



## 070-610B SPC (AUG 2012) SPECIFICATIONS

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RWF II

ROTARY SCREW COMPRESSOR UNITS Models: 496 - 1080

## 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 are manufactured from forged steel, and 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 (Vi): 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<sup>®</sup> SuperFilter<sup>™</sup> II, specifically designed for increased particle capture, cleaner oil, and compressor operation. SuperFilter<sup>™</sup> II captures 99% of particles 5 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 Demistifier<sup>™</sup> 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<sup>™</sup> 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<sup>™</sup> 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<sup>™</sup> 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 has a combination suction shut-off and check valve with strainer multivalve assembly. The unit's discharge has a mounted combination check and shut-off valve.

**OPTIONAL FEATURES:** Demand Oil Pump, Dual Oil Filters, Economizer, Oil Temperature Control Valve, Starter Packages, 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<sup>™</sup> Variable Speed Drive.* 

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.

## 070.610B-SPC (AUG '12) RWFII ROTARY SCREW COMPRESSOR UNITS 496 - 1080 Page 2 STANDARD DESIGN DATA (with Metric equivalents) - NOMINAL @ 3550 RPM

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COMPRESSOR MODEL DISPLACEMENT		RATINGS R-717 (1)(2)				RATINGS R-507 (1)(2)							
		CAPACITY		POWER		CAPACITY		POWER		UNIT WEIGHT (3)			
	NO.	CFM	M3/hr	TR	kW	BHP	kW	TR	kW	BHP	kW	lb	kg
	496B	2,920	4,961	282	991	307	229	390	1370	448	334	20,500	9,299
	496H	2,920	4,961	1,054	3,704	1,181	881	973	3,419	1,341	1,000	NA	NA
	676B	3,982	6,765	381	1,339	420	313	502	1,764	612	456	20,800	9,435
	676H	3,982	6,765	1,424	5,004	1,612	1,202	1,258	4,421	1,845	1,376	NA	NA
	856B	5,068	8,610	484	1,701	535	399	633	2,224	824	614	22,500	10,206
	856H	5,068	8,610	1,809	6,357	2,056	1,533	1,586	5,573	2,504	1,867	NA	NA
	1080B	6.402	10.862	603	2.119	679	506	745	2.618	1.027	766	23.100	10.478

1. 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.

2. 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 (5.5C) superheat.

3. Unit weight does not include motor.

NOTE: All packages with motors larger than 1250 hp will require a vertical oil separator



MODEL	APPROXIMATE DIMENSIONS Inches/Millimeters									
NO.	Α	В	C	D	E	F	G	Н		J
496	135/3429	93/2362	53/1340	45/1130	60/1524	102/2591	68/1727	25/638	39/991	191/4832
676	145/3675	96/2438	51/1302	49/1254	70/1778	108/2743	77/1956	26/666	39/991	196/4994
856	151/3834	96/2438	62/1572	50/1261	70/1778	111/2819	82/2083	28/720	39/991	208/5271
1080	151/3834	96/2438	62/1572	50/1261	70/1778	111/2819	82/2083	28/720	39/991	208/5271

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

	STANDARD CONNECTIONS in./mm								
MODEL	R	-717	R-507						
ŇÕ.	SUCTION	DISCHARGE	SUCTION	DISCHARGE					
496	12/304.8	8/203.2	12/304.8	8/203.2					
676	12/304.8	8/203.2	12/304.8	8/203.2					
856	14/355.6	8/203.2	14/355.6	8/203.2					
1080	14/355.6	8/203.2	14/355.6	8/203.2					

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