



E70-600 SPC/APR 2003

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# RWF

## ROTARY SCREW COMPRESSOR UNITS Models: 100 - 480

### FEATURES AND BENEFITS

**RWF** 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 manufactured **RWF** 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**. All screw compressor casings are designed and tested in accordance with the requirements of ASHRAE 15 safety code. Rotors for models 100—270 are manufactured from bar stock. Rotors for models 316—480 are manufactured from forged steel. Both use the latest asymmetric profiles. The compressor incorporates a complete antifriction bearing design for reduced power consumption and the bearings selected provide an L10 life in excess of 100,000 hours at design conditions.

**CAPACITY CONTROL:** Capacity control is achieved by use of a slide valve which provides fully modulating capacity control from 100% to approximately 10% of full load.

**“VOLUMIZER®” VARIABLE VOLUME RATIO CONTROL:** The **RWF** 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** 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™, 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. It is also designed for horizontal 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 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.

**QUANTUM™ CONTROL CENTER:** The Quantum control panel is factory mounted, NEMA 4, UL ® listed, and completely piped and wired with all the required safety and operating devices. A built-in telecommunications interface suitable for connection to a remote computer or control device is included. A 10.4" Active Color VGA 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. Two 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 ten alarms or shutdowns are stored in memory, providing the ultimate in service and troubleshooting convenience.

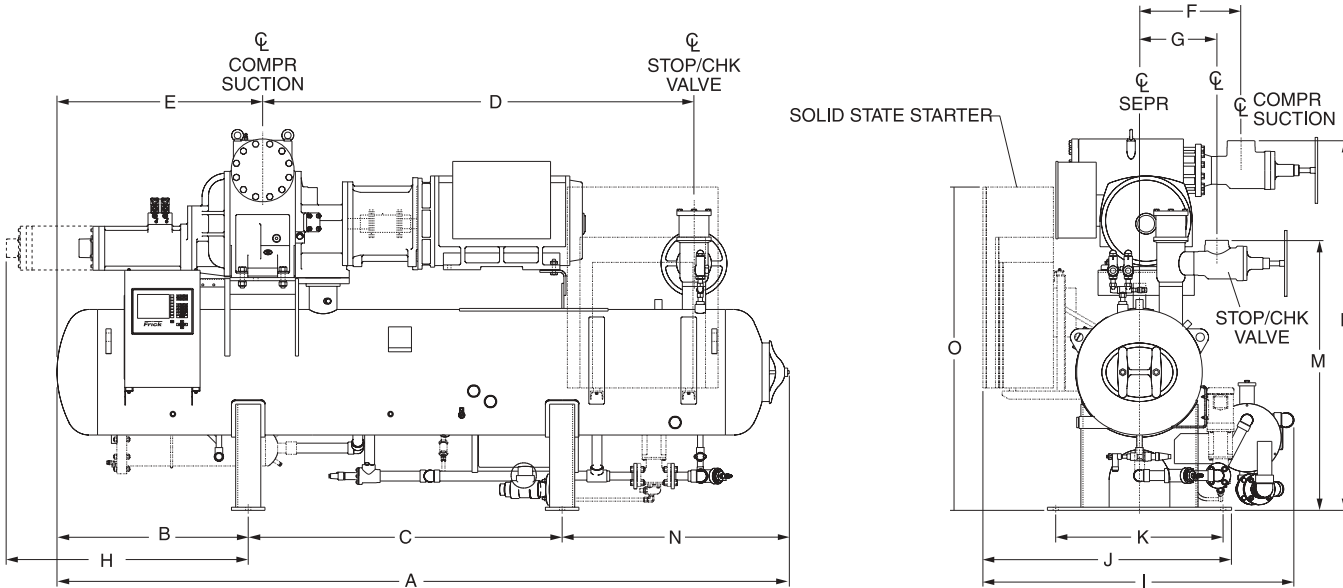
**VALVES:** The Unit's suction strainer is internal to the rotor housing and the suction stop valve is mounted from either side.

**OPTIONAL FEATURES:** Demand Oil Pump, Dual Oil Filters, Economizer, Oil Temperature Control Valve, Starter Packages, Unit-Mounted Solid-State Starter Packages, Power-Regulating Control Transformer, oversized Suction Valve.

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

RWF MODEL NO.	COMPRESSOR DISPLACEMENT		RATINGS R-717 (1)				RATINGS R-22 (2)				UNIT WEIGHT (3)	
			CAPACITY		POWER		CAPACITY		POWER			
			CFM	M3/hr	TR	kw	BHP	kw	TR	kw		
100	592	1005	213	749	235	175	194	682	261	195	7,000	3175
134	790	1342	284	999	314	234	259	911	348	260	7,250	3289
177	1042	1770	384	1351	410	306	345	1213	453	338	11,000	4990
222	1311	2228	483	1699	517	386	434	1526	572	427	11,200	5080
270	1589	2700	598	2103	638	476	538	1892	705	526	13,400	6078
316	1865	3169	688	2420	736	549	617	2170	814	607	14,900	6759
399	2349	3992	866	3046	926	691	778	2736	1025	764	15,400	6985
480	2824	4798	1042	3664	1114	831	936	3291	1233	919	16,400	7439

1. 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) suction superheat.
2. Based on 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. With external oil cooler.



RWF MODEL NO.	APPROXIMATE DIMENSIONS INCHES/MILLIMETERS														
	A (1)	B	C	D	E	F (4)	G (4)	H (3)	I (4)	J (4)	K	L	M	N (2)	O
100	149/3785	35/889	66/1676	90/2286	37/940	21/533	17/432	57/1448	67/1702	50/1270	32/813	76/1930	56/1422	48/1219	66/1676
134	152/3861	35/889	66/1676	92/2337	35/889	22/559	17/432	63/1600	67/1702	50/1270	32/813	79/2007	56/1422	48/1219	66/1676
177	175/4445	46/1168	75/1905	101/2565	51/1295	23/584	19/482	61/1549	75/1905	60/1524	40/1016	89/2260	65/1651	55/1397	78/1981
222	175/4445	46/1168	75/1905	103/2616	49/1245	23/584	19/482	67/1702	75/1905	60/1524	40/1016	89/2260	65/1651	55/1397	78/1981
270	195/4953	51/1295	88/2235	115/2921	53/1346	25/635	22/559	78/1981	82/2083	71/1803	54/1372	96/2438	71/1803	56/1422	78/1981
316	195/4953	51/1295	88/2235	115/2921	53/1346	28/711	21/533	74/1880	93/2362	71/1803	54/1372	100/2540	71/1803	56/1422	78/1981
399	195/4953	51/1295	88/2235	117/2972	51/1295	29/737	21/533	80/2032	93/2362	71/1803	54/1372	100/2540	71/1803	56/1422	78/1981
480	204/5182	52/1321	88/2235	120/3048	50/1270	29/737	21/533	94/2388	102/2591	79/2007	62/1575	106/2692	78/1981	58/1473	78/1981

NOTE: Drawing for reference only. 177/222 is shown; other unit sizes vary slightly. Use certified drawings for erection.

1. On model 100/134 and 480, the end of the compressor extends past the end of the separator.
2. Allow additional 36 in./915 mm to remove coalescer element.
3. Required clearance for removal of movable slide valve/slide stop assembly.
4. Maximum dimension.

RWF MODEL NO.	STANDARD CONNECTIONS in./mm			
	R-717		R-22	
	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
316	8/203.2	6/152.4	N/A	N/A
399	8/203.2	6/152.4	N/A	N/A
480	8/203.2	6/152.4	N/A	N/A



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