DNV·GL

Certificate No:
TAP00001CA

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
WALRing, WALPRO, WALPRO-X

Issued to
Eaton Germany GmbH
Lohmar, Nordrhein-Westfalen, Germany

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature range:	**Refer to certificate.**
Max. working press.:	**up to 800 bar. Refer to certificate.**
Sizes:	**6mm up to 42mm.**

Issued at **Hamburg** on **2019-05-03**
This Certificate is valid until **2024-05-02**.
DNV GL local station: **Essen**

Approval Engineer: **Hagen Markus**

for **DNV GL**

Olaf Drews
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

WALRING

The WALRING tube fitting/pipe coupling system consists of a nut with integrated two edge cutting ring plus captive seal and support ring, tube fittings / pipe couplings acc. to DIN 2353 and DIN EN ISO 8434-1.

WALPRO, WALPRO-X

The WALPRO (carbon steel) and WALPRO-X (stainless steel) tube fitting/pipe coupling system consists of a nut, two edges cutting ring and tube fitting bodies acc. to DIN 2353 and DIN EN ISO 8434-1.

Nuts and cutting rings

Component	Type designation	Applicable system
Profile ring	P-R	WALPRO, WALPRO-X
Nut	M	WALPRO, WALPRO-X
	W-R	WALRING
Captive seal	WF-WD	WALRING

Surface protection of components acc. to Eaton Germany GmbH; Walterscheid Catalogue "E - MEFI - MC001 - M2".

Scope

This type approval includes the tube fittings / pipe couplings, accessories machines and tools as specified in Eaton Germany GmbH; Walterscheid Catalogue "E - MEFI - MC001 - M2", excluding:

- Banjo couplings, Swivel banjos, Double banjo coupling, Swivel elbow coupling
- Ball valves, Non-return valves, Shuttle valves, Non-return valve with male stud
- Compopact diverter valve, Three-way valve
- Flange fittings, Welding nipple

For the following pipe coupling types limitations as specified in the Rules Pt.4, Ch.6 are to be observed:

Bulkhead couplings
Bulkhead coupling types GSS and WSS are not approved through tank walls, watertight decks and bulkheads.
For application through fire divisions a separate type approval is required.

Welded bulkhead coupling type ESS is approved through tank walls, watertight decks and bulkheads. Through fire divisions the coupling and connected pipe is to be provided with same insulation material as used for the divisions. Total insulation length of 450mm.

Pipe couplings where pressure -tight joints are made on the threads are limited in the application as follows:

- Pipe couplings with parallel thread are not approved for pipe class I and II.
- Tapered or parallel thread is not approved for toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur.

Refer to DNVGL Rules, Pt.4, Ch.6 – Section 9 – 5.2.6.

Overview of threaded pipe couplings with limitations

Type	Name
WES..RK/WES..MK/WES…NPT P-WEV..RK, P-WEV..MK, P-WEV..NPT	Male stud elbow
GES..RK/GES..MK/GES..NPT, P-GEV..RK/P-GEV..MK /P-GEV..NPT	Male stud coupling
EGESD….NPT	Stud standpipe adaptor

All other pipe couplings with thread connection not listed in the above table may be used without limitations.

Materials

Component	Material designation and standards[1]	
Profile ring P-R	WALPRO-X	1.4571
Nut M, W-R	WALPRO WALRING	Carbon steel
Pipe couplings	WALPRO-X	1.4571 CuNiFe1Mn
	WALPRO	Carbon steel DIN 3859-1, Table 2
Tubes[1,2]	Stainless steel 1.4401, 1.4571	DIN EN 10216-5 Tolerances: DIN EN 10305-4
	Carbon steel St 37.4, St 52.4	DIN EN 10305-4 Tolerances: DIN EN 10305-4
	CuNiFe1Mn[3]	--
	TUNGUM®[3]	CW700R
Sealing	NBR, FPM, EPDM	Eaton specification

