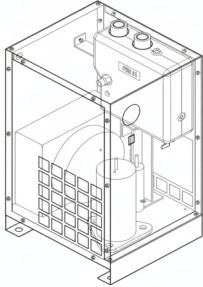
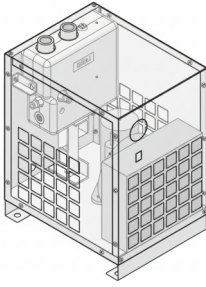
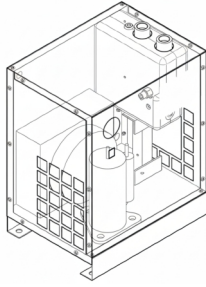
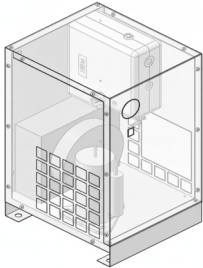
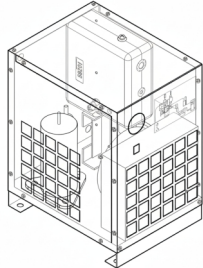
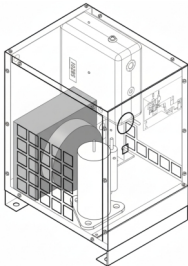
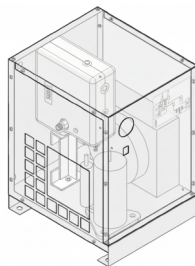


Safety Precaution Manual for 3-in-1 Heat Exchanger

Vertical Installation

A) Type One Installation of heat exchanger parallel to the side panel of the refrigerated dryer, with the air inlet and outlet facing upward.	B) Type Two Installation of heat exchanger close to the rear panel of the refrigerated dryer, with its air inlet and outlet facing upwards.	C) Type Three Installation of heat exchanger parallel to the side panel of the refrigerated dryer, with the air inlet and outlet facing upwards.
		

Horizontal Installation

A) Type One Installation of heat exchanger parallel to the side panel of the refrigerated dryer with its air inlet and outlet facing the rear side. The side panel of the heat exchanger is fixed to the rear panel of the refrigerated dryer with bolts, and the top of the heat exchanger is fixed to the rear panel of the refrigerated dryer with bolts. Use brackets for support in case of heavy heat exchanger.	B) Type Two Installation of heat exchanger parallel to the side panel of the refrigerated dryer, with its air inlet and outlet facing towards the rear side. The bottom of the heat exchanger is supported by angle steel brackets, and the side of the heat exchanger is fixed to the rear panel of the refrigerated dryer with bolts. The top of the heat exchanger is fixed to the upper panel of the refrigerated dryer with bolts.
	
C) Type Three Installation of heat exchanger parallel to the side panel of the refrigerated dryer, with its air inlet and air outlet facing the rear side. The bottom of the heat exchanger is supported by angle steel brackets, and the side of the heat exchanger is fixed to the rear panel of the refrigerated dryer with bolts. The top of the heat exchanger is fixed to the upper panel of the refrigerated dryer with bolts.	D) Type Four Installation of heat exchanger parallel to the side panel of the refrigerated dryer, with its inlet and outlet facing towards the rear side. Provide support to the bottom of the heat exchanger by angle steel brackets, and the side of the heat exchanger is fixed to the rear panel of the refrigerated dryer with bolts. The top of the heat exchanger is fixed to the upper panel of the refrigerated dryer with bolts.
	

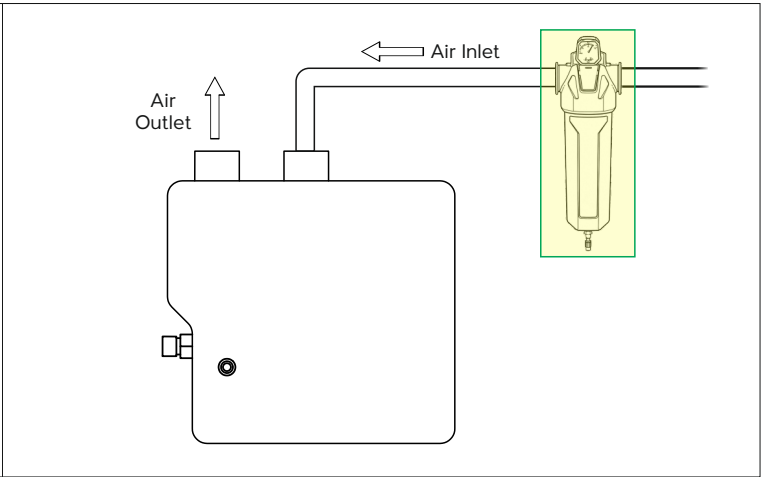
1. Air Side Connection Details
2. Refrigerant Side Connections Details
3. Drain Connection Details
4. Mounting Details



