



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-10-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X
Ref Job #	13800 Item #3
P.O.:	P.O. 4503148039
Serial #'s	229553-1

Tag #'s	Tag: 93SP-2140
---------	----------------

CRN: 0C10259.2
Weight: 310 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 #3
Model Number:	FV-10-300-150FF-TL-A516FP/TFE/304FP-17.4FP- WRFP-BG-FB-X
Serial #:	229553-1

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

310^{LBS}

229553-1

10⁰⁰

Fabricast Valve Manufacturers ID: 2202955

FV-10-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X

P.O. 4503148039 / 3500007374

93SP-2140

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-10-300-150FF-TL-A516FP/TFE/304FP-17.4FP-WRFP-BG-FB-X				
Serial Number	229553-1	Ref. #	13800 Item #3	Size	10
Tag Number	Tag: 93SP-2140		Design Pressure Body PSI/CWP		300
Wetted Parts	17.4ss	Flange Material	A516Gr70	Design Pressure Seat PSI/CWP	
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	Nicholas Hicks - e			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
Resilient Seat Test	330	PSI	Leakage Side 1	e	Leakage Side 2
Test Duration	Side 1	2	Minutes	Side 2	2
Test Results	Side 1	☒ PASS ☐ FAIL	Permissible Leakage		
Test Results	Side 2	☒ PASS ☐ FAIL	☐ Not Applicable		
Tester	Lynan Alexander Sym			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 / e			Date	
Source Inspector				Date	

Inv: 1090181 Date: 03/31/2022
Heat: 536802

BRIDGE CITY STEEL INC*
STAINLESS PLATE SPL 1/4" x 60" x 120" HRAP ASTM A-240 304L

Wear Ring Face, Liner Keepers

087636

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains: 2 pages (Page: 1)

Cust#: WESPRT Company#: WEST COAST METALS

www.tachen.com

MTR#: TSCLTSL00556402.pdf PO#: P042383 SO#: LHHSZ0

Item: 25060120304L#1 Bundle: 3419768 Heatno: 536802 Item: 25060120304L#1 Bundle: 3419768 Heatno: 536802
Item: 25060120304L#1 Bundle: 3419774 Heatno: 536802 Item: 25060120304L#1 Bundle: 3419774 Heatno: 536802

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 0000556402 / Page / Página: 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 LA1330 Manufacturer's work order no. / N° de Pedido Manufactura 901302642 / 004 Delivery note no. / N° de Entrega 85764893 / 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 K ASTM A276-17, A312-21, A479-21, A484-21b Chemical only ASME SA312-19, SA479-21 for Chemical Composition ASTM A666-15 SAE AMS QQ-S-763D for Chemical composition. NACE MR0103 / ISO 17945: 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 25060120304L#1/TA		Product dimensions (Thickness / Width / Length) / Dimensiones (Espesor / Ancho / Largo) 6.35 mm x 1,524.00 mm x 3,048.00 mm 0.2500 inch x 60.0000 inch x 120.0000 inch		Steelmaking procedure / Proceso de manufact. ADD Finish / Acabado 11a / 10 / No.1							
Packing-No. / N° de Empaque	No. of pieces / Piezas	Actual weight / Peso actual	Coil No. / Bobina No.	Heat No. / Cofada	Inspection lot / Lote de Inspeccion						
3419768	6	2,749 lb / 1,247 kg	912210	536802	1000785175						
3419772	6	3,040 lb / 1,379 kg	912210	536802	1000785176						
3419774	6	2,754 lb / 1,249 kg	912210	536802	1000785175						
3419777	6	3,025 lb / 1,372 kg	912210	536802	1000785175						
3419779	6	3,029 lb / 1,374 kg	912210	536802	1000785175						
3419782	6	3,020 lb / 1,370 kg	912210	536802	1000785175						
3419787	6	3,025 lb / 1,372 kg	912210	536802	1000785175						
3419792	6	3,034 lb / 1,376 kg	912210	536802	1000785175						
3419794	6	3,036 lb / 1,377 kg	912210	536802	1000785175						
3419796	6	3,031 lb / 1,375 kg	912210	536802	1000785175						
3419797	6	3,020 lb / 1,370 kg	912210	536802	1000785175						
Sum / Suma	66	32,763 lb / 14,851 kg									
Heat / Calada	Country of Heat / País de calada	Chemical composition / Composición Química									
536802	USA	Chemical analysis per ASTM A751-14a									
		% C	% Si	% Mn	% P	% S	% Cr	% Mo	% Ni	% N	% Cu
		0.022	0.35	1.26	0.032	0.0010	18.05	0.31	8.02	0.066	0.55
Originator of the document / Originador del documento /		The information provided is a true copy of data on file / Los valores mostrados corresponden a los datos archivados									
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		Date of issue and validation / Fecha de emisión y validación 02/07/2022 This document shall not be altered or reproduced, except in full. Falsification, forgery, or other statements or actions may be prosecuted by law. Alejandro Carrillo Ramos Name of expert / Nombre del experto									

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1819610	Apr 20, 2022	1
MILL ORDER NO.	DATE	
375251		
CUSTOMER ORDER NO.		
227570		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1819610	04/20/2022	
CARRIER		
GREEN TRANSFER		
CAR/TRUCK NO.		
177		

ISO 9001 REGISTERED U.S. PLATE PRODUCER	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 AIM .03 SI , .19 C NO WELD REPAIR.
 LASER QUALITY. KILLED FINE GRAIN PRACTICE.

