

Danfoss SC18CL compressor R404A R507 specifications replacement 104L2123 commercial freezer refrigeration

Category: Refrigeration

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Danfoss SC18CL Compressor: Complete Technical Guide & Replacement Options

If you're dealing with a commercial freezer or refrigeration system that's seen better days, chances are you've encountered the Danfoss SC18CL compressor. This workhorse of the refrigeration world powers everything from beverage coolers to frozen food display cases. Let's dive deep into what makes this compressor tick and everything you need to know about specifications, replacements, and performance.

Quick Specifications Overview

The Danfoss SC18CL (sales code 104L2123) is a hermetic reciprocating compressor designed for low and medium back pressure applications

kruff.se. It's built to handle tough commercial refrigeration tasks while maintaining energy efficiency. Whether you're running R404A, R507, or the newer R452A refrigerant, this compressor delivers consistent performance across a wide temperature range

www.secop.com.

Complete Technical Specifications Table

Specification	Details
Model	SC18CL
Manufacturer	Danfoss/Secop
Sales Code	104L2123
Utilisation (mbp/hbp/lbp)	LBP/MBP (Low & Medium Back Pressure)
Domaine (Freezing/Cooling)	Freezing & Cooling
Cooling wattage at -23°C	781W (EN12900 LBP conditions) elgracool.pl
Cubic feet can this compressor cool	Approximately 8-12 cubic feet (freezer) / 15-20 cubic feet (refrigerator)
Litres can this compressor cool	Approximately 200-350 liters
Kcal/h	689.3 kcal/h (at -23.3°C evap temp) elgracool.pl
TON	Approximately 0.22 TR (Tons of Refrigeration)
Oil Type and quantity	Polyolester (POE) 32 cST viscosity, approximately 400-500ml
Horsepower (HP)	5/8 HP (0.625 HP) www.cooltools.net.au
Refrigerant Type	R404A, R452A, R507 www.secop.com
Power Supply	220-240V ~ 50Hz, 1 Phase
Cooling Capacity BTU	2,735 BTU/h (at -23.3°C) / 5,925 BTU/h (at -5°C)
Motor Type	CSCR (Capacitor Start Capacitor Run)
Displacement	17.69 cm ³ (1.08 cu.in) kruff.se
Winding Material	Copper
Pressure Charge	Max refrigerant charge: 1300g www.prokes-auto.com
Capillary	Not included – system dependent
Model Frigo or refrigerator can work with this compressor	Commercial freezers, beverage coolers, display cases, ice cream freezers horecatiger.eu
Temperature function	-45°C to -5°C evaporating temperature www.skh-kaeltetechnik.de
With fan or no	Requires external fan cooling (3m/s recommended)
Commercial or no	Yes – Commercial refrigeration applications
Amperage in function	Running: 3.78A / Starting (LRA): 20.43A www.secop.com
LRA (Locked Rotor Amps)	20.43A
Type of relay	CSR relay (included in starter kit)
Capacitor or no and valeur	Yes – Run: 10µF, Start: 80µF www.secop.com
Country of origin and exporting countries	Made in Germany. Exported worldwide to EU, Asia, Americas

Efficiency Metrics (COP) Performance Table

Here's how the SC18CL performs across different evaporating temperatures with condensing at +45°C:

Evaporating Temp (°C)	-30	-25	-23.3	-20	-15	-10	0	4	10
Cooling Capacity (Watts)	542	715	781	918	1,154	1,510	1,735	1,850	2,050
Power Consumption (Watts)	534	615	660	700	792	933	1,008	1,080	1,180
COP (Coefficient of Performance)	1.01	1.16	1.18	1.31	1.46	1.62	1.72	1.80	1.90

Data based on EN12900 standards with condensing temperature at +45°C, return gas temp 32°C, liquid temp 45°C

Detailed Cooling Capacity by Application Type

LBP (Low Back Pressure) Applications - Freezing

Evap Temp °C	Cooling Capacity W	BTU/h	Power W	COP	Current A
-45	167	569	294	0.57	2.61
-35	395	1,347	455	0.87	3.02
-30	542	1,850	534	1.01	3.29
-25	715	2,443	615	1.16	3.60
-23.3	781	2,667	660	1.18	3.78
-20	918	3,136	700	1.31	3.96
-15	1,154	3,941	792	1.46	4.36
-10	1,510	5,157	933	1.62	4.99

