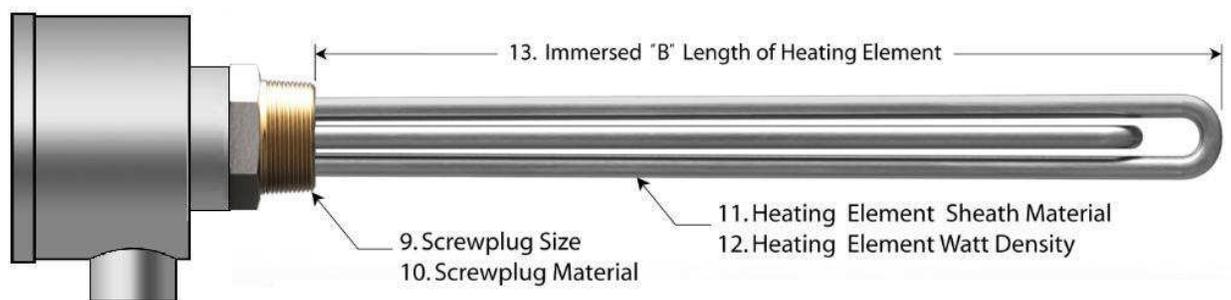


Use of Screw Plug Heater

The variation of different heaters usually is determined by the construction of the main part, the heating element, and how it is incorporated into the overall heater structure. The screw plug heater derives its name from the way it is designed: the heating elements mounted on a screw cap and is screwed into the heating chamber. WATTCO™ designed their screw plug heater with hairpin tubular elements and the machine pipe thread fitting. The elements are either welded or brazed on the thread and then screwed directly through the thread into the heating chamber of the heating vessel or the tank.



The screw plug heaters are used for heating gas or liquid by immersion to obtain a rapid heat transfer rate for a quick heating up of the medium. The screw plug heaters are widely used for various purposes in many industries including the food and beverage industry. The number of different applications using the screw plug heater is enormous. In addition to the general use of boiling water and freeze protection, it is extremely useful for the purpose of steam generation. Screw plug heaters are also used for process water and solutions such as soap and detergent solutions, soluble cutting oil, and demineralize or deionized water.

The threading of screw plug heaters are consistent with NPT (National Pipe Thread) fitting by the North American standards. WATTCO™ produces the NPT screw plugs in the size of 1", 1¼", 1½", 2", 2½", 3" and 4" with diameters of 0.260", 0.315", 0.375", 0.430" and 0.475". The heating elements are available in steel, brass or stainless steel. The sheath materials used are copper, steel and stainless steel in addition to titanium or the more exotic alloy such as Incoloy® and Inconel®. They are largely energy efficient and easy to regulate. The installation is a snap and the maintenance is very easy as well.

There are three different types of screw plug heaters based on the type of applications: water application, heavy oil application, and light oil application. The applications are largely dependent upon the watt density (wpsi, or watts/psi). The water application usually requires 55 to 80 wpsi whereas the light oil and heavy oil applications are respectively 20 to 30 wpsi and 5 to 15 wpsi. While the water application is generally defined for the purpose of heating water, the use of light oil application and heavy oil application are differentiated by the types of the medium used in conjunction with the heater. The light oil application typically include glycol mixture, caustic solutions, acidic solutions, fuel oils, lubrication oils, mineral oil baths, and etc. On the other hand, the heavy oil application is geared for heating up heavy mixtures such as heavy fuel oil, wax, steam and solid grease.

One of the advantages of electric heaters in the industrial setting is that the electric nature of the heater makes it a perfect choice for heating flammable solutions. The screw plug heater is particularly a fit for such an application with the explosion proof housing. WATTCO™ designs and manufactures the explosion and/or moisture resistant terminal enclosures, and they are available when the application warrants the use of such device. More information can be found at <http://www.wattco.com/screwplug-heaters.html>