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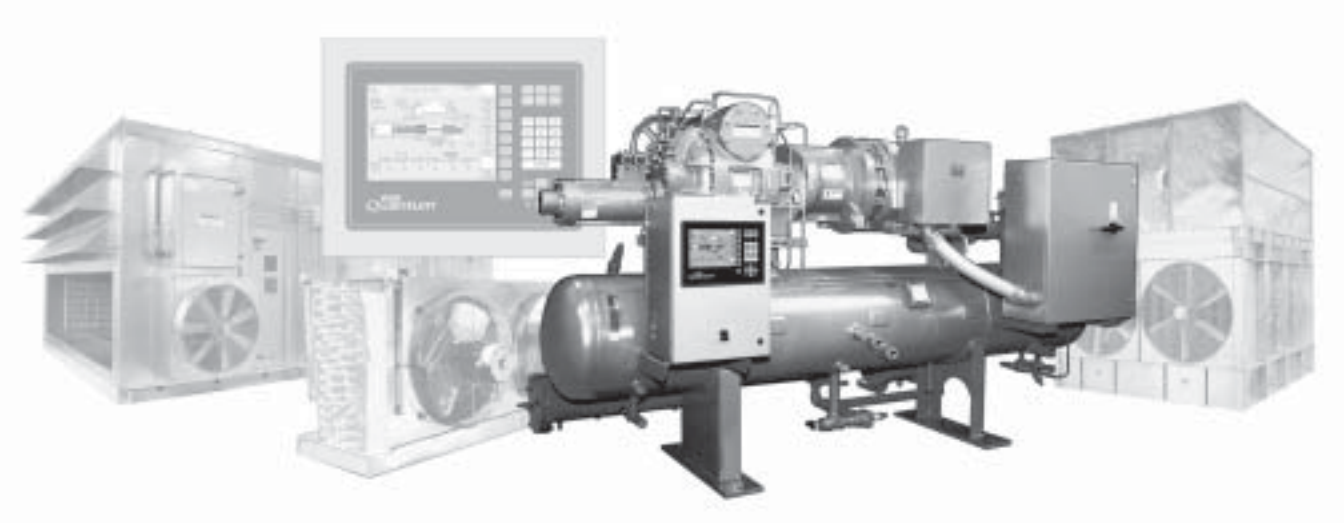
SPECIFICATIONS - ENGINEERING DATA - DIMENSIONS

RWF

ROTARY SCREW COMPRESSOR UNITS
MODELS: RWF 100 through 480

REFRIGERANTS R-717 and R-22
HIGH STAGE and BOOSTER APPLICATIONS



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MODEL NUMBER EXPLANATION

B - Booster
H - Single or High Stage
E - Single-Stage Economized
S - Booster/High Stage
DB - Dual Booster
DH - Dual High Stage
C - Other

DESCRIPTION

The RWF Rotary Screw Compressor Unit line consists of 8 models ranging in capacity from 592 CFM (1004 m^3/h) through 2824 CFM (4798 m^3/h) at 3550 RPM and 60 Hz. Standard units, models 100 – 480, are designed for use on ammonia, halocarbon, and hydrocarbon refrigerants for either high stage or booster service.

Standard units consist of the following major components: **Frick**® manufactured SGC Rotary Screw Compressor with patented VOLUMIZER® variable volume ratio control; compressor/motor coupled with D-flange, drive coupling and guard; SBC microprocessor control panel; suction and discharge line stop valves; suction and discharge line check valves; suction strainer; and a three-stage horizontal oil separator/reservoir. All components have been selected for maximum reliability and arranged to ensure accessibility for service. The units are factory packaged, complete with wiring and piping. All piping connecting the various elements of the compressor unit is done in accordance with ANSI B31.5.

MODEL SGC COMPRESSOR

HOUSING: All screw compressor castings are designed and tested to meet the requirements of ASHRAE 15 safety code for 350 PSIG maximum discharge pressure. Castings are close grain, ASTM-A-48 Class 40 cast iron to ensure structural integrity and mechanical and thermal stability under all operating conditions.

ROTORS: The rotors are machined from AISI-1141 steel to the exacting tolerances of the latest SRM asymmetric profile. The four-lobed male rotor is directly connected to the driver. The six-lobed female rotor is driven by the male rotor on a thin oil film.

BEARINGS: Antifriction bearings with an L10 rated bearing life in excess of 100,000 hours, at design conditions, are used for reduced frictional horsepower and superior rotor positioning, resulting in reduced power consumption, particularly at higher pressure ratios. Cylindrical roller bearings are provided to handle the radial loads and the thrust loads are absorbed by angular contact ball bearings. In addition, thrust balance pistons are provided to reduce the thrust load and improve bearing life.

SHAFT SEAL: The compressor shaft seal is a single-face type with a spring-loaded carbon stationary surface riding against a cast iron rotating seat. The seal is capable of sealing up to 350 PSIG, but is vented to low pressure to provide extended seal life.

VOLUMIZER® VARIABLE VOLUME RATIO CONTROL: The **Frick** compressor includes a patented method of varying the internal volume ratio to match the system pressure ratio. With control of the internal volume ratio, the power penalty associated with overcompression or undercompression is eliminated. The volume ratio control is achieved by the use of a slide stop which is a movable portion of the rotor housing that moves axially with the rotors to control discharge port location. The slide stop is moved by hydraulic actuation of a control piston based on signals from the microprocessor. The range of adjustability is from 2.2 to 5.0 Vi for all models.

CAPACITY CONTROL: Capacity control is achieved by use of a movable slide valve. The slide valve moves axially under the rotors to provide fully modulating capacity control from 100% to minimum load capacity. Minimum load capacity varies slightly with compressor model, pressure ratio, discharge pressure level, and rotor speed. The minimum capacity for all RWF models is approximately 10%.

The slide valve is positioned automatically by hydraulic movement of its control piston based on time-proportional signals from the microprocessor. When in the unloaded position, gas is bypassed back to suction through a recirculation slot before compression begins and any work is expended, providing the most efficient unloading method available for part-load operation of a screw compressor.

LUBRICATION SYSTEM

LUBRICATION SYSTEM: The SGC compressor is designed specifically for operation without an oil pump under normal operating conditions. All oil required for main oil injection and lubrication is provided by positive gas differential pressure. All oil passes through a 15 micron SuperFilter™ furnished with isolation stop valves and drain connections for ease of servicing.

For some low pressure differential applications, an optional demand pump will be required. The demand pump operates only when the suction-discharge differential is not sufficient to provide adequate lubrication and will shut off automatically to conserve pump motor power when not required.

The lubrication system on a unit designed for booster duty includes a demand oil pump. The demand pump is supplied as standard equipment due to the typically low differential pressure across the compressor in booster applications.

OIL SEPARATOR/RESERVOIR: RWF models 100 through 480, high stage or booster have a horizontal design oil separator with integral sump. Two sight glasses are located in the reservoir section and one in the coalescing section. The separator is designed and constructed in accordance with ASME Section VIII, Div. 1 for a maximum design working pressure of 300 PSIG and supplied with dual relief valves. 500 watt heaters maintain oil temperature at an ambient temperature of 67°F minimum, with no wind factor, during compressor shutdown and are replaceable without shutting down the compressor.

Coalescent separator elements are provided for final gas/oil separation of particles down to less than 1 micron. Oil is drained from the coalescer section and returned to the compressor during operation.

OIL FILTERS: All lubrication and injection oil 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. It is also designed for horizontal mounting and furnished with isolation stop valves and drain connections for ease of servicing.

OIL COOLING

LIQUID INJECTION OIL COOLING: The compressor oil is cooled by direct contact with the refrigerant injected through an optimized port location prior to the compressor discharge. Liquid feed arrangements include isolation valves, strainer, solenoid valve, sight glass, a thermal expansion temperature control valve, and a pressure differential control valve. The temperature control valve will maintain the temperature of the oil returning to the compressor between 130°F and 170°F.

WATER-COOLED OIL COOLING: The optional water-cooled oil cooler is a plate and shell design with oil on the plate side. The cooler is designed and constructed according to ASME Section VIII Div. 1 with a Maximum Allowable Working Pressure (MAWP) of 400 PSIG on the shell side. Oil temperature is maintained between 110°F and 130°F for ammonia and halocarbons with a thermally controlled valve. The oil cooler is mounted on the unit with the oil piping connected. Water connections and controls are field installed.

THERMOSYPHON OIL COOLING: The optional thermosyphon cooler is a plate and shell design constructed in accordance with ASME Div. 1 with a MAWP of 400 PSIG on the shell side and 400 PSIG on the plate side. The oil cooler is mounted on the unit with the oil piping connected. Refrigerant connections and controls are field installed.

QUANTUM CONTROL PANEL

HARDWARE: The Quantum control panel is factory mounted, completely piped and wired with all the required safety and operating devices. The single box NEMA 4,UL® listed* control panel houses both the Quantum control and the junction box. A built-in telecommunications interface suitable for connection to a remote computer, CRT, terminal printer, or standard modem is included. An X86-based processor provides speed and processing capability and the 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.

Additional features include: circuit breaker protection for main power; UL, cUL, CE, and ISO 9001 certifications; flexible analog inputs, making it easy to change setup in the field to accept 0-5 volt, 1-5 volt, 4-20 mA or ICTD sensors and transmitters; long life, easily replaceable, lithium coin cell battery for power backup to the time/date clock; communication activity and diagnostic lamps simplify troubleshooting and provide visual indication of proper component operation; code readouts appear on the display if an internal component problem is detected; EEProm setpoint memory - all setpoints are stored on an EEProm chip which requires no battery backup and setpoints can be field programmed within **Frick** defined limits (a notice is displayed if you attempt to program setpoints outside of the defined ranges); replaceable input and output modules; built-in fuse tester.

SOFTWARE: Quantum control panel screens are user friendly, menu driven, and easy to use and understand. Help screens and prompts are available should you experience difficulties in setup or monitoring of system information. Operation instruction can be accessed on-screen via the Help key.

Numerous diagnostic features have been incorporated to ease troubleshooting and identify component malfunctions. They include: sensor short/open, setpoint input out of sensing range, DC and AC power monitoring, and memory error sensing.

Multiple capacity controllers provide application flexibility for auto setback control and control reset for changes in modes of operation. Override controls are provided to allow all safety and controller functions to be programmed to unload the compressor within maximum safety and control parameters.

On-screen calibrations for sensors, motor current, slide valve, and slide stop can be adjusted with easy to understand graphics. No potentiometer adjustment is required. Display backlight flashes on shutdown to attract attention in noisy engine rooms.

Other features include**:** selectable pressure and temperature units; industry standard communication protocols; real-time and historical X-Y trending - selected data and selected time periods can be viewed in either an X-Y trending chart or a tabular chart; ability to add analog and digital inputs.

* UL® listing applies to standard panels. Control Panels with special components may also be certified. Contact **Frick** for confirmation.

ACCESSORIES and OPTIONAL ITEMS

DUAL OIL FILTERS: A second oil filter may be furnished mounted on the unit. Isolation valves are included to provide servicing of the primary filter set while the unit is running.

DEMAND PUMP: Lubrication and oil injection may be achieved by using a positive-displacement, direct-driven gear-type oil pump capable of maintaining lube oil supply at low pressure differentials, operating independent of the compressor.

The pump will operate only when required, due to low system differential pressure.

ECONOMIZER: Increased refrigeration capacity with relatively low increase in brake horsepower can be achieved by the use of a **Frick**® economizer system. The economizer consists of a shell and tube liquid subcooler with appropriate controls. The economizer vessel is shipped loose for mounting in the field.

MOTORS: The compressor drive motor can be supplied and mounted by **Frick**. In addition, a customer supplied motor can be factory mounted by **Frick**.

STARTERS: Starter packages complete with all accessories needed to interface with the RWF, prewired to numbered terminal strips are available.

SPECIAL PACKAGES: For special refrigerant selection, special drivers, or any dual or two stage applications, consult **Frick**.

STANDARD DESIGN DATA

RWF MODEL NO.	SGC COMPRESSOR			
	MODEL NO.	DIA mm	L/D	DISPLACEMENT CFM (m^3/h)
100	1913	193.0	1.35	592 (1005)
134	1918	193.0	1.80	790 (1342)
177	2313	233.0	1.35	1042 (1770)
222	2317	233.0	1.70	1311 (2228)
270	2321	233.0	2.10	1590 (2700)
316	2813	283.0	1.35	1865 (3169)
399	2817	283.0	1.70	2349 (3992)
480	2821	283.0	2.10	2824(4798)

EQUIPMENT SELECTION SCREW COMPRESSOR UNIT

The following information is required for final unit selection:

Refrigerant _____ R-717, R-22
Other - Consult **Frick**
Duty _____ Single Stage, High Stage, Booster
Other - Consult **Frick**
Compressor RPM _____ 3550 (60 Hz) or 2950 (50 Hz)
Other - Consult **Frick**
Lube Oil Pump: Single, High Stage _____ Demand (Opt)
Lube Oil Pump: Booster _____ Demand (Std)
Oil Filters _____ Single (Std), Dual (Opt)
Oil Cooling _____ Liquid Injection (Std)
Water Cooled (Inlet/Outlet Water Temp Req'd) (Opt)
Thermosyphon _____ (Opt)
Saturated Suction Temperature _____ °F
Condensing Temperature _____ °F
Intermediate Temperature (Booster) _____ °F
Suction Superheat _____ °F
Liquid Subcooling _____ °F
Economizer - Kit Only _____ (Opt)
Economizer - Dx Cooler _____ (Opt)
Rating_____TR_____BHP ____ (Including Liquid Subcooling, Suction Superheat, and Liquid Injection corrections as applicable)

COMPRESSOR DRIVER

The following information is required for proper coordination of the screw compressor unit and the compressor driver.

Driver Type _____ Electric Motor
Other - Consult **Frick**®
Motor Speed _____ RPM (See Compressor RPM, above)
Motor Specifications_____ _____HP _____ Frame
_____ Service Factor _____ Full-Load Amps
_____Bearings (Ball or Sleeve)
Motor Power_____ Volts, 3 Phase_____Hz
Motor Supplied By _____ **Frick**, Others
Motor Mounted By _____ **Frick**, Others
Motor Enclosure _____ ODP, TEFC
_____ Explosion Proof_____ Class_____Group
Motor Starting Method _____ Across-the-line,
Wye-delta, Autotransformer, Solid State
* Motor Rotation _____

*** NOTE: Compressor rotation is clockwise when facing end of compressor shaft. MOTOR ROTATION MUST BE COUNTERCLOCKWISE WHEN FACING END OF MOTOR SHAFT.** Most motors have dual rotation, but some, such as the large TEFC motors, are single rotation only for purposes of fan cooling and must be ordered with the correct rotation. Motors must be D-flanged.

MOTOR SELECTION

Motors for high-stage applications may be selected for the design operating condition, however, motors for booster applications need to be sized for start-up and pull-down duty as well as for the design condition. For booster applications start-up and pull-down will quite often be the more demanding requirement.

For starting torque see Compressor Speed/Torque Curve.

MOTOR STARTER PACKAGES

The following specifications describe a motor starter package, complete with all electrical accessories necessary to interface with the RWF compressor unit. These starter packages are available from **Frick** with all necessary interlocks prewired to terminals numbered for direct connection to the RWF Microprocessor.

Specify starting method and overcurrent protection for: _____ HP, _____ Volt/3 Phase, _____ Hz, _____ FLA, _____ RPM compressor motor, complete with overload heaters, 2KVA-120 volt control power transformer, _____: 5 amp-15 VA signal current transformer and normally open auxiliary contact. Starter package includes one across-the-line fused oil pump starter for _____ HP, _____ Volt/Phase, __ Hz, _____FLA, _____RPM motor complete with overload heaters and normally open auxiliary contact. All interlocks wired to terminals marked in accordance with the RWF unit single box microprocessor control. Specify _____NEMA rating for enclosure, NEMA 1 is standard. The maximum starter coil load on terminal 18 shall be one size 3 starter coil or one interposing relay.

The following information must be specified for each application:

STARTING METHOD: Choose Across-the-line, Autotransformer, Wye-delta Open Transition, Wye-delta Closed Transition, or Solid-State starting.

ACROSS-THE-LINE STARTING: Yields full motor starting torque. However, power companies and/or in-house power distribution systems often require other starting methods to achieve reduced starting inrush current. **NOTE: Reducing the inrush current also reduces the starting torque.** A careful analysis of compressor torque requirements versus the available motor starting torque must be made. This can be accomplished by plotting the motor speed-torque curve (obtained from motor vendor) against the compressor speed-torque curve. The available motor torque should exceed the compressor torque requirement by a minimum of 20% at the worst portion of the curve. This usually occurs at approximately half-speed in the region known as the motor pull-up torque (P.U.T.). When plotting these curves please remember that for starting methods other than across-the-line, the motor torque values are reduced as follows:

AUTOTRANSFORMER: The Autotransformer starter has three voltage taps: 50%, 65% and 80%. The starter, unless specified otherwise, is normally shipped connected to the 80% voltage tap. This can be changed in the field as required. The starting torque available is:

80% Tap - 64% of normal torque
65% Tap - 42% of normal torque
50% Tap - 25% of normal torque

WYE-DELTA (OPEN or CLOSED TRANSITION): Starting torque available is 33% of normal. While Wye-delta open transition starters exhibit the same torque characteristics as Wye-delta closed transition starters, closed transition is the more preferred method. This is because open transition allows the motor to get out of sync with the power line during transition. This can result in damaging power spikes that tend to nuisance trip circuit breakers and shorten motor and power distribution equipment life. This is especially true for screw compressors which represent relatively low inertia loads.

SOLID-STATE STARTERS: Starters have complex current and torque relationships. In addition, solid-state starters require careful coordination between the starter and other protective devices to prevent compressor failure due to shorted starter outputs. If a solid-state starter is being considered, consult **Frick** for assistance.

OVERCURRENT PROTECTION: Choose either the Starter package or the Combination starter package with circuit breaker disconnect. For high voltage (2300V, 4160V) applications, specify High voltage fused draw-out starter package.

COMPRESSOR MOTOR DATA: Indicate the motor _____HP, _____voltage, _____Hz, _____FLA (full load amps), and _____speed.

CURRENT TRANSFORMER RATIO: Select the appropriate current transformer ratio from the chart on the wiring diagram.

STANDARD CONDITIONS - HIGH STAGE

The RWF high stage ratings for R-717 and R-22 are based on 3550 RPM (60 Hz), 10°F liquid subcooling (except no external liquid subcooling in economizer ratings), 10°F suction superheat (not contributing to the refrigeration effect) and thermosyphon or water-cooled oil cooling.

SELECTION PROCEDURE - HIGH STAGE

The final rating for a RWF unit at any condition is determined from the standard rating and all of the applicable correction factors.

Capacity (TR) = standard rating (or economized rating) x subcooling correction factor x superheat correction factor x liquid injection correction factor if applicable (see Liquid Injection Oil Cooling) x 0.83 (50 Hz only).

Brake Horsepower (BHP) = standard rating (or economized rating) x 1.01 (liquid injection correction factor if applicable) x 0.83 (50 Hz only).

LIQUID SUBCOOLING CORRECTION FACTORS HIGH STAGE

For liquid subcooling other than 10°F, determine the liquid subcooling capacity correction factor (S.C.C.F.) in the following manner using the actual number of degrees of liquid subcooling (S.C.):

For R-717:

$$S.C.C.F. = 1+(S.C.-10°F)(.0025)$$

For R-22:

$$S.C.C.F. = 1+(S.C.-10°F)(.005)$$

No brake horsepower correction is required for liquid subcooling.

SUCTION SUPERHEAT CORRECTION FACTORS HIGH STAGE

For suction superheat in excess of 10°F, determine the suction superheat capacity correction factor (S.H.C.F.) in the following manner using the actual number of degrees of suction superheat (S.H.):

FOR R-717:

$$S.H.C.F. = \frac{1}{1+(S.H.-10°F)(.0027)}$$

FOR R-22:

$$S.H.C.F. = \frac{1}{1+(S.H.-10°F)(.0028)}$$

It is recommended that a minimum of 10°F of suction superheat be maintained to ensure that all refrigerant entering the compressor is in the vapor state.

No brake horsepower correction is required for suction superheat.

STANDARD CONDITIONS - BOOSTER

The RWF booster ratings for R-717 and R-22 are based on 3550 RPM (60 Hz), liquid cooled to intermediate temperature, no suction superheat, and thermosyphon or water-cooled oil cooling.

SELECTION PROCEDURE - BOOSTER

The final rating for a RWF unit at any condition is deter-mined from the standard rating and all of the applicable correction factors.

Capacity (TR) = standard rating x liquid temperature correction factor x superheat correction factor, if applicable, x 0.83 (50 Hz only).

Brake Horsepower (BHP) = standard rating x 1.01 (liquid injection correction factor, if applicable) x 0.83 (50 Hz only).

LIQUID TEMPERATURE CORRECTION FACTORS BOOSTER

For liquid temperatures greater than the saturated inter-mediate temperature, determine the liquid temperature de-rating factor (L.T.D.F.) in the following manner:

For R-717:

$$L.T.D.F. = 1-(TD)(.0025)$$

For R-22:

$$L.T.D.F. = 1-(TD)(.005)$$

Where TD is the temperature difference in degrees between the actual liquid temperature and the saturated intermediate temperature. No brake horsepower correction is required.

SUCTION SUPERHEAT CORRECTION FACTORS BOOSTER

For suction superheat in excess of 0°F, determine the suction superheat capacity correction factor (S.H.C.F.) in the following manner using the actual number of degrees of suction superheat (S.H.):

FOR R-717:

$$S.H.C.F. = \frac{1}{1+(S.H.)(.0027)}$$

FOR R-22:

$$S.H.C.F. = \frac{1}{1+(S.H.)(.0028)}$$

It is recommended that a minimum of 10°F of suction super-

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 100

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	48.64 122.76	47.06 138.99	45.44 157.83	43.97 182.08	42.44 212.33
-35 5.4*	TR BHP	56.49 128.27	54.64 144.25	52.84 162.71	51.01 183.98	49.34 211.36
-30 1.6*	TR BHP	65.27 133.99	63.22 150.51	61.13 168.56	59.09 189.41	57.02 213.41
-25 1.3	TR BHP	75.01 139.89	72.80 157.03	70.48 175.60	68.11 195.95	65.81 219.32
-20 3.6	TR BHP	85.88 145.79	83.40 163.77	80.88 183.00	78.25 203.77	75.59 226.60
-15 6.2	TR BHP	98.04 151.66	95.14 170.47	92.38 190.62	89.51 212.11	86.54 235.26
-10 9.0	TR BHP	111.49 157.09	108.29 177.30	105.06 198.28	101.94 220.69	98.69 244.60
-5 12.2	TR BHP	126.36 162.06	122.78 183.69	119.18 206.06	115.60 229.40	112.08 254.21
0 15.7	TR BHP	142.71 166.25	138.77 189.60	134.76 213.51	130.72 238.16	126.74 264.06
5 19.6	TR BHP	160.65 169.50	156.31 194.77	151.88 220.43	147.42 246.76	142.87 273.85
10 23.8	TR BHP	180.30 171.74	175.52 198.98	170.66 226.66	165.70 254.77	160.71 283.69
15 28.4	TR BHP	201.76 172.75	196.50 202.09	191.16 231.92	185.73 262.16	180.20 292.92
20 33.5	TR BHP	225.29 173.21	219.37 203.95	213.50 236.01	207.55 268.56	201.48 301.51
25 39.0	TR BHP	251.41 173.31	244.29 204.65	237.81 238.86	231.28 273.77	224.65 309.16
30 45.0	TR BHP	279.67 171.84	271.61 205.23	264.21 240.19	257.05 277.65	249.80 315.58
35 51.6	TR BHP	310.35 168.66	301.87 204.50	292.94 240.74	284.99 280.01	277.04 320.58
40 58.6	TR BHP	344.27 164.36	334.09 202.35	324.60 241.27	315.25 280.98	306.53 324.11

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 100E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	56.95 131.17	56.29 149.18	55.58 169.86	55.03 195.93	54.39 227.78
-35 5.4*	TR BHP	65.48 136.82	64.70 154.78	63.97 175.35	63.17 198.81	62.56 228.32
-30 1.6*	TR BHP	74.91 142.56	74.11 161.25	73.24 181.65	72.42 204.99	71.54 231.55
-25 1.3	TR BHP	85.23 148.36	84.48 167.83	83.58 188.96	82.61 212.07	81.69 238.38
-20 3.6	TR BHP	96.62 154.05	95.82 174.48	94.94 196.46	93.92 220.25	92.85 246.31
-15 6.2	TR BHP	109.22 159.60	108.21 180.95	107.34 204.03	106.33 228.74	105.18 255.41
-10 9.0	TR BHP	122.98 164.61	121.93 187.46	120.83 211.46	119.85 237.28	118.68 264.96
-5 12.2	TR BHP	138.01 169.05	136.88 193.39	135.69 218.87	134.50 245.76	133.37 274.53
0 15.7	TR BHP	154.33 172.63	153.15 198.72	151.88 225.82	150.52 254.12	149.23 284.15
5 19.6	TR BHP	172.01 175.19	170.81 203.16	169.44 232.09	168.00 262.16	166.46 293.49
10 23.8	TR BHP	191.13 176.68	189.85 206.61	188.46 237.56	186.90 269.45	185.29 302.70
15 28.4	TR BHP	211.77 176.86	210.41 208.85	208.94 241.93	207.34 275.99	205.57 311.13
20 33.5	TR BHP	234.08 176.51	232.53 209.77	231.01 245.03	229.33 281.37	227.46 318.76
25 39.0	TR BHP	258.58 175.80	256.31 209.46	254.68 246.81	252.90 285.48	250.99 325.21
30 45.0	TR BHP	284.70 173.55	282.04 209.04	280.05 246.94	278.20 288.15	276.14 330.43
35 51.6	TR BHP	312.67 169.67	310.23 207.33	307.26 246.31	305.26 289.15	303.04 334.06
40 58.6	TR BHP		339.75 204.25	336.88 245.62	334.11 288.78	331.82 336.14

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 134

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	64.86 163.69	62.74 185.32	60.59 210.44	58.63 242.77	56.59 283.11
-35 5.4*	TR BHP	75.32 171.03	72.85 192.34	70.46 216.95	68.01 245.31	65.78 281.82
-30 1.6*	TR BHP	87.03 178.65	84.30 200.68	81.50 224.75	78.79 252.55	76.02 284.54
-25 1.3	TR BHP	100.01 186.52	97.06 209.38	93.97 234.13	90.82 261.27	87.74 292.43
-20 3.6	TR BHP	114.50 194.39	111.20 218.35	107.84 244.00	104.33 271.69	100.79 302.14
-15 6.2	TR BHP	130.72 202.21	126.85 227.29	123.17 254.16	119.35 282.81	115.39 313.67
-10 9.0	TR BHP	148.65 209.46	144.38 236.40	140.08 264.38	135.92 294.25	131.59 326.14
-5 12.2	TR BHP	168.48 216.07	163.71 244.93	158.91 274.75	154.13 305.87	149.44 338.94
0 15.7	TR BHP	190.28 221.66	185.02 252.81	179.69 284.68	174.29 317.55	168.98 352.07
5 19.6	TR BHP	214.20 226.00	208.42 259.69	202.51 293.90	196.55 329.02	190.50 365.14
10 23.8	TR BHP	240.40 228.98	234.02 265.31	227.54 302.22	220.93 339.69	214.28 378.26
15 28.4	TR BHP	269.02 230.33	261.99 269.45	254.88 309.23	247.64 349.55	240.26 390.56
20 33.5	TR BHP	300.39 230.94	292.49 271.93	284.67 314.68	276.73 358.08	268.64 402.02
25 39.0	TR BHP	335.22 231.08	325.72 272.86	317.08 318.48	308.38 365.03	299.53 412.21
30 45.0	TR BHP	372.89 229.13	362.15 273.64	352.28 320.25	342.74 370.20	333.06 420.77
35 51.6	TR BHP	413.79 224.88	402.49 272.67	390.59 320.98	379.98 373.35	369.39 427.44
40 58.6	TR BHP	459.03 219.15	445.45 269.80	432.80 321.69	420.33 374.64	408.70 432.15

