

ADDENDUM

Revision Date: 03/31/2023

Preparation of Shipment Procedure #38

This addendum is to be used in conjunction with FABSCO Preparation of Shipment Procedure #38 for S22-13312, 13313, 13314, 13315, and 13316.

- (1) Refer to shop drawings for additional information for shipping preparation (ie: flange covers, center of gravity markings, temporary shipping bracing marking).
- (2) Equipment under nitrogen purge to be monitored every 15 days during storage period. Nitrogen with dew point of -40F or lower and total oil content of < 5mg/m³ to be used.
- (3) Services gaskets to be used for flanged openings for shipping of equipment per SPEC-ENG-DOC001 para 3.1.8.3.
- (4) Temporary shipping components to be painted orange or yellow to identify removal in the field.
- (5) All exposed threaded surfaces to be coated with a waterproof lubricant to prevent corrosion.
- (6) Spare gaskets and hardware to be wrapped in a waterproof barrier material and enclosed in plywood crates. A shipping list to be included inside crate.

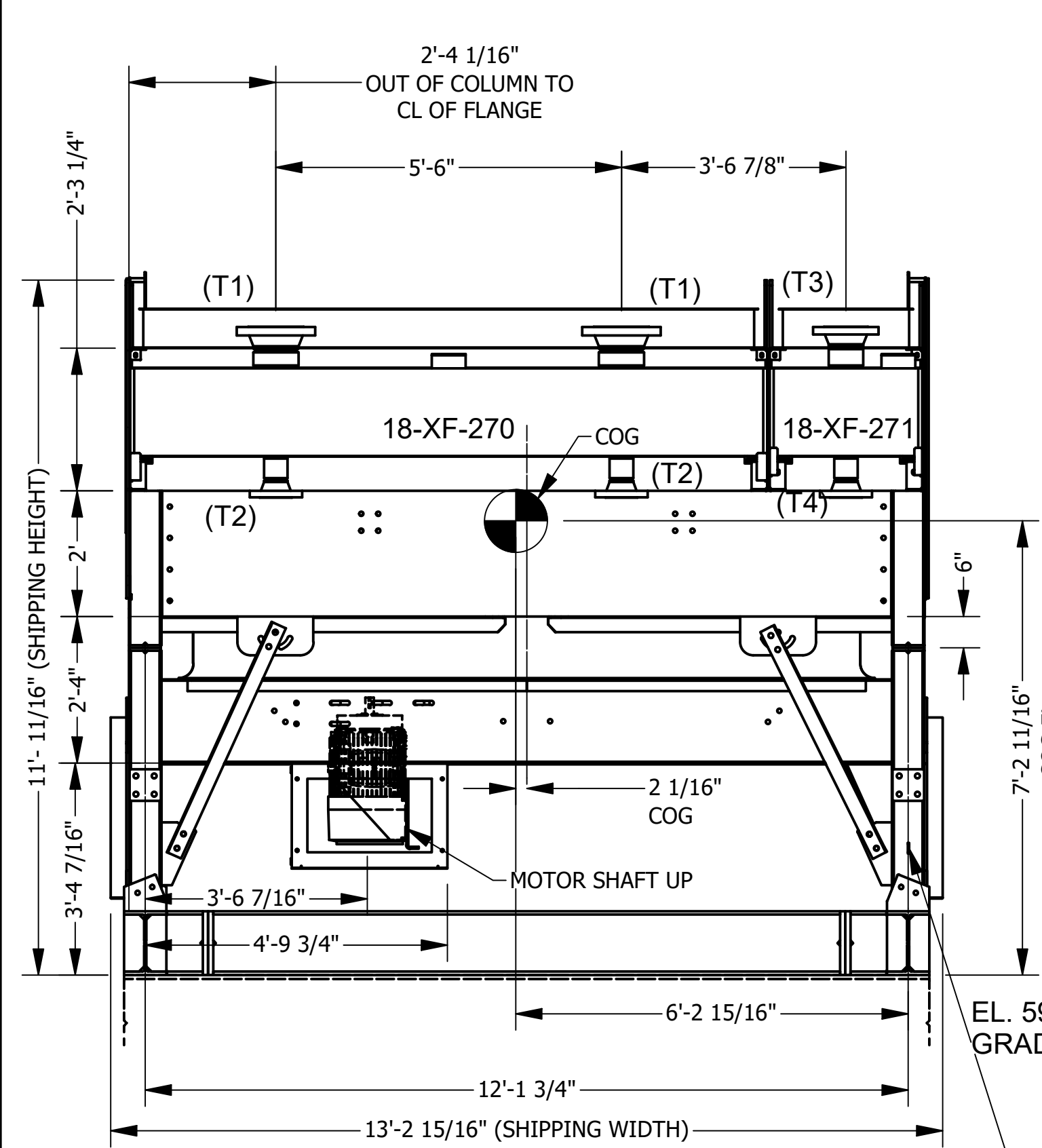
Procedure #38

PREPARATION OF SHIPMENT

1.0 Preparation of Shipment

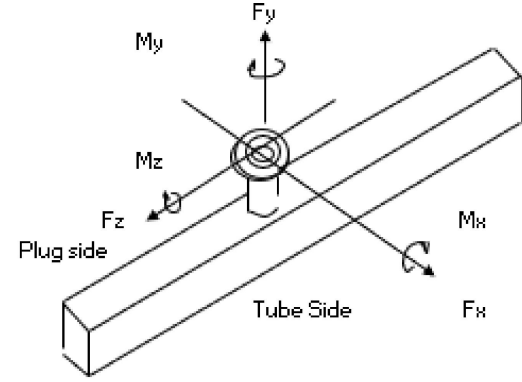
- 1.1 After the final hydrostatic test, each unit shall be drained, dried and cleaned thoroughly of all grease, loose scale, rust, flux, weld spatter, and rubble, and painted as specified by customer specifications. All machined surfaces shall be protected with a good grade of rust preventative.
- 1.2 Flanged openings shall be protected with plywood or steel covers with gaskets suitable for protection of flange facing and the exclusion of any foreign material into the nozzle.
- 1.3 Screwed connections shall be protected with threaded bar stock steel plugs.
- 1.4 All vent holes in reinforcing pads and wear plates shall be plugged with a heavy grease after testing.
- 1.5 If required, the Purchaser's order number and item number shall be predominantly marked with paint in legible block letters on the side of the shell.

SECTION / DESCRIPTION	MAWP	TEST PRESS	DESIGN TEMP	MDMT	CONN NPS	RATING	BUNDLE VOL	BUNDLE WT	LOUVER	HAILSCREENS	MOTOR HP: 25	FAN MFGR: MOORE	DIAM (FT): 10.5	SPECIFICATION NOTES:	COOLER WT #: SEE TABLE
UNITS	PSIG	PSIG	DEG F	DEG F	INCH		CU FT	LBS			TYPE: TEFC	CLASS: 10000	ACFM/FAN: 105588	VIBE SWITCH: WILCOXON	STRUCTURE FINISH: PER A8KM-PP-000-500540-A
AGR1 AMINE REGEN OVERHEAD AIR COOLER	75/FV	98	300	32	SEE TABLE	SEE	44	19395	MANUAL	NONE	RPM: 1800	BLADES: 4	HP@ DES.: 16.96	VIBE SWITCH MODEL NO.;	GALVANIZED
18-XF-270						TABLE					VAC: 460/3/60	PITCH: 5.82		D786-D2	HEADER FINISH: PER A8KM-PP-000-500520-A
AGR2 AMINE REGEN OVERHEAD AIR COOLER	75/FV	98	300	32	SEE TABLE	SEE	9	5505	MANUAL	NONE	FRAME: 284T	RPM: 313	DRIVE: HTD	QTY: 2 PER BAY	NONE
18-XF-271						TABLE					SHAFT: 1.875	SERIES: 36	RATIO: 5.75:1		
											MOTOR WT: 445 lbs	TYPE: EC	DRIVE WIDTH: 36		
											QTY: 2 PER BAY	TIP: VE	AIR BRAKE: YES		
												QTY: 2 PER BAY			



FRONT VIEW

- NOTE:1. (1) BAYS REQUIRED
- 2.SPANNING BEAMS, STUB COLUMNS, TRANSV & LONL DIAG BRACES REMOVED FOR SHIPPING.
- 3.ALL MOTORS ARE VFD COMPATIBLE, NO SPACE HEATER.
- 4.MOTOR REMOVAL BEAM
- 5.MOTORs SHALL BE RATED FOR CLASS 1, DIV. 2, GROUPS B,C,D AND A T3C TEMPERATURE CODE

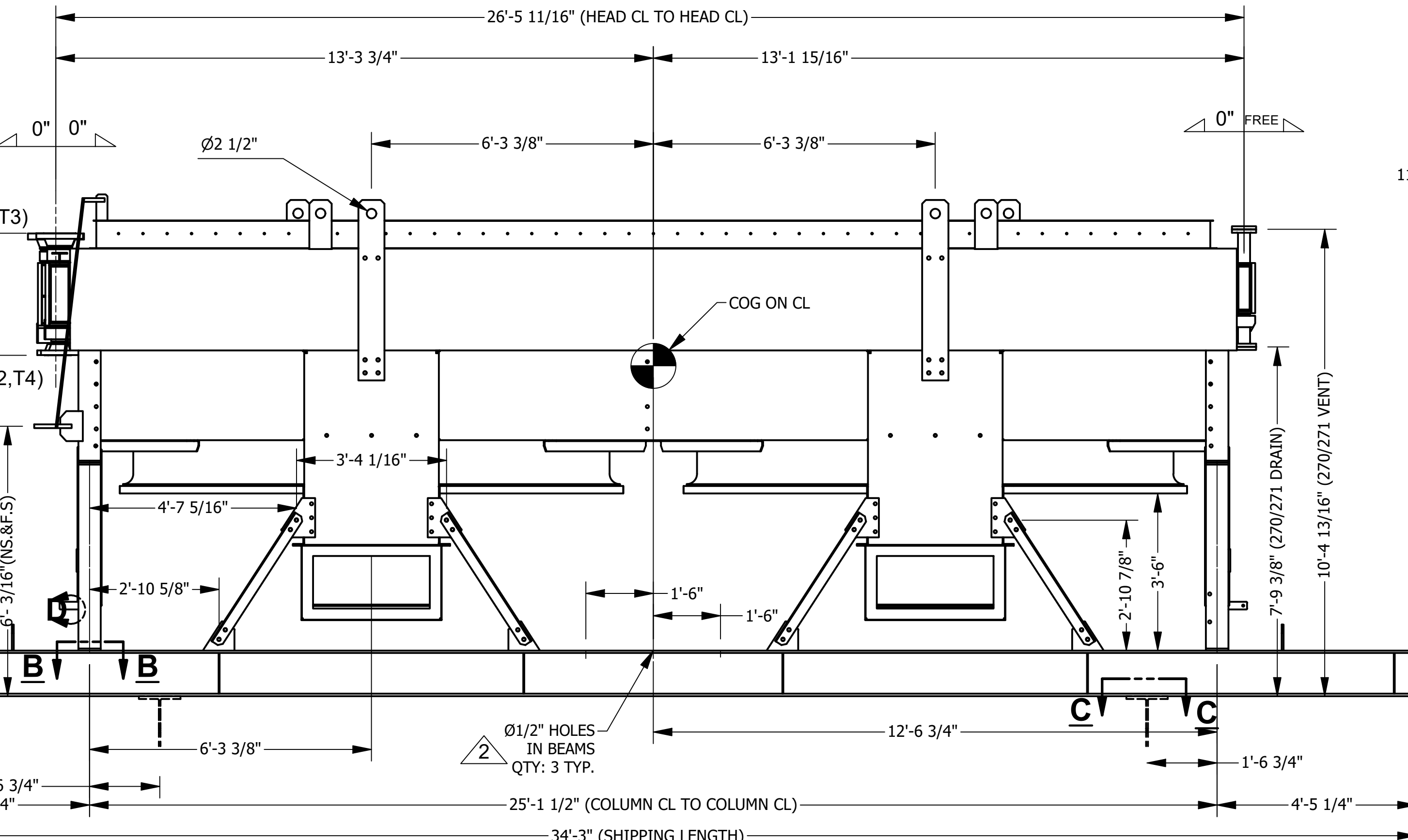


NOZZLE LOADS		QTY/HEAD	SIZE	CLASS, #	2 X API 661	
FRONT HEAD 18-XF-270		2	8	300		
SIZE	FX	FY	FZ	MX	MY	MZ
8	2560	6000	3600	4500	3000	3300
4	3000	2400	3000	2400	3600	2400
COMBINED	5560	8400	6600	6900	12600	5700
MAX API PER HEAD	2250	4500	3750	4500	6000	3000

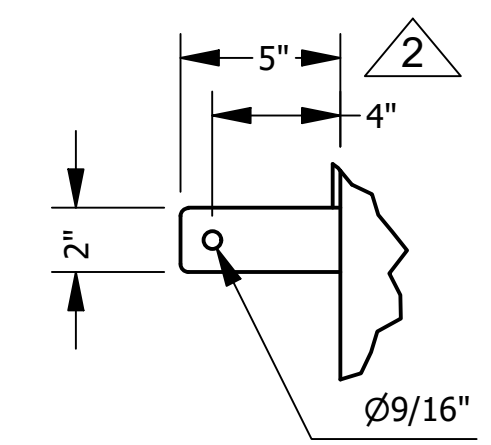
NOZZLE LOADS		QTY/HEAD	SIZE	CLASS, #	2 X API 661	
FRONT HEAD 18-XF-271		1	6	300		
		1	4			
SIZE	FX	FY	FZ	MX	MY	MZ
6	1800	2260	3160	4500	4500	2400
4	1500	1200	1500	1200	1800	1200
COMBINED	3300	3460	3760	4360	6300	3600
MAX API	2250	4500	3750	4500	6000	3000

270/271 COMBINED	8860	11860	10360	11260	18900	9300
STR DESIGN LOAD	6750	13500	11250	13500	18000	9000

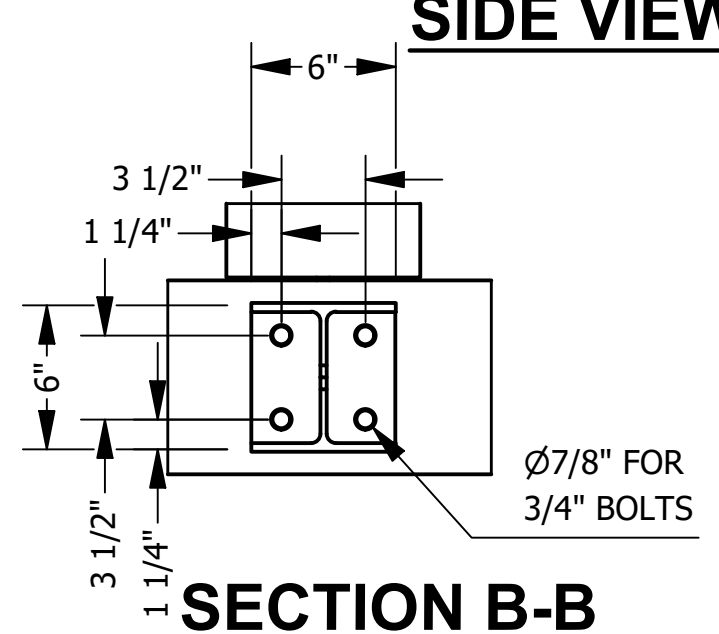
2 DRY HEADER WEIGHT	
HEADER	WEIGHT (LBS)
270 INLET/OUTLET	1715
270 RETURN	1100
271 INLET/OUTLET	415
270 RETURN	260
WEIGHTS PER BAY (LBS)	
ITEM	WEIGHT
COOLER	31053
SPAN BEAMS	6862
LOUVER	953
WALKWAY	3256
H2O	3218
270 PROCESS FLUID	2644
271 PROCESS FLUID	553
TOTAL DRY	42123
TOTAL FULL H2O	45341
TOTAL OPERATING	45320



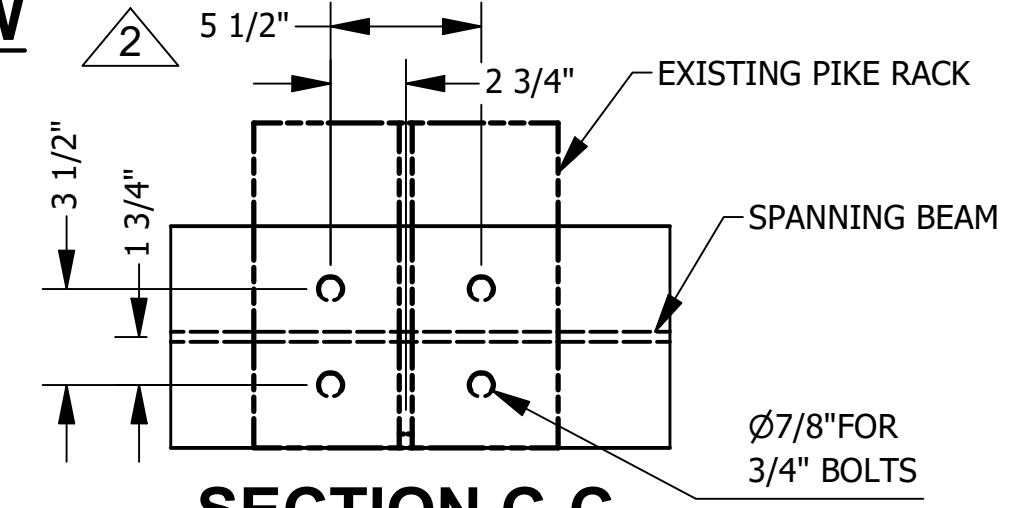
SIDE VIEW



DETAIL D GROUNDING LUG



SECTION B-B



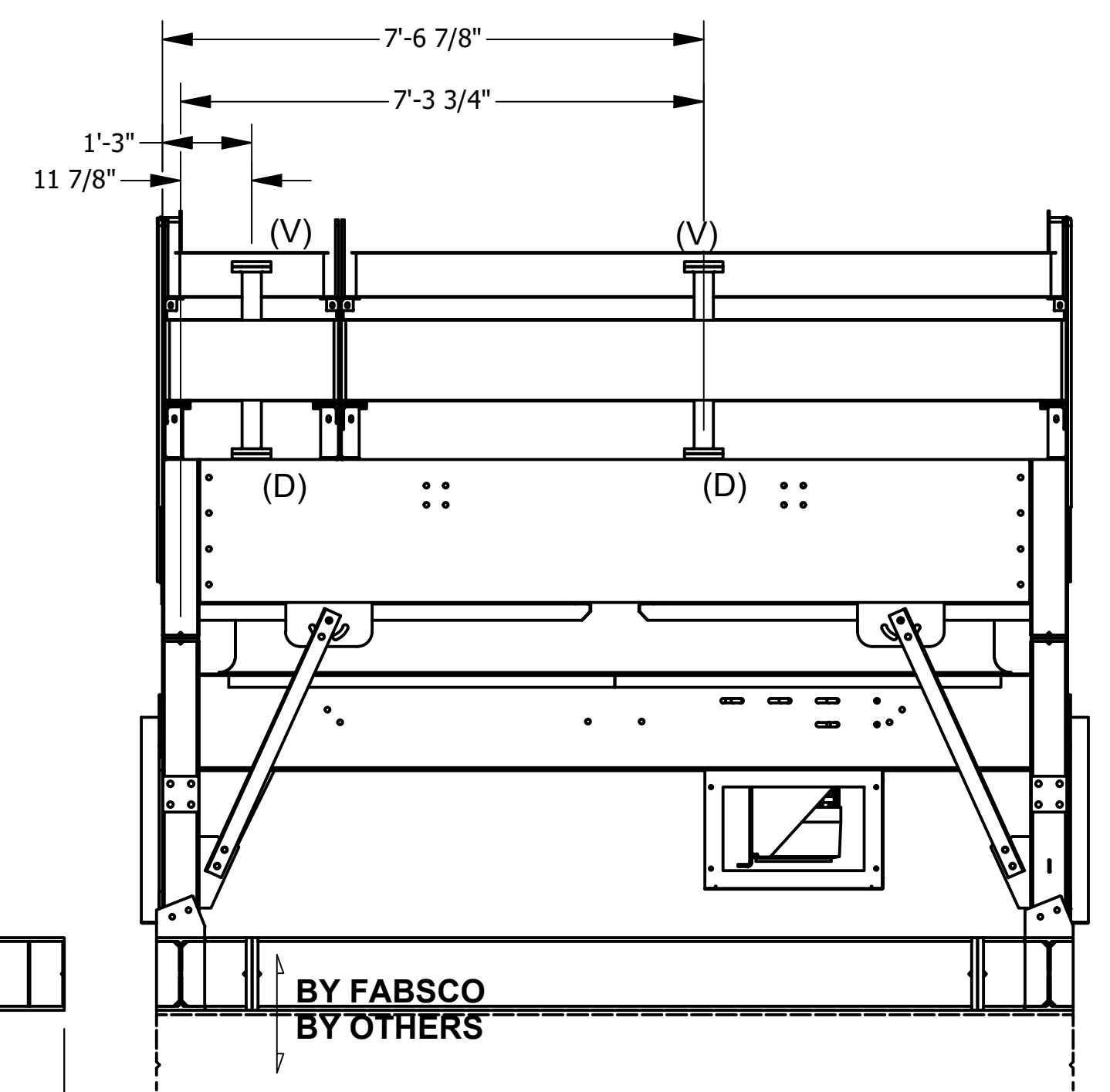
SECTION C-C

2 EQ. TAG #S		
COOLER	EQUIPMENT	TAG #
18-XF-270/271	MOTOR	18-XF-270M1
18-XF-270/271	MOTOR	18-XF-270M2
18-XF-270/271	FAN	18-XF-270-F01
18-XF-270/271	FAN	18-XF-270-F02
18-XF-270/271	VIB SENSOR	18-XF-270-F01
18-XF-270/271	VIB SENSOR	18-XF-270-F02

GENERAL ARRANGEMENT

REV.	DATE	DESCRIPTION
0	3/30/22	FOR APPROVAL
1	9/21/2022	PER CUST. COMM.
2	1/31/2023	PER CUST. COMM.

2 REFERENCE DOCUMENTS	
FABSCO DOC. #	APCI DOC. #
A22-13315-1A-300	EN207122-FAB-9V3-00034
A22-13315-1B-300	EN207122-FAB-9V3-00059
A22-13315-1A-ASME	EN207122-FAB-9V3-00054
A22-13315-1B-ASME	EN207122-FAB-9V3-00049
A22-13315-1 LL	EN207122-FAB-9V3-00077
A22-13315-1 NOTES	EN207122-FAB-9V3-00079
A22-13315-1-STR	
A22-13315-1&13316-1&-2-3 LAYOUT	EN207122-FAB-9V3-00090



BACK VIEW

APPROVED BY: _____

DATE: _____

FLANGES PER ASME B16.5			
NOZZLE SCHEDULE			
ITEM	ITEM	QTY	FLANGE
T1	270 PROCESS INLET	2	8" 300# RFWN
T2	270 PROCESS OUTLET	2	4" 300# RFWN
T3	271 PROCESS INLET	1	6" 300# RFWN
T4	271 PROCESS OUTLET	1	4" 300# RFWN
V	270/271 VENT	4	2" 300# RFLWN/BLD
D	270/271 DRAIN	4	2" 300# RFLWN/BLD

PROJECT NAME:	World Energy Renewables Project
PROJECT NO./UNIT:	EN-20-7122 / H2S Recovery
CUSTOMER/CLIENT:	World Energy Paramount
EQUIPMENT OWNER:	Air Products Manufacturing LLC
ITEM NO.:	18-XF-270/18-XF-271
SERVICE:	AGR1 & AGR2 Amine Regen Overhead Air Coolers
LOCATION:	World Energy, Paramount, CA, USA
PO NO.:	4505606041 / A8KM-4-406-PO-4
FABSCO JOB NO.:	A22-13315-1

DRAWING PROPRIETARY TO FABSCO, LLC AND IS NOT TO BE RELEASED TO ANY THIRD PARTY, EXCEPT WITH NOTIFICATION AND APPROVAL IN WRITING OF FABSCO, LLC OFFICER.

