

Endurance Valve Products Ltd.

Packing Slip

Vendor Code: 0060004517

Name: Shawn

Date: 9 Jan

SHIPMENT# & SAPD#:

15430

DATE: January 3, 2023

P.O. Box 3007
Sherwood Park, Alberta
T8H 2T1
Phone: 780.416.9683 Fax: 780.416.9684
GST# 81449 9752

1 of 3

PURCHASE ORDER # 3500184498

SHIP TO: Endurance Valve Products Ltd.
% Suncor Energy Oil Sands LP
OS FIREBAG
Via Hwy 63 N of Fort McMurray
Firebag Site, Alberta T9H 5H3
PO# 3500184498
Location Code: AW03 / Storage Location ID: 2000

INSPECTED AT MCC (Authorized Personnel)	
NAME (mandatory)	<u>D. M. Ayle</u>
ACCEPTED ☒ YES	BADGE # <u>682439</u>
☐ NO	DATE <u>JAN 9 / 2023</u>
*SCM QA, Area QA, Area Reliability & Qualified Whse Inspectors	

LINE ITEM	DESCRIPTION	PART NUMBER	ORDER QUANTITY	SHIP QUANTITY
1	93SP-2141 16" ENDURANCE KNIFE GATE VALVE	FV-16-300-150RF-WR-A36FPW/ TC-304FP-BG-IWR-X	2	2
2	93SP-2140 10" ENDURANCE KNIFE GATE VALVE	FV-10-300-150RF-WR-A36FPW/ TC-304FP-BG-IWR-X	1	1
TOTAL:			3	3
Freight Carrier: Canadian Freightways (Acct# 1137212)				
Freight Terms: FCA Longview, WA / Collect to Suncor Energy				

Please Contact the Customer Service Department at 780.416.9683 with any questions or concerns

THANK YOU FOR YOUR BUSINESS!

NAME: [illegible]
DATE: [illegible]
ADDRESS: [illegible]
CITY: [illegible]

101

[illegible]	
[illegible]	
[illegible]	[illegible]
[illegible]	
[illegible]	



ph: (780) 416-9683 fax: (780) 416-9684

www.endurancevalve.com

Documentation:

- Certificate of Compliance
- Hydrotest
- MTR's
- I.O.M's
- Endurance Stainless Steel Tag

Supplier: Endurance Valve Products Ltd.
Vendor Code: 421643 / 0060004517
Model: FV-10-300-150RF-WR-A36FP/V/TC-304FP-BG-IWR-X
Ref Job # 13893
P.O.: 3500184498
Serial #'s 222401-1

Tag #'s 93SP-2140 10IN ENDURANCE
KNIFE GATE VALVE 150#

0

0

0

CRN: 0C10259.2

Weight: 300 lbs



ph: (780) 416-9683 fax: (780) 416-9684
www.endurancevalve.com

Certificate of Compliance

Customer: Endurance Valve Products

P.O. Box 3007

Sherwood Park, Alberta

Purchase Order Number: 13893

Model Number:

FV-10-300-150RF-WR-A36FP/V/TC-304FP-BG-IWR-
X

Serial #:

222401-1

Customer PO

3500184498

WE DO HEREBY CERTIFY THAT ALL MATERIALS AS IDENTIFIED IN THE ATTACHED DOCUMENTS ARE IN ACCORDANCE WITH THE SPECIFIED REQUIREMENTS OF THE PURCHASE ORDER

THE FOLLOWING DOCUMENTS ARE ATTACHED:

TEST REPORTS

MTR'S

I.O.M'S

Regards,
Endurance Valve



REGISTRATION CERTIFICATE

This document certifies that the administration systems of

Fabricast Valve LLC

1061 Industrial Way, Longview, Washington 98632, USA

have been assessed and approved by QAS International to the following management systems, standards and guidelines:

ISO 9001:2015

The approved administration systems apply to the following:

Fabricast Valve, located in Longview WA, designs and manufactures custom fabricated knife gate valves for various industries including Canadian oil sands, municipal water/wastewater, chemical, mining, pulp & paper, food & beverage and power. Our designs adhere to ASME B16.34 national valve standards. We also maintain a CRN (Canadian Registration Number) which is a pressure vessel engineering certification, assuring our valves are built to current Canadian standards. We service local and national companies in the USA providing both cast and fabricated valves, and offer a 12-month warranty on all products. All ISO 9001:2015 clauses are applicable to the QMS.

Original Approval	26 th September 2017
Current Certificate	26 th September 2022
Certificate Expiry	26 th September 2023
Certificate Number	US4186

Signed: Certification Officer

On behalf of QAS International

This certificate remains valid while the holder maintains their administration systems in accordance with the standards and guidelines stated above, which will be audited annually by QAS International. The holder is entitled to display the above registration mark for the duration of this certificate, which should be returned to QAS International upon reasonable request.
Issuing Office: QAS International, 5 Technology Park, Colindale Lane, London, NW9 6BX, UK



April 08, 2019

Attention: Stephen Harkness
CEMCORP LTD.
2181 DUNWIN DRIVE
MISSISSAUGA, ON L5L 1X2

Email: SHarkness@cemcorp.com

The design submission, tracking number 2019-01564, originally received on March 04, 2019 was surveyed and accepted for registration as follows:

CRN : 0C10259.2

Accepted on: April 08, 2019

Reg Type: ADDITION TO ACC. FITTING

Expiry Date: April 08, 2029

Drawing No. : FV-150 & FV-300 Rev 1 & 1 As Noted

Fitting type: KNIFE GATE VALVES

Design registered in the name of : FABRICAST VALVE

The registration is conditional on your compliance with the following notes:

- The scope of registration is the CRN renewal for 2"-36" Class 150 & 300, and adding 42" & 48" Class 150 & 300 knife gate valves.
- The valves shall be in full compliance with ASME B16.34 and MSS SP-135, with respect to dimensions, pressure and temperature ratings, materials, markings, inspections etc...
- The MDMT = -45 deg. F (as per client's email), valves components have to be impact tested per the applicable Code of construction.

As indicated on AB-41 Statutory Declaration form and submitted documentation, the code of construction are B16.34 and other engineering analysis.

- This registration is valid only for fittings fabricated at the location(s) covered by the QC certificate attached to the accepted AB-41 Statutory Declaration form.
- This registration is valid only until the indicated expiry date and only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency until that date.
- Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

An invoice covering survey and registration fees will be forwarded from our Revenue Accounts.

If you have any question don't hesitate to contact me by phone at (780) 433-0281 ext 3382 or fax (780) 437-7787 or e-mail Stojanovic@absa.ca.

Sincerely,



STOJANOVIC, STEVAN, P. Eng.
DOP Cert. No. D00008849

CRN-0C10259.2

300^{LB}

222401-1

10"

Fabricast Valve Manufacturers ID: 2210240

FV-10-300-150RF-WR-A36FPV/TC-304FP-BG-IWR-X

P.O. 3500184498

93SP-2140 10IN ENDURANCE KNIFE GATE VALVE 150#

13893

300^{PSI}

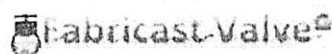
400°F

421643 /
0060004517

A36

304^{SS}

Viton



Strive for Excellence

JAR-015	Hydrostatic Test Report		
Issued by: HR	Effective Date: 8/16/2022	Rev. C	Pg. 1 of 1
APPROVED: 8/16/2022 11:00 AM - Stosh Zydek			

Testing Procedure and Process

Valve Description:	FV-10-300-150RE-WR-A36FP/V/TC-304FP-BG-IWR-X		
Serial Number:	222401-1	Ref. PO#:	13893
Tag Number:	93SP-2140 10IN ENDURANCE KNIFE GATE VALVE 150#	Design Pressure Body PSI/CWP:	300
Wetted Parts:	304 SS / FLUORO	Flange Material:	A36 / FLUORO
Design Pressure Seat PSI/CWP:	300		
Seat Type:	Resilient ☒	Bi-Direct ☐	Metal ☐
Other	☐		

BODY TEST

Each valve shall be given a shell test at a gauge pressure no less than 150% the 38°C (100°F) design pressure rating, rounded up to the next higher 1 bar (25 psi) increment. The test shall be made with water at a temperature not above 50°C (125°F). The pressure shall be able to be applied on all internal walls of the valve body (Gate not required to be in the valve. If gate is present, test shall be made with the valve in the partially open position). No visible leakage through the body material allowed. Leakage through the packing or gate seal shall not be cause for rejection. The shell test duration shall not be less than 10 minutes. Visually detectable leakage through the pressure boundary walls is not acceptable. Leakage through the stem or gate packing shall not be cause for rejection.

*TEST SHALL MEET OR EXCEED REQUIREMENTS OF ASME B16.34, MSS-SP-135, MSS-SP-81, or API 598

Test Pressure:	450 PSI	Test Duration:	10 minutes	Results of Test:	☒ PASS ☐ FAIL	
Tester (Print/Sign):	Lyman Alexander				Date:	12/28/22
QC Inspector (Print/Sign):	Cash Reynolds				Date:	12/28/22
Source Inspector (Print/Sign):					Date:	

OPERATIONAL TEST

Open and close the valve 10 full cycles. The valve shall open and close smoothly without binding. After, visually inspect the body, gate, stem, and operator to ensure it meets customer and manufacturer specifications. The valve shall be considered acceptable if it operates smoothly through the entire cycle and meets manufacturer quality requirements.

Tester (Print/Sign):	Lyman Alexander				Date:	12/28/22
QC Inspector (Print/Sign):	Cash Reynolds				Date:	12/28/22
Source Inspector (Print/Sign):					Date:	

SEAT TEST

Each valve designed for shut-off or isolation service, shall be given a seat/closure test. The seat test shall follow the shell test. Each valve shall be given a seat test at a gauge pressure no less than 110% times the 38°C (100°F) design pressure rating, rounded up to the next higher 1 bar (25 psi) increment. The test shall be made with water at a temperature not above 50°C (125°F). The seat/closure test shall not be less than 2 minutes. For seat tests with double seating type (bi-directional), the test pressure shall be applied/tested on each side's seat. Tests shall be performed in the closed position.

