

CERTIFICATE OF CONFORMITY ZERTIFIKAT

Product Verification (Module F) according to Directive 97/23/EC
Prüfung des Produktes (Modul F) nach Richtlinie 97/23/EG

Certificate No.: USA 05/04/14/001
Zertifikat-Nr.

**Name and Address
of the Manufacturer:**
*Name und Anschrift
des Herstellers*

CHART Heat Exchangers
2191 Ward Ave.
La Crosse, WI 54601, USA

We herewith certify that the results of the examinations of the pressure equipment described below meet the requirements of Directive 97/23/EC. The pressure equipment complies with the EC Type-Examination and carries the mark as illustrated:

Hiermit wird bescheinigt, daß die Ergebnisse der an dem unten genannten Druckgerät vorgenommenen Prüfungen die Anforderungen der Richtlinie 97/23/EG erfüllen. Das Druckgerät entspricht dem Baumuster und ist mit dem abgebildeten Zeichen gekennzeichnet:

CE 0036

Final Assessment Report No.:
Abnahmeprüfbericht Nr.

P-USA-05-03-14-008

EC Type Examination Certificate No:
Zertifikat Nummer der EG Baumusterprüfung

USA 05/03/14/021

Scope of Approval:
Geltungsbereich

Aluminum Plate Fin Heat Exchanger,
Drawing No. 15770A
Serial Nos. 509.8-9, 509.8-10, 509.8-11, 509.8-12
same as above

Location of Manufacture:
Fertigungsstätte

Schaumburg, IL, April 08, 2005
Place, Date

Please see remarks on second page.

TÜV America, Inc.
Industry Service
5 Cherry Hill Drive
Danvers, MA 01923, USA

Phone: 978-739-7000
Fax: 978-777-7634
E-Mail: info_ics@tuvam.com

TÜV Industrie Service GmbH
TÜV SUD Gruppe
TÜV-CERT Certification Body
for Pressure Equipment

Notified Body No. 0036

Member of

CONFÉDÉRATION EUROPÉENNE

CEOC

D'ORGANISMES DE CONTRÔLE



Information regarding the TÜV CERT Certificate

This certificate is only valid for the referenced company and its facilities stated on the certificate. Only the Certification Body is allowed to transfer (assign) it to a third party.

The right to use the marking depicted on the certificate covers solely products, which match with the type approval and the specifications within the test report or within its complementary (additional) agreements.

Each product has to contain (be accompanied by) the necessary operating and assembly instructions.

Each product must bear the clearly visible identification of the manufacturer or importer as well as a type plate, in order to identify the compliance of the type approval with the product placed on the market.

The holder of the TÜV CERT certificate is obliged to continuously observe if the manufacture of the marked products complies with the test requirements; he is obliged to perform the control tests defined within the test requirements or by the Certification Body in an orderly manner.

Aside from the conditions referenced above, the conditions within the General Contract are effective for the TÜV CERT certificate. It is valid as long as the state of the art requirements on which the test (approval) was based, are effective, if it was not withdrawn prior on conditions within the General Contract.

If this certificate expires or is withdrawn it has to be returned to the Certification Body immediately.

2191 Ward Avenue
La Crosse, WI 54601, USA
Phone: 608.787.3333 Fax: 608.787.2141
www.chart-ind.com

EC DECLARATION OF CONFORMITY

Issued in accordance with the

PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC

Chart Heat Exchangers L.P.
2191 Ward Avenue
La Crosse, WI 54601 USA

We hereby declare that in accordance with the above directive, the product detailed below has been manufactured in accordance with conformity assessment modules B and F "EC Type Examination and Product Verification" as approved by TÜV Industrie Service GmbH TÜV Süd Gruppe (Notified Body No. 0036) of Westendstrasse 199, 80686 München, Germany under EC Certificate of Conformity USA 05/04/14/001, and EC Type Examination Certificate USA 05/03/14/021.

