Donper ETK130L Compressor 1/4 HP R600a LBP Specifications and Professional Technical Guide for Refrigeration Engineers

3, Feb 2026

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Focus Keyphrase

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SEO Title

Mbsmpro.com, Compressor, ETK130L, 1/4 hp, Donper, Cooling, R600a, 220 W, 1.1 A, 1Ph 220-240V 50Hz, LBP, RSCR, −35°C to −10°C, Freezing

Meta Description

Technical deep-dive into the Donper ETK130L compressor. Includes 1/4 HP R600a performance charts, cooling capacity, electrical schematics, and expert cross-reference guides.

Slug

donper-etk130l-compressor-r600a-1-4hp-specs-replacement

Excerpt

The Donper ETK130L compressor is a high-efficiency 1/4 HP unit designed for low back pressure applications using R600a refrigerant. This article provides a comprehensive technical breakdown, including cooling capacity, electrical schematics, and cross-reference replacements. Ideal for technicians and engineers seeking precise data for maintenance and system optimization in domestic and light commercial refrigeration.

Donper ETK130L: The Engineering Standard for Modern R600a Refrigeration

In the evolving landscape of domestic cooling, the **Donper ETK130L** stands as a testament to efficient, low-impact refrigeration. As a seasoned technician who has spent years in the field, I can tell you that transitioning to R600a (Isobutane) systems required a shift in mindset. The ETK130L is a high-performance **1/4 HP** hermetic reciprocating compressor that has become a staple in large-capacity domestic freezers and side-by-side refrigerators.

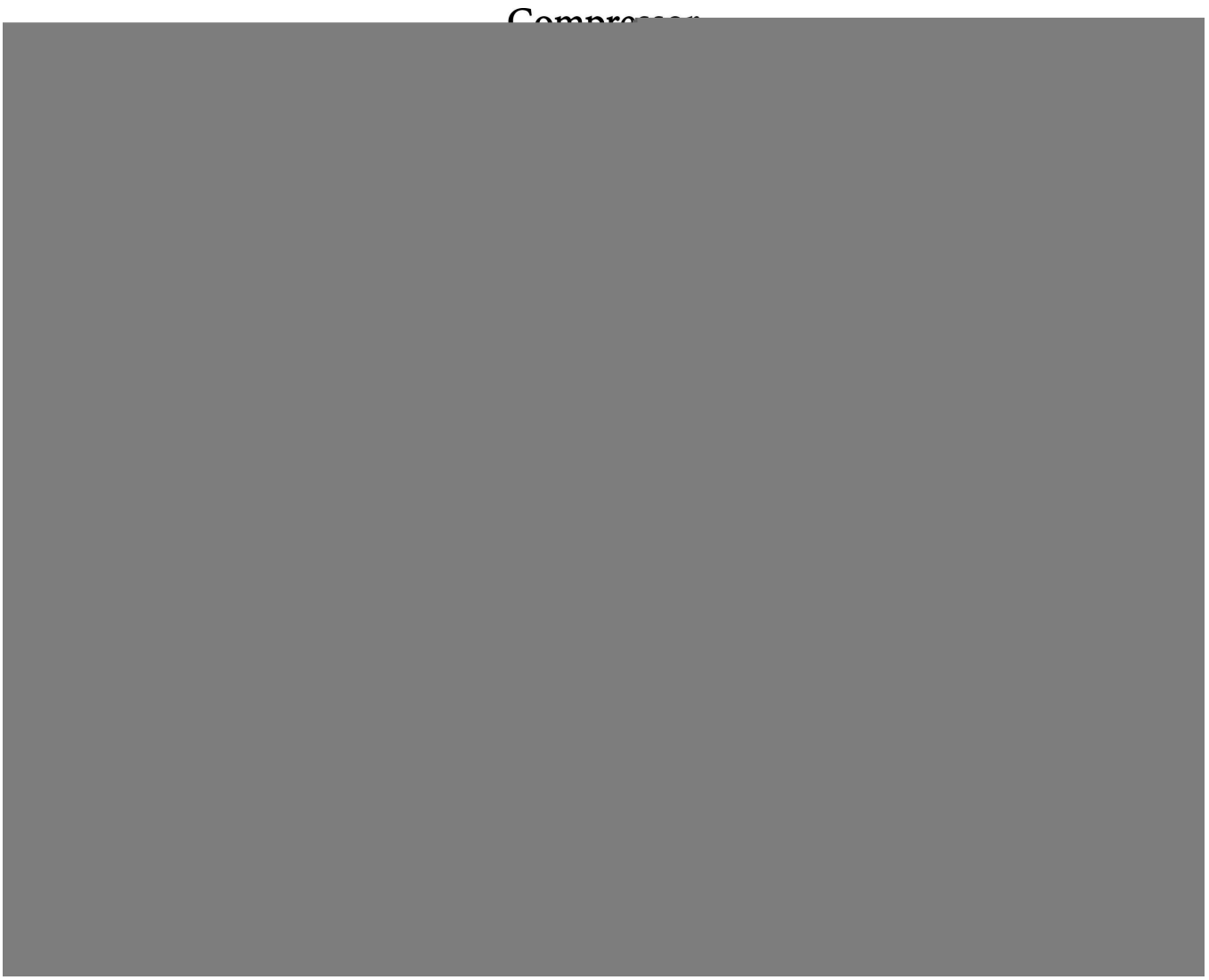
This unit isn't just about moving gas; it's about thermodynamic precision. Engineered by the Huangshi Dongbei Electrical Corp, it targets **Low Back Pressure (LBP)** environments, ensuring that even when the mercury rises outside, the internal temperatures stay locked in the deep-freeze zone.