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.7500 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	725	34				
				515	715	28				
	6 PCS 32673 LBS TOTALS									

Top Flange
Gland Flange

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
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

Quality Systems Coordinator

3/16 A36

AC 6119

Heat Number

AC6119

Shipper No

16386

Customer PO#

VARSTEEL LTD. - DELTA (INTERC) de-1069006

Customer Name

Wrap (Body)

Heat Number: AC6119

鋼材検査証明書
INSPECTION CERTIFICATE

東京製鉄株式会社

TOKYO STEEL MFG.CO.,LTD.

本社:〒100-0013 東京都千代田区有明3丁目7番1号 有明ビル5F (15F)
Head Office: Kaseigakushi Tokyo Bldg. (15F), 3-7-1 Kaseigakushi, Chiyoda-ku Tokyo 100-0013 Japan注文者
Shipper発注店
Customer品名
Commodity

HQT ROLL COIL

規格
Specification

ASIN A36-19 MODIFIED, CSA 39W/44W

受注番号 Contract No. KT21162

送り状番号 Invoice No. C-901696

発行日 Date of Issue SEPTEMBER.15.2021 証明書番号 Certificate No. 642356

受取家
Customer工事名
Project Name

ASTM A30-19 ADDED LSH 3007447	数量 Quantity	コイル番号 Coil No.	期番 Charge No.	引張試験 Tensile Test	衝撃試験 Impact Test	厚さ方向性 Through-thickness Characteristics	備考 Remark
寸法 Size (INCH)	個数 Pieces	重量 Weight kg		引張強さ Tensile Strength N/mm ² (MPa)	引張伸び Elongation %	断面収縮 Reduction of Area %	
0.1780X60.000XC01L	1	20920	AB7271081	AC6119	353	460	300
0.1780X60.000XC01L	1	21240	AB7271091	AC6119	359	462	300
0.1780X60.000XC01L	1	20730	AB7271101	AC6118	349	458	260
0.1780X60.000XC01L	1	20940	AB7271161	AC6118	360	462	260
0.1780X60.000XC01L	1	20970	AB7271171	AC6118	349	450	260
0.1780X60.000XC01L	1	21150	AB7271181	AC6118	349	450	260
	試験方法 Test Method	試験場所 Test Place	試験日 Test Date	試験員 Test Operator	試験結果 Test Result		

上記検査結果は、検査結果の範囲または仕様に基づいて製造され、その要求事項を満足していることを証明します。
We hereby certify that above steels have been satisfactorily tested in accordance with the specification.
PO NO. HRJA 4710 LOT 2

田中 浩二 検査部長
TAKAHARA PLANT: 2-1-1, Shirohama, Takahara-city,
Aichi pref. 441-3435, Japan

田中 浩二 検査部長
Chief Inspector OTSUKA YASUHIRO
Quality Control Sec. Takahara Plant



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
1822463	MAY 11, 2022	13
MILL ORDER NO.	DATE	
136736		
CUSTOMER ORDER NO.		
PLATE SALES-1		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1822463	05/11/2022	
CARRIER		
UNKNOWN		
CAR/TRUCK NO.		
P17571-BCS		

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.

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 ASTO M270-GR 250 (36)									
	0.3125 X 96.000M X 195.000									
	1 PC 1659 LBS	RS6427		665	755	22		(OUTER)		
				590	730	23		(OUTER)		
				650	750	18		(INNER)		
				605	740	22		(INNER)		
	Stuffer Sides									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	Cu	NI	V	Co	Al	Cr	Mo	Ti	B	N	Ca	CE	McQuillan Grain Size
RS6427	.04	.84	.012	.004	.25	.43	.13	.002	.022	.034	.14	.04					.25	
	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

Quality Systems Coordinator

Isana Ford



EVRAZ INC. NA

Evraz Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

REPORT OF CHEMICAL/PHYSICAL TESTS

CERTIFICATE NO.	DATE	PAGE
1819929	Apr 22, 2022	1
MILL ORDER NO.	DATE	
374836		
CUSTOMER ORDER NO.		
227563		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1819929	04/22/2022	
CARRIER		
KIRSCH TRANSPORTATION S		
CAR/TRUCK NO.		
21		

	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
CARBON STRUCTURAL QUALITY PLATE ASTM A36-19/ASME SA36 2021 ASTM A709-18 GRADE
36 AASTO M270-GR 250 (36). KILLED FINE GRAIN PRACTICE.

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"		% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.5000 X 60.000ME X 120.000										
	40 PCS 40840 LBS	SP0417		585	790	33			(OUTER)		
				530	730	39			(INNER)		
	40 PCS 40840 LBS TOTALS										
	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 Ehn Grain Size
SP0417	.16	.84	.010	.004	.18	.02	.00	.002	.000	.031	.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

Quality Systems Coordinator



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
MILL ORDER NO.	DATE	
375251		
CUSTOMER ORDER NO.		
227570		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1819610	04/20/2022	
CARRIER		
GREEN TRANSFER		
CAR/TRUCK NO.		
177		

ISO 9001 REGISTERED U.S. PLATE PRODUCER	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 AIM .03 SI , .19 C NO WELD REPAIR.
LASER QUALITY. KILLED FINE GRAIN PRACTICE.