Resilient Seat Types: Zero leakage shall occur

Metal Seat Types: Test pressure shall be 40 PSI. Maximum leakage of 40cc/min/NPS (MSS-SP-81/135) & .167cc/min/NPS (MSS-SP-61).

Class IV Leakage Rates: Test pressure shall be 40 PSI. Maximum leakage rates are based off of 0.01% valve capacity (Manufacturer predetermined Cv value) as gallons/minute.

*LEAKAGE RATES SHALL BE IN ACCORDANCE WITH REQUIRED SPECIFICATIONS

Metal Seat Test:	330	PSI	Leakage Side 1:	N/A	Leakage Side 2:	N/A
Resilient Seat Test:	330	PSI	Leakage Side 1:	0	Leakage Side 2:	0
Permissible Leakage:	0.00	Test Duration:	Side 1:	2 minutes	Side 2:	2 minutes
Test Results:	Side 1:		☒ PASS ☐ FAIL ☐ Not Applicable	Side 2:		☐ PASS ☐ FAIL ☒ Not Applicable
Tester (Print/Sign):	Lyman Alexander				Date:	12/28/22
QC Inspector (Print/Sign):	Cash Reynolds				Date:	12/28/22
Source Inspector (Print/Sign):					Date:	

Reference Documents: JA-014, JA-015

posco

3/16 A36

Mill Test Certificate

5095924

Certificate No. : 220516-FH01KS-0005A1-0003
Date of Issue : May, 17, 2022

Order No. : 01S5541761

Supplier : POSCO INTERNATIONAL CORPORATION

PO No. : 2205-48763
(48763)
Commodity : HR COIL

Customer : CASCADIA METALS INC.

Spec & Type : ASTM A36

Surveyor To :

Size	Product No.	Quantity	Weight (kg) (lb)	Heat No.	Country of Melt & Pour	Position	YP (%)	TS (%)	EL (%)	Division	Chemical Composition
4.70x1219xC	H0E030440	1	19.430	SO95927	KOR	B	291	458	31	L	0.1481 0.008 0.008 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.014
4.70x1219xC	H0E030340	1	19.400	SO95927	KOR	B	288	455	30	L	0.1452 0.006 0.006 0.0104 0.0042 0.016 0.011 0.023 0.002 0.000 0.013
4.70x1219xC	H0E030340	1	19.400	SO95927	KOR	B	288	455	30	P	0.1481 0.006 0.006 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.014
4.70x1219xC	H0E030370	1	19.370	SO95927	KOR	B	288	455	30	L	0.1452 0.006 0.006 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.013
4.70x1219xC	H0E030370	1	19.370	SO95927	KOR	B	288	455	30	P	0.1481 0.006 0.006 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.014
4.70x1219xC	H0E030390	1	19.160	SO95927	KOR	B	288	455	30	L	0.1452 0.006 0.006 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.013
4.70x1219xC	H0E030390	1	19.160	SO95927	KOR	B	288	455	30	P	0.1481 0.006 0.006 0.0112 0.0044 0.016 0.011 0.023 0.002 0.000 0.014
4.70x1524xC	H0E0301101	1	17.010	SO95920	KOR	B	300	467	31	L	0.1459 0.005 0.005 0.0108 0.0035 0.014 0.011 0.018 0.002 0.000 0.024
4.70x1524xC	H0E0301102	1	17.070	SO95920	KOR	B	300	467	31	P	0.1423 0.005 0.005 0.0105 0.0035 0.012 0.012 0.016 0.002 0.001 0.023
4.70x1524xC	H0E0300901	1	16.940	SO95920	KOR	B	299	461	33	L	0.1459 0.005 0.005 0.0108 0.0035 0.014 0.011 0.018 0.002 0.000 0.024
4.70x1524xC	H0E0300902	1	17.040	SO95920	KOR	B	298	461	33	P	0.1423 0.005 0.005 0.0105 0.0035 0.012 0.012 0.016 0.002 0.001 0.023
4.70x1524xC	H0E0301001	1	16.950	SO95920	KOR	B	299	461	33	L	0.1459 0.005 0.005 0.0108 0.0035 0.014 0.011 0.018 0.002 0.000 0.024
4.70x1524xC	H0E0301002	1	17.250	SO95920	KOR	B	299	461	33	P	0.1423 0.005 0.005 0.0105 0.0035 0.012 0.012 0.016 0.002 0.001 0.023
4.70x1524xC	H0E0321401	1	16.940	SO95922	KOR	B	329	460	31	L	0.1413 0.005 0.004 0.0093 0.0053 0.012 0.013 0.016 0.002 0.001 0.021
4.70x1524xC	H0E0321401	1	16.940	SO95922	KOR	B	329	460	31	P	0.1446 0.004 0.005 0.0105 0.0035 0.012 0.012 0.016 0.002 0.001 0.022
... Sub Total (90) ...											153.730 (kg) 338.912 (lb)

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 50 mm (Rectangular),
* Division - L : Laid Analysis, P : Products Analysis

We hereby certify that the material herein has been made in accordance with the order and is fully in compliance.
This material has been fully killed and made by basic oxygen process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.

Legal function can be imposed on forging, improper use of product can cause safety issues.

WRAP

3/16 136

POSCO

Mill Test Certificate

Certificate No. : 220319-FH01KS-0052A1-0008
Date of Issue : Mar., 21, 2022

Order No. : 01S5442150

PO No. : 2203-48472

Supplier : POSCO INTERNATIONAL CORPORATION

Commodity : HR COIL (48472)

Customer : CASCADIA METALS INC.

Spec & Type : ASTM A36

Size	Product No.	Quantity	Weight (kg) (lb)	Heat No.	Hot Coil No.	Country of Mkt & Port	Position	Tensile Test			Division	Chemical Composition													
								YP (%)	TS (%)	EL (%)		C (%)	Si (%)	Mn (%)	P (%)	S (%)	Cr (%)	Ni (%)	Cu (%)	Mo (%)	Nb (%)	V (%)	Se-Al (%)		
7.94x1219xC	HQB093230	1	18,300 42,549	SC90930	HQB093230	KOR	B	321	505	32	L	0.1840	0.008	0.765	0.0119	0.0028	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
7.94x1219xC	HRB078300	1	18,930 41,733	SC90930	HRB078300	KOR	B	321	505	32	P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
											L	0.1840	0.006	0.765	0.0119	0.0028	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
											P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
7.94x1219xC	HQB093000	1	18,410 40,588	SC90930	HQB093000	KOR	B	294	470	34	L	0.1840	0.006	0.765	0.0119	0.0020	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
											P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
											L	0.1840	0.006	0.765	0.0119	0.0020	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
7.94x1219xC	HQB093210	1	18,330 40,588	SC90930	HQB093210	KOR	B	294	470	34	P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
											L	0.1840	0.006	0.765	0.0119	0.0020	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
											P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
7.94x1219xC	HQB093220	1	18,350 42,661	SC90930	HQB093220	KOR	B	294	470	34	L	0.1840	0.006	0.765	0.0119	0.0028	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
											P	0.1851	0.007		0.0132	0.0027	0.016	0.012	0.029	0.002	0.001	0.000	0.028		
											L	0.1840	0.006	0.765	0.0119	0.0028	0.016	0.013	0.030	0.002	0.001	0.000	0.027		
*** Sub Total (010) ***			5	95,330 (kg)	210,354 (lb)																				
7.94x1524xC	HQB083620	1	18,650 37,147	SC90994	HQB083620	KOR	B	326	510	28	L	0.1899	0.006	0.842	0.0111	0.0041	0.019	0.010	0.014	0.002	0.001	0.001	0.028		
											P	0.1869	0.008		0.0100	0.0038	0.017	0.010	0.015	0.002	0.000	0.000	0.026		
											L	0.1899	0.006	0.842	0.0111	0.0041	0.019	0.010	0.014	0.002	0.001	0.001	0.028		
7.94x1524xC	HQB0836202	1	14,730 32,474	SC90994	HQB0836202	KOR	B	326	510	28	P	0.1869	0.008		0.0100	0.0038	0.017	0.010	0.015	0.002	0.000	0.000	0.026		
											L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
											P	0.1877	0.004	0.853	0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
7.94x1524xC	HQB059300	1	17,250 38,029	SC91000	HQB059300	KOR	B	311	485	32	L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
											P	0.1877	0.004	0.853	0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
											L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
7.94x1524xC	HQB0593002	1	16,700 34,812	SC91000	HQB0593002	KOR	B	311	485	32	P	0.1877	0.004		0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
											L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
											P	0.1877	0.004		0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
7.94x1524xC	HQB028310	1	17,130 37,765	SC91000	HQB028310	KOR	B	305	485	31	L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
											P	0.1877	0.004		0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
											L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
7.94x1524xC	HQB0593102	1	16,780 36,948	SC91000	HQB0593102	KOR	B	305	485	31	P	0.1877	0.004		0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
											L	0.1911	0.006	0.853	0.0090	0.0035	0.017	0.013	0.030	0.003	0.001	0.001	0.027		
											P	0.1877	0.004		0.0087	0.0032	0.019	0.014	0.032	0.002	0.001	0.001	0.025		
*** Sub Total (020) ***			6	98,420 (kg)	216,976 (lb)																				

* Position - T : Top, M : Middle, B : Bottom
* Tensile Test Direction : Transversal, Gauge Length : 50 mm (Rectangular),
YP Method : Upper Point
* Division - L : Leds Analysis, P : Products Analysis

We hereby certify that the material herein has been made in accordance with the order and is fully in compliance.
This material has been fully killed and made by basic oxygen process.
Test Certificate is issued according to ISO 10474/EN 10204 3.1.

