

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

with type designation(s)

**SA950, NL, 120-25 & 200-28-E, 50/18 & 50/18P, HiPAP, 120 kHz & 200 kHz, ES38-7 & ES38B, 50 kHz, 38 kHz, 120 kHz, ES70-7C, ES120-7C, ES200-7C, 12 kHz, SX200 & SL, EM3002 & EM2040C, SQ4, SA240 & SR240, HF Sonar, 38-9/50-7, SH80, SD570, SP60, SP72, SP73/SP74, SP90, SP92/SP93, SH90, SX90/91, SX92/93, SX95, SU92/93, SN90, EM16, SC90, SC92, SC93, SC94, ST90, Bevakning 80, SH40**

Issued to

**KONGSBERG MARITIME AS**  
**HORTEN, 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 all vessels classed by DNV GL.**Issued at **Høvik** on **2019-07-09**This Certificate is valid until **2024-07-08**.DNV GL local station: **Sandefjord**Approval Engineer: **Øyvind Skåra**for **DNV GL**  
**Torill Grimstad Osberg**  
**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.



Job Id: **262.1-010621-10**  
Certificate No: **TAS000012D**  
Revision No: **6**

## Product description

### **Type SA950:**

Bottom mounted trunk and transducer shaft casing in steel or aluminium for retractable transducer.

### **Type NL:**

Bottom flush mounted trunk or externally mounted steel tank with double cable penetration and extension pipe.

### **Type HiPAP with calibration unit:**

Bottom flush mounted trunk with sluice valve for retractable transducer and calibration microphone.

### **Type 120-25-E and 200-28-E:**

Bottom flush mounted tank with cable penetration and extension pipe.

### **Type 50/18, 50/18 P and 50/18 with sluice valve:**

Bottom flush mounted tank with cable penetration with or without sluice valve for retractable transducer

### **Type 120 kHz and 200 kHz:**

Bottom flush mounted tank for double transducers, two cable penetrations, extension pipes and with lifting eyes.

### **Type ES38-7 and ES38B:**

Bottom flush mounted tank with cable penetration, lifting eyes and extension pipe.

### **Type 50 kHz (KSV 082606):**

Bottom flush mounted tank with cable penetration, extension pipe and acoustic window for arctic conditions.

### **Type 38 kHz (38-26 and 22 E):**

Externally mounted steel tank with cable penetration and extension pipe.

### **Type 120 kHz:**

Bottom flush mounted tank with cable penetration, extension pipe and acoustic window for arctic conditions.

### **Type 12 kHz:**

Bottom flush mounted tank with cable penetration, extension pipe and with or without acoustic window for arctic conditions.

### **Type ES70-7C:**

Bottom flush mounted tank with cable penetration, extension pipe and with or without acoustic window for arctic conditions.

### **Type ES120-7C:**

Bottom flush mounted tank with cable penetration, extension pipe and with or without acoustic window for arctic conditions.

### **Type ES200-7C:**

Bottom flush mounted tank with cable penetration, extension pipe and with or without acoustic window for arctic conditions.

### **Type SX 200, SL and SH90:**

Bottom mounted trunk, transducer shaft casing and blind cover for retractable transducer.

### **Type EM3002 and EM2040C:**

Bottom flush mounted tank with cable penetration and extension pipe.

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**Type SQ4, SA240, SR240 and SX95:**

Bottom mounted trunk, transducer shaft casing and transition piece for retractable transducer.

**SC 90:**

Mounting trunk, extension trunk, adapter flange and transducer dock.

**SC 92:**

Mounting trunk, extension trunk, adapter flange and transducer dock.

**SC 93:**

Mounting trunk, extension trunk, adapter flange and transducer dock.

**SC 94:**

Mounting trunk, extension trunk, adapter flange and transducer dock.

**Cable penetration  $\varnothing$ 25mm/ $\varnothing$ 20 mm:**

Cable penetration pieces.

**Transducer Shaft Sleeve HF Sonar and SH90:**

Transducer shaft casing/ sleeve on top of bottom mounted trunk, for retractable transducer.

**Transducer Shaft Sleeve ST90, SX90, SX92 and EM16:**

Transducer shaft casing/ sleeve on top of bottom mounted trunk, for retractable transducer.

**Steel tank/Transducer 38-9/50-7:**

Bottom mounted tank for retractable transducer.

**Transducer Shaft/ Sleeve Assembly SH40:**

Bottom mounted transducer shaft sleeve and trunk for retractable transducer/ sonar.

