

ARGO SALES LTD.

NISKU, ALBERTA

SERIAL # 5590 TAG #

YEAR BUILT 2012 API-12F MOD

Nom. DIA. 15FT-6IN Nom. HT. 16 FT

Nom. CAP. 500 bbl. Est. WT. 15000LBS

BOT. THK. 1/4 IN / A36

SHELL THK. 3/16 IN / A36

DECK THK. 1/4 IN / A36

COATING Y TYPE DEVOE 253



SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

Serial Number: 5590 Customer: Crescent Point Energy
 Description: 500 BBL (80 CU. M.) Non-SKIDDED STORAGE TANK
 Tag Number: _____ Drawing Number: B-5587-90 Size: 15'-6" OD x 16'-0" HIGH
 P.O.# CPG12-0115-P003 LSD: _____

Signature of Approval: *[Signature]*

Sequence of Operation	Customer Hold Points & Inspectors Signature (MM/DD/YYYY)	Q.C. Date & Signature (MM/DD/YYYY)	Comments
1. Drawings Approved		09.11.2012 <i>RL</i>	
2. Welding Procedures Approved		09.11.2012 <i>RL</i>	
3. Welders Qualified		09.11.2012 <i>RL</i>	
4. Material Checked Against Material List		10.04.2012 <i>RL</i>	
5. External Dimensional (Layout)		10.04.2012 <i>RL</i> (BR)	
6. Internal / External Inspection (mech.)		10.04.2012 <i>RL</i> (BR)	
7. Nozzle fit-up & Orientation		10.04.2012 <i>RL</i> (BR)	
8. MPI Floor to Shell Joint	N/A	N/A	Inner fillet weld to be inspected prior to performing outer fillet weld.
9. Spot Radiography	N/A	N/A	As per API-650
10. Floor Vacuum Box Test.	N/A	N/A	Test at 3-5 psi Vacuum
11. Tank Air/Soap Leak Test.		10.05.2012 <i>RL</i> (SW)	Test at .75 psi

Signature of Q.C.M. / Q.C.I. *[Signature]*



SALES LTD

EXAMINATION & INSPECTION REPORT (TANKS)

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 Description: 500 BBL (80 CU. M.) Non-SKIDDED STORAGE TANK
 Tag Number: _____ Drawing Number: B-5587-90 Size: 15'-6" OD x 16'-0" HIGH
 P.O. # CPG12-0115-P003 LSD: _____

Signature of Approval:

Sequence of Operation	Customer Hold Points & Inspectors Signature (MM/DD/YYYY)	Q.C. Date & Signature (MM/DD/YYYY)	Comments
12. Sand Blast Inspection (Internal)		<u>10.13.2012</u> <u>RL</u> <u>DM</u>	SP5 White Metal Blast: to Floor, Shell & Roof
13. Sand Blast Inspection (External)		<u>10.13.2012</u> <u>RL</u> <u>DM</u>	SP6 Commercial Blast: To Shell, Roof & Ladder.
14. Internal Coating		<u>10.18.2012</u> <u>RL</u> <u>SB</u>	Devco 253
15. Holiday Test (internal)		<u>10.18.2012</u> <u>RL</u> <u>SB</u>	Internal coating to be 100% holiday free.
16. External Finish		<u>10.18.2012</u> <u>RL</u> <u>SB</u>	Shell & Roof: Black Marine Enamel. <u>GREY.</u>
17. External Finish (Accessories)		<u>10.18.2012</u> <u>RL</u> <u>SB</u>	Ladder: Black Marine Enamel. <u>GREY.</u>
18. Final Inspection For Shipping		<u>10.18.2012</u> <u>RL</u> <u>SW</u>	Ship Loose: Caged Ladder c/w Bolting

Symbol Legend	
D	Document Review
I	Inspection
H	Hold Point
RI	Random Inspection

Signature of Q.C.M. / Q.C.I.



PNEUMATIC TEST REPORT

Date: Oct 05/2012

Job Number: 5590

Customer: CRESCENT POINT ENERGY

Description of Product: 500 BBL (80 CU. M.) Non-Skidded Storage Tank

Size: 15'-6" OD x 16'-0" HIGH Test Pressure: .75 PSI

Test Conducted By: Darin Ward

Holding Time at Test Pressure: TEST DURATION

Comments: Air/Soap leak test of all seams, floor, shells, roof, manway, all fitting welds
and all attachment welds associated with a single wall storage tank.

Results: _____

No leaks were observed. Air test found acceptable.

U-Type Manometer used to monitor the air test.

(Customer Inspector – please print)

(Signature of Customer Inspector)

Darin Ward
(Signature of Argo Sales Q.C.M. / Q.C.I.)



SALES LTD

Surface Preparation & Inspection Report / By DEANS SANDBLASTING LTD.

Start Date:	Oct. 12, 2012	Start Time:	1230 pm	Foreman:	Dean Mackowosky
Work Order #:	5590	Tag #	N/A	Serial #:	5590
Fabricator:	ARGO SALES Ltd.		Customer:	Crescent Point.	Hold Point: Yes (No)
Ambient Temp(C°):	50C	Rel. Humidity (%):	55%	Dew Point (C°):	10C
(Blast Equipment Air Supply):		Internal Blast SSPC#:	Sp 5	Internal Replica Tape:	No. 5590 TESTEX 4 GRADE 4 Reading 3.5 Gage less 2.0 mils or 50µm X COARSE (1.5 to 4.5 mils) or (40 to 115µm)
Source: Kaeser		Internal Blasting Profile:	3.40	External Replica Tape:	No. 5590 TESTEX 4 GRADE 4 Reading 3.0 Gage less 2.0 mils or 50µm X COARSE (1.5 to 4.5 mils) or (40 to 115µm)
Size: (2) 1500 CFM		External Blast SSPC#:	Sp 6		
Nozzle Size: 6 7 8 other		External Blasting Profile:	3		
Nozzle Pressure (PSI): 90 100 105 110 (120) other					
Product Description & Accessories:	500 BBL w/cage ladder				
Measurement Equipment:	Hypodermic Needle Gauge ☒	Line Pressure Gauge ☐	Air Dryer:	Yes (No)	
Completion Date:	Oct. 13, 2012	Completion Time:	11:00 am	Blast(s):	Dean Kyle (please print) Dean Mackowosky
Ambient Temp(C°)	60C	Rel. Humidity (%):	60%	Dew Point (C°):	30C
Abrasive Used:	9117	Final Acceptance:	Dean Mackowosky	Signature:	Dean Mackowosky

Argo Sales Coating Report

Date: October 14, 2012

Customer: Crescent Point Serial # 5590 Description: 500 bbl Tank Client Rep:

Surface Preparation: Internal: SSPC SP 5 External: SSPC SP 6

Abrasive: Sil 7 Nozzle: # 8 Size: 2000 cfm Pressure: 100 psi

Ambient Temp: 70 f Substrate Temp: 68 f R.H 25% D.P 33 f

OCT 23 2012

Application Equipment

Application Method: Airless Pump Size: 56:1 Tip Size: 5:23 Inlineheater Temp: 90 f

Internal Coating

1st Coat: Devchem 253 Batch # Base APV 2B35302 Batch # Catalyst HU1L79754 Color : Blue (53826)

2nd Coat: Devchem 253 Batch # Base APV2B35326 Batch # Catalyst HU1L79754 Color : White (42322)

3rd Coat : Devchem 253 Batch # Base APV2B35302 Batch # Catalyst HU1L79754 Color: Blue (53826)

Internal Coating Conditions

1st Coat: Ambient Temp: 70 f Substrate Temp: 68 f R.H 25% D.P 33 f Date: 10/14/12

2nd Coat: Ambient Temp: 70 f Substrate Temp: 70 f R.H 26% D.P 34 f Date: 10/15/12

3rd Coat: Ambient Temp: 70f Substrate Temp: 70f R.H 28% D.P 36f Date: 10/16/12

External Coating

1st Coat: Cloverdale T101 Batch # Base C11L2293 Batch # Catalyst N/A Color : Grey (91255)

2nd Coat: Cloverdale 74001 Batch # Base S12B3559Batch # Catalyst N/A Color : 425 Grey (65547)

3rd Coat: Cloverdale N/A Batch # Base N/ABatch # Catalyst N/A Color :

4th Coat : N/A Batch # Base N/A Batch # Catalyst N/A Color:

External Coating Conditions

1st Coat: Ambient Temp: 70 f Substrate Temp: 70 f R.H 26% D.P 34f Date: 10/15/12

2nd Coat: Ambient Temp: 70f Substrate Temp: 70f R.H 26% D.P 34f Date: 10/16/12

3rd Coat: Ambient Temp: f Substrate Temp: f R.H % D.P f Date:

4th Coat: Ambient Temp: f Substrate Temp: f R.H % D.P f Date:

5590
55/2**Internal Inspection & Testing**

1st Coat mils : Min 2.5 Max 6 Avg 4.25 Nozzles 4-7 Comments:
2nd Coat mils: Min 6.5 Max 13 Avg 8.5 Nozzles 7-12 Comments:
3rd Coat mils : Min 9 Max 18 Avg 13.5 Nozzles 9-18 Comments:

Holiday Testing

Test Standard: Nace Tested By: S.B Date: 10/17/12 Area Tested: 500 bbl Discon. & Loc'n Comments:
Found 2 Holidays on Manway Weld

Internal Repair Coating

1st Repair : Devchem 253 Batch # Base APV2B35302 Batch # Catalyst HU1L79754 Color: Blue
2nd Repair: N/A Batch # Base N/A Batch # Catalyst N/A Color: Blue
3rd Repair: N/A Batch # Base N/A Batch # Catalyst N/A Color: Blue

Internal Repair Conditions

Repair # 1: Ambient Temp: 70 f Substrate Temp: 70 f R.H 26 % D.P 34 f
Repair # 2: Ambient Temp: N/A Substrate Temp: N/A R.H N/A D.P N/A
Repair # 3: Ambient Temp: N/A Substrate Temp: N/A R.H N/A D.P N/A