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 134E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	75.96 174.96	75.06 198.95	74.11 226.50	73.36 261.21	72.52 303.70
-35 5.4*	TR BHP	87.34 182.51	86.29 206.43	85.30 233.84	84.22 265.07	83.41 304.43
-30 1.6*	TR BHP	99.91 190.18	98.84 215.06	97.66 242.22	96.56 273.30	95.38 308.72
-25 1.3	TR BHP	113.69 197.93	112.67 223.85	111.45 251.96	110.14 282.74	108.92 317.83
-20 3.6	TR BHP	128.89 205.53	127.78 232.72	126.59 261.98	125.22 293.61	123.80 328.44
-15 6.2	TR BHP	145.70 212.95	144.32 241.37	143.13 272.06	141.76 304.94	140.25 340.59
-10 9.0	TR BHP	164.06 219.66	162.62 250.05	161.12 281.96	159.78 316.35	158.27 353.37
-5 12.2	TR BHP	184.12 225.60	182.56 257.98	180.93 291.85	179.32 327.67	177.87 366.22
0 15.7	TR BHP	205.91 230.36	204.28 265.09	202.52 301.12	200.70 338.84	199.03 379.07
5 19.6	TR BHP	229.49 233.82	227.84 271.04	225.94 309.51	224.02 349.58	222.04 391.60
10 23.8	TR BHP	254.99 235.77	253.24 275.70	251.31 316.82	249.22 359.31	247.16 403.94
15 28.4	TR BHP	282.50 236.03	280.69 278.70	278.67 322.69	276.47 368.03	274.24 415.21
20 33.5	TR BHP	312.26 235.51	310.19 279.92	308.09 326.85	305.80 375.16	303.44 425.41
25 39.0	TR BHP	344.93 234.53	341.91 279.48	339.68 329.25	337.21 380.66	334.84 433.97
30 45.0	TR BHP	379.74 231.49	376.20 278.89	373.54 329.45	370.94 384.23	368.37 440.97
35 51.6	TR BHP	417.02 226.29	413.78 276.57	409.82 328.63	407.01 385.68	404.21 445.74
40 58.6	TR BHP		453.09 272.42	449.29 327.66	445.54 385.18	442.53 448.41

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 177

R-717			SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
			75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)	-40. 8.7*	TR BHP	86.2 212.4	82.6 238.2	79.0 266.9	75.2 300.2	71.4 340.5
	-35. 5.4*	TR BHP	100.5 222.8	96.7 249.4	92.7 278.5	88.5 310.8	84.3 348.1
	-30. 1.6*	TR BHP	116.6 233.4	112.4 261.2	108.0 291.1	103.5 323.7	98.8 359.9
	-25. 1.3	TR BHP	134.5 244.3	129.9 273.4	125.1 304.5	120.2 337.9	115.2 374.4
	-20. 3.6	TR BHP	154.3 254.9	149.4 285.8	144.2 318.3	138.8 353.0	133.3 390.2
	-15. 6.2	TR BHP	176.3 265.0	170.9 298.0	165.2 332.4	159.4 368.6	153.3 407.2
	-10. 9.0	TR BHP	200.6 274.2	194.6 309.8	188.5 346.4	182.1 384.5	175.5 424.7
	-5. 12.2	TR BHP	227.3 282.4	220.8 320.6	214.1 360.0	207.1 400.5	200.0 442.6
	0. 15.7	TR BHP	256.8 289.5	249.5 330.5	242.2 372.7	234.6 416.0	226.8 460.6
	5. 19.6	TR BHP	289.3 295.0	281.1 339.1	273.0 384.3	264.8 430.7	256.3 478.2
	10. 23.8	TR BHP	324.6 298.3	315.8 346.3	306.6 394.6	297.7 444.2	288.5 495.1
	15. 28.4	TR BHP	363.0 299.3	353.7 351.3	343.7 403.5	333.6 456.4	323.5 510.7
	20. 33.5	TR BHP	405.1 298.1	394.7 353.8	384.1 410.5	372.9 467.1	361.7 525.1
	25. 39.0	TR BHP	451.5 295.9	439.2 353.7	427.7 414.7	415.8 476.1	403.3 537.7
	30. 45.0	TR BHP	501.9 292.6	488.2 351.5	475.0 416.1	462.2 482.3	448.8 548.7
	35. 51.6	TR BHP	556.8 288.0	541.5 348.9	526.4 414.6	512.3 485.4	498.0 557.2
	40. 58.6	TR BHP	615.8 281.7	599.5 344.4	582.7 412.1	566.4 485.4	550.9 562.2

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 177E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	100.92 227.68	98.92 256.57	96.66 288.51	94.21 324.86	91.61 367.93
-35 5.4*	TR BHP	116.59 238.44	114.56 268.50	112.31 301.30	109.78 337.43	107.06 378.38
-30 1.6*	TR BHP	133.91 249.27	131.85 280.83	129.56 314.85	127.04 351.90	124.22 392.58
-25 1.3	TR BHP	152.92 260.03	150.89 293.25	148.57 328.89	146.01 367.22	143.19 408.90
-20 3.6	TR BHP	173.78 270.35	171.74 305.64	169.44 343.06	166.82 383.14	163.96 426.16
-15 6.2	TR BHP	196.60 279.91	194.54 317.60	192.23 357.19	189.61 399.20	186.68 444.07
-10 9.0	TR BHP	221.45 288.43	219.43 328.85	217.05 370.94	214.44 415.20	211.50 462.24
-5 12.2	TR BHP	248.50 295.74	246.42 338.96	244.08 383.97	241.40 430.90	238.51 480.33
0 15.7	TR BHP	278.05 301.73	275.74 347.83	273.35 395.85	270.66 445.83	267.71 498.18
5 19.6	TR BHP	310.14 306.10	307.59 355.16	305.02 406.41	302.30 459.64	299.32 515.24
10 23.8	TR BHP	344.55 308.02	342.16 361.09	339.24 415.40	336.40 472.01	333.46 531.21
15 28.4	TR BHP	381.60 307.52	379.36 364.61	376.41 422.82	373.18 482.75	370.11 545.55
20 33.5	TR BHP	421.59 304.77	419.08 365.34	416.44 428.11	412.91 491.71	409.53 558.21
25 39.0	TR BHP	465.07 301.02	461.71 363.38	459.04 430.34	455.70 498.77	451.89 568.75
30 45.0	TR BHP	511.72 296.17	507.88 359.30	504.61 429.58	501.42 502.89	497.54 577.66
35 51.6	TR BHP	561.86 290.29	557.51 354.76	553.33 426.00	549.98 503.69	546.32 583.70
40 58.6	TR BHP		610.76 348.58	606.08 421.15	601.76 501.18	597.95 585.99

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 222

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	108.5 267.5	104.1 299.9	99.4 336.1	94.7 378.0	89.9 428.7
-35 5.4*	TR BHP	126.6 280.5	121.8 314.0	116.7 350.7	111.5 391.3	106.1 438.3
-30 1.6*	TR BHP	146.9 294.0	141.5 328.9	136.0 366.5	130.4 407.6	124.5 453.3
-25 1.3	TR BHP	169.4 307.6	163.6 344.3	157.6 383.4	151.4 425.5	145.0 471.4
-20 3.6	TR BHP	194.4 321.0	188.1 359.9	181.5 400.8	174.8 444.5	167.8 491.4
-15 6.2	TR BHP	222.0 333.7	215.2 375.3	208.1 418.6	200.7 464.2	193.1 512.8
-10 9.1	TR BHP	252.6 345.3	245.1 390.1	237.3 436.2	229.3 484.2	221.0 534.9
-5 12.2	TR BHP	286.2 355.6	278.0 403.8	269.6 453.3	260.8 504.3	251.9 557.3
0 15.7	TR BHP	323.4 364.5	314.2 416.2	305.0 469.3	295.5 523.8	285.7 580.0
5 19.6	TR BHP	364.3 371.5	353.9 427.0	343.7 483.9	333.4 542.3	322.7 602.2
10 23.8	TR BHP	408.7 375.7	397.7 436.1	386.2 496.9	374.8 559.4	363.3 623.4
15 8.5	TR BHP	457.2 376.9	445.3 442.4	432.8 508.1	420.1 574.8	407.4 643.1
20 33.5	TR BHP	510.2 375.4	497.0 445.6	483.7 516.9	469.6 588.3	455.5 661.2
25 39	TR BHP	568.5 372.6	553.1 445.4	538.6 522.2	523.6 599.5	507.9 677.1
30 45.1	TR BHP	632.0 368.4	614.8 442.6	598.2 523.9	582.1 607.3	565.1 690.9
35 51.6	TR BHP	701.2 362.7	681.8 439.3	662.9 522.1	645.1 611.2	627.2 701.6
40 58.6	TR BHP	775.4 354.7	754.9 433.7	733.8 518.9	713.2 611.2	693.7 707.9

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 222E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	127.11 286.81	124.58 323.16	121.73 363.39	118.64 409.11	115.37 463.34
-35 5.4*	TR BHP	146.86 300.38	144.29 338.21	141.44 379.47	138.25 424.96	134.82 476.54
-30 1.6*	TR BHP	168.68 314.02	166.06 353.75	163.18 396.56	159.99 443.19	156.44 494.41
-25 1.3	TR BHP	192.62 327.59	190.05 369.41	187.11 414.26	183.88 462.53	180.33 514.99
-20 3.6	TR BHP	218.91 340.60	216.32 385.01	213.40 432.13	210.10 482.58	206.50 536.74
-15 6.2	TR BHP	247.65 352.65	245.03 400.10	242.10 449.93	238.80 502.80	235.13 559.40
-10 9.0	TR BHP	278.96 363.40	276.39 414.26	273.38 467.25	270.08 522.97	266.40 582.30
-5 12.2	TR BHP	313.04 372.63	310.39 427.02	307.42 483.66	304.03 542.75	300.42 605.11
0 15.7	TR BHP	350.28 380.19	347.31 438.19	344.28 498.64	340.87 561.55	337.20 627.62
5 19.6	TR BHP	390.70 385.71	387.40 447.57	384.17 511.93	380.73 578.93	377.02 649.15
10 23.8	TR BHP	434.04 388.13	430.99 454.94	427.26 523.27	423.68 594.52	420.02 669.25
15 28.4	TR BHP	480.66 387.50	477.85 459.39	474.10 532.60	469.98 608.07	466.19 687.32
20 33.5	TR BHP	531.04 383.96	527.89 460.31	524.50 539.28	520.04 619.40	515.83 703.27
25 39.0	TR BHP	585.78 379.18	581.57 457.77	578.15 542.11	573.92 628.25	569.20 716.50
30 45.0	TR BHP	644.50 373.04	639.70 452.62	635.55 541.16	631.49 633.40	626.66 727.76
35 51.6	TR BHP	707.62 365.60	702.16 446.86	696.93 536.66	692.63 634.41	688.08 735.35
40 58.6	TR BHP		769.23 439.03	763.31 530.50	575.83 631.27	753.09 738.17

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 270

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	134.1 330.3	128.6 370.5	122.8 415.3	117.0 467.0	111.0 529.7
-35 5.4*	TR BHP	156.4 346.5	150.4 387.8	144.2 433.1	137.7 483.5	131.1 541.6
-30 1.6*	TR BHP	181.4 363.1	174.8 406.2	168.0 452.7	161.0 503.6	153.8 560.0
-25 1.3	TR BHP	209.2 379.9	202.1 425.2	194.7 473.5	187.0 525.6	179.1 582.5
-20 3.6	TR BHP	240.1 396.4	232.3 444.5	224.3 495.0	215.9 549.1	207.3 607.1
-15 6.2	TR BHP	274.3 412.1	265.8 463.5	257.0 516.9	247.9 573.3	238.5 633.4
-10 9.1	TR BHP	312.0 426.4	302.8 481.8	293.2 538.8	283.3 598.0	273.1 660.6
-5 12.2	TR BHP	353.5 439.2	343.4 498.7	333.0 559.8	322.2 622.8	311.1 688.3
0 15.7	TR BHP	399.5 450.2	388.1 514.0	376.7 579.6	365.0 647.0	352.9 716.4
5 19.6	TR BHP	450.0 458.8	437.2 527.3	424.6 597.7	411.9 669.8	398.7 743.8
10 23.8	TR BHP	504.9 463.9	491.3 538.5	477.0 613.6	463.0 690.9	448.8 770.0
15 8.5	TR BHP	564.7 465.5	550.1 546.4	534.7 627.5	518.9 709.8	
20 33.5	TR BHP	630.2 463.5	613.9 550.2	597.5 638.4	580.1 726.5	
25 39	TR BHP	702.3 460.1	683.3 550.0	665.4 644.8	646.8 740.3	
30 45.1	TR BHP	780.7 454.9	759.4 546.5	739.0 647.0	719.0 750.0	
35 51.6	TR BHP	866.1 447.8	842.3 542.4	818.9 644.8	796.9 754.8	
40 58.6	TR BHP	957.9 438.0	932.5 535.5	906.5 640.7		

Condition is outside the operating range of compressor.

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 270E

R-717

SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	157.07 354.45	153.94 399.34	150.41 449.03	146.59 505.51	142.54 572.53
-35 5.4*	TR BHP	181.47 371.23	178.29 417.95	174.77 468.93	170.83 525.13	166.59 588.83
-30 1.6*	TR BHP	208.44 388.12	205.20 437.18	201.63 490.07	197.69 547.68	193.30 610.96
-25 1.3	TR BHP	238.03 404.90	234.85 456.56	231.21 511.96	227.21 571.58	222.83 636.41
-20 3.6	TR BHP	270.52 420.98	267.30 475.85	263.69 534.07	259.61 596.39	255.16 663.34
-15 6.2	TR BHP	306.04 435.90	302.79 494.51	299.17 556.09	295.08 621.44	290.52 691.26
-10 9.0	TR BHP	344.71 449.17	341.53 512.03	337.81 577.52	333.74 646.35	329.14 719.48
-5 12.2	TR BHP	386.82 460.57	383.55 527.78	379.88 597.82	375.69 670.80	371.13 747.55
0 15.7	TR BHP	432.84 469.85	429.16 541.58	425.42 616.31	421.23 694.09	416.53 775.27
5 19.6	TR BHP	482.77 476.71	478.70 553.12	474.70 632.75	470.47 715.59	465.69 801.73
10 23.8	TR BHP	536.32 479.68	532.54 562.25	527.95 646.72	523.54 734.86	518.78 826.52
15 28.4	TR BHP	593.91 478.88	590.42 567.71	585.80 658.24	580.75 751.56	
20 33.5	TR BHP	656.13 474.45	652.24 568.85	648.04 666.45	642.59 765.43	
25 39.0	TR BHP	723.74 468.51	718.55 565.69	714.32 669.87	709.13 776.43	
30 45.0	TR BHP	796.27 460.88	790.34 559.27	785.15 668.80	780.22 782.78	
35 51.6	TR BHP	874.19 451.67	867.48 552.12	861.08 662.99	855.73 783.92	
40 58.6	TR BHP		950.25 542.39	943.01 655.45		

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 316

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	154.4 380.6	148.1 426.8	141.5 478.2	134.7 537.8	127.9 610.0
-35 5.4*	TR BHP	180.2 399.2	173.2 446.8	166.1 499.0	158.6 556.8	151.0 623.7
-30 1.6*	TR BHP	209.0 418.3	201.4 468.0	193.6 521.6	185.5 580.0	177.1 644.9
-25 1.3	TR BHP	241.0 437.7	232.8 489.8	224.2 545.6	215.4 605.5	206.3 670.8
-20 3.6	TR BHP	276.6 456.7	267.6 512.0	258.3 570.3	248.7 632.5	238.8 699.1
-15 6.2	TR BHP	315.9 474.8	306.2 534.0	296.1 595.6	285.6 660.5	274.7 729.7
-10 9.1	TR BHP	359.4 491.3	348.8 555.1	337.7 620.7	326.3 689.0	314.5 761.1
-5 12.2	TR BHP	407.2 506.0	395.6 574.5	383.6 645.0	371.1 717.5	358.4 793.0
0 15.7	TR BHP	460.1 518.7	447.0 592.2	433.9 667.8	420.4 745.4	406.5 825.3
5 19.6	TR BHP	518.3 528.7	503.6 607.6	489.1 688.6	474.4 771.7	459.2 856.9
10 23.8	TR BHP	581.6 534.6	565.9 620.5	549.5 707.0	533.3 796.0	516.9 887.1
15 8.5	TR BHP	650.5 536.3	633.7 629.5	615.8 723.0	597.7 817.8	579.7 915.1
20 33.5	TR BHP	726.0 534.1	707.1 634.0	688.3 735.5	668.1 837.0	648.2 940.8
25 39	TR BHP	809.0 530.1	787.0 633.7	766.4 743.0	745.0 853.1	722.7 963.4
30 45.1	TR BHP	899.3 524.2	874.7 629.8	851.2 745.5	828.2 864.2	804.1 983.1
35 51.6	TR BHP	997.7 516.1	970.2 625.1	943.2 742.9	917.9 869.7	892.4 998.3
40 58.6	TR BHP	1103.3 504.8	1074.2 617.1	1044.1 738.4	1014.9 869.7	987.1 1007.3

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 316E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	180.79 407.86	177.16 459.49	173.10 516.65	168.73 581.78	164.10 659.02
-35 5.4*	TR BHP	208.86 427.12	205.17 480.80	201.12 539.46	196.62 604.25	191.77 677.74
-30 1.6*	TR BHP	239.89 446.50	236.12 502.83	232.02 563.72	227.53 630.18	222.51 703.15
-25 1.3	TR BHP	273.94 465.79	270.22 525.05	266.05 588.86	261.51 657.65	256.51 732.46
-20 3.6	TR BHP	311.33 484.27	307.55 547.18	303.42 614.22	298.80 686.15	293.74 763.74
-15 6.2	TR BHP	352.23 501.46	348.37 568.58	344.24 639.49	339.63 714.95	334.47 795.62
-10 9.0	TR BHP	396.80 516.82	392.95 588.73	388.71 664.12	384.14 743.65	378.95 828.17
-5 12.2	TR BHP	445.34 530.05	441.32 606.86	437.12 687.42	432.44 771.84	427.33 860.57
0 15.7	TR BHP	498.41 540.97	493.88 622.82	489.52 708.67	484.88 798.61	479.65 892.57
5 19.6	TR BHP	556.03 549.00	551.00 636.15	546.22 727.55	541.57 823.37	536.30 923.13
10 23.8	TR BHP	617.83 552.61	613.04 646.94	607.48 743.59	602.67 845.52	597.46 951.75
15 28.4	TR BHP	684.25 551.61	679.86 653.55	674.03 756.83	668.53 864.77	663.13 977.46
20 33.5	TR BHP	755.84 546.58	751.21 655.12	745.87 766.52	739.70 880.71	733.77 1000.14
25 39.0	TR BHP	833.71 539.68	827.73 651.67	822.32 770.75	816.31 893.26	809.67 1019.02
30 45.0	TR BHP	917.21 530.89	910.43 644.26	904.19 769.72	898.14 900.48	891.46 1035.00
35 51.6	TR BHP	1006.94 520.26	999.25 635.99	991.69 763.68	985.06 901.80	978.86 1045.84
40 58.6	TR BHP		1094.59 624.76	1086.30 755.05	1077.89 897.49	1071.39 1049.92

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 399

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	194.4 479.2	186.5 537.5	178.2 602.2	169.7 677.3	161.0 768.2
-35 5.4*	TR BHP	226.9 502.7	218.2 562.6	209.1 628.4	199.8 701.2	190.2 785.4
-30 1.6*	TR BHP	263.1 526.7	253.6 589.3	243.7 656.8	233.6 730.3	223.0 812.1
-25 1.3	TR BHP	303.5 551.2	293.1 616.8	282.4 687.0	271.2 762.5	259.8 844.7
-20 3.6	TR BHP	348.3 575.1	337.0 644.8	325.3 718.2	313.1 796.5	300.7 880.4
-15 6.2	TR BHP	397.8 597.8	385.5 672.4	372.8 750.0	359.6 831.7	346.0 918.9
-10 9	TR BHP	452.5 618.6	439.2 699.0	425.2 781.6	410.9 867.6	396.1 958.4
-5 12.2	TR BHP	512.8 637.1	498.1 723.5	483.0 812.3	467.4 903.6	451.3 998.6
0 15.7	TR BHP	579.4 653.2	562.9 745.7	546.4 840.9	529.4 938.6	511.8 1039.3
5 19.6	TR BHP	625.7 665.7	634.2 765.1	615.9 867.1	597.4 971.8	578.3 1079.1
10 23.8	TR BHP	732.3 673.2	712.6 781.4	691.9 890.3	671.6 1002.3	650.9 1117.1
15 28.4	TR BHP	819.2 675.4	798.0 792.8	775.5 910.5	752.7 1029.9	730.0 1152.4
20 33.5	TR BHP	914.2 672.6	890.5 798.4	866.7 926.2	841.4 1054.1	816.2 1184.7
25 39	TR BHP	1018.7 667.6	991.1 798.0	965.1 935.6	938.2 1074.2	910.0 1213.2
30 45	TR BHP	1132.4 660.1	1101.5 793.0	1071.8 938.8	1043.0 1088.2	1012.6 1237.9
35 51.6	TR BHP	1256.3 649.9	1221.7 787.1	1187.7 935.5	1155.9 1095.2	1123.8 1257.2
40 58.6	TR BHP	1389.4 635.6	1352.6 777.1	1314.8 929.8	1278.0 1095.2	1243.0 1268.4

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 399E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	227.68 513.64	223.11 578.66	218.00 650.67	212.50 732.74	206.66 830.03
-35 5.4*	TR BHP	263.03 537.92	258.38 605.52	253.30 679.46	247.62 761.07	241.52 853.59
-30 1.6*	TR BHP	302.11 562.34	297.37 633.28	292.22 710.01	286.57 793.71	280.52 885.62
-25 1.3	TR BHP	345.00 586.61	340.31 661.26	335.08 741.71	329.36 828.32	323.06 922.55
-20 3.6	TR BHP	392.09 609.91	387.32 689.16	382.15 773.67	376.33 864.28	369.96 961.62
-15 6.2	TR BHP	443.61 631.58	438.73 716.07	433.57 805.50	427.76 900.56	421.26 1002.17
-10 9.0	TR BHP	499.73 650.93	494.88 741.47	489.58 836.56	483.82 936.74	477.28 1043.17
-5 12.2	TR BHP	560.89 667.61	555.79 764.32	550.55 865.90	544.66 972.24	538.22 1083.99
0 15.7	TR BHP	627.72 681.40	621.96 784.43	616.56 892.69	610.71 1006.00	604.11 1124.31
5 19.6	TR BHP	700.30 691.55	693.90 801.26	687.97 916.44	682.12 1037.18	675.46 1162.88
10 23.8	TR BHP	778.15 696.11	772.06 814.82	765.13 936.66	759.07 1065.10	752.50 1198.92
15 28.4	TR BHP	861.77 695.03	856.20 823.12	848.88 953.31	842.02 1089.29	835.22 1231.28
20 33.5	TR BHP	951.97 688.50	946.07 825.14	939.30 965.36	931.65 1109.35	924.16 1259.87
25 39.0	TR BHP	1050.06 679.70	1042.45 820.83	1035.59 970.73	1028.11 1125.17	1019.78 1283.57
30 45.0	TR BHP	1155.14 668.63	1146.61 811.50	1138.67 969.54	1131.17 1134.25	1122.75 1303.77
35 51.6	TR BHP	1268.18 655.19	1258.44 801.02	1248.87 961.81	1240.63 1135.85	1232.80 1317.38
40 58.6	TR BHP		1378.54 786.80	1368.04 950.96	1357.41 1130.29	1349.31 1322.50

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 480

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	233.9 576.5	224.4 646.6	214.4 724.5	204.2 814.8	193.7 924.2
-35 5.4*	TR BHP	273.0 604.8	262.5 676.8	251.5 756.0	240.4 843.5	228.8 944.8
-30 1.6*	TR BHP	316.5 633.6	305.1 708.9	293.2 790.1	281.0 878.6	268.3 977.0
-25 1.3	TR BHP	365.1 663.1	352.6 742.0	339.7 826.5	326.3 917.3	312.5 1016.2
-20 3.6	TR BHP	419.0 691.8	405.4 775.7	391.3 864.0	376.7 958.2	361.7 1059.1
-15 6.2	TR BHP	478.6 719.2	463.8 808.9	448.5 902.3	432.6 1000.5	416.2 1105.4
-10 9	TR BHP	544.4 744.2	528.4 840.9	511.5 940.3	494.3 1043.7	476.5 1153.0
-5 12.2	TR BHP	616.9 766.4	599.2 870.4	581.1 977.2	562.3 1087.0	542.9 1201.3
0 15.7	TR BHP	697.0 785.8	677.2 897.1	657.3 1011.6	636.9 1129.1	615.7 1250.3
5 19.6	TR BHP	752.7 800.8	762.9 920.4	740.9 1043.1	718.7 1169.1	695.7 1298.2
10 23.8	TR BHP	881.0 809.9	857.3 940.0	832.4 1071.0	807.9 1205.8	783.0 1343.9
15 28.4	TR BHP	985.5 812.5	960.0 953.7	932.9 1095.3	905.5 1239.0	878.2 1386.3
20 33.5	TR BHP	1099.8 809.1	1071.3 960.5	1042.6 1114.2	1012.2 1268.1	981.9 1425.2
25 39	TR BHP	1225.5 803.1	1192.3 960.0	1161.0 1125.5	1128.7 1292.3	
30 45	TR BHP	1362.3 794.1	1325.1 954.0	1289.4 1129.4	1254.7 1309.1	
35 51.6	TR BHP	1511.3 781.8	1469.7 946.9	1428.8 1125.4	1390.6 1317.5	
40 58.6	TR BHP	1671.5 764.6	1627.2 934.9	1581.7 1118.6	1537.4 1317.5	

Condition is outside the operating range of compressor.