**Transducer Shaft/ Sleeve Assembly SH80 and SH90:**

Bottom mounted transducer shaft sleeve, for retractable transducer.

**SD570 and SH90:**

Bottom mounted trunk, trunk flange, adapter flange and transducer dock for retractable transducer.

**Transducer Shaft Sleeve SP60 and SX95:**

Transducer shaft casing/ sleeve on top of bottom mounted trunk, for retractable transducer.

**Mounting Trunk Sonar SP72 & SP73/SP74:**

Bottom mounted trunk, trunk flange, and blind cover for retractable transducer.

**Mounting Trunk Sonar SP90 and SX90:**

Bottom mounted trunk, trunk flange, and blind cover for retractable transducer.

**Transducer Shaft Sleeve MarkF SP92, SX92 and EM16:**

Transducer shaft casing/ sleeve on top of bottom mounted trunk, for retractable transducer.

**Mounting Trunk Sonar SP92, SP93, SX92 and EM16:**

Bottom mounted trunk, trunk flange, and blind cover for retractable transducer.

**Mounting Trunk Sonar SU92 and SU93:**

Bottom mounted trunk, trunk flange, and blind cover for retractable transducer.

**Mounting trunk Sonar ST90.**

Bottom mounted trunk for retractable transducer.

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**Sonar Extension Trunk for ST90:**

Extension for mounting trunk for SP92 and SP93

**Sonar Extension Trunk Sonar SU92 and SU93:**

Extension for Mounting Trunk Sonar SP92 and SP93.

**Sonar Adaptor Extension Trunk, Hull Unit SX90/91 to SU92/93:**

Adaptor and extension for Mounting Trunk Sonar SP90 and SX90.

**Sonar Trunk for ND500 gate valve Hull Unit SU92 and SU93:**

Sonar trunk for mounting on sluice valve.

**Sonar Trunk for ND500 gate valve Hull Unit SX90:**

Sonar trunk for mounting on sluice valve.

**Sonar Trunk for ND500 gate valve Hull Unit SX92 and SX93:**

Sonar trunk for mounting on sluice valve.

**Sonar Trunk for ND500 gate valve Hull Unit SC92, SC93 and SC94:**

Sonar trunk for mounting on sluice valve.

**Sealing Plate, SN90:**

Sealing plate for cables.

**Trunk Adapter – Bevakning 80:**

Trunk, trunk flange and blind flange.

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## **Application/Limitation**

Bottom penetrations for transducer equipment.

The type approval is limited to evaluation of strength with respect to water integrity.

Type SA950 with aluminium shaft casing is not accepted installed in spaces with fire hazards (i.e. spaces covered by fixed fire extinguishing systems).

## **Approval conditions**

Pipe extensions from transducer trunks/tanks up to above waterline, are to have wall thickness of min. 7 mm and are to be supported along their lengths.

The welding to hull structures and structural support of the items is subject to separate approval by DNV GL for each installation onboard a ship.

All welding is to be carried out by approved welders according to approved welding procedures.

Materials for items welded to the ship's hull structures are to be delivered with material certificates 3.1.

Non-destructive testing is to be carried out to the surveyor's satisfaction.

DNV product certificate is not required for the bottom penetration, but the equipment shall be delivered with manufacturer's product certificate together with fabrication documentation.

For arrangements with valves, the valves are to be delivered with DNV GL Product certificates (I.e. hydrostatic test to be carried out in the presence of a DNV GL Surveyor).

The part of watertight arrangement necessary as a separate compartment for subject equipment for the vessel is subject to separate approval by DNV GL for each installation onboard the ship.

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## Type approval documentation

### Type SA950:

599-091723 "Hylse, sveisetegning" (aluminium)  
599-091724-L "Transducer shaft casing, aluminium, machine drawing"  
599-092418 "Sonarbrønn, Hugin"  
599-092212-C "Sonar trunk, 111-092211"  
599-092209-C "Transducer shaft casing, steel, machine drawing"  
599-092208 "Hylse, stål, sveisetegning"  
599-091731-C "Sonar trunk, 111-091730"  
599-092427 "Hylse, sveisetegning"  
599-092441-B "Hylse, maskintegning"  
599-092691-1 "Trunk production drawing"

### For information only:

122-091725-M "Transducer unit"  
111-092471 "Trunk sammensetning-Packing list SA9-092621"

### Type NL:

111-064387-10 "Svingertank (100-0316583)-Sveise og maskin tegning"  
541-062412.2-1 "Kabelgjennomføring 2 x R1/2" "