Cure History

Temp. Range: 135 f From: 9:00 AM To 5:00 AM Total Hrs: 20 Ambient Air: 75 Forced Cured: Yes

Material Used: Devchem 253 17 Gal Cloverdale T 101 6 Gal I Cloverdale 74001 7 Gal
(53026) 11.349 gal (42322) 5.669 gal (91255) 22.686 gal (65547) 26.466 gal

Final Acceptance

Visual By: Sandy Belseck Date: 10/18/12



SALES LTD

Final Fit Out Traveller

Date: Oct 18/12 Customer: Crescent Point
Job #: 5588 & 5590 Tag #: Tank Size: 500 BBL

Internal:

Check for Down Comer(s)/Riser(s) are correct length(s)	<u>N/A</u>	☒ Yes ☐ No
Check all internals/lengths, gasket(s), bolt(s), stud(s) as per drawing	<u>N/A</u>	☐ Yes ☐ No
Check internals for teflon/nylon washers on coated flanges	<u>N/A</u>	☐ Yes ☐ No
Visual inspection for cleanliness prior to installing manway cover		☒ Yes ☐ No
Final holiday test completed		☒ Yes ☐ No

External:

Manway bolted on complete <u>✓</u> 6 bolt <u> </u>	☒ Yes ☐ No
All openings blanked off	☒ Yes ☐ No
Blind flange(s) are coated as per drawing, and installed as per drawing	☒ Yes ☐ No
Check gauge system & decals	☒ Yes ☐ No
Paint/insulation check for damages/misses	☒ Yes ☐ No
Extra hardware accounted for & coated if required	<u>N/A</u> ☐ Yes ☐ No
Correct nameplate installed	☒ Yes ☐ No

Final Dressout Complete

Print Name

Stephen Way

(Signature)

Stephen Way

RL

Ship Loose Items

Quantity	Description

Ship Loose Complete

Print Name

(Signature)


SALES LTD

ARGO SALES LTD. **MATERIAL TEST REPORTS (TANKS)**

Serial Number: 5590 Customer: Crescent Point Energy Corporation
 Description: 500 BBL. NON- SKIDDED STORAGE TANK
 Tag Number: _____ Size: 15'-6" OD x 16'-0" HIGH Drawing Number: B-5587-90

MARK	DESCRIPTION	HEAT NUMBER
1	A36 1/4" PL. FLAT BOTTOM	NW3666
2	A36 3/16" PL. SHELLS	NW4426
3	A36 1/4" PL. ROOF	NW3666
LI	(2) 1-1/4" CL.3000 316SS COUPLINGS	T2052
	2" CL.3000 316SS COUPLING	T2080
M1	A36 24" X 36" RECT. MW	W301430
N1	4" A105N CL.150 RFSO FLG.	404964
	4" A106B STD. SML. PIPE	231-85
N2	4" A105N CL.150 RFSO FLG.	404968
	4" A106B STD. SML. PIPE	231-85
N3	4" A105N CL.150 RFSO FLG.	404968
	4" A106B STD. SML. PIPE	231-85
N4	4" A105N CL.150 RFSO FLG.	404964
	4" A106B STD. SML. PIPE	231-85
N5	4" A105N CL.150 RFSO FLG.	404964
	4" A106B STD. SML. PIPE	231-85
N6	4" A105N CL.150 RFSO FLG.	404968
	4" A106B STD. SML. PIPE	231-85
N7	4" A105N CL.150 RFSO FLG.	404964
	4" A106B STD. SML. PIPE	231-85



EVRAZ INC. NA
EVRAZ Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

ISO 9001



S O L D T O

WILKINSON STEEL & METALS INC (VANC)
ATTN: ACCOUNTS PAYABLE
888 SE MARINE DR
VANCOUVER, BC V5X 2V3
CANADA

WILKINSON STEEL AND METALS INC-VANC
888 SE MARINE DR
VANCOUVER, BC V5X 2V3
CANADA

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1210437	Jan 25, 2012	1
RAW ORDER NO.	DATE	
251124		
CUSTOMER ORDER NO.		
P11107ME009V		
JOBBER NO.		
SHIPPING NO.	DATE	
1210437	01/25/2012	
CARRIER		
OSM COMPANY FLAT		
CARTON NO.		
WILKINSON124		

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
STRUCTURAL QUALITY COIL FOR CONVERSION TO CSA G40.21-04 GRADE 38/44W / ASTM
A36/SA36 PLATE MEETING MATERIAL REQUIREMENTS OF API650 GROUP III. KILLED FINE
GRAIN PRACTICE.

PHYSICAL PROPERTIES

ITEM NO.	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.2395 X 96.000WE X COIL									
	1 PC 73870 LBS	NN3666		550	720	25				
	1 PC 73870 LBS TOTALS									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cr	Ni	V	Co	Al	Cu	B	N	Cu	CE
NN3666	.14	.84	.010	.006	.25	.01	.05	.005	.005	.052	.03	.003	.0037		
HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (-) WERE ROLLED IN THE USA.															
.....	END OF REPORT														

HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (-) WERE ROLLED IN THE USA.

[Signature]

QUALITY COORDINATOR

I certify the above to be correct as contained in the records of EVRAZ INC. NA BY



EVRAZ INC. NA
Evraz Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

ISO 9001
REGISTERED
U.S. PLATE PRACTICE

SOLD TO

WILKINSON STEEL & METALS INC [VANC]
ATTN: ACCOUNTS PAYABLE
888 SE MARINE DR
VANCOUVER, BC V5X 2V3
CANADA

WILKINSON STEEL AND METALS INC-VANC
888 SE MARINE DR
VANCOUVER, BC V5X 2V3
CANADA

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
STRUCTURAL QUALITY COIL FOR CONVERSION TO CSA G40.21-04 GRADE 38W/44W / ASTM
A36/ASME SA36 PLATE MEETING MATERIAL REQUIREMENTS OF API650 GROUP III. KILLED
FINE GRAIN PRACTICE.

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	HARDNESS IBEND TEST	IMPACTS
1	0.1760 X 96.000ME X COIL SCHEDULE B:7208.38.00									
	1 PC 22460 LBS	NW4426		565	745	25				+
	1 PC 21560 LBS	NW4496		570	740	23				(OUTER)
	2 PCS 44020 LBS TOTALS			525	705	26				(OUTER)

CHEMICAL ANALYSIS

HEAT NO	C	Mn	P	S	Si	Cu	Ni	V	Cr	Mo	Ti	B	N	Ca	CE	Moand Br Grain Size
NW4426	.14	.87	.011	.010	.24	.01	.05	.014	.043	.04	.002	.002	.0046			
NW4496	.14	.87	.013	.008	.26	.01	.05	.008	.042	.05	.002	.002	.0039			
HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (*) WERE ROLLED IN THE USA.																
.....	END OF REPORT	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

QUALITY COORDINATOR

I certify the above to be correct as contained in the records of EVRAZ INC. NA By

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1223697	Mar 26, 2012	1
MILL ORDER NO.	DATE	
252244		
CUSTOMER ORDER NO.		
P20213EM005V		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1223697	03/26/2012	
CARRIER		
RS GILL		
CARTRUCK NO.		
006A		

P.O.# 65586

NW4426 (.188x96)

TA052(1.25IN3000NPTSS)

PO# 67432

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : PINQLE STAINLESS STEEL INC.

CERT. NO : 110098

ORDER NO : 56025

INVOICE NO : BW10990996

L/C NO :

DATE : 01/22/2011

PAGE : 17 ORIGIN : TAIWAN

柏靈鋼鐵股份有限公司

高雄縣仁武鄉烏林村仁心路 303 號

BOTH-WELL STEEL FITTINGS CO., LTD.

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

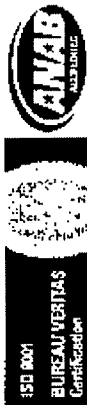
KAHSIUNG HSIEN, TAIWAN R.O.C.(81480)

TEL: 886-7-371-0497, 371-1536, 372-0260 FAX: 886-7-371-3884, 371-3882

web site http://www.borthwell.com.tw e-mail borthwell@www.borthwell.com.tw or box@borthwell.com.tw



®



An ISO 9001:2008 Registered Manufacturer

ITEM	HT. CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION FOR			INSPECTION
					MATERIAL	PITTING	SURFACE	
109	T2052	97069	FULL CPLG 1-1/4" 3000# NPT ✓	100 PC	ASTM A182 -99h	ASME B16.11 - 2009	GOOD	GOOD
110	T2030	FS-6258	FULL CPLG 1-1/2" 3000# NPT	105 PC	ASME SA183			
111	T2065	9SA0029	FULL CPLG 2" 3000# NPT	200 PC	E316 / 3.16L			
112	T2060	97072	FULL CPLG 3/4" 3000# S/W NPT	140 PC				
113	T948	2W538	HEX BUSHING 1-1/4"x1/2" NPT	70 PC				

CHEMICAL COMPOSITION (%)

	C	Si	Mn	P	S	Co	Cr	Ni	Mo	V	Cb(Nb)	N	Al	Ti	Zr	CE
Min	0.030	1.000	2.000	0.045	0.030	-	16.00	10.00	2.000	-	-	0.100	-	-	-	-
Max	0.030	0.400	1.590	0.026	0.027	-	18.00	15.00	3.000	-	-	0.100	-	-	-	-
109	0.030	0.400	1.590	0.026	0.027	-	17.28	10.61	2.050	-	-	0.100	-	-	-	-
110	0.026	0.340	1.440	0.039	0.017	-	16.64	10.05	2.040	-	-	0.055	-	-	-	-
111	0.020	0.420	1.650	0.032	0.025	-	17.27	10.17	2.120	-	-	0.100	-	-	-	-
112	0.030	0.460	1.580	0.029	0.029	-	17.15	10.47	2.040	-	-	0.100	-	-	-	-
113	0.020	0.390	1.690	0.029	0.027	-	16.75	10.05	2.010	-	-	0.060	-	-	-	-

