14th Floor, Centre Tower
3300 Bloor Street West
Toronto, Ontario
Canada M8X 2X4
Tel.: 416.734.3300
Fax: 416.231.1626
Toll Free: 1.877.682.8772

www.tssa.org

November 03, 2014

ROGER WENIGE
ENDRESS + HAUSER GMBH + CO KG
1 HAUPTSTRASSE
MAULBURG 79689
DE

Service Request Type.: BPV-National MB
Service Request No.: 1432740
Your Reference No.: LIQUIPANT TRANSDUCER FTL-OTL31-33 - 3 MFG SITES: GERMANY, CHINA & USA
Registered to.: ENDRESS + HAUSER GMBH + CO KG

Dear ROGER WENIGE,

Please find enclosed the original response from MB, registered under the CRN No.: 0F16950.54.

As all jurisdictional fees are handled by the Technical Standards and Safety Authority (TSSA), you do not pay any jurisdictions directly.

Should you have any questions or require further assistance, I will be happy to assist you.
For general enquiries, please contact a Customer Service Advisor at 1.877.682.TSSA (8772) or e-mail customerservices@tssa.org. When contacting TSSA regarding this file, please refer to the Service Request number provided above.

Yours truly,

Tanya Francis
Administrative Assistant_ BPV Engineering
Tel. : 416-734-3423
Fax : 416-231-6183
Email :tfrancis@tssa.org

**Inspection and Technical Services Manitoba**
500 - 401 York Avenue
Winnipeg Manitoba R3C 0P8
**T** (204) 945-3373
**F** (204) 948-2309
www.firecomm.gov.mb.ca/codes_steam_pressure.html

16 September 2014

TSSA
3300 Bloor Street West, 14th Floor Centre Tower
Toronto, ON
M8X 2X4

Attn: Tanya Francis

**REGISTRATION OF VALVES AND FITTINGS**

**Manufacturer**: ENDRESS + HAUSER GMBH CO.KG

The design(s) for the following Valves/Fittings has been received by us and has been examined and accepted for registration in the Province of Manitoba as follows.

| DRAWING / CATALOGUE | CRN | FILE |
|---|---|---|
| LIQUIPHANT TRANSDUCER FTL-OTL31-33<br>SEE SCOPE OF REGISTRATION<br>DOC:960016105 R.0 | 0F16950.54 | 34279 |

**An invoice covering survey and registration fees is enclosed.**

***NOTE:*** *CRN registered under reciprocal agreement & is conditional based on compliance with the notes set by the original issuing Jurisdiction:* ***TSSA****. See attached stamped "this is part of CRN" for scope of registration. This registration expires* ***June 19, 2024.***

This registration is valid until the indicated expiry date only if the Manufacturer maintains a valid quality management system approved by an acceptable third-party agency until that date. Should the approval of the quality management system lapse before the expiry date indicated above, this registration shall become void.

The registration of this design does not relieve the manufacturer, the owner or his agent of the responsibility for the design or construction of a fitting in accordance with the applicable Acts, Codes and Standards. Inspection and Technical Services assumes no responsibility by registering designs, examining plans and/or inspecting equipment or facility.

Yours truly,

Rabie Harb

**Rabie Harb, E.I.T.**
*Design Surveyor*
Office of the Fire Commissioner
Inspection and Technical Services Manitoba
500 - 401 York Avenue
Winnipeg, Manitoba, R3C 0P8
Phone: 204-945-3373
Email: rabie.harb@gov.mb.ca

# MANITOBA

**DEPARTMENT OF LABOUR**
**AND IMMIGRATION**
**500 – 401 York Avenue**
**Winnipeg, Manitoba R3C 0P8**

**STATUTORY DECLARATION**
**REGISTRATION OF FITTINGS**

**(a) Design Qualification**

1. Michael Frei
(See Note 2)

Quality Assurance Manager
(Position e.g.: president, plant manager, chief eng.)

of Endress+Hauser GmbH+Co. KG; Endress + Hauser(Suzhou) Automation Instr. Co. Ltd.; E+H(India); Endress+Hauser (USA) Automation Instrumentation, Inc.
(Name of company)

located at DE-79689 Maulburg, Germany; 215021 Suzhou (P.R. China); Aurangabad - 431136; 2340 Endress Place, Greenwood, IN, 46143 USA
(Plant Address)

do solemnly declare that the fittings listed hereunder, which are subject to the Boilers & Pressure Vessels Act,

✓ comply with all the requirements of the ANSI/ASME codes as to their dimensions.

or

are not covered by the provisions of the ANSI/ASME codes, and are therefore constructed to comply with _____ code or standard, and are designed to the best current engineering practice, as shown by the supporting test data.