Product Description	Aluminum Plate Fin Heat Exchanger
Product Reference	15770A
Serial Number	509.8-9
Design Code	ASME Section VIII, Division 1, 2001 Edition and 2003 Addenda
Other Applied Standards	EN 288, EN 287, ASME Section IX / PED 97/23/EC
Other Applicable Directives	None

Signed: _____

Name: _____

Kenneth L. Rupp

Position: _____

Senior Principal Quality Engineer & Traffic Manager

Date: _____

April 12, 2005

Reviewed

TÜV SÜD deutschland Branch and Betrieb GmbH

Notified Body for PED to Pressure

Equipment Directive 97/23/EC

Testing Laboratory- APR 18 2005

T. Rupp

Anlage enclosure	2	zum Bericht to report
Prüf-Nr.	P-USA-05-03-14-001	
Inspect.-Nr.		
Blatt page	1 von from	4 Blättern pages



Industrie Service

CERTIFICATE ZERTIFIKAT

EC Type-Examination (Module B) according to Directive 97/23/EC

EG-Baumusterprüfung (Modul B) nach Richtlinie 97/23/EG

Certificate No.: USA 05/03/14/021

Zertifikat-Nr.

**Name and Address
of the Manufacturer:**

Name und Anschrift
des Herstellers

CHART Heat Exchangers
2191 Ward Ave.
La Crosse, WI 54601, USA

**We herewith certify that the type mentioned below meets the requirements of
Directive 97/23/EC.**

Hiermit wird bescheinigt, daß das unten genannte EG-Baumuster die Anforderungen der Richtlinie 97/23/EG erfüllt.

Final Assessment Report No.:

P-USA-05-03-14-008

Abnahmeprüfbericht Nr.

EC Type Examination Report No.:

P-USA-05-03-14-006

EG-Baumusterprüfbericht Nr.

Scope of Approval:

Geltungsbereich

Aluminum Plate Fin Heat Exchanger,
Drawing No. 15770A

Location of Manufacture:

Fertigungsstätte

same as above

The Validity of this Certificate expires

March 01, 2015.

It may be extended upon request.

Schaumburg, IL, March 29, 2005

Place, Date

Please see remarks on second page.

TÜV America, Inc.
Industry Service
5 Cherry Hill Drive
Danvers, MA 01923, USA

Phone: 978-739-7000
Fax: 978-777-7634
E-Mail: info_ics@tuvam.com

TÜV Industrie Service GmbH

TÜV SÜD Gruppe

TÜV CERT-Certification Body

for Pressure Equipment

Notified Body, ID No. 0036

TÜV SÜD Gruppe
Member of

CONFÉDÉRATION EUROPÉENNE

CEOC

D'ORGANISMES DE CONTRÔLE



Industrie Service

Information regarding the TÜV CERT Certificate

This certificate is only valid for the referenced company and its facilities stated on the certificate. Only the Certification Body is allowed to transfer (assign) it to a third party.

The right to use the marking depicted on the certificate covers solely products, which match with the type approval and the specifications within the test report or within its complementary (additional) agreements.

Each product has to contain (be accompanied by) the necessary operating and assembly instructions.

Each product must bear the clearly visible identification of the manufacturer or importer as well as a type plate, in order to identify the compliance of the type approval with the product placed on the market.

The holder of the TÜV CERT certificate is obliged to continuously observe if the manufacture of the marked products complies with the test requirements; he is obliged to perform the control tests defined within the test requirements or by the Certification Body in an orderly manner.

Aside from the conditions referenced above, the conditions within the General Contract are effective for the TÜV CERT certificate. It is valid as long as the state of the art requirements on which the test (approval) was based, are effective, if it was not withdrawn prior on conditions within the General Contract.

If this certificate expires or is withdrawn it has to be returned to the Certification Body immediately.

