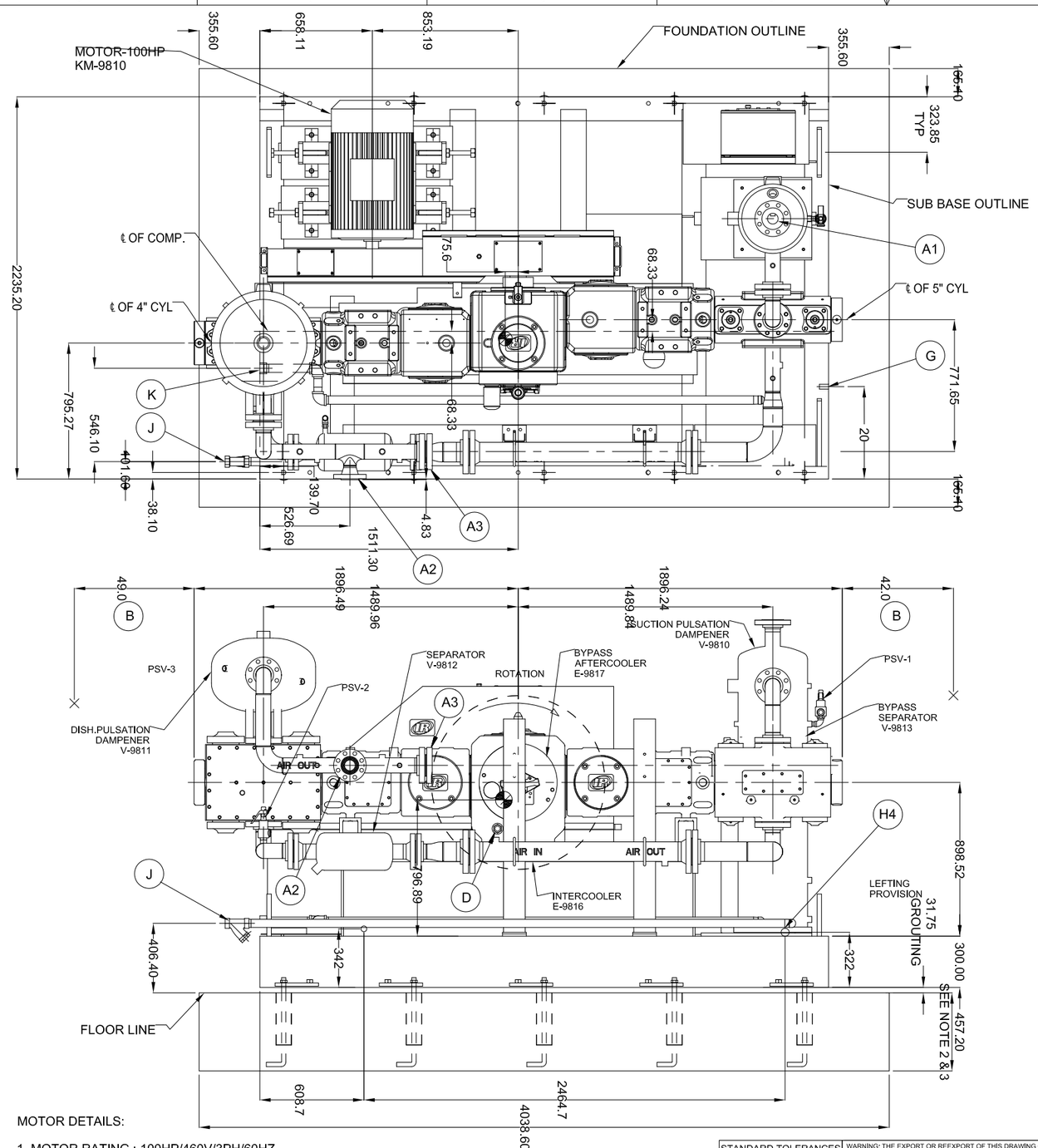
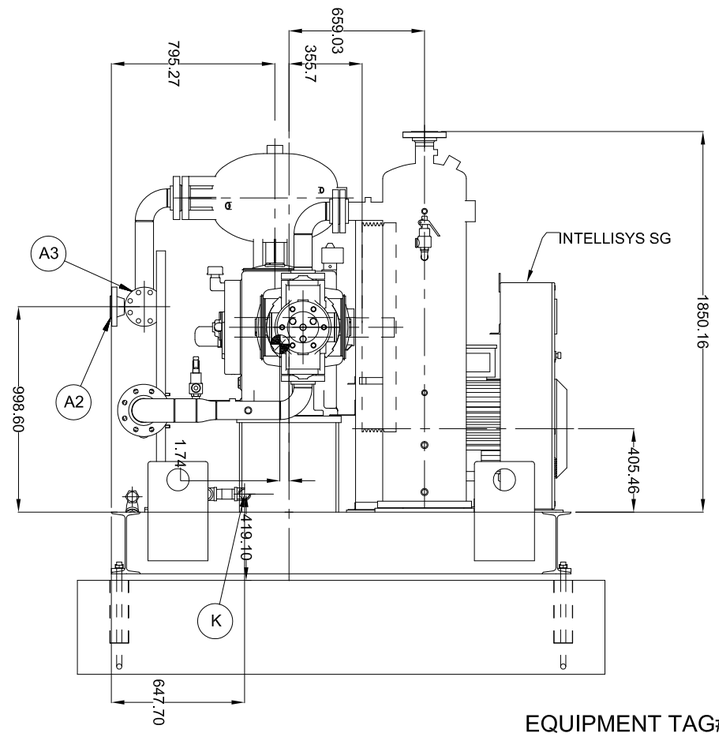
REVISIONS						
ZONE	REV	ECN	DESCRIPTION	DATE	DRAWN	APP'D
	A	ENL05082	ORIGINAL RELEASE	25JUL11	R.PATADIA	P.SHAH
	B	ENL05119	REVISED AS PER CUSTOMER'S COMMENTS	19AUG11	R.PATADIA	P.SHAH
	C	ENL05391	AS BUILT	23JAN12	A.GADARA	P.SHAH



ITEM	DESCRIPTION	SIZE / LEGEND
A1	INLET FLANGE CONNECTION	3" - 300# WNRF
A2	PRIMARY AIR DISCHARGE CONN. (HOT)	2.5" - 600# WNRF
A3	ALTERNATE AIR DISCHARGE CONN. (BLIND)	3" - 600# WNRF
B	SPACE REQUIRED TO REMOVE PISTON AND ROD	AS SHOWN
D	OIL DRAIN CONNECTION-FRAME (PLUGGED)	0.50" NPT
G	REGULATION CONNECTION	0.50" NPT
H2	CONDEN SATE CONNECTION (FIRST STAGE SEPERATOR)	0.50" NPT
H4	CONDEN SATE CONNECTION (SECOND STAGE SEPERATOR)	0.50" NPT
J	60/40 EG/WATER INLET	1.5" NPT
K	60/40 EG/WATER OUTLET	1.5" NPT
PSV-1	PRESSURE RELIEF VALVE (PSV-9810)	130 PSIG
PSV-2	PRESSURE RELIEF VALVE (PSV-9812)	290 PSIG
PSV-3	PRESSURE RELIEF VALVE (PSV-9813)	980 PSIG



EQUIPMENT TAG#: K-9810

MOTOR DETAILS:

1. MOTOR RATING : 100HP/460V/3PH/60HZ
2. SPEED : 1775 RPM

V BELT DRIVE DETAIL					
NO OF BELTS	SIZE OF BELT	OD OF MOTOR PULLEY	OD OF COMP. SHEAVE	COMP. SPEED	CD OF DRIVE
5	5VX-160	8.4"	40"	369	33.59

STANDARD TOLERANCES

ALL DIMENSIONS ARE IN MILLIMETERS (INCHES (IF SHOWN))

UNSPECIFIED TOLERANCES:

WHOLE	± 1
ONE PLACE (.X)	± 0.5
TWO PLACE (.XX)	± 0.25
ANGLES (.X)	± 1°

Ingersoll-Rand Industrial Technologies

DO NOT SCALE DRAWING

DRAWING CONFORMS TO ASME Y14.5M - 1994

CAD GENERATED DRAWING, NO MANUAL REVISIONS ALLOWED

UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND SHARP CORNERS
- WELD SYMBOLS TO BE IN ACCORDANCE WITH ANSI/AWS A2.4

THIRD ANGLE PROJECTION

DRAWN	R.PATADIA	25JUL11
CHECKED	P.SHAH	25JUL11
APPROVED	D.PATIL	25JUL11

NOMENCLATURE

Ingersoll Rand

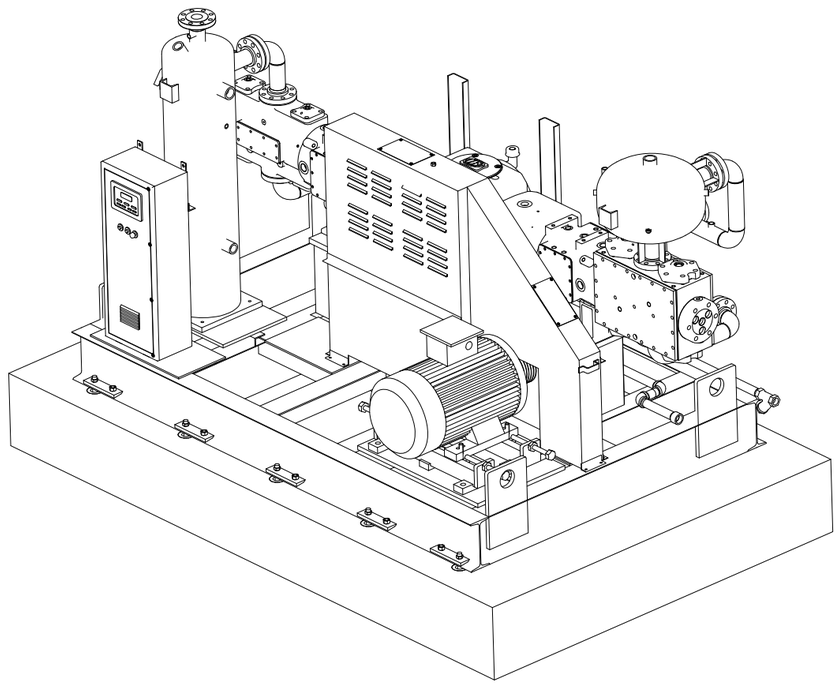
TITLE: **GENERAL ARRANGEMENT & FOUNDATION PLAN**