MATERIAL SUPPLIER

MECHANICAL PROPERTIES

ITEM	HT. CD.	T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HB)(AVG)	Charpy Impact F / 0 °C				HEAT TREATMENT	SOLUTION
							MON. AVG. / (Joule)					
							1	2	3	AVG.		
109	T2052	82.3	37.0	59.2	73.6	158						
110	T2030	76.9	32.9	61.8	74.7	146						
111	T2065	79.2	39.1	61.2	74.3	146						
112	T2060	82.0	41.0	60.7	75.1	160						
113	T948	80.3	37.0	59.0	76.0	156						

ADDITIONAL TEST/REMARKS

STEEL MAKING PROCESS : ELECTRIC FURNACE
CONFORMS TO NACE MR0175/MR0103-2003

MERCURY FREE

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

PROVINCE / CEN

ALBERTA-OA11939.52

ONTARIO-OA11939.5

QUEBEC-OA11939.56

P.E.I.-OA11939.59

N.W.T.-OA11939.5T

NEW BRUNSWICK-OA11939.57

NOVA SCOTIA-OA11939.5R

YUKON-OA11939.5Y

MANITOBA-OA11939.56

P.E.I.-OA11939.59

NEWFOUNDLAND-OA11939.50

SASKATCHEWAN-OA11939.56

YUKON-OA11939.5Y

NEW BRUNSWICK-OA11939.57

NOVA SCOTIA-OA11939.5R

YUKON-OA11939.5Y

YUKON-OA11939.5Y

YUKON-OA11939.5Y

C.C. Huang

Q.C. MANAGER

CHEN CHI HUANG

INSPECTOR

YUAN YAO CHANG

T2080(2IN3000NPTSS)

PO# 67575

MILL TEST & INSPECTION CERTIFICATE

ACCORDING TO EN 10204 : 2004 3.1

CUSTOMER : PINACLE STAINLESS STEEL INC.

CERT. NO : 112360

ORDER NO : 58774

INVOICE NO : BW0110002117

L/C NO :

DATE : 07/05/2011

PAGE : 13 ORIGIN : TAIWAN

台灣鐵工股份有限公司

高雄市仁武區萬林里仁心路 303 號

BOTH-WELL STEEL FITTINGS CO., LTD.

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

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

TEL: 886-7-371-0497, 871-1536, 872-0260

FAX: 886-7-371-3684, 371-3882

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



An ISO 9001:2008 Registered Manufacturer

ITEM	BW HT. CD.	RAW MATERIAL HEAT NO.	DESCRIPTION	QUANTITY	SPECIFICATION FOR		INSPECTION
					MATERIAL	FITTING	SURFACE DIM.
173	T2079	FS-8834	FULL CPLG 2" 3000# NPT	112 PC	ASTM A182 -04a ASME SA182 F316 / 316L ✓	ASME B16.11 - 2005	GOOD GOOD
173	T2080	FS-8835	FULL CPLG 2" 3000# NPT ✓	88 PC			
174	W208	A63902	FULL CPLG 2-1/2" 3000# NPT	100 PC			
175	T2081	9340208	FULL CPLG 3" 3000# NPT	45 PC			
176	T2055	FS-7541	FULL CPLG 4" 3000# NPT	10 PC			

CHEMICAL COMPOSITION (%)

ITEM	BW HT. CD.	C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Nb	N	Al	Ti	Zr	Ce	MATERIAL SUPPLIER
173	T2079	0.030	1.000	2.000	0.045	0.030	-	16.00	10.00	2.000	-	-	0.100	-	-	-	-	MATERIAL SUPPLIER
173	T2080	0.023	0.275	1.500	0.040	0.018	-	16.53	10.09	2.050	-	-	0.053	-	-	-	-	
174	W208	0.026	0.320	1.460	0.038	0.019	-	16.36	10.06	2.070	-	-	0.054	-	-	-	-	
175	T2081	0.022	0.430	1.640	0.028	0.005	-	16.65	11.16	2.040	-	-	0.056	-	-	-	-	
176	T2055	0.024	0.390	1.610	0.029	0.026	-	17.19	10.53	2.020	-	-	0.070	-	-	-	-	
176	T2055	0.028	0.390	1.360	0.040	0.017	-	16.35	10.06	2.040	-	-	0.057	-	-	-	-	

MECHANICAL PROPERTIES

ITEM	BW HT. CD.	T. S. (KSI)	Y. S. (KSI)	EL. (%)	R of A (%)	Hardness (HB)(AVG)	Charpy Impact °F / 0 °C				SOLUTION	ELECTRIC FURNACE CONFORMS TO NACE MR0175-09/MR0103-10 MERCURY FREE
							MIN./AVG. / (Joule)					
							1	2	3	AVG.		
173	T2079	77.5	32.7	65.6	78.0	153	235				1060°C W.Q.	
173	T2080	76.7	34.5	63.2	71.6	153						
174	W208	85.1	41.6	60.5	76.3	170						
175	T2081	80.6	35.4	61.0	76.5	156						
176	T2055	77.7	34.1	63.2	76.0	145						

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

Y.Y. Qiang

INSPECTOR

YUAN YAO CHANG

PO# 66979
W-128540

W301430 (5x3x.25 ANGLE)
Chemical and Physical Test Report
MADE IN CANADA



WHITBY STEEL MILL
HOPKINS STREET SOUTH
WHITBY ON L1N 5T1 CAN
(905) 666-8811

SHIP TO C.W. CARRY 1976 LTD 5815 75TH ST. - SIDING CN Z062 780-465-0381 EDMONTON, AB T6E 0T3	INVOICE TO C.W. CARRY 1976 LTD ACCTS PAYABLE 5815 75 ST NW EDMONTON, AB T6E 0T3	SHIP DATE 05/29/12	CUST. ACCOUNT NO 60122230
---	--	------------------------------	-------------------------------------

PRODUCED IN: WHITBY																		SALES ORDER	CUST P.O. NUMBER	
SHAPE + SIZE		SPECIFICATION																2051209-05	31759-05	
A5 X 3 X 1/4		C.S.A. G40.21-04 (R2009) 44W																		
	✓	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Nb	B	N	Sn	Ti	Zn	C Eqv		
HEAT I.D.		.18	.87	.009	.024	.22	.27	.12	.08	.045	.001	.004	.0001	.0130	.012	.00170	.01200	.376		
W301430	✓																			

Mechanical Test: Yield 54375 PSI, 374.9 MPA Tensile: 77009 PSI, 530.96 MPA %El: 22.58in, 22.5200MM
Customer Requirements CASTING: STRAND CAST
Mechanical Test: Yield 54889 PSI, 376.38 MPA Tensile: 76218 PSI, 525.5 MPA %El: 22.58in, 22.5200MM
Customer Requirements CASTING: STRAND CAST

PRODUCED IN: WHITBY																		SALES ORDER		CUST P.O. NUMBER																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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A5 X 3 X 3/8		44W		A36/44W/50W/A529GR50/ASTM-A36-05/A529GR50 M-05/CSA-G40.21-04 44W/50W																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Mechanical Test: Yield 51891 PSI, 356.4 MPA Tensile: 73182 PSI, 504.57 MPA %El: 21.28in, 21.2200MM
Customer Requirements CASTING: STRAND CAST
Mechanical Test: Yield 51594 PSI, 355.73 MPA Tensile: 73318 PSI, 505.51 MPA %El: 21.98in, 21.9200MM
Customer Requirements CASTING: STRAND CAST

Customer Notes

NO WELD REPAIRMENT PERFORMED. STEEL NOT EXPOSED TO MERCURY.
This material, including the billets, was melted and manufactured in Canada

Bhaskar Yalamanchili

Shashank
Quality Director
Gerdau

Metallurgical Services Manager
WHITBY STEEL MILL

THE ABOVE FIGURES ARE CERTIFIED CHEMICAL AND PHYSICAL TEST RECORDS AS CONTAINED IN THE PERMANENT RECORDS OF COMPANY.

Seller warrants that all material furnished shall comply with specifications subject to standard published manufacturing variations. NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, ARE MADE BY THE SELLER, AND SPECIFICALLY EXCLUDED ARE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.
In no event shall seller be liable for indirect, consequential or punitive damages arising out of or related to the materials furnished by seller.
Any claim for damages for materials that do not conform to specifications must be made from buyer to seller immediately after delivery of same in order to allow the seller the opportunity to inspect the material in question.