Test Plan for EC Type Examination of Pressure Equipment

Module: B	Test plan No: P-USA-05-03-14-023																
<p>Manufacturer/Person responsible for putting the equipment on the market: CHART Heat Exchangers 2191 Ward Ave. La Crosse, WI 54601, USA</p>																	
<p>Factory: same</p>																	
<p>Technical data of type/type family:</p>																	
Category:	IV																
Description of type/typefamily:	Plate Fin Heat Exchanger, Drawing No. 15770A, Sales Order 509.8																
Intended use:	Cryogenic Gas Service																
Type identification:	serial no. 509.8-x (x tbd)																
Manufacturer logo:	CHART																
Service pressure (max) PS [bar]	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Stream</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>Pressure [bar]</td> <td>7.5</td> <td>63.0</td> <td>63.0</td> <td>40.0</td> <td>30.0</td> <td>2.0</td> <td>2.0</td> </tr> </tbody> </table>	Stream	A	B	C	D	E	F	G	Pressure [bar]	7.5	63.0	63.0	40.0	30.0	2.0	2.0
Stream	A	B	C	D	E	F	G										
Pressure [bar]	7.5	63.0	63.0	40.0	30.0	2.0	2.0										
Service temperature (min/max) TS [°C]	-196/+65																
Volume [L]	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th>Stream</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> </tr> </thead> <tbody> <tr> <td>Volume [L]</td> <td>1408</td> <td>272</td> <td>178</td> <td>224</td> <td>147</td> <td>1597</td> <td>1968</td> </tr> </tbody> </table>	Stream	A	B	C	D	E	F	G	Volume [L]	1408	272	178	224	147	1597	1968
Stream	A	B	C	D	E	F	G										
Volume [L]	1408	272	178	224	147	1597	1968										
Test pressure pneumatic PH [bar]	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tbody> <tr> <td>Pressure [bar]</td> <td>11.3</td> <td>69.3</td> <td>69.3</td> <td>44.0</td> <td>33.0</td> <td>3.0</td> <td>3.0</td> </tr> </tbody> </table>	Pressure [bar]	11.3	69.3	69.3	44.0	33.0	3.0	3.0								
Pressure [bar]	11.3	69.3	69.3	44.0	33.0	3.0	3.0										
Test pressure hydrostatic PH [bar]	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tbody> <tr> <td>Pressure [bar]</td> <td>--</td> <td>94.5</td> <td>94.5</td> <td>60</td> <td>45</td> <td>--</td> <td>--</td> </tr> </tbody> </table>	Pressure [bar]	--	94.5	94.5	60	45	--	--								
Pressure [bar]	--	94.5	94.5	60	45	--	--										
Identification:	<p>serial no. 509.8-x (x tbd)</p>																
<p>(Additional data relevant for the type/type family, add if needed) --</p> <p>13786 gross</p> <p>7982</p>																	
Safety device: Set pressure [bar]																	
Maximum filling mass [kg]																	
Tare mass [kg]																	
<p>(delete non-applicable items)</p>																	



Test Plan for EC Type Examination of Pressure Equipment

Testing based on:

Directive: EU Pressure Equipment Directive 97/23/EC (PED), Annex I

Standards: ASME Section VIII Div. 1, 2001 Edition, 2003 Addenda
AD-2000 Guideline HP30

Deviations: --

Intended tests and examinations:

1. Design examination: ☒
2. Final assessment: ☒
3. Proof test: ☒ Test pressure PT see above Fluid: Air/N₂
[bar]:
4. Tests according to checklist test report: ☒

Measurements/examinations and results (CHECKLIST)		
1.	Qualifications of personnel for permanent joining	X
2.	Qualifications of procedures	X
3.	Certificates for base metal and filler materials	X
4.	Traceability of materials	X
5.	Certificates for heat treatments	n/a
6.	Production tests	X
7.	Qualifications for NDT personnel	X
8.	Certificates for non-destructive tests	X
9.	Calibration of measuring and test equipment	X
10.	Visual inspections	X
11.	Dimensional inspections	X
12.	Identification	X
13.	Certificates for repair and deviations	X
14.	Hazard analysis	X
15.	Drawing	X
16.	Operation manual	X

5. Tests of safety devices : ☐
6. Validation of measurement criteria, calibration ☒

Previously performed tests:



Test Plan for EC Type Examination of Pressure Equipment

Selection of test sample(s):	
Quantity:	--
Type:	--
Comments:	--



Test Plan for EC Type Examination of Pressure Equipment

The sample(s) is (are) representative for the type (type family). The tests listed above will be performed in compliance with the test requirements of the standards/regulations quoted in this test plan.

The tests will be performed to establish whether the solutions/standards adopted by the manufacturer meet the essential requirements of the Directive.