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 480E

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)

		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 125.8	85.0 151.7	95.0 181.1	105.0 214.2	115.0 251.5
-40 8.7*	TR BHP	273.93 617.99	268.45 696.28	262.34 783.06	255.72 881.78	248.69 998.87
-35 5.4*	TR BHP	316.46 647.20	310.90 728.64	304.82 817.72	297.99 915.93	290.64 1027.30
-30 1.6*	TR BHP	363.48 676.57	357.83 762.12	351.66 854.53	344.86 955.27	337.26 1065.85
-25 1.3	TR BHP	415.09 705.80	409.52 795.82	403.26 892.70	396.37 996.98	388.79 1110.36
-20 3.6	TR BHP	471.75 733.84	466.11 829.40	459.92 931.20	452.90 1040.26	445.23 1157.38
-15 6.2	TR BHP	533.73 759.93	527.99 861.86	521.80 969.57	514.80 1083.96	506.97 1206.28
-10 9.0	TR BHP	601.27 783.20	595.53 892.35	589.21 1006.95	582.28 1127.53	574.40 1255.65
-5 12.2	TR BHP	674.87 803.27	668.79 919.76	662.60 1042.33	655.51 1170.28	647.75 1304.82
0 15.7	TR BHP	755.32 819.84	748.32 943.79	742.05 1074.60	734.99 1210.92	727.06 1353.40
5 19.6	TR BHP	842.68 832.19	834.91 963.98	827.99 1103.16	820.93 1248.52	812.92 1399.83
10 23.8	TR BHP	936.37 837.77	928.92 980.40	920.85 1127.47	913.54 1282.14	905.64 1443.19
15 28.4	TR BHP	1037.07 836.57	1030.22 990.45	1021.71 1147.54	1013.37 1311.24	1005.19 1482.21
20 33.5	TR BHP	1145.61 828.66	1138.37 992.95	1130.30 1161.76	1121.24 1335.38	1112.22 1516.61
25 39.0	TR BHP	1263.55 818.09	1254.42 987.74	1245.99 1167.93	1237.28 1354.41	
30 45.0	TR BHP	1390.04 804.64	1379.77 976.66	1370.08 1166.47	1361.28 1365.30	
35 51.6	TR BHP	1525.99 788.38	1514.32 963.98	1502.77 1157.19	1492.97 1367.18	
40 58.6	TR BHP		1658.69 946.83	1646.11 1144.39	1633.46 1360.21	

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 100

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
-40	TR	57.60	54.21	50.87	47.45	43.96	40.43
0.5	BHP	140.73	155.21	170.89	188.22	207.99	231.33
-35	TR	65.79	62.01	58.29	54.49	50.62	46.68
2.6	BHP	146.62	161.64	177.62	195.02	214.30	236.34
-30	TR	74.85	70.64	66.50	62.27	57.98	53.59
4.9	BHP	152.46	168.19	184.68	202.34	221.62	243.02
-25	TR	84.83	80.15	75.55	70.86	66.08	61.23
7.4	BHP	157.61	174.72	191.91	210.05	229.52	250.85
-20	TR	95.81	90.60	85.50	80.30	75.01	69.63
10.1	BHP	161.79	180.88	199.14	217.97	237.88	259.33
-15	TR	107.86	102.07	96.43	90.67	84.81	78.85
13.2	BHP	165.06	185.87	206.23	225.93	246.50	268.33
-10	TR	120.99	114.63	108.38	102.03	95.55	88.96
16.5	BHP	167.63	189.87	212.13	233.77	255.20	277.65
-5	TR	135.37	128.34	121.46	114.43	107.29	100.01
20.1	BHP	169.55	193.23	217.11	240.81	263.82	287.10
0	TR	151.03	143.28	135.72	127.97	120.09	112.08
24.0	BHP	171.17	195.57	221.26	246.95	271.98	296.50
5	TR	168.06	159.54	151.22	142.73	134.02	125.22
28.2	BHP	172.30	197.33	224.17	251.84	279.52	305.69
10	TR	186.55	177.26	168.05	158.75	149.23	139.49
32.8	BHP	172.40	198.74	226.36	255.64	285.23	314.47
15	TR	206.64	196.36	186.35	176.10	165.71	155.04
37.7	BHP	171.99	199.43	228.12	258.30	290.16	321.56
20	TR	228.36	217.01	206.13	194.90	183.51	171.92
43.0	BHP	170.27	199.14	229.17	260.35	293.30	327.68
25	TR	251.76	239.47	227.39	215.27	202.74	190.08
48.8	BHP	167.19	198.12	229.30	261.84	295.74	331.57
30	TR	277.00	263.58	250.46	237.12	223.57	209.68
54.9	BHP	162.89	195.49	228.61	262.48	297.68	334.51
35	TR	304.18	289.55	275.31	260.67	245.97	230.85
61.5	BHP	156.78	191.70	226.59	261.94	298.71	336.80
40	TR	333.40	317.48	301.98	286.18	269.97	253.68
68.5	BHP	148.97	186.43	223.17	260.51	298.62	338.25

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 100E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	72.89	71.14	69.39	67.45	65.33
0.5	BHP	154.33	171.74	190.57	211.16	234.17
-35	TR	82.00	80.11	78.23	76.17	73.90
2.6	BHP	160.12	178.26	197.64	218.66	241.61
-30	TR	91.88	89.88	87.81	85.60	83.19
4.9	BHP	165.71	184.72	204.86	226.42	249.78
-25	TR	102.57	100.35	98.16	95.78	93.19
7.4	BHP	170.49	191.00	212.03	234.34	258.25
-20	TR	114.11	111.68	109.32	106.75	103.97
10.1	BHP	174.17	196.76	219.02	242.24	266.90
-15	TR	126.55	123.88	121.32	118.55	115.55
13.2	BHP	176.83	201.22	225.68	249.98	275.55
-10	TR	139.80	136.99	134.20	131.21	127.96
16.5	BHP	178.64	204.51	231.01	257.38	284.05
-5	TR	154.11	150.98	148.02	144.75	141.25
20.1	BHP	179.70	207.08	235.19	263.79	292.22
0	TR	169.36	165.99	162.74	159.25	155.42
24.0	BHP	180.35	208.46	238.49	269.05	299.69
5	TR	185.66	181.99	178.48	174.67	170.56
28.2	BHP	180.38	209.14	240.36	273.03	306.25
10	TR	202.97	199.08	195.20	191.06	186.66
32.8	BHP	179.37	209.35	241.34	275.67	311.02
15	TR	221.62	217.13	213.02	208.55	203.73
37.7	BHP	177.90	208.71	241.75	277.03	314.67
20	TR	241.31	236.23	231.89	227.04	221.88
43.0	BHP	175.05	207.06	241.34	277.59	316.40
25	TR	262.15	256.62	251.73	246.67	241.01
48.8	BHP	170.85	204.64	239.89	277.44	317.20
30	TR	284.12	278.07	272.81	267.26	261.28
54.9	BHP	165.46	200.62	237.57	276.30	317.33
35	TR	307.29	300.83	295.07	288.93	282.60
61.5	BHP	158.36	195.56	233.91	273.90	316.40
40	TR		324.77	318.45	311.96	304.89
68.5	BHP		189.09	228.87	270.57	314.20

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 134

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
-40. 0.5	TR BHP	76.8 188.0	72.3 207.3	67.7 228.2	63.1 251.4	58.5 276.9	53.9 307.8
-35. 2.6	TR BHP	87.7 196.0	82.7 215.9	77.6 237.2	72.5 260.5	67.4 285.2	62.2 314.4
-30. 4.9	TR BHP	99.8 203.8	94.2 224.7	88.5 246.7	82.8 270.2	77.2 294.9	71.4 323.2
-25. 7.4	TR BHP	113.1 210.6	106.8 233.3	100.6 256.4	94.3 280.5	87.9 306.5	81.6 333.6
-20. 10.1	TR BHP	127.7 216.2	120.8 241.6	113.8 266.0	106.8 291.2	99.8 317.7	92.8 345.0
-15. 13.2	TR BHP	143.7 220.5	136.1 248.4	128.3 275.5	120.6 301.7	112.9 329.3	105.1 357.0
-10. 16.5	TR BHP	161.3 224.1	152.8 253.8	144.3 283.5	135.7 312.3	127.2 340.9	118.6 370.9
-5. 20.1	TR BHP	180.4 226.7	171.1 258.3	161.7 290.3	152.2 321.8	142.8 352.3	133.3 383.4
0. 24.0	TR BHP	201.4 228.8	191.0 261.5	180.6 295.9	170.2 330.2	159.8 363.4	149.4 396.2
5. 28.2	TR BHP	224.1 230.2	212.6 263.9	201.3 299.6	189.9 336.6	178.4 373.7	166.9 408.4
10. 32.8	TR BHP	248.7 230.6	236.3 265.9	223.7 302.6	211.2 341.7	198.6 381.1	185.9 420.1
15. 37.7	TR BHP	275.4 230.1	261.7 266.9	248.0 305.0	234.3 345.4	220.5 387.9	206.6 429.8
20. 43.0	TR BHP	304.4 227.9	289.2 266.6	274.4 306.5	259.3 348.2	244.2 392.2	229.1 438.2
25. 48.8	TR BHP	335.6 223.8	319.2 265.4	302.7 306.7	286.4 350.3	269.8 395.5	253.3 443.1
30. 54.9	TR BHP	369.2 218.3	351.3 262.0	333.3 305.9	315.4 351.2	297.5 398.3	279.5 447.2
35. 61.5	TR BHP	405.4 210.2	385.9 257.1	366.4 303.3	346.8 350.6	327.3 399.8	307.7 450.5
40. 68.5	TR BHP	444.4 199.8	423.1 250.2	401.9 298.8	380.7 348.8	359.3 399.8	338.1 452.6

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 134E

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	97.33 206.19	94.98 229.42	92.63 254.54	90.02 282.02	87.17 312.68
-35 2.6	TR BHP	109.51 213.96	106.97 238.18	104.44 264.07	101.68 292.11	98.63 322.74
-30 4.9	TR BHP	122.71 221.46	119.96 246.87	117.24 273.76	114.27 302.55	111.04 333.76
-25 7.4	TR BHP	136.99 227.88	134.01 255.30	131.07 283.40	127.88 313.21	124.41 345.15
-20 10.1	TR BHP	152.41 232.82	149.15 263.02	145.98 292.79	142.54 323.85	138.80 356.80
-15 13.2	TR BHP	169.04 236.33	165.45 269.00	162.02 301.73	158.30 334.23	154.26 368.44
-10 16.5	TR BHP	186.76 238.82	182.98 273.34	179.22 308.86	175.20 344.17	170.85 379.84
-5 20.1	TR BHP	205.82 240.21	201.63 276.84	197.71 314.38	193.28 352.76	188.59 390.81
0 24.0	TR BHP	226.19 241.03	221.68 278.68	217.33 318.88	212.61 359.90	207.52 400.84
5 28.2	TR BHP	247.90 241.07	243.03 279.55	238.33 321.35	233.24 365.12	227.67 409.74
10 32.8	TR BHP	271.04 239.64	265.84 279.79	260.66 322.65	255.19 368.64	249.21 415.99
15 37.7	TR BHP	295.88 237.60	289.95 278.85	284.43 323.14	278.44 370.40	271.97 420.83
20 43.0	TR BHP	322.15 233.74	315.41 276.61	309.60 322.51	303.11 371.10	296.20 423.10
25 48.8	TR BHP	349.86 228.04	342.58 273.30	336.06 320.51	329.30 370.82	321.71 424.11
30 54.9	TR BHP	379.12 220.77	371.16 267.86	364.17 317.33	356.74 369.21	348.75 424.20
35 61.5	TR BHP	409.96 211.24	401.51 261.02	393.84 312.35	385.65 365.92	377.17 422.86
40 68.5	TR BHP		433.37 252.30	425.02 305.55	416.34 361.36	406.88 419.82

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 177

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)							
-40. 0.5	TR BHP	102.3 246.7	96.1 271.3	89.9 298.0	83.7 327.7	77.5 360.1	71.3 399.0
-35. 2.6	TR BHP	116.9 257.4	110.0 282.9	103.1 310.0	96.2 339.7	89.3 371.1	82.3 408.0
-30. 4.9	TR BHP	133.0 267.5	125.3 294.7	117.7 322.7	110.0 352.6	102.2 383.9	94.5 419.8
-25. 7.4	TR BHP	150.8 276.3	142.2 306.0	133.7 335.7	125.2 366.4	116.6 399.4	108.0 433.6
-20. 10.1	TR BHP	170.3 283.8	160.9 316.7	151.4 348.4	141.9 380.6	132.4 414.3	122.9 448.8
-15. 13.2	TR BHP	191.6 289.9	181.3 325.6	170.9 360.9	160.3 394.6	149.8 429.8	139.3 464.8
-10. 16.5	TR BHP	215.0 294.7	203.6 332.8	192.1 371.3	180.5 408.7	168.9 445.2	157.3 483.3
-5. 20.1	TR BHP	240.6 298.2	227.9 338.9	215.3 380.0	202.6 421.1	189.8 460.6	176.9 499.9
0. 24.0	TR BHP	268.3 300.5	254.4 343.1	240.5 387.2	226.6 431.7	212.6 475.1	198.4 517.3
5. 28.2	TR BHP	298.5 301.7	283.3 346.3	268.0 392.1	252.7 439.5	237.3 488.0	221.8 533.9
10. 32.8	TR BHP	331.4 302.4	314.5 348.1	297.8 396.1	281.0 446.1	264.1 496.8	247.2 548.1
15. 37.7	TR BHP	366.9 301.5	348.5 349.4	330.0 398.7	311.7 451.0	293.2 504.9	274.7 559.4
20. 43.0	TR BHP	405.4 298.9	385.3 349.2	364.9 400.2	344.8 454.5	324.7 510.7	304.4 569.0
25. 48.8	TR BHP	447.0 293.6	424.8 347.3	402.8 401.0	380.6 456.4	358.7 515.2	336.6 575.4
30. 54.9	TR BHP	491.5 285.0	467.7 343.4	443.6 399.9	419.4 458.1	395.3 518.1	371.2 580.9
35. 61.5	TR BHP	540.1 274.1	513.7 336.3	487.5 396.9	461.3 457.8	434.8 520.0	408.6 584.9
40. 68.5	TR BHP	592.0 260.0	563.3 325.9	534.8 391.2	506.2 455.5	477.5 520.9	448.6 586.9

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 177E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	130.03	126.36	123.09	119.52	115.58
0.5	BHP	271.62	300.84	333.19	368.57	407.84
-35	TR	146.19	142.34	138.82	134.98	130.78
2.6	BHP	281.52	312.55	345.85	381.82	421.09
-30	TR	163.71	159.67	155.89	151.74	147.23
4.9	BHP	291.08	324.14	358.80	395.72	435.57
-25	TR	182.70	178.43	174.34	169.89	165.01
7.4	BHP	299.50	335.22	371.66	409.95	450.75
-20	TR	203.21	198.74	194.23	189.45	184.22
10.1	BHP	306.21	345.16	384.12	424.11	466.29
-15	TR	225.27	220.44	215.75	210.47	204.86
13.2	BHP	310.94	353.05	395.78	437.91	481.78
-10	TR	248.99	243.77	238.69	233.12	226.99
16.5	BHP	314.59	358.86	405.03	451.14	496.95
-5	TR	274.44	268.64	263.28	257.30	250.72
20.1	BHP	316.48	363.45	412.17	462.23	511.77
0	TR	301.59	295.33	289.40	283.13	276.06
24.0	BHP	317.38	365.92	417.83	471.03	524.88
5	TR	330.60	323.74	317.25	310.44	303.11
28.2	BHP	316.96	367.04	421.09	477.55	535.75
10	TR	361.47	353.84	347.05	339.49	331.54
32.8	BHP	314.88	366.45	422.85	481.95	543.17
15	TR	394.06	386.03	378.50	370.52	361.72
37.7	BHP	311.43	365.23	422.89	484.35	548.84
20	TR	429.03	420.10	411.87	403.26	393.90
43.0	BHP	306.51	362.40	421.58	485.08	551.87
25	TR	466.11	455.90	447.36	437.77	427.82
48.8	BHP	299.18	357.78	419.37	483.79	553.30
30	TR	504.61	494.21	484.63	474.48	463.47
54.9	BHP	288.37	351.25	415.18	482.08	552.63
35	TR	546.11	534.52	523.99	513.13	501.14
61.5	BHP	275.76	341.63	409.02	478.28	550.72
40	TR		577.00	565.54	553.68	540.97
68.5	BHP		328.81	400.22	472.29	547.63

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 222

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
-40. 0.5	TR BHP	128.8 310.7	121.0 341.6	113.3 375.3	105.5 412.7	97.6 453.4	89.7 502.4
-35. 2.6	TR BHP	147.2 324.1	138.5 356.2	129.8 390.4	121.1 427.8	112.4 467.3	103.6 513.8
-30. 4.9	TR BHP	167.5 336.9	157.8 371.1	148.2 406.4	138.5 444.0	128.8 483.4	119.0 528.6
-25. 7.4	TR BHP	189.9 347.9	179.1 385.4	168.4 422.8	157.6 461.3	146.8 503.0	136.0 546.0
-20. 10.1	TR BHP	214.4 357.4	202.6 398.8	190.6 438.7	178.7 479.3	166.8 521.7	154.8 565.2
-15. 13.2	TR BHP	241.3 365.0	228.3 410.0	215.2 454.4	201.9 496.9	188.7 541.2	175.4 585.3
-10. 16.5	TR BHP	270.8 371.1	256.4 419.1	241.9 467.5	227.4 514.7	212.7 560.6	198.0 608.5
-5. 20.1	TR BHP	302.9 375.5	287.0 426.7	271.1 478.5	255.1 530.3	239.0 580.1	222.8 629.5
0. 24.0	TR BHP	337.9 378.4	320.4 432.1	302.9 487.6	285.3 543.6	267.7 598.3	249.8 651.4
5. 28.2	TR BHP	375.9 380.0	356.7 436.1	337.4 493.8	318.2 553.4	298.9 614.5	279.3 672.3
10. 32.8	TR BHP	417.4 380.8	396.0 438.3	375.0 498.8	353.8 561.7	332.6 625.6	311.3 690.2
15. 37.7	TR BHP	462.0 379.7	438.8 440.0	415.6 502.1	392.5 567.9	369.2 635.8	345.9 704.4
20. 43.0	TR BHP	510.5 376.3	485.2 439.7	459.5 504.0	434.3 572.4	408.8 643.1	383.3 716.6
25. 48.8	TR BHP	562.9 369.7	534.9 437.3	507.3 504.9	479.3 574.7	451.7 648.8	423.8 724.6
30. 54.9	TR BHP	619.0 358.9	589.0 432.5	558.6 503.6	528.2 576.8	497.7 652.4	467.5 731.6
35. 61.5	TR BHP	680.1 345.1	646.9 423.5	613.8 499.8	580.8 576.5	547.5 654.8	514.5 736.5
40. 68.5	TR BHP	745.4 327.4	709.3 410.4	673.4 492.7	637.4 573.6	601.3 656.0	565.0 739.1

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 222E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	163.93	159.30	155.16	150.65	145.62
0.5	BHP	342.64	379.47	420.24	464.85	514.12
-35	TR	184.31	179.45	175.00	170.14	164.80
2.6	BHP	355.17	394.30	436.30	481.66	530.99
-30	TR	206.41	201.30	196.53	191.28	185.56
4.9	BHP	367.27	408.97	452.71	499.29	549.40
-25	TR	230.35	224.97	219.79	214.17	207.99
7.4	BHP	377.90	422.99	468.98	517.31	568.74
-20	TR	256.21	250.57	244.88	238.83	232.23
10.1	BHP	386.38	435.55	484.73	535.24	588.48
-15	TR	284.05	277.93	272.01	265.34	258.25
13.2	BHP	392.26	445.51	499.48	552.69	608.10
-10	TR	313.91	307.36	300.93	293.89	286.14
16.5	BHP	396.92	452.73	511.16	569.41	627.28
-5	TR	345.98	338.67	331.85	324.36	316.06
20.1	BHP	399.25	458.59	520.34	583.41	646.02
0	TR	380.18	372.30	364.83	356.82	348.00
24.0	BHP	400.33	461.68	527.26	594.75	662.59
5	TR	416.66	408.09	400.03	391.33	381.97
28.2	BHP	399.83	463.03	531.36	602.71	676.55
10	TR	455.60	446.00	437.46	428.04	417.91
32.8	BHP	397.03	462.19	533.46	608.23	685.60
15	TR	496.58	486.56	477.08	467.01	455.89
37.7	BHP	392.57	460.56	533.43	611.15	692.68
20	TR	540.57	529.44	519.07	508.24	496.43
43.0	BHP	386.28	456.92	531.70	611.95	696.45
25	TR	587.21	574.51	563.77	551.67	539.14
48.8	BHP	376.96	450.99	528.81	610.24	698.10
30	TR	635.65	622.72	610.69	597.86	584.01
54.9	BHP	363.27	442.66	523.41	607.96	697.14
35	TR	687.86	673.34	660.22	646.55	631.44
61.5	BHP	347.32	430.42	515.52	603.02	694.58
40	TR		726.87	712.53	697.57	681.57
68.5	BHP		414.21	504.33	595.33	690.53

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 270

R-22			SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
			75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)	-40. 0.5	TR BHP	159.6 383.9	149.5 421.3	140.1 462.8	130.6 508.8	120.8 560.9	138.2 612.0
	-35. 2.6	TR BHP	182.2 399.5	171.1 439.1	160.6 481.4	150.0 527.4	139.1 578.2	161.9 625.6
	-30 4.9	TR BHP	207.1 414.9	194.9 457.3	183.3 501.0	171.4 547.6	159.3 598.3	188.2 639.6
	-25 7.4	TR BHP	234.6 429.0	221.3 475.1	208.3 521.0	195.2 569.0	181.7 620.2	217.3 661.7
	-20. 10.2	TR BHP	264.9 440.8	250.3 491.5	235.9 541.0	221.3 590.9	206.4 643.3	249.2 688.0
	-15. 13.2	TR BHP	298.1 449.9	282.0 505.2	266.2 560.2	249.9 612.9	233.5 667.2	284.0 716.3
	-10. 16.5	TR BHP	334.6 457.6	316.7 516.3	299.3 576.1	281.5 634.5	263.2 691.1	322.0 745.9
	-5. 20.1	TR BHP	374.3 462.9	354.5 525.5	335.4 589.4	315.8 653.4	295.7 715.3	
	0. 24.0	TR BHP	417.6 467.1	395.8 532.0	374.7 600.5	353.2 669.5	331.2 737.4	
	5. 28.2	TR BHP	464.7 469.6	440.7 536.8	417.5 608.5	393.8 682.1	369.8 757.0	
	10. 32.8	TR BHP	515.8 469.3	489.2 539.3	463.9 614.6	438.0 692.2		
	15. 37.7	TR BHP	570.5 467.1	542.1 541.2	514.1 618.5	485.8 699.6		
	20. 43.0	TR BHP	630.5 462.7	599.3 540.7	568.5 620.6	537.5 704.9		
	25. 48.8	TR BHP	695.3 454.6	660.7 537.5	627.6 621.6	593.3 707.6		
	30. 54.9	TR BHP	764.3 440.9	727.6 531.3	691.0 619.8	653.8 710.0		
	35. 61.5	TR BHP	839.9 424.1	799.1 520.0	759.4 614.9	719.0 709.4		
	40. 68.5	TR BHP	920.7 401.6	876.2 503.5	833.1 605.9	789.0 705.5		

Condition is outside the operating range of compressor.

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 270E

R-22

SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)

		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	202.70	196.95	191.82	186.26	179.93
0.5	BHP	424.00	469.57	520.02	575.05	635.73
-35	TR	227.90	221.88	216.35	210.31	203.64
2.6	BHP	439.53	487.98	539.96	595.98	656.73
-30	TR	255.23	248.90	242.98	236.47	229.30
4.9	BHP	454.53	506.17	560.32	617.95	679.65
-25	TR	284.83	278.16	271.74	264.78	257.04
7.4	BHP	467.67	523.52	580.49	640.37	703.68
-20	TR	316.79	309.82	302.76	295.27	287.01
10.1	BHP	478.15	539.07	600.02	662.59	728.25
-15	TR	351.14	343.63	336.29	328.04	319.20
13.2	BHP	485.55	551.38	618.26	684.22	752.71
-10	TR	388.11	379.91	372.04	363.33	353.71
16.5	BHP	491.10	560.55	632.69	704.92	776.62
-5	TR	427.74	418.72	410.25	400.99	
20.1	BHP	493.93	567.47	644.00	722.20	
0	TR	470.00	460.25	451.15	441.10	
24.0	BHP	495.19	571.20	652.24	736.17	
5	TR	515.05	504.47	494.51	483.76	
28.2	BHP	494.47	572.78	657.47	745.91	
10	TR	563.15	551.30	540.74		
32.8	BHP	490.87	571.66	660.02		
15	TR	613.70	601.42	589.66		
37.7	BHP	485.31	569.50	659.84		
20	TR	667.98	654.34	641.55		
43.0	BHP	477.42	564.91	657.57		
25	TR	725.56	710.00	696.70		
48.8	BHP	465.82	557.49	653.85		
30	TR	785.33	769.49	754.67		
54.9	BHP	448.84	547.10	647.06		
35	TR	849.83	831.97	815.84		
61.5	BHP	429.10	531.88	637.20		
40	TR		898.06	880.44		
68.5	BHP		511.77	623.27		

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 316

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
-40. 0.5	TR BHP	183.3 442.1	172.2 486.1	161.2 534.0	150.1 587.3	138.9 645.1	127.7 714.9
-35. 2.6	TR BHP	209.4 461.1	197.1 506.9	184.7 555.4	172.3 608.6	159.9 664.9	147.5 731.0
-30. 4.9	TR BHP	238.3 479.4	224.5 528.0	210.8 578.3	197.0 631.8	183.2 687.8	169.4 752.2
-25. 7.4	TR BHP	270.2 495.0	254.9 548.3	239.6 601.6	224.3 656.5	208.9 715.7	193.6 776.9
-20. 10.1	TR BHP	305.1 508.5	288.3 567.5	271.3 624.3	254.3 682.0	237.3 742.4	220.2 804.2
-15. 13.2	TR BHP	343.4 519.4	324.8 583.4	306.2 646.6	287.3 707.1	268.5 770.0	249.6 832.8
-10. 16.5	TR BHP	385.3 528.0	364.8 596.3	344.2 665.2	323.5 732.4	302.6 797.7	281.8 865.9
-5. 20.1	TR BHP	431.0 534.3	408.4 607.2	385.7 680.9	363.0 754.5	340.0 825.4	317.0 895.8
0. 24.0	TR BHP	480.8 538.5	455.9 614.8	431.0 693.9	406.0 773.5	380.8 851.4	355.5 926.9
5. 28.2	TR BHP	534.9 540.6	507.6 620.6	480.2 702.6	452.7 787.4	425.2 874.4	397.4 956.6
10. 32.8	TR BHP	593.9 541.8	563.5 623.6	533.6 709.8	503.4 799.3	473.3 890.1	443.0 982.1
15. 37.7	TR BHP	657.4 540.2	624.4 626.0	591.3 714.4	558.4 808.0	525.3 904.6	492.2 1002.4
20. 43.0	TR BHP	726.4 535.5	690.3 625.6	653.9 717.1	617.9 814.4	581.7 915.0	545.5 1019.6
25. 48.8	TR BHP	800.9 526.0	761.1 622.3	721.8 718.5	682.0 817.7	642.7 923.2	603.0 1031.0
30. 54.9	TR BHP	880.8 510.7	838.1 615.4	794.8 716.6	751.5 820.8	708.2 928.3	665.2 1040.9
35. 61.5	TR BHP	967.8 491.1	920.4 602.6	873.4 711.2	826.5 820.3	779.1 931.7	732.1 1048.0
40. 68.5	TR BHP	1060.7 465.9	1009.2 584.0	958.2 701.0	907.0 816.2	855.6 933.4	803.9 1051.6

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 316E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	233.21	227.08	221.13	214.44	207.06
0.5	BHP	487.84	541.36	599.28	661.73	730.82
-35	TR	262.45	255.82	249.45	242.28	234.38
2.6	BHP	506.20	562.61	622.45	686.05	754.98
-30	TR	294.14	286.97	280.14	272.49	263.97
4.9	BHP	523.87	583.58	645.93	711.65	781.39
-25	TR	328.37	320.69	313.30	305.18	295.95
7.4	BHP	539.24	603.60	669.21	737.83	809.10
-20	TR	365.20	357.16	349.04	340.41	330.52
10.1	BHP	551.29	621.50	691.71	763.76	837.62
-15	TR	404.77	396.12	387.68	378.17	367.68
13.2	BHP	559.77	635.68	712.73	788.69	866.10
-10	TR	447.38	437.91	428.87	418.84	407.54
16.5	BHP	566.16	646.20	729.33	812.52	894.06
-5	TR	492.99	482.65	472.89	462.23	450.27
20.1	BHP	569.35	654.15	742.37	832.43	921.36
0	TR	541.66	530.45	519.88	508.44	495.86
24.0	BHP	570.75	658.38	752.09	848.50	945.41
5	TR	593.53	581.37	569.93	557.60	544.21
28.2	BHP	569.87	660.15	757.79	859.65	965.19
10	TR	648.90	635.30	623.17	609.61	595.41
32.8	BHP	565.71	658.80	760.66	867.38	977.85
15	TR	707.14	693.00	679.51	665.20	649.42
37.7	BHP	559.20	656.28	760.40	871.41	987.89
20	TR	769.62	753.97	739.25	723.85	707.08
43.0	BHP	550.05	650.91	757.70	872.36	993.03
25	TR	835.89	818.03	802.82	785.64	767.82
48.8	BHP	536.64	642.30	753.39	869.67	995.14
30	TR	904.70	886.53	869.51	851.33	831.64
54.9	BHP	517.04	630.29	745.49	866.20	993.56
35	TR	978.90	958.48	939.93	920.54	899.07
61.5	BHP	494.27	612.71	734.08	858.92	989.65
40	TR		1034.50	1014.29	993.09	970.36
68.5	BHP		589.51	717.98	847.79	983.64

