



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
Model:	FV-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X
Ref Job #	13800 Item #2
P.O.:	P.O. 4503148039
Serial #'s	229552-1 229552-2

Tag #'s	Tag: 93SP-2141	Tag: 93SP-2141
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	CRN: 0C10259.2
Weight:	1,100 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:

13800 Item #2

Model Number:

FV-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-
WRFP-BG-FB-X

Serial #:

229552-1

229552-2

Customer PO

P.O. 4503148039

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

T Black

Regards,
Endurance Valve

CRN-0C10259.2

800^{LBS}

229552-1

16⁰⁰

Fabricast Valve Manufacturers ID: 2202955

FV-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X

P.O. 4503148039 / 3500007374

93SP-2141

13800

300^{PSI}

400°F

421643

A516Gr70

17.4^{SS}

PTFE

CRN-0C10259.2

800^{LBS}

229552-2

16⁰⁰

abricast Valve Manufacturers ID: 2202955

FV-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X

P.O. 4503148039 / 3500007374

93SP-2141

13800

300^{PSI}

400°F

421643

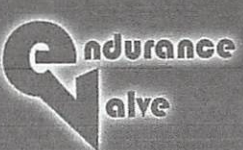
A516Gr70

17-4^{SS}

PTFE



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-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X				
Serial Number	229552-1	Ref. #	13800	Item #2	Size 16
Tag Number	Tag: 93SP-2141	Design Pressure Body PSI/CWP		300	
Wetted Parts	17.4ss	Flange Material	A516Gr70	Design Pressure Seat PSI/CWP 300	
Seat Type	Resilient ☒	Bi-Direct ☒	Metal ☐	Other ☐	
BODY TEST					
Using a calibrated pressure tester which is re-calibrated every 360 days, Valve shall be hydrostatically pressure tested at 1.5 times the rated working pressure with no visible leakage through the body material allowed. (Leakage through the packing or gate seal shall not be cause for rejection)					
Test Pressure	450	PSI	Test Duration	10	Minutes
Results of Test	☒ PASS ☐ FAIL				
QC Inspector	Lymyn Alexander				Date 8-30-22
Source Inspector					Date
SEAT TEST					
Apply test pressure to the closed gate at 40PSI (low pressure seat test) and then 1.1. times the rated pressure (high pressure test). Test shall be performed in both flow directions if applicable. Standard acceptance criteria for metal seats are a maximum leakage rate of 40cc/min/NPS (MSS-SP-81) and .167cc/min/NPS (MSS-SP-61) measured at 40PSI. Acceptance criteria for resilient seats are drip tight from 0 PSI to required test pressure. After test, the valve seat is dried with compressed air and wiped down with a dry towel. Leakage will be captured using a measurable catch vessel. *Note - Class IV Leakage Rates are based off of 0.01% Capacity.					
Metal Seat Test	0	PSI	Leakage Side 1	N/A	Leakage Side 2 N/A
Resilient Seat Test	330	PSI	Leakage Side 1	0	Leakage Side 2 0
Test Duration	Side 1	2	Minutes	Side 2	2 Minutes
Test Results	Side 1	☒ PASS ☐ FAIL	Permissible Leakage		
Test Results	Side 2	☒ PASS ☐ FAIL	0.000		
Tester	Nicholas Hicks - Nicholas Hicks				Date 8-30-22
Source Inspector					Date
OPERATIONAL TEST					
Open and close the valve 10 full cycles. The valve should open and close smoothly without binding. After the operational test visually inspect the body, gate, stem and operator to ensure it meets Customer and Factory specifications. The valve shall be considered acceptable if it operates smoothly through the entire cycle and meets Factory Quality Requirements.					
(For additional functional testing use form QF-82-05-1 to document results.)					
QC Inspector	Nicholas Hicks				Date 8-30-22
Source Inspector					Date



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-16-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X				
Serial Number	229552-2	Ref. #	13800	Item #2	Size 16
Tag Number	Tag: 93SP-2141	Design Pressure Body PSI/CWP		300	
Wetted Parts	17.4ss	Flange Material	A516Gr70	Design Pressure Seat PSI/CWP 300	
Seat Type	Resilient ☒	Bi-Direct ☒	Metal ☐	Other ☐	
BODY TEST					
Using a calibrated pressure tester which is re-calibrated every 360 days, Valve shall be hydrostatically pressure tested at 1.5 times the rated working pressure with no visible leakage through the body material allowed. (Leakage through the packing or gate seal shall not be cause for rejection)					
Test Pressure	450	PSI	Test Duration	10	Minutes
Results of Test	☒ PASS ☐ FAIL				
QC Inspector	Lynnan Alexander Syon			Date	8-30-22
Source Inspector				Date	
SEAT TEST					
Apply test pressure to the closed gate at 40PSI (low pressure seat test) and then 1.1. times the rated pressure (high pressure test). Test shall be performed in both flow directions if applicable. Standard acceptance criteria for metal seats are a maximum leakage rate of 40cc/min/NPS (MSS-SP-81) and .167cc/min/NPS (MSS-SP-61) measured at 40PSI. Acceptance criteria for resilient seats are drip tight from 0 PSI to required test pressure. After test, the valve seat is dried with compressed air and wiped down with a dry towel. Leakage will be captured using a measurable catch vessel. *Note - Class IV Leakage Rates are based off of 0.01% Capacity.					
Metal Seat Test	0	PSI	Leakage Side 1	N/A	Leakage Side 2 N/A
Resilient Seat Test	330	PSI	Leakage Side 1	0	Leakage Side 2 0
Test Duration	Side 1	2	Minutes	Side 2	2 Minutes
Test Results	Side 1	☒ PASS ☐ FAIL	Permissible Leakage		
Test Results	Side 2	☒ PASS ☐ FAIL	☐ Not Applicable	0.000	
Tester	Nicholas Hicks - Nicholas Stob			Date	8-30-22
Source Inspector				Date	
OPERATIONAL TEST					
Open and close the valve 10 full cycles. The valve should open and close smoothly without binding. After the operational test visually inspect the body, gate, stem and operator to ensure it meets Customer and Factory specifications. The valve shall be considered acceptable if it operates smoothly through the entire cycle and meets Factory Quality Requirements.					
(For additional functional testing use form QF-82-05-1 to document results.)					
QC Inspector	Lynnan Alexander Syon			Date	8-30-22
Source Inspector				Date	

1199 472

539199



EVRAZ INC. NA

P.O. Box 1670, Regina, Saskatchewan, Canada S4P 3C7

Test Certificate

Form TCI: Revision 2: Date 13 Feb 2017

Customer:
VANSTEEL LTD
330-220 4TH STREET
LETHBRIDGE
AB T1A4J7

Customer P.O. No.: CTL-811

Mill Order No.: 41-258341-17 Shipping Manifest: RT121493

Product Description: ASIM A1011 (Q4A)CS TYPE B
MODIFIED SUM OF CU+NI+CR+MO = 1.30% MAX

Ship Date: 10 Jun 21
Cert Date: 10 Jun 21
Cert No: 071105542
(Page 1 of 1)

Size (Min): 0.112 X 60.00 X COIL (IN)

Tested Pieces				Tensiles				Charpy Impact Tests								
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA Elong % Tst	Average Hardness	Abs. Energy(FTLB)	% Shear	Tst Imp	Tst Dlr	Tst Siz (mm)	BDWTT Tmp %Str			
Chemical Analysis																
Heat Id	C	Mn	P	S	SI	Tot Al	Cu	NI	Cr	Mo	Co	V	Ti	B	N	Melted In
539199	.05	.29	.014	.010	.27	.007	.40	.12	.17	.04	.001	.001	.001	.0002	.0084	CAN

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT
THIS PRODUCT IS CERTIFIED TO CHEMISTRY ONLY
BALANCE OF CHEMISTRY IS IRON (FE)
MELTED AND POURED IN CANADA
539199 A0061 PCES: 1, WGT: 41980

Port Liners

Customer Name

Customer PO#

Shipper No

Heat Number

VARSTEEL LTD. - DELTA (INTERC) DE-1069592

16498

539199

(u) Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

Warehouse Transfer

From Delta Varsteel to Corporate Ce

Transfer No

233606

Heat Number

540798

Customer Name

VARSTEEL LTD. - DELTA (INTERC)

Customer PO#

DE-1072731

Shipper No

17288

Heat Number

540798

Test Certificate

Form TCI: Revision 2: Date 13 Feb 2017

P.O. Box 1670, Regina, Saskatchewan, Canada S4P 3C7

Shipping Manifest : RT127215

Customer P.O. No.: DCTL-863

CLIN. Data: 04 Nov 77	Cont No: 071111477
-----------------------	--------------------

Product Description: CSA G40.21(2018)44/300/38W:ASTM A36(19)

VARSTEEL LTD.
330-220 4TH STREET

LETHBRIDGE
AB T1J4J7

Size (Min): 0.178 X 60.00 X COIL (IN)

Tested Pieces		Tensiles										Charpy Impact Tests									
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong 2in	%Tst 8in Dir	Average Hardness	Abs. Energy(FTLb)	% Shear	Tst Temp	Tst Dir	Tst Siz (mm)	BDWTT Temp	% Str					
540798	C0005	0.308 X 60.00	L 56000	70000			38	T													
	C0006	0.183 X 60.00	L 63000	73000			35	T													

Heat Id		Chemical Analysis										Melted in				
C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	CEV	CAN
540798	.05	.84	.008	.005	.15	.053	.31	.19	.16	.06	.011	.003	.022	.0002	.0068	.27

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED

MERCURY IS NOT A METALLOGICAL COMPONENT DURING THE MANUFACTURE OF THIS PRODUCT

HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY.

COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY.

