

5732609 B4.

4701

ASME

U

CERTIFIED BY

ALFA LAVAL TECHNOLOGIES AB

NOZZLE ID	S4-S3	S2-S1
MAWP	4000 kPa	4000 kPa
AT TEMP.	100°C	100°C
MAWP EXTERNAL	100 kPa	100 kPa
AT TEMP.	100°C	100°C
MDMT	0°C	0°C
AT MAWP	4000 kPa	4000 kPa
SERIAL NO.	AAM1007907	
YEAR BUILT	2023	
TYPE	TK20-BWFX	

CRN No. R9304.5C



345 Carlingview Drive
Toronto, Ontario M9W 6N9
Tel.: 416.734.3300
Fax: 416.231.1626
Toll Free: 1.877.682.8772

www.tssa.org

May 30, 2023

ALFA LAVAL INC.
101 MILNER AVE
SCARBOROUGH ON M1S 4S6
CANADA

Workorder Type: Registration - Heat Exchanger (Conventional)

Workorder No: 8280375

Your Reference No.: TK20-FX_class300

Registered to: ALFA LAVAL LUND AB

Dear ZORAN JAKOVLJEVIC,

Technical Standards and Safety Authority (TSSA) is pleased to inform you that your submission has been reviewed and registered as follows:

CRN : R9304.5

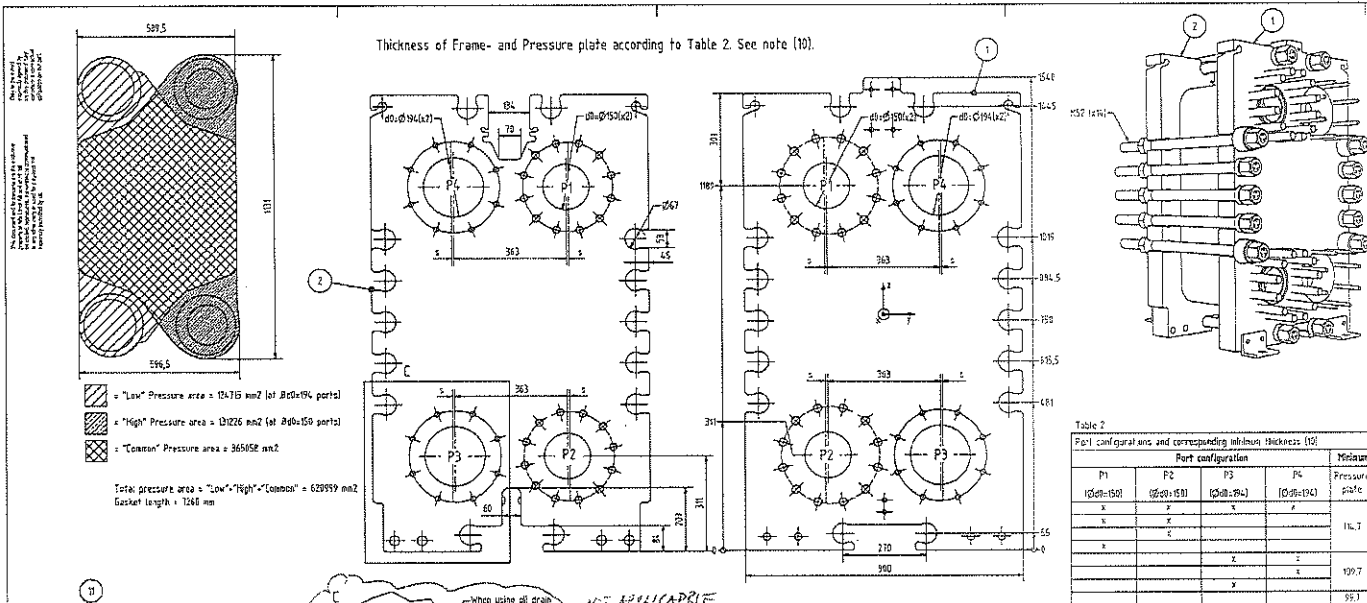
Main Design No.: 3490024064 Rev. 00

The stamped copy of the approved registration and the invoice are mailed separately (There will be no hard copies for electronic submissions). Should you have any questions or require further assistance, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. We will be happy to assist you. When contacting TSSA regarding this file, please refer to the Work Order number provided above.

Yours truly,

Zivko Gacevic , P. Eng.
Engineer, BPV
Tel : . +1 416-734-3429
Email : zgacevic@tssa.org

Kel-Gor Q.A. Receiving			
Kel-Gor Job No. <u>24-1001</u>			
Verified To	☒	☒	☐
Date	<u>May 30, 2023</u>	P.O.	Mis Spec
Signed	<u>[Signature]</u>		
Kel-Gor Q.A. Receiving			
Kel-Gor Job No. _____			
Verified To	☐	☐	☐
	P.O.	Mis	Spec Code
Code	Ed. _____		
Date	_____		
Signed	_____		



Designed and manufactured acc. to: ASME BPVC Section VIII Division 1
 Edition 2001
 Pressure vessel calculation report: 349002405 Rev. 0

The pressure-retaining components, defined by item number on this drawing, have been designed for loads according to UG-22, (d), (e) and (f) as given in the pressure vessel calculation report. The design of the structural components for the PHE has to be made for each configuration of heat transfer plate material, thickness and number of plates. The pressure and temperature performance of the heat transfer plates shall be according to ASME specifications of pressure and temperature performance limits.

Design temp: 250°C (482°F)
 Design pressure: 10.5 MPa (153 bar / 15 psig)
 MaxWP (external): 10.5 MPa (153 bar / 15 psig)
 P1/P2 1200: HAMP: 4.00 MPa (58.0 bar / 840 psi)
 Class 300: Test min: 5.20 MPa (75.0 bar / 1080 psi)
 Test max: 6.00 MPa (87.0 bar / 1250 psi)
 P3/P4 1000: HAMP: 4.00 MPa (58.0 bar / 840 psi)
 Class 300: Test min: 5.20 MPa (75.0 bar / 1080 psi)
 Test max: 6.00 MPa (87.0 bar / 1250 psi)

Hydraulic test pressure media: Water

The pressure/temperature ratings of ASME B16.5 are to be considered when standard flanges are mounted on the PHE.

Details without item number are not subject to inspection.

Correction allowance: 0 mm

See manufacturing drawings for dimensions with specified tolerances.



Table 2
 Port configuration and corresponding minimum thickness [mm]

Port configuration	Minimum thickness	
	Pressure plate	Frame plate
P1 (1000-1500)	16.7	109.7
P2 (1000-1500)	16.7	109.7
P3 (1000-1500)	16.7	109.7
P4 (1000-1500)	16.7	109.7

- Notes:
- (1) Normalized or quenched and tempered.
 - (2) Material in heat transfer plates shall be listed in ASME Section II Part D or in ASME Code case.
 - (3) Weld no. refers to applicable qualified WPS.
 - (4) Marking shall be made in accordance with UG-93(a)(2).
 - (5) The gasketed connection is a proprietary design of Alfa Laval, suitable for flange with flat face of the applicable connection standard, i.e. ASME B16.5.
 - (6) See Pressure vessel calculation report for establishing of MCHT.
 - (7) Maximum permissible external loading for connections acc. to pressure vessel calculation report.
 - (8) All materials ASME SA-516 Grade 70 and note (1).
 - (9) For dimensions, see Table 1.
 - (10) Frame- and Pressure plate is turnable around vertical axis (V) meaning that for a specific configuration, the ports can be flipped compared with shown views on this drawing.



This Document has been digitally signed and approved. The stamp size has been optimized for 11 x 17 documents.

Technical Standards and Safety Authority
 Boilers and Pressure Vessels Safety Program

REGISTERED
 C.R.N.: R9304.5
 Signed: *Lucas Zerk*
 Date: May 30, 2023.

Item	Description	Material	Notes
1	Channel plate - heatplates	Stainless steel, titanium, Al alloys	(1)
2	Heat transfer plate	Drawing 349002405	C of C
3	Gasket	Mineral fibre gasket	-
4	Blind cover - Blind flange	ASME SA-516 Grade 60	(10)
5	Inspection cover	ASME SA-516 Grade 60	(10)
6	Flange	ASME SA-154 Grade 2H Grade 7	(10) (11)
7	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
8	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
9	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
10	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
11	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
12	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
13	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
14	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
15	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
16	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
17	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
18	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
19	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
20	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)

Item	Description	Material	Notes
1	Channel plate - heatplates	Stainless steel, titanium, Al alloys	(1)
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11	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
12	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
13	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
14	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
15	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
16	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
17	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
18	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
19	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)
20	Blind cover	ASME SA-154 Grade 2H Grade 7	(10) (11)

Revision No.
 Author: [Name]
 Date: [Date]
 Checked: [Name]
 Date: [Date]
 Approved: [Name]
 Date: [Date]

Table 1

Connection	G	S	W	H	E	A, MIN	d	F	B	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
ASME B16.5 Class 300 ORISO	3/4"	1"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"	7 1/4"	7 1/2"	7 3/4"
ASME B16.5 Class 300 DIN150	1 1/8"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"	7 1/4"	7 1/2"	7 3/4"	8"	8 1/4"

+ For inspection covers
 ++ For blind covers

Montréal, le 2 juillet 2023.

MR. ZORAN JAKOVLJEVIC
ALFA LAVAL INC.
101 MILNER
SCARBOROUGH ONTARIO
CANADA M1S 4S6

Manufacturer : ALFA LAVAL INC.
5400 INTERNATIONAL TRADE DRIVE
RICHMOND VIRGINIA
U.S.A. 23231

OUR REFERENCE : 945811
Design number : 3490024064 R0

Subject: Design registration confirmation

Hi,

We wish to inform you that your design registration application has been evaluated and that it was registered under the following Canadian Registration Number (CRN): **R09304.56**.

