



PLATINUM
ENERGY SERVICES ULC

A Trinity Industries Canada Company *"The Oilfield Equipment People"™*



Data Manual for Apache Canada Ltd.

Quality Control Summary for One (1) New Platinum 750 BBL Single Wall Tank Serial No: 21575

Apache PO #: 4500109912 Rev 0

AFE #: 70-13-0001

Request #: 21314-A-TM

TK-026-21575

Manufacturer of Gas Processing Equipment

SINGLE WALL | DOUBLE WALL | 50BBL TO 2000BBL TANKS | CUSTOM ORDERS WELCOME!

Phone: (403) 264-6688

Toll Free: 1-888-745-4667

Fax: (403) 237-8271

Website: www.platinumenergycanada.com

E-mail: sales@platinumenergycanada.com



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AS BUILT DRAWING

B31.3 PIPING

Manufacturer of Gas Processing Equipment

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WELDER QUALIFICATIONS & IDENTIFICATIONS

NAME	IDENTIFICATION	QUALIFICATION
ACTON-BROWNE, CHRIS	A2	1 ST YEAR APPRENTICE
AKERSTROM, KYLE	A1	1 ST YEAR APPRENTICE
BATDORF, VAUGHN	B5	JOURNEYMAN
BECK, JOE	B11	1 ST YEAR APPRENTICE
BENEDICT, DAN	B7	JOURNEYMAN
BYPALKO, TRAVIS	B1	1 ST YEAR APPRENTICE
CAAN, MATT	C2	3 RD YEAR APPRENTICE
CLARKSON, DARCY	C1	JOURNEYMAN
FERGUSON, TYLER	F4	1 ST YEAR APPRENTICE
FERNETTI, JUSTIN	F3	1 ST YEAR APPRENTICE
FISCHER, BRIAN	F1	2 ND YEAR APPRENTICE
GRAY, DYLAN	G4	3 RD YEAR APPRENTICE
GRAY, MIKE	G3	3 RD YEAR APPRENTICE
GREEN, BRAD	G2	1 ST YEAR APPRENTICE
GREEN, JORDAN	G1	JOURNEYMAN
HAUGHIAN, MARC	H5	2 ND YEAR APPRENTICE
KNUDSLIEN, CLINT	K1	JOURNEYMAN
LAGRAN, MATT	L2	2 ND YEAR APPRENTICE
LUTZ, BRAD	L1	JOURNEYMAN
MACPHERSON, DREW	M2	2 ND YEAR APPRENTICE
MASON, KEN	M1	JOURNEYMAN
MCCOLL, MIKE	M4	1 ST YEAR APPRENTICE
MCCOLL, MITCH	M3	1 ST YEAR APPRENTICE
MEILICKE, TRAVIS	M6	JOURNEYMAN
MUND, CHARLTON	M5	JOURNEYMAN
PATRICK, MIKE	P2	JOURNEYMAN
PLANTE, MARCEL	P5	JOURNEYMAN
ROSS, WAYNE	R3	JOURNEYMAN
RUBBEIKE, TYSON	R4	1 ST YEAR APPRENTICE
SACKMAN, SEAN	S11	1 ST YEAR APPRENTICE
SCHUETZLE, TAREN	S2	2 ND YEAR APPRENTICE
SLOTA, NIK	S8	3 RD YEAR APPRENTICE
STADNYK, MIKE	S3	JOURNEYMAN
STADNYK, MITCH	S1	JOURNEYMAN
SUBOTIC, VLADO	S5	JOURNEYMAN
WALLIS, ROSS	W2	1 ST YEAR APPRENTICE
WEIMER, STEVE	W1	JOURNEYMAN

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Fax: (403) 237-8271

Website: www.platinumenergycanada.com

E-mail: sales@platinumenergycanada.com

In Process Checklist

Date: MAY 26 / 2014

Unit #: 21575 Tank Size: 750 BBL.

Customer: APACHE Q.C.: WAYNE ROSS

	Accept	Repair	Q.C.
Hoops Long Seam	✓		WR
Floor Seam	✓		WR
Roof Seam	✓		WR
Roof To Hoop Seam	✓		WR
Toe Railing	✓		WR
Hoop To Floor Primary Seam	N/A		WR
Hoop To Floor Secondary Seam	✓		WR
Primary Stack Circ. Seam	N/A		WR
Secondary Stack Circ. Seam	✓		WR
Annulus Flat Bar	N/A		WR
Fittings	✓		WR
Manway	✓		WR
ANGLE IRON RUN-AROUND	✓		WR
Skid	✓		WR
Heater Box	N/A		WR
Enviro Vault	N/A		WR
Ladder	✓		WR
Air Test	✓		WR
ANCHOR CHAIRS	✓		WR

- All In – Process Inspection will be completed by the Quality Control Manager
- Tank Components / Jobs are individually checked as they are completed. Visually inspected for quality of welds, defects, missed welds, soundness, etc.
- Air – Testing will be completed when tank is stabbed, fittings/manway is welded & inspected. A Test Pressure of 24 ounces is used. Welds are sprayed with soapy water. If any leaks occur, they will be repaired and retested.

Remarks: _____

GAUGE CALIBRATION REPORT

Form 17.28

Location:	Reddcliff	Calibration Date:	June 26/14
Client:	Platinum	Reference PO #:	R1252917
Client Contact:	Wayne	Client Contact PH #:	4035482657
Technician:	Kurtis Brezovski	Reference Ticket #:	

Gauge Identification

ID Number :	N/A	Date Last Calibrated:	N/A
-------------	-----	-----------------------	-----

Gauge Data

Type:	Pressure
Manufacturer:	WGI
Range:	0-14kPa
Model #:	N/A
Serial #:	TECH-MH-006-2014
Service:	Air

Test Equipment Used

Description	Model #	Serial #	Last Calibration Date
Gauge	Crystal IS33	2262-245676	Apr. 9/14

Test Data

% of Input	Input in KPA/PSI	AS FOUND	AS LEFT
0%	0	0	0
25%	3.5	3.5	3.5
50%	7	7	7
75%	10.5	10.5	10.5
100%	14	14	14
75%	10.5	10.5	10.5
50%	7	7	7
25%	3.5	3.5	3.5
0%	0	0	0

Declaration

Techmation Electric & Controls Ltd. certifies that all test equipment used has been calibrated using measurement standards traceable to the National Institute of Standards and Technology (NIST).

Comments

Inspected/Approved By:

Techmation Employee:

Name: Kurtis Brezovski

Date: June 26/14

Techmation QC Representative:

Name:

Kurtis Brezovski

Date:

June 26/14

Leak Test Procedure

Description: 750 BDL Date: MAY 26 / 2014
 Work Order No: 21575 Fabricated By: Platinum Energy
 Customer: APACHE Test Performed By: WAYNE ROSS
 Test Pressure: 2402 Manufacturer: Platinum Energy

Leak Test Results:

Flat Bar: Inside Circumference: _____ Leaks
 Outside Circumference: _____ Leaks
 Welded By: _____
 Repaired/Retested: _____

Circumferential & Longitudinal Seams:

Inside Circumference: _____ Leaks
 Outside Circumference: 0 Leaks
 Welded By: C1 + W2
 Repaired/Retested: _____

Nozzles / Fittings / Manway:

Mark	Size	Leaks	Welder	Mark	Size	Leaks	Welder
N1	2"	0	C1 + W2				
N2	3"	0	C1 + W2				
N3	8"	0	C1 + W2				
N4	4"	0	C1 + W2				
N6	2"	0	C1 + W2				
N7	4"	0	C1 + W2				
N8	20"	0	C1 + W2				
N9	3/4"	0	C1 + W2				
N10	2"	0	C1 + W2				
Clarb	1 1/4"	0	C1 + W2				
M1	2'x3'	0	C1 + W2				

Bottom: 0 Leaks

Welded By: C1 + M3

Repaired/Retested: _____

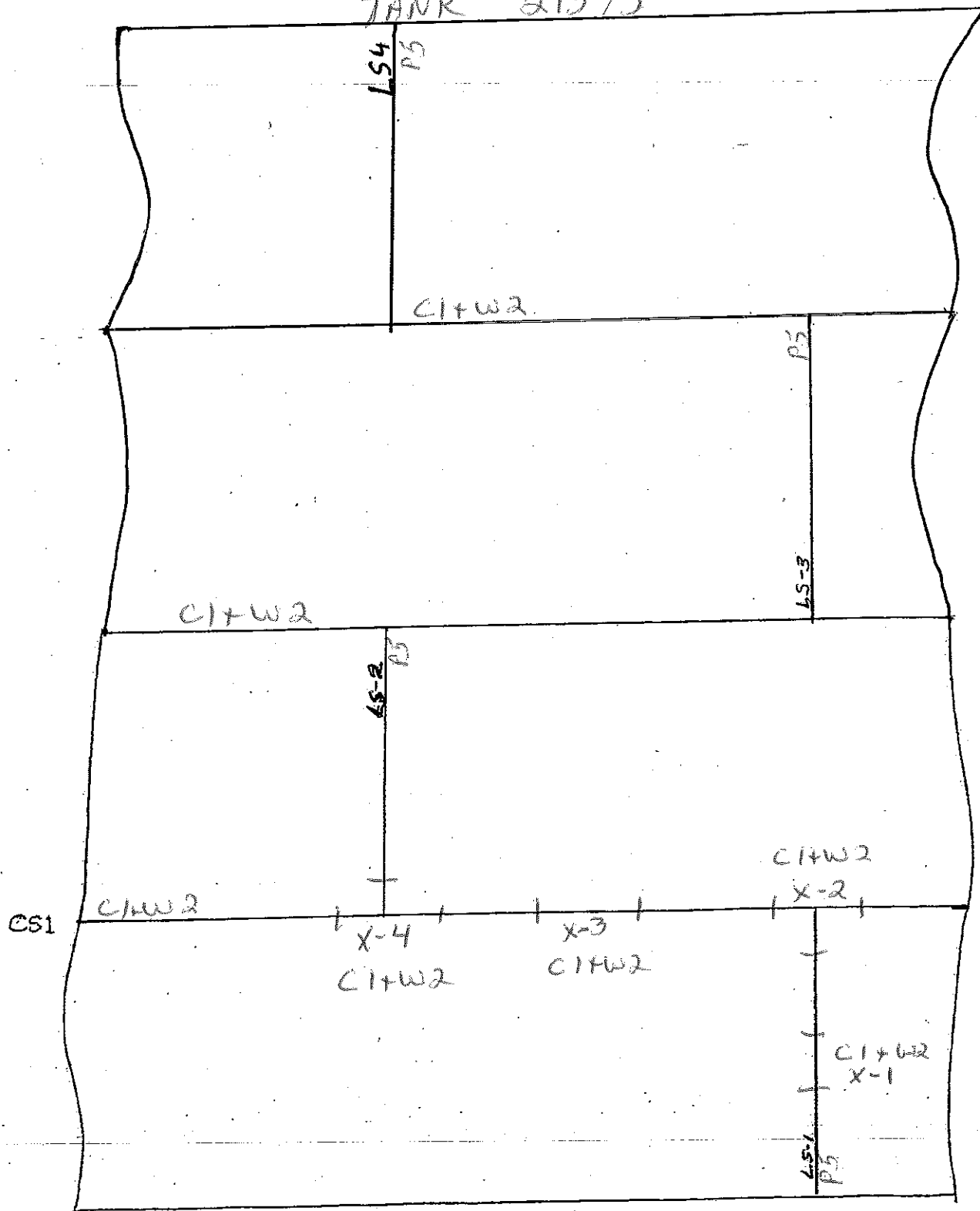
TOTAL Number of Leaks: 0

RADIOGRAPHIC INSPECTION REPORT

1 of 1

23	LEGEND						Exposure Information		Report Acceptance
Film		Image Quality Indicator ASTM Wire Type			Weld Defects		Material		Client Rep.
A	- KODAK Mx125	1	- 1A Film Side	4	- 1B Source Side	1. Slight		C = Carbon Steel	WAYNE ROSS
B	- KODAK T200	2	- 1A Source Side	5	- 1C Film Side	2. Moderate		S = Stainless Steel	
C	- KODAK AA400	3	- 1B Film Side	6	- 1C Source Side	3. Severe		C/S = Carbon Steel to Stainless Steel	Client Rep. Sign:
D	- AGFA D4							Film Per Cassette 1	

TANK # 21575



Final Checklist

Date: MAY 26 / 2014

Unit #: 21575

Tank Size: 750 BBL

Customer: APACHE

Q.C.: WAYNE ROSS

Welding:

	Accept	Repair	Q.C.
Circ. Seams			WR
Long Seams			WR
Floor Seams			WR
Roof Seams			WR
Annulus Flat Bar			WR
Fittings			WR
Manway			WR
Down Corners			WR
Risers			WR
Toe Railing			WR
Ladder			WR
Brackets			WR
Enviro Vault			WR
Heater Box			WR
Skid			WR
Saddles			WR
Heat Coil			WR
Fire Tube			WR
Name Plate Bracket			WR

Bolted Connections:

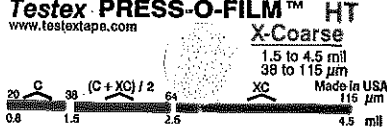
	Accept	Repair	Q.C.
Ladder Clips			WR
Heater Box Clips			WR
Flanges			WR
Gauge Board Arm			WR
Thief Hatch			WR
Goose Neck			WR
Manway			WR
Sight Glass			WR

Remarks: _____

APPLICATION RECORD AND QUALITY CONTROL

Customer: Apache Work Order #: 21575 Date of Start Up: May 31/14
Inspector: _____ Applicator: Cms

Surface Preparation: SP-5

Blast Profile Test:  3.1 mils

1st Coat Application

Date: June 4/14 Product Type: Devco
Time: 3 pm Product Used: 253
Temp: 78°F Color: White
Rh%: 40% Base Batch #: fm6698UA-49428
Surface Temp: 79°F Cat #: fm 5961UA-48947

2nd Coat Application

Date: June 5/14 Product Type: Devco
Time: 3 pm Product Used: 253
Temp: 80°F Color: Blue
Rh%: 20% Base Batch #: PL 5266 UA-48578
Surface Temp: 80°F Cat #: PL 5260UA-48585

3rd Coat Application

Date: _____ Product Type: _____
Time: _____ Product Used: _____
Temp: _____ Color: _____
Rh%: _____ Base Batch #: _____
Surface Temp: _____ Cat #: _____

Final Inspection

Date: June 12/14 Recommended DFT: 10-18 mils
Measurements Taken Approx: 800 High: 17 Low: 10 Average: 14
Comments and Results: found 5 holidays. repaired with
Grout
Signature: [Signature]



St Paul, MN 55164-0303

Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

Customer: SAMUEL & SON LIMITED (A DIVISION OF SAMUEL SALES) 2360 DIXIE ROAD MISSISSAUGA ON L4Y1Z7		Customer P.O.No.: U01533 & 41-374962		Mill Order No. 41-374962		Shipping Manifest: PR090285													
Product Description: CSA G40.21(2004)44/300/38W; ASTM A36(08) A709(08A)36/ASME SA36(10) CSA G40.21(2004)260W		Ship Date: 11 Sep 13		Cert No: 041163726		Cert Date: 11 Sep 13 (Page 1 of 1)													
Size: 0.250 X 96.00 X 288.0 (IN)																			
Tested Pieces:				Charpy Impact Tests															
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB)			% Shear			Tst Tmp (mm)	Tst Dir	Tst Tmp	BDWTT Temp %Shr
										1	2	3	Avg	1	2				
A3G286	0928	0.254 (T.L.C)	L 49	69	69	33		T											
B3G783	1002	0.254 (T.L.C)	C 52	69	69	31		T											
B3G783	1003	0.254 (T.L.C)	L 55	69	69	27		T											
			C 56	72	72	28		T											
			L 62	73	73	26		T											
			C 61	73	73	25		T											
Heat Id																			
Chemical Analysis																			
A3G286	C	Mn	P	S	Si	Total	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	ORGN			
B3G783	.16	.84	.012	.003	.04	.033	.26	.15	.12	.05	.001	.004	.006	.0001	.0076	USA			
	.16	.84	.015	.002	.04	.031	.26	.08	.06	.02	.001	.003	.006	.0001	.0066	USA			
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT																			
MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL																			
PRODUCTS SHIPPED: 0928 PCES: 11, WGT: 21562 * B3G783 1001 PCES: 15, WGT: 29404																			
* A3G286																			
SAMPLER, SON & CO., LTD. CERTIFIED COPY OF TEST REPORT YOUR PO# R255149 OUR ORDER# 493096 DATE 10/24/13 R255149																			
WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION																			
Cust Part #: _____																			
Chad Falleysek CHECKED BY																			



ESSAR STEEL ALGOMA INC., 105 West Street, Sault Ste. Marie, Ontario, Canada P6A 7B4

SO No., Item & Date:	8016101 000010 2013/10/24	Shipment No. & Date:	1000074363 2013/10/31	TC No., Date & Time:	ESA-114087 2013/11/04 - 14:28:40								
Sold to Customer Name and Address:		Customer PO NO./Item:											
SAMUEL SON AND COMPANY LTD		- A26692 / -											
15TH AVENUE 701		BOL NO:											
NISKU, Alberta, Canada		1000074363											
T2C 2A1		Cust. Part No.:											
		C P RAIL (CAD FUNDS) - cp 346918											
Customer Specification:		Carrier:											
HR STEEL SHEET Carbon SQ / SS To the Chemistry of Multi Cert ASTM A36 (08) / ASME SA36 (11A) / CSA G40.21 38W (04 (R09)) / CSA G40.21 44W (04 (R09)) Top Semi Critical Surface Improved Shape Restr thickness 3/4 Tol													
Supplementary Instructions : Test Cert 1sepp@samuel.com													
Insp T/R : Test Report For Info Only													
Cust Use : GENERAL MFG													
ESSAR STEEL ALGOMA INC. HEREBY CERTIFIES THAT THE MATERIAL HEREIN DESCRIBED WAS MADE AND TESTED IN ACCORDANCE WITH THE RULES OF THE SPECIFICATION SHOWN. ALL RESULTS ARE RETAINED IN ACCORDANCE WITH THE COMPANY'S STANDARD RECORD KEEPING PRACTICES.													
THIS MILL TEST REPORT MAY NOT BE REPRODUCED EXCEPT IN FULL WITHOUT WRITTEN APPROVAL OF ESSAR STEEL ALGOMA INC. IF YOU RECEIVE THIS DOCUMENT AND ARE NOT THE INTENDED RECEIVER, PLEASE CALL (705) 945-4085 FOR INSTRUCTIONS ON METHOD OF DISPOSAL OF DOCUMENT.													
MEETS EN 10204 3.1													
ISO QUALITY AND ENVIRONMENTAL CERTIFICATES AVAILABLE AT WWW.ESSARSTEELALGOMA.COM													
ALL HEATS FULLY KILLED.													
HEATS INDICATED WITH (*) FINE GRAINED													
HEATS INDICATED WITH (**) MADE IN CANADA WITH DOMESTIC AND NORTH AMERICAN MATERIALS.													
Dimensions (T x W x L)													
Heat No. (wt%)	C	Mn	P	S	Si	Heat No-MS	Batch No.	Dimensions (T x W x L)	No. of Pcs	Quantity	No. of Pcs		
2113T3*	0.16	0.86	0.007	0.005	0.020	0.02	0.02	0.03	0.01	0.033	0.021	0.000	0.001
..... MECHANICAL PROPERTIES													
Tensile Tests													
Heat No.	Batch No.	SRCE	LAB	GAUGE	COND	METH	DIR	LOC	YIELD(KSI)	TENSILE(KSI)	EL SCALE	ELONG(%)	
2113T3		106"	ALG	0.1790	AR	.2	T	F	64.0	77.0	2"	29	

WARNING THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OR VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL FOR ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE RELIED UPON FOR ANY PURPOSE (INCLUDING DESIGN OR CALCULATIONS) AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.

K. UGHADPAGA
MANAGER METALLURGICAL SERVICES

CP346918



K. UGHADPAGA
MANAGER METALLURGICAL SERVICES

*******WARNING******* THE TEST RESULTS AND VALUES REPORTED HEREIN INDICATE ONLY THAT (1) THE PARTICULAR STEEL FOR WHICH THIS CERTIFICATE IS ISSUED MEETS THE MINIMUM SPECIFIED YIELD STRENGTH AND (2) THE ANALYSIS AND PHYSICAL PROPERTIES OF SUCH STEEL ARE IN CONFORMANCE WITH THE REQUIREMENTS OF THE SPECIFICATION INDICATED. THE RESULTS OR VALUES REPORTED HEREIN CAN NOT BE USED TO QUALIFY THE STEEL FOR ANY SPECIFICATION OTHER THAN THE ONE INDICATED AND CAN NOT BE RELIED UPON FOR ANY PURPOSE (INCLUDING DESIGN OR CALCULATIONS) AS REPRESENTING THE ACTUAL STRENGTH OF SUCH STEEL.



St. Paul, MN 55164-0303

Test Certificate

Form TC1: Revision 1: Date 31 Oct 2000

Customer: SAMUEL & SON LIMITED (A DIVISION OF SAMUEL SALES) 2360 DIXIE ROAD MISSISSAUGA ON L4Y1Z7		Customer P.O.No.: U01524 & 41-373965 Mill Order No.: 41-373966-01 Shipping Manifest: PR090244													
Product Description: CSA G40.21(2004)44/300/38W/ASTM A36(08) A709(09A)36/ASME SA36(10) CSA G40.21(2004)260W		Ship Date: 10 Sep 13 Cert Date: 10 Sep 13 Cert No: 041163652 (Page 1 of 1)													
Size: 0.250 X 96.00 X 480.0 (IN)															
Tested Pieces:		Tensiles:													
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB)	% Shear	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
A3G312	0894	0.254 (T.L.C)	L 55	72	72	32	T	T							
B3G763	0929	0.254 (T.L.C)	C 54	72	72	31	T	T							
			L 56	71	71	30	T	T							
			C 54			30	T	T							
Heat Id															
Chemical Analysis															
C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	ORGN
.16	.85	.014	.006	.04	.027	.26	.09	.10	.02	.001	.004	.006	.0001	.0086	USA
.16	.86	.011	.005	.05	.026	.28	.16	.12	.05	.001	.004	.005	.0001	.0080	USA
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT															
MATERIAL MARKED WITH AN ASTERISK IS PRODUCED FROM COIL															
PRODUCTS SHIPPED:															
* A3G312															
PCES: 15, WGT: 49005															
* B3G763															
PCES: 8, WGT: 26136															
YOUR P.O. R1255149															
OUR ORDER 493096															
DATE 10/28/13															
FILLED BY:															
SARUEL, SON & CO., LTD. CERTIFIED COPY OF TEST REPORT															
WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION															
Cust Part #:															
Chad Falteysek															
CHECKED BY															

CERTIFIED MILL TEST REPORT



**The Best Value -
Price, Quality, Service
All The Time.**

LOG NO. F00000000052969

Page 1 of 2

BONNEY FORGE CORPORATION

P.O. BOX 330 • 14486 CROGHAN PIKE • MOUNT UNION, PA 17066-0330

(814) 542-2545 • (800) 345-7546 • FAX (814) 542-4908

www.bonneyforge.com

CUSTOMER: MRC CANADA ULC

DATE 01/16/2014

CUSTOMER

BONNEY ORDER NO. B000158444

ORDER NO.: S759243784

SHIP TO: MRC CANADA ULC - BRCH 759
502-25 AVENUE
NISKU AB T9E 0K6
Canada

ITEM	QUANTITY	LOT NO.	GRADE OR SPECIFICATION NO. CHEMICAL ANALYSIS, PHYSICAL PROPERTIES, REMARKS:
29 18C10681	59	6506	1/4 3M A105N COUP T SA/A105N Al 0.034 C 0.190 Co 0.004 Cr 0.030 Cu 0.120 Mn 1.000 Mo 0.006 N 0.003 Nb 0.014 Ni 0.030 P 0.006 S 0.024 Si 0.200 V 0.003 CE(Long Formula) = 0.37 T/S(PSI) 70,138 Y/S(PSI) 45,629 EL(%) 34.05 RA(%) 63.76 Brinell 130 BHN 130 BHN
39 18C10960	225	6383	11/2 3000 A105N HCP T SA/A105N Al 0.022 C 0.200 Co 0.003 Cr 0.030 Cu 0.080 Mn 1.030 Mo 0.006 N 0.003 Nb 0.014 Ni 0.030 P 0.007 S 0.017 Si 0.230 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 71,563 Y/S(PSI) 49,408 EL(%) 31.35 RA(%) 57.56 Brinell 132 BHN 130 BHN
18C10960		6295	11/2 3000 A105N HCP T SA/A105N Al 0.032 C 0.194 Co 0.002 Cr 0.040 Cu 0.060 Mn 1.050 Mo 0.004 N 0.003 Nb 0.016 Ni 0.020 P 0.009 S 0.020 Si 0.200 V 0.003 CE(Long Formula) = 0.38 T/S(PSI) 72,998 Y/S(PSI) 47,217 EL(%) 34.45 RA(%) 58.58 Brinell 135 BHN 132 BHN
48 18C11557	111	59274	2 3000 A105N TEE S SA/A105N Al 0.026 C 0.200 Co 0.004 Cr 0.040 Cu 0.090 Mn 1.010 Mo 0.013 N 0.003 Nb 0.012 Ni 0.030 P 0.006 S 0.018 Si 0.250 V 0.003 CE(Long Formula) = 0.39 T/S(PSI) 75,986 Y/S(PSI) 49,470 EL(%) 33.35 RA(%) 62.45 Brinell 130 BHN 132 BHN

I certify that the data on this sheet is a true copy taken from our records of material furnished us by the production mill, or as obtained by additional laboratory checks.

by Meloney Specht
Meloney Specht
QUALITY PROCESS MANAGER

CMTR: REV2

MILL TEST & INSPECTION CERTIFICATE

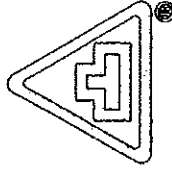
ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : SEYBOLD INTERNATIONAL CORP.

CERT. NO : 133372 L/C NO :

ORDER NO : 7007343 DATE : 11/04/2013

INVOICE NO : BW01310207170 PAGE : 7 ORIGIN : TAIWAN



柏緯鐵工股份有限公司

BOTH-WELL STEEL FITTINGS CO., LTD.