Engagement can be imposed on forging, improper use of product can cause safety issues.

Surveyor To :

Park, Junyoung

POSCO

Gwangyang Works, 20-26, Pokposarang-gil, Gwangyang-si, Jeollanam-do, 57807, Korea

< PAGE : 30 >

Chief of material testing section

Park, Junyoung

STUFFER



California Steel Industries
14000 San Bernardino Ave.
Fontana, California 92335

Mill Test Report

Purchase Order
Shipment Number
Delivery Number
Sales Order
Prod. Order Number
Truck / RR ID
Shipment Date
Generated On
Attention
Page 01 of 01

22360
800176169
0251872352
0000239553 - 000012
0000311614
YP52922
00/00/00
09/28/22
Carlos

General Order Information

Product: H.R. Band - Direct Ship (NSP)
End Use: WAREHOUSE STOCK
Thickness: 0.4950 IN NOM
Width: 60.0000 IN Edge: MID
Length:

Oil:
Finish:
Coating Weight:
Chem Treat:
Origin:
ROHS Compliant: Yes

Bill To

HARBOR PIPE & STEEL, INC.
1495 COLUMBIA AVE, BLDG #10
RIVERSIDE, CA, 92507

Ship To

GENESIS METALS
1495 COLUMBIA AVE., BLDG. 10
RIVERSIDE, CA, 92507

Material Specification Requirements

Specification: PQ-IN CONFORMANCE WITH ASTM-A36-14 CHEMICAL AND
TENSILE REQUIREMENTS

Deox. Practice:
Cast Method: Continuous

Add'l Req.	Min	Max	Add'l Req.	Min	Max	Add'l Req.	Min	Max

Testing Parameters

Tensile		Bend		Hardness		Charpy	
Freq.	HT/LOT						
Orient.	TRANS						
Loc.	ID						
Gauge Len. (in)	8.0000						
Yield Method	0.5% EUL						
R-Bar Strain							
N-Value Strain							

Chemical Analysis, wt%

Heat	Coil	Type	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn	Al	V	Co	Ti	B	N	Ca
US7165		H	0.15	1.17	0.008	0.007	0.017	0.03	0.01	0.03	0.00	0.009	0.030	0.000	0.000	0.001	0.0002	0.005	0.0010

Mechanical Testing Results

Heat		Coil		Loc		Yield		Tensile		Elong		Y/T		T/Y		R-Bar		Delta-R		N-Value		Bend		Hardness	
						Ksi		Ksi		%						Avg						Loc		Result	
US7165				H		43.8		67.5		25.0		0.65		1.54											
US7165				H		42.5		67.2		28.0		0.63		1.58											

Charpy

Heat		Coil		Loc		Absorbed Energy, ft-lb		Percent Shear		Lateral Expansion, in.	
						Spec 1 Spec 2 Spec 3 Avg		Spec 1 Spec 2 Spec 3 Avg		Spec 1 Spec 2 Spec 3 Avg	

DWW

Deanne Wilson
Chief - Laboratory Services

I certify that the material described herein has been manufactured in accordance with the requirements of the referenced specification, and the test results conform to the specification requirements.

Summary of Material on Delivery and Special Test Results

Heat		Steel		Coil		Supplier Information		Name and Location		Special Statements	
US7165		2163251						USS - MON VALLEY WORKS, BRADDOCK, PA, USA		(1)(2)(3)(4)	

Special Statements

- (1) COILS ROLLED AND MANUFACTURED IN THE U.S. FROM STEEL THAT IS MELTED AND POURED IN THE U.S.
- (2) TEST METHODS PER ASTM E8, E18, E23, E29, E436, E419 IN COMPLIANCE WITH ISO 17025. TEST TYPE 1* RESULTS MAY NOT BE IN ACCORDANCE WITH ISO 17025. THE DECISION RULE FOR COMPLIANCE TO THE SPECIFICATION OR REQUIREMENTS IS BASED ON SIMPLE ACCEPTANCE.
- (3) MATERIAL IS REACH COMPLIANT UNDER THE LATEST LIST OF SUBSTANCES PUBLISHED BY THE ECHA.
- (4) MATERIAL IS ROHS COMPLIANT.

EN10204:2004 TYPE
2.2 AND TYPE 3.1
COMPLIANT

CSI-QM110414 Rev.1

PACKING BOX

1121335
CS7165

TEST REPORT

IMR Report Number 202207296C

SUMMARY

One coupon was received for mechanical testing.

The sample meets the specified tensile requirements of ASTM A572-21st, Gr. 50 for plates.

ROOM TEMPERATURE TENSILE TEST

Laboratory Number	Tensile Strength (ksi)	Yield Point (ksi)	Elongation in 2" (%)	Orig. Gauge Width (in.)
2207296-3FTT	72.5	58.5	40	0.508
Specification Req. (Min.)	65	50	19	

Yield point determined by 0.5% extension method
Direction = Transverse
Method(s): ASTM A370-21 and ASTM A6-21

HORSESHOE
TOP FLANGE
GLAND FLANGE
YOKE PAD

July 1, 2022

James Rhyasen
State Plate
7510 NE 99th St
Vancouver, WA 98662

PO Number
1155

Date Received
June 23, 2022

Material
3/4" Thick Steel Plate

Material Identity
Heat# E2D263

Specification(s)
ASTM A572-21st, Gr. 50



Nadcap
ACCREDITED

Reviewed by

Alex N. Fish
Metallurgy & Chemistry Manager

All procedures were performed in accordance with the IMR Quality Manual, current revisions, and related procedures; and the P&W MCL Manual F-23 and related procedures as applicable. The information contained in this test report represents only the material tested and may not be reproduced, except in full, without the written approval of IMR Test Labs ("IMR"). IMR maintains a quality system in compliance with the ISO/IEC 17025 and is accredited by A2LA, certificate #1143.07. IMR will perform all testing in good faith using the proper procedures, trained personnel, and equipment to accomplish the testing required. Conformance will be based on results without measurement uncertainty applied, unless otherwise requested by the customer. IMR's liability to the customer or any third party is limited at all times to the amount charged for the services provided. All test samples will be retained for a minimum of 3 months and may be destroyed thereafter, unless otherwise specified by the customer. The recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal statutes. IMR Test Labs is a GEAE 5-400 approved lab (Supplier Code T4260).

E2D263

3/4 A572-50

STATEMENT OF ANALYSIS

Page 2 Of 3

CONSIGNEE:

DATE: 10 May 2022

STATE PLATE LLC

BILL OF LADING NO.: AR356800

7610 NE 99TH ST

MILL ORDER NO.(s) 41-673792

VANCOUVER, WA 98662

PRODUCT: PIPE _____ HSS _____ SHEET X PLATE _____ COIL _____

THE ANALYSIS OF THE PRODUCT ON THIS LOAD IS AS FOLLOWS:

SIZE				GRADE					HEAT NO.				
ELEMENT - ALLOY THRESHOLD													
%C	%Mn	%B	%Ti	%Si	%Cu	%Ni	%Cr	%P	%S	%V	%CB	%Mo	%AL
—	1.65	.0008	0.05	0.60	0.40	0.30	0.30	—	—	0.10	0.06	0.08	0.30
0.000 X 0 X				SECONDS US					W2D645 C14				
0.07	1.45	.0004	0.015	0.26	0.24	0.08	0.14	0.009	0.000	0.027	0.046	0.07	0.029
0.000 X 0 X				SECONDS US					W2D645 C14				
0.07	1.45	.0004	0.015	0.26	0.24	0.08	0.14	0.009	0.000	0.027	0.046	0.07	0.029
0.000 X 0 X				SECONDS US					W2D645 C15				
0.07	1.45	.0004	0.015	0.26	0.24	0.08	0.14	0.009	0.000	0.027	0.046	0.07	0.029
0.000 X 0 X				SECONDS US					W2D645 C15				
0.07	1.45	.0004	0.015	0.26	0.24	0.08	0.14	0.009	0.000	0.027	0.046	0.07	0.029
0.000 X 0 X				SECONDS US					W2C581 E34				
0.05	1.44	.0001	0.012	0.23	0.28	0.12	0.14	0.009	0.001	0.021	0.043	0.07	0.032
0.000 X 0 X				SECONDS US					E2D074 B14				
0.05	1.45	.0001	0.013	0.23	0.24	0.10	0.14	0.008	0.001	0.028	0.046	0.07	0.026
0.000 X 0 X				SECONDS US					E2D263 B05				
0.06	1.26	.0001	0.014	0.20	0.26	0.08	0.15	0.007	0.000	0.028	0.039	0.03	0.030
0.000 X 0 X				SECONDS US					W2D615 B16				
0.05	1.45	.0003	0.014	0.24	0.25	0.13	0.14	0.008	0.001	0.025	0.044	0.07	0.027

We trust this is the information you require.

Very truly yours,

SSAB ALABAMA INC.

Shipping

Export Declaration Exempt: NOEEI 30.36

IMR TEST LABS

A Curtiss-Wright Business Unit
www.imrportland.com

5687-ASE International Way
Portland, OR 97222
T: 1.503.653.2904 | F: 1.503.653.9591

TEST REPORT

IMR Report Number 202207044B

SUMMARY

One coupon was received for mechanical testing.

The sample meets the specified tensile requirements of ASTM A36-19 for plates.