PHYSICAL PROPERTIES

ITEM NO	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BHN	BEND TEST	IMPACTS
1	0.7500 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									

Top Flange
Gland Flange

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Cb	Al	Cr	Mo	Ti	B	N	Ca		CE	McQuaid Bhn 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

Quality Systems Coordinator

blr466

BL - 17095902

Load - 2248131

04-23-2015 11:08

Bridge City Steel LLC

Heat - N02837

Cust PO - 217618

Order-Line - 12311834 / 1

Evrax Oregon Steel 5/15/2014 10:29:01 AM PAGE 3/003 Fax Server

**EVRAZ**

EVRAZ INC. NA

Evrax Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

ISO 9001

REGISTERED

U.S. PLATE PRODUCER

S
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O**REPORT OF CHEMICAL/PHYSICAL TESTS**

CERTIFICATE NO.	DATE	PAGE
1372967	May 14, 2014	1
MILL ORDER NO.	DATE	
275452		
CUSTOMER ORDER NO.		
6790448		
JOB/REQ. NO.		
SHIPPING NO.	DATE	
1372967	05/14/2014	
CARRIER		
CUSTOMER WILL CALL		
CAR/TRUCK NO.		
30		

THIS MATERIAL HAS BEEN MANUFACTURED, TESTED AND FOUND TO MEET THE SPECIFICATIONS AND PURCHASE ORDER REQUIREMENTS
 CARBON PRESSURE VESSEL QUALITY ASTM A516-10 GRADE 70 ASME SA516 GRADE 70 2013
 KILLED FINE GRAIN NO WELD REPAIR. PRESSURE VESSEL QUALITY.

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	0.5000 X 120.000ME X 480.000 2 PCS 16336 LBS 2 PCS 16336 LBS	^ N02837	A20 A21	600 585	825 800	22 25				
2	0.7500 X 120.000ME X 480.000 1 PC 12252 LBS 5 PCS 44924 LBS TOTALS	^ N02759	A35	545	775	21				

Horseshoe (Body)

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Co	Al	Cr	Mo	Ti	B	N	Ca	CE	McQuay-Norris Grain Size
N02837	.20	1.28	.010	.008	.31	.01	.05	.023	.000	.042	.03	.00	.003	.0000				
N02759	.19	1.28	.013	.005	.30	.01	.05	.026	.000	.048	.02	.00	.003	.0000				

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

Richard Deschand Quality Coordinator

BRIDGE CITY STEEL
S10 PLATE S4516 GR 70
3/4" X 96.0000" X 240.0000"
PART NO.

514 AS16-70

N22783

VERIFICATION OF MATERIAL & TEST RESULTS
10MAR21
Pg 1/1

Attn:

EVRAZ

EVRAZ INC. NA
1400 N. Riverside Blvd., Portland, Oregon 97201

REPORT OF CHEMICAL/PHYSICAL TESTS

ISO 9001 REGISTERED		SOLD TO US		42 USA		CERTIFICATE NO. 1710634 DATE Jan 13, 2020 PAGE 1	
347452		CUSTOMER ORDER NO. POR-6412		JOB ORDER NO.		SHIPPING NO. 1710634 DATE 01/13/2020	

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

ITEM NO.	DESCRIPTION	HEAT NO.	SLAB	YIELD PSI X 100	TENSILE PSI X 100	% ELONG 8" 2"	% RA	HARDNESS BRIN	TEST	IMPACTS
1	COMPLIANT. REPORT ALL RESIDUALS PER 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.									
2	PCS 19602 LBS	N22783	A28	555	815	35				
2	PCS 19602 LBS	N22787	A24	550	820	35				
4	PCS 39204 LBS TOTALS									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	SI	CU	NI	V	CB	AL	CR	MO	TI	B	N	CA	CE	TEST
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

Port Flanges (Body), Yoke Top, Yoke Pads

Attn:

EVRAZ

EVRAZ INC. NA

Evraz Oregon Steel 14400 N. Rivergate Blvd., Portland, Oregon 97203

REPORT OF CHEMICAL/PHYSICAL TESTS

ISO 9001 REGISTERED U.S. PLATE PRODUCER	SOLD TO	F 4 NUE 96 US		42 USA 86	
		CERTIFICATE NO. 1710634		DATE Jan 13, 2020	
		MILL ORDER NO. 347452		DATE	
		CUSTOMER ORDER NO. POR-6412		JOB/REQ. NO.	
		SHIPPING NO. 1710634		DATE 01/13/2020	
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)					
CARTRUCK NO. 745					

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
	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 96.0000E X 480.000									
	2 PCS 19602 LBS	N22783	A28	555	815	35				
	2 PCS 19602 LBS	N22787	A24	550	820	35				
	4 PCS 39204 LBS TOTALS									

CHEMICAL ANALYSIS

HEAT NO.	C	Mn	P	S	Si	Cu	Ni	V	Co	Al	Cr	Mo	Ti	B	N	Ca		CE	McQuaid Etn Scan 9825
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

Certificate of Mill Test Results

BRIDGE CITY STEEL INC*
STAINLESS SHEET SSH 11ga x 60" x 144" ASTM A-240 304 2B

PO/Rel: 227782

Inv: I091444 Date: 05/13/2022
Heat: C34AY2103793



YC INOX CO., LTD.

INSPECTION CERTIFICATE
EN 10204-3.1:2004

No.270,Sec.4,Jungshan Rd.,Shijou Shiang,
Chang-Hwa,Taiwan,R.O.C
http://www.ycinox.com
TEL : +886-4-8899666 FAX : +886-4-8899770



Customer	TA CHEN STAINLESS PIPE CO., LTD.				Customer No.	L00027		Certificate No.	211021C0044	
Product	PRIME COLD ROLLED STAINLESS STEEL SHEET				Commercial Invoice No.	J21100247		Date of Issue	2021/10/21	
Specification	ASTM A240M-20a/A480M-20a				PO No.	L99816		Order No.	DC21090009-19	
Steel Grade	304/304L	Finish	2B	Protect	PI	P.I.No.	A11009007		Weight No.	C21100305

