



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:

Model: FV-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X

Ref Job # 13842 Item #1

P.O.: P.O. 3500058708

Serial #'s 221031-1 221031-2

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

Weight: CRN: 0C10259.2
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: 13842 Item #1

Model Number: FV-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X

Serial #: 221031-1 221031-2

Customer PO

P.O. 3500058708

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

310^{LBS}

Fabricast Valve Manufacturers ID: 2205103

221031-1

10"

FV-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X

SUNCOR

P.O. 3500058708

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

13842

300^{PSI}

400^{°F}

0060004517

A36

17.4^{SS}

PTFE

CRN-0C10259.2

310^{LBS}

Fabricast Valve Manufacturers ID: 2205103

221031-2

10"

FV-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X

SUNCOR

P.O. 3500058708

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

13842

300^{PSI}

400°F

0060004517

A36

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-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X			
Serial Number:	221031-1	Ref. PO#:	13842 Item #1	Size: 10
Tag Number:	93SP-2140 10IN ENDURANCE KNIFE GATE VALVE 150#	Design Pressure Body PSI/CWP:		300
Wetted Parts:	17.4ss	Flange Material:	A36cs	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 guage 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 Syme				Date:	9-16-22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks				Date:	9-16-22
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 Syme	Date:	9-16-22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks	Date:	9-16-22
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 guage 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 OCCORDANCE WITH REQUIRED SPECIFICAITONS

Metal Seat Test:	300	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 Syme				Date:	9-16-22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks				Date:	9-16-22
Source Inspector (Print/Sign):					Date:	

Reference Documents: JA-014, JA-015



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-10-300-150FF-TL-A36/TFE/SS-17.4-BG-FB-X		
Serial Number:	221031-2	Ref. PO#:	13842 Item #1
Tag Number:	93SP-2140 10IN ENDURANCE KNIFE GATE VALVE 150#	Design Pressure Body PSI/CWP:	300
Wetted Parts:	17.4ss	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 guage 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 Symeon			Date:	9.16.22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks			Date:	9.16.22
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 Symeon	Date:	9.16.22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks	Date:	9.16.22
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 guage 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:	300 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 Symeon	Date:	9.16.22
QC Inspector (Print/Sign):	Nicholas Hicks - Nicholas Hicks	Date:	9.16.22
Source Inspector (Print/Sign):		Date:	

Reference Documents: JA-014, JA-015



Indiana

NLMK INDIANA
6500 SOUTH BOUNDARY ROAD
PORTAGE, IN 46368
PHONE: 219.787.8200

06/08/2021 13:08
CSTM8105
Page 1 of 1

CERTIFICATE OF TEST FOR COIL 5326353 HEAT# Z2691

SOLD TO: RYERSON, INC. RYERSON PROCUREMENT CORPORATION P.O. BOX 91601 LUBBOCK, TX 79490		ORDER SPECIFICATIONS	
SHIP TO: RYERSON, INC. C/O OREGON FERROLOY PARTNER C/O EVRA 14400 N. RIVER GATE RIVER GATE, OR 97203		ITEM: 41239811	
CUSTOMER PO: 4501067380-4		ORDER: 3068460	
RESULTS FOR COIL: 520353		EDGE: MILL	
PRODUCT TYPE: HR		FINISH: BLACK	
PRODUCT CATEGORY: CONV TO A36		HARDNESS: NA	
ORDERED GRADE: 1012		YIELD: 36000	
ORDERED GAUGE: 0.1810 MIN		TENSILE: 59000/60000	
GAUGE TOL: +0.0100/-0.0000		ELONGATION: 23%	
ORDERED WIDTH: 60.000 MIN		BEND:	
WIDTH TOL: +1.5000/-0.0000			

JOB #	COIL #	SIZE (inches)	WGT(pounds)	YIELD	TENSILE	ELONGATION
3068460-02	5326353	0.1810 x 60.0000	46720	53,000	67,000	34.0
HEAT# Z2691 (Country of Origin: MELT & MFG IN USA)						
C: .12 - MN: .35 - P: .014 - S: .006 - SI: .01 - AL: .029 - CU: .16 - NI: .05 - CR: .11 - MO: .02 - SN: .03 - TI: .001 - V: .002 - NB: .003 - N: .009 - B: .0002 - CA: .0031 - CE: * - ZR: * - AS: * - SB: .002						

Wrap (Body)

Manufactured in the United States of America - 'BUY AMERICAN' Compliant

ELEMENTS ABOVE ARE REPORTED IN WEIGHT PERCENT (i.e. C .06 = .06% weight carbon)

Elements with a reported value of " * " were undetected, and thus are less than .001%.

NLMK INDIANA certifies that the material listed herein has been tested in accordance with the methods prescribed in the governing specifications. Based upon the results of such testing, the material conforms to the specifications. All testing has been performed using the current revision of the testing specifications.


Jason Jones
Product Engineer



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

REPORT OF CHEMICAL/PHYSICAL TESTS



S L B T O
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
CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-17 GRADE
36 PLATRX. KILLED FINE GRAIN PRACTICE.

CERTIFICATE NO.	DATE	PAGE
1824382	May 27, 2022	1
MILL ORDER NO.	DATE	
376512		
CUSTOMER ORDER NO.		
227698		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1824382	05/27/2022	
CARRIER		
GREEN TRANSFER		
CAR/TRUCK NO.		
698		

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.2500 X 60.000ME X 120.000									
	1 PC 510 LBS	SP0523		451	670	45				
	87 PCS 44370 LBS	SP0573		474	665	30				
				595	745	33				
				555	735	20				
	88 PCS 44880 LBS TOTALS									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	Cu	NI	V	Co	Al	Cr	Mo	TI	B	N	Ca	CE	McQuaid Em Gran Size
SP0523	.15	.85	.019	.003	.19	.02	.01	.003	.002	.033	.02	.00						
SP0573	.14	.86	.016	.004	.20	.02	.01	.003	.002	.030	.02	.00						
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

Quality Systems Coordinator

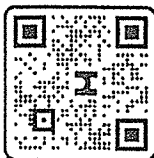
John P. B. B.

u
o
w
d
s
ce

검사 증명서
MILL TEST CERTIFICATE



당진제련소: 충남 당진시 송악읍 북파신리로 1480
1480 Bukpashin-ro, Songak-eup, Dangjin-Si, Chungnam, Korea



증명서 번호 : 20210929-HS-0001-002
Certificate No.

