Danfoss MLZ-B Scroll Compressors Instructions

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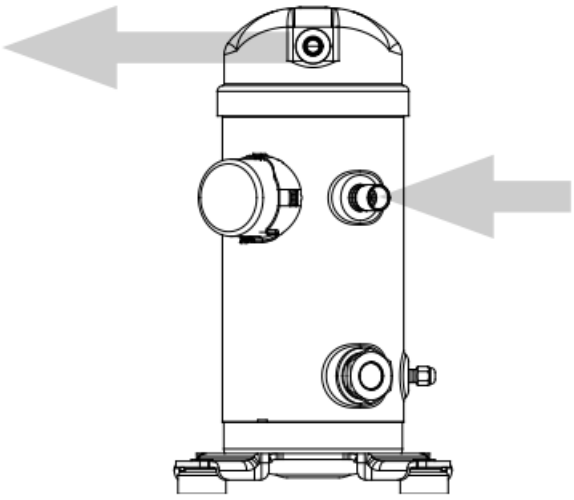


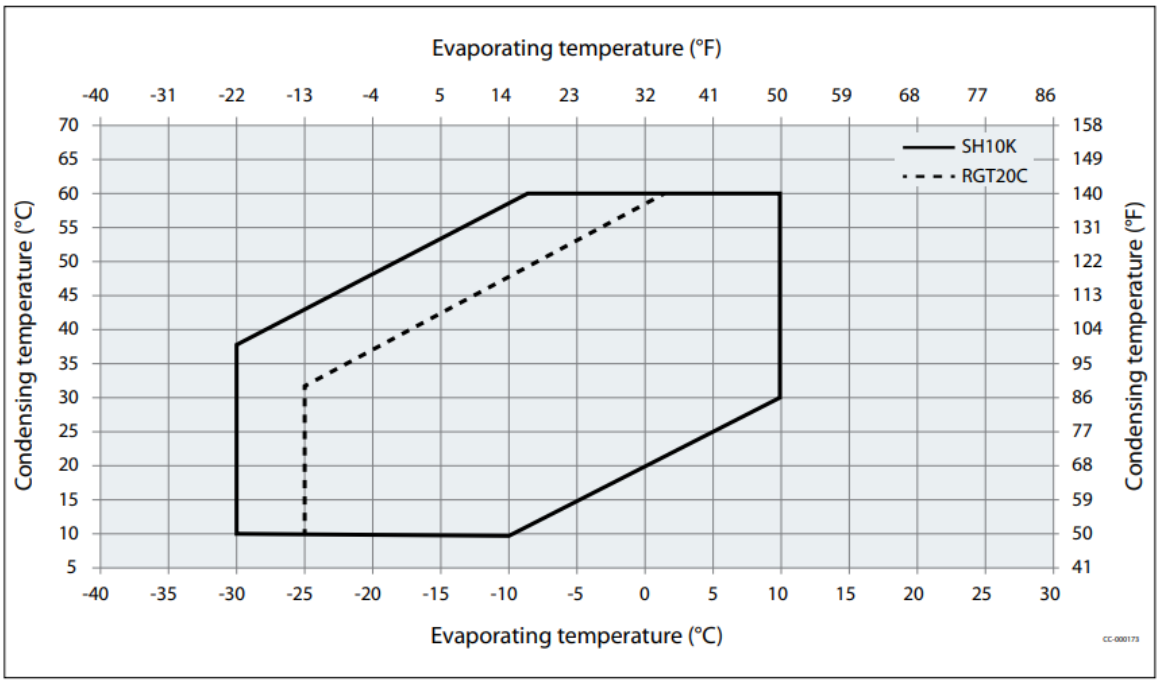
Contents

MLZ-B Scroll Compressors