高雄市中區武聖路仁心路303號

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN R.O.C.(81460)

TEL: +886-7-3711536, 3710497, 3720260 FAX: +886-7-3713864, 3713882

Web site: <http://www.bothwell.com.tw> e-mail: box@bothwell.com.tw

ITEM	BW HT. CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION FOR		INSPECTION										
					MATERIAL	FITTING	SURFACE	DIM.									
015	T2428	9SD0013	FULL CPLG 1" 3000# NPT	70 PC	ASTM A182 -13	ASME B16.11 - 2011	GOOD	GOOD									
016	T2424	4B627	TEE 1/4" 3000# NPT	80 PC	ASME SA182 -2013ED												
017	T2429	4A636	TEE 1" 3000# NPT	45 PC	F316 / 316L												
019	T2475	S-9532	90D ELBOW 1-1/2" 3000# S/W	30 PC													
020	TB233	11C261	FULL CPLG 3/4" 3000# NPT	70 PC													
ITEM	BW HT. CD.	CHEMICAL COMPOSITION (%)															MATERIAL SUPPLIER
		C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Ch(Nb)	N	Al	Ti	Zr	
015	T2428	0.030	1.00	2.00	0.045	0.030	-	16.0	10.0	2.00	-	-	0.10	-	-	-	-
016	T2424	0.024	0.24	1.56	0.028	0.023	-	17.28	10.50	2.04	-	-	0.06	-	-	-	-
017	T2429	0.017	0.36	1.74	0.028	0.029	-	17.01	10.09	2.00	-	-	0.05	-	-	-	-
019	T2475	0.024	0.36	1.76	0.027	0.028	-	17.04	10.04	2.02	-	-	0.05	-	-	-	-
020	TB233	0.024	0.33	1.77	0.030	0.015	-	16.74	10.14	2.03	-	-	0.06	-	-	-	-
020	TB233	0.020	0.280	1.080	0.030	0.002	-	16.260	10.020	2.010	-	-	0.043	-	-	-	-
ITEM	BW HT. CD.	MECHANICAL PROPERTIES										HEAT TREATMENT		ADDITIONAL TEST/REMARKS STEEL MAKING PROCESS : ELECTRIC FURNACE CONFORMS TO NACE MR0175-09/MR0103-10 CONFORMS TO NACE ISO15156-3 2009 MERCURY FREE			
		T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HBW)(AVG)	Charpy Impact °F / 0 °C			SOLUTION							
Min		75	30	30	50	-	MIN./AVG. / (Joule)										
Max		-	-	-	-	235	1	2	3	AVG.							
015	T2428	80.2	35.7	64.0	76.5	155	156					1060°C W.Q.					
016	T2424	81.8	33.0	60.6	76.5	163	164										
017	T2429	81.2	34.4	63.0	74.2	163	164										
019	T2475	86.6	44.6	56.6	76.6	179	181										
020	TB233	89.3	43.2	57.2	75.8	173	175										

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

C.C. Huang

Q. C. MANAGER
CHEN CHI HUANG

INSPECTOR
YUAN YAO CHANG

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER :

CERT. NO : 131379

ORDER NO : 12913485

INVOICE NO : BR01310202064

L/C NO :

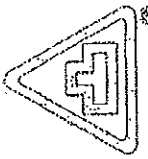
DATE : 05/08/2013

PAGE : 15

ORIGIN : TAIWAN

柏緯鐵工股份有限公司
BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, REN-SIN ROAD, REN-WU DISTRICT, KAOHSIUNG CITY, TAIWAN R.O.C.(81460)
 TEL: +886-7-3711536, 3710497, 3720260 FAX: +886-7-3713864, 3713882
 Web site: http://www.bothwell.com.tw e-mail: box@bothwell.com.tw



INVOICE NO : BR01310202064

PAGE : 15

ORIGIN : TAIWAN

Web site: <http://www.dounwell.com.tw>

email: DOA@dounwell.com.tw

ITEM	BW HT. CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	SPECIFICATION FOR			INSPECTION										
				QUANTITY	MATERIAL	FITTING	SURFACE	DIM.									
420	T2379	9SC0111	FULL CPLG 1/2" 3000# NPT	100 PC	ASTM A182 -07 ASME SA182 -408 F316 / 316L	ASME B16.11 - 2011	GOOD	GOOD									
422	T2361	9SC0085	FULL CPLG 1" 3000# NPT	300 PC													
423	T2272	9SC0028	FULL CPLG 1-1/4" 3000# NPT	20 PC													
424	TB234	11B870	FULL CPLG 2" 3000# NPT	50 PC													
425	T2361	9SC0085	RED. CPLG 1"x1/2" 3000# NPT	50 PC													
ITEM	BW HT. CD.	CHEMICAL COMPOSITION (%)											MATERIAL SUPPLIER				
		C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Co(Nb)		N	Al	Ti	Zr
420	T2379	0.030	1.00	2.00	0.045	0.030	-	16.0	10.0	2.00	-	-	0.10	-	-	-	-
422	T2361	0.025	0.40	1.59	0.031	0.026	-	17.32	10.51	2.05	-	-	0.07	-	-	-	-
423	T2272	0.025	0.39	1.56	0.029	0.025	-	17.14	10.55	2.06	-	-	0.07	-	-	-	-
424	TB234	0.018	0.44	1.60	0.037	0.027	-	17.19	10.17	2.04	-	-	0.08	-	-	-	-
425	T2361	0.020	0.30	1.11	0.035	0.001	-	16.14	10.06	2.05	-	-	0.04	-	-	-	-
425	T2361	0.025	0.39	1.56	0.029	0.025	-	17.14	10.55	2.06	-	-	0.07	-	-	-	-
ITEM	BW HT. CD.	MECHANICAL PROPERTIES											ADDITIONAL TEST/REMARKS				
		T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HRC)(AVG)	Charpy Impact F / 0 °C			HEAT TREATMENT		REMARKS					
Min		75	30	30	50	-	MIN./AVG.	1	2	3	SOLUTION		CONFORMS TO NACE MR0175-09/MR0103-10				
Max		-	-	-	-	235					1050°C W.Q.		MERCURY FREE				
420	T2379	81.9	35.2	62.6	76.5	157 159					1050°C W.Q.						
422	T2361	80.4	33.5	65.0	76.5	150 152					1050°C W.Q.						
423	T2272	79.2	38.1	64.8	76.4	153 156					1050°C W.Q.						
424	TB234	87.6	43.9	62.8	77.7	175 178					1050°C W.Q.						
425	T2361	80.4	33.5	65.0	76.5	150 152					1050°C W.Q.						
WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.																	
C.C. Huang																	
Y.-Y. Chang																	
Q.C. MANAGER																	
INSPECTOR																	
YUAN YAO CHANG																	

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 :2004 3.1

CUSTOMER : ALLIED FITTING CANADA

CERT. NO : 120694

ORDER NO : 083011PBWS

INVOICE NO : BF0110009103

L/C NO :

DATE : 03/19/2012

PAGE : 32 ORIGIN : TAIWAN

柏緯鋼鐵股份有限公司

高雄市仁武區烏林里仁心路 303 號

BOTH-WELL STEEL FITTINGS CO., LTD.

NO.303, JEN-HSIN ROAD JEN-WU DISTRICT

KAHSIUNG CITY, TAIWAN R.O.C. (81460)

TEL: 886-7-371-0497, 871-1536, 372-0260

web site: http://www.bbothwell.com.tw e-mail: bothwell@bothwell.com.tw

An ISO 9001:2008 Registered Manufacturer



ISO 9001

ASME B16.11 - 2009

GOOD

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DESCRIPTION

FULL CPLG 2" 3000# NPT
FULL CPLG 2-1/2" 3000# NPT
FULL CPLG 3" 3000# NPT
FULL CPLG 4" 3000# NPT
CROSS 1/4" 3000# NPT

CHEMICAL COMPOSITION (%)

ITEM	BW HT. CD.	RAW MATERIAL HEAT NO.	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Co(Nb)	N	Al	Ti	Zr	CE	INSPECTION SURFACE	DIM.
237	T2157	9SB0210	0.030	1.000	2.000	0.045	0.030	-	16.00	10.00	2.000	-	-	0.100	-	-	-	-	ASTM A182 -07	100 PC
238	W208	A63902	0.023	0.370	1.560	0.028	0.025	-	18.00	15.00	3.000	-	-	0.070	-	-	-	-	ASME SA182 -A08	5 PC
239	T2151	FS-0095	0.028	0.430	1.640	0.028	0.005	-	17.23	10.48	2.020	-	-	0.056	-	-	-	-	F316 / 316L	5 PC
240	T2055	FS-7541	0.028	0.400	1.460	0.039	0.018	-	16.54	10.08	2.070	-	-	0.056	-	-	-	-	ASME B16.11 - 2009	5 PC
241	T929	FS-3350	0.028	0.390	1.360	0.040	0.017	-	16.35	10.06	2.040	-	-	0.057	-	-	-	-	GOOD	GOOD
241	T929	FS-3350	0.021	0.360	1.400	0.040	0.024	-	16.34	10.06	2.070	-	-	0.052	-	-	-	-	GOOD	GOOD

MECHANICAL PROPERTIES

ITEM	BW HT. CD.	T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HB)(AVG)	Charpy Impact F / 0 °C	HEAT TREATMENT	ADDITIONAL TEST / REMARKS
237	T2157	81.8	41.2	61.4	76.5	157	158	SOLUTION	STEEL MAKING PROCESS : ELECTRIC FURNACE
238	W208	85.1	41.6	60.5	76.3	170	169	1060°C W.Q.	CONFORMS TO NACE-MR0175-09/MR0103-10
239	T2151	78.7	38.8	65.0	76.5	150	150	MERCURY FREE	
240	T2055	77.7	34.1	63.2	76.0	145	144		
241	T929	79.0	36.9	66.2	77.1	149	148		

WE HEREBY CERTIFY, THAT THE MATERIAL DESCRIBED ABOVE HAS BEEN TESTED AND COMPLIES WITH THE TERMS OF THE ORDER CONTRACT.

C.C. Huang

Q.C. MANAGER
CHEN CHI HUANG

INSPECTOR
YUAN YAO CHANG



INSPECTION CERTIFICATE
EN 10204 3.1 : 2004
AWAJI MATERIA (THAILAND) CO.,LTD.

81,MOO4, PRAKASA ROAD, TAMBOL BANGMUANG, AMPHUR MUANG
SAMUTPRAKARN THAILAND 10270, Tel : (662)701-5226

ISO 9001 :2008 Manufacturing Company
Certified by BV. Certificate No. A-TH10000101
Material manufacturer QMS acc.
PED 97/23/EC Annex1, Part 3/AD2000W0
Certified by Lloyd's Register
Certificate No. 50207/1A1

Date : OCTOBER 29, 2012
Certificate No. : T12-X2178

Purchaser : THE BROADHEAD GROUP/MCJUNKIN CANADA

Order No.		Job No.	Product		Raw Material Pipe Maker																		
S-759158148 WPB/20		-	CARBON STEEL BUTT WELDING FITTINGS		SUMITOMO METAL INDUSTRIES, LTD. (JAPAN)																		
Inspection Standard		Material Standard		Visual	Dimension	Pipe Heat No. : J2L4138																	
ASME B16.9-07, ASME B16.25-07 ASTM A980-10 NACE MR-0175/ISO 15156-09 MR-0103-10		ASTM A234-11a, WPB ASME SA234-10, WPB except nuclear usage CSA Z245.11-09, GR241 CATTJ		GOOD	GOOD	Magnetic Particle Test																	
Product Code		Material		Article & Size		W.T. INSPECTED																	
2X158		WPB		STD 90 LONG RADIUS ELBOW 2"		-																	
Manufacturing No. (Heat code.)		Material		Quantity		Note.																	
2X158		WPB		1,000 Pcs.																			
Specification Min. Max. Heat No.		#1 Chemical Composition (%)															#2 Mechanical Test			Hardness			
		C	Si	#3 Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	Ca	N	Al	C.E	Y.S.	T.S.	E	HB	
		X100	X100	X100	X1000	X1000	X100	X100	X100	X100	X100	X100	X100	X100	X10000	X10000	X1000	X100	MPa	%			
		-	10	29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	240	415	22.5	-
		30	-	106	50	58	40	40	40	15	8	2	-	-	-	-	-	-	50	-	-	197	
L 18		22	68	18	9	2	2	7	2	0	0	0	0	0	10	12	5	31	307	488	54	140	
J2L4136		P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					

#4 UT = Ultrasonic thickness inspection

C.E. = $C + \frac{Mn}{6} + \frac{Cr+Mo+V}{5} + \frac{Ni+Cu}{15}$
*1 Equivalent for A234 WPB
*2 Y.S= Yield Strength (0.2% offset), T.S.= Tensile Strength, E = Elongation (in 50mm)
*3 As per foot note D of ASTM A234 Table 1.
L = Ladle Analysis, P = Product Analysis
Weld repair is not applied to our products.
Steel Making by Vacuum degassed, killed steel.

ELBOW / Forming temperature 850°C~945°C and cooled in still air
TEE, REDUCER & CAP / Normalizing : 910°C
We hereby certify that the material described herein has been duly inspected and conforms to the standard as specified above.

AT-24(2)17

Surveyor to
QA. GM. /Work Inspector S. MAEKAWA



SAN ENG STEEL FORGING CO. LTD
311, Jen Hsin Road, Jen Wu District
Kachsiung, Taiwan, R.O.C.
TEL: 07-3724249 : FAX: 07-3712923
URL: www.saneng.com.tw
e-mail: saneng@ksts.seed.net.tw

MILL TEST CERTIFICATE

EN10204-3.1.B(DIN50049/3.1.B)
Customer: W.F.F.FITTINGS & FLANGES (CANADA)
LTD.
Order No.: D000431

Certificate No.: SE103375
Date: 06/07/2013
Page: 1 OF 1

PRODUCT		MATERIAL SPECIFICATIONS		DIMENSIONAL SPECIFICATIONS																
FORGED CARBON STEEL FLANGES		ASTM A105-11a/ASME SA-105-11a		ASME B16.5-09 CSA Z245.12																
Item No.	CODE NO	DESCRIPTION	QUANTITY	CHEMICAL COMPOSITION (%)																
				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N	CE(*)				
				Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max			
1		150 WNRF STD 2" A105N	1,470 PCE		0.350	0.350	0.100	0.600	0.035	0.040	0.400	0.120	0.080	0.020	-	-	0.419			
					0.220	0.210	1.150	0.023	0.005	0.006	0.020	0.004	0.008	0.001	0.005	-	-			
Item No.	Heat No.	T.S.(*) (MPa)	Y.S.(*) (MPa)	EL.(*) (%)	Hardness (HB)	R.A.(*) (%)	Impact Test Temp: Minimum: Joule	Material Supplier	HEAT TREATMENT(*) <input checked="" type="checkbox"/> N									REMARKS 880°CX3HRS CONFORMS WITH NACE MR0103-12 AND NACE MR0175/ISO15156-2-09 CLAUSE 7.2.1.4 REGION 3 AND ANNEX A. CONFORMS WITH Z245.12 CAT 1 GR248 SOUR SERVICE-09(FOR USE AS WELDING NECK AND BLIND FLANGES ONLY) MN TO C RATIO IS GREATER THAN 3.0"		
1	4553922	535.0	358.0	34.2	154/151	68.6	1 2 3	ACOMINAS												
*1: T.S. = Tensile Strength, Y.S.=Yield Strength, E.L.=Elongation, R.A.=Reduction of Area. *2: N=Normalized, A=Annealed, Q=Quenched, T=Tempered, S.T=Solution Treated, S.R=Stress Relieved, A.C=Air Cooled, F.C=Furnace Cooled, W.C=Water Cooled, O.C=Oil Cooled. *3: C.E. Value = C + (Mn /5) + (Cr + Mo +V) / 5 + (Ni + Cu) / 15																				
We hereby certify that the material has been tested in accordance with the above specification and also with the requirements called for by the above order.																				
Manager of Quality Assurance Dept																				



BEBITZ



Flanschenwerk Bebitz GmbH - Lebendorfer Str. 1 - 06420 Bebitz / GERMANY
Tel. +49 34691 40 0 - Fax +49 3469140 329 - Email: flanges@bebitz.de
Bebitz Flanges Works Pvt. Ltd. - Survey No. 140/2, Saravali Boisar - Taluka Palghar - Thane 401501 -
Maharashtra, INDIA Tel. +91-0-9049991039/42/43 - Fax +91-0-2525 274266/67 - Email: quality@bebitz.in

Abnahmeprüfzeugnis 3.1 / Inspection certificate 3.1 / Certificat de reception 3.1 nach (A02) / acc. DIN EN 10204 : 2005 Nr. (A03) / No.13-62549 Datum (Z02) / Date 10/12/2013

Zeichen des Herstellers (A04)
Manufacturer's brand



Stempel des Abnehmers (Z03)
Stamp of the testing engineer



Überprüft als Hersteller nach AD-Merkblatt W0 / TRD100 und VdTÜV Werkstoffblätter 350/3, 354, 399. / Approved as manufacturer acc. AD-Merkblatt W0 / TRD100 and VdTÜV Material Sheets 350/3, 354, 399.
Zertifiziert nach DGR 97/23/EG durch TÜV CERT Zertifizierungsst. für Druckgeräte der TÜV NORD GmbH Co KG, Benannte Stelle Nr. 0045. / Certified acc. to PED 97/23/EC, certifying body for pressure equipment TÜV NORD GmbH Co KG, registration no. 0045.

Besteller MRC CANADA ULC
(A06) 7072-112 AVE SE CALGARY AB,
Customer T2C 4Z1 CANADA

Bestell-Nr (A07) / Order-No S 759 222684
Auftrag (A08) / Order BFW/2443
Lieferschein / Delivery No. 2534038
Position (B07.1) / Item 2

Stck (B08) Bezeichnung (B01; B09 - B11)
Quantity Product

Schmelze/Prüflos (B07)
Heat no./Test no.

504 2 inch Welding Neck Flange 150 lbs Std. raised Face

U15556/1

Material A 105N - ASTM A 105M-11a / ASME SA-105M/ GR - 248 / CSA Z245.12-2009 Sour Service Cat I
(B02; B05) forged 1150-1200 °C/normalized 880-910 °C, still air, Soaking Time 60 mins/inch (Min. 90 mins. for all)

Anford. ASME B 16.5-2003
(B03) NACE MR0175-2011 / MR0103-2010 - DIN EN ISO 15156-2 : 2009
Requirements 2011a ASME Boiler & Pressure Vessel Code - Section II Part A

Schmelzenanalyse (C71 - C92) / Ladle analysis

Erschmelzung (C70) / Melting process E

C	Si	Mn	P	S	Cr	Ni	Ti	Mo	Nb	V	N	Cu	Al	CEV
0.210	0.26	0.85	0.017	0.007	0.20	0.01	0.00	0.00	0.0014	0.002	0.000	0.010	0.030	0.39

$$CEV = C + \frac{Mn}{6} + \frac{V + Mo + Cr}{5} + \frac{Ni + Cu}{15} \quad PREN = Cr + 3.3 \times Mo + 16 \times N$$

Mechanische Prüfungen / Mechanical tests

Probenlage (C02): q/t / Position of Specimen: q/t Tensile Test - ASTM A 370						$I_0 = 4 d_0$	KBV / Charpy Impact Test EN ISO 148-1 (V-notch, Position of specimen: q/t)				Härte (C32): Hardness ISO 6506-1	
Temp (C03) °C	Streckgr. (C11) / Yield strength 0,2% N/mm ²		1,0% N/mm ²	Zugfestigk. (C12) Tensile strength N/mm ²	Dehng. (C13) Elongation %	Einschnürg. Red. of area %	Temp. (C03) °C	Einzelwerte (C42) Single values J			MW (C43) Average J	HBW 10/3000
20	min 250 max			485	22.0	30	20					137 187
20	299			523	32.3	64	20	82	78	88	82.7	139
20	306			532	33.1	65	20	74	80	84	79.3	140
20	291			517	32.0	64	20	80	70	76	75.3	138
20	294			529	32.4	65	20	80	72	78	76.7	141

Besichtigung und Ausmessung ohne Beanstandungen. (D01) / Results of inspection and dimension without objections.
Die gestellten Anforderungen sind erfüllt. (Z01) / The product meets the requirements.

Ranjan Kumar Jena,
Abnahmebeauftragter des Herstellers (Z02)
Inspection Representative of the Manufacturer

F - QAC-09-04



B E B I T Z



Flanschenwerk Bebitz GmbH - Lebendorfer Str. 1 - 06420 Bebitz / GERMANY
Tel. +49 34691 40 0 - Fax +49 3469140 329 - Email: flanges@bebitz.de
Bebitz Flanges Works Pvt. Ltd. - Survey No. 140/2, Saravali Boisar - Taluka Palghar - Thane 401501 -
Maharashtra, INDIA Tel. +91-0-9049991039/42/43 - Fax +91-0-2525 274266/67 - Email: quality@bebitz.in

Abnahmeprüfzeugnis 3.1 / Inspection certificate 3.1 / Certificat de reception 3.1
nach (A02) / acc. DIN EN 10204 : 2005 Nr. (A03) / No. 14-50506 Datum (Z02) / Date 1/24/2014

Zeichen des Herstellers (A04)
Manufacturer's brand



Stempel des Abnehmers (Z03)
Stamp of the testing engineer



Überprüft als Hersteller nach AD-Merkblatt W0 / TRD100 und VdTÜV Werkstoffblätter 350/3, 354, 399. / Approved as manufacturer acc. AD-Merkblatt W0 / TRD100 and VdTÜV Material Sheets 350/3, 354, 399.

Zertifiziert nach DGR 97/23/EG durch TÜV CERT Zertifizierungsst. für Druckgeräte der TÜV NORD GmbH Co KG, Benannte Stelle Nr. 0045. / Certified acc. to PED 97/23/EC, certifying body for pressure equipment TÜV NORD GmbH Co KG, registration no. 0045.

Besteller MRC CANADA ULC
(A06) 7072-112 AVE SE CALGARY AB,
Customer T2C 4Z1 CANADA

Bestell-Nr (A07) / Order-No PO S 759 23752
Auftrag (A08) / Order BFW/2602
Lieferschein / Delivery No. 2534409
Position (B07.1) / Item 99

Stck (B08) Bezeichnung (B01; B09 - B11)
Quantity Product

Schmelze/Prüflos (B07)
Heat no./Test no.

1786 3 inch Welding Neck Flange 150 lbs Std. raised Face

17047/1

Material A 105N - ASTM A 105M-11a / ASME SA-105M/ GR - 248 / CSA Z245.12-2009 Sour Service Cat I
(B02; B05) forged 1150-1200 °C/normalized 880-910 °C, still air, Soaking Time 60 mins/inch (Min. 90 mins. for all)

Anford. ASME B 16.5-2003

(B03) NACE MR0175-2011 / MR0103-2010 - DIN EN ISO 15156-2 : 2009

Require- 2011a ASME Boiler & Pressure Vessel Code - Section II Part A
ments

Schmelzenanalyse (C71 - C92) / Ladle analysis

Erschmelzung (C70) / Melting process E

C	Si	Mn	P	S	Cr	Ni	Ti	Mo	Nb	V	N	Cu	Al	CEV
0.205	0.26	0.84	0.013	0.007	0.22	0.01	0.00	0.00	0.0005	0.002	0.000	0.010	0.025	0.39

Mechanische Prüfungen / Mechanical tests

$$CEV = C + \frac{Mn}{6} + \frac{V + Mo + Cr}{5} + \frac{Ni + Cu}{15} \quad PREN = Cr + 3.3 \times Mo + 16 \times N$$

Probenlage (C02): q/t / Position of Specimen: q/t						KBV / Charpy Impact Test EN ISO 148-1					Härte (C32)
Tensile Test - ASTM A 370						(V-notch, Position of specimen: q/t)					Hardness
Temp (C03)	Streckgr. (C11) / Yield strength		Zugfestigk. (C12)	Dehng. (C13)	Einschnürg.	Temp. (C03)	Einzelwerte (C42)			MW (C43)	ISO 6506-1
°C	0,2% N/mm²	1,0% N/mm²	Tensile strength N/mm²	Elongation %	Red. of area %	°C	Single values J			Average J	HBW 10/3000
20	min 250		485	22.0	30	20					137
	max										187
20	279		503	34.3	65	20	62	50	56	56.0	141
20	282		507	32.2	66	20	64	52	58	58.0	142
20	285		510	33.5	64	20	58	64	54	58.7	140
20	290		512	35.3	67	20	58	66	54	59.3	141

Besichtigung und Ausmessung ohne Beanstandungen. (D01) / Results of inspection and dimension without objections.
Die gestellten Anforderungen sind erfüllt. (Z01) / The product meets the requirements.

Ranjan Kumar Jena,
Abnahmebeauftragter des Herstellers (Z02)
Inspection Representative of the Manufacturer

F - QAC-09-04



BEBITZ



Flanschenwerk Bebitz GmbH - Lebendorfer Str. 1 - 06420 Bebitz / GERMANY
Tel. +49 34691 40 0 - Fax +49 3469140 329 - Email: flanges@bebitz.de
Bebitz Flanges Works Pvt. Ltd. - Survey No. 140/2, Saravali Boisar - Taluka Palghar - Thane 401501 -
Maharashtra, INDIA Tel. +91-0-9049991039/42/43 - Fax +91-0-2525 274266/67 - Email: quality@bebitz.in

Abnahmeprüfzeugnis 3.1 / Inspection certificate 3.1 / Certificat de reception 3.1
nach (A02) / acc. DIN EN 10204 : 2005 Nr. (A03) / No.12-72267 Datum (Z02) / Date 4/4/2013

Zeichen des Herstellers (A04)
Manufacturer's brand



Stempel des Abnehmers (Z03)
Stamp of the testing engineer



Überprüft als Hersteller nach AD-Merkblatt W0 / TRD100 und VdTÜV Werkstoffblätter 350/3, 354, 399. / Approved as manufacturer acc. AD-Merkblatt W0 / TRD100 and VdTÜV Material Sheets 350/3, 354, 399.
Zertifiziert nach DGR 97/23/EG durch TÜV CERT Zertifizierungsst. für Druckgeräte der TÜV NORD GmbH Co KG, Benannte Stelle Nr. 0045. / Certified acc. to PED 97/23/EC, certifying body for pressure equipment TÜV NORD GmbH Co KG, registration no. 0045.

Besteller MRC CANADA ULC
(A06) 7072-112 AVE SE CALGARY AB,
Customer T2C 4Z1 CANADA

Bestell-Nr (A07) / Order-No S 759 183221
Auftrag (A08) / Order BFW/2213
Lieferschein / Delivery No. 2533265
Position (B07.1) / Item 2

Stck (B08) Bezeichnung (B01; B09 - B11)
Quantity Product

Schmelze/Prüflos (B07)
Heat no./Test no.

661 4 inch Welding Neck Flange 150 lbs Std. raised Face

11665/2

Material A 105N - ASTM A 105M-11a / ASME SA-105M / GR - 248 / CSA Z245.12-2009 Sour Service Cat I
(B02; B05) forged 1150-1200 °C/normalized 880-910 °C, still air, Soaking Time 60 mins/inch (Min. 90mins. for all)

Anford. ASME B 16.5-2003
(B03) NACE MR0175-2011 / MR0103-2010 - DIN EN ISO 15156-2 : 2009
Require-ments 2011a ASME Boiler & Pressure Vessel Code - Section II Part A

Schmelzenanalyse (C71 - C92) / Ladle analysis

Erschmelzung (C70) / Melting process E

C	Si	Mn	P	S	Cr	Ni	Ti	Mo	Nb	V	N	Cu	Al	CEV
0.200	0.27	0.86	0.019	0.008	0.23	0.010	0.00	0.002	0.0003	0.002	0.000	0.010	0.031	0.39

$$CEV = C + \frac{Mn}{6} + \frac{V + Mo + Cr}{5} + \frac{Ni + Cu}{15} \quad PREN = Cr + 3,3 \times Mo + 16 \times N$$

Mechanische Prüfungen / Mechanical tests

Probenlage (C02): q/t / Position of Specimen: q/t Tensile Test - ASTM A 370						$l_0 = 4 d_0$	KBV / Charpy Impact Test DIN EN 10045-1				Härte (C32) Hardness ISO 6506	
Temp (C03) °C	Streckgr. (C11) / Yield strenght 0,2% N/mm²		1,0% N/mm²	Zugfestigk. (C12) Tensile strenght N/mm²	Dehng. (C13) Elongation %	Einschnürg. Red. of area %	Temp. (C03) °C	Einzelwerte (C42) Single values J			MW (C43) Average J	HBW 2,5/187,5
20	min 250			485	22.0	30	20					137
	max											187
20	321			533	35.0	65	20	86	78	72	78.7	150
20	331			538	35.5	66	20	68	82	78	76.0	151
20	313			524	35.2	65	20	84	76	70	76.7	149
20	318			529	35.3	66	20	72	66	78	72.0	148

Besichtigung und Ausmessung ohne Beanstandungen. (D01) / Results of inspection and dimension without objections.
Die gestellten Anforderungen sind erfüllt. (Z01) / The product meets the requirements.