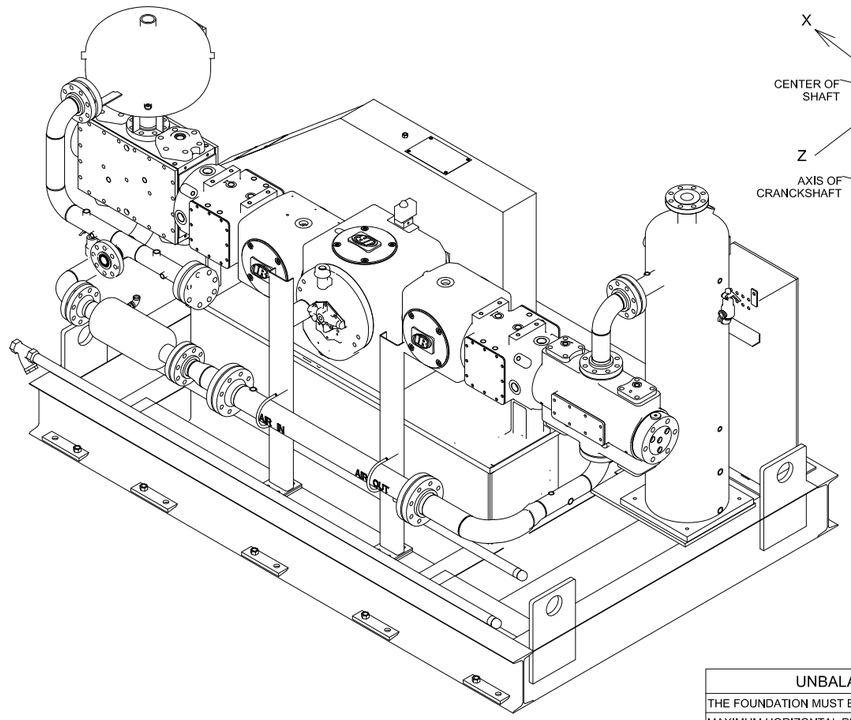
SIZE	ESTIMATED WEIGHT (KG UNLESS OTHERWISE SPECIFIED)	DWG NO.	REV
A1		23924541	C

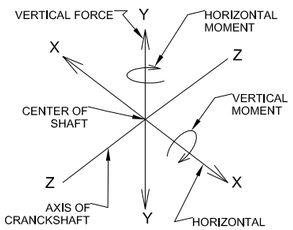
SCALE: 0.08 UNIT: SHEET 1 OF 2

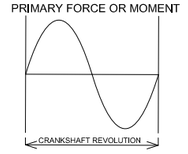
UNLESS OTHERWISE SPECIFIED PRINTED DOCUMENT IS UNCONTROLLED

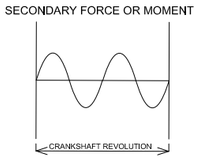
RC20.10 23924541-C PHN7904 GA Rev2









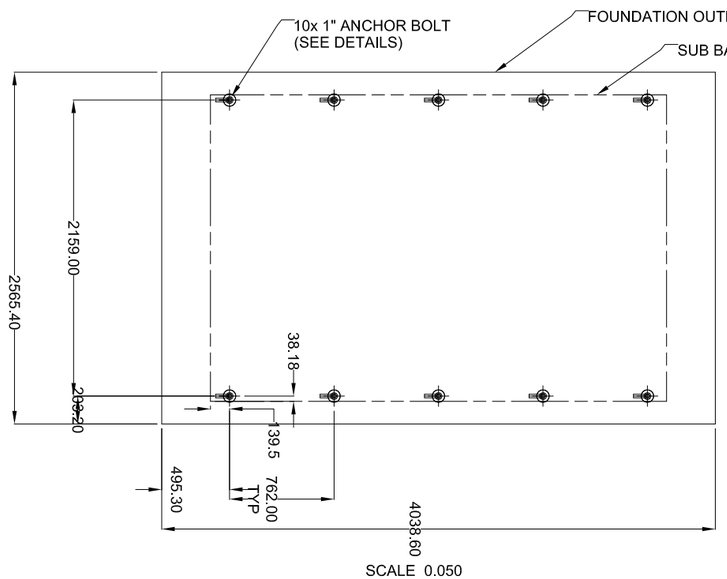


SR #	COMP./ASSY NAME	APPROX. WT (KG)
1	5" Air End	710
2	4" Air End	860
3	Frame & Running Gear	1015
4	Compressor Sheave	500
5	Motor	650
6	Base plate	1700
7	Volume Bottle	700
8	Coolers & Separator	200
79	Misc, parts	50
	Totol Weight	6385

UNBALANCED INERCIA FORCES ON FOUNDATION:	
THE FOUNDATION MUST BE DESIGN TO RESIST THE FOLLOWING FORCES.	
MAXIMUM HORIZONTAL PRIMARY FORCES	307 LBS
MAXIMUM HORIZONTAL SECONDARY FORCES	76 LBS
MAXIMUM VERTICAL PRIMARY FORCES	0 LBS
MAXIMUM VERTICAL SECONDARY FORCES	0 LBS
MAXIMUM HORIZONTAL PRIMARY MOMENT (ABOUT AXIS Y-Y)	744 LBS. FT.
MAXIMUM HORIZONTAL SECONDARY MOMENT (ABOUT AXIS Y-Y)	141 LBS. FT.
MAXIMUM VERTICAL PRIMARY MOMENT (ABOUT AXIS X-X)	178 LBS. FT.
MAXIMUM VERTICAL SECONDARY MOMENT (ABOUT AXIS X-X)	0 LBS. FT.

NOTES:
1) MOMENTS TAKEN ABOUT AXIS THROUGH CENTER OF SHAFT FORCES TAKEN AS ACTING AT CENTER OF SHAFT.

2) PRIMARY FORCES AND MOMENT CHANGE FROM ZERO TO MAXIMUM GIVEN ABOVE TO ZERO TO SAME MAXIMUM IN REVERSE DIRECTION AND BACK TO ZERO ONCE IN A CRANKSHAFT REVOLUTION SECONDARY FORCES AND MOMENTS GO THROUGH THIS CYCLE TWICE IN A REVOLUTION. THE SKETCH SHOWS THIS.



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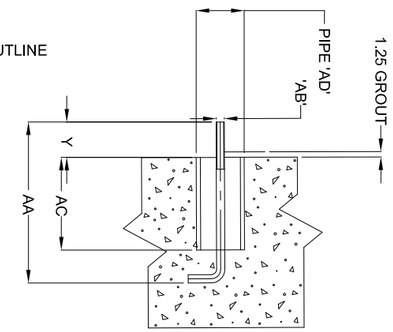


ANCHOR BOLT DETAILS
NO OF BOLTS : 10

BOLT		SLEEVE		PROJ.
AA	AB	AC	AD	Y
20.00	1.00	12.00	3.00	3.50

NOTES:

1) DO NOT SCALE THIS DRAWING. USE FIGURES GIVEN.

2) THE FOUNDATION SHOWN IS MINIMUM SUITABLE ONLY FOR FIRM SOIL BACKED UP BY BEDROCK. WE RECOMMEND THAT YOU INVESTIGATE THE SOIL CONDITION IN THE PROSPECTIVE LOCATION AND IF THERE IS ANY DOUBT ABOUT ITS SUITABILITY, WE URGE CONSULTATION WITH A FOUNDATION EXPERT.

3) SEE GENERAL FOUNDATION INSTRUCTION FORM 500.

4) DO NOT USE THIS DRAWING FOR CONSTRUCTION PURPOSES UNLESS OFFICIALLY ENDORSED.

5) BE SURE TO READ THE INSTRUCTION BOOK BEFORE CONSTRUCTION.

6) SEE AX-2172 FOR CLOSED LOOP COOLING DIRECTIVE.

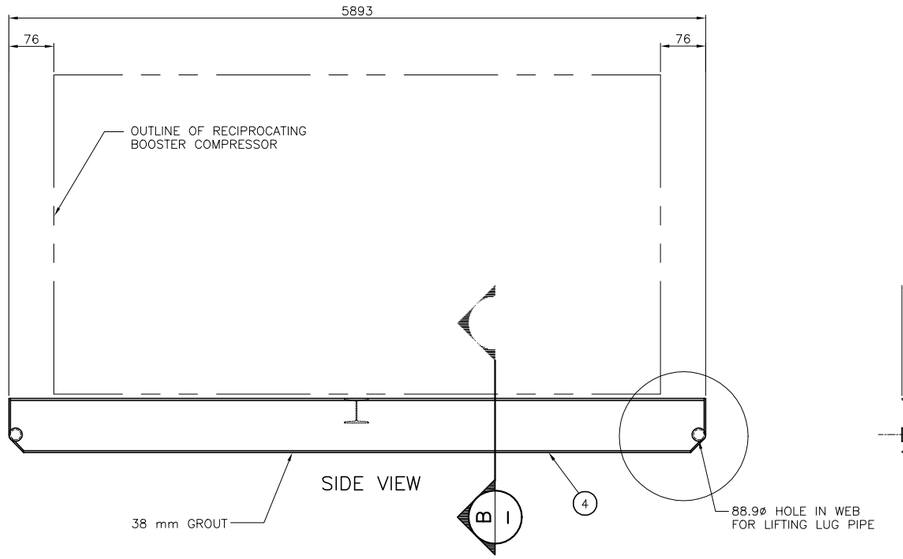
7) FOR GROUTING INSTRUCTION SEE DRG.39802624. PEDESTAL UNDER COMPRESSOR IS PROVIDED WITH GROUTING HOLES.