Certificate No. 20210929-HS-0001-002

ISSN	:2021-09-29
Date of Issue	

제품사수 Dimension (mm)	수량 Quantity	중량 Weight (kg)	제강번호 Heat No.	제품번호 Product No.	79 Mpa	인장시험 Tensile Test										화학성분 Chemical Composition(%)																		단위 Unit 2 : x 100 3 : x 1,000 4 : x 10,000 5 : x 100,000				
						YP (N/mm ²)	TS	EL (%)	YP-EL (%)	PA (%)	YR (%)	YP Mod	C		S	Mn	P	S	Cr	Ni	Cu	Mo	Nb	Ti	V	Si -Al												
													1	3													4	4	2	2	3	3	2	3	3	3		
0.3125xNCMx607xC	1	9,450	SQ3569	CJM631701	B	291.1	468.8	23							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,600	SQ3388	CJM631702	B	281.1	468.8	28							2	L	1.090	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,650	SQ3988	CJM631703	B	281.1	468.8	28							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,760	SQ3588	CJM631801	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,640	SQ3688	CJM631802	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,300	SQ3586	CJM631803	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,890	SQ3588	CJM67801	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,640	SQ3588	CJM67802	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									
0.3125xNCMx607xC	1	9,650	SQ3988	CJM67803	B	294.0	474.0	27							2	L	1.690	10	723	136	37	2	1	21	0	1	1	0	26									

Stuffer Sides

- Position - T:Top, M:Middle, B:Bottom
- Tensile test - Direction:Transverse, Gauge length:50mm (Rectangular), YP Mid : 2.10, 2% off-set, 5.0 (0.5% underload), U (Upper yield point), L (Lower yield point)
- Division -- P:Product analysis, L:Ladle analysis

WE HEREBY CERTIFY THAT THE MATERIAL HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATION AND THE REQUIREMENTS

Signature

Y
H
K
M

[illegible]



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

REPORT OF CHEMICAL/PHYSICAL TESTS



SOLD TO
PLATE SALES OSM-LAMPROS
9040 N. BURGARD WAY
FAX ATTN: BRIAN
PORTLAND, OR 97203
US

PLATE SALES OSM-LAMPROS
8524 N. CRAWFORD
PORTLAND, OR 97217
USA

CERTIFICATE NO.	DATE	PAGE
1825352	Jun 03, 2022	6
MILL ORDER NO.	DATE	
136736		
CUSTOMER ORDER NO.		
PLATE SALES-1		
JOB/REQ. NO.		

SHIPPING NO.	DATE
1825352	06/03/2022

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
EOS CARBON REGULAR QUALITY PLATE EXCESS PRIME STEEL PLATE.

CARRIER	
UNKNOWN	
CAR/TRUCK NO.	
P17623-BGS	

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	CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-18 GRADE 36 AASSTO M270-GR 250 (36) 0.5000 X 96.000M X 138.000 1 PC 1879 LBS	N26741		540	700	29		(OUTER)		
				540	700	29		(OUTER)		
				540	700	29		(OUTER)		
				540	700	29		(OUTER)		
				540	700	29		(OUTER)		
				515	675	26		(INNER)		
				515	675	26		(INNER)		
				515	675	26		(INNER)		
				515	675	26		(INNER)		

Horseshoe (Body)
Packing Box Sides
Stuffer Ends

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Co	Al	Cr	Mo	Ti	B	N	Ca	CE	McQuaid Grain Size
N26741	.13	.85	.013	.005	.16	.01	.05	.003		.033	.02							
N26741:	Cb=<0.005, Mo=<0.005																	
HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (✓) WERE ROLLED IN THE USA.																		

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

Quality Systems Coordinator

Donna Taylor



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

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1819610	Apr 20, 2022	1



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

SHIPPING NO.	DATE
1819610	04/20/2022
MILL ORDER NO.	DATE
375251	
CUSTOMER ORDER NO.	
227570	
JOB/REQ. NO.	

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 AIM .03 SI , .19 C NO WELD REPAIR.
LASER QUALITY. KILLED FINE GRAIN PRACTICE.

CARRIER
GREEN TRANSFER
CARTRUCK NO.
177

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.7500 X 96.000ME X 240.000									
	4 PCS 19604 LBS	RS6514		492	715	26				
	1 PC 4901 LBS	RS6515		515	715	28				
3	1.2500 X 96.000ME X 240.000									
	1 PC 8168 LBS	RS6515		463 515	725 715	34 28				
6 PCS 32673 LBS TOTALS										

Port Flanges (Body)
Top Flange
Gussets
Gland Flange
Yoke Top
Yoke Pads

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	Cu	NI	V	CB	Al	Cr	Mo	TI	B	N	Ca	CE	McQuaid Brn Grain Size
RS6514	.18	.86	.008	.005	.03	.37	.17	.002	.002	.038	.11	.06						
RS6515	.18	.86	.009	.004	.06	.41	.20	.002	.002	.040	.11	.05						
RS6515	.18	.86	.009	.004	.06	.41	.20	.002	.002	.040	.11	.05						
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 John Pate-Bell Quality Systems Coordinator

34 AS72-04

711105
20-5034

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

REPORT OF CHEMICAL/PHYSICAL TESTS

ISO 9001 REGISTERED (PLATE PRODUCER)		SOLD TO		STATE PLATE	
CERTIFICATE NO. 1705947 DATE Dec 12, 2015 MILL ORDER NO. 345480 DATE		CUSTOMER ORDER NO. 7449260 JOBBED NO.		YEAR END TONS SHIPPING NO. 1705947 DATE 12/12/2019	
CARRIER GINA MARIE CARRIER NO. 5					

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
 HSLA STRUCTURAL QUALITY PLATE ASTM A572-18 GRADE 50 ASME SA572 GRADE 50 2017
 ASTM A709-18 GRADE 50. KILLED FINE GRAIN PRACTICE.

PHYSICAL PROPERTIES																		
ITEM NO	DESCRIPTION				HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS					
4	0.7500 X 96.000ME X 480.000																	
	1 PC 9801 LBS				M19183		585	710	24									
	1 PC 9801 LBS TOTALS																	
Port Flanges (Body) Top Flange Gussets Gland Flange Yoke Top Yoke Pads																		
CHEMICAL ANALYSIS																		
HEAT NO.	C	Mn	P	S	SI	CU	NI	V	CB	AL	CR	MO	TI	B	N	CA	CE	REMARKS
M19183	0.14	0.05	0.007	0.003	0.20	0.00	0.01	0.020	0.015	0.039	0.02	0.00	0.001		0.004			
HEATS INDICATED WITH (+) WERE MELTED & MANUFACTURED IN THE USA. HEATS INDICATED WITH (*) WERE ROLLED IN THE USA.																		
END OF REPORT																		

Port Flanges (Body)
 Top Flange
 Gussets
 Gland Flange
 Yoke Top
 Yoke Pads

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

METALLURGICAL TEST REPORT

6870 Highway 42 East
Ghent, KY 41045-9615
(502) 347-6000

Ship To:

SAMUEL, SON & CO., INC.
106 SE 223RD AVE, BUILDING B
GRESHAM, OR 97030

Date: 1/05/2022 Page: 2

Steel: 316/316L

Finish: HRP

Your Order: 041S-7479741

NAS Order: AN 0966834 02

Corrosion: ASTM A262/15 180Bend-OK

PRODUCT DESCRIPTION:

REMARKS:

Mat'l is Free of Mercury Contamination. No weld repairs.