**(b) Quality Control of Manufacture**

I further declare the manufacture of these fittings is controlled by a quality control program which complies with the requirements of ISO9001:2009, and has been verified by the following authority or authorized agency SQS.

The fittings covered by this declaration, for which I seek registration, are Category F

In support of the application, the following information, calculations and/or test data are attached:

Technical Description 960016068--; Scope of Registration Summary 960016105--; Drawing 960015905--

Declared before me at _____ in the province/state of _____ the _____

day of _____ AD 20_____

A (commissioner for oaths)

_____ Michael F
Signature of Declarer

**(For Official Use Only)**

The application is accepted for registration in Category "F" in accordance with the Boilers and Pressure Vessels Act and CSA Standard B51.

This registration must be revalidated after ten (10) years from the date of acceptance.

June 19, 2024

Registered Number CRN ØF16950.54 For the Chief Inspector

Rabie Yard Date: Sept 16, 2014

**Notes:**
**(1)** *This form shall be completed and signed by the president or highest official in the manufacturing plant where the fitting is produced.*
**(2)** *Two completed copies of Statutory Declaration form together with two copies of Catalogs, drawings or Bulletins illustrating above fittings shall be submitted.*
**(3)** *All fittings are required to be registered in the name of the Manufacturer.*

**File No. 1 UR 900 / 2013**

## Certification

I hereby certify that the document overleaf was signed in my presence on this day, the 31st of July 2013 , by Mr.

**Michael F r e i ,** born on the 7th of December 1953,
of Hauptstr. 1, D-79689 Maulburg / Germany,

who is personally known to me,

acting as Quality Assurance Manager of

**Endress + Hauser GmbH + Co. KG**, Hauptstr. 1, D-79689 Maulburg / Germany.

Schopfheim, the 31st of July 2013

Klein
Oberjustizrat, notary public

NOTARIAT SCHOPFHEIM

## 1.2.2 Scope of Registration

**Table 1.2.2 – Scope of Registration Summary - Notes:** Refer to drawing E+H drawing 960015905 - -.

| | Process connection (please refer to drawing 960015905--) | | Materials of Construction | Maximum Design Pressure (bar) and Temperature (°C) |
|---|---|---|---|---|
| | **Design** | **Pressure components** | | |
| **LIQUIPHANT** | ISO 2852 | DN25-38 (1" to 1-1/2"), DN40-51 (2") | UNS S31603, SA-479, (316L, 1.4435, 1.4404)<br>UNS S31603, SA-312, (TP316L, 1.4435, 1.4404) | 25 bar @ -40°C…+150°C |
| | DIN 11851 Tube connection and slotted nut | DN25, DN32, DN40, DN50 | | DN25, DN32, DN40:<br>40 bar @ -40°C…+100°C<br>25 bar @ -40°C…+140°C<br>DN50:<br>25 bar @ -40°C…+140°C |
| | SMS Adapter connection and slotted nut | ≤ 1-1/2" | | 25 bar @ -40°C…+150°C |
| **FTL31**<br>**FTL33**<br>**OFTL31**<br>**OFTL33** | E+H proprietary weld adapter | ≤ ø65mm | | 25 bar @ -40°C…+150°C |
| | Varivent | F (DN25), N (DN32-DN162) | | 25 bar @ -40°C…+150°C |
| | Pipe Thread standard DIN/ISO 228 | G1/2", G3/4", G1" | | 40 bar @ -40°C…+150°C |
| | Pipe Thread standard DIN/ISO 228 | G3/4", G1" (including welding boss) | | 40 bar @ -40°C…+100°C<br>25 bar @ -40°C…+150°C |
| | ASME B1.1 DIN/ISO 13 | M24 x 1.5 | | 40 bar @ -40°C…+150°C |
| | ASME B1.20.1-1983 NPT Thread | NPT 1/2", NPT 3/4", NPT 1" | | 40 bar @ -40°C…+150°C |
| | DIN EN 10226-1 Thread | Threaded: R 1/2", R3/4", R1" | | 40 bar @ -40°C…+150°C |
| | Flush mounted for welding neck 1" | G1" aligned (including welding boss)<br>Rd52 (including welding boss) | | 40 bar @ -40°C…+100°C<br>25 bar @ -40°C…+150°C |
| | | Extension Tube | UNS S31603, SA-312, (TP316L, 1.4435, 1.4404)<br>UNS S31603, SA-479, (316L, 1.4435, 1.4404) | 40 bar @ -40°C…+150°C |
| | | Fork | MIM-316L (B 883-97) | 40 bar @ -40°C…+150°C |

