

COMPRESSOR SAFETIES

DISCHARGE SAFETIES

	<u>setting</u>	<u>default</u>	<u>range</u>
High discharge temp stop load	_____	230 °F <i>110</i>	0 - 249.8 °F <i>121</i>
High discharge temp force unload	_____	240 °F <i>116</i>	0 - 249.8 °F <i>121</i>
High discharge temp alarm	_____	220 °F <i>104</i>	0 - 249.8 °F <i>121</i>
High discharge temp alarm delay	_____	5 sec.	0 - 60 sec.
High discharge temp shutdown	_____	230 °F <i>110</i>	0 - 249.8 °F <i>121</i>
High discharge temp shutdown delay	_____	5 sec.	0 - 60 sec.
Low discharge pressure shutdown	_____	25 psig <i>172</i>	0-380**psig
Low discharge pressure shutdown delay	_____	60 sec.	0 - 90 sec.
High disch press mode #1 stop load	_____	135 psig <i>931</i>	0-225 psig <i>1550</i>
High disch press mode #1 force unload	_____	140 psig <i>965</i>	0-225 psig
High disch press mode #1 alarm	_____	145 psig <i>1MP</i>	0-225 psig
High disch press mode #1 alarm delay	_____	2 sec.	0 - 5 sec.
High disch press mode #1 shutdown	_____	148 psig <i>1020</i>	0-225 psig
High disch press mode #1 shutdown delay	_____	2 sec.	0 - 5 sec.
High disch press mode #2 stop load	_____	135 psig <i>931</i>	0-225 psig
High disch press mode #2 force unload	_____	140 psig <i>965</i>	0-225 psig
High disch press mode #2 alarm	_____	145 psig <i>1MP</i>	0-225 psig
High disch press mode #2 alarm delay	_____	2 sec.	0 - 5 sec.
High disch press mode #2 shutdown	_____	148 psig <i>1MP</i>	0-225 psig
High disch press mode #2 shutdown delay	_____	2 sec.	0 - 5 sec.

** based on maximum discharge pressure setting in factory set-up.

SUCTION SAFETIES

	<u>setting</u>	<u>default</u>	<u>range</u>
High suction pressure stop load	_____	120 psig <i>827</i>	0 - 200 psig <i>1380</i>
High suction pressure force unload	_____	130 psig <i>896</i>	0 - 200 psig
High suction pressure alarm	_____	140 psig <i>965</i>	0 - 200 psig
High suction pressure alarm delay	_____	5 sec.	0 - 60 sec.
High suction pressure shutdown	_____	150 psig <i>1030</i>	0 - 200 psig
High suction pressure shutdown delay	_____	5 sec.	0 - 60 sec.



SGC 2321 Open System

CoolWare v7.1.1

Registered To: Johnson Controls-Australia ERS Pty

Customer Name	Reference	Date 25/09/2007	Run # 2
End User Name	Item	Atmospheric Pressure	1.014 bar
Project	Screw Open	Elevation	0 m

COMPRESSOR - SGC 2321

Compressor Power	80.5 kW	Compression Ratio	4.52	Eff Model	Hydrocarbon Mix
Speed	1800 rpm	Volume Ratio	3.67	Volumetric Eff	53.4%
Percent Suct Vol Flow	60.0%	Ideal Volume Ratio	3.67	Adiabatic Eff	67.1%
		Discharge Port	Standard		

	Temperature (°C)	Pressure (barg)	Mass Flow (kg/min)	Volume Flow (m3/min)	Standard Volume Flow (scmm) (MSCMH)	
Suction	26.7	0.45	12.6	12.4	17.33	1.040
Discharge	82.2	5.60	12.6	3.2	17.33	1.040

OIL SYSTEM

Oil Type	CP-1516-100	Oil Cooler Heat Rej	55.7 kW	Oil Pump Boost	0.00 bar
Oil Flow	145.3 lpm	Main Inj Oil Temp	71.1 °C	Oil System Pres Drop	0.69 bar
Main Inj Oil Flow	96.4 lpm	Bearing Oil Temp	71.1 °C	Main Inj Orifice Dia	1.191 cm
Bearing Oil Flow	48.9 lpm	Oil Cooling	All Oil	Main Inj Cv	5.0
Oil Pump Piping	All Oil	Main Inj Valve Pos	76.5%	Main Inj Valve Dia	2.54 cm

SYSTEM

Upstream Temperature	26.7 °C	Downstream Temperature	82.2 °C
Upstream Pressure	0.45 barg	Downstream Pressure	5.60 barg
Suct Line Superheat	0.0 °C	Disc Line Desuperheat	0.0 °C
Suct Line Pres Drop	0.00 bar	Disc Line Pres Drop	0.00 bar
		Separator Pres Drop	0.00 bar
		Discharge Dew Point	-78.6 °C

FLUID

Gas	Mole %
Methane	94.300
Ethane	2.220
Propane	0.500
n-Butane	0.160
Carbon Dioxide	1.820
Nitrogen	1.000
Molecular Weight	17.19

ERRORS AND WARNINGS

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



SGC 2321 Open System

CoolWare v7.1.1

Registered To: Johnson Controls-Australia ERS Pty

Customer Name	Reference	Date	Run #
End User Name	Item	21/09/2007	1
Project	Screw Open	Atmospheric Pressure	1.014 bar
		Elevation	0 m