The following is a reminder of your obligations regarding certain requirements of the regulation respecting pressure vessels, and the referenced codes and standards:

- The manufacturer must maintain a valid quality control program to manufacture equipment according to the CRN.
- The CRN remains valid as long as there are no changes to the design calculations that might affect the pressure boundary. The design registration of fittings expires 10 years after acceptance. It must, therefore, be resubmitted for validation.
- The manufacturer shall submit a copy of the *Manufacturer's Data Report* to us for each equipment manufactured according to this CRN within 30 days following the signing of this report.
- The drawing number and the revision number registered under this CRN must be indicated on the *Manufacturer's Data Report* for equipment manufactured according to the CRN.

This notice of approval does not relieve the manufacturer of their responsibilities with respect to the design or fabrication of equipment manufactured according to this CRN.

Yours sincerely,

Bureau d'expertise et d'homologation en équipements sous pression

Montréal
545, boul. Crémazie Est, 7ième étage
Montréal (Québec) H2M 2V2
Téléphone : 514 873-6459
Sans frais : 1 866 262-2084
www.rbq.gouv.qc.ca

Kel-Gor Q.A. Receiving			
Kel-Gor Job No. 24-1201			
Verified To	☒	☒	☐
Date	17 JUL 2023	P.O.	Mtts Spec
Signed	HF		
Kel-Gor Q.A. Receiving			
Kel-Gor Job No. _____			
Verified To	☐	☐	☐
Code	_____	Ed.	_____
Date	_____		
Signed	_____		

Montréal, 2 juillet 2023.

MONSIEUR ZORAN JAKOVLJEVIC
ALFA LAVAL INC.
101 MILNER
SCARBOROUGH ONTARIO
CANADA M1S 4S6

Fabricant : ALFA LAVAL INC.
5400 INTERNATIONAL TRADE DRIVE
RICHMOND VIRGINIA
U.S.A. 23231

Numéro de dossier : 945811
Numéro(s) de dessin(s) : 3490024064 R0

Objet : Enregistrement des plans et devis – Confirmation de l'enregistrement

Bonjour,

Nous vous informons que votre demande d'enregistrement de plans et devis a été traitée et que cette conception a été enregistrée sous le numéro d'enregistrement canadien (NEC\CRN) suivant : **R09304.56**.

Nous portons votre attention sur certaines exigences réglementaires concernant les installations sous pression, ainsi que des codes et normes qui y sont associés :

- Le fabricant doit maintenir un programme de contrôle de la qualité valide pour fabriquer un équipement selon ce NEC;
- Ce numéro d'enregistrement demeure valide tant et aussi longtemps que les paramètres de conception demeurent inchangés. Dans le cas d'accessoires, l'enregistrement est valide pour une durée de 10 ans à partir de la date d'enregistrement. Les documents de conception doivent alors être resoumis pour validation;
- Le fabricant doit nous transmettre une copie de la *Déclaration de conformité du constructeur (Manufacturer's Data Report)* pour chaque appareil ou chaudière fabriqué selon ce NEC dans les 30 jours suivant la signature de cette déclaration;
- Le numéro de dessin enregistré et le numéro de révision doivent être indiqués sur la déclaration de conformité pour les équipements fabriqués selon ce NEC.

Le présent avis d'approbation ne dégage pas le fabricant de ses responsabilités quant à la conception ou à la construction des équipements ou d'accessoires fabriqués selon un NEC.

Solutions distinguées

Bureau d'expertise et d'homologation en équipements sous pression

Montréal
545, boul. Crémazie Est, 7ième étage
Montréal (Québec) H2M 2V2
Téléphone : 514 873-6459
Sans frais : 1 866 262-2084
www.rbq.gouv.qc.ca



Report

Alfa Laval Technologies AB

Certificate of cleanliness of Gasketed Plate Heat Exchangers	Doc. No. B23-653021-170	Rev. 0
	Date 2023-12-07	
	Page 1/1	

Alfa Laval Order No. B23-653021	Customer Name Cummins
Alfa Laval Serial No. AAM1007906 to AAM1007907	Customer PO No. 10135540
Alfa Laval Equipment Type TK20-BWFX	Customer Tag/Item No. HX-4025
	Project --

Cleaning Procedure

We hereby certify that the Gasketed Plate Heat Exchangers have been manufactured, cleaned, visually inspected and handled in accordance with procedure K-302 rev 0.

Result

Accepted without remarks.

Kel-Gor Q.A. Receiving			
Kel-Gor Job No. 24-1001			
Verified To	☒ P.O.	☒ MfIs	☐ Spec
Date	Mar 20. 24		
Signed	H. F. ...		
Kel-Gor Q.A. Receiving			
Kel-Gor Job No. _____			
Verified To	☐ P.O.	☐ MfIs	☐ Spec Code
Code	Ed. _____		
Date	_____		
Signed	_____		

Signature and date	
Matilda Cortes Rosenbäck	Digitally signed by Matilda Cortes Rosenbäck Date: 2024.04.02 15:41:35 +02'00'

Mfg Representative:
Authorized Inspector:

Date: December 7, 2023
Date: December 7, 2023

FORM U-1P MANUFACTURER'S DATA REPORT FOR PLATE HEAT EXCHANGERS
As Required by the Provisions of the ASME Boiler and
Pressure Vessel Code Rules, Section VIII, Division 1

Page 1 of 2

1. Manufactured and certified by Alfa Laval Technologies AB, Rudeboksvagen 1, SE-226 55 Lund, Sweden
(Name and address of Manufacturer)
2. Manufactured for Alfa Laval Benelux B.V., P O BOX 9377, 4801, LJ BREDA, Netherland
(Name and address of Purchaser)
3. Location of installation Unknown
4. Type Vertical Gasketed AAM1007906/-7907 R9304.5C B23-653021-12 Rev. 2
(Horizontal or vertical) (Gasketed, semi-weld, brazed) (Manufacturer's serial no) (CRN) (Drawing no.)
5. ASME Code Section VIII, Div. 1 2021 Ed. 2766 N/A 2023 4700-4701
(Edition (Year)) (Code Case number) (Special Service per UG-120(d)) (Year built) (National Board no.)
6. Endplates: (a) SA-516 Grade 70 (b) SA-516 Grade 70 (c) N/A
(Fixed material) (Moveable material) (Other material)

No.	Quantity	Width	Length	Thickness	Corr. Allow.	Heat Treat	Temp.	Time
(a)	1	900 mm	1560 mm	110 mm	0 mm	None	N/A	N/A
(b)	1	900 mm	1490 mm	100 mm	0 mm	None	N/A	N/A
-	-	-	-	-	-	-	-	-

7. Frame compression bolts and nuts Nos. 14, Metric M52, Bolts SA-193 Grade B7 and Nuts SA-194 Grade 2H
(Quantity, diameter, material specification, and grade)
8. Impact Test No, exempted per UCS-66(a), Fig UCS-66 General note (c)
(Indicate yes or no and the component(s) impact tested)
9. Heat transfer plates M SA-240 Type 316 0.8 mm (0.0315 in.) 25 / 158 cassettes
(Plate Model) (Material specification and grade) (Thickness) (Minimum/maximum quantity of plates for frame)
- 125 cassettes 836 mm 819 mm
(Quantity of plates pressure tested) (Minimum tightening dimension) (Maximum tightening dimension)
10. Chamber 1, MAWP See 15 at max. temp See 15, See 15 MDMT at See 15 Hydro/pneu.test press. See 15
11. Chamber 2, MAWP See 15 at max. temp See 15, See 15 MDMT at See 15 Hydro/pneu.test press. See 15
12. Nozzles, connections, inspections, and safety valve openings:

Purpose (Inlet, Outlet, Drain, etc)	Qty.	Dia or Size	Type	Material			Nozzle Thickness		How Attached		Location (Insp. Open.)
				Nozzle	Flange	Flange Rating	Nom.	C.A.	Nozzle	Flange	
Primary Inlet	1	DN 150	Studs	N/A	N/A	#300	N/A	N/A	N/A	See 15	N/A
Primary Outlet	1	DN 150	Studs	N/A	N/A	#300	N/A	N/A	N/A	See 15	N/A
Secondary Inlet	1	DN 200	Studs	N/A	N/A	#300	N/A	N/A	N/A	See 15	N/A
Secondary Outlet	1	DN 200	Studs	N/A	N/A	#300	N/A	N/A	N/A	See 15	N/A

13. Supports: Lugs N/A Legs Feet 5 Others N/A Attached Bolted to heads
(Quantity) (Quantity) (Describe) (Where and how)
14. Manufacturer's Partial Data Reports properly identifying and signed by Commissioned Inspectors have been furnished for the following
Items of the report (list the name of the part, item number, and Manufacturer's name and identifying number): N/A

15. Remarks
Manufacturer's model number TK20-BWFX. Additional information, see attached U-4 Form.
Design is covered by CRN approved drawing 3490024064 Rev 0
Heat transfer plates are cassettes that consists of two pieces of 0.8 mm plates welded together.