Ranjan Kumar Jena,
Abnahmebeauftragter des Herstellers (Z02)
Inspection Representative of the Manufacturer

F - QAC-09-04

2520257

4894628-00

V&M FRANCE TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 69880 SAINT SAULVE	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT - INSPECTION CERTIFICATE 3.1 EN 10204 : 2004
		No. : 51815x12 Page: 1 / 5 Date: 22.05.2012

SRL CUT FROM DEPI.

2 STD A106

(A01) V&M FRANCE	(A06.1) V&M-Order-No. LA2160 (A06.2) Suborder
(A06.1) Customer CCTF CORPORATION 5407 -53RD AVENUE EDMONTON AB T6B 3G2 T6B 3G2	(A07.1) Order-No. VM2848
(A06.2) Orderer VALLOUREC TUBES CANADA INC. / BURLINGTON, ONTARIO L7L 6G4	(A07.2) Order-No. VM2848 Date 01.02.2012
	(A07.3) Order-No. 4890988-00
(B01, B02, B04) Description of the product	Hot finished seamless line pipe Ends bevelled, angle 30° (+5 / -0), root face 1.6 mm (± 0.8) Inside without rust protection Outside dry varnish As rolled API spec. 5 L, PSL1, 10.2007 ASTM A 106 M - 10 / ASTM A 530 M - 04a ASME SA 106, Edition 2010 / ASME SA 530 M, Edition 2010 ASME Boiler and Pressure Vessel Code, Sect. II, Part. A, Edition 2010 CSA Z 245.1:2009 Nace MR 0175 / ISO 15156-2:2009 EN ISO 15156-2:2009, Annex A.2.1.2 Nace MR 0103-2010, Paragraph 2.1 X 42 Grade B acc. to API spec. 5 L Grade B acc. to ASTM A 106 M / ASME SA 106 Grade 280 acc. to CSA Z 245.1, Cat. I
(B03) Sour service as defined in paragraph 18 of CSA Z 245.1, but without HIC test. These PSL1 products do not conform to Annex H of API 5L.	

(A13) V&M Item	(A09) Cust. Item	(B14) Item text	(B09) Dimensions	(B10) Single length
6		SKU No 2520029	NPS 2 SCH 40 OD-Tolerance + 0.75 % - 0.75 % WT-Tolerance + 0.024 in - 0.020 in	Fixed length 38.6 Ft + 4 in - 0 in

V&M FRANCE TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59680 SAINT SAULVE	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT - INSPECTION CERTIFICATE 3.1 EN 10204 : 2004
		No. : 5181Sv12 Page: 2 / 5 Date: 22.05.2012

(A13) V&M Item	(A08) Cust. Item	(B07.1) Heat	(B08) Quantity	(B11) Total length ft	(B13) Weight lb
6		973407	228	8,846,290	33,058

(C71)

HEAT CHEMICAL ANALYSIS

For each reduction of 0,01% carbon below 0,30 %, an increase of 0,05% manganese above 1,08 % would be permitted to a maximum of 1,35% manganese.

(B07.1) Heat	(B15) Process	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Ti %
min	-	-	0,10	0,28	-	-	-	-	-	-	-
max	-	0,28	0,50	1,08	0,030	0,030	0,40	0,15	0,40	0,40	0,11
973407	Electric (EAF)	0,15	0,18	0,75	0,013	0,004	0,13	0,05	0,10	0,11	0,00

(B07.1) Heat	Nb/Cb %	V %	B %	0002 %	2528 %	0014 %	1003 %	1099 %				
min	-	-	-	-	3,00	-	-	-				
max	0,11	0,08	0,001	0,15	-	1,00	0,40	0,40				
973407	0,00	0,00	0,000	0,00	4,95	0,39	0,33	0,31				

0002	V+NB+Ti
2528	MN/C
0014	CR+CU+MO+NI+V
1003	CE = C+MN/6+(CR+MO+V)/5+(NI+CU)/15
1099	C+F(MN/6+SI/24+CU/15+NI/20+((CR+MO+V+NB)/6)+5*B)

Heats fully killed

(C72)

PRODUCT CHEMICAL ANALYSIS

For each reduction of 0,01% carbon below 0,30 %, an increase of 0,05% manganese above 1,08 % would be permitted to a maximum of 1,35% manganese.

V&M FRANCE TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT - INSPECTION CERTIFICATE 3.1 EN 10204 : 2004 No. : 5181Sv12 Page: 3 / 5 Date: 22.05.2012
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(C72)

PRODUCT CHEMICAL ANALYSIS

(907.1) Heat	(C00.1) Test Piece	C %	Si %	Mn %	P %	S %	Cr %	Mo %	Ni %	Cu %	Ti %
min		-	0,10	0,28	-	-	-	-	-	-	-
max		0,26	0,50	1,06	0,030	0,030	0,40	0,15	0,40	0,40	0,11
973407	01KC485	0,17	0,18	0,77	0,014	0,007	0,13	0,05	0,10	0,11	0,00
973407	02KC485	0,18	0,17	0,75	0,013	0,005	0,13	0,05	0,10	0,10	0,00

(907.1) Heat	(C00.1) Test Piece	Nb/Cb %	V %	B %	0002 %	2528 %	0014 %	1003 %	1099 %		
min		-	-	-	-	3,00	-	-	-		
max		0,11	0,08	0,001	0,15	-	1,00	0,40	0,40		
973407	01KC485	0,00	0,00	0,000	0,00	4,57	0,39	0,35	0,34		
973407	02KC485	0,00	0,00	0,000	0,01	4,60	0,38	0,34	0,33		

0002	V+NB+Ti
2528	Mn/C
0014	CR+CU+MO+NI+V
1003	CE = C+Mn/5+((CR+MO+V)/5+(NI+CU)/15)
1099	C+P/(Mn/5+Si/24+CU/15+NI/20+((CR+MO+V+NB)/5)+5*B)

(904)

HEAT TREATMENT
NORMALIZED CONDITION MIN 920°C (1688 F) COOLING AIR
TENSILE TEST RESULTS

Type (C10.1)	Tube strip specimen
Test temperature (C03)	Room temperature
Direction (C02)	longitudinal

SIMPLE LENGTH

V&M FRANCE TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59680 SAINT SAULVE	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT - INSPECTION CERTIFICATE 3.1 EN 10204 : 2004 No. : 51818v12 Page: 4 / 5 Date: 22.05.2012
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TENSILE TEST RESULTS

(907.1) Heat	(C00.1) Test Piece	(C10.2) Dimension	(011) YS	(012) TS	(013.2) Elong.	(014.1) Ratio						
		ln / sq ln	R _{0.5} psi	R _m psi	2" %	R _p /R _m %						
min		-	42000	80000	22,0	-						
max		-	-	-	-	0,93						
973407	01KC465	0,74x0,17 0,13	48135	70074	30,9	0,86						

(C10.2) Dimension	Test piece dimensions Test piece area
----------------------	--

HARDNESS TEST RESULTS

09 HRB EQUIVALENT TO 22 HRC

Method of test (C30)	Rockwell B
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(907.1) Heat	(C00.1) Test Piece	(C31.1) HRB	(C31.1) HRB	(C31.1) HRB	(C32.1) Mean							
min		-	-	-	-							
max		99,0	99,0	99,0	-							
973407	01KC465	77,7	77,2	77,9	77,6							

(C30)

TECHNOLOGICAL AND OTHER TESTS ON SPECIMENS

Test	Conditions	Test rate	Result
Bending	Bending (specific)		Satisfactory

(054)

OTHER TESTS ON PIPE

Test	Conditions	Test rate	Result
Hydrostatic test	3000 PSI 5 SEC	100% each lot	Satisfactory
Appearance & Dimensions	Aspect & Dimensions (spécifique) / Asp	100% each lot	Satisfactory
Eddy Current test	CSA Z245-1	100% each lot	Satisfactory
Residual magnetism	30 GAUSS MAX	100% each lot	Satisfactory

(A04, B06)

MARKING, IDENTIFICATION

V&M FRANCE TUBERIE SAINT SAULVE SAINT SAULVE ZONE INDUSTRIELLE 59880 SAINT SAULVE	 VALLOUREC & MANNESMANN TUBES Vallourec Group	MATERIAL TEST REPORT - INSPECTION CERTIFICATE 3.1 EN 10204 : 2004 No. : 51818v12 Page: 5 / 6 Date: 22.05.2012
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(A04, B04)

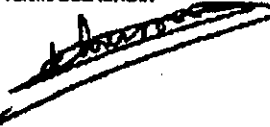
MARKING, IDENTIFICATION

8 Paint stenciled on one side	 V & M FRANCE SL 0061API DATE OF MARKING A/SA106 Z245.1-07 2 3/8X0.154 80.3X3.91 B+X42+290CAT1 PSL1 S SMLS 30D0PSI 207.0BAR S HTHEAT NUMBER 68 SCH 40 LENGTH LENGTH VM2848 4890968-00
------------------------------------	--

(201)

The supplied products are in compliance with the requirements of the order

(A05, Z02, Z03)

Date	22.05.2012
Validated by	Inspection Representative
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Valérie DELACROIX 
	+ (33) 3 27 23 14 56
	+ (33) 3 27 23 15 26
	valerie.delacroix@vmtubes.fr
Stamp	

Indication in parentheses correspond to attributes according to EN 10160

This testimonial and certification respectively may neither be modified nor used for other products. Offences are regarded as falsification of documents and will be subject to criminal prosecution.



MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Algarra Tubes Inc.
347 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L3
(705) 948-9130 tel
(705) 945-8131 fax

Number / Numero:
00039550

Page / Página:
1 / 7

Date / Día: December 17, 2012

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Standard or Specification / Normas o Especificaciones: ASTM/A5ME/CSA, 106/CSA Z245		CONDUCCION SIN COSTURA		Steel Grade / Grado de acero: B/290 SS		NORMAL BEVEL 30 DEG. NORMAL BEVEL 30 DEG.	
Dimensions / Dimensiones: 4.5 X 0.237 INCH		Schedule / Cálculo: 040		Length / Longitud: 18.01 / 21.98 FT		Nominal Weight / Peso Nominal: 10.80 LB/FT	
114.3 X 6.02 MM				5.49 / 6.70 MTS		60453.000 KG	

TENSILE TEST / ENSAYO DE TENSION

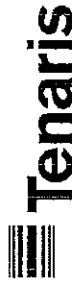
Heat N° Colada N°	Sample N° Muestra N°	Zone Zona	Pipe N° Tubo N°	Specimen condition Condición de la probeta				Specimen dimensions Dimensiones de la probeta		Test Temp. Temp. ensayo °C	Y.S. Eul 0.5% Min: 42 000 Max: 71 000 psi	U.T.S. Req. Min: 60 000 Max: 90 499 psi	Y.S./U.T.S.		Elongation / Alargamiento		Obt.	
				Ls	Sc	Type Tipo	On	Size Tamaño mm	Area Sección mm2				Req. Max.	Lo	in	%		%
33527	22377	E2	00001	B	AM	Ss	L	25.30 x 5.70	148.10	RT	58 215	79 990	0.73	2	23.3	33.0		
33527	22378	E1	00065	B	AM	Ss	L	25.37 x 6.15	157.41	RT	54 887	73 092	0.75	2	23.6	33.0		
33529	22369	E1	00009	B	AM	Ss	L	25.20 x 5.61	143.00	RT	56 195	78 027	0.72	2	23.2	31.0		
33529	22370	E2	00029	B	AM	Ss	L	25.37 x 6.17	158.12	RT	56 309	77 928	0.72	2	23.6	32.0		
33530	22381	E1	00015	B	AM	Ss	L	25.37 x 6.05	154.83	RT	54 375	75 154	0.72	2	23.5	28.0		
33530	22382	E1	00016	B	AM	Ss	L	25.37 x 5.89	150.90	RT	56 010	74 799	0.75	2	23.4	36.0		

As manufactured / Según proceso de fabricación		Location of sample / Ubicación de la muestra		Req. Max: Required maximum / Máximo requerido		U.T.S: Ultimate tensile strength / Resistencia	
B: Body / Cuerpo		Max: Maximum / Máximo		Req: Required / Requerido		Y.S: Yield strength / Fluencia	
E1 / E2: Ends of Sampling / Extremos de Muestra		Min: Minimum / Mínimo		RT: Room temperature / Temperatura ambiente			
L: Longitudinal / Longitudinal		Obt: Obtained / Obtenido		Sc: Specimen condition / Condición de la probeta			
Lc: Initial length / Longitud inicial		Ori: Orientation / Orientación		Ss: Strip specimen / Muestra rectangular			

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to fine law.

Este certificado se emite mediante sistema computarizado y es validado con firma electrónica. El certificado original posee impreso el logo "Tenaris" color verde. En caso de que el poseedor del certificado entregue una copia, deberá garantizar la conformidad con el original haciéndose responsable por cualquier uso ilegal o indebido. Cualquier alteración y/o falsificación estará sujeta a la ley.

FOR03171



MILL TEST CERTIFICATE CERTIFICADO DE PRUEBAS EN FABRICA

Number / Número:
00039550

Page / Página:
2 / 7

Algarra Tubes Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 949-8130 tel
(705) 946-8131 fax

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Standard or Specification / Normas o Especificaciones: ASTM/A5ME/CSA,106/CSA Z245		CONDUCCION SIN COSTURA		Steel Grade / Grado de acero: B/290 SS		NORMAL BEVEL 30 DEG.	
Schedule / Cédula: 040		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 578 Pcs/Pz		Nominal Weight / Peso Nominal: 10.80 LB/FT	
Dimensions / Dimensiones: 4.5 X 0.237 INCH		114.3 X 6.02 MM		12105.758 FT		60453.000 KG	
114.3 X 6.02 MM						16.07 KG/M	

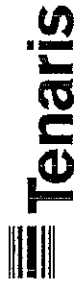
CHEMICAL COMPOSITION / COMPOSICION QUIMICA

Heat N° Colada N°		Sample N° Muestra N°	H	Max Min	Composition % / Composición %																		
					X 100					X 1002										X 10000			
					C	Mn	Si	Cr	Mo	S	P	Ni	V	Cu	Al	Sn	As	Nb	Ti	Ca	B	N	
33527	00001	H	15	109	24	6	3	2	14	110	20	140	29	11	11	1	3	18	2	85	37		
33527	22377	P	14	108	22	6	3	2	11	110	13	181	26	10	9	1	3	10	3	42	35.8		
33527	22378	P	13	109	23	7	3	2	12	108	13	162	27	11	10	1	3	10	3	42	35.2		
33529	00001	H	15	108	25	7	3	2	13	110	20	140	26	10	12	1	3	18	2	86	37		
33529	22369	P	13	108	25	7	3	2	11	108	14	149	27	9	10	1	3	10	3	63	35.1		
33529	22370	P	13	109	25	8	3	2	11	110	14	152	25	10	10	0	3	9	3	64	35.3		
33530	00001	H	15	109	24	6	3	2	14	120	10	140	31	10	12	1	3	15	2	82	36.8		
33530	22351	P	14	106	22	6	3	3	13	116	12	155	28	10	10	1	3	8	3	80	35.5		
33530	22352	P	14	107	22	6	3	2	13	117	12	155	30	10	10	1	3	7	3	75	35.6		

Ca. 2: Carbon equivalent/Carbono equivalente		Max: Maximum / Máximo		P: Product / Producto	
Ht: Heat / Colada		Min: Minimum / Mínimo			

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

FOR03171



MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Algoma Tubes Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 940-6130 (tel)
(705) 945-3131 (fax)

Number / Número: 00039550
Date / Día: December 17, 2012

Page / Página: 3 / 7

Customer / Cliente: MCJUNKIN RED MAN TUBULAR	Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2	Customer's References / Ref. del Cliente: N/A	Manufacturer's Works Order N° / Confirmación de Venta: 00928002
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED LAMINADO EN CALIENTE SIN COSTURA	Product Type / Tipo de Producto: LINE PIPE SEAMLESS CONDUCCION SIN COSTURA	Surface / Superficie: VARNISHED BARNIZADO	Ends / Extremos: NORMAL BEVEL 30 DEG. NORMAL BEVEL 30 DEG.
Standard or Specification / Normas o Especificaciones: ASTM/A5ME/CSA,106/CSA Z245	Steel Grade / Grado de acero: B/290 SS	Quantity / Cantidad: 578 Pcs/Pz 133276.160 LB 3689.835 MTS	Nominal Weight / Peso Nominal: 10.80 LB/FT 16.07 KG/M
Dimensions / Dimensiones: 4.5 X 0.237 INCH 114.3 X 6.02 MM	Schedule / Cédula: 040	Length / Longitud: 18.01 / 21.98 FT 5.49 / 6.70 MTS	

SUPERFICIAL HARDNESS / DUREZA SUPERFICIAL

Heat N°	Sample N°	Zone	External / Externa
Colada N°	Muestra N°	Zona	Scale / Escala: HBW
			Req. Min: -- Req. Max: 237
33527	22377	E2	140
33527	22378	E1	143

Heat N°	Sample N°	Zone	External / Externa
Colada N°	Muestra N°	Zona	Scale / Escala: HBW
			Req. Min: -- Req. Max: 237
33529	22369	E1	143
33529	22370	E2	143

Heat N°	Sample N°	Zone	External / Externa
Colada N°	Muestra N°	Zona	Scale / Escala: HBW
			Req. Min: -- Req. Max: 237
33530	22381	E1	143
33530	22382	E1	143

B: Body / Cuerpo E1 / E2: Ends of Sampling / Extremos de Muestra Ls: Location of sample / Ubicación de la muestra

THROUGH WALL HARDNESS / DUREZA EN EL ESPESOR

Required values		Individuals / Individuales		Average / Promedio		Hardness type HRC	
		Min: --	Max: 22.0	Var: --	Max: --	Var: --	Var: --
Heat N°	Sample N°	Pipe N°	Tubo N°	Zone	Scale	Scale	Var.
Colada N°	Muestra N°				Quad.	Quad.	
33527	22377	E2	00001	B	AM	1	79.5 79.7 79.5 0.0
33527	22378	E1	00085	B	AM	1	80.2 80.2 80.2 0.0
33529	22369	E1	00009	B	AM	1	80.4 80.4 80.4 0.0
33529	22370	E2	00029	B	AM	1	80.4 80.4 80.4 0.0
33530	22381	E1	00015	B	AM	1	80.3 80.3 80.3 0.0
33530	22382	E1	00016	B	AM	1	80.3 80.3 80.3 0.0

AM: As manufactured / Según proceso de fabricación E1 / E2: Ends of Sampling / Extremos de Muestra

Avg: Average / Promedio Ls: Location of sample / Ubicación de la muestra

B: Body / Cuerpo Max: Maximum / Máximo Quad: Quadrant / Cuadrante

See Specimen condition / Condición de la probeta

Var: Variation / Variación

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

FOR03171



MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Aljama Tubos Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P8C 1L9
(705) 946-8130 tel
(705) 946-8131 fax

Number / Número: **00039550**
Date / Día: **December 17, 2012**

Page / Página: **4 / 7**

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED			
Standard or Specification / Normas o Especificaciones: ASTM/A536/CSA 106/CSA Z245		CONDUCCION SIN COSTURA		BARNIZADO			
Dimensions / Dimensiones: 4.5 X 0.237 INCH		Schedule / Cédula: 040		Steel Grade / Grado de acero: B1290 SS		Ends / Extremos: NORMAL BEVEL 30 DEG.	
114.3 X 6.02 MM		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 578 Pcs/Pz		NORMAL BEVEL 30 DEG.	
		5.49 / 6.70 MTS		133276.160 LB		Nominal Weight / Peso Nominal: 10.80 LB/FT	
				3689.835 MTS		16.07 KG/M	

FLATTENING TEST / ENSAYO DE APLASTAMIENTO

Standard / Norma:				Standard / Norma:			
Heat N°	Sample N°	Pipe N°	Zone	Heat N°	Sample N°	Pipe N°	Zone
Colada N°	Muestra N°	Tubo N°	Zona	Colada N°	Muestra N°	Tubo N°	Zona
33527	22377	00001	E2	33530	22381	00015	E1
33527	22378	00085	E1	33530	22382	00016	E1
Result				Result			
Resultado				Resultado			
Good / Bueno				Good / Bueno			
Good / Bueno				Good / Bueno			

E1 / E2: Ends of Sampling / Extremos de Muestra

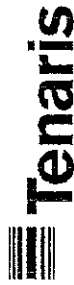
HYDROSTATIC TEST / PRUEBA HIDRAULICA

Pressure / Presión		Time / Tiempo		Results / Resultado	
Unit / Unidad	Value / Valor	Seconds / Segundos			
psi	2.635	5		Satisfactory / Satisfactorio	

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FOR03171



MILL TEST CERTIFICATE CERTIFICADO DE PRUEBAS EN FABRICA

Aljona Tucco Inc.
547 Wallara Terrace
Sault Ste. Marie, ON CANADA
P8C 1L9
(705) 946-8130 tel
(705) 946-8131 fax

Number / Número:
00039550

Page / Página:
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Date / Día: December 17, 2012

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED LAMINADO EN CALIENTE SIN COSTURA				Product Type / Tipo de Producto: LINE PIPE SEAMLESS CONDUCCION SIN COSTURA			
Standard or Specification / Normas o Especificaciones: ASTM/ASME/CSA, 106/CSA Z245				Steel Grade / Grado de acero: B/290 SS			
Dimensions / Dimensiones: 4.5 X 0.237 INCH 114.3 X 6.02 MM		Schedule / Cédula: 040		Length / Longitud: 18.01 / 21.98 FT 5.49 / 6.70 MTS		Ends / Extremos: NORMAL BEVEL 30 DEG. NORMAL BEVEL 30 DEG.	
				Quantity / Cantidad: 578 Pcs/Pz 12105.758 FT 3689.835 MTS		Nominal Weight / Peso Nominal: 10.80 LB/FT 16.07 KG/M	

HEAT TREATMENT / TRATAMIENTO TERMICO

Heat treatment / Tratamiento térmico: Pipe / Tubo	
Quench media of heat treatment process / Medio de enfriamiento del tratamiento térmico: n/a	
Temperature Scale / Escala de Temperatura: Fahrenheit	
Type Tipo	as rolled

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information Información Suplementaria	
Manufactured by ALGOMA TUBES Steel making process: Electric Arc Furnace-Ladle Furnace-Continuous Casting Machine. Fully Killed Steel Material free from Mercury contamination Not repaired by welding Non destructive test: Satisfactory Inspection method EMI - FLVI - MPICO - WALL - Inspection Description EMI 5% OD L&T & 10% ID L&TENDS MPI (DRY OR WET) OR CUT OFF CARRIER ATW400461	Fabricated por ALGOMA TUBES Fabricación del acero: Horno de Arco Eléctrico-Horno de Afinación-Máquina de Colada Continua. Acero calmado con aluminio Material libre de contaminación de Mercurio No reparado por soldadura Control no destructivo: Satisfactorio Método de inspección EMI - FLVI - MPICO - WALL - Descripción de inspección EMI 5% OD L&T & 10% ID L&TENDS MPI (DRY OR WET) OR CUT OFF CARRIER ATW400461

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to this original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

Este certificado se emite mediante sistema computarizado y es válido con firma electrónica. El certificado original posee impreso al logo Tenaris color verde. En caso de que el poseedor del certificado entregue una copia, deberá garantizar la conformidad con el original haciéndose responsable por cualquier uso ilegal o indebido. Cualquier alteración y/o falsificación estará sujeta a la ley.

FOR03171



MILL TEST CERTIFICATE CERTIFICADO DE PRUEBAS EN FABRICA

Algoma Tubes Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 940-8130 Ext
(705) 946-8131 Int

Number / Número:
00039550

Page / Página:
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Date / Día: December 17, 2012

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
LAMINADO EN CALIENTE SIN COSTURA		CONDUCCION SIN COSTURA		Steel Grade / Grado de acero: B1290 SS		NORMAL BEVEL 30 DEG. NORMAL BEVEL 30 DEG.	
Standard or Specification / Normas o Especificaciones: ASTM/A5ME/CSA,106/CSA Z245		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 578 Pcs/Pz		Nominal Weight / Peso Nominal: 10.80 LB/FT	
Dimensions / Dimensiones: 4.5 X 0.237 INCH		Schedule / Cédula: 040		3689.835 MTS		16.07 KG/M	
114.3 X 6.02 MM		5.49 / 6.70 MTS		133276.160 LB		60453.000 KG	

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information / Información Suplementaria

ALGOMA Ref: 049861

MATERIAL MEETS REQUIREMENTS OF NACE MR103-2010, MR01752009, CAT 1SS, EN 10204 2.1 2.2 3.1 OCT/2004, CSA Z245.1 APRIL/2007, ASTM A106 B/2010, ASME SA106 B/2010

MATERIAL MEETS REQUIREMENTS OF NACE MR103-2010, MR01752009, CAT 1SS, EN 10204 2.1 2.2 3.1 OCT/2004, CSA Z245.1 APRIL/2007, ASTM A106 B/2010, ASME SA106 B/2010

MARKING / MARCACION

Marking Marcación

PIPE STENCIL:

TENARIS AT #FE3 ASTM A106 ASME SA106 CSA Z245.1-07 GR B1290CAT1 SS 114.3 6.02 S 18.3 INDE HEAT

#C*** #M*** #N*** #K*** 16.08 KG/M MADE IN CANADA

WHERE:

Heat number #C***:

Net weight of pipe in Kgs #K***:

Length Mts #M***:

Pipe number #N***:

MASCARILLA DE TUBO ESTARCIDO:

TENARIS AT #FE3 ASTM A106 ASME SA106 CSA Z245.1-07 GR B1290CAT1 SS 114.3 6.02 S 18.3 INDE HEAT

#C*** #M*** #N*** #K*** 16.08 KG/M MADE IN CANADA

DONDE:

Numero de colada #C***:

Peso real de tubo en Kgs #K***:

Longitud del tubo en Mts #M***:

Numero de secuencia #N***:

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Tenaris

MILL TEST CERTIFICATE
CERTIFICADO DE PRUEBAS EN FABRICA

Aljona Tubos Inc.
547 Wallace Terrace
Sault Ste. Marie, ON CANADA
P6C 1L9
(705) 960-8130 tel
(705) 966-8131 fax

Number / Número:
00039550

Page / Página:
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Date / Día: December 17, 2012

Customer / Cliente: MCJUNKIN RED MAN TUBULAR		Customer's Order Item / Orden Cliente - Item: S 759 182566 ITEM 2		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 009280/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Standard or Specification / Normas o Especificaciones: ASTM/A5ME/CSA,108/CSA Z245		Steel Grade / Grado de acero: B/290 SS		Quantity / Cantidad: 578 Pcs/Pz		Normal BEVEL 30 DEG.	
Dimensions / Dimensiones: 4.5 X 0.237 INCH		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 12105.758 FT		Normal BEVEL 30 DEG.	
114.3 X 6.02 MM		5.49 / 6.70 MTS		3689.835 MTS		Nominal Weight / Peso Nominal: 10.80 LB/FT 16.07 KG/M	

SUMMARY REPORT / REPORTE RESUMEN

Heat N° Colada N°	Quantity Cantidad (Pieces)	Length Longitud (ft)	Weight Peso (Tons)
33527	28	581.99	177.391
33529	497	10,423.33	3,177.03
Average length per pipe Longitud promedio por tubo (ft)		Peso nominal por tubo (lb/ft)	
20.944		11.009	
		6.384	
		16.384	

Heat N° Colada N°	Quantity Cantidad (Pieces)	Length Longitud (ft)	Weight Peso (Tons)
33530	53	1,100.44	335.414
		5.492	

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Por el presente certificamos que el material aquí descrito ha sido fabricado, muestreado, ensayado e inspeccionado de acuerdo a los requisitos de su orden de compra. Este certificado no es, ni puede ser usado, como una declaración de origen.