Item No.	Heat No.	ID.NO.	Product Description	Quantity Pcs	Weight kgs	Chemical Composition(%)										Tension Test			'01 HR	'02 HT	Coil No.	Coil No.
						Dimension										0.2% Y.S.	T.S.	EL				
			C	Si	Mn	P	S	Ni	Cr	N	0.2% Y.S.	T.S.	EL	MPa	%	HRB	°C					
Specification					Min.	10 ⁻²	10 ⁻²	10 ⁻³	10 ⁻³	10 ⁻²	10 ⁻²	10 ⁻³	800	1750	205	515	40	1040				
					Max.	30	75	200	45	30	1200	1950	100				92					
1	C34AY2103370	DC21090009-165	11GA x60.0" x120.0"	14	1,536	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F1	965504751		
2	C34AY2103370	DC21090009-166	11GA x60.0" x120.0"	14	1,539	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F2	985504781		
3	C34AY2103370	DC21090009-167	11GA x60.0" x120.0"	13	1,430	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F3	985504791		
4	C34AY2103370	DC21090009-170	11GA x60.0" x144.0"	12	1,579	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F4	985504791		
5	C34AY2103370	DC21090009-171	11GA x60.0" x144.0"	12	1,580	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F5	985504791		
6	C34AY2103370	DC21090009-172	11GA x60.0" x144.0"	12	1,587	22	31	68	33	2	812	1803	38	359	645	48	86	1050	F6	985504791		
7	C34AY2103793	DC21090009-173	11GA x60.0" x144.0"	12	1,581	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F7	9955327		
8	C34AY2103793	DC21090009-174	11GA x60.0" x144.0"	12	1,584	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F8	9955327		
9	C34AY2103793	DC21090009-175	11GA x60.0" x144.0"	12	1,586	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F9	9955327		
10	C34AY2103793	DC21090009-176	11GA x60.0" x144.0"	12	1,596	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F10	9955327		
11	C34AY2103793	DC21090009-177	11GA x60.0" x144.0"	12	1,587	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F11	9955327		
12	C34AY2103793	DC21090009-178	11GA x60.0" x144.0"	11	1,454	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F12	9955327		
13	C34AY2103793	DC21090009-179	11GA x60.0" x144.0"	11	1,454	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F13	9955327		
14	C34AY2103793	DC21090009-180	11GA x60.0" x144.0"	11	1,455	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F14	9955327		
15	C34AY2103793	DC21090009-181	11GA x60.0" x144.0"	11	1,455	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F15	9955327		
16	C34AY2103793	DC21090009-182	11GA x60.0" x144.0"	11	1,453	17	33	85	29	7	808	1812	36	337	625	58	86	1050	F16	9955327		
17	C34AW2102101	DC21090009-256	12GA x60.0" x120.0"	16	1,514	22	43	138	37	1	803	1805	58	258	649	58	84	1050	F17	Z466316		
18	C34AW2102101	DC21090009-257	12GA x60.0" x120.0"	16	1,509	22	43	138	37	1	803	1805	58	258	649	58	84	1050	F18	Z466316		
19	C34AW2102101	DC21090009-258	12GA x60.0" x120.0"	16	1,510	22	43	138	37	1	803	1805	58	258	649	58	84	1050	F19	Z466316		
TOTAL:					240	28,989																

Remark				Note			
1.ASME SA240/SA480 (2017 SECTION II PART A)				Intergranular Corrosion Test (according to ASTM A262 Practice E) : OK			
2.BENDING TEST : OK (304)				Intergranular Corrosion Test (according to ASTM A262 Practice A) : OK			
3.MERCURY FREE				Hardness according to NACE MR0175 / ISO 15156-3:2015 : Satisfactory.			
4.CHEMICAL PROPERTIES AND PHYSICAL PROPERTIES COMPLY TO AMS 5513J(304)/5511F(304L)				Hardness according to NACE MR0103 / ISO 17945:2015 : Satisfactory.			
5.ASTM A666-15/ASME SA666-15 ANNEALED				Bend Test:OK			
6.COUNTRY OF MANUFACTURE : TAIWAN				Country of melt and pour : Indonesia (17~19)			
				Country of melt and pour : Taiwan (1~16)			
				Visual Inspection(Surface) and Dimension Check : OK			
				1MPa=1N/mm ² =10bar=145psi=10.2kgf/cm ²			
Surveyor By				Manager of Quality Assurance Department			
N/A							

We hereby certify that material described herein has been manufactured and tested with satisfactory results in accordance with the requirement of the above material specification. The material described above has been found free of radiation by raw material supplier.

- ISO 9001:2015 (No.01 100 056292)
- PED / AD2000 / No.01 202 TWHQ-05 0105
- ISO 14001:2015 (No.01 101 022 096335)
- ISO 45001:2018 (No.01 113 022 096335)

Manager of Quality Assurance Department

[Signature]

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains 1 page (Page# 1)

Customer: WESPRT PO#:P041919 SO#:LHCXAI

Item:1GA601430412B Bundle:DC21090009-181 Heat#:C34AY2103793

MTR#:YCCL211021C0044

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West Coast Metals

7401 NE Halsey Suite B, Portland, OR 97230

RIDGE CITY STEEL INC*

PO/Ref: 227450

TAINLESS PLATE SPL 1/4" x 48" x 120" HRAP ASTM A-240 304L

Certificate of Mill Test Results

Contact: BRIT

Inv: I088666

Date: 02/14/2022

Heat: N80V



NORTH AMERICAN
STAINLESS

METALLURGICAL TEST REPORT

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

Certificate: 724697 01 Mail To:

Ship To:

Date: 9/22/2021

Page: 1

Customer: 3585 046

Steel: 304/304L

Finish: HRAP

Your Order: P039822

NAS Order: AN 0954386 03

Corrosion: ASTM A262/15;180Bend-OK

PRODUCT DESCRIPTION:

STAINLESS STEEL COIL, HRAP; UNS 30400/30403
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 5511K/5513J XMRK; MIL-S-5059D AMD3 (X CRN MEAS); MIL-4043B
NACE MR0175/ISO 15156-3:2015 A, MR0103/07; QQS766D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED

REMARKS:

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

Product ID #	Coil #	Thickness	Width	Weight	-----Length-----	Mark	Pieces
04N80V C	* 04N80V C	.2500	48.0000	17,670	COIL	428.30	4

CHEMICAL ANALYSIS

ANAB, ISO/IEC 17025, Certificate# L2323

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CR %	CU %	MN %	MO %	N %	NI %	P %	S %
N80V	US	.0128	18.1020	.4825	1.8370	.4290	.0838	8.0395	.0325	.0027
		SI %								
		.2975								

MECHANICAL PROPERTIES

Product ID #	Coil #	l o c a l	UTS KSI	20C .2% YS KSI	20C ELONG %-2"	% Hard RB	Tail Hard
04N80V C	04N80V C	F T	97.84	57.71	47.09	88.50	88.00

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

9/23/2021

Wear Ring Face

053580

Gate MTR



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

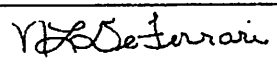
These items are controlled by the U.S. Government and authorized for export only to the country of ultimate destination for use by the ultimate consignee or end-user(s) herein identified. They may not be resold, transferred, or otherwise disposed of, to any other country or to any person other than the 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

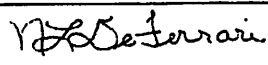
 ATI Flat Rolled Products 500 Green Street Washington, PA 15301	Certificate of Test		 Norleen DeFerrari - Sr. Manager, Quality
	Mill Information		Customer Information
	Cert Number 0220738-01 Sales Order 50-091-189 Cert Date Oct-26-2021	Name ROLLED ALLOYS INC PO 0200638-TEM PO Date Sep-14-2021	

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

Material Information "ATI 17-4" PRECIPITATION HARDENABLE STAINLESS STEEL TRACER # <u>Below</u> 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	Lot #	(lbs)
Item: 003	Cust-Id: 0008519		Govt-Contract-#:		Govt-DO-Rating:				
	Cust-Job:		ScheduleB:						
1	.3750	84.0000	260.0000	862403		CG26083	Th 0635194	506920	2502
1	.3750	84.0000	256.0000	862403		CG26084	Th 0635195	506925	2463
1	.3750	84.0000	266.2500	862268		CG26090	Th 0635197	506715	2562

Chemistry Testing						
Element (wt %)	Requirements		Final Heat Analysis		Final Heat Analysis	
	Min	Max	882288	Loc	882403	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	Certificate of Test		 Moreen DeFerrari - Sr. Manager, Quality	
			Customer Information	
500 Green Street Washington, PA 15301	Mill Information		Customer Information	
	Cert Number 0220738-01	Name ROLLED ALLOYS INC		
	Sales Order 50-091-189 Cert Date Oct-26-2021	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 ($\geq 0.10\%$) 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)

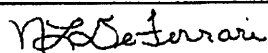
FRPB - ATI FRP BRACKENRIDGE 100 River Road Brackenridge, PA 15014

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		 M. DeFerrari - Sr. Manager, Quality	
			Customer Information	
	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

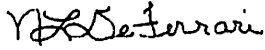
The following test methods are used by the listed lab: ASTM E8 for all specimens for yield, tensile, and elongation except ISO 6892-1 for 80mm specimens; ASTM E290 for bend (for New Bedford Laboratory - Type 2 Free bend is used), ASTM E112 for grain size; ASTM E10, E18, E92, & E384 for hardness; ASME 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	Certificate of Test		 Moreen 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	

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

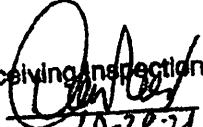
Knowingly and willfully recording any false, fictitious or fraudulent statement or entry on this document may be punished as a felony under Federal Statutes, including Federal Law, Title 18, Chapter 47.

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



SPECIALTY METALS
80 Clinton Street
Johnstown, PA 15901
Phone: 814-535-9200 Fax: 814-535-1610
www.gautierspecialty.com

SOLD TO

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

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

CUSTOMER P.O.	CUSTOMER PART	QUANTITY	BARS	LADING NO	SHIPMENT DATE
0198697-TEM	0008521	3,043 Lbs	3	28535NCS	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	Freq	Seve	Macro-Etch		
ENS	0	0	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



SPECIALTY METALS
80 Clinton Street
Johnstown, PA 15901
Phone: 814-535-9200 Fax: 814-536-1610
www.gautierspecialty.com

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.	CUSTOMER PART	QUANTITY	BARS	LADING NO	SHIPMENT DATE					
0198697-TEM	0008521	3,043 Lbs	3	28535NCS	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										
TEST		UNITS		RESULTS						
Hardness, RC		RC		31						
AMS 2315 Ferrite %										
1										
Melted & Manufactured in										
USA										
Disclaimer Statements										
Other Physical Properties										
TEST		UNITS		RESULTS						
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										
Receiving Inspection										
By: <i>[Signature]</i>										
Date: 10-25-21										

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

(Version 3)

ELLWOOD NATIONAL STEEL

3 FRONT STREET, IRVINE, PA 16329

Page 1 of 3

ENS

(814) 563-7522
Telefax (814) 563-6330

CERTIFIED TEST REPORT

Date: 7/13/21

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

For Company: Gautler Specialty Metals
80 Clinton St.
Johnstown, 15901

Customer'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

I certify that the reported results and statements of the certificate represent the actual attributes of the material furnished and are in full compliance with all purchase order/specification requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punishable as a felony under Federal Statutes. During the manufacturing process, tests, and inspections, the material did not come in direct contact with mercury or any of its compounds nor with any mercury containing device employing a single boundary of containment. No welding or weld repair was performed on this material. The material was produced free of radioactive elements.

