Technical Comparison: ZEL HDL200A vs. Huaguang ATA72XL

Category: Refrigeration
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technical comparison between two common refrigerator compressors: the **ZEL HDL200A** and the **Huaguang (Wanbao) ATA72XL**. We will examine their specifications and address the critical question: Can one be used as a replacement for the other?

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When evaluating compressors for replacement, we must look at three primary factors: Refrigerant type, cooling capacity (power), and electrical compatibility.

1. ZEL HDL200A Specifications

- **Refrigerant: R600a** (Isobutane)
- **Voltage/Frequency:** 220-240V / 50Hz
- **Cooling Capacity:** Approximately 180–200 Watts (roughly **1/4 HP** class)
- **Lubricant:** Typically uses Mineral or Alkylbenzene oil compatible with R600a.
- **Application:** Modern, high-efficiency domestic refrigerators.

2. Huaguang ATA72XL Specifications

- **Refrigerant: R134a** (Tetrafluoroethane)
- **Voltage/Frequency:** 220-240V / 50-60Hz
- **Cooling Capacity:** Approximately 190–210 Watts (roughly **1/4 HP** class)
- **Lubricant:** POE (Polyolester) oil.
- **Application:** Standard domestic refrigerators and water dispensers.

The Compatibility Verdict: Can they be swapped?

The short answer is: No.

You cannot directly replace a ZEL HDL200A with a Huaguang ATA72XL (or vice versa) without significant and specialized modifications to the entire refrigeration system. Here is why:

A. Refrigerant Incompatibility (The Dealbreaker)

The ZEL compressor uses **R600a**, which is a hydrocarbon gas that operates at much lower pressures than **R134a**.

- A system designed for R600a has a different capillary tube length and diameter compared to an R134a system.
- If you put an R134a compressor into an R600a system, the high pressures of R134a will likely "choke" the narrow R600a capillary tube, leading to poor cooling or compressor failure.

B. Oil and Chemical Issues

R600a compressors usually use mineral-based oils, while R134a compressors require synthetic POE oil. These oils are not cross-compatible. If residues of the old oil remain in the lines, they can react with the new refrigerant, creating sludge that clogs the expansion device (capillary tube), ultimately destroying the new compressor.

C. Safety and Design

R600a is flammable. Systems designed for R600a have specific safety considerations regarding electrical components (non-sparking relays). While putting an R134a (non-flammable) compressor into an R600a shell is less of a fire risk, the mechanical performance will be abysmal because the evaporator and condenser sizes are optimized for the specific thermodynamic properties of the original gas.

Summary Comparison Table

Feature	ZEL HDL200A	Huaguang ATA72XL	Compatible?
Refrigerant	R600a	R134a	**No**
Cooling Power	~1/4 HP	~1/4 HP	Yes (Close)
Voltage	220-240V	220-240V	Yes
Oil Type	Mineral/AB	POE	**No**
Operating Pressure	Low	High	**No**

Conclusion

While both compressors fall into the same general "power bracket" (roughly 1/4 HP), they are built for entirely different chemical environments.

Recommendation: Always replace a compressor with one that uses the **same refrigerant** as the original. If your fridge is labeled for R600a, you must use an R600a compressor like the ZEL HDL200A. Using the Huaguang ATA72XL in its place would require flushing the entire system, changing the capillary tube, and vacuuming the system extensively—a process that is often more expensive and less reliable than simply buying the correct part.


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HUAGUANG
ATA72XL
220-240V-50/60Hz 1PH R134a
THERMALLY PROTECTED
Wanbao Group Compressor Co., Ltd.


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