CUSTOMER - THIRD PARTY		TENARIS QUALITY DEPARTMENT SIGNATURE	
INSPECTION COMPANY COMPANIA DE INSPECCION NOT APPLY Employee Name: N/A		CHIEF OF QUALITY CERTIFICATION DEPT. RESPONSABLE DEL DEPTO. DE CERTIFICACION DE CALIDAD PEI DUNGHO	

This certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any unlawful or not allowed use. Any alteration and/or falsification will be subjected to the law.

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FOR03171



Tenaris

INSPECTION CERTIFICATE 3.1
CERTIFICADO DE INSPECCIÓN 3.1

EN 10204 3.1: 2004

Tenaris de México, S.A.
Carretera México-Toluca Km. 43.5 y 502
C.P. 78300, Toluca, México
(52-229) 450 1500 ext.
(52-229) 450 1800 fax

Number / Número: **14012122**

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Date / Día: February 25, 2014

Customer / Cliente: MRC MIDFIELD		Customer's Order Item / Orden Cliente - Item: S 769 240426 ITEM 3		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 210827702	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED			
LAMINADO EN CALIENTE SIN COSTURA		CONDUCCION SIN COSTURA		BARNIZADO			
Standard or Specification / Normas o Especificaciones: CSA Z245.1-07/ABRIL 2007		Steel Grade / Grado de acero: GR B1290		Ends / Extremos: NORMAL BEVEL			
Dimensions / Dimensiones: 8.625 X 0.322 INCH		Length / Longitud: 18.01 / 21.98 FT		BISELADO NORMAL			
219.1 X 8.2 MM		Schedule / Cédula: SCH 040 / W.C STD		Nominal Weight / Peso Nominal: 28.58 LB/FT			
				75777.351 LB			
				34372.000 KG			

TENSILE TEST / ENSAYO DE TENSION

Heat N° Caleña N°	Sample N° Muestra N°	Specimen condition Condición de la probeta		Specimen dimensions Dimensiones de la probeta		Test Temp. Temp. ensayo	Y.S.		U.T.S.		Y.S./U.T.S.		Elongation / Alargamiento	
		Sc	Tip	Size Tamaño	Area Sección		Eul 0.50 % Min. 42 000	Req. Max. 71 790	Req. Min. 60 000	Max. 90 850	Req. Max.	Lo	Min.	Obt.
13266	49360	B	AM	38.01 X 08.33	318.37	RT	45 002	71 527	0.63	2	27.1	2	27.1	42.0
13266	49361	B	AM	38.11 X 08.29	317.68	RT	47 206	71 604	0.66	2	27.1	2	27.1	42.0
13307	49362	B	AM	38 X 08.21	313.70	RT	46 011	71 365	0.64	2	27.1	2	27.1	42.0
13307	49363	B	AM	38.02 X 08.04	307.36	RT	48 671	71 855	0.68	2	26.9	2	26.9	44.0

As: Manufactured / Según proceso de fabricación	Sc: Specimen condition / Condición de la probeta
B: Body / Cuerpo	Ss: Strip specimen / Muestra rectangular
L: Longitudinal / Longitudinal	U.T.S.: Ultimate tensile strength / Resistencia
Lo: Initial length / Longitud inicial	Y.S.: Yield strength / Fluencia
Req. Max: Required maximum / Máximo requerido	
Req. Required / Requerido	
RT: Room temperature / Temperatura ambiente	

This certificate is issued by a computerized system and it is valid with additional signature. On the original certificate the trace-mark green colored "Tenaris" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one taking upon himself the responsibility for any invalid or not allowed use. Any alteration and/or falsification will be subjected to the law.

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FOR03171



INSPECTION CERTIFICATE 3.1
CERTIFICADO DE INSPECCIÓN 3.1

Number / Número:
14012122

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Tubos de Acero de México, S.A.
Carretera México Veracruz KM 433.7 SN
Delimito Veracruz Tequila, Veracruz, Veracruz
C.P. 91997 MEXICO
(52) 229 989 1100 tel
(52) 229 989 1600 fax

EN 10204 3.1: 2004

Customer / Cliente: MRO MIDFIELD	Customer's Order Item / Orden Cliente - Item: S 759 240426 ITEM 3	Customer's Reference / Ref. del Cliente: N/A	Manufacturer's Works Order N° / Confirmación de Venta: 210827102
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED	Product Type / Tipo de Producto: LINE PIPE SEAMLESS	Surface / Superficie: VARNISHED	
LAMINADO EN CALIENTE SIN COSTURA	CONDUCCION SIN COSTURA	BARNIZADO	
Standard or Specification / Normas o Especificaciones: CSA Z245.1-07/ABRIL 2007		Ends / Extremos: NORMAL BEVEL	
		BISELADO NORMAL	
Dimensions / Dimensiones: 8.625 X 0.322 INCH 219.1 X 8.2 MM	Schedule / Cédula: SCH 040 / W.C STD	Length / Longitud: 18.01 / 21.98 FT 5.49 / 6.70 MTS	Quantity / Cantidad: 120 Pcs/Pz. 75777.351 LB 34372.000 KG
		Steel Grade / Grado de acero: GR B/280	Nominal Weight / Peso Nominal: 28.58 LB/FT 42.55 KG/M

CHEMICAL COMPOSITION / COMPOSICION QUIMICA

		Composition % / Composición %																					
		X 100							X 10000														
		C	Mn	Si	Mo	Cr	P	S	V	Nb	Ni	Cu	Sn	Al	Ti	As	B	Ca	N	Ca. 2	Col. 1	Col. 2	
		25	135	50	15	40	30	10	80	110	400	400	—	—	110	—	10	—	—	—	40	—	99.99
		Max	—	29	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	300	—	99.99
		Min	25	135	50	15	40	30	10	80	110	400	400	—	110	—	10	—	—	40	—	99.99	
		Max	—	29	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	300	—	99.99
		Min	16	71	27	3	8	10	1.8	2	1	110	181	13	21	3	8	3	18	76	32	443.75	40.3
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Min	17	70	27	3.3	8	9	1.4	0	0	100	163	10	21	0	8	0	15	81	33	411.76	37.6
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Min	17	69	26	3.3	8	9	1.1	0	0	100	162	10	21	0	8	0	14	71	32	405.86	37.5
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Min	16	70	27	3	7	11	1.3	2	1	110	152	13	24	3	8	3	19	70	31	437.5	38.4
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Min	17	68	26	3.3	7	9	0.7	0	0	100	136	10	24	0	7	0	14	73	32	400	33.9
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		Min	17	68	26	3.3	7	9	0.8	0	0	100	137	11	24	0	7	0	14	67	32	400	34
		Max	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—



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Date / Día: February 25, 2014

EN 10204 3.1: 2004

THROUGH WALL HARDNESS DUREZA EN EL ESPESOR

AM: As manufactured / Según proceso de fabricación	ID: Internal diameter / Diámetro interno	Min: Minimum / Mínimo	Quad: Quadrant / Cuadrante
Avg: Average / Promedio	LS: Location of sample / Ubicación de la muestra	MW: Middle wall / Centro	Sc: Specimen condition / Condición de la probeta
B: Body / Cuerpo	Max: Maximum / Máximo	OD: Outside diameter / Diámetro externo	Var: Variation / Variación

BEATING THE SNAKE PIT

The certificate is issued by a computerized system and it is valid with electronic signature. On the original certificate the trade-mark green colored "Trenkelt" is stamped. In case the owner of the original certificate would release a copy of it, he must attest its conformity to the original one withing upon limited responsibility for any untruth or falsification will be subjected to the law. Any alteration and/or falsification will be subjected to the law.

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FORN:3171



Tenaris

INSPECTION CERTIFICATE 3.1
CERTIFICADO DE INSPECCIÓN 3.1
EN 10204 3.1: 2004

Tubos de Acero de México, S.A.
Carretera México Veracruz KM 433.7 SN
Delimito Valentín Tejeda, Veracruz, Veracruz
C.P. 91607 MEXICO
(52) 229 949 1100 tel
(52) 229 949 1800 fax

Customer / Cliente: MRC MIDFIELD		Customer's Order Item / Orden Cliente - Item: S 759 240426 ITEM 3		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 210827102	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Standard or Specification / Normas o Especificaciones: CSA Z245.1-07/ABRIL 2007		CONDUCCION SIN COSTURA		Steel Grade / Grado de acero: GR B/290		Normal Bevel: BISELADO NORMAL	
Dimensions / Dimensiones: 8.625 X 0.322 INCH		Schedule / Cédula: SCH 040 / W.C STD		Quantity / Cantidad: 120 Pcs/Pz		Nominal Weight / Peso Nominal: 28.58 LB/FT	
219.1 X 8.2 MM		Length / Longitud: 18.01 / 21.98 FT		75777.351 LB		42.55 KG/M	
		5.49 / 6.70 MTS		789.320 MTS			

HYDROSTATIC TEST / PRUEBA HIDRAULICA

Pressure / Presión	Time / Tiempo	Results / Resultado
Unit / Unidad	Value / Valor	Seconds / Segundos
mpa	16.3	5
		Satisfactory / Satisfactorio

HEAT TREATMENT / TRATAMIENTO TERMICO

Heat treatment / Tratamiento termico: Pipe / Tubo	
Quench media of heat treatment process / Medio de enfriamiento del tratamiento termico: n/a	
Temperature Scale / Escala de Temperatura: n/a	
Type	Type
	As rolled

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information / Información Suplementaria	
Manufactured by Tenaris/Tenaris	Fabricado por Tenaris/Tenaris
Steel making process: Electric Arc Furnace-Ladle Furnace-Continuous Casting Machine	Fabricación del acero: Horno de Arco Eléctrico-Horno de Afinación-Máquina de Colada Continua
Fully Killed Steel	Acero calmado con aluminio
Material free from Mercury contamination	Material libre de contaminación de Mercurio

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CERTIFICADO DE INSPECCIÓN 3.1

EN 10204 3.1: 2004

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Carretera México Veracruz KM 433.7 SN
Delicias, Veracruz, Veracruz, Veracruz
C.P. 91897 MEXICO
(52) 229 989 1100 tel
(52) 229 989 1600 fax

Customer / Cliente: MRC MIDFIELD		Customer's Order Item / Orden Cliente - Item: S 759 240426 ITEM 3		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 210827/02	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Laminado en caliente sin costura		CONDUCCION SIN COSTURA		Steel Grade / Grado de acero: GR B/290		NORMAL BEVEL	
Standard or Specification / Normas o Especificaciones: CSA Z245.1-07/ABRIL 2007		Schedule / Cédula: SCH 040 / W.C STD		Quantity / Cantidad: 2589.633 FT		BISELADO NORMAL	
Dimensions / Dimensiones: 8.625 X 0.322 INCH		Length / Longitud: 18.01 / 21.98 FT		Weight / Peso: 75777.351 LB		Nominal Weight / Peso Nominal: 28.58 LB/FT	
219.1 X 8.2 MM		5.49 / 6.70 MTS		789.320 MTS		42.55 KG/M	

SUPPLEMENTARY INFORMATION / INFORMACION SUPLEMENTARIA

Supplementary Information / Información Suplementaria	
Not repaired by welding Non destructivo test Satisfactory Inspection method - EMI - FLVT - MPI - UT INSPECTION FOR LAMINATION: SATISFACTORY MATERIAL ACCORDING TO ASTM A106/ASME SA106, 10 GR. B/CSA Z245.1 GR.290 CATI SS, APRIL 2007 Z2 HRC MAX ALUMINIUM KILLED STEEL REL. MIN 3 SUM. Mo-Cr-Ni-Cu-V MAX 0.9599 CERTIFICATE ACCORDING TO EN 10204 3.1: 2004	No reparado por soldadura Control no destructivo, Satisfactorio Método de Inspección - EMI - FLVT - MPI - VERIFICACION DE LAMINACIONES POR UT: SATISFACTARIO MATERIAL DE ACUERDO A ASTM A106/ASME SA106, 10 GR. B/CSA Z245.1 GR.290 CATI SS, ABRIL 2007 MATERIAL DE ACUERDO A NACE MR0175 / ISO 15156-2, 2009 Y NACE MR0103, 2010 SOLO DUREZA MAX. 22 HRC ALUMINIO KILLADO ACERO REL. MIN 3 SUM. Mo-Cr-Ni-Cu-V MAX 0.9599 CERTIFICADO DE ACUERDO A EN 10204 3.1: 2004

MARKING / MARCACION

Marking / Marcación	
PIPE STENCIL: #N***** TENARIS TM ASTM A106/ASME SA106 / CSA Z245.1 #FE1 219.1 8.20 42.55 STD SCH 040 GR B/290 CAT I SS S TEST PRESSURE/ENDE #M*** MT #K*** KG HEAT #C*** O.P. 235188 / #N***** HABILITADA MADE IN MEXICO WHERE: Heat number #C****:	MASCARILLA DE TUBO ESTARCIDO: #N***** TENARIS TM ASTM A106/ASME SA106 / CSA Z245.1 #FE1 219.1 8.20 42.55 STD SCH 040 GR B/290 CAT I SS S TEST PRESSURE/ENDE #M*** MT #K*** KG HEAT #C*** O.P. 235188 / #N***** HABILITADA MADE IN MEXICO DONDE: Número de colada #C****:

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Delimito Valenzuela Tejeda, Veracruz, Veracruz
C.P. 91597 MEXICO
(52) 225 969 1100 tel
(52) 225 969 1800 fax

Customer / Cliente: MRC MIDFIELD		Customer's Order Item / Orden Cliente - Item: S 759 240426 ITEM 3		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 210827102	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED				Surface / Superficie: VARNISHED			
LAMINADO EN CALIENTE SIN COSTURA				BARNIZADO			
Standard or Specification / Normas o Especificaciones: CSA Z245.1-07/ABRIL 2007				Ends / Extremos: NORMAL BEVEL			
Schedule / Cédula: SCH 040 / W.C STD				BISELADO NORMAL			
Dimensions / Dimensiones: 8.625 X 0.322 INCH		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 120 Pcs/Pz		Nominal Weight / Peso Nominal: 28.58 LB/FT	
219.1 X 8.2 MM		5.49 / 6.70 MTS		789.320 MTS		34372.000 KG	
						42.55 KG/M	

MARKING / MARCACION

Marking / Marcación	
Fecha de Fabricación #FEt: _____	
Peso real de tubo en Kgs #K****: _____	
Longitud del tubo en Mts #M****: _____	
Número de secuencia #N****: _____	
HABILITADA 31084818-30/S759240426-3	

SUMMARY / REPORTE DE RESUMEN

Heat N° Cebada N°	Quantity Cantidad (Piezas)	Length Longitud (ft)	Weight Peso (Tons)
13307	72	1,557.28	474.66
			20.866

Average length per pipe Longitud promedio por tubo (ft)	Weight Peso (Tons)
21.58	13.706

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EN 10204 3.1: 2004

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Carretera México Veracruz KM 431.7 SN
Delimito Valenzuela Tejería, Veracruz, Veracruz
C.P. 91697 MEXICO
(52) 229 963 1100 tel
(52) 229 963 1600 fax

Customer / Cliente: MRC MIDFIELD		Customer's Order Item / Orden Cliente - Item: S 759 240428 ITEM 3		Customer's Reference / Ref. del Cliente: N/A		Manufacturer's Works Order N° / Confirmación de Venta: 210827102	
Manufacturing Process / Proceso de Manufactura: SEAMLESS HOT ROLLED		Product Type / Tipo de Producto: LINE PIPE SEAMLESS		Surface / Superficie: VARNISHED		Ends / Extremos: BARNIZADO	
Standard or Specification / Normas o Especificaciones: LAMINADO EN CALIENTE SIN COSTURA		Steel Grade / Grado de acero: GR B290		Quantity / Cantidad: 120 Pcs/Pz		Nominal Weight / Peso Nominal: 28.58 LB/FT	
Schedule / Cédula: SCH 040 / W.C STD		Length / Longitud: 18.01 / 21.98 FT		Quantity / Cantidad: 75777.351 LB		Ends / Extremos: NORMAL BEVEL	
Dimensions / Dimensiones: 8.625 X 0.322 INCH		Length / Longitud: 5.49 / 6.70 MTS		Quantity / Cantidad: 34372.000 KG		Ends / Extremos: BISELADO NORMAL	
219.1 X 8.2 MM							

This is to certify that the product described here has been manufactured, sampled, tested, and inspected in accordance with purchaser order requirements. This certificate is not a declaration of origin nor may it be used as a declaration of origin.

Por el presente certificamos que el material aquí descrito ha sido fabricado, muestreado, ensayado e inspeccionado de acuerdo a los requisitos de su orden de compra. Este certificado no es, ni puede ser usado, como una declaración de origen.

CUSTOMER - THIRD PARTY		TENARIS QUALITY DEPARTMENT SIGNATURE	
INSPECTION COMPANY COMPAÑIA DE INSPECCIÓN		CHIEF OF QUALITY CERTIFICATION DEPT. RESPONSABLE DEL DEPTO. DE CERTIFICACIÓN DE CALIDAD	
NO APLICA Employee Name: N/A		Rafael Gutiérrez de Velasco Magallanes	

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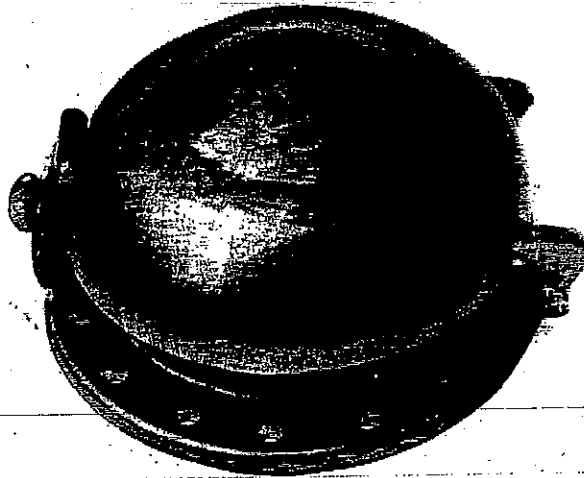
INCENDIUM SUPPLY LTD.

288 Point McKay Terrace N.W.
Calgary, Alberta T3B 4V6

Phone: (403) 283-6921
Fax: (403) 283-6864

WENCO THIEF HATCH

Model TH8



All Aluminum Spring Loaded Pressure and Vacuum Relief Hatch

Fits a 8 inch A.P.I. Tank Opening

Flange Bolt Pattern: 16 holes, 5/8" Dia. on a 10 3/8" B.C.D.

Pressure Springs: Your choice: 4oz, 8oz, 16oz

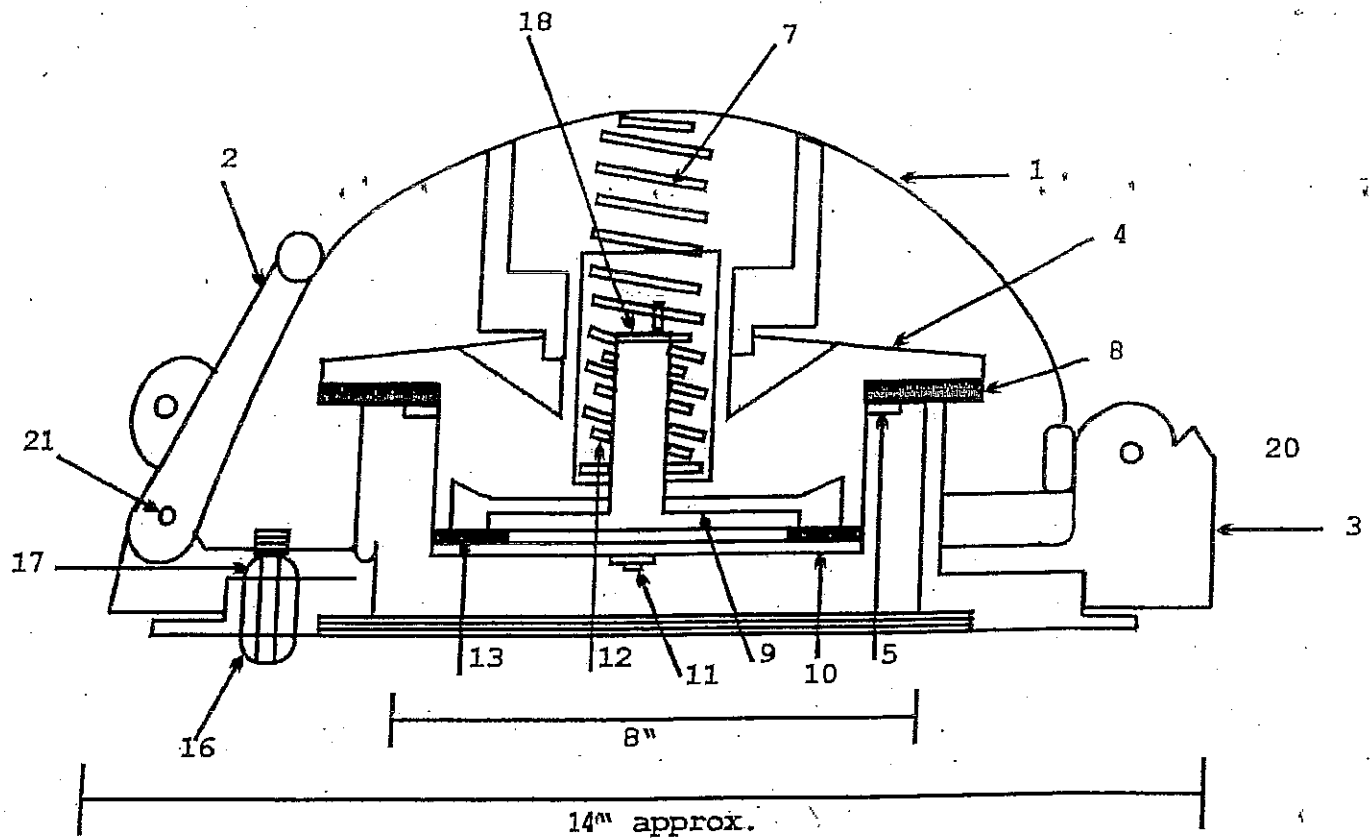
Vacuum Spring: 0.4oz

Standard: Sweet Service Buna N Gaskets & Galvanized Springs

Optional: Sour Service Viton Gaskets & Stainless Steel Springs

**We also supply: Nuts & Bolts (16/Set)
Base Gaskets**

CALL US FOR WENCO BURNERS



PART #	PART NAME	QUANTITY
1	Cover	1
2	Latch	1
3	Base	1
4	Center	1
5	Pressure Ring	1
6	Pressure Ring Bolt	4
7	Pressure Spring	1
8	Pressure Gasket	1
9	Vacuum Disc	1
10	Vacuum Ring	1
11	Vacuum Ring Bolt	1
12	Vacuum Spring	1
13	Vacuum Gasket	1
14	Hinge Pin Clips	4
15	Base Gasket	1
16	Bolt, Hex	16
17	Nut, Hex	16
18	Cotter Pin	1
19	Cotter Pin Washer	1
20	Hinge Pin	1
21	Latch Pin	1



Level Indication > Zero Emission

Redtail Hawk

This sealed float-activated level gauge features a unique dry-seal design making this unit superior to other sealed level gauging systems. It can be relied upon to measure storage and production tanks, with an 18 year production history and over 8000 units installed globally.

Design

The robust dry-seal design of the Redtail Hawk gauging system utilizes two reels of cable separated by a pressure seal and fixed to a common axle. One reel, on the sealed side of the gauge head, is exposed to the tank process and attaches to the float. The other reel attaches to the external gauge board indicator and moves in unison with the tank-exposed reel. The integral sloped channel to the tank connection allows condensation to drain back into the tank, eliminating freezing risk.

Construction

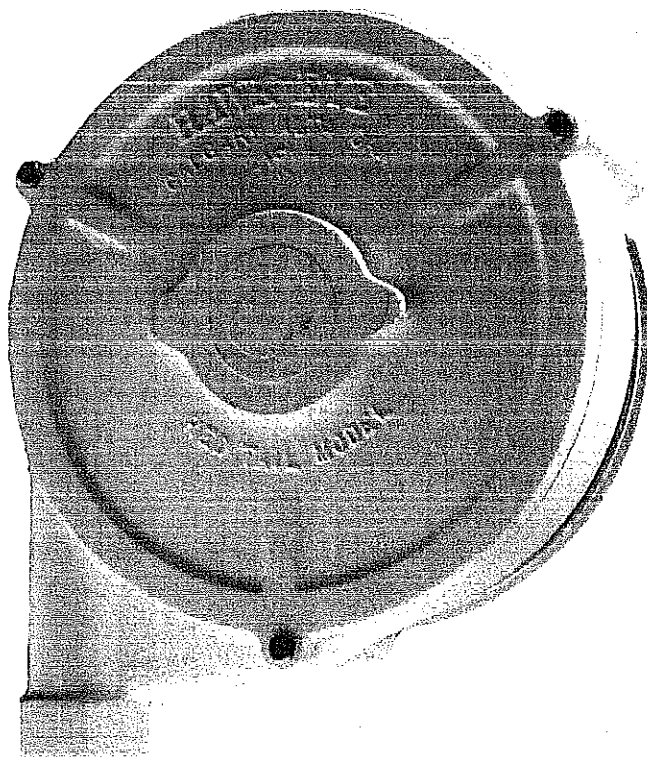
Cast aluminum and stainless steel construction makes this gauge head ideal for any process conditions, including high temperature, corrosive and sour gas environments. Available with optional stainless steel float.

Flexibility

The Redtail Hawk gauge head can transmit level electronically by attaching a Goshawk Transmitter. Performed before or after the installation of the gauge head on the tank, the addition of a Goshawk Transmitter is simple with stock parts available from Hawkeye Industries Inc. The addition of a Goshawk transmitter indicates allows tank level measurement via both electronic signal from the transmitter and the mechanical gauge board display.