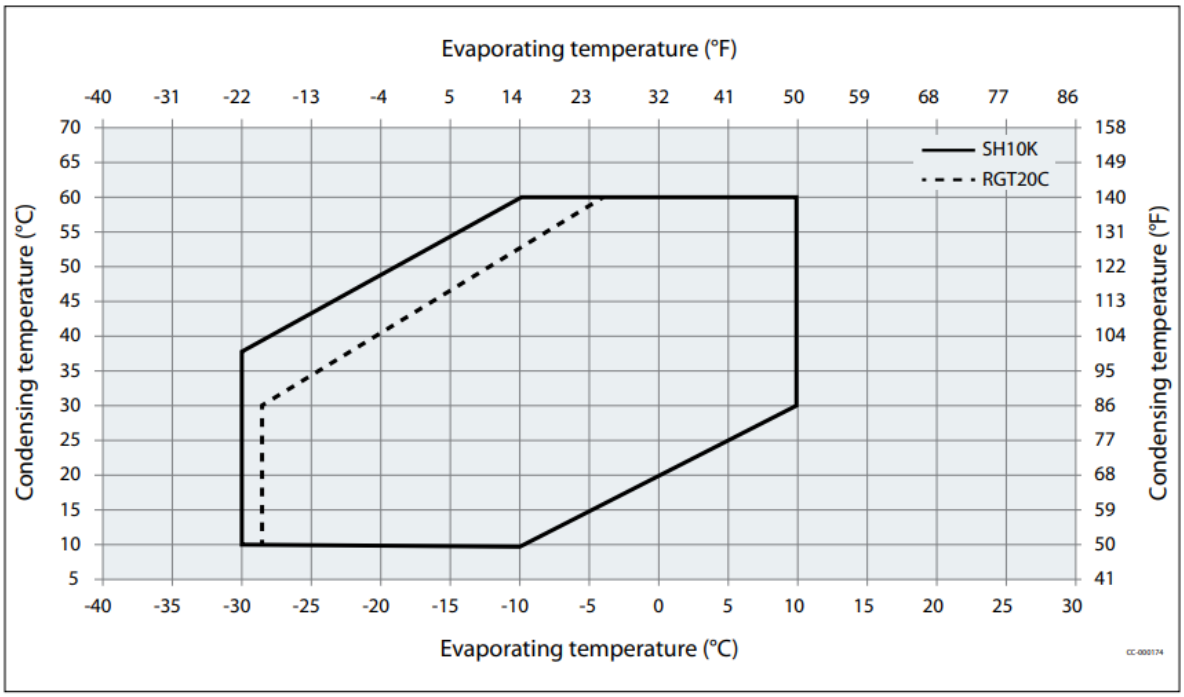
A: Model number	E: Supply voltage range
B: Serial Number	F: Locked rotor current Maximum operating current
C: Internal protection	G: Lubricant type and a nominal charge
D: Manufacturing year	H: Approved Refrigerant