404964(4RF50150)

PO# 66632

41713

MATERIAL TEST CERTIFICATES



M.GELDBACH(SHANG) FLANGE & FITTINGS CO.,LTD.
LIJIAZHANG VILLAGE DINGXIANG COUNTY
SHANXI PROVINCE CHINA

CUSTOMER

PAGE 1 OF 4

CERTIFICATE: EN10204/3.1

CERTIFICATE #: F-11008-D

DATE: NOV. 2, 2011

SPECIFICATION: ASTM SA105N AND ASME B16.5-2003/NACE MR0175-05 latest edition

THE MATERIALS WILL SATISFY PAR 3.1.5 AND 4.3 OF THE P.E.D. ESSENTIAL SAFETY REQUIREMENTS
PRODUCT CRN NUMBER: 0B11075.C

CUSTOMER REFERENCE # F-11008-D

OUR REFERENCE # F-11008-D

T.F.F. REFERENCE # F-11008-D

CHEMICAL ANALYSIS (%)

ITEM NO.	HEAT NO.	QTY	SIZE	DESCRIPTION	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cb	Cu	Ce1	Ce2
					0.35	to 0.60	to 0.10	to 0.04	0.035	0.40	0.30	0.12	0.05	0.02	max	*1)	*2)
					max 1.05	0.35	0.35	max	max	max	max	max	max	max	max		
1	404992	20	4"	B16.5 150 LJ	0.20	0.87	0.25	0.017	0.015	0.015	0.030	0.003	0.005	0.010	0.020	0.345	0.355
2	404992	100	3"	B16.5 150 RFBL	0.20	0.87	0.25	0.017	0.015	0.015	0.030	0.003	0.005	0.010	0.020	0.345	0.355
3	404992	5	8"	B16.5 600 RFBL	0.20	0.87	0.25	0.017	0.015	0.015	0.030	0.003	0.005	0.010	0.020	0.345	0.355
4	404992	400	2"	B16.5 150 RF50	0.20	0.87	0.25	0.017	0.015	0.015	0.030	0.003	0.005	0.010	0.020	0.345	0.355
5	404964	2500	4"	B16.5 150 RF50	0.19	0.88	0.24	0.030	0.019	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
6	404964	100	5"	B16.5 150 RF50	0.19	0.88	0.24	0.030	0.019	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
7	404978	152	6"	B16.5 150 RF50	0.19	0.88	0.24	0.016	0.024	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
8	404978	1000	8"	B16.5 150 RF50	0.19	0.88	0.24	0.016	0.024	0.015	0.030	0.003	0.005	0.010	0.020	0.337	0.347
9	405008	100	12"	B16.5 150 RF50	0.19	0.83	0.22	0.021	0.017	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
10	405008	10	18"	B16.5 150 RF50	0.19	0.83	0.22	0.021	0.017	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338
11	405008	100	4"	B16.5 150 RF50	0.19	0.83	0.22	0.021	0.017	0.015	0.030	0.003	0.005	0.010	0.020	0.328	0.338

MECHANICAL PROPERTIES

ITEM NO.	HEAT NO.	HEAT TREATMENT	FORGE TEMP. 945 - 1000 C	TENSILE 485 Mpa min	YIELD 250 Mpa min	R OF A 30% min	ELONG 22% min	HARDNESS 187 HB max	CE1 - C + Mn/6 - 0.40max	CE2 - (Ce1) + (Cr+Mo+V)/5 + (Cu+Ni)/15 - 0.43max
		Normalized at temperature between 843 C and 927 C - Cooled in still air.								
1	404992	Normalized	850 C	514 Mpa	317 Mpa	56 %	33 %	165 HB		
2	404992	Normalized	850 C	514 Mpa	317 Mpa	56 %	33 %	165 HB		
3	404992	Normalized	850 C	514 Mpa	317 Mpa	56 %	33 %	165 HB		
4	404992	Normalized	850 C	514 Mpa	317 Mpa	56 %	33 %	165 HB		
5	404964	Normalized	850 C	522 Mpa	326 Mpa	54 %	32 %	166 HB		
6	404964	Normalized	850 C	522 Mpa	326 Mpa	54 %	32 %	166 HB		
7	404978	Normalized	850 C	510 Mpa	325 Mpa	57 %	35 %	166 HB		
8	404978	Normalized	850 C	510 Mpa	325 Mpa	57 %	35 %	166 HB		
9	405008	Normalized	850 C	530 Mpa	311 Mpa	55 %	32 %	167 HB		
10	405008	Normalized	850 C	530 Mpa	311 Mpa	55 %	32 %	167 HB		
11	405008	Normalized	850 C	530 Mpa	311 Mpa	55 %	32 %	167 HB		

We hereby certify that the products listed have been inspected and tested in accordance with the conditions and requirements of the purchase order and unless otherwise stated conform in all respects to the specifications, drawings relevant thereto Surface and dimensional check according to relevant standard

Quality Manager

Signature/Date:

MG

THE TRADEMARK OF QUALITY

LIFT LUGS		SHELL TO ROOF JOINT	CPLG. IN ROOF (S.S.)	NOZZLE ON ROOF	FLOOR JOINTS	SHELL TO FLOOR JOINT	ROOF JOINT	SHELL JOINT - HORIZ.	SHELL JOINT - VERT.	SHELL NOZZLE (C.S.)	PIPE TO NOZZLE (RFSO)
ASL-1		ASL-2	ASL-9	ASL-13/ ASL-2	ASL-2	ASL-2	ASL-2	ASL-1	ASL-2 OR ASL-13	ASL-13	ASL-13

BILL OF MATERIALS (FOR 1 TANK)				
MARK	QTY	MAT'L	DESCRIPTION	SERVICE
1	1	A36	6.4 PL. x 4826 Ø (FLAT BOTTOM)	FLAT BOTTOM SHELLS ROOF
2	4	A36	4.8 PL. x 2438 x 14841 LG.	
3	1	A36	6.4 PL. x 4826 Ø (ROOF)	
4	1	A36	NAMEPLATE AND BRACKET	CAGED LADDER (SEE SHT. B-5587-90 CL FOR DETAILS)
5	1	A36	LARGE LIFT LUGS	
6	4	A36	LANYARD SAFETY TIE OFF LUG (ARGO STD. TAIL LUGS- NO REPAD)	
7	1	A36	REDTAIL GAUGE HEAD SUPPORT BRACKET (SEE DETAIL THIS SHEET)	REDTAIL GAUGE HEAD SUPPORT BRACKET (SEE DETAIL THIS SHEET)
8	1	A36	REDTAIL GAUGE HEAD SUPPORT BRACKET (SEE DETAIL THIS SHEET)	
LI	1	316SS	42 DIA. (11-1/4") 3000# NPT FULL CPLG.	
	1	316SS	60 DIA. (2") 3000# NPT FULL CPLG.	HAWKEYE REDTAIL GAUGE SYSTEM c/w PVC FLOAT
	1		HAWKEYE REDTAIL GAUGE SYSTEM c/w PVC FLOAT	
	5	A36	GAUGE BOARD BRACKETS (TRIM TO 120mm FOR HAWKEYE BOARD)	
	2	316SS	FLOAT GUIDE U-BOLT	610x914 (24"x36") RECT. MANWAY (SET 100mm ABOVE FLOOR)
M1	1	A36	610x914 (24"x36") RECT. MANWAY	
	1	A36	762x1066 RECTANGULAR SPLIT MANWAY COVER	
TH	1		219 DIA (8") HAWKEYE MARSHAWK THIEF HATCH SET @ 8 OZ. PRESSURE / 0.4 OZ. VACUUM (VITON GASKETS)	219 DIA (8") HAWKEYE MARSHAWK THIEF HATCH SET @ 8 OZ. PRESSURE / 0.4 OZ. VACUUM (VITON GASKETS)
	1	A36	219 DIA. (8") ARGO FAB. THIEF HATCH EXTENSION	
N1	1	A105	114 DIA. (4") 150# RESO FLG.	
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
N2	1	A105	114 DIA. (4") 150# RF50 FLG.	114 DIA. (4") STD. SMLS PIPE x 168 LG.
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
N3	1	A105	114 DIA. (4") 150# RESO FLG.	
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
N4	1	A105	168 DIA. (4") 150# RF50 FLG.	168 DIA. (4") STD. SMLS PIPE x 168 LG.
	1	A106	168 DIA. (4") STD. SMLS PIPE x 168 LG.	
N5	1	A105	114 DIA. (4") 150# RESO FLG.	
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
N6	1	A105	114 DIA. (4") 150# RF50 FLG.	114 DIA. (4") STD. SMLS PIPE x 168 LG.
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
N7	1	A105	114 DIA. (4") 150# RF50 FLG.	
	1	A106	114 DIA. (4") STD. SMLS PIPE x 168 LG.	
		</		

BILL OF MATERIALS		RUNG TO RUNNER LADDER		CRESCENT POINT ENERGY CORPORATION	
MARK	QTY	MAT'L	DESCRIPTION	SERVICE	
A	2	A36	9.5 THK x 64 FLAT BAR x 5915 LG.		
B	7	A36	6.4 THK x 38 FLAT BAR x 3870 LG.		
C	3	A36	6.4 THK x 50 FLAT BAR x 2388 LG. (FORMED AS PER DETAIL)		
D	2	A36	9.5 THK x 152 FLAT BAR x 175 LG. (SEE DETAIL THIS SHEET)		
E	16	A36	19Ø (3/4") ROUND BAR x 470 LG. (LADDER RUNGS)		
F	2	A36	9.5 THK x 152 FLAT BAR x 175 LG. (SEE DETAIL THIS SHEET)		
G	1	A36	6.4 THK x 76 FLAT BAR x 2388 LG. (FORMED AS PER DETAIL)		
H	1	A36	6.4 THK x 76 FLAT BAR x 2905 LG. (FORMED AS PER DETAIL)		



Level Indication Sealed Systems

Redtail Hawk Gauge Head

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

Right: Redtail installed on tank with optional Goshawk Transmitter:



