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› [Danfoss](#) /

› [Danfoss TEX-2 R-22 TXV Instruction Manual](#)

Danfoss 068Z3209

Danfoss TEX-2 R-22 TXV Instruction Manual

Model: 068Z3209

For 3/8"x1/2" Flare Connections

1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of the Danfoss TEX-2 Thermostatic Expansion Valve (TXV) model 068Z3209. This valve is designed for use with R-22 refrigerant in refrigeration and air conditioning systems, featuring 3/8" inlet and 1/2" outlet flare connections.

Proper understanding and adherence to these instructions are crucial for ensuring the longevity, efficiency, and safe operation of the valve and the overall system.

2. SAFETY INFORMATION

Always observe general safety precautions when working with refrigeration systems. This includes, but is not limited to:

- Ensure the system is depressurized before attempting any installation or maintenance.
- Wear appropriate personal protective equipment (PPE), such as safety glasses and gloves.
- Handle refrigerants with care, as they can cause frostbite or other injuries.
- Only qualified personnel should perform installation and service procedures.
- Refer to local codes and regulations for specific installation requirements.

3. PRODUCT OVERVIEW

The Danfoss TEX-2 TXV (model 068Z3209) is a thermostatic expansion valve designed to regulate the flow of refrigerant into the evaporator, maintaining a constant superheat at the evaporator outlet. This ensures optimal evaporator performance and protects the compressor from liquid refrigerant slugging.



Figure 3.1: Overview of the Danfoss TEX-2 TXV, showing the valve body, flare connections, capillary tube, sensing bulb, and a copper strap for bulb attachment.

