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**APPLICATION NOTES FOR  
MODELS SSA AND SSD  
SUBMERSIBLE LVDTs**

## **INTRODUCTION**

Sensotec's models SSA and SSD submersible LVDT displacement transducers are engineered for rugged industrial applications which require a waterproof transducer. This document provides handling procedures, mounting information and explanations of features to ensure operation in hostile environments.

## **FEATURES**

The wetted parts of the transducer are constructed of 316 grade stainless steel, except for the connector. The connector has a neoprene body with a nickle-aluminum bronze (per DGS 1043) fixing hexagon.

The connector can be mated under water up to a maximum pressure of 500 psi (35 bar) which is equivalent to a water depth of 1100 feet (330 meters).

The two halves of the connector are held together by water pressure but the additional locking sleeve provides additional mechanical security especially when the transducer is out of water.

The connector has a pressure rating of 10k psi (690 bar) and will withstand in excess of 500 wet matings as long as the correct handling procedures are followed.

The body of the transducer has an ultimate theoretical strength of 10k psi (670 bar); applying a safety factor of 2.8 (for slow changes in pressure) gives a working pressure rating of 3500 psi (240 bar). For certain application where the rate of change of pressure is known to be very low, a smaller safety factor could be used. For example, a safety factor of 2 yields a service pressure rating of 5k psi (335 bar). Similarly, in applications where the rate of change of pressure is known to be high, a higher safety factor should be applied such as 10.

The neoprene cable has a diameter of 10.2mm +/- 0.5mm. The submerged life of the connector and cable will dictate the life of the complete transducer and is typically more than ten years.

Any length of cable can be specified up to a maximum continuous length of 3250 feet (1000 meters). The conductors are 18 AWG.

For cable lengths greater than 150 feet (50m), Sensotec recommends the 4-20mA output version of the model SSD.

## HANDLING PROCEDURES

- Do not allow connector to "dry out" by long exposure to heat or sunshine. If this occurs, soak the connector in water before use
- Lubricate with silicone spray only; do not use grease. Avoid spraying the silicone spray onto the electrical contacts.
- Clean the connectors with warm, soapy water. Avoid the use of chemical cleaners.
- An accumulation of mud or sand can "splay" the female contacts.
- Do not disconnect by pulling on cable.
- Avoid sharp bends at cable entry to the connector.
- If the connector is left disconnected for long periods or in a dirty environment, then each half should be protected by a dummy connector part (available from Sensotec).

## INSTALLATION

For maximum flexibility in installation, no mounting flanges or fixtures are incorporated.

The two end caps are each 1 inch (27mm) long and 0.4 inches (11mm) thick. It is recommended that this is the area in which mounting clamps (or similar devices) are attached.

To aid installation the armature has a large radial clearance of 0.60 inch (1.5mm) in the transducer through hole. This through hole also reduces the potential for problems with build up of sand, silt or marine organisms.

## OPERATING TEMPERATURE RANGE

Model SSA	-40 to +140°F (-40 to +60°C)
Model SSD (+/-5V, 0-10V output)	-40 to +140°F (-40 to +60°C)
Model SSD (4-20mA output)	+15 to +140°F (-10 to +60°C)