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 399

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)							
-40. 0.5	TR BHP	230.8 556.7	216.9 612.2	202.9 672.5	189.0 739.5	174.9 812.4	160.8 900.3
-35. 2.6	TR BHP	263.7 580.7	248.2 638.3	232.6 699.5	217.0 766.4	201.4 837.3	185.7 920.6
-30. 4.9	TR BHP	300.1 603.7	282.8 664.9	265.5 728.2	248.1 795.6	230.7 866.1	213.3 947.2
-25. 7.4	TR BHP	340.3 623.4	321.0 690.5	301.7 757.5	282.4 826.6	263.1 901.2	243.7 978.3
-20. 10.1	TR BHP	384.2 640.4	363.1 714.6	341.6 786.1	320.2 858.8	298.8 934.8	277.3 1012.8
-15. 13.2	TR BHP	432.4 654.0	409.0 734.7	385.6 814.3	361.7 890.4	338.1 969.7	314.3 1048.7
-10. 16.5	TR BHP	485.2 664.9	459.3 750.9	433.5 837.7	407.4 922.3	381.1 1004.5	354.8 1090.4
-5. 20.1	TR BHP	542.8 672.8	514.3 764.6	485.7 857.4	457.1 950.1	428.2 1039.4	399.2 1128.0
0. 24.0	TR BHP	605.4 678.1	574.1 774.2	542.7 873.7	511.3 974.0	479.6 1072.1	447.6 1167.2
5. 28.2	TR BHP	673.5 680.8	639.2 781.5	604.6 884.7	570.1 991.6	535.5 1101.1	500.4 1204.6
10. 32.8	TR BHP	747.9 682.3	709.6 785.3	671.9 893.8	634.0 1006.5	596.0 1120.9	557.8 1236.7
15. 37.7	TR BHP	827.8 680.3	786.3 788.3	744.6 899.7	703.2 1017.5	661.5 1139.2	619.8 1262.2
20. 43.0	TR BHP	914.7 674.3	869.3 787.9	823.4 903.0	778.1 1025.6	732.6 1152.3	686.9 1283.9
25. 48.8	TR BHP	1008.6 662.4	958.4 783.6	908.9 904.8	858.8 1029.8	809.3 1162.5	759.4 1298.3
30. 54.9	TR BHP	1109.1 643.1	1055.3 774.9	1000.8 902.3	946.3 1033.6	891.9 1169.0	837.6 1310.8
35. 61.5	TR BHP	1218.7 618.4	1159.1 758.9	1099.9 895.6	1040.8 1033.0	981.0 1173.2	921.9 1319.7
40. 68.5	TR BHP	1335.6 586.7	1270.9 735.4	1206.6 882.8	1142.1 1027.8	1077.4 1175.4	1012.3 1324.2

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 399E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	293.95	286.21	278.65	270.11	260.66
0.5	BHP	615.58	683.13	755.54	833.69	920.40
-35	TR	330.81	322.44	314.37	305.20	295.04
2.6	BHP	638.77	709.99	785.15	864.55	950.80
-30	TR	370.75	361.69	353.05	343.14	332.28
4.9	BHP	661.05	736.48	815.23	896.98	984.09
-25	TR	413.87	404.19	394.85	384.38	372.59
7.4	BHP	680.41	761.74	844.65	930.20	1019.20
-20	TR	460.28	450.15	439.90	428.79	416.11
10.1	BHP	695.56	784.29	873.04	963.27	1055.22
-15	TR	510.13	499.24	488.58	476.53	462.94
13.2	BHP	706.21	802.11	899.52	995.42	1091.28
-10	TR	563.82	551.89	540.47	527.82	513.17
16.5	BHP	714.14	815.30	920.41	1025.60	1126.80
-5	TR	621.26	608.29	595.92	582.47	567.04
20.1	BHP	718.05	825.11	936.71	1050.62	1161.46
0	TR	682.54	668.44	655.14	640.68	624.56
24.0	BHP	719.68	830.43	948.78	1070.77	1192.32
5	TR	747.87	732.57	718.14	702.61	685.68
28.2	BHP	718.40	832.51	955.90	1084.60	1218.20
10	TR	817.59	800.48	785.20	768.06	750.19
32.8	BHP	712.97	830.65	959.34	1094.25	1233.90
15	TR	890.67	873.03	856.14	838.11	818.15
37.7	BHP	704.63	827.39	958.85	1099.15	1246.43
20	TR	969.45	949.86	931.36	911.94	890.75
43.0	BHP	693.00	820.37	955.26	1100.12	1252.71
25	TR	1052.83	1030.52	1011.38	989.75	967.23
48.8	BHP	675.99	809.37	949.60	1096.51	1255.16
30	TR	1139.44	1116.74	1095.34	1072.44	1047.60
54.9	BHP	651.21	794.09	939.49	1091.94	1252.87
35	TR	1232.80	1207.26	1184.00	1159.55	1132.49
61.5	BHP	622.51	771.81	924.96	1082.56	1247.66
40	TR		1302.97	1277.60	1250.89	1222.24
68.5	BHP		742.51	904.54	1068.33	1239.86

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 480

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG					
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7	125.0 277.9
-40 0.5	TR BHP	277.7 669.7	260.9 736.5	244.1 809.0	227.4 889.6	210.4 977.3	193.4 1083.1
-35 2.6	TR BHP	317.2 698.6	298.6 767.9	279.8 841.5	261.1 922.0	242.3 1007.3	223.4 1107.5
-30 4.9	TR BHP	361.0 726.3	340.2 799.9	319.4 876.0	298.5 957.1	277.5 1041.9	256.6 1139.5
-25 7.4	TR BHP	409.4 750.0	386.2 830.7	362.9 911.3	339.7 994.4	316.5 1084.2	293.2 1176.9
-20 10.1	TR BHP	462.2 770.4	436.8 859.7	410.9 945.7	385.2 1033.1	359.5 1124.6	333.6 1218.4
-15 13.2	TR BHP	520.2 786.8	492.0 883.8	463.9 979.6	435.1 1071.2	406.7 1166.6	378.1 1261.6
-10 16.5	TR BHP	583.7 799.9	552.5 903.3	521.5 1007.8	490.1 1109.5	458.5 1208.4	426.8 1311.8
-5 20.1	TR BHP	653.0 809.4	618.7 919.8	584.3 1031.5	549.9 1143.0	515.1 1250.4	480.2 1357.0
0 24	TR BHP	728.3 815.8	690.6 931.4	652.9 1051.1	615.1 1171.7	577.0 1289.7	538.5 1404.2
5 28.2	TR BHP	810.2 819.0	769.0 940.2	727.3 1064.3	685.8 1192.9	644.2 1324.6	
10 32.8	TR BHP	899.7 820.8	853.7 944.7	808.3 1075.2	762.7 1210.8	717.0 1348.5	
15 37.7	TR BHP	995.8 818.4	945.9 948.3	895.8 1082.3	846.0 1224.1	795.8 1370.5	
20 43	TR BHP	1100.4 811.2	1045.8 947.8	990.6 1086.3	936.1 1233.8		
25 48.8	TR BHP	1213.4 796.9	1153.0 942.7	1093.4 1088.5	1033.1 1238.9		
30 54.9	TR BHP	1334.3 773.7	1269.5 932.2	1204.0 1085.5	1138.4 1243.4		
35 61.5	TR BHP	1466.1 743.9	1394.4 913.0	1323.2 1077.4	1252.1 1242.7		
40 68.5	TR BHP	1606.7 705.8	1528.9 884.7	1451.5 1062.0	1374.0 1236.5		

Condition is outside the operating range of compressor.

NOTE: Capacities Based on 10°F Liquid Subcooling, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 480E

R-22		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	353.91	344.68	335.28	324.88	313.41
0.5	BHP	742.09	823.57	909.83	1003.20	1107.22
-35	TR	398.29	388.18	378.31	367.11	354.73
2.6	BHP	770.04	855.97	945.70	1040.49	1143.82
-30	TR	446.38	435.44	425.02	412.90	399.55
4.9	BHP	796.91	887.92	982.43	1079.63	1183.97
-25	TR	498.30	486.61	475.32	462.37	448.02
7.4	BHP	820.19	918.35	1018.43	1119.90	1226.16
-20	TR	554.16	541.94	529.57	515.90	500.38
10.1	BHP	838.37	945.49	1052.66	1160.19	1269.54
-15	TR	614.17	601.02	588.16	573.40	556.76
13.2	BHP	851.13	966.88	1084.48	1199.40	1313.29
-10	TR	678.81	664.40	650.62	635.29	617.23
16.5	BHP	860.57	982.68	1109.58	1236.64	1356.25
-5	TR	747.91	732.26	717.35	701.11	682.11
20.1	BHP	865.15	994.46	1139.13	1266.70	1398.45
0	TR	821.67	804.67	788.65	771.16	751.38
24.0	BHP	866.99	1000.64	1143.44	1290.85	1435.91
5	TR	900.27	881.84	864.43	845.74	825.07
28.2	BHP	865.32	1002.97	1151.92	1307.26	1467.76
10	TR	984.17	963.56	945.12	924.73	902.89
32.8	BHP	858.61	1000.58	1155.88	1318.86	1487.37
15	TR	1072.01	1050.84	1030.49	1008.72	984.57
37.7	BHP	848.38	996.52	1155.10	1324.45	1502.30
20	TR	1166.76	1143.29	1121.00	1097.57	
43.0	BHP	834.25	987.90	1150.60	1325.41	
25	TR	1267.04	1240.33	1217.34	1191.18	
48.8	BHP	813.65	974.48	1143.58	1320.87	
30	TR	1371.21	1344.08	1318.27	1290.67	
54.9	BHP	783.73	955.93	1131.25	1315.12	
35	TR	1483.52	1452.93	1424.94	1395.50	
61.5	BHP	749.10	928.99	1113.58	1301.64	
40	TR		1568.03	1537.59	1505.32	
68.5	BHP		893.59	1088.84	1286.26	

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - **CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).**

RWF 100E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	86.71 195.40	83.80 217.53	80.86 242.47	77.61 270.12	73.99 301.41
-35 2.6	TR BHP	97.21 201.99	93.97 224.91	90.75 250.59	87.22 278.92	83.31 310.61
-30 4.9	TR BHP	108.54 208.20	105.02 232.20	101.41 258.57	97.58 287.72	93.32 320.06
-25 7.4	TR BHP	120.73 213.34	116.91 238.98	112.88 266.23	108.71 296.37	104.08 329.50
-20 10.1	TR BHP	133.88 217.15	129.74 244.43	125.20 273.43	120.65 304.70	115.61 338.82
-15 13.2	TR BHP	147.86 220.23	143.33 249.60	138.43 279.71	133.45 312.56	127.96 347.81
-10 16.5	TR BHP	162.85 221.70	158.00 253.28	152.54 285.17	147.13 319.70	141.23 356.08
-5 20.1	TR BHP	178.86 222.26	173.62 255.48	167.83 289.61	161.61 325.92	155.20 364.14
0 24.0	TR BHP	195.98 222.23	190.25 256.47	184.02 292.80	177.31 330.34	170.05 371.40
5 28.2	TR BHP	214.10 221.21	207.98 256.67	201.21 294.26	193.94 334.38	186.17 377.14
10 32.8	TR BHP	233.29 218.99	226.82 255.91	219.47 294.71	211.51 336.07	203.21 381.05
15 37.7	TR BHP	253.77 216.00	246.65 254.03	238.91 294.36	230.15 336.79	221.19 383.86
20 43.0	TR BHP	275.40 211.36	267.70 251.06	259.37 292.82	250.03 336.76	240.17 384.90
25 48.8	TR BHP	298.31 205.57	290.06 246.81	280.94 289.84	271.04 335.56	260.26 384.86
30 54.9	TR BHP	322.46 198.46	313.64 241.13	303.87 285.90	293.07 332.99	281.56 383.78
35 61.5	TR BHP	347.93 189.29	338.46 234.32	328.04 280.36	316.31 329.05	303.87 381.34
40 68.5	TR BHP		364.66 225.77	353.40 273.59	341.01 323.75	327.31 377.28

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 134E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	115.85 261.52	111.98 291.26	108.02 324.62	103.66 361.60	98.80 403.42
-35 2.6	TR BHP	129.87 270.29	125.57 301.09	121.24 335.49	116.51 373.37	111.24 415.73
-30 4.9	TR BHP	144.98 279.17	140.32 310.77	135.49 346.14	130.34 385.12	124.62 428.37
-25 7.4	TR BHP	161.24 286.00	156.19 319.75	150.82 356.36	145.21 396.67	138.98 440.97
-20 10.1	TR BHP	178.73 291.18	173.21 328.08	167.28 365.93	161.16 407.77	154.38 453.38
-15 13.2	TR BHP	197.42 295.04	191.44 334.70	184.98 374.13	178.25 418.20	170.86 465.34
-10 16.5	TR BHP	217.41 296.87	210.99 339.50	203.77 382.54	196.55 427.58	188.61 476.17
-5 20.1	TR BHP	238.75 297.49	231.81 342.30	224.14 388.45	215.83 436.12	207.20 487.00
0 24.0	TR BHP	261.57 297.30	253.97 343.46	245.72 392.56	236.79 443.20	227.19 496.72
5 28.2	TR BHP	285.71 295.78	277.60 343.55	268.64 394.33	258.97 448.64	248.50 504.83
10 32.8	TR BHP	311.30 292.68	302.71 342.37	292.97 394.75	282.41 450.73	271.22 511.47
15 37.7	TR BHP	338.58 288.56	329.14 339.69	318.89 394.06	307.26 451.44	295.20 515.03
20 43.0	TR BHP	367.40 282.24	357.19 335.56	346.15 391.80	333.76 451.18	320.51 516.18
25 48.8	TR BHP	397.95 274.41	387.00 329.72	374.91 387.60	361.76 449.30	347.30 515.87
30 54.9	TR BHP	430.14 264.84	418.43 321.99	405.46 382.15	391.12 445.61	375.70 514.15
35 61.5	TR BHP	464.10 252.53	451.52 312.78	437.69 374.56	422.24 440.12	405.45 510.61
40 68.5	TR BHP		486.46 301.27	471.64 365.38	455.01 432.78	436.71 504.91

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 177E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	154.33 343.90	148.95 382.08	143.48 424.97	137.49 472.39	130.79 525.72
-35 2.6	TR BHP	173.06 355.56	167.15 395.41	161.14 439.55	154.58 488.09	147.33 542.12
-30 4.9	TR BHP	193.38 366.87	186.85 408.34	180.17 453.79	173.06 503.87	165.14 559.07
-25 7.4	TR BHP	215.07 375.83	208.15 420.25	200.64 467.40	192.94 519.32	184.34 576.03
-20 10.1	TR BHP	238.38 382.54	230.92 430.71	222.68 480.30	214.26 534.13	204.94 592.66
-15 13.2	TR BHP	263.26 387.63	255.15 439.12	246.45 491.18	237.11 548.32	226.98 608.63
-10 16.5	TR BHP	289.89 390.07	281.22 445.16	271.62 501.30	261.64 560.97	250.72 623.37
-5 20.1	TR BHP	318.31 390.91	308.93 448.77	298.61 508.35	287.53 571.20	275.83 638.48
0 24.0	TR BHP	348.43 389.75	338.43 450.34	327.28 513.35	315.27 578.70	302.28 650.34
5 28.2	TR BHP	380.62 387.62	369.73 449.95	357.76 515.75	344.61 584.71	330.85 658.69
10 32.8	TR BHP	414.88 383.77	402.92 447.71	390.11 516.22	375.77 587.54	360.82 665.21
15 37.7	TR BHP	450.83 377.99	438.35 444.65	424.25 514.37	408.89 588.78	392.60 669.32
20 43.0	TR BHP	489.31 370.28	475.65 439.31	460.59 511.65	443.88 587.82	426.23 670.95
25 48.8	TR BHP	529.85 359.37	515.11 431.89	499.10 506.80	480.87 584.94	461.73 670.41
30 54.9	TR BHP	572.55 345.26	556.93 421.92	539.51 499.69	520.16 581.13	499.03 667.35
35 61.5	TR BHP	618.03 329.13	600.89 408.46	582.23 490.55	561.63 574.60	538.62 663.58
40 68.5	TR BHP		647.41 392.28	627.32 478.10	605.06 565.53	580.42 657.48

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 222E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	194.66 434.28	187.92 482.69	181.00 536.87	173.41 596.75	164.94 664.07
-35 2.6	TR BHP	218.25 449.48	210.85 499.41	203.27 555.23	194.97 616.55	185.80 684.75
-30 4.9	TR BHP	243.83 463.97	235.68 515.60	227.27 573.15	218.28 636.41	208.25 706.11
-25 7.4	TR BHP	271.15 475.16	262.49 531.22	253.08 590.25	243.33 655.82	232.45 727.43
-20 10.1	TR BHP	300.52 483.42	291.16 544.78	280.85 606.41	270.20 674.41	258.41 748.31
-15 13.2	TR BHP	331.64 489.64	321.83 555.19	310.85 620.63	299.01 692.21	286.18 768.35
-10 16.5	TR BHP	365.32 492.61	354.48 562.65	342.51 634.19	329.96 707.89	315.85 787.56
-5 20.1	TR BHP	401.07 493.45	389.35 567.00	376.44 642.84	362.53 722.20	347.34 806.14
0 24.0	TR BHP	438.99 491.79	426.49 568.75	412.52 648.90	397.46 732.25	380.99 820.48
5 28.2	TR BHP	479.51 488.94	465.85 567.99	450.89 651.66	434.40 739.57	416.98 833.28
10 32.8	TR BHP	522.63 483.91	507.63 564.92	491.59 651.98	473.64 742.85	454.72 841.68
15 37.7	TR BHP	567.88 476.48	552.23 560.87	534.54 649.37	515.29 744.05	494.71 846.53
20 43.0	TR BHP	616.31 466.63	599.18 553.95	580.27 645.63	559.32 742.53	537.02 848.23
25 48.8	TR BHP	667.37 452.79	648.84 544.42	628.75 639.30	605.88 738.52	581.72 847.19
30 54.9	TR BHP	721.27 434.95	701.50 531.71	679.62 630.09	655.35 733.41	628.72 842.96
35 61.5	TR BHP	778.37 414.55	756.82 514.63	733.39 618.38	707.53 724.90	678.58 837.83
40 68.5	TR BHP		815.40 494.16	790.17 602.54	762.20 713.19	731.22 829.83

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 270E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40	TR	240.68	232.39	223.80	214.38	203.87
0.5	BHP	537.79	597.68	664.75	738.86	822.14
-35	TR	269.81	260.71	251.32	241.02	229.63
2.6	BHP	557.45	618.24	687.40	763.29	847.67
-30	TR	301.40	291.36	280.99	269.82	257.37
4.9	BHP	575.24	638.53	709.48	787.77	873.98
-25	TR	335.13	324.47	312.88	300.78	287.27
7.4	BHP	588.93	658.88	730.55	811.68	900.25
-20	TR	371.41	359.88	347.19	333.97	319.33
10.1	BHP	598.87	675.48	751.04	834.56	925.94
-15	TR	410.01	397.76	384.27	369.55	353.62
13.2	BHP	606.48	688.05	769.72	856.42	950.57
-10	TR	451.40	438.04	423.32	407.82	390.24
16.5	BHP	609.81	697.07	786.40	877.45	974.16
-5	TR	495.56	481.08	465.18	447.98	
20.1	BHP	610.65	702.14	796.82	895.93	
0	TR	542.37	526.93	509.73	491.13	
24.0	BHP	608.38	704.05	804.01	908.07	
5	TR	592.41	575.56	557.09	536.76	
28.2	BHP	604.66	702.87	807.05	916.81	
10	TR	645.67	627.16	607.34		
32.8	BHP	598.27	698.86	807.10		
15	TR	701.51	682.22	660.39		
37.7	BHP	588.95	693.61	803.60		
20	TR	761.33	740.34	716.86		
43.0	BHP	576.69	684.90	798.70		
25	TR	824.43	801.50	776.73		
48.8	BHP	559.50	672.93	790.59		
30	TR	891.02	866.56	839.52		
54.9	BHP	537.40	657.10	779.01		
35	TR	961.54	934.91	905.92		
61.5	BHP	512.14	635.91	764.36		
40	TR		1007.27	976.08		
68.5	BHP		610.53	744.65		

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 316E

R-507

SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	277.91 621.47	268.35 690.24	258.45 767.68	247.60 853.20	235.49 949.28
-35 2.6	TR BHP	311.50 644.13	301.03 713.91	290.22 793.75	278.36 881.36	265.24 978.74
-30 4.9	TR BHP	347.92 664.56	336.39 737.44	324.44 819.13	311.60 909.54	297.27 1009.08
-25 7.4	TR BHP	386.79 680.23	374.56 760.87	361.22 843.31	347.31 937.03	331.78 1039.32
-20 10.1	TR BHP	428.62 691.38	415.36 779.90	400.78 866.81	385.61 963.32	368.78 1068.89
-15 13.2	TR BHP	472.88 700.03	459.07 794.17	443.23 889.14	426.63 988.41	408.35 1097.18
-10 16.5	TR BHP	520.68 703.72	505.18 804.40	488.62 907.46	470.81 1012.12	450.60 1124.29
-5 20.1	TR BHP	571.52 704.49	554.98 810.17	536.79 919.35	517.15 1033.47	495.79 1150.34
0 24.0	TR BHP	625.39 701.66	607.77 812.18	588.08 927.47	566.79 1047.31	543.43 1174.00
5 28.2	TR BHP	682.98 697.18	663.75 810.63	642.64 930.85	619.34 1057.23	594.57 1191.81
10 32.8	TR BHP	744.26 689.67	723.13 805.79	700.50 930.72	675.15 1061.35	648.25 1203.23
15 37.7	TR BHP	808.57 678.80	786.51 799.60	761.57 926.49	734.41 1062.52	705.15 1209.53
20 43.0	TR BHP	877.40 664.54	853.37 789.40	826.57 920.72	797.02 1059.75	765.37 1211.34
25 48.8	TR BHP	949.94 644.64	923.81 775.49	895.47 911.24	863.19 1053.49	828.94 1209.28
30 54.9	TR BHP	1026.34 619.07	998.64 757.14	967.78 897.76	933.49 1045.70	895.77 1202.64
35 61.5	TR BHP	1107.71 589.95	1077.29 732.64	1044.18 880.76	1007.64 1033.11	966.65 1194.81
40 68.5	TR BHP		1160.49 703.32	1124.86 857.93	1085.34 1016.03	1041.46 1182.86

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 399E

R-507

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG				
		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	350.17 785.87	338.21 871.00	325.69 968.72	311.97 1076.60	296.65 1197.72
-35 2.6	TR BHP	392.46 814.22	379.34 900.87	365.70 1001.47	350.71 1111.96	334.11 1234.73
-30 4.9	TR BHP	438.28 839.77	423.82 932.66	408.81 1033.32	392.56 1147.34	374.44 1272.81
-25 7.4	TR BHP	487.19 859.14	471.87 961.86	455.13 1064.83	437.53 1181.83	414.64 1296.28
-20 10.1	TR BHP	539.88 872.77	523.21 985.51	504.96 1096.55	485.74 1214.79	464.44 1347.81
-15 13.2	TR BHP	595.54 883.42	578.24 1003.05	558.34 1124.18	536.19 1242.41	511.43 1372.78
-10 16.5	TR BHP	655.74 887.78	636.22 1015.60	615.49 1146.75	593.07 1280.09	567.41 1418.16
-5 20.1	TR BHP	719.72 888.43	698.95 1022.51	676.09 1161.32	650.45 1302.72	621.65 1442.64
0 24.0	TR BHP	787.56 884.63	765.40 1024.62	740.66 1171.10	713.84 1323.76	684.16 1484.92
5 28.2	TR BHP	860.03 878.74	835.85 1022.29	809.31 1174.86	779.66 1334.38	746.50 1496.11
10 32.8	TR BHP	937.19 869.09	910.61 1015.92	882.15 1174.32	850.28 1340.44	816.17 1520.62
15 37.7	TR BHP	1018.15 855.22	990.36 1007.84	959.00 1168.55	924.83 1341.26	886.05 1521.00
20 43.0	TR BHP	1104.84 837.14	1074.56 994.78	1040.85 1160.90	1003.64 1337.26	963.60 1529.68
25 48.8	TR BHP	1196.21 811.96	1163.24 977.04	1127.53 1148.63	1086.95 1328.90	1042.25 1522.20
30 54.9	TR BHP	1292.75 779.74	1257.51 953.79	1218.57 1131.36	1175.48 1318.67	1127.75 1517.58
35 61.5	TR BHP	1394.93 742.99	1356.56 922.82	1314.81 1109.73	1268.77 1302.36	1215.96 1504.75
40 68.5	TR BHP		1461.41 885.84	1416.45 1080.82	1366.59 1280.54	1310.30 1489.84

Condition is outside the operating range for economizer operation.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz WITH FLASH TYPE ECONOMIZER (SEE ECONOMIZER OPERATION SECTION FOR SELECTIONS BASED ON DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS).

RWF 480E

R-507

SATURATED CONDENSING TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		75.0 132.2	85.0 155.7	95.0 181.8	105.0 210.7	115.0 242.7
-40 0.5	TR BHP	421.37 949.04	407.00 1049.29	391.86 1166.92	375.27 1296.71	356.75 1442.39
-35 2.6	TR BHP	472.20 982.93	456.44 1088.31	438.95 1202.21	419.46 1328.08	398.29 1467.36
-30 4.9	TR BHP	527.32 1013.38	509.94 1126.27	491.12 1241.96	470.10 1372.84	446.58 1514.18
-25 7.4	TR BHP	586.14 1036.38	567.71 1161.23	547.12 1283.79	524.46 1416.10	499.07 1562.46
-20 10.1	TR BHP	649.55 1052.42	629.46 1189.33	607.31 1323.48	582.72 1457.23	555.28 1609.29
-15 13.2	TR BHP	716.42 1064.95	695.64 1209.97	671.70 1357.29	645.07 1500.75	615.37 1653.90
-10 16.5	TR BHP	788.86 1069.90	765.31 1224.71	740.41 1384.01	712.17 1539.85	679.54 1696.35
-5 20.1	TR BHP	865.82 1070.34	840.80 1232.65	813.29 1401.13	782.40 1573.10	747.80 1741.20
0 24.0	TR BHP	947.46 1065.55	920.74 1234.81	890.94 1412.37	857.95 1594.83	820.76 1778.94
5 28.2	TR BHP	1034.70 1058.26	1005.52 1231.71	973.53 1416.45	937.81 1610.10	897.84 1807.11
10 32.8	TR BHP	1127.56 1046.44	1095.46 1223.75	1061.14 1415.36	1022.56 1616.36	979.31 1825.43
15 37.7	TR BHP	1224.93 1029.56	1191.48 1213.74	1153.61 1408.01	1112.41 1617.29	1065.66 1835.76
20 43.0	TR BHP	1329.22 1007.64	1292.82 1197.77	1252.09 1398.44	1207.21 1611.89	
25 48.8	TR BHP	1439.25 977.24	1399.49 1176.25	1356.48 1383.34	1307.44 1601.42	
30 54.9	TR BHP	1555.42 938.36	1512.99 1148.09	1466.01 1362.31	1413.94 1588.63	
35 61.5	TR BHP	1678.48 894.09	1632.16 1110.69	1581.84 1336.02	1526.36 1568.67	
40 68.5	TR BHP		1758.40 1066.08	1704.23 1300.99	1644.01 1542.05	

Condition is outside the operating range for economizer operation.
Condition is outside the operating range of compressor.

