

Appendix 1. Acoustic Equipment

AP1.1 Transducer Position (DS-30/50/80, FE-700)

AP1.1.1 Best location

Select following locations for the transducer of acoustic equipment, such as a Doppler sonar and Echo sounder.

1. Location where is lightly affected by bubbles.
2. Location where is lightly affected by propeller and side thruster noises.

The most important thing is to avoid bubbles.

Flow of air bubbles created at ship's bow varies from hull to hull and according to ship's speed. Typically, bubbles flow along the hull as shown in Fig. AP1.1.1.

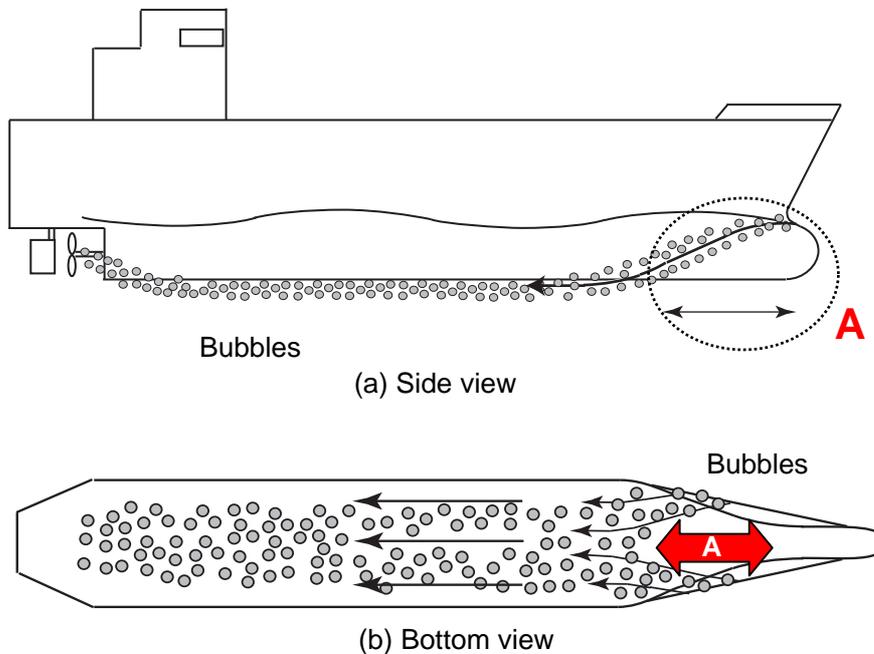


Fig. AP1.1.1 Flow of bubbles

- The best location for the transducer shows arrow (a) in Fig. AP1.1.1.
- The example of an installation is Fig. AP1.1.2.

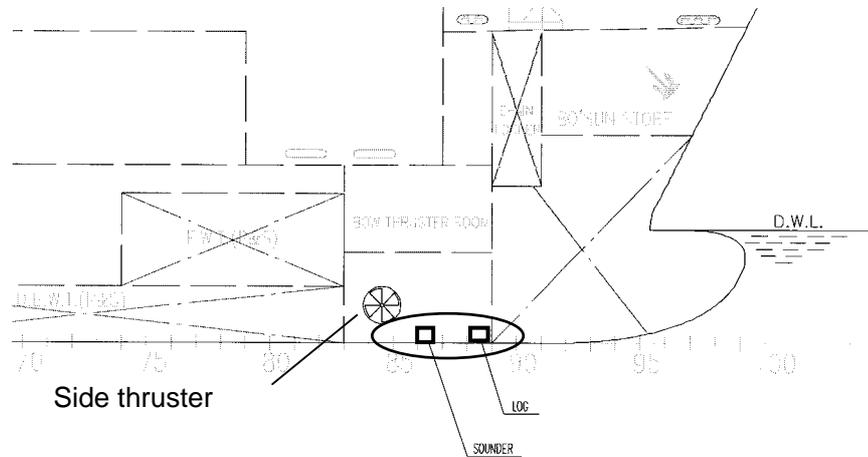


Fig. AP1.1.2 Location of transducer

The performance of the Doppler sonar is easily degraded by bubbles, so the transducer must be placed at the location "A" as shown in Fig. AP1.1.1.

Transversely, the transducer is mounted on the keel or as near to the keel as possible.

When side thruster is installed;

The transducer is mounted in front of the side thruster about 1 m.

