

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

Category: Refrigeration

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**Meta Description:** Explore the comprehensive technical specs for the Donper LG83WZ1 compressor. Includes cooling capacity, replacement cross-references, and performance data for R134a systems.

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**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.

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## 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 cm<sup>3</sup>**, 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.

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## 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 cm <sup>3</sup>
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
<b>-23.3 (ASHRAE)</b>	<b>230</b>	<b>172</b>	<b>1.34</b>
-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 cm <sup>3</sup>
Secop	NLE8.8MF	1/3 HP	8.8 cm <sup>3</sup>
LG	MA88LAEP	1/4 HP+	8.8 cm <sup>3</sup>
Panasonic	QB86C16GAX5	1/4 HP+	8.6 cm <sup>3</sup>
Tecumseh	THG1374YS	1/4 HP	7.4 cm <sup>3</sup>

### 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

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## 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.
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## 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.*

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## 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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