June 27, 2022

James Rhyasen
State Plate
7510 NE 99th St
Vancouver, WA 98662

PO Number
1153

Date Received
June 16, 2022

Material
1" Thick Steel Plate

Material Identity
Heat# A2D253

Specification(s)
ASTM A36-19

ROOM TEMPERATURE TENSILE TEST

Laboratory Number	Tensile Strength (ksi)	Yield Point (ksi)	Elongation in 4D (%)	Orig. Gauge Dia. (in.)
2207044-2RTT	75.5	48.9	31	0.503
Specification Req. (Range/Mln.)	58 - 80	36	21	

Direction = Transverse
Method(s): ASTM A370-21

PORT FLANGE
YOKE TOP



Nadcap
ACCREDITED

Reviewed by

Raelynn Webb

Raelynn Webb
Technical Review

All procedures were performed in accordance with the IMR Quality Manual, current revision, and related procedures; and the P&W MCL Manual F-23 and related procedures as applicable. The information contained in this test report represents only the material tested and may not be reproduced, except in full, without the written approval of IMR Test Labs ("IMR"). IMR maintains a quality system in compliance with the ISO/IEC 17025 and is accredited by A2LA, certificate #1140.07. IMR will perform all testing in good faith using the proper procedures, trained personnel, and equipment to accomplish the testing required. Conformance will be based on results without measurement uncertainty applied, unless otherwise requested by the customer. IMR's liability to the customer or any third party is limited at all times to the amount charged for the services provided. All test samples will be retained for a minimum of 3 months and may be destroyed thereafter, unless otherwise specified by the customer. The recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal statutes. IMR Test Labs is a GEAE S-400 approved lab (Supplier Code T4260).

STATEMENT OF ANALYSIS

Page 5 Of 6

CONSIGNEE:

DATE: 14 May 2022

STATE PLATE LLC

BILL OF LADING NO.: MR461728

7510 NE 99TH ST

MILL ORDER NO.(s) 41-673792 41-673792

VANCOUVER, WA 98662

PRODUCT: PIPE _____ HSS _____ SHEET X _____ PLATE _____ COIL _____

THE ANALYSIS OF THE PRODUCT ON THIS LOAD IS AS FOLLOWS:

SIZE				GRADE					HEAT NO.				
ELEMENT - ALLOY THRESHOLD													
%C	%Mn	%B	%Ti	%Si	%Cu	%Ni	%Cr	%P	%S	%V	%CB	%Mo	%AL
—	1.65	.0008	0.05	0.60	0.40	0.30	0.30	—	—	0.10	0.06	0.08	0.30
0.000 X 0 X				SECONDS US					A2D253 A15				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					A2D253 A16				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					A2D253 A17				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					B2D731 A04				
0.20	0.83	.0003	0.022	0.16	0.32	0.16	0.17	0.015	0.003	0.004	0.001	0.03	0.032
0.000 X 0 X				SECONDS US					B2D625 B04				
0.15	1.33	.0001	0.002	0.16	0.27	0.15	0.12	0.007	0.004	0.072	0.002	0.04	0.033
0.000 X 0 X				SECONDS US					A2D086 A04				
0.21	0.40	.0002	0.007	0.18	0.31	0.16	0.14	0.009	0.002	0.002	0.001	0.03	0.030
0.000 X 0 X				SECONDS US					A2D073 B33				
0.20	0.85	.0002	0.024	0.19	0.33	0.17	0.15	0.008	0.001	0.005	0.001	0.04	0.039
0.000 X 0 X				SECONDS US					A2D073 B31				
0.20	0.85	.0002	0.024	0.19	0.33	0.17	0.15	0.008	0.001	0.005	0.001	0.04	0.039

We trust this is the information you require.
 Very truly yours,
 SSAB IOWA INC.

Shipping

Export Declaration Exempt: NOEEI 30.36

TEST REPORT

IMR Report Number 202207044B

SUMMARY

One coupon was received for mechanical testing.

The sample meets the specified tensile requirements of ASTM A36-19 for plates.

June 27, 2022

James Rhyasen
State Plate
7510 NE 99th St
Vancouver, WA 98662

PO Number
1153

Date Received
June 16, 2022

Material
1" Thick Steel Plate

Material Identity
Heat# A2D253

Specification(s)
ASTM A36-19

ROOM TEMPERATURE TENSILE TEST

Laboratory Number	Tensile Strength (ksi)	Yield Point (ksi)	Elongation In 4D (%)	Orig. Gauge Dia. (in.)
2207044-2RTT	75.5	48.9	31	0.503
Specification Req. (Range/Min.)	58 - 80	36	21	

Direction = Transverse
Method(s): ASTM A370-21

PORT FLANGE



Modcap
ACCREDITED

Reviewed by

Raelynn Webb

Raelynn Webb
Technical Review

All procedures were performed in accordance with the IMR Quality Manual, current revision, and related procedures; and the P&W MCL Manual F-23 and related procedures as applicable. The information contained in this test report represents only the material tested and may not be reproduced, except in full, without the written approval of IMR Test Labs (IMR). IMR maintains a quality system in compliance with the ISO/IEC 17025 and is accredited by A2LA, certificate #1140.07. IMR will perform all testing in good faith using the proper procedures, trained personnel, and equipment to accomplish the testing required. Conformance will be based on results without measurement uncertainty applied, unless otherwise requested by the customer. IMR's liability to the customer or any third party is limited at all times to the amount charged for the services provided. All test samples will be retained for a minimum of 3 months and may be destroyed thereafter, unless otherwise specified by the customer. The recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal statutes. IMR Test Labs is a GEAE S-400 approved lab (Supplier Code T4280).

STATEMENT OF ANALYSIS

Page 5 Of 6

CONSIGNEE:

DATE: 14 May 2022

STATE PLATE LLC

BILL OF LADING NO.: MR461728

7510 NE 99TH ST

MILL ORDER NO.(s) 41-673792 41-673792

VANCOUVER, WA 98662

PRODUCT: PIPE _____ HSS _____ SHEET X PLATE _____ COIL _____

THE ANALYSIS OF THE PRODUCT ON THIS LOAD IS AS FOLLOWS:

SIZE				GRADE					HEAT NO.				
ELEMENT - ALLOY THRESHOLD													
%C	%Mn	%B	%Ti	%Si	%Cu	%Ni	%Cr	%P	%S	%V	%CB	%Mo	%AL
—	1.65	.0008	0.05	0.60	0.40	0.30	0.30	—	—	0.10	0.06	0.08	0.30
0.000 X 0 X				SECONDS US					A2D253 A15				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					A2D253 A16				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					A2D253 A17				
0.20	0.87	.0001	0.022	0.17	0.33	0.15	0.20	0.015	0.002	0.004	0.002	0.02	0.026
0.000 X 0 X				SECONDS US					B2D731 A04				
0.20	0.83	.0003	0.022	0.16	0.32	0.16	0.17	0.015	0.003	0.004	0.001	0.03	0.032
0.000 X 0 X				SECONDS US					B2D625 B04				
0.15	1.33	.0001	0.002	0.16	0.27	0.15	0.12	0.007	0.004	0.072	0.002	0.04	0.033
0.000 X 0 X				SECONDS US					A2D086 A04				
0.21	0.40	.0002	0.007	0.18	0.31	0.16	0.14	0.009	0.002	0.002	0.001	0.03	0.030
0.000 X 0 X				SECONDS US					A2D073 B33				
0.20	0.85	.0002	0.024	0.19	0.33	0.17	0.15	0.008	0.001	0.005	0.001	0.04	0.039
0.000 X 0 X				SECONDS US					A2D073 B31				
0.20	0.85	.0002	0.024	0.19	0.33	0.17	0.15	0.008	0.001	0.005	0.001	0.04	0.039

We trust this is the information you require.

Very truly yours.

SSAB IOWA INC.