Installation at bow bulb

If the bottom is not flat, the transducer tank must be welded as shown in Fig. AP1.1.3 to make the transducer surface flat. The installation at an angle will cause a false reading of depth.

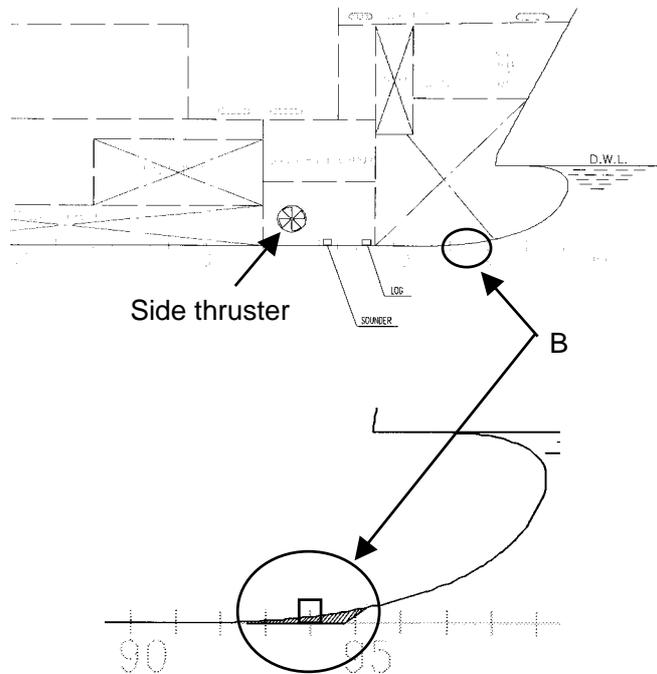


Fig. AP1.1.3 Installation at bow bulb

Location for transducer of Echo sounder

The best position is the above-mentioned B. Installation at other areas may be affected by air bubbles and cause unstable depth indications. The lower frequency, the more the air bubble interference. Use 200 kHz transducer which there is the possibility of air bubble interference.

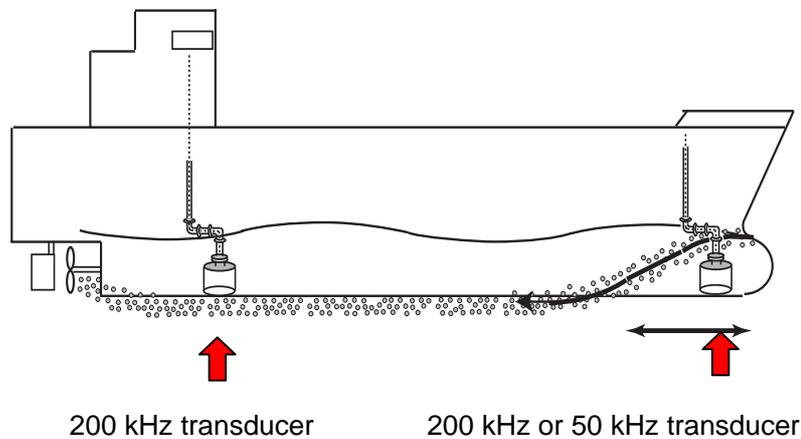


Fig. AP1.1.4 Location of Echo sounder transducer

AP1.1.2 Installation of Echo sounder and Doppler sonar transducers

Decide location of Doppler sonar transducer first.

When installing Doppler sonar and Echo sounder transducers, decide the location for the Doppler sonar transducer first. The Echo sounder transducer is placed behind the Doppler sonar transducer about 2 m or more.

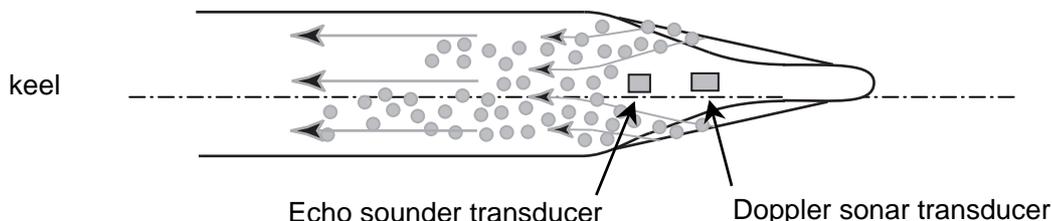


Fig. AP1.1.5 Echo sounder and Doppler sonar transducers

The recommended area for Echo sounder transducer to be mounted shows Fig. AP1.1.6.

