



# Installation Instructions

## Replacing VAL06881 or VAL06882 with VAL08030 and MOD01434

For RTAA/RTWA/RTUA Units

Models Affected: RTAA/RTWA/RTUA units built prior to 01 Nov 2003



### **⚠ SAFETY WARNING**

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



# Warnings, Cautions and Notices

**Warnings, Cautions and Notices.** Note that warnings, cautions and notices appear at appropriate intervals throughout this manual. Warnings are provide to alert installing contractors to potential hazards that could result in death or personal injury. Cautions are designed to alert personnel to hazardous situations that could result in personal injury, while notices indicate a situation that could result in equipment or property-damage-only accidents.

Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

Read this manual thoroughly before operating or servicing this unit.

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**ATTENTION:** Warnings, Cautions and Notices appear at appropriate sections throughout this literature. Read these carefully:

**⚠ WARNING** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**⚠ CAUTION** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

**NOTICE:** Indicates a situation that could result in equipment or property-damage only

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## Important Environmental Concerns!

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants-including industry replacements for CFCs such as HCFCs and HFCs.

## Responsible Refrigerant Practices!

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified. The Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that

must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

### ⚠ WARNING

#### Proper Field Wiring and Grounding Required!

All field wiring **MUST** be performed by qualified personnel. Improperly installed and grounded field wiring poses **FIRE** and **ELECTROCUTION** hazards. To avoid these hazards, you **MUST** follow requirements for field wiring installation and grounding as described in **NEC** and your local/state electrical codes. Failure to follow code could result in death or serious injury.

### ⚠ WARNING

#### Personal Protective Equipment (PPE) Required!

Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards.

- Before installing/servicing this unit, technicians **MUST** put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. **ALWAYS** refer to appropriate MSDS sheets and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate MSDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations.
- If there is a risk of arc or flash, technicians **MUST** put on all PPE in accordance with NFPA 70E or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit.

Failure to follow recommendations could result in death or serious injury.

### ⚠ WARNING

#### Contains Refrigerant!

The system contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.



# Introduction

## Reason for Replacement

Sporlan has discontinued production of both the SEO-70 and SEO-100 ton valves and the associated repair kits. The replacement part for the SEO series valves or repair kits is the SEHI-100 valve. The SEHI-100 valve has 6,386 steps

compared to the SEO series valves, which has 755 steps. Because of the difference in steps, an alternate module (MOD01434) is required for operation. As a result, all expansion valves and control modules currently installed on the unit will need to be replaced with new valves and modules (see [Table 1](#)).

**Table 1. Required replacement parts**

Unit Type	VAL08030	MOD01434	CAB00872	CON00544 <sup>(a)</sup>	CON01027 <sup>(a), (b)</sup>
RTWA	2	1	2	1	1
RTUA	2	1	2	1	1
RTAA 70–215 Ton	2	1	2	1	1
RTAA 240–300 Ton	3	2	3	1	1
RTAA 340–400 Ton	4	2	4	2	1

(a) CON00544 and CON01027 require the use of a special crimping tool. Contact your local Trane sales office for more information.

(b) CON01027 is a package of 10 individual 5-pin connectors.

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# Valve Replacement Procedure

Complete the following steps to replace the valves.

**⚠ WARNING**

**Contains Refrigerant!**

The system contains oil and refrigerant under high pressure. Recover refrigerant to relieve pressure before opening the system. See unit nameplate for refrigerant type. Do not use non-approved refrigerants, refrigerant substitutes, or refrigerant additives.

Failure to follow proper procedures or the use of non-approved refrigerants, refrigerant substitutes, or refrigerant additives could result in death or serious injury or equipment damage.

1. Following standard operating procedures, remove the charge.
2. Unsolder or cut away the old SEO series valve from the piping.
3. Install the new SEHI-100 valve.

