RXF 101
R717 - Summary

BY JOHNSON CONTROLS

CoolWare v7.3.1 — Registered To: Abcol - Jeff Hymel

Customer Name	Industrial Refrigeration Systems	Reference	Tag # 31-Z-204	Date 10/23/2009	
End User Name	Range Fuels Soperton Plant, LLC	Item	Screw Package	Atmospheric Pressure	14.55 psi
Project	Lean Solvent Refrigeration System			Elevation	295 ft

PACKAGE CONFIGURATION

Package	RXF 101	Compressor	XJF 151N	Suction Valve	Standard
Refrigerant	R717	Separator Orientation	Horizontal	Discharge Valve	Standard
Oil Type	Frick #3	Oil Separator	Standard	Safety Valve	Shank 815
Oil Pump	None	Separator Diameter	24.0	Safety Valve Cap.	1205.3
Oil Cooling		Separator Velocity Ref.	0.41	Separator Velocity Ref. CR	7.10

CONDITION # 1

Evaporator Temp	5.0 °F	Speed	3550 rpm	Discharge Temp	160.0 °F
Condenser Temp	107.0 °F	Percent Evap Cap	100.0%	Condenser Heat Rej.	2423.5 kbtu/hr
Evaporator Load	140.3 TR	Percent Suct Vol Flow	100.0%	Oil Cooler Heat Rej.	522.7 kbtu/hr
Compressor Power	286.5 hp	Percent Load (Slide Valve)	100.0%	Oil Flow	23.6 gpm

Motor frame size may not fit on this package.

Disclaimer: the information contained in this program is subject to change without notice. Frick reserves the right to final verification of all rating results.

RXF 101
R717 Package Details

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Customer Name	Industrial Refrigeration Systems	Reference	Tag # 31-Z-204	Date	10/23/2009
End User Name	Range Fuels Soperton Plant, LLC	Item	Screw Package	Atmospheric Pressure	14.55 psi
Project	Lean Solvent Refrigeration System			Elevation	295 ft

COMPRESSOR DATA

Refrigerant: R717 — Oil: Frick #3

Run #	Application	Evap Temp (°F)	Cond Temp (°F)	InterClr Temp (°F)	InterMedTemp (°F)	Capacity (TR)	Power (hp)	Loading
1	Single Stage	5.0	107.0			140.3	286.5	100.0

MOTOR, FRAME AND COUPLING

Size	Custom 300 hp	Enclosure		Efficiency @ SF%	
Speed	3600 rpm	Service Factor		Efficiency @ 100%	
Frame	405TSD	Motor Noise	dB	Efficiency @ 75%	
Starting Type	None	Weight		Efficiency @ 50%	
Coupling Model		Motor Bore Dia		Power Factor @ SF%	
Volt / Ph / Cycle	460 / / 60 Hz	LRA		Power Factor @ 100%	
FLT		Lug Type		Power Factor @ 75%	
FLA				Power Factor @ 50%	

Run #	Coupling S. F.	Power Use kW
1		0.0

LIQUID INJECTION

Type	Easy Cool 3/4in ICM 20A			SVT Size	1/2in SVT Low
Cv	0.7	Port Piping	Low Vi	SVT Max Flow	19.0 lbm/min

Run #	Heat Load (kbtu/hr)	Mass Flow (lbm/min)	Tx Capacity (%)	Rated Cv	dP Across Valve (psi)	Port
1	522.7	17.1	66.0	0.5	150.5	Low Vi

SEPARATOR

Diameter	Horizontal 24.0 in Standard	Coalescer	Super 1	Length	112.9 in
Oil Height	7.13 in	Separator Velocity Ref.	0.41		
Refrigerant Area	2.2 ft2	Separator Velocity Ref. CR	7.10		

Run #	Separator Vel ft/min	Separator Limit ft/min	Coalescer Vel ft/min	Coalescer Limit ft/min	Oil Retention min.
1	53.2	141.0	10.2	25.0	1.3

SAFETY RELIEF VALVE

Separator DWP Rating	300 psig	Valve Inlet Size	1in FPT
Safety Valve	Dual Shank 815	Valve Outlet Size	1-1/2in FPT
Valve Capacity	1205.3 cfm		

Run #	Surface cfm	Displacement cfm
1	123.3	575.5

ERRORS AND WARNINGS

Run # 1 Motor frame size may not fit on this package.

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RXF 101
R717 Single Stage

Frick BY JOHNSON CONTROLS

ABCOL IRS Inc.

CoolWare v7.3.1 — Registered To: Abcol - Jeff Hymel

Customer Name	Industrial Refrigeration Systems	Reference	Tag # 31-Z-204	Date 10/23/2009	Run #1
End User Name	Range Fuels Soperton Plant, LLC	Item	Screw Package	Atmospheric Pressure	14.55 psi
Project	Lean Solvent Refrigeration System			Elevation	295 ft

SYSTEM PERFORMANCE SUMMARY

Evaporator Load	140.3 TR			Coeff. Of Performance	2.309
Compressor Power	286.5 hp	Condenser Heat Rej.	2423.5 kbtu/hr	Performance Factor	2.04 hp/TR

COMPRESSOR - XJF 151N

Shaft Power	286.5 hp	Eff Model	R717 (Ammonia)	Suction Valve	Standard
Drive Mode	Standard	Volumetric Eff	87.7%	Suct Valve dP	0.2 psi
Speed	3550 rpm	Adiabatic Eff	66.3%	Discharge Valve	Standard
Percent Evap Cap	100.0%	Discharge Port	Standard	Disc Valve dP	0.2 psi
Percent Suct Vol Flow	100.0%	Compression Ratio	7.10	Liquid Inj Valve	Easy Cool
Percent Load (Slide Valve)	100.0%	Volume Ratio	3.50	Liquid Inj Port	Low Vi
		Ideal Volume Ratio	3.15	Liquid Inj Flow	17.1 lbm/min

	Temperature (°F)	Pressure (psia)	Mass Flow Rate (lbm/min)	Volume Flow Rate (cfm)
Suction	9.9	33.6	62.3	523.9
Discharge	160.0	238.7	79.4	116.0

OIL SYSTEM

Oil Cooling	Liquid Injection	Oil Pump	None	Oil Flow	23.6 gpm
Oil Type	Frick #3	Main Inj Valve Pos	5.0%	Main Inj Flow	18.0 gpm
Oil Cooler Heat Rej.	522.7 kbtu/hr			Bearing Flow	5.6 gpm
Oil Injection Temp	160.0 °F			Oil Manifold	231.5 psia

EVAPORATOR

Temperature	5.0 °F	Pressure	34.2 psia	Superheat	0.0 °F
Suction Line Superheat	5.0 °F	Suction Line Pressure Drop	0.4 psi	Liquid Feed	107.0 °F
Heat Load	140.3 TR				

CONDENSER

Temperature	107.0 °F	Pressure	236.0 psia	Subcooling	0.0 °F
Disch Line Desuperheat	0.0 °F	Disc Line Pressure Drop	0.5 psi	External Subcooling	0.0 °F
Heat Rejection	2423.5 kbtu/hr				

ERRORS AND WARNINGS

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