

COMPRESSORS

Rotary Screw Compressor Packages

For Industrial Refrigeration



Frick[®]
INDUSTRIAL REFRIGERATION

Frick RWF II and RXF Packaged Rotary Screw Compressors

Advanced Frick® technology means exceptional reliability and efficiency.

- Engineered and manufactured to meet industrial refrigeration requirements.
- Designed to assure reliability, accessibility, and ease of service.
- Compact package allows reduced engine room size and lower construction costs.
- High stage and booster applications for all common refrigerants.



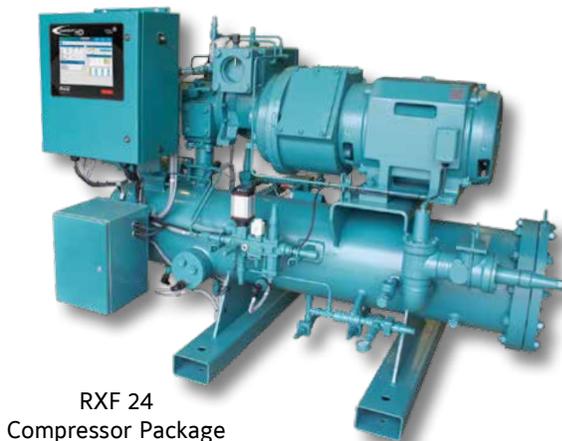
RWF II 134
Compressor Package
with Mounted Solid-State Starter

RWF II Specifications [†]					
High Stage Model	CFM	R-717		R-507	
		TR	BHP	TR	BHP
100	591	212	238	203	267
119 SS*	691	249	280	235	315
134	788	283	317	274	359
159 SS*	921	333	375	318	425
177	1,040	380	414	355	463
209 SS*	1,216	443	484	406	543
222	1,310	480	522	459	588
264 SS*	1,531	559	611	530	692
270	1,618	593	644	562	721
316	1,864	681	742	639	833
375 SS*	2,179	782	870	720	976
399	2,347	857	936	806	1,059
472 SS*	2,744	984	1,098	908	1,243
480	2,824	1,027	1,124	950	1,262
546	3,209	1,167	1,278	1,059	1,438
496	2,920	1,053	1,180	973	1,343
676	3,981	1,422	1,610	1,256	1,846
856	5,068	1,807	2,054	1,582	2,503
1080**	6,402	618	678	745	963

[†] Based on 20°F Suction, 95°F Condensing, 10°F Liquid Subcooling with 10°F Superheat

* SS - Super Speed models nominal @ 4,150 rpm. All other models nominal @ 3,550 rpm.

** Booster only @ -40°F Suction, 10°F intermediate, no Superheat



RXF 24
Compressor Package

RXF Specifications [†]					
Model	CFM	R-717		R-507	
		TR	BHP	TR	BHP
12	71.5	25.3	30.3	20	35
15	89.2	31.6	37.9	27	44
19	110.5	39.1	46.9	35	54
24	144.1	51	61.1	43	71
30	179.8	63.7	76.3	57	88
39	222.6	78.9	94.5	72	110
50	292.3	103.6	124	94	144
58	341	120.9	143.3	113	166
68	403	142.7	169.3	134	193
85	499	176.8	209.6	169	240
101	596	211.4	250.7	201	292

[†] Based on 20°F Suction, 95°F Condensing, 10°F Liquid Subcooling with 10°F Superheat



Screw Compressors – Preferred Technology

Screw compressors are specified over reciprocating compressors because of their inherent reliability. Fewer moving parts and simple rotary motion means:

- Less maintenance
- Lower noise and vibration levels
- Lower total repair costs.

Frick compressors perform at peak efficiency under varying loads and operating conditions. Volumizer Variable Volume Ratio Control adjusts the compressor volume ratio during operation to the most efficient point, depending upon system requirements. This reduces energy waste caused by under- or overcompression.



RWF II Compressor Package
with Mounted Solid-State Starter



RXF Compressor Package
with Mounted Variable Speed Drive

Infinite capacity reduction from 100% to 10% (RWF II) or 25% (RXF) of full load is provided by a slide valve control—one of the most efficient methods of capacity control for screw compressors. Frick compressors allow close system control under widely varying load conditions.

SuperSpeed Packages – Increased Capacity

The six (6) new Frick RWF II SuperSpeed (SS) Packages are specifically designed for use at 4,200 rpm with remote mount Variable Speed Drive. When a VSD is required in a Cold Storage application, these models increase the capacity per base model size. All components on the compressor package are designed for higher speeds, including mufflers.

The World's Best Industrial Refrigeration Compressor Systems

RWF II and RXF Compressors feature **rotor designs** that provide the strongest, most efficient operation for their applications.



