

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings with Bolts Not Covered by a National Standard**with type designation(s)
Style 77

Issued to

Victaulic Company
EASTON PA, United States

is found to comply with

DNV Classification of Ships & HSLC Pt.4 Ch. 6 "Piping Systems"
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
Det Norske Veritas' Standards for Certification 2.9 No. 5-792.20**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

Temperature range:	Grade E / EPDM -30°F to +230°F (-34°C to +110°C) Grade T (Type A)
Max. working press.:	Nitrile: -20°F to +180°F (-29°C to +82°C)
Sizes:	25 bar (363 psi)
	2" to 12" steel piping. 3/4" to 10" Cu-Ni piping.

This Certificate is valid until **2018-06-30**.Issued at **Høvik** on **2015-08-04**for **DNV GL**DNV GL local station: **New York**Approval Engineer: **Tom Berg-Nielsen**

Marianne Spæren Marveng
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

Grooved pipe couplings. Victaulic Style 77 flexible coupling.

Nominal sizes:

- 2" to 12" (50 to 300mm) for steel piping
- 3/4" to 10" (20 to 250 mm) for Cu-Ni Class 200 piping grooved end pipes and for grooved end fittings in configurations of 45° and 90° elbows and tee's.

Design:

Grooved pipe and fittings are joined by couplings. Sizes ¾" – 12" (20-300mm) are two piece cast housings. The sealing is provided by a rubber gasket, internal to the coupling.

Materials:

Coupling housings: Ductile iron to ASTM A-536 65-45-12

Bolts and nuts: Carbon steel ASTM A-183 heat-treated to 110 000 psi minimum tensile strength

Gasket: Grade E (EPDM) and Grade T (type A) Nitrile

The approval is also valid for 90/10 Cu-Ni Class 200 pipe and fittings, supplied with grooved ends according to manufacturer's specification.

Application/Limitation

The Victaulic coupling Style 77 may be used in the following systems:

Systems			Systems		
Flammable fluids (Flash point ≤ 60 °C)			Fresh water		
1	Cargo oil lines	+ 5)	21	Cooling water system	+ 1)
2	Crude oil washing lines	+ 5)	22	Condensate return	+ 1)
3	Vent lines	+ 3)	23	Non-essential system	+
Inert gas			Sanitary/Drains/Scuppers		
4	Water seal effluent lines	+	24	Deck drains (internal)	+ 4)
5	Scrubber effluent lines	+	25	Sanitary drains	+
6	Main lines	+ 2) 5)	26	Scuppers and discharge (overboard)	÷ (no)
7	Distribution lines	+ 5)			
Flammable fluids (Flash point > 60°C)			Sounding/ vent		
8	Cargo oil lines	+ 5)	27	Water tanks/Dry spaces	+
9	Fuel oil lines	+ 3) 2)	28	Oil tanks (flash point > 60°C)	+ 2) 3)
10	Lubrication oil lines	+ 2) 3)			
11	Hydraulic oil	+ 2) 3)			
12	Thermal oil	+ 2) 3)			
Sea Water			Miscellaneous		
13	Bilge lines	+ 1)	29	Starting/control air	-(no)
14	Fire main and water spray	+ 3)	30	Service air (non-essential)	+
15	Foam systems	+ 3)	31	Brine	+
16	Sprinkler system	+ 3)	32	CO2 system	-(no)
17	Ballast system	+ 1)	33	Steam	-(no)
18	Cooling water system	+ 1)			
19	Tank cleaning services	+			
20	Non-essential system	+			

Slip-on joints allowed for systems marked +, not allowed marked -.

Job Id: **262.1-009291-6**
Certificate No: **TAP0000029**

Limitations/remarks:

- 1) Inside machinery spaces of category A - only approved fire resistant types
- 2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions.
- 3) Approved fire resistant types.
- 4) Above free board deck only.
- 5) In pump rooms and open decks – only approved fire resistant types.
- 6) If compression couplings include any components which readily deteriorate in case of fire, they are to be of approved fire resistant type as required for Slip-on joints.

The style 77 couplings of sizes up to and including 12" are fire tested and are of fire resistant types. The products covered in this certificate are Machine Grooved Type suitable for class I, II and III piping systems in accordance with Table 8, IACS URP2, Rev. 7, 2007.

Grade E / EPDM and Grade T (Type A) gasket material are fire tested and are therefore of fire resistant type.

EPDM is not to be used for hydrocarbon applications.

The wall thickness and the material of the pipes are to be in accordance with the current Rules of Det Norske Veritas.

When used in systems where vacuum may occur, due precautions shall be taken to prevent the internal gasket from being drawn into the gap of the two pipe ends.

Type Approval documentation

Tests carried out

Pneumatic proof, vacuum proof, hydrostatic proof, flexibility proof, flexibility proof angle, hydrostatic burst, bending proof, bending ultimate and fire test

Marking of product

For traceability to this type approval, the couplings are at least to be marked with:

- Manufacturer's name or trade mark.
- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNVGL Surveyor shall perform a survey - every second year and before the expiry date of this certificate to verify that the conditions for the type approval are complied with. The Surveyor shall witness burst testing of samples of couplings selected at random from stock or from the running production as a part of this survey

END OF CERTIFICATE