Operating envelops

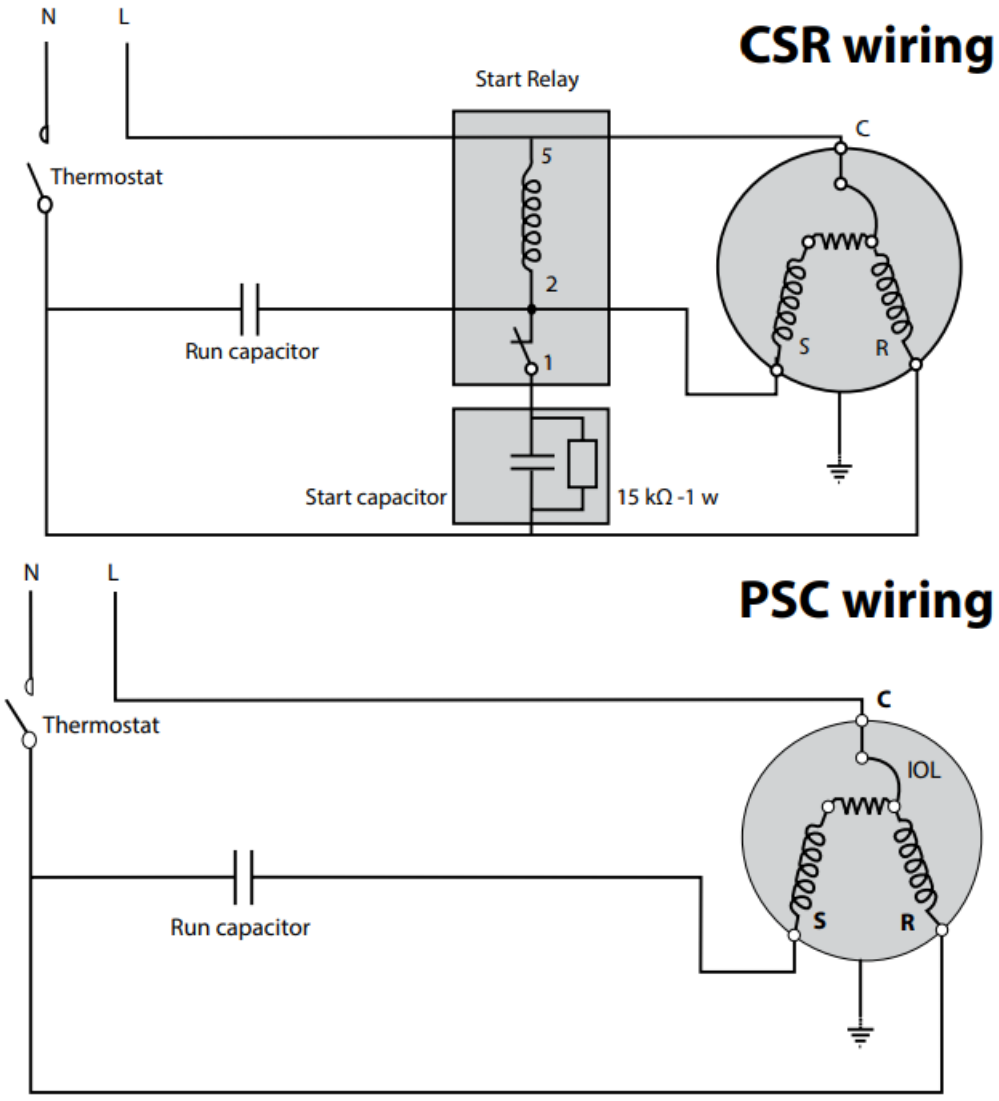
MLZ R454C Operating Map



MLZ R455A Operating Map



Single phase

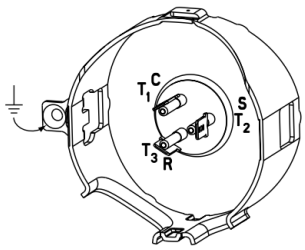
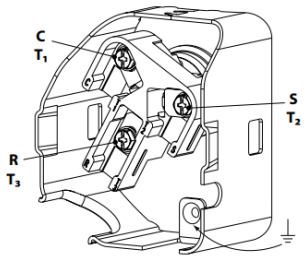
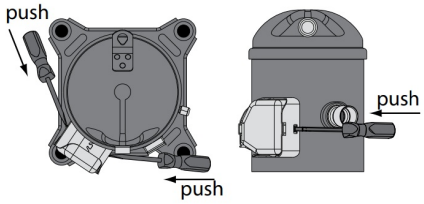


Models	Brazed connection size	Rotolock connection size
MLZ 015-026	Suction 3/4″ Discharge 1/2″	Suction 1″1/4 Discharge 1″
MLZ 030-045	Suction 7/8″ Discharge 1/2″	Suct. 1″1/4 Discharge 1″
MLZ 048	Suction 7/8″ Discharge 3/4″	Suction 1″1/4 Discharge 1″ 1/4
MLZ 058-076	Suction 1″1/8 Discharge 7/8″	Suction 1″3/4 Discharge 1″1/4

⚠Installation and servicing of the compressor by qualified personnel only. Follow these instructions and sound refrigeration engineering practices relating to installation, commissioning, maintenance, and service.

⚠ The compressor must only be used for its designed purpose(s) and within its scope of application (refer to «operating limits0). Consult Application guidelines and datasheet available from cc.danfoss.com	⚠a Never operate compressor without terminal box cover in place and secured.	⚠ Under all circumstances, the EN378 (or other applicable local safety regulations) requirements must be fulfilled. Wear protective goggles and work gloves.
The compressor is delivered under nitrogen gas pressure (between 0.3 and 0.4 bar / 4 and 6 psi). Do not disassemble bolts, plugs, fittings, etc… unless all pressure has been relieved from the compressor.		The compressor must be handled with caution in the vertical position (maximum offset from the vertical : 15°).