BALANCE OF CHEMISTRY IS IRON (FE)

MELTED AND POURED IN CANADA

540798 C0009 PCES: 1, WGT: 46780

PCES: 1, WGT:

0000

540798

Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL
WAS TESTED IN ACCORDANCE WITH THE
APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

3/8 A36

541093

**EVRAZ**

EVRAZ INC. NA

P.O. Box 1670, Regina, Saskatchewan, Canada S4P 3C7

Test Certificate

Form TC1: Revision 2: Date 13 Feb 2017

Customer: VARSTEEL LTD 330-220 4TH STREET LETHBRIDGE AB T1J4J7		Customer P.O. No.: CTL-870		Mill Order No.: 41-258861-12		Shipping Manifest : RT128225															
		Product Description: CSA G40.21(2018)44/300/38W; ASTM A36(19) A709(01A)36/ASME SA36(01ED) CSA G40.21(2004)260W				Ship Date: 30 Nov 21 Cert Date: 30 Nov 21		Cert No: 071112181 (Page 1 of 1)													
		Size (Min): 0.365 X 60.00 X COIL (IN)																			
Tested Pieces			Tensiles				Charpy Impact Tests														
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong % 2in 8in	Tst Dir	Average Hardness	Abs. Energy (FTLB) 1 2 3 Avg				% Shear 1 2 3 Avg				Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tst % Shr
Heat Id: 541093 C: .04 Mn: .60 P: .008 S: .010 Si: .14 Tot Al: .046 Cu: .43 Ni: .13 Cr: .09 Mo: .03 Cb: .022 V: .001 Ti: .000 B: .0002 N: .0081 MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY. COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY. BALANCE OF CHEMISTRY IS IRON (FE) MELTED AND POURED IN CANADA 541093 B0275 PCES: 1, WGT: 42360																					
Stuffer Sides																					
(u) Cust Practice:										WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH THE APPROPRIATE SPECIFICATION											
										Approved By: <u>Kendal Dunnett</u> Quality Representative											

Heat Number

541093

Shipper No

17351

Customer PO#

VARSTEEL LTD. - DELTA (INTERC) DE-1072988

$\frac{1}{2} \frac{1}{3} \frac{2}{3} \frac{1}{4}$

EVRAZ INC. NA

P.O. Box 1670, Regina, Saskatchewan, Canada S4P 3C7

Form TCI: Revision 2: Date 13 Feb 2017

Test Certificate

Customer:

VARSTEEL LTD
330-220 4TH STREET

LETHBRIDGE
AB T1J4J7

Customer P.O. No.: CTL-867

Product Description: CSA G40.21(2018)44/300/38W-ASTM A36(19)
A709(01A)36/ASME SA36(01ED)
CSA G40.21(2004)260W

Shp Date: 12 Oct 21	Cert No: 071110649
Cert Date: 12 Oct 21	(Page 1 of 1)

Cert No: 071110649
(Page 1 of 1)

Size (Min): 0.490 X 60.00 X COIL (IN)

Tested Pieces			Tensiles				Charpy Impact Tests									
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (PSI)	UTS (PSI)	%RA	Elong %	Tst 2in 8in Dir	Average Hardness	Abs. Energy(FTLb)	% Shear	Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp	%Sur
										1 2 3 Avg	1 2 3 Avg					

Chemical Analysis															Melting	
Heat	C	Mn	P	S	Si	Total	Cu	Ni	Cr	Mo	Co	V	Ti	B	N	In
421037	.06	.54	.012	.002	.17	.048	.26	.08	.09	.02	.023	.001	.001	.0001	.0082	CAN

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT			
HOT-ROLLED COIL INTENDED FOR CONVERSION TO GRADE. CERTIFIED TO CHEMISTRY ONLY.			
COIL END PHYSICAL TEST RESULTS, IF REPORTED, ARE FOR INFORMATION ONLY.			
BALANCE OF CHEMISTRY IS IRON (FE)			
HEATED AND POUNDED IN CANADA			
421037	A0042	PCES: 1, WGT: 42400	421037 A0043

HEATED AND Poured IN CANADA			
421037	A0042	PCES: 1, MGT: 42400	421037
			A0043
			PCES: 1, MGT: 425600

Packing Box Sides

(11) Cust Practice:

WE HEREBY CERTIFY THAT THIS MATERIAL
WAS TESTED IN ACCORDANCE WITH THE
APPROPRIATE SPECIFICATION

Approved By: Kendal Dunnett
Quality Representative

**Nut Retainers
Stuffer Ends**

TEST REPORT

IMR Report Number 202112606B

SUMMARY

One sample was received for mechanical testing.

The sample meets the specified tensile requirements for plates.

November 29, 2021

Rem Steel Sales, Inc
9109 N Wilbur
Portland, OR 97217

ROOM TEMPERATURE TENSILE TEST

Laboratory Number	Tensile Strength (ksi)	Yield Point (ksi)	Elongation in 2" (%)	Orig. Gauge Width (in.)
2112606-2FTT	90.5	70.0	30	0.504
ASTM A572-21 ^{e1} , Gr. 50 Req. (Min.)	65	50	19	
ASTM A709-18, Gr. 50 Req. (Min.)	65	50	19	

PO Number
7120

Date Received
November 18, 2021

Material
5/8" Plate Coupon

Material Identity
Heat# A1J022

Specification(s)
ASTM A572-21^{e1}, Gr. 50;
and ASTM A709-18, Gr. 50

Yield point determined by 0.5% extension method
Direction = Transverse
Method(s): ASTM A370-20 and ASTM A6-19



Reviewed by

Elwin Aragorn

Elwin Aragorn
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

CONSIGNEE:

REM STEEL SALES INC.

9109 N WILBUR

DATE: 23 Oct 2021

BILL OF LADING NO.: MR447190

41-656998 41-656998 41-656998

41-656998 41-656998 41-656998

MILL ORDER NO.(s)

41-656998 41-656998

PORTLAND, OR 97217

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					B1J594 B16				
0.17	0.88	.0000	0.006	0.04	0.32	0.31	0.23	0.013	0.003	0.003	0.001	0.06	0.028
0.000 X 0 X				SECONDS US					B1I609 D26				
0.16	0.81	.0001	0.006	0.04	0.28	0.11	0.13	0.010	0.006	0.003	0.001	0.03	0.035
0.000 X 0 X				SECONDS US					A1H043 D03				
0.16	1.20	.0001	0.006	0.05	0.41	0.22	0.17	0.018	0.003	0.069	0.029	0.03	0.027
0.000 X 0 X				SECONDS US					A1H043 D04				
0.16	1.20	.0001	0.006	0.05	0.41	0.22	0.17	0.018	0.003	0.069	0.029	0.03	0.027
0.000 X 0 X				SECONDS US					A1H043 D04				
0.16	1.20	.0001	0.006	0.05	0.41	0.22	0.17	0.018	0.003	0.069	0.029	0.03	0.027
0.000 X 0 X				SECONDS US					A1H043 D03				
0.16	1.20	.0001	0.006	0.05	0.41	0.22	0.17	0.018	0.003	0.069	0.029	0.03	0.027
0.000 X 0 X				SECONDS US					B1J507 B41				
0.16	1.05	.0002	0.009	0.18	0.36	0.26	0.41	0.009	0.002	0.052	0.028	0.04	0.035
0.000 X 0 X				SECONDS US					A1J022 B17				
0.16	1.08	.0002	0.008	0.18	0.37	0.27	0.42	0.012	0.001	0.050	0.029	0.03	0.039

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

Shipping

Export Declaration Exempt: NOEEI 30.36



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

REPORT OF CHEMICAL/PHYSICAL TESTS



BRIDGE CITY STEEL
3865 NW ST HELENS RD
PORTLAND, OR 97210
USA

BRIDGE CITY STEEL
3865 NW ST HELENS RD
PORTLAND, OR 97210
USA

CERTIFICATE NO.	DATE	PAGE
1809314	Jan 24, 2022	1
MIL ORDER NO.	DATE	
372904		
CUSTOMER ORDER NO.		
227314		
JOB/REL. NO.		
SHIPPING NO.	DATE	
1809314	01/24/2022	

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
EOS CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-18
GRADE 36 FOR LASER QUALITY APPLICATIONS NO WELD REPAIR. LASER QUALITY. KILLED
FINE GRAIN PRACTICE. AIM .03 SI, .19 C.

CARRIER
GREEN TRANSFER
CAR/TRUCK NO.
28

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	1.2500 X 96.000ME X 240.000									
	2 PCS 16336 LBS	RS5967		474	725	28				
2	0.7500 X 96.000ME X 240.000									
	4 PCS 19604 LBS	RS5173		625	800	23				
				466	720	38				
3	1.0000 X 96.000ME X 240.000									
	3 PCS 19602 LBS	RS5173		485	735	34				
	9 PCS 55542 LBS TOTALS									

Gussets
Gland Flange
Lifter Sides
Lifter Top
Yoke Top

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	Cu	NI	V	CB	AI	Cr	Mo	TI	B	N	Ca	CE	Max Min Grain Size
RS5967	.18	.91	.012	.003	.03	.32	.11	.003	.001	.033	.11	.03						
RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02						
RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02						
HEATS INDICATED WITH (1) WERE MELTED & POURED IN CANADA. HEATS INDICATED WITH (+) WERE ROLLED IN THE USA.																		

END OF REPORT

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

By

Quality Systems Coordinator

John J. B. B.

REPORT OF CHEMICAL/PHYSICAL TESTS



BRIDGE CITY STEEL
3865 NW ST HELENS RD
PORTLAND, OR 97210
USA

BRIDGE CITY STEEL
3865 NW ST HELENS RD
PORTLAND, OR 97210
USA

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
EOS CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-18
GRADE 36 FOR LASER QUALITY APPLICATIONS NO WELD REPAIR. LASER QUALITY. KILLED
FINE GRAIN PRACTICE. AIM .03 SI, .19 C.

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	1.2500 X 96.000ME X 240.000 2 PCS 16336 LBS	RS5967		474	725	28				
2	0.7500 X 96.000ME X 240.000 4 PCS 19604 LBS	RS5173		625	800	23				
3	1.0000 X 96.000ME X 240.000 3 PCS 19602 LBS	RS5173		466	720	38				
	9 PCS 55542 LBS TOTALS			485	735	34				

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	Cu	NI	V	CB	AI	Cr	MO	TI	B	N	CA	CE	Weld Brn Green Side
RS5967	.18	.91	.012	.003	.03	.32	.11	.003	.001	.033	.11	.03						
RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02						
RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02						

HEATS INDICATED WITH (+) WERE MELTED & POURED IN CANADA.
HEATS INDICATED WITH (+) WERE ROLLED IN THE USA.

