Trane VAL12000

Trane VAL12000 OEM Thermostatic Expansion Valve

Model: VAL12000 / VAL-12000
Brand: Trane

1. Product Overview

The Trane VAL12000 / VAL-12000 is an Original Equipment Manufacturer (OEM) thermostatic expansion valve designed for use in various Trane chiller systems. This component plays a crucial role in the refrigeration cycle by controlling the amount of refrigerant flowing into the evaporator, ensuring efficient heat exchange and system performance.

It is a direct replacement for or supersedes models VAL-12000, VAL012000, VAL08573, VAL-8573, and VAL8573.

Figure 1: Illustrative stamp indicating Trane OEM Component. Actual product appearance may vary.

Commonly Used In:

- Various Trane Chillers: Rotary Chillers, RTAC Chillers, BCVC Chillers
- Specific Rotary Chiller Models: RTAC120, RTAC135, RTAC140, and others.

2. Specifications

Manufacturer	Trane
Part Number	VAL12000
Item Model Number	VAL12000
Valve Type	Thermostatic Expansion Valve (TXV)
Connections	1.387 ODS (Outlet Diameter Size) x 2.125 OD (Overall Diameter); M12 Input
Item Weight	Approximately 5 pounds
Item Package Quantity	1
ASIN	B07ZWHPJS6
Date First Available	November 1, 2019

Note: Specifications are subject to change without notice. Always refer to the product label for the most accurate information.

3. Installation Guidelines

Installation of the Trane VAL12000 expansion valve should only be performed by qualified HVAC technicians. Improper installation can lead to system malfunction, refrigerant leaks, and potential safety hazards. Always follow industry best practices and local codes.

3.1 Safety Precautions

- Ensure the system is de-energized and depressurized before beginning any work.
- Wear appropriate Personal Protective Equipment (PPE), including safety glasses and gloves.
- Handle refrigerants with care, following all safety guidelines.
- Ensure proper ventilation in the work area.

3.2 Installation Steps (General)

1. **System Preparation:** Isolate the section of the refrigeration system where the valve is to be installed. Recover any refrigerant according to environmental regulations.
2. **Remove Old Valve:** Carefully disconnect and remove the existing expansion valve, noting its orientation and connections.
3. **Prepare New Valve:** Inspect the new VAL12000 valve for any damage. Ensure all connection points are clean and free of debris.
4. **Connect Valve:** Install the new valve, ensuring proper alignment and secure connections. Use appropriate brazing or flaring techniques as required by the system design. Pay close attention to the M12 input and ODS connections.
5. **Thermal Bulb Placement:** Securely attach the thermal bulb to the suction line in the correct location, typically just after the evaporator outlet, ensuring good thermal contact. Insulate the bulb to prevent ambient temperature interference.
6. **Leak Check:** After installation, perform a thorough leak check using an appropriate leak detection method.
7. **Evacuation and Charging:** Evacuate the system to a deep vacuum to remove non-condensables and moisture. Recharge the system with the correct type and amount of refrigerant as specified by the chiller manufacturer.

8. **System Start-up:** Slowly bring the system back online and monitor its performance to ensure proper operation of the expansion valve.

For detailed, system-specific installation instructions, refer to the service manual of the Trane chiller unit in which this valve is being installed.

4. Operation

The Trane VAL12000 is a thermostatic expansion valve (TXV) that automatically regulates the flow of liquid refrigerant into the evaporator based on the superheat of the refrigerant vapor leaving the evaporator. Its primary function is to maintain a constant superheat, ensuring the evaporator is fully utilized without allowing liquid refrigerant to return to the compressor.

The thermal bulb, sensing the temperature of the suction line, transmits pressure to the diaphragm within the valve. This pressure, balanced against the evaporator pressure and spring pressure, modulates the valve's opening. This dynamic control optimizes system efficiency and protects the compressor from liquid slugging.

5. Maintenance

The Trane VAL12000 expansion valve is a robust component designed for long-term reliability. While it generally requires minimal direct maintenance, its optimal performance is dependent on the overall health and cleanliness of the refrigeration system.