DRAWN BY:	 FABSCO Fin-Air, LLC.	REV:
BH		
DATE:		
3/30/22		
CHECKED BY:	DRAWING NO:	
	A22-13315-1-100	2

**FABSCO LLC.****AIR COOLED EXCHANGER SPECIFICATION SHEET**

P.O. Box 988
2410 Industrial Rd.
Sapulpa, OK 74066
(918) 224-7550 Fax (918) 224-3564

1	Customer	Air Products Manufacturing LLC	Customer/Client: World Energy Paramount	Date:	11/28/2023 Rev.	1
2	Plant Location	World Energy, Paramount, CA, USA	Fabsco Job No.: A22-13315	Item No.	18-XF-270	
3	Service	AGR1 Amine Regen Overhead Air Cooler	Project: World Energy Renewables Project	Ref. No.	EN-20-7122 / H2S Recovery	
4	Size and Type	10.146 x 26.000	FORCED	No. Bays	1	
5	Surface/Unit - Finned Tube	40835 ft2	:Bare Tube	1939.9 ft2		
6	Heat Exchanged	14500000 Btu/h	MTD, Eff.	93.6 °F		
7	Transfer Rate-Finned Tube	3.811 :Bare Tube, Service	80.22	Clean	112.92 Btu/h.ft2.F	

PERFORMANCE DATA - TUBE SIDE

10	Fluid Name	Amine Regen OVHD	Vapor Ref. Temp.	°F	250.4	130
11	Total Fluid In	lb/h	17577	Specific Heat	Btu/lb.F	0.407
12	Vapor	lb/h	17577	Viscosity	cP	0.014
13	Liquid	lb/h	0	Conductivity	Btu/h.ft.F	0.015
14	Noncond	lb/h	0.0	Density	lb/ft3	0.095
15	Steam	lb/h	0	Liquid Ref. Temp.	°F	250.4
16	Water	lb/h	0.0	Specific Heat	Btu/lb.F	1.032
17				Viscosity	cP	0.505
18	Temperature In/Out	°F	250.4	Conductivity	Btu/h.ft.F	0.375
19	Pressure In / Out	psia	34.70	Density	lb/ft3	61.48
20	Velocity	ft/s	40.61			
21	Press. Drop Allow/Calc	psi	3	Fouling resistance	h.ft2.F/Btu	0.003 tubeside / 0.002 airside

PERFORMANCE DATA - AIR SIDE (Air)

23	Std. air flow rate/item	(SCFM)	164483	Altitude above Sea Level	ft	69
24	Air Quantity/Fan	(ACFM)	105588	Temperature In (Dry Bulb)	°F	90
25	Actual Static Press	in H2O	0.62	Temperature Out	°F	171.23
26	Face Velocity	(SFPM)	630	Min. Design Ambient	°F	35
27	Max Mass Velocity	lb/h.ft2		Fan Air Temperature	°F	90

DESIGN - MATERIALS - CONSTRUCTION

29	Design Pressure psig	FV @ 300F	75	Test Pressure psig	98	Design Temperature	300.0	32	°F
30	TUBE BUNDLE	HEADER, Type	BOX	TUBE, Material	SA-213-TP316L				
31	Size 10.2 W x 26 L TUBES (FT)	Material	SA-240-316L	Smls. tube					
32	No./Bay	1	No. Rows	6	No. Passes	2	OD	1	Thickness 0.065 in
33	Arrangement	Bundles in Series	Slope 0.125	in/ft LAST PASS	No./Bundle	285	MIN WALL		
34	Bundles	1 Bundles in parallel	Plug Material	Note 8	Length	26	ft		
35	Bays	1 Bays in parallel	Gasket Material	316 ANNEALED	Pitch	2.5	in		
36	Bundle Frame Finish	Galvanized	Note 10	Corr Allow	0 in	Fin, Type	L TENSION		
37	Header Finish	NONE	In qty/in.	2	8	Material	ALUMINUM		
38	Structure Finish	Galvanized	Note 10	Out qty/in.	2	4	OD	2.25 Thk.	0.016 in.
39	Mounting/C TO C	Piperack	Vent/Drain	2" 300# RFLWN (2)	No./in	10	Fin Operating Temp (F)	270.0	
40	Surf Prep	NONE	Rating/Facing	300# RFWN	Code -	ASME	Sect VIII Div 1 Stamped		
41	Louvres / Guards	MANUAL LOUVER	TI	PI	Stamp	YES			
42	Vibration Switches	WILCOXON 786A-D2	Flange Calc per UG44(b)	YES	SPECS.	API 661			

MECHANICAL EQUIPMENT

44	Fan Mfg	MOORE	Driver	Speed Reducer					
45	Model	VE	36	10000	Type	MOTOR	Type	HTD	
46	No./Bay	2	Rev./ Min	313	Mfg.	US MOTOR	Mfg.	GATES OR EQ	
47	Fan Diam. Ft	10.5	No. Blades	4	No/Bay	2	Model		
48	Manual Adjust	Pitch	5.8	hp /Driver	25	No/Bay	2		
49	Mat'l: Blade	ALUMINUM	Hub ALUM	Rev/Min	1800	AGMA Rating, hp	45		
50	hp/Fan, Design	16.96	Enclosure	TEFC	Ratio	5.75			
51	hp/Fan, Min Amb	18.84	Volt/Phase/Cycle	460/3/60	Support	STRUCTURE			
52	Plot Area	10.146 x 26.000	ft2	Bundle WT Dry lb	19395	Full H2O	22139	API Noz Mult.	2
53	Weight per bay lbs.	45341	Motors VFD Compatible	Temp Code T3C		Steam Coil	NO	Heat Treat	NO
54	Weight per unit lbs.	90682	Class 1 Div 2 Gr BCD			Recirc	NO	NDE	API
55	dBA @ 3'	85				Ladder	YES	Bugscreen	NO
56	Fan Wt Lbs	93				End Walk	YES	Air Brake	YES
57	Notes:					Side Walk	NO	N2 Purge	YES
58	1. 10% plug & plug gasket included as spares					Drive Walk	NO	Turbulators	NO

2. The motors will have a 1.15 SF on sine-wave power (constant frequency/speed) and will have a 1.0 SF at variable frequency.
3. Tube-tubesheet strength welded. Mockup required. Helium leak test
4. Spot RT per API 661
5. Flange material SA-182 F316/316L
6. Special Service: Wet H2S Low Severity, Toxic, Flammable
7. 18-XF-270 & 18-XF-271 combined in common bay.
8. Nitronic 50 plugs included
9. 50% of the fan motors shall be variable speed for process outlet temperature control.
10. Structural steel to be hot dip galvanized per A8KM-PP-000-500540.
11. Vent & drain shall be provided with gaskets, bolting & blind flanges rated for the design conditions.
12. Irregular pass arrangement: 4 row 1 pass; 2 row 1 pass
13. Anti-rotation safety device provided on fan shaft bushing per fan: MOORE FAN MODEL "AIRBRAKE F BUSHING MOUNT"



**NORTH AMERICAN
STAINLESS**
An Acerinox Group Company

METALLURGICAL TEST REPORT

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

Certificate: 833632 04
Customer: 2830 023
Mail To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 2/16/2023 Page: 1

Steel: 316/316L

Finish: HRAP

Your Order: 0214661-TUL

NAS Order: AN 1008220 04

Corrosion: ASTM A262/15 180Bend-UK

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP; UNS 31600/31603
ASTM A240/22a, 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: Q05766D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.

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, ACD, & Cont. Casting
Product Mfg. by a Quality Mgt. Sys. in Conf. w/ISO 9001
*Melted & Manufactured in the USA; Mat'l is DFARS Compliant

Skid #	Prod #	Thickness	Width	Weight	Length	Mark	Pieces	COMMODITY CODE
PV8812	* 04X31D	1.0000	60.0000	8,480	240.00	PLATE	2 X	

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
X31D	US	.0179	.3025	16.9620	.5190	1.1810	2.2595	.0613	10.1200	.0355
		S %	SI %							
		.0010	.4040							

MECHANICAL PROPERTIES

Skid #	Prod #	UTS KSI	20C .2% YS KSI	ELONG %-2"	Hard RB	A 262 Pr A Pr A	A 262 'E' Pr E	R of A %
PV8812	04X31D	FT 88.25	40.04	55.00	76.50	OK	OK	73.73

ANTHONY CARDWELL
04/03/2023

HEAT # X31D



TDAPCE - NO 7002110
Technical
Dept. Mgr.

Receiving Inspection
By: [Signature]
Date: 2/16/23

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.

Dept. Mgr.

2/16/2023

2/16/2023

Mr
2/29/23

GLOBE X-RAY SERVICES, INC.

8441 South Union Tulsa, OK 74132

Certification 167339-1

Report of Ultrasonic Examination

Customer: Rolled Alloys P. O. 0672834US
Address: Job # 4438804-TUL/8&1

Ultrasonic Examination

Test Instrument: Olympus Epoch 650 S/N: 221511111
Surface Condition: Smooth Procedure #: GXS II-D Rev: 1-22
Couplant: Sonix Search Unit Cable: RG-174 Co-Axial, 6FT. Long with BNC to BNC Connectors
Beam Angle: 0 Degrees Search Unit 1" x 2.25 MHz S/N: 66159
Scanning Pattern: 100% Reference Level: 40 Db
Calibration Reference: Backwall Technique: Contact, Manual Scan
Scanning Surface: One major surface

Reference Standard:

ASTM/ASME A-578/SA-578 LEVEL A(1) w/S1
ASTM/ASME A-578/SA-578 LEVEL B(2) w/S1 ASTM/ASME A-435/SA-435 w/S1
√ ASTM/ASME A-578/SA-578 LEVEL C(3) w/S1

Notes: Tag# 0808148-001-001

Thickness/Grade	Tracer	Area	Heat Number/Code	Accept	Reject
1.00"/ 316/316L	0672834US	60" x 240"	X31D	√	

Unless otherwise noted by an * following the item number, there were no recordable indications observed.

Examination By: Samuel Daniel Qualification Level: II
Date: March 17, 2023 Time: NA AM/PM

GLOBE XRAY ASSUMES NO RESPONSIBILITY FOR THE INTEGRITY OF THE STRUCTURE OR ANY LOSSES OF ANY KIND DUE TO ANY KIND OF INTERPRETATION

RAQAVJ 3-17-23
4438804-TUL/8 & 1

MR
E/29/21



**NORTH AMERICAN
STAINLESS**

METALLURGICAL TEST REPORT

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

Certificate: 780905 02 Mail To:
Customer: 2830 023 ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 5/17/2022 Page: 1

Steel: 316/316L

Finish: HRAP

Corrosion: ASTM A262/15 180Bend-OK

Your Order: 0206835-TUL

NAS Order: AN 0982101 03

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP; 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; Q9766D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.
DFARS 252.225-7008
DFARS 252.225-7009

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

Skid #	Prod #	Thickness	Width	Weight	-----Length-----	Mark	Pieces	COMMODITY CODE
PT9804	* 10T66W	.5000	48.0000	2,520	PLATE	173.00	2 x	

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
T66W	US	.0174	.3520	16.6460	.4665	1.1725	2.0855	.0525	10.0600	.0370
		S %	SI %							
		.0011	.3005							

MECHANICAL PROPERTIES

Skid #	Prod #	1 d e r	UTS KSI	20C KSI	2% YS KSI	20C ELONG %-2"	Hard RH	Grain No.	A 262 'E' Pr E	R of A %
PT9804	10T66W	F T	88.33	40.84	61.28	76.00	7.00	OK	69.76	

ANTHONY CARDWELL
04/03/2023



Receiving Inspection
By: *[Signature]*
Date: 5/19

Technical
Dept. Mgr. *[Signature]*

KRIS LARK

5/17/2022

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.

*MP
5/25/23*

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains: 1 pages (Page: 1)

Cust#: ROLHO Company#: ROLLED ALLOYS- HOUSTON

MTR#: UGCL19891-01 P08: 0213718-033 SO#: LJVNU8

Item: 37578.74316L#1 Bundle: 20226934 Heatno: 220074 Item: 37578.74316L#1 Bundle: 20226497 Heatno: 220074

		MILL CERTIFICATE BS EN 10104/3.1 CERTIFICAT DE RECEPTION NF EN 10204/3.1 ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1		N-Nr-N 22K0027791-01 V01																																																																									
Correspondence address: Aperam Genk Swinnenwijnweg 5, Poort Genk 7523 3600 Genk, Belgium Tel.: +32 (0)39 30 21 11		TRACER # D667266 US 2 TRACER # D667268 US																																																																											
Manufacturer's works order number N° de la commande usine productrice Werksauftragsnummer R0764775/02-64035/ARIJ02		Surveyor's mark Cachet de l'expert Stempel des Werkstätt-Verständigen 		Purchaser and/or consignee Client et/ou destinataire Besteller und/oder Empfänger Ta Chen International Inc. 5855 Oldipo Avenue 90805 Long Beach U.S.A.																																																																									
Product - Produit - Erzeugnis COILS, HOT ROLLED, ANNEALED AND PICKLED COILS, LAMINE A CHAUD, RECUITS + DECAPE COILS, WARMOEWALZT, BEGLUBT UND GEBEIZT		Customer article number Numéro client Artikelnummer des Kunden 37578.74316L#1																																																																											
Steel designation Désignation de l'acier Stahlbezeichnung ASTM A 240-2020 TYPE 316L / 316 ASME SA 240-2021 TYPE 316L / 316		Finish Présentation Aufmachung NO 1 NO 1		Steelmaking process Mode d'élaboration de l'acier - Stahlherstellungsverfahren Proc. process: Electric arc furnace - VOD/AOD - Continuous casting Proc. fabric: Four à arc - VOD/AOD - Cône continue Fertigungsablauf: Elektro-Ofen - VOD/AOD - Stranggussanlage Any supplementary requirements Prescriptions supplémentaires - Zusätzliche Anforderungen																																																																									
Product delivery condition Etat de livraison du produit - Lieferzustand Solution Annealing Hypertrappe Lösungsglühen 1050 °C		Forced air-water/air forced-eau Gebläse Luft-Wasser																																																																											
MAKE MR 0173 / ISO 15156-1 / ISO 15156-3 // ASTM A430 / A430M - ASME SA430 / SA430M // AMS 5907-P02 - ASTM A276 (CHEM.COMP) - ASTM A312(M) (CHEM.COMP) - MAT MERCURY FREE - NO WELD REPAIRING // CORN. TEST: ASTM A262-E OK // IN ACCORDANCE WITH UNS S31603																																																																													
Identification of the product Identification du produit - Identifizierung des Erzeugnisses MELTED IN BELGIUM, MADE IN BELGIUM																																																																													
Dimensions Dimensions - Abmessungen		Number of pieces Nb de pièces - Stueckzahl 3																																																																											
Thickness Epaisseur - Stärke 9.52 mm 0.375"		Width Largeur - Breite 2000.00 mm 78.740"		Length Longueur - Länge 28730 KG 63338 LBS																																																																									
CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG																																																																													
<table border="1"> <thead> <tr> <th></th> <th>C</th> <th>SI</th> <th>Mn</th> <th>NI</th> <th>Cr</th> <th>Mo</th> <th>TI</th> <th>N</th> <th>S</th> <th>P</th> <th>Cu</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Required - Exigé Anforderung</td> <td>%max</td> <td>0.030</td> <td>0.75</td> <td>2.00</td> <td>10.00 14.00</td> <td>16.00 18.00</td> <td>2.00 3.00</td> <td></td> <td>0.100</td> <td>0.010</td> <td>0.045</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Cast Analysis Analyse coulée</td> <td></td> <td>0.024</td> <td>0.52</td> <td>1.31</td> <td>10.08</td> <td>16.65</td> <td>2.04</td> <td></td> <td>0.037</td> <td>0.003</td> <td>0.033</td> <td>0.17</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Analysis Schwelz</td> <td></td> <td>C71</td> <td>C72</td> <td>C73</td> <td>C74</td> <td>C75</td> <td>C76</td> <td>C77</td> <td>C78</td> <td>C79</td> <td>C80</td> <td>C81</td> <td>C82</td> <td>C83</td> <td>C84</td> <td>C85</td> <td>C86</td> </tr> </tbody> </table>							C	SI	Mn	NI	Cr	Mo	TI	N	S	P	Cu							Required - Exigé Anforderung	%max	0.030	0.75	2.00	10.00 14.00	16.00 18.00	2.00 3.00		0.100	0.010	0.045							Cast Analysis Analyse coulée		0.024	0.52	1.31	10.08	16.65	2.04		0.037	0.003	0.033	0.17						Analysis Schwelz		C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86
	C	SI	Mn	NI	Cr	Mo	TI	N	S	P	Cu																																																																		
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Analysis Schwelz		C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85	C86																																																												
Positive material identification carried out: OK Tests de vérification de la conformité de la nuance fournie: OK Verwechslungsprüfung wurde durchgeführt: OK																																																																													
Location (1) MECHANICAL PROPERTIES - PROPRIETES MECANQUES - MECHANISCHE WERTE A-SA 370																																																																													
Room temperature - Température ambiante - Raumtemperatur Yield or proof strength Limite d'élasticité Dehngrenze Tensile Strength Résistance à la traction Zugfestigkeit Elongation after fracture Allongement après rupt. Bruchdehnung Hardness Dureté Haerte Yield or proof strength Limite d'élasticité Dehngrenze Tensile str. Résist. KSI Zugfestigkeit Bruchdehnung Impact strength test Essai de résilience Kerbschlagzähigkeitstest Corrosion test Test de corrosion Korrosionstest																																																																													
Direction (2) Required Exigé Anforderung mini maxi Obtained Obtenue Ergebnisse																																																																													
Rp0.2% Rp1% Rm Rm Rp0.2% Rp1% Rm Rm Rp0.2% Rp1% Rm Rm																																																																													
C11 C14 C12 C13 C16 C31 C18 C17 C18 C19																																																																													
ASTM A262 E: OK																																																																													
Location of the sample (1) Emplacement de l'échantillon Lage des Probenabschnittes 1. Front - Début - Anfang 2. Deck - Fin - Ende 3. Middle - Milieu - Mitte																																																																													
The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen Packing list Avis d'expédition Lieferschein/Nummer 220700101-100432																																																																													
Organization inspection Organisme et/ou service contrôle Überwachungsabteilung Quality Department 12/7/2022 R. Vliegen																																																																													
Direction of the test pieces (2) Orientation des éprouvettes Probenrichtung T. Transverse - Travers - Quer L. Longitudinal - Long - Längs																																																																													

Z8Q701 - PS3

ANTHONY CARDWELL
04/03/2023MTR
E/29/23

1315-1 Plate

15
16



**NORTH AMERICAN
STAINLESS**
An Acerinox Group Company

METALLURGICAL TEST REPORT

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

Certificate: 826621 02
Customer: 2830 001
Mail To:
ROLLED ALLOYS
125 W. STERNS RD.
TEMPERANCE, MI 48182

Ship To:
ROLLED ALLOYS
125 W. STERNS RD.
TEMPERANCE, MI 48182

Date: 1/12/2023

Steel: 316/316L

Finish: HRAP

Corrosion: ASTM A262/15,180Bend-OK

Your Order: 0213717-TEM

NAS Order: AN 1005097 01

PRODUCT DESCRIPTION:

STAINLESS STEEL COIL, HRAP; UNS 31600/31603
ASTM A240/22a,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 MRR;
NACE MR0175/ISO 15156-3:2015 A, MR0103/07; Q05766D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.

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 DPAAS Compliant

Product ID #	Coil #	Thickness	Width	Weight	Length	Mark	Pieces	COMMODITY CODE
07W73B A	* 07W73B A	.2500	48.0000	16,230	COIL	384.70	2	1 0006666

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS

CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
W73B	US	.0150	.2570	16.6310	.4610	1.1590	2.0650	.0483	10.0500	.0320
		S %	SI %							
		.0011	.3990							

HEAT # W73B



TRACER # 066957415

MECHANICAL PROPERTIES

Product ID #	Coil #	UTS KSI	20C KSI	2%YS KSI	20C ELONG %-2"	Hard RB	Tail Hard	A 262 Pr A	A 262 'E' Pr E
07W73B A	07W73B A	F T	89.14	47.97	50.86	86.50	89.00	OK	OK

ANTHONY CARDWELL
04/03/2023

Receiving Inspection
By: *[Signature]*
Date: 1-13-23

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

1/12/2023

Mr
1/22/23



**NORTH AMERICAN
STAINLESS**
An Acerinox Group Company

METALLURGICAL TEST REPORT

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

Certificate: 830341 04 Mail To:
Customer: 2830 023 ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 1/31/2023 Page: 1

Steel: 116/116.

Finish: HRAP

Corrosion: ASTM A262/15 189Hand-OK

Your Order: 0213870-TUL

NAS Order: AN 1005541 04

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP; UNS 31600/31603
ASTM A240/22a, 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
Material meets the requirements of ASTM A240/08.
DFARS 252.225-7008
DFARS 252.225-7009

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	COMMODITY CODE
03X14R CR	* 03X14B CB	1.2500	60.0000	5,120	PLATE	230.00	7	1 0006739

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
X14B	US	.0126	.3255	16.7800	.4925	1.2795	2.0565	.0580	10.1600	.0345
		S %	SI %							
		.0014	.1355							

MECHANICAL PROPERTIES

Product ID #	Coil #	UTS KSI	20C .2% YS KSI	20C ELONG %-2"	Hard RB	Grain No.	A 262 Pr A Pr A	A 262 'R' Pr E	R of A %
03X14B CB	03X14B CB	F T 85.21	42.72	53.35	78.00	8.00	OK	OK	74.65

ANTHONY CARDWELL
04/03/2023

HEAT # X14B



TRACE # 0R71454110

Technical
Dept. Mgr.

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.

1/31/2023

MT
2/2/23

6/29/27

CLIENTE / Customer / Client

INDUSTRIAL PIPING SPECIALISTS, INC
606 NORTH 145 EAST AVENUE
TULSA, OK 74116
USA

CERTIFICADO DE INSPECCION

Inspection Certificate - Certificat de Réception

FECHA: 07/11/2022 N° 222422 HOJA: 3
Date: 07/11/2022 No Page: 3

Company management certifications:

ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018



ULMA FORJA, S.COOP.

Management Systems certified by LRQA

Certified acc. PED 2014/68/UE + AD2000 W0
by TÜV Rheinland
N° 01 202 E-12 02 7443 UNE-EN 10204 (B1.1)
ISO 10474 (3, 1)

Bº Zubillaga, 3 - Apdo 14
20560 Oñati (Gipuzkoa) SPAIN
Tel: 34 - 943 780552
Fax: 34 - 943 781808
E-mail: ulma@ulmalorge.com

MARCA DEL FABRICANTE

Mark of factory
Marque du fabricant



Packing List: 172604
Expedition: 414310

DEPARTAMENTO
Section
Département

QUALITY ASSURANCE

PRODUCTO
Article - Produit

FLANGES

SU PEDIDO N°
Your Order No
Votre Cde. N°

TP7601020 TULSA

DE
of - de 22/06/2022

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-17

MATERIAL CORRESPONDIENTE
Material Correspondent - Qualité

ASME SA182F316/F316L-19, ASTM A182F316/F316L-21

MODO DE FUSION (*)

Steel Making - Elaboration de l'acier
E = Elec. Y = Originao básica

NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17945-15

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations (*)	COLADA N° Heat No N° Coule	RESISTENCIA T.Strength Resist Rupt N/mm2	LIMITE ELAS Y.Strength 0.2 % N/mm2	ALARGAM Elongation Allongement Lo.50mm/mil %	ESTRICCION Red Area Striction %	RESILIENCIA Impact test Résilience Joules	CHARPY V 10x10mm ACDIA Austenite Moyenne °C	DUREZA Hardness Dureté HBW
74 FU1515RFWN406L	45	WN 1 1/2 150LB 40S RF A182F316/F316L	29G208 HE	A01L2	572	315	57,00	74,02			156 156
69 FU1815RFWN106L	9	WN 18 150LB 10S RF A182F316/F316L	23L214 HE	A14L2	569	301	58,26	85,56			140 141
92 FU230RFWN406L	60	WN 2 300LB 40S RF A182F316/F316L	31L207 HE	A36L1	595	315	56,64	71,23			156 160
104 FU430RFWN406L	20	WN 4 300LB 40S RF A182F316/F316L	19L206 HE	A09L2	582	287	64,34	76,31			156 160
105 FU430RFWN806L	120	WN 4 300LB 80S RF A182F316/F316L	19L209 HE	A09L2	582	287	64,34	76,31			156 160

COLADA N°

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

Heat No Ladle L Product P	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	N %	Origin of Steel
A01L2 L	0.019	0.500	1.420	0.029	0.025	16.680	10.070	2.030	0.0660	Italy
A14L2 L	0.019	0.400	1.810	0.034	0.001	16.880	10.220	2.190	0.0686	Ruff
A36L1 L	0.025	0.440	1.610	0.031	0.027	16.990	10.060	2.040	0.0790	Sweden
A09L2 L	0.024	0.420	1.510	0.022	0.009	16.620	10.150	2.020	0.0600	Sweden

- Las dimensiones y la condición superficial se hallaron satisfactorias.
- Dimension and surface condition were found acceptable.
- Les dimensions et états de surface sont satisfaisants.

- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur



(*) OBSERVACIONES
Remarks
Observations

H_HEAT TREATMENT SOLUTION ANNEALED ABOVE 1040°C AND WATER QUENCHED

ANTHONY CARDWELL
06/19/2023

MR
E/19/23

| A22-13315-1A FL | | 539520 | LN: 2 | T0529364-1 | SDM880S316/L | |

(A01) Salzgitter Mannesmann Stainless Tubes France SAS

(A05) B.P.10 - F 21601 Montbard Cedex - FRANCE

www.smst-tubes.com

INSPECTION CERTIFICATE
Abnahmeprüfzeugnis
Certificat de Réception

SDM 880S316/L5L

(A02)

EN 10204: 2004 TYPE 3.1

(A03) No. / Nr. / N° 3-14-32124-rev.01

(A06) Purchaser / Besteller / Acheteur

INDUSTRIAL PIPING SPECIALIST

(A07) Customer Order No / Kundenauftragsnr. / N° Commande Client

HRO54770

(A08) SMST-Tubes Order No / Auftragsnr. / N° Commande SMST

0000257884

00000 TULSA

Oklahoma

SMST-Item

(A09) Part No / Teilenummer / Part number

Etats-Unis

0000257884-000005

(B01)(B02)(B04) Product Description / Produkt Beschreibung / Description du Produit

Seamless Stainless Steel Hot Finished Tubes Solution Annealed Pickled / Passivated Plain Ends Square Cut Deburred
Rohre warmgefertigt nahtlos rostfreier Stahl lösungsgeglüht gebeizt/ passiviert glatte Enden rechtwinklig gesägt entgratet
Tubes sans soudure Acier Inoxydable Fini à chaud Remis en solution Décapé/passivé Extrémité lisse coupée d'équerre

Specifications / Spezifikationen / Spécifications

ASME SA 312 13; ASME SA 376 13; ASTM A 312 14; ASTM A 376 13; NACE MR0103
2012; NACE MR0175/ISO 15156-3 2009

Grade / Werkstoff / Nuance

TP 316; TP 316L

Tolerances / Toleranzen / Tolérances

A 312

(B03) Supplementary Requirements / Zusatzanforderungen / Exigences Supplémentaires

None / Keine / Aucune

(B06)(D01) Marking of the Product / Kennzeichnung des Produkts / Marquage du Produit

Technical marking

\$WQ_NUMBER\$ DMV-F - ASME SA 312 / ASME SA 376 / ASTM A 312 / ASTM A 376 -
DMV 316L - TP 316L / TP 316 - NPS 8 X SCH 80S - \$INDIV_LENGTH_FT\$ FT - SML -
\$HEAT_NBR\$ - \$QUAL_LOT_NBR\$ - FRANCE

Country of Origin of the tubes / Herstellungsland der Rohre / Pays d'origine des tubes

France / Frankreich / France

Quantity / Menge / Quantité			Dimensions / Abmessung / Dimensions						
(B07) Heat Schmelze Coulée	Quality Lot Qualitätslos Lot Qualité	SMST-Item	(B08) Pieces Stück Pièces	(B13) Weight Gewicht Poids	(B16) Length Länge Longueur	(B09) OD	(B10) WT	(B11) Ordered Length Auftragslänge Longueur commandée	
								min	max
				15524.00 kg	236.139 m	219.10 mm	12.70 mm	5182 mm	7315 mm
539520	QL30077681	000005	40	34224.57 lbs	774.73 ft	NPS 8	SCH 80S	17.00 ft	24.00 ft
				34224.57 lbs	774.73 ft	8.626 "	0.500 "	17.00 ft	24.00 ft

Heat Analysis / Schmelzanalyse / Analyse de Coulée

		Request	C	Si	Mn	P	S	Cr	Ni	Mo
		Min	0.00	0.00	0.00	0.00	0.0000	16.0	11.0	2.0
		Max	0.035	0.75	2.0	0.045	0.0300	18.0	14.0	3.0
(B07) Heat Schmelze Coulée	Heat Origin Ursprung der Schmelze Origine de la Coulée	(C70) Melting Process Erschmelzungsart Procédé d'élaboration	%	%	%	%	%	%	%	%
539520	Germany	EAF + VOD	0.019	0.36	1.35	0.024	0.009	16.76	11.32	2.16

Tensile Test at Room Temperature / Zugversuch bei Raumtemperatur / Essai de traction à température ambiante

ASTM A 370

(C02) Direction : LONGITUDINAL

(A01) **Salzgitter Mannesmann Stainless Tubes France SAS**
(A05) B.P.10 - F 21501 Montbard Cedex - FRANCE

www.smet-tubes.com

INSPECTION CERTIFICATE
Abnahmeprüfzeugnis
Certificat de Réception



(A02) EN 10204: 2004 TYPE 3.1

(A03) No. / Nr. / N° **3-14-32124-rev.01**

ASTM A 370

Request	Min	(C11) YS 0.2%	(C12) U.T.S.	(C13) EL
		Rp 0.2%	Rm	2"
	Max			
Quality Lot Qualitätslos Lot Qualité	(C00) Sample	ksi	ksi	%
QL30077681	30240330	37	80	54

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

(C30) Hardness Test / Härteprüfung / Essai de dureté

NACE MR0103 // NACE MR0175/ISO 15156-3

Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Request Result Ergebnis Résultat	(C30) HRC		
			(C31) Min	(C31) Max	(C32) Avg
			22.0 max		
QL30077681	30240330	< 18	< 18	< 18	< 18

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

(C50) Flattening Test / Faltversuch / Essai d'aplatissement

ASTM A 999

Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Result Ergebnis Résultat
QL30077681	30240328 30240330	OK

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

Intergranular Corrosion Test / Prüfung der Interkristallinen Korrosion / Essai de corrosion intergranulaire

ASTM A 262 PRACTICE E

Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Result Ergebnis Résultat
		Request Max Unit
QL30077681	30240330	Satisfactory

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

(A01) **Salzgitter Mannesmann Stainless Tubes France SAS**

(A05) B.P.10 - F 21501 Montbard Cedex - FRANCE

www.smt-tubes.com

INSPECTION CERTIFICATE
Abnahmeprüfzeugnis
Certificat de Réception

(A02) EN 10204: 2004 TYPE 3.1



(A03) No. / Nr. / N° **3-14-32124-rev.01**

Other Tests and Declarations / Andere Prüfungen und Prüffeststellungen / Autres Tests et Déclarations

QL30077681

Heat Treatment / Wärmbehandlung / Traitement Thermique / Annealed ; Température : > 1040 °C / 1904 °F Rapid cooling

(D01) Visual and dimensional inspection (VT) on 100% of tubes according to the order Besichtigung und Maßkontrolle von 100% der Rohre gemäß Auftrag Examen visuel et dimensionnel sur 100% des tubes selon la commande	Satisfactory Bestanden Satisfaisant
--	---

(D51) Antimixing Check (PMI) on 100% of tubes Verwechslungsprüfung an allen Rohren mittels Spektralprüfung von 100% der Rohre Contrôle anti-mélange par PMI sur 100% des tubes	Satisfactory Bestanden Satisfaisant
--	---

(D52) Hydro Pressure Test 5 Second at 12.00 MPA ASTM A 999 (EP_1107) Wasserdruckprüfung 5 Sekunde mit 12.00 MPA ASTM A 999 (EP_1107) Épreuve hydraulique 5 Second avec 12.00 MPA ASTM A 999 (EP_1107) 1700 PSI	Satisfactory Bestanden Satisfaisant
---	---

The material is conforming to directive 2000/53/EC, 2002/95/EC and CD 2005/618/EC
Das Material entspricht den Anforderungen der Richtlinien 2000/53/EC, 2002/95/EC und CD 2005/618/EC
Le matériau est conforme aux directives 2000/53/EC, 2002/95/EC et CD 2005/618/EC

No Weld Repair
Keine Reparaturschweißung
Aucune réparation par soudure

(Z01) SMST declares that the product is in compliance with the order.
Die Erzeugnisse wurden bestellungsgemäß geprüft und für in Ordnung befunden
SMST atteste que les produits livrés sont conformes aux stipulations de la commande

Tubes are free from mercury contamination and from radioactive contamination
Die Rohre sind frei von Quecksilberverunreinigungen und frei von radioaktiver Verunreinigung
Les tubes sont exempts de contamination par le mercure et de contamination radioactive

Confirmation with reference to Pressure Equipment Directive 97/23/EC:
The works operates a quality management system that has undergone a specific assessment for materials for pressure equipment and is certified by a competent body (TÜV-SÜD-Cert.No: 05/2014/MAN)
Bestätigung in Bezug auf Druckgeräterichtlinie 97/23/EC:
Das Werk wendet ein Qualitätsmanagementsystem an, das in Bezug auf Werkstoffe für Druckgeräte einer spezifischen Bewertung unterzogen wurde und von einer zuständigen Stelle (TÜV-SÜD-Cert.No: 05/2014/MAN) zertifiziert ist.
Confirmation concernant la Directive Equipements sous Pression 97/23/EC:
L'usine applique un système de management de la qualité qui a fait l'objet d'une évaluation spécifique pour les matériaux pour équipements sous pression et qui est certifié par un organisme compétent (TÜV-SÜD-Cert.No: 05/2014/MAN)

(Z02) Mill's Inspector Werkssachverständiger Le Contrôleur usine	S.MONSAT	Date of Edition Ausgabedatum Date d'Édition	03/11/2014
--	-----------------	---	-------------------

This certificate is issued by a computerized system and valid without signature. In case the owner of the original would release a copy of it he must attest its conformity and will be responsible for any unlawful or not allowed use. Any alterations or falsification will be subject to law.
Dieses Zeugnis bzw. diese Bescheinigung wurde mit Hilfe der EDV erstellt und ist ohne Unterschrift gültig. Veränderungen sowie Verwendung für andere Erzeugnisse werden als Urkundenfälschung und Betrug strafrechtlich verfolgt.
Ce certificat est rédigé à l'aide d'un traitement électronique de données et est applicable sans signature. Tout changement ou application pour d'autres produits seront considérés comme falsification de documents et fraude et seront sujet à la juridiction pénale.

Mr
8/29/22



INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCION
CERTIFICAT DE RECEPCION
ABNAHMEPRUFZEUGNIS
EN 10204:2004 / 3.1

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Created on: Date: 03/08/2022	Modified on: 04/25/2022

TTI - TUBACEX TUBOS INOXIDABLES

Registro Mercantil de Aleva, Tomo 587, Folio 189, Hoja VI 2885 - N.I.F. A-01140227
Tres cruces, 8
01400 Llodio (Aleva)
SPAIN

TL: 946721350
FAX: 946725062
E-MAIL:

CUSTOMER DESCRIPTION/DESCRIPCION DEL CLIENTE/KUNDENBEZEICHNUNG/COMMETTANT

CLIENT SOLD TO/SOLICITANTE/AUFTRAGGEBER/COMMETTANT TSS TUBACEX SERVICE SOLUTIONS, S.A.U POLIGONO INDUSTRIAL SARATXO 01470 AMURRIO	CLIENT SHIP TO/DESTINAT. TSS TUBACEX SERVICE SOLUTIONS, S.A.U POLIGONO INDUSTRIAL SARATXO 01470 AMURRIO
---	---

CLIENT ORDER/PEDIDO CLIENTE/KUNDEN AUFTRAGSNUMMER/NO.DE COMMANDE: 1009374

SALES ORDER/PEDIDO VENTAS/AUFTRAGSNUMMER/NO.DE COMMANDE D'USINE:

MATERIAL: SEAML. STAINL. STEEL TUBES/PIPES/TUBOS INOXIDABLES SIN SOLDADURA/TUBES INOX SANS SOUDURE/NAHTLOSE EDELSTAHLROHRE
HEAT-TREATED, PICKLED / TRATADO, DECAPADO / HYPERTREMPE, DECAPE / WÄRMEBEHANDELT, GEBEIZT, PASSIVATED AS PER ASTM A380 / PASIVADO SEGUN ASTM A380 / PASSIVÉ (ASTM A380) / PASSIVIERT (ASTM A380)
GRADE / ACERO / GRADE / WERKSTOFF: TP316, TP316L, 1.4401, 1.4404,
STANDARD / NORMA / STANDARD / LIEFERUNG NACH: ASME SECT.II PART.A SA312/SA312M-2021 ED.
ASME SECT.II PART.A SA376/SA376M-2021 ED.
ASTM A312/A312M-19
ASTM A376/A376M-19
EN 10216-5:2013 TC1
EN 10297-2:2005
CHECK ANALYSIS
CORROSION TESTED ACC. TO ASTM A262 PRACTICE E
CORROSION TESTED ACC. TO EN ISO 3651-2 PRACTICE A
CORROSION TESTED ACC. TO MIL-P-24691/3 (ASTM A262 PCT.E)
ANSI/NACE MR0103/ISO 17945:2015
ANSI/NACE MR0175/ISO15156-3:2015
TOLERANCES / TOLERANCIAS / TOLERANCES / TOLERANZEN NACH: ASME SECT.II PART.A SA999/SA999M-2021 ED.
ASTM A999/A999M-18
EN ISO 1127/03.97 D2/T2
RANDOM LENGTHS / LARGOS VARIABLES / LONGUEUR COURANTE / EINGEENGTE LÄNGE 6.000/7.000 MM
PLAIN ENDS / LISOS / EXTRÉMITÉ D'EQUERRE / GLATTE ENDEN,
DIMENSIONS/DIMENSIONES/DIMENSIONS/DIMENSIONS: 114,3 X 8,56 MM - 4" SCH 80S
HOT FINISHED/ACABADOS EN CALIENTE/WARMGEFORMT/FINIS A CHAUD

Sales Item	Client Item	Delivery No	Lot No.	Heat No	Pieces	Weight	Tot Lgth	Un Lgth
Pos Ped.	Pos Cnt	N° Entrega	N° lote	Calada	Piezas	Peso	Long. Tot	Long. Un
Auftrag Pos	Kunde Pos	Lieferung	Los Nr.	Schmelze	Stück	Gewicht	Gesamtlänge	Längentyp
Usine Pos	Com. Pos	Avls. d'exp	Lot d'inspection	Coulée	Pcs	Poids	Totlength	Long. Un
40		8110072995	P2200399	58511	18	5,745.247 LB	366.142 FT	19.685-22.966 FT



TUBACEX TUBOS
INOXIDABLES S.A.U.

INGENIERIA DE CALIDAD

[Signature]

Edigo Artola Alcaraz

We hereby certify that the material herein described has been manufactured, sampled tested and inspected in accordance with above standards and specifications and satisfies all requirements. This certificate is issued by a computerized system and is a valid without original signature. In case the owner of the certificate would release a copy of it, he must accept its conformity to the issued, assuming the responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate shall legally be prosecuted.

Mr
6/20/23



INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCIÓN
CERTIFICAT DE RECEPTION
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EN 10204:2004 / 3.1

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RAW MATERIAL/DATOS MATERIAL/VORMATERIAL/MATIERE PREMIERE			
Heat Nr: 58511	Supplier ACERALAVA (SPAIN)	Method Electric furnace+AOD	

CHEMICAL COMPOSITION (%)/COMPOSICIÓN QUÍMICA (%)/CHEMISCHE ZUSAMMENSETZUNG (%)/COMPOSITION CHIMIQUE(%)												
* L: Ladle C: Products												
	Heat	Seq	C	Mn	Si	P	S	Ni	Cr	Mo	Cu	V
L	58511	1	0.018	1.41	0.400	0.032	0.0010	11.15	16.75	2.16	0.32	0.045
C	58511	5	0.018	1.40	0.410	0.032	0.0010	11.18	16.82	2.15	0.32	0.043
	Heat	Seq	Ti	Nb	W	Co	N	Pren				
L	58511	1	0.001	0.007	0.040	0.090	0.0541	24,7436				
C	58511	5	0.001	0.027	0.036	0.089	0.0541	24,7806				

HEAT TREATMENT/TRATAMIENTO TÉRMICO/WARMEBEHANDLUNG/TRAITEMENT THERMIQUE	
HIPERTEMLADOS A 1040 °C , ENFRIADO RAPIDO	
SOLUTION ANNEALED AT 1040 °C , Rapidly cooled	
HYPERTEMPES 1040 °C , REPROID. RAPIDE	
LOESUNGSGEGLUHT 1040 °C , SCHNELLE ABKÜHLUNG	

TENSILE TEST/TEST DE TENSIÓN/ESSAI TRACTION/ZUGVERSUCH										
Lot No.	Sample	T	Rp0.2	Rp1.0	Rm	A2"	A5	Type	Spec.Type	Spec.Dim
		°C	KS/	KS/	KS/	%	%			mm
P2200399	1	20	59	66	93	48	46	L	S	20,27

HARDNESS TEST/TEST DE DUREZA/DUREE/HÄRTEPRÜFUNG			
Lot No.	Sample	HRB1	HRB2
P2200399	1	90	90

METALURGICAL TESTS/ENSAYOS METALÚRGICOS/METALLURGISCHE PRÜFUNGEN/ESSAIS METALLURGIQUES	
INTERGRANULAR CORROSION TEST ACC. TO DIN EN ISO 3651-2 MET. A:	
SATISFACTORY	
ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ISO 3651-2 MET. A:	
SATISFACTORIO	
BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ISO 3651-2	
MET. "A": IN ORDNUNG	
ESSAI DE CORR. INTERGR. SELON ASTM ISO 3651-2 MET. "A": SATISFAISANT	
INTERGRANULAR CORROSION TEST ACC. TO ASTM A262	
PRACT. E/MIL-P-24691-3: SATISFACTORY	
ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ASTM A262	
PRACT. E/MIL-P-24691-3: SATISFACTORIO	
BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ASTM A262	
PRACT. E/MIL-P-24691-3: IN ORDNUNG	
ESSAI DE CORR. INTERGR. SELON ASTM ASTM A262 PRACT. E/MIL-P-24691-3:	



TUBACEX TUBOS
INOXIDABLES S.A.U.
INGENIERIA DE CALIDAD
[Signature]
Xilago Artalejo Alorbas

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with above standards and specifications and satisfies customer requirements. This certificate is issued by a computerized system and it is valid without original signature. In case the owner of the certificate would release a copy of it, he must attest its conformity in the words, assuming the responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate shall be legally prosecuted.

mf
6/25/23



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SATISFAISANT

NON-DESTRUCTIVE TESTS/ENSAYOS NO DESTRUCTIVOS/ZERSTÖRUNGSFREIE
PRÜFUNGEN/ESSAIS NON DESTRUCTIFS

POSITIVE MATERIAL IDENTIFICATION TEST ON EACH TUBE/PIPE BY

"X-RAY-FLUORESCENCE-ANALYZER": SATISFACTORY

VERIFICACION DEL GRADO DE ACERO EN CADA TUBO MEDIANTE "ANALIZADOR DE
FLUORESCENCIA DE RAYOS X": SATISFACTORIO

VERWECHSLUNGSPRÜFUNG AN JEDEM ROHR MIT

"RÖNTGEN-FLUORESZENZ-ANALYSATOR": IN ORDNUNG

VERIFICATION DE LA NUANCE SUR CHAQUE TUBE PAR

"X-RAY-FLUORESCENCE-ANALYZER": SATISFAISANT

HYDROSTATIC PRESSURE TESTED AT 154 bar, 2200 PSI DURING 5 SEC ON EACH
TUBE/PIPE: SATISFACTORY

ENSAYO HIDROSTÁTICO A 154 bar, 2200 PSI DURANTE 5 SEC EN CADA TUBO:
SATISFACTORIO

WASSERDRUCKPRÜFUNG BEI 154 bar, 2200 PSI HALTEZEIT 5 SEC JE ROHR: IN
ORDNUNG

ESSAI DE PRESSION HYDROSTATIQUE À 154 bar, 2200 PSI PENDANT 5 SEC SUR
CHAQUE TUBE: SATISFAISANT

DIMENSIONAL CHECKING ON EACH TUBE: SATISFACTORY

INSPECCION DIMENSIONAL AL 100% DE LOS TUBOS SATISFACTORIA

100% MASSKONTROLLE: O.B.

VERIFICATION DIMENTIONNELLE AU 100% DES TUBES, SATISFAISANTE

VISUAL INSPECTION ON EACH TUBE: SATISFACTORY

INSPECCION VISUAL AL 100% DE LOS TUBOS, SATISFACTORIA

100% BESICHTIGUNG: O.B.

EXAMEN VISUEL AU 100% DES TUBES, SATISFAISANT

TECHNOLOGICAL TESTS/ENSAYOS TECNOLÓGICOS/TECHNOLOGISCHE

PRÜFUNGEN/TECHNOLOGICAL TESTS

FLARING TEST: SATISFACTORY

ABOCARDADO S.NORMA: SATISFACTORIO

AUFWEITVERSUCH: IN ORDNUNG

ESSAI D'EVASEMENT: SATISFAISANT

FLATTENING TEST: SATISFACTORY

APLASTADO S.NORMA: SATISFACTORIO

RINGFLATVERSUCH: IN ORDNUNG

ESSAI D'APLATISSEMENT: SATISFAISANT

MARKING/ETIQUETADO/KENNZEICHNUNG/MARKSTEXT

TX2 TUBACEX 114.3 X 8.56 MM - 4" SCH 80S ASME SA312 ASME SA376 ASTM A312 ASTM A376 EN 10216-5 TC1 EN 10297-2
TP316 TP316L 1.4401 1.4404 HPD HF SMLS SLOHEAT/ PMI-AV LOT NO/ MADE IN SPAIN



TUBACEX TUBOS
INOXIDABLES S.A.U.
INGENIERIA DE CALIDAD

[Signature]

Elaborado por: [Signature]

We hereby certify that the material herein described has been manufactured, sampled, tested and
inspected in accordance with above standards and specifications and satisfies orders requirements. This
certificate is issued by a computerized system and is valid without original signature. In case the owner
of the certificate needs release as a copy of it, he must obtain its conformity to the issued, assuming the
responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate
shall be legally prosecuted.

MP
6/24/23



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REMARKS/OBSERVACIONES/ANMERKUNG/REMARQUES

NO MERCURY, MERCURY COMPOUNDS OR MERCURY BEARING INSTRUMENTS AND/OR EQUIPMENT HAVE BEEN USED ALONG MANUFACTURING AND INSPECTION PROCESS.
DURANTE LOS PROCESOS DE FABRICACIÓN E INSPECCIÓN NO SE HA USADO MERCURIO NI INSTRUMENTOS Y/O EQUIPOS CONTENIENDO MERCURIO O CON COMPONENTES DE MERCURIO.
KEINE QUECKSILBER, BZW. QUECKSILBERVERUNREINIGTES KOMPONENTEN ODER KUGELLAGERINSTRUMENTE UND/ODER GERÄTE SIND BENUTZT WORDEN PRODUKTIONS UND BESICHTIGUNGSPROZESS.
IL N'A PAS ÉTÉ FAIT USAGE DE MERCURE, DE COMPOSÉS CONTENANT DU MERCURE OU DE MATÉRIAUX ET/OU D'INSTRUMENT CONTENANT DU MERCURE TOUT AU LONG DES ÉTAPES DE FABRICATION ET DU PROCESSUS D'INSPECTION ET DE CONTRÔLE.