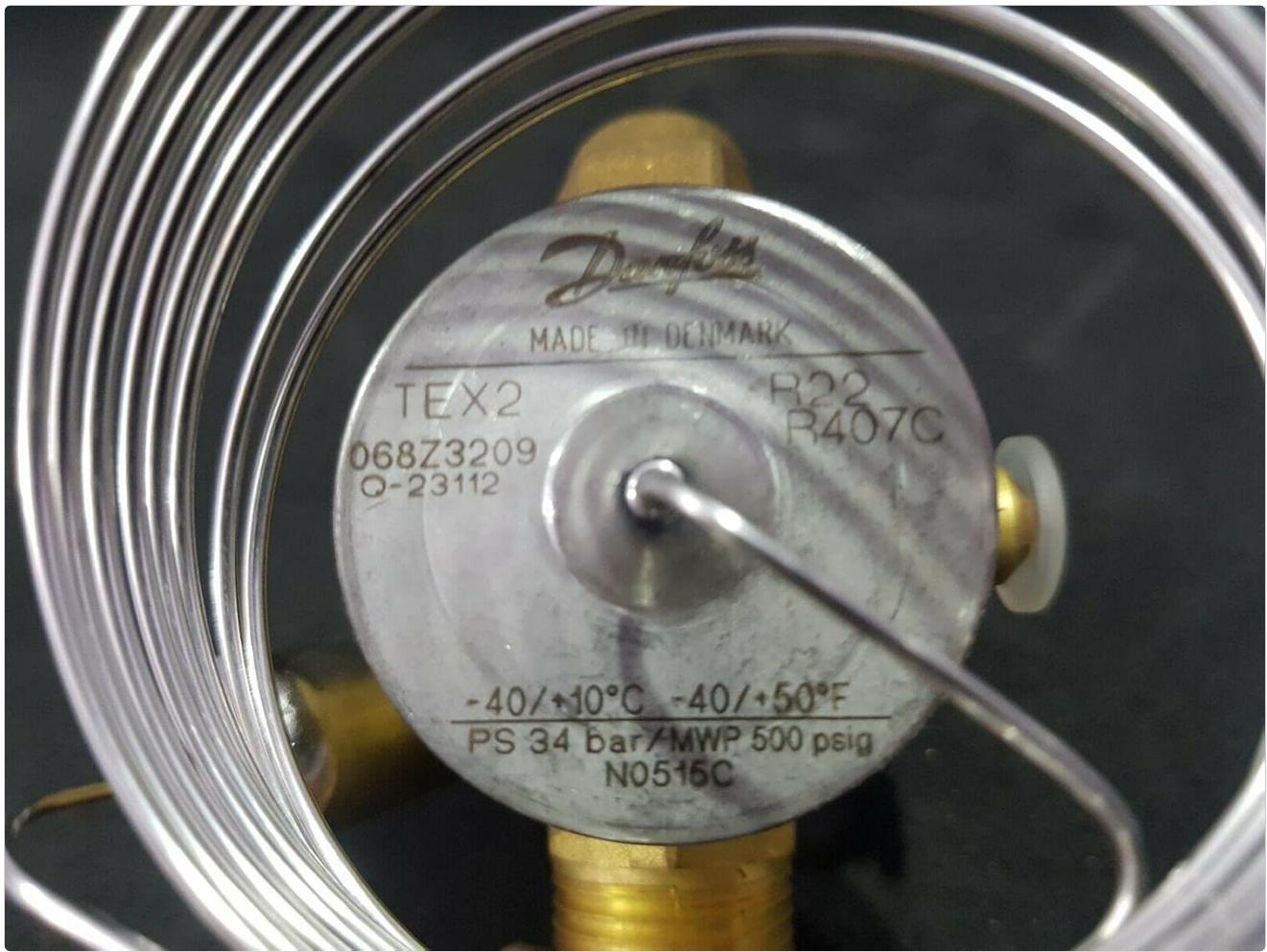


Figure 3.2: Close-up view of the valve's top plate, displaying model number (068Z3209), refrigerant type (R22/R407C), temperature range (-40/+10°C, -40/+50°F), and pressure ratings (PS 34 bar/MWP 500 psig).

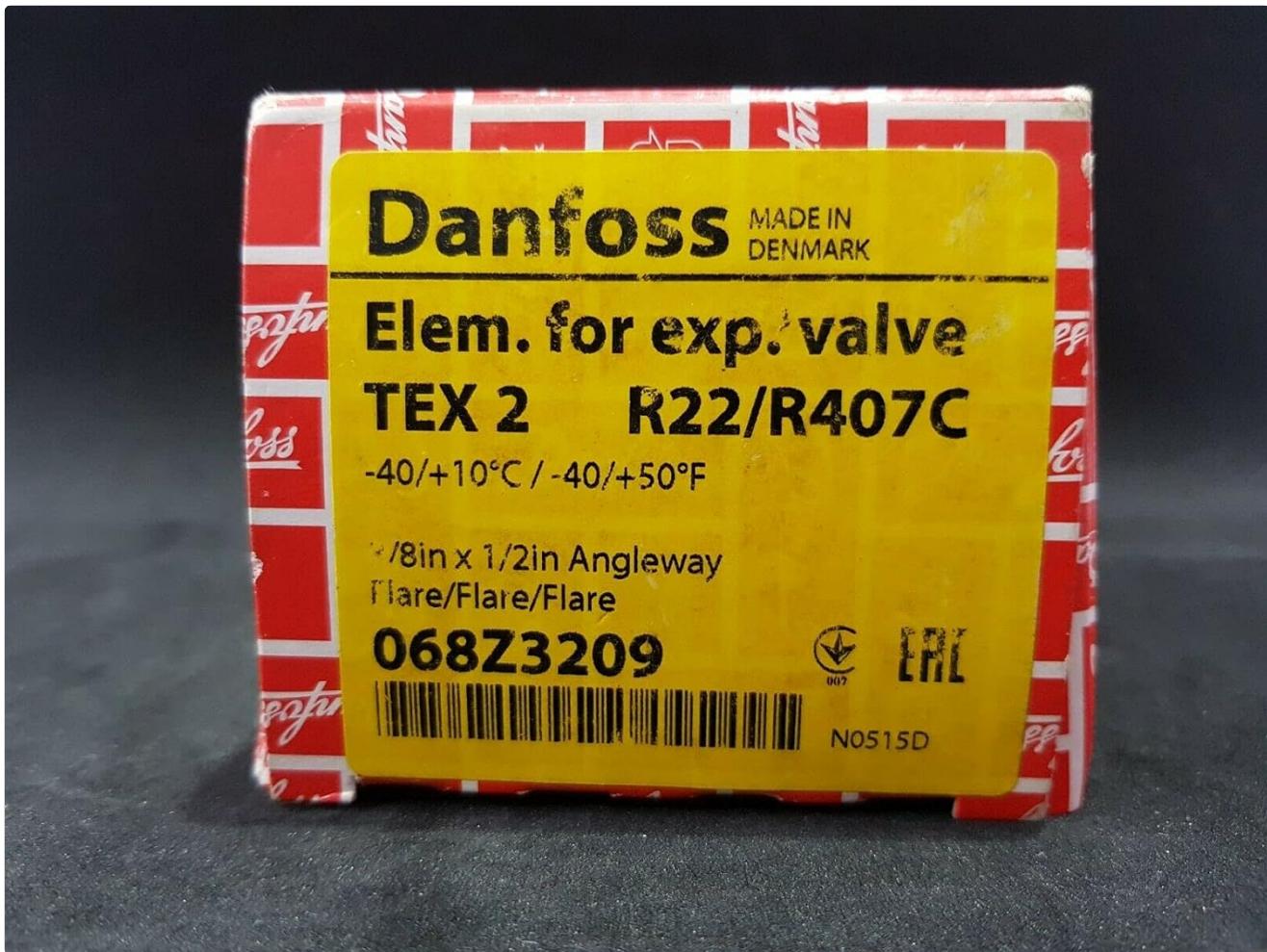


Figure 3.3: The product packaging for the Danfoss TEX-2 TXV, showing the brand logo, model information, and specifications.