Gussets
Gland Flange
Lifter Sides
Lifter Top
Yoke Top

END OF REPORT

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

By

Quality Systems Coordinator

CERTIFICATE NO.	DATE	PAGE
1809314	Jan 24, 2022	1
MILL ORDER NO.	DATE	
372904		
CUSTOMER ORDER NO.		
227314		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1809314	01/24/2022	
CARRIER		
GREEN TRANSFER		
CART/BUCK NO.		
28		

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1809314	Jan 24, 2022	1
MILL ORDER NO.	DATE	
372904		
CUSTOMER ORDER NO.		
227314		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1809314	01/24/2022	
CARRIER		
GREEN TRANSFER		
CAR/TRUCK NO.		
28		

	SOLD TO	BRIDGE CITY STEEL 3865 NW ST HELENS RD PORTLAND, OR 97210 USA	BRIDGE CITY STEEL 3865 NW ST HELENS RD PORTLAND, OR 97210 USA

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
EOS CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-18
GRADE 36 FOR LASER QUALITY APPLICATIONS NO WELD REPAIR. LASER QUALITY. KILLED
FINE GRAIN PRACTICE. AIM .03 SI, .19 C.

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	1.2500 X 96.000ME X 240.000 2 PCS 16336 LBS	+! RS5967		474	725	28				
2	0.7500 X 96.000ME X 240.000 4 PCS 19604 LBS	+! RS5173		625 466	800 720	23 38				
3	1.0000 X 96.000ME X 240.000 3 PCS 19602 LBS	+! RS5173		485	735	34				
	9 PCS 55542 LBS TOTALS									

Gussets
Gland Flange
Lifter Sides
Lifter Top
Yoke Top

CHEMICAL ANALYSIS

	HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Co	Al	Cr	Mo	Ti	B	N	Ca		CE	McQuaid Ehn Grain Size
+!	RS5967	.18	.91	.012	.003	.03	.32	.11	.003	.001	.033	.11	.03							
+!	RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02							
+!	RS5173	.18	.87	.013	.001	.06	.33	.13	.003	.001	.054	.12	.02							

HEATS INDICATED WITH (!) WERE MELTED & POURED IN CANADA.
HEATS INDICATED WITH (+) WERE ROLLED IN THE USA.

..... END OF REPORT

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

Quality Systems Coordinator

Gussets

TEST REPORT

IMR Report Number 202111333D

SUMMARY

One sample was received for mechanical testing.

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

October 21, 2021

S. _____
7
Vendor: _____

ROOM TEMPERATURE TENSILE TEST

PO Number
1052

Date Received
October 13, 2021

Material
1.25" Thick Steel Plate

Material Identity
Heat# B1H804

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

Laboratory Number	Tensile Strength (ksi)	Yield Point (ksi)	Elongation in 4D (%)	Orig. Gauge Dia. (in.)
2111333-4RTT	91.0	71.5	25	0.507
Specification Req. (Min.)	65	50	19	

Yield point determined by 0.5% extension method
Direction = Transverse @ 1/4 Thick
Method(s): ASTM A370-20 and ASTM A6-19



Reviewed by

Adam Shaney, CWI
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).

Handwritten notes: 11/4 A572-50, B1H804, 1052

PMI

STATEMENT OF ANALYSIS

Page 3 Of 3

CONSIGNEE:

DATE: 27 Sep 2021

BILL OF LADING NO.: MR445036

MILL ORDER NO.(s) 41-655074 41-655074

POSDOVER, 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					B1H803 D23				
0.17	1.23	.0002	0.008	0.18	0.36	0.20	0.16	0.011	0.004	0.039	0.003	0.04	0.030
0.000 X 0 X				SECONDS US					B1H803 D23				
0.17	1.23	.0002	0.008	0.18	0.36	0.20	0.16	0.011	0.004	0.039	0.003	0.04	0.030
0.000 X 0 X				SECONDS US					B1H803 D23				
0.17	1.23	.0002	0.008	0.18	0.36	0.20	0.16	0.011	0.004	0.039	0.003	0.04	0.030
0.000 X 0 X				SECONDS US					B1H803 D23				
0.17	1.23	.0002	0.008	0.18	0.36	0.20	0.16	0.011	0.004	0.039	0.003	0.04	0.030
0.000 X 0 X				SECONDS US					B1H803 D23				
0.17	1.23	.0002	0.008	0.18	0.36	0.20	0.16	0.011	0.004	0.039	0.003	0.04	0.030
0.000 X 0 X				SECONDS US					B1H804 D36				
0.16	1.18	.0000	0.007	0.04	0.39	0.19	0.16	0.013	0.004	0.068	0.030	0.04	0.030
0.000 X 0 X				SECONDS US					B1H804 D35				
0.16	1.18	.0000	0.007	0.04	0.39	0.19	0.16	0.013	0.004	0.068	0.030	0.04	0.030
0.000 X 0 X				SECONDS US					B1I522 A07				
0.05	1.43	.0000	0.014	0.04	0.27	0.07	0.15	0.011	0.004	0.005	0.045	0.02	0.029

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

Shipping

Export Declaration Exempt: NOEEI 30.36

Attn:

EVRAZ

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

ISO 9001

REGISTERED

U.S. PAT. PEND.

SOLD TO

US

NOTE 36

42

USA

HEAT NO. 36

YIELD TENSILE % ELONG
PSI X 100 PSI X 100 8" 2"

% RA

HARDNESS
HRC

BEND
TEST

IMPACTS

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO. 1710634
DATE Jan 13, 2020
PAGE 1

MILL ORDER NO. 347452
DATE
CUSTOMER ORDER NO. POR-6412
JOB REQ. NO.
SHIPPING NO. 1710634
DATE 01/13/2020
CARRIER GREEN TRANSFER
CAR/TRUCK NO. 745

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
CARBON STEEL PRESSURE VESSEL QUALITY PLATE ASTM A516-17 GRADE 70 ASME SA516
GRADE 70 2017. AS ROLLED KILLED FINE GRAIN NO WELD REPAIR. PRESSURE VESSEL
QUALITY. KILLED FINE GRAIN PRACTICE. NACE MR0175 P.2 ANNEX A (continued)

PHYSICAL PROPERTIES

DESCRIPTION

HEAT NO.

SLAB

YIELD TENSILE % ELONG
PSI X 100 PSI X 100 8" 2"

% RA

HARDNESS
HRC

BEND
TEST

IMPACTS

COMPLIANT. REPORT ALL RESIDUALS PERS SA20 ITEMS WITH (*) ALSO MEET ASTM/ASME
A516 GR65. ITEMS WITH (**) ALSO MEET ASTM/ASME A516 GR60. INSPECTION CERTIFICATE

3.1 EN10204 :2004 DIN 50049 3.1.B.

1 0.7500 X 96.0000 X 480.000

2 PCS 19602 LBS

2 PCS 19602 LBS

4 PCS 39204 LBS TOTALS

CHEMICAL ANALYSIS

HEAT NO.

C

Mn

P

S

Si

Cu

Ni

V

Cr

Mo

Ti

B

N

Ca

CE

ASME B16.34

N22783

20

1.34

.015

.005

.29

.01

.05

.027

.033

.02

.002

N22783

CB=

<0.005

Mo=

<0.005

B=

<0.0005

N22787

20

1.30

.015

.004

.31

.01

.05

.023

.034

.03

.002

N22787

CB=

<0.005

Mo=

<0.005

B=

<0.0005

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

..... END OF REPORT
I certify the above to be correct as contained in the records of EVRAZ INC. NA By Aaron Capps
Quality Coordinator

Joc No. 370380 Indexed 14Jan20 by 147sncn

16060312

1" AS16-24

PART NO.

Attn:

NUCOR
PLATE MILL GROUP
P.O. Box 279
Winston, NC 27886
(252) 356-3700

1505 River Rd
Cofield, NC 27922
(252) 356-3700

Mill Test Report
Page 7

Issuing Date : 09/09/2021
Vehicle No: NOKL 725223
Specification: 1.0000" x 96.000" x 480.000"
ASTM A516 70/65/60-17/ASME SA516-70/65/60 PQV 2019/2021
Normalized Plate NACE MR0175 Annex 2.1.2 (2016), MR0103 (2010)
Section 2.1.2 Compliant (2016) 13.1.1, 13.1.2 Vacuum Degassed

Load No.: 617828
Our Order No.: 191355/4
Ship To: RAIL SITE
Cust. Order No.: HOU-10202

Sold To: SI
SI Manufacturer: PA 19477

Marking :

Heat No	C	Mn	P	S	Si	Cu	NI	Gr	Mo	Al (wt)	V	Nb	Ti	N	Cu	B	Sn	Cu	Pcm
1606312	0.20	1.02	0.012	0.001	0.19	0.16	0.08	0.11	0.01	0.031	0.005	0.002	0.002	0.0063	0.0017	0.0001	0.005	0.41	0.27

Plate Setal No	Pieces	Tons	Dir.	Tensile Test			Heat Treat		
				Yield (psi)	Tensile (psi)	Elong. % in 2"	Norm (°F)	Time (min)	Temp (°F)
1606312-05	1	6.53	H-T	47,100	74,600	52.5	1650	41	

Plate Setal No	Pieces	Tons	Dir.	Absorbed Energy (FT-Lbs)			Charpy Impacts			Temp (°F)	Size
				(ft-lbs) 1	(ft-lbs) 2	(ft-lbs) 3	(ft-lbs) 1	(ft-lbs) 2	(ft-lbs) 3		
1606312-05	1	6.53	H-L	78.6	83.4	78.0	80.0	15		-50	10mm

Port Flanges (Body)
Top Flange
Yoke Pads

TEST COUPONS TAKEN FROM HEAT TREATED PLATE
Place frequency charpy:

Manufactured to fully killed fine grain practice by Electric Arc Furnace. Welding or weld repair was not performed on this material. Mercury has not been used in the direct manufacturing of this material. Produced as continuous cast discrete plate, unless otherwise noted in Specification. For Mexico shipment: Sales@nucor.com
Yield by 0.5%LL method unless otherwise specified. Ceq = C + (Mn/6) + ((Cr+Mo+V)/5) + ((Cu+Ni)/15)
Pcm = C + (Si/30) + (Mn/20) + (Cr/20) + (Ni/60) + (V/10) + (B/5)
Milled and Manufactured in the USA. ISO 9001:2015 certified. PED 2014/68/EU, 97/23/EC 7/2 Annex 1, Para. 4.3 Compliant API Q1-1051
DIN 5049 3.1, EN 10204 3.1 (2004) 3.1B (1993) DIN EN 10204 3.1 (2005) compliant, ABS QA-3824368

We hereby certify that the contents of this report are accurate and correct. All test results and operations performed by the material manufacturer are in compliance with the applicable specifications, including customer specifications.