STAINLESS STEEL PLATE, HRA; UNS 31600/31603
ASTM A240/20a, A480/20a, A666/15; ASME SA240/19, SA480/19, SA666/19

CHEM ONLY ON FOLLOWING ASTM: A276/17, A479/20, A484/20b, A312/21

CHEM ONLY ON FOLLOWING ASME: SA312/19, SA479/19

AMS 5507H/5524M X MRK;

NACE MR0175/ISO 15156-3:2015 A, MR0103/07; QQS766D-A X MAG PERM

MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED

Mat'l is Free of Mercury Contamination. No weld repairs.
EN 10204:2004 3.1; RoHS 1, 2 & 3 Compliant
Material is Free of Radioactive Contamination
Steel Making Process: EAF, AOD, & Cont. Casting
Product Mfg. by a Quality Mgt. Sys. in Conf. w/ISO 9001
*Melted & Manufactured in the USA; Mat'l is DFARS Compliant
*Melted & Manufactured in the USA; Mat'l is DFARS Compliant

CHEMICAL ANALYSIS	CM(Country of Mait)	ES(Spain)	US(United States)	ZA(South Africa)	JP(Japan)	Chemical Analysis per ASTM A 51/20

MECHANICAL PROPERTIES

QC ACCEPTED
DATE 1/25/22
INTLS AM

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items tested and this report cannot be reproduced, except in its entirety, without the written approval of NAS.

Technical
Dept. Mgr.

KRIS LARK

1/05/2022



Rolled Alloys Inc.
 125 W. Sterns Road Temperance, MI 48182
 United States of America
 Tel: 1-800-521-0332
 Fax: 734-847-6917

Sales Order # 4257905-TEM-1
Customer PO #: 211214COGS

Certificate of Conformance

Sold To:

FABRICAST VALVE
 1061 INDUSTRIAL WAY
 LONGVIEW, WA 98632
 United States of America

Ship To:

BRIDGE CITY STEEL
 3865 NW ST HELENS ROAD
 PORTLAND, OR 97210
 United States of America

In #	Item Description Dimensions	Specifications	Quantity	Mill Country of Origin	Heat # Tracer #
1	3/8" PLATE 17-4 48.0 x 96.0 in Plate Saw Cut Rectangle	Specs: See Test Report	1 pcs 528 lb	ATI SPECIALTY ROLLED PRODUCTS (Flat) United States of America	862403 0635195US
2	1/2" PLATE 17-4 48.0 x 96.0 in Plate Saw Random	Specs: See Test Report	1 pcs 693 lb	Gautier Specialty Metals United States of America	S8491-01-T1 0634814US

We hereby certify that the material supplied by Rolled Alloys on the above referenced purchase order was processed in accordance with the quality assurance program and procedures approved under our ISO 9001:2015/AS9100D certificate. The material was produced in compliance with the following revisions of our Quality Manual: Rev. G 5/10/2021. Our records indicate that the material and test report(s) meet the requirements of EN 10204 for a Type 3.1 inspection certificate, and meet the requirements of the purchase order and applicable specifications. The certifications provided for the Tracer numbers above are authentic and true to the original document. Rolled Alloys QMS includes mechanisms and process controls for the prevention of counterfeit parts. Required documentation is on file, and is available for review upon request. The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under federal statute. Unless otherwise specified, the materials supplied with this order did not come into known contact with mercury or other low melting point elements, radioactive materials, Polychlorinated Biphenyls (PCBs), nor undergo any weld repairs while under Rolled Alloys possession. (No mercury was used in the manufacturing of this product.) Rolled Alloys complies with the applicable requirements of the 2010 Dodd Frank Wall Street Reform and Consumer Protection Act, concerning Conflict Minerals. When applicable, Rolled Alloys complies with the requirements of AS6279 Standard Practice for Production, Distribution, and Procurement of Metal Stock. Products supplied by Rolled Alloys are compliant with EU Directive 2011/65/EU and 2015/863 (RoHS3). These articles have no intended release as outlined in the European Chemical Agency's Guidance on requirements for substances in articles (RIP 3.8), and there is no obligation to register them under REACH. Safety Data Sheets (SDS), formerly known as Material Safety Data Sheets (MSDS), are available at www.RolledAlloys.com. Products supplied by Rolled Alloys do not contain any significant amounts (does not exceed 0.1 Wt%) of the chemical compounds on the EU Candidate List of Substances of Very High Concern (SVHC).

Josh Messerole
 Director of Quality

January 7, 2022

Date



Rolled Alloys Inc.
125 W. Sterns Road
Temperance, MI 48182
United States of America

Tel: 1-800-521-0332
Fax: 734-847-6917

Packing List
Shipment # 1129934SUS
Shipment Date 1/7/22
Customer # 3030653



Sold To:

FABRICAST VALVE
1061 INDUSTRIAL WAY
LONGVIEW, WA 98632
United States of America
360-425-0306

Shipped To:

BRIDGE CITY STEEL
3865 NW ST HELENS ROAD
PORTLAND, OR 97210
United States of America

Purchase Order # Sales Order #		Freight				Shipping Via	Salesperson
211214COGS 4257905-TEM-1		Prepaid				R & L Carriers	Andy Yun
Line #	Order Qty	Ship Qty	Bill Qty	Weight	Backorder Qty	Description	
1	1.00 pcs	528.077 lb	1.00 pcs	528 lb	0.00 pcs	3/8" PLATE 17-4 Plate Saw Specs: See Test Report 48.0" x 96.0" 1 PCS Heat: 862403 Tracer: 0635195US Mill:ATI SPECIALTY ROLLED PRODUCTS (Flat)	
2	1.00 pcs	693.043 lb	1.00 pcs	693 lb	0.00 pcs	1/2" PLATE 17-4 Plate Saw Specs: See Test Report 48.0" x 96.0" 1 PCS Heat: S8491-01-T1 Tracer: 0634814US Mill:Gautier Specialty Metals	

These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the authorized ultimate consignee or end-user(s), either in their original form or after being incorporated into other items, without first obtaining approval from the U.S. Government or as otherwise authorized by U.S. law and regulations.

THE RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS OR ENTRIES ON THIS DOCUMENT MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL STATUTE.

ALL ITEMS SUBJECT TO PRIOR SALE PLUS APPLICABLE TAXES. PO TERMS & CONDITIONS ACKNOWLEDGED, ROLLED ALLOYS STANDARD TERMS AND CONDITIONS APPLY.

THIS INFORMATION IS AVAILABLE AT WWW.ROLLEDALLOYS.COM OR CONTACT YOUR REPRESENTATIVE.