Classified by Alfa Laval as: Business

Kel-Gor Q.A. Receiving
Kel-Gor Job No. 24-1201
Verified To ☒ P.O. ☐ Mts ☐ Spec ☐
Date MAR 20 25
Signed HF
Kel-Gor Q.A. Receiving
Kel-Gor Job No. _____
Verified To ☐ P.O. ☐ Mts ☐ Spec ☐
Code _____ Ed. _____
Date _____
Signed _____

Manufactured by Alfa Laval Technologies AB, Rudeboksvagen 1, SE-226 55 Lund, Sweden

Page 2 of 2

Manufacturer's Serial No. AAM1007906/-7907

CRN R9304.5C

National Board No. 4700-4701

CERTIFICATE OF SHOP COMPLIANCE

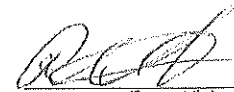
We certify that the statements in this report are correct and that all details of design, material, construction and workmanship of this plate and frame heat exchanger conform to the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1.

U Certificate of Authorization Number 20,988 Expires December 29, 2024

Date December 7, 2023

Name Alfa Laval Technologies AB
(Manufacturer)

Signed


(Representative)

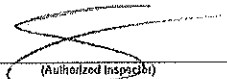
CERTIFICATE OF SHOP INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by LRQA Verification Limited. of UK

have inspected the plate and frame heat exchanger described in this Manufacturer's Data Report on December 7, 2023, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this plate and frame heat exchanger in accordance with ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the plate and frame heat exchanger described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date December 7, 2023

Signed


(Authorized Inspector)

Commissions AI Comm. No. 11500

(National Board Authorized Inspector Commission number)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the statements in this report are correct and that the field assembly construction of all parts of this vessel conforms with the Requirements of ASME BOILER AND PRESSURE VESSEL CODE Section VIII, Division 1.

U Certificate of Authorization No. _____ Expires _____

Date _____

Name _____

(Assembler)

Signed _____

(Representative)

CERTIFICATE OF FIELD ASSEMBLY INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and employed by _____

of _____, have compared the statements in this Manufacturer's Data Report with the described plate and

frame heat exchanger and state that parts referred to as data items _____, not included in the certificate of shop inspection have been inspected by me and to the best of my knowledge and belief, the Manufacturer has constructed this plate and frame heat exchanger in accordance with the ASME BOILER AND PRESSURE VESSEL CODE, Section VIII, Division 1. By signing this certificate neither the Inspector nor his/her employer makes any warranty, expressed or implied, concerning the plate and frame heat exchanger described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his/her employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Date _____

Signed _____

(Authorized Inspector)

Commissions _____

(National Board Authorized Inspector Commission number)

FORM U-4 MANUFACTURER'S DATA REPORT SUPPLEMENTARY SHEET
As Required by the Provisions of the ASME Boiler and Pressure Vessel Code Rules, Section VIII, Division 1

1. Manufactured and certified by Alfa Laval Technologies AB, Rudeboksvagen 1, SE-226 55 Lund, Sweden
(Name and address of Manufacturer)

2. Manufactured for Alfa Laval Benelux B.V., P O BOX 9377, 4801, LJ BREDA, Netherland
(Name and address of Purchaser)

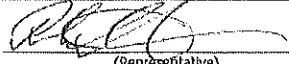
3. Location of Installation Unknown
(Name and address)

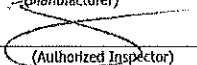
4. Type Vertical Plate Heat Exchanger AAM1007906/-7907
(Horizontal, vertical, or sphere) (Tank, separator, heat exch., etc.) (Manufacturer's serial number)

R9304.5C B23-653021-12 Rev. 2 4700-4701 2023
(CRN) (Drawing number) (National Board number) (Year built)

Data Report Item Number	Remarks
Form U-1P	
Items 10 & 11	The following pressures/temperatures apply:
	<i>Primary Side (S4-S3)</i> <i>Secondary Side (S2-S1)</i>
	MAWP, internal 4000 kPa (40.0 bar) 4000 kPa (40.0 bar)
	at Temperature 100 °C 100 °C
	MAWP, external 100 kPa (1.0 bar) 100 kPa (1.0 bar)
	at Temperature 100 °C 100 °C
	MDMT 0 °C 0 °C
	at MAWP 4000 kPa (40.0 bar) 4000 kPa (40.0 bar)
	Hydro Test Pressure 5200 kPa (52.0 bar) 5200 kPa (52.0 bar)
Item 12	S1, S2: Studded connections suitable for DN200 ASME B16.5 #300 Flanges, each provided with 12 pcs 7/8" SA193-B7 Stud Bolts
Item 12	S3, S4: Studded connections suitable for DN150 ASME B16.5 #300 Flanges, each provided with 12 pcs 3/4" SA-193-B7 Stud Bolts
Item 15	U-2 (b) (1) Design requirements according to (a)(2)(-a): Yes ☒ No ☐ Superimposed static reactions Yes ☐ No ☒ Cyclic or dynamic reactions Yes ☐ No ☒ Loadings due to wind, snow, or seismic reactions Yes ☐ No ☒ Impact reactions Yes ☐ No ☒ Temperature effects Yes ☐ No ☒ Abnormal pressures
	Prior to placing the vessel in service it shall be provided with pressure relief device by the user.
	Volume: 362 l
	Distance between flat heads = Minimum tightening dimension in Item 9.
	Heat/Identification numbers for Heat-transfer Plates: 0544966, 1TZM, 0466912 0469159

Certificate of Authorization: Type: U No. 20,988 Expires December 29, 2024

Date December 7, 2023 Name Alfa Laval Technologies AB Signed 
(Manufacturer) (Representative)

Date December 7, 2023 Signed  Commissions AI Comm. No. 11500
(Authorized Inspector) (National Board Authorized Inspector Commission number)

INSPECTION CERTIFICATE

(according to DIN EN 10204, type 3.1)

Manufacturer:

Otelinox S.A.

Strada Soseaua Gaesti no. 16

Targoviste, 130087

Dambovită, Romania

No: 0042178630



A subsidiary of SAMSUNG C&T

MANAGEMENT SYSTEMS CERTIFIED
ACCORDING TO ISO 9001 & IATF 16949,
ISO 14001, ISO 45001

LABORATORY ACCREDITED ACCORDING TO ISO/IEC 17025

Customer: ALFA LAVAL TECHNOLOGIES AB

Customer Ord.No.: OMCP-208979

Product: Strips

Steel grade: TYPE 316L AL111 2359-63 R12 / 1.4404/2B

TYPE 316 AL111 2349-63 R17 / 1.4401/2B

Melting process: E

Specification: AD2000W2; PED 2014/68/EU; EN 10088-2/14; EN 10028-7/16; ASTM A 240M/19; ASME SA240/21;
ISO 15156-3:2015(E)-NACE:MR0175 & MR0103

Coil No	Heat No	Weight (kg)	Std	Chemical analysis (%)											
				C	Mn	Si	P	S	Cr	Ni	Mo	Ti	N	Cu	Al
1L26/103-228364/B/1/A	0544966	2790.000		0.027	1.030	0.330	0.030	0.0010	16.550	10.130	2.020	xxxx	0.049	xxxx	xxxx
1L26/103-228364/B/1/B	0544966	2804.000		0.027	1.030	0.330	0.030	0.0010	16.550	10.130	2.020	xxxx	0.049	xxxx	xxxx

Surface and dimensional control, material identity test, intercrystalline corrosion acc. to DIN EN ISO 3651/2-A: O.K

Ra=0.23/0.22 microns; PREN=24.000

Extent of delivery				Test Results											
Coil No	Dimensions (mm)	Pallet No	Packing List No	Test No	Pos	Std	0.2%Y Str (N/mm2)	1%Y Str (N/mm2)	T/S (N/mm2)	Elong (A80%)	Elong (A50%)	Elong (A10%)	HV HRB	Bending Test	Grain Size
1L26/103-228364/B/1/A	0.78 X 625 Slit	1000686643	42178630	688	T		290.0	319.0	603.0	52.0	53.0	xxxx	153.0 79.5	xxxx	7.50
				689	B		304.0	332.0	608.0	50.0	51.0	xxxx	159.0 81.5	xxxx	7.50
1L26/103-228364/B/1/B	0.78 X 625 Slit	1000686644	42178630	688	T		290.0	319.0	603.0	52.0	53.0	xxxx	153.0 79.5	xxxx	7.50
				689	B		304.0	332.0	608.0	50.0	51.0	xxxx	159.0 81.5	xxxx	7.50

Heat treatment: 1080 °C/ Air cooling

T = Top B = Bottom

Sample direction: transversal

Delivered product is in conformity with order requirements.

Marking: Producer Trade Mark, Material, Heat No., Coil-No.