T. A. Depierre, Metallurgical
2/10/2021 11:36:30 AM



運錫鋼鐵股份有限公司
YUEN CHANG STAINLESS STEEL CO., LTD.
Y C S S

Port Liners

檢驗證明書

高雄市前金區中正四路 235 號 13F
13F, No. 235 Jungjeng 4th Road, Chianjin
Chiu, Kaohsiung, Taiwan
TEL : 886-7-9695858 FAX : 886-7-9685768
https://www.yuenchang.com.tw

Certificate No. : 11006080006

MILL TEST / QUALITY CONTROL CERTIFICATES

列印日期 ISSUE DATE : 2021/06/08

客戶名稱 Customer	Central National Canada ULC 38 Ancon Road WoodBridge, Ontario L4H 2A9, Canada					Invoice NO. : QEP574/21 PI NO. : IN21062 PO NO. : OP6067961
商品描述 Desc. Of Goods	Prime Cold Rolled Stainless Steel Sheets, Slit Edge, AS PER ASTM A-240/ASME SA-240 ASTM A-480/ASME SA-480					
項目 Item	鋼捲編號 Coil No.	爐號 A Unique Heat Number	鋼種 Steel Grade	表面 Finish	產品尺寸 Thickness x Width x Length	淨重 Net Weight (KGS)
IE006	02S35247-021	YU195151	304/304L	2B	16GA x 60IN x 120IN	1,636
IE007	02S35247-022	YU195151	304/304L	2B	16GA x 60IN x 120IN	1,635
IE008	9Y774L01-020	9Y774	304/304L	2B	14GA x 60IN x 120IN	1,719
IE001	9Y400L04-016	9Y400	304/304L	2B	12GA x 60IN x 120IN	1,731
IE003	9Y400L04-028	9Y400	304/304L	2B	12GA x 60IN x 120IN	1,732
IE005	9Y400L04-029	9Y400	304/304L	2B	12GA x 60IN x 120IN	1,731
IE002	05S41947-019	YU495874	304/304L	2B	11GA x 60IN x 120IN	1,746
IE004	05S41947-024	YU495874	304/304L	2B	11GA x 60IN x 120IN	1,745

化學成份 Actual Mill Chemical										
Item	C	Si	Mn	P	S	Cr	Ni	Cu	N	Mo
IE006	0.0190	0.34	0.80	0.036	0.0030	18.18	8.05	0.46	0.0580	0.29
IE007	0.0190	0.34	0.80	0.036	0.0030	18.18	8.05	0.46	0.0580	0.29
IE008	0.0200	0.40	1.40	0.034	0.0020	18.09	8.02	0.05	0.0550	0.04
IE001	0.0270	0.40	1.24	0.032	0.0013	18.28	8.05	0.04	0.0680	0.04
IE003	0.0270	0.40	1.24	0.032	0.0013	18.28	8.05	0.04	0.0680	0.04
IE005	0.0270	0.40	1.24	0.032	0.0013	18.28	8.05	0.04	0.0680	0.04
IE002	0.0230	0.34	0.87	0.030	0.0100	18.25	8.14	0.19	0.0430	0.06
IE004	0.0230	0.34	0.87	0.030	0.0100	18.25	8.14	0.19	0.0430	0.06

機械性質 Mechanical Property Test Reports					
Item	T.S N/MM2	Y.S(0.2%) N/MM2	Elong A50(%)	HRBW	HRB
IE006	643	313	55.0		84.0
IE007	643	313	55.0		84.0
IE008	662	287	53.0	83.0	
IE001	633	307	56.0	84.0	
IE003	633	307	56.0	84.0	
IE005	633	307	56.0	84.0	
IE002	668	337	50.0	88.0	
IE004	668	337	50.0	88.0	

QC ACCEPTED
DATE 10-19-21
WFLS

-652658

YUEN CHANG STAINLESS STEEL CO., LTD.
Authorized Signature

QC Manager

David Wang

茲證明本廠所製產品，均依材料規格製造及試驗，並符合規格之要求。

We hereby certify that the products described herein have been manufactured and tested with satisfactory results in accordance with the requirement of the above material specification.

本產品無輻射污染，並且不含汞。The material described above is free from radiation contamination and mercury.

除訂單特別註明，板面正反面或鋼捲外側表面被視為主要表面。Unless specified on the order, the main side of sheets and plates, or the outside surface of coils and

Wear Ring Port

MILL TEST REPORT

This MTR contains 1 page (Page# 1)

Customer: WESPRT PO#:P040233 SO#:LGGKW0
 Item:18860120304L#1 Bundle:3366279 Heat#:534315

MTR#:TSC100526099.GI

083144

Manufacturer / Fabricante 		Type of document / Tipo de documento INSPECTION CERTIFICATE CERTIFICADO DE INSPECCION according to / de acuerdo con EN 10204-3.1		Document number / N° de certificado 0000526099 / Page / Pagina: 1 / 2							
1 Steel Drive; P.O. Box 13000; Calvert, AL 36513-1300			Customer/Ship to / Cliente Customer's order number / N° de Pedido Cliente LD8855 Manufacturer's works order no. / N° de Pedido Manufactura 901292126 / 006 Delivery note no. / N° de Entrega 85735855 / 010 Product / Producto Stainless Steel Hot Rolled Sheets/Hojas								
Terms of delivery / Condiciones de entrega ASTM A240/A240M-20a, ASME SA-240 Sec. II part A Ed.2021 ASTM A480/A480M-19, ASME SA-480 Sec. II part A Ed.2019 SAE AMS 5511 K SAE AMS 5513 J ASTM A276-17, A312-21, A479-20, A484-20b Chemical only ASME SA312-19, SA479-20 for Chemical Composition ASTM A666-15 SAE AMS QQ-S-763D for Chemical composition. NACE MR0103 / ISO 17845: 2015 NACE MR0175 / ISO 15156-3: 2015			Steel Grade and Quality / Acero TYPE 304L/304 UNS S30403 UNS S30400								
Customer's material no. / N° de material del cliente 18860120304L#1/1A		Product dimensions (Thickness / Width / Length) / Dimensiones (Espesor / Ancho / Largo) 4.76 mm x 1,524.00 mm x 3,048.00 mm 0.1875 inch x 60.0000 inch x 120.0000 inch		Strengthening procedure / Proceso de fortalecimiento ABB							
Finish / Acabado 110 / 107 No.1											
Packing No. / N° de Empaque	No. of pieces / Piezas	Actual weight / Peso actual	Coil No. / Número de Bobina	Heat No. / Calada	Inspection lot / Lote de inspección						
3366267	8	3,049 lb / 1,383 kg	898558	534315	1000745441						
3366268	8	3,062 lb / 1,389 kg	898558	534315	1000745441						
3366269	8	3,060 lb / 1,388 kg	898558	534315	1000745441						
3366270	8	3,053 lb / 1,389 kg	898558	534315	1000745441						
3366271	8	3,051 lb / 1,384 kg	898558	534315	1000745441						
3366277	8	3,064 lb / 1,390 kg	898558	534315	1000745441						
3366278	8	3,062 lb / 1,389 kg	898558	534315	1000745441						
3366279	8	3,058 lb / 1,387 kg	898558	534315	1000745441						
3366280	8	3,058 lb / 1,387 kg	898558	534315	1000745441						
3366281	8	3,056 lb / 1,386 kg	898558	534315	1000745441						
3366282	8	3,073 lb / 1,394 kg	898558	534315	1000745441						
Sum / Suma	88	33,846 lb / 15,262 kg									
Heat / Calada	Country of Mfg / País de origen	Chemical composition / Composición Química									
534315	USA	% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% N	% Cu
		0.024	0.32	1.29	0.030	0.0011	18.10	0.21	8.03	0.059	0.36
Originator of the document / Originador del documento / Outokumpu Stainless USA, LLC An ISO 9001:2015 certified company ISO 17025:2017 accredited testing lab by ANAB EU PED 2014/68/EU, Annex I, 4.3 certified Certificate is generated automatically / Certificado es generado automáticamente		The information provided is a true copy of data on file / Los valores mostrados corresponden a los datos archivados  Alejandro Carrillo Ramirez Head of export / Jefe de exportación		Date of issue and validation / Fecha de emisión y validación 07/21/2021 This document shall not be altered or reproduced, except in full. Translations, facsimiles, or other documents or entries may be prosecuted by law.							