### For information only:

111-031661.2-1 "Svingertank (100-031658.3)-Pakklister (100-062870.1)"  
111-062869.3 "Svingerhus-Pakklister 100-062870.1, Svinger 710-36-EP i tank"  
830-062868.5-1 "Svingerarr.-Pakklister 100-062870.1, Svinger 710-36-EP i tank"  
830-034522.3-6 "Svinger monteret i stålsko-100-034523.1, arrangement"  
830-031658.3-5 "Svinger i tank-100-034799.7, arrangement"

### Type HiPAP:

599-082973-E01 "Mounting flange DN500"  
362973-A01 "Mounting flange DN500 d26 holes"  
599-089862-B "Mounting flange DN125, calibration microphone"  
599-044140-D01 "Mounting Flange DN350"  
362992-A01 "Mounting Flange DN700"

### For information only:

429242-B "Outline Dimensions HL3770 502"  
122-089860-C "Hull unit, calibration microphone"  
424577-A01 "Installation of DN500 Flange and Valve Information Drawing"  
830-088440-B "Installation of mounting flange ø350"

### Type 120-25-E and 200-28-E:

111 082774-B "Steel tank for transducer"  
111-088487-C "Steel tank transducer"

### For information only:

820-068117-L "Mounting of ceramic transducer element in steel blister"

### Type 50/18, 50/18 P and 50/18 with sluice valve:

111-074666-M "Transducer tank"  
599-112062-A "Gland, transducer dock, transducer in sluice valve"  
599-112056-A "Transducer dock, transducer in sluice valve"  
599-112054-A "Transducer tank, transducer in sluice valve"

### For information only:

820-083230-C "Mounting of transducer in steel tank"  
830-112093-A "Arrangement drawing, transducer in sluice valve"

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Type 50/18 with plug, EA/EN Systems:

871-218549 A "Steel Tank – Transducer 50/18 w/Plug, EA/EN Systems"

For information only:

821-218554 A "Steel Tank Assy – Transducer 50/18 w/Plug, EA/EN Systems"

871-218553 A "Mounting Ring, Steel Tank – Transducer 50/18 w/Plug"

871-218551 A "Mounting Bracket, Steel Tank – Transducer 50/18 w/Plug"

Type 120 kHz and 200 kHz:

599-083648-B "Trunk, arctic tank for transducer"

For information only:

830-083695 "Outline dimensions, arctic tank"

Type ES38-7 and ES38B:

599-065040-C "Trunk, arctic tank for transducers"

599-133807-B "Steel tank, transducer"

871-218723-A "Trunk, arctic tank (30mm) for transducers"

For information only:

830-065080 "Arctic tank for transducer, outline dimensions"

820-065238-D "Installation of transducer in arctic tank"

820-218724-A "Installation drawing ES38B or 38-7, transducer in arctic tank (30mm)"

834-218725-A "Outline dimensions arctic tank (30mm) for transducers ES38B and 38-7"

Type 50 kHz (KSV 082606):

210206-A "Arctic tank"

For information only:

860-210212-B "Arctic tank assy."

Type 38 kHz (38-26 and 22 E):

599-109806-A "Steel tank"

For information only:

820-040390.7-3 "Montering av keramisk svingeelement i stålsko"

Type 120 kHz:

599-109637-A "Trunk, arctic tank"

For information only:

499-109636-B "Arctic tank assy"

310687 D "Arctic tank assy"

Type ES70-7C:

425244 Trunk for Artic Tank

For information only:

425347 Artic Tank Assy

Type ES120-7C:

424806 Trunk for Artic Tank

For information only:

425089 Artic Tank Assy

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Type ES200-7C:  
425441 Trunk for Artic Tank

For information only:  
425623 Artic Tank Assy

Type 12 kHz:  
599-109488-B "Trunk, arctic tank"  
599-110090-B "Steel tank"  
871-218728-A "Trunk, arctic tank (30mm)"

For information only:  
499-109506-A "Arctic tank assy"  
860-218730-A "Arctic tank assy (30mm)"

Type SX200, SL and SH90:  
111-026925-F "Mounting trunk, SL"  
599-064687-L "Hylse bunnutstyr, SX200"  
599-026927.4-3 "Blindlokk for montasjebønn"

For information only:  
111-112639-A "Installation trunk w/blind cover"

Type EM3002 and EM2040C:  
871-215927-A "Steel tank, Sonar Head"  
312615-A "Steel Tank, Sonar Head"

