

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Bottom Penetration for Echo Sounder, Sonar or Log**

with type designation(s)

DB-60, DB-100, SB-60, SB-100, ETNSLB, ETNSLJB

Issued to

**Skipper Electronics AS
Oslo, Norway**

is found to comply with

DNV GL rules for classification – Ships**Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.**Issued at **Høvik** on **2018-07-18**This Certificate is valid until **2023-06-30**.DNV GL local station: **Oslo Maritime and CAP**for **DNV GL**Approval Engineer: **Adel Samiei**

**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

Retractable gate/ball valve arrangement (herein referred to as 'Assembly' in the certificate) with bottom penetration consisting of gate/ball valve, pipe as intermediate element and flanged connection welded to the hull.

Type designation	Arrangement for
ETNSLJB	Echo Sounder
ETNSLB	Doppler Log
SB-100	Echo Sounder/ Doppler Log or EM Log
SB-60	EM Log
DB-100	Echo Sounder/ Doppler Log or EM Log
DB-60	EM Log

Material of bottom flanges, intermediate pipe, and top flanges are:

- AISI 316L / 1.4404 EN10028-7
- AISI 316 / 1.4401 EN10028-7

Application/Limitation

Products covered by this certificate may be used as installation for Doppler speed log, echo sounder and EM speed log. Mounting to hull is to be approved in each case.

Products covered by this certificate are evaluated for a internal design pressure of 3.3 bar (equivalent to 33 meter of water).

Gate valves and Ball valves shall be purchased with a DNV GL product certificate. Design review of valves are out of scope of this certificate. Design pressure of valves shall be minimum 3.3 bar.

The whole component shall be subject to hydrostatic test at 5 bar.

Valve bodies, pipes, and flanges shall be delivered with a Works certificate (equivalent to type 3.1 material certificate) issued by an approved manufacturer of DNV GL.

Assembly as covered by this certificate shall be delivered with a DNV GL product certificate.

Type Approval documentation

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:

- Manufacturer's name or trade mark
- Pressure class
- Size

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 approval are complied with. Reference is made to DNVGL-CP-0338.