Certificate No:
TAP00002SS

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Butterfly Valves

with type designation(s)
EFW wafer serie 20, EFU double flanged serie 20, EFL lugged serie 20, EFD/EFDL double flanged serie 13 family valves

Issued to
ERGOMATIC Marine & Industrial Equipment S.A.
Athens/Acharnai, **Greece**

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0186 – Type approval – Valves

Application :

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

Temperature range:	**Dep. on seat and body material, see cert.**
Max. working press.:	**See the certificate**
Sizes:	**See the certificate**

Issued at **Høvik** on **2024-05-31**
This Certificate is valid until **2025-12-03**.
DNV local unit: **NB/CMC Team West**

Approval Engineer: **Rob Oerlemans**

for **DNV**

Bosman van der Merwe
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

Wafer, lug and flanged type butterfly valves with soft seats.
Design basis: EN-12516-2:2004

Design types:
Types EFW and EFU with max. working pressure: 10 bar:
Sizes: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800
Types EFL with max. working pressure: 10 bar:
Sizes: DN200, 250, 300, 350, 400, 450, 500, 600

Types EFW and EFL with max. working pressure: 16 bar:
Sizes: DN25, 32, 40, 50, 65, 80, 100, 125, 150
Types EFU with max. working pressure: 16 bar:
Sizes: DN200, 250, 300, 350, 400, 450, 500, 600, 700, 800

Types EFW, EFL and EFU with max. working pressure: 25 bar:
Sizes: DN25, 32, 40, 50, 65, 80, 100, 125, 150, 200, 250, 300

Types EFD with max. working pressure: 16 bar:
Sizes: DN40, 50, 65, 80, 100, 125, 150

Types EFD with max. working pressure: 10 bar:
Sizes: DN 200, 250, 300, 350, 400, 450, 500, 600, 700, 800

Materials:

Part	***Material***
Body	
Grey Cast Iron Ferritic Nodular Cast Iron Cast Steel Cast Stainless Steel Cast Tin Bronze Carbon Steel Stainless Steel	EN GJL250 EN GJS400-15 ASTM A216/A216M WCB ASTM A351/A351 M CF8-CF8M CuSn10-C (CC480K) EN10025 S275JR S355J2N AISI 304/316
Disc	
Cast Stainless Steel Ferritic Nodular Cast Iron Cast Tin Bronze Cast Aluminum Bronze Super duplex	ASTM A351/A351 M CF8/CF8M EN GJS400-15 CuSn10-C (CC480K) CuAl10Fe5Ni5 (CC333G) 1.4469 Super duplex
Stem	
Stainless Steel	AISI 420, 304 or 316
Seat	EPDM, NBR or Viton

Application/Limitation

Valves are approved for ship piping systems, machinery piping systems and cargo piping systems onboard ships and offshore mobile units (considering below limitations).

Maximum working temperatures for valves with the following seats:

Sealing	***Temperature***
EPDM	-40°C to 110°C
NBR (e.g. Perbunan)	-10°C to 100°C
Viton	-20°C to 210°C

EPDM sealing shall not be used in hydrocarbon systems.

The valves may not be used where “fire safe” application is required.

Valves of grey cast iron are not permitted fitted in the following systems:

- Class I and II piping systems
- Service temperatures below 0 °C and above 120°C
- Hydraulic piping systems
- Ship’s side or bottom and on sea chest
- Collision bulkheads
- Under static head fitted on external wall of fuel tanks
- Ballast lines to forward tanks through cargo oil tanks
- Bilge and ballast piping in tunnels in double bottom

Valves of nodular cast iron are not permitted fitted in/on the following:

- Class I piping systems
- Service temperatures below 0 °C and above 350°C

When used as shipside valves the disc must not extend outside the hull plating in open position.
The maximum output torque from actuators used on butterfly valves must not exceed the limit at which the valve spindle or disc can be damaged if the disc is restrained in any position.
The approval does not include any operating gear for remote control of the valves.

In seawater applications, surface preparation and coating of cast iron and cast steels shall be approved by society.
Stainless steels AISI 420 and SUS 304 & 316 are not considered as seawater resistant material.

Type Approval documentation

Production Testing and Certification

Production Testing and Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Marking of product

Minimum marking requirements shall be as outlined in the valve design standard.

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.