Electrical connections

 **Quick connect spade terminals T and P terminal box type**	 **Ring connect screw terminals Q and C terminal box type**	

Introduction

These instructions pertain to the MLZ scroll compressors used for refrigeration systems.
They providenecessary information regarding the safety and proper usage of this product.

Handling and storage

- Handle the compressor with care. Use the dedicated handles in the packaging. Use the compressor lifting lug and use appropriate and safe lifting equipment.
- Store and transport the compressor in an upright position.
- Store the compressor between -35°C and 70°C / -31°F and 158°F.
- Don’t expose the compressor and the packaging to rain or corrosive atmosphere.

Safety measures before assembly

⚠ **Never use the compressor in a flammable atmosphere.**

- Mount the compressor on a horizontal flat surface with less than 7° slope.
- Verify that the power supply corresponds to the compressor motor characteristics (see nameplate).

- When installing a compressor for R404A, R507, R454C or R455A use equipment specifically reserved for HFC refrigerants that was never used for CFC or HCFC refrigerants.
- Use clean and dehydrated refrigeration-grade copper tubes and silver alloy brazing material.
- Use clean and dehydrated system components.
- The piping connected to the compressor must be flexible in 3 dimensions to dampen vibrations.
- The compressor must always be mounted with the rubber grommets supplied with the compressor.

Assembly

- Slowly release the nitrogen holding charge through discharge and suction ports.
- Connect the compressor to the system as soon as possible to avoid oil contamination from ambient moisture.
- Avoid material entering the system while cutting tubes.
  Never drill holes where burrs cannot be removed.
- Braze with great care using state-of-the-art techniques and vent piping with nitrogen gas flow.
- Connect the required safety and control devices. When the schrader port, if any, is used for this, remove the internal valve.

Leak detection

 Never pressurize the circuit with oxygen or dry air. This could cause fire or explosion.

- Do not use leak detection dye.
- Perform a leak detection test on the complete system.
- The low side test pressure must not exceed 31 bar /450 psi.
- When a leak is discovered, repair the leak and repeat the leak detection.

Vacuum dehydration

- Never use the compressor to evacuate the system.
- Connect a vacuum pump to both the LP & HP sides.
- Pull down the system under a vacuum of 500 µm Hg (0.67 mbar) / 0.02 inch Hg absolute.
- Do not use a megohmmeter nor apply power to the compressor while it is under vacuum as this may cause internal damage.

Electrical connections

- Switch off and isolate the main power supply.
- All electrical components must be selected as per local standards and compressor requirements.
- Refer to electrical connections details. For three phase applications, the terminals are labeled T1, T2, and T3. For single-phase applications the terminals are labeled C (common), S (start), and R (run).
- Danfoss scroll compressors will only compressgas while rotating counter-clockwise (when viewed from the compressor top). Since singlephase motors will start and run in only one direction, reverse rotation is not a major consideration. Three-phase motors, however, will start and run in either direction, depending on the

phase angles of the supplied power. Care must be taken during installation to ensure that the compressor operates in the correct direction.

- Use ø 4.8 mm / #10 – 32 screws and ¼" ring terminals for the power connection with ring connect screw terminal (C type). Fasten with 3 Nm torque.
- Use ø 6.3 mm tabs for quick connect spade terminals (P type).
- Use a self-tapping screw to connect the compressor to the earth.

Filling the system

- Keep the compressor switched off.
- Keep the refrigerant charge below the indicated charge limits if possible. Above this limit; protect the compressor against liquid flood-back with a pumpdown cycle or suction line accumulator.
- Never leave the filling cylinder connected to the circuit.

Compressor models	**Refrigerant charge limit**
MLZ015-019-021-026	3.6 kg / 8 lb
MLZ030-038-045-048	5.4 kq / 12 lb
MLZ058-066-076	7.2 kq/16lb

Verification before commissioning

⚠Use safety devices such as safety pressure switches and mechanical relief valves in compliance with both generally and locally applicable regulations and safety standards. Ensure that they are operational and properly set.

⚠Check that the settings of high-pressure switches don't exceed the maximum service pressure of any system component.