MBP (Medium Back Pressure) Applications - Cooling

Evap Temp °C	Cooling Capacity W	BTU/h	Power W	COP	Current A
-10	1,124	3,837	933	1.20	4.99
-7	1,510	5,157	1,009	1.50	5.33
-5	1,735	5,925	1,008	1.72	5.29
0	2,100	7,167	1,150	1.83	5.80
+5	2,500	8,533	1,300	1.92	6.20

Physical Dimensions & Connections

Dimension	Measurement
Total Height	219mm (8.62")
Shell Height	213mm (8.39")
Length with Cover	255mm (10.04")
Width	151mm (5.94")
Suction Connection	10.2mm ID (3/8") at 37° angle
Discharge Connection	6.2mm ID (1/4") at 37° angle
Process Tube	6.2mm ID (1/4") at 143° angle
Weight	13.7 kg (30.2 lbs)
Baseplate Mounting	204mm x 150mm

Electrical Specifications & Starting Components

The SC18CL uses a CSCR (Capacitor Start Capacitor Run) motor configuration, which provides high starting torque – perfect for commercial refrigeration applications

horecatiger.eu.

Electrical Parameter	Value
Voltage Range	198-254V (operating range)
Frequency	50Hz
Phase	1 (Single Phase)
Running Current (RLA)	4.2A
Locked Rotor Current (LRA)	20.43A
Starting Device	CSR Relay
Run Capacitor	10µF
Start Capacitor	80µF
Max Starting Current	20.43A (4 seconds)

Starter Kit Components:

- SC starter kit (550mm cable) – Part #117-7040
- Start capacitor 80µF – Part #117U5373
- Run capacitor 10µF – Part #117-7112
- Plastic cover and cord relief included

Typical Applications

The Danfoss SC18CL shines in these commercial refrigeration applications:

- ☐ **Glass door merchandise refrigerators**
- ☐ **Stainless steel commercial freezers**
- ☐ **Food retail display cabinets**
- ☐ **Beverage coolers**
- ☐ **Ice cream freezers**
- ☐ **Frozen food storage**
- ☐ **Supermarket display cases**
- ☐ **Restaurant refrigeration units**

This compressor is particularly well-suited for systems requiring reliable operation in temperature ranges from -45°C (deep freezing) to -5°C (medium temperature cooling)

www.skh-kaeltetechnik.de.

5 Compressor Replacements - Same Refrigerant (R404A/R507)

When your SC18CL needs replacement, here are compatible options that work with the same refrigerants:

Model	HP	Displacement	Cooling W @ -23°C	Voltage	Notes
SC18CLX	5/8 HP	17.69 cm³	781W	220-240V 50Hz	Direct replacement, same specs
SC21CL	3/4 HP	21.0 cm³	920W	220-240V 50Hz	Slightly higher capacity
SC15CL	1/2 HP	15.0 cm³	650W	220-240V 50Hz	Lower capacity option
SC18ML	5/8 HP	17.69 cm³	850W	220-240V 50Hz	MBP optimized variant
TFS4517Z	5/8 HP	17.2 cm³	765W	220-240V 50Hz	Tecumseh equivalent

5 Compressor Replacements - Alternative Refrigerants

If you’re considering retrofitting to newer, more environmentally friendly refrigerants:

Model	Refrigerant	HP	Cooling W @ -23°C	Voltage	Notes
SC18CL (R452A)	R452A	5/8 HP	732W	220-240V 50Hz	Same compressor, different gas www.secop.com
SC18CL (R449A)	R449A	5/8 HP	745W	220-240V 50Hz	Lower GWP alternative
SC18CL (R407A)	R407A	5/8 HP	720W	220-240V 50Hz	Retrofit option
SC18G	R290 (Propane)	5/8 HP	800W	220-240V 50Hz	Natural refrigerant, eco-friendly
SC18D	R134a	5/8 HP	680W	220-240V 50Hz	HFC alternative for MBP

Important Note: When changing refrigerants, always consult a certified refrigeration technician. System modifications, oil changes, and component adjustments may be required.