Inspection & Technical Services Manitoba
Office of the Fire Commissioner
Manitoba
THIS IS PART OF CRN
ØF1695054

## 1.2.3 Material Specifications

### Table 1.2.3 Material Specifications and Design Temperatures

| Part | Listed Material | Temperature Range |
|---|---|---|
| **Liquiphant Transducer** | UNS S31603, A-479, (316L, 1.4435, 1.4404)<br>UNS S31603, A-312, (TP316L, 1.4435, 1.4404)<br>ASTM B883, MIM-316L | -40 °C to 150°C |

| Name and Form [1,2] | UNS | Min. Tensile (ksi) [1] | Min. Yield (ksi) [1] | Maximum Allowable Stress (psi) up to 302°F [1] |
|---|---|---|---|---|
| ASTM B883, MIM-316L | -- | 65 | 20 | 13,300 |
| UNS S31603, A-479, (316L, 1.4435, 1.4404) | S31603 | 70 | 25 | 16,676 |
| UNS S31603, A-312, (TP316L, 1.4435, 1.4404) | S31603 | 70 | 25 | 16,676 |

**NOTES**

[1] Per ASME B31.3-2012 table A-1

[2] Alloy types and grades with superior physical and chemical properties permissible.

[3] Note that all E+H alloys are dual listed, and comply to International, European and ASME standards.

| | Process connection | | Method qualifying to CSA B51(Please refer to drawing 960015905--)<br>Proof tests results and calculations in Appendix B of this report |
|---|---|---|---|
| | **Design** | **Pressure components** | |
| **LIQUIPHANT**<br><br>**FTL31**<br>**FTL33**<br><br>**OFTL31**<br>**OFTL33** | ISO 2852 | DN25-38 (1..1-1/2"), DN40-51 (2") | o Valid CRN 0F15498.5C<br>o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii)<br>o Proof test reports: 970004359, 970004360, 970004361 (Appendix B of this report) |
| | DIN 11851 Tube connection and slotted nut | DN25, DN32, DN40, DN50 | o Valid CRN 0F15498.5C<br>o Pressures and temperatures per DIN 11851 published standard. (section 1.5 of report) |
| | SMS Adapter connection and slotted nut | ≤ 1-1/2" | o Valid CRN 0F15498.5C<br>o ASME B31.3 304.7.2 (d) detailed stress analysis (Section 1.8 of this report) |
| | E+H proprietary weld adapter | ≤ ø65mm | o Valid CRN 0F15498.5C<br>o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii)<br>o Proof test result: 970004363 (Appendix B of this report) |
| | Varivent | F (DN25), N (DN32-DN162) | o Valid CRN 0F15498.5C<br>o Detailed stress analysis - B31.3 para. 304.7.2 (d) (Section 1.6.1 of this report) |
| | Pipe Thread standard DIN/ISO 228 | G1/2", G3/4", G1" | o Valid CRN 0F15498.5C<br>o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii)<br>o Proof test reports: 970004356, 970004357 (Appendix B of this report) |
| | Pipe Thread standard DIN/ISO 228 | G3/4", G1" (including welding boss) | o Valid CRN 0F15498.5C<br>o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii)<br>o Proof test report: 970004358 (Appendix B of this report) |
| | ASME B1.1 DIN/ISO 13 | M24 x 1.5 | o Valid CRN 0F15498.5C<br>o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii)<br>o Proof test report: 970004363 (Appendix B of this report)<br>o ASME B31.3 table 326.1: ASME B1.13M Non-Mandatory Appendix B (Section 1.3.2 and 1.3.3 of this report) |
| | ASME B1.20.1-1983 NPT Thread | NPT 1/2", NPT 3/4", NPT 1" | o Valid CRN 0F15498.5C<br>o ASME B31.3 paragraph 314.2.1(Section 1.3.1 of this report) |
| | DIN EN 10226-1 Thread | Threaded: R 1/2", R3/4", R1" | o ASME B31.3 paragraph 314.2. (Section 1.3.1 of this report) |
| | Flush mounted for welding neck 1" | G1" aligned (including welding boss)<br>Rd52 (including welding boss) | o Valid CRN 0F15498.5C (full version) & 0F11261.5C (Aligned)<br>o Proof test results witnessed by an authorized inspector per CSA B51 para. 4.2.6 (viii)<br>o Proof test report: 970004362, 970004357, 970004361, 970004359, 970004363 (Appendix B of this report) |
| | | Extension Tube | o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii)<br>o Proof test results: 970004356 (Appendix B of this report) |
| | | Fork | o Proof test results witnessed by an authorized inspector - CSA B51 para. 4.2.6 (viii)<br>o Proof test results: All of the above. (Appendix B of this report) |