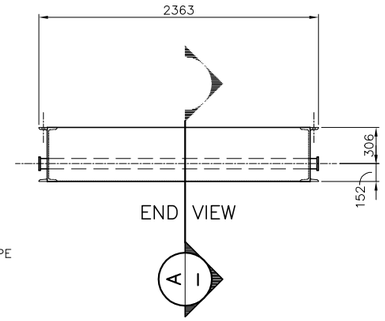
8) RECOMMENDED CLEARANCE ON THREE SIDES 36.00" AND 42.00" IN FRONT OF INTELLISYS OR MINIMUM AS REQUIRED BY LATEST NATIONAL CODES.

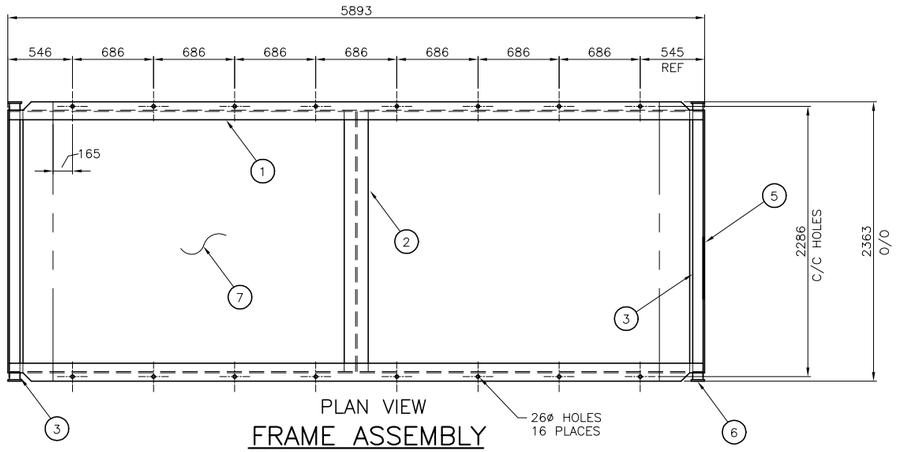
CENTER OF GRAVITY

TITLE: GENERAL ARRANGEMENT & FOUNDATION PLAN

SIZE A1 | DWG NO. 23924541 | REV. C
SCALE 0.07 | SHEET 2 OF 2







FRAME ASSEMBLY
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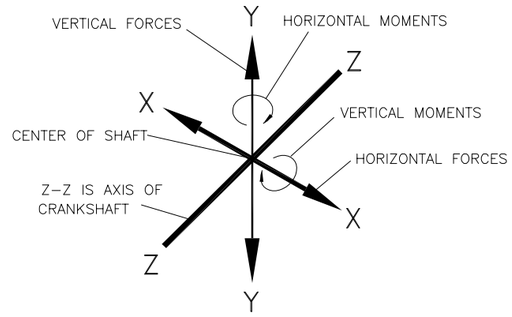
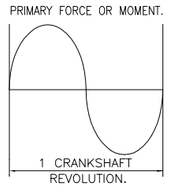
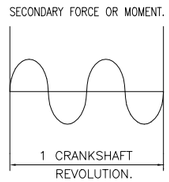






UNBALANCED INERTIA FORCES ON FOUNDATION

THE FOUNDATION MUST BE DESIGNED TO RESIST THE FOLLOWING FORCES :

MAXIMUM HORIZONTAL PRIMARY FORCE 1383 LBS.

MAXIMUM HORIZONTAL SECONDARY FORCE 267 LBS.

MAXIMUM VERTICAL PRIMARY FORCE 0 LBS.

MAXIMUM VERTICAL SECONDARY FORCE 0 LBS.

MAXIMUM HORIZONTAL PRIMARY MOMENT (ABOUT AXIS Y–Y) 6429 LBS.FT.

MAXIMUM HORIZONTAL SECONDARY MOMENT (ABOUT AXIS Y–Y) 941 LBS.FT.

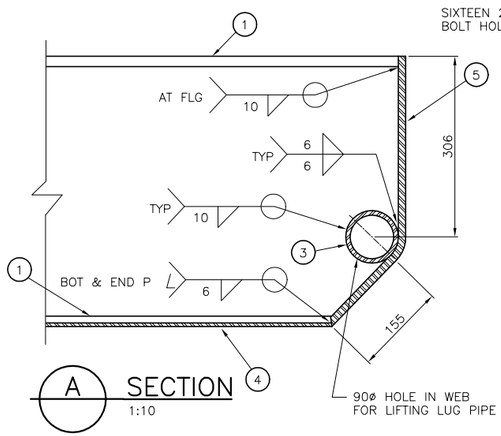
MAXIMUM VERTICAL PRIMARY MOMENT (ABOUT AXIS X–X) 1553 LBS.FT.

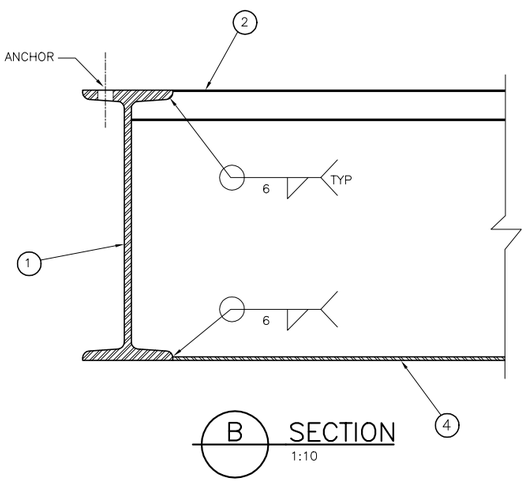
MAXIMUM VERTICAL SECONDARY MOMENT (ABOUT AXIS X–X) 0 LBS.FT.

NOTES :

1 : MOMENTS TAKEN ABOUT AXIS THROUGH CENTER OF SHAFT. FORCES TAKEN AS ACTING AT CENTER OF SHAFT.

2 : PRIMARY FORCES & MOMENTS CHANGE FROM ZERO TO MAXIMUM GIVEN ABOVE TO ZERO TO SAME MAXIMUM IN REVERSE DIRECTION & BACK TO ZERO ONCE IN A CRANKSHAFT REVOLUTION. SECONDARY FORCES & MOMENTS GO THROUGH THIS CYCLE TWICE IN A REVOLUTION. THE SKETCH SHOWS THIS.





Item	Qty.	Description	Reference
7	1	1360 Kg CONCRETE	6.5 CUBIC METERS
6	4	LIFTING LUG END CAP	A53 PLATE 127ø x13
5	2	TUB END PLATE	A53 PLATE 2223x508x13
4	1	TUB BOTTOM	A53 STEEL PLATE 2184x5867x6
3	2	LIFTING LUG	80ø, SCH 80 A53 PIPE @ 2337 LONG
2	1	CROSS BRACE	W200x52 @ 2200mm LONG
1	2	SIDE RAILS	S460x81.4 @ 6096mm LONG

BILL OF MATERIALS

ALL DIMENSIONS IN MILLIMETERS U.N.O.

CAD GENERATED DRAWING,
NO MANUAL REVISIONS ALLOWED

WARNING:
THE EXPORT OR RE–EXPORT OF THIS DRAWING OR A PRODUCT PRODUCED BY THIS DRAWING IS SUBJECT TO U.S. EXPORT ADMINISTRATION REGULATIONS AND OTHER APPLICABLE GOVERNMENTAL RESTRICTIONS OR REGULATIONS.

NOUN CODE

THIRD ANGLE PROJECTION

DRAWN: ASH — DATE: NOV 18 2007

CHECKED: BR — DATE:

APPROVED: BR — DATE:

Air Force Compressed Air Systems
Bay C, 3518-62nd Ave SE
Calgary, Alberta T2C 1Z8
Toll Free: 1-888-231-1024

TITLE

PLAN AND ELEVATIONS

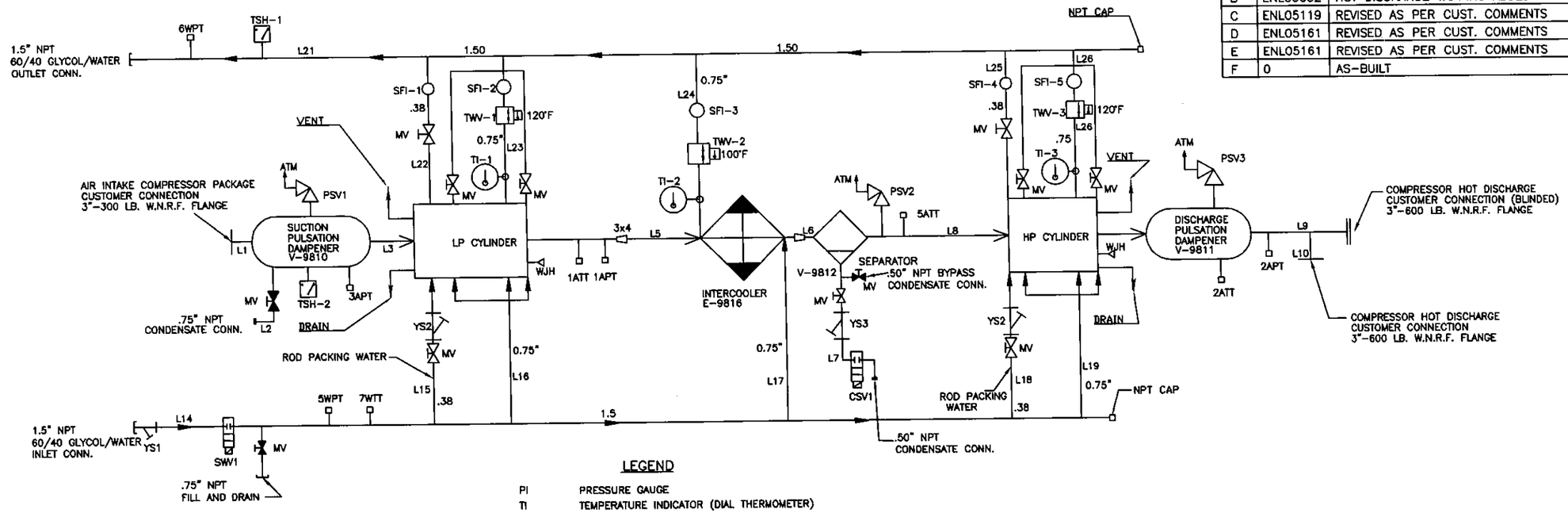
BOOSTER AIR COMPRESSOR SKID K–903
WHITESANDS CONKLIN PILOT PROJECT – PHASE II
INJECTION AIR BOOSTER COMPRESSOR IR 2–STAGE MODEL PHE 7&4.5x9