Shipping

Export Declaration Exempt: NOEEI 30.36

BRIDGE CITY STEEL INC* PO/Rel: 228154
STAINLESS PLATE SPL 1/2" x 60" x 240" HRAP-ASTM-A-240 304L

Inv: 1094724 Date: 09/02/2022
Heat: SD54699

SEAT RING

Certificate No.: MT2209102 Customer: YA CHEN STAINLESS PIPE COMPANY LIMITED Contract No.: S2205001 Commodity: HOT ROLLED STAINLESS STEEL PLATE		Material Specification: ASTM A240-19 Date: 2022/09/21 Page: 1/1	
Physical Description			
No.	Product No.	Grade	Heat No.
1	BS61614	304D01L	S054599
2	BS51729	304D01L	S054448
3	BS55014	304D01L	YU18741
4	BS65119	304D01L	YU19749
5	BS55126	304D01L	YU18607
Total		29	17.871
Chemical Composition (%)			
No.	C	Si	Mn
1	0.024	0.411	0.031
2	0.021	0.404	0.028
3	0.022	0.390	0.030
4	0.016	0.390	0.031
5	0.022	0.470	0.033
Mechanical Properties			
Solution Annealed (1030°C Water Cooling)			
No.	Country of melt	Cu	Ni
1	0.222	0.040	0.116
2	0.236	0.035	0.141
3	0.250	0.030	0.100
4	0.190	0.038	0.080
5	0.190	0.045	0.133
Impact Test			
(-185°C) (Min. 00 J)			
1 2 3 AVE			
Remarks:			
1. Equivalent to Q235TD-A-X-M-FUL 2. Material meets the requirements of ASTM A240-19. 3. Material meets the requirements of NACE MR0175. 4. Physical properties comply with the requirements of ASTM A240-19. 5. Country of Manufacture: Taiwan 6. Inhibitor: 7.0% 7. Inhibitor: 7.0% 8. Inhibitor: 7.0% 9. Inhibitor: 7.0% 10. Inhibitor: 7.0% 11. Inhibitor: 7.0% 12. Inhibitor: 7.0% 13. Inhibitor: 7.0% 14. Inhibitor: 7.0% 15. Inhibitor: 7.0% 16. Inhibitor: 7.0% 17. Inhibitor: 7.0% 18. Inhibitor: 7.0% 19. Inhibitor: 7.0% 20. Inhibitor: 7.0% 21. Inhibitor: 7.0% 22. Inhibitor: 7.0% 23. Inhibitor: 7.0% 24. Inhibitor: 7.0% 25. Inhibitor: 7.0% 26. Inhibitor: 7.0% 27. Inhibitor: 7.0% 28. Inhibitor: 7.0% 29. Inhibitor: 7.0% 30. Inhibitor: 7.0% 31. Inhibitor: 7.0% 32. Inhibitor: 7.0% 33. Inhibitor: 7.0% 34. Inhibitor: 7.0% 35. Inhibitor: 7.0% 36. Inhibitor: 7.0% 37. Inhibitor: 7.0% 38. Inhibitor: 7.0% 39. Inhibitor: 7.0% 40. Inhibitor: 7.0% 41. Inhibitor: 7.0% 42. Inhibitor: 7.0% 43. Inhibitor: 7.0% 44. Inhibitor: 7.0% 45. Inhibitor: 7.0% 46. Inhibitor: 7.0% 47. Inhibitor: 7.0% 48. Inhibitor: 7.0% 49. Inhibitor: 7.0% 50. Inhibitor: 7.0% 51. Inhibitor: 7.0% 52. Inhibitor: 7.0% 53. Inhibitor: 7.0% 54. Inhibitor: 7.0% 55. Inhibitor: 7.0% 56. Inhibitor: 7.0% 57. Inhibitor: 7.0% 58. Inhibitor: 7.0% 59. Inhibitor: 7.0% 60. Inhibitor: 7.0% 61. Inhibitor: 7.0% 62. Inhibitor: 7.0% 63. Inhibitor: 7.0% 64. Inhibitor: 7.0% 65. Inhibitor: 7.0% 66. Inhibitor: 7.0% 67. Inhibitor: 7.0% 68. Inhibitor: 7.0% 69. Inhibitor: 7.0% 70. Inhibitor: 7.0% 71. Inhibitor: 7.0% 72. Inhibitor: 7.0% 73. Inhibitor: 7.0% 74. Inhibitor: 7.0% 75. Inhibitor: 7.0% 76. Inhibitor: 7.0% 77. Inhibitor: 7.0% 78. Inhibitor: 7.0% 79. Inhibitor: 7.0% 80. Inhibitor: 7.0% 81. Inhibitor: 7.0% 82. Inhibitor: 7.0% 83. Inhibitor: 7.0% 84. Inhibitor: 7.0% 85. Inhibitor: 7.0% 86. Inhibitor: 7.0% 87. Inhibitor: 7.0% 88. Inhibitor: 7.0% 89. Inhibitor: 7.0% 90. Inhibitor: 7.0% 91. Inhibitor: 7.0% 92. Inhibitor: 7.0% 93. Inhibitor: 7.0% 94. Inhibitor: 7.0% 95. Inhibitor: 7.0% 96. Inhibitor: 7.0% 97. Inhibitor: 7.0% 98. Inhibitor: 7.0% 99. Inhibitor: 7.0% 100. Inhibitor: 7.0%			

This MTR contains: 1 pages (Page: 1)

TA CHEN INTERNATIONAL, INC.
www.tachen.com

ROLL TEST REPORT

WEST COAST METALS

204810

Inv: 1094724 Date: 09/02/2022
Heat: SD54699

PO/Rel: 228154
BRIDGE CITY STEEL INC.
STAINLESS PLATE SPL 1/2" x 60" x 240" HRAP ASTM A-240 304L

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains: 1 pages (Page: 1)

Custid: WESPRT Companyid: WEST COAST METALS

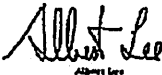
www.tachen.com

MTR: YYCLYYCL2208162.pdf POK: P044579 SOK: LJHGB

Inspection Certificate
Inspection No: 500602407041-1 Bundle: BPS1674-020 Heatno: S054699

YEOU YIH STEEL CO., LTD.

In Accordance with EN 10204:2004 TYPE 3.1

Certificate No.: MT2208162					Date: 2022/08/21		PAGE: 1/1						
Customer: TA CHEN STAINLESS PIPE COMPANY LIMITED					Material Specification: ASTM A240-18								
Contract No.: S2205001													
Commodity: HOT ROLLED STAINLESS STEEL PLATE													
Physical Description													
No.	Product No.	Grade	Heat No.	Size	No of Pieces/Pct	Weight/Kgs	FINISH	EDGE	QUALITY				
1	BP51874	304/304L	SD54699	0.500" X 60" X 240"	3	2,618	NO.1	SE	PRIME				
2	BP51720	304/304L	SD54440	0.500" X 60" X 120"	6	2,613	NO.1	SE	PRIME				
3	BUSS014	304/304L	YU107471	0.500" X 60" X 240"	2	1,507	NO.1	SE	PRIME				
4	BUSS139	304/304L	YU107470	0.500" X 60" X 144"	12	0,672	NO.1	SE	PRIME				
5	BUSS168	304/304L	YU109077	1.000" X 60" X 144"	3	3,483	NO.1	SE	PRIME				
Total					26	17,871							
Chemical Composition(%)													
No.	C	Si	Mn	P	S	Al	Cr	Mo	N	Cu	Ti	Country of mill	
1	0.024	0.411	1.438	0.031	0.003	0.040	18.104	0.118	0.040	0.222		Korea	
2	0.021	0.404	1.470	0.029	0.003	0.075	18.128	0.141	0.035	0.238		Korea	
3	0.022	0.380	0.850	0.038	0.002	0.010	18.103	0.100	0.040	0.200		Taiwan	
4	0.018	0.380	0.720	0.038	0.001	0.030	18.300	0.085	0.039	0.100		Taiwan	
5	0.022	0.470	0.830	0.033	0.004	0.110	18.050	0.130	0.045	0.150		Taiwan	
Mechanical Properties											Solution Annealed 1080°C Water Cooling		
No.	Y.S.(MPa)		T.S.(MPa)	Elongation %	Hardness HRB/AVE	Impact Test							
	0.2%	1%				(20°C) / Min. 60 J				(-100°C) / Min. 60 J			
						1	2	3	AVE.	1	2	3	AVE.
1	273		650	53	81								
2	279		682	49	83								
3	289		683	47	85								
4	247		676	40	81								
5	233		650	51	82								
YEYOU YIH STEEL CO., LTD.						Remarks:							
An ISO 9001:2015 certified company						1. Equivalent to QQST85D-A XING FIRM.							
An ISO 14001:2015 certified company						2. Mercury Free and bending test OK.							
EU PED 2014/68/EU Annex 1.4.3 certified						3. NO repair of plate by welding.							
AD2000/MQ/AN/2010 certified						4. Physical properties comply to the bracketed of ASTM A666/ASME SA289.							
CPR EN10028-4 material manufacture certified						5. Material meets the hardness requirement of NACE MR0175.							
DNV-GL ship building stainless steel manufacture certified						6. Country of Manufacture : Taiwan							
NO.2 YONG GONG 10TH ROAD, YONG AN DISTRICT, KAOHSIUNG CITY, TAIWAN 828, R.O.C.						7. Intergranular corrosion comply to ASTM A262-15A, E.							
TEL: 886-7-8225818 FAX: 886-7-8225808						8. ASME SA-240/2019							
Manager of Quality Assurance Department						9. Permitted variations in dimensions comply to ASTM A400-18/ASME SA-400-18.							
 Albert Lee Manager						10. DISCRETE MILL PLATE.							
						11. Chemical and physical properties comply to ASTM A178/18, ASME SA178/19, ASTM A-276/17, AISI 304/304L/304/304L/304L/304L							
We hereby certify the above statement to be true and correct in accordance with the material specification. This report cannot be perfectly reproduced.						We hereby certify that the material described above has been fabricated and that no reduction in properties.							

GATE

INTERNATIONAL INSPECTION

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Cr	Cr Error	Ni	Ni Error	Results
1	12/8/2022 9:31	System Check	53.79	cps	Final	System Check 1 of 2						Pass
2	12/8/2022 9:32	System Check	54.26	cps	Final	System Check 2 of 2						Pass
3	12/8/2022 9:33	General Metals	11.99	%	Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 1.04	1.079	0.046	0.162	0.046	Pass
4	12/8/2022 9:33	General Metals	12.28	%	Final	Job# 237-1 12" 240 (1 of 2)	SS-316 : 1.38	16.83	0.162	9.924	0.201	Pass
5	12/8/2022 9:34	General Metals	13	%	Final	Job# 237-1 12" 240 (2 of 2)	SS-316 : 1.00	16.96	0.155	9.964	0.193	Pass
6	12/8/2022 9:35	General Metals	13.05	%	Final	Job# 212-1 16" UNI (1 of 1)	17-4 PH : 1.17	15.23	0.145	4.046	0.135	Pass
7	12/8/2022 9:36	General Metals	12.88	%	Final	Job# 211-1 28" DS (1 of 2)	SS-304 : 0.23	18.16	0.159	7.898	0.176	Pass
8	12/8/2022 9:38	General Metals	12.98	%	Final	Job# 211-1 28" DS (2 of 2)	SS-304 : 0.51	18.13	0.157	7.944	0.174	Pass
9	12/8/2022 9:39	General Metals	13.19	%	Final	Job# 217-1 24" UNI (1 of 1)	17-4 PH : 1.59	15.66	0.147	4.109	0.135	Pass
S/N 222401-1 11	12/8/2022 9:41	General Metals	11.03	%	Final	Job# 240-1 10" UNI (1 of 1)	SS-304 : 0.78	18.35	0.16	7.872	0.177	Pass
12	12/8/2022 9:42	General Metals	12.75	%	Final	Job# 246 10" UNI (1 of 1)	SS-304 : 0.70	17.94	0.158	7.972	0.177	Pass
13	12/8/2022 9:44	General Metals	12.81	%	Final	Job# 240-2 16" UNI (1 of 2)	SS-304 : 1.45	18.18	0.158	7.928	0.175	Pass
14	12/8/2022 9:47	General Metals	13.2	%	Final	Job# 240-2 16" UNI (2 of 2)	SS-304 : 0.63	18.11	0.158	7.961	0.175	Pass
15	12/8/2022 9:51	General Metals	12.88	%	Final	Job# 232-1 6" UNI (1 of 1)	SS-304 : 0.00	18.11	0.162	7.99	0.18	Pass
16	12/8/2022 9:52	General Metals	12.76	%	Final	Job# 213-1 28" DS (1 of 1)	SS-304 : 0.02	18.1	0.16	8.16	0.179	Pass
17	12/8/2022 9:52	General Metals	11.64	%	Final	Job# 251-1 26" DS (1 of 2)	SS-304 : 1.34	18.31	0.173	8.414	0.195	Pass
18	12/8/2022 9:54	General Metals	12.81	%	Final	Job# 251-1 26" DS (2 of 2)	SS-304 : 0.00	18.32	0.161	8.126	0.179	Pass
19	12/8/2022 9:56	General Metals	11.85	%	Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	1.103	0.046	0.14	0.043	Pass

