



## Form E70-400 SPC (JUL 2005)

### SPECIFICATIONS

File: EQUIPMENT MANUAL - Section 70  
Replaces: E70-400 SPC (MAY 2003)  
Dist: 1, 1a, 1b, 1c, 4, 4b, 4c

# RXF

## ROTARY SCREW COMPRESSOR UNITS Models 12 through 50



**RXF** Rotary Screw Compressor Units are engineered and manufactured to meet the exacting requirements of the industrial refrigeration market. All components have been designed and arranged to assure reliability, accessibility, and ease of service. Standard units are designed for high-stage or booster duty with ammonia or halocarbon refrigerants and are shipped completely assembled.

**COMPRESSOR:** The Frick manufactured RXF compressor incorporates the latest technology to bring large screw reliability and efficiency to small screw sizes. The ASTM A-48, class 40 gray iron compressor casings are designed and tested in accordance with the requirements of ASHRAE 15 safety code (362 psia maximum working pressure). The steel rotors incorporate a new generation rotor profile. This profile, in combination with an integral gear drive to increase rotor tip speed, brings unprecedented efficiency to screw compressors in this size range. The compressor incorporates a complete antifriction bearing design for reduced power consumption, improved efficiency, and reduced maintenance. The RXF compressor unit incorporates a NEMA "C" flange motor into a close-coupled mounting arrangement. Compressor/motor assemblies require NO coupling alignment.

**VOLUMIZER® II VARIABLE VOLUME RATIO CONTROL:** The RXF compressor incorporates a simple mechanism which adjusts the compressor volume ratio during operation to the most efficient of three possible volume ratios, depending on system requirements. This minimizes the power penalty associated with over or undercompression and reduces excess bearing loading caused by running a machine at a less efficient  $V_i$ .

**MOTOR:** Factory mounted, **premium efficient, low noise NEMA motors** are standard. Motors are provided with class B insulation and 1.15 service factor. Standard 60 hertz voltages are 230/460 (15–150 HP). Standard 50 Hertz voltages are 190/380 (15–150 HP).

**CAPACITY CONTROL:** The compressor incorporates a slide valve for capacity control, allowing infinite capacity adjustment from 100% to 25% of full load. Slide valve control is the most efficient unloading method available for part-load operation of a screw compressor.

**LUBRICATION SYSTEM:** The RXF compressor is designed specifically for operation without an oil pump for normal high-stage operation. All oil required for main oil injection and lubrication, is provided by positive gas differential pressure, and passes through our new Frick® SuperFilter™, specifically designed for increased particle capture and cleaner oil and compressor operation. SuperFilter™ allows less than 1/2% of 15 micron particles to pass through, yielding 35X better performance than today's industry standard of 50% efficiency (nominal) captured in one pass.

**OIL SEPARATOR/RESERVOIR:** The oil separator is horizontal, three-stage design with integral sump. The separator is designed and constructed in accordance with ASME Section VIII, Div. 1 for a maximum design working pressure of 300 psig. Replaceable coalescent separator elements are provided for final gas/oil separation of particles down to less than 1 micron.

**OIL COOLING:** Cooling the compressor oil may be achieved by liquid refrigerant injection, unit-mounted external water-cooled oil cooler, or unit-mounted thermosiphon oil cooler.

**QUANTUM™LX CONTROL CENTER:** The Quantum™LX control panel is factory mounted, NEMA 4, UL® listed, and completely wired with all the required safety and operating devices. A 10.4" Active Color VGA Graphics Display offers a high contrast, crisp clear display of compressor information and status. Additional Input/Output can be easily installed in the field. This feature provides flexibility for future engine room upgrades and changes. Ethernet communications along with three field-selectable serial communication ports allow you to choose from a combination of RS-422, RS-485, or RS-232 port configurations for both interpanel and external communications. Included in the microprocessor is time-proportioning capacity control, first-out annunciation, prealarms, volumizer control, real-time clock control, access code protection, lead-lag sequencing, alternate suction pressure operation, trending, and more. The operating conditions at the time of the compressor's last twenty alarms or shutdowns are stored in memory, providing the ultimate in service and troubleshooting convenience.