**Important:** *Keep the cable away from the torch or other hot surfaces when brazing in the new valve. Wrap the body and motor assembly with a wet cloth when brazing to prevent equipment damage.*

**Note:** *The valve can be installed in an off-vertical position only if the motor housing is above the liquid line.*

4. Repeat [Step 1](#) through [Step 3](#) for the corresponding valve on the other circuit of the chiller.

# Module Replacement Procedure

Complete the following steps to replace the control module.

**⚠ WARNING**

**Hazardous Voltage!**

**Disconnect all electric power, including remote disconnects, before installing or servicing the power supply. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before installing or servicing the power supply could result in death or serious injury.**

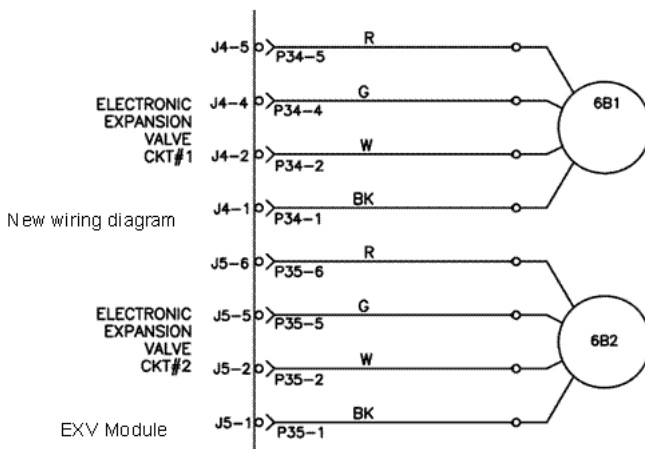
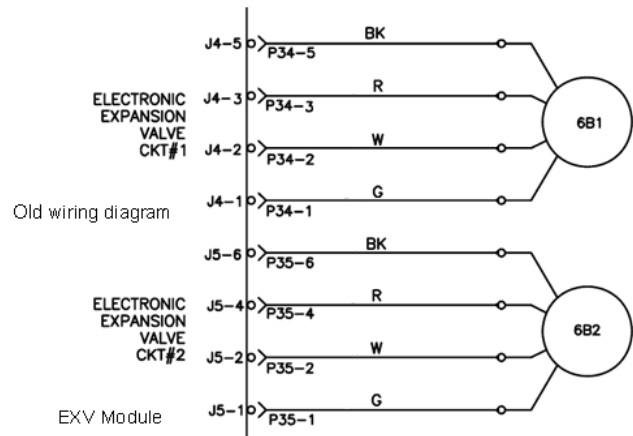
1. Turn off all electrical power to the chiller control panel. Verify that no electrical power exists in the control panel before proceeding.
2. Disconnect all leads to the old module (MOD01423).
3. Remove the old module (MOD01423) and mount the new module (MOD01434) in its place.
4. Reconnect wiring to the new module using CAB00872, CON00544, and CON01027. Note the location of the J4 and J5 keying pins, as they differ from the old module (MOD01423). Refer to [Table 2](#) and [Table 3](#).

**Table 2. SEH “New” style EXV Module (MOD01434)**

Terminal	Terminal #	Terminal Designation
J4	5	EXV1 Phase A1 (red)
	4	EXV1 Phase A2 (green)
	3	N/C Keying
	2	EXV1 Phase B1 (white)
	1	EXV1 Phase B2 (black)
J5	6	EXV2 Phase A1 (red)
	5	EXV2 Phase A2 (green)
	4	N/C Keying
	3	N/C Keying
	2	EXV2 Phase B1 (white)
	1	EXV2 Phase B2 (black)

**Table 3. SEO “Old” style EXV Module (MOD01423)**

Terminal	Terminal #	Terminal Designation
J4	5	EXV Ckt 1 (Gnd, black)
	4	N/C Keying
	3	EXV Ckt 1 Phase 1 (red)
	2	EXV Ckt 1 Phase 1 (white)
	1	EXV Ckt 1 Phase 1 (green)
J5	6	EXV Ckt 2 (Gnd, black)
	5	N/C Keying
	4	EXV Ckt 2 Phase 1 (red)
	3	N/C Keying
	2	EXV Ckt 2 Phase 2 (white)
	1	EXV Ckt 2 Phase 2 (green)





# Valve and Control Module Check-out Procedure

Verify that the newly installed valves and the control module are functioning properly.