304L Composition Range (ASME Sec.II)

Chromium (Cr): 18.0 - 20.0

Nickel (Ni): 8.0 - 13.0

17-4PH Composition Range (ASME Sec.II)

Chromium (Cr): 15.0 - 17.5

Nickel (Ni): 3.0 - 5.0

Technician: Daniel C Rosian 12/8/2022

S. C. C.

ARMI MBH

ANALYTICAL LTD

ISO Certified - 9001 - 17025 - 17043 - 17034

Certificate of Analysis

IARM 35NN

Low Alloy Steel / F11 / 1%Cr ½Mo / UNS K11572

Certified Reference Material

Values listed in wt.% with estimated uncertainties

Al	0.0134 ± 0.0005	As	0.0047 ± 0.0002	B	0.0003 ± 0.0001	Ca	0.0010 ± 0.0001
Co	0.0089 ± 0.0002	Cr	1.086 ± 0.001	Cu	0.174 ± 0.001	Fe*	97.22 ± 0.01
Mn	0.331 ± 0.001	Mo	0.478 ± 0.002	Nb	0.0017 ± 0.0001	Ni	0.125 ± 0.001
P	0.0063 ± 0.0001	Pb	0.0022 ± 0.0001	S	0.0038 ± 0.0005	Sb	0.0025 ± 0.0001
Si	0.559 ± 0.004	Sn	0.0087 ± 0.0001	Ta	0.0012 ± 0.0001	Ti	0.0019 ± 0.0001
V	0.0056 ± 0.0001	W	0.0035 ± 0.0001				



*Iron has been calculated as a balance element and was not directly measured by WD-XRF

Description and Intended Use

This Certified Reference Material comes in the form of a solid metal disk approximately 3mm thick by 35mm diameter. The intended use of this certified reference material may include, but is not limited to, the calibration of instruments and the validation of analytical methods. Independent evaluation for the intended use of this material should be conducted by the user.

Instructions for Use

1. The test surface is on the opposite side of the labeled surface, which includes the material identification. The entire thickness of the unit is certified. However, the user is cautioned not to measure disks less than 2mm thick when using X-ray fluorescence spectrometry. Each packaged disk has been prepared by finishing the test surface using a lathe. The user must determine the correct surface preparation procedure for each analytical technique. The user is cautioned to use care when either resurfacing the disk or performing additional polishing, as these processes may contaminate the surface.
2. The material should be stored in a cool, dry location when not in use.

Analytical Reference Materials International • 276 Abby Road • Manchester, NH 03103
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IARM-35NN-F
8/30/2020 1/2



ph: (780) 416-9685 fax: (780) 416-9684
www.endurancevalve.com

INSTALLATION & MAINTENANCE

Valve: 150# MO/UNI

Flange Bolting: See bolt/torque chart

DESCRIPTION:

The FV-150 MO/UNI is a fabricated knife-gate valve with an O-Ring Seat and Metal-to-Metal back up seat, to seal the gate in the flow area. It is a unidirectional flow valve and needs to be installed with the flow arrows on the valve following the direction of the pipe line flow. Multiple rows of packing are used to seal the gate outside the flow area. The pressure rating of the FV-150 MO/UNI is 150# - 300 CWP (cold working pressure). The Manufacturer will provide test reports with shipment.

SHIPPING & STORAGE:

All valves are normally shipped in the "closed" position. Small valves (2" – 6") may be packaged in individual boxes. Larger valves and large quantities will be packaged on pallets, skids, or in boxes and will require a forklift, or appropriate machine, for moving. Storage should be a clean dry environment, such as a warehouse.

INSTALLATION:

Install the valve to the mating pipe flange using proper fastener size and length. Thread size will be provided with each valve. If fasteners are not included in the ordered shipment, customer/installer will need to obtain proper fasteners themselves and must measure the valve and flanges to ensure correct length. Studs and nuts should be used when possible to make fitting easier. Be careful not to bottom-out fasteners in the chest during installation as that area is usually a pressure boundary and can be adversely affected if stress is applied from fasteners. Washers should be used to help shorten the penetration of bolts in the chest holes when needed. (Reference Flange Installation Instructions)

Torque charts can be referenced for the mating flange fasteners in the installation process but will vary according to gasket type, size, and thickness used. Use the cross-torque pattern method for tightening the fasteners. Mating flanges must be parallel and true with each other and the valve. Do not use the valve to pull together or push apart the two mating pipes. After installation, open and close the valve to assure smooth operation.



ph: (780) 416-9683 fax: (780) 416-9681
www.endurancevalve.com

MAINTENANCE:

The only item requiring maintenance/adjustment on the knife-gate valve is the packing. After shipment and installation, the packing gland may require adjustment to stop any leaks, especially if the valve has been in storage for a long period of time. When adjusting the packing gland fasteners, it is best to move along both sides of the gland to ensure even adjustment. To stop a leak, normally just a small amount of tightening per fastener is required. Do not tighten fasteners more than is necessary to stop the leak.

Valve Size	Bolt Size	Torque FT. lbs.
2"-4"	5/8"-11 UNC	55 (+/-5)
6"-8"	3/4"-10 UNC	65 (+/-5)
10"-12"	7/8"-9 UNC	110 (+/-10)
14"-16"	1"-8 UNC	135 (+/-10)
18"-20"	1-1/8"-8 UNC	150 (+/-10)
24"-30"	1-1/4"-8 UNC	200 (+/-10)
32"-48"	1-1/2"-8 UNC	250 (+/-10)

