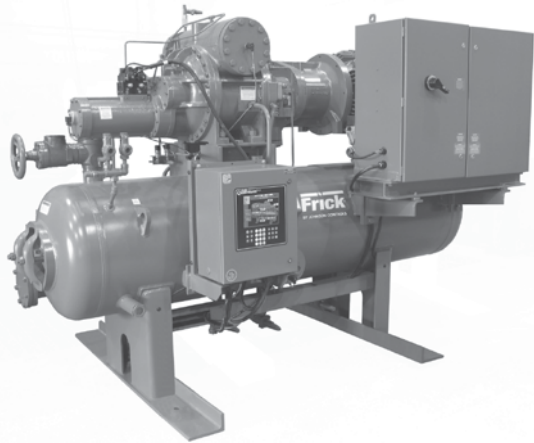




BY JOHNSON CONTROLS



Form 070.610A-SPC (AUG 2012)

SPECIFICATIONS

File: EQUIPMENT MANUAL - Section 70
Replaces: 070-610A SPC (MAY 2010)
Dist: 1, 1a, 1b, 1c, 4, 4b, 4c

RWF II

ROTARY SCREW COMPRESSOR UNITS

Models: 100 - 546

FEATURES AND BENEFITS

RWF II 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 servicing convenience. Standard units are designed for use as boosters or high-stage machines on ammonia or halocarbon refrigerants and are shipped completely assembled.

COMPRESSOR: The Frick® RWF II compressor has been designed utilizing the latest technology to offer the most reliable and energy efficient unit currently available. Setup is easy thanks to the new D-flange connection on our low noise motor that is standard for the RWF II. All screw compressor casings are designed and tested in accordance with the requirements of ASHRAE 15 safety standard. Rotors for models 100–270 are manufactured from bar stock. Rotors for models 316–546 are manufactured from forged steel. Both use the latest asymmetric profiles. The compressor incorporates a complete antifriction bearing design for reduced power consumption. The bearings selected provide an L10 life in excess of 100,000 hours at design conditions.

CAPACITY CONTROL: The capacity of the RWF II compressor package is controlled either mechanically by use of a slide valve or with a variable speed drive that controls the capacity by speed increase or decrease.

MECHANICAL CAPACITY CONTROL by using the slide valve provides modulating capacity control from 100% to approximately 12% of full load capacity.

SPEED CAPACITY CONTROL by using a variable speed drive provides modulating capacity control from 100% to approximately 20% of full load capacity by speed. This represents the largest window-of-control by speed in the industry. Further reduction in capacity can be achieved mechanically by unloading the slide valve.

VARIABLE VOLUME RATIO CONTROL: The RWF II compressor includes a patented method of varying the internal volume ratio to match the system pressure ratio, eliminating the power penalty associated with over- or undercompression.

LUBRICATION SYSTEM: The RWF II compressor is designed specifically for operation without an oil pump. All oil required for main oil injection and lubrication is provided by positive gas differential pressure. All oil passes through the Frick® SuperFilter™ II, specifically designed for increased particle capture, cleaner oil, and longer compressor operation. SuperFilter™ II captures 99% of particles five microns and larger and has twice the particulate holding capacity of the original filter for maximum bearing life. It is also designed for horizontal filter mounting and furnished with isolation stop valves and drain connections for ease of servicing. Booster and some low-pressure differential, high-stage applications will require the demand oil pump option.

OIL SEPARATOR/RESERVOIR: The oil separator is a 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 either EZ-Cool™ liquid-refrigerant-injection oil cooling, water-cooled oil cooling, or thermosyphon oil cooling. Water-cooled and thermosyphon oil-cooled systems are supplied with ASME plate and shell type heat exchangers mounted on the unit. They are also equipped with an oil temperature control valve.

QUANTUM™ HD CONTROLLER: The Quantum™ HD controller is factory mounted, NEMA 4 and built to the UL-508A standard. It is completely wired with all the required safety and operating devices. A 15" Touch-Screen, XGA Graphics Display offers a high contrast, crisp, clear display of compressor information and status. Additional I/O can be easily installed in the field. This feature provides flexibility for future engine room upgrades and changes. Ethernet communications provides remote access to Quantum™ HD screens through a local network or even across the Internet. Ethernet protocols deliver Quantum HD data over that same Ethernet network. Three field-selectable serial communication ports allow you to choose from a combination of RS-422 or RS-485, port configurations for external serial communications. Features included in the Quantum™ HD controller are, time-proportioning capacity control, first out annunciation, pre-alarms, variable volume ratio control (Vi), PIN code security protection, lead-lag sequencing, four user-defined capacity control modes, trending, maintenance schedule, compressor VFD control and more. Freeze displays of the operating conditions at the time of the compressor's last 50 alarms or shutdowns are stored in memory, providing the ultimate in service and troubleshooting convenience. For more information, see the Quantum HD controller SPC (090.040-SPC).