NO WELDING OR WELD REPAIRS WERE MADE
SIN REPARACION POR SOLDADURA
KEINE SCHWEISSBEARBEITUNG WURDE VORGENOMMEN
SANS RÉPARATION AVEC SOUDURE

MATERIAL MANUFACTURER APPROVED BY TÜV SÜD Industrie Service GmbH (NOTIFIED BODY 036) TO ISSUE CERTIFICATES OF SPECIFIC PRODUCT CONTROL IN ACCORDING TO PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU ANNEX 1 POINT 4.3.
FABRICANTE DE MATERIALES APROBADO POR TÜV SÜD Industrie Service GmbH (ORGANISMO NOTIFICADO 0036) PARA LA EMISION DE CERTIFICADOS ESPECIFICOS DE CONTROL DE PRODUCTO DE ACUERDO AL ANEXO I, PUNTO 4.3 DE LA DIRECTIVA DE EQUIPOS A PRESION 2014/68/EU.
WERKSTOFFHERSTELLER MIT BERECHTIGUNG ZUR AUSSTELLUNG VON BESCHEINIGUNGEN ÜBER SPEZIFISCHE PRÜFUNGEN AN DEN WERKSTOFFEN IM GELTUNGSBEREICH DER ZERTIFIZIERUNG UND IN ÜBEREINSTIMMUNG MIT DER DRUCKGERÄTERICHTLINIE 2014/68/EU UND DEN ZUGRUNDE LIEGENDEN SPEZIFIKATIONEN ENTSPR. DER BENANNTE STELLE NR.0036, TÜV SÜD Industrie Service GmbH
PRODUCTEUR DU MATERIEL APPROUVE PAR TÜV SÜD Industrie Service GmbH (N.B. 0036) POUR EMISSION DES CERTIFICATS SPECIFIQUE DE CONTROLE DE PRODUIT SELON LA DIRECTIVE DES EQUIPES A PRESION 2014/68/EU ANNEXE 1 POINT 4.3.

MATERIAL CHARACTERISTICS COMPLY WITH POINT 7.5 OF ANNEX I TO PED BY HAVING AN ELONGATION AFTER RUPTURE AT TENSILE TEST NO LESS THAN 14% AND A BENDING RUPTURE ENERGY AT IMPACT TEST NO LESS THAN 27J AT 20°C.
LAS CARACTERISTICAS DEL MATERIAL CUMPLEN CON LOS REQUISITOS DEL PUNTO 7.5 DE LA DIRECTIVA PED POR TENER UN ALARGAMIENTO TRAS ROTURA EN EL ENSAYO DE TRACCION NO INFERIOR AL 14% Y PO DE TRACCION NO INFERIOR AL 14% Y POR TENER UNA RESISTENCIA AL IMPACTO NO INFERIOR A 27 J A 20° C.
DIE WERKSTOFF-WERTE ENTSPRECHEN PUNKT 7.5. DER DGRL, ANHANG I, MIT EINERBRUCHDEHNUNG = 14% IM NORMGEMÄSS DURCHGEFÜHRTEN ZUVERSUCH UND DER KERBSCHLAGARBEIT = 27J AN EINER ISO - v PRO PROBE BEI EINER TEMPERATUR VON HÖCHSTENS 20°C
LES CARACTERISTIQUES DU MATERIEL, AYANT UN ALLONGEMENT APRES RUPTURE A L'ESSAI DE TRACTION NON INFERIEUR DU 14% ET UNE RESISTENCE A LA FLEXION PAR CHOC A 20°C NON INFERIEUR A 27J, SONT CONFORMES AUX PRESCRIPTIONS DU PONT 7.5 DE L'ANNEXE I DE PED.

MATERIAL IS FREE OF RADIATION CONTAMINATION
EL MATERIAL ESTA LIBRE DE CONTAMINACION POR RADIACIONES
MATERIAL IS FREI VON RADIOAKTIVITÄT
MATÉRIEL LIBRE DE POLUTION RADIOACTIVE



We hereby certify that the material herein described has been manufactured, sampled, tested, and inspected in accordance with above standards and specifications and satisfies order requirements. This certificate is issued by a computerized system and is valid without original signature. In case the owner of this certificate would release a copy of it, he must attest its conformity to the issued, assuming the responsibility for any omission of TUBACEX, not allowed use. Any forgery or falsification of this certificate shall legally be prosecuted.

TUBACEX TUBOS
INOXIDABLES S.A.U.

INGENIERIA DE CALIDAD

[Signature]

Ing. Araceli Altabas

Mr Sloc

Salzgitter Mannesmann Stainless Tubes France SAS

attachment to INSPECTION CERTIFICATE

Certificate Nr.: 3-14-32124-rev.01

Customer Order: 0000257884



Tube List (Tally List)

CustomerOrderItemId	WorkOrderId	PhulD	TubeNumber	TubeLength
0000257884-000005	325788400502	30109625000	0000000	5202 mm
0000257884-000005	325788400502	30109625000	0000000	5497 mm
0000257884-000005	325788400502	30109625000	0000000	5538 mm
0000257884-000005	325788400502	30109625000	0000000	5829 mm
0000257884-000005	325788400502	30109625001	0000000	5963 mm
0000257884-000005	325788400502	30109625001	0000000	5996 mm
0000257884-000005	325788400502	30109625001	0000000	6000 mm
0000257884-000005	325788400502	30109625001	0000000	6068 mm
0000257884-000005	325788400502	30109625002	0000000	5910 mm
0000257884-000005	325788400502	30109625002	0000000	5911 mm
0000257884-000005	325788400502	30109625002	0000000	6011 mm
0000257884-000005	325788400502	30109625002	0000000	6022 mm
0000257884-000005	325788400502	30109625003	0000000	6072 mm
0000257884-000005	325788400502	30109625003	0000000	6094 mm
0000257884-000005	325788400502	30109625003	0000000	6168 mm
0000257884-000005	325788400502	30109625003	0000000	6215 mm
0000257884-000005	325788400502	30109625004	0000000	5844 mm
0000257884-000005	325788400502	30109625004	0000000	5851 mm
0000257884-000005	325788400502	30109625004	0000000	5917 mm
0000257884-000005	325788400502	30109625004	0000000	5974 mm
0000257884-000005	325788400502	30109625005	0000000	5807 mm
0000257884-000005	325788400502	30109625005	0000000	5870 mm
0000257884-000005	325788400502	30109625005	0000000	5913 mm
0000257884-000005	325788400502	30109625005	0000000	5964 mm
0000257884-000005	325788400502	30109625006	0000000	5625 mm
0000257884-000005	325788400502	30109625006	0000000	5965 mm
0000257884-000005	325788400502	30109625006	0000000	6030 mm
0000257884-000005	325788400502	30109625006	0000000	6054 mm
0000257884-000005	325788400502	30109625007	0000000	5903 mm
0000257884-000005	325788400502	30109625007	0000000	5986 mm
0000257884-000005	325788400502	30109625007	0000000	6010 mm
0000257884-000005	325788400502	30109625007	0000000	6020 mm
0000257884-000005	325788400502	30109625008	0000000	5527 mm
0000257884-000005	325788400502	30109625008	0000000	5979 mm
0000257884-000005	325788400502	30109625008	0000000	6019 mm
0000257884-000005	325788400502	30109625008	0000000	6042 mm
0000257884-000005	325788400502	30109625009	0000000	5638 mm
0000257884-000005	325788400502	30109625009	0000000	5826 mm
0000257884-000005	325788400502	30109625009	0000000	5854 mm
0000257884-000005	325788400502	30109625009	0000000	6025 mm

Mr
6/29/23

| A22-13315-1A FL | | N682 | LN: 5 | T0529364-1 | D230RFLN96/L | |



14527 Smith Rd.
Humble, Texas 77396
TEL: (281) 441-4088
FAX: (281) 441-8899

PAGE: 1 of 1
REPORT # 23-043179
DATE: 4/13/2023

FCI ORDER # 119111
IAW ASME 2021 ED.
IAW NACE MR0175 2015Ed

CUSTOMER ORDER # TP797039X
SOLD / SHIPPED TO: IPS

Item	Quantity	Description
1	2	2" X 300 X 9" LG RF LWN
2	2	2" X 300 X 9" LG RF LWN

PART HBW: 140
PART HBW: 143

Heat Number: N682
Material Type: SA182F316/L

CHEMICAL ANALYSISPHYSICAL PROPERTIES

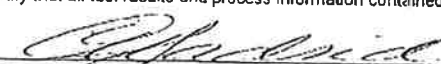
C .02
Mn 1.66
P .034
S .024
Si .42
Cr 16.51
Mo 2.06

Yield PSI 40,400
Tensile PSI 75,800
Elongation % 71
Reduction of Area % 75
Hardness 137/137 HBW

Cu .30
Ni 10.53
N .040

Heat Treatment SOLUTION ANNEALED
Temperature 1900 °F MIN
Time at Temperature 1/2 HR/IN THK
Cooling Media WATER

Flange dimensions and bolt hole patterns comply with ASME B16.5, B16.47, MSS SP-44. Hub profile for reinforcing nozzles per ASME Section VIII Div. 1 Appendix 2 (Figure 2-4). We hereby certify that all test results and process information contained herein are correct and true as contained in the records of the company.

Prepared by: 

Name: Cynthia Madrid

Title: QA Representative

ANTHONY CARDWELL
06/19/2023

for
6/25/23



PLYMOUTH TUBE CO USA

601 Grantham Avenue
West Monroe, LA 71292
(318) 388 - 3360



Sold To:

Webco Industries, Inc.
PO BOX 100
SAND SPRINGS, OK 74063

Customer's Order No. 10075494

Date: 05-11-22

Invoice Number:

Page 1 of 1

Mill Order Number: 200001-2-1

TEST REPORT

TR# 200001

Size: 1.0000" OD X 0.0650" MIN. WALL
Grade: TP316/316L SEAMLESS
Specifications: ASTM A213(19a)/ ASME SA213(19) COLD DRAWN STAINLESS PRESSURE TUBING
Finish tubes solution bright annealed at a minimum temperature of 1900°F (1040°C) and rapidly cooled in an inert atmosphere.

Heat	Lot Numbers	Yield Strength lbs per sq. in.	Tensile Strength lbs per sq. in.	% Elong in 2"	Hardness Test
563767	1	44400 / 44900	92100 / 93700	57.00 / 55.00	RB 76-78 2 Tests

Test	Status	Comments
Flatten	OK	
Flare	OK	
Eddy Current	OK	ASTM A-1016 100%

Heat	C	MN	P	S	SI	CR	NI	MO	CU	CO	N	TI	A
563767	0.016	1.630	0.030	0.007	0.390	17.000	11.250	2.060	0.310	0.140	0.076	0.021	0.006
Ladle	0.017	1.640	0.032	0.007	0.390	16.960	11.370	2.080	0.310	0.140	0.078	0.023	0.006
Product													

Additional Requirements:

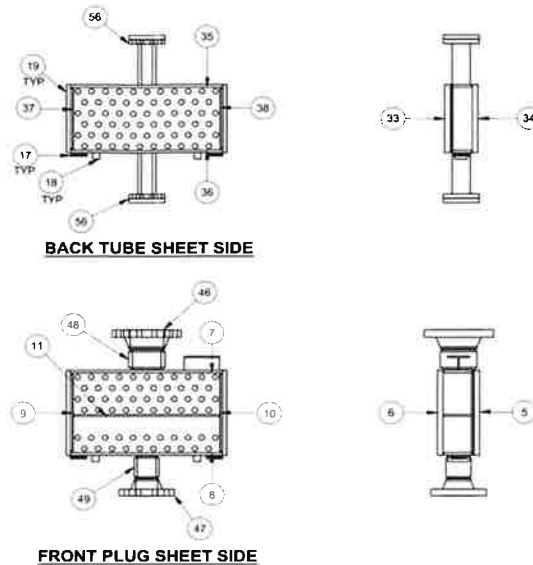
353 STRAIGHT TUBES PRODUCED PER WEBCO INDUSTRIES, INC. PO# 10075494. MATERIAL COMPLIES WITH EN10204 3.1. TUBES MANUFACTURED IN THE USA. COUNTRY OF MELT: SWEDEN.

We hereby certify this report to be correct.

By *Justin Leonard*
Plymouth Tube Company

ANTHONY CARDWELL
10/24/2022

*MT
8/29/22*

[illegible]

5
6
33
34



METALLURGICAL TEST REPORT

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

Certificate: 833632 04
Customer: 2830 023
Mail To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 2/16/2023 Page: 1
Steel: 316/316L
Finish: HRAP

Your Order: 0214661-TUL

NAS Order: AN 1008220 04

Corrosion: ASTM A262/15 189Send-UK

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP; UNS 31600/31603
ASTM A240/22a, A480/20a, A666/15; ASME SA240/19, SA480/19, SA666/19
CHEM ONLY ON FOLLOWING ASTM: A276/17, A479/20, A484/30b, A312/21
CHEM ONLY ON FOLLOWING ASME: SA312/19, SA479/19
AMS 5507B/5524M X MRK;
NACE MR0175/ISO 15156-3:2015 A, MR0103/07; QQS765D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.

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

Skid #	Prod #	Thickness	Width	Weight	Length	Mark	Pieces	COMMODITY CODE
PV8812	* 04X31D	1.0000	60.0000	8,480	240.00	PLATE	2 X	

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
X31D	US	.0179	.3025	16.9620	.5190	1.1810	2.2595	.0613	10.1200	.0355
		S %	SI %							
		.0010	.4040							

MECHANICAL PROPERTIES

Skid #	Prod #	1 d o i c e	UTS KSI	20C .2% YS KSI	20C ELONG %-2"	% Hard RB	A 262 Pr A	A 262 'E' Pr E	R of A %
PV8812	04X31D	F T	88.25	40.04	55.00	76.50	OK	OK	73.73

ANTHONY CARDWELL
04/03/2023

HEAT # X31D


RECEIVED
RECEIVING INSPECTION
By: 
Date: 4/5/23

ANTHONY CARDWELL
04/03/2023

HEAT # X31D



Receiving Inspection
By: [Signature]
Date: 2/16/23

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.

TDORCE - AC7702411C
Technical
Dept. Mgr.

KRIS LARE 2/16/2023

Mr
Elmer

13315-1B Plate

GLOBE X-RAY SERVICES, INC.

8441 South Union Tulsa, OK 74132

Certification 167339-2

Report of Ultrasonic Examination

Customer: Rolled Alloys P. O. 0672834US
 Address: Job # 4438815-TUL/8&1

Ultrasonic Examination

Test Instrument: Olympus Epoch 650 S/N: 221511111
 Surface Condition: Smooth Procedure #: GXS II-D Rev: 1-22
 Couplant: Sonix Search Unit Cable: RG-174 Co-Axial, 6FT. Long with BNC to BNC Connectors
 Beam Angle: 0 Degrees Search Unit 1" x 2.25 MHz S/N: 66159
 Scanning Pattern: 100% Reference Level: 40 Db
 Calibration Reference: Backwall Technique: Contact, Manual Scan
 Scanning Surface: One major surface

Reference Standard:

ASTM/ASME A-578/SA-578 LEVEL A(1) w/S1
 ASTM/ASME A-578/SA-578 LEVEL B(2) w/S1 ASTM/ASME A-435/SA-435 w/S1
√ ASTM/ASME A-578/SA-578 LEVEL C(3) w/S1

Notes: Tag# 0808148-001-001

Thickness/Grade	Tracer	Area	Heat Number/Code	Accept	Reject
1.00"/ 316/316L	0672834US	60" x 240"	X31D	√	

Unless otherwise noted by an * following the item number, there were no recordable indications observed.

Examination By: Samuel Daniel Samuel Daniel Qualification Level: II
 Date: March 17, 2023 Time: NA AM/PM

GLOBE XRAY ASSUMES NO RESPONSIBILITY FOR THE INTEGRITY OF THE STRUCTURE OR ANY LOSSES OF ANY KIND DUE TO ANY KIND OF INTERPRETATION

RAQAVJ 3-17-23
 4438815-TUL 8&1

Mr
 8/24/23



**NORTH AMERICAN
STAINLESS**

METALLURGICAL TEST REPORT

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

Certificate: 780905 02 Mail To:
Customer: 2830 023 ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 5/17/2022 Page: 1

Steel: 316/316L

Finish: HRAP

Your Order: 0206835-TUL

NAS Order: AN 0982101 03

Corrosion: ASTM A262/15 180Bend-OK

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP; 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
Material meets the requirements of ASTM A240/08.
DFARS 252.225-7008
DFARS 252.225-7009

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

Skid #	Prod #	Thickness	Width	Weight	-----Length-----	Mark	Pieces	COMMODITY CODE
PT9804	* 10T66W	.5000	48.0000	2,520	PLATE	173.00	2 x	

AMAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan) Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
T66W	US	.0174	.3520	16.6460	.4665	1.1725	2.0855	.0525	10.0600	.0370
		S %	SI %							
		.0011	.3005							

MECHANICAL PROPERTIES

Skid #	Prod #	1 d o i c c	UTS KSI	20C .2% YS KSI	ELONG %-2"	Hard RB	Grain No.	A 262 'E' Pr E	R of A %
PT9804	10T66W	F T	88.33	40.84	61.28	76.00	7.00	OK	69.76
ANTHONY CARDWELL 04/03/2023									

HEAT # T66W



TRACER # 0651850US

Receiving Inspection
By: *[Signature]*
Date: 5/19

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

5/17/2022

*Mr
5/29/22*

MILL TEST REPORT

TA CHEN INTERNATIONAL, INC.

This MTR contains: 1 pages (Page: 1)

Cust#: ROLHO Company#: ROLLED ALLOYS - HOUSTON

MTR#: UGCL/UGCL19891-01 P01: 0213718-OSS SO#: LJVNU8

Item: 37578-74316L-1 Bundle: 20226934 Heatno: 220074 Item: 37578-74316L-1 Bundle: 20226497 Heatno: 220074

		MILL CERTIFICATE BS EN 10204/3.1 CERTIFICAT DE RECEPTION NF EN 10204/3.1 ABNAHMEPRUEFZEUGNIS DIN EN 10204/3.1		N-Nr-N 22K0027791-01 V01																																																																	
Correspondence address: Aperam Genk Swinnenrijweg 5, Poort Genk 7523 3600 Genk, Belgium Tel. +32 (0)89 30 21 11		1 TRACER # <u>D667266 US</u> 2 TRACER # <u>D667268 US</u>																																																																			
Manufacturer's work order number N° de la commande usine productrice Werksauftragsnummer R0764775/02-64035/ARL/02		Surveyor's mark Cachet de l'expert Stempel des Werkssachverständigen 		Purchaser and/or consignee Client et/ou destinataire Desteller und/oder Empfänger Ta Chen International Inc. 5855 Ohio Avenue 90805 Long Beach U.S.A.																																																																	
Product - Produit - Erzeugnis COILS, HOT ROLLED, ANNEALED AND PICKLED COILS, LAMINE A CHAUD, RECUITS + DECAPÉ COILS, WARMGEWALZT, OEGLUHT UND GEBEIZT		Steel designation Désignation de l'acier Stahlbezeichnung ASTM A 240-2020 TYPE 316L / 316 ASME SA 240-2021 TYPE 316L / 316		Product delivery condition Etat de livraison du produit - Lieferzustand Solution Annealing Hypertrompe Lösungslühen 1050 °C																																																																	
Steel designation Désignation de l'acier Stahlbezeichnung ASTM A 240-2020 TYPE 316L / 316 ASME SA 240-2021 TYPE 316L / 316		Steelmaking process Mode d'élaboration de l'acier - Stahlherstellungsverfahren Prod. process: Electric arc furnace - VOD/AOD - Continuous casting Proc. fabric: Four à arc - VOD/AOD - Coulée continue Fertigungsablauf: Elektro-Ofen - VOD/AOD - Stranggussanlage		Product delivery condition Etat de livraison du produit - Lieferzustand Solution Annealing Hypertrompe Lösungslühen 1050 °C																																																																	
NACE MR 0175 / ISO 15156-1 / ISO 15156-3 / ASTM A400 / A400M - ASME SA 440 / SA 440M / AMS 5507-F02 - ASTM A276 (CHEM COMP) - ASTM A312M (CHEM COMP) - MAY MERCURY FREE - NO WELD REPAIRING // CORR. TEST: ASTM A262-E OK // IN ACCORDANCE WITH UNS S31603		Any supplementary requirements Prescriptions supplémentaires - Zusätzliche Anforderungen		Forced air-water/air forced-eau Gebogene Luft-Wasser																																																																	
Identification of the product Identification du produit - Identifizierung des Erzeugnisses MADE IN BELGIUM, MADE IN BELGIUM		Dimensions Dimensions - Abmessungen		Number of pieces Nb de pièces - Stueckzahl 3																																																																	
Coil n. N. Bobine - Band Nr. 22007415		Heat n. N. Coulée - Schmelz Nr. 220074		Thickness Epaisseur - Stärke 9.52 mm 0.375"																																																																	
		Width Largeur - Breite 2000.00 mm 78.740"		Length Longueur - Länge 2000.00 mm 78.740"																																																																	
		Net weight Poids net - netto Gewicht 28730 KG 63338 LBS																																																																			
CHEMICAL ANALYSIS - ANALYSE CHIMIQUE - CHEMISCHE ZUSAMMENSETZUNG																																																																					
<table border="1"> <thead> <tr> <th></th> <th>C</th> <th>Si</th> <th>Mn</th> <th>Ni</th> <th>Cr</th> <th>Mo</th> <th>Ti</th> <th>N</th> <th>S</th> <th>P</th> <th>Cu</th> <th></th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>Required - Exigé Anforderung</td> <td>0.030</td> <td>0.75</td> <td>2.00</td> <td>10.00</td> <td>16.00</td> <td>2.00</td> <td></td> <td>0.100</td> <td>0.030</td> <td>0.045</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Case Analysis Analyse casée</td> <td>0.024</td> <td>0.52</td> <td>1.31</td> <td>10.08</td> <td>16.65</td> <td>2.04</td> <td></td> <td>0.037</td> <td>0.003</td> <td>0.033</td> <td>0.37</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Analysis Schmelze</td> <td>C71</td> <td>C72</td> <td>C73</td> <td>C74</td> <td>C75</td> <td>C76</td> <td>C77</td> <td>C78</td> <td>C79</td> <td>C80</td> <td>C81</td> <td>C82</td> <td>C83</td> <td>C84</td> <td>C85</td> </tr> </tbody> </table>							C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P	Cu					Required - Exigé Anforderung	0.030	0.75	2.00	10.00	16.00	2.00		0.100	0.030	0.045						Case Analysis Analyse casée	0.024	0.52	1.31	10.08	16.65	2.04		0.037	0.003	0.033	0.37					Analysis Schmelze	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85
	C	Si	Mn	Ni	Cr	Mo	Ti	N	S	P	Cu																																																										
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Analysis Schmelze	C71	C72	C73	C74	C75	C76	C77	C78	C79	C80	C81	C82	C83	C84	C85																																																						
Positive material identification carried out: OK Tests de vérification de la conformité de l'avance fournie: OK Verwechslungsprüfung wurde durchgeführt: OK																																																																					
Location (1) MECHANICAL PROPERTIES - PROPRIETES MECANIKES - MECHANISCHE WERTE A-SA 370																																																																					
Room temperature - Température ambiante - Raumtemperatur																																																																					
Yield or proof strength Limite d'élasticité Dehngrenze KSI																																																																					
Tensile Strength Résistance à la traction Zugfestigkeit KSI																																																																					
Elongation after fracture Allongement après rupt. Bruchdehnung %																																																																					
Hardness Dureté HRC																																																																					
Yield or proof strength Limite d'élasticité Dehngrenze KSI																																																																					
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Elongation % Allongement Bruchdehnung %																																																																					
Impact strength test Essai de résilience Kerbschlagzähigkeitstest																																																																					
Corrosion test Test de corrosion Korrosionstest																																																																					
ASTM A262 E: OK																																																																					
Internal cleanliness:																																																																					
Location of the sample (1) Emplacement de l'échantillon Lage des Probenabschnittes 1. Front - Début - Anfang 2. Back - Fin - Ende 3. Middle - Milieu - Mitte																																																																					
The delivery is in accordance with the order La fourniture est conforme aux exigences de la commande Die Lieferung entspricht den Bestellbedingungen																																																																					
Packing list Avis d'expédition Lieferscheinnummer 220700101-100432																																																																					
Quality Department																																																																					
Direction of the test pieces (2) Orientation des épreuves Probenrichtung T. Transverse - Travers - Quer L. Longitudinal - Long - Längs																																																																					
Marking, inspection and measurement: without objection Contrôle de marquage, d'aspect et de dimensions: satisfaisant Prüfung der Stempelung, des Oberflächenaspekts und der Abmessungen: ohne Beanstandung																																																																					
12/7/2022 The Inspector Le responsable R. Vliogen																																																																					

Z50701 - PSS

 ANTHONY CARDWELL
 04/03/2023

 MTR
 4/3/23



**NORTH AMERICAN
STAINLESS**
An Acerinox Group Company

METALLURGICAL TEST REPORT

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

Certificate: 826521 02 Mail To:
Customer: 2830 001 ROLLED ALLOYS
125 W. STERNS RD.
TEMPERANCE, MI 48182

Ship To:
ROLLED ALLOYS
125 W. STERNS RD.
TEMPERANCE, MI 48182

Date: 1/12/2023

Steel: 316/316L

Finish: HRAP

Corrosion: ASTM A262/15,180Bend-OK

Your Order: 0213717-TEM

NAS Order: AN 1005097 01

PRODUCT DESCRIPTION:

STAINLESS STEEL COIL, HRAP; UNS 31600/31603
ASTM A240/22a,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 HRK;
FACE MR0175/ISO 15156-3:2015 A, MR0103/07; Q95766D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.