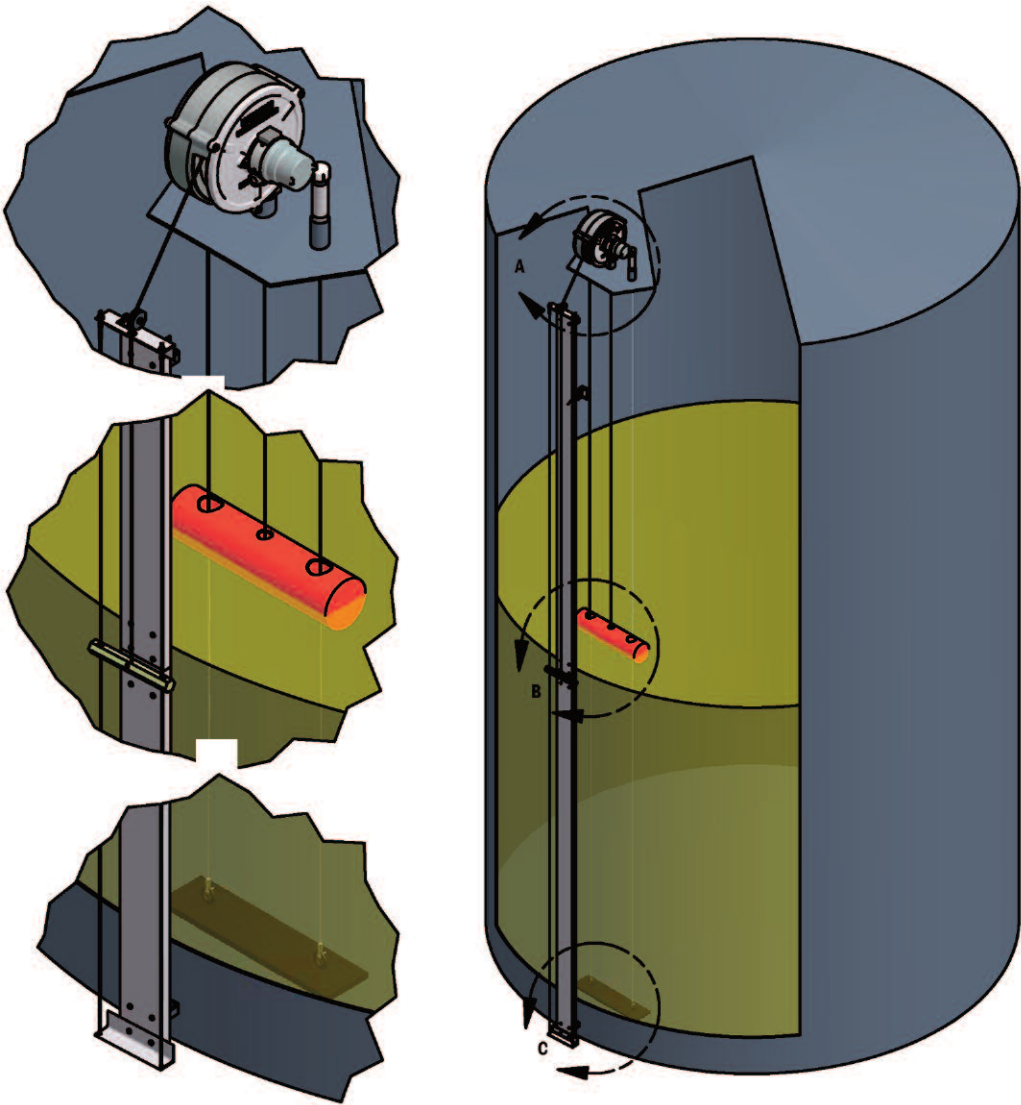


Far Right: Redtail Hawk Gauge Head installed on typical 20 ft x 400 BBL Tank.

Right: Redtail Hawk Gauge Head with cable guide locks and top of gauge board.

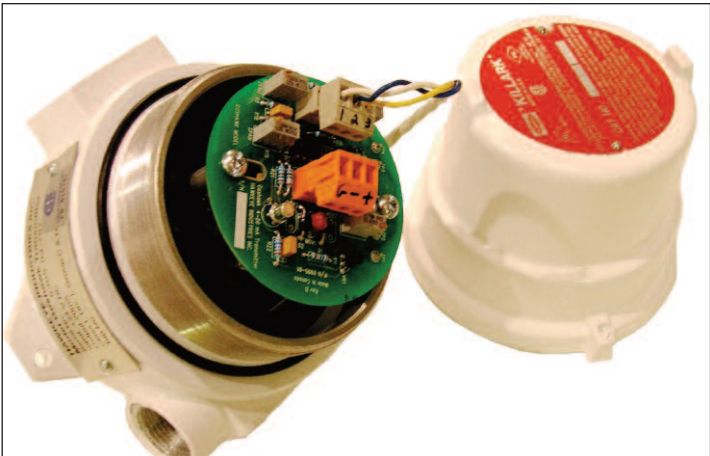
Right: Standard Poly Float (red) with float guides, resting on liquid surface. Also shown, gauge board and indicator.

Right: Cable Guide Anchor plate, and bottom of gauge board assembly.



Technical Information

Measuring Principle	Float
Performance	
Key Features	Dry Seal Design Minimal Maintenance Optional Transmitter Robust Design
Maximum Range (Height)	20 m [66 ft]
Local Display	Gauge Board and Indicator
Electrical	
Output	Mechanical
Power	n/a
Mechanical	
Process Connection	2 NPTF [60.3 mm]
Material	Cast Aluminum and Stainless Steel
Process	
Process Temperature	-40 °C to 80 °C (w/ poly float)
Ambient Temperature	-40 °C to 70 °C
Pressure	0.15 bar [2 psi]
Approvals	
Hazardous Location (Goshawk)	CSA Class 1, Div. 1, Group C&D



Above: Optional Goshawk 4-20 mA level Transmitter



Roadside Hawk

Specifications

Measuring Principle	Float
Maximum Range	6 m [20 ft]
Local Display	Gauge Board & Indicator
Process Connection	1-1/2 NPT
Process Temperature	-40 °C to 80 °C (w/ PE Float)
Ambient Temperature	-40 °C to 70 °C
Pressure	1 bar [14.5 psi]

Related Products

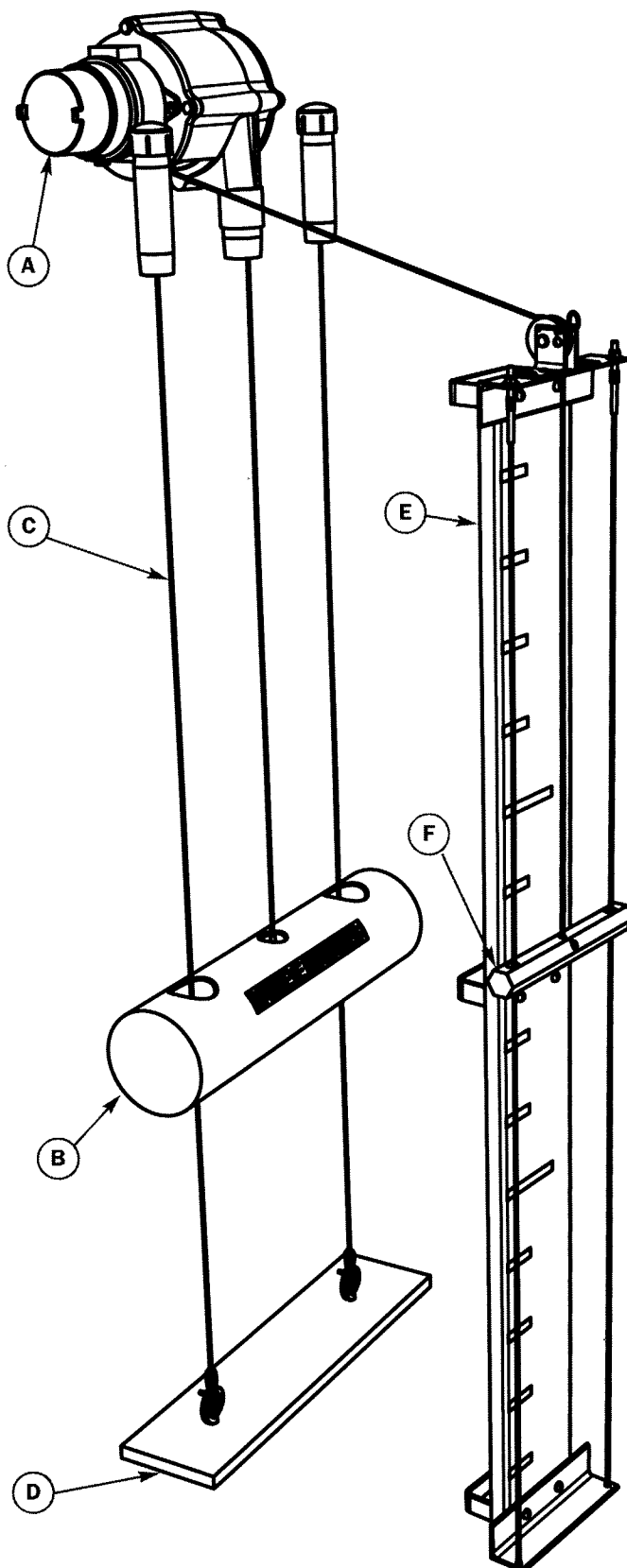
Add these items to complete the Redtail Hawk Gauging System.

- ▶ 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 (not shown)

Goshawk Transmitter

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

Output	4 - 20 mA
Power Supply	13 - 24 VDC, Loop.
Maximum Height	GH1: 5.5 m [18 ft] GH2: 8.3 m [27 ft]
Process Connection	Bolted via specific gauge cover
Hazardous Location	CSA Class I, Div. 1, Group C&D





Level Indication > Zero Emission

Roadside Hawk

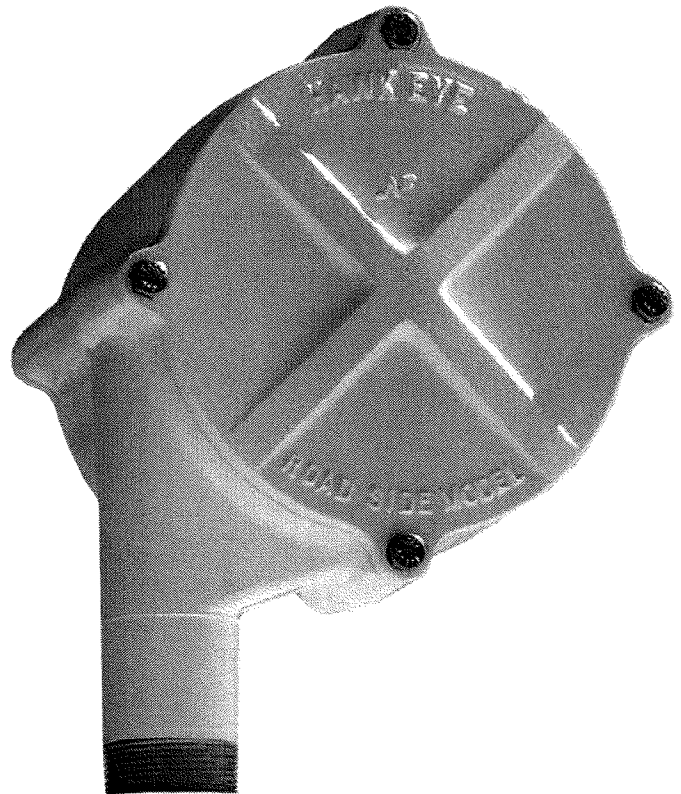
Using the same principles as the Redtail Model, the Roadside is a compact design suited for higher pressure applications as well as underground tanks. The renowned Hawkeye durability and maintenance-free design are evident in this level gauge.