Flange Bolting Instructions

Engineering



Isometric View

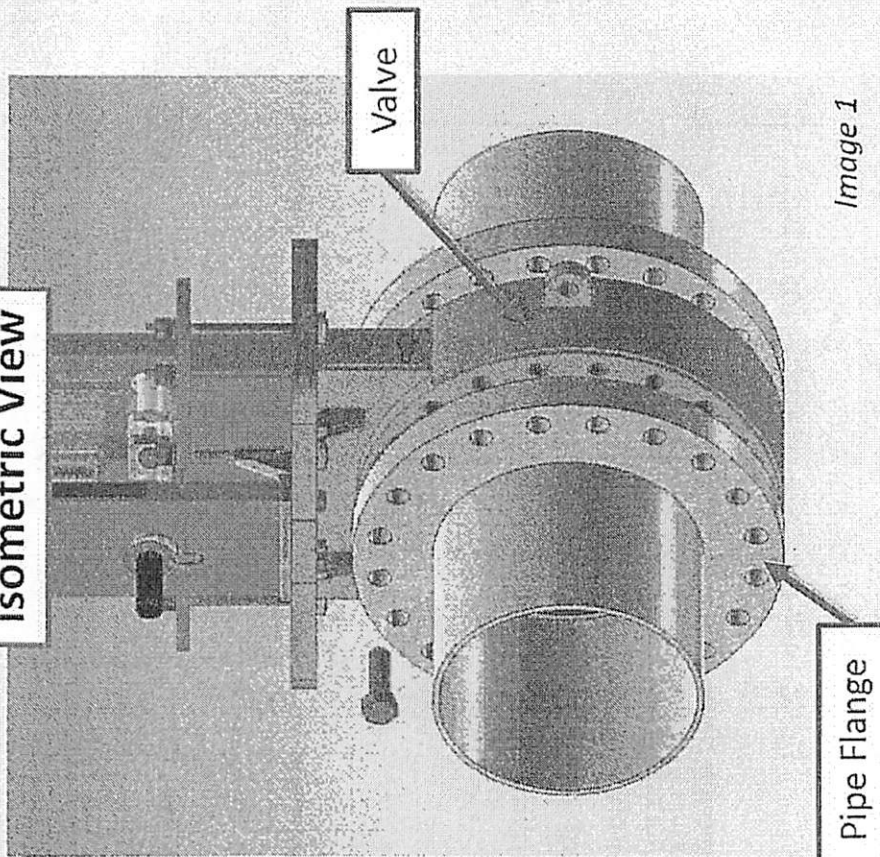


Image 1

Side View

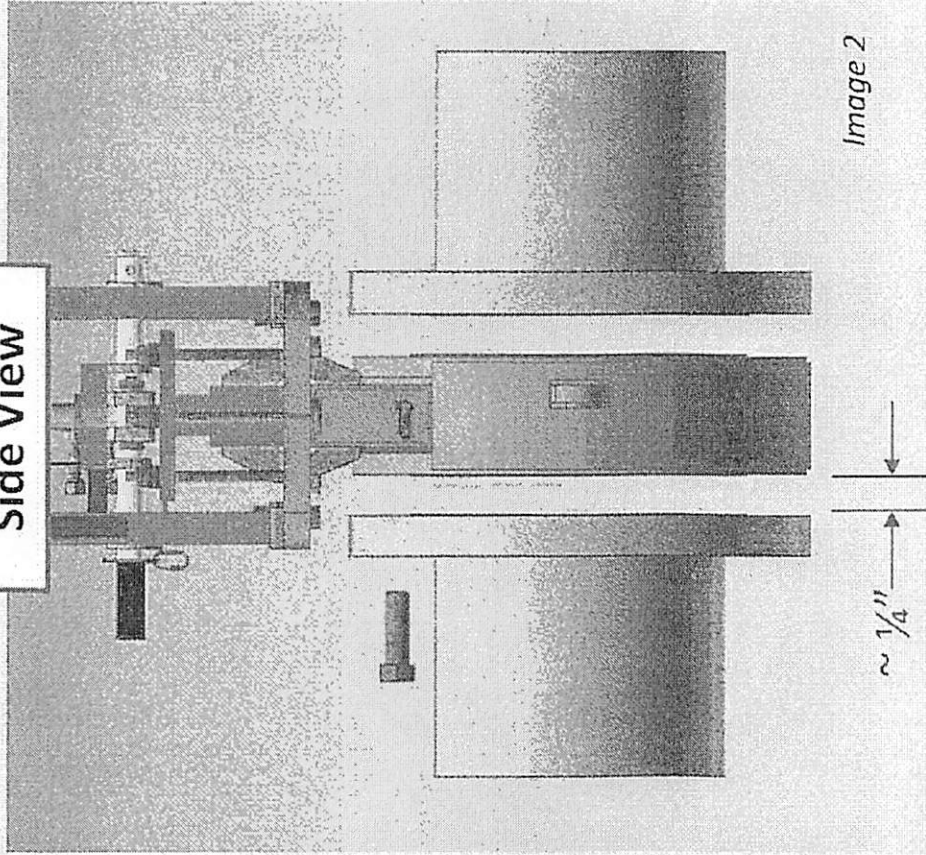


Image 2

- Position pipe mating flanges and valve into approximate, final location (ensuring gasket is also in place).
- Offset the faces of the valve and mating flange about 1/4 inch.
 - This allows the flanges to be adjusted and wiggle room for the bolts to line up properly.

Isometric View

- Insert bolt and screw it into the valve body only a few turns, then move on to next bolt.
 - Bolts should be inserted in a star-like pattern around the flange to avoid pulling flange too far in one direction.
 - Image 3 shows numbers next to the bolts that indicate example insertion order.
- If studs are being used, they should not be inserted into the valve prior to positioning it inline with the pipe mating flange.
 - This can make the installation process more difficult since bolt holes can become slightly askew during the manufacturing process.

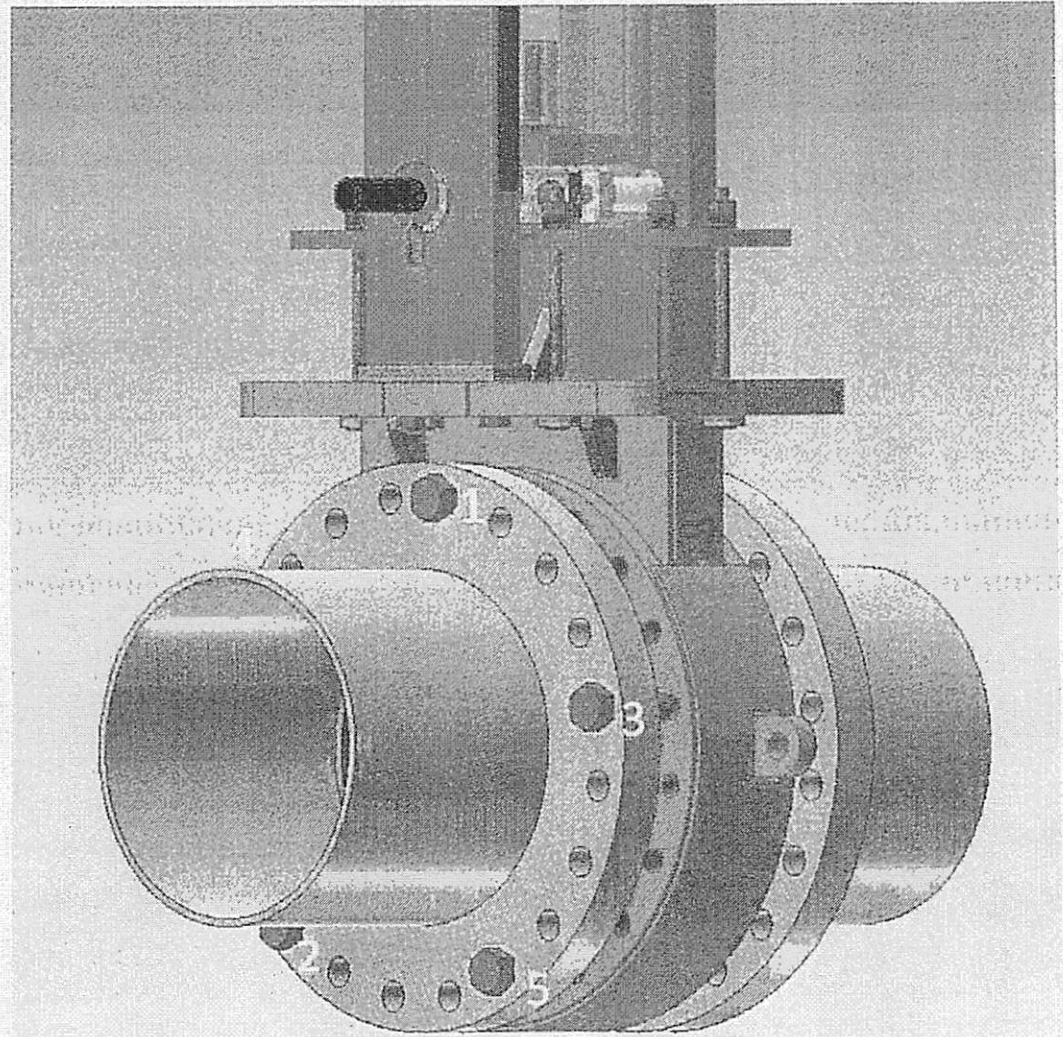


Image 3

Isometric Views

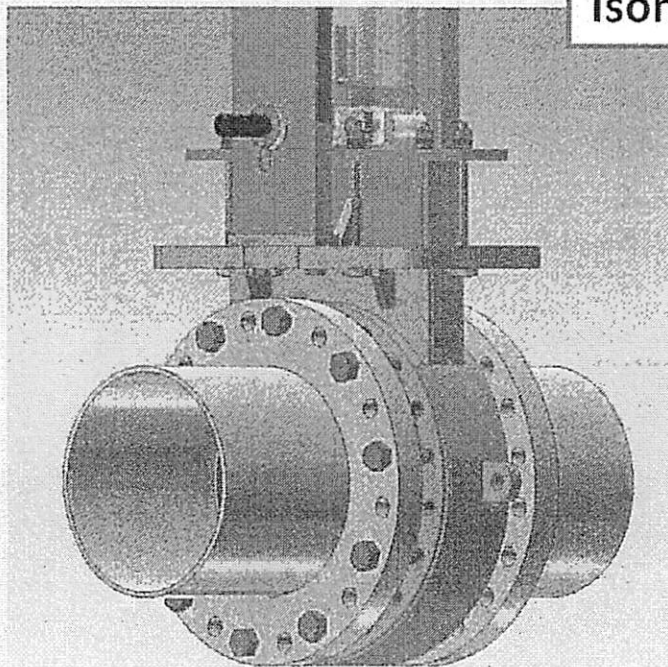


Image 4

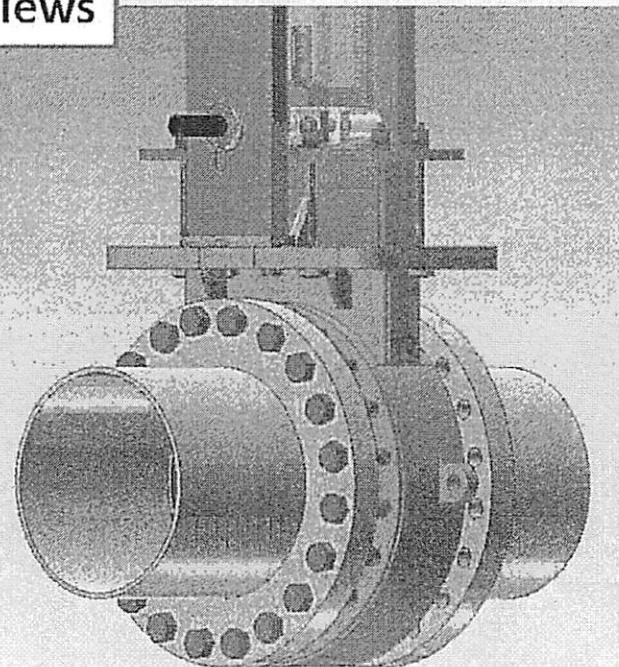


Image 5

- Continue inserting all remaining bolts in the same type of insertion pattern (ref. Image 3), remembering to thread them in only a few turns keeping the flanges loose and free to be adjusted.