Anti-Friction Bearings – High reliability, reduced horsepower and predictive maintenance

Variable Volume Ratio Control – For maximum efficiency at all application conditions

Infinite Capacity Control – Precisely matches load requirements

Cold-Start™ Valve – Ensures a quick start at any condition, and provides oil pressure without the need for a pump.

External Oil Cooling – Eliminate capacity and power penalties using the latest technology in plate design; constructed according to ASME Section VIII Division I.

SuperCoalescer – Significantly reduced condensing pressures delivering maximum energy efficiency

SuperFilter™II – Keeps your oil clean down to 5 microns

Flange-Mounted Motors – Eliminate the need for coupling alignment

Smart Series™ Motors – NEMA premium efficient, low noise motors, with corrosion protection features, for efficient, quiet, and reliable operation

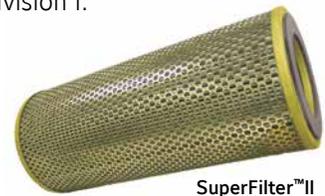
PhD Vibration Protection – PhD vibration monitoring helps stop interruptions before they start

Quantum™ HD Controller – For user friendly, worry-free operation

Smart, Leak-Free Packaging – Use of internal oil passages and pre-bent pipe results in fewer leak potential fittings and welds.

Reliability with Confidence – Dependability proven in thousands of installations

Easy to Service – All critical components for service and maintenance are easily accessible



SuperFilter™II

Options:

Variable Speed Drive – Changes capacity by varying motor speed

Mounted Starters – Factory mounted, superior motor overload protection, less mounting space, and reduced installation costs

Dual Oil Filters – Ensure continuous operation during service of the primary filter. Isolation valves included.





It All Adds Up To Low Total Cost of Ownership

The Math Adds Up!

Energy-saving features reduce operating costs significantly. Your plant's performance depends upon refrigeration equipment reliability and efficiency.

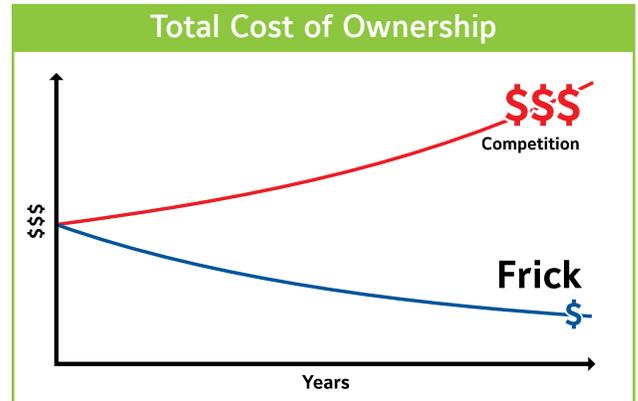
While evaluating productivity improvements, it's important to take a close look at overall life cycle cost.

Reliable, advanced, energy saving technologies such as anti-friction bearings save money. Commercial jet engines use anti-friction roller bearings because of their dependable performance in extreme conditions.



These bearings are higher efficiency, less maintenance and do not require an oil pump on the package like conventional bearings. And this is just one example!

When you add up maintenance, operating, and repair costs, you'll find that Frick screw compressors provide increased productivity and efficiency resulting in lower total ownership cost. It's the "all work, no waste" compressor system that provides "Peace of Mind" performance and helps save time, energy and money.



Just One Savings Example

Frictional losses are greater in sleeve bearings than in roller bearings. Using roller bearings will, on average, consume 3% less horsepower.

Example: Screw compressor with a 300 hp motor

300 hp x 3% = 9 hp *Anti-friction roller bearings save 9 hp over sleeve bearings.*

At 10¢ per kW, a 9 hp efficiency could provide a **cost savings of approximately \$6,000 per year!**



Energy Savings Equals Total Cost Savings

- Anti-Friction Bearings
- SuperCoalescer
- Cold-Start Valve
- Variable Volume Ratio Control
- External Oil Cooling
- Premium Efficient Motors

Innovative Design
For the Lowest Total Operating Cost

+ Industrial Strength
For the Lowest Total Maintenance Cost

+ Backed by a Standard 2-Year or
Optional 3-Year Warranty 

= Lowest Total Cost of Ownership

Quantum™ HD... Unifies Your Compressor System

Quantum™ HD is Standard

Quantum™ HD control panels make equipment management easy, from anywhere! Access any control, calibration or configuration value using on-screen touch control. With a large, high-contrast display, navigation and reading of the operating values and control settings is easy.



The Frick Quantum HD compressor controller has now been improved with the "Unity" software architecture, a Frick exclusive.