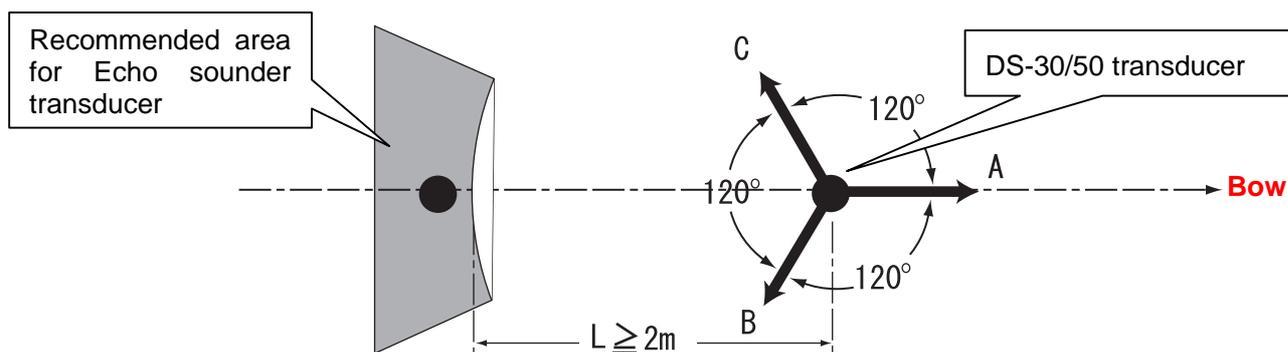


Fig. AP1.1.6 DS-30/50 and FE-700 transducers

Doppler sonar transmits three beams in directions A, B and C. Never place the Echo sounder transducer in the directions A, B and C.

DS-80 and FE-700

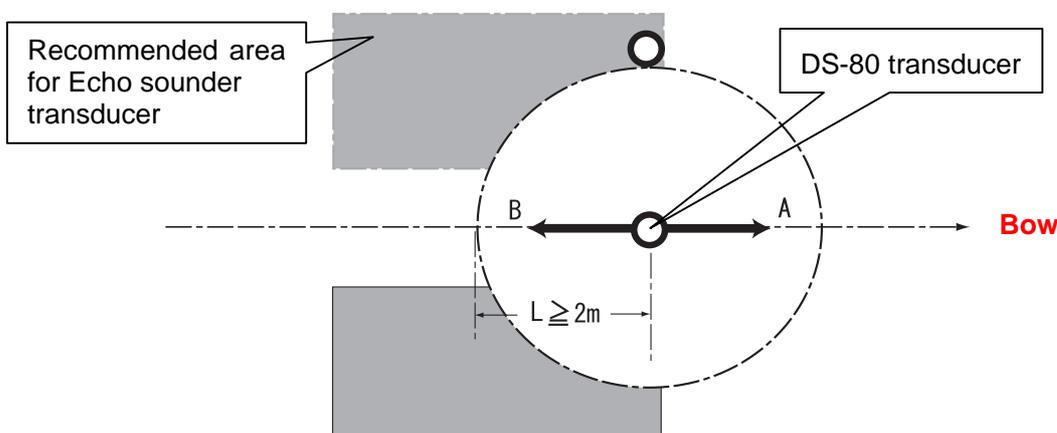


Fig. AP1.1.7 DS-80 and FE-700 transducers

AP1.2 Piping Transducer cable

Pipe the cable from the transducer flange to the transducer or matching box.

Note: The transducer cable of Doppler sonar must be piped.