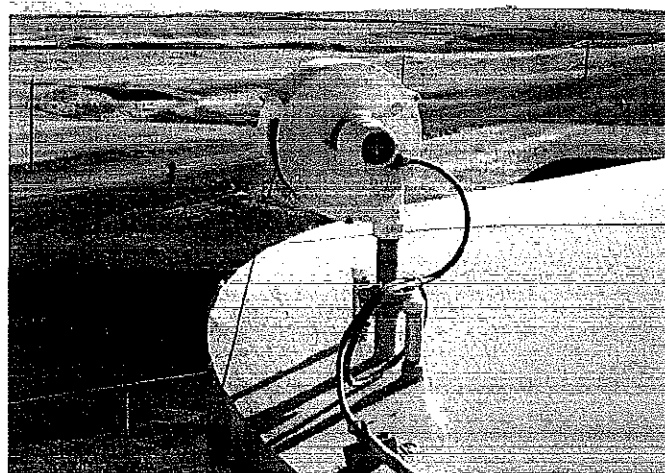
Ordering Information

- 1.) Specify Redtail Hawk Sealed Gauge Head System
- 2.) Specify Optional Goshawk Transmitter
- 3.) Specify Tank Height and Volume
- 4.) Specify Gauge Board Readout (Volume or Linear Height)
- 5.) Specify Level Switches (if required)
- 6.) Specify Float Guide Anchor Plate (required if tank does not have attachment points at bottom for float guide cables)



Above: Redtail Hawk Gauge Head

Below: Redtail with Optional Goshawk Transmitter installed on a tank.



www.hawk-eye.com

4716 76 Ave NW, Edmonton, AB Canada T6B 0A5

1-800-910-HAWK (4295)

phone: (780) 490-4295, fax: (780) 490-4290

REV 80 SEPTEMBER 2009



Specifications

Measuring Principle	Float
Maximum Range	20 m [66 ft]
Local Display	Gauge Board & Indicator
Process Connection	2 NPTF
Process Temperature	-40 °C to 80 °C (w/ PE Float)
Ambient Temperature	-40 °C to 70 °C
Pressure	0.15 bar [2 psi]

Related Products

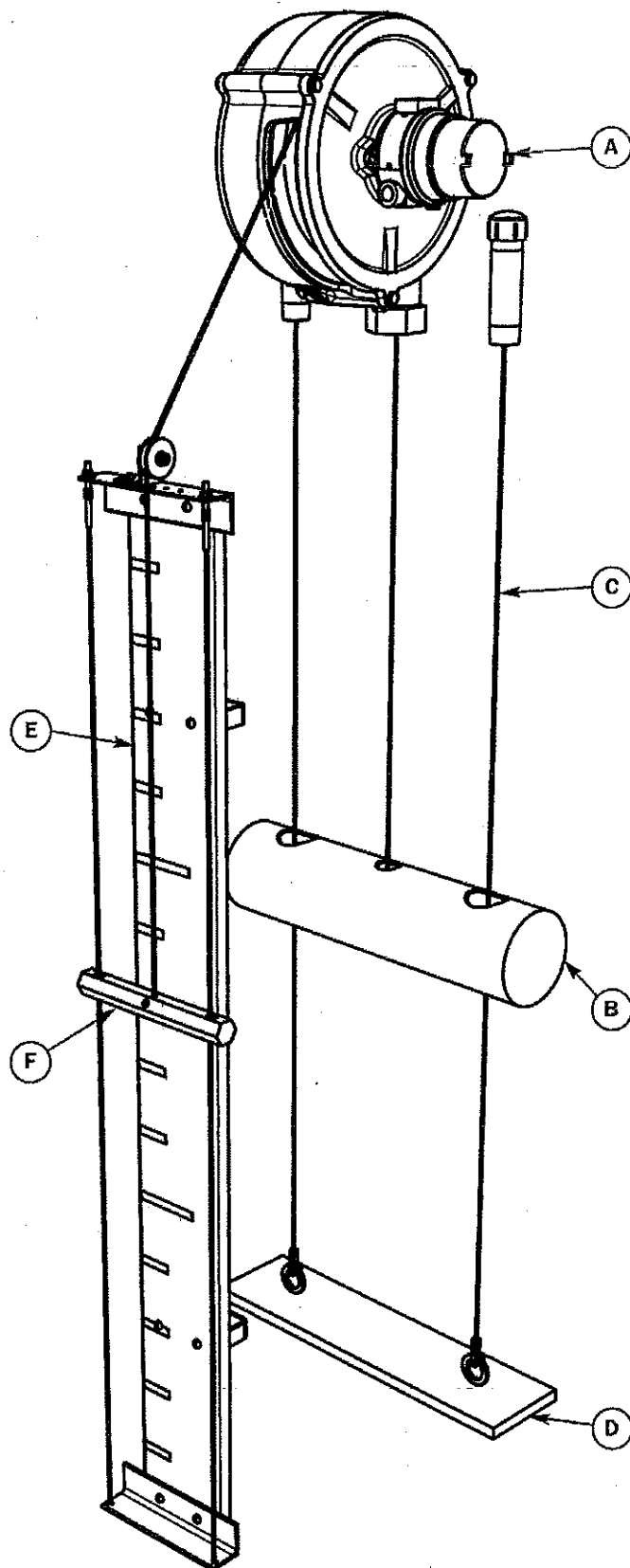
Add these items to complete the Redtail Hawk Gauging System.

- ▶ Goshawk Level Transmitter (A)
- ▶ Polyethylene or Stainless Steel Float (B)
- ▶ Float Guide Kit (C)
- ▶ Float Guide Anchor Plate (D)
- ▶ Gauge Board with Decal and Mounting Clips (E)
- ▶ Indicator & Guide Kit (F)
- ▶ Level Switches (G)

Goshawk Transmitter

The optional bolt-on Goshawk Level transmitter adds 4-20 mA electronic level indication to the Redtail Hawk Gauge Head. See the Goshawk brochure for more information.

Output	4 - 20 mA
Power Supply	13 - 24 VDC, Loop.
Maximum Height	GH1: 7.6 m [25 ft] GH2: 11.4 m [37 ft]
Process Connection	Bolted via specific gauge cover
Hazardous Location	CSA Class I, Div. 1, Group C&D



HAWKEYE INDUSTRIES INC.

MODEL: Redtail Model Gauge

INSTRUCTIONS: Installation of fluid level indicator

TANK PREPARATION

- A. Locate position for gauge head connection on tank roof at the recommended dimension (Fig. A). Weld a 2" NPT coupling (No.11) in place.
- B. Locate position for float guide connection on tank roof at the recommended dimension (Fig. D). Weld two, 1 1/4" couplings (No.16) in place.
- C. Using a chalk line, from center of the tank roof to the bottom of the outside tank wall, snap the line about 2 1/2" to the **right of the center** of the 2" coupling (No.11) to indicate the center of the gauge board. Weld gauge board brackets (No.10) with the center of the bracket on the chalk line, to a maximum of 8' centers.
- D. Suspend a plumb bob from the 1 1/4" couplings (No.16) to the tank floor and weld bottom float guide anchor clips (No.3) in place or use a Hawkeye anchor plate.

INSTALLATION

NOTE: Do not remove tape from the indicator spool until the instructions advise to do so.

GAUGE BOARD - Drill appropriate sized holes in gauge board (No.7) and attach board to gauge board brackets (No.10) using 1/4" x 3/4" machine screws, 1/4" nuts and washers.

INDICATOR & GUIDE KIT - Install indicator and guide kit (Fig. B) onto the gauge board. Secure top cable guide bracket (with idler pulley No.22) to top of gauge board and bottom cable guide bracket (No.23) to the bottom of gauge board using the supplied 1/4" x 3/4" machine screws (No.17), 1/4" nuts (No.18) and washers. Tighten each cable stud on top cable guide bracket (No.22) until cable (No.15) is taut.

GAUGE HEAD & FLOAT - Thread a 2" x 6" nipple (No.25) into the 2" coupling (No.11). Pull float cable (No.6) from the 2" opening on the gauge head and thread it through the 2" nipple (No.12). Tighten gauge head to nipple, aligning the indicator spool with the center of gauge board so that the open side of the gauge lines up with gauge board **and faces the board** (note the orientation of the head in Fig. A). At this point, the float cable will unravel into tank. Remove nut and washer from the float cable stud (No.12). Thread the stud through the center hole of the float (No.4) and replace nut and washer. Tighten nut until there are three threads showing. Rotate indicator spool counter clockwise until you can feel the float lift. Remove the tape from the indicator spool on the gauge head (No.1). Secure indicator spool and unravel three wraps of cable then release spool and pass cable over the idler pulley (No.22) and through indicator cable guide (No.8). Temporarily attach cable to indicator (No.9) using a cable clamp (No.13). Pull the indicator down (lifting float to the top of the tank). Reset indicator (No.9) at the maximum level on gauge board (No.7). Adjust cable, tighten clamp (No.13), and cut off excess cable.

FLOAT GUIDE KIT - Thread strap fork cable ends (No.5) through 1 1/4" couplings and then through the outside guide holes on float (No.4). Attach strap fork ends (No.19) to bottom float guide anchor clips (No.3). Tighten top float guide anchor (No.2) to 1 1/4" coupling (No.16). Remove PVC cap and pull cable through the cable tension holder until spring is partially compressed. Cut off excess cable and replace PVC cap and tighten. Pull indicator downward to bottom of gauge board to ensure float travel is free of any binding.

#	DESCRIPTION	MATERIAL	QTY	#	DESCRIPTION	MATERIAL	QTY	#	DESCRIPTION	MATERIAL	QTY
1	RETAIL HEAD ASSEMBLY	ALUMINUM & 316 SS	1	9	LEVEL INDICATOR	COATED STEEL	1	17	1/4" NC X 3/4" SCREW	ZINC PLATED	
2	TOP FLOAT GUIDE ANCHOR	ALUMINUM & 316 SS	2	10	GAUGE BOARD BRACKET	(BY CUSTOMER)		18	1/4" NC NUT	ZINC PLATED	
3	BOTTOM FLOAT GUIDE ANCHOR	(BY CUSTOMER) (OR HAWKEYE)	2	11	2" NPT COUPLING	(BY CUSTOMER)	1	19	STRAP FORK END	316 SS	2
4	HORIZONTAL FLOAT	POLYETHYLENE OR 316 SS	1	12	#10-32 FLOAT CABLE STUD	316 SS	1	20	#10-24 x 1" MACHINE SCREW	316 SS	2
5	FLOAT GUIDE CABLE	316 SS	1	13	1/8" CABLE CLAMP	316 SS	1	21	#10-24 LOCK NUT	316 SS	2
6	FLOAT CABLE	316 SS	1	14	INDICATOR CABLE	316 SS	1	22	TOP CABLE GUIDE BRACKET	ALUMINUM	1
7	GAUGE BOARD	ANODIZED ALUMINUM WITH 7 YEAR DECAL	1	15	INDICATOR GUIDE CABLE	316 SS	1	23	BOTTOM CABLE GUIDE BRACKET	ALUMINUM	1
8	INDICATOR CABLE GUIDE	PLASTIC	1	16	1 1/4" NPT COUPLING	(BY CUSTOMER)	2	24	GOSHAWK 4-20mA TRANSMITTER	ALUMINUM & 316 SS	1
								25	2" NPT PIPE NIPPLE	(BY CUSTOMER)	1

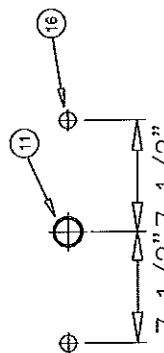


FIG. D

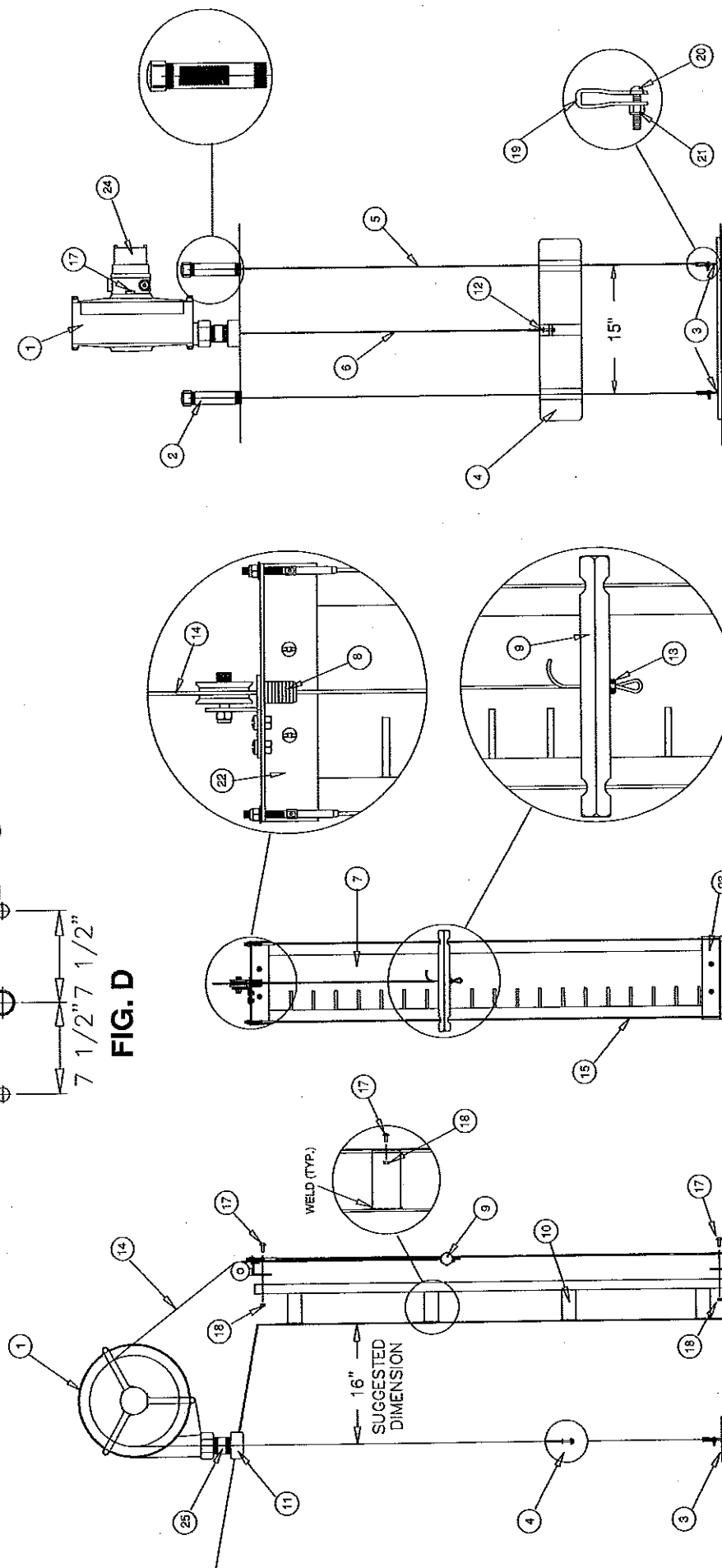


FIG. A

FIG. B

FIG. C



Level Indication > Transmitters

Goshawk

The Goshawk transmitter adds 4-20 mA electronic level indication to the Redtail Hawk and Roadside Hawk Sealed Gauge Head Systems.

Design

The Goshawk Transmitter is a bolt-on, two-wire 24 VDC loop-powered transmitter that adds 4-20 mA electronic level indication to Hawkeye Industries' sealed gauge heads. Connecting mechanically to the gauge head axle, with solid-state set-point and range control, the Goshawk Transmitter does not require recalibration following power surges or outages.

Construction

The proprietary Goshawk PCB and mechanical components are encased in a Class I, Div. I Group B, C&D Hazardous Location Enclosure, with a Class I, Group C & D Hazardous Location Shaft Operator.

Flexibility

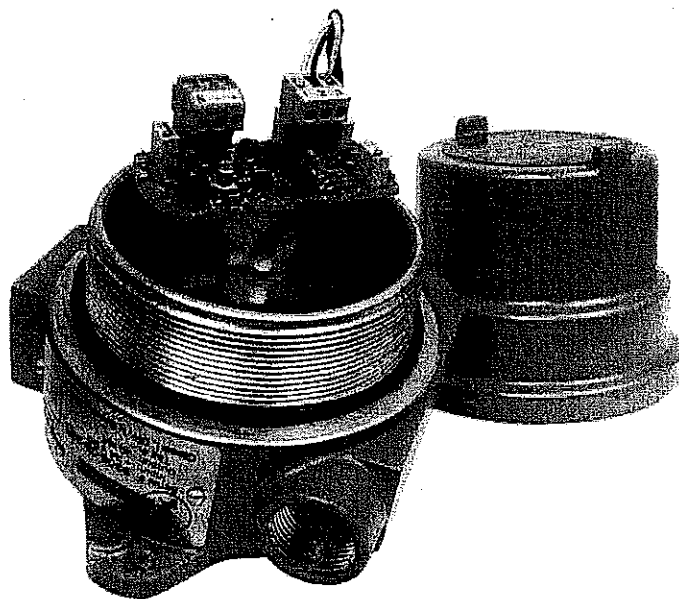
The Goshawk Transmitter is bolted onto Hawkeye Industries' Redtail Hawk or Roadside Hawk Sealed Gauge Head, before or after gauge head installation. The standard transmitter works with all tank heights supported by the Redtail Hawk and Roadside Hawk systems up to 7.6 m [72 ft]. Higher tanks can be accommodated, call us for more information.

Ordering Information

- 1.) Specify Goshawk Transmitter.
- 2.) Specify Gauge Head Model that the transmitter will be attached to (for existing installations only)

Note, when installing on an existing gauge head, a specific transmitter gauge head cover will be included with the installation kit. Credit will be issued for the return of the standard gauge head cover.

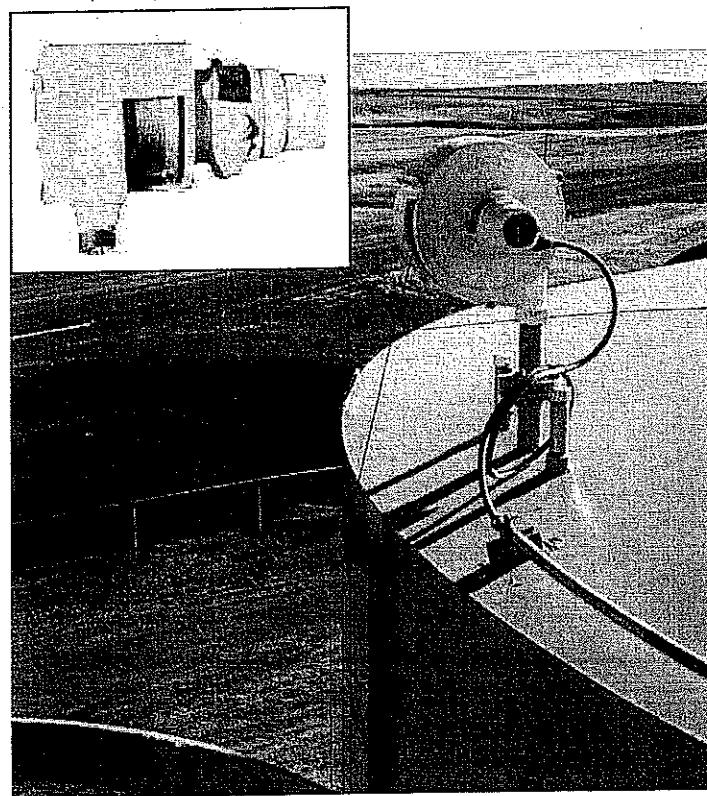
- 3.) Specify Tank Height



Above: Goshawk Transmitter with cover removed

Below: Goshawk installed on in-service Redtail Gauge Head

Below (inset): Goshawk installed on Roadside 'S' Gauge Head



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2110 70 Ave NW, Edmonton, AB Canada T6P 1N6

1-800-910-HAWK (4295)

phone: (780) 490-4295, fax: (780) 490-4290

REV C0 FEBRUARY 2013

Specifications

Measuring Principle	Float (via gauge head)
Local Display	Gauge Board & Indicator
Output	4-20 mA
Power Supply	13 - 24 VDC loop
Process Connection	Gauge-specific cover plate
Process Temperature	-40 °C to 80 °C
Ambient Temperature	-40 °C to 70 °C
Hazardous Location	CSA Class I, Div. 1, Group C&D

Accuracy

Output Non-Linearity	0.01% Max
Output Error	0.13% FS @ 25 °C + Gauge Error
Gauge Error: Redtail*	±0.06 Turns (Indicator Pos. ±2.1 in)
Gauge Error: Roadside*	±0.07 Turns (Indicator Pos. ±1.2 in)

* Net Error for GH I. For GH II, multiply Error by 1.5. For GH III, multiply error by 2.5.

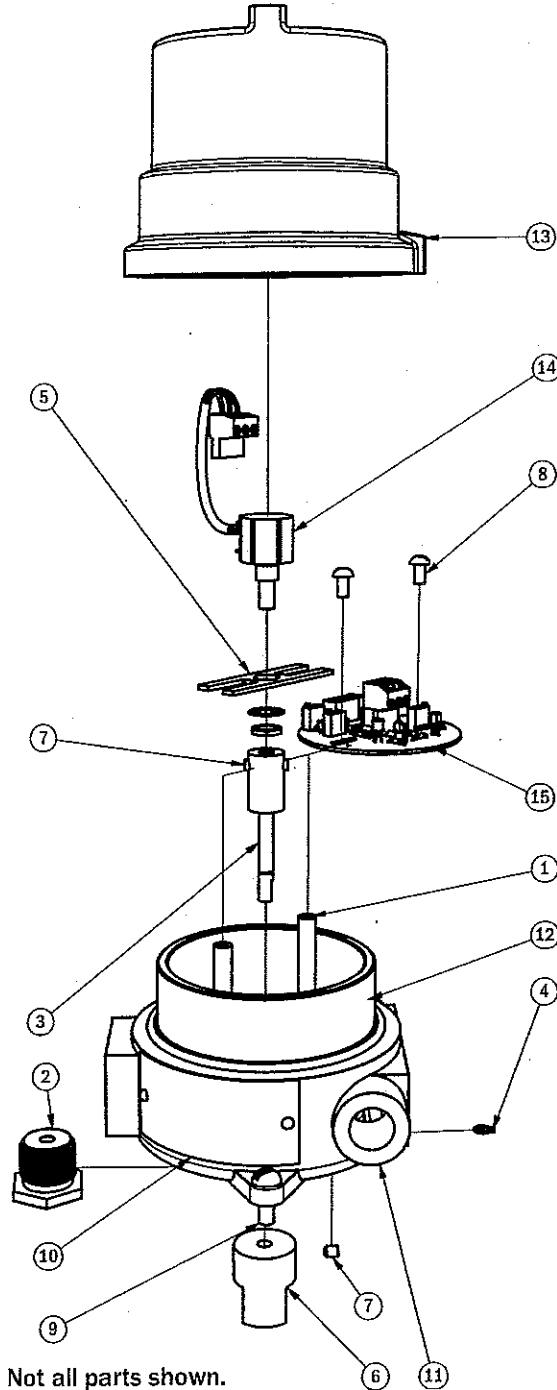
Tank Sizing Information

Model	Maximum Operating Height			
	Redtail		Roadside	
	Absolute	Recommended	Absolute	Recommended
GH I	8.2m [27 ft]	7.3m [24 ft]	3.7m [12 ft]	3.4m [11 ft]
GH II	12.8m [42 ft]	11.9m [39 ft]	6.1m [20 ft]	5.5m [18 ft]
GH III	21.9m [72 ft] [†]	21.0m [69 ft] [†]	10.4m [34 ft] [†]	10.1m [33 ft] [†]

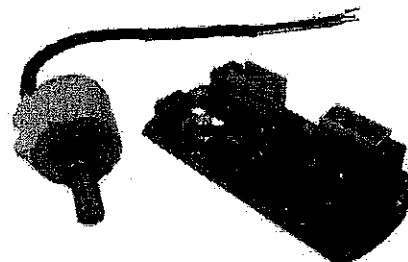
[†] Exceeds maximum gauge head range. See Redtail and Roadside specifications for details.

Parts List

#	Qty	p/n	Title	#	Qty	p/n	Title
1	2	GH-1008	Stand Off	9	2	HW-1022	Body Screw
2	1	GH-1025	Operator	10	1	GH-1015	ID Plate
3	1	GH-1003	Drive Shaft	11	1	GH-1000	Body
4	1	HW-1014	Ret. Ring	12	1	GH-1000	O-ring
5	1	GH-1014	H-Clip	13	1	GH-1001	Cover
6	1	GH-1010	Transition Coupler	14	1	GH-1005	Potentiometer Assembly
7	3	HW-1020	Set Screw	15	1	GH-1004	Circuit Board
8	2	HW-1000	Standoff Screw				



Note: Not all parts shown.



Note: Potentiometers and PCB's are available as spare parts. Call us for more information.

Related Products

The Goshawk is for use in conjunction with one of Hawkeye's zero-emission gauge heads: the Redtail Hawk or the Roadside Hawk.



Goshawk Level Transmitter

This document contains the recommended procedures installing and calibrating the Hawkeye Industries Goshawk Level Transmitter for use on a Redtail or Roadside Gauge Head.

Requirements

The gauge board, indicator, float, and gauge head, shall be in place on the tank prior to Goshawk installation.

Contents

A.) Goshawk Installation on Gauge Head

B.) Electrical Connections

C.) Calibration (Zero & Span)

D.) Calibration (Tank Height) *

E.) Transmission Installation & Calibration **

Sections D.) and E.) are only required for transferring a previously-installed Goshawk to a different sized tank.