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 DPARe Compliant

Product ID #	Coil #	Thickness	Width	Weight	-----Length-----	Mark	Pieces	COMMODITY CODE
07W73B A	* 07W73B A	.2500	48.0000	16,230	COIL	384.70	2	1 0006666

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %
W73B	US	.0150	.2570	16.6310	.4610	1.1590	2.0650	.0483	10.0500	.0320
		S %	SI %							
		.0011	.3990							

HEAT # W73B



TRACER # 0669534/US

MECHANICAL PROPERTIES

Product ID #	Coil #	1 d 0 i 0 x	UTS KSI	20C .2% YS KSI	ELONG %-2"	Hard RB	Tail Hard	A 262 Pr A Pr A	A 262 'E' Pr E
07W73B A	07W73B A	F T	89.14	47.97	50.86	86.50	89.00	OK	OK

ANTHONY CARDWELL
04/03/2023

RECEIVED
INSPECTION

By: *[Signature]*
Date: 1-13-23

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

1/12/2023

*mm
6/2/24*



**NORTH AMERICAN
STAINLESS**
An Acerinox Group Company

METALLURGICAL TEST REPORT

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

Certificate: 830341 04 Mail To:
Customer: 2830 023 ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Ship To:
ROLLED ALLOYS
6555 SOUTH 57TH WEST AVENUE
TULSA, OK 74131

Date: 1/31/2023 Page: 1

Steel: 316/316L

Finish: HRAP

Corrosion: ASTM A262/15 183Bend-OK

Your Order: 0213870-TUL

NAS Order: AN 1005541 04

PRODUCT DESCRIPTION:

STAINLESS STEEL PLATE, HRAP, UNS 31600/31603
ASTM A240/22a, 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; QQS765D-A X MAG PERM
MIN. SOLUTION ANNEAL TEMP 1900F, WATER QUENCHED
Material meets the requirements of ASTM A240/08.
DFARS 252.225-7008
DFARS 252.225-7009

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	COMMODITY CODE
03X14B CB	* 03X14B CB	1.2500	60.0000	5,120	PLATE	230.00	7	1 0006739

ANAB, ISO/IEC 17025, Certificate# L2323

CHEMICAL ANALYSIS CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan)

Chemical Analysis per ASTM A751/20

HEAT	CM	C %	CO %	CR %	CU %	HN %	MO %	N %	NI %	P %
X14B	US	.0126	.3255	16.7800	.4925	1.2795	2.0565	.0580	10.1600	.0345
		S %	SI %							
		.0014	.1355							

MECHANICAL PROPERTIES

Product ID #	Coil #	1 d 0 i c f	UTS KSI	20C .2% YS KSI	20C ELONG %-2"	Hard RB	Grain No.	A 262 Pr A Pr A	A 262 'E' Pr E	R of A %
03X14B CB	03X14B CB	F T	85.21	42.72	53.35	78.00	8.00	OK	OK	74.65

ANTHONY CARDWELL
04/03/2023

HEAT # X14B



TRACE # 0071454110

Receiving Inspection
By: [Signature]
Date: 1/31/2023

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.

PRIG LAM

1/31/2023

my
4/22/11

MF
6/29/77



The Original

OFFICINE NICOLA GALPERTI & FIGLIO S.p.A.

Capitale Sociale € 502.500 interamente versato
Sede Legale e Amministrativa:
23824 DERVIO (LC) - Via Enrico Fermi, 48
C.C.I.A.A. Lecco n. 00202260138 - R.E.A. n. 79515 C.F. e P.IVA IT00202260138
Stabilimento - Ufficio Amministrativo / Workshop - Warehouse - Office - Mailing address:
22010 GERA LARIO (CO) - Località S. Agata - Tel. (0344) 97200
Telefax (0344) 97210 - E-MAIL ADDRESS: galperti@galperti.com
WEB SITE : galperti.com

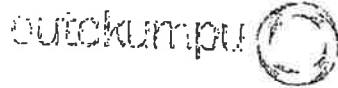
P	Report 6614/CR
M	Sheet 1 of 1
I	Date 31/05/2019

CLIENT : INDUSTRIAL PIPING	SUPPLIER : OFFICINE NICOLA GALPERTI & FIGLIO
CLIENT ORDER No : TP610058	SUPPLIER'S Ref.No. : 190013

OBJECT : STAINLESS STEEL FLANGES															
MATERIAL : ASTM A182 F316/F316L	HEAT : E182251.A TEST : 39														
P.A.M.I. INSTRUMENT TYPE : NITON XL GOLD															
INSTRUMENT MANUFACTURER : THERMO SCIENTIFIC															
SERIAL No : 67717															
ELEMENTS TO BE VERIFIED :	<table border="1"> <tr> <th>Cr</th><th>Ni</th><th>Mo</th><th>Nb</th><th>Ti</th><th>Mn</th><th>C</th></tr> <tr> <td>17,89</td><td>10,74</td><td>2,12</td><td>0,012</td><td>0,001</td><td>1,550</td><td>0,019</td></tr> </table>	Cr	Ni	Mo	Nb	Ti	Mn	C	17,89	10,74	2,12	0,012	0,001	1,550	0,019
Cr	Ni	Mo	Nb	Ti	Mn	C									
17,89	10,74	2,12	0,012	0,001	1,550	0,019									
CHECK ELEMENTS :															
ITEM	QTY	DESCRIPTION	MATERIAL IDENTIF.	ACCEPTED	REJECTED										
167	30	6" 300 WN RF 80S	PMI	X											
RESULTS : MATERIAL CONFORM TO SPECIFICATIONS															
NOTES : MATERIAL PERFORMED ON 100% OF THE PIECES															

OPERATOR		INSPECTORS			
PMI INSPECTOR	C. RUSEGNI	CUSTOMER'S PRESENT	Yes	☐	No ☐
SIGNATURE		INSPECTOR'S PRESENT	Yes	☐	No ☐
DATE	31/05/2019				

MP
E12912



INSPECTION CERTIFICATE
EN 10204 / 3.1

DEGERFORS LONG PRODUCTS S-693 01 DEGERFORS, SWEDEN Ref.OC-Dect. Jörgen Johansson		Date-Datum-Date Your order-Ihre Bestellung-Votre commande 2015-01-05 G00722/D1		No. LP 363-18								
Product-Erzeugnisform-Produkt Stainless steel, hot rolled billet Blooms unsoaked at 1220°C/5h before normal heating to reduce Ferrite in rolled billets. Intended for further hot working and heat treatment. No mechanical tests performed. Not heat treated.		Our order Unserer Auftrag Notre commande		Advice of delivery Lieferschein Avis d'expédition								
Requirements-Prüfgrundlagen-Exigences ASTM A182/A182M-17 GALPERSpec. NPS N.25 Rev.3. Note: Deviations from spec. NPS N.25 Rev.3 on P accepted by Galper & Figlio.		Purchaser-Besteller-Acheteur OFF. NIE NICOLA GALPERTI & FIGLIO SPA VIA E. FERMI 46 IT-23024 DERVIO (LC)		ITALY								
Marking-Kennzeichnung-Markage Type of steel Werkstoff Nr. Nuance F 316 F 316L 17-11-2L		Brand mark Herstellerzeichen Signe du producteur		Inspectors' stamp Abnahmesiegel Policon de l'expert								
Milling process Einschmelzungsart Procédé de fusion EAF AOD CC to bloom 400x300 mm												
Extent of delivery-Lieferumfang-Étendue de livraison												
Item	Quantity	Dimensions, mm	Cast No.	Lot No.	Weight Kg							
Pos.	Anzahl	Abmessungen, mm	Schmelze Nr.	Los Nr.	Gewicht Kg							
Pos.	Nombre	Dimensions, mm	Coulée n.	Lot n.	Poids Kg							
03-01	120	Round 120	E182251	118069	62 148							
03-02	7	Round 120	E182251	118070	3 164							
04-01	49	Round 180	E182251	118070	33 860							
Chemical composition-Chemische Zusammensetzung-Composition Chimique (Weight %)												
Cast No.												
Schmelze Nr.												
Coulee no												
E182251	C	Si	Mn	P	S	Cr	Ni	Mo	Ti	Nb	Cu	Co
	0.017	0.31	1.64	0.027	0.007	17.15	10.06	2.05	0.008	0.017	0.33	0.17
	N	Sn	V	Al	B							
	0.078	0.008	0.050	0.006	0.0003							
Test results-Prüfergebnisse-Résultats d'essais (L=longitudinal/longitudinal, T=transverse/querschnitt)												
Test No./LT	RP 0,2	RP 1,0	Rm	AS	Z	HB						
Probe Nr./LT	Impact test-Kerbschlagbiegeversuch-						TCT					
Eproutette n./LT	MPa	MPa	MPa	%	%	Résilience						
Requirements Schwerte Exigences						Inspection and gauge measurement-Ausmessung und Beschichtigung-Contrôle visuel et dimensionnel No remarks-Ohne Beanstandung-Pas de remarque The order requirements stipulated are satisfied Die gestellten Anforderungen der Bestellung sind erfüllt. Radioactivity < 0.1 Bq/g (equivalent to Co ⁶⁰). Measured on samples of the material using analysis techniques in accordance with guidelines issued by the IAEA. No void repair performed. Outokumpu Stainless AB Degerfors Long Products						
Other tests-Sonstige Prüfungen-Autres essais US-Tested according to DS procedure CFP-201. Approved. PMI-test has been performed on every bar/billet with X-ray spectro, without remarks.												
EN ISO 9001:2015 and EN ISO 14001:2015. Certificate no. 5749-3027684-0102. Approved by TÜV NORD Scandinavia AB. AD 2000-Merkblatt W0, approved by TÜV Nord Systems. Certificate no. 07/203/3140/WPI/0689/15 PED 2014/68/EU, approved by TÜV Nord Systems. Certificate no. 07/202/3140/WZ/0688/15 Reg.No.:SE56001-5748 V.A.T.No.:SE560011874801 Registered office:Stockholm, Sweden						JÖRGEN JOHANSSON Section Manager Quality Control						

mf
E/24/12

CLIENTE / Customer / Client

INDUSTRIAL PIPING SPECIALISTS, INC
606 NORTH 145 EAST AVENUE
TULSA, OK 74116
USA

CERTIFICADO DE INSPECCION Inspection Certificate - Certificat de Réception

FECHA: 07/11/2022 N.º 222422 HOJA: 3
Date No. Page:

Company management certifications:

ISO 9001: 2015
ISO 14001: 2015
ISO 45001: 2018



ULMA FORJA, S.COOP

Management Systems certified by UQAE

Certified acc. PED 2014/68/EU AD2000-WO
by TÜV Rheinland
N.º 01 202 E/Q 02 7443 UNE EN 10204 06/31
ISO 10474 13/31

Bº Zubillaga, 3 - Apdo. 14
20560 ONATI (Gipuzkoa) SPAIN
Tel: 34 - 943 780552
Fax: 34 - 943 781803
E-mail: ulma@ulmarge.com

MARCA DEL FABRICANTE

Mark of factory
Marque du fabricant



Packing List: 172604
Expedition: 414310

DEPARTAMENTO
Section
Département

QUALITY ASSURANCE

PRODUCTO
Article - Produit

FLANGES

SU PEDIDO N.º
Your Order No.
Votre Cde. N.º

TP7601020 TULSA

DE
of - de 22/05/2022

NORMAS APLICABLES
Requirements - Normes Applicables

ASME B16.5-17

MATERIAL CORRESPONDIENTE

ASME SA182F316/F316L-19, ASTM A182F316/F316L-21

MODO DE FUSION (*)
Steel Making - Elaboration de l'acier

NACE MR0175/ISO15156-02/03-15 & NACE MR0103/ISO17945-15

E = Elec. Y = Origeno básico

PARTIDA Item Poste	CANTIDAD Quantity Quantité	DESCRIPCION Description Description	OBSERVACIONES Remarks Observations	COLADA N.º Heat No. N.º Coudée	RESISTENCIA T.Strength R.Strength N/mm²	LIMITE ELAST. Y.Strength O.2 % N/mm²	ALARGAMIENTO Elongation Allongement La.S. %	ESTRUCION Red. Area Striction %	RESILIENCIA Impact test Résistance Joules	CHARPY V 10x10mm MEDA Average Moyenne °C	DUREZA Hardness Dureté HBW
74 FU1515RFWN406L	45	WN 1 1/2 150LB 40S RF A182F316/F316L	29G208 HE	A01L2	572	315	57.00	74.02			156 156
82 FU1815RFWN106L	9	WN 1 1/2 150LB 10S RF A182F316/F316L	23L214 HE	A14L2	569	301	58.26	85.56			140 141
92 FU230RFWN406L	60	WN 2 300LB 40S RF A182F316/F316L	31L207 HE	A36L1	595	315	56.64	71.23			156 160
104 FU430RFWN406L	20	WN 4 300LB 40S RF A182F316/F316L	19L206 HE	A09L2	582	287	64.34	78.31			156 160
105 FU430RFWN806L	120	WN 4 300LB 80S RF A182F316/F316L	19L209 HE	A09L2	582	287	64.34	76.31			156 160

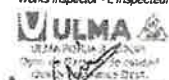
COLADA N.º
Heat No.
Liquor L.
Produit P.

COMPOSICION QUIMICA - STEEL MAKER'S LADLE ANALYSIS - ANALYSE CHIMIQUE

	C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	N %	Origin of Steel
A01L2 L	0.019	0.500	1.420	0.029	0.025	16.660	10.070	2.030	0.0860	Italy
A14L2 L	0.019	0.400	1.810	0.034	0.001	16.880	10.220	2.190	0.0686	Italy
A36L1 L	0.025	0.440	1.610	0.031	0.027	16.990	10.090	2.040	0.0790	Sweden
A09L2 L	0.024	0.420	1.510	0.022	0.009	16.620	10.150	2.020	0.0800	Sweden

- Las dimensiones y la condición superficial se hallaron satisfactorias
- Dimension and surface condition were found acceptable.
- Les dimensions et l'état de surface sont satisfaisants.
- Los materiales citados cumplen las normas aplicables.
- Manufacturing requirements are satisfied.
- Les normes applicables sont respectées.

EL INSPECTOR
Works Inspector - L'Inspecteur



(*) OBSERVACIONES:

Remarks
Observations

H: HEAT TREATMENT SOLUTION ANNEALED ABOVE 1040°C AND WATER QUENCHED.

ANTHONY CARDWELL
06/19/2023

Mr
Elizalde

| A22-13315-1B FL | | 733410 | LN: 2 | T0529366-1 | SDM680S316/L |

(A01) **Salzgitter Mannesmann Stainless Tubes France SAS**

(A05) B.P.10 - F 21501 Montbard Cedex - FRANCE

www.mannesmann-stainless-tubes.com



MANNESMANN
STAINLESS TUBES

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Abnahmeprüfzeugnis
Certificat de Réception

(A02) EN 10204: 2004 TYPE 3.1

(A03) No. / Nr. / N°

3-21-04606-rev.01

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(A06) Purchaser / Besteller / Acheteur

INDUSTRIAL PIPING SPECIALIST

PO Box 581270

00000 TULSA

Oklahoma

Etats-Unis

(A07) Customer Order No / Kundenauftragsnr. / N° Commande Client

HR121778

(A08) SMST-Tubes Order No / Auftragsnr. / N° Commande SMST

0000286638

SMST-Item

(A09) Part No / Teilenummer / Part number

0000286638-000006

(B01) (B02) (B04) **Product Description / Produkt Beschreibung / Description du Produit**

Seamless Stainless Steel Hot Finished Pipes Solution Annealed Pickled / Passivated Plain Ends Square Cut Deburred

Rohre warmgefertigt nahtlos rostfreier Stahl lösungsgeglüht gebeizt / passiviert glatte Enden rechtwinklig gesägt entgratet

Tubes sans soudure Acier Inoxydable Fini à chaud Remis en solution Décapés / Passivés Extrémités lisses coupées d'équerre

Specifications / Spezifikationen / Spécifications

ASME SA 312 19; ASME SA 376 19; ASTM A 312 19; ASTM A 376 19; ANSI/NACE MR0103/ISO 17945 2016; ANSI/NACE MR0175/ISO 15156-3 2015

Grade / Werkstoff / Nuance

TP 316; TP 316L; DMV 316L

Tolerances / Toleranzen / Tolérances

A 312; SA 312

(B03) **Supplementary Requirements / Zusatzanforderungen / Exigences Supplémentaires**

None / Keine / Aucune

(B06 - D01) **Marking of the Product / Kennzeichnung des Produkts / Marquage du Produit**

Technical marking

MANNESMANN MST-F - ASTM A 376 / ASTM A 312 / ASME SA 376 / ASME SA 312 - DMV 316L - TP 316 / TP 316L - NPS 6 X SCH 80S - \$INDIV_LENGTH_FT\$ FT - SML - NH/ET - HEAT \$HEAT_NBR\$ - SQUAL_LOT_NBR\$ - FRANCE - \$ORDER_ID\$

Country of Origin of the tubes / Herstellungsland der Rohre / Pays d'origine des tubes

France / Frankreich / France

Quantity / Menge / Quantité						Dimensions / Abmessung / Dimensions			
(B07) Heat Schmelze Coulée	Quality Lot Qualitätslos Lot Qualité	SMST-Item	(B08) Pieces Stück Pièces	(B13) Weight Gewicht Poids	(B16) Length Länge Longueur	(B09) OD	(B10) WT	(B11) Ordered Length Auftragslänge Longueur commandée	
								min	max
733410	QL30157450	000006	23	7201.00 kg	166.891 m	168.30 mm	10.97 mm	6096 mm	7315 mm
				15875.50 lbs	547.54 ft	NPS 6	SCH 80S	20.00 ft	24.00 ft
				15875.50 lbs	547.54 ft	6.626 "	0.432 "	20.00 ft	24.00 ft
			23	7201.00 kg	166.891 m				
			23	15875.50 lbs	547.54 ft				

Heat Analysis / Schmelzeanalyse / Analyse de Coulée

		Request	C	Si	Mn	P	S	Cr	Ni	Mo
		Min	0.00	0.00	0.00	0.00	0.0000	16.0	11.0	2.0
		Max	0.035	0.75	2.0	0.045	0.0300	18.0	14.0	3.0
(B07) Heat Schmelze Coulée	Heat Origin Ursprung der Schmelze Origine de la Coulée	(C70) Melting Process Erschmelzu ngsart Procédé d'élaboration	%	%	%	%	%	%	%	%
733410	Germany	EAF - AOD	0.021	0.37	1.79	0.027	0.0007	16.8	11.2	2.1

Salzgitter Mannesmann Stainless Tubes France SAS ISO9001 - LRQA N° 0027896

ANTHONY CARDWELL
06/19/2023

mf
8/25/1

| A22-13315-1B FL | | 733410 | LN: 2 | T0529366-1 | SDM680S316/L |

(A01) **Salzgitter Mannesmann Stainless Tubes France SAS**

(A05) B.P.10 - F 21501 Montbard Cedex - FRANCE

www.mannesmann-stainless-tubes.com



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(A02)

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(A03) No. / Nr. / N°

3-21-04606-rev.01

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Tensile Test at Room Temperature / Zugversuch bei Raumtemperatur / Essai de traction à température ambiante

ASTM A 370

(C02) Direction: LONGITUDINAL

Coupon Type / Art der Probe / Type du Coupon Test: Plai Type Specimen

		(C14)	(C11)	(C12)	(C13)
			YS 0.2%	U.T.S.	EL
		Width mm	Rp 0.2%	Rm	2"
Request	Min		30	75	35.0
	Max				
Quality Lot Qualitätslos Lot Qualité	(C00) Sample		ksi	ksi	%
QL30157450	39044488	12.478	43.2	86.0	54

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

(C30) Hardness HRC / Härteprüfung HRC / Essai de dureté HRC

ASTM E 18;EN ISO 6508-1

			(C30) HRC		
		Request			22.0 max
Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Result Ergebnis Resultat	(C31) Min	(C31) Max	(C32) Avg
QL30157450	39044488		<18	<18	<18.0

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

(C50) Flattening Test / Kaltversuch / Essai d'aplatissement

ASTM A 999

Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Result Ergebnis Resultat
QL30157450	39044488	OK
	39044489	OK

Sampling done on tubes in manufacturing length / Beprobung erfolgte an Rohren in Herstelllänge / Echantillonnage réalisé par longueur de fabrication

mp
Elzai

| A22-13315-1B FL | | 733410 | LN: 2 | T0529366-1 | SDM680S316/L |

(A01) Salzgitter Mannesmann Stainless Tubes France SAS

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(A02) EN 10204: 2004 TYPE 3.1

(A03) No. / Nr. / N°

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Intergranular Corrosion Test / Prüfung der interkristallinen Korrosion / Essai de corrosion intergranulaire

ASTM A 262 PRACTICE E; MIL-P-1144D 23.08.1975

	Request Max	
	Unit	
Quality Lot Qualitätslos Lot Qualité	(C00) Sample	Result Ergebnis Résultat
QL30157450	39044488	Satisfactory

Mi
E/25/2

A22-13315-1B FL | 733410 | LN: 2 | T0529366-1 | SDM680S316/L |
(A01) Salzgitter Mannesmann Stainless Tubes France SAS
(A05) B.P.10 - F 21501 Monibard Cedex - FRANCE
www.mannesmann-stainless-tubes.com



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(A02) EN 10204: 2004 TYPE 3.1

(A03) No. / Nr. / N°

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Other Tests and Declarations / Andere Prüfungen und Prüffeststellungen / Autres Tests et Déclarations

QL30157450

Heat Treatment / Wärmebehandlung / Traitement thermique : ANNEALED BY DIRECT QUENCHING - Rapid
Cooling off the extrusion press - Temperature : 1038°C (1900°F) min

(D01) Visual and dimensional inspection (VT) on 100% of tubes according to the order
Besichtigung und Maßkontrolle von 100% der Rohre gemäß Auftrag
Examen visuel et dimensionnel sur 100% des tubes selon la commande
Satisfactory
Bestanden
Satisfaisant

(D51) Antimixing Check (PMI) on 100% of tubes
Verwechselungsprüfung an allen Rohren mittels Spektralprüfung von 100% der Rohre
Contrôle anti-mélange par PMI sur 100% des tubes
Satisfactory
Bestanden
Satisfaisant

(D02) Eddy Current Testing (ET) on 100% of tubes ASTM A999; ASTM A999/ASTM E 426 (EC_004): Automated Eddy
Current with Concentric Coil Technique
Wirbelstromprüfung von 100% der Rohre ASTM A999; ASTM A999/ASTM E 426 (EC_004): Automatisierte
Wirbelstromprüfung mit der Durchlaufspulentechnik
Courants de Foucault sur 100% des tubes ASTM A999; ASTM A999/ASTM E 426 (EC_004): Courants de Foucault
Automatique par Technique de Bobines Concentriques
Satisfactory
Bestanden
Satisfaisant

No Weld Repair
Keine Reparaturschweißung
Aucune réparation par soudure

(Z01) SMST declares that the product was manufactured, sampled, tested, inspected and packed in accordance with the specifications and any other
requirements designated in the purchase order within the extent listed in SMST order acknowledgment, and has been found to meet such
requirements
SMST bestätigt, dass die Rohre hergestellt, beprobt, geprüft, kontrolliert und gepackt wurden in Übereinstimmung mit den Spezifikationen und
anderen Anforderungen in der Kundenbestellung innerhalb des Umfangs wie dieser in der SMST Auftragsbestätigung aufgeführt wurde. Die
Rohre entsprechen den Auftragsanforderungen
SMST Atteste que les produits sont fabriqués, prélevés, testés, inspectés et emballés en conformité aux spécifications et autres exigences
stipulées dans la commande d'achat avec les limites décrites dans l'accusé de réception de la commande. Les produits livrés sont conformes à
ces stipulations

Tubes are free from mercury contamination and from radioactive contamination
Die Rohre sind frei von Quecksilberverunreinigungen und frei von radioaktiver Verunreinigung
Les tubes sont exempts de contamination par le mercure et de contamination radioactive

The material is conforming to directive 2000/53/EC and 2011/65/EU
Das Material entspricht den Anforderungen der Richtlinien 2000/53/EC und 2011/65/EU
Le matériau est conforme aux directives 2000/53/EC et 2011/65/EU

Confirmation with reference to Pressure Equipment Directive 2014/68/EU:

The works operates a quality management system that has undergone a specific assessment for materials for pressure equipment and is
certified by a competent body (TUV-SÜD-Cert No: 05/2020/MAN)

Bestätigung in Bezug auf Druckgeräterichtlinie 2014/68/EU:
Das Werk wendet ein Qualitätsmanagementsystem an, das in Bezug auf Werkstoffe für Druckgeräte einer spezifischen Bewertung unterzogen
wurde und von einer zuständigen Stelle (TUV-SÜD-Cert.No: 05/2020/MAN) zertifiziert ist.