SIZE	ESTIMATED WEIGHT	DRAWING No.	REV
B	18145 KG 40,000 LBS	AFPCS–1.2M03	0

SCALE 1:50 | UNIT: | SHEET: 4 OF 15

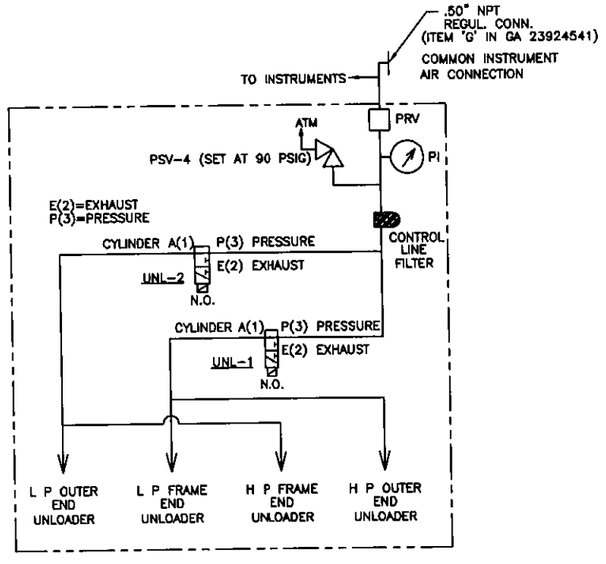
AutoCAD® Drawing File
No Manual Revisions

REVISIONS					
REV	ECN	DESCRIPTION	DWN	APV	DATE
A	ENL05033	ORIGINAL RELEASE	PVS	DP	25JUN11
B	ENL05082	HOT DISCHARGE TAPPING ADDED	PVS	DP	25JUL11
C	ENL05119	REVISED AS PER CUST. COMMENTS	PVS	DP	16AUG11
D	ENL05161	REVISED AS PER CUST. COMMENTS	PVS	DP	15SEP11
E	ENL05161	REVISED AS PER CUST. COMMENTS	SRJ	GP	21JAN12
F	0	AS-BUILT	ASH	BG	24AUG12



LEGEND

PI	PRESSURE GAUGE
TI	TEMPERATURE INDICATOR (DIAL THERMOMETER)
MV	MANUAL BALL VALVE
YS	STRAINER
PRV	PRESSURE REDUCING VALVE
PSV1/9810	PRESSURE RELIEF VALVE (SET AT 139 PSIG) 958 kPag
PSV2/9812	PRESSURE RELIEF VALVE (SET AT 300 PSIG) 2067 kPag
PSV3/9811	PRESSURE RELIEF VALVE (SET AT 1100 PSIG) 7577 kPag
PSV4/9814	PRESSURE RELIEF VALVE (SET AT 90 PSIG) 620 kPag
SFI	SIGHT FLOW INDICATOR
SWV	SOLENOID WATER VALVE
TWV	THERMOSTATIC WATER CONTROL VALVE
UNL-1	SOLENOID UNLOADER VALVE (1ST STEP UNLOADING)
UNL-2	SOLENOID UNLOADER VALVE (2ND STEP UNLOADING)
CSV	CONDENSATE SOLENOID VALVE
CH	CRANK CASE HEATER
WJH	CYLINDER WATER JACKET HEATER



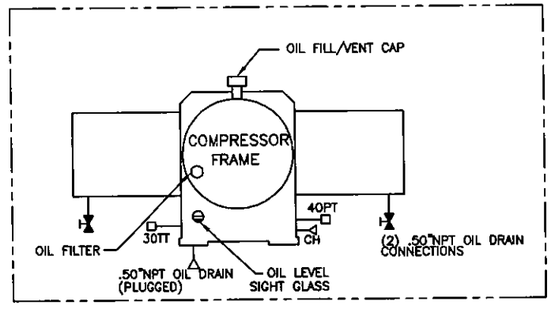
REGULATION SYSTEM

INTELLISYS CONTROL- LEGEND

1APT	1ST STAGE DISCHARGE AIR PRESSURE
1ATT	1ST STAGE DISCHARGE AIR TEMPERATURE
2APT	PACKAGE DISCHARGE AIR PRESSURE
2ATT	2ND STAGE DISCHARGE AIR TEMPERATURE
3APT	SUCTION PRESSURE
30TT	FRAME OIL TEMPERATURE
40PT	FRAME OIL PRESSURE
5WPT	PACKAGE INLET WATER PRESSURE
5ATT	2ND STAGE INLET AIR TEMPERATURE
6WPT	PACKAGE OUTLET WATER PRESSURE
7WTT	PACKAGE INLET WATER TEMPERATURE
TSH-1	PACKAGE WATER OUTLET TEMPERATURE
TSH-2	PACKAGE AIR INLET TEMPERATURE

AIR FLOW
WATER FLOW
CONDENSATE CONNECTION
REGULATION AIR

PROFESSIONAL ENGINEER ALBERTA
JOHN G. PERSON
05-SEPT-2012
APPROVAL SCOPE
FOR PIPING ONLY



OIL SYSTEM

NOTES:

1) SUCTION PRESSURE CANNOT EXCEED 165 PSIG.
2) ALL WATER PIPING LINES TO BE PROVIDED WITH HIGH POINT VENTS AND LOW POINT DRAINS.
3) SEE AX-2172 FOR CLOSED LOOP COOLING SYSTEM DIRECTIVE.
4) DO NOT COMBINE CONDENSATE DRAIN & BYPASS LINE. THESE LINES SHOULD BE OPEN TO ATMOSPHERIC PRESS.
5) REFER SHEET 2 FOR LINE SCHEDULE & TAG NO.

RC 20.11 23908379 REV F

K9810- RECIP ROTATING COMPRESSOR

DRAWING CONFORMS TO ASME Y14.5M -1994

MICROFILM BLOWBACK SCALE 0 1 in

THIRD ANGLE PROJECTION

DRAWN	PVS	25JUN11
CHECKED	PVS	25JUN11
APPROVED	DP	25JUN11
CHG. NOS.	42, 99	
SCALE	NTS	
	FSCM 6R484	

Ingersoll Rand
Industrial Technologies

TITLE: DIAGRAM, P&ID TOTAL SYSTEM

SIZE	ECN	DWG NO.	REV
D	ENL05161	23908379	F
WT. -	UNIT PHE-7	SHEET 1 OF 2	

AutoCAD® Drawing File
No Manual Revisions

REVISIONS					
REV	ECN	DESCRIPTION	DWN	APV	DATE
A	ENL05033	ORIGINAL RELEASE	PVS	DP	25JUN11
B	ENL05082	HOT DISCHARGE TAPPING ADDED	PVS	DP	25JUL11
C	ENL05119	REVISED AS PER CUST. COMMENTS	PVS	DP	16AUG11
D	ENL05161	REVISED AS PER CUST. COMMENTS	PVS	DP	15SEP11
E	ENL05161	REVISED AS PER CUST. COMMENTS	SRJ	GTP	21JAN12
F	0	AS-BUILT	ASH	BG	24AUG12

LINE SCHEDULE:

LINE	LINE NUMBER	MATERIAL	SCHEDULE	WALL THICKNESS	
L1	AC-BAA-3-1301	CS	40	–	SEE NOTE 1
L2	PW-AAA-3/4-1303	SS304	–	0.065	
L3	AC-BAA-3-1302	CS	40	–	
L4	AC-BAA-3-1303	CS	40	–	SEE NOTE 2
L5	AC-BAA-4-1303	CS	40	–	SEE NOTE 2
L6	AC-BAA-3-1304	CS	40	–	
L7	PW-BAA-1/2-1304	SS304	–	0.035	
L8	AC-BAA-3-1305	CS	40	–	
L9	AC-CAA-3-1307	CS	80	–	SEE NOTE 3
L10	AC-CAA-3-1307	CS	80	–	SEE NOTE 3
L14	GL-AAA-1.5-1303	SS304	–	0.065	
L15	GL-AAA-3/8-1316	SS304	–	0.035	
L16	GL-AAA-3/4-1310	SS304	–	0.065	
L17	GL-AAA-3/4-1312	SS304	–	0.065	
L18	GL-AAA-3/8-1318	SS304	–	0.035	
L19	GL-AAA-3/4-1314	SS304	–	0.065	
L21	GL-AAA-1.5-1300	SS304	–	0.065	
L22	GL-AAA-3/8-1317	SS304	–	0.035	
L23	GL-AAA-3/4-1311	SS304	–	0.065	
L24	GL-AAA-3/4-1313	SS304	–	0.065	
L25	GL-AAA-3/8-1319	SS304	–	0.035	
L26	GL-AAA-3/4-1315	SS304	–	0.065	

TAG NO:

PSV1	PSV-9810
TSH2	TSH-9810
PSV2	PSV-9812
CSV1	XV-9812
PSV3	PSV-9811
CSV2	XV-9813
PSV4	PSV-9814
SWV1	XV-9810
TSH1	TSH-9811
SFI-1	FG-9814
TI-1	TG-9810
TWV-1	TV-9810
SFI-2	FG-9810
TI-2	TG-9814
SFI-3	FG-9816
TI-3	TG-9811
TWV-3	TV-9811
SFI-5	FG-9811
PRV	PCV-9814
PI	PG-9814
UNL-1	XV-9814A
UNL-2	XV-9814B
YS1	SP-7100
YS2	SP-7101
YS3	SP-7102

PROFESSIONAL ENGINEER ALBERTA
JOHN G. PERSON
05-SEPT-2012

APPROVAL SCOPE
FOR PIPING ONLY

NOTES:
1. L1 IS FITTING ON Y-9810, NOT SEPARATE SPOOL
2. L4 & L5 ARE ONE SPOOL
3. L9 & L10 ARE ONE SPOOL

RC 20.11 23908379 P&ID REV. 5 / 13 / 19

DRAWING CONFORMS TO ASME Y14.5M – 1994

MICROFILM SLIDERACK SCALE

THIRD ANGLE PROJECTION

DRAWN	DATE
PVS	25JUN11
CHECKED	
PVS	25JUN11
APPROVED	
DP	25JUN11
CHG. NOS.	42, 99
SCALE	NTS
FSCM 6R484	

Ingersoll Rand
Industrial Technologies

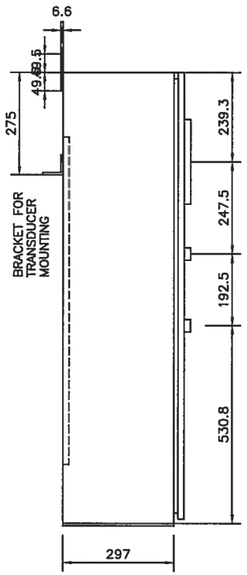
TITLE: DIAGRAM, P&ID TOTAL SYSTEM

SIZE	ECN	DWG NO.	REV
D	ENL05161	23908379	F
WT. –	UNIT PHE-7	SHEET 2 OF 2	

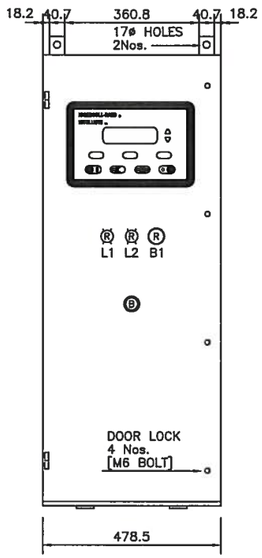
AutoCAD® Drawing File
No Manual Revisions

REVISIONS

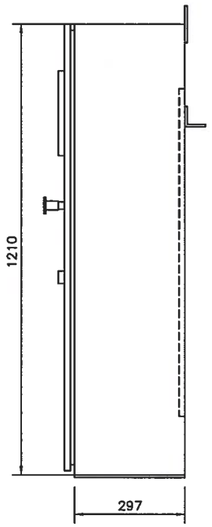
REV	ECN	DESCRIPTION	DWN	APV	DATE
A	ENL05038	ORIGINAL RELEASE IN WORD FORMAT	JSP	NPP	23JUN11
B	ENL05060	REVSIED TO ADD GA & MAKE CORRECTION	JSP	NPP	11JUL11
C	ENL05328	REVSIED TO MAKE CORRECTION FOR HEATER CKT	JSP	NPP	21DEC11
D	ENL05403	REVSIED TO MAKE CORRECTION FOR HEATER CKT	RBP	NPP	25JAN12
E	-------	REVISED TO REFLECT AS BUILT	JMK	JMK	02MAR12
F	-------	REMOVED XR1/XR2 TRANSFORMERS AND RELATED COMPONENTS. ADDED TB	JMK	JMK	08MAY12



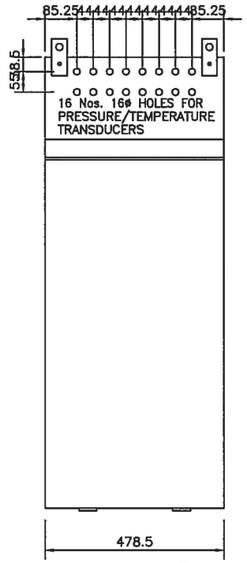
L.H.S. VIEW



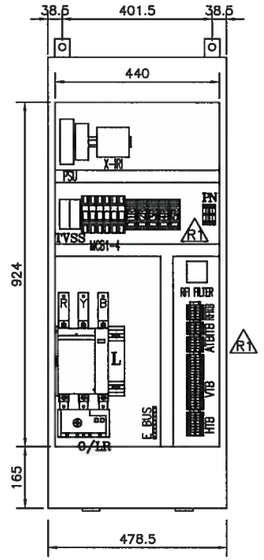
FRONT VIEW



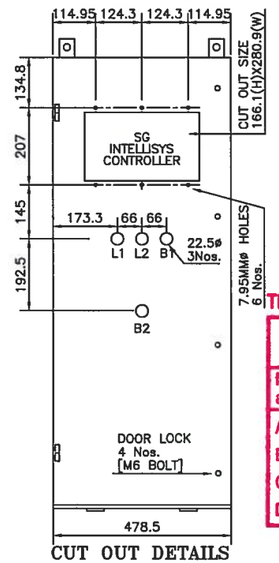
R.H.S. VIEW



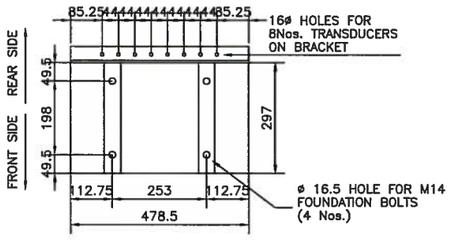
REAR VIEW



OPEN FRONT VIEW



CUT OUT DETAILS FOR FRONT DOOR



FOUNDATION DETAIL

CCN No.	TAG No.	DESCRIPTION		MAKE	
392592541M	----	SG INTELLISYS CONTROLLER		IR SCOPE	---
39201918	RFI	RFI-FILTER			---
42412122IM	X-IRI	INTELLISYS REMOTE INTERFACE [WITH POWER SUPPLY CARD]			---
70446042	PSU	POWER SUPPLY UNIT FOR 12V DC	[120VAC/12VDC, RATING 5A]	PHOENIX	CSA APPROVAL
68188473	TVSS	TRANSIENT VOLTAGE SUPRESSOR		PHOENIX	CSA APPROVAL
70465448	L1	120V AC CONTROL SUPPLY ON INDICATING LAMP	[3PLBR]	TEKNIC	CSA APPROVAL
70465455	L2	12V DC CONTROL SUPPLY ON INDICATING LAMP	[3PLBR]		
70464037	B1	EMERGENCY STOP [MUSHROOM STAYPUT]	[2AML4]		
70464029	B2	OVERLOAD RESET PUSH BUTTON		TEKNIC	CSA APPROVAL
70471966	L	POWER CONTACTOR FOR STARTER	[TYPE LC1F185,185A]	TELEMECANIQUE [SCHNEIDER]	CSA APPROVAL
17277666	O/LR	OVERLOAD RELAY	[TYPE LR9-F5369, 90-150A]		
70464011	1R-6R	AUXILIARY RELAY	[MY-4N]	OMRON	CSA APPROVAL
---	---	SOCKET FOR AUXILIARY RELAY	[ERS14M]	ESSEN	CSA APPROVAL
17283292	MCB1 & 2	MINIATURE CIRCUIT BREAKER	[REMOVED]	ABB	CSA APPROVAL
70469283	MCB3	MINIATURE CIRCUIT BREAKER	[REMOVED]		
70469291	MCB4	MINIATURE CIRCUIT BREAKER	[S201C10 1P 10A]		
17277831	XR1	STEP DOWN TRANSFORMER	[REMOVED]	SHILCHAR	CSA APPROVAL
'---	XR2	STEP DOWN TRANSFORMER	[REMOVED]	SHILCHAR	CSA APPROVAL
70465483	ATB,VTB,ITB,HTB,RFTTB	TERMINAL BLOCK	[UK 2.5B, 2.5 MM SQ.]	PHOENIX	CSA APPROVAL
----	----	END CONNECTOR FOR INTELLISYS	[MSTB 2.5, 2/3/4WAY]		
70465505	----	RC SCNUBBER	[LA4-KE1FC]	TELEMECANIQUE	CSA APPROVAL

THREE STREAMS ENGINEERING LTD. Vendor Document Review

Squad Check #	Equipment Tag #	Reviewed By	Date
049	K-9810		MAY 23/12

Note: Fabricator is responsible for compliance with all purchase specifications. T.S.E. assumes no responsibility for compliance by approval of these documents

A ☑ APPROVED WITHOUT EXCEPTION: Proceed with fabrication & issue final dwgs.
B ☐ APPROVED EXCEPT AS MARKED: Proceed with fabrication & reissue dwgs.
C ☐ NOT APPROVED: Revise drawings as marked & reissue for approval.
D ☐ REVIEW NOT REQUIRED: For information only.

NOTES

UNLESS SPECIFIED OTHERWISE ALL DIMENSION ARE IN mm.
PANEL CABINET TO BE FABRICATED USING 3mm CRCA SHEET.
ALL WELDED JOINTS TO BE TACK WELDED USING ELECTRIC WELDING.
STEPS FOR PAINTING
A) CLEANING, DE-RUSTING & PHOSPHATING.
B) TWO COATS OF PRIMER.
C) APPLICATION OF FILLER ON EXTERNAL FACES FOR SURFACE FINISH.
D) TWO COATS OF FINAL PAINTS AS PER SHADE MUNSELL 3.6Y 7.31/2.9 FOR OUT SIDE ,IN SIDE & MOUNTING PLATE.
DOOR TO BE PROVIDED WITH RUBBER GASKET & GASKETING FOR INTELISYS CONTROLLER.
PANEL PROTECTION IP:65 NEMA-4 AS PER IS:2147.