No other software architecture provides the field configurability or remote access options for the industrial refrigeration industry.

As the name implies, Unity brings all your system control into one cohesive unit, allowing you to view any Unity control from any other Unity controller that is on the same network. From a compressor panel, you can now view your condenser, vessel, evaporator, engine room or even another compressor control.

Simply the easiest-to-use, yet most powerful controller available today!

Easy, Connected Equipment Management

Capacity control

- Four user-defined modes

Sequencing

- Three suction levels
- Up to eight compressors per level
- Uses Ethernet for high-speed communications
- High stage/booster interlock between levels

Communications

- Up to three serial communication ports with any protocol

Supported serial protocols:

- Frick®
- Modbus ASCII
- Modbus RTU
- Allen-Bradley® DF1

Remote Networking

- Access all panels from any one panel on the network

Ethernet

- Modbus TCP
- Ethernet IP
- Secure, remote access from any or your web-enabled devices. See screens as though you were standing in front of the compressor using any standard internet browser!



The screenshot shows the Home screen of the Quantum HD controller. At the top, a green status bar indicates 'Normal' (10). Below it, a blue header bar displays 'Compressor' (1), IP address '192.168.0.135', and date/time '02/17/2016 - 13:36:51'. Three navigation buttons are on the right: 'Home' (2), 'Alarms', and 'Menu'. The main content area is divided into several sections: 'Package Operating Values' (8) with a table of pressure, temperature, and superheat; 'System Operating Values' (7) with a table of economizer pressure, leaving/entering process temperatures, and system discharge pressure; 'Capacity Management' (3) showing 'Capacity Control' mode (Mode 1) and a setpoint of 19.5 PSIG; and 'Compressor' (4) showing 'Running' status, mode (Manual), capacity slide (76.3%), volume slide (3.22), oil pump (Off), and speed (100.0%). At the bottom, there are four sets of control buttons for Compressor (start/stop), Capacity (up/down), Volume (up/down), and Speed (up/down) (6).

	Pressure	Temperature	Superheat
Suction	20.6 PSIG	16.2 °F	11.7 °F
Discharge	161.4 PSIG	168.0 °F	69.0 °F
Oil	152.6 PSIG	139.6 °F	
Separator		169.1 °F	
Filter Differential	4.3 PSI		

Motor Amps	85 AMPS		
Motor FLA	85.0 %	Motor Run Hours	0 HRS
Motor Kilowatts Est.	0 kW		

Economizer Pressure	54.3 PSIG
Leaving Process Temperature	32.8 °F
Entering Process Temperature	39.8 °F
System Discharge Pressure	151.2 PSIG

Never Leave the Home Screen!

The **Home** screen of the Quantum HD controller is designed to provide normal day-to-day operation without the user leaving the Home screen. Above, in clockwise order, are the high points of the Home screen.

The Home screen header, including the package status bar, panel name, IP address, date and time, as well as the three primary navigation buttons, is always present. Only the content below the header changes as you navigate the Quantum HD controller.

- 1 The user-defined panel name, IP address, date and time are clearly illustrated.
- 2 Simply touch one of these three **Quick Navigation Buttons** to initiate the easy-to-follow, intuitive navigation. The active button is outlined. The Home screen is never more than a single touch away.
- 3 The **Capacity Management** window illustrates the current mode, setpoint and actual value. It also provides the operator the ability to easily and quickly select from up to four capacity control modes, as well as quickly change the capacity control setpoint.

- 4 The **Compressor** window provides the status, position and mode for the compressor, capacity slide, volume slide, oil pump and Variable Speed Drive (if used).
- 5 Easily change the mode of the compressor, capacity slide and volume slide. If used, the Variable Speed Drive mode will match the capacity slide mode.
- 6 Manual control of the capacity slide, volume slide and speed is accomplished by simply touching and holding the Up ▲ arrow to load or increase, or the Down ▼ arrow to unload or decrease. Manually starting and stopping the compressor is just as easy.
- 7 Select up to 6 **System Operating Values** from the **User-Defined** screen to be displayed on the Home screen. All analog values can be selected and viewed on the User-Defined screen.
- 8 The standard **Package Operating Values** are prominently displayed for easy interpretation.
- 9 The capacity control channel, setpoint, and actual value are clearly displayed adjacent to the package status bar.
- 10 The **Package Status** bar is color-coded, letting you know at a glance if the operation is **Normal**, or if the package is in **Warning** or **Shutdown**.

Single Source Industrial Refrigeration Solutions !

Heat Exchangers



Packaged Equipment



Hygienic Air Units



Vessels



Controls



Evaporators



Compressors



Condensers



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 CONTAINS 25% POST-CONSUMER WASTE