Issued in agreement with TÜV SÜD Industrie Service GmbH (10/2002)

QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036

(Certification no. DGR-0036-QS-W 23/2002/MUC-002)

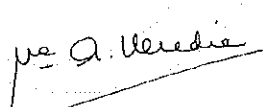
IL-CQ-1

Targoviste, 18.10.2022

WORK INSPECTOR
CUTA VICTORIA

Kel-Gor Q.A. Receiving
Kel-Gor Job No. 244001
Verified To ☒ P.O. ☒ Miss ☒ Spec
Date MAR 20 25
Signed <i>Wade</i>
Kel-Gor Q.A. Receiving
Kel-Gor Job No.
Verified To ☒ P.O. ☒ Miss ☒ Spec
Code <i>100</i> Ed. <i>1</i>
Date
Signed

AL Lund AB TC-Pro 1062213 SEULED 2022-10-18

ACERINOX EUROPA FABRICA DEL CAÑO DE GINER PALMONES (LOS BARRIOS) Telf. (34) - 956 62 22 00 Fax (34) - 956 62 22 13 P.O. BOX 83 11370 LOS BARRIOS (Cádiz) ESPAÑA		  by Accredited Body		INSPECTION CERTIFICATE ABNAHMEPRÜFZEUGNIS 3.1									
CUSTOMER KUNDE ALFA LAVAL TECHNOLOGIES AB NÖBBELÖVS MOSSAVÄG				OUR ORDER N° UNSERE AUFTR. MA 4929				YOUR ORDER N° IHRZ BESTELL. OMCP209534					
TRADE MARK STEMPSEL DES HERSTELL. 				INSPECTOR'S STAMP STEMPSEL DES WERKSACHVERSTÄNDIGEN				STEELMAKING PROCESS HERSTELLUNGSPROZESS A.O.D.					
REQUIREMENTS ANFORDERUNGEN EN 10088-4:2009				INTERGRANULAR CORROSION INTERKRISTALLINE KORROSION				GRADE NERBIOFF Acx 240 1.4404		FINISH AUSFÜHRUNG 2B			
COIL / BOX COIL/KLEBE		CONTENT INHALT		DIMENSIONS (mm) ABMESSUNGEN			MARKS POS.		QUANTITY STÜCKZAHL		TEST N° PROBE NR.		
021TZM B1 021TZM B4 042BXZ A4		021TZM B 021TZM B 042BXZ A		THICKNESS DICKE 0,800 0,800 0,800			WIDTH BREITE 625,00 625,00 625,00				1 021TZM B 1 021TZM B 1 042BXZ		
CHEMICAL ANALYSIS / CHEMISCH ZUSAMMENSETZUNG													
HEAT N° SCHWELER NR.		C	CR	MN	MO	N	NI	P	S	SI			
REQUIREMENTS ANFORDERUNGEN		0,030	16,500 18,500	2,000	2,000	0,100	10,000 13,000	0,045	0,015	1,000			
1TZM 2BXZ		0,018 0,026	16,705 16,685	1,163 1,255	2,221 2,040	0,040 0,034	10,085 10,075	0,031 0,029	0,002 0,001	0,386 0,460			
MECHANICAL PROPERTIES / MECHANISCHE EIGENSCHAFTEN													
TEST N° PROBE NR.		Rm N/mm2		Rp 0.2 N/mm2		Rp 1.0 N/mm2		A50 %		A80 %		HV10	
REQUIREMENTS ANFORDERUNGEN		530,00 680,00		240,00		270,00		40,00				G.S.	
021TZM B 021TZM B 042BXZ		614,96 608,69		303,41 321,74		337,22 352,89		49,49 58,55		53,49 58,55		165,00 153,00	
REMARKS / BEOBACHTUNGEN													
The delivery is in accordance with the order QUALITY ASSURANCE SYSTEM IN ACCORDANCE WITH THE PRESSURE MATERIAL COMPLIES WITH NORSOK M-630 MDS S15 Equipment Directive PED 2014/68/EU													
SURFACE AND DIMENSIONAL CONTROL OBERFLÄCHEN- UND ABMESSUNGSKONTROLLE													
SATISFACTORY OHNE BEANSTANDUNG													
WORK INSPECTOR WERKSACHVERSTÄNDIGER													
 A. Heredia													
Palmones, 23 Novembre 2022													



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23115/53 - BL23157-14 - 260099

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
SE - 221 00 LUND (SWEDEN)

VOTRE/YOUR REF N° OMCF-435071

Poste/item 1 STUD(TF) 7/8" 9 UNC x 140 ENISO
Qte/Qty 450 898-1 CL8.8 ASME SA193 B7 ADW7
COAT:ZN ENISO 4042 A9F(10micr.min.)
Part nr 1644181-10/13
Plan 1644181 rev 12

.. STUD(TF) 7/8"
Heat :
018060

Normes/Standard : ASME SA193 GRADE B7-EN ISO 898-1 CLASSE 8.8 ADW7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P	Cr	Mo	B
0.43	0.846	0.294	0.0043	0.011	1.039	0.224	0.0001

CARACTERISTIQUES MECANIQUES/MECHANICAL TEST

TEST n°1	Rm MPa	Rp0.2% MPa	A% 4D	A% 5d	Z%	HB	KV +20°C Joules
	1054	866.5	18.8	16.8	56	312	92/93/90
TEST n°29869	Rm MPa	Rp0.2% MPa	A% 4D	A% 5d	Z%		
	1045	850	18.45	15.3	54.22		
TEST n°29870	Rm MPa	Rp0.2% MPa	A% 5d	A% 4D	Z%		
	1056	872	15.15	21.3	57		
TEST n°29871	KV +20°C Joules						
	91/85/93						
TEST n°29872	KV +20°C Joules						
	85/89/93						
TEST n°29873	KV -50°C Joules						
	59/60/59						
TEST n°29874	Rm 300°C MPa	Rp0.2% 300°C MPa	A% 5d 300°C	Z% 300°C			
	1016	734	14.3	43.71			
TEST n°1	REV. T° C						
	610						

Goods are in conformity to: EN ISO 898-1 CLASSE 8.8 ADW7-ASME SA193 GRADE B7 EDITION 2017

Material in conformity To PED 2014/68/EU

Delivery state : Quenched and Tempered

Visual and dimensional control : Conform

Macroetch Examination :Conform

Marks on studbolt : BC - B7 - 8.8

On labels : 018060

V X PS <= 5000 With the approval of the TÜV RHEINLAND 01 202 F/Q-06 00121

See PV TÜV N° 8121028740

**Beck-Crespel**

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23115/53 - BL23157-14 - 260099

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN

PO BOX 74

SE - 221 00 LUND (SWEDEN)

VOTRE/YOUR REF N° OMCF-435071

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

06/06/2023

David COEURET

QC Technician

dcoeuret@beckcrespel.fr

**MATERIAL CHECKED AGAINST
ASME II PART A EDITION 21**Date 23-12-06 Sign.



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23115/49 - BL23171-8 - 260504

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
SE - 221 00 LUND (SWEDEN)

VOTRE/YOUR REF N° OMCF-435061

Poste/Item 1 STUD(TF) 3/4" 10 UNC x 120 ENISO
Qte/Qty 1 040 898-1 CL8.8 ASME SA193 B7 ADW7
COAT:ZN ENISO 4042 A9F(10micr.min.)
Part 1644181-05/13
Plan 1644181 rev 12

- STUD 3/4"
Heat :
289056

Normes/Standard : ASME SA193 GRADE B7-EN ISO 898-1 CLASSE 8.8 ADW7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P	Cr	Mo	B
0.413	0.828	0.26	0.012	0.011	1.027	0.207	0.0004

CARACTERISTIQUES MECANIKES/MECHANICAL TEST

TEST n°1	Rm MPa	Rp0.2% MPa	A% 5d	A% 4D	Z%	HB		
	903	731	26.4	23	61	272		

TEST n°128096	Rm MPa	Rp0.2% MPa	A% 5d	Z%	HB			
	1053	798	15.7	59	312			

TEST n°128097	HB	KV +20°C Joules						
	312	96/92/92						

TEST n°128098	Rm MPa	Rp0.2% MPa	A% 5d	Z%	HB			
	955	738	16.7	63	290			

TEST n°128099	HB	KV +20°C Joules						
	290	107/107/112						

TEST n°128100	KV -50°C Joules							
	64/62/62							

TEST n°128101	Rm 300°C MPa	Rp0.2% 300°C MPa	A% 5d 300°C	Z% 300°C				
	969	770	18.2	56				

ELABORATION

TEST n°1	REV. T° C							
	610							

TEST n°128096	REV. T° C							
	610							

TEST n°128098	REV. T° C							
	610							

**Beck-Crespel**

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23115/49 - BL23171-8 - 260504

ALFA LAVAL TECHNOLOGIES ABRUDEBOKSVAGEN
PO BOX 74
SE - 221 00 LUND (SWEDEN)

VOTRE/YOUR REF N° OMCf-435061

Goods are in conformity to: EN ISO 898-1 CLASSE 8.8 ADW7-ASME SA193 GRADE B7 EDITION 2017
Material in conformity To PED 2014/68/EU
Delivery state : Quenched and Tempered
Visual and dimensional control : Conform
Macroetch Examination : Conform
Marks on studbolt : BC - B7 - 8.8
On labels : 289056
V X PS <= 5000 With the approval of the TÜV RHEINLAND 01 202 F/Q-06 00121
See PV TÜV N° 22001/69-235058

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

21/06/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr**MATERIAL CHECKED AGAINST
ASME II PART A EDITION 21**Date 23-12-06 Sign.

INSPECTION CERTIFICATE

(according to DIN EN 10204, type 3.1)

Manufacturer:

Otelinox S.A.

