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Name : Rishabh Sarswa
Rollno : 19UELE8030

Experiment : 4

Object :

To Study electric immersion heater.

Theory :



Construction of electric immersion heater

The main parts are

Heating element
Outer frame Heating

Heating element

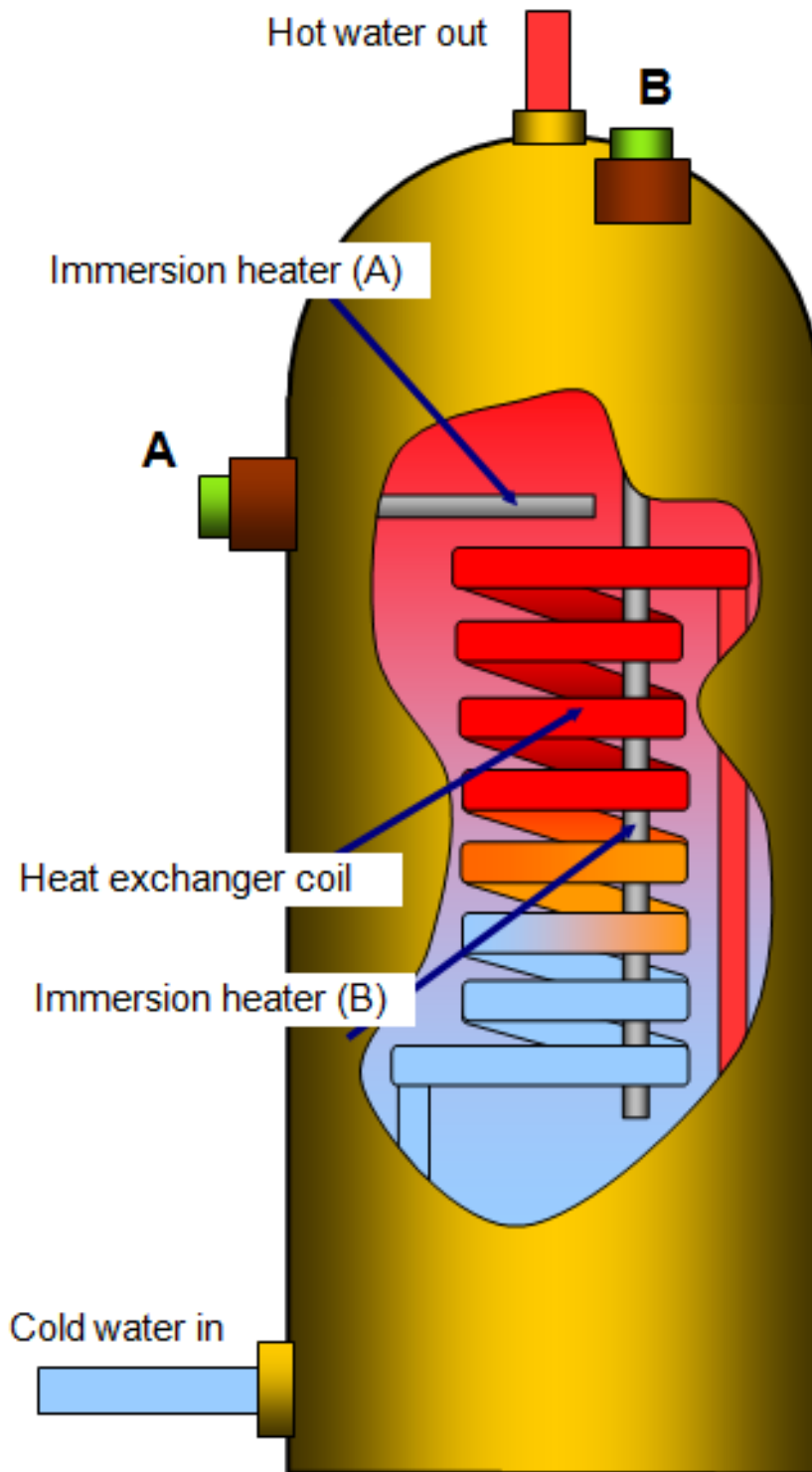
The heating element is made up of Nichrome wire which produces heat while giving electric supply. Its melting point is about 4200 o C. The coil type heating element is normally used in this heater.

Outer frame

The outer frame is made up of chromed iron brass pipe in which a heating element is placed. Inside wall of the pipe is coated with magnesium oxide, which act as insulation, so that the heating element may not touch the pipe. The top portion of the outer frame is made up of bakelite insulator. The ends of the heating element coils are connected at the points called as a terminal which is connected to the power chord. The scale is also provided to indicate the water level to be maintained.

Operation

To use immersion water heater, one simply fills a bucket of water and places the immersion rod into the bucket either directly or with an aid like a clothes hanger. Then connect the plug into the socket and switch ON. As the supply is given, the heating element gets heated and is transferred to the water. So water gets heated.



Testing of instrument immersion heater

Preface the series testing leads to test the water heater for open close shot and Earth for leakage test by connecting the two end of testing lead to the terminal of plug top of the water heater if the lamp does not give light .it makes these is an open circuit i.e breaking of electric wire inside the body of water heater. if the left gives a bright light it mean those is short circuit i.e wire and at the terminal of both wires in the cord leaking. if the lamp glow simly it mean the element of the water it is a working order and it is known a closed circuit now to perform the test for earth fault connected one end of the test lead to one terminal of plug and top and another to the metal part of body of the water heater if the lamp glows it means the insulation inside the body is leaking from somewhere which is known as a leakage fault.

Precation

Without immersing the water heater in water, supply cannot be given.
One should not touch the immersion rod when supply is ON.
Before removing the immersion rod from water it should be disconnect from the plug socket.
The water filled bucket should not be touched while the supply is ON.
Except water no other liquid substance should be heated by immersion heater.

Result

These we have studied about the immersion water heater and also we have tested the water heater.