Certificate of Mill Test Results

Inv: 1085935 Date: 11/01/2021
 Heat: 534315

BRIDGE CITY STEEL INC#
 STAINLESS PLATE SPL 3/16" x 60" x 120" HRAP ASTM A-240 304L

PO/Rel: 227108

Wear Rings Face

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains: 2 pages (Page: 1)

Cust#: WESPRT Company#: WEST COAST METALS
MTR#: TSCL/TSCL00406499.pdf PO#: SO#:
Item: 31372144304L#1 Bundle: 3187941 Heatno: 525113

www.tachen.com

Manufacturer / Fabricante 		Type of document / Tipo de documento INSPECTION CERTIFICATE CERTIFICADO DE INSPECCION according to / de acuerdo con EN 10204-3.1		Document number / N° de certificado 0000406499 / Page / Pagina: 1 / 2																					
1 Steel Drive; P.O. Box 13000; Calvert, AL 36513-1300 TA CHEN INTERNATIONAL CORP. 5855 OBISPO AVE LONG BEACH CA 90805-3715 USA		Customer/Ship to / Cliente TA CHEN INTERNATIONAL CORP., LONG BEACH Customer's order number / N° de Pedido Cliente L82546 Manufacturer's work order no. / N° de Pedido Manufactura 901255696 / 001 Delivery note no. / N° de Entrega 85609247 / 010 Product / Producto SHEET/HOJAS/BLECH																							
Terms of delivery / Condiciones de entrega ASTM A240/A240M-17, ASME SA-240 Sec. II part A Ed.2017 ASTM A240/A240M-18, ASME SA-240 Sec. II part A Ed.2017 ASTM A480/A480M-18, ASME SA-480 Sec. II part A Ed.2017 ASTM A480/A480M-18a, ASME SA-480 Sec. II part A Ed.2017 SAE AMS 5511 J SAE AMS 5513 J ASTM A276-17, A312-18a, A479-18, A484-18a Chemical Only ASTM A666-15 ASME SA312-18a, SA479-18 for Chemical Composition NACE MR0175 / ISO 15156-3: 2015 NACE MR0103 / ISO 17945: 2015		Steel Grade and Quality / Acero TYPE 304L/304 UNS S30403 UNS S30400																							
Customer's material no. / N° de material del cliente 31372144304L#1/TA		Product dimensions (Thickness / Width / Length) / Dimensiones (Espesor / Ancho / Largo) 7.94 mm x 1,828.80 mm x 3,657.60 mm 0.3125 inch x 72.0000 inch x 144.0000 inch		Steelmaking procedure / Proceso de manufact. AOD																					
Finish / Acabado 11a / 1D / No.1																									
Packing-No. / N° de Empaque 3187941 3187943 3187946 3187948	No. of pieces / Piezas 3 3 3 3	Actual weight / Peso actual 2,767 lb / 1,255 kg 2,765 lb / 1,254 kg 2,767 lb / 1,255 kg 2,751 lb / 1,248 kg		Coil No. / Bobina No. 846605 846605 846605 846605	Heat No. / Colada 525113 525113 525113 525113																				
Inspection lot / Lote de inspeccion 1000611558 1000611558 1000611558 1000611558																									
Sum / Suma 12		11,050 lb / 5,012 kg																							
Heat / Colada 525113	Country of Melt / País de colada USA	Chemical composition / Composicion Quimica Chemical analysis per ASTM A751-14a <table border="1"> <thead> <tr> <th>% C</th> <th>% Si</th> <th>% Mn</th> <th>% P</th> <th>% S</th> <th>% Cr</th> <th>% Mo</th> <th>% Ni</th> <th>% N</th> <th>% Cu</th> </tr> </thead> <tbody> <tr> <td>0.025</td> <td>0.34</td> <td>1.28</td> <td>0.031</td> <td>0.0010</td> <td>18.19</td> <td>0.33</td> <td>8.02</td> <td>0.057</td> <td>0.48</td> </tr> </tbody> </table>				% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% N	% Cu	0.025	0.34	1.28	0.031	0.0010	18.19	0.33	8.02	0.057	0.48
% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% N	% Cu																
0.025	0.34	1.28	0.031	0.0010	18.19	0.33	8.02	0.057	0.48																
Sample Position / Localiz. de la muestra TRANSVERSE		Mechanical testing per ASTM A370-18																							
Inspection lot / Lote de inspeccion 1000611558 1000611558		YS0.2% / PSI / MPa 48,006 / 331 51,051 / 352	TS / PSI / MPa 93,981 / 648 95,141 / 656	El. A2" / % 54.6 54.3	HRB 82 83																				
Resistant to intergranular corrosion / Resistente contra corrosión inter-granular: Dimensions-surface / Dimensiones-Superficie: Positive Material Identification (PMI) / Control de identidad (análisis espectrográfico): Heat Treat: Solution anneal 1900°F/1040°C Min, Air and water quench Bending test per ASTM E290-14 OK		ASTM A 262-15, PRACTICE E - Sample Acceptable OK OK																							
Originator of the document / Originador del documento Outokumpu Stainless USA, LLC An ISO 9001:2015 certified company An ISO 17025: 2005 accredited lab EU PED 2014/68/EU, Annex I, 4.3 certified Certificate is generated automatically / Certificado es generado automáticamente		The information provided is a true copy of data on file / Los valores mostrados corresponden a los datos archivados  Alejandro Carrillo Ramos Name of expert / Nombre del experto		Date of issue and validation / Fecha de emisión y validación 05/06/2019 This document shall not be altered or reproduced, except in full, fraudulent, fictitious, or false statements or entries may be prosecuted by law.																					

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains:2 pages (Page:2)

Cust#: WESPR Company#: WEST COAST METALS
MTR#: TSCL/TSCL00406499.pdf PO#: SO#:
Item: .31372144304L#1 Bundle:3187941 Heatno:525113

www.tachen.com

Manufacturer / Fabricante 	Type of document / Tipo de documento INSPECTION CERTIFICATE CERTIFICADO DE INSPECCION according to / de acuerdo con EN 10204-3.1	Document number / Nº de certificado. 0000406499 / Page / Pagina: 2 / 2
No welding or weld repairs were performed on this material DFARS 225.872-1 Compliant No intentional additions of Mercury compounds were made or used Free of radioactive contamination EU RoHS Directive 2011/65/EU Compliant Product manufactured in the USA Country of Melt as per ISO 3166-1 We hereby certify that the material herein has been made and tested in accordance with the listed specifications and that the results of all tests are acceptable.		
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Gate MTR

sij | acroni

10162251-20030266-174390

Izdajatelj Certifikata:
Originator of Inspection Document:
Aussteller der Bescheinigung:SIJ ACRONI, d.o.o.
KRT-KAKOVOST
Cesta Borisa Kidriča 44
SI - 4270 Jesenice
Slovenia, EUTel.: +386 4 584 10 16
Fax: +386 4 584 10 71
E-Mail: gorazd.kosec@acroni.si
W: http://www.acroni.si

Page 1 / 5

Prevzemni certifikat 3.1 / Inspection Certificate 3.1 / Abnahmeprüfzeugnis 3.1 EN 10204:2004	Prejemnik / Consignee / Empfänger JACQUET WEST 22400 LUCERNE STREET 90745 CARSON UNITED STATES
Št. dokumenta / Document No. / Bescheinigungs Nr. 10162251-20030266-174390 z / dated / vom 31.03.2021	Proizvajalčeva št. naročila / Manufacturer's works order No. / Werksauftrag Nr. 20030266 z / dated / vom 02.02.2021
Kupčeva št. naročila / Purchaser's order No. / Kundenbestell Nr. 11879-52250	Kupčeva št. izdelka / Purchaser Article No. / Artikel Nr. des Kunden
Št. Dobavnega lista / Packing list No. / Lieferschein Nr. 10162251 z / dated / vom 31.03.2021	Datum izdaje / Date of issue / Ausgabedatum 31.03.2021
Št. Računa / Account No. / Kontonummer 2120101006790	

Izdelek / Product / Erzeugnis DEBELA PLOŠČEVINA / HOT-ROLLED PLATE / WARMGEWALZTES GROßBLECH		SINOX 4542
Zahteva / Requirements / Anforderungen ASME SA-693 BPVC.II.A-2019 (ANNEALED)	Oznaka jekla / Steel designation / Stahlbezeichnung S17400	630
ASTM A 693:2016 (annealed)	S17400	630
SAE AMS 5604-J (LAB.H900 ANNEALED) (Acroni is not AS9100 certified)	S17400	630
Customer Grade	HOT ROLLED STAINLESS STEEL 17-4PH	
Specifikacija kupca / Customer specification No. / Kundenspezifikation		
Dodatne zahteve / Supplementary requirements / Zusätzliche anforderung		
Dobavno stanje / Product delivery condition / Lieferzustand des Erzeugnisses ŽARJENO / ANNEALED / GEGLÜHT		
Stanje površine / Surface finish / Oberflächenbehandlung Brez popravila z varjenjem / No weld repair / Keine Schweißreparatur		

Oznake izdelka / Marking of the product / Kennzeichnung des Erzeugnisses						
Znak proizvajalca Manufacturer's mark Zeichen des Herstellers	Oznaka jekla Steel designation Stahlbezeichnung	Št. plošče Plate No. Tafel Nr.	Št. sarže Heat No. Schmelzen Nr.	Dimenzije izdelka Product dimensions Abmessungen des Erzeugnisses	Zig kontrolorja Stamp of the works inspector Stempel des Werkssachverständigen	Zig prevzemalca Stamp of the inspection representative Stempel des Abnahmebeauftragten
SIJ ACRONI						
Dodatne oznake / Other marks / Andere Kennzeichen						

Obseg dobave / Extent of material delivery / Umfang der Lieferung							
Poz. Item. Pos.	Št. Sarže Heat No. Schmelzen Nr.	Št. plošče Plate No. Tafel Nr.	Teoretična teža Mass Masse	Teža neto Actual mass ist Masse	Dimenzije izdelka Product dimension Maße des Erzeugnisses	Št. kosov No. of pieces Stückzahl	Št. vzorca Sample No. Probe Nr.
2	315536	2032635602	1864.19 (kg)	1840.00 (kg)	0.750 / 79.00 / 240.00 (inch)	1	2032635602

Način izdelave jekla / Steelmaking process / Stahlherstellungsverfahren E + VOD

To potrjuje, ki ga izdajemo z uporabo poslovno-informacijskega sistema, je v skladu EN 10204, ods.5 in velja brez podpisa.
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Odgovorna oseba / Werkssachverständiger / Works Expert : Gorazd Kosec

70# 11510 .750" 17-4 (630)
H# 315536

JACQUET
FICHE#
45988

Pogoji toplotne obdelave / Heat treatment details / Wärmebehandlung Details

Solution annealing at 1900°F +/-25°F (1038°C +/- 14°C) for a time commensurate with thickness and cooling to below 90°F (32°C).