VALVES: The Unit's suction strainer is internal to the rotor housing and the suction stop valve can be mounted from either side.

OPTIONAL FEATURES: Demand Oil Pump, Dual Oil Filters, Economizer, Power-Regulating Control Transformer, oversized Suction Valve.

UNIT MOUNTED STARTER PACKAGES: The RWF II screw compressor package can be equipped with package mounted starters. This can either be in the form of a *Digital Bypass SS Soft Starter* (seen in the diagram on the following page) or a *Vyper™ Variable Speed Drive* (seen in the picture on this page).

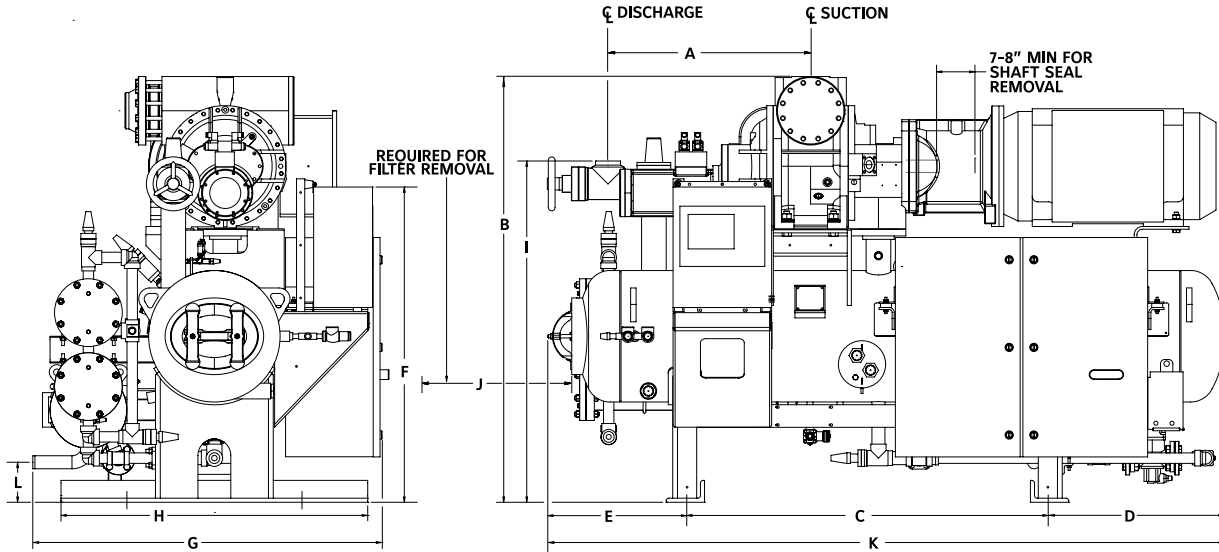
The package mounted starters are factory wired and tested under rigid processes. At a minimum the advantage is simplified onsite installation, smaller overall package footprint, superior motor overload protection and local main circuit breaker disconnect and lockout.

Please check www.johnsoncontrols.com/FRICK for the latest version of this publication.