[Signature]
John G. Blum
Vice President

(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: Gautler Specialty Metals

Heat: 58491

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
ALLIANCE

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

PO 13800 Item #3
10" FV-150 T-Lok
Gate PMI

INTERNATIONAL INSPECTION

S/N 229553-1

Reading No	Time	Type	Duration	Units	Sequence	Item Description	Material ID	Cr	Cr Error	Ni	Ni Error	Results
1	6/28/2022 7:08	System Check	47.45	cps	Final	System Check 1 of 2						Pass
2	6/28/2022 7:09	System Check	54	cps	Final	System Check 2 of 2						Pass
3	6/28/2022 7:10	General Metals	10	%	Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	1.104	0.047	0.15	0.045	Pass
4	6/28/2022 7:34	General Metals	10	%	Final	Job# 118-2 - 6" UNI (1 of 2)	SS-304 : 0.92	17.96	0.156	7.779	0.173	Pass
5	6/28/2022 7:34	General Metals	10	%	Final	Job# 118-2 - 6" UNI (2 of 2)	SS-304 : 0.51	18.25	0.172	8.01	0.19	Pass
6	6/28/2022 7:38	General Metals	10	%	Final	Job# 017-1 - 6" UNI (1 of 2)	17-4 PH : *2.22	15.51	0.147	4.635	0.143	Pass
9	6/28/2022 7:40	General Metals	9.89	%	Final	Job# 017-1 - 6" UNI (2 of 2)	17-4 PH : *2.21	15.6	0.158	4.729	0.155	Pass
11	6/28/2022 7:44	General Metals	9.56	%	Final	Job# 955-10 - 10" TLOK (1 of 1)	17-4 PH : *2.22	15.54	0.162	4.718	0.158	Pass
12	6/28/2022 7:48	General Metals	10	%	Final	Job# 070-1 - 24" DS (1 of 2)	SS-304 : 0.78	18.13	0.173	7.937	0.191	Pass
13	6/28/2022 7:48	General Metals	10	%	Final	Job# 070-1 - 24" DS (2 of 2)	SS-304 : 1.42	18.12	0.161	7.753	0.178	Pass
20	6/28/2022 7:54	General Metals	10	%	Final	Job# 064 - 10" UNI (1 of 1)	17-4 PH : *2.58	15.37	0.148	4.79	0.146	Pass
21	6/28/2022 7:55	General Metals	10	%	Final	Job# 086 - 14" DS (1 of 1)	SS-304 : 0.00	17.98	0.159	8.094	0.179	Pass
23	6/28/2022 7:56	General Metals	10	%	Final	Job# 027-1 - 6" UNI (1 of 2)	17-4 PH : *2.22	15.7	0.148	4.654	0.144	Pass
24	6/28/2022 7:57	General Metals	9.53	%	Final	Job# 027-1 - 6" UNI (2 of 2)	17-4 PH : *2.21	15.65	0.164	4.606	0.157	Pass
25	6/28/2022 7:58	General Metals	10	%	Final	Job# 106-1 - 16" TLOK (1 of 2)	17-4 PH : *2.00	15.14	0.144	4.25	0.137	Pass
26	6/28/2022 7:58	General Metals	10	%	Final	Job# 106-1 - 16" TLOK (2 of 2)	17-4 PH : *1.79	15.31	0.155	4.188	0.146	Pass
27	6/28/2022 8:00	General Metals	10	%	Final	Job# 092-1 - 10" DS (1 of 3)	SS-316 : 0.00	16.96	0.154	10.264	0.194	Pass
28	6/28/2022 8:00	General Metals	10	%	Final	Job# 092-1 - 10" DS (2 of 3)	SS-316 : 0.15	16.85	0.158	10.089	0.197	Pass
29	6/28/2022 8:01	General Metals	10	%	Final	Job# 092-1 - 10" DS (3 of 3)	SS-316 : 0.00	16.9	0.164	10.246	0.205	Pass
30	6/28/2022 8:06	General Metals	10	%	Final	Job# 072-1 - 30" 240 (1 of 1)	SS-316 : 1.36	17.01	0.156	9.888	0.192	Pass
31	6/28/2022 8:13	General Metals	10	%	Final	Job# 820-2 - 48" TLOK (1 of 1)	SS-304 : 0.22	18.01	0.16	7.897	0.178	Pass
32	6/28/2022 8:21	General Metals	10	%	Final	IARM 35NN Calibration Standard	1.25Cr(P11) : 0.75	1.1	0.047	0.152	0.045	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 6/28/2022

D. Rosian

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.



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)

