

SELECTION OF THERMOWELL

1. MATERIALS THE LONGEVITY FACTOR

In general, the selection of thermowells material is governed mainly according to the corrosion the well faces. The high polish given to all stainless and Monel wells provide maximum corrosion resistance. Well are also available in special grades of stainless steel, Chrome-molybdenum steel, silicon bronze, hastelloy B&C, nickel, titanium, and monel.

2. CONNECTION-THE INSTALLATION FACTOR

All threaded well are made by easily welded or brazed materials. Welding and brazing is important for the installation requiring seal. The pipe thread provides mechanical strength, and the weld or braze provides the seal.

Flanged wells (other than van stone type) consist of a bar stocks well which is solidly welded to a top quality flange. Standard construction uses a primary "J" groove weld and a bevel groove clean fillet. This double welded construction eliminates the possibility of crevice corrosion since no open joint are exposed from either inside or outside the installation.

Socket weld well are simple to install, simply weld them into place. These wells fit A.S.A. standard socket weld coupling or flanges.

3. INSERTION LENGTH-THE ACCURACY FACTOR

The distance from the tip of the well to the underside of the thread or other connection is defined as the insertion length (designated as "U"). For best accuracy this length should be greater enough to permit the entire temperaturesensitive part of element to project into the medium being measured. A properly installed element: in liquid, the element should be immersed up to its sensitive length plus one inch, and in air or gas, the element should be immersed up to its sensitive length plus three inches.

4. BORE SIZE-THE INTERCHANGEABILITY FACTOR

Almost all installation uses several type of temperature measuring sensor. The selection of a standard bore diameter can produce extreme flexibility within the plant. The same well can accommodate thermocouple, resistance thermometer, and bimetal thermometer. The bore sizes most commonly used in temperature-sensing elements as follows.

Diameter Bore: 0.260" (6.6 mm)

Bimetal Thermometers 1/4" (6.4 mm) Stem

Thermocouples—(#20 Gage)

Liquid-in-glass Test Thermometers (unarmored)

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Other elements having 0.250" maximum diameter

Diameter Bore: 0.385" (9.8 mm)

Thermocouples (#14 Gage)

Liquid-in-glass Test Thermometers (armored)

Other elements having 0.35" (9.5 mm) maximum diameter

5. TAPERED OR STRAIGHT WELL THE VELOCITY RATING FACTOR

Tapered shank provides greater stiffness with same sensitivity. The higher strength to weight ratio give these wells higher natural frequency than the equivalent length straight shank well thus permitting operation at higher fluid velocity.

6. VELOCITY RATING OF WELL

Fluid flowing by the well forms a turbulent wake, which has a definite frequency, based on the diameter of the fluid. It is important that the well have sufficient so that the wake frequency will never equal the natural frequency of the well itself. If the natural frequency of the well coincides with the wake frequency, the well would vibrate to destruction and break off in the piping.

PROCESS CONNECTION

1. THREADED CONNECTION

Parallel or tapered thread is made for convenient installation into a weld in fitting directly into the process. Such a connection is suitable for smaller diameter well, which are not likely to be changed frequently.

2. FLANGED CONNECTION

Flanged connection is preferable if there is a need for more frequent well replacement such as high corrosion rates. The flange bolts to mating flange mounted on the process. Such a technique is more appropriate for large pipe diameter and for high-pressure application.

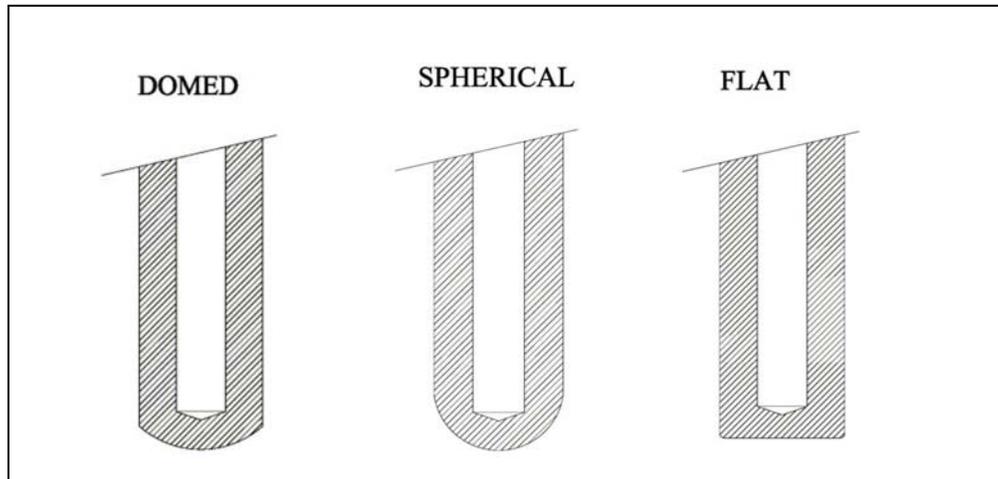
3. WELDED CONNECTION

Welded connection can be used when the process is not corrosive and routine removal is not required. High integrity is achieved and this technique is suitable for high temperature & pressure application.

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Tip Profile



Tip profiles should be consideration while designing the thermowell for a specific application .

Flat tip should be used for lower pressure applications, where flow characteristics around thermowell are not important. **Domed and spherical** profiles should be used in medium and high pressure applications respectively where flow characteristics around thermowell are important.

Surface Finish

Tempsens Thermowells are supplied as standard with a fine machined surface finish. Other finishes may also be supplied on request.

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