Strada Soseaua Gaesti no. 16

Targoviste, 130087

Dambovita, Romania

No: 0042189427



A subsidiary of SAMSUNG C&T

MANAGEMENT SYSTEMS CERTIFIED
ACCORDING TO ISO 9001 & IATF 16949,
ISO 14001, ISO 45001

LABORATORY ACCREDITED ACCORDING TO ISO/IEC 17025

Customer: ALFA LAVAL TECHNOLOGIES AB

Customer Ord.No.: OMCP-213808

Product: Strip

Steel grade: TYPE 316L AL111 2359-63 R12 / 1.4404/2B

TYPE 316 AL111 2349-63 R17 / 1.4401/2B

Melting process: E

Specification: AD2000W2; PED 2014/68/EU; EN 10088-2/14; EN 10028-7/16; ASTM A 240M/22; ASME SA240/21;
ISO 15156-3:2015(E) - NACE:MR0175 & MR0103

Coil No	Heat No	Weight (kg)	Std	Chemical analysis (%)											
				C	Mn	Si	P	S	Cr	Ni	Mo	Ti	N	Cu	Al
1L26/114-220250/B/2	0466912	3246.000		0.021	1.030	0.320	0.027	0.0010	16.610	10.080	2.050	xxxx	0.048	xxxx	xxxx

Surface and dimensional control, material identity test, intercrystalline corrosion acc. to DIN EN ISO 3651/2-A: O.K

Ra=0.20/0.21 microns; PREN=24.143

Extent of delivery				Test Results											
Coil No	Dimensions (mm)	Pallet No	Packing List No	Test No	Pos	Std	0.2%Y Str (N/mm2)	1%Y Str (N/mm2)	T/S (N/mm2)	Elong (A80%)	Elong (A50%)	Elong (A10%)	HV HRB	Bending Test	Grain Size
1L26/114-220250/B/2	0.78 X 625 Slit	1000707471	42189427	714	T		289.0	319.0	593.0	53.5	54.0	xxxx	157.0 80.5	xxxx	7.00
				715	B		278.0	308.0	583.0	55.0	55.5	xxxx	150.0 79.0	xxxx	7.00

Heat treatment: 1080 °C/ Air cooling

T = Top B = Bottom

Sample direction: transversal

Delivered product is in conformity with order requirements.

Marking: Producer Trade Mark, Material, Heat No., Coil-No.

Issued in agreement with TÜV SÜD Industrie Service GmbH (10/2002)

QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036

(Certification no. DGR-0036-QS-W 23/2002/MUC-002)

WORK INSPECTOR
MOISE VIOLETA

C
30

IL-CQ-1

Targoviste, 12.07.2023



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23202/12 - BL23241-19 - 271818

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN

PO BOX 74

SE - 221 00 LUND (SWEDEN)

VOTRE/YOUR REF N° OMCf-444754

Poste/item 1 NUT M52 X 5 (80x75)
Qte/Qty 60 EN ISO 898-2 CL8/ASME SA 194-2H
COAT: ZN 20 - PART 3350026846/06
PLAN 82300176 REV.05

NUT M 52
Heat :
1225380

Normes/Standard : ASME SA194-2H -EN ISO 898-2 CL8 ADW7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P			
0.48	0.73	0.18	0.014	0.006			

CARACTERISTIQUES MECANIKES/MECHANICAL TEST

TEST n°1

HB-24H 640°C	HB/ HBw						
255/255	245/266						

ELABORATION

TEST n°1

REV. T° C							
570							

Goods are in conformity to: ASME SA194 GRADE 2H EDITION 2021-EN ISO 898-2 CL 8 ADW7
Material in conformity To PED 2014/68/EU

Delivery state : Quenched and tempered
Widening test : Conform
Proof load test : Not required
Visual and dimensional control : Conform
Macroetch Examination : Conform
Marking on nuts : BC 2H 8 + Heat code 1ECF

SEE TÜV PV N°23001/59-236971

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

29/08/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr

INSPECTION CERTIFICATE

(according to DIN EN 10204, type 3.1)

No: 0042191279



A subsidiary of SAMSUNG C&T

MANAGEMENT SYSTEMS CERTIFIED
ACCORDING TO ISO 9001 & IATF 16949,
ISO 14001, ISO 45001
LABORATORY ACCREDITED ACCORDING TO ISO/IEC 17025

Manufacturer:

Otelinox S.A.

Strada Soseaua Gaesti no. 16

Targoviste, 130087

Dambovita, Romania

Customer: ALFA LAVAL TECHNOLOGIES AB

Customer Ord.No.: OMCP-214490

Product: Strip

Steel grade: TYPE 316L AL111 2359-63 R12 / 1.4404/2B

TYPE 316 AL111 2349-63 R17 / 1.4401/2B

Melting process: E

Specification: AD2000W2; PED 2014/68/EU; EN 10088-2/14; EN 10028-7/16; ASTM A 240M/22; ASME SA240/21;
ISO 15156-3:2015(E)-NACE:MR0175 & MR0103

Coil No	Heat No	Weight (kg)	Std	Chemical analysis (%)											
				C	Mn	Si	P	S	Cr	Ni	Mo	Ti	N	Cu	Al
1L28/19-237216/B/2	0469159	3775.000		0.017	1.040	0.330	0.034	0.0010	16.600	10.060	2.050	xxxx	0.047	xxxx	xxxx

Surface and dimensional control, material identity test, intercrystalline corrosion acc. to DIN EN ISO 3651/2-A: O.K

Ra=0.15/0.16 microns; PREN=24.117

Extent of delivery				Test Results											
Coil No	Dimensions (mm)	Pallet No	Packing List No	Test No	Pos	Std	0.2%Y Str (N/mm2)	1%Y Str (N/mm2)	T/S (N/mm2)	Elong (A80%)	Elong (A50%)	Elong (A10%)	HV HRB	Bending Test	Grain Size
1L28/19-237216/B/2	0.78 X 625 Slit	1000732077	42191279	890	T		274.0	303.0	583.0	54.5	55.5	xxxx	151.0 79.0	xxxx	7.00
				891	B		285.0	313.0	582.0	55.0	56.0	xxxx	153.0 79.5	xxxx	7.00

Heat treatment: 1080 °C/ Air cooling

T = Top B = Bottom

Sample direction: transversal

Delivered product is in conformity with order requirements.

Marking: Producer Trade Mark, Material, Heat No., Coil-No.

Issued in agreement with TÜV SÜD Industrie Service GmbH (10/2002)

QS approved acc. to PED, Annex I, Para. 4.3 by Notified Body 0036

(Certification no. DGR-0036-QS-W 23/2002/MUC-002)

WORK INSPECTOR
TICHIE CRISTINA

C
27

IL-CQ-1

Targoviste, 30.08.2023

AL LUND AB TC-no 1076267 SELUKNA 2023-09-01



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23166/41 - BL23292-3 - 273356

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
221 00 LUND

VOTRE/YOUR REF N° OMCF-440911

Poste/Item 1 TBOLT M52X1577(LT 1650) EN10269
Qte/Qty 20 42CrMo4 SA193B7 +1 NUT
EN ISO 898-2 CL8/SA194 2H ZN ADW7
3350027119/00 DWG 3480013135/0
3350026953/00+3350026846/04

.. TBOLT M 52
Heat :
48642

Normes/Standard : 42CrMo4 NF EN 10269 - ASME SA 193 B7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P	Cr	Mo
0.39	0.85	0.25	0.006	0.006	1.06	0.23

CARACTERISTIQUES MECANIKES/MECHANICAL TEST

TEST n°1

Rm MPa	Rp0.2% MPa	A% 4D	A% 5d	Z%	HB	KV +20°C Joules
922	792	20.2	14	62	275	118/113/115

ELABORATION

TEST n°1

REV. T° C						
660						

MATERIAL ACCORDING TO STANDARD ASME EDITION 2021
SPECIFICATION ALFA LAVAL MATIERE AL111-2244-78

Mill Certificate : Ovako n° 488495
Delivery state : Quenched and tempered
Macroetch examination : Conform
Visual and dimensional control : conform
Marks : BC 1.7225 B7 + Heat code : 1EVW

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

19/10/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23166/41 - BL23292-3 - 273353

ALFALAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
221 00 LUND

VOTRE/YOUR REF N° OMCf-440911

Poste/item 1 TBOLT M52X1577(LT 1650) EN10269
Qte/Qty 20 42CrMo4 SA193B7 +1 NUT
EN ISO 898-2 CL8/SA194 2H ZN ADW7
3350027119/00 DWG 3490013135/0
3350026953/00+3350026846/04

.. NUT M 52
Heat :
1225380

Normes/Standard : ASME SA194-2H -EN ISO 898-2 CL8 ADW7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P			
0.46	0.73	0.18	0.014	0.006			

CARACTERISTIQUES MECANIKES/MECHANICAL TEST

TEST n°1

HB-24H 540°C	HB/ HBw					
255/255	245/266					

ELABORATION

TEST n°1

REV. T°C						
570						

Goods are in conformity to: ASME SA194 GRADE 2H EDITION 2021-EN ISO 898-2 CL 8 ADW7
Material in conformity To PED 2014/68/EU

Delivery state : Quenched and tempered
Widening test : Conform
Proof load test : Not required
Visual and dimensional control : Conform
Macroetch Examination : Conform
Marking on nuts : BC 2H 8 + Heat code 1ECF

See TÜV PV N° 23001/59-236971

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

19/10/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23166/41 - BL23292-3 - 273355

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
221 00 LUND

VOTRE/YOUR REF N° OMCF-440911

Poste/Item 2 TBOLT M52X1877(LT=1950) EN10269
Qte/Qty 8 42CRMO4/SA193 B7 +1 NUT M52(80x75)
ENISO 898-2 CL8/SA194 2HADW7 ZN25
REF 3350027120/00- DWG 3490013135/0
3350026954/00 + 3350026846/04

- TBOLT M 52
Heat :
289057

Normes/Standard : 42CrMo4 NF EN 10269 - ASME SA 193 B7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P	Cr	Mo	
0.42	0.846	0.275	0.01	0.015	1.042	0.211	

CARACTERISTIQUES MECANIKES/MECHANICAL TEST

TEST n°1

Rm MPa	Rp0.2% MPa	A% 5d	A% 4D	Z%	HB	KV +20°C Joules	
886.4	781	27.6	20	54.5	265	130/125/136	

ELABORATION

TEST n°1

REV. T° C							
730							

MATERIAL ACCORDING TO STANDARD ASME EDITION 2021
SPECIFICATION ALFA LAVAL MATIERE AL111-2244-78

Mill Certificate : Rodacciai n° 174222
Delivery state : Quenched and tempered
Macroetch examination : Conform
Visual and dimensional control : conform
Marks : BC 1.7225 B7 + Heat code : 1ETI