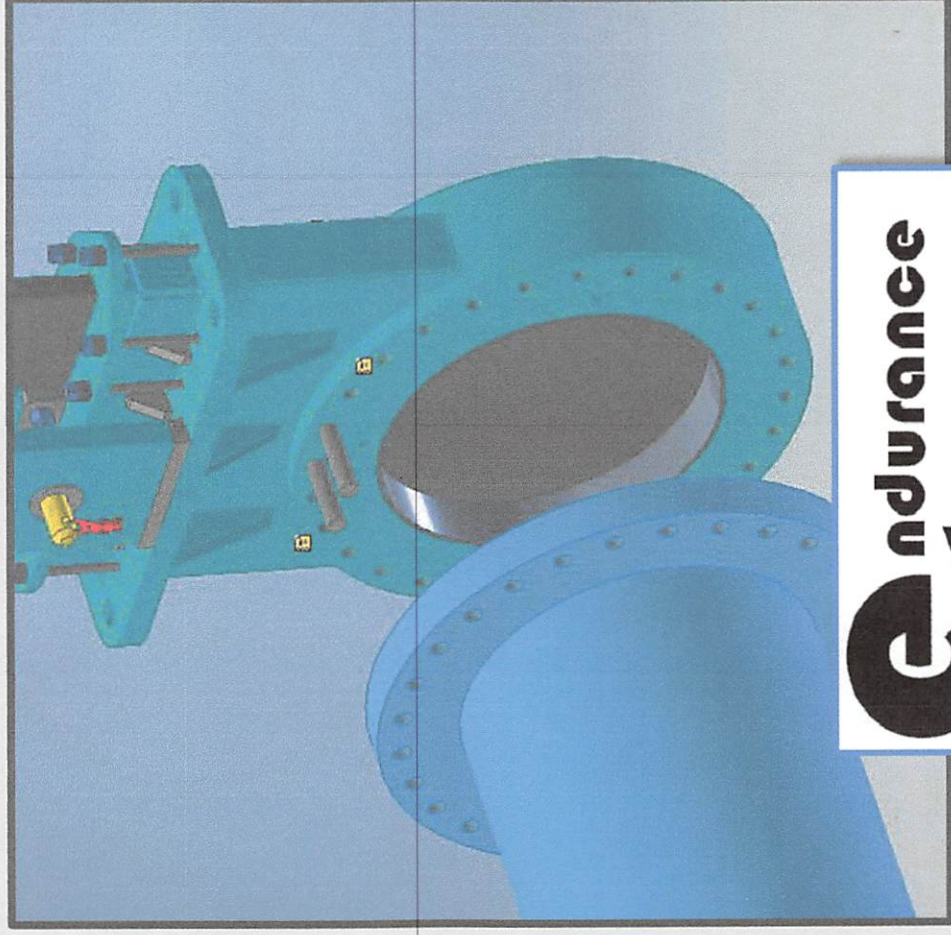
BOLTING STUDS TO VALVE-PIPING

Engineering



STEP 1

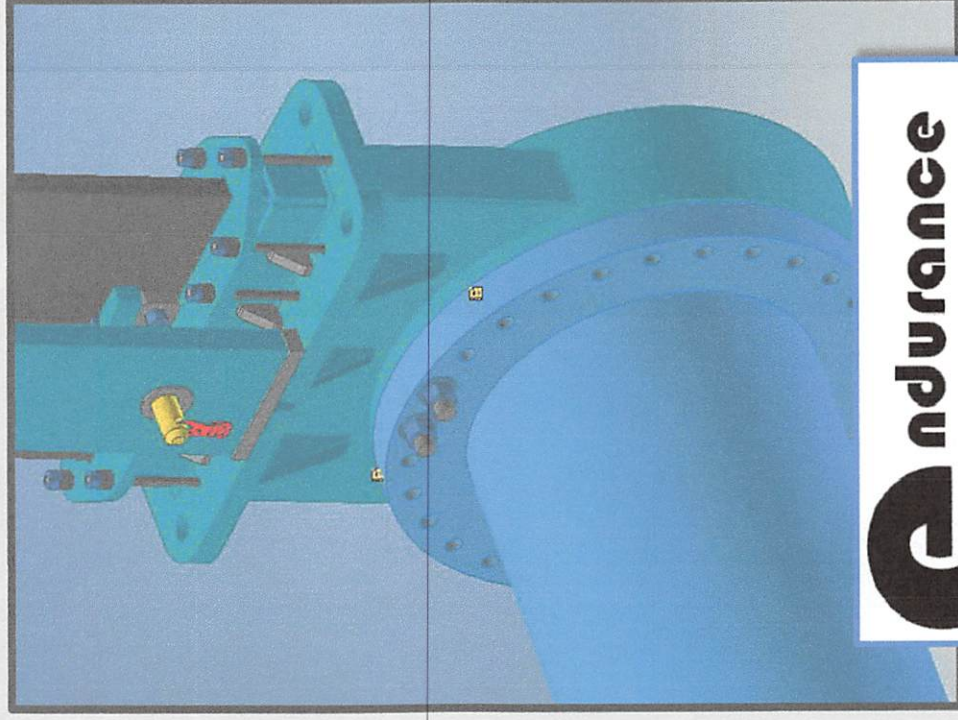
- Begin with 2 studs threaded into the valve next to each other



Endurance
Valve

STEP 2

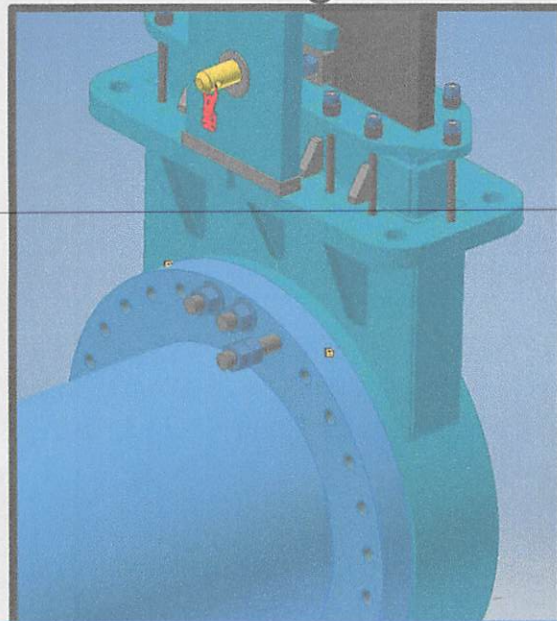
- Line-up to piping and slide flush to pipe and hand snug nuts w/washer