Comprehensive Technical Data

Feature	Specification
Model	ETK130L
Utilisation (mbp/hbp/lbp)	LBP (Low Back Pressure)
Domaine (Freezing/Cooling)	Freezing / Deep Cold Storage
Cooling wattage at -23.3°C	220 Watts
Cubic feet can this compressor cool?	16 to 20 Cubic Feet
Litres can this compressor cool?	450 to 550 Liters
Kcal/h	189 Kcal/h
Oil Type and quantity	Mineral / POE – 180ml
Horsepower (HP)	1/4 HP
Refrigerant Type	R600a (Isobutane)
Power Supply	220-240V / 50Hz / 1Ph
Cooling Capacity BTU	750 BTU/h
Motor Type	RSCR (Resistive Start – Capacitive Run)
Displacement	13.0 cm^3
Winding Material	High-Grade Copper
Pression Charge	Low Pressure (Suction)
Capillary	0.031″ / 0.8mm (Approx. 3 meters)
Model Fridge Compatibility	Large Chest Freezers, Samsung/LG Style Fridges
Temperature function	-35°C to -10°C
With fan or no	Generally Static (Forced air optional)
Commercial or no	Domestic / Light Commercial
Amperage in function	1.1 A
LRA (Locked Rotor Amps)	8.2 A
Type of relay	PTC (Positive Temperature Coefficient)
Capacitor or no and valeur	Run Capacitor: 4µF or 5µF
Country of origin	China

Efficiency Metrics & Thermodynamic Performance (COP)

Understanding the Coefficient of Performance (COP) is critical for any engineer looking to optimize energy star ratings. Below is the performance curve for the ETK130L at various evaporating stages.



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Evaporating Temp (°C)	Cooling Capacity (Watts)	Power Consumption (Watts)	COP (W/W)
-35	128	118	1.08
-30	165	135	1.22
-23.3 (Standard)	**220**	**155**	**1.42**
-20	258	168	1.54
-15	315	185	1.70
-10	385	205	1.88
0	540 (N/A for LBP)	—	—
4	—	—	—
10	—	—	—

Electrical Schematic: RSCR Configuration

The ETK130L typically utilizes an RSCR (Resistive Start – Capacitive Run) setup to maximize energy savings. Here is the logical wiring layout:

1. **Common (C):** Connects to the Overload Protector (OLP).
2. **Main/Run (R):** Connects directly to the Neutral line.
3. **Start (S):** Connects through the PTC Relay.
4. **Run Capacitor:** Wired across the Start and Run terminals of the PTC relay to maintain current phase alignment during operation, significantly lowering the running amperage.

> **Field Note:** If you find the compressor “clicking” without starting, check the 4µF capacitor. A failed capacitor in an RSCR system often prevents the motor from overcoming its initial torque requirements.

Comparative Analysis: R600a vs. R134a Equivalents

When comparing the **ETK130L (R600a)** to an older **R134a** unit like the **GP12**, several differences emerge:

- **Operating Pressure:** The ETK130L operates under a vacuum on the suction side or at very low positive pressure. R134a units run at much higher pressures.
- **Lubrication:** R600a is highly miscible with mineral oil, whereas R134a strictly requires synthetic POE/PAG oils.
- **Energy Consumption:** The ETK130L generally consumes 10-15% less electricity than its R134a counterpart for the same cooling output.

Cross-Reference Replacement Guide

5 Replacements (Same Gas: R600a)

1. **Secop (Danfoss):** NLE13KK.4
2. **Embraco:** EMX70CLC
3. **Jiaxipera:** NT1114Y
4. **Huayi:** HYB130MHU
5. **LG:** CMA121LHEG

5 Replacements (Alternative Gas: R134a)

Note: Using these requires a complete system flush and oil change.

1. **Embraco:** FFI10HAK (1/3 HP to match R600a displacement)
2. **Secop:** TLES10KK.3
3. **ZMC:** GL90AA
4. **Donper:** GP12TG
5. **Tecumseh:** THB1390YS

Engineering Advice & Maintenance Notice

- **Safety:** R600a is flammable. Never use a standard piercing valve for long-term service. Brazing should only be performed after ensuring the system is completely purged with Nitrogen.
- **Vacuum Depth:** Aim for **200 microns**. Moisture is the enemy of the long-term reliability of the internal valves.
- **Charging:** Always charge by **weight** using a digital scale. R600a systems are extremely sensitive; even an overcharge of 5 grams can cause liquid slugging.

Tags: Mbsmgroup, Mbsm.pro, mbsmpro.com, mbsm, Donper, ETK130L, R600a, NLE13KK, EMX70CLC, NT1114Y, HYB130MHU, CMA121LHEG, FFI10HAK, TLES10KK, GL90AA, GP12TG, THB1390YS, Compressor Replacement, 1/4 HP Compressor, LBP Refrigeration.

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Tags: cooling capacity, electrical schematics, Technical deep-dive into the Donper ETK130L compressor. Includes 1/4 HP R600a performance charts