Notes
[1] For selection of tubes and detailed material designation refer to Eaton Germany GmbH; Walterscheid Catalogue "E - MEFI - MC001 - M2".
[2] Minimum tube wall thickness acc. to DNV GL Ship Rules Pt.4, Ch.6 - Section 9, 1.2 Minimum wall thickness. Regarding material certificates Section 2, Table 3 Material certificates is to be observed.
[3] In connection with WALPRO-X pipe couplings

Application/Limitation

The WALRING, WALPRO, WALPRO-X tube fitting/pipe coupling systems are type approved for application in pipe class I, II and III-piping systems, as specified in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 9, Table 11 and 12 - Compression couplings - Bite type - Fire resistant type.

The pipe couplings are not approved for application in high pressure fuel injection systems of combustion engines.

The use of WALPRO-X pipe couplings made of CuNiFe1Mn for connection of pipe made of CuNiFe and Tungum is limited to piping systems with static load.

Application in sea water system is not approved (cutting ring made of 1.4571). May be used for other suitable media and installation on open deck.

Selection of materials

It shall be noted that the selection of the materials considers the intended service condition and installation area of the piping system. In particular, the resistance to corrosion, erosion, oxidation and other deterioration which may occur during intended service life.

Reference is made to DNVGL Rules Pt.4, Ch.6 – Section 2 – Materials.

Sizes and pressure range[1]

WALRING, WALPRO Carbon steel				**WALPRO-X Stainless steel**				**WALPRO-X CuNiFe**		**WALPRO-X, Tungum**	
L Series		**S Series**		**L Series**		**S Series**					
Pipe O.D. mm	**PN**	**Pipe O.D. mm**	**PN**	**Pipe O.D. mm**	**PN**	**Pipe O.D. mm**	**PN**	**Pipe O.D. mm**	**PN bar**	**Pipe O.D. mm**	**PN bar**
6-10	500 bar	6-10	800 bar	6-12	400 bar	6-16	630 bar	6-22	180 bar	6-38	330 bar
12-18	400 bar	12-16	630 bar	15-18	315 bar	20-30	400 bar	30	150 bar		
22-42	250 bar	20-38	420 bar	22-42	160 bar	38	315 bar				

Notes

[1] Max. working pressure of the piping system depend on selected pipe material, pipe wall thickness and individual PN of selected tube fittings.

Temperature range[2]

The temperature range for the fittings are limited by the selected soft seal material and/or fitting material.

Carbon steel	-20ºC[1] to +120ºC
Stainless steel	-55ºC to + 400ºC
CuNiFe, Tungum	-55ºC to + 200°C
NBR	-35ºC to +100ºC
FPM	-25ºC to +200ºC
EPDM[2]	-45ºC to +175ºC

Notes

[1] Lowest medium temperature -20°C and lowest environmental temperature -40°C. Refer to DIN 3859-1.

[2] For service temperatures above 120°C (Carbon steel) and above 50°C (Stainless steel) the pressure reductions factors specified in Eaton Germany GmbH; Walterscheid Catalogue "E - MEFI - MC001 - M2" are to be observed.

Temperature range examples

Stainless steel pipe fitting with NBR sealing	- 35°C up to +100°C
CuNiFe pipe fitting with FPM sealing	- 45°C up to +175°C

Assembling and Installation

For the assembling and installation the instructions specified in Eaton Germany GmbH Walterscheid Catalogue "E - MEFI - MC001 - M2" are to be observed.

Type Approval documentation

Tests carried out

Test sope in accordance with DNV Type Approval Programme No.5-792.20,
GL VI-7-8 – Part 6 Requirements for Mechanical Components and Equipment and DNVGL CP-0185.

Marking of product

Component	Marking	Example
Fitting body	Eaton sign, material supplier code.	, 13
Cutting ring Walpro	Eaton unique outer profile	
Nut	Eaton sign, size, series	, 30 S
Captive seal	Colour	NBR: black, EPDM:purple FPM: green

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to DNVGL-CP-0338, Sec.4.

End of certificate