Package#	Location	Size	Type	Gross Weight
1264553PUS	floor	96"X48"X6"	PAL	642 L
1264656PUS	123	96"X48"X8"	PAL	838 L

 ATI Flat Rolled Products	Certificate of Test		 Noreen DeFerrari - Sr. Manager, Quality	
	Mill Information		Customer Information	
500 Green Street Washington, PA 15301	Cert Number 0220738-01	Name ROLLED ALLOYS INC		
	Sales Order 50-091-189	PO 0200638-TEM		
	Cert Date Oct-26-2021	PO Date Sep-14-2021		

Sold to: ROLLED ALLOYS INC PO BOX 310 TEMPERANCE, MI 48182	Ship to: ROLLED ALLOYS INC. 125 WEST STERNS ROAD TEMPERANCE, MI 48182
---	--

Material Information

"ATI 17-4" PRECIPITATION HARDENABLE STAINLESS STEEL <i>TRACER # Below</i> PMP HOT ROLLED PLATE ANNEALED PICKLED COMMERCIAL CUT EDGE	
AMS 5604J CND A/H900 S-SPEC-1, S-1000 DATED 03/30/21 ASME-SA-693-19 CND A/H900 ASQR-01 REV 11	ASTM-A-693-16 S17400 CND A/H900 S-SPEC-35 S-400 DATED 8-1-19 UNS S17400

Piece Information

	Gauge	Width	Length				Total Wt
Pcs	(in)	(in)	(in)	Heat #	Piece ID	Section Id	(lbs)
Item: 003		Cust-Id: 0008519		Govt-Contract-#:		Govt-DO-Rating:	
		Cust-Job:		ScheduleB:			
1	.3750	84.0000	260.0000	862403	CG26083	Th 0635194	2502
1	.3750	84.0000	256.0000	862403	CG26084	Th 0635195	2463
1	.3750	84.0000	266.2500	862268	CG26090	Th 0635197	2562

Chemistry Testing

Element (wt %)	Requirements		Final Heat Analysis		Final Heat Analysis	
	Min	Max	862268	Loc	862403	Loc
C	---	.07	.05	BN	.04	BN
MN	---	1.00	.55	BN	.61	BN
P	---	.040	.023	BN	.025	BN
S	---	.030	< .001	BN	< .001	BN
SI	---	1.00	.22	BN	.20	BN
CR	15.00	17.50	15.41	BN	15.50	BN
NI	3.00	5.00	4.74	BN	4.78	BN
MO	---	.50	.20	BN	.22	BN
CU	3.00	5.00	3.26	BN	3.28	BN
CB	.15	.45	.28	BN	.27	BN
TA	---	---	.010	TC	.010	TC
CBT	.15	.45	.29	--	.28	--

 ATI Flat Rolled Products 500 Green Street Washington, PA 15301	Certificate of Test		 Moreen DeFerrari - Sr. Manager, Quality	
	Mill Information		Customer Information	
	Cert Number 0220738-01 Sales Order 50-091-189 Cert Date Oct-26-2021	Name ROLLED ALLOYS INC PO 0200638-TEM PO Date Sep-14-2021		

Chemistry Testing

Element (wt %)	Requirements		Final Heat Analysis		Final Heat Analysis	
	Min	Max	862268	Loc	862403	Loc
CBC	5.00	---	5.96	--	6.28	--

ATI Flat Rolled Products performs chemical analysis by the following techniques for testing locations TC, BN, & LO: C & S by combustion/infrared absorption per ASTM E1019; N & O by inert fusion/thermal conductivity per ASTM E1019; Mn, P, Si, Cr, Ni, Mo, Cu, Cb(Nb), Co, V, W by WDXRF per ASTM E572; Pb, Bi, Ag by GFAA per ASTM E1184; Al and Ti (>=0.10%) by WDXRF per ASTM E572 otherwise by OES per ASTM E1086; Ta by ICP per ASTM E1479.

862268 - Material was produced by EF melting with AOD refining.
USA melt and manufacture

Material melted at ATI FRP Brackenridge (FRPB)

862403 - Material was produced by EF melting with AOD refining.
USA melt and manufacture

Material melted at ATI FRP Brackenridge (FRPB)

FRPB - ATI FRP BRACKENRIDGE 100 River Road Brackenridge, PA 15014

CBC = Cb / C

CBT = Cb + Ta

Mechanical Testing

		LOT 506715		LOT 506715		LOT 506920		LOT 506920		LOT 506925	
Condition:		ANNEALED		H900		ANNEALED		H900		ANNEALED	
Direction:		TRANSVERSE		TRANSVERSE		TRANSVERSE		TRANSVERSE		TRANSVERSE	
Temperature:		ROOM TEMP		ROOM TEMP		ROOM TEMP		ROOM TEMP		ROOM TEMP	
Spec:											
Test Limit	Units	Result	Loc	Result	Loc	Result	Loc	Result	Loc	Result	Loc
HARDNESS	---	34. HRC	TC	44. HRC	TC	35. HRC	TC	45. HRC	TC	35. HRC	TC
YS 0.2% OFFSET	psi	---	--	181000.	TC	---	--	182200.	TC	---	--
TENSILE	psi	---	--	195000.	TC	---	--	195900.	TC	---	--
ELONG. IN 2"	%	---	--	19.	TC	---	--	16.	TC	---	--
RED OF AREA	%	---	--	57.	TC	---	--	54.	TC	---	--

 ATI Flat Rolled Products 500 Green Street Washington, PA 15301	Certificate of Test		 Noreen DeFerrari - Sr. Manager, Quality	
	Mill Information		Customer Information	
	Cert Number 0220738-01 Sales Order 50-091-189 Cert Date Oct-26-2021	Name ROLLED ALLOYS INC PO 0200638-TEM PO Date Sep-14-2021		

Mechanical Testing

		LOT 506925	
Condition:		H900	
Direction:		TRANSVERSE	
Temperature:		ROOM TEMP	
Spec:			
Test Limit	Units	Result	Loc
YS 0.2% OFFSET	psi	182800.	TC
TENSILE	psi	199100.	TC
ELONG. IN 2"	%	14.	TC
RED OF AREA	%	47.	TC
HARDNESS	---	45. HRC	TC

When hardness is measured using the Brinell scale, the indentation measuring device is Type A.

"H", "TH", "RH", and other heat treated values are capability test results.

Mechanical Property Requirements

Condition:		ANNEALED		H900	
Direction:		TRANSVERSE		TRANSVERSE	
Temperature:		ROOM TEMP		ROOM TEMP	
Spec:					
Test Limit	Units	Min	Max	Min	Max
YS 0.2% OFFSET	psi	---	---	170000.	---
TENSILE	psi	---	---	190000.	---
ELONG. IN 2"	%	---	---	8.	---
RED OF AREA	%	---	---	30.	---
HARDNESS	---	---	352. HBW	40. HRC	47. HRC

Metallography - General

Test ID	Result Name	Condition	Test Result	Loc	Requirements
506715 LOT	DELTA FERRITE	ANNEALED	1.00	PE	5.00 max
506920 LOT	DELTA FERRITE	ANNEALED	1.00	PE	5.00 max

 ATI Flat Rolled Products 500 Green Street Washington, PA 15301	Certificate of Test		 Noreen DeFerrari - Sr. Manager, Quality	
	Mill Information		Customer Information	
	Cert Number 0220738-01 Sales Order 50-091-189 Cert Date Oct-26-2021	Name ROLLED ALLOYS INC PO 0200638-TEM PO Date Sep-14-2021		

Metallography - General

Test ID	Result Name	Condition	Test Result	Loc	Requirements
506925 LOT	DELTA FERRITE	ANNEALED	1.00	PE	5.00 max

Certification Statements

Grade verification was performed spectroscopically.