COMPRESSOR - SGC 2321

Compressor Power	112.6 kW	Compression Ratio	1.65	Eff Model	Hydrocarbon Mix
Speed	1800 rpm	Volume Ratio	2.20	Volumetric Eff	91.8%
Percent Suct Vol Flow	100.0%	Ideal Volume Ratio	1.41	Adiabatic Eff	67.0%
		Discharge Port	Standard		

	Temperature (°C)	Pressure (barg)	Mass Flow (kg/min)	Volume Flow (m3/min)	Standard Volume Flow	
					(scmm)	(MSCMH)
Suction	26.7	3.00	59.6	21.3	82.13	4.928
Discharge	76.6	5.60	59.6	15.1	82.13	4.928

OIL SYSTEM

Oil Type	CP-1516-100	Oil Cooler Heat Rej	4.9 kW	Oil Pump Boost	0.00 bar
Oil Flow	26.2 lpm	Main Inj Oil Temp	71.1 °C	Oil System Pres Drop	0.69 bar
Main Inj Oil Flow	0.0 lpm	Bearing Oil Temp	71.1 °C	Main Inj Orifice Dia	1.191 cm
Bearing Oil Flow	26.2 lpm	Oil Cooling	All Oil	Main Inj Cv	5.0
Oil Pump Piping	All Oil	Main Inj Valve Pos	5.0%	Main Inj Valve Dia	2.54 cm

SYSTEM

FLUID

SYSTEM		FLUID	
		Gas	Mole %
Upstream Temperature	26.7 °C	Downstream Temperature	76.6 °C
Upstream Pressure	3.00 barg	Downstream Pressure	5.60 barg
Suct Line Superheat	0.0 °C	Disc Line Desuperheat	0.0 °C
Suct Line Pres Drop	0.00 bar	Disc Line Pres Drop	0.00 bar
		Separator Pres Drop	0.00 bar
		Discharge Dew Point	-78.6 °C
		Methane	94.300
		Ethane	2.220
		Propane	0.500
		n-Butane	0.160
		Carbon Dioxide	1.820
		Nitrogen	1.000
		Molecular Weight	17.19

ERRORS AND WARNINGS

Oil pressure differential is too low.

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SGC 2321 Open System

CoolWare v7.1.1

Registered To: Johnson Controls-Australia ERS Pty -

Customer Name	Reference	Date	Run #
End User Name	Item	21/09/2007	2
Project	Screw Open	Atmospheric Pressure	1.014 bar
		Elevation	0 m

COMPRESSOR - SGC 2321

Compressor Power	112.6 kW	Compression Ratio	1.65	Eff Model	Hydrocarbon Mix
Speed	1800 rpm	Volume Ratio	2.20	Volumetric Eff	91.8%
Percent Suct Vol Flow	100.0%	Ideal Volume Ratio	1.41	Adiabatic Eff	67.0%
		Discharge Port	Standard		

	Temperature (°C)	Pressure (barg)	Mass Flow (kg/min)	Volume Flow (m3/min)	Standard Volume Flow (scmm) (MSCMH)	
Suction	26.7	3.00	59.6	21.3	82.13	4.928
Discharge	75.5	5.60	59.6	15.1	82.13	4.928

OIL SYSTEM

Oil Type	CP-1516-100	Oil Cooler Heat Rej	7.4 kW	Oil Pump Boost	2.00 bar
Oil Flow	48.7 lpm	Main Inj Oil Temp	71.1 °C	Oil System Pres Drop	0.69 bar
Main Inj Oil Flow	4.3 lpm	Bearing Oil Temp	71.1 °C	Main Inj Orifice Dia	1.191 cm
Bearing Oil Flow	44.3 lpm	Oil Cooling	All Oil	Main Inj Cv	5.0
Oil Pump Piping	All Oil	Main Inj Valve Pos	5.0%	Main Inj Valve Dia	2.54 cm

SYSTEM

FLUID

Upstream Temperature	26.7 °C	Downstream Temperature	75.5 °C	Gas	Mole %
Upstream Pressure	3.00 barg	Downstream Pressure	5.60 barg	Methane	94.300
Suct Line Superheat	0.0 °C	Disc Line Desuperheat	0.0 °C	Ethane	2.220
Suct Line Pres Drop	0.00 bar	Disc Line Pres Drop	0.00 bar	Propane	0.500
		Separator Pres Drop	0.00 bar	n-Butane	0.160
		Discharge Dew Point	-78.6 °C	Carbon Dioxide	1.820
				Nitrogen	1.000
				Molecular Weight	17.19

COMPRESSOR

<u>Bearings</u>			<u>Rotors</u>		
Position	Load n	L10 (hrs)		Male	Female
Male Inlet Radial	5978	1000000	Rotor Thrust Direction	Normal	Normal
Male Outlet Radial	8855	1000000	Balance Piston Force	6153.0 n	0.0 n
Female Inlet Radial	8582	1000000	Inlet Blocking Dia	4.75 µm	7.05 µm
Female Outlet Radial	13345	1000000	Outlet Blocking Dia	6.57 µm	9.64 µm
Male Axial	3358	1000000	Max Rotor Body	12.79 µm	18.86 µm
Female Axial	2269	1000000	Max allowable deflection	55.26 µm	
			Rotor Shaft Fatigue Safety Factor	7.24	6.36

ERRORS AND WARNINGS

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