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

19/10/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr



Beck-Crespel

A Beck Industries Company

Certificat d'essais / Test Certificate NFEN 10204.3.1

NR 23166/41 - BL23292-3 - 273354

ALFA LAVAL TECHNOLOGIES AB

RUDEBOKSVAGEN
PO BOX 74
221 00 LUND

VOTRE/YOUR REF N° OMCF-440911

Poste/Item 2 TBOLT M52X1877(LT=1950) EN10269
Qte/Qty 8 42CRMO4/SA193 B7 +1 NUT M52(80x75)
ENISO 898-2 CL8/SA194 2H ADW7 ZN25
REF 3350027120/00- DWG 3490013135/0
3350026954/00 + 3350026846/04

- NUT M 52
Heat :
1225380

Normes/Standard : ASME SA194-2H -EN ISO 898-2 CL8 ADW7

ANALYSE/HEAT ANALYSIS

C	Mn	Si	S	P			
0.48	0.73	0.18	0.014	0.006			

CARACTERISTIQUES MECANIQUES/MECHANICAL TEST

TEST n°1

HB-24H 840°C	HB/ HBw						
255/255	245/286						

ELABORATION

TEST n°1

REV. T°C							
570							

Goods are in conformity to: ASME SA194 GRADE 2H EDITION 2021-EN ISO 898-2 CL 8 ADW7
Material in conformity To PED 2014/68/EU

Delivery state : Quenched and tempered
Widening test : Conform
Proof load test : Not required
Visual and dimensional control : Conform
Macroetch Examination : Conform
Marking on nuts : BC 2H 8 + Heat code 1ECF

See TÜV PV N° 23001/59-236971

We, the undersigned BECK CRESPEL, hereby certify that the supplied products are fully in accordance with the requirements of the order.

This test certificate applies only to the items, designation and quantities as described above.

19/10/2023

David COEURET
QC TECHNICIAN
dcoeuret@beckcrespel.fr

SSAB

VASTAANOTTOTODISTUS INSPECTION CERTIFICATE

ASME SA-20/2021/ASTM A20/2019

1/3

90353T-001

23.10.2023

Tilaja Purchaser
ALFA LAVAL TECHNOLOGIES AB
BOX 74
221 00 LUND SWEDEN
Tilaus nro Order No.
OMCF-440910

Tilausvahvistus Order Confirmation
90353T

Vastaanottaja Consignee
ALFA LAVAL TECHNOLOGIES AB
NÖBBELÖVS MOSSAVÄG/GF1
221 00 LUND SWEDEN
Asiakkaan merkki Shipping mark
SECKIN AKGUEL ERBAS

Päivämäärä Date
24.10.2023

Valmistajan merkki
Mark of the Manufacturer



Todistus Certificate
3B7

Laatumerkintä Quality Marking
SA516GR70MT ZT

Tarkastajan leima
Stamp of Inspector

Mxx

Toimitustyyppi Delivery type
TOTAL DELIVERY

Sulatus nro levy nro Cast No. Plate No.
XXXXX XXX XX XXX

Vastaanottajan leima
Stamp of Surveyor

Muut leimaukset
Other Stamps

Tuote Product
HEAVY PLATES
Laji Grade

Toleranssit Tolerances
ASME SA-20, 2021

Tekniset vaatimukset ja/tai viralliset määräykset Technical terms of Delivery and/or Official Regulations

SA516 GR 70 MT ZT ASME SA-516-2021
Laatuselvitys Quality Specifications
PRESS.VESSEL STEEL ASME CODE SEC II ED 2021 SA20

Positio Item	Mitat mm Dimensions mm	Merkki Marke	Kpl Pcs	Paino kg Weight kg	Sulatus levy nro Cast plate No	SP nro SP No	UT	MT	Turvamerkki Safety mark
-----------------	---------------------------	-----------------	------------	-----------------------	-----------------------------------	-----------------	----	----	----------------------------

NORM.PRECISION FLAME CUT STEEL PLATES FOR STEEL CONSTR.
ACC.TO SPEC.AL 111 1430-64 REV.7.ALL LIMITATIONS OF SA20 § 5.3 HAVE BEEN MET. MACHINED DRAWING: 3490021701-21 REV 02, ART.NO: B3350048901.
SURFACE CONDITION EN 10 163-2:2005 CLASS B3
ULTRASONIC TESTING ASME SA 578:2021 LEVEL C, S1
020 110.00 X3490021701-02 B23-653021-437829/ADE OMCF-440910 GF1 2 2062 40292 031 031 U

*** 2 2062

Raahe Steel Works

Täten todistamme, että toimitus on tilausvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and inspection

MINNA VALKAMA

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7

RTX00

AL Lund AB TQ-no 1079059 SELLED 2023-10-27



AINESTODISTUS TEST REPORT

ASME SA-20/2021/ASTM A20/2019

2/3

90353T-001

23.10.2023

Tilaja Purchaser
ALFA LAVAL TECHNOLOGIES AB
BOX 74
221 00 LUND SWEDEN
Tilaus nro Order No.
OMCF-440910

Tilauvahvistus Order Confirmation
90353T

Vastaanottaja Consignee
ALFA LAVAL TECHNOLOGIES AB
NÖBBELÖVS MOSSAVÄG/GF1
221 00 LUND SWEDEN
Asiakkaan merkki Shipping mark
SECKIN AKGUEL ERBAS

Päivämäärä Date
24.10.2023

AMT

Valmistajan merkki
Mark of the Manufacturer



Laji Grade
SA516 GR 70 MT ZT

Lisävaatimukset Additional requirements

Jatkuvavalettua happiterästä
Oxygen steel, continuous casting

Laatuselvitys Quality Specifications

Fully killed, Fine grain practiced

PRESS.VESSEL STEEL ASME CODE SEC II ED 2021 SA20

N 900C,T=1.1(MIN)XTHICKN(MM)

Pos. Item	Sulatus, k. erä nro Cast, test No	T-tila Cond	Tensile test														Taivutuskoe Bend test		Huom Nb	Päästö Tempering °C					
			K2	°C	RP02 MPa	RT05 MPa	REL MPa	REH MPa	RM MPa			A %			RE / RM	RM * A5	RAZ %				Keskiarvo Average	K5	D = X t		
020	40292 031	N	J1		330					520	2	3		50	80	200		28							
			1W																				32		
			5W																				35		

K2: J1=BOTTOM,TRANSV. 1W=RAZ %, TOP, A/SA770 5W=RAZ %, BOT, A/SA770

N =NORMALIZED

Raahe Steel Works

Täten todistamme, että toimitus on tilauvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and Inspection

MINNA VALKAMA

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HAMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7



ANALYYSITODISTUS ANALYSIS CERTIFICATE
ANALYSEBESCHEINIGUNG COMPOSITIO CHIMIQUE CERTIFICAT

3/3

90353T-001

23.10.2023

Sulatus nro Cast No Schmelzen Nr. No de coulée	Koe nro Test No Prüf Nr. Essai No	Positio Item Pos. Poste	Cekv Ceq Câq Cég Cekv	Analyyksi % Chemical composition % Chemisch Zusammensetzung % Composition Chimique % (*ppm)															Päivämäärä Date Datum Date	
					C	SI	MN	P	S	AL	NB	V	TI	CU	CR	NI	MO	CA	B	
40292		020	.43	.229	.37	1.14	.009	.003	.043	.016	.009	.003	.012	0.04	0.04	.003	.001	.0002		AMT

CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Raahe Steel Works

Testaus ja tarkastus
Prüfung und Kontrolle

Testing and Inspection
Essais et Contrôle

MINNA VALKAMA

Valtuutettu tarkastaja
Sachverständiger

Authorized inspection representative
inspector autorisé

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7

SSAB Europe Oy, Raahe Steel Works testing laboratories T002 and T010 are accredited by the FINAS accreditation service, accreditation requirement SFS-EN ISO/IEC 17025.

Steel manufactured and supplied by Raahe Steel Works is free from radiation.

AL Lund AB TQ-10 1079059 SELUED 2023-10-27



ULTRAÄÄNITARKASTUSPÖYTÄKIRJA / ULTRASONIC TEST REPORT

nro / no 46332



Levy nro / Plate no / Kohde / Object 40292 031	Osalevyt / Part plates / Kpl / Piece 11	Tilaus / Order 30390T / 020	Laatu / Steel grade SA516 GR 70 MT ZT
Levykoko / Size 110.00 x 2000 x 4800	Pinnanlaatu / Surface finish Valssattu / As rolled	Lämpökäsittelytila / Heat treatment ---	
Tarkastusohje / Inspection procedure A653	Tarkastusluokka / Inspection class C S1	Tarkastusstandardi / Inspection standard ASME SA-578/ASME SA-578M:2021 Level C S1	
Ultraäänilaitte / Ultrasonic equipment Krautkrämer USM 100 No: 2	Luotain / Probe SEB 4 Ø 24 mm 4 MHz	Nro / No 32	Laite ja luotaimet tarkastettu SFS-EN ISO 22232-3 mukaisesti / Equipment and probes checked according to SFS-EN ISO 22232-3
Perusvahvistus [dB] / Calibration gain [dB] 49	Keskialueen tarkastus / The body inspection 100% Tarkastus/Inspection		100 % tarkastetun reuna-alueen leveys/Width of 100 % edge testing -
Kalibrointi / Calibration Takaseinäkaiku/Back wall echo	Lisävaatimukset / Extra requirements		Huomautus / Notify
Lisävahvistus [dB] / Extra gain [dB] 6			
Pinta-alan määrittämenetelmä / Method for sizing of discontinuities ASME			
Siirtymiskorjaus [dB] / Transfer correction [dB] -			
Kytentäaine / Coupling media water			
Tulokset / Results			
Tarkastustulokset / Result of inspection ☒ Hyväksytty / Accepted ☐ Hylätty / Rejected			
Levyyn leimattu UT-luokka / Inspection class stamped on the plate			
Pvm ja paikka / Date and place 05.09.2023 Raahe	Tarkastaja / Inspector Ahti Lumijärvi	Allekirjoitus / Signature 	Pätevyys / Competence SNT-TC-1A-Level 1 UT
Pvm ja paikka / Date and place 05.09.2023 Raahe	Hyväksyjä / Acceptor Aki Haikola	Allekirjoitus / Signature 	Pätevyys / Competence EN ISO 9712 No.16175-UT2



VASTAANOTTOTODISTUS INSPECTION CERTIFICATE

ASME SA-20/2021/ASTM A20/2019

1/3

90353S-001

22.10.2023

Tilaja Purchaser
ALFA LAVAL TECHNOLOGIES AB
BOX 74

221 00 LUND SWEDEN

Tilaus nro Order No.