DRAWING CONFORMS TO ASME Y14.5M – 1994

MICROFILM BLOWBACK SCALE 0 1 in

THIRD ANGLE PROJECTION

DRAWN	JSP	23JUN11
CHECKED	NPP	23JUN11
APPRVD	KBP	23JUN11
CHG. NOS.	42, 99	
SCALE	NTS	
	FSCM 6R484	

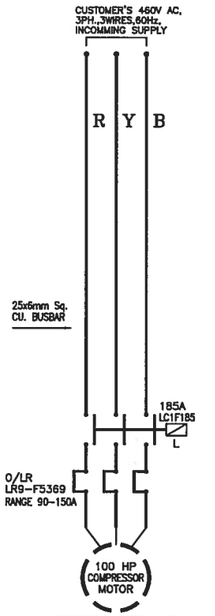
Ingersoll Rand
Industrial Technologies

TITLE
ELECTRIC SCHEMATIC & PANEL LAYOUT

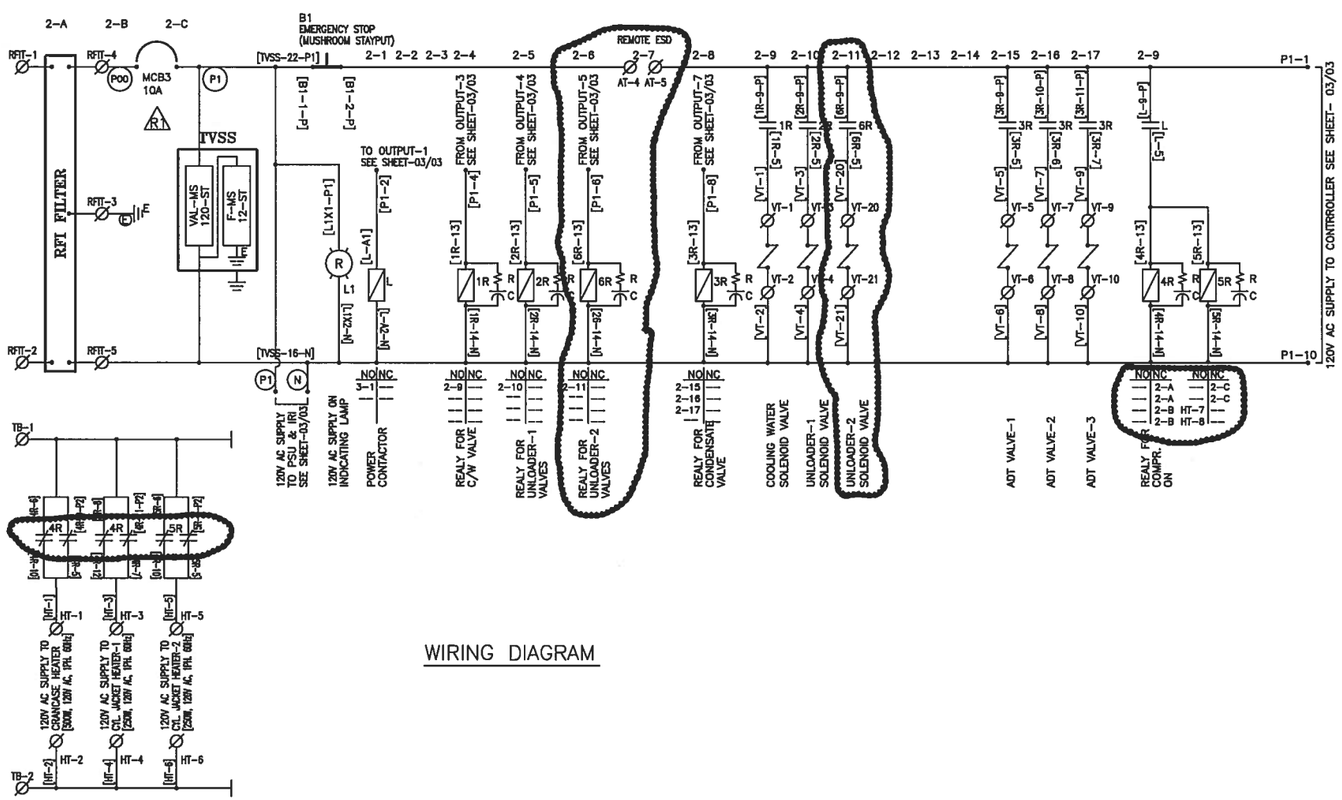
SIZE	ECN	DWG NO.	REV
B	ENL05403	23911597	F
WT.	UNIT PHE	SHEET 1	OF 3

RC20.13 23911597 ES_CPL RevF

AutoCAD® Drawing File
No Manual Revisions

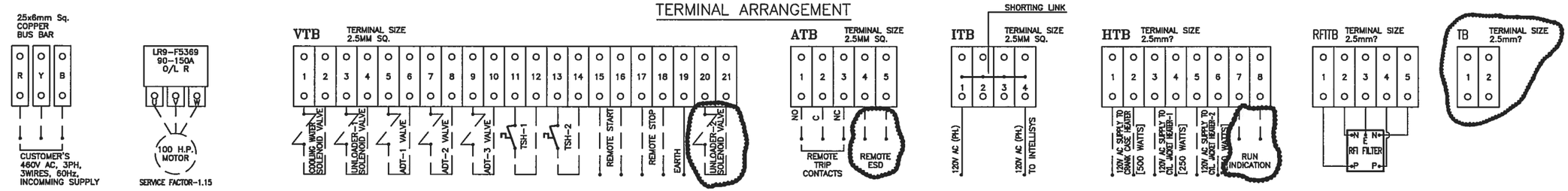


MOTOR DATA	
MOTOR	100HP [FV]
FULL LOAD CURRENT	121A [W/O SF]
FULL LOAD CURRENT	150A [WITH SF]
VOLTS	460V
PHASE	3
FREQUENCY	60 Hz
SERVICE FACTOR	1.15
TYPE	SQ. CAGE



WIRING DIAGRAM

TERMINAL ARRANGEMENT



DRAWING CONFORMS TO ASME Y14.5M -- ANSI

MICROFILM BLOWBACK SCALE 0 1 in

THIRD ANGLE PROJECTION

DRAWN	JSP	DATE 23JUN11
CHECKED	NPP	23JUN11
APPRVD	KBP	23JUN11
CHG. NOS.	42, 99	
SCALE	NTS	
	FSCM 6R484	

Ingersoll Rand
Industrial Technologies

TITLE
ELECTRICAL SCHEMATIC & PANEL LAYOUT

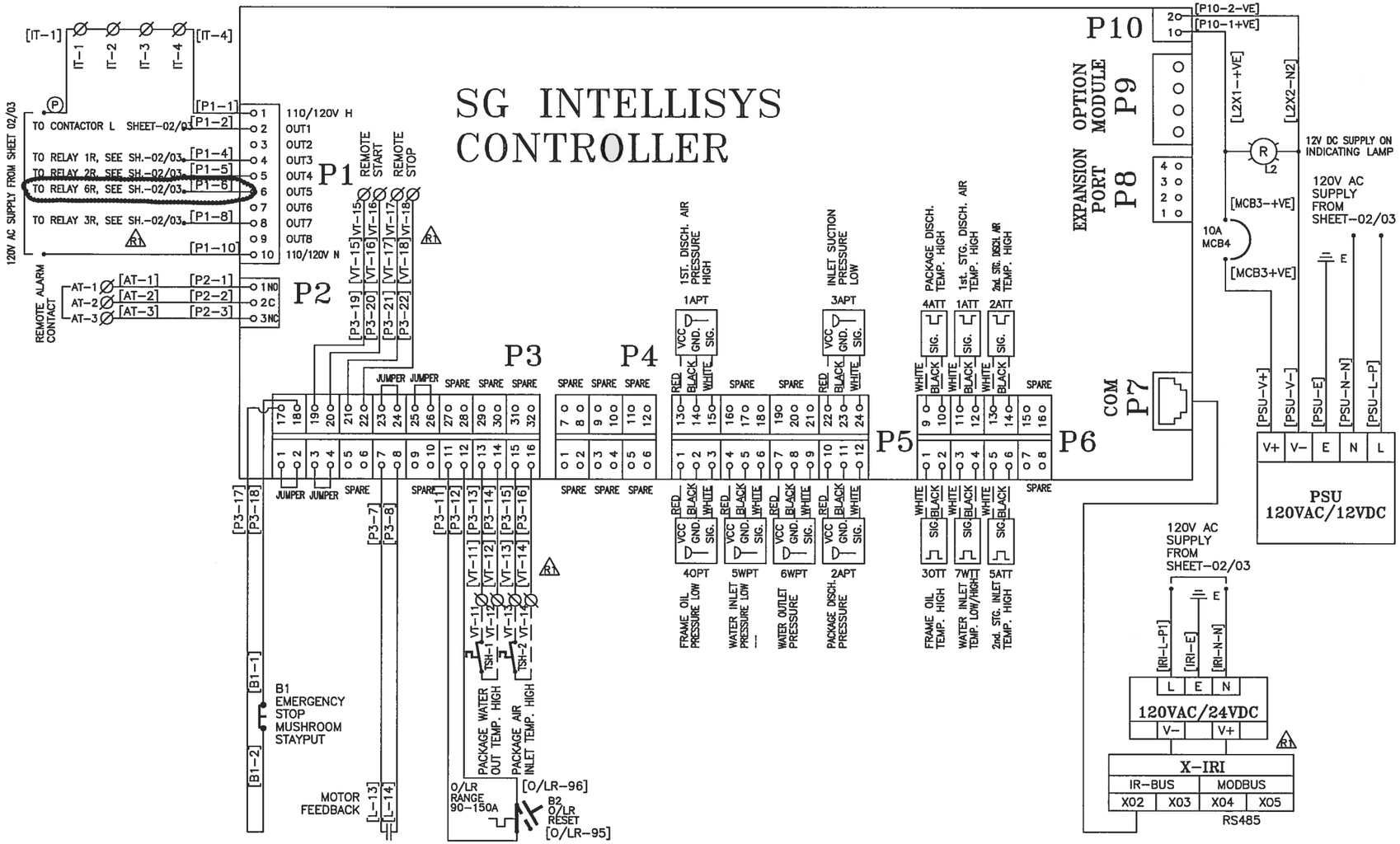
SIZE	ECN	DWG NO.	REV
B	ENL05403	23911597	F

