



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

This certificate is issued to:

PRODUCER	SERTO AG Langfeldstrasse 117 8500 Frauenfeld Switzerland
DESCRIPTION	SERTO metric brass bite type compression ferrule tube unions in conjunction with copper pipes
TYPE	SERTO 4000 Series / Program Ms-M
APPLICATION	For use as general purpose in piping systems for liquids or gases compatible with the materials of construction on board of ships classed or intended for classification with Lloyd's Register. <u>Restrictions:</u> -Pressure piping systems that are required to remain operational after a fire casualty
RATINGS	For copper pipes pipe sizes: Ø 2 -35 mm Nominal pressure up to: 250 - 16 bar* Temperature range: - 40°C to + 180°C For temperatures exceeding 120°C the max. pressure is to be reduced to 75 %.
OTHER CONDITIONS	*) The minimum pipe thicknesses are to be in compliance with the Rules. The manufacturer's installation instruction is to be sought.
STANDARDS	Lloyd's Register's Rules and Regulations for the Classification of Ships, 2013.

Certificate No.	14/20006
Issue Date	16 January 2014
Expiry Date	15 January 2019
Sheet	1 of 2


Torsten Schroeder
Hamburg Technical Support Office
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group



Lloyd's
Register

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. HDS/ENS 30344-14, Issue No. 0 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No.	14/20006
Issue Date	16 January 2014
Expiry Date	15 January 2019
Sheet	2 of 2

Torsten Schroeder
Hamburg Technical Support Office
Lloyd's Register EMEA

Lloyd's Register EMEA
71 Fenchurch Street, London EC3M 4BS

Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as the 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.



Marine Design Appraisal Document

Lloyd's Register EMEA
Hamburg Technical Support Office
Am Sandtorkai 41
20457 Hamburg
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
E-mail: hamburg-technical-support@lr.org

Date
16 January 2014

Please quote this reference number on all future communications
HPC 1210436/30344-14/TS/hu

**THE LLOYD'S REGISTER'S TYPE APPROVAL SYSTEM, 2002
ISSUED TO: SERTO AG
FOR: SERTO 4000 SERIES / PROGRAM MS-M
TYPE APPROVAL CERTIFICATE NO. 14/20006**

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register's Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

COMMENTS

1. For essential systems as required by the Rules the manufacturer's material certificate may be acceptable.
2. The copper pipe dimensions are to be in compliance with Part 5, Chapter 12, Section 3 of the Rules.
3. The manufacturer's list of chemical resistance of piping components is to be observed.
4. Copper pipes are particularly susceptible to perforation by corrosion / erosion and should only be used for low water velocities and where there is no excessive local turbulence.

DRAWINGS

Drawing-No.	Rev.	Title
-	-	Set of sectional drawings for several pipe coupling sizes

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group Limited

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Lloyd's Register EMEA
Hamburg Technical Support Office
Am Sandtorkai 41
20457 Hamburg
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
E-mail: hamburg-technical-support@lr.org

Date
16 January 2014

Please quote this reference number on all future communications
HPC 1210436/30344-14/TS/hu

APPROVAL DOCUMENTATION

Form 2571	Application for Type Approval	06.03.2013
4M	SERTO Catalogue Brass M 4m.1-4M.96	15 / 2013
Appendix a, (a.17, a.18)	Technical information, Installation instruction	-

TEST REPORTS

HPC 1210436	LR-Visit Report - Inspection and surveillance of production facilities in Aadorf / Switzerland including witnessing of performed tests for Nitrogen leakage, burst pressure, re-assembly, pull-out for SERTO Brass-M tube unions size \varnothing 6 x 1mm, \varnothing 15 x 1.5 mm and \varnothing 28 x 2 mm.	18.07.2013
K079/13	Combined pressure pulsation and vibration tests of compression ferrule unions according to IACS P2.11.5.5.3 for Brass-M compression ferrule unions with CuDHP pipes sizes OD 6 mm, OD 15 mm and OD 28 mm	21.11.2013



Torsten Schröder
Senior Specialist
Engineering Systems
Hamburg Technical Support Office
Lloyd's Register EMEA
T +49 (0)40 328107-463
E torsten.schroeder@lr.org

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group Limited

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.

Lloyd's Register EMEA
Hamburg Technical Support Office
Am Sandtorkai 41
20457 Hamburg
Telephone +49 (0)40 328107 - 0 Fax +49 (0)40 328107 - 480
E-mail: hamburg-technical-support@lr.org

Date
16 January 2014

Please quote this reference number on all future communications
HPC 1210436/30344-14/TS/hu

Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the LR Type Approval System Procedure.

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

Lloyd's Register EMEA
Is a subsidiary of Lloyd's Register Group Limited

Lloyd's Register Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'Lloyd's Register'. Lloyd's Register assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant Lloyd's Register entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.