Tools

Installation onto Gauge Head

► #3 Robertson Screwdriver

► 9/16 Open-end wrench (for Redtail)

► 1/2 Open-end wrench (for Roadside)

► 9/32 Allen Key

Calibration (Zero & Span)

► 24 VDC Loop calibrator - or -
► multi-meter capable of reading current in mA plus a 24 VDC Power Supply*

► Pen-size flat screwdriver

Calibration (Tank Height)

► Multimeter capable of read-

Tools (cont'd)

ing resistance in ohms (Ω), with Allen Key

spring-hook leads

► Pen-size flat screwdriver

Transmission Installation &

Calibration

► Slot-head screwdriver 1/16

Allen Key

► 3/32 Allen Key

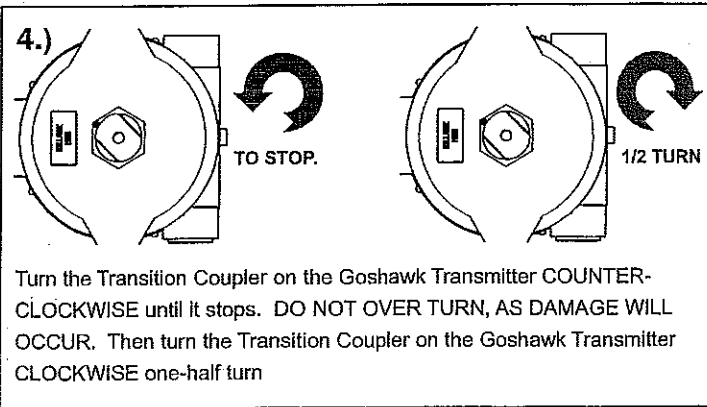
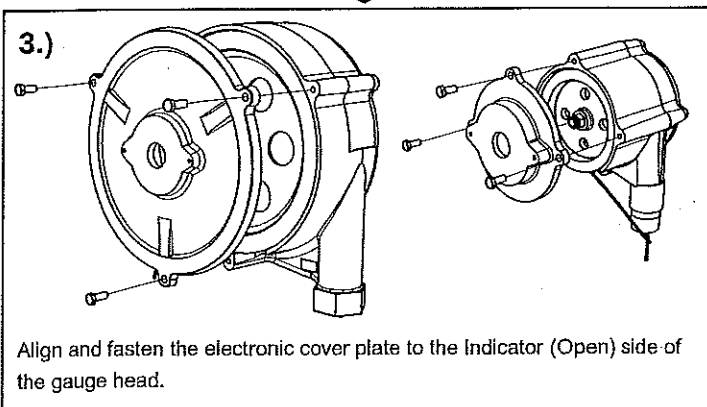
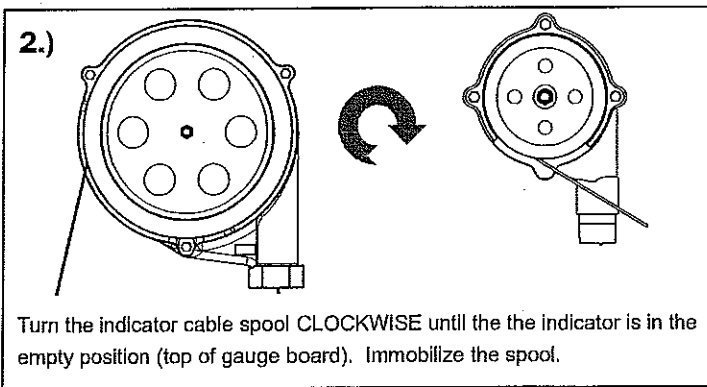
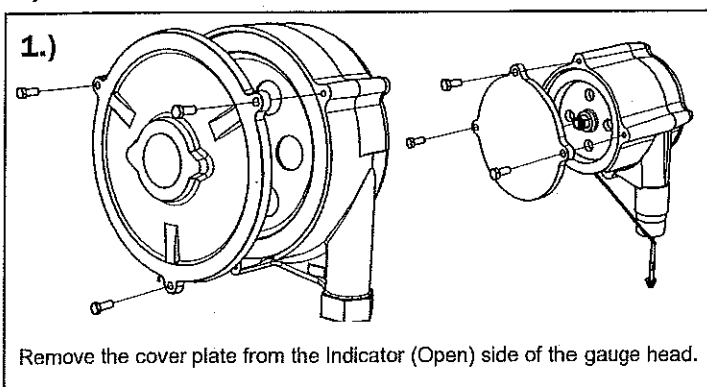
► 1/2 Wrench

► Retaining Ring Pliers

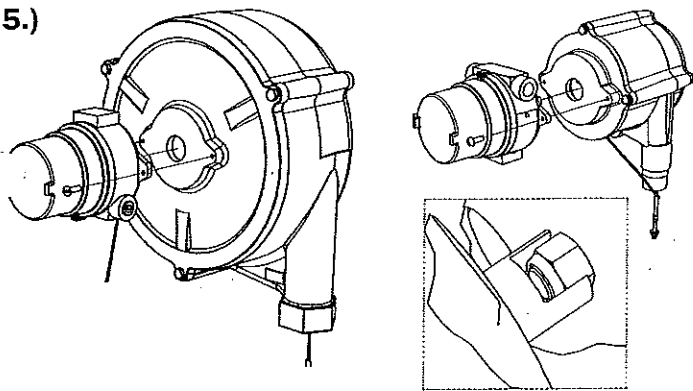
Parts Required

QTY	Part
► 1	Goshawk Level Transmitter
► 2	1/4-20 UNC x 3/4 Button-head screw
Installation on Redtail	
► 1	Redtail Gauge Head
► 1	Redtail Electronic Cover Plate
Installation on Roadside	
► 1	Roadside Gauge Head
► 1	Roadside Electronic Cover Plate
Transmission Installation	
► 1	Goshawk II Transmission Kit

A.) Goshawk Installation on Gauge Head

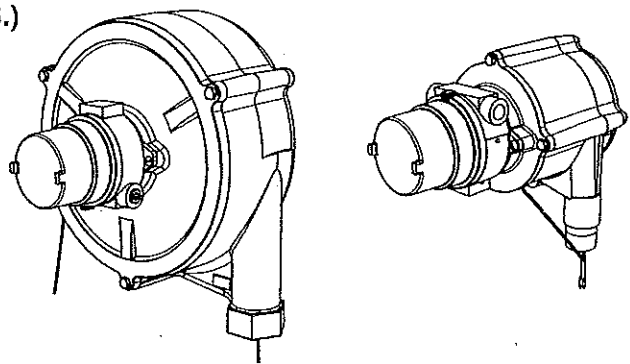


5.)



Place the transmitter on the electronic cover plate. Ensure the transition coupler mates with the gauge head axle without binding.

6.)



Align the bolt holes on the transmitter with the tapped holes on the cover plate, and secure using the 1/4-20UNC x 3/4 Machine Screws. Release the spool so the gauge head components can move freely

Installation on Gauge Head Complete. Proceed to B.)

B.) Electrical Connections

NOTE! In November 2008, Hawkeye Industries Significantly Revised the Goshawk Circuit Board. All labels and functions remain the same, but component locations have changed. The boards are simple to identify, as the **newer** is significantly **smaller**, and **rectangular** in shape, compared to the **older** board, which is **larger**, and **circular**.

B1.) Power & Signal Connections

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

The Goshawk Transmitter has a three position terminal block (orange) located on the left-side of the circuit board (after Nov. 2008) or in the centre (before Nov. 2008) for connecting the 13-24 VDC power supply, signal out, and a shield termination connection. **NOTE:** the shield termination connection is not connected to the circuit, and is provided for convenience only.

TERMINAL	FUNCTION	LABEL
1	+13 TO +24 VDC	+
2	Signal Out	-
3	Shield	G or S

B2.) Potentiometer Connections

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

The grey terminal block provides connections for the potentiometer. Should the potentiometer be replaced, connect the wires accordingly:

TERMINAL	WIRE COLOUR
1	WHITE
2	BLUE
3	YELLOW

Electrical Connections Complete. Proceed to C.)

C.) Calibration (Zero & Span)

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

Identify the circuit board, and note the locations of the zero and span adjustments before proceeding.

1.)

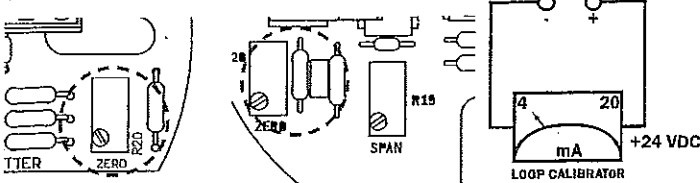
Connect the +24 lead from the Loop Calibrator to the positive (+) terminal on the circuit board terminal block.

* If using a 24 VDC power supply and multi-meter, ensure that the multimeter is set to mA and connected in-line with the +24VDC lead and the positive (+) on the circuit board terminal block.

2.)

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

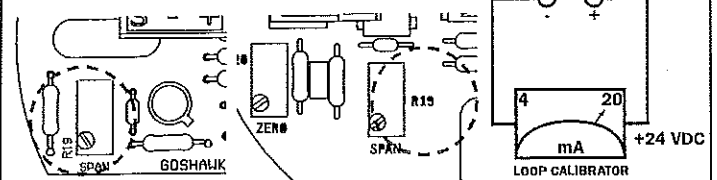


Move the indicator to the empty position (top of gauge board) and secure in place. Use the screwdriver to adjust the R20 fine-trim potentiometer (labeled ZERO) until the measuring equipment indicates 4 mA.

3.)

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008



Move the indicator to the full position (bottom of gauge board) and secure in place. Use the screwdriver to adjust the R19 fine-trim potentiometer (labeled SPAN) until the measuring equipment indicates 20 mA.

Goshawk Calibration Complete.

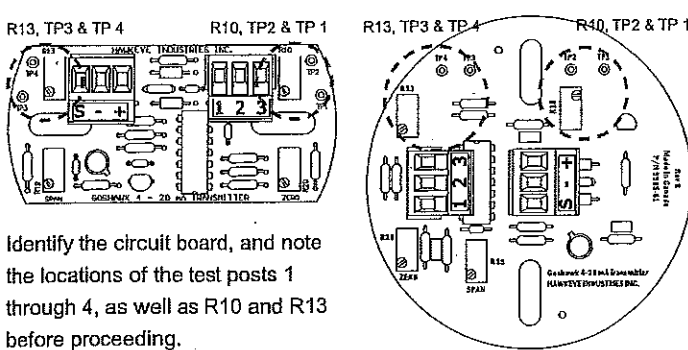
Proceed to D.) only if the Goshawk is to be installed on a tank different than the factory precalibration.

D.) Calibration (Tank Height)

NOTE! Sections D.) and E.) are only required for transferring a previously-installed Goshawk to a different sized tank. New Goshawks are shipped precalibrated for tank height. **DO NOT CONNECT GOSHAWK TO POWER SOURCE DURING THIS PROCEDURE.**

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

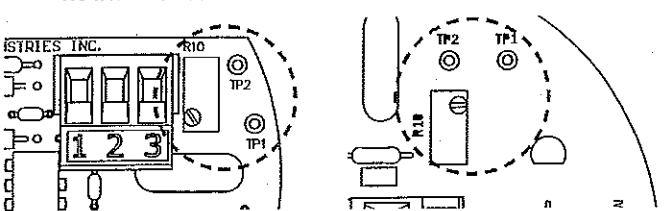


Identify the circuit board, and note the locations of the test posts 1 through 4, as well as R10 and R13 before proceeding.

1.)

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008

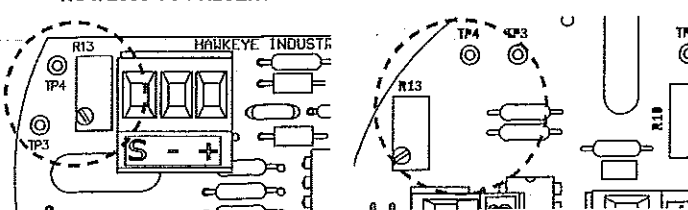


Connect one spring hook lead to Test-Post 1 (TP1), and the other spring hook lead to Test-Post 2 (TP2) and adjust R10 to the appropriate resistance for the desired tank height (See Table D-1).

2.)

NOV. 2008 TO PRESENT

PRIOR TO NOV. 2008



Connect one spring hook lead to Test-Post 3 (TP3), and the other spring hook lead to Test-Post 4 (TP4) and adjust R13 to the appropriate resistance for the desired tank height (See Table D-1).

Goshawk Calibration Complete.

Proceed to E.) if the Goshawk has, or will have a transmission.

Table D-1

For Goshawk I (No Geared Transmission)

Tank Height (ft)	Redtail		Roadside	
	R10 (Ω)	R13 (Ω)	R10 (Ω)	R13 (Ω)
2	-	-	1.5	1.5
3	-	-	10	10
4	-	-	30	30
5	1.5	1.5	30	30
6	10	10	30	30
7	10	10	40	40
8	30	30	40	40
9	30	30	70	70
10	30	30	100	100
11	30	30	150	150
12	30	30	180	180
13	40	40		
14	40	40		
15	40	40		
16	40	40		
17	60	60		
18	60	60		
19	70	70		
20	100	100		
21	100	100		
22	130	130		
23	150	150		
24	150	150		
25	180	180		

Table D-2

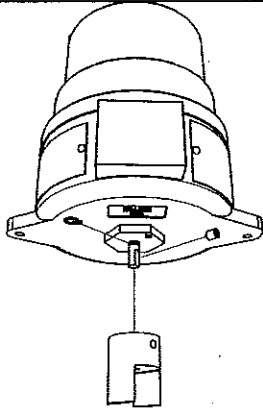
For Goshawk II (With Geared Transmission)

Tank Height (ft)	Redtail		Roadside	
	R10 (Ω)	R13 (Ω)	R10 (Ω)	R13 (Ω)
3	-	-	1.5	1.5
4.5	-	-	10	10
6	-	-	30	30
7.5	1.5	1.5	30	30
9	10	10	30	30
10.5	10	10	40	40
12	30	30	40	40
13.5	30	30	70	70
15	30	30	100	100
16.5	30	30	150	150
18	30	30	180	180
19.5	40	40		
21	40	40		
22.5	40	40		
24	40	40		
25.5	60	60		
27	60	60		
28.5	70	70		
30	100	100		
31.5	100	100		
33	130	130		
34.5	150	150		
36	150	150		
37.5	180	180		

E.) Transmission Installation & Calibration

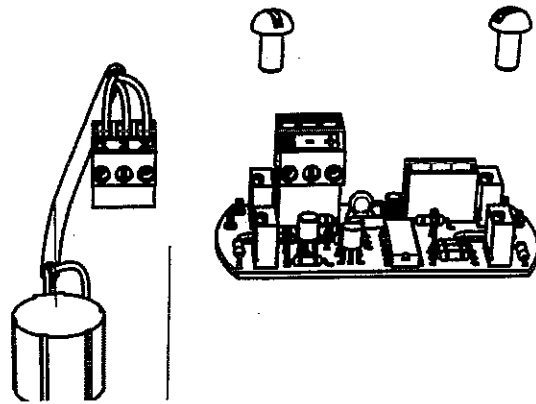
NOTE! Sections D.) and E.) are only required for transferring a previously-installed Goshawk to a different sized tank. New Goshawks are shipped precalibrated for tank height. The Goshawk shall be separated from the gauge head, and disconnected from power while performing this procedure.

1.)



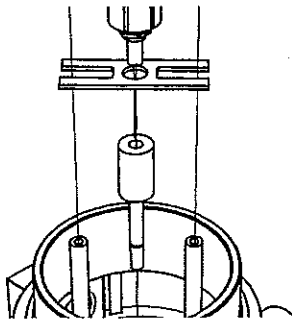
Loosen the retaining screw on the transition coupler with the 3/32 allen key and remove it from the operator shaft. Remove the external retaining ring from the operator shaft.

2.)



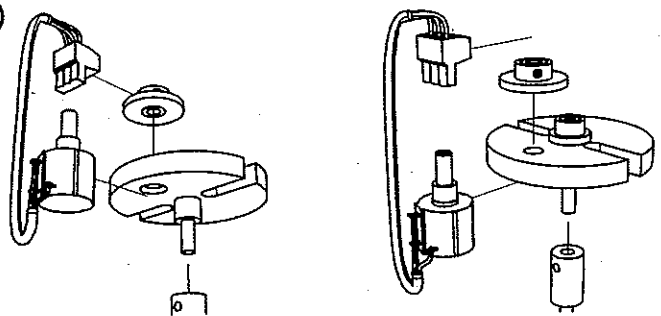
Disconnect power and potentiometer from the circuit board. Remove the two circuit board retaining screws using the slot-head screwdriver, and carefully remove the circuit board and set aside.

3.)



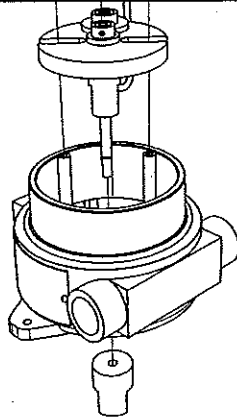
Lift the potentiometer / h-clip / operator shaft assembly out. Using the 3/32 allen key, loosen the retaining screws on the operator shaft, and remove from the potentiometer shaft. Remove the h-clip by removing the potentiometer retaining nut and lock ring with 1/2 wrench.

4.)



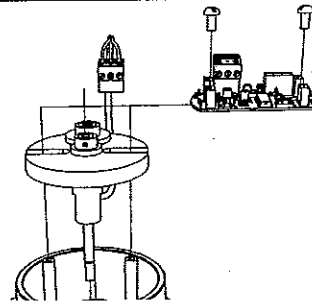
Insert the potentiometer into the threaded hole on the underside of the transmission chassis and tighten. Fit the larger gear, hub up, to the exposed potentiometer shaft. Use the 1/16 allen key to secure the gear set screw to the potentiometer shaft. Connect the transmission centre axle to the operator shaft, and secure the set screws with the 3/32 allen key.

5.)



Drop the potentiometer / transmission assembly into the Goshawk body, taking care to align the chassis slots to the posts, and secure the operator shaft with the external retaining ring. Reattach the transition coupler.

6.)



Align the connection holes on the circuit board with the posts on the goshawk, and secure with the slot-head machine screws. Reconnect the potentiometer to the circuit board.

7.)

Follow steps A through D to reconnect and recalibrate the Goshawk. **NOTE:** use Table D-2 for the tank height settings.

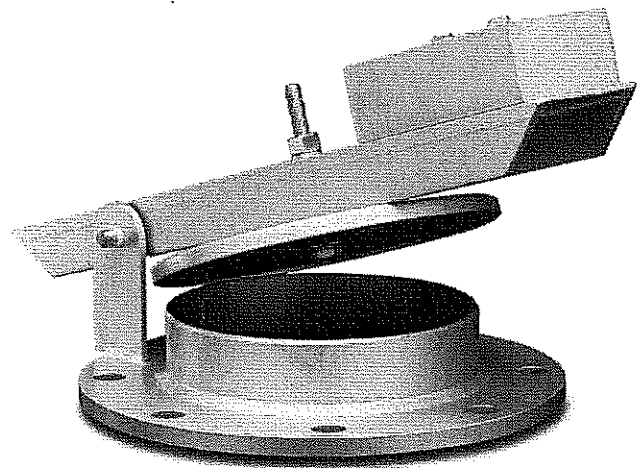
**Goshawk Transmission and Calibration Complete.
Level Indication System Installation Complete.**

Emergency Relief Vent, Model 2000

The **Series 2000** is designed to provide an emergency pressure relief opening for storage tanks when exposed to over pressures that are not handled by standard tank vents. These vents provide the capacity to meet API standard 2000 for emergency venting due to fire exposure when properly sized. These covers also provide quick easy access for tank inspection and maintenance.

The Enardo emergency pressure relief vent provides pressure relief only. Vacuum relief must be supplied by normal venting devices or an Enardo Series 2500 emergency relief vent with vacuum.

When excessive pressure builds within the storage tank the Series 2000 Emergency Pressure Relief Vent hinged cover begins to open at the predetermined set pressure, relieving excess pressure. When the over pressure has dissipated the cover reseats onto the base. The hinge mechanism prevents misalignment and provides an accurate reseat.



Features and Benefits

- Advanced seal technology exceeds the most stringent of industrial standards for allowable leakage (1 scfh @ 90% set point) and provides excellent set point accuracy (+/- 3%).
- All components are field replaceable, including pallet seal without the need for special tools or complex procedures.
- Every Series 2000 vent is factory inspected and leak checked and certified.
- Corrosion resistant coatings are available for even the most corrosive of applications.
- Certified flow capacity curves are available for the full product size range.
- Available in API, ANSI, DIN and JIS flanges.
- EN 13463-1: 2001, EN 13463-5: 2003 Certified.

Vent Setting Range

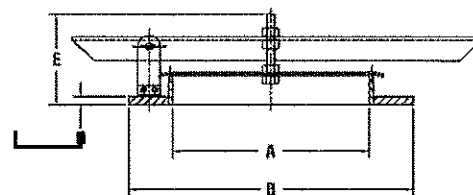
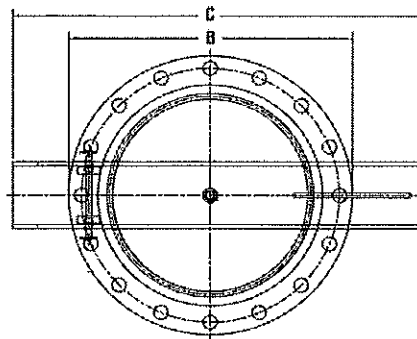
Model Numbers	Sizes Available mm (In.)	Pressure	Vacuum
Series 2000	ANSI 100 (4), 200 (8), 300 (12), 400 (16), 460 (18), 500 (20), 600 (24) API 200 (8), 500 (20), 600 (24)	2.0 to 32.0 oz/sq. in. (0.5 Increments) 3.5 to 55.0 inH ₂ O (1.0 Increments) 8.0 to 138.0 mbar (2.2 mbar Increments)	NA

Materials of Construction

Base	Arm	Disk	Seal	Seal Support
Carbon Steel 304 S.S. 316 S.S.	Carbon Steel 304 S.S. 316 S.S.	Aluminum 304 S.S. 316 S.S.	Buna-N FEP Teflon Viton	Aluminum 304 S.S. 316 S.S.



Emergency Relief Vent, Model 2000



Selection Guide to Enardo Pressure Relief Vent Series 2000

Model	A Size in. (mm)	B1 ANSI Flange O.D. in. (mm)	B2 API Flange O.D. in. (mm)	C Overall Length in. (mm)	D Flange Thickness in. (mm)	E Height in. (mm)	C.S. Unit Weight* Lb. (kg)	S.S. Unit Weight* Lb. (kg)
2004	4 (100)	9 (229)	NA	14 (356)	1/2 (13)	4-3/4 (121)	14 (6)	14 (6)
2008	8 (200)	13-1/2 (343)	13-1/2 (343)	21 (533)	1/2 (13)	6-1/2 (165)	28 (13)	29 (13)
2012	12-1/4 (310)	19 (483)	NA	22 (559)	1/2 (13)	6-1/2 (165)	42 (19)	43 (20)
2016	15-1/4 (390)	23-1/2 (597)	NA	29 (737)	1/2 (13)	6-1/2 (165)	94 (43)	97 (44)
2018	17-1/2 (445)	25 (635)	NA	36 (914)	3/4 (19)	6-3/4 (171)	110 (50)	118 (54)
2020	19-1/4 (490)	27-1/2 (699)	26 (660)	38-1/4 (972)	3/4 (19)	6-3/4 (171)	119 (54)	127 (58)
2024	23-1/4 (590)	32 (813)	30 (762)	41 (1041)	3/4 (19)	6-3/4 (171)	176 (80)	186 (84)

*Unit weights indicate Net Weight of valve at standard set pressure (2.0 oz/sq.in. pressure), does not include shipping crate or box. Add 20% for gross shipping weight (Domestic Only). Pressure settings above the standard will increase total unit weight - consult factory for more information.

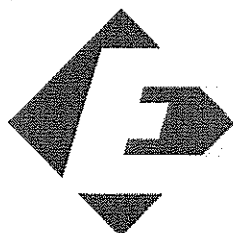
Selection Guide to Enardo Pressure Relief Vent Series 2000

2000	—	2	0	—			—			—			—			—	
		Series			Connection Size			Base & Arm		Disk Cover		Gasket		Bolt Pattern		Pressure Settings	Options
					4", 8", 12", 16", 18", 20", 24"			2. Carbon Steel 3. 304 Stainless Steel 4. 316 Stainless Steel 5. Exotic		1. Aluminum 3. 304 S.S. 4. 316 S.S. 5. Exotic		T. Teflon N. Buna-N V. Viton X. Special		1. ANSI 2. API		n - inH ₂ O z - oz/sq.in. 2.0 oz/sq.in. to 32.0 oz/sq.in. (0.5 oz/sq.in. increments) 3.5 inH ₂ O to 55.0 inH ₂ O (1.5 inH ₂ O increments)	1. Special Coating 2. Optional Hardware 3. Other

Example:

2000 — **2** **0** **1** **2** — **2** **1** **N** — **1** — **Z** **2** **4**

Indicates a 12" Emergency Pressure Relief Vent with a carbon steel base and arm, an aluminum disk cover with a neoprene gasket, an ANSI 150 lb. bolting pattern, with relief pressure of 24 oz.





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

08-May-2014

Enardo Model: Model 2000 EPRV

Connection Size: 20

inches

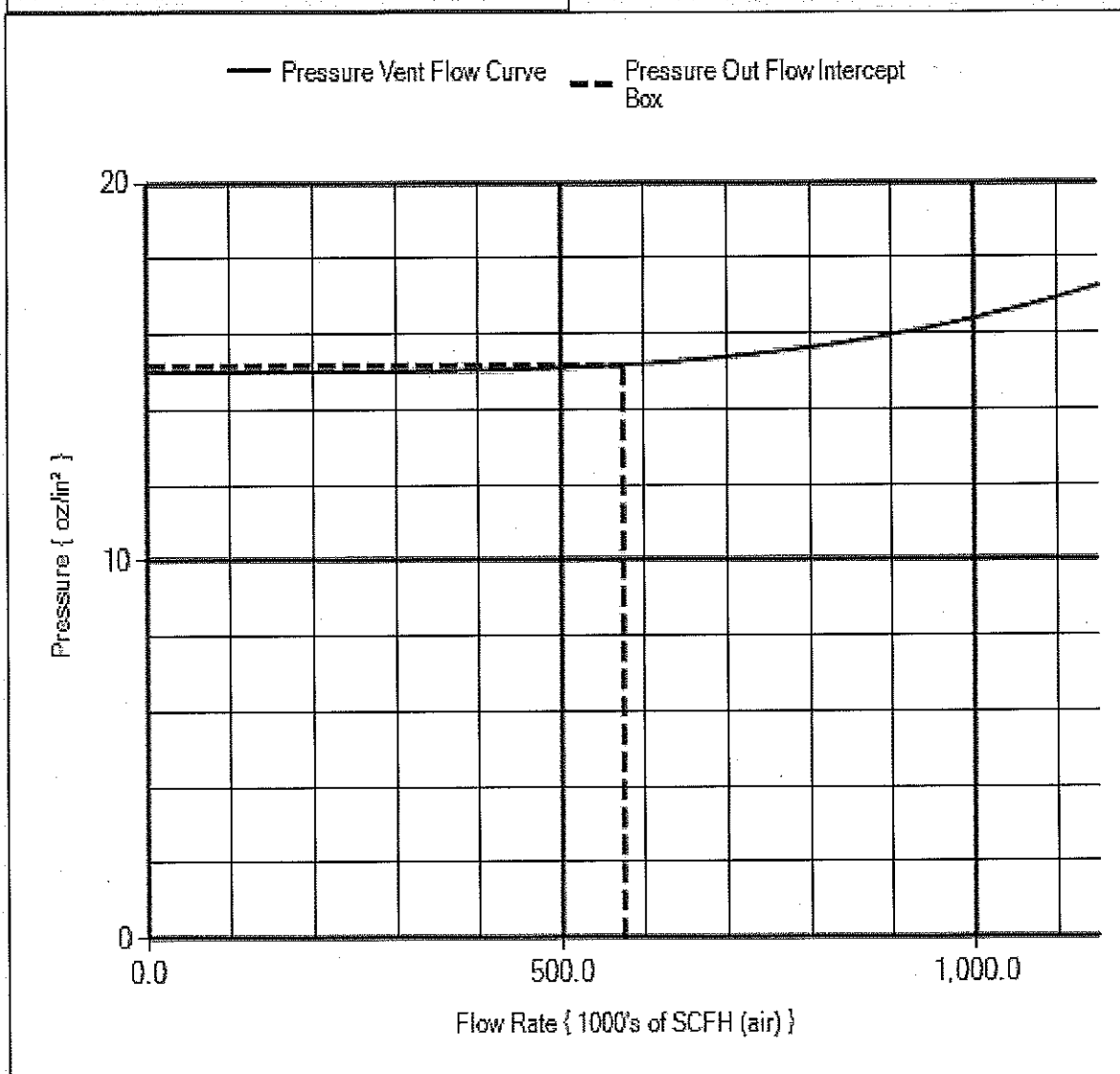
PRESSURE

Flow Rate: 574394 SCFH (air)