Type SQ4, SA240, SR240 and SX95:  
111-042509-D "Mounting trunk, SQ4"  
599-065222-G "Hylse komplett, SR240"  
599-081472-D "Blindlokk, arb.tegning, SQ4"  
111-074113-B "Overg.stuss f. SA240 bunnust. på ST bønn"

For information only:  
599-081473 "Sammenstillings tegning, blindlokk, SQ4"  
111-042507-B "Montasjebønn kompl., SQ4"

SC90:  
402509-A "Mounting trunk sonar"  
402517-A "Extension trunk sonar"  
403257-A "Adapter flange FSV84-SC90"  
403038-A "Transducer dock for DN350 gatevalve"

Cable penetration  $\varnothing$ 25mm:  
599-069484-B "Kabelgjennomføring  $\varnothing$ 25, mask.tegning"

Cable penetration  $\varnothing$ 20mm:  
599-035130-H "Tetningsstykke, kabelgjennomføring"

Transducer Shaft Sleeve HF Sonarand SH90:  
871-202365 A "Weld.&Mach.drwg. transducer shaft sleeve HF sonar"  
871-205405-B "Weld.&Mach.drwg. mounting trunk HF sonar"

For information only:  
862-202568 "Assembly drawing"  
860-202627 A "Assembly drawing transducer shaft sleeve"



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Transducer Shaft Sleeve ST90, SX90 and SX92:

860-204471 B "Sonar ST90-Assembly drwg. transducer shaft sleeve"  
599-082973 E "Mounting flange DN500"  
870-204168 B "Sonar ST90-Welding drwg. transducer shaft sleeve"

For information only:

"Sonar ST90 – Hull unit inst. proposal"  
871-204169 B "Sonar ST90-Machinery drwg. transducer shaft sleeve"  
872-204170 "Sonar ST90-Surface treatment transducer shaft sleeve"

Steel tank/Transducer 38-9/50-7:

599-203664 A "Weld.&Mach.drwg. transducer steel tank"

Steel tank/Transducer 38-9:

871-218416 A "Steel Tank Arctic Tank - Transducer 38-9 EA600"

For information only:

860-218422 A "Arctic Tank Assy - Transducer 38-9 EA600"

Transducer Shaft/ Sleeve & Trunk Assembly SH40:

870-208660 B Welding Drawing - Transducer Shaft Sleeve - Hull Unit - Sonar SH40  
871-208508 E Machining Drawing - Transducer Shaft Sleeve - Hull Unit - Sonar SH40  
111-280251 A Sonar Mounting Trunk - SH40  
599-280253 A Blind Flange - Sonar Mounting Trunk - SH40

For information only:

830-208751 A Arrangement Hull Unit - Typical Installation - Sonar SH40  
872-208515 A Surface Treatment - Transducer Shaft Sleeve - Sonar SH40  
499-280254 A Blind Flange Complete - Sonar Trunk - SH40, w/ Parts List  
499-280255 A Sonar Trunk with Blind Flange - SH40, w/ Parts List

Transducer Shaft/ Sleeve Assembly SH80 and SH90:

871-202365 A "Weld.&Mach.drwg. transducer shaft sleeve HF sonar"

For information only:

860-202627 A "Assembly drawing transducer shaft sleeve – Sonar SH80"

SD570 and SH90:

111-026925-F "Mounting trunk, SL"  
599-026927.4-3 "Blindlokk for montasjebrønn"  
351141-A "Adapter flange FSV84-SH90"  
400045-A "Transducer dock for DV350 gate valve hull unit"

For information only:

111-112639-A "Installation trunk w/blind cover"  
351862-A "Adapter flange with blind cover FSV84-SH90"

Transducer Shaft Sleeve SP60 and SX95:

871-205722 E "Sonar SP60-Welding/ mach. drwg. transducer shaft sleeve"

For information only:

872-205723 A "Sonar SP60-Surface treatment transducer shaft sleeve"

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Mounting Trunk Sonar SP72:  
871-205555 B "Sonar SP72-Welding/ mach. drwg. Sonar mounting trunk"

For information only:

860-205564 A "Sonar SP72-Assembly drwg., Sonar trunk w/ blind flange"

Mounting Trunk Sonar SP73/SP74:  
871-207483 A "Sonar Mounting Trunk – Sonar SP73/ SP74"  
871-207485 C "Blind Flange, Sonar Mounting Trunk – Sonar SP73/ SP74"

For information only:

