

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe System with Couplings**

with type designation(s)

Push fit Pipe and drain system

Issued to

Blücher Metal A/S
VILDBJERG, Denmark

is found to comply with

Det Norske Veritas' Rules for Classification of Ships**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:** - 35°C to 100°C, dependent on sealing type**Max. pressure:** Dependent on pipe sizes and fixations**Design:** The pipes are longitudinal welded thin wall pipes with a pressed-out bulb at one end. The bulb gives room for a lip sealThis Certificate is valid until **2018-12-31**.Issued at **Høvik** on **2015-07-24**for **DNV GL**DNV GL local station: **Oslo Pressure Equipment**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

The pipes are longitudinal welded thin wall pipes with a pressed-out bulb at one end. The bulb gives room for a lip seal ring of EPDM, NBR or FPM. A length of same end of pipe is rolled to a diameter exceeding outside nominal diameter of rest of pipe. Assembly of pipes is performed by pushing the small end of pipe through the lip seal into the big end.

Type designations:

490	Group pipe penetration	842	Sliding ring-seal socket
525	87,5 ° "P" water trap	843	Expansion socket
811	Straight pipe with 1 socket	844	Plug
812	Straight pipe with 2 socket	850	Eccentric increaser / Concentric reducer
820	15 °, 30 °, 45 ° and 87,5 ° Bend	854	Pipe with flange
821	87, 5 ° Long radius bend	855	W.C. connector
830	87, 5 ° Branch	885	Adapter
831	87,5 ° Double Branch 180°	886	Adapter
832	87,5 ° Double Branch 90°	866	Pipe penetration
834	Rear access branch	867	Toilet penetration for vacuum system
836	45° Double branch 180°	868	Flange penetration
837	45° Double branch 90°	869	Adjustment socket
838	45° Oblique branch pipe	870	Pipe penetration
839	87,5° Combination Y and 1/8 bend	872	Pipe penetration
840	Access pipe	873	Transport pockets
841	Double ring-seal socket	470	Drain penetration, vertical
874	Goose neck	475	Drain penetration, horizontal
474	Drain penetration, vertical	472.300	Drain upper part, Tiles and concrete
471	Drain upper part with side inlets, Tiles and concrete	473	Drain upper part, Vinyl floors
472.320	Drain upper part, Resin floors	503	Water trap, removable
502	Water trap, removable	611	Extension pipe
505	Water trap, bottle	480.150.050	Vacuum drain
491	Cabin drain		

Materials: Stainless steel AISI304 or AISI316

Ext. dia. of pipe	Thickness
40 mm	1, 0 mm
50 mm	1, 0 mm
75 mm	1, 0 mm
110 mm	1, 0 mm
125 mm	1, 0 mm
160 mm	1, 25 mm
200 mm	1, 50 mm

Non welded drain penetrations
470.900.xxx
475.900.xxx
868.900.xxx
490.900.xxx

Pressure Peak Clamps
847.001.xxx

xxx = Nominal pipe diameter

The pressure peak clamps are approved for use also when penetrating watertight compartments without remotely operated valves.

Application/Limitation

The pipe system may be used for non-pressurized and vacuum sanitary discharge systems above freeboard deck and in enclosed spaces below, and as vent pipes for sanitary discharge systems, (and for central vacuum cleaning system - CVC) and tanks not forming part of the ship structure.

Watertight bulkhead:

Pipe penetrations through watertight bulkheads, fire bulkheads or shell plating shall be approved in each separate case.

When penetrating a watertight bulkhead there shall be remotely operated valves secured to each bulkhead. The valves and control system shall be located outside the damage zone of the ship.

The pipes shall be installed and secured according to the manufacturer's specifications and to the DNV Surveyor's satisfaction.

Type Approval documentation **Tests carried out**

- Pressure test, Vacuum test, Vibration test

Marking of product

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

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

Periodical assessment

For renewal of TA certificate periodical assessment shall be done by DNV GL surveyor to verify that the conditions for the TA are not altered since the certificate was issued.

The main scope of the periodical assessment shall be:

- review of the TA documentation and verification that this documentation is still used as basis for the production
- review of possible changes in design, material and performance of the product
- verification of the company's production and quality systems w.r.t. ensuring continued consistent production of the type approved products to the required quality
- verification of that the product marking for identification and traceability to the TA Certificate is not altered.

END OF CERTIFICATE