WT. WT | UNIT BNE | SHEET 2 OF 3

AutoCAD® Drawing File
No Manual Revisions

3-13-2

SG INTELLISYS CONTROLLER



DRAWING CONFORMS TO ASME Y14.5M – ANSI

MICROFILM BLOWBACK SCALE 0 1 in

PROPRIETARY NOTICE

THIRD ANGLE PROJECTION

DRAWN	JSP	23JUN11
CHECKED	NPP	23JUN11
APPRVD	KBP	23JUN11
CHG. NOS.	42, 99	
SCALE	NTS	
	FSCM 6R484	

Ingersoll Rand
Industrial Technologies

TITLE
ELECTRICAL SCHEMATIC & PANEL LAYOUT

SIZE	ECN	DWG NO.	REV
B	ENL05403	23911597	F

WT. | UNIT PHE | SHEET 3 OF 3

RC20.13 23911597 ES_CPL RevF

Ingersoll-Rand Order No. 10832269 / 80718328

INGERSOLL-RAND MODEL5 & 4 X 7 PHE7 COMPRESSOR INSTRUMENT LIST
Ingersoll-Rand P&ID drawing no. 23908379

				Normal			Warning			Trip							
Cenovus Inst Tag #	Instrument Tag P & ID	CCN	Function	Pressure (psig)	Temp. (F)	Warning Not Advjustable	L	H	Trip	LL	HH	Type	Range	Manufacturer	Model #	Controller I/O Signal
PT-9816	1APT	54364104IM	1st stage discharge air pressure	263.087	241.660	95 % of trip set point	-	269.92 psig	8 % higher of Operating Pressure	-	284.12 psig	Pressure Transmitter	150-500 PSI	Texas Instruments,Kevlico	NA	AI
TE/TT-9816	1ATT	39571310IM	1st stage discharge air Temperature	263.087	241.660	97 % of trip set point	-	263.5 Deg F	Operating Temperature + 30 Deg F	-	271.66 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
PT-9811	2APT	54364096IM	Package discharge air pressure (off-Design)	900.000	119.000	95% of trip value	-	923.00 psig	8% Higher of Operating	-	972.00 psig	Pressure Transmitter	0-1000 PSI	Texas Instruments,Kevlico	NA	AI
TE/TT-9811	2ATT	39571310IM	2nd stage discharge air Temperature	869.300	361.320	97 % of trip set point	-	379.27 Deg C	Operating Temperature + 30 Deg F	-	391.20 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
PT-9810	3APT	39875539	Suction Pressure	115.000	104.000	105 % if Low trip set point-Not adjustable, 95 % of High trip Value	106.05 psig	119.2 psig	10 % Lower /10% Higher of Operating Pressure	101 psig	125.48 psig	Pressure Transmitter	0-225 PSI	Kavlico Corporation	P4050-5130	AI
TE/TT-9819	3OTT	39571310IM	Frame Oil Temperature	-	-	95 % of trip Value	-	165 Deg F	Fixed	-	175 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
PT-9819	4OPT	39875539	Frame Oil Pressure	-	-	120 % of trip set point	7.5 psig		Fixed	6 psig	-	Pressure Transmitter	0-225 PSI	Kavlico Corporation	P4050-5130	AI
TE/TT-9817	4ATT	39571310IM	Package discharge air Temperature (NOTE 1)	869.300	119.000	97 % of trip Value	-	144.53 Deg F	Operating Temperature + 30 Deg F	-	149 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
TT-9812	5ATT	39571310IM	2nd stage inlet air Temperature	257.531	119.000	97 % of trip Value	-	144.53 Deg F	Operating Temperature + 30 Deg F	-	149 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
PT-9818A	5WPT	39875539	Package Inlet Glycol/Water pressure	45.000	40-107	97 % of trip Value, 5% lower of Operating Value	38 psig	47.5 Deg F	8% Higher of Operatign Pressure	-	67.5 psig	Pressure Transmitter	0-225 PSI	Kavlico Corporation	P4050-5130	AI
PT-9818A	5WPT	39875539	Package Inlet Glycol/Water pressure	45.000	40-107			-	10 % Lower of Operating Value	40 psig	-	Pressure Transmitter	0-225 PSI	Kavlico Corporation	P4050-5130	AI
PT-9818B	6WPT	39875539	Package Outlet Glycol /Water pressure (use for low pressure drop)	35.000	125.000	5% lower of Operating Value	33.25 psig	-	10 % Lower of Operating Value	20 psig	-	Pressure Transmitter	0-225 PSI	Kavlico Corporation	P4050-5130	AI
TE/TT-9805	7WTT	39571310IM	Package Inlet Glycol/Water Temperature	45.000	40-107	5 % of Operating Vaule	38 Deg F	-	20 % of Operating value	36 Deg F	-	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
TE/TT-9805	7WTT	39571310IM	Package Inlet Glycol/Water Temperature	45.000	40-107	97 % of trip Value		144 Deg F	10 % of Operating Value		117.7 Deg F	Temperature Transmitter	(-)58-758 F	Temp-Pro	NA	AI
TSHH-9818	TSH-1	39198494IM	Package Outlet Glycol/Water Temperature	35.000	125.000	-	-	-	10% of Operating Temp.	-	137.5 Deg F	Temperature Switch	50-650 F	United Electric	F6G-12146 WITH 3BC-6F28 MODIFICATION	DI
TSHH-9810	TSH-2	39198494IM	Package Air Inlet Temperature	114.080	104.000	-	-	-	5% of Operating Value	-	109.2 Drg F	Temperature Switch	50-650 F	United Electric	F6G-12146 WITH 3BC-6F28 MODIFICATION	DI
PSV-9810	PSV1	39323688IM	Suction volume bottle Safety Valve			-	-	-	-	-	139 PSIG	Safety Valve	E Orifice	Farris	27EA34-M40/00	N/A
PSV-9812	PSV2	17343302	1st stg discharge Safety valve			-	-	-	-	-	300 PSIG	Safety Valve	D Orifice	Farris	27DA33-M40/00	N/A
PSV-9811	PSV3	23913403	Discharge Volume Bottle safety Valve (off-Design)			-	-	-	-	-	1100 PSIG	Safety Valve	N/A	Kunkle	0189-C01-KH	N/A
PSV-9814	PSV4	39331368IM	Regulation Safety valve			-	-	-	-	-	90 PSIG	Safety Valve	N/A	Kingston	118CSS-5-090	N/A
XV-9812	CSV1	39309034	Interstage Separator Drain	-	-	Open for 2 seconds in Every 3 minutes.	-	-	Orifice size : 3/64"	-	-	Condensate Solenoid Valve	N/A	Automatic Switch Company	8262G80	DO
XV-9813	CSV2	40057424IM	Discharge Separator Drain	-	-	Open for 2 seconds in Every 3 minutes (NOTE 2)	-	-	Orifice size : 5/16"	-	-	Condensate Solenoid Valve	N/A	Automatic Switch Company	8262G27	DO
XV-9810	SWV1	39111877IM	Cooling Glycol /Water Inlet (NOTE 3)	-	-		-	-	--	-	-	Solenoid Water Valve	N/A	ASCO	A8210G22	DO
TCV-9810	TMV-1	54635701IM	LP cylinder Glycol /water Outlet	-	-	Set @ 120 Deg F.	-	-	Not Adjustable	-	-	Thermostatic Water Control Valve	N/A	FLUID POWER ENERGY	A1111GKVW3-120	--
TCV-9816	TMV-2	54635693IM	Intercooler Glycol /Water Outlet	-	-	Set @ 100 Deg F.	-	-	Not Adjustable	-	-	Thermostatic Water Control Valve	N/A	FLUID POWER ENERGY	A1111GKVW3-100	--
TCV-9811	TMV-3	54635701IM	HP Cylinder Glycol /Water Outlet	-	-	Set @ 120 Deg F.	-	-	Not Adjustable	-	-	Thermostatic Water Control Valve	N/A	FLUID POWER ENERGY	A1111GKVW3-120	--
TCV-9817	TMV-4	54635693IM	Aftercooler Glycol /Water Outlet	-	-	Set @ 100 Deg F (NOTE 2)	-	-	Not Adjustable	-	-	Thermostatic Water Control Valve	N/A	FLUID POWER ENERGY	A1111GKVW3-100	--
XV-9814A	UNL1	54635693IM	Capacity Load/Unload	-	-	-	-	-	--	-	-	0% Solenoid Unloader Valve	N/A	Automatic Switch Company	8262G16	DO
XV-9814B	UNL2	54635693IM	Capacity Load/Unload	-	-	-	-	-	--	-	-	50% Solenoid Unloader Valve	N/A	Automatic Switch Company	8262G16	DO
PCV-9814	PRV	39322549IM	Regulation System Pressure Regulating Valve						Control Orifice:3/16"			Pressure Regulator	N/A	Grove' Mity-Mite'	# 94-11486P2A	
PG-9414	PI	39322763	Regulation System Pressure									Pressure Gauge	0-110 Psi-g	Asohroft	25-1009AWL-02L-0/110 MG	
TG-9810	TI-1	40048423	LP Cylinder Glycol/Water Outlet									Dial Type Thermometer	0-250 Deg F			
TG-9816	TI-2	40048423	Irtercooler Glycol/Water Outlet									Dial Type Thermometer	0-250 Deg F			
TG-9811	TI-3	40048423	HP Cylinder Glycol/Water Gullet									DialType Thermometer	0-250 Deg F			
TG-9817	TI-4	40043423	Aftercooler Glycol/Water Outlet									DialType Thermometer	0-250 Deg F			
FG-9814	SFI-1	95955464	Site Flow Indication for Water Glycol						Orifice:3/4"			Mechanical Sight Flow Indicator				
FG-9810	SFI-2	95587895	Site Flow Indication for Water Glycol						Orifice:3/8"			Mechanical Sight Flow Indicator				
FG-9816	SFI-3	95587895	Site Flow Indication for Water Glycol						Orifice:3/8"			Mechanical Sight Flow Indicator				
FG-9812	SFI-4	95955464	Site Flow Indication for Water Glycol						Orifice: 3/4"			Mechanical Sight Flow Indicator	-			
FG-9811	SFI-5	95507895	Site Flow Indication for Water Glycol						Orifice: 3/4"			Mechanical Sight Flew Indicator	-			

NOTE :

1. TE/TT9817 (4ATT) is for provision for after cooler and currently will be programmed as read only.
2. Item Not installed.Provision for Aftercooler.
3. This Solenoid is Disabled and remains open.

