

TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000011A
Revision No:
3

This is to certify:

That the Pipe Couplings, Flared or Welded Nipple Type

with type designation(s)
Cast ORFS SAE J 1453 90° flared fittings

Issued to
CAST S.p.A.
Volpiano, TO, Italy

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV class programme DNV-CP-0185 – Type approval – Mechanical joints

Application :

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

Temperature range: -60 to 200°C (see Table 2 & 4)
Max. working press.: 280 bar / 420 bar / 630 bar (see Table 1)
Sizes: 6 to 38 mm

Issued at **Høvik** on **2022-10-04**

for **DNV**

This Certificate is valid until **2027-12-29**.

DNV local station: **Italy/Malta CMC**

Approval Engineer: **Sarah Miller**

Sinisa Sedlan
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Product description

SAE J1453 (ISO 8434-3) 90° flared pipe fittings with o-ring seal.

Materials:

Part	Carbon Steel Coupling	Stainless Steel Coupling
Ring/Sleeve & Body	11SMnPb37/30 or 11SMn37/30 or 36SMnPb14 according to UNI EN10087 or 28SMnPb28 (PR60) or C35 or C35R according to UNI EN10083-2	X6CrNiMoTi17-12-2 (WNo. 1.4571) or X5CrNiMo17-12-2 (WNo. 1.4401) or X2CrNiMo17-12-2 (WNo. 1.4404) or According to UNI EN10088-3
Nut	11SMnPb37/30 or 11SMn37/30 according to UNI EN10087 or C4C or C10C according to UNI EN10263-2 or C35 or C45 according to UNI EN10083-2	X6CrNiMoTi17-12-2 (WNo. 1.4571) or X5CrNiMo17-12-2 (WNo. 1.4401) or X2CrNiMo17-12-2 (WNo. 1.4404) or According to UNI EN10088-3

Production plant located at Casalgrasso CN, Italy

Application/Limitation

Table 1 - Maximum allowable working pressure:

Tube O.D (mm)	Maximum pressure (bar)
6,8,10,12	630
14,15,16,18,20,22,25	420
28,30,32,35,38	280

Table 2 - Temperature ranges:

Part	Material	Temperature Range
Body	Stainless steel	-60 °C to +200 °C
	Carbon steel	-20 °C to +120 °C
Sealing	NBR	-35 °C to +100 °C
	Viton	-25 °C to +200 °C

Table 3 - Couplings covered by this certificate are only to be used in piping classes I, II and III in below applications:

<ul style="list-style-type: none"> ▪ Flammable fluids (flash point ≤ 60°C) <ul style="list-style-type: none"> - Vent lines - Cargo oil lines ⁽¹⁾ - Crude oil washing lines ⁽¹⁾ ▪ Inert gas <ul style="list-style-type: none"> - Water seal effluent lines - Scrubber effluent lines - Main Lines ^{(1) (2)} - Distribution lines ⁽¹⁾ ▪ Flammable fluids (flash point > 60°C) <ul style="list-style-type: none"> - Cargo Oil lines ⁽¹⁾ - Fuel oil lines ⁽²⁾ - Lubricating oil lines ⁽²⁾ - Hydraulic oil ⁽²⁾ - Thermal oil ⁽²⁾ 	<ul style="list-style-type: none"> ▪ Fresh water <ul style="list-style-type: none"> - Cooling water system - Condensate return - Non-essential system ▪ Sounding/vent <ul style="list-style-type: none"> - Water tanks/Dry spaces - Oil tanks (f.p. > 60°C) ⁽²⁾ ▪ Sanitary/drains/scuppers <ul style="list-style-type: none"> - Deck drains (internal) ⁽³⁾ - Sanitary drains - Scuppers and discharge (overboard) ▪ Miscellaneous <ul style="list-style-type: none"> - Starting/Control air - Service air (non-essential) - Brine - CO2 system - Steam
<p>⁽¹⁾ Only in pump rooms and open decks</p> <p>⁽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.</p> <p>⁽³⁾ Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.</p>	

Couplings covered by this certificate shall not be used in systems subject to pressure below atmospheric or vacuum condition.

Table 4 - The maximum pressure for which the mechanical joints will be type approved is defined as maximum allowable pressure for continuous service at +20°C. For elevated temperatures the maximum allowable pressure have to be reduced according to Pressure reduction factors in the below table:

Temperature	20°C	50°C	100°C	120°C	150°C	200°C
Carbon steels	1	1	1	0.96	-	-
Stainless steels	1	0.95	0.85	0.82	0.77	0.71

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer. These couplings should not be used on tubes in cold fabricated (hard temper) conditions.

Type Approval documentation

Burst test report V.d.P.n°13/09 dated 2009-07-02.

Burst test report V.d.P.n°36/08 dated 2008-05-05.

Burst test report V.d.P.n°38/08 dated 2008-05-05.

Repeated assembly test report V.d.P.n°104/04 dated 2004-09-06.

IMA Dresden test report C97/04 dated 2005-02-16 (containing test result from leakage test, combined impulse/vibration test and fire test)

IMA Dresden supplement 1 of test report C97/04

IMA Dresden supplement 2 of test report C97/04

Renewal burst pressure test report V.d.P. n°68/17 dated 2017-12-21

Manufacturers ORFS catalogue – October 2013

Renewal burst pressure test report 2022-07-13

Renewal Assessment Report. 2022-08-13

Tests carried out

Burst pressure test, repeated assembling test, leakage test, fire test, pull out test, vibration test, pressure pulsation test

Marking of product

For traceability to this type approval, the products are to be marked with:

- Manufacturer's name or trade mark
- Type designation

Periodical assessment

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