Compatible Refrigerator/Freezer Models

The SC18CL compressor works with various commercial refrigeration brands and models:

Compatible Brands:

- Beverage Air
- True Manufacturing
- Turbo Air

- Delfield
- Continental Refrigerator
- True Food Service
- Mondial Framec (Ice-Plus-N40 series) horecatiger.eu
- Gram Commercial
- Williams Refrigeration

Common Applications:

- 2-4 door commercial freezers
 - Reach-in refrigerators
 - Undercounter freezers
 - Display merchandisers
 - Blast chillers (small capacity)
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Installation & Maintenance Tips

Before Installation:

1. Verify voltage matches your power supply (220-240V 50Hz)
2. Ensure proper ventilation – compressor needs 3m/s airflow
3. Check that refrigerant type matches your system
4. Verify oil level and type (POE 32 cST)

During Installation:

- Use proper brazing techniques with nitrogen purge
- Install new filter-drier
- Evacuate system to 500 microns or better
- Charge with correct refrigerant amount (max 1300g) www.prokes-auto.com
- Install proper starting components (relay + capacitors)

Maintenance Schedule:

- Check electrical connections every 6 months
- Monitor running current (should be 3.5-4.5A normal operation)
- Inspect capacitors annually
- Clean condenser coils quarterly
- Check oil condition during major service

Troubleshooting Common Issues

Compressor won't start:

- Check start capacitor (80 μ F) – common failure point
- Verify relay is functioning
- Ensure voltage is within 198-254V range
- Check for locked rotor (LRA should be 20.43A max)

Compressor runs but no cooling:

- Check refrigerant charge
- Inspect for restrictions in capillary/expansion valve
- Verify compressor valves aren't damaged
- Check for refrigerant leaks

High current draw:

- Dirty condenser coils
- Overcharged system
- High head pressure
- Worn compressor bearings
- Voltage issues

Frequent cycling:

- Faulty relay or capacitors
- Thermostat problems
- Low refrigerant charge
- Restricted airflow

Energy Efficiency & Operating Costs

The SC18CL offers decent efficiency for commercial refrigeration:

At -23.3°C evaporating temperature:

- Cooling Capacity: 781W

- Power Input: 660W
- COP: 1.18
- EER: 4.07

At -10°C evaporating temperature:

- Cooling Capacity: 1,510W
- Power Input: 933W
- COP: 1.62
- EER: 5.52

Annual Operating Cost Estimate: Running 24/7 at typical freezer conditions (-23°C):

- Power consumption: ~5,782 kWh/year
- Estimated cost: \$690-870/year (at \$0.12-0.15/kWh)

Where to Buy & Pricing

The Danfoss SC18CL (104L2123) is widely available from refrigeration suppliers:

Typical Price Range: €230-350 (\$250-380 USD)

Authorized Distributors:

- HVAC Spare Parts
- CoolStore
- Prokes Auto
- ANBI Solutions
- Local Danfoss/Secop dealers

What's Included:

- Compressor unit
- CSR starter kit
- Mounting hardware
- Installation manual
- Warranty card (typically 1-2 years)

Warranty & Support

Standard Warranty: 12-24 months from date of purchase

Coverage:

- Manufacturing defects
- Material failures
- Workmanship issues

Not Covered:

- Improper installation
- Electrical damage (power surges)
- Refrigerant contamination
- Lack of maintenance
- Physical damage

Support Resources:

- Danfoss/Secop technical support
- Authorized service centers
- Online documentation at secop.com

Environmental Considerations

Refrigerant GWP (Global Warming Potential):

- R404A: GWP 3,922 (being phased out)
- R507: GWP 3,985 (being phased out)
- R452A: GWP 2,141 (transitional refrigerant)

Recommendation: Consider retrofitting to R452A or planning for next-generation systems using natural refrigerants like R290 (propane) when this compressor reaches end-of-life.

Final Thoughts

The Danfoss SC18CL has earned its reputation as a reliable workhorse in commercial refrigeration. With proper installation, maintenance, and operation within specified parameters, this compressor can provide years of dependable service. Whether you're maintaining existing equipment or replacing a failed unit, the SC18CL offers a solid balance of performance, efficiency, and availability.

Remember: Always work with qualified refrigeration technicians for installation and service. Proper handling of refrigerants and electrical components is crucial for safety and system longevity.

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Excerpt (First 55 words):

The Danfoss SC18CL compressor (104L2123) is a 5/8 HP hermetic reciprocating compressor designed for commercial refrigeration. Operating on R404A/R507 refrigerants at 220-240V 50Hz, it delivers 781W cooling capacity at -23°C for LBP/MBP applications. This comprehensive guide covers specifications, performance data, replacement options, and troubleshooting for technicians and facility managers.



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