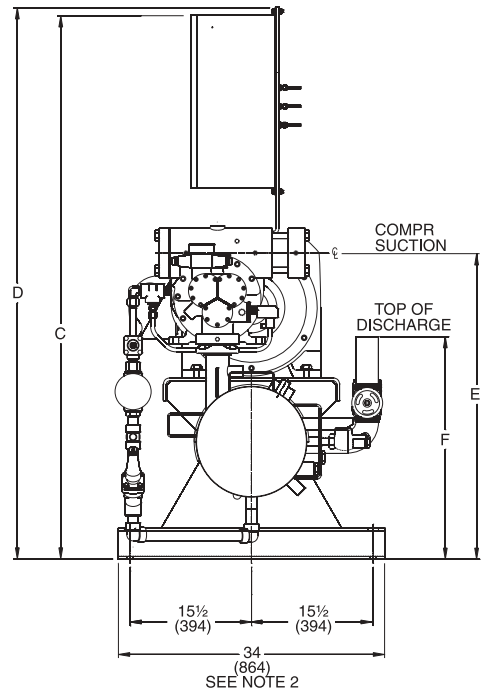
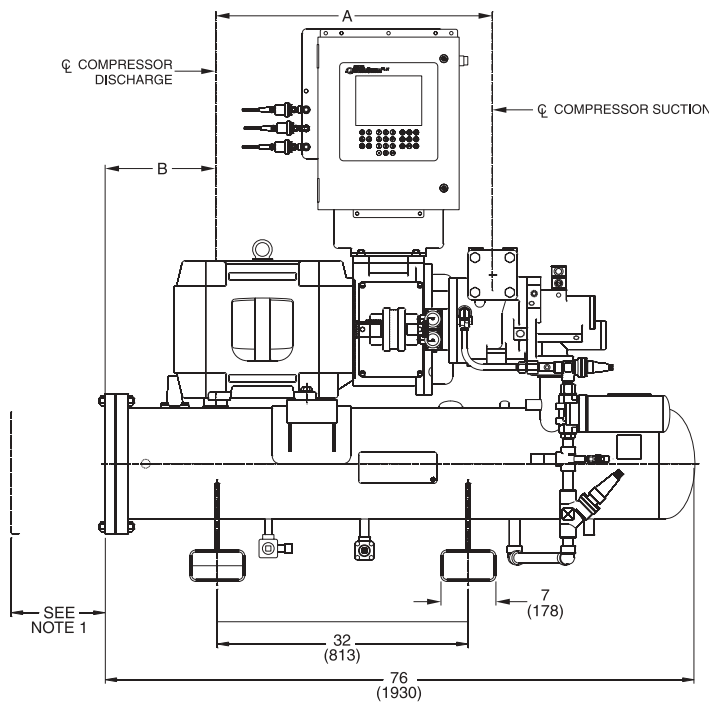
**VALVES:** The unit's discharge has a mounted combination stop/check valve with a serviceable check valve assembly. The suction has an integral suction strainer and mounted check valve and a separately shipped stop valve.

**OPTIONAL FEATURES:** Starter Packages (ship loose), Three-Way Oil Temperature Control Valve, Additional Oil Charge, Oversized Suction Stop Valve, Economizer Kit, Power Regulating Control Transformer, Oversized Oil Filter, and Demand Oil Pump.

STANDARD DESIGN DATA (with metric equivalents)

RFX MODEL NO.	MOTOR SPEED RPM	COMPRESSOR DISPLACEMENT		RATINGS R-717 <sup>(1)</sup>				RATINGS R-22 <sup>(2)</sup>				UNIT MINIMUM <sup>(3)</sup> WEIGHT WITH MOTOR		UNIT MAXIMUM <sup>(4)</sup> WEIGHT WITH MOTOR	
				CAPACITY		POWER		CAPACITY		POWER					
				CFM	M3/HR	TR	kw	BHP	kw	TR	kw	BHP	kw	lb	kg
12	1750	71.5	122	25.3	88.9	30.3	22.5	22.4	78.7	33.1	24.6	1713	770	2038	924
15	3550	89.2	152	31.6	111.1	37.9	28.2	27.9	98.1	41.3	30.7	1713	770	2188	992
19	3550	110.5	188	39.1	137.4	46.9	34.9	34.6	121.6	51.2	38.1	1728	784	2203	999
24	1750	144.1	245	51.0	179.3	61.1	45.5	45.1	158.6	66.7	49.7	2434	1105	3145	1427
30	3550	179.8	306	63.7	224.0	76.3	58.9	56.3	198.0	83.3	62.1	2414	1096	3125	1418
39	3550	222.6	378	78.9	277.5	94.5	70.5	69.7	245.1	103.1	76.8	2471	1122	3182	1443
50	3550	292.3	497	103.6	364.3	124.0	92.4	91.6	322.1	135.4	100.9	2559	1162	3270	1483