Design

The Roadside Hawk Gauge Head utilizes the same robust dry-seal technology as the Redtail Hawk Gauge System, eliminating downtime and maintenance associated with a leaking gauge head. The same integral sloped tank connection channel as found in the Redtail Hawk Gauge Head allows condensation to drain back into the tank, eliminating freezing risk. Two different Roadside Hawk Gauge Head system models are available, Standard (S) for use with a standard mechanical indicator, or Retractable (R), which does not require an external gauge board indicator for operation, instead using a Goshawk Transmitter and a precision balanced spring return mechanism, suitable for underground tanks.

Construction

Cast aluminum and stainless steel construction allow this unit to operate in most process conditions including high temperature, corrosive, sour gas. Due to the compact design, the Roadside Hawk can operate in pressures up to 1 bar.



Above: Roadside Gauge Head

Flexibility

Like the Redtail Hawk Gauge Head, The Roadside Hawk can be fitted with a Goshawk Transmitter, to indicate level electronically. This modification can be done before, or after installation with ease. Two versions of the Roadside are available, both of which are suitable for above or under ground use. The standard model, the Roadside S, has reels for both the float and indicator lines, whereas the Roadside R, replaces the indicator reel with a spring, eliminating the requirement for mechanical level indication.

Ordering Information

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

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 B0 SEPTEMBER 2009



**HAWKEYE
INDUSTRIES INC.**

Vapor Control > Thief Hatches

Marshhawk

The Marsh Hawk Thief Hatch is a deep-set pressure and vacuum relief for atmospheric tanks. Because the pressure and vacuum seals are recessed inside the tank, the Marsh Hawk will not freeze up in low temperature conditions, providing year-round operation.

Design

By situating both the pressure and vacuum seals over 9" inside the tank, the intrinsic heat of the product protects the hatch from freezing. The hatch pressure release settings are easily adjustable, from 2 oz/in² to 16 oz/in², using proprietary pressure spacers. The guided spring ensures positive shut-off, eliminating flutter and leaks that exist in traditional hatches. The removable internals allow for easy tank access and simplify seal maintenance.

Construction

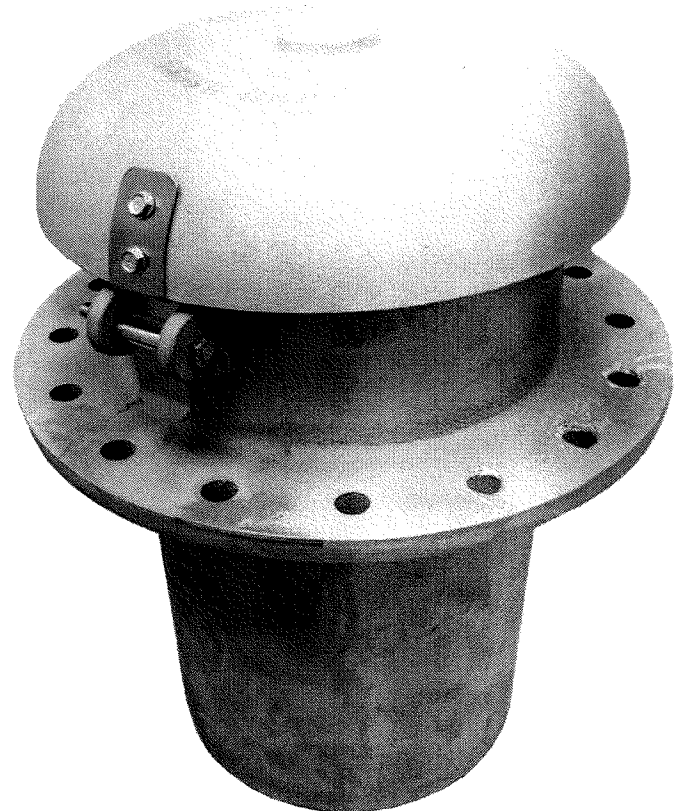
Rugged stainless steel and aluminum construction make the Marsh Hawk perfect for sweet or sour gas applications.

Flexibility

The Marsh Hawk Thief Hatch is available with a variety of seal materials, depending on application. Additionally, the field-adjustable pressure relief setting makes the Marsh Hawk a flexible tank vent solution. The Marsh Hawk can replace any existing hatch on an 8" API flange, and many mounting adapters are available to suit most tank connections. An optional pipe-away adapter is available to pipe vapours to containment or flare.

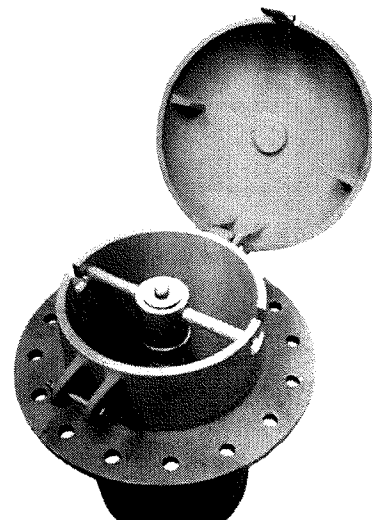
Ordering Information

- 1.) Specify Marsh Hawk Thief Hatch
- 2.) Specify Pressure Release Setting (2 - 16 oz / in²)
- 3.) Specify Seal Material (Viton STD, AFLAS available)
- 4.) Specify Connection (if other than 8" API Flange)



Above: Marshhawk Thief Hatch

Below: Marshhawk with cover open, revealing the handle of the deep-set internals.



www.hawk-eye.com

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

1-800-910-HAWK (4295)

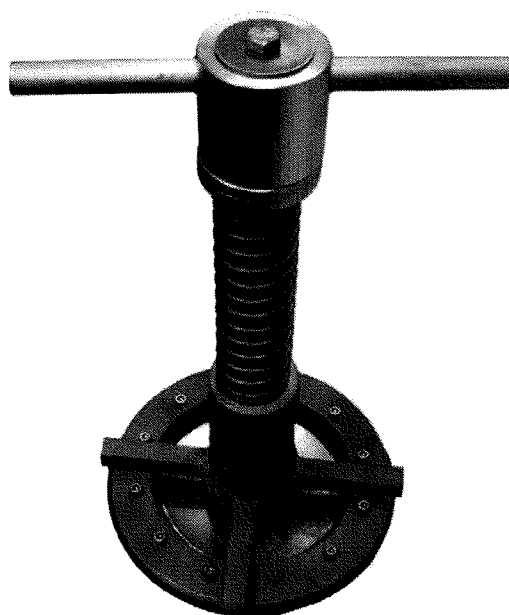
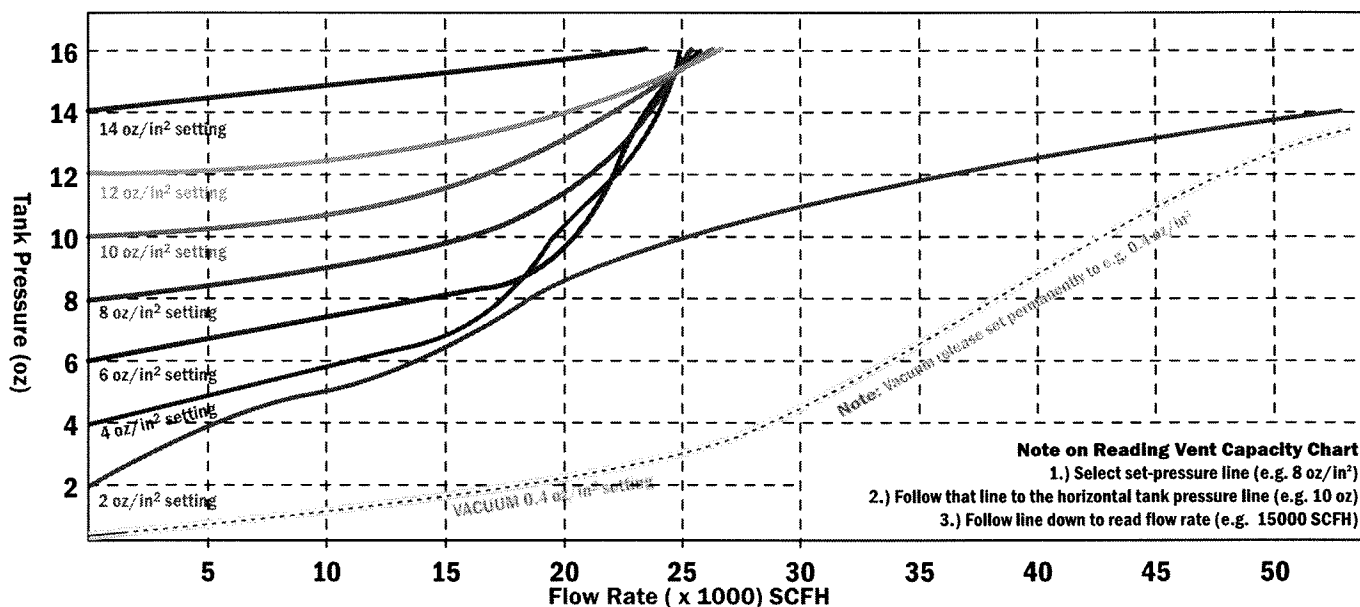
phone: (780) 490-4295, fax: (780) 490-4290