Endurance
valve

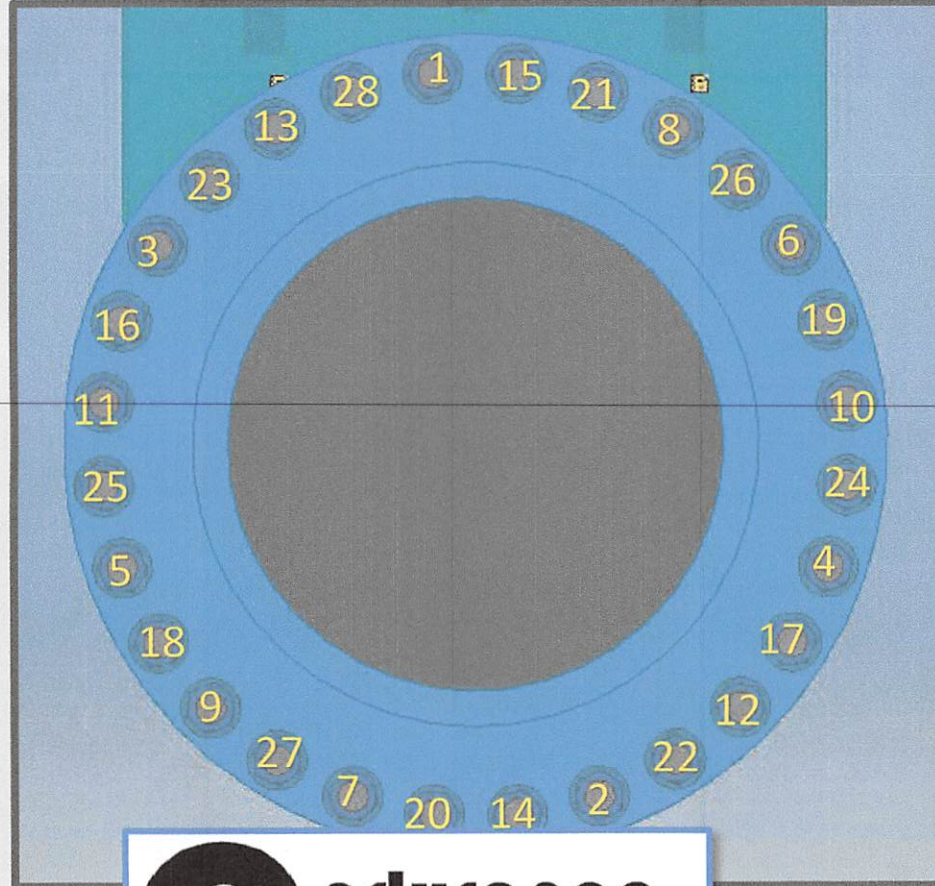
STEP 3

- 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

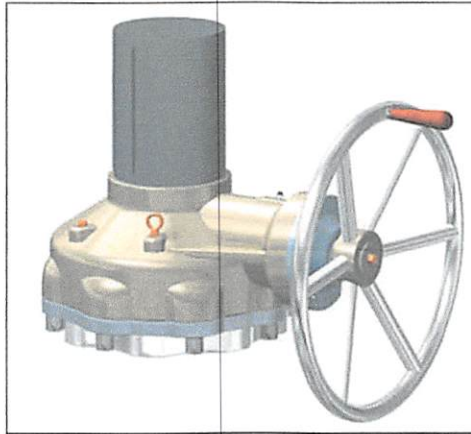
- Thread remaining studs and nuts into valve hand snug
- Then torque* in sequence shown in gradual increasing torque.



*torque sequence changes per valve size



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.

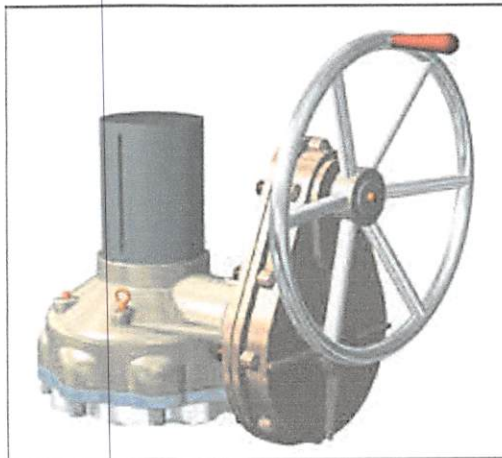


GENERAL TYPE-HORIZONTAL
TYPE-1 Stair

Specifications

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

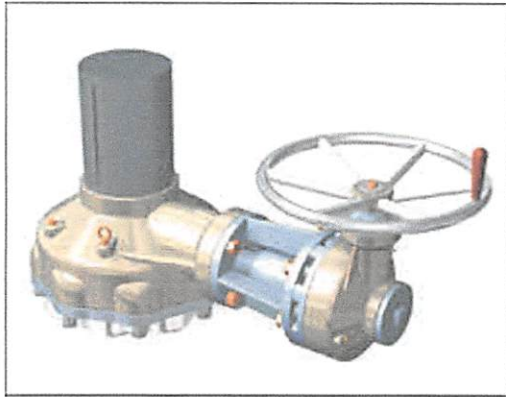
- SB-V6~SB-V8



SUPPORT BOX TYPE HORIZONTAL
TYPE - 2 Stairs

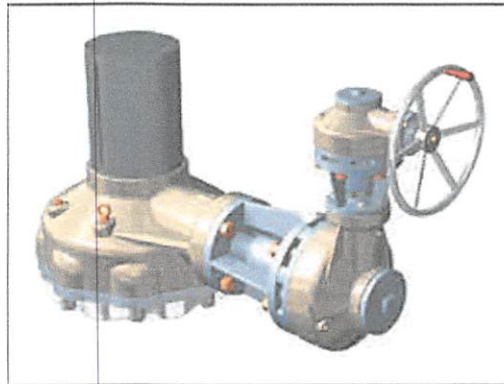
Specifications

- 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