Unionaire PUQ012HR5R0WPK 12000 BTU Heat Pump Compressor Technical Specifications and R22 System Overview

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The Unionaire PUQ012HR5R0WPK is a robust 12,000 BTU reversible heat pump system designed for demanding climates. Utilizing an R22 rotary compressor, this unit balances efficiency and reliability. Our technical breakdown covers electrical parameters, pressure ratings, and compatible replacements, providing field workers with the essential data needed for professional maintenance, system repairs, and component sourcing.

Unionaire PUJ012HR5R0WPK 12000 BTU Heat Pump R22 Technical Specifications and Compressor Replacement Guide

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12000 BTU, 1.5 HP, Heat Pump, R22, 220V, Cooling and Heating

When working in the HVAC field, encountering a Unionaire system is quite common, especially in regions requiring robust performance under high ambient temperatures. The PUJ012HR5R0WPK is a classic example of a reliable reversible heat pump designed to handle both the scorching summer heat and the chill of winter. As a technician, seeing these specifications tells a clear story of a 1-ton (12,000 BTU) system built for durability and efficiency.
The heart of this system is its rotary compressor, optimized for R22 refrigerant. While R22 is being phased out globally, many of these units remain in service because of their heavy-duty build quality. With a cooling and heating capacity of 3.52 kW, this model provides a balanced thermal load for standard residential or small commercial spaces.

Technical Performance and Engineering Insight

From an engineering perspective, the electrical characteristics of this unit are standard but precise. With a Rated Load Amperage (RLA) of 6A for the compressor and a Locked Rotor Amperage (LRA) of 31A, the electrical draw is manageable for most residential circuits, provided a 10A fuse or circuit breaker is utilized.
The design pressures are particularly noteworthy. A high-side pressure of 400 PSI and a low-side of 82 PSI indicate a system that operates comfortably within the safety margins of R22, ensuring longevity even when the outdoor unit is exposed to intense sun. The 0.850 kg refrigerant charge is a relatively small amount for a 12,000 BTU unit, reflecting an efficient heat exchanger design that maximizes every gram of gas.

Efficiency Metrics (COP)

Efficiency in a heat pump is measured by the Coefficient of Performance. Below is a breakdown of estimated performance across various evaporating temperatures for a compressor of this class.

Evaporating Temp (°C)	Cooling Capacity (Watts)	Power Consumption (Watts)	COP (W/W)
10	4100	1150	3.56
7.2 (Standard Rating)	3520	1080	3.26
5	3200	1020	3.13
0	2650	950	2.78
-5	2150	880	2.44
-10	1700	820	2.07

Technical Specification Table: Unionaire PUJ012HR5R0WPK

Data Point	Specification

Model	PUJ012HR5R0WPK
Utilisation	HBP (High Back Pressure)
Domaine	Comfort Cooling & Heating (Heat Pump)
Cooling Wattage at -23°C	N/A (AC Application)
Cubic feet/Litres capacity	Effectively cools rooms approx. 150-250 sq. ft.
Kcal/h	3024 Kcal/h
Oil Type and Quantity	Mineral Oil (SUNISO 3GS or equivalent), ~350ml
Horsepower (HP)	1.5 HP
Refrigerant Type	R22
Power Supply	220-240V / 50Hz / 1 Phase
Cooling Capacity BTU	12,000 BTU/h
Motor Type	Permanent Split Capacitor (PSC)
Displacement	Approx. 16.0 to 18.0 cc
Winding Material	Copper
Pression Charge	High: 400 PSI / Low: 82 PSI
Capillary Size	0.054″ x 30″ (Typical for 12k BTU AC)
Recommended Application	Split Unit Air Conditioners
Temperature Function	Reversible (Cooling/Heating)
Fan Requirement	Yes (Forced Air Condenser)
Commercial Use	Yes (Light Commercial/Residential)
Amperage in Function (RLA)	6.0 A
Locked Rotor Amps (LRA)	31.0 A
Type of Relay	Potential Relay or Start Kit (Optional)
Capacitor Value	30uF or 35uF / 450V
Country of Origin	Made in Egypt

Compressor Replacement Guide

If the original compressor in the PUJ012HR5R0WPK fails, finding an exact match or a compatible alternative is essential for maintaining system balance.

5 Direct Replacements (R22 Gas)

1. **GMCC** – PH215X2C-4FT1 (Highly reliable rotary)
2. **Highly (Hitachi)** – ASD102SK
3. **LG** – QJ222P
4. **Panasonic** – 2K22C225A
5. **Samsung** – UR4D124

5 Replacements (Alternative Refrigerant / Conversion)

Note: Converting from R22 to other gases often requires oil changes and capillary adjustments.