STANDARD DESIGN DATA (with Metric equivalents) - NOMINAL @ 3550 RPM

MODEL NO.	COMPRESSOR DISPLACEMENT		RATINGS R-717 ⁽¹⁾⁽²⁾				RATINGS R-507 ⁽¹⁾⁽²⁾				UNIT WEIGHT ⁽³⁾	
			CAPACITY		POWER		CAPACITY		POWER			
	CFM	M3/hr	TR	kw	BHP	kw	TR	kw	BHP	kw	lb	kg
100B	592	1,005	59	207	60	45	-	-	-	-	5,400	2,449
100H	592	1,005	213	749	235	175	217.8	766	264.2	197	5,400	2,449
134B	790	1,342	79	276	80	60	-	-	-	-	5,600	2,540
134H	790	1,342	284	999	314	234	290.4	1021	352.3	263	5,600	2,540
177B	1,042	1,770	105	369	102	76	-	-	-	-	7,300	3,311
177H	1,042	1,770	384	1,351	410	306	386.0	1358	459.1	342	7,300	3,311
222B	1,311	2,228	132	464	129	96	-	-	-	-	7,600	3,447
222H	1,311	2,228	483	1,699	517	386	486.1	1710	578.1	431	7,600	3,447
270B	1,589	2,700	163	573	159	119	-	-	-	-	10,000	4,536
270H	1,589	2,700	598	2,103	638	476	600.5	2112	714.1	533	10,000	4,536
316B	1,865	3,169	188	660	183	137	-	-	-	-	12,500	5,670
316H	1,865	3,169	688	2,420	736	549	691.7	2433	822.6	613	12,500	5,670
399B	2,349	3,992	236	831	230	172	-	-	-	-	12,800	5,806
399H	2,349	3,992	866	3,046	926	691	871.0	3063	1035.8	772	12,800	5,806
480B	2,824	4,798	284	1,000	277	207	-	-	-	-	16,800	7,620
480H	2,824	4,798	1,018	3,581	1,127	841	-	-	-	-	16,800	7,620
546B	3,216	5,464	314	1,104	290	216	-	-	-	-	19,700	8,936
546H	3,216	5,464	1,169	4,110	1,280	955	-	-	-	-	NA	NA

- Booster conditions are based on -40°F (-40°C) suction and 10°F (-12.2°C) intermediate temperature with liquid at interstage saturation and no superheat.
 - High stage conditions are based on 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) superheat.
 - Unit weight does not include motor.
- NOTE:** All packages with motors larger than 1250 hp will require a vertical oil separator.



MODEL NO.	APPROXIMATE DIMENSIONS Inches/Millimeters											
	A	B	C	D	E	F	G	H	I	J	K	L
100	37/940	78/1981	66/1676	33/838	25/635	58/1473	65/1651	56/1422	62/1575	30/762	124/3150	7/178
134	37/940	78/1981	66/1676	33/838	25/635	58/1473	65/1651	56/1422	62/1575	30/762	124/3150	7/178
177	31/787	90/2286	75/1905	36/914	36/914	55/1397	70/1778	62/1575	63/1600	39/991	137/3480	6/152
222	31/787	90/2286	75/1905	36/914	36/914	55/1397	70/1778	62/1575	63/1600	39/991	137/3480	6/152
270	37/940	96/2438	88/2235	42/1067	36/914	54/1372	80/2032	66/1676	65/1651	39/991	166/4216	5/127
316	35/889	101/2565	88/2235	42/1067	35/889	54/1372	81/2057	66/1676	65/1651	33/838	165/4191	16/406
399	35/889	101/2565	88/2235	42/1067	35/889	54/1372	81/2057	66/1676	65/1651	33/838	165/4191	16/406
480	39/991	107/2718	82/2083	46/1168	49/1245	54/1372	89/2261	74/1880	68/1727	33/838	177/4496	9/229
546	39/991	107/2718	82/2083	46/1168	49/1245	54/1372	89/2261	74/1880	68/1727	33/838	177/4496	9/229

NOTE: Graphic and dimensions above for reference only. Other unit sizes will vary. Use only certified drawings for erection.

MODEL NO.	STANDARD CONNECTIONS in./mm			
	R-717		R-507	
	SUCTION	DISCHARGE	SUCTION	DISCHARGE
100	5/127.0	4/101.6	5/127.0	4/101.6
134	6/152.4	4/101.6	6/152.4	4/101.6
177	6/152.4	5/127.0	6/152.4	5/127.0
222	6/152.4	5/127.0	8/203.2	5/127.0
270	8/203.2	6/152.4	10/254.0	6/152.4

MODEL NO.	STANDARD CONNECTIONS in./mm			
	R-717		R-507	
	SUCTION	DISCHARGE	SUCTION	DISCHARGE
316	8/203.2	6/152.4	10/254.0	6/152.4
399	8/203.2	6/152.4	10/254.0	6/152.4
480	8/203.2	6/152.4	10/254.0	6/152.4
546	10/254.0	8/203.2	10/254.0	8/203.2

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