EN 10204:2005 - 3.1 Certificate does not imply that material is an approved PED grade. For a complete listing of approved PED grades, visit our website at www.atimetals.com.

ATI-FRP defines the Grain Orientation Nomenclature as Longitudinal (L) is the Length, Long Transverse (LT) is the width, and Short Transverse (ST) is the thickness or gauge.

The product was solution heat treated at 1900F (1038C) for a time commensurate with thickness and heating equipment and procedure used, and cooled to below 90F (32C).

ATI Flat Rolled Products has complied with all producer requirements of AS6279.

ATI Flat Rolled Products does not use mercury in the testing or production of its products.

No welds/weld repairs performed.

Material tested at ATI Flat Rolled Products GEAE S400 approved facilities (T1225 & T9317): Natrona Heights, PA; Brackenridge, PA and New Bedford, MA.

ATI Flat Rolled Products holds several quality and Laboratory Certifications that include ISO-9001, AS9100, AD 2000-Merkblatt W0, EU Pressure Equipment Directive 14/68/EU, Nadcap, ISO/IEC 17025, GEAE S400 (T1225 & T9317), GEAE S-1000. Refer to www.ATIMetals.com to access the current ATI-FRP quality certifications

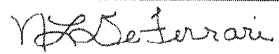
The following test methods are used by the listed lab: ASTM E8 for all specimens for yield, tensile, and elongation except ISO 6892-1 for 80mm specimens; ASTM E290 for bend (for New Bedford Laboratory - Type 2 Free bend is used), ASTM E112 for grain size; ASTM E10, E18, E92, & E384 for hardness; ASME B46.1 section3 for surface roughness; AMS 2750 for laboratory heat treatment, ASTM E139 for stress rupture; ASTM E29 for rounding; ASTM E3 and E407 for metallographic preparation and etching.

ATI FRP products have not come in contact with radioactive materials during manufacturing or processing.

EN 10204:2005 3.1 Certificate.

General Statements

The Finishing Location for ALL PIECES is ATI-FRP
The shipping Location is ATI-FRP WASHINGTON, PA

 ATI Flat Rolled Products 500 Green Street Washington, PA 15301	Certificate of Test		 Nicoleen DeFerrari - Sr. Manager, Quality
	Mill Information		Customer Information
	Cert Number 0220738-01 Sales Order 50-091-189 Cert Date Oct-26-2021	Name ROLLED ALLOYS INC PO 0200638-TEM PO Date Sep-14-2021	

General Statements

TESTING WAS PERFORMED AT THE FOLLOWING LOCATIONS

BN = ATI FRP Brackenridge; 100 River Road; Brackenridge, PA 15014
 PE = PRODUCT EVALUATION SYSTEMS; 637 Donohoe Road; Latrobe, PA 15650
 TC = ATI FRP Natrona Heights; 1300 Pacific Avenue; Natrona Heights, PA 15065

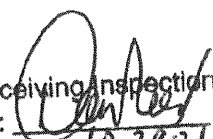
Knowingly and willfully recording any false, fictitious or fraudulent statement or entry on this document may be punished as a felony under Federal Statutes, including Federal Law, Title 18, Chapter 47.

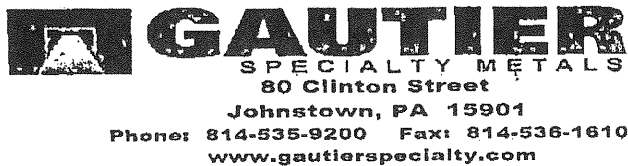
WARNING: Processing that makes fumes, dust, or solutions may cause lung disease. Please see safety Data Sheet for further information which has been supplied to your Purchasing Department. For an additional copy, please refer to our website at:
www.atimetals.com/Products/ati-sds

For access to online Certifications of Test, please register at MyATI.ATIMetals.com

This Certified Material Test Report is a true representation of the data on file. The reported results conform to the sales contract and specification(s) as set forth in ATI Flat Rolled Products order acknowledgement. This Certificate of Test may not be reproduced except in full without the written authorization of the company.

ATI Flat Rolled Products website contains listing of material produced, general technical and contact information, and current quality and company accreditations including but not limited to ISO-9001, AS-9100, Nadcap, and ISO/IEC 17025. Please visit us at www.atimetals.com


 Receiving Inspection
 By: 
 Date: 10-28-21



PRODUCT CERTIFICATION

WORK ORDER	HEAT NUMBER
016041	S8491-01-T1
Tag I.D.	SALES ORDER / RLS
016041/001A	02-020837 / 002
016041/001B	CERT ID / REV
016041/002	00043624 / 01

SOLD TO

Rolled Alloys
125 W. Sterns Road
Temperance, MI 48182
United States

CUSTOMER P.O. 0198697-TEM	CUSTOMER PART 0008521	QUANTITY 3,043 Lbs	BARS 3	LADING NO 28535NCS	SHIPMENT DATE 10/21/2021
SPECIFICATION PS174PH0050048P-326 Grade: 17-4 Ordered Size: 0.500" x 48.000" Plate Process: Hot Rolled; Solution Annealed; Warm Flattened; Pickled; Edges/End Cut Edge Quality: Cut Edge Surface Finish: As-Rolled/Pickled					
COMMERCIAL DESCRIPTION Grade: 17-4PH Ordered Size: 0.500" x 48.000" Plate Tolerances: Thickness -0.010 +0.055 Width -2.000 +3.000 Length Option: Range Ordered Length: 0.000" Min: 120.000" Max: 158.000" Process: Hot Rolled; Solution Annealed; Warm Flattened; Pickled; Edges/End Cut Edge Quality: Cut Edge Surface Finish: As-Rolled/Pickled Customer Specs: AMS 5604J, ASME SA 693 ASTM A 693-16, DFARS Domestic 252.225-7008 EN 10204 3.1, No Weld Repair UNS S17400					
CERTIFICATION REQUIREMENTS 1 TEST REPORT WITH SHIPMENT MANIFEST ANALYSIS, CAST METHOD, MELT SOURCE, ANNEALED HARDNESS, H900 CONDITION PROPERTIES					
CERTIFICATION INST. Please email the BOL and TR to: rapaperwork@rolledalloys.com					
Vendor Provided Data					
Vendor ENS	Freq 0	Seve 0	Macro-Etch S1 R1 C1		
Heat Analysis (from Vendor)					

HEAT # S8491-01-T1



TRACER # 0634814US

We hereby certify that these Chemical and/or Test results are correct as contained in the records of Gautier, Steel Manufactured in U.S.A. and is free of contamination from mercury and/or radioactive materials. No weld repairs have been made to this material.

