Donper LG83WZ1 Refrigeration Compressor Technical Specifications and R134a Replacement Guide for Unionaire refrigerator

Category: Refrigeration
written by www.mbsm.pro | 2 February 2026



Focus Keyphrase: Donper LG83WZ1 Refrigeration Compressor Technical Specifications and R134a Replacement Guide
SEO Title: Mbsmpro.com, Compressor, LG83WZ1, 1/4 HP+, Donper, Cooling, R134a, 230 W, 1.4 A, 1Ph 220-240V 50Hz, LBP, Freezing
Meta Description: Explore the comprehensive technical specs for the Donper LG83WZ1 compressor. Includes cooling capacity, replacement cross-references, and performance data for R134a systems.
Slug: donper-lg83wz1-compressor-specifications-r134a-replacement
Tags: Donper, LG83WZ1, R134a, 1/4 HP+, Refrigerator Compressor, Mbsmgroup, Mbsm.pro, mbsmpro.com, mbsm, Embraco FFI8.5HAK, Secop NLE8.8MF, LG MA88LAEP, Panasonic QB86C16GAX5, Tecumseh THG1374YS, LBP Compressor

Excerpt: The Donper LG83WZ1 stands as a cornerstone in modern domestic and light commercial refrigeration. Engineered for Low Back Pressure applications, this R134a-driven unit provides reliable cooling capacity for medium to large refrigerators. Its 8.3cc displacement ensures consistent thermal management, making it a preferred choice for technicians seeking a robust, thermally protected motor for demanding climates.

The Engineering Behind Reliability: A Deep Dive into the Donper LG83WZ1 Compressor

In the precision-driven world of refrigeration, the compressor is the heart of the thermal cycle. Among the workhorses found in modern residential and light commercial units, the **Donper LG83WZ1** has earned a reputation for resilience and steady performance. As a Low Back Pressure (LBP) specialist, this model is specifically designed to handle the rigorous demands of freezing and deep-cooling applications where maintaining sub-zero temperatures is non-negotiable.

Technical Performance and Infrastructure

The LG83WZ1 utilizes **R134a refrigerant**, a long-standing industry standard known for its thermodynamic stability. With a displacement of **8.3 cm³**, it sits comfortably in the 1/4 HP+ to 1/3 HP class, providing enough "muscle" for large household refrigerators or vertical display freezers. The motor is a single-phase, thermally protected unit operating on a standard 220-240V 50Hz supply, making it a universal fit for many international markets.

Comprehensive Technical Specifications

Feature	Specification
Model	LG83WZ1
Utilization	LBP (Low Back Pressure)
Domaine	Freezing / Deep Cooling
Cooling Wattage at -23.3°C	230 W
Cubic Feet Capacity	14 – 18 cu.ft.
Liters Capacity	400 – 500 Liters
Kcal/h	198 Kcal/h
Oil Type and Quantity	Ester Oil (POE) / 180ml
Horsepower (HP)	1/4 HP+
Refrigerant Type	R134a
Power Supply	220–240V / 50Hz / 1Ph
Cooling Capacity (BTU/h)	785 BTU/h
Motor Type	RSIR / RSCR (depending on start kit)
Displacement	8.3 cm³
Winding Material	High-Grade Copper
Suction Pressure Charge	0.5 to 1.2 Bar (system dependent)

Feature	Specification
Capillary Recommendation	0.031″ or 0.036″ ID
Common Application	Double-door refrigerators, Chest Freezers
Temperature Function	-35°C to -15°C
Cooling Method	Static or Fan Assisted
Commercial Status	Semi-Commercial / Residential
Amperage (FLA)	1.4 A
LRA (Locked Rotor Amps)	11.5 A
Relay Type	PTC or Magnetic
Start Capacitor	Optional (usually 60-80 µF if used)
Origin	China (Global Export)

Efficiency Metrics (COP)

Understanding the Coefficient of Performance (COP) is vital for energy-conscious engineering. The LG83WZ1 shows its strengths in the mid-range of LBP operations.

Evaporating Temp (°C)	Cooling Capacity (Watts)	Power Consumption (Watts)	COP (W/W)
-30	165	148	1.11
-25	215	165	1.30
-23.3 (ASHRAE)	**230**	**172**	**1.34**
-20	275	185	1.48
-15	345	205	1.68
-10	430	230	1.87

Direct Replacement Cross-Reference

When a compressor fails in the field, speed and accuracy in replacement are paramount. Below are the most compatible units based on displacement and cooling capacity.

5 Replacements: Same Refrigerant (R134a)

Brand	Model	HP Equivalent	Displacement
Embraco	FFI8.5HAK	1/4 HP+	8.5 cm³
Secop	NLE8.8MF	1/3 HP	8.8 cm³
LG	MA88LAEP	1/4 HP+	8.8 cm³
Panasonic	QB86C16GAX5	1/4 HP+	8.6 cm³
Tecumseh	THG1374YS	1/4 HP	7.4 cm³

5 Replacements: Alternative Refrigerant (R600a)

Note: Converting from R134a to R600a requires a complete system flush, lubricant change, and capillary adjustment.

Brand	Model	HP Equivalent	Gas Type
Embraco	EMX70CLC	1/4 HP	R600a
Secop	TLES7.5KK.3	1/4 HP	R600a

LG	MK88LAEM	1/4 HP+	R600a
Donper	B80H	1/4 HP	R600a
Jiaxipera	NT1114Y	1/4 HP	R600a

Comparative Analysis: R134a vs. R600a Performance

While the LG83WZ1 uses R134a, the industry is shifting toward R600a (Isobutane). Comparing these two helps technicians understand why the LG83WZ1 remains a staple for repairs:

- **Pressure:** R134a operates at higher discharge pressures than R600a, allowing for faster heat transfer in smaller condenser coils.
- **Charge Weight:** R134a systems require a higher gram-weight charge than R600a, making the LG83WZ1 less sensitive to minor leaks.
- **Oil Compatibility:** The LG83WZ1 uses POE (Polyolester) oil, which is highly hygroscopic. Unlike the mineral oils used in R600a units, the LG83WZ1 requires strict moisture control during service.

Electrical Schematic and Wiring Guide

For field workers, identifying the terminal configuration is the first step to a successful installation. The LG83WZ1 typically follows the standard triangular pin layout.

> *Engineering Tip: Always verify the resistance between the Start (S), Main (M), and Common (C) terminals. On the LG83WZ1, the Main winding typically shows lower resistance than the Start winding.*

Field Advice and Professional Notices

- **Vacuum Integrity:** Because this compressor uses Ester oil, you must pull a vacuum to at least 500 microns. Moisture reacting with POE oil creates acid that can etch the motor windings, leading to premature burnout.
- **Filter Drier Replacement:** Never install a new LG83WZ1 without replacing the filter drier. A clogged drier is the number one cause of high head pressure and motor failure.
- **Condenser Maintenance:** In commercial settings, ensure the condenser fins are cleaned every six months. The LG83WZ1 is robust, but excessive heat from a dirty condenser will trip the thermal protector and reduce the unit’s lifespan.

Benefits for the End User

1. **Low Noise Floor:** Designed with internal dampening springs to reduce vibration.
2. **High Torque Start:** Capable of starting under moderate pressure fluctuations, making it reliable in regions with unstable power grids.

3. **Longevity:** When paired with a clean system, these compressors are known to exceed 10 years of service life.



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