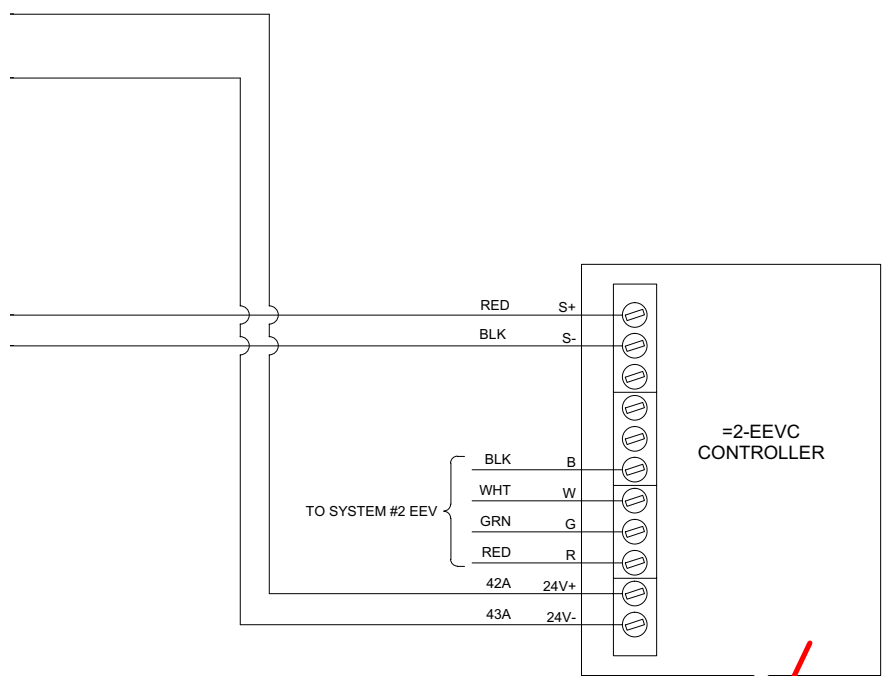
The microboard senses the respective suction temperature and suction pressure in different system to calculate the respective suction superheat, comparing with setpoint of suction superheat, signal to EEVC controllers with J15-3 and J15-7 to system #1 and J15-4 and J15-8 to system #2, EEVC controller convey the pulses to EEV through 4 wires to control the valve's opening and closing. Both system EEVC controllers share a common transformer. See the wiring diagram of EEV control for details.

035-41068-003



LD20913

FIGURE 53 - WIRING OF EEV CONTROL



LD20913a

FIGURE 51 - WIRING OF EEV CONTROL (CONT'D)

EEVC CONTROLLER SETUP

The IB-G can accept 4-20 milliamp or 0-10 volt DC analog input signals and is designed to allow externally supplied control signals to control one or two step motor valves including SEI/SER/SEH/SEV/ESX* electric expansion valves. New features include LED indicators for power and valve position and a valve open or closed feature.

Set the DIP switches in accordance with your valve and desired operation. The ON position is the UP location of the switch, when the terminal strip is located at the bottom of the board. There is also a set of jumpers to select a 0-10V signal and impedance when using a 4-20mA signal. Default settings are highlighted. If an invalid valve configuration is set, the LED's will flash and the valve will not move.

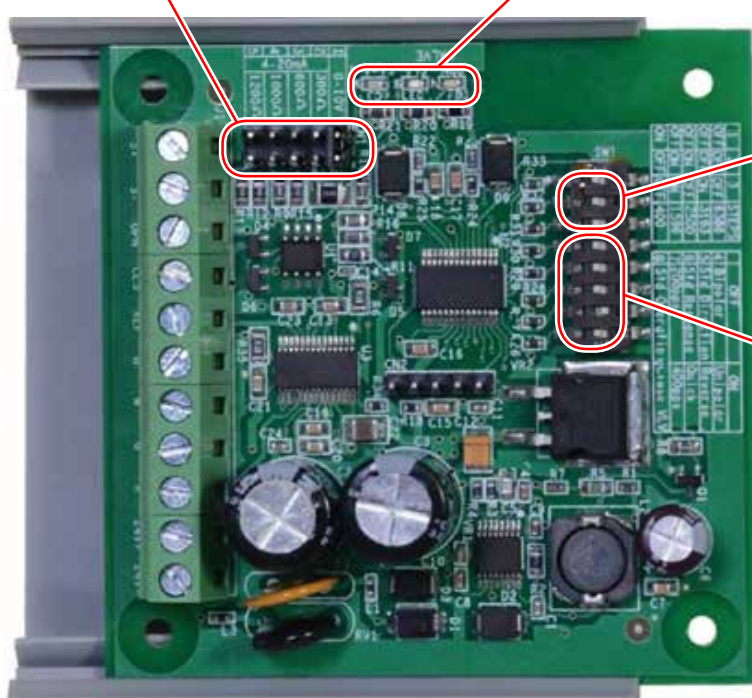
On power-up, the board will initialize by giving the valve a large number of steps to assure that the valve is fully shut. The valve will not respond to input signals during this time. If the valve is required to shut during operation, the CLS and REF terminals should be used.

Supplying a signal to OPN and REF will cause the valve to open to 100%, once removed the valve will resume normal operation.

If power is lost to the EEVC Controller or wire to the valve severed, the valve will remain in its last position. Solenoid valves may be desired before the step motor valve on critical applications. To force the valve shut during operation for test purposes, turn switch 8 to the ON position. To resume normal operation, turn switch 8 OFF.

The EEVC Controller has three LEDs to notify the user of the status of the valve and board. The RED LED is a status LED and will be on when that EEVC Controller has power. The YELLOW LED is the Close Valve LED, it will only be on when the valve is fully closed. The GREEN LED is the Valve Open LED and will flash in different sequences depending on valve position. The GREEN LED will flash once for valve positions >0% and including 10%, twice for valve positions >10% and including 20%, etc. The GREEN LED will remain on when the valve is fully open.

1	2	3	4	5
0 - 10 VDC	4 - 20 mA			
	300Ω	600Ω	1000Ω	1200Ω



1	2	3	STEPS
OFF	OFF	OFF	6386
OFF	OFF	ON	3193
OFF	ON	OFF	2500
OFF	ON	ON	1596
ON	OFF	OFF	500

	OFF	ON
4	Bipolar	Unipolar
5	STD Direction	REV Direction
6	STD Response	Quick
7	200pps	400pps
8	STD Operation	Close Valve

FIGURE 54 - EEVC CONTROLLER SETUP