Robert Sorg, Quality Manager

PRODUCT CERTIFICATION

WORK ORDER 016041 HEAT NUMBER S8491-01-T1
Tag I.D. 016041/001A SALES ORDER / RLS 02-020837 / 002
016041/001B CERT ID / REV
016041/002 00043624 / 01

SOLD TO

Rolled Alloys
125 W. Sterns Road
Temperance, MI 48182
United States

CUSTOMER P.O. 0198697-TEM	CUSTOMER PART 0008521	QUANTITY 3,043 Lbs	BARS 3	LADING NO 28535NCS	SHIPMENT DATE 10/21/2021					
C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Al	V
.032	.70	.022	.001	.30	3.21	4.84	15.30	.30	.01	.051
Cb	Sn	Ti								
.262	.01	-.001								
Mechanical by Lot										
<u>TEST</u>		<u>UNITS</u>		<u>RESULTS</u>						
Hardness, RC		RC		31						
<u>AMS 2315 Ferrite %</u>										
1										
<u>Melted & Manufactured in</u>										
USA										
Disclaimer Statements										
Other Physical Properties										
<u>TEST</u>		<u>UNITS</u>		<u>RESULTS</u>						
Tensile (ksi),,Trans,H900		KSI		195.9						
YS (0.2%)(ksi),,Trans,H900		KSI		174.4						
Elong. (2"),,Trans,H900		Percent		15.2						
Red. of Area,,Trans,H900		Percent		52.9						
Hardness, RC,,,H900		RC		43						
End of Certification										
RECEIVED BY: <i>Robert Sorg</i> Date: <u>10-25-21</u> Receiving Inspection By: <i>Robert Sorg</i> Date: <u>10-25-21</u>										

We hereby certify that these Chemical and/or Test results are correct as contained in the records of Gautier, Steel Manufactured in U.S.A. and is free of contamination from mercury and/or radioactive materials. No weld repairs have been made to this material.

Robert Sorg, Quality Manager

Robert Sorg

CERTIFIED TEST REPORT

Date: 7/13/21

Report of Tests of: (4), 11"x50" - Grade 17-4 PH Forged Slab Mult(s)

For Company: Gautier Specialty Metals
80 Clinton St.
Johnstown, 15901Customer's Order: 02-011092
Date of Order: 1/21/21
Our Shop Order: H000258889
Specification: 17-4 PH**CHEMICAL ANALYSIS**

Heat #	C	Mn	P	S	Si	Ni	Cr	Mo	V	Cu	Al	Ti	Sn	Nb
S8491	.032	.70	.022	.001	.30	4.84	15.30	.30	.051	3.21	.01	<.001	.01	.262
	N	Ta												
	.012	.004												

Material Certified: S8491-01-B1 11"x50"x96.25"; S8491-01-T1 11"x50"x83.75"; S8491-02-B1 11"x50"x104.5"; S8491-02-T1 11"x50"x59"

The material was melted using the electric furnace-ladle refined-vacuum oxygen decarburization-vacuum degassed process and was subsequently bottom poured.

This material meets the chemistry and is capable of meeting AMS 5604J, ASTM A693-16, ASTM A484-20, ASTM A564-19 Type 630 and ASME SA564 Type 630 (2019).

This material meets the chemistry and properties of AMS 5643V (tested as forging stock).

Nb+Ta = .27

Chemistry per ISO 17025/NADCAP certified laboratory.

The material was melted and produced in the USA, in accordance with the ENS Quality System which is certified to AS9100D and ISO 9001:2015.

Delta Ferrite per AMS 2315 less than 1% as tested on S8491-01-T1/B1 and S8491-02-T1/B1

H900 Tensile Properties:

Sample ID	Ultimate (Ksi)	OFS @ .02% (Ksi)	TE (%)	Reduction Area (%)	Hardness (HBW)
S8491-01-B1 Transverse	194.7	171.9	15	50	416
S8491-02-T1 Transverse	194.9	171.7	15	49	418

(Version 3)

ELLWOOD NATIONAL STEEL

3 FRONT STREET, IRVINE, PA 16329

Page 2 of 3

ENS

(814) 563-7522

Telefax (814) 563-6330

Macrostructure to ASTM E381

Sample ID	S	R	C
S8491-01-T1	1	1	1
S8491-01-B1	1	1	1
S8491-02-T1	1	1	1
S8491-02-B1	1	1	1

AMS 2303F

Sample ID	F/S
S8491-01-T1	0/0
S8491-01-B1	0/0
S8491-02-T1	0/0
S8491-02-B1	0/0

Material forged to 11"x50" Slab from 40"x53" ingot.

This material meets AMS 2303F (tested as forging stock).

[Version 3]

ELLWOOD NATIONAL STEEL

3 FRONT STREET, IRVINE, PA 16329

Page 3 of 3



(814) 563-7522

Telefax (814) 563-6330

Company: Gautier Specialty Metals

Heat: S8491

Order: 02-011092

CERTIFIED TEST REPORT REVISION LOG

Date	Approved By	Description
6/1/2021	TPiotrowski	Statements: Removed [Ready for verification per JGS]
7/13/2021	JStevens	Modified Customer Order