Precipitation hardening at 900°F +/-10°F (482°C +/- 6°C) for 60 minutes +/- 5 minutes

Mehanske lastnosti pri sobni temperaturi / Mechanical properties at room temperature / Mechanische Eigenschaften bei Raumtemperatur														
Sl. sarže Heat No. Schmelzen Nr.	Sl. vzorca Sample No. Probe Nr.	Smer vzorca Sample orientation Proben lage		Meja plastičnosti Yield or proof strength Streck- oder Dehngrenze (KSI)		Nat. trdnost Tensile str. Zugfestigkeit (KSI)	Zg. meja plastičnosti Upper Yield strenght Obere Streckgrenze (KSI)	Kontrakcija Reduction of area Brucheinsch- nürung (%)	Raztezok Elongation Bruchdehnung (%)	Razmerje Ratio Beziehung	Trdota Hardness Härte			
		T/L	T/B	1/2; 1/3; 1/4; S2	Rp0,2	Rp1,0	Rm	Reh	Z	A5	A50	A80	Rp/Rm	
Zahteva Requirements Anforderung	MIN													
	MAX													
315536	2032635602	T	T	S2	118.21		141.85							9.0
T- Prečno / Transverse / Quer L- Vzdržno / Longitudinal / Längs T- Glava / Top / Kopf B- Noga / Bottom / Fuss 1/2 - Odvzem vzorca na sredini / Taking the sample at the center of product / Unter der Probe in der Mitte des Produkt 1/3 - Odvzem vzorca po deb 1/3 pod površino / Thickness 1/3 under the surface / Dicke 1/3 unter der Oberfläche 1/4 - Odvzem vzorca po deb 1/4 pod površino / Thickness 1/4 under the surface / Dicke 1/4 unter der Oberfläche S2 - Odvzem vzorca po deb 2 mm pod površino / Thickness 2 mm under the surface / Dicke 2 mm unter der Oberfläche														

Trdota / Hardness / Härte (HB)			
Sl. sarže Heat No. Schmelzen Nr.	Sl. vzorca Sample No. Probe Nr.	Meritev / Measurement / Messungen	
		1	
Zahteva Requirem Anforderung	MIN		
	MAX	353.0	
315536	2032635602	302.0	

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H 900 - Mechanical properties at Precipitation hardening condition at 900°F /482°C

Mehanične lastnosti - Simulation der Abdehnung / Mechanical properties - Simulation of the heat treatment / Mechanische Eigenschaften - Simulation der Wärmebehandlung													
St. sarže Heat No. Schmelzen Nr.	St. vzorca Sample No. Probe Nr.	Smer vzorca Sample orientation Proben lage			Meja plastičnosti Yield or proof strength Streck- oder Dehngrenze (KSI)		Nat. trdnost Tensile str. Zugfestigkeit (KSI)	Zg. meja plastičnosti Upper Yield strength Obere Streckgrenze (KSI)	Kontrakcija Reduction of area Bruchseinschn ürung (%)	Raztezek Elongation Bruchdehnung (%)	Razmerje Ratio Beziehung	Trdota Hardness Härte	
		T/L	T/B	1/2; 1/3; 1/4; S2	Rp0,2	Rp1,0	Rm	ReH	Z	A5	A50	A80	Rp/Rm
Zahteva Requirements Anforderung	MIN				170.0		190.00		35.0		10.0		
	MAX												
315536	2032635602	T	T	S2	170.0		193.77		42.0		11.0		
T- Prečno / Transverse / Quer L- Vzdužno / Longitudinal / Längs T- Glava / Top / Kopf B- Noga / Bottom / Fuss 1/2 - Odvzem vzorca na sredini / Taking the sample at the center of product / Unter der Probe in der Mitte des Produkt 1/3 - Odvzem vzorca po deb 1/3 pod površino / Thickness 1/3 under the surface / Dicke 1/3 unter der Oberfläche 1/4 - Odvzem vzorca po deb 1/4 pod površino / Thickness 1/4 under the surface / Dicke 1/4 unter der Oberfläche S2 - Odvzem vzorca po deb 2 mm pod površino / Thickness 2 mm under the surface / Dicke 2 mm unter der Oberfläche													

Trdota - simulacija toplote obdelave / Hardness - simulation of the heat treatment / Härte - Simulation der Wärmebehandlung (HB)													
St. sarže Heat No. Schmelzen Nr.	St. vzorca Sample No. Probe Nr.	Meritev / Measurement / Messungen											
		1											
Zahteva Requirem Anforderung	MIN	375.0											
	MAX	444.0											
315536	2032635602	388.0											

Kemična Analiza / Chemical Composition / Chemische Zusammensetzung											
St. Sarže / Heat No / Schmelzen Nr.	315536										
%C	%Si	%Mn	%P	%S	%Cr	%Ni	%Cu	%Mo	%Nb	%Ta	%Co
0.031	0.316	0.814	0.013	0.0001	15.11	4.23	3.409	0.081	0.206	0.007	0.017

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Dodatne zahteve / Additional requirements / Zusätzliche Anforderungen :
Št. sarže / Heat No. / Schmelzen Nr. : 315536

Nb+Ta

0.213

Kontrola oznak, identifikacije, površine, oblike in dimenzij / Control of marking and identification, surface appearance, shape and dimensional properties / Prüfung von Kennzeichnung, Identifizierung, Oberfläche, Form und Maße :
ASME SA 480 Ed.2019 OK
ASTM A480/A480M-20 OK

Neporušilvene preiskave / Non destructive test / Zerstörungsfreie Prüfungen

Ultrazvočni pregled / Ultrasonic inspection / Ultraschallprüfung :

Ultrazvočni pregled po EN10160-S2-E3: OK / Ultrasonic inspection acc. EN10160-S2-E3: OK / Ultraschallprüfung nach. EN10160-S2-E3: OK

Podatki o vzorcu / Sample Data / Probenummer			
Št. vzorca Sample No. Probe Nr.	Št. sarže Heat No. Schmelzen Nr.	%	
Zahteva Requirement Anforderung	MIN MAX	5.0	
2032635602	315536	0.2	

Opombe / Remarks / Bemerkungen

Potrdujemo da dobavljeni izdelki ustrezajo zahtevam naročila / We confirm herewith that the delivered products comply with the purchase order / Es wird bestätigt, daß die Erzeugnisse den Bestellanforderungen entsprechen
Država porekla = Država izdelave taline = Država izdelave slaba - SLOVENIJA - EU / Country of Origin = Country of melt = Country of slab: SLOVENIA - EU /
Herkunftsland = Land der schmelze = Land der Bramme - SLOVENIA - EG
Material ni kontaminiran z živim srebrom. / Free from Known Contamination with Mercury. / Keine kontamination mit Quecksilber.
Material je skladen z RoHS direktivo. Podrobnosti na: <https://sij.acroni.si/assets/magazine-files/RoHS-declaration-April-2020.pdf> / Material fully comply with RoHS directive, Details on: <https://sij.acroni.si/assets/magazine-files/RoHS-declaration-April-2020.pdf> / Material ausgestattet mit RoHS-Richtlinien, Einzelheiten

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auf: <https://sij.acroni.si/assets/magazine-files/RoHS-declaration-April-2020.pdf>

Sistem vodenja kakovosti je certificiran po ISO 9001. Št. Certifikata: 12 100 6200 TMS. Izdajatelj: TÜV SÜD Management Service GmbH. / Quality Management System is certified according to ISO 9001. Certificate no. 12 100 6200 TMS, issued by TÜV SÜD Management Service GmbH. / Qualitätsmanagementsystem zertifiziert nach ISO 9001. Zertifikat Nr. 12 100 6200 TMS der TÜV SÜD Management Service GmbH.

Merilne sevanja: NI RADIOAKTIVNEGA ONESNAŽENJA / Measuring Radiation: NO RADIOACTIVE CONTAMINATION / messen: KEINE ERHÖHTE RADIOAKTIVITÄT

Spektrometerska analiza PMI v skladu API RP 578: OK / Spectrometer Sorting Test PMI according API RP 578: OK / Spektrometer Sortiertest PMI nach API RP 578: OHNE BEANSTANDUNG

Vizualni pregled: OK / Visual inspection: OK / Sichtprüfung: OHNE BEANSTANDUNG

DFARS compliant per 252.225.7003 and 252.225.872-1

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INTERNATIONAL INSPECTION

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Ni	Ni Error	Cr	Cr Error	Results
1	4/15/2022 7:14	System Check	53.64	cps	Final	System Check 1 of 2						Pass
2	4/15/2022 7:15	System Check	54.06	cps	Final	System Check 2 of 2						Pass
3	4/15/2022 7:16	General Metals	10	%	Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	0.157	0.045	1.113	0.047	Pass
4	4/15/2022 7:21	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (1 of 9)	17-4 PH : *2.22	4.63	0.145	15.738	0.15	Pass
5	4/15/2022 7:22	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (2 of 9)	17-4 PH : *2.58	4.734	0.143	15.667	0.146	Pass
7	4/15/2022 7:24	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (3 of 9)	17-4 PH : *2.21	4.697	0.148	15.696	0.152	Pass
8	4/15/2022 7:24	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (4 of 9)	17-4 PH : *2.21	4.7	0.147	15.721	0.152	Pass
9	4/15/2022 7:25	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (5 of 9)	17-4 PH : *2.21	4.718	0.158	15.601	0.161	Pass
10	4/15/2022 7:26	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (6 of 9)	17-4 PH : *2.22	4.643	0.142	15.764	0.148	Pass
11	4/15/2022 7:27	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (7 of 9)	17-4 PH : *2.22	4.677	0.14	15.843	0.145	Pass
12	4/15/2022 7:27	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (8 of 9)	17-4 PH : *2.22	4.602	0.143	15.828	0.15	Pass
14	4/15/2022 7:29	General Metals	10	%	Final	Job# 933-2 - 6" DSDE (19 of 9)	17-4 PH : *2.22	4.665	0.144	15.679	0.148	Pass
15	4/15/2022 7:32	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (1 of 14)	17-4 PH : 1.46	4.112	0.14	15.21	0.149	Pass
16	4/15/2022 7:32	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (2 of 14)	17-4 PH : 1.21	4.053	0.138	15.155	0.147	Pass
17	4/15/2022 7:33	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (3 of 14)	17-4 PH : 0.90	4.014	0.133	15.174	0.143	Pass
18	4/15/2022 7:33	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (4 of 14)	17-4 PH : 0.78	3.968	0.136	15.378	0.148	Pass
19	4/15/2022 7:33	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (5 of 14)	17-4 PH : 0.88	4.013	0.135	15.22	0.146	Pass
20	4/15/2022 7:34	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (6 of 14)	17-4 PH : 1.47	4.106	0.135	15.357	0.145	Pass
21	4/15/2022 7:34	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (7 of 14)	17-4 PH : 0.91	4.016	0.134	15.389	0.146	Pass
22	4/15/2022 7:35	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (8 of 14)	17-4 PH : 1.57	4.12	0.138	15.034	0.147	Pass
23	4/15/2022 7:35	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (9 of 14)	17-4 PH : 0.27	3.947	0.133	15.346	0.145	Pass
24	4/15/2022 7:35	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (10 of 14)	17-4 PH : 1.30	4.066	0.134	15.336	0.144	Pass
25	4/15/2022 7:36	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (11 of 14)	17-4 PH : 0.00	3.831	0.133	15.278	0.147	Pass
26	4/15/2022 7:36	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (12 of 14)	17-4 PH : 1.12	4.04	0.136	15.431	0.147	Pass
27	4/15/2022 7:36	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (13 of 14)	17-4 PH : *1.81	4.14	0.14	15.368	0.149	Pass
28	4/15/2022 7:37	General Metals	10	%	Final	Job# 933-4 - 8" DSDE (14 of 14)	17-4 PH : 1.20	4.053	0.146	15.066	0.156	Pass
29	4/15/2022 7:40	General Metals	10	%	Final	Job# 913-2 - 16" TLOK (1 of 2)	17-4 PH : 0.35	3.957	0.136	15.184	0.148	Pass
30	4/15/2022 7:40	General Metals	10	%	Final	Job# 913-2 - 16" TLOK (2 of 2)	17-4 PH : 0.91	4.017	0.143	15.251	0.154	Pass
36	4/15/2022 7:47	General Metals	10	%	Final	Job# 922 - 10" TLOK (1 of 1)	17-4 PH : *2.22	4.629	0.142	15.43	0.145	Pass