NOTE: Ratings based on Liquid Subcooling by Flash Type Economizer, 10°F Suction Superheat with Superheat not contributing to the refrigeration effect, no Liquid Subcooling from condenser or external source. No allowance for vapor line pressure drop or economizing vessel temperature split is included in the above ratings.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 100

R-717			SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
			-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)	-80 24.3*	TR BHP	16.41 32.97	15.83 37.75	15.18 42.27	14.47 46.27	13.71 54.56	12.93 67.54	12.00 92.76
	-75 23.2*	TR BHP	19.81 34.13	19.20 39.12	18.51 43.68	17.77 47.64	16.96 54.73	16.13 64.28	15.16 79.58
	-70 21.9*	TR BHP	23.76 35.03	23.08 40.41	22.36 45.31	21.57 49.44	20.71 55.99	19.83 63.91	18.81 75.21
	-65 20.4*	TR BHP	28.29 35.86	27.55 41.81	26.77 47.04	25.94 51.44	25.01 57.86	24.07 64.96	23.00 74.37
	-60 18.6*	TR BHP	33.47 36.32	32.66 42.92	31.82 48.72	30.94 53.46	29.93 60.02	28.92 66.80	27.79 75.58
	-55 16.6*	TR BHP	39.38 36.22	38.49 43.66	37.58 50.20	36.63 55.60	35.54 62.22	34.44 69.06	33.25 77.17
	-50 14.3*	TR BHP	46.08 36.37	45.09 43.99	44.10 51.33	43.09 57.41	41.87 64.45	40.70 71.46	39.43 79.59
	-45 11.7*	TR BHP	53.56 37.43	52.56 43.79	51.48 51.90	50.39 59.03	49.06 66.57	47.74 73.71	46.42 82.28
	-40 8.7*	TR BHP	62.13 37.15	60.96 44.35	59.76 51.94	58.60 59.98	57.14 68.48	55.66 75.98	54.22 84.56
	-35 5.4*	TR BHP	71.81 34.14	70.32 45.32	69.08 51.96	67.77 60.27	66.20 69.94	64.62 78.31	62.89 86.74
	-30 1.6*	TR BHP	82.64 27.58	80.95 44.01	79.47 53.05	78.05 60.33	76.33 70.72	74.56 79.97	72.75 89.49
	-25 1.3	TR BHP	94.71 16.54	92.82 39.61	91.06 53.37	89.53 60.80	87.57 70.83	85.68 81.33	83.70 91.49
	-20 3.6	TR BHP		106.01 31.37	104.03 50.72	102.29 61.83	100.14 70.70	97.99 81.91	95.82 93.34
	-15 6.2	TR BHP		120.62 18.46	118.41 44.77	116.43 61.13	114.07 71.00	111.68 81.72	109.25 94.49
	-10 9.0	TR BHP			134.29 34.83	132.06 57.01	129.40 72.06	126.85 81.21	124.06 94.64
	-5 12.2	TR BHP			151.80 20.16	149.28 49.46	146.40 71.00	143.51 81.68	140.53 93.94
	0 15.7	TR BHP				168.21 37.86	165.13 66.68	161.78 82.47	158.56 93.30

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 134

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
-80. 24.3*	TR BHP	22.0 45.2	21.3 50.3	20.4 55.8	19.4 61.7	18.4 72.4	17.4 90.1	16.2 126.0
-75. 23.2*	TR BHP	26.6 46.7	25.8 52.1	24.9 57.7	23.9 63.5	22.8 72.6	21.7 85.7	20.4 107.3
-70. 21.9*	TR BHP	31.9 47.9	31.0 53.8	30.1 59.8	29.0 65.9	27.8 74.3	26.6 85.2	25.3 100.9
-65. 20.4*	TR BHP	38.0 49.0	37.0 55.7	36.0 62.1	34.8 68.5	33.6 76.7	32.3 86.6	30.9 99.5
-60. 18.6*	TR BHP	44.9 49.7	43.9 57.2	42.8 64.4	41.5 71.2	40.2 79.6	38.8 89.0	37.3 100.6
-55. 16.6*	TR BHP	52.8 49.5	51.7 58.2	50.5 66.3	49.2 74.1	47.7 82.5	46.2 92.0	44.6 102.9
-50. 14.3*	TR BHP	61.8 49.7	60.6 58.6	59.3 67.8	57.8 76.5	56.2 85.4	54.6 95.2	52.8 106.0
-45. 11.7*	TR BHP	71.8 51.2	70.6 58.3	69.2 68.6	67.6 78.6	65.8 88.2	64.0 98.2	62.2 109.5
-40. 8.7*	TR BHP	83.3 51.0	81.9 59.1	80.3 68.6	78.6 79.9	76.7 90.7	74.6 101.2	72.6 112.7
-35. 5.4*	TR BHP	96.3 47.1	94.4 60.4	92.8 68.7	90.9 80.3	88.8 92.6	86.6 104.3	84.2 115.6
-30. 1.6*	TR BHP	110.9 38.2	108.7 58.7	106.8 70.1	104.7 80.4	102.4 93.7	99.9 106.5	97.5 119.2
-25. 1.3	TR BHP	127.1 23.0	124.6 52.8	122.3 70.5	120.1 81.0	117.5 93.8	114.8 108.3	112.1 121.8
-20. 3.6	TR BHP		142.3 41.8	139.7 67.0	137.2 82.4	134.3 93.6	131.3 109.1	128.3 124.2
-15. 6.2	TR BHP		162.0 24.7	159.0 59.1	156.2 81.4	153.0 93.9	149.7 108.8	146.3 125.7
-10. 9.1	TR BHP			180.4 46.0	177.2 76.0	173.6 95.4	170.0 108.1	166.2 126.1
-5. 12.2	TR BHP			203.9 26.6	200.3 65.9	196.4 94.1	192.3 108.8	188.2 125.1
0. 15.7	TR BHP				225.7 50.5	221.5 88.5	216.8 109.9	212.5 124.3

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 177

R-717			SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
			-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)	-80. 24.3*	TR BHP	29.4 57.7	28.4 64.3	27.3 71.4	26.0 78.9	24.6 92.4	23.2 114.1	21.7 156.8
	-75. 23.2*	TR BHP	35.5 59.7	34.5 66.8	33.2 74.0	31.9 81.5	30.4 93.1	28.9 109.5	27.3 136.0
	-70. 21.9*	TR BHP	42.6 61.3	41.4 69.1	40.1 76.9	38.7 84.8	37.2 95.5	35.5 109.4	33.8 129.1
	-65. 20.4*	TR BHP	50.7 62.0	49.4 71.5	48.0 80.0	46.5 88.3	44.9 98.9	43.1 111.5	41.3 128.0
	-60. 18.6*	TR BHP	59.9 62.4	58.6 73.2	57.1 82.9	55.4 91.9	53.7 102.7	51.8 114.9	49.8 129.7
	-55. 16.6*	TR BHP	70.5 62.2	69.0 73.6	67.4 85.5	65.6 95.6	63.7 106.6	61.6 119.0	59.5 133.0
	-50. 14.3*	TR BHP	82.5 62.3	80.8 73.9	79.1 86.7	77.2 98.8	75.0 110.4	72.8 123.2	70.5 137.3
	-45. 11.7*	TR BHP	95.8 63.9	94.2 73.6	92.3 87.0	90.2 101.3	87.8 114.1	85.4 127.2	83.0 141.9
	-40. 8.7*	TR BHP	111.2 63.2	109.2 74.4	107.1 87.1	104.9 102.0	102.3 117.4	99.6 131.2	96.9 146.2
	-35. 5.4*	TR BHP	128.5 57.9	126.0 75.7	123.8 87.1	121.3 102.2	118.5 119.1	115.6 135.3	112.4 150.1
	-30. 1.6*	TR BHP	147.9 46.7	145.0 73.1	142.4 88.6	139.7 102.3	136.6 119.6	133.3 137.8	130.0 154.9
	-25. 1.3	TR BHP	169.5 28.0	166.3 65.5	163.2 88.8	160.2 103.0	156.7 119.8	153.2 139.2	149.5 158.3
	-20. 3.6	TR BHP		189.9 51.7	186.4 84.0	183.1 104.5	179.2 119.6	175.2 139.7	171.2 160.5
	-15. 6.2	TR BHP		216.1 30.3	212.1 73.8	208.4 102.9	204.1 119.8	199.7 139.4	195.2 161.5
	-10. 9.1	TR BHP			240.6 57.3	236.3 95.8	231.5 121.3	226.8 138.5	221.6 161.9
	-5. 12.2	TR BHP			271.9 33.1	267.2 82.9	262.0 119.2	256.5 139.1	251.1 160.7
	0. 15.7	TR BHP				301.0 63.3	295.5 111.8	289.2 140.1	283.4 159.5

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 222

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
-80. 24.3*	TR BHP	37.1 72.6	35.8 81.0	34.3 89.9	32.7 99.4	31.0 116.4	29.2 143.6	27.3 197.4
-75. 23.2*	TR BHP	44.7 75.2	43.4 84.1	41.9 93.2	40.1 102.6	38.3 117.2	36.4 137.9	34.4 171.3
-70. 21.9*	TR BHP	53.6 77.2	52.1 87.0	50.5 96.8	48.7 106.7	46.8 120.3	44.7 137.7	42.6 162.6
-65. 20.4*	TR BHP	63.8 78.1	62.2 90.1	60.5 100.7	58.6 111.2	56.5 124.5	54.3 140.4	52.0 161.1
-60. 18.6*	TR BHP	75.5 78.5	73.8 92.1	71.9 104.4	69.8 115.7	67.6 129.3	65.2 144.7	62.7 163.3
-55. 16.6*	TR BHP	88.8 78.3	86.9 92.7	84.9 107.6	82.6 120.4	80.2 134.2	77.6 149.8	74.9 167.5
-50. 14.3*	TR BHP	103.9 78.4	101.8 93.1	99.6 109.1	97.2 124.4	94.4 139.1	91.7 155.2	88.8 172.8
-45. 11.7*	TR BHP	120.7 80.4	118.6 92.7	116.2 109.5	113.6 127.5	110.6 143.7	107.6 160.2	104.5 178.7
-40. 8.7*	TR BHP	140.0 79.6	137.6 93.7	134.9 109.6	132.1 128.5	128.8 147.9	125.4 165.2	122.0 184.2
-35. 5.4*	TR BHP	161.8 73.0	158.7 95.3	155.9 109.6	152.8 128.7	149.2 150.0	145.5 170.4	141.5 189.0
-30. 1.6*	TR BHP	186.2 58.8	182.6 92.1	179.3 111.6	175.9 128.9	172.0 150.7	167.9 173.5	163.7 195.1
-25. 1.3	TR BHP	213.4 35.2	209.4 82.5	205.5 111.8	201.8 129.7	197.3 150.9	192.9 175.2	188.2 199.3
-20. 3.6	TR BHP		239.1 65.1	234.7 105.7	230.5 131.5	225.7 150.6	220.6 175.9	215.5 202.1
-15. 6.2	TR BHP		272.1 38.2	267.1 93.0	262.4 129.6	257.0 150.9	251.4 175.6	245.8 203.3
-10. 9.1	TR BHP			302.9 72.1	297.6 120.6	291.6 152.7	285.6 174.4	279.1 203.9
-5. 12.2	TR BHP			342.4 41.6	336.4 104.4	329.9 150.1	323.1 175.2	316.2 202.3
0. 15.7	TR BHP				379.1 79.8	372.1 140.8	364.2 176.4	356.9 200.9

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 270

R-717		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)								
-80. 24.3*	TR BHP	45.9 87.3	44.2 100.1	42.4 112.1	40.4 122.8	38.3 144.4	36.1 177.5	33.5 239.9
-75. 23.2*	TR BHP	55.4 90.5	53.7 103.9	51.7 116.2	49.6 126.8	47.4 145.5	45.0 170.4	42.3 209.5
-70 21.9*	TR BHP	66.4 93.0	64.4 107.5	62.4 120.7	60.2 131.9	57.8 149.4	55.3 170.2	52.5 199.7
-65 20.4*	TR BHP	79.0 94.2	76.9 111.3	74.7 125.4	72.4 137.5	69.8 154.6	67.1 173.6	64.1 198.4
-60. 18.6*	TR BHP	93.5 94.7	91.2 113.8	88.8 130.0	86.3 143.0	83.5 160.6	80.6 178.9	77.4 201.4
-55. 16.6*	TR BHP	109.9 94.4	107.4 114.5	104.8 134.0	102.2 148.8	99.1 166.7	96.0 185.2	92.6 206.9
-50. 14.3*	TR BHP	128.6 94.6	125.8 115.1	123.0 135.9	120.1 153.7	116.7 172.8	113.4 191.8	109.8 213.7
-45. 11.7*	TR BHP	149.5 96.9	146.6 114.6	143.6 136.4	140.5 157.6	136.7 178.6	133.0 198.0	129.2 221.1
-40. 8.7*	TR BHP	173.4 95.6	170.0 115.8	166.6 136.5	163.3 158.7	159.2 183.8	155.0 204.2	150.9 227.5
-35. 5.4*	TR BHP	200.4 87.3	196.1 117.7	192.6 136.5	188.8 159.1	184.4 186.4	179.9 210.5	175.0 233.5
-30. 1.6*	TR BHP	230.5 70.1	225.7 113.8	221.5 138.9	217.5 159.2	212.6 187.2	207.5 214.5	202.4 241.0
-25. 1.3	TR BHP	264.2 41.8	258.8 101.9	253.8 139.2	249.4 160.3	243.9 187.5	238.5 216.5	232.8 246.4
-20. 3.6	TR BHP		295.6 80.4	290.0 131.8	285.0 162.5	278.8 187.1	272.7 217.4	266.5 249.9
-15. 6.2	TR BHP		336.3 47.1	330.0 115.9	324.4 160.1	317.6 187.6	310.8 217.0	303.8 251.4
-10. 9.1	TR BHP			374.3 89.9	367.9 148.9	360.3 189.9	353.0 215.5	345.0 251.8
-5. 12.2	TR BHP			423.1 51.9	415.9 128.9	407.6 186.5	399.4 216.5	390.8 250.0
0. 15.7	TR BHP				468.6 98.4	459.8 174.6	450.2 217.9	441.2 248.3

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 316

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
-80. 24.3*	TR BHP	52.7 103.3	50.9 115.2	48.9 127.9	46.5 141.4	44.1 165.6	41.6 204.4	38.9 280.9
-75. 23.2*	TR BHP	63.6 107.0	61.8 119.6	59.6 132.6	57.1 146.0	54.6 166.8	51.8 196.2	49.0 243.7
-70. 21.9*	TR BHP	76.2 109.8	74.2 123.8	71.9 137.8	69.3 151.9	66.6 171.1	63.7 196.0	60.6 231.4
-65. 20.4*	TR BHP	90.8 111.1	88.5 128.1	86.1 143.3	83.3 158.2	80.4 177.2	77.2 199.8	74.0 229.3
-60. 18.6*	TR BHP	107.4 111.7	104.9 131.1	102.3 148.5	99.3 164.6	96.1 184.0	92.8 205.9	89.2 232.4
-55. 16.6*	TR BHP	126.3 111.4	123.6 131.9	120.7 153.2	117.6 171.3	114.1 191.0	110.5 213.2	106.6 238.4
-50. 14.3*	TR BHP	147.8 111.6	144.8 132.5	141.7 155.3	138.3 177.0	134.4 197.9	130.5 220.8	126.4 245.9
-45. 11.7*	TR BHP	171.7 114.4	168.8 131.9	165.3 155.9	161.7 181.5	157.4 204.5	153.0 228.0	148.6 254.3
-40. 8.7*	TR BHP	199.2 113.2	195.7 133.3	191.9 156.0	188.0 182.8	183.3 210.4	178.4 235.1	173.7 262.0
-35. 5.4*	TR BHP	230.3 103.8	225.8 135.6	221.8 156.0	217.4 183.2	212.3 213.4	207.1 242.4	201.4 269.0
-30. 1.6*	TR BHP	265.0 83.7	259.8 131.0	255.2 158.8	250.3 183.3	244.8 214.4	238.9 246.9	233.0 277.5
-25. 1.3	TR BHP	303.7 50.1	297.9 117.4	292.3 159.0	287.1 184.5	280.8 214.7	274.5 249.3	267.8 283.6
-20. 3.6	TR BHP		340.2 92.6	334.0 150.5	328.0 187.2	321.1 214.2	313.9 250.3	306. 287.5
-15. 6.2	TR BHP		387.1 54.4	380.1 132.3	373.3 184.4	365.7 214.7	357.7 249.8	349.7 289.3
-10. 9.1	TR BHP			431.0 102.6	423.4 171.6	414.8 217.3	406.3 248.2	397.1 290.1
-5. 12.2	TR BHP			487.2 59.2	478.7 148.5	469.3 213.6	459.7 249.3	449.8 287.9
0. 15.7	TR BHP				539.4 113.5	529.4 200.3	518.2 251.0	507.8 285.8

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 399

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 3.6	-10.0 9.1	0.0 15.7	10.0 23.8	20.0 33.5	30.0 45.1	40.0 58.6
-80. 24.3*	TR BHP	66.4 130.1	64.1 145.1	61.5 161.1	58.6 178.0	55.6 208.5	52.4 257.3	49.0 353.7
-75. 23.2*	TR BHP	80.1 134.7	77.8 150.6	75.0 166.9	71.9 183.9	68.7 210.0	65.3 247.0	61.7 306.8
-70. 21.9*	TR BHP	96.0 138.3	93.4 155.8	90.6 173.5	87.3 191.2	83.8 215.5	80.2 246.8	76.3 291.3
-65. 20.4*	TR BHP	114.3 139.9	111.5 161.4	108.4 180.4	104.9 199.3	101.2 223.1	97.3 251.6	93.2 288.7
-60. 18.6*	TR BHP	135.2 140.7	132.1 165.0	128.8 187.0	125.1 207.3	121.1 231.7	116.8 259.3	112.4 292.6
-55. 16.6*	TR BHP	159.1 140.3	155.7 166.0	152.0 192.9	148.1 215.7	143.7 240.5	139.1 268.4	134.3 300.2
-50. 14.3*	TR BHP	186.1 140.5	182.4 166.8	178.4 195.6	174.1 222.9	169.2 249.2	164.3 278.1	159.1 309.7
-45. 11.7*	TR BHP	216.3 144.1	212.5 166.1	208.2 196.3	203.6 228.5	198.2 257.5	192.7 287.1	187.2 320.2
-40. 8.7*	TR BHP	250.9 142.5	246.5 167.9	241.7 196.4	236.7 230.2	230.8 265.0	224.6 296.1	218.7 330.0
-35. 5.4*	TR BHP	290.0 130.7	284.3 170.7	279.3 196.5	273.7 230.7	267.4 268.8	260.8 305.3	253.6 338.7
-30. 1.6*	TR BHP	333.7 105.4	327.2 165.0	321.3 199.9	315.2 230.9	308.2 270.0	300.8 310.9	293.4 349.5
-25. 1.3	TR BHP	382.4 63.1	375.1 147.9	368.1 200.3	361.6 232.4	353.6 270.4	345.6 314.0	337.3 357.1
-20. 3.6	TR BHP		428.4 116.6	420.5 189.5	413.1 235.7	404.3 269.8	395.3 315.3	386.2 362.1
-15. 6.2	TR BHP		487.5 68.5	478.6 166.6	470.1 232.2	460.5 270.4	450.5 314.6	440.4 364.3
-10. 9.1	TR BHP			542.8 129.2	533.2 216.1	522.4 273.7	511.6 312.5	500.1 365.3
-5. 12.2	TR BHP			613.5 74.6	602.8 187.0	591.0 269.0	578.8 313.9	566.5 362.5
0. 15.7	TR BHP				679.2 142.9	666.7 252.3	652.6 316.1	639.4 359.9

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 480

R-717

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20 3.6	-10 9.1	0 15.7	10 23.8	20 33.5	30 45.1	40 58.6
-80 24.3*	TR BHP	79.9 156.5	77.1 174.6	74.0 193.8	70.5 214.1	66.9 250.8	63.0 309.5	58.9 425.5
-75 23.2*	TR BHP	96.4 162.0	93.6 181.2	90.2 200.8	86.5 221.2	82.6 252.6	78.6 297.1	74.2 369.1
-70 21.9*	TR BHP	115.5 166.4	112.4 187.4	109.0 208.7	105.0 230.0	100.8 259.2	96.5 296.9	91.8 350.4
-65 20.4*	TR BHP	137.5 168.3	134.1 194.2	130.4 217.0	126.2 239.8	121.7 268.4	117.1 302.7	112.1 347.3
-60 18.6*	TR BHP	162.6 169.3	158.9 198.5	154.9 225.0	150.5 249.4	145.7 278.7	140.5 311.9	135.2 352.0
-55 16.6*	TR BHP	191.4 168.8	187.3 199.7	182.9 232.1	178.2 259.5	172.9 289.3	167.3 322.9	161.6 361.1
-50 14.3*	TR BHP	223.9 169.0	219.4 200.7	214.6 235.3	209.4 268.2	203.5 299.8	197.7 334.6	191.4 372.6
-45 11.7*	TR BHP	260.2 173.4	255.6 199.8	250.5 236.2	244.9 274.9	238.4 309.8	231.8 345.4	225.2 385.2
-40 8.7*	TR BHP	301.8 171.4	296.5 202.0	290.8 236.3	284.8 276.9	277.7 318.8	270.2 356.2	263.1 397.0
-35 5.4*	TR BHP	348.9 157.2	342.0 205.4	336.0 236.4	329.3 277.5	321.7 323.4	313.7 367.3	305.1 407.5
-30 1.6*	TR BHP	401.4 126.8	393.6 198.5	386.5 240.5	379.2 277.8	370.8 324.8	361.9 374.0	353.0 420.5
-25 1.3	TR BHP	460.0 75.9	451.2 177.9	442.8 241.0	435.0 279.6	425.4 325.3	415.8 377.7	405.8 429.6
-20 3.6	TR BHP		515.4 140.3	505.9 228.0	497.0 283.5	486.4 324.6	475.5 379.3	464.6 435.6
-15 6.2	TR BHP		586.5 82.4	575.8 200.4	565.5 279.3	554.0 325.3	542.0 378.5	529.8 438.3
-10 9.1	TR BHP			653.0 155.4	641.4 260.0	628.5 329.3	615.5 375.9	601.6 439.5
-5 12.2	TR BHP			738.0 89.7	725.2 225.0	711.0 323.6	696.3 377.6	681.5 436.1
0 15.7	TR BHP				817.1 171.9	802.0 303.5	785.1 380.3	769.2 433.0

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 100

R-22		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)								
-80 20.2*	TR BHP	24.32 45.87	23.68 51.22	22.96 55.75	22.35 59.76	21.55 65.58	20.73 71.54	19.86 79.64
-75 18.5*	TR BHP	28.55 47.90	27.82 53.01	27.05 58.07	26.29 62.20	25.39 68.08	24.47 73.82	23.50 81.07
-70 16.6*	TR BHP	33.38 49.64	32.46 54.88	31.70 60.29	30.80 64.82	29.74 70.82	28.71 76.58	27.62 83.42
-65 14.4*	TR BHP	38.87 50.74	37.76 57.07	36.81 62.04	35.96 67.47	34.58 73.68	33.49 79.63	32.28 86.34
-60 12.0*	TR BHP	45.03 51.16	43.80 58.56	42.62 64.49	41.64 69.58	40.32 76.56	38.88 82.79	37.51 89.60
-55 9.2*	TR BHP	52.02 50.89	50.58 59.37	49.19 66.43	47.99 71.84	46.63 79.19	45.02 85.86	43.38 93.03
-50 6.2*	TR BHP	59.84 51.40	58.15 59.23	56.63 67.63	55.09 74.17	53.66 81.45	51.93 88.87	50.03 96.40
-45 2.7*	TR BHP	68.57 50.58	66.67 59.09	64.91 67.99	63.18 75.75	61.56 84.27	59.71 91.56	57.50 99.63
-40 0.5	TR BHP	78.28 47.60	76.13 59.37	74.11 67.38	72.25 76.56	70.37 86.28	68.44 94.54	66.00 102.77
-35 2.6	TR BHP	89.02 41.71	86.61 58.14	84.35 67.30	82.24 76.29	80.23 87.34	78.15 97.22	75.54 105.91
-30 4.9	TR BHP	100.86 32.22	98.19 54.63	95.64 67.29	93.24 75.39	91.14 87.52	88.86 98.47	86.22 109.20
-25 7.4	TR BHP	113.88 18.53	110.94 47.73	108.07 65.87	105.46 75.38	103.10 86.62	100.73 98.95	97.89 111.15
-20 10.1	TR BHP		124.93 36.79	121.76 61.69	118.76 75.26	116.30 85.93	113.68 98.37	110.67 111.82
-15 13.2	TR BHP		140.24 21.11	136.75 53.76	133.38 73.54	130.73 85.60	127.93 97.15	124.78 111.69
-10 16.5	TR BHP			153.12 41.34	149.40 68.66	146.48 85.24	143.65 96.21	139.95 110.52
-5 20.1	TR BHP			170.97 23.69	166.87 59.67	163.70 83.26	160.56 95.70	156.98 109.61
0 24.0	TR BHP				185.88 45.79	182.45 77.80	179.12 95.25	175.22 108.01

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 134

R-22

SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
-80. 20.2*	TR BHP	32.3 62.6	31.5 68.5	30.5 74.1	29.6 79.9	28.5 87.3	27.4 95.7	26.2 105.5
-75. 18.5*	TR BHP	37.9 65.4	37.0 70.9	36.0 77.1	34.9 83.2	33.6 90.7	32.3 98.7	31.0 107.7
-70. 16.6*	TR BHP	44.3 67.8	43.2 73.4	42.1 80.1	40.9 86.7	39.4 94.3	38.0 102.4	36.5 111.1
-65. 14.4*	TR BHP	51.6 69.4	50.2 76.3	48.9 82.4	47.7 90.2	45.9 98.1	44.3 106.4	42.6 115.1
-60. 12.0*	TR BHP	59.8 70.0	58.2 78.3	56.7 85.7	55.2 93.1	53.4 101.9	51.4 110.6	49.5 119.7
-55. 9.2*	TR BHP	69.1 69.8	67.3 79.4	65.4 88.3	63.7 96.1	61.8 105.5	59.5 114.7	57.3 124.4
-50. 6.1*	TR BHP	79.5 70.6	77.3 79.2	75.3 89.9	73.1 99.2	71.1 108.5	68.7 118.8	66.1 128.8
-45. 2.7*	TR BHP	91.2 69.4	88.7 79.1	86.3 90.4	83.8 101.3	81.6 112.2	79.0 122.4	75.9 133.2
-40. .5	TR BHP	104.1 65.2	101.3 79.6	98.6 89.6	95.9 102.4	93.3 114.9	90.6 126.4	87.2 137.5
-35. 2.6	TR BHP	118.4 57.4	115.2 78.1	112.2 89.5	109.2 102.1	106.4 116.3	103.4 129.9	99.8 141.7
-30. 4.9	TR BHP	134.2 44.5	130.7 73.5	127.2 89.6	123.8 100.9	120.9 116.6	117.6 131.6	114.0 146.1
-25. 7.4	TR BHP	151.5 26.0	147.7 64.4	143.8 87.8	140.0 101.0	136.9 115.4	133.4 132.3	129.4 148.7
-20. 10.2	TR BHP		166.3 49.9	162.0 82.5	157.7 100.9	154.4 114.5	150.6 131.5	146.4 149.6
-15. 13.2	TR BHP		186.8 29.2	182.0 72.1	177.2 98.7	173.6 114.1	169.5 129.9	165.1 149.5
-10. 16.5	TR BHP			203.8 55.8	198.5 92.3	194.6 113.7	190.4 128.7	185.4 148.0
-5. 20.1	TR BHP			227.7 32.5	221.8 80.5	217.6 111.2	212.8 128.4	207.8 146.7
0. 24.0	TR BHP				247.2 62.1	242.6 104.2	237.5 127.9	232.0 144.7

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 177

R-22		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)								
-80. 20.2*	TR BHP	43.1 79.9	42.0 87.6	40.7 94.9	39.6 102.6	37.9 111.5	36.2 121.4	34.4 132.9
-75. 18.5*	TR BHP	50.6 82.5	49.4 90.8	48.0 99.0	46.5 107.0	44.6 116.0	42.7 125.6	40.7 136.2
-70. 16.6*	TR BHP	59.2 84.8	57.6 93.6	56.2 102.9	54.5 111.6	52.3 120.8	50.1 130.4	47.8 140.7
-65. 14.4*	TR BHP	68.9 86.7	67.0 96.1	65.3 106.0	63.6 116.2	61.0 125.8	58.4 135.8	55.9 146.1
-60. 12.0*	TR BHP	79.8 87.5	77.7 98.4	75.6 109.0	73.7 119.9	70.9 130.8	67.8 141.3	65.0 152.1
-55. 9.2*	TR BHP	92.2 87.1	89.8 99.8	87.2 111.6	84.9 123.2	82.0 135.4	78.6 146.7	75.2 158.2
-50. 6.1*	TR BHP	106.1 87.8	103.2 99.6	100.4 113.6	97.5 126.0	94.4 139.3	90.6 152.0	86.7 164.0
-45. 2.7*	TR BHP	121.6 86.1	118.3 99.3	115.1 114.3	111.8 128.6	108.3 142.7	104.2 156.7	99.7 169.7
-40. .5	TR BHP	138.9 80.6	135.1 99.7	131.5 113.3	127.9 130.0	123.9 145.5	119.5 160.8	114.4 175.3
-35. 2.6	TR BHP	157.9 70.7	153.7 97.4	149.7 113.0	145.6 129.6	141.2 147.3	136.5 164.1	131.0 180.3
-30. 4.9	TR BHP	179.0 54.6	174.3 91.4	169.7 112.8	165.1 128.1	160.5 147.7	155.2 166.3	149.6 184.5
-25. 7.4	TR BHP	202.1 31.8	197.0 79.8	191.8 110.2	186.8 128.0	181.6 146.2	176.0 167.2	169.9 187.3
-20. 10.2	TR BHP		221.9 61.6	216.1 103.0	210.4 127.5	204.9 145.0	198.7 166.3	192.2 188.6
-15. 13.2	TR BHP		249.1 35.9	242.8 89.8	236.3 124.3	230.4 144.3	223.7 164.3	216.7 188.5
-10. 16.5	TR BHP			271.9 69.2	264.8 115.8	258.2 143.4	251.2 162.7	243.3 186.7
-5. 20.1	TR BHP			303.6 40.2	295.8 100.6	288.6 139.8	280.9 162.0	272.8 185.0
0. 24.0	TR BHP				329.6 77.4	321.8 130.4	313.5 161.0	304.6 182.5