4. SETUP AND INSTALLATION

Proper installation is critical for the correct functioning of the TXV. Follow these steps carefully:

- 1. System Preparation:** Ensure the refrigeration system is clean and free of contaminants. Evacuate the system thoroughly to remove non-condensable gases and moisture.
- 2. Valve Placement:** Install the TXV as close as possible to the evaporator inlet. Ensure the valve body is oriented correctly according to the flow arrow.
- 3. Connecting Flare Fittings:**
 - Clean the flare surfaces on both the valve and the tubing.
 - Apply a small amount of refrigeration oil to the flare surfaces.
 - Align the flare nuts and hand-tighten them.
 - Using two wrenches (one to hold the valve body, one to tighten the nut), tighten the flare nuts to the recommended torque specifications to ensure a leak-free seal. Avoid overtightening.
- 4. Sensing Bulb Installation:**
 - Mount the sensing bulb horizontally on a clean, bare section of the suction line, immediately after the evaporator outlet.
 - For suction lines up to 7/8" (22mm), mount the bulb on top of the pipe. For larger pipes, mount it at the 4 or 8 o'clock position.
 - Secure the bulb firmly with the provided copper strap or clamps to ensure good thermal contact. Insulate the bulb and the first few inches of the capillary tube to prevent ambient temperature interference.

5. **Leak Testing:** After installation, pressurize the system with nitrogen and perform a thorough leak test using an electronic leak detector or soap bubbles on all connections.
6. **System Charging:** Charge the system with the correct type and amount of R-22 refrigerant according to the system manufacturer's specifications.

5. OPERATING PRINCIPLES

The Danfoss TEX-2 TXV operates by balancing three forces:

- **P1 (Bulb Pressure):** Pressure exerted by the charge in the sensing bulb, which responds to the temperature of the suction line.
- **P2 (Evaporator Pressure):** Pressure exerted by the refrigerant in the evaporator, acting to close the valve.
- **P3 (Spring Pressure):** Pressure exerted by the superheat spring, acting to close the valve.

The valve modulates its opening to maintain a constant superheat. When the superheat increases (e.g., due to higher heat load), the bulb temperature rises, increasing P1, which opens the valve further to allow more refrigerant into the evaporator. Conversely, when superheat decreases, P1 drops, and P2 + P3 overcome P1, causing the valve to close slightly, reducing refrigerant flow.

6. MAINTENANCE

The Danfoss TEX-2 TXV is designed for reliable operation with minimal maintenance. However, periodic checks are recommended as part of overall system maintenance:

- **Leak Checks:** Regularly check all connections for refrigerant leaks.
- **Bulb Contact:** Ensure the sensing bulb remains securely attached and insulated on the suction line for accurate temperature sensing.
- **System Cleanliness:** Maintain a clean refrigeration system to prevent contaminants from affecting valve operation.
- **Superheat Verification:** Periodically verify the system's superheat to ensure the TXV is operating correctly. Adjustments should only be made by qualified technicians.

7. TROUBLESHOOTING

If the refrigeration system is not performing optimally, the TXV may be a contributing factor. Here are some common issues and potential causes:

Symptom	Possible Cause	Action
High Superheat / Starved Evaporator	Undercharge of refrigerant Clogged filter-drier TXV orifice partially blocked Sensing bulb loose or uninsulated External equalizer line blocked (if applicable)	Check refrigerant charge Replace filter-drier Inspect/clean TXV (if serviceable) or replace Re-secure and insulate bulb Clear blockage

Symptom	Possible Cause	Action
Low Superheat / Flooded Evaporator	Overcharge of refrigerant Sensing bulb incorrectly positioned or contaminated TXV stuck open Internal leak in TXV	Adjust refrigerant charge Reposition/clean bulb Replace TXV Replace TXV
Fluctuating Superheat	Improper bulb contact or insulation Pressure drop across evaporator too high System hunting	Re-secure and insulate bulb Check evaporator for restrictions Verify system design and charge

Note: Troubleshooting should only be performed by certified HVAC/R technicians. Incorrect diagnosis or repair can lead to system damage or personal injury.

8. SPECIFICATIONS

Key specifications for the Danfoss TEX-2 TXV (Model 068Z3209):

- **Model Number:** 068Z3209
- **Refrigerant Compatibility:** R-22, R-407C
- **Connection Type:** Flare
- **Inlet Connection Size:** 3/8 inch
- **Outlet Connection Size:** 1/2 inch
- **Temperature Range:** -40°F to +50°F (-40°C to +10°C)
- **Maximum Working Pressure (MWP):** 500 psig (34 bar)
- **Item Weight:** Approximately 1 Pound
- **Manufacturer:** Danfoss
- **Country of Origin:** Made in Denmark (as per product image)

9. WARRANTY AND SUPPORT

For specific warranty terms and conditions, please refer to the official Danfoss warranty policy or contact your authorized Danfoss distributor or reseller. Warranty coverage typically applies to defects in materials and workmanship under normal use and service.

For technical support, product inquiries, or service assistance, please visit the official Danfoss website or contact their customer service department. When contacting support, please have your product model number (068Z3209) and any relevant system details available.

You can find more information about Danfoss products and support at www.danfoss.com.