Huayi HYE69Y63 Compressor 1/5 HP R134a LBP

Category: Refrigeration
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Focus Keyphrase: Huayi HYE69Y63 Compressor 1/5 HP R134a LBP Technical Specifications and Professional Cross-Reference Guide for Refrigerator Repair
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Meta Description: Technical analysis of the Huayi HYE69Y63 1/5 HP compressor. Learn about its R134a performance, LBP cooling capacity, electrical wiring schemas, and top 10 replacement alternatives for technicians.
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Excerpt: The Huayi HYE69Y63 is a highly efficient hermetic reciprocating compressor designed for low back pressure applications using R134a refrigerant. With a 1/5 HP rating and dual-frequency compatibility (50/60Hz), this motor is a cornerstone for domestic refrigerators and freezers. This comprehensive guide covers technical datasheets, electrical wiring, and professional replacement strategies for global cooling systems.

Mastering Domestic Refrigeration: The Technical Profile of the Huayi HYE69Y63 Compressor

In the precision-driven world of refrigeration engineering, the **Huayi HYE69Y63** stands as a testament to reliable, small-scale thermal management. As a 1/5 horsepower unit optimized for Low Back Pressure (LBP) cycles, this compressor is a frequent choice for manufacturers of domestic refrigerators and light-duty freezers. Its ability to operate across both 50Hz and 60Hz frequencies makes it a versatile global component, capable of maintaining sub-zero temperatures with impressive volumetric efficiency.

Engineering Design and Performance

The HYE69Y63 utilizes a hermetic reciprocating mechanism, engineered to move R134a refrigerant with minimal mechanical friction. In the field, technicians value this model for its thermal protection systems and robust winding material, which ensure longevity even in high-ambient temperature environments. The “HYE” series from Huayi is recognized for its low noise profile and vibration-damping housing, making it ideal for residential kitchen appliances.

Technical Data and Specifications Table

Feature	Detailed Specification
Model	HYE69Y63
Utilisation (mbp/hbp/lbp)	LBP (Low Back Pressure)
Domaine (Freezing/Cooling)	Freezing / Deep Cold Storage
Oil Type and Quantity	POE (Ester Oil) – Approx. 180 ml
Horsepower (HP)	1/5 HP
Refrigerant Type	R134a
Power Supply	220-240VAC / 50-60Hz / 1 Phase
Cooling Capacity (ASHRAE)	168 Watts / 573 BTU/h (@ -23.3°C)
Motor Type	RSIR (Resistive Start – Inductive Run)
Displacement	6.9 cm^3
Winding Material	High-Grade Copper
Pressure Charge	0.8 to 1.3 Bar (Evaporating Pressure)
Capillary Recommendation	0.031″ ID (Length dependent on cabinet)
Refrigerator Brands	Haier, Whirlpool, Midea, Hisense
Temperature Function	-35°C to -10°C (-31°F to 14°F)
Cooling System	Static (Natural Convection)
Commercial Class	Domestic / Residential
Amperage (FLA)	1.1 A to 1.3 A
LRA (Locked Rotor Amps)	12.0 A
Type of Relay	PTC (Positive Temperature Coefficient)
Capacitor Requirement	Generally none (Standard RSIR configuration)

Electrical Wiring Schema (RSIR Configuration)

Correct electrical connection is paramount for the safety of the hermetic motor. The terminal block of the HYE69Y63 follows the standard triangular pin layout:
Common (C): Located at the top of the triangle. This connects to the line supply through the **Thermal Overload Protector**.
Main/Run (M): Located at the bottom right. This winding remains energized throughout the cooling cycle.
Start (S): Located at the bottom left. This winding is energized momentarily via the **PTC relay** to initiate rotation.
Technician's Insight: If the compressor fails to start but hums, check the resistance between C-M and C-S. A healthy motor will show a combined resistance across S-M that equals the sum of the two individual readings.

Comparative Performance Analysis

When comparing the HYE69Y63 against its industry peers, we see a focus on balancing displacement with energy consumption.

Metric	Huayi HYE69Y63 (R134a)	Standard 1/5 HP (R600a Equivalent)
Displacement	6.9 cm^3	10.2 cm^3
Operating Pressure	Positive (Standard)	Low / Near-Vacuum
Efficiency (COP)	1.30 W/W	1.50 W/W
Gas Charge Weight	Moderate (~120g)	Low (~50g)

Professional Replacement Cross-Reference

Finding a suitable replacement requires matching the BTU/h capacity and the displacement as closely as possible to maintain the refrigerator's original duty cycle.

5 Compressor Replacements (R134a – Same Gas):

1. **Embraco:** EMT55HLP (High performance, near-identical BTU)
2. **ACC / Cubigel:** GL70AA (Robust European alternative)
3. **GMCC:** PE75H1C (Slightly higher displacement, very reliable)
4. **Secop (Danfoss):** PL50F (Compact design for limited spaces)
5. **Tecumseh:** FFI6HAK (Standard American replacement)

5 Compressor Replacements (R600a – Different Gas):

Note: Converting from R134a to R600a requires a complete system flush, oil replacement, and potentially a capillary tube adjustment.

1. **TEE:** NTU170MT
2. **Cubigel:** HMK12AA
3. **Secop:** HTK12AA
4. **Huayi:** HYB12MHU
5. **Jiaxipera:** NT1114Y

Field Engineering Advice and Notices

- **Vacuum Standards:** Because R134a systems use POE oil, they are highly sensitive to moisture. A deep vacuum of at least 500 microns is mandatory. Failure to achieve this will lead to acid formation, which destroys the motor windings over time.
- **Thermal Protection:** If the compressor “clicks” off frequently, ensure the condenser coils are clean. Static-cooled compressors like the HYE69Y63 rely on natural convection; dust buildup can cause the internal thermal protector to trip prematurely.
- **Start Components:** Always replace the PTC relay and the overload protector when installing a new compressor. A fatigued relay can cause the start winding to stay energized too long, leading to a catastrophic burnout of the new unit.
- **Charging by Weight:** For R134a, always charge using a digital scale to the exact weight specified on the refrigerator’s nameplate. Charging by “pressure feel” often leads to overcharging, which increases the stress on the 1/5 HP motor.

Conclusion and Practical Benefits

The Huayi HYE69Y63 is a resilient, mid-range compressor that provides a stable cooling solution for millions of households worldwide. For the engineer, it represents a standard “plug-and-play” solution for a wide variety of refrigeration brands. Its dual-frequency capability and high copper-content windings make it an exceptionally forgiving unit in regions where power grid stability may fluctuate.



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