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 222

R-22			SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
			-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)	-80. 20.2*	TR BHP	54.3 100.6	52.9 110.3	51.3 119.6	49.8 129.2	47.7 140.4	45.5 152.9	43.3 167.4
	-75. 18.5*	TR BHP	63.7 103.9	62.2 114.3	60.4 124.7	58.6 134.7	56.2 146.0	53.8 158.1	51.2 171.5
	-70. 16.6*	TR BHP	74.5 106.7	72.5 117.9	70.8 129.6	68.6 140.5	65.8 152.1	63.1 164.3	60.2 177.2
	-65. 14.4*	TR BHP	86.8 109.2	84.4 121.0	82.2 133.5	80.1 146.4	76.8 158.4	73.6 171.0	70.4 184.0
	-60. 12.0*	TR BHP	100.5 110.2	97.9 124.0	95.2 137.2	92.8 151.0	89.3 164.7	85.4 178.0	81.8 191.5
	-55. 9.2*	TR BHP	116.1 109.7	113.0 125.7	109.9 140.5	106.9 155.2	103.3 170.5	98.9 184.7	94.6 199.2
	-50. 6.1*	TR BHP	133.6 110.6	129.9 125.4	126.5 143.1	122.8 158.6	118.9 175.4	114.1 191.3	109.2 206.5
	-45. 2.7*	TR BHP	153.1 108.4	149.0 125.0	145.0 143.9	140.8 161.9	136.4 179.8	131.3 197.3	125.5 213.7
	-40. .5	TR BHP	174.8 101.5	170.2 125.6	165.6 142.6	161.1 163.7	156.0 183.2	150.5 202.5	144.1 220.7
	-35. 2.6	TR BHP	198.9 89.0	193.6 122.7	188.5 142.3	183.4 163.2	177.8 185.5	171.9 206.7	165.0 227.1
	-30. 4.9	TR BHP	225.4 68.8	219.5 115.1	213.7 142.0	207.9 161.3	202.1 185.9	195.5 209.4	188.4 232.3
	-25. 7.4	TR BHP	254.5 40.1	248.1 100.5	241.5 138.7	235.2 161.1	228.6 184.1	221.6 210.5	214.0 235.9
	-20. 10.2	TR BHP		279.4 77.6	272.1 129.7	264.9 160.6	258.0 182.6	250.2 209.4	242.0 237.5
	-15. 13.2	TR BHP		313.7 45.2	305.7 113.0	297.6 156.5	290.1 181.7	281.7 206.9	272.9 237.3
	-10. 16.5	TR BHP			342.4 87.2	333.4 145.8	325.1 180.5	316.4 204.9	306.4 235.2
	-5. 20.1	TR BHP			382.4 50.7	372.5 126.7	363.4 176.0	353.7 204.0	343.5 233.0
	0. 24.0	TR BHP				415.1 97.4	405.2 164.3	394.7 202.7	383.6 229.8

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 270

R-22		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)								
-80. 20.2*	TR BHP	67.3 121.7	65.4 136.1	63.3 148.4	61.6 159.4	59.0 174.0	56.3 188.7	53.5 208.5
-75. 18.5*	TR BHP	79.0 125.5	76.8 141.0	74.6 154.8	72.4 166.1	69.5 181.0	66.4 195.1	63.3 212.9
-70. 16.6*	TR BHP	92.3 128.9	89.7 145.3	87.4 160.8	84.9 173.2	81.4 188.5	78.0 202.7	74.5 219.6
-65. 14.4*	TR BHP	107.5 131.8	104.3 149.2	101.6 165.6	99.0 180.4	94.9 196.2	91.0 211.0	87.0 227.6
-60. 12.0*	TR BHP	124.5 132.8	121.0 152.8	117.6 170.2	114.7 186.2	110.3 204.0	105.6 219.6	101.2 236.4
-55. 9.2*	TR BHP	143.9 132.0	139.7 154.9	135.7 174.1	132.2 191.2	127.6 211.2	122.3 227.9	117.0 245.7
-50. 6.1*	TR BHP	165.5 132.9	160.6 154.5	156.2 177.3	151.8 195.5	146.9 217.1	141.1 236.0	135.0 254.8
-45. 2.7*	TR BHP	189.7 130.3	184.2 154.0	179.1 178.2	174.1 199.4	168.5 222.5	162.3 243.3	155.2 263.5
-40. .5	TR BHP	216.5 122.2	210.3 154.2	204.5 176.6	199.1 201.6	192.7 226.7	186.0 249.7	178.1 272.0
-35. 2.6	TR BHP	246.2 106.7	239.3 150.5	232.8 176.1	226.7 200.9	219.7 229.5	212.5 254.8	203.9 279.7
-30. 4.9	TR BHP	279.0 82.1	271.4 140.9	264.0 175.6	257.0 198.5	249.6 230.0	241.6 258.1	232.8 286.2
-25. 7.4	TR BHP	315.1 47.1	306.6 122.6	298.3 171.3	290.7 198.1	282.5 227.7	274.0 259.4	264.4 290.4
-20. 10.2	TR BHP		345.4 94.2	336.2 159.8	327.5 197.2	318.7 225.8	309.3 258.0	299.0 292.3
-15. 13.2	TR BHP		387.8 53.9	377.7 138.7	367.9 192.1	358.3 224.5	348.2 254.8	337.3 292.1
-10. 16.5	TR BHP			423.0 106.3	412.2 178.7	401.6 222.9	391.1 252.2	378.9 289.5
-5. 20.1	TR BHP			472.4 60.7	460.5 154.7	448.9 217.0	437.2 250.4	424.6 286.7
0. 24.0	TR BHP				513.1 118.3	500.5 202.1	487.9 248.5	474.2 282.3

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 316

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
-80. 20.2*	TR BHP	77.3 143.2	75.3 157.0	73.0 170.1	70.9 183.8	67.9 199.8	64.8 217.6	61.6 238.2
-75. 18.5*	TR BHP	90.7 147.8	88.5 162.7	86.0 177.4	83.4 191.6	80.0 207.8	76.5 225.0	72.9 244.0
-70. 16.6*	TR BHP	106.0 151.9	103.2 167.7	100.7 184.4	97.7 199.9	93.7 216.4	89.7 233.7	85.7 252.2
-65. 14.4*	TR BHP	123.5 155.3	120.1 172.1	117.0 189.9	114.0 208.2	109.2 225.4	104.7 243.3	100.2 261.9
-60. 12.0*	TR BHP	143.0 156.7	139.3 176.4	135.4 195.2	132.0 214.9	127.0 234.4	121.6 253.2	116.4 272.4
-55. 9.2*	TR BHP	165.2 156.0	160.8 178.9	156.3 199.9	152.2 220.8	146.9 242.7	140.8 262.8	134.7 283.4
-50. 6.1*	TR BHP	190.1 157.3	184.9 178.5	180.0 203.6	174.7 225.7	169.1 249.6	162.4 272.3	155.3 293.8
-45. 2.7*	TR BHP	217.9 154.2	212.0 177.9	206.3 204.7	200.4 230.4	194.1 255.8	186.8 280.7	178.6 304.1
-40. .5	TR BHP	248.8 144.4	242.1 178.7	235.6 203.0	229.2 232.9	221.9 260.6	214.1 288.1	205.0 314.1
-35. 2.6	TR BHP	283.0 126.6	275.4 174.6	268.2 202.5	260.9 232.2	253.0 263.9	244.5 294.1	234.7 323.1
-30. 4.9	TR BHP	320.7 97.9	312.3 163.7	304.1 202.0	295.8 229.6	287.5 264.6	278.1 297.9	268.0 330.6
-25. 7.4	TR BHP	362.1 57.0	352.9 142.9	343.6 197.4	334.7 229.3	325.3 262.0	315.4 299.6	304.4 335.6
-20. 10.2	TR BHP		397.5 110.4	387.2 184.6	376.9 228.5	367.1 259.8	356.0 298.0	344.3 337.9
-15. 13.2	TR BHP		446.3 64.3	434.9 160.8	423.4 222.7	412.7 258.5	400.7 294.5	388.2 337.7
-10. 16.5	TR BHP			487.1 124.0	474.4 207.5	462.6 256.9	450.1 291.6	436.0 334.6
-5. 20.1	TR BHP			544.1 72.1	530.0 180.2	517.1 250.5	503.3 290.3	488.8 331.5
0. 24.0	TR BHP				590.6 138.6	576.5 233.7	561.6 288.5	545.8 326.9

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz

RWF 399

R-22		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)								
-80. 20.2*	TR BHP	97.3 180.3	94.8 197.7	91.9 214.2	89.3 231.5	85.5 251.6	81.6 274.0	77.6 299.9
-75. 18.5*	TR BHP	114.2 186.1	111.4 204.9	108.3 223.4	105.0 241.3	100.7 261.6	96.3 283.4	91.8 307.2
-70. 16.6*	TR BHP	133.5 191.2	130.0 211.2	126.8 232.2	123.0 251.7	118.0 272.6	113.0 294.3	107.9 317.5
-65. 14.4*	TR BHP	155.5 195.6	151.2 216.8	147.3 239.1	143.6 262.2	137.6 283.8	131.9 306.4	126.1 329.7
-60. 12.0*	TR BHP	180.1 197.4	175.4 222.1	170.6 245.8	166.3 270.6	159.9 295.2	153.1 318.9	146.6 343.1
-55. 9.2*	TR BHP	208.1 196.5	202.5 225.2	196.8 251.8	191.6 278.0	185.0 305.6	177.3 331.0	169.6 356.9
-50. 6.1*	TR BHP	239.4 198.1	232.8 224.8	226.6 256.4	220.0 284.2	213.0 314.3	204.5 342.8	195.6 370.0
-45. 2.7*	TR BHP	274.4 194.2	266.9 224.1	259.8 257.8	252.3 290.1	244.4 322.1	235.2 353.4	224.9 382.9
-40. .5	TR BHP	313.3 181.9	304.9 225.0	296.6 255.6	288.6 293.3	279.4 328.2	269.6 362.8	258.2 395.5
-35. 2.6	TR BHP	356.3 159.4	346.9 219.8	337.7 255.0	328.5 292.4	318.6 332.4	307.9 370.3	295.6 406.9
-30. 4.9	TR BHP	403.8 123.3	393.3 206.2	382.9 254.4	372.5 289.1	362.0 333.2	350.2 375.2	337.5 416.3
-25. 7.4	TR BHP	456.0 71.8	444.4 180.0	432.7 248.6	421.4 288.7	409.7 329.9	397.1 377.2	383.4 422.6
-20. 10.2	TR BHP		500.6 139.1	487.6 232.5	474.7 287.7	462.2 327.2	448.3 375.3	433.6 425.5
-15. 13.2	TR BHP		562.0 81.0	547.7 202.5	533.2 280.4	519.7 325.5	504.7 370.8	488.9 425.2
-10. 16.5	TR BHP			613.4 156.2	597.4 261.3	582.5 323.5	566.8 367.1	549.0 421.3
-5. 20.1	TR BHP			685.1 90.8	667.5 227.0	651.2 315.4	633.7 365.6	615.5 417.5
0. 24.0	TR BHP				743.7 174.6	726.0 294.3	707.3 363.2	687.3 411.7

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

BOOSTER - CAPACITY and BRAKE HORSEPOWER RATING @ 3550 RPM 60 Hz.

RWF 480

R-22

SATURATED SUCTION TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG (* in Hg)		SATURATED INTERMEDIATE TEMPERATURE, °F/CORRESPONDING PRESSURE, PSIG						
		-20.0 10.2	-10.0 16.5	0.0 24.0	10.0 32.8	20.0 43.0	30.0 54.9	40.0 68.5
-80 20.2*	TR BHP	117.1 216.9	114.0 237.8	110.6 257.7	107.4 278.5	102.9 302.7	98.2 329.6	93.4 360.8
-75 18.5*	TR BHP	137.4 223.9	134.0 246.5	130.3 268.8	126.3 290.3	121.1 314.7	115.8 340.9	110.4 369.6
-70 16.6*	TR BHP	160.6 230.0	156.4 254.1	152.5 279.3	148.0 302.8	142.0 327.9	135.9 354.0	129.8 382.0
-65 14.4*	TR BHP	187.1 235.3	181.9 260.8	177.2 287.6	172.8 315.4	165.5 341.4	158.7 368.6	151.7 396.6
-60 12.0*	TR BHP	216.7 237.5	211.0 267.2	205.2 295.7	200.1 325.5	192.4 355.1	184.2 383.6	176.4 412.8
-55 9.2*	TR BHP	250.3 236.4	243.6 270.9	236.8 302.9	230.5 334.4	222.6 367.6	213.3 398.2	204.0 429.4
-50 6.1*	TR BHP	288.0 238.3	280.1 270.4	272.6 308.5	264.7 341.9	256.2 378.1	246.0 412.4	235.3 445.1
-45 2.7*	TR BHP	330.1 233.6	321.1 269.6	312.5 310.1	303.5 349.0	294.0 387.5	282.9 425.1	270.6 460.6
-40 0.5	TR BHP	376.9 218.8	366.8 270.7	356.8 307.5	347.2 352.8	336.1 394.8	324.3 436.5	310.6 475.8
-35 2.6	TR BHP	428.6 191.8	417.3 264.4	406.3 306.8	395.2 351.8	383.3 399.9	370.4 445.5	355.6 489.5
-30 4.9	TR BHP	485.8 148.3	473.1 248.1	460.6 306.0	448.1 347.8	435.5 400.8	421.3 451.4	406.0 500.8
-25 7.4	TR BHP	548.6 86.4	534.6 216.5	520.5 299.1	506.9 347.3	492.9 396.9	477.7 453.8	461.2 508.4
-20 10.2	TR BHP		602.2 167.3	586.6 279.7	571.1 346.1	556.0 393.6	539.3 451.5	521.6 511.9
-15 13.2	TR BHP		676.1 97.4	658.9 243.6	641.4 337.3	625.2 391.6	607.2 446.1	588.2 511.5
-10 16.5	TR BHP			737.9 187.9	718.7 314.3	700.8 389.2	681.9 441.6	660.5 506.8
-5 20.1	TR BHP			824.2 109.2	803.0 273.1	783.4 379.4	762.3 439.8	740.5 502.3
0 24	TR BHP				894.7 210.0	873.4 354.0	850.9 436.9	826.8 495.3

NOTE: Capacities Based on Liquid at Intermediate Temperature and no Suction Superheat.

LIQUID INJECTION OIL COOLING

High Stage compressor units may be supplied with single-port (low Vi) or dual-port (low Vi and high Vi) liquid injection oil cooling. Single port will be furnished for low compression ratio operation and dual port for high compression ratio operation. Booster compressor units use single-port liquid injection oil cooling due to the typically lower compression ratios.

The control system on high stage units with dual-port liquid injection oil cooling automatically switches the liquid refrigerant supply to the high port when the compressor is operating at higher compression ratios (above 3.5 Vi) for best efficiency.

The following table gives the evaporator temperature limits for liquid injection use and single-port application.

CONDENSING TEMPERATURE	MAX. EVAP TEMP LIQ. INJ. USE		MIN. EVAP TEMP* SINGLE PORT (LOW Vi)
	R-717	R-22	R-717 & R-22
75°F	+10°F	+ 5°F	-23°F
85°F	+25°F	+15°F	-17°F
95°F	+35°F	+25°F	-11°F
105°F	+40°F	+35°F	- 4°F

* Dual Injection Kit will be shipped by Frick below these temperatures.

Where low compression ratios are anticipated, thermosyphon or water-cooled oil cooling should be used.

It is **IMPERATIVE** that an uninterrupted supply of high pressure liquid refrigerant be provided to the injection system at all times. Two items are of extreme importance, the design of the receiver/liquid injection supply and the size of the liquid line.

It is recommended that the receiver be oversized sufficiently to retain a five minute supply of refrigerant for oil cooling. The evaporator supply must be secondary to this consideration. Two methods of accomplishing this are shown.

The dual dip tube method (Figure 1) uses two dip tubes in the receiver. The liquid tube is below the evaporator tube to ensure continued oil cooling when the receiver level is low.

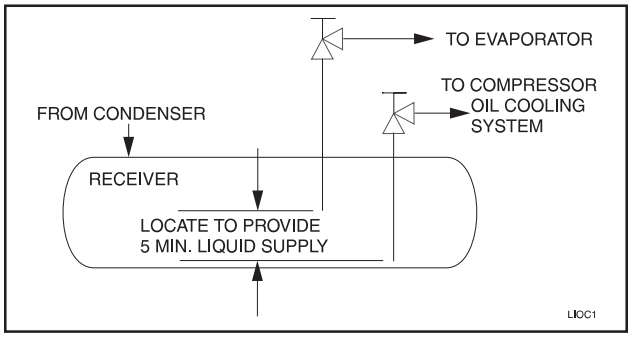


Figure 1

The level control method (Figure 2) utilizes a float level control on the receiver to close a solenoid valve feeding the evaporator when the liquid falls below that amount necessary for five minutes of liquid injection oil cooling.

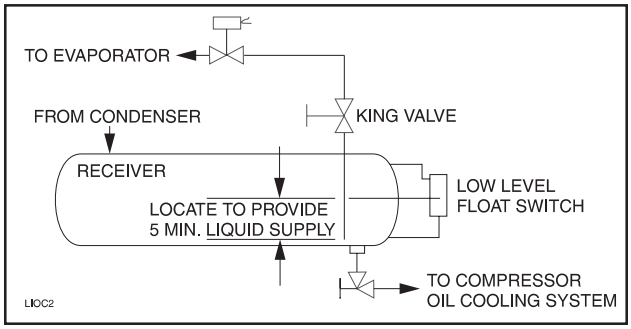
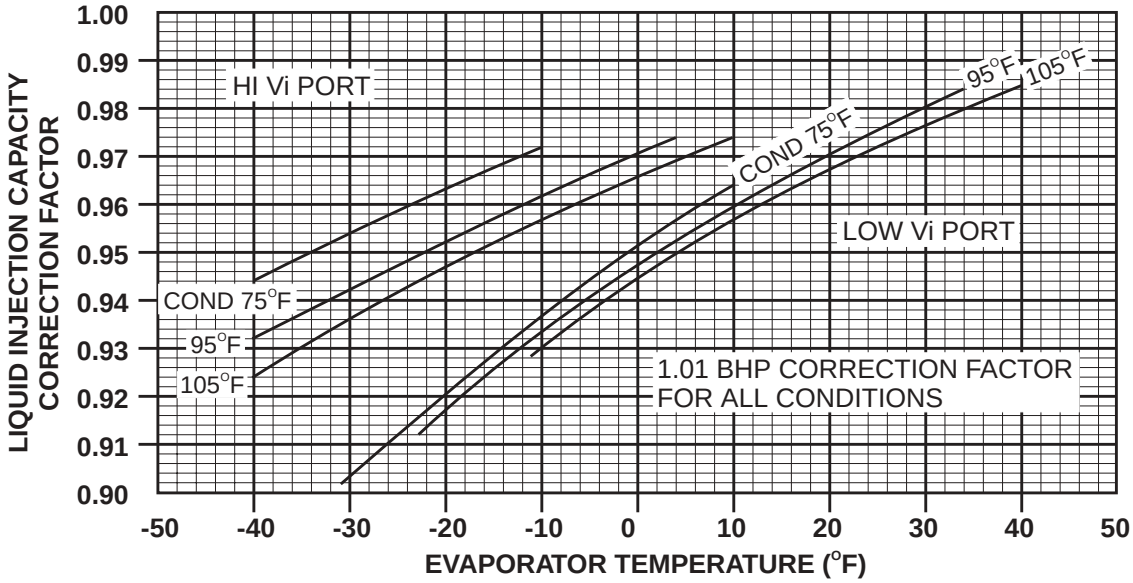


Figure 2

HIGH STAGE LIQUID INJECTION CORRECTION FACTORS - R-717 and R-22



BOOSTER LIQUID INJECTION CORRECTION FACTORS - R-717 and R-22: No correction factor for either capacity (TR) or power (BHP).

Liquid line sizes and the additional receiver volume (quantity of refrigerant required for 5 minutes of liquid injection oil cooling) are given in the following table.

REF.		RWF MODEL	LIQUID LINE SIZES - Inches (1)		5 MINUTE LIQUID SUPPLY	
			PIPE	TUBING OD	MASS LB	VOL CU FT
HIGH STAGE	R717	100,134	3/4	—	80	2.0
		177,222	1	—	140	4.0
		270	1-1/4	—	180	5.0
		316,399	1-1/4	—	250	7.0
		480	2	—	310	8.5
	R22	100,134	1-1/4	1-1/8	290	4.0
		177,222	1-1/2	1-3/8	570	8.0
		270	2	2-1/8	700	10.0
		316,399	2	2-1/8	1050	14.0
		480	2-1/2	2-5/8	1300	18.0
BOOSTER	R717	100,134	1/2	—	20	0.5
		177,222	3/4	—	30	1.0
		270	1	—	40	1.5
		316,399	1	—	40	1.5
		480	1	—	50	1.5
	R22	100,134	3/4	5/8	44	0.6
		177,222	3/4	7/8	59	0.8
		270	3/4	7/8	92	1.2
		316,399	3/4	7/8	92	1.2
		480	1	1-1/8	114	1.6

1. Lines are sized for a maximum 100 foot liquid line. For longer runs, increase line size accordingly.

THERMOSYPHON OIL COOLING

Thermosyphon oil coolers, like water (or glycol)-cooled oil coolers, eliminate the capacity and power penalties associated with liquid injection oil cooling. Thermosyphon oil coolers have the further advantages of eliminating water (or glycol) pump power consumption and maintenance, fouling, and potential system contamination.

The principle of operation is as follows (see diagram). A supply of high pressure liquid is maintained in a receiver at a predetermined minimum head above the oil cooler and below the condenser. Gravity causes the liquid refrigerant to flow to the oil cooler where a portion of the liquid is boiled off, thereby cooling the hot oil. New liquid from the receiver displaces the lighter refrigerant liquid/vapor mixture which rises to the receiver, dropping out the remaining liquid before allowing the vapor to return to the condenser, completing the cycle.

PIPING ARRANGEMENT FOR THERMOSYPHON OIL COOLING SYSTEMS

The components and piping of a thermosyphon oil cooling system include a liquid source at condensing pressure, adequate static heads to provide fluid flow, appropriate control valves, safety relief valves, service valves and pump-out connections. The arrangement of component placement and fluid flow requirements must be designed to suit the individual refrigeration system layout with consideration given to piping safety practices.

The component and piping arrangement shown below is intended only to illustrate the operating principles of thermosyphon oil cooling. Other component layouts may be better suited to a specific installation.

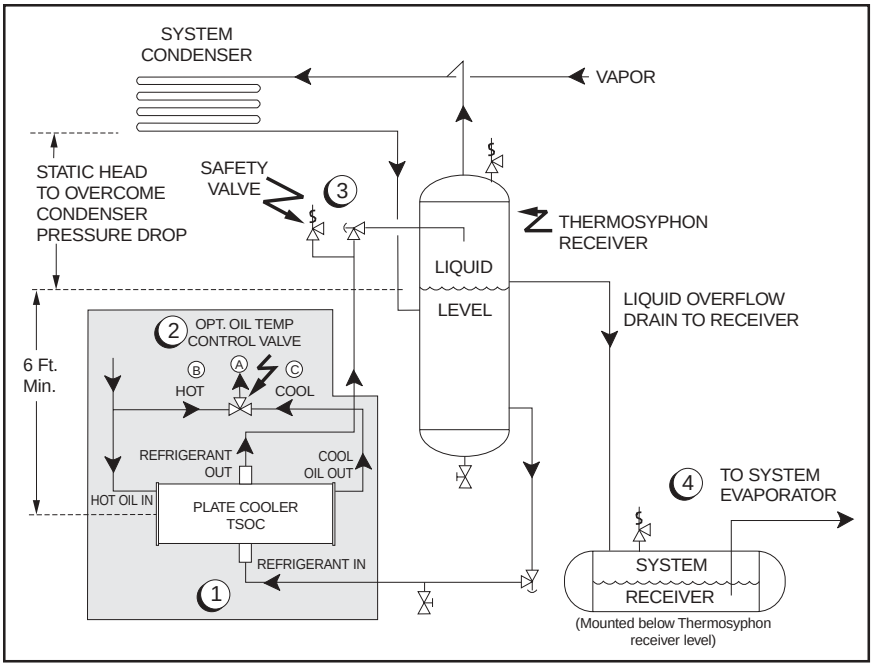


Figure 3

1. The thermosyphon oil cooler is supplied with the oil side piped to the compressor unit and stub ends supplied on the refrigerant side.
2. A three-way oil temperature control valve is required where condensing temperature is expected to go below 65°F.
3. A refrigerant-side safety valve is required in this location only when refrigerant isolation valves are installed between the cooler and thermosyphon receiver. If no valves are used between the cooler and TSOC receiver, the safety valve on the TSOC receiver must be sized to handle the volume of both vessels. Then, the safety valve on the cooler vent (liquid refrigerant side) can be eliminated.
4. The system receiver must be below the thermosyphon receiver in this arrangement.

