

## INTRODUCTION

Diaphragm seals with a capillary connection can be installed at vulnerable locations, with high concentration of chloride, high temperatures, or locations that can be influenced by mechanical damage or a combination of all three. One of the weakest points in a Diaphragm Seal System is the connection between the seal and the capillary and all of the influences mentioned above can easily damage the welded capillary connection. When the capillary connection is damaged the Diaphragm Seal System can even start leaking which results in a loss of measurement.

## SOLUTION DEVELOPED

To overcome this problem Badotherm has designed a 'Heavy Duty Support Tube' solution. This description does not completely cover the functionality of the design, because it not only can be used for heavy duty environments, but also at locations where the weld of the capillary should be protected against environmental chloride stress corrosion.

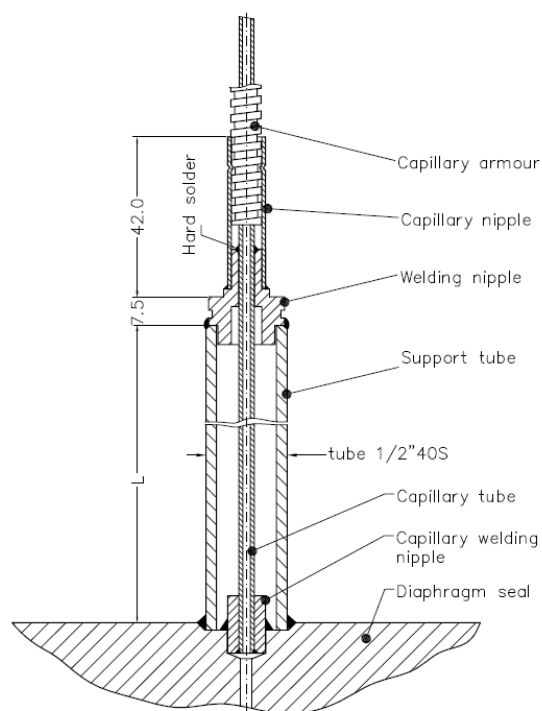
Key features of the Heavy Duty Support tube are:

- Reduction of temperature on capillary in order to prevent burning of personnel
- Reduce the chance of mechanical damage on capillary connection
- Prevent chloride stress corrosion on the capillary weld (IP68 execution only)

The Heavy Duty Support Tube is available in two types, the IP57 tube and the IP68. The IP57 has the function of temperature reduction and reduction of mechanical damage. The IP68 edition has the extra feature that it hermitically seals the capillary weld from environmental influences such as chloride fumes and fluid. The soldered tube end prevents the fumes and the rain combined with these fumes to 'attack' welded connection.

## TECHNICAL SPECIFICATIONS

The Heavy Duty Support Tube has had extensive testing in the process simulation environment in the Badotherm facility and in the "Field" with key customers. The temperature test has proven that the temperature reduction is significantly. When a process temperature of 300°C in an environment temperature of 20°C is applied, the Diaphragm Seal temperature on the end of 80mm extension tube reduces to approximately 70°C. The 150mm extension tube reduces the temperature at the capillary side to approximately 35°C. Both temperatures are safe for personnel and nearby equipment.



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