Inspection Body

Location:	Date:	TUV America, Inc. TUV Industry Service
Schaumburg, IL, USA	March 29, 2005	

Manufacturer:

Location:	Date:	CHART Heat Exchangers
La Crosse, WI, USA		

Certification Body for Pressure Equipment:

Location:	Date:	TÜV Industrie Service GmbH TÜV SÜD Gruppe
Schaumburg, IL, USA	March 29, 2005	

March 29, 2005

Pat Goethel
CHART Heat Exchangers
2191 Ward Ave.
La Crosse, WI 54601, USA

Report No. P-USA-05-03-14-006 on EC Type Examination (Module B) of:
Plate Fin Heat Exchanger, Sales Order 509.8, Drawing No. 15770A

Dear Mr. Goethel:

In accordance with your application from March 21, 2005 we have examined the submitted documentation according to Module B of the Pressure Equipment Directive 97/23/EC based on the code / standard ASME Section VIII Div. 1, 2001 Edition 2003 Addenda as specified in your submittal. The standards referred to in Article 5 of Directive 97/23/EC were not applied in full.
Result of the Examination:

- No objections were noted.
- The comments made in the pertaining documentation have to be observed.
- A re-submittal of the documentation is not required.
- Materials of construction must comply with the the requirements of the Particular Material Appraisal P-USA-05-03-14-007
- Deviations from Particular Material Appraisals P-USA-05-03-14-007 should not occur.
All material documentation has to be submitted to TÜV prior to final assessment.
- Suitable, non-standardized test processes and procedures that are used: none
- Suitable test / measurement results, and/or examinations and their results that are used: none

Other Remarks:

- The design / equipment for external fire was not part of this examination.
- Evidence of the approval of permanent joining procedures was submitted.
- Evidence of the approval of joining personnel was submitted.
- We have retained one copy each for our files.
- The examination results relate to the documents listed below only.
- A partial duplication of this report / approval without the written consent of the Notified Body is not permitted.

TÜV America Inc.
1821 Walden Office Square
Suite 316
Schaumburg, IL 60173

Phone: (847) 397-9847
Fax: (847) 397-9849
E-mail: info@tuvam.com
www.TUVamerica.com



America

Appeals Process:

An appeal against the results of this design examination can be filed verbally or in writing any time with TÜV America Inc., Industry Service, at above address.

Sincerely,

**TÜV Industrie Service GmbH
TÜV Süd Gruppe
TÜV-CERT Certification Body
for Pressure Equipment**



Annex:

Drawing Nos. 15770A Rev. B, 15770B Rev. A, 15770C Rev. A, and 15770NPCE Rev. 0
Design Calculations SDP54 ver. 2004.12.23 dated 28 Jan 05 drw 15770A Rev. A
Bill of Material Drw 15770A
EC Type Examination Report P-USA-05-03-14-006
Particular Material Appraisal P-USA-05-03-14-007



America

**Inspection Body of TÜV Industrie Service
GmbH TÜV Süd Gruppe
Notified Body ID No. 0036,
to Directive 97/23/EC**



Industrie Service

**Report on the Final Assessment
in accordance with Annex I, Section 3.2 of Directive 97/23/EC**

Customer:	Chart Heat Exchangers	Page:	1 of 3
Manufacturer:	Chart Heat Exchangers	Report No.:	P-USA-05-03-14-008
	2191 Ward Ave	Certificate No.:	USA 05/03/14/021
	La Crosse, WI 54601, USA		USA 05/04/14/001
Equipment Type:	Aluminum Plate Fin Heat Exchanger		

Test / Inspection Specification: Directive 97/23/EC for Pressure Equipment, Module B+F
Applied code / standard: ASME Section VIII Div. 1, 2001 edition, 2003 addenda

Marking / Labeling of the pressure equipment:

- Marking on: Nameplate
- Manufacturer's name and / or identification: Chart Heat Exchangers L. P.
 - Year of manufacture: 2005
 - Type / Serial number: 509.8-9, 509.8-10, 509.8-11, 509.8-12
 - Intended Use: Cryogenic Gas Service

Other identification information:

Chamber Designation:	A	B	C	D	E	F	G
Min./Max. allowable pressure PS [bar]:	7.5	63.0	63.0	40.0	30.0	2.0	2.0
Min./Max. allowable temperature TS [°C]:	-196/65	-196/65	-196/65	-196/65	-196/65	-196/65	-196/65
Volume V [Liter]:	1408	272	178	224	147	1597	1968
Fluid:	Gr. 1	Gr. 1	Gr. 1	Gr. 1	Gr. 1	Gr. 1	Gr. 1

EC-Type-examination on: March 23, 2005

by: Inspection Body of TÜV Industrie Service GmbH TÜV Süd Gruppe, Report No. P-USA-05-03-14-006
Module: B

Drawing / Document number or similar designation: 15770A Rev. B
15770B Rev. A
15770C Rev. A
15770NPCE Rev. 0

The documents were presented and are valid.