Scan Above QR Code for
Connection Details

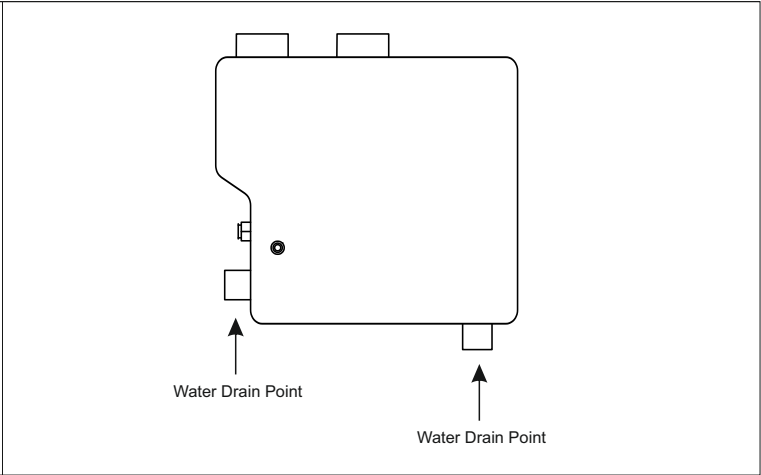
Install a Filter to Remove Contaminants

A filter should be installed in the system to remove dirt, metal particles, moisture, and other contaminants from the circulating fluid. Contaminants can accumulate inside the heat exchanger passages, reducing heat transfer efficiency and causing blockages. Moisture in the system may also lead to corrosion and internal damage. Regular inspection and replacement of the filter help maintain reliable operation, improve equipment life, and prevent costly repairs.



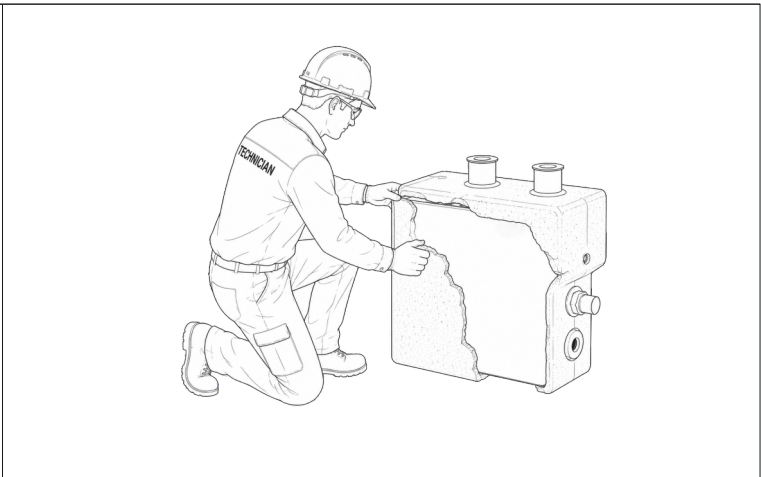
Ensure the Drain Valve Is Located at the Lowest Point

The drain valve should always be installed at the lowest point of the heat exchanger. This arrangement allows complete drainage of the fluid during maintenance, inspection, or shutdown. Proper drainage prevents stagnant liquid from remaining inside the unit, which could cause corrosion, freezing damage, contamination, or bacterial growth. Complete draining also makes maintenance activities safer and more effective.



Do Not Remove the Insulation

The insulation provided on the heat exchanger should not be removed unless specifically required for inspection or repair. Insulation minimizes heat loss, improves energy efficiency, and helps maintain the desired operating temperature. It also protects personnel from accidental contact with hot surfaces, reducing the risk of burns and injuries. Damaged or removed insulation should be replaced immediately to ensure safe and efficient operation.



