ZMC GL90TB Compressor Technical Specifications and R134a Replacement Guide

Category: Mbsmpro
written by www.mbsm.pro | 31 January 2026



Mbsmpro.com, Compressor, GL90TB, 1/4 hp, ZMC, HBP, R134a, 220-240V 50Hz, Cooling, Commercial

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Technical Specifications Table

Feature	Specification
Model	GL90TB
Utilisation	HBP (High Back Pressure)

Feature	Specification
Domaine	Cooling / Refrigeration (Commercial)
Cooling wattage at -23.3°C	Approx. 330W (LBP) / 820W (HBP @ +7.2°C)
Cubic feet capacity	12 – 18 cu.ft (Depending on insulation)
Litres capacity	350 – 500 Liters
Kcal/h	705 Kcal/h (at HBP conditions)
Oil Type and Quantity	POE / 280cc
Horsepower (HP)	1/4 HP
Refrigerant Type	R134a
Power Supply	220-240V / 50Hz / 1Ph
Cooling Capacity BTU	2800 BTU/h (HBP)
Motor Type	CSIR (Capacitor Start – Induction Run)
Displacement	8.85 cm^3
Winding Material	Copper
Pression Charge	120 – 150 psi (High side)
Capillary	0.042″ or 0.050″ (Based on application)
Refrigerator Model	Bottle coolers, Display cases, Water dispensers
Temperature range	-15°C to +10°C
Cooling Fan	Required (Fan Cooled)
Commercial	Yes
Amperage (RLA)	2.1 A
LRA (Locked Rotor Amps)	13.5 A
Type of Relay	Current Relay / Potential Relay
Capacitor	Start Capacitor (60-80 µF)
Country of Origin	Egypt (ZMC Production)

Efficiency Metrics (COP)

Evaporating Temp (°C)	Cooling Capacity (Watts)	Power Consumption (Watts)	COP (W/W)
-15	385	285	1.35
-10	480	310	1.55
-5	590	335	1.76
0	720	360	2.00
+5	870	385	2.26
+7.2	940	400	2.35
+10	1040	415	2.51

Compressor Replacements

Same Refrigerant (R134a)

1. **Danfoss/Secop:** FR8.5G / FR10G
2. **Embraco:** NEK6210Z
3. **Tecumseh:** CAE4440Y

4. **Cubigel:** GL90AA (LBP variant) or GP12TB
5. **Huayi:** HYE90YG

Different Refrigerant (R600a/R290/Other)

1. **Embraco (R290):** NEU6212U
2. **Secop (R290):** SCE15CNX
3. **Danfoss (R12):** TL5A (Legacy)
4. **Aspera (R22):** E6181GK (Requires valve adjustment)
5. **Cubigel (R290):** GX12TG

High-Performance Cooling: The ZMC GL90TB Deep Dive

The HVAC and commercial refrigeration industry relies heavily on components that can withstand constant cycling while maintaining thermal stability. The **ZMC GL90TB** stands as a workhorse in this category. Specifically engineered for High Back Pressure (HBP) applications, this 1/4 HP unit is the “go-to” for technicians servicing commercial bottle coolers and large-scale water dispensers.

Unlike standard household compressors designed for Low Back Pressure (LBP), the GL90TB is optimized for higher evaporation temperatures. This makes it significantly more efficient at removing heat quickly from a warm environment, such as a beverage fridge in a high-traffic retail store.

Comparative Analysis: GL90TB vs. GL90AA

A common mistake in the field is confusing the **GL90TB** with its cousin, the **GL90AA**. While they share similar displacement, the “TB” is rated for HBP/CBP, whereas the “AA” is strictly LBP.

- **Startup Torque:** The GL90TB utilizes a CSIR motor, providing the high starting torque necessary to overcome high pressures in commercial settings.
- **Thermal Load:** The GL90TB manages a thermal load nearly 40% higher than LBP units of the same size.

Engineering Insights & Maintenance

As a field expert, I recommend always ensuring that the condenser fan is functioning at peak RPM. Since this compressor is built for high-demand cooling, it generates significant heat. Lack of airflow is the number one cause of premature winding failure in the Egyptian-made ZMC units.

> *Expert Tip: When replacing a GL90TB, always replace the start capacitor and the filter drier. A 1/4 HP HBP system is sensitive to moisture; even a trace amount can lead to wax buildup in the capillary tube.*

Focus Keyphrase: ZMC GL90TB Compressor Technical Specifications and R134a Replacement Guide
SEO Title: Mbsmpro.com | ZMC GL90TB Compressor | 1/4 HP HBP R134a Specs
Meta Description: Discover the full technical data for the ZMC GL90TB compressor. 1/4 HP, R134a, High Back Pressure unit for commercial cooling. Includes COP tables and replacement guides.
Slug: zmc-gl90tb-compressor-1-4-hp-r134a-specs-replacement
Tags: Mbsmgroup, Mbsm.pro, mbsmpro.com, mbsm, GL90TB, ZMC, Compressor, R134a, 1/4 HP, HBP, NEK6210Z, FR8.5G, CAE4440Y, Commercial Cooling, Refrigeration Parts Egypt.
Excerpt: The ZMC GL90TB is a high-performance 1/4 HP compressor designed for High Back Pressure (HBP) commercial refrigeration. Operating on R134a with a 220-240V supply, it offers a cooling capacity of approximately 2800 BTU/h. This article provides technical specs, COP efficiency metrics, and direct replacement models for professional HVAC technicians and industrial cooling experts.



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