

BI-METALLIC STRIP

Dissimilar Expansion of Metals

Assembly : Consists of a strip of laminated dissimilar metals (Manganese and Copper). This bimetal strip is mounted on a wooden handle.

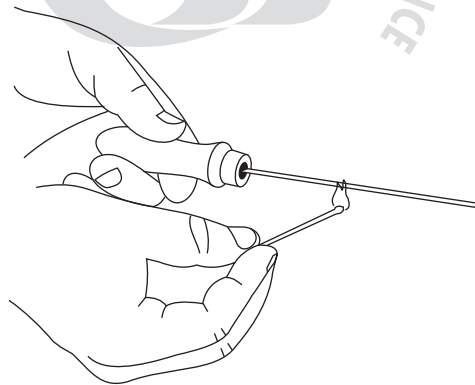
Wooden Handle



Bi-metallic Strip

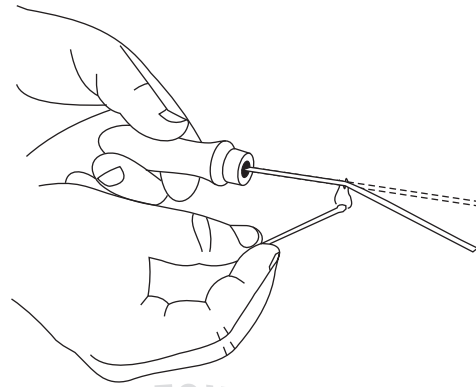
To do & observe:

Step 1 :



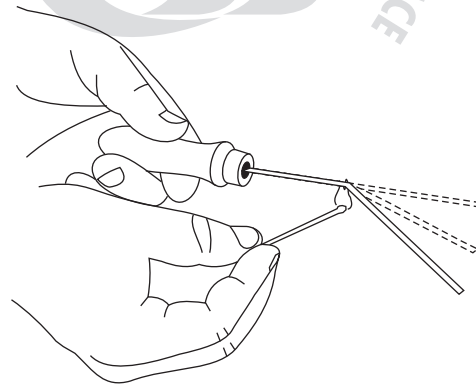
Heat the bimetallic strip using match stick.

Step 2 :



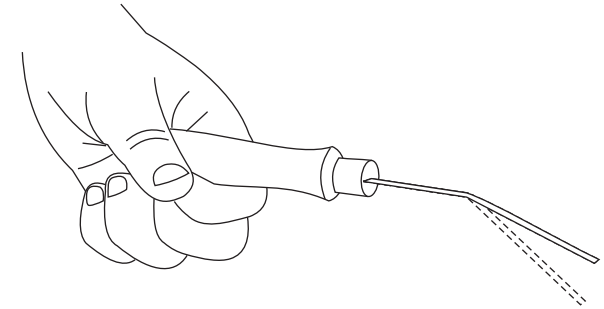
Notice that it bends as it gets heated

Step 3 :



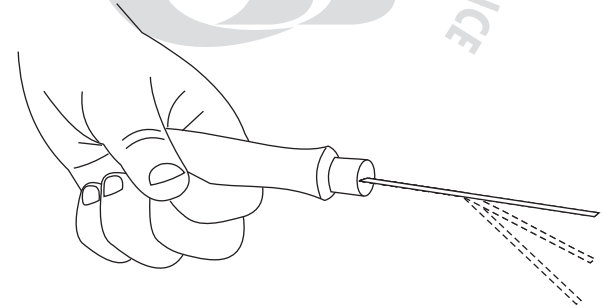
If heating is continued it bends further.

Step 4 :



Put-off the match stick. Allow the strip to cool. It starts to move in reverse direction

Step 5 :



After complete cooling the bimetallic strip attains initial status.

What is going on?

The two metals will be having different coefficients of linear expansions. When the strip is heated, one metal having greater coefficient of linear expansion will expand more and the other will expand less. Since the two strips are mechanically connected to each other, dissimilar expansion results in bending of the strip. The strip bends in the form of arc at the point of heating. The metal with greater coefficient of linear expansion lies on the outer side.

Follow-up :

Instead of heating if you cool the strip, the strip bends in a direction opposite to the direction when heated.

Applications :

Bimetallic strips are commonly used as thermo switches in automatic electric heaters, toasters, Electric pressing iron and refrigerators.



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