1. R-717: +20°F (-6.7°C) suction and 95°F (35°C) condensing with 10°F (5.5°C) liquid subcooling and 10°F (5.5°C) suction superheat.
2. R-22: +20°F (-6.7°C) suction and 105°F (40.6°C) condensing with 10°F (5.5°C) liquid subcooling and 10°F (5.5°C) suction superheat.
3. Minimum weight for R-22 or R-717 LIOC.
4. Maximum weight for R-22 or R-717 TSOC or WCOO.



1. Allow for coalescer element accessibility; 12 inches for Models 12-15 and 22 inches for Models 24-50.
  2. 6 x 5 Oil Coolers, Flat Plate Oil Coolers and Liquid Injection Oil Cooling are within the RXF Screw Compressor unit envelope.
  3. Piping shown is for use with Liquid Injection Kits
  4. Dimensions shown are inches with millimeters in parentheses.
- NOTE: Drawing for reference only! Use certified drawings for erection.**

MODEL NO.	CONNECTION				DIMENSIONS											
	SUCTION		DISCHARGE		A		B		C		D		E		F	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RXF 12	2½	63.5	2½	63.5	35 <sup>5</sup> / <sub>16</sub>	897	14 <sup>1</sup> / <sub>16</sub>	357	69 <sup>9</sup> / <sub>16</sub>	1762	70 <sup>7</sup> / <sub>16</sub>	1,789	39 <sup>1</sup> / <sub>16</sub>	992	28 <sup>3</sup> / <sub>16</sub>	721
RXF 15	2½	63.5	2½	63.5	35 <sup>5</sup> / <sub>16</sub>	897	14 <sup>1</sup> / <sub>16</sub>	357	69 <sup>9</sup> / <sub>16</sub>	1762	70 <sup>7</sup> / <sub>16</sub>	1,789	39 <sup>1</sup> / <sub>16</sub>	992	28 <sup>3</sup> / <sub>16</sub>	1257
RXF 19	3	76.2	2½	63.5	35 <sup>5</sup> / <sub>16</sub>	897	14 <sup>1</sup> / <sub>16</sub>	357	69 <sup>9</sup> / <sub>16</sub>	1762	70 <sup>7</sup> / <sub>16</sub>	1,789	39 <sup>1</sup> / <sub>16</sub>	992	28 <sup>3</sup> / <sub>16</sub>	1257
RXF 24	3	76.2	3	76.2	28 <sup>1</sup> / <sub>2</sub>	724	18 <sup>9</sup> / <sub>16</sub>	472	76 <sup>3</sup> / <sub>16</sub>	1935	77 <sup>1</sup> / <sub>4</sub>	1,962	46 <sup>13</sup> / <sub>16</sub>	1,189	32 <sup>13</sup> / <sub>16</sub>	833
RXF 30	4	101.6	3	76.2	28 <sup>1</sup> / <sub>2</sub>	724	18 <sup>9</sup> / <sub>16</sub>	473	76 <sup>3</sup> / <sub>16</sub>	1935	77 <sup>1</sup> / <sub>4</sub>	1,962	46 <sup>7</sup> / <sub>8</sub>	1,191	32 <sup>13</sup> / <sub>16</sub>	833
RXF 39	4	101.6	3	76.2	28 <sup>1</sup> / <sub>2</sub>	724	18 <sup>9</sup> / <sub>16</sub>	473	76 <sup>3</sup> / <sub>16</sub>	1935	77 <sup>1</sup> / <sub>4</sub>	1,962	46 <sup>7</sup> / <sub>8</sub>	1,191	32 <sup>13</sup> / <sub>16</sub>	833
RXF 50	4	101.6	3	76.2	28 <sup>1</sup> / <sub>2</sub>	724	18 <sup>9</sup> / <sub>16</sub>	472	76 <sup>3</sup> / <sub>16</sub>	1935	77 <sup>1</sup> / <sub>4</sub>	1,962	46 <sup>7</sup> / <sub>8</sub>	1,191	32 <sup>13</sup> / <sub>16</sub>	833

**NOTE: The suction stop valve is shipped separately for field installation. Make allowances for piping.**



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