RECEIVED
GUTIERREZ

Receiving Inspection
By: [Signature]
Date: 10-25-21

PO 13842-103-1
10" FV-150 T-Lok
Gate PMI

INTERNATIONAL INSPECTION

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Cr	Cr Error	Ni	Ni Error	Results
1	8/1/2022 6:53	System Check	53.52	cps	Final	System Check 1 of 2						Pass
2	8/1/2022 6:54	System Check	55.24	cps	Final	System Check 2 of 2						Pass
3	8/1/2022 6:55	General Metals	10 %		Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	1.089	0.047	0.156	0.046	Pass
4	8/1/2022 7:00	General Metals	10 %		Final	Job# 132-1 2" UNI (1 of 1)	SS-316 : 0.00	16.58	0.156	10.322	0.199	Pass
5	8/1/2022 7:06	General Metals	10 %		Final	Job# 955-4 16" UNI (1 of 2)	17-4 PH : *1.81	15.23	0.145	4.219	0.137	Pass
6	8/1/2022 7:09	General Metals	10 %		Final	Job# 955-4 16" UNI (2 of 2)	17-4 PH : 0.80	15.56	0.153	4.005	0.141	Pass
7	8/1/2022 7:16	General Metals	10 %		Final	Job# 955-2 16" UNI (1 of 2)	17-4 PH : 1.45	15.25	0.149	4.108	0.14	Pass
8	8/1/2022 7:18	General Metals	10 %		Final	Job# 955-2 16" UNI (2 of 2)	17-4 PH : 1.42	15.46	0.147	4.096	0.136	Pass
9	8/1/2022 7:22	General Metals	10 %		Final	Job# 132-2 3" UNI (1 of 1)	SS-316 : 0.80	16.71	0.15	9.992	0.188	Pass
10	8/1/2022 7:24	General Metals	10 %		Final	Job# 108-1 8" UNI (1 of 2)	SS-304 : 0.28	18.21	0.164	7.91	0.181	Pass
11	8/1/2022 7:24	General Metals	10 %		Final	Job# 108-1 8" UNI (2 of 2)	SS-304 : 0.70	17.97	0.159	7.949	0.178	Pass
S/N 221031-1	12	8/1/2022 7:26	General Metals	10 %	Final	Job# 103-1 10" TLOK (1 of 2)	17-4 PH : *2.71	15.82	0.151	4.463	0.142	Pass
S/N 221031-2	14	8/1/2022 7:27	General Metals	10 %	Final	Job# 103-1 10" TLOK (2 of 2)	17-4 PH : *2.24	15.5	0.151	4.709	0.148	Pass
15	8/1/2022 7:28	General Metals	10 %		Final	Job# 103-2 16" TLOK (1 of 4)	17-4 PH : *1.80	15.23	0.147	4.322	0.14	Pass
16	8/1/2022 7:29	General Metals	10 %		Final	Job# 103-2 16" TLOK (2 of 4)	17-4 PH : 1.56	15.08	0.143	4.119	0.135	Pass
17	8/1/2022 7:29	General Metals	10 %		Final	Job# 103-2 16" TLOK (3 of 4)	17-4 PH : *1.79	15.28	0.152	4.195	0.143	Pass
18	8/1/2022 7:29	General Metals	10 %		Final	Job# 103-2 16" TLOK (4 of 4)	17-4 PH : 1.47	15.33	0.146	4.113	0.136	Pass
24	8/1/2022 7:34	General Metals	10 %		Final	Job# 098 18" UNI (1 of 1)	17-4 PH : *2.22	15.31	0.148	4.623	0.145	Pass
25	8/1/2022 7:35	General Metals	10 %		Final	Job# 138-2 28" DS (1 of 2)	SS-304 : 0.57	17.95	0.17	7.966	0.191	Pass
26	8/1/2022 7:36	General Metals	10 %		Final	Job# 138-2 28" DS (2 of 2)	SS-304 : 0.09	18	0.17	7.855	0.189	Pass
27	8/1/2022 7:38	General Metals	10 %		Final	Job# 078-1 4" UNI (1 of 2)	SS-304 : 1.16	18.1	0.157	7.95	0.175	Pass
28	8/1/2022 7:38	General Metals	10 %		Final	Job# 078-1 4" UNI (2 of 2)	SS-304 : 1.50	18.13	0.159	7.925	0.176	Pass
29	8/1/2022 7:41	General Metals	10 %		Final	Job# 105-1 6" UNI (1 of 1)	17-4 PH : *2.21	15.46	0.157	4.67	0.153	Pass
30	8/1/2022 7:41	General Metals	10 %		Final	Job# 110 6" UNI (1 of 1)	17-4 PH : *2.22	15.56	0.146	4.649	0.142	Pass
31	8/1/2022 7:43	General Metals	10 %		Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	1.073	0.045	0.143	0.043	Pass

17-4PH Composition Range

Chromium (Cr): 15.0 - 17.5

Nickel (Ni): 3.0 - 5.0

316 Composition Range (ASME Sec.II)

Chromium (Cr): 16.0 - 18.0

Nickel (Ni): 10.0 - 14.0

304L Composition Range (ASME Sec.II)

Chromium (Cr): 18.0 - 20.0

Nickel (Ni): 8.0 - 13.0

Technician: Daniel C Rosian 8/1/2022

D. Rosian

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Ni	Ni Error	Cr	Cr Error	Results
------------	------	------	----------	-------	----------	------------------	-------------	----	----------	----	----------	---------

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@LCgroup.com
IARM-35NN-F
6/30/2020 1 / 2



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# - 150 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.



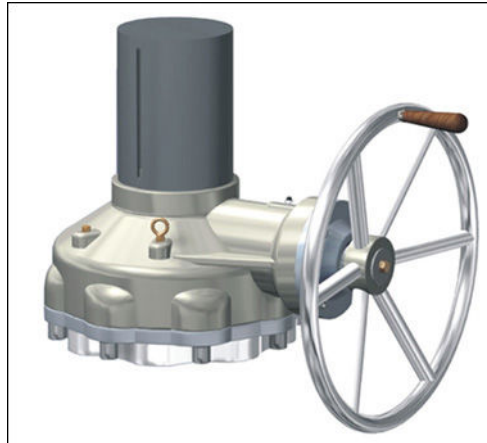
ph: (780) 416-9683 fax: (780) 416-9684
www.endurancevalve.com

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 a 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