304L Composition Range (ASME Sec.II)

Chromium (Cr): 18.0 - 20.0

Nickel (Ni): 8.0 - 13.0

Technician: Daniel C Rosian 4/15/2022

D. Rosian

PO 13800 Item #2
16" FV-150 T-Lok
Gate PMI

INTERNATIONAL INSPECTION

S/N 229952-1
S/N 229952-2

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Ni	Ni Error	Cr	Cr Error	Results
37	4/15/2022 7:48	General Metals	10 %		Final	Job# 974 - 12" UNI (1 of 1)	SS-304 : 0.22	8.258	0.179	18.288	0.159	Pass
40	4/15/2022 7:51	General Metals	10 %		Final	Job# 955-2 - 16" TLOK (1 of 2)	17-4 PH : 1.42	4.095	0.136	15.382	0.146	Pass
41	4/15/2022 7:51	General Metals	10 %		Final	Job# 955-2 - 16" TLOK (2 of 2)	17-4 PH : 1.33	4.073	0.137	15.367	0.148	Pass
42	4/15/2022 7:53	General Metals	10 %		Final	Job# 909 - 16" DS (1 of 3)	SS-304 : 1.46	7.93	0.191	17.973	0.172	Pass
45	4/15/2022 7:55	General Metals	10 %		Final	Job# 909 - 16" DS (2 of 3)	SS-304 : 0.98	7.929	0.175	18.021	0.157	Pass
46	4/15/2022 7:55	General Metals	10 %		Final	Job# 909 - 16" DS (3 of 3)	SS-304 : 0.98	7.932	0.179	17.753	0.159	Pass
47	4/15/2022 7:57	General Metals	10 %		Final	Job# 936 - 12" UNI (1 of 1)	SS-304 : 0.00	8.195	0.184	18.132	0.163	Pass
48	4/15/2022 8:00	General Metals	10 %		Final	Job# 975-1 - 28" UNI (1 of 1)	SS-304 : 0.09	8.141	0.191	17.917	0.169	Pass
49	4/15/2022 8:01	General Metals	10 %		Final	Job# 922-2 - 16" TLOK (1 of 2)	17-4 PH : 1.49	4.125	0.136	15.322	0.145	Pass
50	4/15/2022 8:02	General Metals	10 %		Final	Job# 922-2 - 16" TLOK (2 of 2)	17-4 PH : 1.39	4.084	0.135	15.494	0.147	Pass
53	4/15/2022 8:05	General Metals	10 %		Final	Job# 935-1 - 10" UNI (1 of 1)	17-4 PH : *2.22	4.627	0.142	15.458	0.146	Pass
54	4/15/2022 8:07	General Metals	10 %		Final	Job# 820-3 - 48" TLOK (1 of 2)	SS-304 : 0.08	7.863	0.191	18.308	0.173	Pass
55	4/15/2022 8:07	General Metals	10 %		Final	Job# 820-3 - 48" TLOK (2 of 2)	SS-304 : 0.18	7.891	0.183	18.201	0.165	Pass
56	4/15/2022 8:13	General Metals	10 %		Final	Job# 820-1 - 42" TLOK (1 of 4)	SS-304 : 0.00	8.026	0.193	18.182	0.174	Pass
57	4/15/2022 8:14	General Metals	10 %		Final	Job# 820-1 - 42" TLOK (2 of 4)	SS-304 : 0.00	8.082	0.178	18.446	0.16	Pass
58	4/15/2022 8:16	General Metals	10 %		Final	Job# 820-1 - 42" TLOK (3 of 4)	SS-304 : 0.45	8.021	0.175	18.387	0.159	Pass
59	4/15/2022 8:19	General Metals	10 %		Final	Job# 820-1 - 42" TLOK (4 of 4)	SS-304 : 0.02	8.08	0.182	18.07	0.163	Pass
61	4/15/2022 8:23	General Metals	10 %		Final	Job# 955-1 - 10" TLOK (1 of 1)	17-4 PH : *2.21	4.602	0.151	15.546	0.155	Pass
62	4/15/2022 8:24	General Metals	10 %		Final	Job# 922-2 - 36" DSDE (1 of 1)	SS-304 : 0.00	8.196	0.176	18	0.156	Pass
63	4/15/2022 8:28	General Metals	10 %		Final	Job# 822-2 - 36" DSDE (1 of 1)	SS-304 : 0.00	8.062	0.178	18.01	0.159	Pass
64	4/15/2022 8:32	General Metals	10 %		Final	Job# 928-1 - 6" UNI (1 of 1)	SS-304 : 0.38	7.995	0.179	17.996	0.161	Pass
65	4/15/2022 8:44	General Metals	10 %		Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	0.13	0.043	1.114	0.046	Pass

17-4PH Composition Range

Chromium (Cr): 15.0 - 17.5

Nickel (Ni): 3.0 - 5.0

ARMI MBH

ANALYTICAL LTD

ISO Certified • 9001 • 17025 • 17043 • 17034

Certificate of Analysis

IARM 35NN

Low Alloy Steel / F11 / 1¼Cr 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 38mm 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 2 mm 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
Telephone (603) 935-4100 • Fax (603) 935-4101 • www.ARMIL.com • ARMI@LGCgroup.com

IARM-35NN-F
6/30/2020 1/2

INTERNATIONAL
INSPECTION

PMI Procedure: IL-54-
PMI Instrument: Thermo Scientific Niton XL2 980
Instrument S/N# 112678
Tech: D. Roslan



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

INSTALLATION & MAINTENANCE

Valve: 150# TLOK

Flange Bolting: See bolt/torque chart

DESCRIPTION:

The FV-150 T-LOK is a fabricated knife-gate valve. It has two body liners and a seat all made of Teflon or UHMW. It is a bi-directional flow valve and can be installed inline facing either direction. Multiple rows of packing are used to seal the gate outside the flow area. The pressure rating of the FV-150 T-LOK 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.



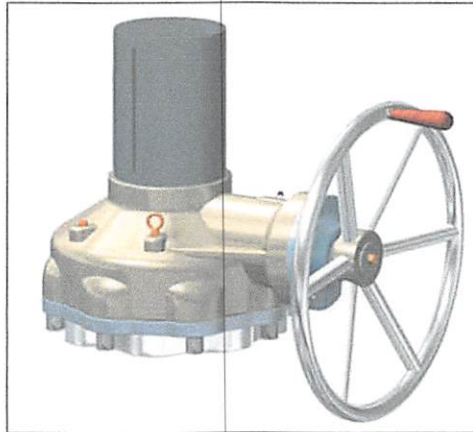
ph: (780) 416-9683 fax: (780) 416-9684
www.endurancevalve.com

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)

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)

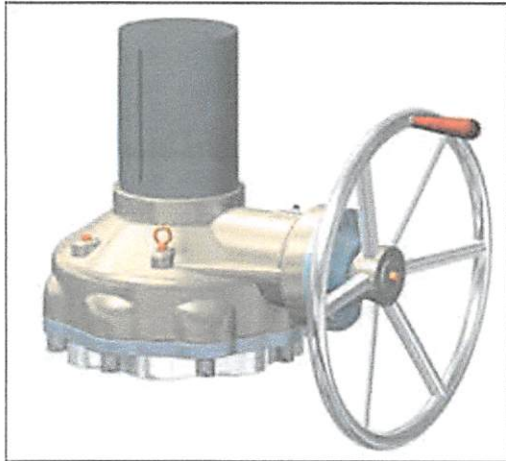
Temperature Range : -4°F □ 284°F (-20°C □ +140°C)

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.

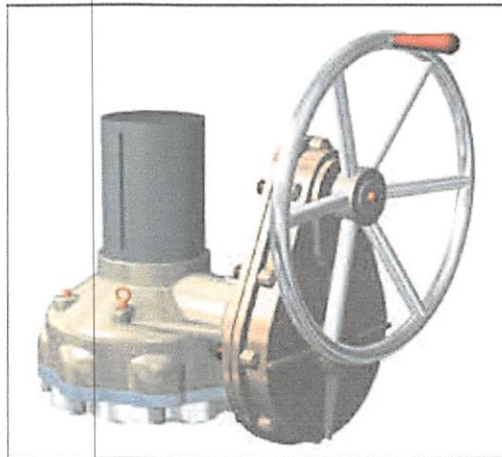
3) **CHAIN WHEEL** : Overhead or inaccessible valves, when equipped with this device, may be conveniently and safely operated from the floor.