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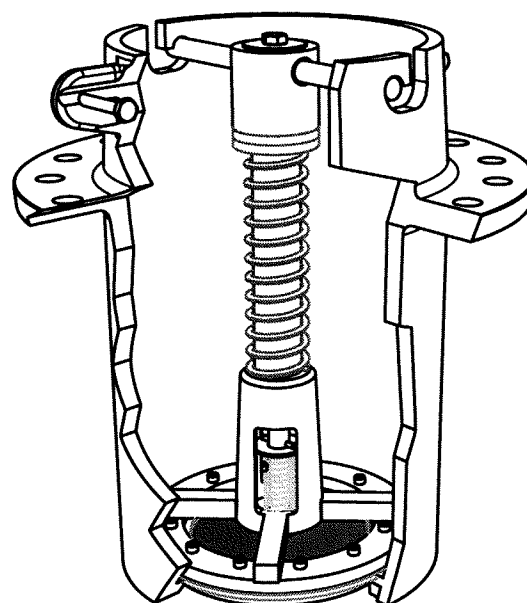
Marshhawk

Pressure and Vacuum Relief Flow Rates



Left: The Marshhawk Spider Cage assembly. Pressure relief adjustment is achieved by adding or removing spacer washers at the top of the pressure spring.

Right: Schematic cutaway of a Marshhawk (shown without lid). The pressure spacers are in blue, the pressure spring in red, the vacuum spring in yellow, the vacuum plate in green and the pressure & vacuum gasket in orange.



Related Products

- Hatch risers, for connecting to sloped roofs or connections other than 8 API.
- Pipe Away, for ducting away any emissions from the hatch.
- TVTH 200 & 300 are economical alternatives when the flow rate and anti-freeze characteristics of the Marshhawk are unnecessary.

Materials

Component	Standard	Optional
Pressure Gasket	FKM (Viton)	AFLAS, KALREZ
Vacuum Gasket	FKM (Viton)	AFLAS, KALREZ
Pressure Spring	Stainless Steel	Inconel
Vacuum Spring	Stainless Steel	Inconel

www.hawk-eye.com

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Vapour Control Thief Hatches

Marsh Hawk Thief Hatch

The Marsh Hawk Thief Hatch is a deep-set pressure and vacuum relief for atmospheric tanks. Because the pressure and vacuum seals are recessed inside the tank, the Marsh Hawk will not freeze up in low temperature conditions, providing year-round operation.

Design

By situating both the pressure and vacuum seals over 9" inside the tank, the intrinsic heat of the product protects the hatch from freezing. The hatch pressure release settings are easily adjustable, from 2 oz/in² to 16 oz/in², using proprietary pressure spacers. The guided spring ensures positive shut-off, eliminating flutter and leaks that exist in traditional hatches. The removable internals allow for easy tank access and simplify seal maintenance.

Construction

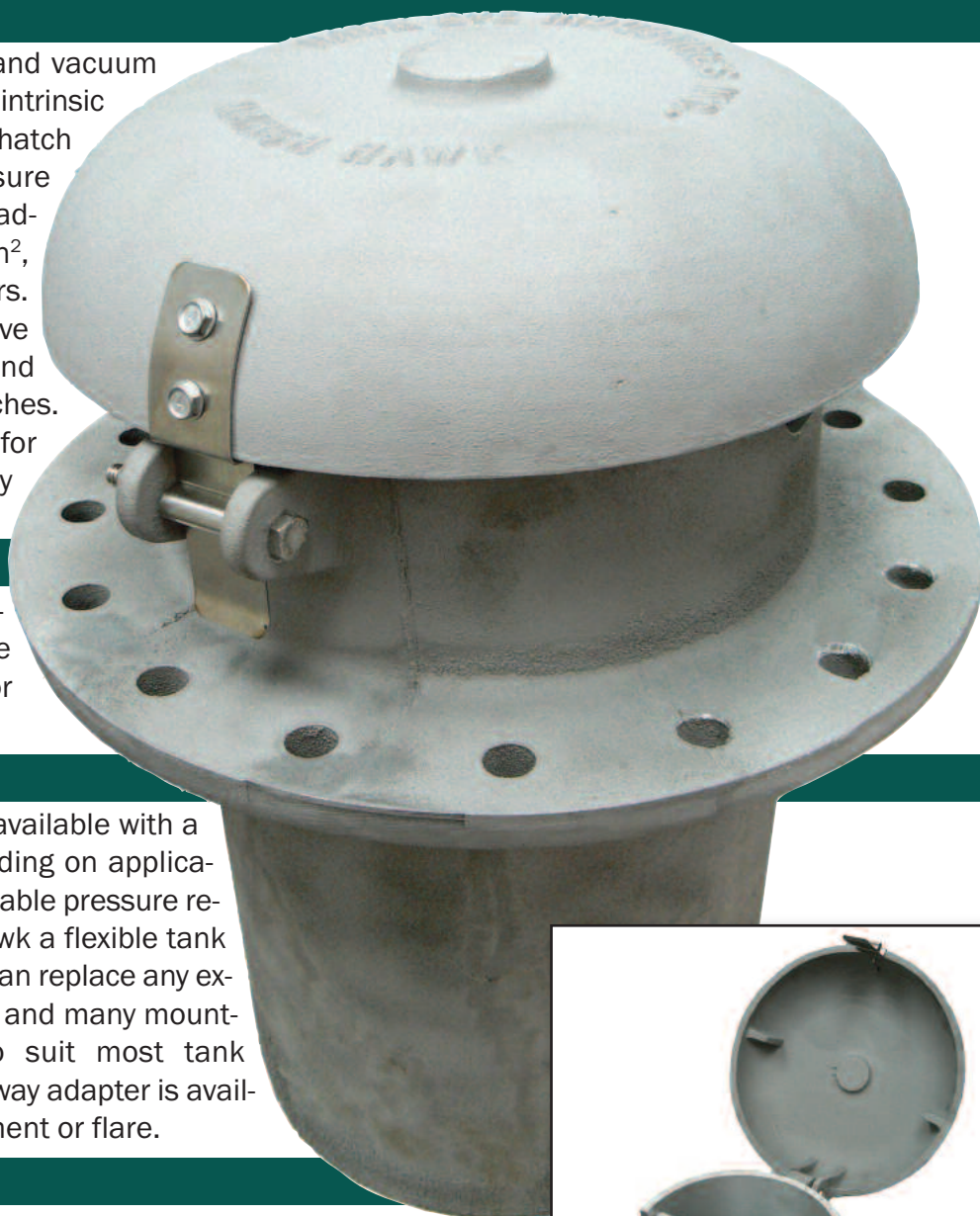
Rugged stainless steel and aluminum construction make the Marsh Hawk perfect for sweet or sour gas applications.

Flexibility

The Marsh Hawk Thief Hatch is available with a variety of seal materials, depending on application. Additionally, the field-adjustable pressure relief setting makes the Marsh Hawk a flexible tank vent solution. The Marsh Hawk can replace any existing hatch on an 8" API flange, and many mounting adapters are available to suit most tank connections. An optional pipe-away adapter is available to pipe vapours to containment or flare.

Ordering Information

- 1.) Specify Marsh Hawk Thief Hatch
- 2.) Specify Pressure Release Setting (2 - 16 oz / in²)
- 3.) Specify Seal Material (Viton STD, AFLAS available)
- 4.) Specify Connection
(if other than 8" API Flange)
- 5.) Specify pipe-away, if required

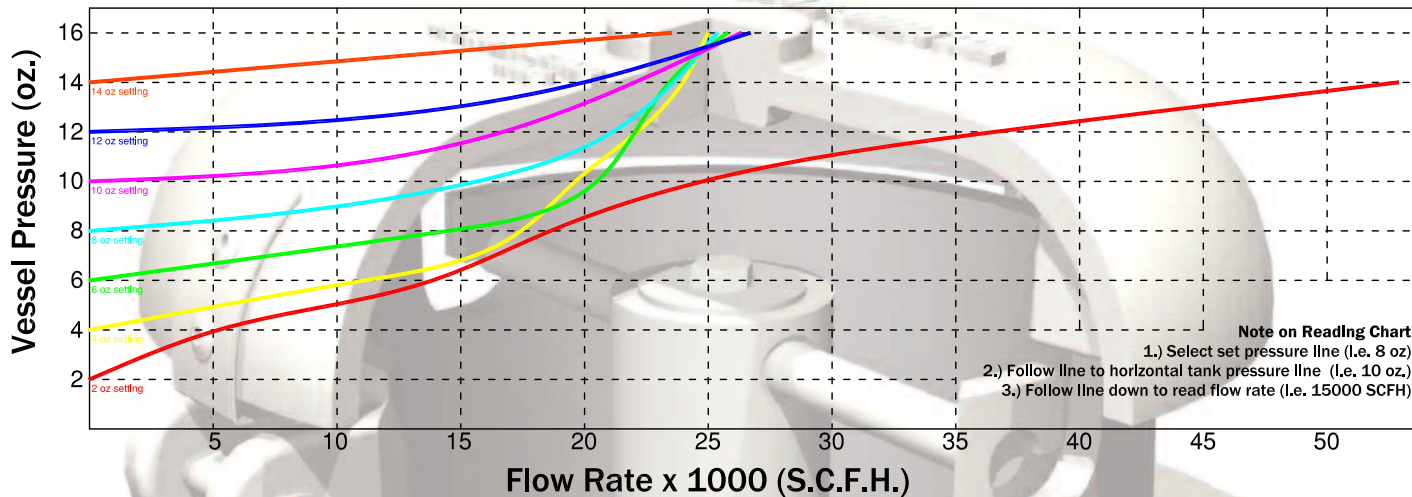


Above: The Standard Hawkeye Industries Inc. Marsh Hawk Thief Hatch
Right: The Marsh Hawk with Cover open