OMCF-440910

Tilausvahvistus Order Confirmation

90353S

Vastaanottaja Consignee
ALFA LAVAL TECHNOLOGIES AB
NÖBBELÖVS MOSSAVÄG/GF1

221 00 LUND SWEDEN

Asiakkaan merkki Shipping mark

SECKIN AKGUEL ERBAS

Päivämäärä Date

23.10.2023

Valmistajan merkki

Mark of the Manufacturer



Todistus Certificate

3B7

Laatumerkintä Quality Marking

SA516GR70MT ZT

Tarkastajan leima

Stamp of Inspector

Mxx

Toimitustyyppi Delivery type

TOTAL DELIVERY

Sulatus nro levy nro Cast No. Plate No.

XXXXX XXX XX XXX

Vastaanottajan leima

Stamp of Surveyor

Muut leimaukset

Other Stamps

Tuote Product

HEAVY PLATES

Laji Grade

SA516 GR 70 MT ZT ASME SA-516-2021

Laatuselvitys Quality Specifications

PRESS.VESSEL STEEL ASME CODE SEC II ED 2021 SA20

Toleranssit Tolerances

ASME SA-20, 2021

Tekniset vaatimukset ja/tai viralliset määräykset Technical terms of Delivery and/or Official Regulations

Positio Item	Mitat mm Dimensions mm	Merkki Marke	Kpl Pcs	Paino kg Weight kg	Sulatus levy nro Cast plate No	SP nro SP No	UT UT	MT MT	Turvamerkki Safety mark
-----------------	---------------------------	-----------------	------------	-----------------------	-----------------------------------	-----------------	----------	----------	----------------------------

NORM.PRECISION FLAME CUT STEEL STRUCTURES FOR STEEL CONSTR.

ACC.TO SPEC.AL 111 1430-64 REV.7.ALL LIMITATIONS OF SA20 § 5.3 HAVE BEEN MET. ART.NO: 3350038343.

SURFACE CONDITION EN 10 163-2:2005 CLASS B3

ULTRASONIC TESTING ASME SA 578:2021 LEVEL C, S1

010 100.00 X3490021678-01 B23-653021-437829/ADE OMC-440910 GF1 2 1944 23343 033 033 U

*** 2 1944

Raahe Steel Works

Täten todistamme, että toimitus on tilausvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and Inspection

MINNA VALKAMA

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HAMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-82101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7



AINESTODISTUS TEST REPORT

ASME SA-20/2021/ASTM A20/2019

2/3

90353S-001

22.10.2023

Tilaja Purchaser
ALFA LAVAL TECHNOLOGIES AB
BOX 74
221 00 LUND SWEDEN

Tilaus nro Order No.
OMCF-440910

Tilauvahvistus Order Confirmation
90353S

Vastaanottaja Consignee
ALFA LAVAL TECHNOLOGIES AB
NÖBBELÖVS MOSSAVÄG/GF1
221 00 LUND SWEDEN
Asiakkaan merkki Shipping mark
SECKIN AKGUEL ERBAS

Päivämäärä Date
23.10.2023

VJS

Valmistajan merkki
Mark of the Manufacturer



Laji Grade
SA516 GR 70 MT ZT

Lisävaatimukset Additional requirements

Jatkuvavalettua happiterästä
Oxygen steel, continuous casting

Laatuselvitys Quality Specifications

Fully killed, Fine grain practiced

PRESS.VESSEL STEEL ASME CODE SEC II ED 2021 SA20

N 900C,T=1.1(MIN)XTHICKN(MM)

Pos. Item	Sulatus, k. erä nro Cast. test No	T-tila Cond	Tensile test										Taivutuskoe Bend test				Huom Nb	Päästö Tempering °C
			K2	°C	RP02 MPa	RT05 MPa	REL MPa	REH MPa	1	RM MPa 2	3	A % 50 80 200	RE / RM	RM * A5	1	RAZ % 2 3	Keskiarvo Average	
010	23343	033	N	J1	316					500		28				61		
				1W												39		
				5W														

K2: J1=BOTTOM,TRANSV. 1W=RAZ %, TOP, A/SA770 5W=RAZ %, BOT, A/SA770

N =NORMALIZED

Raah Steel Works

Täten todistamme, että toimitus on tilauvahvistuksen mukainen.
We hereby certify that the material described above has been tested and complies with the terms of the order confirmation.

Testaus ja tarkastus Testing and inspection

MINNA VALKAMA

Valtuutettu tarkastaja Authorized inspection representative

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HÄMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7

RTX97

AL Lund AB TQ-no 1079060 SELUEED 2023-10-27



ANALYYSITODISTUS ANALYSIS CERTIFICATE
ANALYSEBESCHEINIGUNG COMPOSITIO CHIMIQUE CERTIFICAT

3/3
90353S-001
22.10.2023

Sulatus nro Cast No Schmelzen Nr. No de coulée	Koe nro Test No Prüf Nr. Essai No	Positio Item Pos. Poste	Cekv Ceq Cäq Cég Cekv	Analyyksi % Chemical composition % Chemisch Zusammensetzung % Composition Chimique % (*=ppm)															Päivämäärä Date Datum Date 23.10.2023		VJS
				C	SI	MN	P	S	AL	NB	V	TI	CU	CR	NI	MO	CA	B			
23343		010	.40	.203	.38	1.14	.005	.001	.038	.016	.005	.002	.009	0.03	0.04	.002	.001	.0003			

CEQ=C+Mn/6+(Cr+Mo+V)/5+(Ni+Cu)/15

Raahe Steel Works

Testaus ja tarkastus
Prüfung und Kontrolle

Testing and Inspection
Essais et Contrôle

SSAB Europe Oy, Raahe Steel Works testing laboratories T002 and T010 are accredited by the FINAS accreditation service, accreditation requirement SFS-EN ISO/IEC 17025.

Steel manufactured and supplied by Raahe Steel Works is free from radiation.

MINNA VALKAMA

Valtuutettu tarkastaja
Sachverständiger

Authorized inspection representative
inspecteur autorisé

Yhtiön nimi Company Name: SSAB Europe Oy
Kotipaikka Registered Office: HAMEENLINNA

Osoite Address: PL 93, P.O Box 93
FI-92101 RAAHE, FINLAND

Puhelin Telephone: 020 5911
+358 20 5911

Y-tunnus Business ID: 2389445-7

AL Lund AB TQ-70 1079060 SELUED 2023-10-27



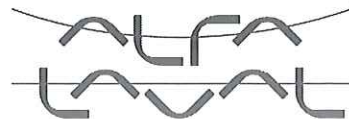
ULTRAÄÄNITARKASTUSPÖYTÄKIRJA / ULTRASONIC TEST REPORT

nro / no 36683



Levy nro / Plate no / Kohde / Object 23343 033	Osalevyt / Part plates / Kpl / Piece 11	Tilaus / Order 34333K / 010	Laatu / Steel grade SA516 GR 70 MT ZT
Levykoko / Size 100.00 x 2000 x 5200	Pinnanlaatu / Surface finish Valssattu / As rolled	Lämpökäsittelytila / Heat treatment --	
Tarkastusohje / Inspection procedure A653	Tarkastusluokka / Inspection class C S1	Tarkastusstandardi / Inspection standard ASME SA-578/ASME SA-578M:2021 Level C S1	
Ultraäänilaitte / Ultrasonic equipment KRAUTKRAMER USM 35 No: 4	Luotain / Probe SEB 4 Ø 24 mm 4 MHz	Nro / No 31	Laitte ja luotaimet tarkastettu SFS-EN ISO 22232-3 mukaisesti / Equipment and probes checked according to SFS-EN ISO 22232-3
Perusvahvistus [dB] / Calibration gain [dB] 45	Keskialueen tarkastus / The body inspection 100% Tarkastus/Inspection	100 % tarkastetun reuna-alueen leveys/Width of 100 % edge testing -	
Kalibrointi / Calibration Takaseinäkaiku/Back wall echo	Lisävaatimukset / Extra requirements	Huomautus / Notify	
Lisävahvistus [dB] / Extra gain [dB] 6			
Pinta-alan määrittäminen / Method for sizing of discontinuities ASME			
Siirtymiskorjaus [dB] / Transfer correction [dB] -			
Kytentäaine / Coupling media water			
Tulokset / Results			
Tarkastustulokset / Result of inspection ☒ Hyväksytty / Accepted ☐ Hylätty / Rejected			
Levyyn leimattu UT-luokka / Inspection class stamped on the plate			
Pvm ja paikka / Date and place 07.11.2022 Raahe	Tarkastaja / Inspector Aki Haikola	Allekirjoitus / Signature 	Pätevyys / Competence EN ISO 9712 No.16175-UT2
Pvm ja paikka / Date and place 08.11.2022 Raahe	Hyväksyjä / Acceptor Tuomo Pitkänen	Allekirjoitus / Signature 	Pätevyys / Competence SNT-TC-1A-Level 2 UT