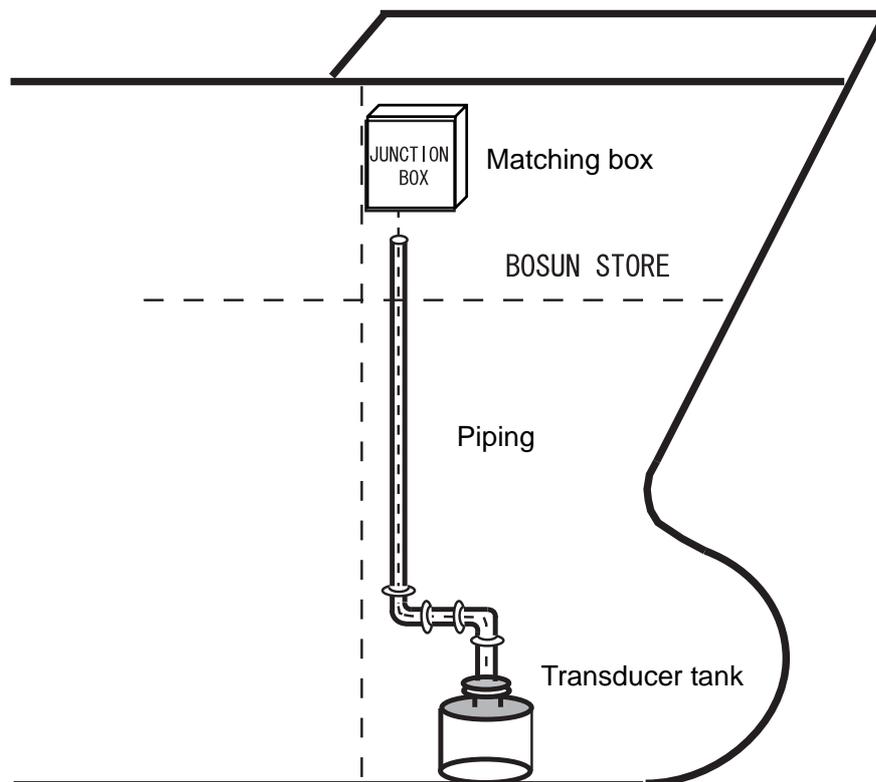


Fig. AP1.2.1 Piping transducer cable

AP1.3 Installation on ship with protruded keel

When the transducer is mounted in the keel, take followings into account to prevent the adverse affect from bubbles.

1. "In keel" installation

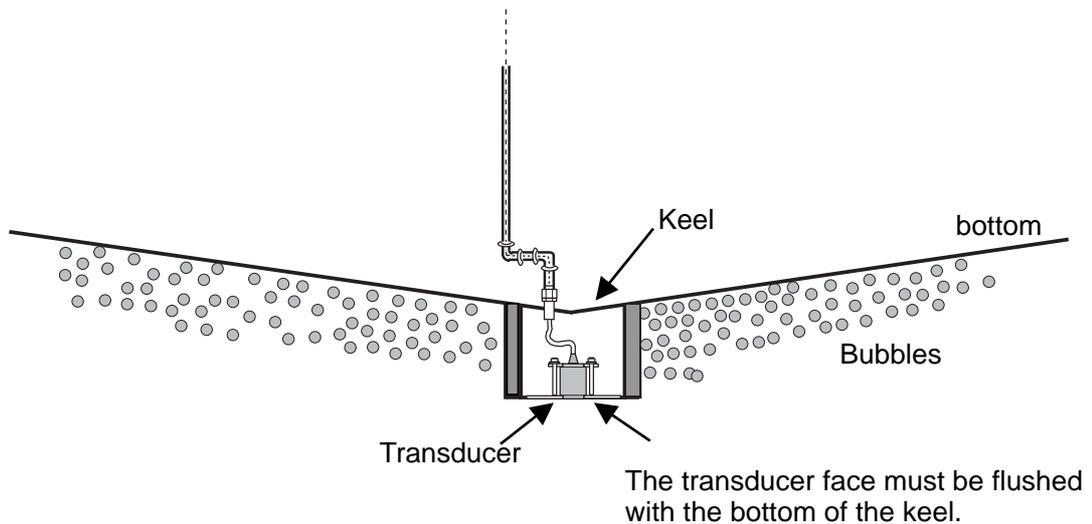


Fig. AP1.3.1 "In keel" Installation

2. "Beside keel" installation (Using tank)