WATER-COOLED OIL COOLER SELECTION

Required cooling water flow, GPM, is determined from the following formula.

$$GPM = \frac{OCHR}{500\ (T_o - T_i)}$$

OCHR - Oil Cooler Heat Rejection (BTU/HR)
See Tables
T_o - Cooling Water Outlet Temperature
(Not to exceed 110°F based upon 120°F oil out)
T_i - Cooling Water Inlet Temperature (°F)

OIL COOLER DATA TABLE

RWF MODEL	TYPICAL COOLER	CONNECTION	
		INLET	OUTLET
100/134 High Stage	116 Plates	3″	3″
100-222 Booster	66 Plates	2″	2″
177/222 High Stage	190 Plates	3″	3″
270 High Stage	288 Plates	3″	4″
316/399 Booster	56 Plates	3″	3″
316/399 High Stage	136 Plates	4″	5″
480 Booster	72 Plates	3″	3″
480 High Stage	188 Plates	4″	5″

OIL COOLER HEAT REJECTION (OCHR) - 1,000 BTU/HR

Based on 10°F superheat, 10°F subcooling, superheat enthalpy not contributing to refrigeration effect. For applications having greater than 10°F superheat, consult Frick.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - HIGH STAGE R-717							
		100	134	177	222	270	316	399	480
75	-40	211	273	353	439	564	629	787	947
	-35	212	272	353	438	566	628	786	946
	-30	211	271	351	436	566	625	781	940
	-25	211	268	348	431	563	619	773	930
	-20	209	264	343	423	557	608	759	913
	-15	205	258	334	412	546	592	738	888
	-10	200	250	323	397	530	570	710	854
	-5	193	239	308	377	509	543	675	812
	0	183	226	290	354	482	510	633	762
	5	172	210	269	327	449	471	584	703
	10	158	192	244	296	410	425	527	634
	15	142	171	216	261	365	376	464	558
	20	146	178	221	269	373	390	484	582
	25	130	157	191	232	324	336	416	500
	30	112	134	161	195	275	282	349	420
	35	93	110	131	158	226	230	283	340
	40	73	86	103	123	178	179	220	265

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - HIGH STAGE R-717							
		100	134	177	222	270	316	399	480
85	-40	256	333	427	532	680	763	957	1151
	-35	257	332	429	535	687	767	961	1156
	-30	258	333	431	536	692	770	964	1160
	-25	259	332	431	536	696	770	963	1158
	-20	259	331	430	533	697	767	959	1154
	-15	259	328	426	527	694	759	948	1140
	-10	256	323	419	518	687	746	931	1120
	-5	252	316	409	504	673	727	906	1090
	0	246	306	395	486	654	701	873	1050
	5	237	293	378	463	629	669	832	1001
	10	226	277	356	435	597	630	782	941
	15	213	259	331	403	558	584	724	871
	20	197	237	302	367	513	531	658	792
	25	179	214	271	327	462	474	586	705
	30	161	190	237	285	408	413	510	614
	35	141	165	205	245	354	355	437	526
	40	146	173	212	257	367	374	462	556
95	-40	309	402	510	637	811	913	1146	1379
	-35	309	401	514	642	821	920	1154	1388
	-30	310	401	518	646	831	928	1163	1399
	-25	313	403	522	650	841	935	1171	1409
	-20	315	404	525	653	848	939	1176	1415
	-15	317	404	526	653	854	941	1177	1416
	-10	317	403	524	649	855	937	1172	1410
	-5	316	400	519	642	852	928	1159	1394
	0	314	394	511	630	843	912	1138	1369
	5	309	385	498	614	827	889	1108	1333
	10	301	373	482	592	804	858	1069	1286
	15	291	357	461	565	774	820	1020	1227
	20	278	339	436	533	737	775	962	1157
	25	262	317	407	495	692	721	895	1077
	30	243	292	374	454	640	661	818	984
	35	224	266	337	408	582	595	736	885
	40	203	240	300	362	521	528	652	784
105	-40	374	489	605	757	961	1086	1363	1640
	-35	369	480	608	761	970	1092	1370	1648
	-30	370	480	615	768	983	1103	1384	1665
	-25	372	481	622	776	998	1116	1399	1683
	-20	376	485	628	783	1013	1128	1413	1700
	-15	380	488	634	789	1027	1138	1424	1713
	-10	384	490	637	792	1037	1144	1431	1722
	-5	386	490	639	792	1044	1146	1433	1724
	0	387	489	636	788	1046	1141	1426	1715
	5	386	484	630	779	1042	1130	1411	1697
	10	382	477	619	764	1030	1111	1385	1666
	15	376	466	604	744	1011	1083	1349	1623
	20	367	452	585	718	985	1047	1303	1568
	25	354	434	561	687	950	1003	1247	1500
	30	339	412	531	649	906	949	1179	1418
	35	321	387	497	606	854	887	1100	1323
	40	300	358	459	558	794	817	1013	1219
115	-40	456	596	719	901	1140	1291	1622	1951
	-35	444	579	717	897	1140	1287	1617	1945
	-30	438	570	722	903	1153	1298	1629	1960
	-25	440	571	732	914	1172	1315	1650	1985
	-20	444	574	742	926	1193	1333	1672	2011
	-15	450	579	752	937	1214	1352	1694	2038
	-10	456	585	760	947	1234	1368	1714	2062
	-5	461	589	767	954	1251	1380	1728	2079
	0	466	592	772	958	1265	1389	1737	2090
	5	469	592	772	958	1273	1391	1739	2092
	10	470	590	769	952	1275	1385	1730	2081
	15	468	585	761	941	1269	1371	1711	2058
	20	464	576	748	923	1255	1347	1680	2021
	25	456	563	730	899	1232	1314	1638	1971
	30	445	546	707	869	1202	1272	1584	1906
	35	431	524	679	832	1161	1221	1518	1826
	40	413	499	645	788	1110	1158	1438	1730

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - HIGH STAGE R-22							
		100	134	177	222	270	316	399	480
75	-40	146	185	241	298	393	429	536	645
	-35	140	177	229	283	376	409	510	614
	-30	134	168	216	267	357	386	481	579
	-25	126	156	201	248	334	359	447	538
	-20	115	142	184	226	307	327	407	490
	-15	103	127	163	200	275	291	362	435
	-10	91	110	142	174	240	253	314	378
	-5	77	94	120	146	204	213	264	318
	0	64	77	98	119	168	174	216	260
	5	51	61	77	93	132	136	168	202
	10	38	45	55	67	96	98	121	146
	15	26	30	35	42	61	62	76	91
	20	13	15	16	19	28	28	34	41
	25	1	1	(1)	(1)	(1)	(1)	(1)	(1)
	30	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	35	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	40	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
85	-40	190	241	313	388	510	561	701	843
	-35	185	234	304	377	498	545	681	819
	-30	180	227	294	364	484	527	658	792
	-25	174	218	283	349	468	506	632	760
	-20	167	208	269	331	448	482	600	722
	-15	158	195	252	310	422	451	562	676
	-10	147	180	233	285	392	416	517	622
	-5	135	164	212	259	359	378	470	565
	0	121	147	189	231	323	338	419	504
	5	108	129	166	203	286	297	368	443
	10	94	113	143	174	248	255	316	380
	15	81	96	122	148	211	216	268	322
	20	68	80	100	121	175	178	220	265
	25	55	64	80	96	140	141	174	209
	30	42	48	60	72	106	106	130	156
	35	29	33	40	48	71	71	87	105
	40	17	20	21	25	38	37	46	55
95	-40	238	304	394	490	640	707	885	1065
	-35	234	298	386	480	631	694	868	1044
	-30	231	292	379	469	622	680	850	1023
	-25	226	285	370	458	611	665	830	998
	-20	222	277	360	445	599	647	808	972
	-15	216	269	349	430	582	626	781	940
	-10	208	257	333	410	560	598	745	896
	-5	198	243	315	387	532	565	703	846
	0	187	228	294	361	501	528	657	790
	5	174	210	272	333	466	488	606	729
	10	160	193	249	304	429	446	554	666
	15	147	175	226	275	391	404	501	603
	20	133	158	203	246	353	362	448	539
	25	119	140	180	219	316	322	398	479
	30	105	123	158	191	279	282	349	420
	35	92	106	137	165	242	243	300	361
	40	78	90	115	138	205	204	252	303
105	-40	292	374	485	604	787	873	1094	1316
	-35	289	369	479	595	780	862	1079	1298
	-30	287	364	473	587	774	851	1065	1281
	-25	284	359	467	579	768	840	1051	1264
	-20	281	354	460	569	762	828	1035	1245
	-15	278	347	452	559	753	814	1016	1222
	-10	274	340	442	546	741	797	994	1196
	-5	267	330	429	528	723	773	964	1160
	0	259	318	413	508	700	744	926	1114
	5	249	303	393	482	671	708	881	1060
	10	237	287	372	455	638	670	832	1001
	15	223	269	349	426	602	628	779	937
	20	210	251	325	396	565	585	726	873
	25	196	233	301	366	526	541	670	806
	30	182	215	278	337	489	499	618	743
	35	167	196	254	308	450	456	564	678
	40	153	178	231	279	411	413	511	615

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - HIGH STAGE R-22							
		100	134	177	222	270	316	399	480
115	-40	354	455	590	736	955	1063	1333	1604
	-35	351	450	583	726	948	1051	1317	1584
	-30	349	446	578	719	945	1043	1305	1570
	-25	348	442	574	713	943	1036	1296	1559
	-20	347	439	570	707	941	1029	1287	1548
	-15	346	435	565	700	939	1021	1276	1535
	-10	344	430	559	692	935	1011	1263	1519
	-5	341	424	552	682	929	999	1246	1499
	0	337	416	542	669	917	981	1223	1471
	5	331	407	529	651	900	957	1192	1434
	10	322	393	510	627	874	923	1149	1382
	15	312	378	490	601	845	887	1103	1327
	20	299	360	467	572	811	846	1051	1264
	25	286	342	444	542	775	803	997	1199
	30	272	323	419	511	736	758	940	1131
	35	258	304	395	480	698	714	884	1063
	40	243	285	370	450	659	669	828	996
125	-40	427	550	712	889	1151	1285	1611	1938
	-35	422	542	702	876	1140	1268	1589	1912
	-30	420	538	697	869	1137	1259	1577	1897
	-25	420	535	694	864	1138	1255	1571	1890
	-20	421	533	693	861	1142	1253	1568	1886
	-15	422	532	691	858	1145	1251	1564	1882
	-10	422	530	689	854	1148	1248	1560	1877
	-5	422	527	686	849	1150	1243	1553	1868
	0	422	523	682	843	1150	1237	1544	1857
	5	420	518	675	834	1147	1226	1529	1839
	10	416	511	665	819	1136	1207	1505	1811
	15	410	500	649	798	1115	1179	1468	1766
	20	401	486	630	774	1090	1146	1425	1714
	25	389	469	608	746	1059	1106	1375	1654
	30	376	451	585	716	1025	1064	1322	1590
	35	363	432	561	685	989	1020	1265	1522
	40	348	412	535	652	949	972	1206	1451

1. Oil cooling not required.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - ECONOMIZED R-717							
		100	134	177	222	270	316	399	480
75	-40	211	271	350	435	562	624	781	940
	-35	211	270	349	433	563	621	777	935
	-30	210	268	347	430	562	617	771	928
	-25	209	265	343	424	558	609	761	915
	-20	207	260	337	416	551	598	745	896
	-15	203	254	328	404	539	581	723	870
	-10	197	245	316	388	522	558	695	836
	-5	190	234	301	368	499	530	659	793
	0	180	221	283	345	471	497	616	741
	5	168	205	261	318	438	457	567	682
	10	154	186	237	286	399	413	511	615
	15	139	166	209	252	355	363	449	540
	20	142	173	214	261	362	378	469	564
	25	126	151	184	224	314	325	402	484
	30	109	130	157	189	268	275	340	409
	35	92	109	131	157	225	228	282	339
	40	73	86	103	123	178	179	220	265
85	-40	258	334	428	533	685	764	957	1151
	-35	258	332	429	533	689	766	959	1154
	-30	259	332	430	533	693	767	959	1154
	-25	259	331	429	532	695	765	956	1150
	-20	259	328	426	528	695	760	949	1142
	-15	257	325	422	521	690	751	937	1127
	-10	255	319	414	510	681	736	917	1103
	-5	250	311	403	495	666	715	890	1071
	0	243	301	388	476	645	688	855	1029
	5	234	287	370	452	618	654	813	978
	10	222	271	348	424	585	614	763	918
	15	208	252	323	392	546	568	704	847
	20	192	231	294	356	500	516	639	769
	25	174	208	263	317	450	460	568	683
	30	156	185	230	276	395	400	494	594
	35	137	160	198	237	343	343	423	509
	40	144	170	208	252	360	367	454	546
95	-40	314	407	515	643	824	923	1158	1393
	-35	313	404	518	646	832	928	1163	1399
	-30	314	404	521	649	840	933	1169	1406
	-25	316	404	524	651	848	938	1174	1412
	-20	317	404	525	651	853	939	1175	1414
	-15	318	403	524	649	856	938	1172	1410
	-10	318	401	521	644	855	932	1163	1399
	-5	316	396	515	635	850	920	1148	1381
	0	312	389	505	622	838	901	1124	1352
	5	306	380	491	604	819	876	1091	1312
	10	298	367	474	581	795	844	1050	1263
	15	287	351	452	553	763	805	1000	1203
	20	273	332	427	521	725	758	941	1132
	25	257	310	398	484	679	705	874	1051
	30	239	286	365	443	627	645	799	961
	35	219	260	330	398	570	581	718	864
	40	200	235	294	354	511	516	637	766

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - ECONOMIZED R-717							
		100	134	177	222	270	316	399	480
105	-40	384	499	618	773	987	1109	1392	1675
	-35	377	489	620	774	993	1112	1395	1678
	-30	377	487	624	779	1004	1120	1404	1689
	-25	379	487	629	784	1017	1130	1415	1702
	-20	382	489	634	789	1029	1138	1425	1714
	-15	385	491	638	792	1039	1145	1432	1723
	-10	387	491	639	793	1047	1147	1434	1725
	-5	388	490	638	790	1051	1146	1431	1722
	0	388	487	634	784	1049	1138	1420	1708
	5	386	482	626	772	1042	1123	1401	1685
	10	381	473	614	756	1027	1100	1371	1649
	15	374	461	597	734	1005	1070	1332	1602
	20	364	446	576	707	976	1032	1284	1545
	25	351	427	551	674	939	986	1225	1474
	30	335	405	521	636	894	931	1156	1391
	35	316	379	487	593	841	869	1078	1297
	40	295	351	450	546	781	801	992	1193
115	-40	472	615	742	929	1183	1333	1674	2014
	-35	458	595	737	922	1180	1325	1663	2001
	-30	451	584	741	925	1189	1332	1670	2009
	-25	452	583	748	933	1206	1345	1686	2028
	-20	455	585	756	942	1224	1359	1703	2049
	-15	460	588	763	950	1242	1374	1720	2069
	-10	465	592	770	957	1258	1386	1734	2086
	-5	469	594	774	961	1271	1393	1743	2097
	0	472	595	776	962	1281	1397	1747	2102
	5	473	594	774	958	1286	1395	1742	2096
	10	473	590	769	950	1283	1385	1728	2079
	15	470	583	758	935	1273	1366	1703	2049
	20	464	572	743	915	1255	1339	1668	2007
	25	455	558	723	889	1229	1302	1621	1950
	30	443	540	699	857	1195	1258	1564	1882
	35	427	517	669	819	1152	1204	1496	1800
	40	409	491	635	775	1099	1140	1416	1703

1. Oil cooling not required.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - ECONOMIZED R-22							
		100	134	177	222	270	316	399	480
75	-40	143	179	232	286	382	414	516	621
	-35	137	171	221	272	365	394	490	589
	-30	130	162	208	256	347	371	463	557
	-25	122	150	194	238	324	345	429	516
	-20	112	137	176	216	296	314	390	469
	-15	100	122	156	191	264	278	346	416
	-10	87	106	136	166	231	241	299	360
	-5	74	89	114	139	195	203	251	302
	0	61	74	93	113	160	165	205	247
	5	49	58	73	88	126	129	160	192
	10	37	43	53	64	91	93	115	138
	15	25	29	34	41	59	59	73	88
	20	13	15	16	19	27	27	34	41
	25	1	1	(1)	(1)	(1)	(1)	(1)	(1)
	30	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	35	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	40	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
85	-40	186	234	304	376	499	544	679	817
	-35	182	228	295	364	488	528	659	793
	-30	177	220	285	352	474	511	638	768
	-25	171	212	274	338	458	491	612	736
	-20	164	202	261	321	438	467	581	699
	-15	154	189	244	300	413	437	543	653
	-10	143	175	225	275	382	402	500	602
	-5	131	159	205	250	349	366	454	546
	0	118	142	183	223	313	326	404	486
	5	105	125	161	195	277	286	355	427
	10	92	109	139	168	240	247	305	367
	15	79	93	118	143	205	209	259	312
	20	66	78	98	118	171	173	214	257
	25	54	63	78	94	138	139	171	206
	30	41	48	60	72	105	105	130	156
	35	29	33	40	48	71	71	87	105
	40	17	20	21	25	38	37	46	55
95	-40	235	297	385	477	632	691	864	1039
	-35	232	291	378	468	624	679	848	1020
	-30	228	286	371	458	615	666	831	1000
	-25	224	279	362	447	605	652	812	977
	-20	220	272	353	435	592	634	791	952
	-15	214	263	341	420	576	613	764	919
	-10	205	252	326	400	553	585	728	876
	-5	195	238	308	377	525	553	687	826
	0	184	223	288	352	493	516	641	771
	5	171	206	266	324	458	476	591	711
	10	157	188	243	296	421	435	540	650
	15	144	171	220	268	384	394	488	587
	20	131	154	198	240	347	354	438	527
	25	117	138	177	214	311	316	390	469
	30	104	122	156	188	276	278	343	413
	35	91	106	136	164	241	241	298	358
	40	78	90	116	139	206	205	253	304

1. Oil cooling not required.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (10°F Superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - ECONOMIZED R-22							
		100	134	177	222	270	316	399	480
105	-40	291	369	479	594	785	862	1078	1297
	-35	289	364	472	585	779	851	1063	1279
	-30	286	359	466	577	773	841	1050	1263
	-25	284	354	460	569	767	830	1036	1246
	-20	281	349	453	559	760	817	1020	1227
	-15	277	342	445	549	750	803	1001	1204
	-10	272	335	435	536	737	785	978	1177
	-5	266	325	422	518	719	761	947	1139
	0	257	313	405	497	694	731	909	1094
	5	246	298	386	472	664	696	864	1039
	10	234	282	364	445	631	657	816	982
	15	221	264	342	417	595	616	764	919
	20	207	246	319	388	558	574	711	855
	25	193	229	295	359	520	531	658	792
	30	180	211	273	332	483	491	608	731
	35	166	194	251	304	446	451	557	670
	40	152	177	229	277	409	411	507	610
115	-40	357	454	588	731	964	1062	1329	1599
	-35	354	448	581	722	958	1049	1312	1578
	-30	353	444	576	714	954	1041	1301	1565
	-25	351	440	572	708	952	1034	1291	1553
	-20	350	437	567	702	950	1026	1281	1541
	-15	349	432	562	695	947	1018	1269	1527
	-10	346	427	556	686	941	1007	1255	1510
	-5	343	421	549	676	934	994	1238	1489
	0	338	413	538	662	921	975	1213	1459
	5	332	403	524	644	902	950	1182	1422
	10	322	390	505	619	874	916	1138	1369
	15	312	374	485	594	844	879	1092	1314
	20	298	357	462	565	809	837	1039	1250
	25	285	338	439	535	772	795	986	1186
	30	271	320	415	505	733	751	931	1120
	35	256	301	391	475	695	707	876	1054
	40	242	283	368	446	656	664	822	989
125	-40	437	557	720	897	1181	1303	1631	1962
	-35	432	548	710	883	1170	1285	1608	1934
	-30	430	543	704	875	1166	1276	1595	1919
	-25	430	541	701	870	1167	1271	1589	1912
	-20	431	538	699	866	1170	1268	1584	1906
	-15	431	536	697	863	1173	1265	1580	1901
	-10	431	534	694	858	1175	1261	1573	1892
	-5	431	531	691	852	1175	1255	1565	1883
	0	429	526	686	845	1173	1247	1554	1869
	5	426	520	679	835	1168	1235	1537	1849
	10	422	512	667	820	1154	1214	1510	1817
	15	415	500	650	798	1131	1183	1472	1771
	20	405	486	631	773	1103	1148	1427	1717
	25	392	469	608	744	1069	1107	1374	1653
	30	379	450	584	713	1032	1063	1319	1587
	35	364	430	559	682	993	1017	1261	1517
	40	349	410	533	649	951	969	1201	1445

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (Liquid at intermediate temperature, no superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - BOOSTER R-717							
		100	134	177	222	270	316	399	480
-20	-80	45	60	73	91	113	126	158	190
	-75	42	55	67	82	102	114	143	172
	-70	37	48	58	71	89	99	123	148
	-65	31	41	47	57	71	79	98	118
	-60	24	32	34	41	51	56	70	84
	-55	16	20	19	23	29	32	39	47
	-50	7	9	5	6	8	8	10	12
	-45	1	1	(1)	(1)	(1)	(1)	(1)	(1)
-10	-80	58	76	94	117	145	163	204	245
	-75	55	71	88	109	135	152	190	229
	-70	50	66	81	99	124	138	172	207
	-65	46	60	73	89	111	123	153	184
	-60	40	52	62	75	94	103	129	155
	-55	33	42	48	57	72	79	98	118
	-50	24	31	33	39	49	53	66	79
	-45	14	18	16	19	24	26	32	38
	-40	6	7	1	2	2	2	3	4
	-35	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
0	-80	70	92	115	142	177	200	250	301
	-75	67	87	109	134	167	188	235	283
	-70	63	82	103	126	157	176	220	265
	-65	59	77	95	117	145	162	202	243
	-60	54	70	87	106	132	146	182	219
	-55	48	62	76	92	115	127	158	190
	-50	41	53	62	74	93	102	127	153
	-45	32	41	45	54	68	74	92	111
	-40	22	28	28	33	42	45	56	67
	-35	11	14	11	12	16	17	21	25
	-30	3	4	(1)	(1)	(1)	(1)	(1)	(1)
10	-80	81	107	134	166	207	234	293	352
	-75	78	102	128	158	197	222	278	334
	-70	74	97	122	150	187	210	263	316
	-65	71	93	116	142	177	198	247	297
	-60	67	87	108	132	165	183	229	275
	-55	62	80	99	121	151	167	208	250
	-50	56	72	89	107	134	147	183	220
	-45	49	62	75	90	113	124	154	185
	-40	40	50	58	69	87	94	117	141
	-35	29	37	40	47	59	64	79	95
	-30	18	22	21	25	31	33	41	49
	-25	7	9	4	4	6	6	7	8
	-20	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
20	-80	103	136	171	212	263	299	375	451
	-75	97	127	160	198	246	278	349	420
	-70	92	121	152	187	233	263	329	396
	-65	88	115	145	178	222	249	311	374
	-60	84	109	137	168	210	234	293	352
	-55	79	103	129	156	196	218	272	327
	-50	74	95	119	144	180	199	248	298
	-45	67	87	107	129	162	178	222	267
	-40	60	77	94	113	142	155	192	231
	-35	51	65	77	91	115	125	155	186
	-30	40	51	57	68	86	92	114	137
	-25	28	36	38	44	56	60	74	89
	-20	16	20	18	20	26	27	34	41
	-15	5	6	(1)	(1)	(1)	(1)	(1)	(1)

1. Oil cooling not required.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (Liquid at intermediate temperature, no superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - BOOSTER R-717							
		100	134	177	222	270	316	399	480
30	-80	137	181	226	281	349	397	498	599
	-75	122	161	202	250	311	353	443	533
	-70	113	149	187	231	288	326	409	492
	-65	107	140	177	218	272	306	383	461
	-60	102	133	168	206	258	289	362	435
	-55	97	127	159	195	244	272	340	409
	-50	92	119	150	182	228	254	317	381
	-45	86	111	139	167	210	232	290	349
	-40	79	101	126	152	191	210	261	314
	-35	71	91	113	135	170	185	231	278
	-30	62	79	96	114	144	156	194	233
	-25	52	65	76	90	114	123	152	183
	-20	40	50	56	65	83	88	109	131
	-15	26	33	34	40	50	53	66	79
	-10	13	16	12	14	18	19	24	29
	-5	2	2	(1)	(1)	(1)	(1)	(1)	(1)
	0	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
40	-80	201	266	328	408	507	578	726	873
	-75	162	213	267	331	412	468	588	707
	-70	143	188	237	294	365	414	520	626
	-65	132	174	219	271	337	381	478	575
	-60	125	164	207	254	318	357	448	539
	-55	119	155	196	241	301	337	422	508
	-50	114	148	187	228	285	318	398	479
	-45	108	140	176	214	269	299	373	449
	-40	101	130	164	197	248	275	343	413
	-35	93	119	149	179	226	249	310	373
	-30	86	109	136	162	205	224	279	336
	-25	76	96	119	141	179	194	241	290
	-20	66	83	100	117	149	161	199	239
	-15	54	68	78	91	116	125	154	185
	-10	40	50	56	65	83	88	109	131
	-5	26	32	33	38	48	51	63	76
	0	12	15	11	12	16	16	20	24

1. Oil cooling not required.

OIL COOLER HEAT REJECTION (OCHR) - 1000 BTU/HR (Liquid at intermediate temperature, no superheat, 120°F oil into compressor)

COND TEMP. °F	EVAP TEMP. °F	RWF SCREW COMPRESSOR MODELS - BOOSTER R-717							
		100	134	177	222	270	316	399	480
-20	-80	20	26	27	33	41	45	56	67
	-75	13	17	13	16	20	22	27	32
	-70	5	6	(1)	(1)	(1)	(1)	(1)	(1)
	-65	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
-10	-80	32	41	47	57	71	78	97	117
	-75	25	31	34	41	51	55	69	83
	-70	16	21	19	23	29	31	38	46
	-65	8	10	3	4	5	5	6	7
	-60	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
0	-80	43	56	66	79	100	109	136	164
	-75	36	46	53	64	80	88	109	131
	-70	28	36	39	47	59	64	80	96
	-65	19	24	24	28	36	38	48	58
	-60	10	13	7	9	11	12	15	18
	-55	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
10	-80	53	69	82	100	125	138	172	207
	-75	46	59	70	85	106	117	145	174
	-70	39	50	57	69	86	94	117	141
	-65	30	39	43	51	65	70	87	105
	-60	21	26	27	32	41	44	54	65
	-55	11	14	10	12	15	16	20	24
	-50	2	2	(1)	(1)	(1)	(1)	(1)	(1)
	-45	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
20	-80	68	88	107	129	162	180	225	271
	-75	61	79	94	114	143	158	197	237
	-70	54	69	82	98	124	136	169	203
	-65	46	58	68	81	103	112	139	167
	-60	37	47	53	63	80	86	107	129
	-55	27	34	37	43	55	59	73	88
	-50	16	20	19	22	28	30	37	45
	-45	6	8	(1)	(1)	(1)	(1)	1	1
	-40	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
30	-80	84	109	132	161	202	225	281	338
	-75	76	98	119	144	181	201	251	302
	-70	68	88	106	128	161	177	221	266
	-65	61	78	93	111	140	154	192	231
	-60	53	67	79	94	118	129	161	194
	-55	43	55	63	74	94	102	127	153
	-50	33	42	46	54	69	74	92	111
	-45	22	28	28	33	42	44	55	66
	-40	11	14	9	10	13	14	17	20
	-35	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
	-30	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
40	-80	105	137	166	203	254	284	356	428
	-75	95	123	150	182	228	254	318	383
	-70	86	112	135	163	205	228	285	343
	-65	78	101	121	145	184	202	253	304
	-60	70	89	107	128	162	177	221	266
	-55	61	78	92	109	139	152	189	227
	-50	52	65	76	90	114	124	154	185
	-45	41	52	59	69	88	95	118	142
	-40	30	37	40	47	60	64	80	96
	-35	18	23	21	24	31	33	40	48
	-30	7	8	(1)	(1)	(1)	(1)	(1)	(1)

1. Oil cooling not required.

ECONOMIZER - HIGH STAGE (OPTIONAL)

The economizer option provides an increase in system capacity and efficiency by subcooling liquid from the condenser through a heat exchanger or flash tank before it goes to the evaporator. The subcooling is provided by flashing liquid in the economizer cooler to an intermediate pressure level.The intermediate pressure is provided by a port located part way down the compression process on the screw compressor.

As the screw compressor unloads, the economizer port will drop in pressure level, eventually being fully open to suction. Because of this, an output from the microprocessor is generally used to turn off the supply of flashing liquid on a shell and coil or DX economizer when the capacity falls below approximately 45%-60% capacity (85%-90% slide valve position). This is done because the compressor will be more efficient operating at a higher slide valve position with the economizer turned off, than it will at a low slide valve position with the economizer turned on. Please note however that shell and coil and DX economizers can be used at low compressor capacities in cases where efficiency is not as important as assuring that the liquid supply is subcooled. In such cases, the economizer liquid solenoid can be left open whenever the compressor is running.

Due to the tendency of the port pressure to fall with decreasing compressor capacity, a back-pressure regulator valve (BPR) is generally required on a flash economizer system (Figure 6) in order to maintain some preset pressure difference between the subcooled liquid in the flash vessel and the evaporators. If the back-pressure regulator valve is not used on a flash economizer, it is possible that no pressure difference will exist to drive liquid from the flash vessel to the evaporators, since the flash vessel pressure will approach suction pressure at a decreased slide valve position. In cases where wide swings in pressure are anticipated in the flash economizer vessel, it may be necessary to add an outlet pressure regulator to the flash vessel outlet to avoid overpressurizing the economizer port, which could result in motor overload. Example: A system feeding liquid to the flash vessel in batches.

