Danfoss 067N6151

Danfoss Expansion Valve 4T Tges10 R404 - Instruction Manual

Model: 067N6151

Product Overview

The Danfoss 067N6151 4TR Thermostatic Expansion Valve (TGE) is designed for precise control of refrigerant flow in various refrigeration and air conditioning systems. This bi-flow valve is suitable for R404A and R507A refrigerants and features a 1/2x7/8 inch solder ODF connection with a 1/4 inch externally equalized port. It operates within a temperature range of -40 to 50°F and has a maximum operating temperature of +210°F.

Image: Danfoss 4TR Thermostatic Expansion Valve, showing its main body, solder connections, and the coiled capillary tube with sensing

bulb.

Key Features

- **Balance Port Design:** Ensures stable operation across varying load conditions.
- **Bi-flow Operation:** Allows expansion in both directions, suitable for heat pump applications.
- **Low Hysteresis:** Provides accurate and responsive superheat control.
- **Durable Construction:** Features a laser-welded, stainless steel power element, capillary tube, and bulb for extended lifetime.
- **Straightway Flow:** Optimized for efficient refrigerant passage.
- **Adjustable Superheat Setting:** Allows for fine-tuning of system performance.
- **UL Certified:** Meets recognized safety and quality standards.
- **High Operating Temperature:** Capable of handling temperatures up to +210°F.

Applications

This expansion valve is suitable for a wide range of refrigeration and air conditioning systems, including but not limited to:

- Water Chillers
- Bus Air Conditioning Systems
- Rooftop Units
- Heat Pumps
- Refrigerated Containers
- Other A/C and Refrigeration Systems requiring precise refrigerant flow control.

Setup and Installation

Installation of the Danfoss TGE expansion valve should only be performed by qualified personnel with experience in refrigeration and HVAC systems. Ensure all local codes and regulations are followed.

1. **Safety First:** Before beginning installation, ensure the system is depressurized and all power sources are disconnected. Wear appropriate personal protective equipment (PPE).
2. **Valve Placement:** Install the valve in the liquid line immediately upstream of the evaporator. Ensure the flow direction matches the arrow on the valve body.
3. **Solder Connections:** Use appropriate brazing techniques for the 1/2x7/8 inch ODF solder connections. Protect the valve body from excessive heat during brazing to prevent internal damage.
4. **Equalizer Line:** Connect the 1/4 inch external equalizer line to the suction line, typically downstream of the evaporator. This ensures proper sensing of evaporator pressure.
5. **Sensing Bulb Installation:** Securely attach the sensing bulb to the suction line, close to the evaporator outlet. Ensure good thermal contact by cleaning the pipe surface and using a clamp or straps. 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 and charge with the correct type and amount of R404A or R507A refrigerant as specified by the system manufacturer.

Operating Principles

The Danfoss TGE expansion valve regulates the flow of liquid refrigerant into the evaporator based on the superheat of the refrigerant vapor leaving the evaporator. The sensing bulb, filled with a charge, responds to the temperature of the suction line. Changes in suction line temperature cause the charge in the bulb to expand or contract, which in turn opens or closes the valve orifice, maintaining a constant superheat and ensuring efficient evaporator operation.
The bi-flow design allows the valve to function effectively in both heating and cooling modes, making it ideal for heat pump applications where the direction of refrigerant flow reverses.

Maintenance

The Danfoss TGE expansion valve is designed for long-term reliability with minimal maintenance. However, periodic checks of the overall refrigeration system are recommended to ensure optimal performance.

- **Superheat Verification:** Periodically check the system's superheat to ensure it is within the manufacturer's recommended range. Adjust the valve's superheat setting if necessary (refer to system-specific guidelines).
- **Leak Detection:** Regularly inspect all connections for signs of refrigerant leaks.
- **Sensing Bulb Integrity:** Ensure the sensing bulb remains securely attached and insulated on the suction line.
- **Cleanliness:** Keep the exterior of the valve clean and free from debris.

Troubleshooting

Common issues related to expansion valves often manifest as incorrect superheat or inefficient system operation. Always consult a qualified HVAC technician for diagnosis and repair.