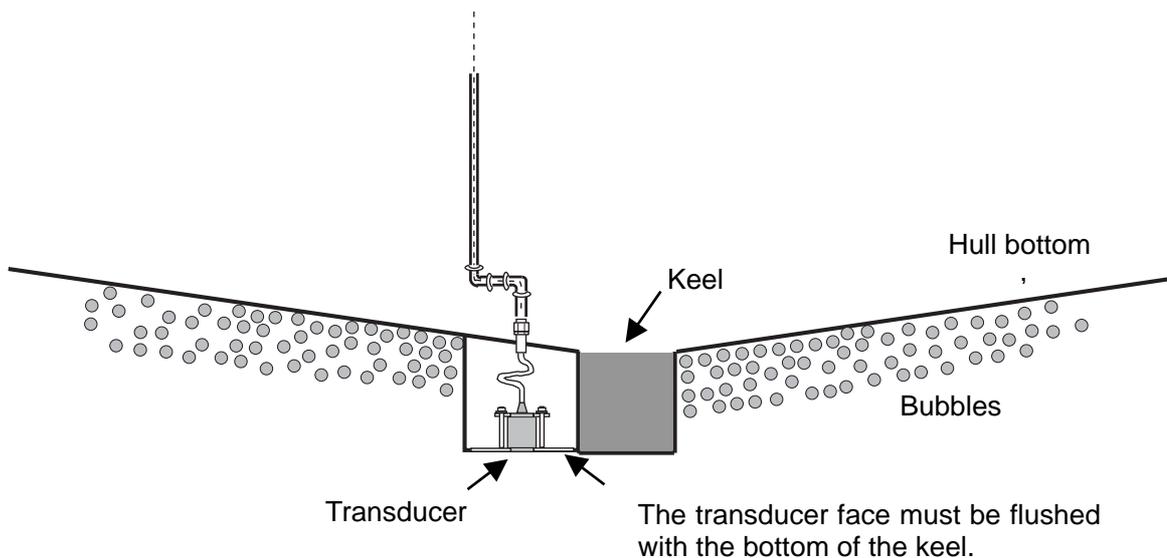


Fig. AP1.3.2 "Beside keel" installation

3. "Parallel to keel" installation (Using tank)

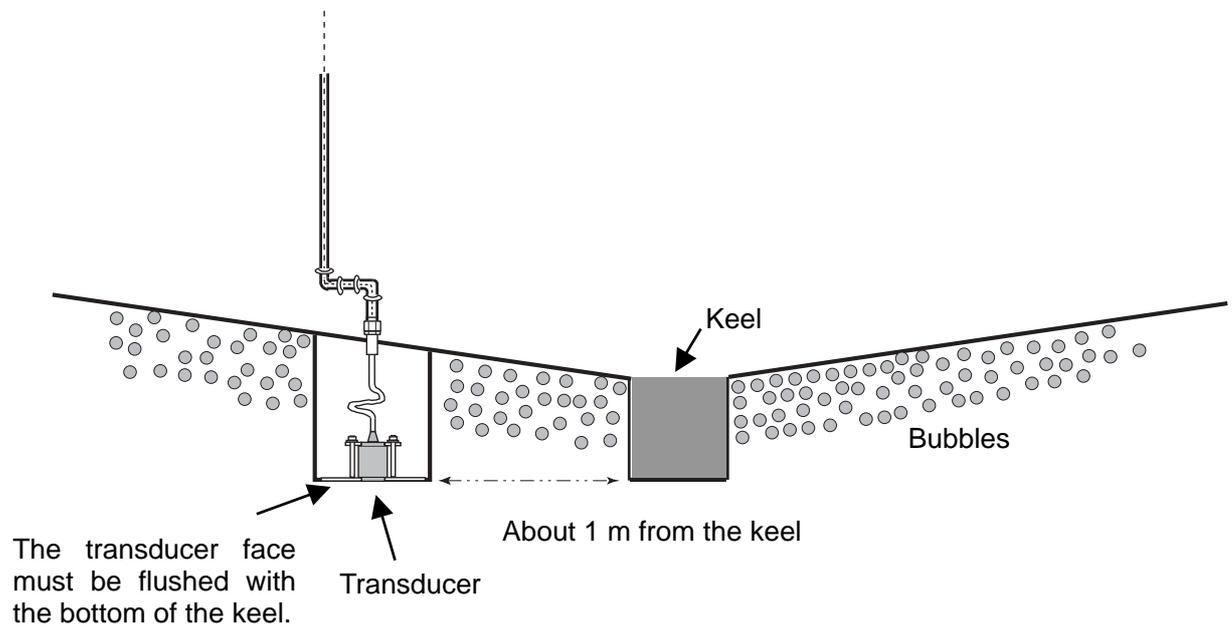


Fig. AP1.3.3 "Parallel to keel" installation