Side View

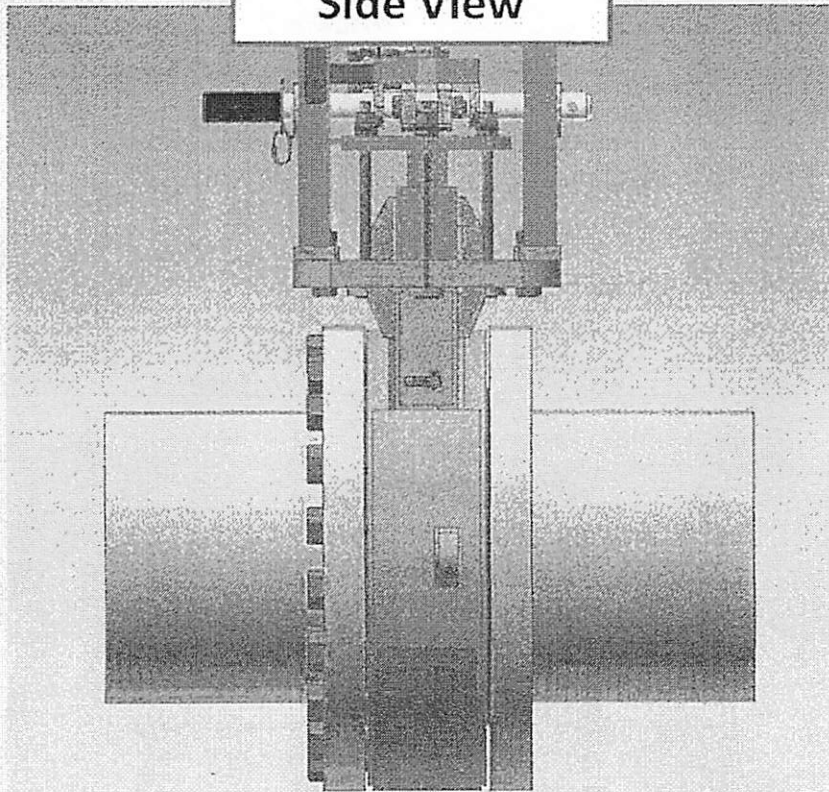


Image 6

Front View

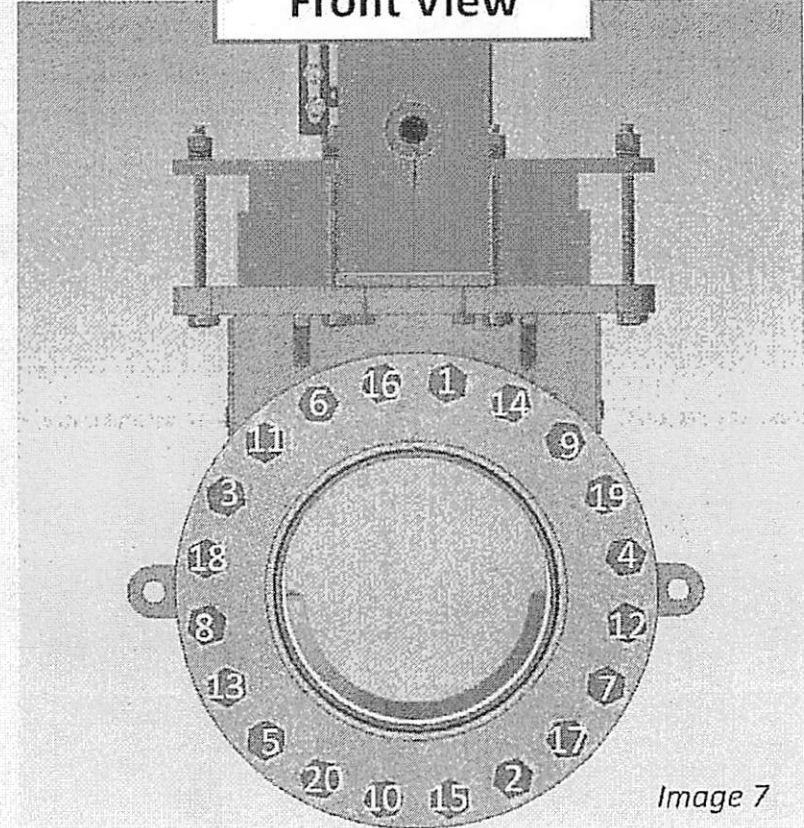


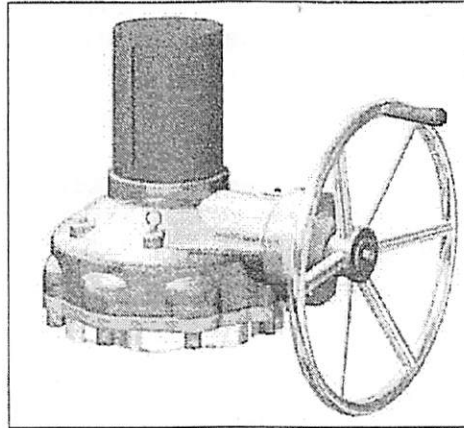
Image 7

After all bolts are inserted, they can then be tightened to snug the mating flange up with the valve body.

- Bolt-tightening pattern should follow a similar procedure as the initial insertion pattern.
 - Image 7 shows an example of the bolt-tightening order.

*Torque specifications are not provided by Endurance Valve.

SAMBO INDUSTRIAL BEVEL GEAR OPERATORS



BEVEL GEAR BOX

* MATERIAL & FEATURE

1) MATERIAL

HOUSING	Ductile Iron or WCB
BASE	Ductile Iron or WCB
END CAP	Ductile Iron or WCB
PINION	SCM440
BEVEL GEAR	SCM4
DRIVE SLEEVE	A105
STEM CAP	A36
LOCK NUT	A105

2) FEATURE

We have two kinds of manual bevel gear operator type, one is bevel gear and the other is be helical gear. The latter was bevel-spur gear. It has been changed helical gear, because of so rotating among the spur gears.

GENERAL TYPE ----- SB-VS10 SB-V8 (USED BEVEL GEAR)

SUPPORT BOX TYPE-1 - SB-V3-1 SB-V8-1 (USED BEVEL- HELICAL GEAR)

SUPPORT BOX TYPE-2 - SBV2-20 SBV8-20 (USED BEVEL- BEVEL GEAR)

SUPPORT BOX TYPE-3 - SBV2-20-1 SBV8-20-1 (USED BEVEL- BEVEL-BEVEL GEAR)

INSTALLATION

1) Mounting to valve

If the bevel gear operator has been supplied with a hand-wheel, it is recommended that it is fitted to the gearbox before mounting on the valves. About that, be careful the P.C. and tap size of gear box base.

2) Maintenance

Under normal operating conditions no maintenance is required for the bevel gear operator but should the valve be taken out of service for overhaul, the bevel gear operator baseplate may be removed and the grease changed using one of the following recommended lubricants.

Manufacturer : Yong Kang CO.,LTD

Name : Grease(GRANT SUPER GREASE)

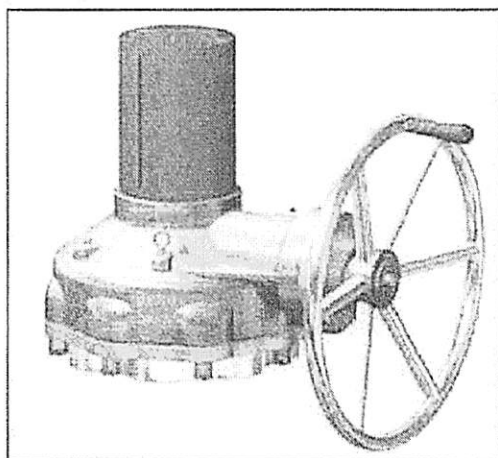
Temperature Range : -4°F (-20°C) +140°C

DEVICE OF OPERATION

1) **HAND WHEEL** : Hand-wheel can be located in quadrant, giving you good adaptability. You can install very easily, attach the wheel to the pinion, and a nut and screw.

2) **ACTUATOR** : If you would like to increase RPM, you may use an actuator.

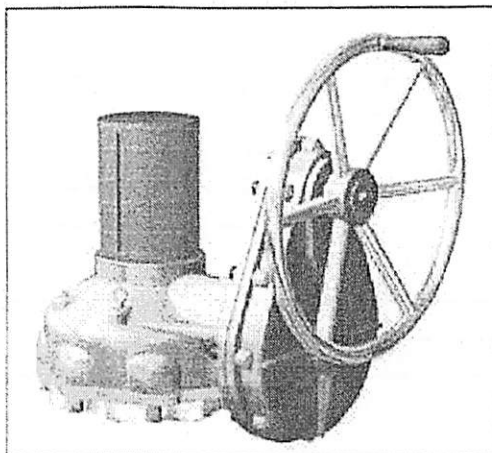
3) **CHAIN WHEEL** : Overhead or inaccessible valves, when equipped with this device may be conveniently and safely operated from the floor.



GENERAL TYPE-HORIZONTAL
TYPE-1 Stair

Specifications

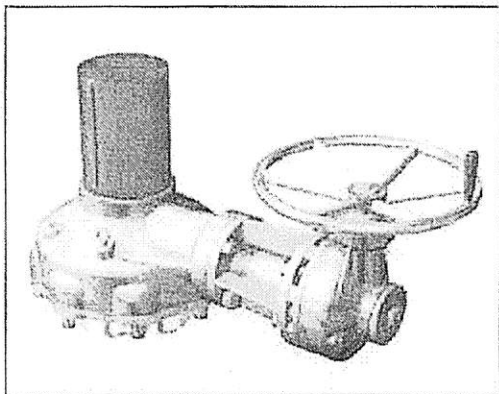
- SB-VS10~SB-VS20
- SB-V0~SB-V2
- SB-V3~SB-V5
- SB-V6~SB-V8



SUPPORT BOX TYPE HORIZONTAL
TYPE - 2 Stairs

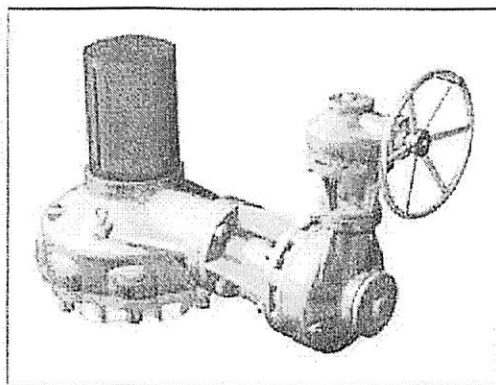
Specifications

- SB-V3-1~SB-V6-1
- SB-V7-1~SB-V8-1



SUPPORT BOX TYPE VERTICAL
TYPE - 2 Stairs

Specifications
- SBV2~20~SBV8~20



SUPPORT BOX TYPE HORIZZONTAL
TYPE - 3 Stairs

Specifications
SBV2~20-1~SBV8~20-1