5.1 Recommended Practices

- **System Cleanliness:** Ensure the refrigeration system remains free of contaminants (moisture, acids, debris) which can cause corrosion or blockages within the valve. Regular filter dryer replacement is crucial.
- **Refrigerant Quality:** Use only the specified type and quality of refrigerant.
- **Performance Monitoring:** Periodically monitor system superheat and subcooling. Deviations can indicate issues with the expansion valve or other system components.
- **Leak Detection:** Regularly check for refrigerant leaks around valve connections.

Any adjustments or repairs to the expansion valve or refrigeration system should be performed by certified HVAC professionals.

6. Troubleshooting

Troubleshooting issues related to an expansion valve often involves diagnosing overall system performance. The following are common symptoms that might indicate an issue with the expansion valve, though they can also be caused by other system components.

Symptom	Possible Cause (Valve Related)	Action
High Superheat / Low Suction Pressure	Valve restricted or stuck closed; thermal bulb lost charge or improperly installed.	Check thermal bulb contact and insulation. Inspect valve for blockages. Consider valve replacement if faulty.
Low Superheat / High Suction Pressure (Flooding)	Valve stuck open; thermal bulb improperly installed or sensing incorrect temperature.	Verify thermal bulb placement. Check for external bulb damage. Consider valve replacement if faulty.

Symptom	Possible Cause (Valve Related)	Action
Fluctuating Suction Pressure / Superheat	Intermittent valve operation; moisture in system causing ice formation at valve orifice.	Check for system contaminants. Replace filter dryer. Evacuate and recharge system.
Compressor Short Cycling	Improper refrigerant flow due to valve issue, leading to low pressure cutout.	Diagnose refrigerant charge and valve operation.

Important: Troubleshooting refrigeration systems requires specialized knowledge and tools. Always consult with or hire a qualified HVAC technician for diagnosis and repair.

7. Warranty and Support

As an OEM component, the Trane VAL12000 expansion valve is typically covered under the warranty terms provided by Trane for their chiller systems or by the distributor from whom it was purchased. Specific warranty details, including duration and coverage, may vary.

For warranty claims, technical support, or to order replacement parts (such as MOD02686 for a stepper motor or MOD02688 for a cable, if applicable to your system), please contact your authorized Trane distributor or a certified HVAC service provider.

Manufacturer: Trane

Contact: Refer to your local Trane representative or the official Trane website for service and support information.

Last Updated: November 2023

Related Documents - VAL12000

	Trane RTWD/RTUD R'newal Service Program Kit Installation Instructions Installation instructions for the Trane R'newal Service Program Kit for RTWD and RTUD Chillers, detailing parts location, safety warnings, environmental concerns, and component breakdowns.
	Trane Comprehensive Chilled-Water System Design Catalog Trane's comprehensive catalog for designing advanced chilled-water systems. This guide details system components, state-of-the-art design principles, configurations, and selection criteria for chillers, cooling towers, pumps, and control valves. It focuses on achieving efficiency, reliability, and cost-effectiveness in commercial and industrial HVAC applications, including insights on Tracer Chiller Plant Control and Trane Design Assist.

	Trane AFDR Retrofit Installation Instructions for RTHD Chillers Comprehensive installation guide for Trane AFDR Retrofit Air-cooled Adaptive Frequency Drive™ for RTHD Chillers. Covers safety, environmental conditions, model details, and step-by-step installation procedures for qualified personnel.
	Trane Ignitor Installation Instructions KIT03033USA Detailed installation instructions for the Trane Ignitor KIT03033USA, covering safety warnings, environmental considerations, and step-by-step procedures for qualified personnel.
	Trane Air-Fi™ Wireless Communications Sensor (WCS) Quick Reference Guide This guide provides quick reference information for the Trane Air-Fi™ Wireless Communications Sensor (WCS), detailing how to adjust room temperature, system settings, fan speed, manage occupancy, and understand error codes. It includes safety warnings and battery life indicators.
	Trane Building Automation System (BAS) and HVAC Components Price List Comprehensive price list for Trane Building Automation Systems (BAS), HVAC equipment, and related components, including controllers, sensors, chillers, air handlers, and accessories. Details product codes, model numbers, and pricing for commercial and industrial applications.