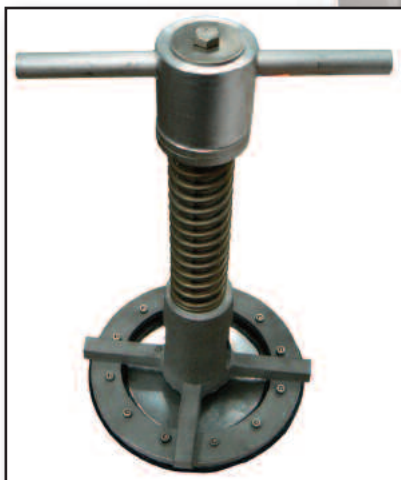
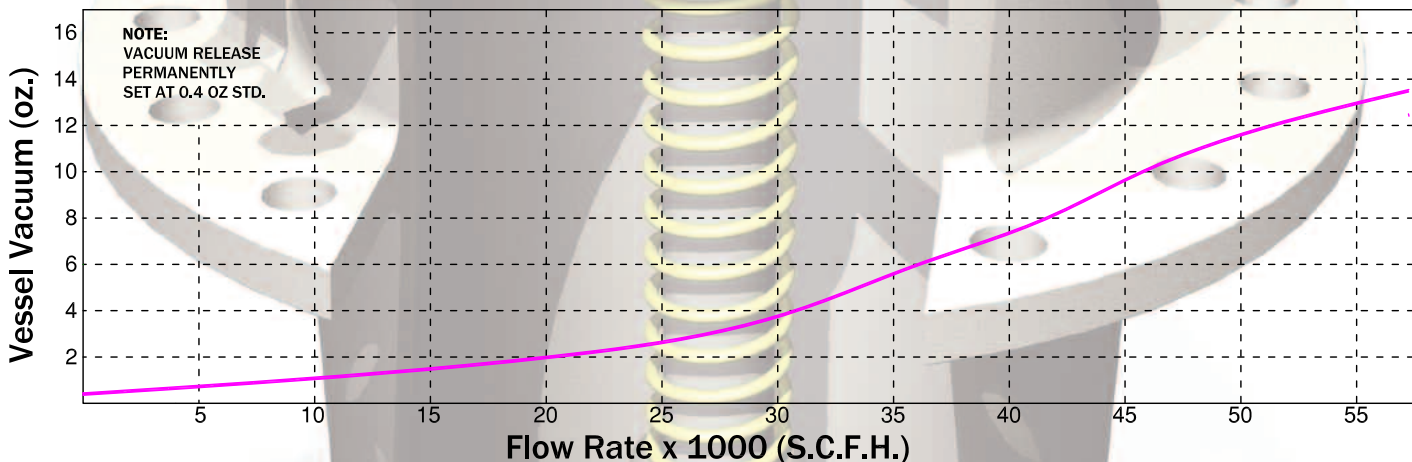


Flow Data

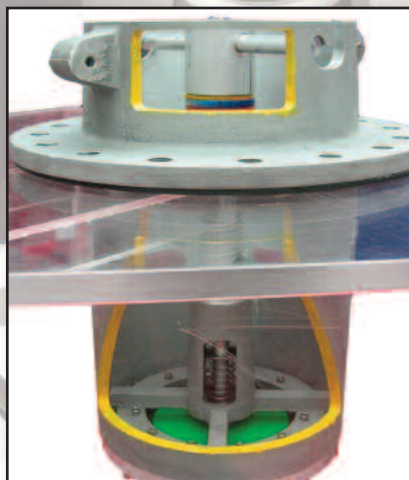
Marsh Hawk Tank Vent Flow – Pressure Relief



Marsh Hawk Tank Vent – Vacuum Relief



Marsh Hawk Valve internal
(Spidercage)



Cutaway of a Marsh Hawk installed
on a tank.



Pipe-away flange adapter for use with
Marsh Hawk Thief Hatch.

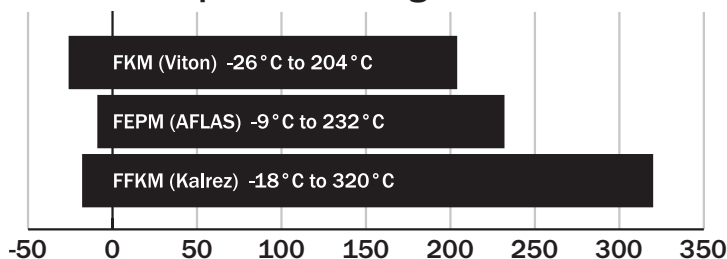


Marshhawk Thief Hatch Gasket

Gasket Suitability

Hawkeye offers three gasket materials for the Marshhawk Thief Hatch, each with different properties and chemical compatibilities. Please ensure the gasket used in the Marshhawk is suitable for your application prior to ordering a replacement. Call us for assistance.

Gasket Temperature Range



Relubrication Requirements

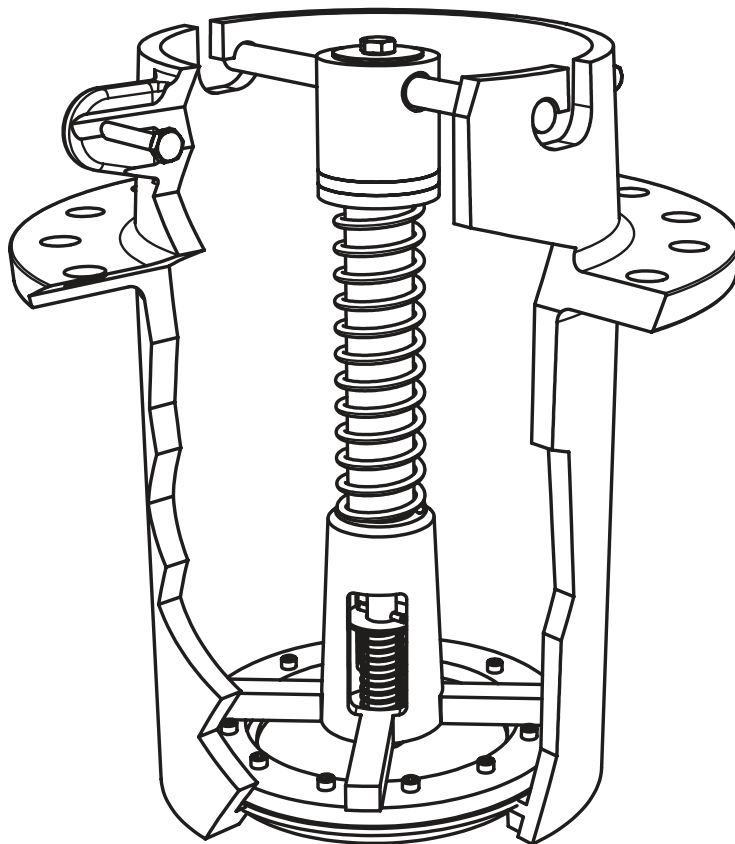
Generally, the more active the vent action of the hatch, the more frequent relubrication should be performed. Specific relubrication requirements are application specific, and are determined by the following variables:

- ▶ Chemical exposure
- ▶ Elevated pressure
- ▶ High flow velocity
- ▶ Elevated temperature
- ▶ Utilization (i.e. if hatch is primary relief)

Grease

Hawkeye factory-applies *Dow Corning 4 Electrical Insulating Compound* to the vacuum and pressure gasket, and recommends the same compound for any field relubrication.

- ▶ Excellent seal and release properties
- ▶ -57 °C to 204 °C
- ▶ Moisture Resistant
- ▶ 4.5% Bleed, 24 hr/200 °C
- ▶ 1.4% Evaporation, 24 hr/200 °C
- ▶ Non-toxic and odorless



Antifreeze Solution

It is not recommended to use any kind of antifreeze solution on a normally-operating Marshhawk thief hatch – even as a preventative measure. However, if there is evidence of the hatch icing up, a compound with suitable gasket compatibility is recommended.

Antifreeze Solution Gasket Compatibility

Antifreeze Solution	Gasket Material		
	FKM (Viton)	FEPM (AFLAS)	FFKM (Kalrez)
Methanol	4	1	1
Ethanol	3	1	1
Isopropanol	1	1	1
Ethylene Glycol	1	1	1
1 - Satisfactory	2 - Fair	3 - Doubtful	4 - Unsatisfactory



Final Fit Out Traveller

Date:	Oct 18/12	Customer:	Crescent Point	
Job #:	5588 & 5590	Tag #:		Tank Size: 500 BBL

Internal:

Check for Down Comer(s)/Riser(s) are correct length(s)	~A	☒ Yes ☐ No
Check all internals/lengths, gasket(s), bolt(s), stud(s) as per drawing	~A	☐ Yes ☐ No
Check internals for teflon/nylon washers on coated flanges	~A	☐ Yes ☐ No
Visual inspection for cleanliness prior to installing manway cover		☒ Yes ☐ No
Final holiday test completed		☒ Yes ☐ No

External:

Manway bolted on complete ☒ 6 bolt	~A	☒ Yes ☐ No
All openings blanked off		☒ Yes ☐ No
Blind flange(s) are coated as per drawing, and installed as per drawing		☒ Yes ☐ No
Check gauge system & decals		☒ Yes ☐ No
Paint/insulation check for damages/misses		☒ Yes ☐ No
Extra hardware accounted for & coated if required	~A	☐ Yes ☒ No
Correct nameplate installed		☒ Yes ☐ No

Final Dressout Complete

Print Name <u>Stephen Way</u>	(Signature) <u>Stephen Way</u>
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Ship Loose Items

Quantity	Description

Ship Loose Complete

Print Name _____	(Signature) _____
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