860-207513 A "Sonar Trunk w/Blind Flange – Sonar SP73/ SP74"

Mounting Trunk Sonar SP90 and SX90:  
871-205557 A "Sonar SP90-Welding/ mach. drwg. Sonar mounting trunk"  
871-205559 B "Sonar SP90-Mach. drwg., Blind flange Sonar mounting trunk"

Transducer Shaft Sleeve MarkF SP92, SX90 and EM16:  
870-205430 A "Sonar SP92-Welding drwg. transducer shaft sleeve, special flange Mark F"  
871-205431 A "Sonar SP92-Mach. drwg. transducer shaft sleeve, special flange Mark F"

For information only:

872-205432 B "Sonar SP92-Surface treatment, transd. shaft sleeve special flange, Mark F"

Mounting Trunk Sonar SP92, SP93, SX92 and EM16:  
871-207481-C "Sonar Mounting Trunk –Sonar SP92/ SP93"  
358379-B "Mounting Trunk DN1100-EM16( SP92/ SP93)"  
387850-B "Mounting Trunk DN800-EM16( SP92/ SP93"  
390484-A "Mounting Trunk DN700-EM16( SP92/ SP93"

For information only:

860-207515 A "Sonar Trunk w/Blind Flange – Sonar SP92/ SP93"

Mounting Trunk Sonar SU92 and SU93:  
372751 B "Sonar Mounting Trunk"  
376649 A "Sonar Mounting w/Blind flange"

For information only:

860-207515 A "Sonar Trunk w/Blind Flange – Sonar SP92/ SP93"

Mounting Trunk SONAR SC92, SC93 and SC94:  
427176 A "Sonar mounting trunk SC92, SC93 and SC94"

Mounting Trunk Ø356 SC92, SC93 and SC94:  
434524 A "Ø356 Sonar Mounting Trunk SC92/SC93/SC94"

For information only:

427423 A "Sonar trunk with blind flange SC92, SC93 and SC94"

434529 A "Small sonar trunk with blind flange SC92/SC93 and SC94"

Sonar Extension Trunk Sonar SU92 and SU93:  
374676 A "Sonar Extension Trunk Sonar SU92/93"

Sonar Adaptor Extension Trunk, Hull Unit SX90/91 to SU92/93:  
389298 "Sonar Adapter Extension Trunk, Hull Unit SX90/91 to SU92/93"

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Sonar Trunk for ND500 gate valve Hull Unit SU92 and SU93:  
389044 B "Sonar Trunk for ND500 gate valve Hull Unit SU92 and SU93"

Mounting Trunk SONAR ST90  
436691 A "Sonar mounting trunk ST90"

Sonar Extension Trunk ST90  
439413 A "Sonar Extension Trunk SX92/93 to ST92/93"

Sonar Trunk for ND500 gate valve Hull Unit SX90:  
356640 A "Sonar Trunk for ND500 gate valve Hull Unit SX90"

Sonar Trunk for ND500 gate valve Hull Unit SX92 and SX93:  
390410 A "Sonar Trunk for ND500 gate valve Hull Unit SX92 and SX93"

Sonar Trunk for ND500 gate valve Hull Unit SC92, SC93 and SC94:  
427177 A "Sonar Trunk for ND500 gate valve Hull Unit SC92, SC93 and SC94"

Sonar Trunk for DN350 gate valve SC90  
403038 A " Transducer dock for DN350 gate valve"

Sonar Trunk for DN350 gate valve SC92, SC93 and SC94.  
430192 B "TD dock DN350 SC94, SC93, SC92"

Sealing Plate, SN90:  
368695 A "Sealing plate for cables"  
368698 A "Sealing plate with cable glands"  
383784 A "Sealing plate with cable glands"

Trunk adapter, Bevakning 80:  
405624 B "Trunk Adapter Bevakning 80"

For information only:  
406151 A "Installation trunk w/blind cover"

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## Marking of product

For identification to this certificate the products are to be marked with:

- Manufacturers name or trade mark.
- Type designation.
- Additional marking at manufacturers' option.

DNV GL product certificate is not required for the bottom penetrations, but the equipment shall be delivered with manufacturer's product certificate together with fabrication documentation. For arrangements with valves, the valves shall be delivered with DNV GL Product certificates.

## Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment after two years, after three and a half year and before the expiry date of this certificate to verify that the conditions for the type approval are complied with. The main elements of the certificate retention survey are:

- Review of Type Approval documentation
- Review of possible changes in design, materials and performance
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.