Plate Heat Exchanger Certificate



Page 1(1)

Type	Serial no.	Manufacturing year
TK20-BWFX	AAM1007906	2023
Supplier	Customer	
Alfa Laval Benelux Peter Peeters	Alfa Laval Benelux BV	

Order references and pressure vessel data		Side1	Side2
Suppliers Order No.	P802994 / HX-4025 (batch 2)	Design pressure (bar)	-1.0 / 40.0
Manufacturers Order no.	B23-653021	Design temp (C)	0.0 / 100.0
Assembly drawing no.	AAM1007906	Volume (L)	178
		Heat load (kW)	8127
		Heating surface (m²)	103.90
Calculation drawing no.	Type registration no.		
3490015486-7	-		

List of materials

Article	Material specification	Identification / Heat no.	TQ no.
END CASSETTE 2	EN 10028-7 1.4401/SA240 316	0544966	1062213
END CASSETTE 1	EN 10028-7 1.4401/SA240 316	1TZM	1063762
STUD BOLT	EN ISO 898-1 8.8/SA193 B7/ADW7	018060	1072693
STUD BOLT	EN ISO 898-1 8.8/SA193 B7/ADW7	289056	1073327
CHANNEL CASSETTE	EN 10028-7 1.4401/SA240 316	0466912	1074258
NUT	EN ISO 898-2 8/SA194 2H	1ECF	1076179
CHANNEL CASSETTE	EN 10028-7 1.4401/SA240 316	0469159	1076267
TIGHTENING BOLT	EN ISO 898-2/SA193 B7/10269/SA194 2H	1EVW/1ECF	1078875
TIGHTENING BOLT	EN ISO 898-2/SA193 B7/10269/SA194 2H	1ETI/1ECF	1078879
FRAME PLATE	ASME SA516 70 MT ZT	40292-031	1079059
PRESSURE PLATE BLANK	ASME SA516 70 MT ZT	23343-033	1079060
GASKET	EPDMC	-	-

Pressure test according to procedure K206	Side1	Side2
Test pressure (bar)	52.0	52.0
Hold time (min)	30	30

Manufacturer

Alfa Laval Technologies AB, Sweden 2023-12-07

Quality Control Department

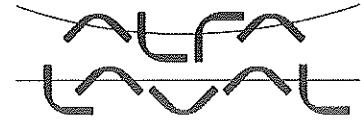
Certification

Design drawing and strength calculation reviewed and approved by the Design Manager of Alfa Laval Technologies AB, Sweden.
Review of manufacturing documents, material identification, manufacturing, testing, internal and external inspection has been done in accordance with existing requirements. The result was accepted.

Kel-Gor Q.A. Receiving
Kel-Gor Job No. 24-1301
Verified To ☒ P.O. ☒ Mts ☒ Spec ☒
Date Mac 28.25
Signed IF
Kel-Gor Q.A. Receiving
Kel-Gor Job No. _____
Verified To ☐ P.O. ☐ Mts ☐ Spec ☐ Code _____
Code _____ Ed. _____
Date _____
Signed _____

Alfa Laval Technologies AB	Telephone	Bank Giro	Bank	IBAN code SEK
Box 74	+46 46 36 65 00	689-4638	SE Banken, Stockholm, Sweden	SE48 5000 0000 0594 7100 0297
SE-221 00 LUND, Sweden	Telefax		BIC code	IBAN code EUR
www.alfalaval.com	+46 46 30 50 90		ESSESESS	SE09 5000 0000 0594 7820 1794
VAT number: SE556016864201				IBAN code USD
Reg. number: 556016-8642				SE60 5000 0000 0550 1829 3942
EORI number: SE 5560168642				

Plate Heat Exchanger Certificate



Page 1(1)

Type	Serial no.	Manufacturing year
TK20-BWFX	AAM1007907	2023
Supplier	Customer	
Alfa Laval Benelux Peter Peeters	Alfa Laval Benelux BV	

Order references and pressure vessel data		Side1	Side2
Suppliers Order No.	P802994 / HX-4025 (batch 2)	Design pressure (bar)	-1.0 / 40.0
Manufacturers Order no.	B23-653021	Design temp (C)	0.0 / 100.0
Assembly drawing no.	AAM1007907	Volume (L)	178
		Heat load (kW)	8127
		Heating surface (m²)	103.90
Calculation drawing no.	Type registration no.		
3490015486-7	-		

List of materials			
Article	Material specification	Identification / Heat no.	TQ no.
END PLATE 2	EN 10028-7 1.4401/SA240 316	0544966	1062213
END PLATE 1	EN 10028-7 1.4401/SA240 316	1TZM	1063762
STUD BOLT	EN ISO 898-1 8.8/SA193 B7/ADW7	018060	1072693
STUD BOLT	EN ISO 898-1 8.8/SA193 B7/ADW7	289056	1073327
CHANNEL PLATE	EN 10028-7 1.4401/SA240 316	0466912	1074258
NUT	EN ISO 898-2 8/SA194 2H	1ECF	1076179
CHANNEL PLATE	EN 10028-7 1.4401/SA240 316	0469159	1076267
TIGHTENING BOLT	EN ISO 898-2/SA193 B7/10269/SA194 2H	1EVW/1ECF	1078875
TIGHTENING BOLT	EN ISO 898-2/SA193 B7/10269/SA194 2H	1ETI/1ECF	1078879
FRAME PLATE	ASME SA516 70 MT ZT	40292-031	1079059
PRESSURE PLATE BLANK	ASME SA516 70 MT ZT	23343-033	1079060
GASKET	EPDMC	-	-

Pressure test according to procedure K206		Side1	Side2
Test pressure (bar)		52.0	52.0
Hold time (min)		30	30

Manufacturer

Alfa Laval Technologies AB, Sweden 2023-12-07

Quality Control Department

Certification

Design drawing and strength calculation reviewed and approved by the Design Manager of Alfa Laval Technologies AB, Sweden. Review of manufacturing documents, material identification, manufacturing, testing, internal and external inspection has been done in accordance with existing requirements. The result was accepted.

Alfa Laval Technologies AB Box 74 SE-221 00 LUND, Sweden www.alfalaval.com VAT number: SE556016864201 Reg. number: 556016-8642 EORI number: SE 5560168642	Telephone +46 46 36 65 00 Telefax +46 46 30 50 90	Bank Giro 689-4638	Bank SE Banken, Stockholm, Sweden BIC code ESSESESS	IBAN code SEK SE48 5000 0000 0594 7100 0297 IBAN code EUR SE09 5000 0000 0594 7820 1794 IBAN code USD SE60 5000 0000 0550 1829 3942
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AAM1007906

**Alfa Laval, Plate Heat Exchanger
Channel Plate Installation Description**

2023-06-05

Customer: Alfa Laval Benelux BV
Model : TK20-BWFX
Customer PO: 10135540

SU Order No: B23-653021-10
Serial No: AAM1007906 to AAM1007907

Plate material and Thickness: ALLOY 316L 0.80 mm

A Dimension: 835 mm

Grouping:	Hot side 1*125HW	Cold side 1*124HG
Sealing material:	HeatSeal™ A Clip-on	EPDMC ClipGrip™
Port Locations:	S4 -> S3	S2 -> S1

Connection material: Stainless steel Stainless steel

Port hole with flow on the gasketed side: U

Port hole sealed with O-ring: O

Plates are assembled with the gasket side facing the pressure plate.

Plate no.	Plate code no.	Plate Pattern	Punched corner of the plate				Flow direction on the gasket side of the plate
			upper left	lower left	lower right	upper right	
			S1	S2	S3	S4	
			=<=	=>=	=>=	=<=	
	FRAME PLATE						
	3350019044		O	O	O	O	
	W		O	O	U --<---	U	Down
1	39515548 63	TK20 BW2 A	U --<---	U	O	O	Up
	W		O	O	U --<---	U	Down
2	39515548 03	TK20 BW2 A	U --<---	U	O	O	Up
	W		O	O	U --<---	U	Down
3	39515548 03	TK20 BW2 A	U --<---	U	O	O	Up
4,	5,, 122	39515548 03 TK20 BW2 A					
	W		O	O	U --<---	U	Down
123	39515548 03	TK20 BW2 A	U --<---	U	O	O	Up
	W		O	O	U --<---	U	Down
124	39515548 03	TK20 BW2 A	U --<---	U	O	O	Up
	W		O	O	U --<---	U	Down
125	39515548 96	TK20 BW2 A					
	PRESSURE PLATE						
			T1	T2	T3	T4	

Article No:	Quantity:	Total
3350019044	1	2
39515548 63	1	2
39515548 03	123	246
39515548 96	1	2
	126	252

Kel-Gor Q.A. Receiving			
Kel-Gor Job No. <u>24-1001</u>			
Verified To	☐	☐	☐
Date	<u>24.06.23</u>	P.O.	Mts Spec
Signed	<u>AF</u>		
Kel-Gor Q.A. Receiving			
Kel-Gor Job No. _____			
Verified To	☐	☐	☐
Code	_____	Ed.	_____
Date	_____		
Signed	_____		