1. Purpose		2. General Safety Warnings	
This manual provides safety precautions, operating guidelines, maintenance practices, and emergency procedures for safe handling and operation of a 3-in-1 Heat Exchanger. The unit may combine: • Heat exchange • Cooling or condensation functions		Warning Improper installation, operation, or maintenance may cause: • High-pressure release • Burns from hot surfaces • Frostbite from refrigerants • Electrical shock • Fire hazards • Equipment damage • Only trained and authorized personnel should operate or service the unit.	
3. Personal Protective Equipment (PPE)		4. Pre-Installation Safety Checks	
Operators and technicians must wear: • Safety goggles • Heat-resistant gloves • Safety shoes • Protective clothing • Hearing protection (if installed near compressors/pumps) • Respiratory protection when handling refrigerants or chemicals		Before installation: Verify: • Unit is free from visible damage • Ports and fittings are clean • Pressure rating matches system requirements • Correct orientation for inlet/outlet connections • Mounting surface is stable Do Not: • Lift the exchanger using ports or fittings • Install near open flames • Exceed rated pressure or temperature limits	
5. Installation Precautions			
Mechanical Safety • Use proper lifting equipment • Tighten fittings to manufacturer torque specifications • Ensure vibration isolation if connected to compressors/pumps • Avoid excessive pipe stress on connections		Pressure Safety • Install pressure relief valves • Use pressure gauges on inlet and outlet lines • Never block relief devices Electrical Safety (if sensors/heaters are included) • Disconnect power before servicing • Ground all electrical components properly • Protect wiring from moisture and heat Installation of a suitable hot gas bypass valve is mandatory.	
6. Operating Safety Procedures			
Before Start-Up Check: • All valves are in correct position • No leakage present • Coolant/oil/refrigerant levels are correct • Air is purged from system • Flow direction is correct		During Operation Monitor: • Pressure levels • Temperature readings • Flow rate • Vibrations • Unusual noise Never: • All valves are in correct position • No leakage present • Coolant/oil/refrigerant levels are correct • Air is purged from system • Flow direction is correct	
7. Temperature Hazards			
Hot Surface Risk Surface temperatures may exceed safe touch limits. Precautions: • Install insulation where necessary • Place warning labels • Allow cooling before maintenance		Cold Surface Risk Low-temperature refrigerants may cause frostbite. Precautions: • Wear insulated gloves • Avoid skin contact with cold pipes	
8. Pressure Hazards			
The heat exchanger may contain: • Compressed gas • Refrigerant • Steam • Hot oil		Safety Rules • Depressurize system before opening • Open valves slowly • Never weld on pressurized equipment • Use approved pressure-rated components only	

9. Chemical & Refrigerant Safety		
If refrigerants or chemicals are used: Avoid: • Inhalation of vapors • Skin contact • Open flame exposure In Case of Leak: • Evacuate area if concentration is high • Ventilate immediately • Use leak detector • Notify safety personnel		
10. Maintenance Safety		
Lockout/Tagout (LOTO) Before maintenance: • Shut down system • Isolate energy sources • Lock and tag valves/switches • Release stored pressure • Verify zero energy state	Routine Inspection Inspect regularly for: • Corrosion • Cracks • Leakage • Fouling/scaling • Loose fittings • Abnormal vibration	Cleaning • Use manufacturer-approved cleaning agents • Avoid corrosive chemicals • Flush system thoroughly after cleaning
11. Emergency Procedures		
In Case of Leakage • Shut down system immediately • Isolate affected section • Wear PPE Clean spill using approved procedure	In Case of Overpressure • Activate emergency shutdown • Evacuate if necessary • Inspect relief valve function	Fire Emergency • Use appropriate fire extinguisher: • CO₂ • Dry chemical • Do not use water on electrical fires
12. Storage & Handling		13. Prohibited Actions
Store Unit: • Indoors in dry location • Away from corrosive atmosphere • Protected from dust and moisture During transport • Cap all openings • Prevent impact damage • Avoid dropping unit	Do Not • Modify the heat exchanger • Operate with damaged fittings • Exceed pressure/temperature ratings • Use incompatible fluids • Perform unauthorized welding/drilling	
14. Recommended Safety Labels		15. Operator Training Requirements
Attach labels for: • Hot Surface • High Pressure • Refrigerant Inside • Wear Ppe • Lockout Before Service		Operators should be trained in: • Safe startup/shutdown • Pressure system safety • Leak response • PPE usage • Emergency shutdown procedures
16. Maintenance Record Log (Recommended)		
Maintain records for: • Inspection dates • Pressure tests • Repairs/replacements • Leak incidents • Cleaning schedules		

Failure to Follow Safety Precautions may result in Injury, Environmental Hazards, or Equipment Failure.