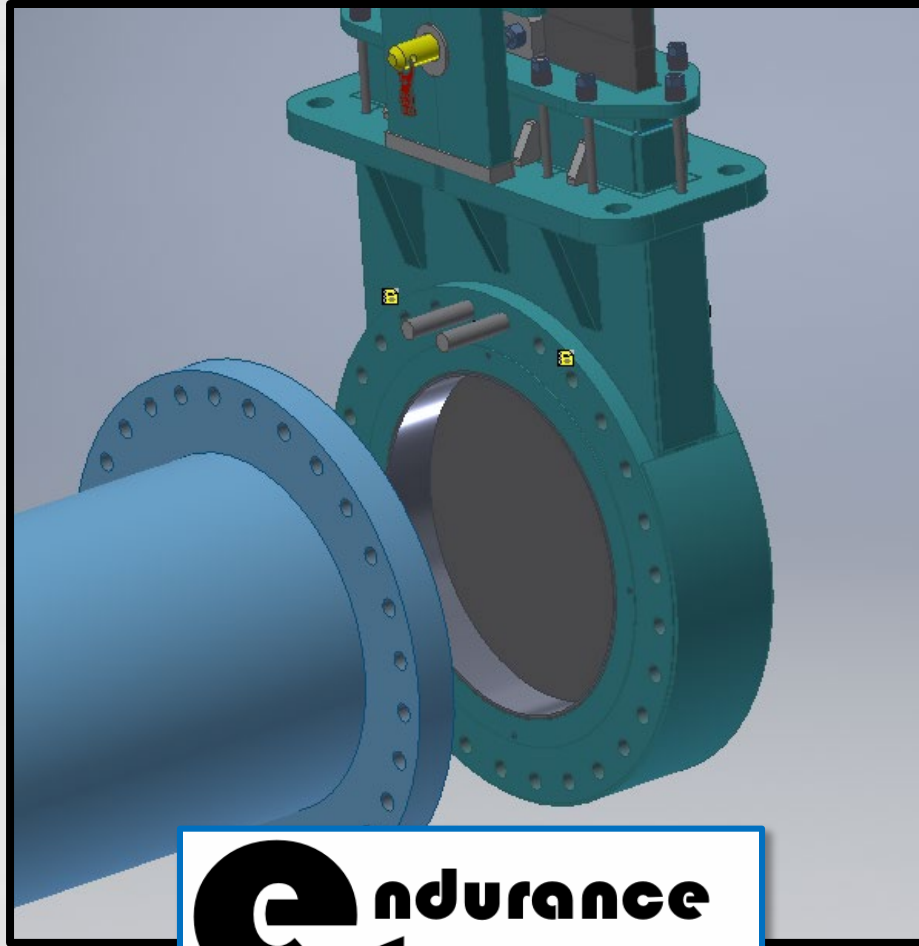
BOLTING STUDS TO VALVE-PIPING

Engineering



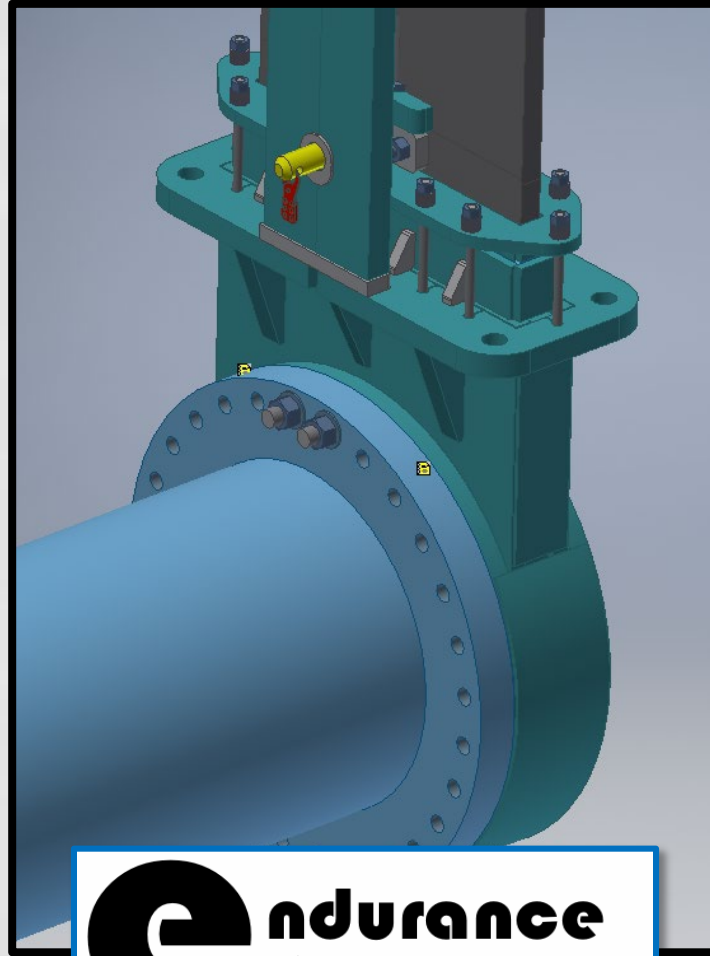
STEP 1

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



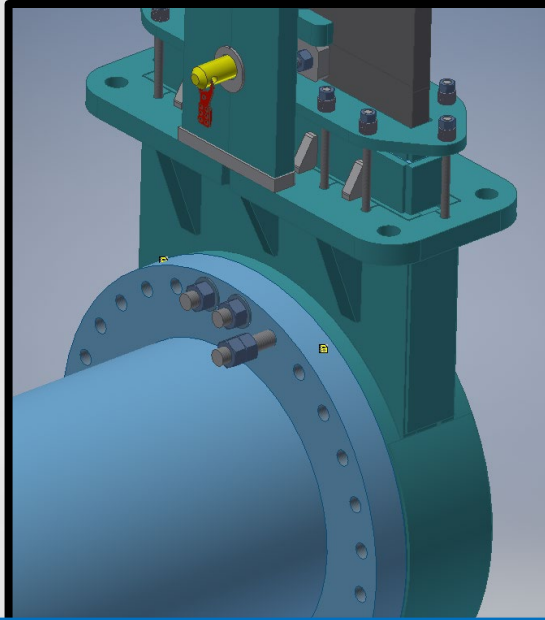
STEP 2

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



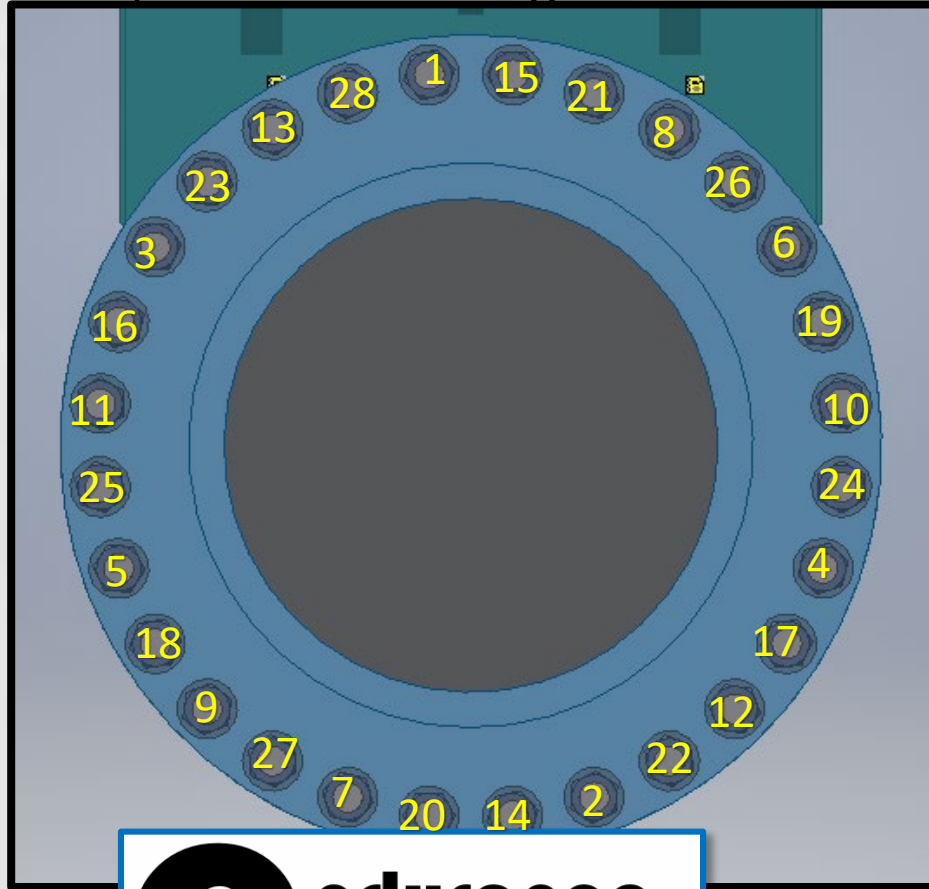
STEP 3

- 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