Symptom	Possible Cause	Action
High Superheat	Undercharge, restricted liquid line, valve stuck closed, incorrect superheat setting.	Check refrigerant charge, inspect liquid line filter/drier, verify valve operation, adjust superheat.
Low Superheat / Liquid Floodback	Overcharge, sensing bulb loose/uninsulated, valve stuck open, incorrect superheat setting.	Check refrigerant charge, re-secure/insulate sensing bulb, verify valve operation, adjust superheat.
Fluctuating Superheat	Improper bulb placement, unstable load, pressure drop issues.	Re-evaluate bulb placement, check system load stability, inspect for pressure drops.

Note: These are general guidelines. Always refer to specific system diagnostics and safety procedures.

Specifications

Attribute	Detail
Model Number	067N6151
Refrigerants	R404A, R507A
Connection Type	1/2 x 7/8 inch Solder, ODF
Equalization	1/4 inch Externally Equalized
Flow Direction	Bi-flow
Operating Temperature Range	-40 to 50°F (-40 to 10°C)

Attribute	Detail
Maximum Operating Temperature	+210°F (+99°C)
Material	Stainless Steel (power element, capillary tube, bulb)
Dimensions (L x W x H)	5.25 x 4.25 x 3.25 inches
Item Weight	1.1 pounds
Certifications	UL Certified
Replaces Models	SSE-3, HFES-3.5S, 067N6151

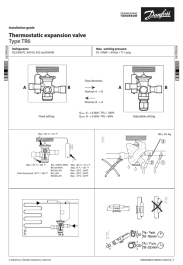
Warranty Information

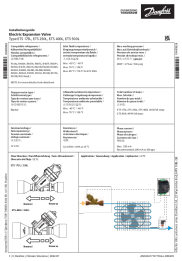
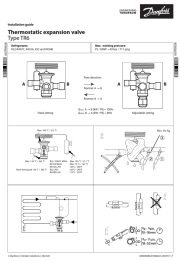
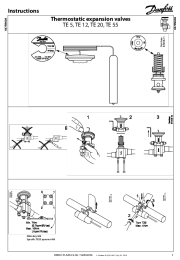
Specific warranty details for the Danfoss 067N6151 expansion valve are typically provided at the point of purchase or can be obtained directly from Danfoss or an authorized distributor. Please retain your proof of purchase for warranty claims. General Danfoss product warranties usually cover defects in material and workmanship for a specified period from the date of purchase.

Support and Contact

For technical support, installation assistance, or further inquiries regarding the Danfoss 067N6151 expansion valve, please contact Danfoss customer service or an authorized Danfoss distributor. You can find contact information on the official Danfoss website or through your product supplier.
Danfoss Official Website: www.danfoss.com

Related Documents - 067N6151

	Danfoss TR6 Thermostatic Expansion Valve Installation Guide Installation guide for the Danfoss TR6 Thermostatic Expansion Valve, covering refrigerant compatibility, working pressure, flow direction, settings, and technical specifications.
	Danfoss TR6 Thermostatic Expansion Valve Technical Data and Application Guide Comprehensive guide to the Danfoss TR6 thermostatic expansion valve, covering its features, applications in HVAC/R systems, technical specifications, sizing, ordering information, and design principles. Includes diagrams and tables for easy reference.

	[Danfoss Electric Expansion Valve ETS Series Installation Guide] Installation guide for Danfoss Electric Expansion Valves (ETS 175L, ETS 250L, ETS 400L, ETS 500L), covering technical specifications, mounting, brazing, electrical connections, disassembly, assembly, and safety warnings.
	[Danfoss TR6 Thermostatic Expansion Valve Installation Guide] Installation guide for the Danfoss TR6 Thermostatic Expansion Valve, covering refrigerants, working pressure, flow direction, settings, and technical specifications.
	[Danfoss Thermostatic Expansion Valves TE 5, TE 12, TE 20, TE 55: Instructions and Specifications] This document provides installation instructions and technical specifications for Danfoss TE 5, TE 12, TE 20, and TE 55 thermostatic expansion valves. It includes details on valve components, installation procedures, torque settings, superheat calculations, and capacity tables for various refrigerants.
	[Danfoss Colibri® Electric Expansion Valves ETS Series - Technical Data Sheet] Comprehensive technical data sheet for Danfoss Colibri® Electric Expansion Valves, including features, design, specifications, applications, ordering information, and troubleshooting for ETS 12C, ETS 24C, ETS 25C, ETS 50C, and ETS 100C models.