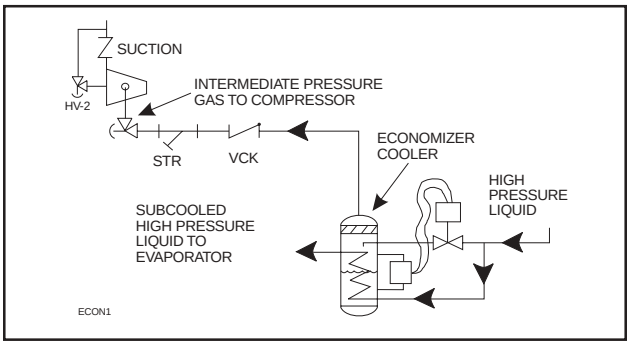


FIG. 4 - Shell and Coil Economizer System

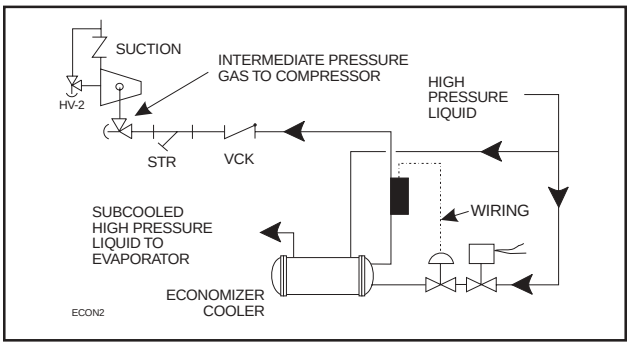


FIG. 5 - Direct Expansion Economizer System

The recommended economizer systems are shown below. Notice that in all systems there should be a strainer (STR) and a check valve (VCK) between the economizer vessel and the economizer port on the compressor. The strainer prevents dirt from passing into the compressor and the check valve prevents oil from flowing from the compressor unit to the economizer vessel during shutdown.

CAUTION **Other than the isolation valve needed for strainer cleaning, it is essential that the strainer be the last device in the economizer line before the compressor. Also, piston-type check valves are recommended for installation in the economizer line, as opposed to disc-type check valves. The latter are more prone to gas- pulsation-induced failure. The isolation and check valves and strainer should be located as closely as possible to the compressor, preferably within three feet.**

For refrigeration plants employing multiple compressors on a common economizing vessel, regardless of economizer type, each compressor must have a back-pressure regulating valve in order to balance the economizer load, or gas flow, between compressors. The problem of balancing load becomes most important when one or more compressors run at partial load, exposing the economizer port to suction pressure. In the case of a flash vessel, there is no need for the redundancy of a back-pressure regulating valve on the vessel and each of the multiple compressors. Omit the BPR valve on the flash economizer vessel and use one on each compressor, as shown in Figure 7. It is also recommended that the back-pressure regulating valves, used on economizer lines, should be specified with electric shutoff option. The electric shutoff feature is necessary to prevent flow from the common economizer vessel to the suction side of a stopped compressor, through the suction check valve bypass line, if the other compressors and the common economizer vessel are still operating and the HV2 valve on the suction bypass is open.

For refrigeration plants using a Packaged Refrigerant Recirculation (PRR) unit and a direct expansion (DX) economizer

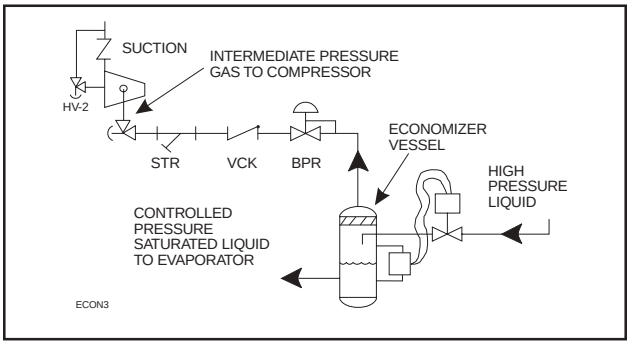


FIG. 6 - Flash Economizer System

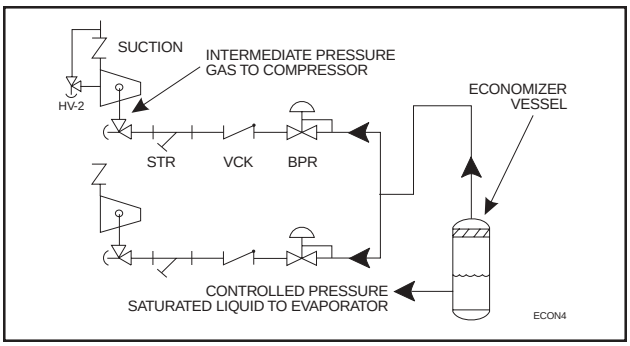


FIG. 7 - Multiple Compressor Economizer System

system it is necessary to operate the liquid feed solenoid on the PRR unit and the liquid feed solenoid on the DX vessel off of a common signal to avoid liquid overfeed on the DX economizer system.

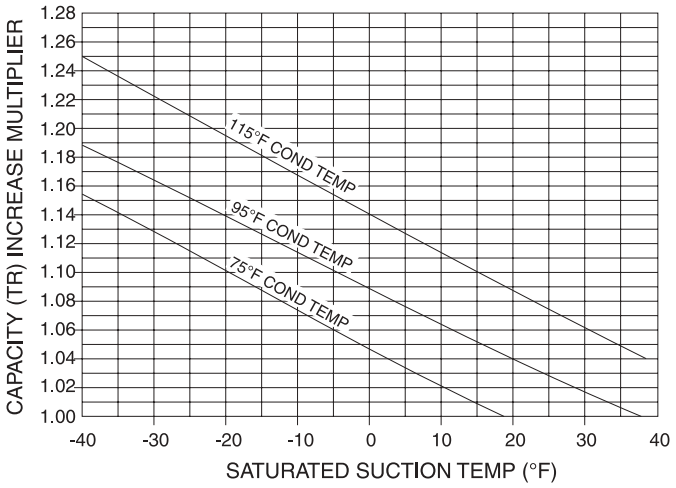
If multiple compressors are operated with a common economizer vessel, it is necessary to install a back-pressure regulator valve with an electric shutoff option in the vapor line piped to the compressor's economizer port. If an electric shutoff is not installed in the economizer vapor line, valve HV-2 must remain closed to avoid a gas bypass from the economizer line through the suction check valve bypass, back to the suction line on a compressor that is shut down.

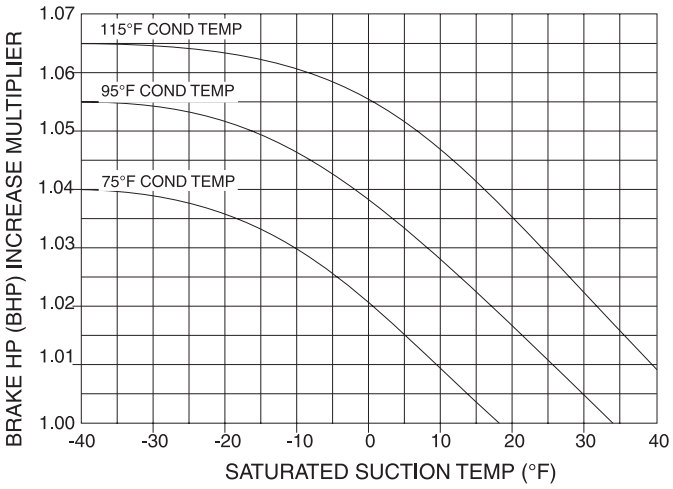
HIGH STAGE - CAPACITY and BRAKE HORSEPOWER RATINGS WITH DIRECT EXPANSION OR SHELL and COIL ECONOMIZERS

PROCEDURE - Determine capacity (TR) and brake horsepower (BHP) from the noneconomized, standard rating tables for the appropriate refrigerant (R-717 or R-22). Multiply these ratings by the capacity and shaft horsepower increase multipliers below for the appropriate refrigerant. Apply any other correction factors (subcooling, superheat, or liquid injectionor 50 Hz) using instructions from Page 7.

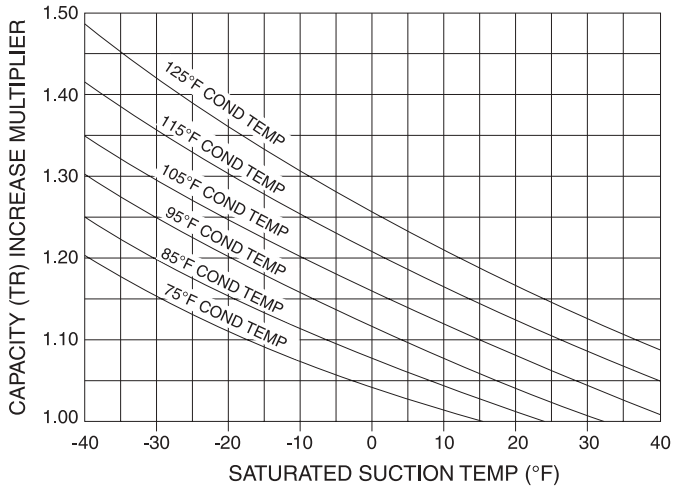
DIRECT EXPANSION OR SHELL and COIL ECONOMIZER RATING INCREASE MULTIPLIERS

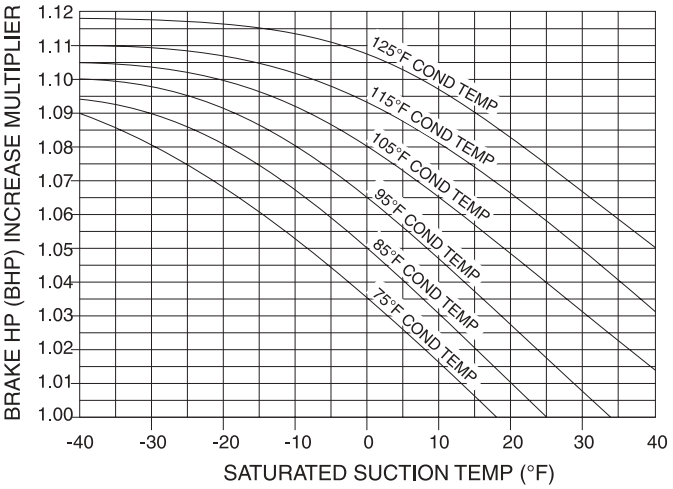
R-717





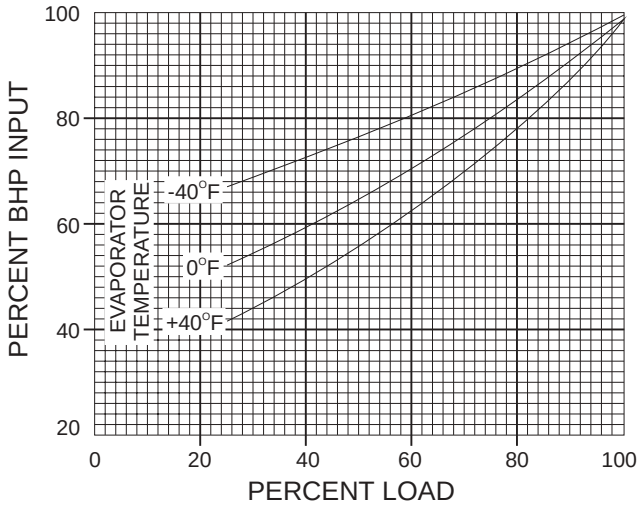
R-22





NOTE: Increase multipliers are based on liquid subcooling by either direct expansion or shell and coil economizer.Use of the increase multipliers results in ratings based on 10°F suction superheat with the superheat enthalpy not contributing to the refrigeration effect, no liquid subcooling from condenser or other external source, and 10°F small temperature difference in heat exchanger. No allowance for vapor line pressure drop is included in the resulting ratings.

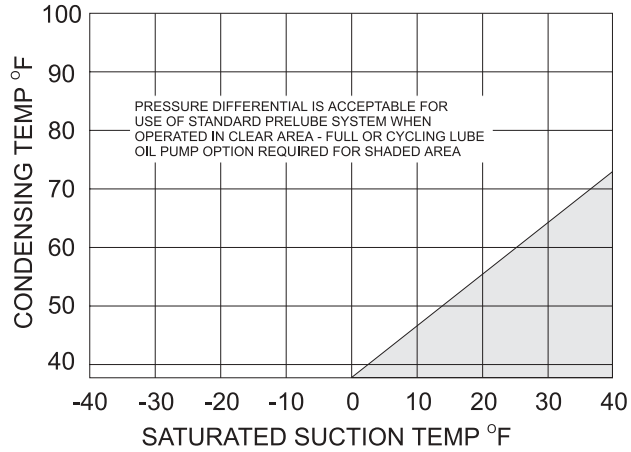
TYPICAL PART LOAD POWER INPUT WITH CONSTANT CONDENSING TEMPERATURE-HIGH STAGE



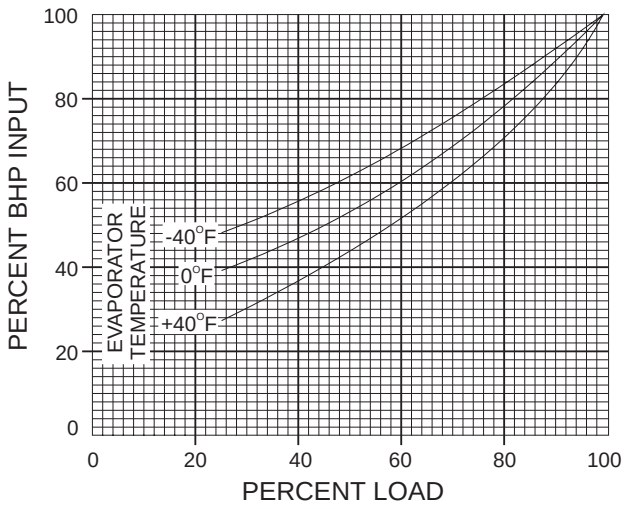
This curve is applicable for R-717 (85°F to 105°F) full-load condensing temperature) and R-22 (95°F to 115°F) full-load condensing temperature).

STANDARD LUBRICATION SYSTEM LIMITS - HIGH STAGE

The standard system for compressor operation without a lube oil pump may be used on high stage applications shown in the clear area of the graph. The optional **demand oil pump** is required only on low differential pressure applications shown in the shaded area of the graph. Where condensing temperatures fluctuate into the shaded area only on an occasional basis in the winter, the **demand pump** avoids unnecessary consumption of pump horsepower.



TYPICAL PART LOAD POWER INPUT WITH FALLING CONDENSING TEMPERATURE-HIGH STAGE



The curve, above, is based on a 20°F linear drop in condensing temperature from full load to 10% of full load. This curve is applicable for R-717 (85°F to 105°F) full-load condensing temperature) and R-22 (95°F to 115°F) full-load condensing temperature). It is not applicable if condensing temperature does not drop with compressor unloading as in the following examples:

1. Water-cooled condensing temperatures cannot fall below entering water temperature.

2. Single compressor unloading on a multiple compressor system will have a negligible effect on system condensing temperature.

3. No condensing temperature drop will occur if condenser fans are cycled off as the load decreases.

MINIMUM COMPRESSOR FLOW

The minimum flow capacity for each compressor varies depending upon its geometry and its operating conditions. Typical minimum flow for each of our compressor models is listed below. This table represents minimum suction flow with the slide valve fully unloaded.

UNIT	MINIMUM FLOW*	
	CFM	m^3/hr
100	71	121
134	95	161
177	125	212
222	157	267
270	365	621
316	224	380
399	282	479
480	650	1,104

*@ 3550 rpm

MOTOR SELECTION and STARTING TORQUE

Motors must be sized adequately for all expected operating conditions since start-up, pull down, and load variations quite often require significantly more horsepower than nominal design.

Motor starting torque capacity must also be considered, especially when other than across-the-line start is employed. Motor starting and pull-up torque must be at least 20% greater than compressor requirements at maximum expected start-up conditions. Refer to the torque data.

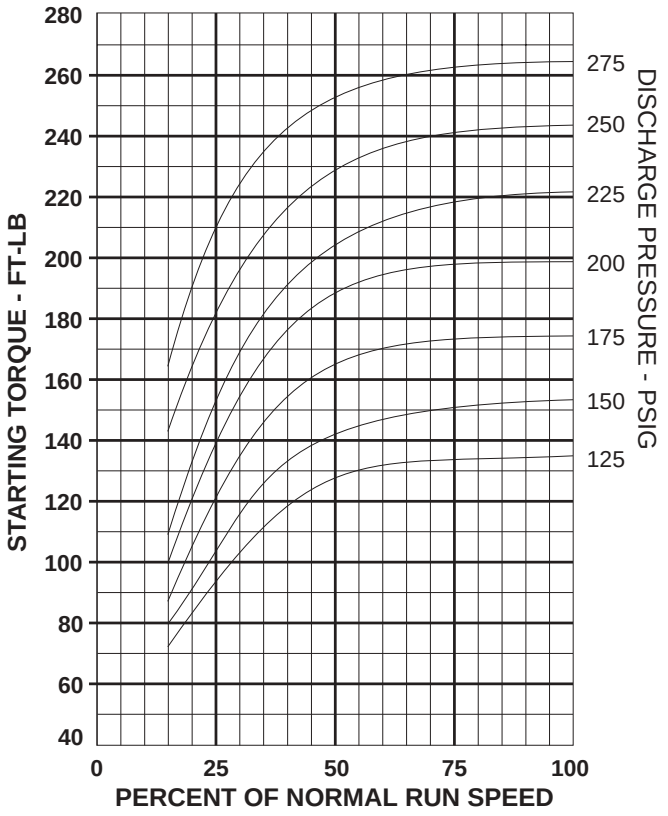
NOTE: Motor starting torque varies considerably with various manufacturers - obtain specific torque data for the motor being used.

RWF MODEL	STARTING TORQUE (1) MULTIPLIER	BREAKAWAY TORQUE (ft-lb)	(2)(3) MASS MOMENT OF INERTIA (lb-ft^2)
100	0.75	10	7
134	1.00	10	8
177	1.32	14	14
222	1.66	14	17
270	2.24	14	27
316	2.36	20	35
399	2.98	20	43
480	3.91	20	50

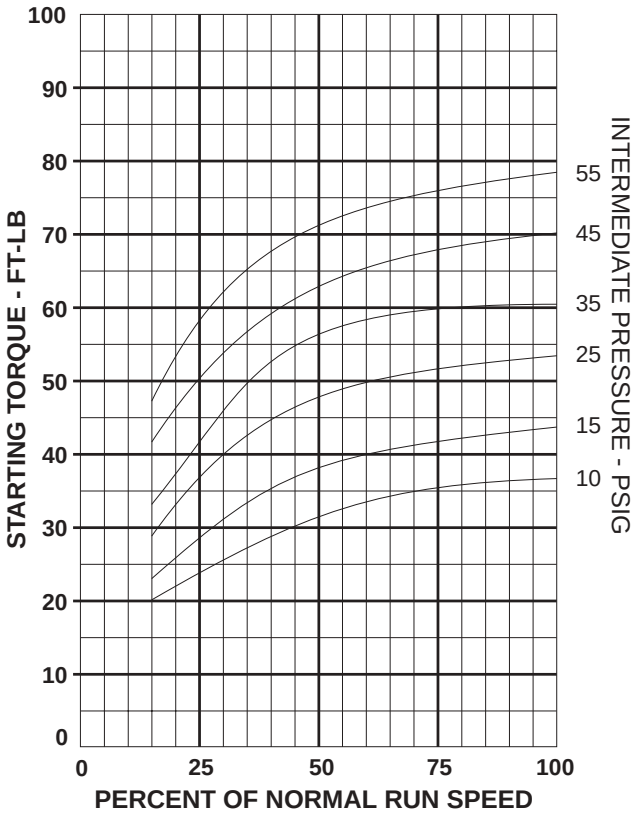
1. High Stage or Booster Application.
2. Including standard compressor coupling half.
3. Inertia resolved to drive shaft.

RWF SCREW COMPRESSOR SPEED vs STARTING TORQUE CURVE - FULLY UNLOADED - HIGH STAGE and BOOSTER

HIGH STAGE



BOOSTER



STARTING TORQUE FOR SPECIFIC COMPRESSOR

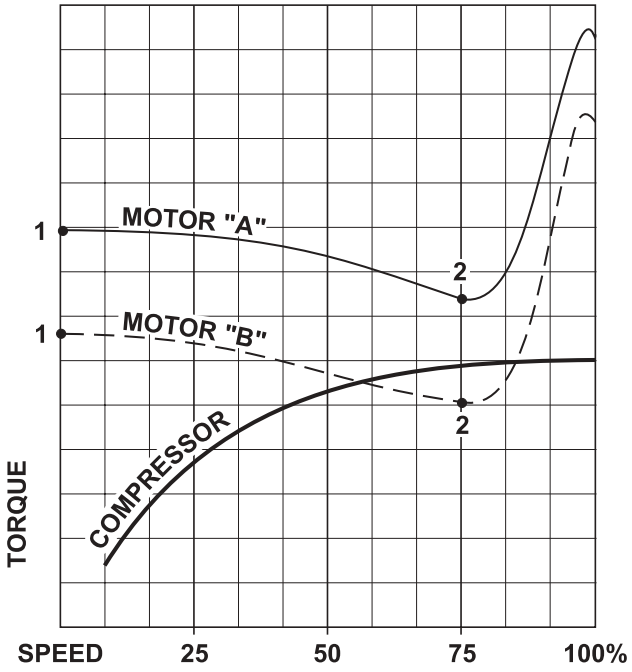
Multiply the starting torque value from high stage or booster curves at 100% of normal run speed by starting torque multiplier for appropriate compressor size.

MOTOR/COMPRESSOR TORQUE

Ensure that the motor STARTING and MINIMUM PULL-UP TORQUE capabilities will exceed the compressor requirements at the anticipated condition that will be experienced during normal starting.

NOTE: Wye-delta and auto transformer (reduced voltage) motor starting methods drastically effect the starting torque available from motors as indicated:

Across-the-Line	**100% Torque**
Auto Transformer	**25 - 64% Torque**
Wye-delta	**33% Torque**



Motor "A": Adequate to start the compressor.

Motor "B": Will not start the compressor

NOTE: Starting torque of both motors (1) is above compressor torque. However, the pull-up torque (2) of motor "B" is below the compressor torque curve and motor "B" will not accelerate the compressor to 100% speed.

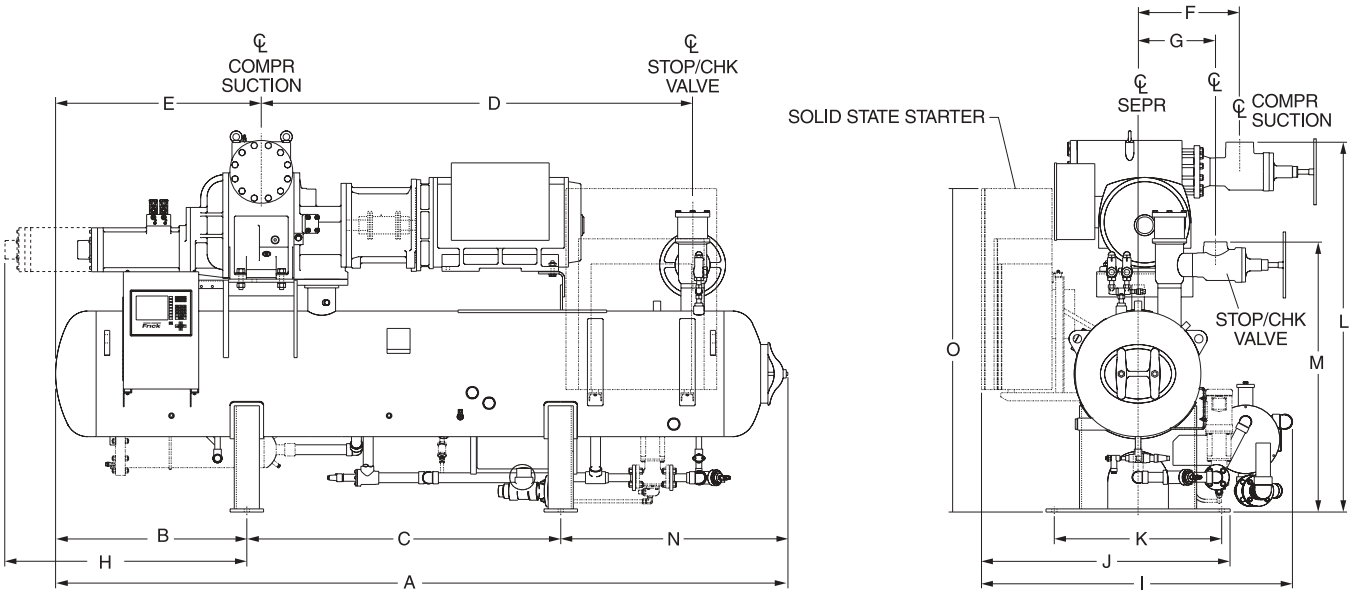
STANDARD MOTOR and FRAME SIZES
230, 460, and 575 Volts - 3-Phase - 60 Hertz, 3600 RPM

50Hz motors or a special drive may require modified package design. When a modified package design is required there may be cost and delivery considerations.

MODEL 100/134				MODEL 177-270		MODEL 316-480*	
HP	**FRAME**	**HP**	**FRAME**	**HP**	**FRAME**	**HP**	**FRAME**
40	286TS	450	505USS	125	404TS	400	447TSS
50	324TS	450	507USS	150	405TS	400	505USS
60	326TS	500	505USS	200	444TS	450	505USS
75	364TS	500	507USS	250	445TS	450	507USS
100	365TS	–	–	300	445TS	500	505USS
125	404TS	–	–	300	447TSS	500	507USS
150	405TS	–	–	350	447TSS	600	5008S
200	444TS	–	–	400	447TSS	700	5008S
250	445TS	–	–	400	505USS	800	5010S
300	445TS	–	–	450	505USS	900	5808S
300	447TSS	–	–	450	507USS	1000	5810S
350	447TSS	–	–	500	505USS	–	–
400	447TSS	–	–	500	507USS	–	–
400	505USS	–	–	600	5008S	–	–

* For larger horsepower motors, consult Frick.

DIMENSIONS



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	22/559	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	24/610	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	25/635	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	27/686	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	28/711	24/610	78/1981	82/2083	71/1803	54/1372	99/2515	75/1905	56/1422	78/1981
316	195/4953	51/1295	88/2235	115/2921	53/1346	30/762	24/610	74/1880	93/2362	71/1803	54/1372	102/2591	74/1880	56/1422	78/1981
399	195/4953	51/1295	88/2235	117/2972	51/1295	31/787	24/610	80/2032	93/2362	71/1803	54/1372	102/2591	74/1880	56/1422	78/1981
480	204/5182	52/1321	88/2235	120/3048	50/1270	31/787	24/610	94/2388	102/2591	79/2007	62/1575	109/2769	80/2032	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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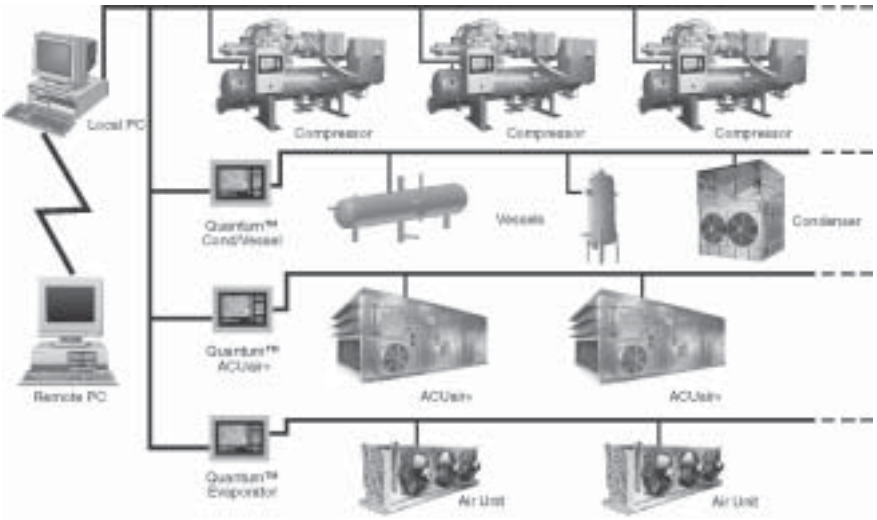

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