- A low-pressure switch is recommended to avoid low-pressure operation.

Minimum setting for R454C and R455A	1.3 bar (absolute) / 19 psia

- Verify that all electrical connections are properly fastened and in compliance with local regulations.
- When a crankcase heater is required, it must be energized at least 8 hours before initial start-up and start-up after prolonged shutdown.
- Please respect a 90 Nm ± 20 Nm for tightening torque of all roto lock nut.

Start-up

- Never start the compressor when no refrigerant is charged.
- Do not provide any power to the compressor unless suction and discharge service valves are open if installed.
- Energize the compressor. It must start promptly. If the compressor does not start, check wiring conformity and

voltage on terminals.

- Eventual reverse rotation can be detected by the following phenomena; excessive noise, no pressure differential between suction and discharge, and line warming rather than immediate cooling. A service technician should be present at the initial start-up to verify that supply power is properly phased and that the compressor is rotating in the correct direction. MLZ Scroll compressors are designed to operate for a maximum of 150 hours in reverse, but as a reverse rotation situation can go unnoticed for longer periods, phase monitors are recommended. For compressors MLZ048 and larger, phase monitors are required for all applications. Danfoss recommends phase protection for residential compressors.
- If the internal overload protector trips out, it must cool down to 60°C / 140°F to reset. Depending on ambient temperature, this may take up to several hours.

Check with running compressor

⚠Check current draw and voltage. Measurement of amps and volts during running conditions must be taken at other points in the power supply, not in the compressor electrical box.

- Check suction superheat to reduce risk of slugging.
- Observe the oil level in the sight glass (if provided) for about 60 minutes to ensure proper oil return to the compressor.
- Respect the operating limits.
- Check all tubes for abnormal vibration. Movements in excess of 1.5 mm / 0.06 in require corrective measures such as tube brackets.
- When needed, additional refrigerant in liquid phase may be added in the low-pressure side as far as possible from the compressor. The compressor must be operating during this process.
- Do not overcharge the system.
- Never release refrigerant into the atmosphere.
- Before leaving the installation site, carry out a general installation inspection regarding cleanliness, noise, and leak detection.
- Record the type and amount of refrigerant charge as well as operating conditions as a reference for future inspections.

Maintenance

⚠Internal pressure and surface temperature are dangerous and may cause permanent injury. Maintenance operators and installers require appropriate skills and tools. Tubing temperature may exceed 100°C / 212°F and can cause severe burns.

⚠ Ensure that periodic service inspection to ensure system reliability and as required by local regulations are performed. To prevent system-related compressor problems, the following periodic maintenance is recommended:

- Verify that safety devices are operational and properly set.
- Ensure that the system is leak tight.
- Check the compressor current draw.
- Confirm that the system is operating in a way consistent with previous maintenance records and ambient

conditions.

- Check that all electrical connections are still adequately fastened.
- Keep the compressor clean and verify the absence of rust and oxidation on the compressor shell, tubes, and electrical connections.
- Acid/moisture content in the system and oil should be checked regularly.

Warranty

Always transmit the model number and serial number with any claim filed regarding this product. The product warranty may be void in the following cases:

- Absence of nameplate.
- External modifications; in particular, drilling, welding, broken feet, and shock marks.
- Compressor opened or returned unsealed.
- Rust, water, or leak detection dye inside the compressor.
- Use of a refrigerant or lubricant not approved by Danfoss.
- Any deviation from recommended instructions pertaining to installation, application, or maintenance.
- Use in mobile applications.
- Use in the explosive atmospheric environment.
- No model number or serial number was transmitted with the warranty claim.

Disposal


Danfoss recommends that compressors and compressor oil should be recycled by a suitable company at its site.

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AN374931472821en-000101- 8510302P01AB

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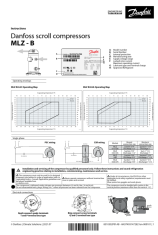
Documents / Resources

	Danfoss MLZ-B Scroll Compressors [pdf] Instructions MLZ-B Scroll Compressors, MLZ-B, Scroll Compressors, Compressors

References

- Read more on our commercial compressors | Danfoss | Danfoss