Set Point: 15 oz/in²

Pressure at flow: 15.2 oz/in²

% of MAWP: 94.83 %





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

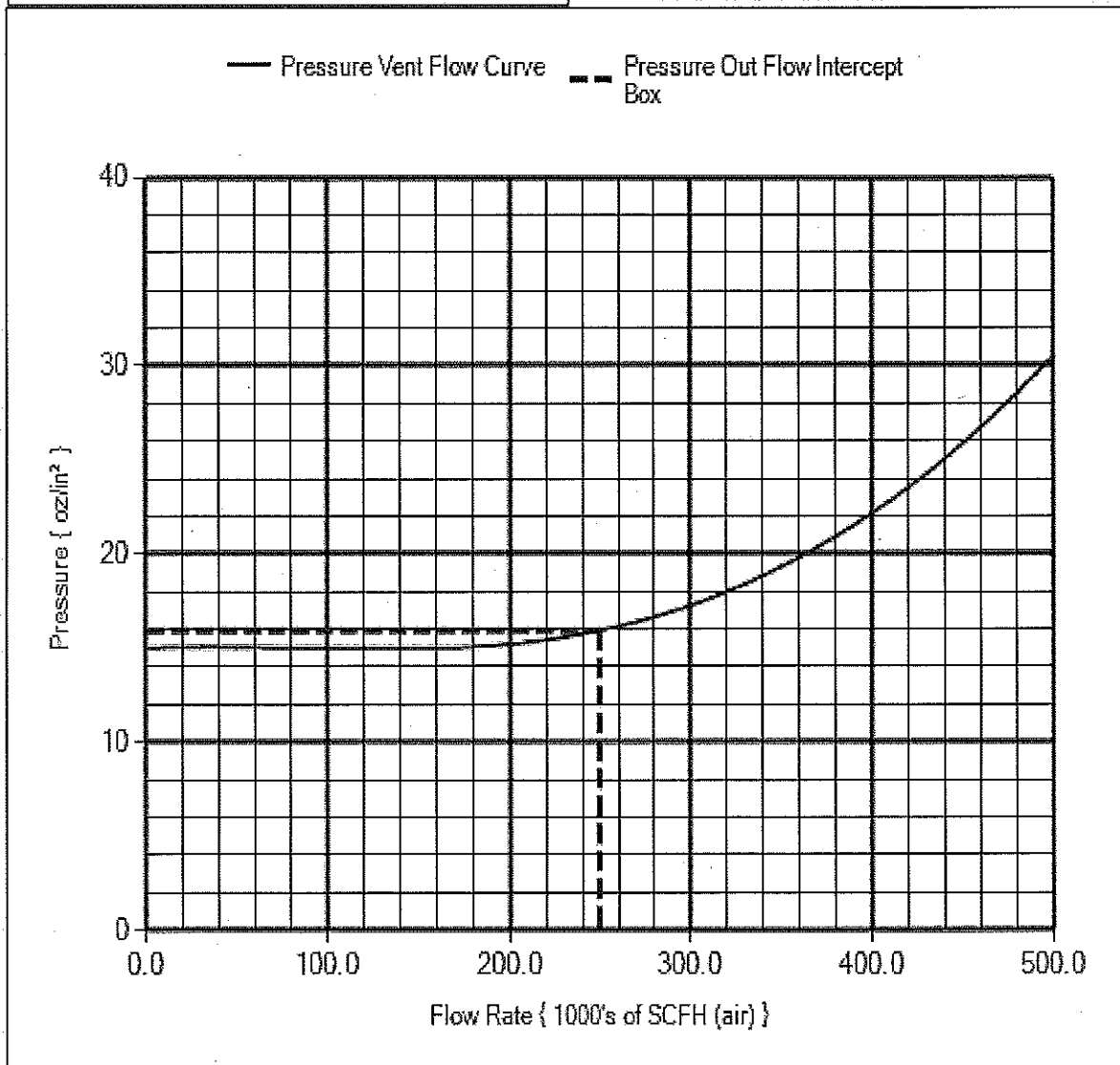
08-May-2014

Enardo Model: Model 2000 EPRV

Connection Size: 8 inches

PRESSURE

Flow Rate: 249258 SCFH (air)
Set Point: 15 oz/in²
Pressure at flow: 15.9 oz/in²
% of MAWP: 99.55 %





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

08-May-2014

Enardo Model: Model 2000 EPRV

Connection Size: 8 inches

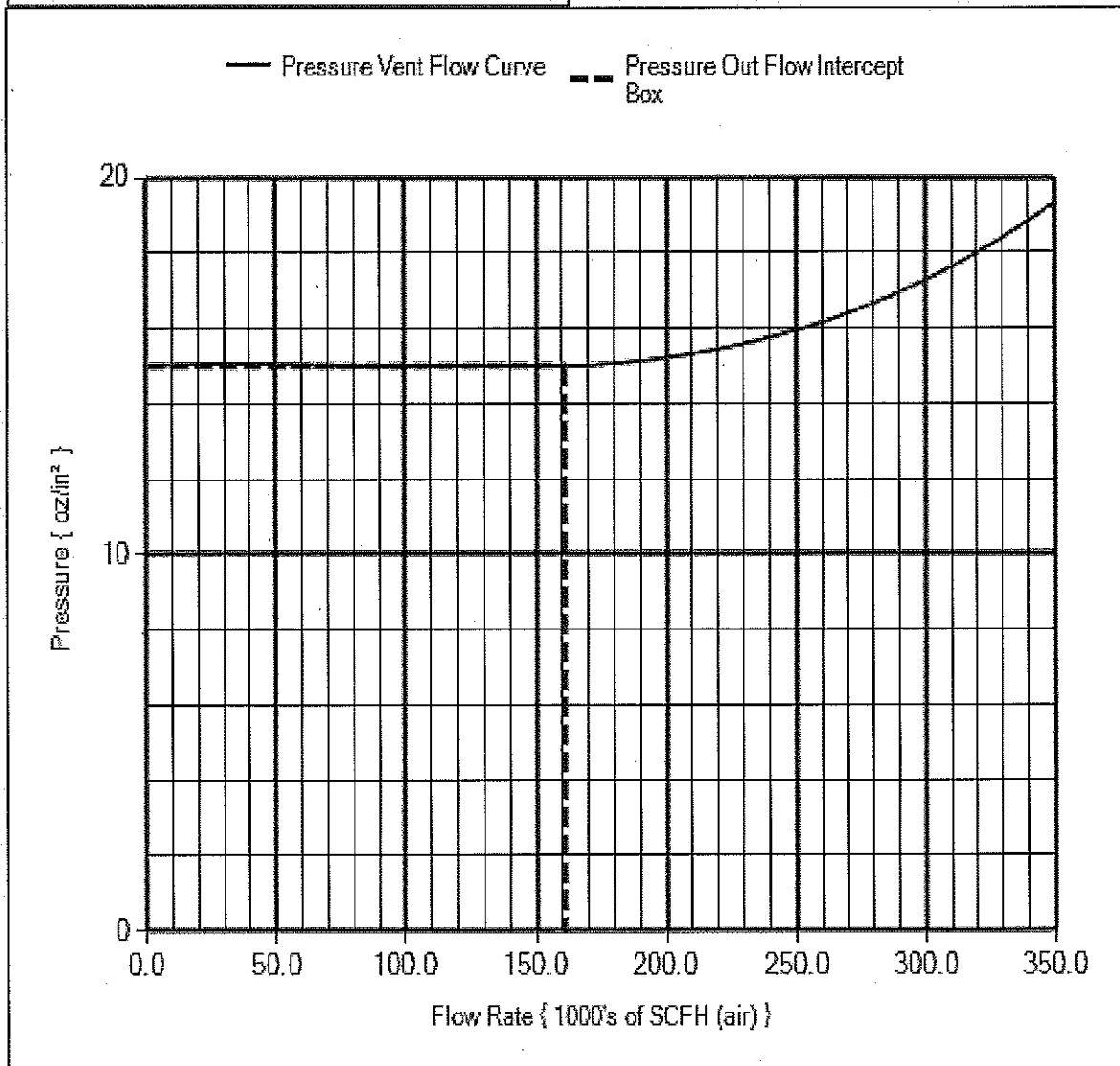
PRESSURE

Flow Rate: 161000 SCFH (air)

Set Point: 15 oz/in²

Pressure at flow: 15 oz/in²

% of MAWP: 93.75 %





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

08-May-2014

Enardo Model: Model 2000 EPRV

Connection Size: 8

inches

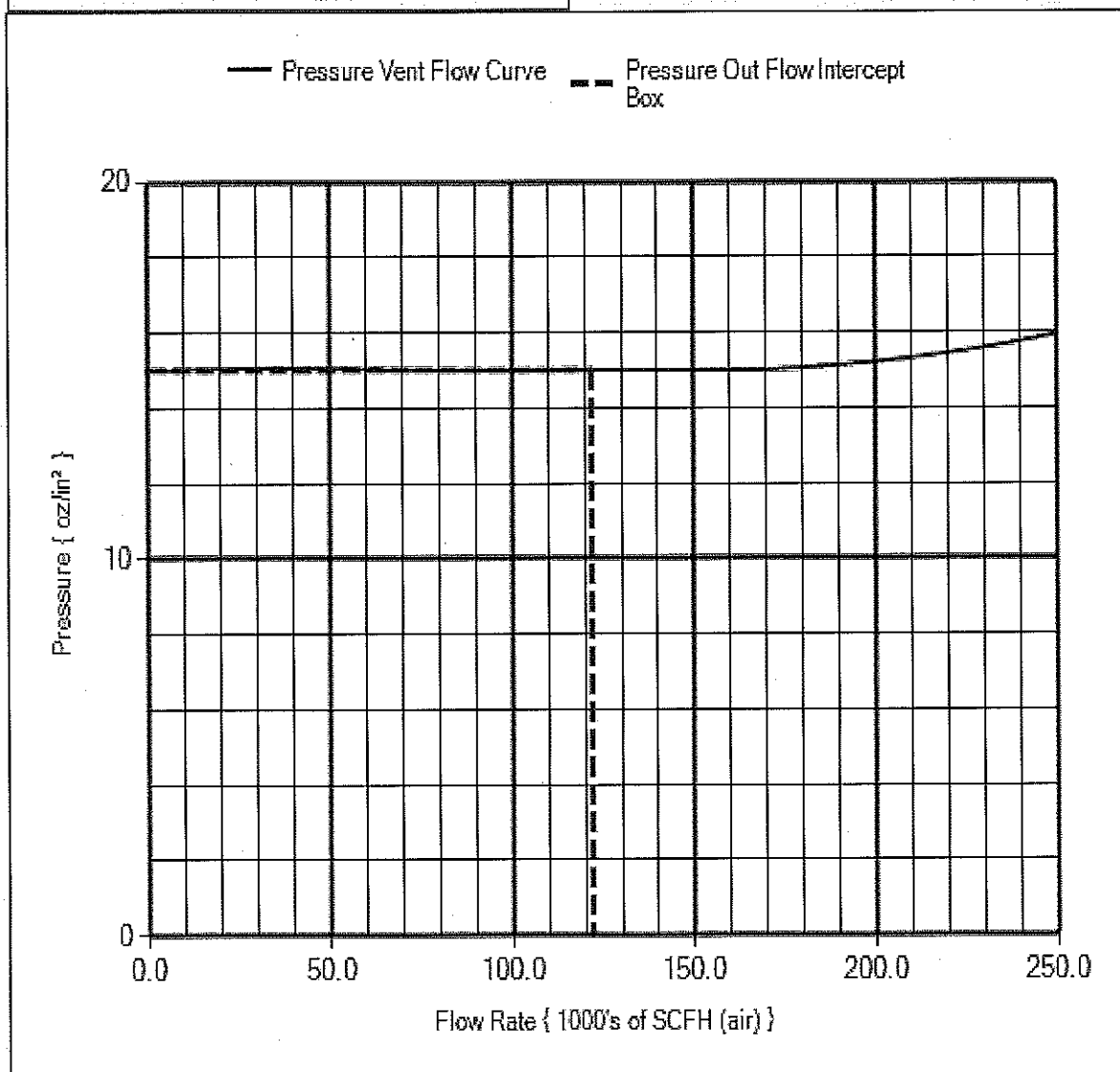
PRESSURE

Flow Rate: 122000 SCFH (air)

Set Point: 15 oz/in²

Pressure at flow: 15 oz/in²

% of MAWP: 93.75 %





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

08-May-2014

Enardo Model: Model 2000 EPRV

Connection Size: 8

inches

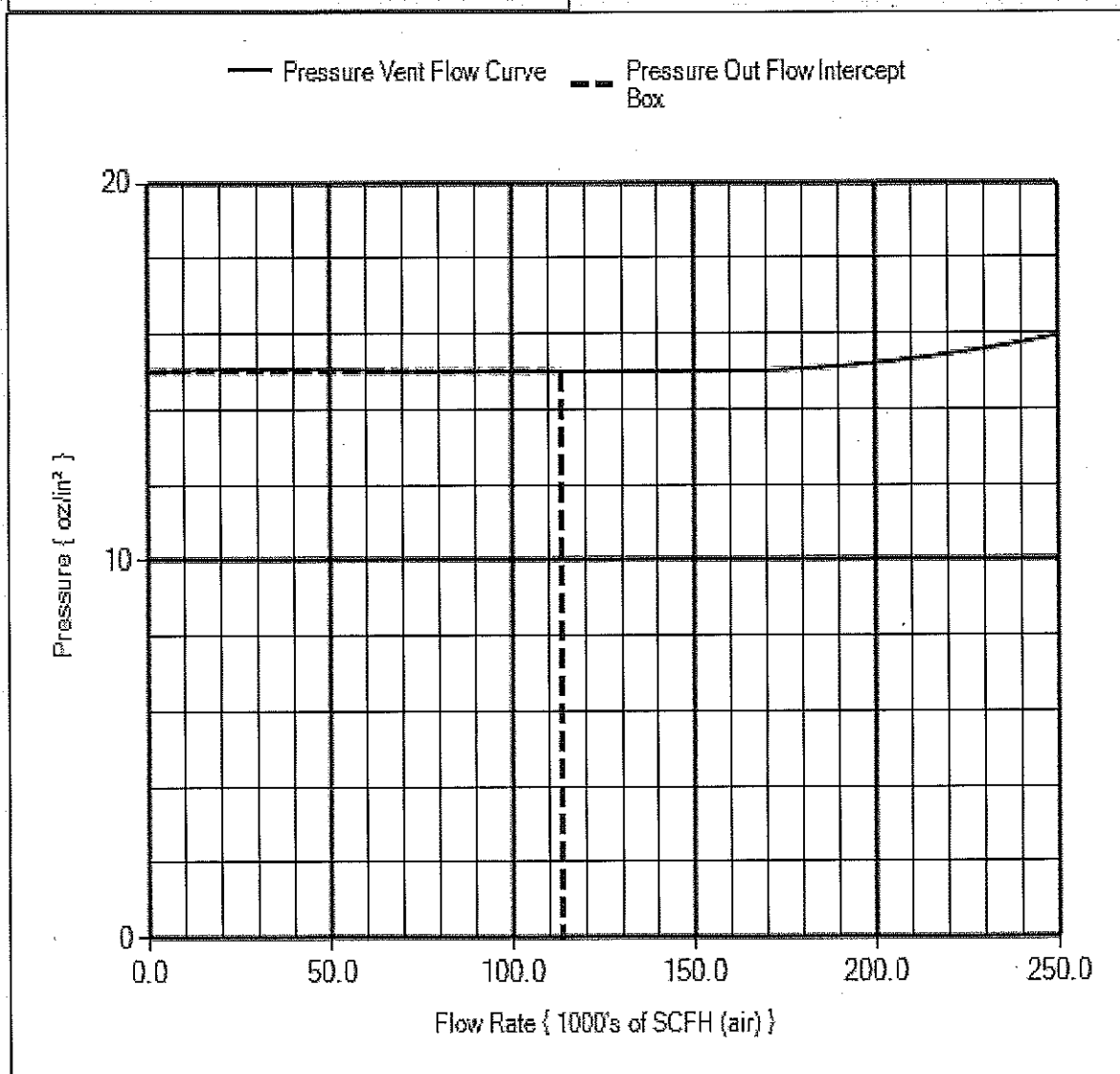
PRESSURE

Flow Rate: 113557 SCFH (air)

Set Point: 15 oz/in²

Pressure at flow: 15 oz/in²

% of MAWP: 93.75 %





ENARDO Soft Calc II

4470 South 70th East Avenue
Tulsa Oklahoma 74145

08-May-2014

Enardo Model: Model 660

Connection Size: N/A

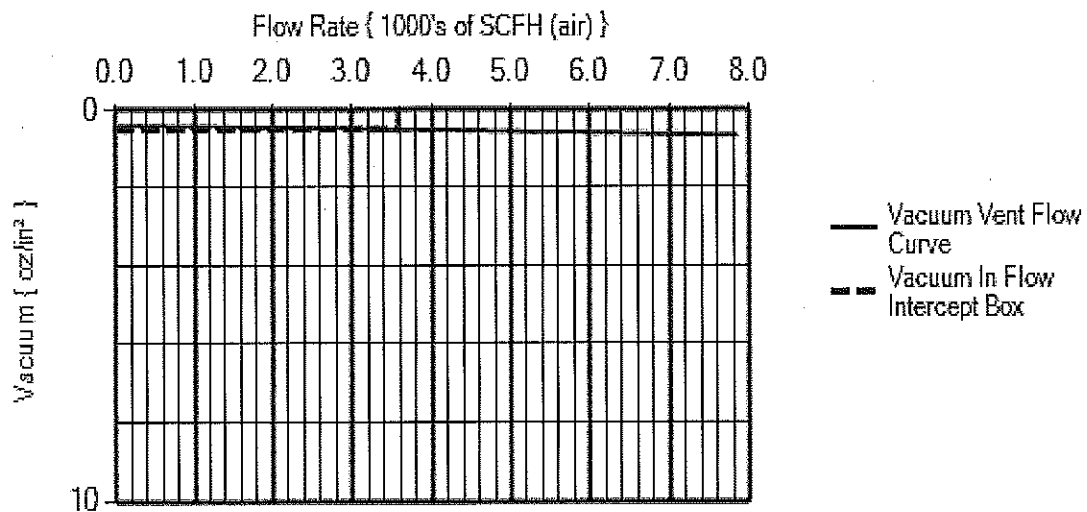
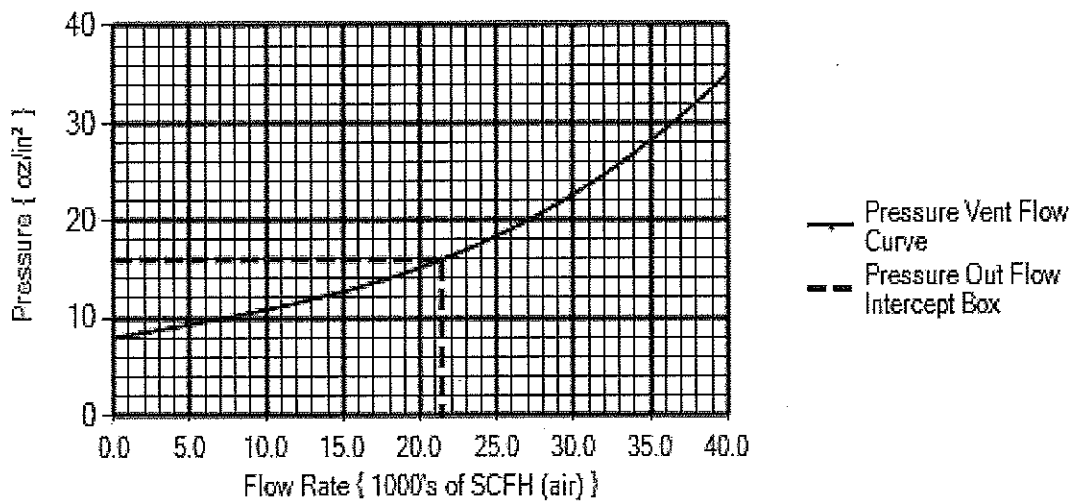
inches

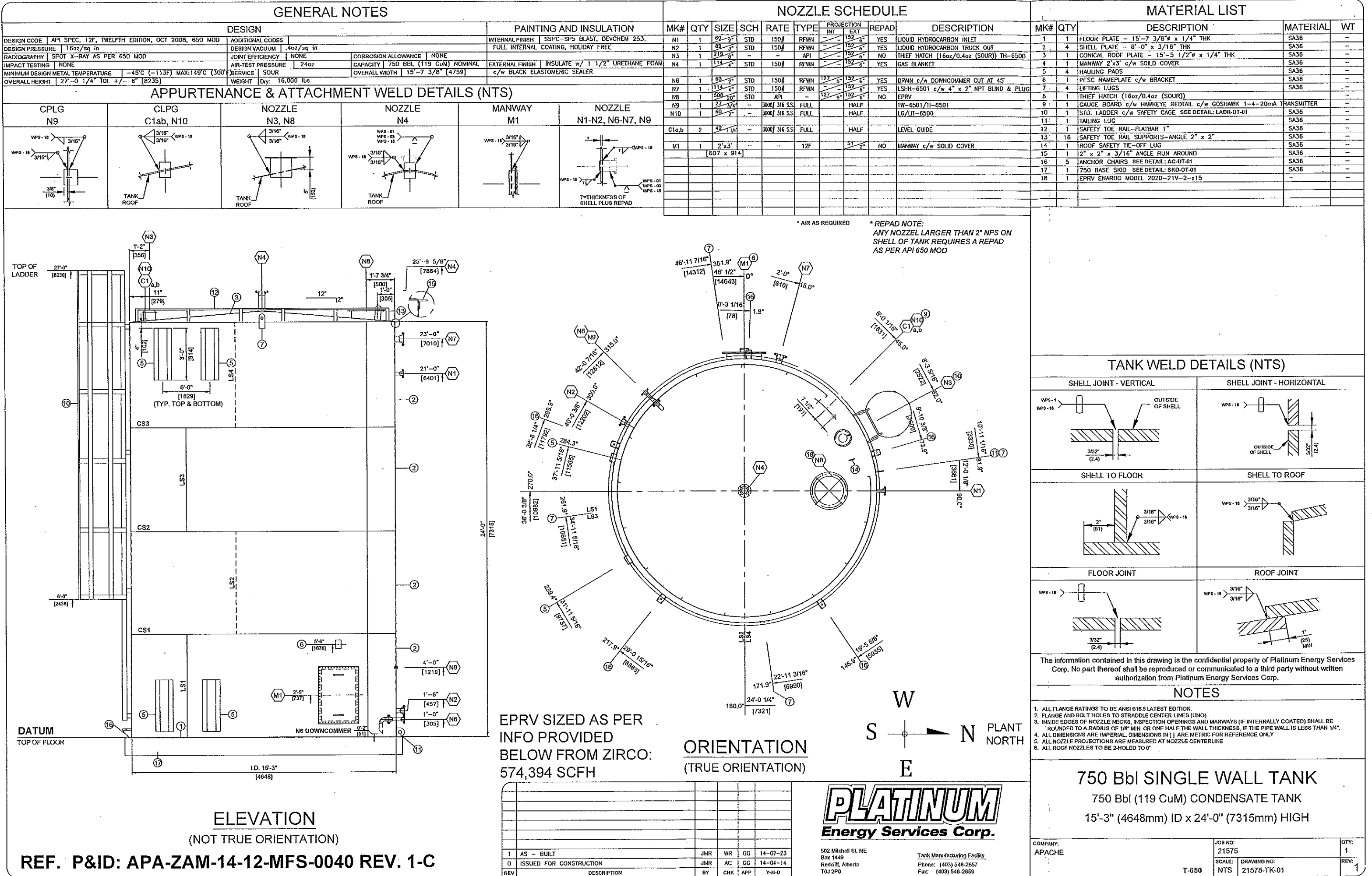
PRESSURE

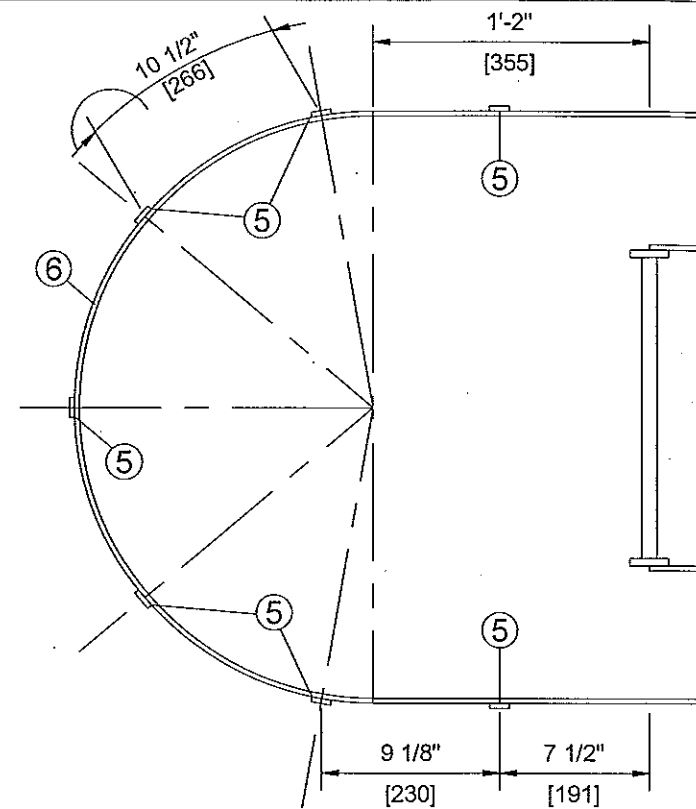
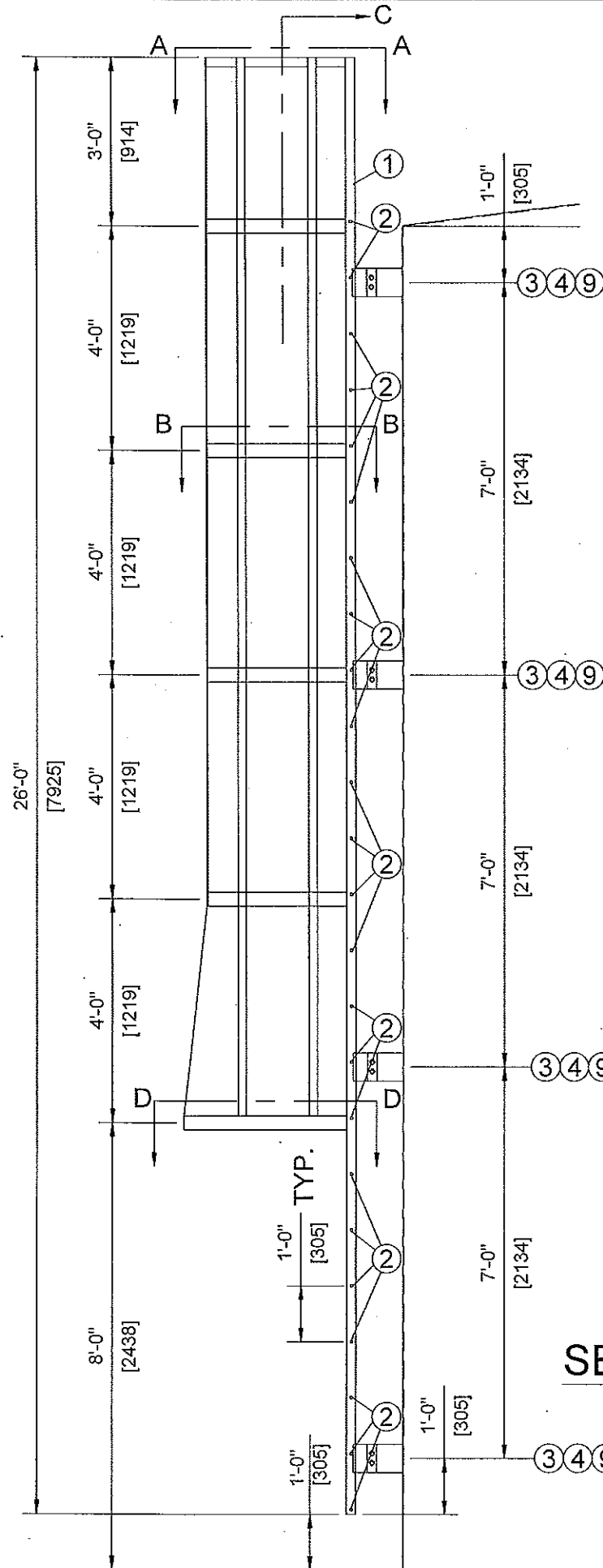
Flow Rate: 21,423 SCFH (air)
Set Point: 8 oz/in²
Pressure at flow: 16 oz/in²
% of MAWP: 100.00 %