Cenovus Rise Rate

PHN7904 Cooling Calculations

"Design Condition"			
898 psia	**Design Discharge Pressure**		**100% Load**
Total Compressor Heatload:		(201860 btu/hr)	
Heatload Considered for 60/40 EG/H20:		(222046 btu/hr)	
Corrected Coolant Flow in GPM:		(54.2168 gpm)	
Inlet Air Temp F	**Coolant Temp F**		**Cooling Water Rise F**
104	**104**		**10**
Stage 1	54,063.00	10.8	Stage 1 Cooler H2O gpm
Stage 2	106,297.00	21.3	Stage 2 Cooler H2O gpm
Cylinder 1	14,500.00	2.9	Stage 1 Cylinder H2O gpm
Cylinder 2	27,000.00	5.4	Stage 2 Cylinder H2O gpm
Combined BTU	201,860.00	40.4	Combined H2O GPM
**Safety Factor	1.10	1.342	Factor for 60/40 EG/H2O
Total System Heatload	**222,046.00**	**54.22**	**Total GPM**

"Off-Design Condition"			
914 psia	**Off-Design Pressure**		**51% Load**
Total Compressor Heatload:		(204302 btu/hr)	
Heatload Considered for 60/40 EG/H20:		(224732.2 btu/hr)	
Corrected Coolant Flow in GPM:		(54.8878 gpm)	
Inlet Air Temp F	**Coolant Temp F**		**Cooling Water Rise F**
104	**104**		**10**
Stage 1	54,479.00	10.9	Stage 1 Cooler H2O gpm
Stage 2	107,323.00	21.5	Stage 2 Cooler H2O gpm
Cylinder 1	15,000.00	3	Stage 1 Cylinder H2O gpm
Cylinder 2	27,500.00	5.5	Stage 2 Cylinder H2O gpm
Combined BTU	204,302.00	40.9	Combined H2O GPM
**Safety Factor	1.10	1.342	Factor for 60/40 EG/H2O
Total System Heatload	**224,732.20**	**54.89**	**Total GPM**

** Factory Safety Factor built into performance file heatload in anticipation unkonown of field conditions

Ingersoll Rand
Industrial Technologies

5 & 4 x 7 PHE7 BOL

(5 & 4 x 7 PHE7 BOL)

RECIPSelect
1.5 / 2010.008

File No.	PHN7904	Proposal No.	60/40 (TEG/H2O)	Date	08 Dec 2011
Customer	Cenovus Rise Rate	User	Ingersoll-Rand	Build ID	5051

Gas		Air	Reference Conditions		
Service		Lubricated	Pressure	psia	14.700
Atmospheric Pressure	psia	13.780	Temperature	°F	60.00
Atmospheric Temperature	°F	89.60	Relative Humidity	%	0.0
Inlet Pressure	psia	128.780			
Inlet Temperature	°F	104.00	Stroke	in	7.000
Relative Humidity	%	100.0	Speed	rpm	376
Coolant Temperature	°F	104.00	Friction Loss	hp	4.01

Stage Data

Compressor Data		1	2	3	4	5
Cylinder Diameters	in	5.0000	4.0000			
Number of Cylinders		1	1			
Valve Speed	ft/min	1365	1940			
OE Rod Diameter	in	0.0000	0.0000			
FE Rod Diameter	in	1.5000	1.5000			
Piston Area - OE	in2	19.63	12.57			
Piston Area - FE	in2	17.87	10.80			
Displacement OE	cfm	29.91	19.14			
Displacement FE	cfm	27.22	16.45			
Total Displacement	cfm	57.12	35.59			
OE Clearance	%	15.30	21.10			
FE Clearance	%	16.60	19.00			
Average Clearance	%	15.92	20.13			
Rod Load Compression	lb	-3099	-8567			
Rod Load Tension	lb	2432	6518			
Stage Inlet						
Stage Inlet Pressure	psia	128.780	270.740			
Stage Inlet Temperature	°F	104.00	119.00			
Compressibility Factor		0.9996	0.9966			
Total Inlet Capacity	icfm	47.51	23.08			
Capacity at Ref. Conditions	scfm	381.41	381.41			
Stage Discharge						
Stage Discharge Pressure	psia	276.266	916.327			
Stage Discharge Temp	°F	240.37	358.48			
Discharge Compressibility		1.0037	1.0269			
Compression Ratio		2.1453	3.3845			
K value of Gas		1.3964	1.3967			
Volume Exponent		1.4069	1.4464			
Volumetric Efficiency Losses	%	5.36	8.51			
Volumetric Efficiency - OE	%	83.62	63.57			
Volumetric Efficiency - FE	%	82.68	66.35			
OE IndicatedPower	hp	13.44	24.66			
FE Indicated Power	hp	12.10	22.02			
Stage Power (w/Friction)	hp	29.38	54.09			
Cooler Performance						
Cooler Pressure Drop	%	2.00	2.00			
CTD	°F	15.00	15.00			
Condensation	lb/min	0.0406	0.0786			
Cooler Heat Load	Btu/hr	54063	106297			
Cooler Water Flow	gpm	10.8	21.3			
Cooler Water Temp Rise	°F	10.00	10.00			
Cylinder Water Flow	gpm	2.9	5.4			
Cylinder Water Temp Rise	°F	10.00	10.00			

Summary

Total Capacity	scfm	381.41 (+/-) 5.0%	Discharge Pressure	psia	898.00
Compressor Shaft Power	hp	83.47	Discharge Temperature	°F	119.00
Specific Power	hp/100 scfm	21.88 (+/-) 6.0%			

Ingersoll Rand
Industrial Technologies

5 & 4 x 7 PHE7 BOL

(5 & 4 x 7 PHE7 BOL)

RECIPSelect
1.5 / 2010.008

File No.	PHN7904	Proposal No.	60/40 (TEG/H2O)	Date	08 Dec 2011
Customer	Cenovus Rise Rate	User	Ingersoll-Rand	Build ID	5051

Gas		Air	Reference Conditions		
Service		Lubricated	Pressure	psia	14.700
Atmospheric Pressure	psia	13.780	Temperature	°F	60.00
Atmospheric Temperature	°F	89.60	Relative Humidity	%	0.0
Inlet Pressure	psia	128.780			
Inlet Temperature	°F	104.00	Stroke	in	7.000
Relative Humidity	%	100.0	Speed	rpm	376
Coolant Temperature	°F	104.00	Friction Loss	hp	4.01

Stage Data

Compressor Data		1	2	3	4	5
Cylinder Diameters	in	5.0000	4.0000			
Number of Cylinders		1	1			
Valve Speed	ft/min	1365	1940			
OE Rod Diameter	in	0.0000	0.0000			
FE Rod Diameter	in	1.5000	1.5000			
Piston Area - OE	in2	19.63	12.57			
Piston Area - FE	in2	17.87	10.80			
Displacement OE	cfm	29.91	19.14			
Displacement FE	cfm	27.22	16.45			
Total Displacement	cfm	57.12	35.59			
OE Clearance	%	15.30	21.10			
FE Clearance	%	16.60	19.00			
Average Clearance	%	15.92	20.13			
Rod Load Compression	lb	-3129	-8756			
Rod Load Tension	lb	2459	6675			
Stage Inlet						
Stage Inlet Pressure	psia	128.780	272.231			
Stage Inlet Temperature	°F	104.00	119.00			
Compressibility Factor		0.9996	0.9966			
Total Inlet Capacity	icfm	47.44	22.92			
Capacity at Ref. Conditions	scfm	380.81	380.81			
Stage Discharge						
Stage Discharge Pressure	psia	277.787	932.653			
Stage Discharge Temp	°F	241.46	361.32			
Discharge Compressibility		1.0038	1.0272			
Compression Ratio		2.1571	3.4260			
K value of Gas		1.3964	1.3967			
Volume Exponent		1.4069	1.4464			
Volumetric Efficiency Losses	%	5.38	8.58			
Volumetric Efficiency - OE	%	83.49	63.09			
Volumetric Efficiency - FE	%	82.55	65.91			
OE IndicatedPower	hp	13.52	24.94			
FE Indicated Power	hp	12.17	22.29			
Stage Power (w/Friction)	hp	29.56	54.73			
Cooler Performance						
Cooler Pressure Drop	%	2.00	2.00			
CTD	°F	15.00	15.00			
Condensation	lb/min	0.0411	0.0784			
Cooler Heat Load	Btu/hr	54479	107323			
Cooler Water Flow	gpm	10.9	21.5			
Cooler Water Temp Rise	°F	10.00	10.00			
Cylinder Water Flow	gpm	3.0	5.5			
Cylinder Water Temp Rise	°F	10.00	10.00			

Summary

Total Capacity	scfm	380.81 (+/-) 5.0%	Discharge Pressure	psia	914.00
Compressor Shaft Power	hp	84.29	Discharge Temperature	°F	119.00
Specific Power	hp/100 scfm	22.13 (+/-) 6.0%			