## Confirm Proper Operation of the EXV System

- Place the chiller in STOP mode by pressing the stop button on the CLD.  
With the circuit shut down, the valve should be in the closed position. Note the EXV position.
- Enable the EXV TEST from the Service Test Menu.  
The first part of the test is an electrical integrity test (EIT), which is performed on the stepper motor phase and associated wiring. The wiring energizes the outputs to the stepper motor on the valve and measures voltage levels. If a failure is detected, it will report the following diagnostic: EXV Elect. Drive CKT.
- If the UCM reports a failure, see [“The UCM Reports an EIT Failure,” p. 6.](#)
- Observe the pin in the sight glass of the valve during the second part of the EXV test (the timing test).
- The UCM first drives the valve closed for 18 seconds. The valve makes a clicking sound when it reaches its end stop.
- Then the valve will immediately be stepped open for 18 seconds.
- The valve will then be stepped closed again.

By observing the site glass during the test, you can verify valve operation. If the electrical test passes, but the pin fails to move through its full range, go to [“The UCM Does Not Detect an EXV Problem, But the Valve Does Not Move Through Its Full Range,” p. 7.](#)

## The UCM Reports an EIT Failure

Loose or incorrect connections, worn wiring, failures in the stepper motor, or failures in the EXV module can contribute to an EIT failure. If a simple inspection of connections does not reveal a problem, proceed to test the following components in the order listed:

### Check the Stepper Motor

**⚠ WARNING**

**Hazardous Voltage!**

**Disconnect all electric power, including remote disconnects, before installing or servicing the power supply. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before installing or servicing the power supply could result in death or serious injury.**

- Turn off all electrical power to the chiller control panel. Verify that no electrical power exists in the control panel before proceeding.
- Disconnect the appropriate EXV at the motor connector.
- Using an ohm meter, check the resistance of the valve windings and associated leads/connectors by measuring the resistance of the pairs at the connector plug. Verify the resistance using the following values:
  - Red, Green—75 ohms  $\pm$ 10%
  - White, Black—75 ohms  $\pm$ 10%
- With the connector unplugged, check the resistance of the each lead to GND. The resistance should be greater than 1 meg ohm.

If resistance for the above components is not met or is inadequate, examine the connector or wiring for defects.

### Check Associated Wiring

If the motor is functioning properly, reconnect it and then disconnect the wires from the module in order to check resistance of the motor through the wires.

**⚠ WARNING**

**Hazardous Voltage!**

**Disconnect all electric power, including remote disconnects, before installing or servicing the power supply. Follow proper lockout/tagout procedures to ensure the power cannot be inadvertently energized. Failure to disconnect power before installing or servicing the power supply could result in death or serious injury.**

- Turn off all electrical power to the chiller control panel. Verify that no electrical power exists in the control panel before proceeding.
- Check each winding resistance and discontinuity between windings and from each winding to the ground.
- If a measurement is acceptable at the motor connector, but unacceptable from the wires at the module, then the wiring or the connector must be repaired or replaced.

### Check the Module

If the motor and wiring are functioning properly, check the module. Examine the module for loose or incorrect connections. If necessary, reconnect or tighten the connections and repeat the EXV test. If the problem is not resolved, replace the module.

### **The UCM Does Not Detect an EXV Problem, But the Valve Does Not Move Through Its Full Range**

Do the following to verify the diagnosis:

1. Perform the EXV test again to verify that the EIT is not detecting any problems.
2. During the timing test, verify that the observed valve corresponds to the circuit under test. Check for cross-wiring of the valves between circuits. An intermittent connection can be adequate during the EIT, but open during part of the timing test.

If the valve does not move with the proper electrical levels, it may be restricted, mechanically jammed, or stuck in place. Replace the valve.



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