Final Assessments in accordance with Annex I Section 3.2.1 of the Pressure Equipment Directive on:

March 29, 2005 (units 509.8-9, 509.8-11)

March 30, 2005 (units 509.8-10, 509.8-12)

by: Inspection Body of TÜV Industrie Service GmbH TÜV Süd Gruppe.

Inspections and examinations and their results:

- The calibration labels showed that the inspection / measuring / test equipment used for the inspections was calibrated.
- The material certificates for the main pressure-bearing parts were presented and comply with the requirement.
- Evidence of the required qualifications of employed joining personnel and NDT-personnel was presented and is valid.
- Evidence of the required qualification of joining procedures was presented and is valid.



America

**Inspection Body of TÜV Industrie Service
GmbH TÜV Süd Gruppe
Notified Body ID No. 0036,
to Directive 97/23/EC**



Industrie Service

Report No.: P-USA-05-03-14-008 Page: 2 of 3

Final Assessment in accordance with Annex I Section 3.2.1 of the Pressure Equipment Directive (continued):

- Random visual inspection and dimensional checks were performed by the manufacturer and the Notified Body: Visual inspection of the main weld seams (e.g. header seams); dimensional check of the main components (core, heads). There were no objections.
- Implemented procedures to ensure traceability were reviewed and checked at random. There were no objections.
- Deviations from, amendments to or restrictions of the test / inspection specification: None
- Non-standardized test processes and procedures that were used: None
- Other documentation submitted by the manufacturer (title and/or unique identification): None

Proof (Pressure) Tests in accordance with Annex I Section 3.2.2

on: March 29, 2005 (units 509.8-9, 509.8-11)

March 30, 2005 (units 509.8-10, 509.8-12)

by: Inspection Body of TÜV Industrie Service GmbH TÜV Süd Gruppe

Chamber Designation:	A	B	C	D	E	F	G
Pneumatic Test Pressure (bar):	11.3	69.3	69.3	44.0	33.0	3.0	3.0
Pneumatic Pressure Test Medium:	Air/N ₂	Air/N ₂	Air/N ₂	Air/N ₂	Air/N ₂	Air/N ₂	Air/N ₂
Hydrostatic pressure test (water)	--	94.5	94.5	60	45	--	--
Hydrostatic Pressure Test Medium:	--	water	water	water	water	--	--

Conclusion: The Final Assessment was performed in compliance with the requirements of the Directive. The performance of the inspections / tests and their results showed no deviations.

Remarks:

- The test results cover only the tested equipment described here.
- A partial duplication of the test results without the written consent of the Notified Body is not permitted.

Based on the performed tests and inspections, and after approval by the Certification Body, there are no objections to affixing the CE marking and the identification number 0036.

Additional Notes:

- The pressure equipment was tested and inspected without constituent parts. Therefore, the testing and inspection of the constituent parts is still necessary.
- The pressure equipment may be subject to inspections prior to putting into service, and to periodic in-service inspections in accordance with the locally applicable rules and regulations.




America

Inspection Body of TÜV Industrie Service
GmbH TÜV Süd Gruppe
Notified Body ID No. 0036,
to Directive 97/23/EC



Industrie Service

Report No.:	P-USA-05-03-14-008	Page:	3 of 3
<p>TÜV Industrie Service GmbH TÜV Süd Gruppe Notified Body, ID No. 0036, to the Pressure Equipment Directive 97/23/EC</p> <p>For the Inspection Body:</p> <p>Schaumburg, IL March 24, 2005</p> <p> (Thomas Reiners, TÜV America Inc., Industry Service)</p> <p>Annexes:</p> <ul style="list-style-type: none">• 1: Copy of the material certificates for the main pressure bearing parts• 2: Copy of the manufacturer's Declaration of Conformity			