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

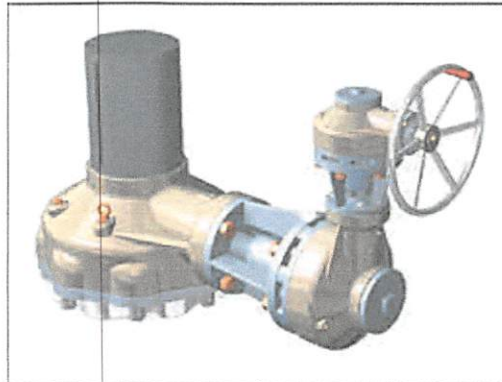
Specifications

- 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

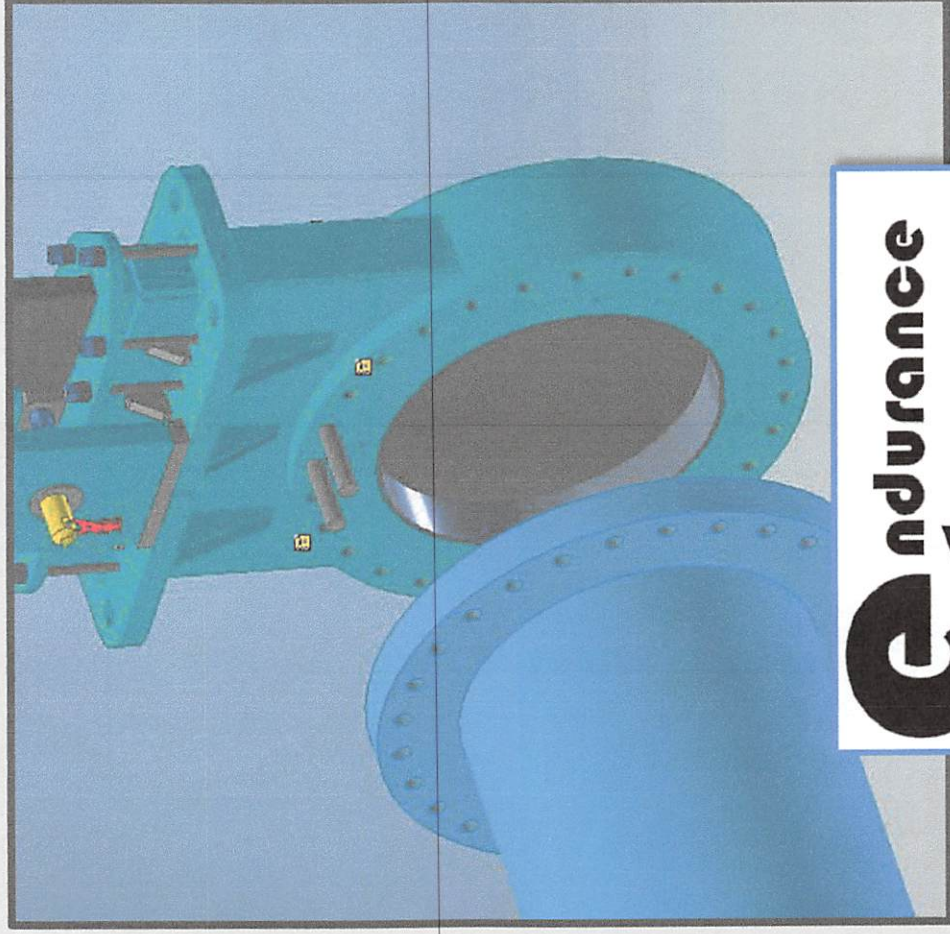
BOLTING STUDS TO VALVE-PIPING

Engineering



STEP 1

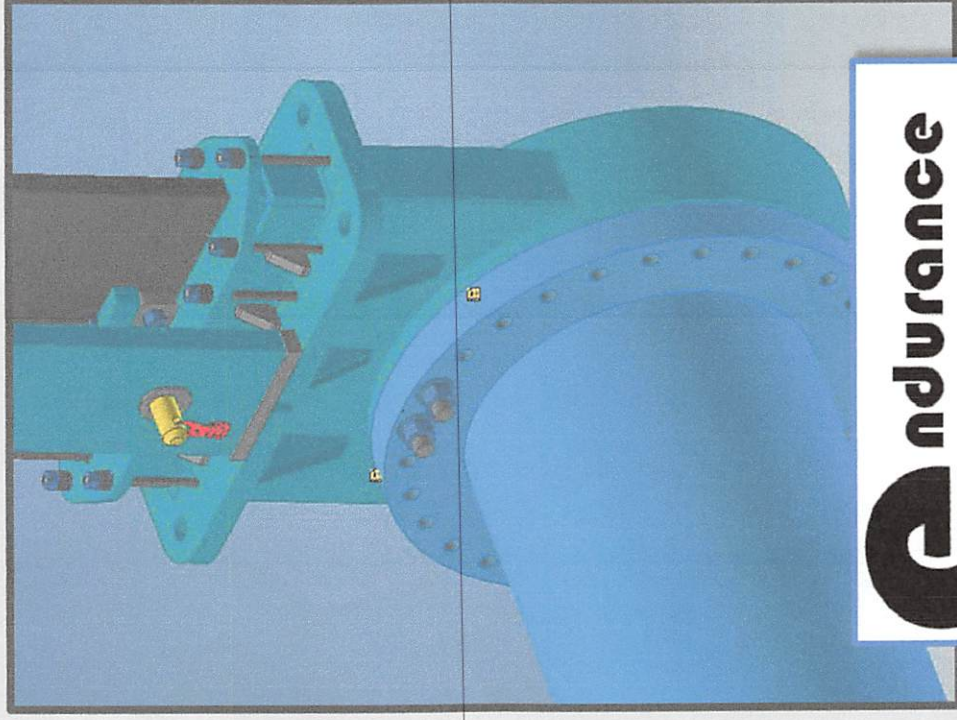
- Begin with 2 studs threaded into the valve next to each other



Endurance
Valve

STEP 2

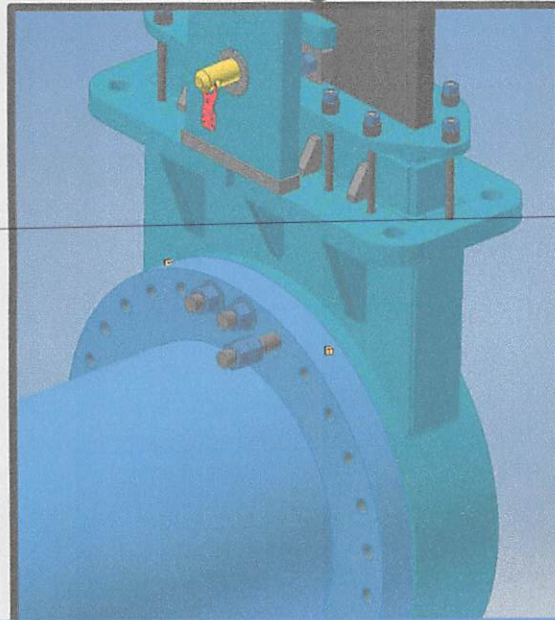
- Line-up to piping and slide flush to pipe and hand snug nuts w/washer



Endurance
Galve

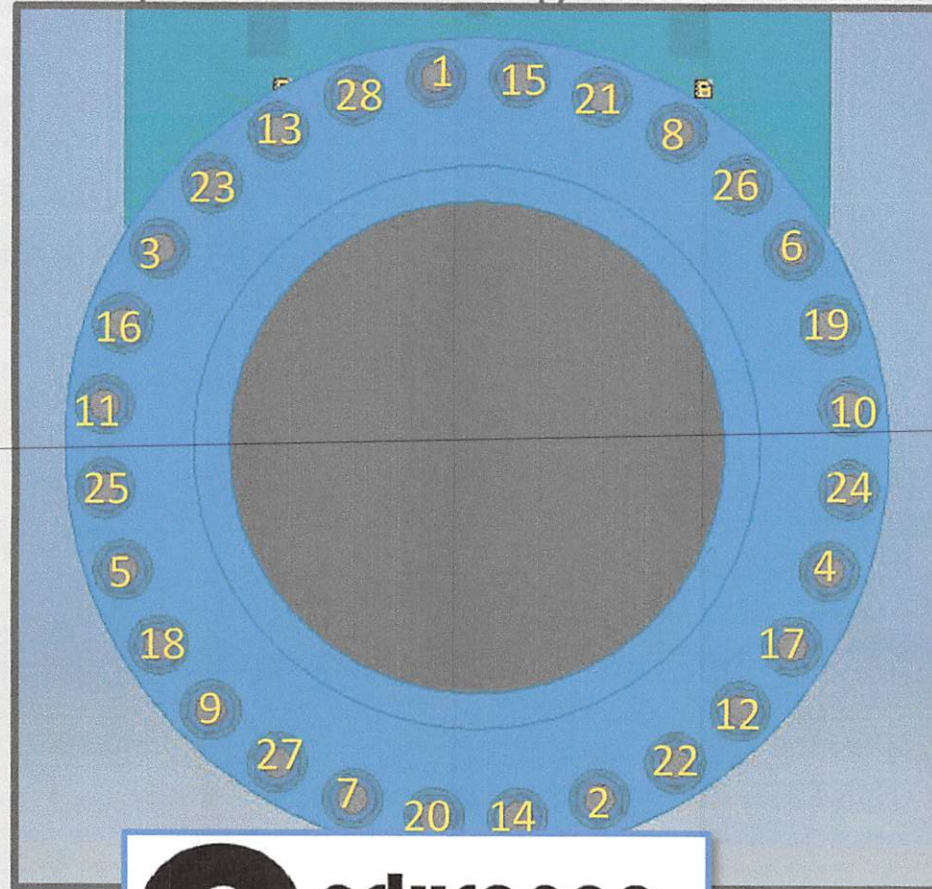
STEP 3

- Thread a nut $\frac{3}{4}$ of the way down another stud.
- Thread a 2nd nut down to the 1st nut.
- Place a washer on the longest side of the stud
- Thread stud by hand into the valve snug and remove upper nut
- Loosen nut and thread remaining stud into valve



STEP 4

- Thread remaining studs and nuts into valve hand snug
- Then torque* in sequence shown in gradual increasing torque.



*torque sequence changes per valve size