Confirmation concernant la Directive Equipements sous Pression 2014/68/EU:

L'usine applique un système de management de la qualité qui a fait l'objet d'une évaluation spécifique pour les matériaux pour équipements
sous pression et qui est certifié par un organisme compétent (TUV-SÜD-Cert.No: 05/2020/MAN)

(Z02) Mill's Inspector
Werkssachverständiger
Le Contrôleur usine

Florian Sullerot (IU)

Date of Edition
Ausgabedatum
Date d'Edition

07/06/2021

This certificate is issued by SALZGITTER MANNESMANN STAINLESS TUBES via a computerized system bearing a traceable unique number.
It is valid without signature. An intermediary may only pass on the original certificate without any alterations. Providing a copy of the original is
only permitted subject to strict compliance with the prerequisites set out in § 6 of EN 10204:2004 i.e. traceability and availability of the original
upon request. Any modification or alteration of the certificate or any copies are strictly prohibited. Any contravention of this notice or § 6 of EN
10204:2004 is illegal and will be prosecuted. Any falsification of a certificate e.g. by introducing false or fraudulent data for the purpose of
promoting the sales of goods is a criminal offence under German law (and many other jurisdictions) punishable with fines and imprisonment. If
an authentication is needed, please contact info@msl.mannesmann.com

msl
21/06/21

| A22-13315-1B FL | | 733410 | LN: 2 | T0529366-1 | SDM680S316/L |

(A01) **Salzgitter Mannesmann Stainless Tubes France SAS**

(A05) B.P.10 - F 21501 Montbard Cedex - FRANCE

www.mannesmann-stainless-tubes.com

INSPECTION CERTIFICATE

Abnahmeprüfzeugnis

Certificat de Réception

(A02)

EN 10204: 2004 TYPE 3.1



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STAINLESS TUBES**

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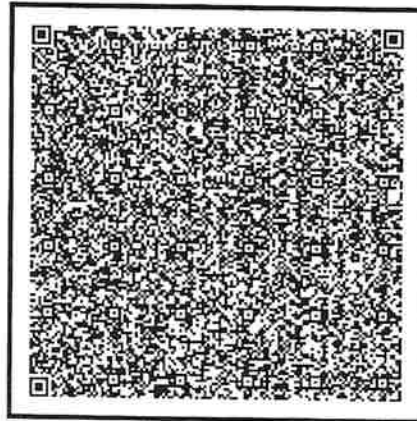
(A03) No. / Nr. / N°

3-21-04606-rev.01

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**Certificate anti counterfeiting check
Prüfung der Zeugnisse gegen Fälschung
Contrôle de la contrefaçon des certificats**



A set of information from the Inspection Certificate cover page are included in encrypted form in the above QR code.

By scanning it with your mobile device you can check if the Inspection Certificate is genuine.

Ein Teil der Informationen der ersten Zeugnis-Seite sind in verschlüsselter Form in dem oben dargestellten QR Code enthalten. Beim Scannen mit einem mobilen Gerät kann das Zeugnis auf Authentizität geprüft werden.

Une partie des informations contenues dans la première page de ce certificat d'inspection sont disponibles sous forme cryptée dans le "QR Code" ci-dessus. Lors de la lecture avec votre appareil mobile, vous pouvez vérifier l'authenticité du certificat d'inspection.

Handwritten signature

Salzgitter Mannesmann Stainless Tubes France SAS



MANNESMANN
STAINLESS TUBES

A Member of the Thyssen Group

attachment to INSPECTION CERTIFICATE

Certificate Nr.: 3-21-04606-rev.01

Customer Order: 0000286638

Tube List (Tally List)

Pag. 1 / 1

CustomerOrderItemid	WorkOrderid	PhuiD	QualityLotID	HeatNumber	TubeNumber	TubeLength
0000286638-000006	328663800601	30215505002	QL30157450	733410	000001	7293 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000002	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000003	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000004	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000005	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000006	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000007	7294 mm
0000286638-000006	328663800601	30215505002	QL30157450	733410	000008	7294 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000014	7130 mm
0000286638-000006	328663800601	30215505000	QL30157450	733410	000015	7294 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000016	7293 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000017	7293 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000018	7294 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000019	7278 mm
0000286638-000006	328663800601	30215505003	QL30157450	733410	000020	7294 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000021	7215 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000022	7215 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000023	7216 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000024	7232 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000025	7174 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000026	7232 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000027	7232 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	000028	7148 mm
0000286638-000006	328663800601	30215505001	QL30157450	733410	23 pieces	166891 mm

400
6/29/

| A22-13315-1B FL | | 58511 | LN: 4 | T0529366-1 | STX480S316/L | |



INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCIÓN
CERTIFICAT DE RECEPCIÓ
ABNAHMEPRÜFZEUGNIS
EN 10204:2004 / 3.1

Number: 730942	Rev: 00
Page: 1 / 4	
Created on: Date: 03/08/2022	Modified on: 04/25/2022

TTI - TUBACEX TUBOS INOXIDABLES

Registro Mercantil de Alava, Tomo 587, Folio 189, Hoja VI 2885 - N.I.F. A-01140227

Tres cruces, 8

01400 Llodio (Alava)

SPAIN

TL: 946721350

FAX: 946725062

E-MAIL:

CUSTOMER DESCRIPTION/DESCRIPCIÓN DEL CLIENTE/KUNDENBEZEICHNUNG/COMMETTANT

CLIENT SOLD TO/SOLICITANTE/AUFTRAGGEBER/COMMETTANT	CLIENT SHIP TO/DESTINAT.
TSS TUBACEX SERVICE SOLUTIONS, S.A.U POLIGONO INDUSTRIAL SARATXO 01470 AMURRIO	TSS TUBACEX SERVICE SOLUTIONS, S.A.U POLIGONO INDUSTRIAL SARATXO 01470 AMURRIO

CLIENT ORDER/PEDIDO CLIENTE/KUNDEN AUFTRAGSNUMMER/NO.DE COMMANDE: 1009374

SALES ORDER/PEDIDO VENTAS/AUFTRAGSNUMMER/NO.DE COMMANDE D'USINE:

MATERIAL: SEAML. STAINL. STEEL TUBES/PIPES/TUBOS INOXIDABLES SIN SOLDADURA/TUBES INOX SANS SOUDURE/NAHTLOSE EDELSTAHLROHRE
HEAT-TREATED, PICKLED / TRATADO, DECAPADO / HYPERTREMPE, DECAPE / WÄRMEBEHANDELT, GEBEIZT, PASSIVATED AS PER ASTM A380 / PASIVADO SEGUN ASTM A380 / PASSIVÉ (ASTM A380) / PASSIVIERT (ASTM A380)
GRADE / ACERO / GRADE / WERKSTOFF: TP316, TP316L, 1.4401, 1.4404,
STANDARD / NORMA / STANDARD / LIEFERUNG NACH: ASME SECT.II PART.A SA312/SA312M-2021 ED.
ASME SECT.II PART.A SA376/SA376M-2021 ED.
ASTM A312/A312M-19
ASTM A376/A376M-19
EN 10216-5:2013 TC1
EN 10297-2:2005
CHECK ANALYSIS
CORROSION TESTED ACC. TO ASTM A262 PRACTICE E
CORROSION TESTED ACC. TO EN ISO 3651-2 PRACTICE A
CORROSION TESTED ACC. TO MIL-P-24691/3 (ASTM A262 PCT.E)
ANSI/NACE MR0103/ISO 17945:2015
ANSI/NACE MR0175/ISO 15156-3:2015
TOLERANCES / TOLERANCIAS / TOLERANCES / TOLERANZEN NACH: ASME SECT.II PART.A SA999/SA999M-2021 ED.
ASTM A999/A999M-18
EN ISO 1127/03.97 D2/T2
RANDOM LENGTHS / LARGOS VARIABLES / LONGUEUR COURANTE / EINGEENGTE LÄNGE 6.000/7.000 MM
PLAIN ENDS / LISOS / EXTRÉMITÉ D'EQUERRE / GLATTE ENDEN,
DIMENSIONS/DIMENSIONES/DIMENSIONS/DIMENSIONS: 114,3 X 8,56 MM - 4" SCH 80S
HOT FINISHED/ACABADOS EN CALIENTE/WARMGEFORMT/FINIS A CHAUD

Sales Item	Client Item	Delivery No	Lot No.	Heat No	Pieces	Weight	Tot Lgth	Un Lgth
Pos Fed.	Pos Cnt	N° Entrega	N° lote	Calada	Piezas	Peso	Long. Tot	Long. Un
Auftrag Pos	Kunde Pos	Lieferung	Los Nr.	Schmelze	Stück	Gewicht	Gesamtlänge	Längentyp
Usine Pos	Com. Pos	Avs. d'exp	Lot d'inspection	Couïde	Pcs	Poids	Tolength	Long. Un
40		8110072995	P2200399	58511	18	5,745.247 LB	366.142 FT	19.685-22.966 FT



We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with above standards and specifications and satisfies all requirements. This certificate is issued by a computerized system and is valid without original signature. In case the owner of the certificate would release as a copy of it, he must assure its conformity to the issued, assuming the responsibility for any unavailability of TUBACEX, not allowed use. Any forgery or falsification of this certificate shall be legally prosecuted.

TUBACEX TUBOS
INOXIDABLES S.A.U.

INGENIERIA DE CALIDAD

[Signature]

Edgar Arellano Alvarado

*no
8/24/1*



INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCIÓN
CERTIFICAT DE RECEPTION
ABNAHMEPRÜFZEUGNIS
EN 10204:2004 / 3.1

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RAW MATERIAL/DATOS MATERIAL/VORMATERIAL/MATIERE PREMIERE			
Heat Nr: 58511	Supplier ACERALAVA (SPAIN)	Method Electric furnace+AOD	

CHEMICAL COMPOSITION (%) / COMPOSICIÓN QUÍMICA (%) / CHEMISCHE ZUSAMMENSETZUNG (%) / COMPOSITION CHIMIQUE(%)													
* L: Ladle C: Products													
	Heat	Seq	C	Mn	Si	P	S	Ni	Cr	Mo	Cu	V	
L	58511	1	0.018	1.41	0.400	0.032	0.0010	11.15	16.75	2.16	0.32	0.045	
C	58511	5	0.018	1.40	0.410	0.032	0.0010	11.18	16.82	2.15	0.32	0.043	
	Heat	Seq	TI	Nb	W	Co	N	Pren					
L	58511	1	0.001	0.007	0.040	0.090	0.0541	24,7436					
C	58511	5	0.001	0.027	0.036	0.089	0.0541	24,7806					

HEAT TREATMENT/TRATAMIENTO TÉRMICO/WARMEBEHANDLUNG/TRAITEMENT THERMIQUE	
HIPERTEMPERADOS A 1040 °C , ENFRIADO RAPIDO	
SOLUTION ANNEALED AT 1040 °C , Rapidly cooled	
HYPERTEMPES 1040 °C , REPROID. RAPIDE	
LOSSUNGSBEGLUEHT 1040 °C , SCHNELLE ABKÜHLUNG	

TENSILE TEST/TEST DE TENSION/ESSAI TRACTION/ZUGVERSUCH											
Lot No.	Sample	T °C	Rp0.2 KSI	Rp1.0 KSI	Rm KSI	A2" %	A5 %	Type	Spc.Type	Spc.Dim mm	
P2200399	1	20	59	66	93	48	46	L	S	20,27	

HARDNESS TEST/TEST DE DUREZA/DUREE/HÄRTEPRÜFUNG			
Lot No.	Sample	HRB1	HRB2
P2200399	1	90	90

METALURGICAL TESTS/ENSAYOS METALÚRGICOS/METALLURGISCHE PRÜFUNGEN/ESSAIS METALLURGIQUES	
INTERGRANULAR CORROSION TEST ACC. TO DIN EN ISO 3651-2 MET.A:	
SATISFACTORY	
ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ISO 3651-2 MET.A:	
SATISFACTORIO	
BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ISO 3651-2	
MET. "A": IN ORDNUNG	
ESSAI DE CORR. INTERGR. SELON ASTM ISO 3651-2 MET. "A": SATISFAISANT	
INTERGRANULAR CORROSION TEST ACC. TO ASTM A262	
PRACT. E/MIL-P-24691-3: SATISFACTORY	
ENSAYO DE CORROSION INTERGRANULAR DE ACUERDO A ASTM A262	
PRACT. E/MIL-P-24691-3: SATISFACTORIO	
BESTÄNDIGKEIT GEGEN INTERKRISTALLINE KORROSION ENTSPRECHEND ASTM A262	
PRACT. E/MIL-P-24691-3: IN ORDNUNG	
ESSAI DE CORR. INTERGR. SELON ASTM ASTM A262 PRACT. E/MIL-P-24691-3:	



TUBACEX TUBOS
INOXIDABLES S.A.U.
INGENIERIA DE CALIDAD

[Signature]

18190 Rev 10/10/2018

We hereby certify that the material herein described has been manufactured, sampled, tested and inspected in accordance with above standards and specifications and satisfies all requirements. This certificate is issued by a computerized system and is valid without original signature. In case the owner of the certificate would release as a copy of it, he must attest its conformity to the issued, assuming the responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate shall be prosecuted.

*me
8/19/23*



INSPECTION CERTIFICATE
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SATISFAISANT

NON-DESTRUCTIVE TESTS/ENSAYOS NO DESTRUCTIVOS/ZERSTÖRUNGSFREIE
PRÜFUNGEN/ESSAIS NON DESTRUCTIFS

POSITIVE MATERIAL IDENTIFICATION TEST ON EACH TUBE/PIPE BY
"X-RAY-FLUORESCENCE-ANALYZER": SATISFACTORY
VERIFICACION DEL GRADO DE ACERO EN CADA TUBO MEDIANTE "ANALIZADOR DE
FLUORESCENCIA DE RAYOS X": SATISFACTORIO
VERWECHSLUNGSPRÜFUNG AN JEDEM ROHR MIT
"RÖNTGEN-FLUORESZENZ-ANALYSATOR": IN ORDNUNG
VERIFICATION DE LA NUANCE SUR CHAQUE TUBE PAR
"X-RAY-FLUORESCENCE-ANALYZER": SATISFAISANT

HYDROSTATIC PRESSURE TESTED AT 154 bar, 2200 PSI DURING 5 SEC ON EACH
TUBE/PIPE: SATISFACTORY

ENSAYO HIDROSTÁTICO A 154 bar, 2200 PSI DURANTE 5 SEC EN CADA TUBO:
SATISFACTORIO

WASSERDRUCKPRÜFUNG BEI 154 bar, 2200 PSI HALTEZEIT 5 SEC JE ROHR: IN
ORDNUNG

ESSAI DE PRESSION HYDROSTATIQUE À 154 bar, 2200 PSI PENDANT 5 SEC SUR
CHAQUE TUBE: SATISFAISANT

DIMENSIONAL CHECKING ON EACH TUBE: SATISFACTORY

INSPECCION DIMENSIONAL AL 100% DE LOS TUBOS SATISFACTORIA

100% MASSKONTROLLE: O.B.

VERIFICATION DIMENTIONNELLE AU 100% DES TUBES, SATISFAISANTE

VISUAL INSPECTION ON EACH TUBE: SATISFACTORY

INSPECCION VISUAL AL 100% DE LOS TUBOS, SATISFACTORIA

100% BESICHTIGUNG: O.B.

EXAMEN VISUEL AU 100% DES TUBES, SATISFAISANT

TECHNOLOGICAL TESTS/ENSAYOS TECNOLÓGICOS/TECHNOLOGISCHE

PRÜFUNGEN/TECHNOLOGICAL TESTS

FLARING TEST: SATISFACTORY

ABOCARDADO S. NORMA: SATISFACTORIO

AUFWEITVERSUCH: IN ORDNUNG

ESSAI D'ÉVASEMENT: SATISFAISANT

FLATTENING TEST: SATISFACTORY

APLASTADO S. NORMA: SATISFACTORIO

RINGFALTVERSUCH: IN ORDNUNG

ESSAI D'APLATISSEMENT: SATISFAISANT

MARKING/ETIQUETADO/KENNZEICHNUNG/MARKSTEXT

TX2 TUBACEX 114,3 X 8,56 MM - 4° SCH 80S ASME SA312 ASME SA376 ASTM A312 ASTM A376 EN 10216-5 TC1 EN 10297-2
TP316 TP316L 1.4401 1.4404 HPD HF SMLS SLOHEAT/ PMI-AV LOT NO/ MADE IN SPAIN



TUBACEX TUBOS
INOXIDABLES S.A.U.
INGENIERIA DE CALIDAD

[Signature]

Ensigne Antonio Alcaraz

We hereby certify that the material herein described has been manufactured, sampled, tested and
inspected in accordance with above standards and specifications and satisfies order requirements. This
certificate is issued by a computerized system and it is valid without original signature. In case the owner
of the certificate would release a copy of it, he must attest its conformity to the issued, assuming the
responsibility for any unlawful or TUBACEX, not allowed use. Any forgery or falsification of this certificate
shall legally proceed.

Handwritten initials



**INSPECTION CERTIFICATE
CERTIFICADO DE INSPECCION
CERTIFICAT DE RECEPTION
ABNAHMEPRÜFZEUGNIS
EN 10204:2004 / 3.1**

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REMARKS/OBSERVACIONES/ANMERKUNG/REMARQUES

NO MERCURY, MERCURY COMPOUNDS OR MERCURY BEARING INSTRUMENTS AND/OR EQUIPMENT HAVE BEEN USED ALONG MANUFACTURING AND INSPECTION PROCESS.
DURANTE LOS PROCESOS DE FABRICACIÓN E INSPECCIÓN NO SE HA USADO MERCURIO NI INSTRUMENTOS Y/O EQUIPOS CONTENIENDO MERCURIO O CON COMPONENTES DE MERCURIO.
KEINE QUEKSILBER, BZW. QUEKSILBERVERUNREINIGTES KOMPONENTEN ODER KUGELLAGERINSTRUMENTE UND/ODER GERÄTE SIND BENUTZT WORDEN PRODUKTIONS UND BESICHTIGUNGSPROZESS.
IL N'A PAS ÉTÉ FAIT USAGE DE MERCURE, DE COMPOSÉS CONTENANT DU MERCURE OU DE MATÉRIAUX ET/OU D'INSTRUMENT CONTENANT DU MERCURE TOUT AU LONG DES ÉTAPES DE FABRICATION ET DU PROCESSUS D'INSPECTION ET DE CONTRÔLE.

NO WELDING OR WELD REPAIRS WERE MADE
SIN REPARACION POR SOLDADURA
KEINE SCHWEISSBEARBEITUNG WURDE VORGENOMMEN
SANS RÉPARATION AVEC SOUDURE

MATERIAL MANUFACTURER APPROVED BY TÜV SÜD Industrie Service GmbH (NOTIFIED BODY 036) TO ISSUE CERTIFICATES OF SPECIFIC PRODUCT CONTROL IN ACCORDING TO PRESSURE EQUIPMENT DIRECTIVE 2014/68/EU ANNEX 1 POINT 4.3.
FABRICANTE DE MATERIALES APROBADO POR TÜV SÜD Industrie Service GmbH (ORGANISMO NOTIFICADO 0036) PARA LA EMISION DE CERTIFICADOS ESPECIFICOS DE CONTROL DE PRODUCTO DE ACUERDO AL ANEXO 1, PUNTO 4.3 DE LA DIRECTIVADE EQUIPOS A PRESION 2014/68/EU.

WERKSTOFFHERSTELLER MIT BERECHTIGUNG ZUR AUSSTELLUNG VON BESCHEINIGUNGEN ÜBER SPEZIFISCHE PRÜFUNGEN AN DEN WERKSTOFFEN IM GELTUNGSBEREICH DER ZERTIFIZIERUNG UND IN ÜBEREINSTIMMUNG MIT DER DRUCKGERÄTERICHTLINIE 2014/68/EU UND DEN ZUGRUNDE LIEGENDEN SPEZIFIKATIONEN ENTSPR. DER BENANNTE STELLE NR.0036, TÜV SÜD Industrie Service GmbH
PRODUCTEUR DU MATERIEL APPROUVE PAR TÜV SÜD Industrie Service GmbH N.B. 0036) POUR EMISSION DES CERTIFICATS SPECIFIQUE DE CONTROLE DE PRODUIT SELON LA DIRECTIVE DES EQUIPES A PRESION 2014/68/EU ANNEXE 1 POINT 4.3.

MATERIAL CHARACTERISTICS COMPLY WITH POINT 7.5 OF ANNEX I TO PED BY HAVING AN ELONGATION AFTER RUPTURE AT TENSILE TEST NO LESS THAN 14% AND A BENDING RUPTURE ENERGY AT IMPACT TEST NO LESS THAN 27J AT 20°C.
LAS CARACTERISTICAS DEL MATERIAL CUMPLEN CON LOS REQUISITOS DEL PUNTO 7.5 DE LA DIRECTIVA PED POR TENER UN ALARGAMIENTO TRAS ROTURA EN EL ENSAYO DE TRACCION NO INFERIOR AL 14% Y PO DE TRACCION NO INFERIOR AL 14% Y POR TENER UNA RESISTENCIA AL IMPACTO NO INFERIOR A 27 J A 20°C.
DIE WERKSTOFF-WERTE ENTSPRECHEN PUNKT 7.5. DER DGRL, ANHANG I, MIT EINERBRUCHDEHNUNG = 14% IM NORMGEMÄSS DURCHGEFÜHRTEN ZUGVERSUCH UND DER KERBSCHLAGARBEIT = 27J AN EINER ISO - V PRO PROBE BEI EINER TEMPERATUR VON HÖCHSTENS 20°C
LES CARACTERISTIQUES DU MATERIEL, AYANT UN ALLONGEMENT APRES RUPTURE A L'ESSAI DE TRACTION NON INFERIEUR DU 14% ET UNE RESISTENCE A LA FLEXION PAR CHOC A 20°C NON INFERIEUR A 27J, SONT CONFORMES AUX PRESCRIPTIONS DU PONT 7.5 DE L'ANNEXE I DE PED.