1. **GMCC (R410A)** – PA145X2C-4FZ1 (Requires system modification)
2. **Tecumseh (R404A)** – AE4440Z (For MBP applications)
3. **Danfoss (R407C)** – HRP034T4
4. **Copeland (R134a)** – ARE37C3E (Only for specific low-pressure setups)

5. **Bristol (R22/R407C)** – H23A153DBEA

Technician’s Advice and Maintenance Notice

1. **Refrigerant Charge:** Always use a scale. The nameplate specifies exactly 0.850 kg. Overcharging this unit will lead to high head pressure and premature compressor failure, especially in a heat pump where the reversing valve adds complexity.
2. **Electrical Protection:** Ensure the 10A breaker is dedicated. If the LRA (31A) is hit frequently due to short-cycling, the windings will degrade. Installing a “Hard Start Kit” can significantly extend the life of older compressors in this model.
3. **Reversing Valve Check:** Since this is a heat pump, if you find the unit is not cooling but the compressor is running, check the solenoid on the reversing valve before assuming the compressor is faulty.
4. **Clean Coils:** A 12,000 BTU unit relies heavily on airflow. Clogged condenser fins will quickly push the high-side pressure above the 400 PSI design limit.

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Excerpt: The Unionaire PUJ012HR5R0WPK is a robust 12,000 BTU (1.5 HP) heat pump system designed for efficient cooling and heating. Utilizing R22 refrigerant with an 850g charge, this 220V/50Hz unit is a staple in residential HVAC. Our guide covers its electrical RLA/LRA specs, design pressures, and provides a detailed list of compatible compressor replacements.



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Unionaire G+ ITWG 022 R5 Air Conditioner Specifications, 21500 BTU Cooling Capacity, Technical Manual and Installation Guide

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The Unionaire G+ ITWG 022 R5 represents a robust cooling solution engineered for demanding Mediterranean and Middle Eastern climates. Delivering a potent 21,500 BTU/Hr cooling capacity, this Egyptian-manufactured indoor unit balances high-volume airflow with structural durability. Designed for 220-240V/50Hz systems, it features an IPX4 rating and a compact 12.5 kg chassis for versatile wall-mounted installation.

Jiaxipera TT1114GY R600a compressor technical specifications and high-efficiency replacement guide for

professional HVAC technicians

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The Jiaxipera TT1114GY is a cornerstone of modern eco-friendly refrigeration, utilizing R600a isobutane to deliver high-efficiency cooling in household appliances. Designed for Low Back Pressure (LBP) applications, this 1/5 HP unit provides a cooling capacity of 168W at standard evaporating temperatures. This guide offers the technical data required for precision field replacements and system optimization.

Siberia GFF93AA Compressor 1/3+ hp R134a 270W Technical Specifications

and Professional Replacements Review

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The heart of any reliable industrial or home refrigerator is the compressor. The Siberia GFF93AA stands out as a high-displacement 1/3+ HP unit featuring genuine copper windings and a massive wide-voltage tolerance from 160V to 260V. For technicians working in harsh power zones, this R134a unit provides 270W of efficient, stable cooling power…

Jiaxipera TT1113GY Compressor 1/5 HP R600a technical specifications and professional replacement guide for domestic refrigeration and freezing

systems

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The Jiaxipera TT1113GY is a cornerstone of modern domestic refrigeration, operating as a 1/5 HP Low Back Pressure compressor optimized for R600a refrigerant. This high-efficiency unit is widely used in household refrigerators and freezers, offering a cooling capacity of 155 Watts. This guide covers all essential technical data, electrical characteristics, and professional replacement options.

I installed a 2-meter capillary tube. Is this a reason for ice buildup on the suction line?

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Troubleshooting frost on a refrigerator’s suction line requires a deep understanding of pressure drops. If a 2-meter capillary tube was recently installed, it might be the primary culprit behind liquid floodback. This article explores the technical relationship between expansion device length, refrigerant flow, and the critical balance needed to protect the compressor from terminal damage.

Panasonic QB110C25CAX0 1/3 HP Compressor Specifications and

Replacement

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The Panasonic QB110C25CAX0 is a high-performance 1/3 HP reciprocating compressor designed for Low Back Pressure (LBP) applications. Operating on R134a refrigerant, it delivers 280W of cooling capacity at -23.3°C, making it ideal for large domestic freezers and commercial coolers. This guide provides technical data, COP efficiency tables, and compatible replacement models for technicians.

What is the best type of washing machine available on the market in terms of cleaning performance, easy maintenance, and long lifespan?

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Selecting a washing machine in 2026 requires balancing advanced technology with mechanical endurance. This professional guide evaluates the market’s leading brands—LG, Bosch, and Samsung—based on cleaning efficiency, ease of repair, and structural longevity. We break down the engineering behind Direct Drive motors and high-build quality chassis to help you make an investment that lasts.

Jiaxipera JM1080Y Compressor 1/8 hp R600a, capillary 0.028 2.5m

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The Jiaxipera JM1080Y is a high-performance 1/8 hp compressor specifically designed for R600a refrigerant in domestic LBP applications. With a cooling capacity of 100W and a displacement of 6.2 cm^3, it provides a quiet, energy-efficient solution for modern refrigerators. This guide covers technical data, performance metrics, and professional field advice for technicians