VACUUM

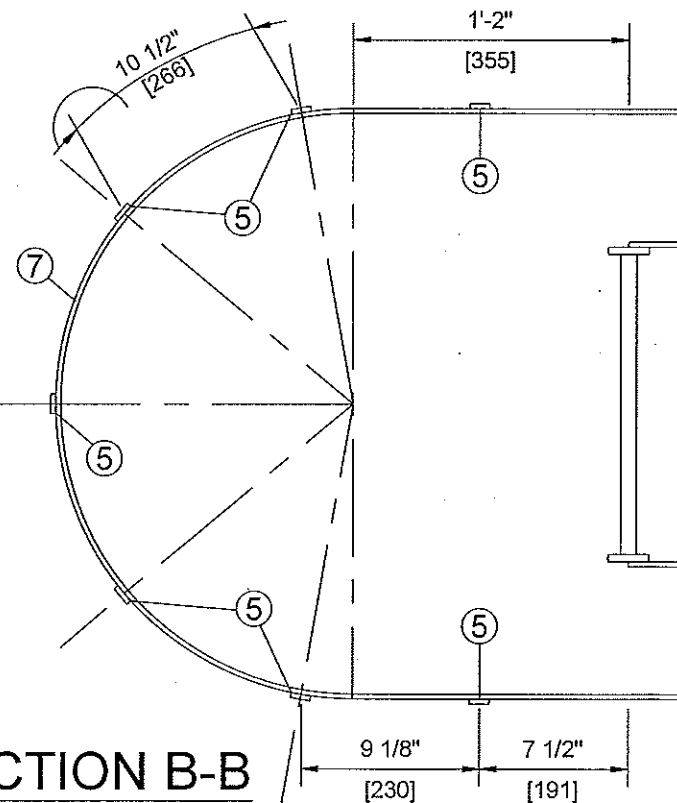
Flow Rate: 3,586 SCFH (air)
Set Point: 0.4 oz/in²
Vacuum at flow: 0.5 oz/in²
% of MAWV: 100.00 %



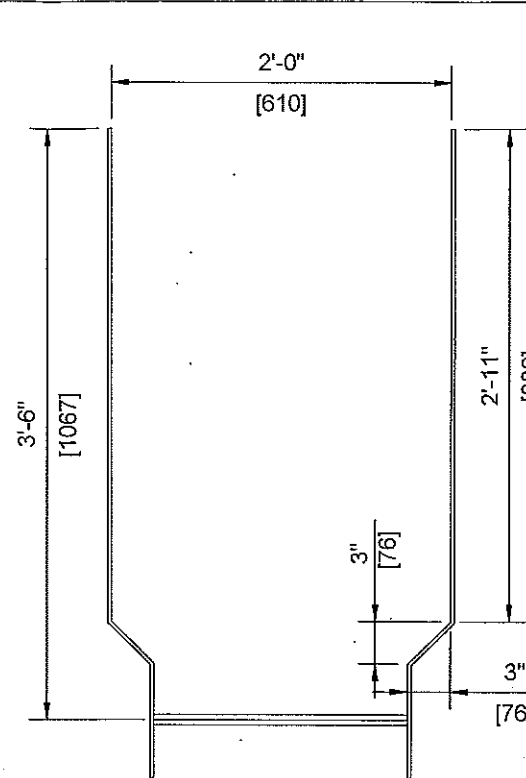




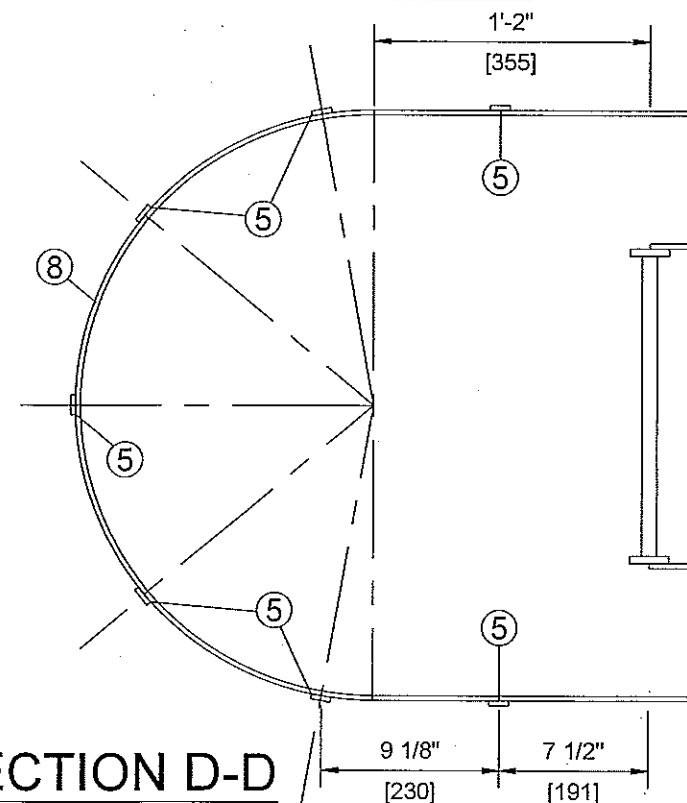
SECTION A-A



SECTION B-B



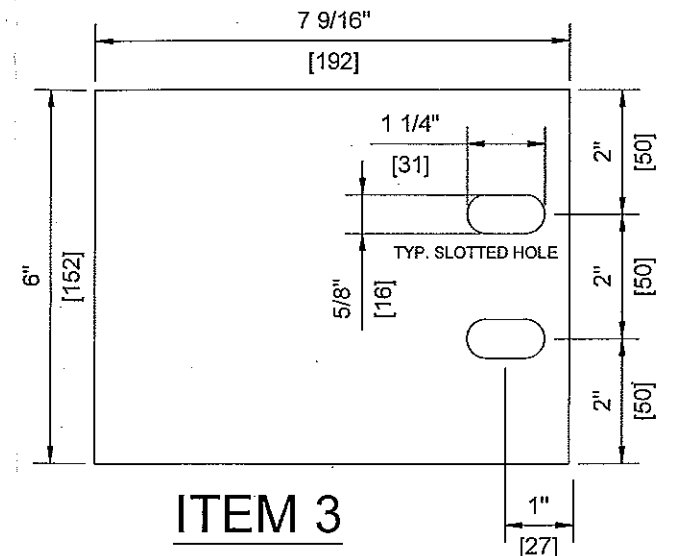
SECTION C



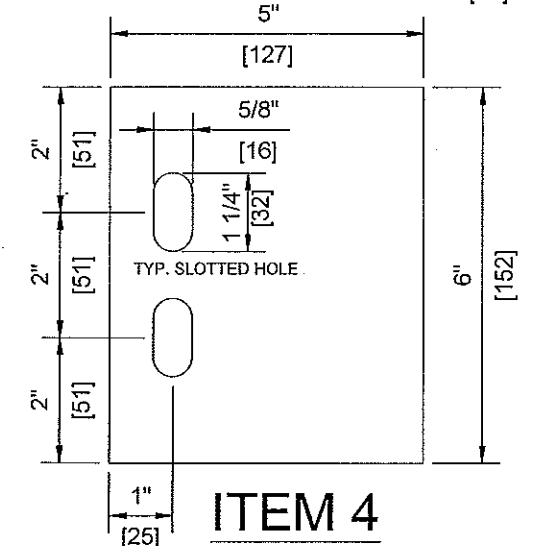
SECTION D-D

MATERIAL LIST

ITEM#	QTY	DESCRIPTION	MATERIAL	WT
1	2	FLAT BAR 2 1/2" x 3/8" THK. CTS	-	-
2	24	ROUND BAR 3/4"	-	-
3	8	FLAT BAR 6" x 3/8" THK. 7 9/16" LG. (ATTACHED TO TANK)	-	-
4	8	FLAT BAR 6" x 3/8" THK. 5" LG. (ATTACHED TO LADDER)	-	-
5	7	FLAT BAR 1" x 1/4" THK. CTS	-	-
6	1	FLAT BAR 3" x 1/4" THK. - 8'-5 7/16" LG.	-	-
7	4	FLAT BAR 2" x 1/4" THK. - 8'-5 7/16" LG.	-	-
8	1	FLAT BAR 2" x 1/4" THK. - 9'-3" LG.	-	-
9	16	BOLT 5/8" DIA. x 1 1/2" LG. CW LOCKWASHER & NUT	-	-



ITEM 3



ITEM 4

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NOTES

1. ALL DIMENSIONS ARE IMPERIAL. DIMENSIONS IN [] ARE METRIC & FOR REFERENCE ONLY.

26' LADDER FOR 24' HIGH TANKS

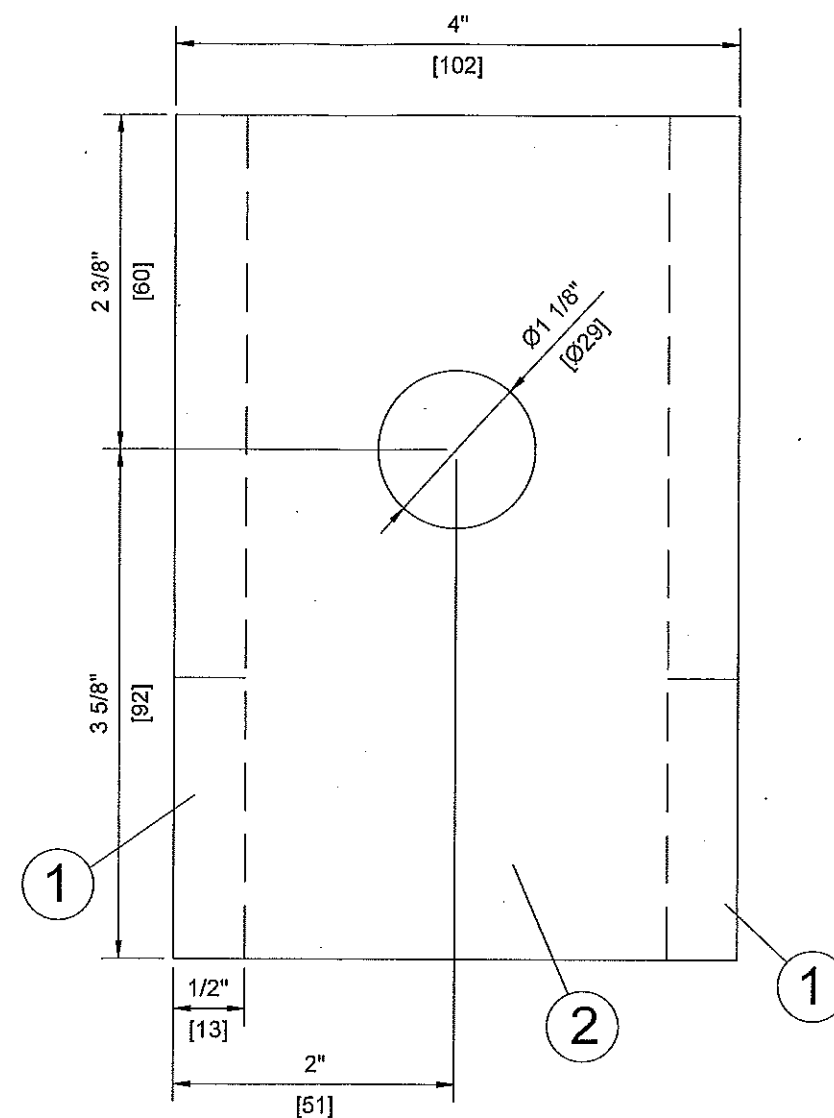
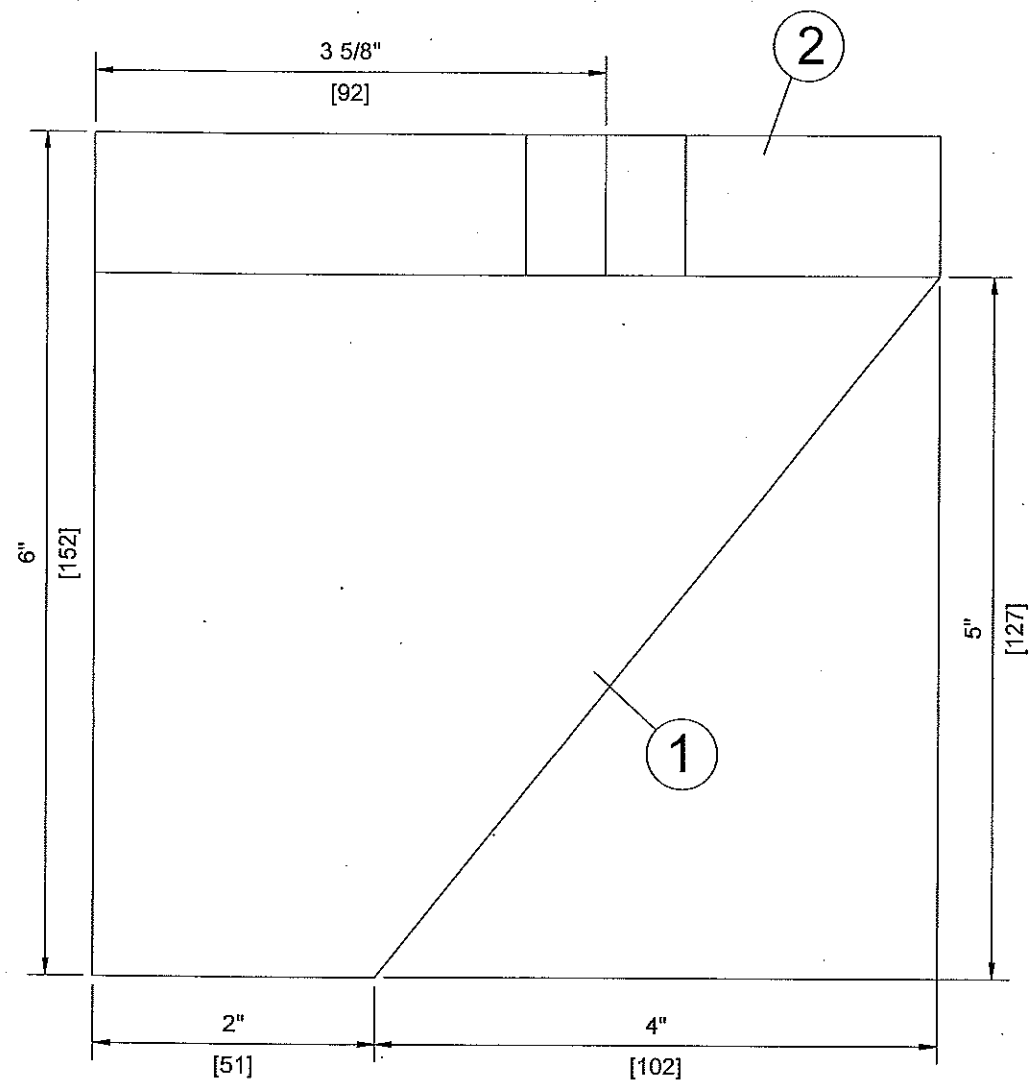
COMPANY: APACHE	JOB NO: 21575
DRAWN BY:	CHECKED BY:
DATE: 11-06-07	SCALE: NTS
DRAWING NO: LADR-DT-01	REV: 1

REV	DESCRIPTION	BY	CHK	APP	Y-M-D
1	AS - BUILT	JMR	WR	GG	14-07-23
0	ISSUED FOR CONSTRUCTION	JL	AC	GG	14-05-14

PLATINUM
Energy Services Corp.

Mitchell St. N.
Box 1449
Redcliff, Alberta
T0J 2P0

Tank Manufacturing Facility
Phone: (403) 546-2657
Fax: (403) 546-2659

[illegible]

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NOTES

1. ALL DIMENSIONS ARE IMPERIAL. DIMENSIONS IN [] ARE METRIC & FOR REFERENCE ONLY

ANCHOR CHAIR

6" x 6" x 4"

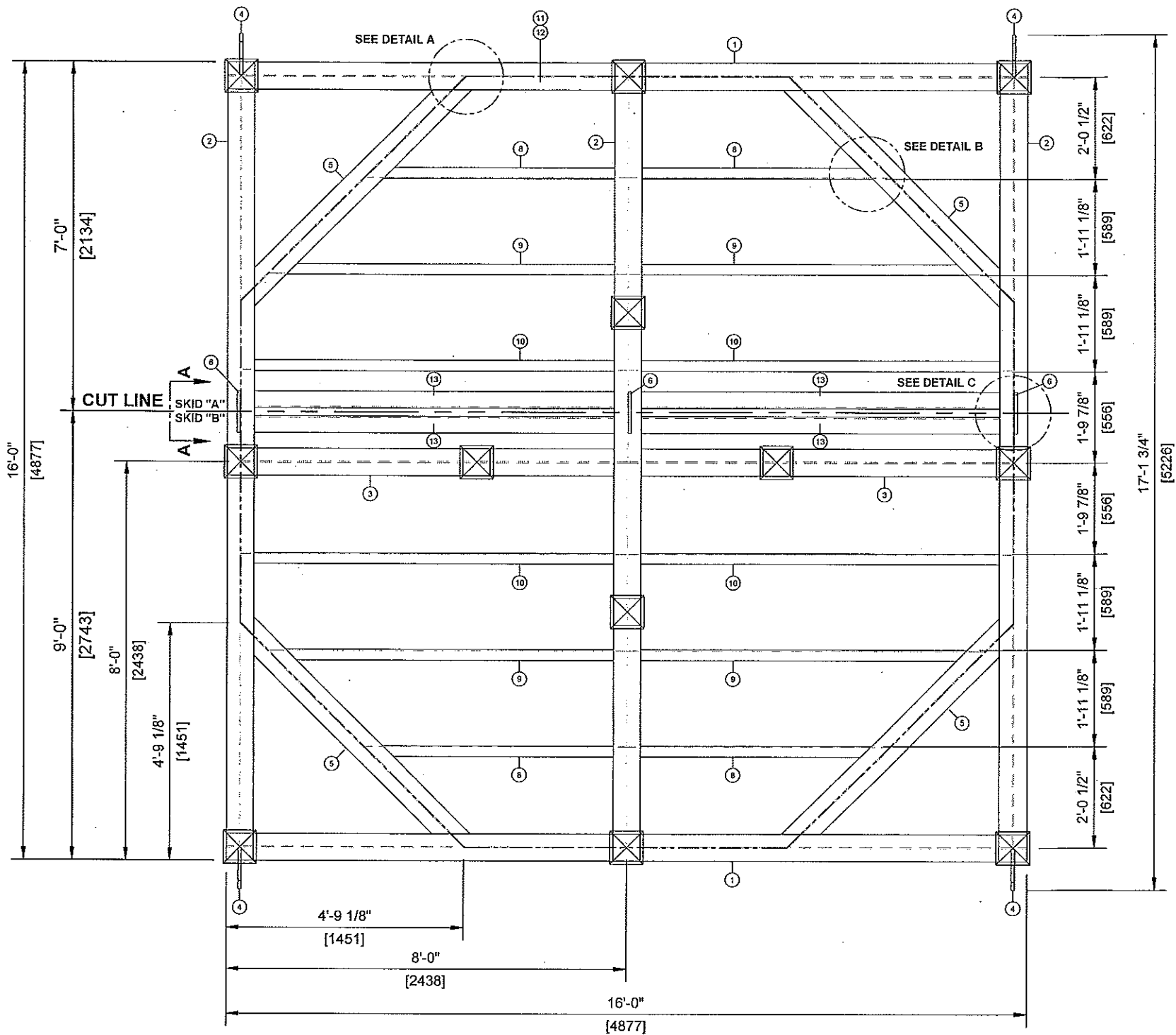
†	AS - BUILT	JMR	WR	GC 14-07-2
0	ISSUED FOR CONSTRUCTION	J1	AC	GG 14-05-1
REV	DESCRIPTION	BY	CHK	APP Y-14-0

PLATINUM
Energy Services Corp.

Mitchell St. N.
Box 1449
Redcliff, Alberta
T0J 2P0

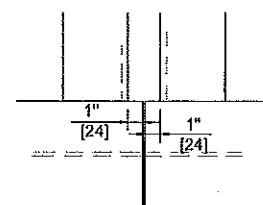
Tank Manufacturing Facility
Phone: (403) 548-2657
Fax: (403) 548-2659

COMPANY: APACHE				JOB NO: 21575	
DRAWN BY:	CHECKED BY:	DATE: 11-06-07	SCALE: NTS	DRAWING NO: AC-DT-01	REV:



MATERIAL LIST				
MK#	QTY	DESCRIPTION	MATERIAL	WT
1	2	BEAM W12 x 30 [W310 x 45] x 16'-0" Lg.	G40.21-50W	-
2	3	BEAM W12 x 30 [W310 x 45] x 15'-4 15/16" Lg.	G40.21-50W	-
3	2	BEAM W12 x 30 [W310 x 45] x 7'-4 15/16" Lg.	G40.21-50W	-
4	4	LIFT LUG: 3/4" PLATE, 10" x 11 1/4" (CTS.) SEE DETAIL	G40.21-44W	-
5	4	BEAM W12 x 30 [W310 x 45] x 6'-10 1/2" Lg.	G40.21-50W	-
6	3	ASSEMBLY PLATE: 3/4" PLATE, 10" x 11 1/4" SEE DETAIL	G40.21-44W	-
7	6	BOLTS 1" DIA LOCK WASHER AND NUTS	-	-
8	4	CHANNEL C8 x 11.5 x 4'-10 7/16" Lg.	G40.21-44W	-
9	4	CHANNEL C8 x 11.5 x 6'-10" Lg.	G40.21-44W	-
10	4	CHANNEL C8 x 11.5 x 7'-5 3/8" Lg.	G40.21-44W	-
11	1	PLATE 3/16" THK X (CTS.) SEE DETAIL	G40.21-SA36	-
12	1	INSULATION - 2" TO 3" (UNDERSIDE OF PLATED PORTION)	-	-
13	4	ANGLE 4" x 4" x 3/8" THK X (CTS.)	G40.21-44W	-

PLEASE INFORM DRAFTING OF ANY CHANGES FOR FUTURE REFERENCE. THANK YOU



ANGLE AT CUT LINE
(TYP.)

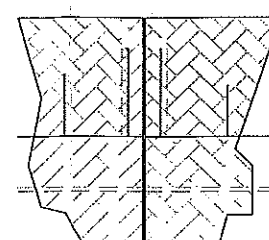
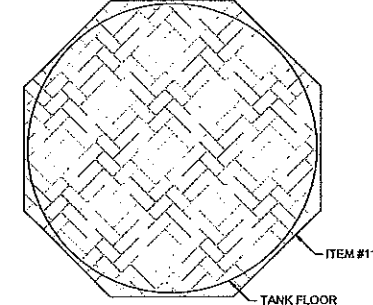
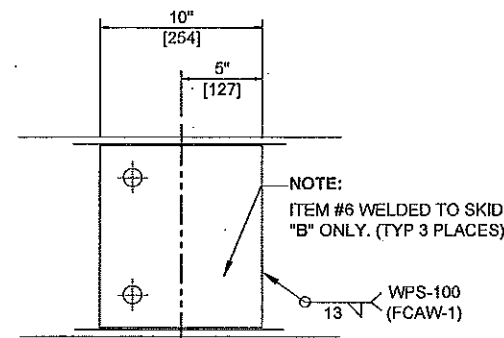


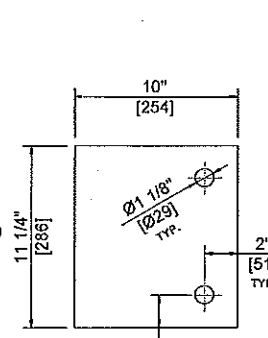
PLATE AT CUT LINE
(TYP.)



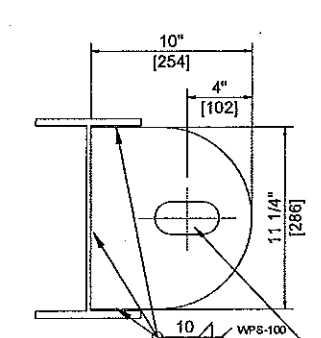
#11 DETAIL
NOTE PLATE IS TO COVER OCTAGONAL PORTION ONLY (STITCH WELD TOP AND BOTTOM)



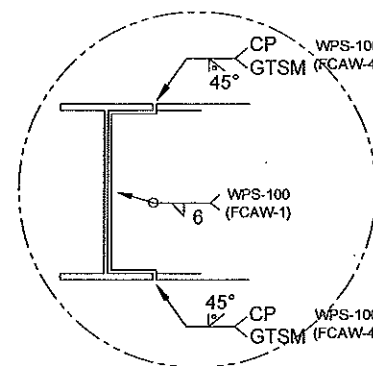
VIEW 'A-A'
(TYP. 3 PLACES)



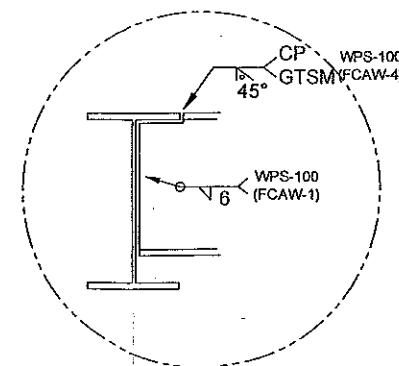
#6 DETAIL
ASSEMBLY PLATE
(TYP. 3 PLACES)



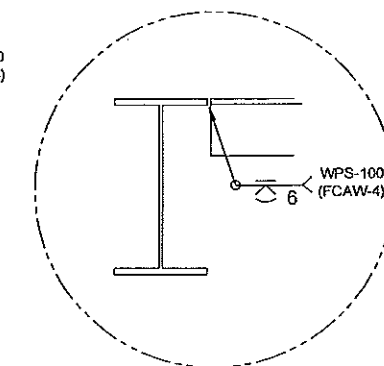
#4 DETAIL
LIFT LUG
(TYP. 4 PLACES)



DETAIL A
BEAM TO BEAM CONNECTION (TYP.)



DETAIL B
CHANNEL TO BEAM CONNECTION (TYP.)



DETAIL C
ANGLE TO BEAM CONNECTION (TYP.)

NOTES

- ALL DIMENSIONS ARE IMPERIAL. DIMENSIONS IN [] ARE METRIC & FOR REFERENCE ONLY.
- GTS - GROUND TO SOUND METAL
- CP - COMPLETE PENETRATION
- ☒ DENOTES MINIMUM PERMANENT SUPPORT / ANCHOR LOCATIONS (DESIGNED BY OTHERS)
- TANK TO BE LIFTED INDEPENDENTLY FROM SKID
- UNDERSIDE: TO BE INSULATED AS PER MK. #12
- SEAL COMPLETE SKID WITH ELASTOMERIC - BLACK

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REV	DESCRIPTION	BY	CHK	APP	Y-M-D
1	AS - BUILT	JMR	WR	GG	14-07-23
0	ISSUED FOR CONSTRUCTION	JMR	AC	GG	14-05-14
A	ISSUED FOR APPROVAL	JMR	AC	GG	14-03-19

PLATINUM
Energy Services Corp.

502 Mitchell St. N.
Box 1449
Redcliff, Alberta
T0J 2P0

Tank Manufacturing Facility
Phone: (403) 548-2657
Fax: (403) 548-2659

750 BBL-SGL-SKID
16' [4877mm] x 16' [4877mm]
NO HEATER BOX

COMPANY:
APACHE

JOB NO:
21575

SCALE: NTS
DRAWING NO: -SKD-DT-01

QTY:
1

REV:
1