MATERIAL IS FREE OF RADIATION CONTAMINATION
EL MATERIAL ESTA LIBRE DE CONTAMINACION POR RADIACIONES
MATERIAL IS FREI VON RADIOAKTIVITÄT
MATÉRIEL LIBRE DE POLUTION RADIOACTIVE



We hereby certify that the material herein described has been manufactured, sampled, tested, and inspected in accordance with above standard and specifications and satisfies customer requirements. This certificate is issued by a computerized system and it is valid without original signature. In case the owner of the certificate would release as a copy of it, he must attest its conformity to the issuer, assuming the responsibility for any alteration of TUBACEX, not allowed one. Any forgery or falsification of this certificate shall legally be prosecuted.

TUBACEX TUBOS
INOXIDABLES S.A.U.
INGENIERIA DE CALIDAD

[Signature]

Responsable Calidad Alcobac

mi 6/25/22

| A22-13315-1B FL | | | N682 | LN: 5 | T0529366-1 | D230RFLN96/L | |



14527 Smith Rd.
Humble, Texas 77396
TEL: (281) 441-4088
FAX: (281) 441-8899

PAGE: 1 of 1
REPORT # 23-043179
DATE: 4/13/2023

FCI ORDER # 119111
IAW ASME 2021 ED.
IAW NACE MR0175 2015Ed

CUSTOMER ORDER # TP797039X
SOLD / SHIPPED TO: IPS

Item Quantity Description

1	2	2" X 300 X 9" LG RF LWN
2	2	2" X 300 X 9" LG RF LWN

PART HBW: 140
PART HBW: 143

Heat Number: N682

Material Type: SA182F316/L

CHEMICAL ANALYSIS

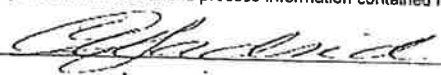
PHYSICAL PROPERTIES

C	.02
Mn	1.66
P	.034
S	.024
Si	.42
Cr	16.51
Mo	2.06
Cu	.30
Ni	10.53
N	.040

Yield PSI	40,400
Tensile PSI	75,800
Elongation %	71
Reduction of Area %	75
Hardness	137/137 HBW

Heat Treatment SOLUTION ANNEALED
Temperature 1900 °F MIN
Time at Temperature 1/2 HR/IN THK
Cooling Media WATER

Flange dimensions and bolt hole patterns comply with ASME B16.5, B16.47, MSS SP-44. Hub profile for reinforcing nozzles per ASME Section VIII Div. 1 Appendix 2 (Figure 2-4). We hereby certify that all test results and process information contained herein are correct and true as contained in the records of the company.

Prepared by: 

Name: Cynthia Madrid

Title: QA Representative

*ms
4/25/23*



PLYMOUTH TUBE CO USA
 601 Grantham Avenue
 West Monroe, LA 71292
 (318) 388 - 3360



Sold To:

Weeco Industries, Inc.
 PO BOX 100
 SAND SPRINGS, OK 74063

Customer's Order No. 10075494

Date: 05-11-22

Invoice Number:

Page 1 of 1

Mill Order Number: 200001-2-1

TEST REPORT

TR# 200001

Size: 1.0000" OD X 0.0650" MIN. WALL
Grade: TP316/316L SEAMLESS
Specifications: ASTM A213(19a)/ ASME SA213(19) COLD DRAWN STAINLESS PRESSURE TUBING
 Finish tubes solution bright annealed at a minimum temperature of 1900°F (1040°C) and rapidly cooled in an inert atmosphere.

Heat	Lot Numbers	Yield Strength lbs per sq. in.	Tensile Strength lbs per sq. in.	% Elong in 2"	Hardness Test
563767	I	44400 / 44900	92100 / 93700	57.00 / 55.00	RB 76-78 2 Tests

Test	Status	Comments
Flatten	OK	
Flare	OK	
Eddy Current	OK	ASTM A-1016 100%

Heat	C	MN	P	S	SI	CR	NI	MO	CU	CO	N	PI	A
563767	0.016	1.630	0.030	0.007	0.390	17.000	11.250	2.060	0.310	0.140	0.076	0.021	0.006
Ladle	0.016	1.630	0.030	0.007	0.390	17.000	11.250	2.060	0.310	0.140	0.076	0.021	0.006
Product	0.017	1.640	0.032	0.007	0.390	16.960	11.370	2.080	0.310	0.140	0.078	0.023	0.006

Additional Requirements:

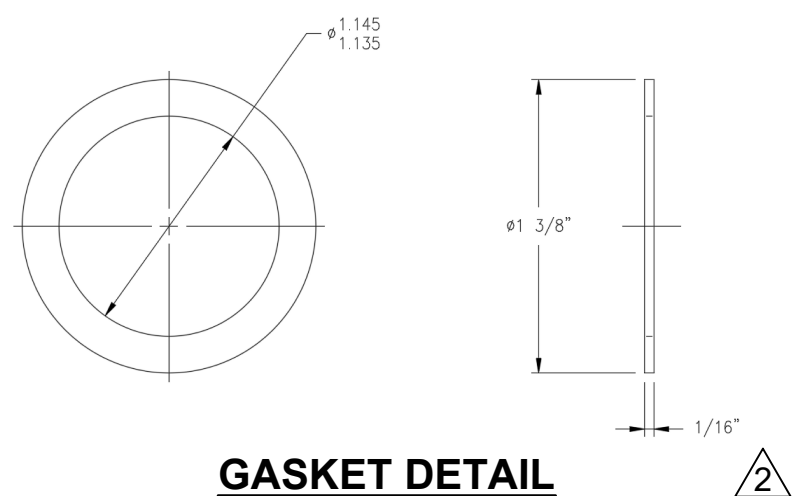
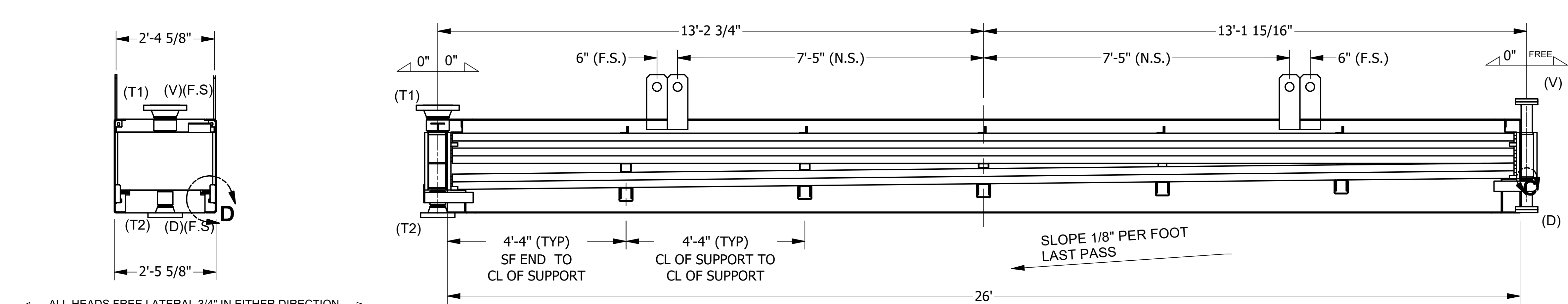
353 STRAIGHT TUBES PRODUCED PER WECO INDUSTRIES, INC. PO# 10075494. MATERIAL COMPLIES WITH EN10204 3.1. TUBES MANUFACTURED IN THE USA. COUNTRY OF ORIGIN: SWEDEN.

We hereby certify this report to be correct.

By *Justin Leonard*
 Plymouth Tube Company

*MP
6/2/22*

ANTHONY CARDWELL
 10/24/2022



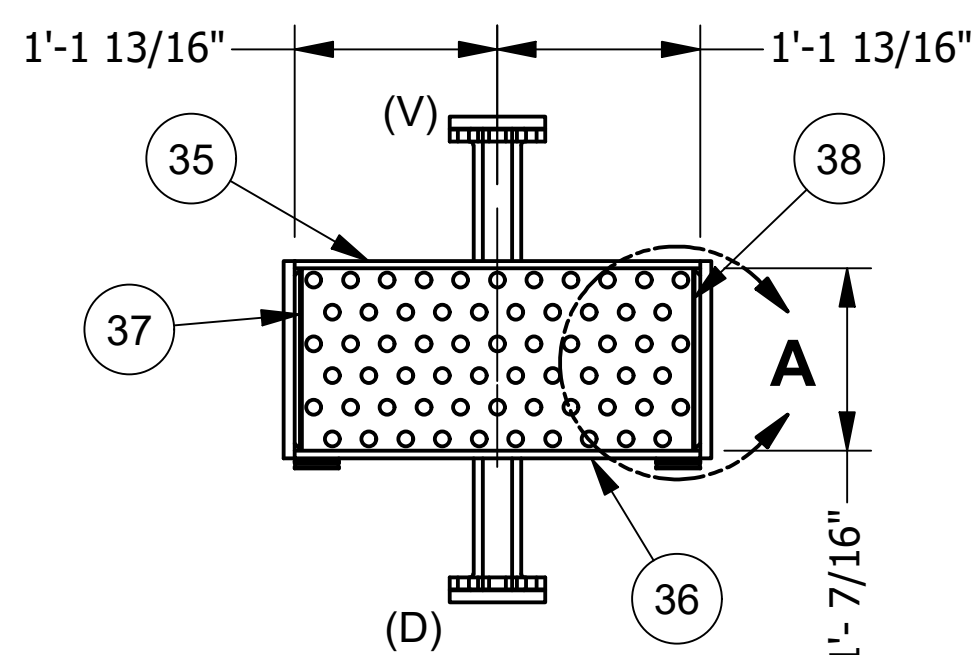
DESIGN INFORMATION	
DESIGN PRESS. PSIG:	75 / FV
DESIGN TEMP. DEG F:	300 / 300
MDMT DEG F:	32
CORROSION ALLOW. IN.:	0
EFFECTIVE SURFACE AREA:	BARE: 428.8 FT^2 EXTENDED: 9027 FT^2

WET H2S
SPOT RT
THIS EXCHANGER HAS BOTH TOXIC AND FLAMMABLE SERVICE

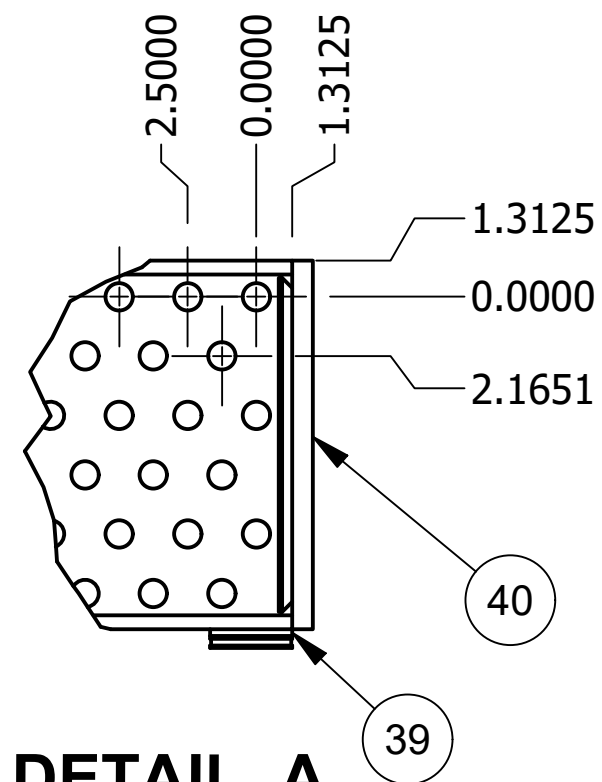
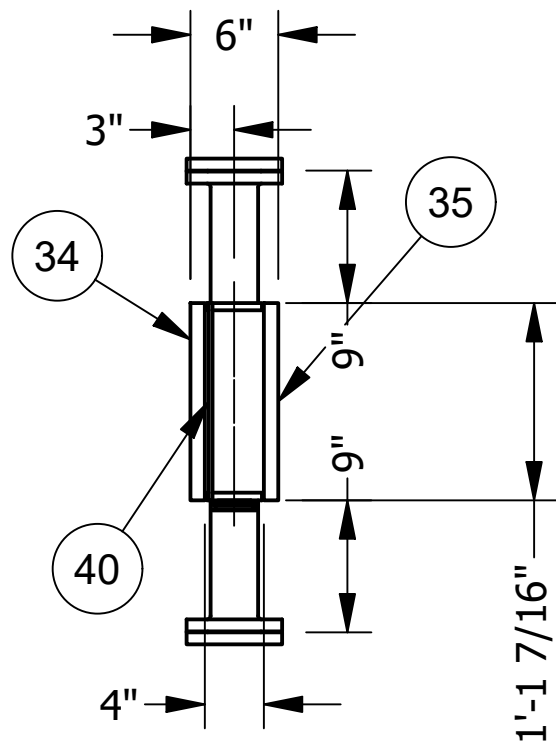
HYDROTEST PSIG:	98
DESIGN & STAMP:	ASME
API 661 7TH ED.	
ASME SECT. VIII, DIV. 1 ED. 2021	
CHARPY EXEMPT UG20(f) AND/OR UCS 66	

PLUG HOLE INFORMATION	
PREDRILL DIAMETER	0.9688
TUBE REAM	1.01
TAP REAM	1.0469
TPI	12
SPOTFACE OD	1.5
SPOTFACE DEPTH	0.01
GROOVES/HOLE	FRONT (2) / BACK (2)
PLUG DIAM	1.125

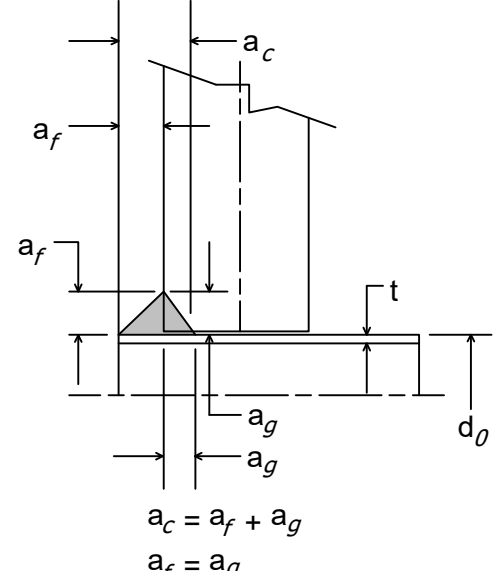
ROLL TOOL INFO	
FRONT ROLLER	1251C / R19
FRONT MANDREL	M63C
BACK ROLLER	1251C / R19
BACK MANDREL	M63C



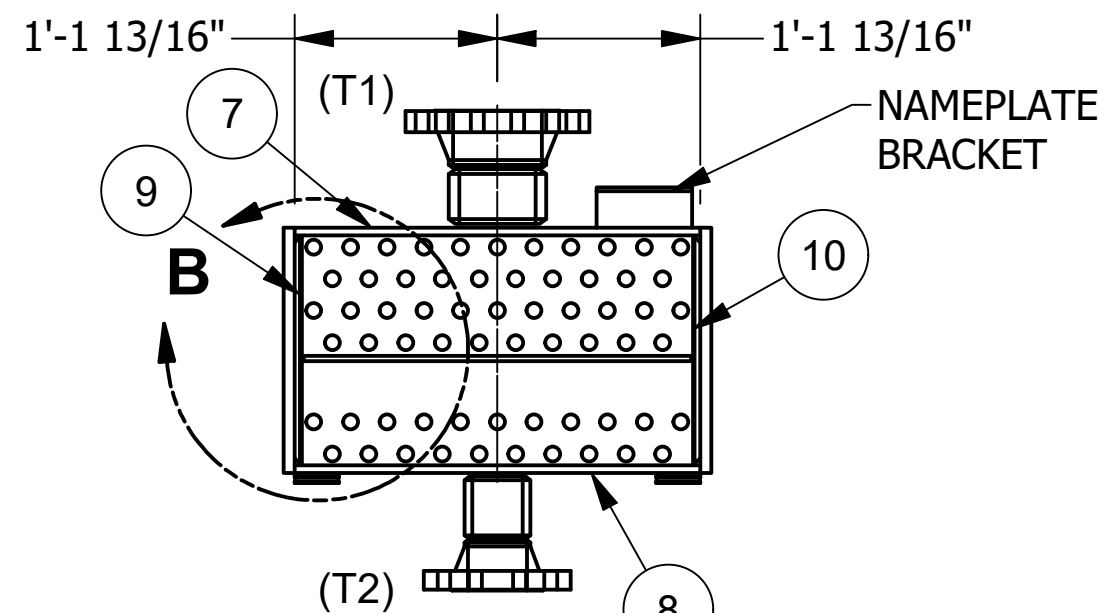
BACK TUBE SHEET SIDE



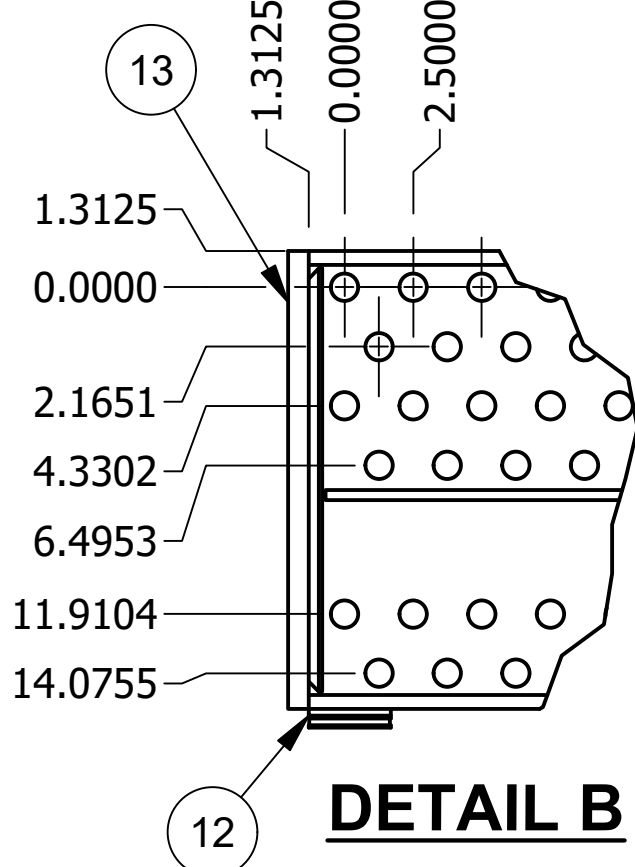
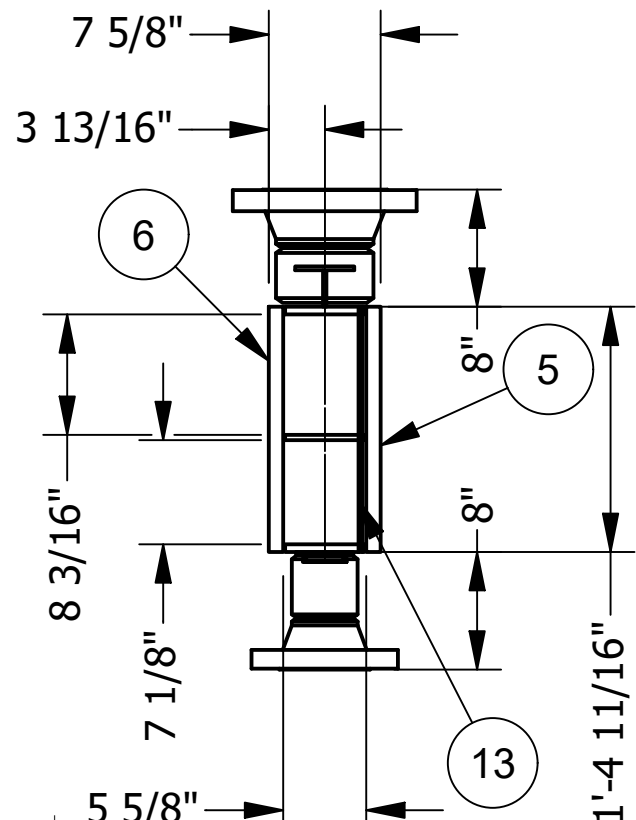
DETAIL A



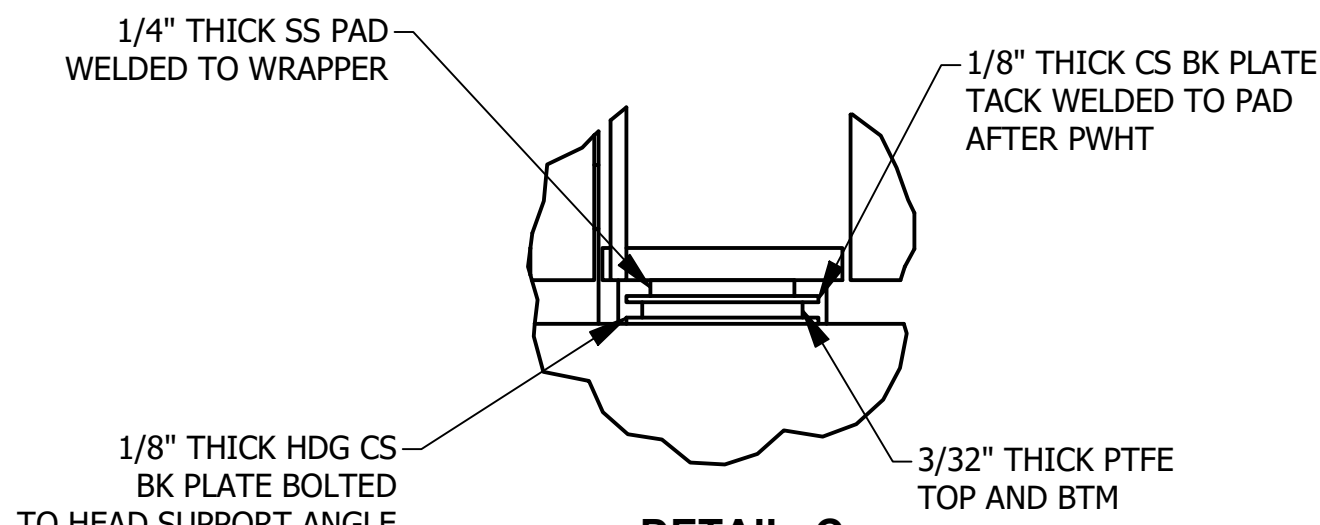
STRENGTH WELD TUBE-SHEET
af = 0.0625" ag = 0.0625"



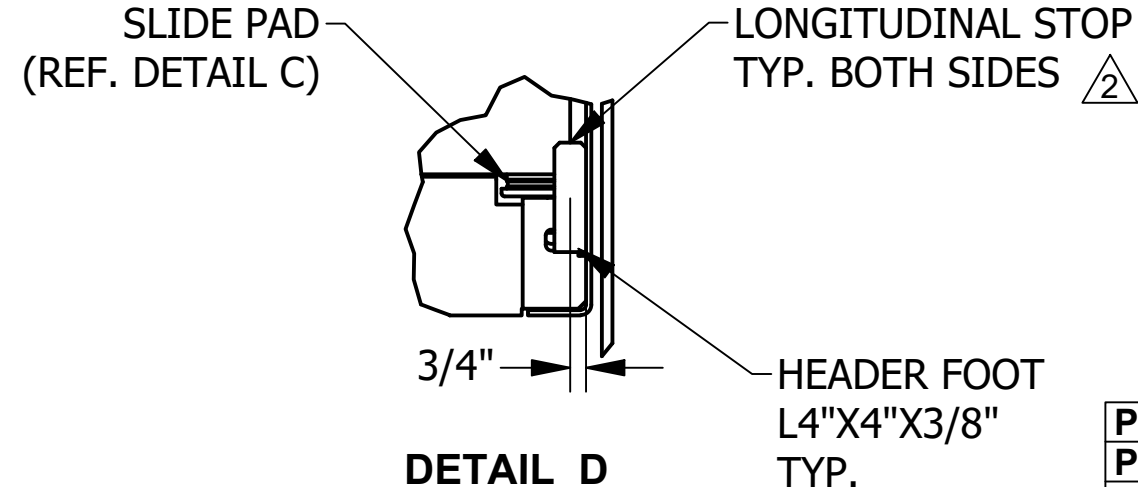
FRONT PLUG SHEET SIDE



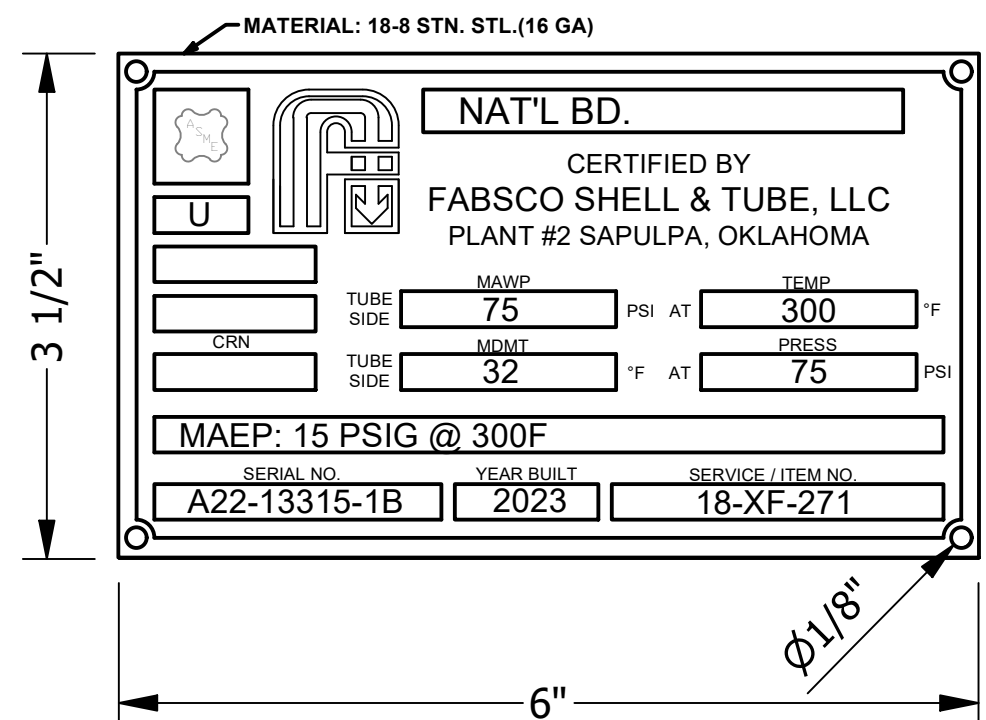
DETAIL B



DETAIL C
SLIDE PAD DETAIL



DETAIL D
HEADER SUPPORT
TYP. BOTH ENDS



REV:	DATE	COMMENT	BY
0	03-31-2022	FOR APPROVAL	BH
1	9/20/2022	PER CUST. COMM.	BH
2	1/31/2023	PER CUST. COMM.	BH

NOZZLE:		CONNECTIONS:	
(T1) (INLET)	(1) 6" 300# - SCH 160 - RFWN	(1) 6" 300# - SCH 160 - RFWN	6" PIPE - SCH 160 - 3.875" LG - BBE
(T2) (OUTLET)	(1) 4" 300# - SCH 160 - RFWN	(1) 4" 300# - SCH 160 - RFWN	4" PIPE - SCH 160 - 4.375" LG - BBE
(V) (VENT)	(1) 2" 300# RFLWN W/BLIND	(1) 2" 300# RFLWN W/BLIND	
(D) (DRAIN)	(1) 2" 300# RFLWN W/BLIND	(1) 2" 300# RFLWN W/BLIND	
TUBES: (63) 1" OD 0.065" MW 312"			
FIN: 5/8" HI 0.016" THK. 10/FPI, L TENSION			
PLUGS: (126) 1.125" OD 1" UH SHOULDER			

	THICK	LENGTH	WIDTH	BEVELS
6 FRONT T/P SHEET	1.0000	27.6250	16.6875	30 LONG
7 FRONT WRAPPER	0.5000	27.6250	5.3750	30 LONG
8 FRONT END	0.5000	15.4375	5.3750	45 ALL
9 FRONT STAY	0.3750	26.3750	5.3750	45 ALL
10 HEADER PAD	0.2500	4.0000	3.5000	NONE
11 HEADER WING	0.2500	0.7500	3.5000	NONE
12 BACK T/P SHEET	1.0000	27.6250	13.4375	30 LONG
13 BACK WRAPPER	0.5000	27.6250	3.7500	30 LONG
14 BACK END	0.5000	12.1875	3.7500	45 ALL
15 HEADER PAD	0.2500	4.0000	3.5000	NONE
16 HEADER WING	0.2500	0.7500	3.5000	NONE

CERTIFIED	
BY: _____	DATE: _____

MATERIALS:	
PLATE:	SA-240-316L
PIPE:	SA-312-TP316L
FLANGE:	SA-182-F316/316L
PLUG:	NITRONIC 50 XM-19
GASKET:	316 ANNEALED
SIDE FRAME:	A36
TUBE:	SA-213-TP316L (SMLS)
FIN:	ALUMINUM
STAY PLATE:	SA-240-316L

STRUCTURAL:	
SIDEFRAME:	C 0.25" 27.25" 312"
SUPPORT:	(5) - 4" X 4" X 0.1875" RT
BINDER:	(5) - L 2 X 2 X .25
TP AIRSEAL:	Z SHAPE
BTM AIRSEAL:	Z SHAPE
LUG:	A36 604 WELDED
HDR FINISH:	SSPC-SP1
SSPC-SP16	REFERENCE: A8KM-PP-000-500520-A
SFR FINISH:	HAND TOOL CLEAN
Galvanized	REFERENCE: A8KM-PP-000-500540-A

TUBE SPACERS:	
TUBE SPACERS REQD.:	23
SCALLOPED CHANNELS:	1" X 2.5" PITCH
ALUMINUM	
TOLERANCES:	
LENGTH:	± 0.125
WIDTH:	± 0.125
TUBE PROJECTION:	0.0625 +0.0625 - 0.00
DRY WEIGHT LBS:	5505
HYDRO WEIGHT LBS:	8249

PROJECT NAME:	World Energy Renewables Project
PROJECT NO./UNIT:	EN-20-7122 / H2S Recovery
CUSTOMER/CLIENT:	World Energy Paramount
EQUIPMENT OWNER:	Air Products Manufacturing LLC
ITEM NO.:	18-XF-271
SERVICE:	AGR1 AMINE REGEN OVERHEAD AIR COOLER
LOCATION:	World Energy, Paramount, CA, USA
PO NO.:	4505606041 / A8KM-4-406-PO-4
FABSCO JOB NO.:	A22-13315-1B

DRAWING PROPRIETARY TO FABSCO FIN-AIR, LLC AND IS NOT TO BE RELEASED TO ANY THIRD PARTY, EXCEPT WITH NOTIFICATION AND APPROVAL IN WRITING OF FABSCO FIN-AIR, LLC OFFICER.

DRAWN BY:	BH		BUNDLE ARRANGEMENT DRAWING 18-XF-271	REV: 2
DATE:	03-31-2022			
CHECKED BY:		DRAWING NO:	A22-13315-1B-300	

**FABSCO**
SHELL & TUBE, LLC

2410 Industrial Road
P.O. Box 988
Sapulpa, OK 74066
918/224-7550 Fax 918/224-3564

CERTIFICATE OF HYDROSTATIC TESTING

FABSCO SHELL & TUBE, L.L.C. JOB NUMBER:	A22-13315-1A
CUSTOMER NAME:	Air Products
CUSTOMER PURCHASE ORDER NUMBER:	4505606041
CUSTOMER ITEM NUMBER:	18-XF-270

THIS IS TO CERTIFY THE ABOVE UNIT WAS HYDROSTATICALLY TESTED PER
ASME CODE SECTION VIII DIVISION 1.

SHELLSIDE TEST PRESSURE PSI	TUBESIDE TEST PRESSURE PSI	DATE TESTING PERFORMED
N/A	98	4/9/2024

S.S.

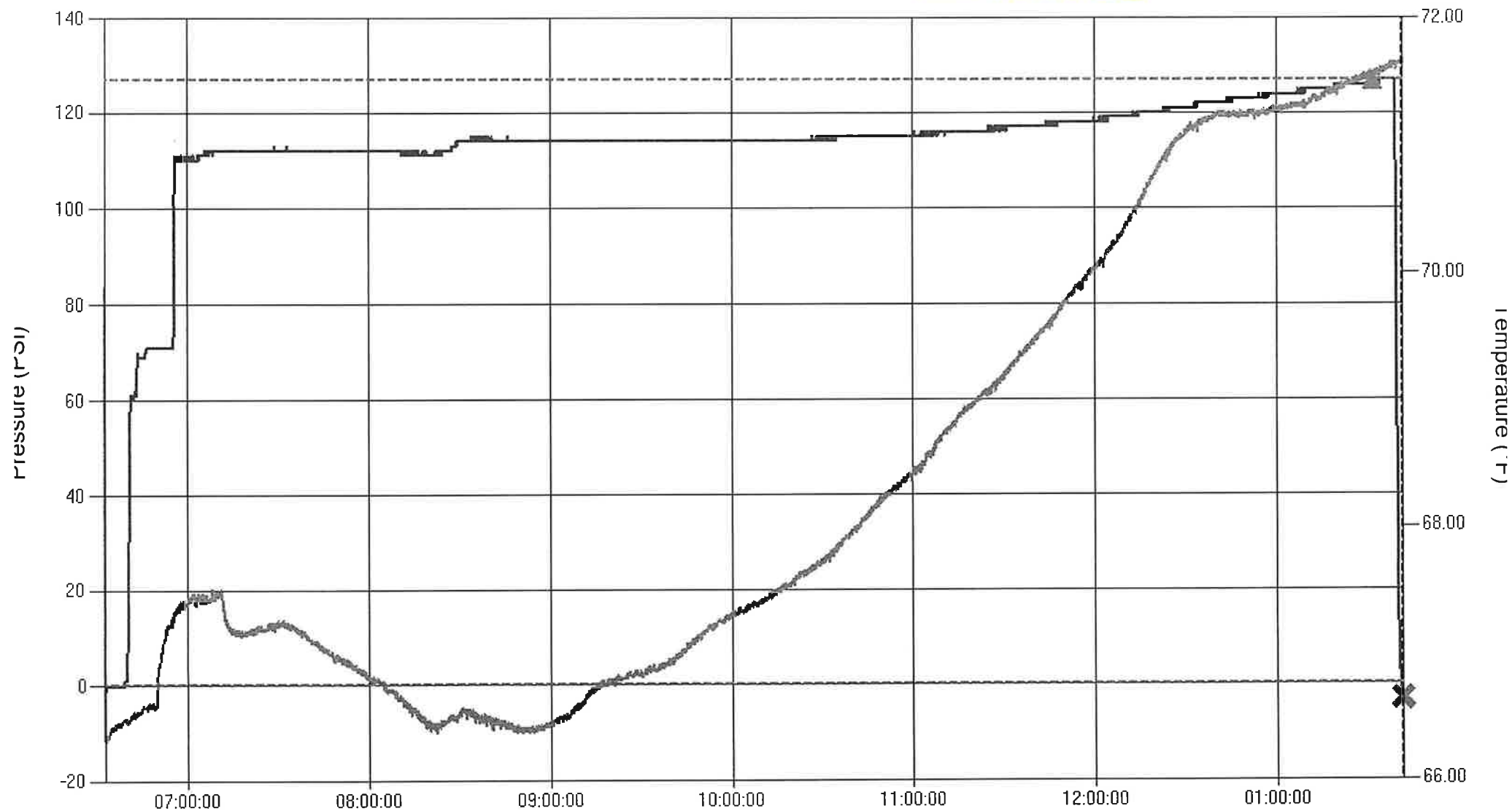
T.S.

GAUGE#: _____ CAL. DATE: _____	GAUGE#: <u>1638461032</u> CAL. DATE: <u>11/15/2023</u>
GAUGE#: _____ CAL. DATE: _____	GAUGE#: _____ CAL. DATE: _____

WITNESSED BY: BUREAU VERITAS INSPECTION AND INSURANCE COMPANY
AUTHORIZED INSPECTOR

David Soler
FABSCO SHELL & TUBE, LLC.
QUALITY CONTROL DEPARTMENT

4/9/2024
DATE



-  Pressure
-  Ambient
-  RTD

Log

Start: 6:32:34 AM

End: 1:41:39 PM

Total Elapsed Time: 00:27:05

Min Max During Test

▲ Maximum: 127 PSI

x Minimum: -3 PSI

Alarms Settings

High: 127 PSI

Low: 0 PSI

Test Window

Start: 6:32:34 AM

End: 1:41:39 PM

Elapsed Time: 07:09:05

9162

4-9-24

**FABSCO**
SHELL & TUBE, LLC

2410 Industrial Road
P.O. Box 988
Sapulpa, OK 74066
918/224-7550 Fax 918/224-3564

CERTIFICATE OF HYDROSTATIC TESTING

FABSCO SHELL & TUBE, L.L.C. JOB NUMBER:	A22-13315-1B
CUSTOMER NAME:	Air Products
CUSTOMER PURCHASE ORDER NUMBER:	4505606041
CUSTOMER ITEM NUMBER:	18-XF-271

THIS IS TO CERTIFY THE ABOVE UNIT WAS HYDROSTATICALLY TESTED PER
ASME CODE SECTION VIII DIVISION 1.

SHELLSIDE TEST PRESSURE PSI	TUBESIDE TEST PRESSURE PSI	DATE TESTING PERFORMED
N/A	98	4/9/2024

S.S.		T.S.	
GAUGE#:	CAL. DATE:	GAUGE#:	CAL. DATE:
		1594905655	6/16/2023
GAUGE#:	CAL. DATE:	GAUGE#:	CAL. DATE:

WITNESSED BY: BUREAU VERITAS INSPECTION AND INSURANCE COMPANY
AUTHORIZED INSPECTOR

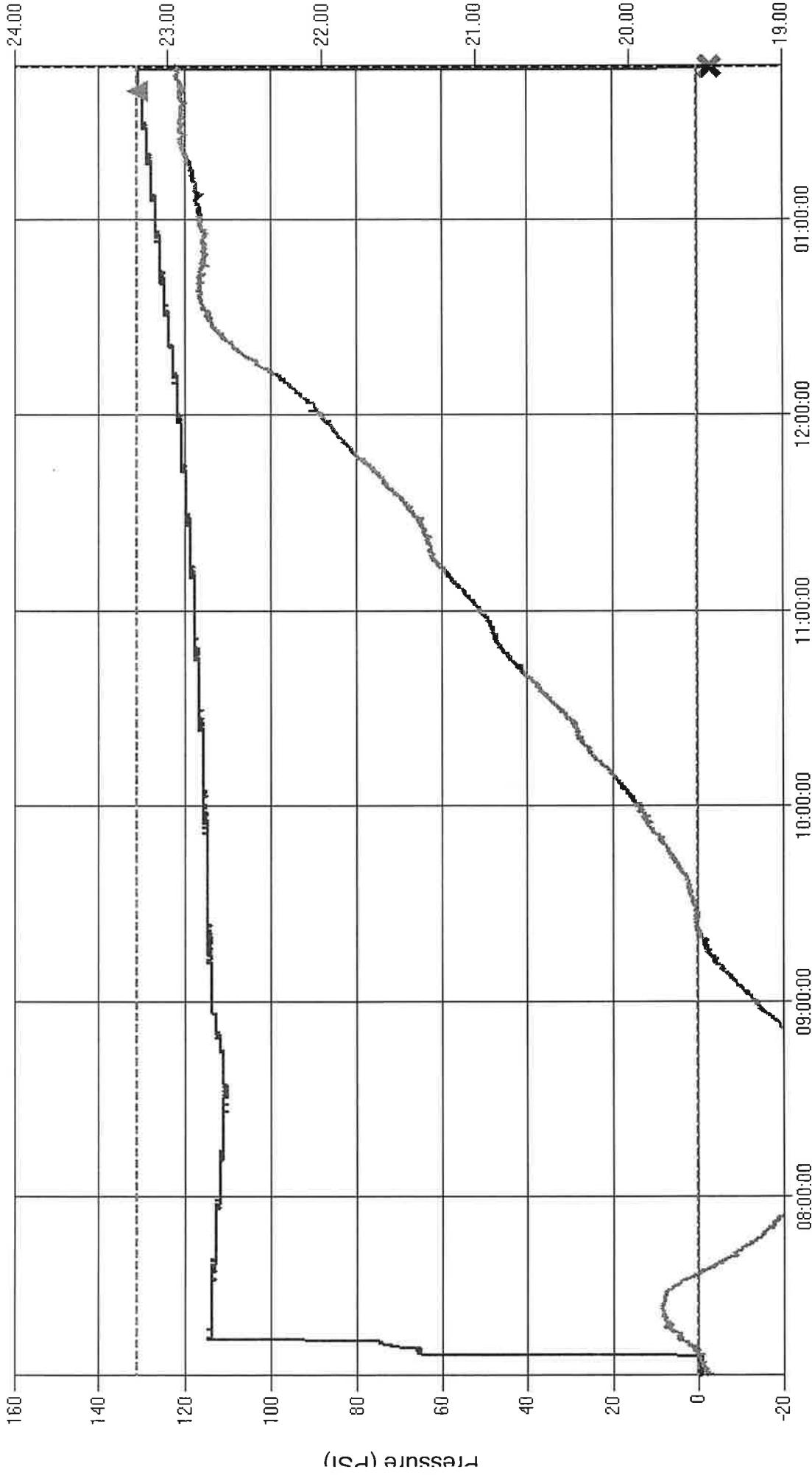
David Sales
FABSCO SHELL & TUBE, LLC.
QUALITY CONTROL DEPARTMENT

4/9/2024
DATE

*mm
4/9/24
Bv m*

Logger: Vaetrix HTGX-10K-I-05-BT-RTD S/N 1594905655
Range: 10000 PSI
Session: A22-13315-1B

Test Date: Tuesday, April 9, 2024



Pressure **Ambient** **RTD**

Test Window
Start: 7:04:54 AM
End: 1:47:14 PM
Elapsed Time: 06:42:20

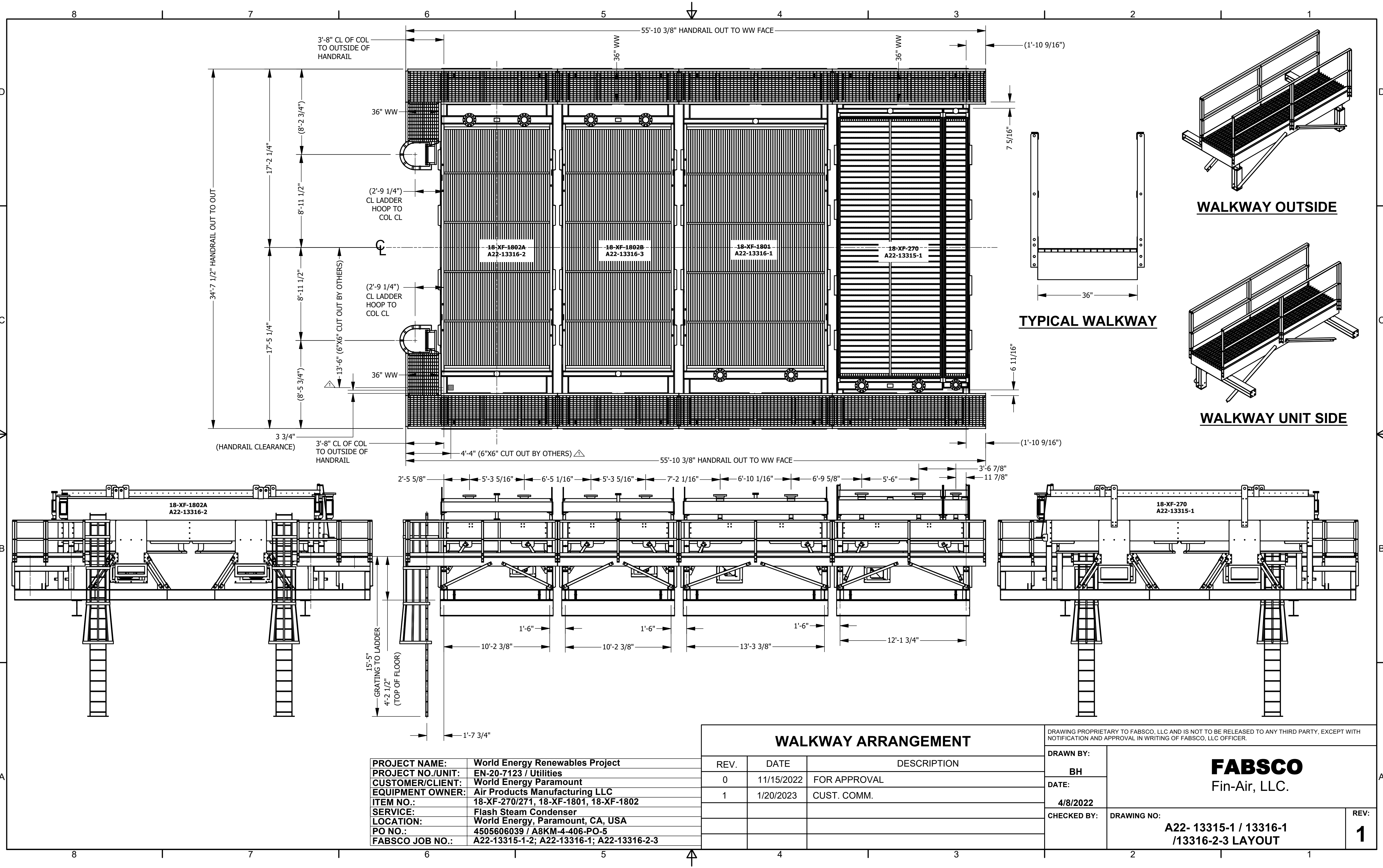
Alarms Settings
High: 131 PSI
Low: 0 PSI

Min Max During Test
Maximum: 131 PSI
Minimum: -3 PSI

Log
Start: 7:04:54 AM
End: 1:47:14 PM
Total Elapsed Time: 00:27:05

OK

P.O. BOX 988, TULSA, OK 74131
(agent of the carrier issuing same.)



PROJECT NAME:	World Energy Renewables Project
PROJECT NO./UNIT:	EN-20-7123 / Utilities
CUSTOMER/CLIENT:	World Energy Paramount
EQUIPMENT OWNER:	Air Products Manufacturing LLC
ITEM NO.:	18-XF-270/271, 18-XF-1801, 18-XF-1802
SERVICE:	Flash Steam Condenser
LOCATION:	World Energy, Paramount, CA, USA
PO NO.:	4505606039 / A8KM-4-406-PO-5
FABSCO JOB NO.:	A22-13315-1-2; A22-13316-1; A22-13316-2-3

WALKWAY ARRANGEMENT			
REV.	DATE	DESCRIPTION	
0	11/15/2022	FOR APPROVAL	
1	1/20/2023	CUST. COMM.	

DRAWING PROPRIETARY TO FABSCO, LLC AND IS NOT TO BE RELEASED TO ANY THIRD PARTY, EXCEPT WITH NOTIFICATION AND APPROVAL IN WRITING OF FABSCO, LLC OFFICER.			
DRAWN BY:	FABSCO Fin-Air, LLC.		
BH			
DATE:			
4/8/2022			
CHECKED BY:	DRAWING NO:		REV:
	A22- 13315-1 / 13316-1 /13316-2-3 LAYOUT		1