Medical Ultrasonic Probe

Ultrasound device is one of the most helpful medical devices for doctors in diagnosis and treatment. Also for the patients it's safe and painless do not require needles, shots or cuts. It captures images of the inside of the body even of soft tissues that don't show up well on X-rays using sound waves . It uses a small probe called a transducer and gel placed directly on the skin. High-frequency sound waves travel from the probe through the gel into the body. The probe is the main part of the ultrasound machine and it's shape determines its field of view. Probes are generally described by the size & the shape of their footprint. Selecting the right probe for the situation is essential to get good images.

There are four basic types of probes used:

Curvilinear probes :
have widened footprint and lower frequency for transabdominal imaging & widen the field of view.

Linear probes :
are generally high frequency better for imaging superficial structures & vessels also called vascular probes.

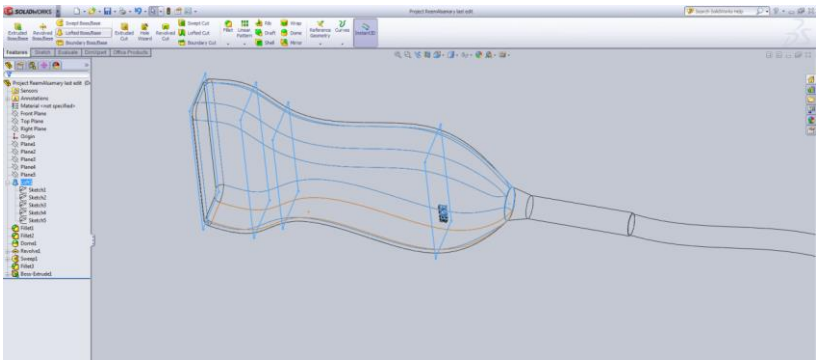
Endocavitary probes :
with high frequency and better imaging as transvaginal & transrectal probes.

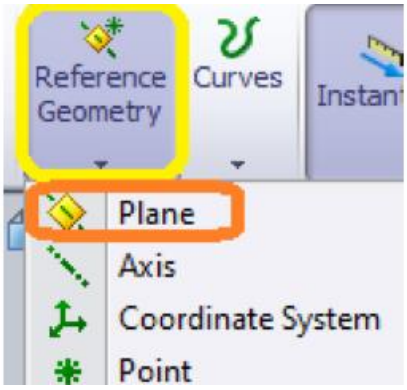
Phase array probes :
for getting between ribs such as cardiac ultrasound.

For this project I choose this picture (Linear probe type).
To design this shape , I have used several Features and follow some methods .

Loft Feature :

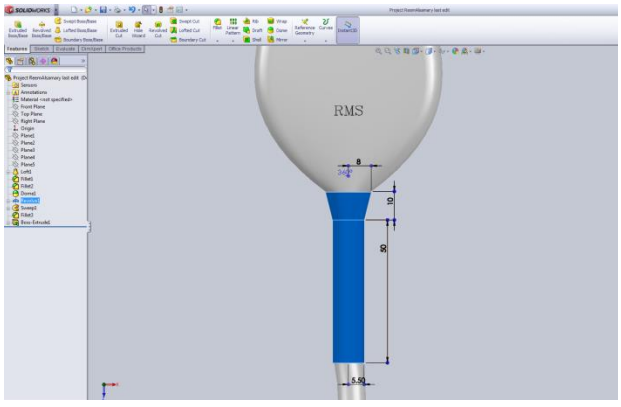
For this feature I have to create several planes then draw appropriate sketches with different distance then connect them with Loft features .





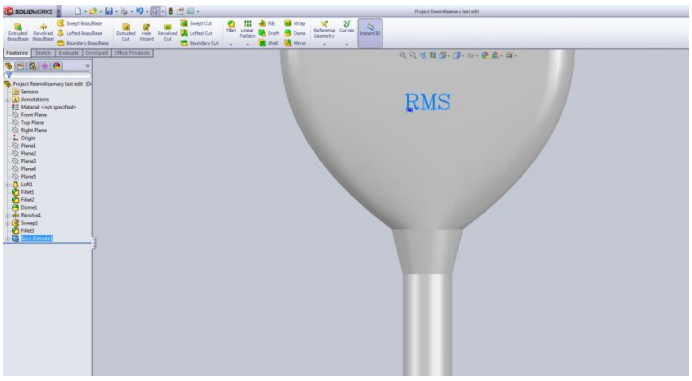
Revolve Feature :

For the wire base .



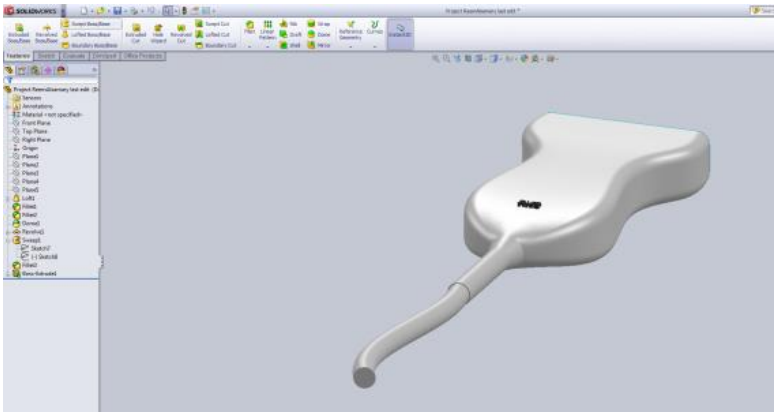
Extrude Feature :

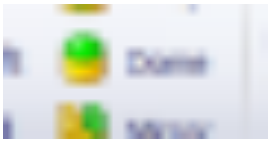
I used this features to create the logo and extrude it by 14 mm .



Sweep Feature :

I used it for the wire by using Spline sweep .

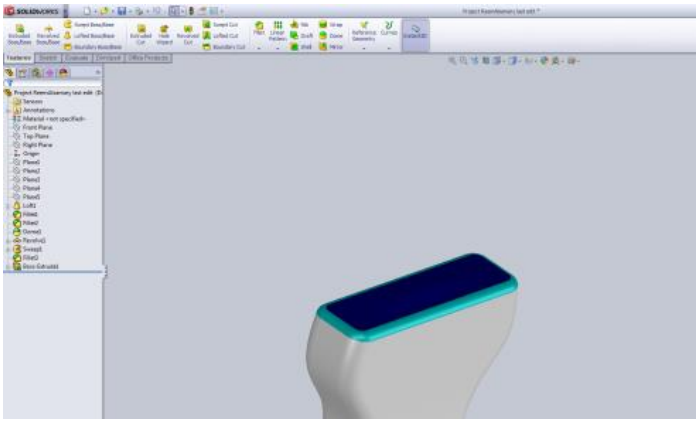




Dome Feature :

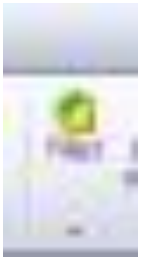
To make the surface slightly curved shape of the higher part of the probe .

I did dome by 1mm .



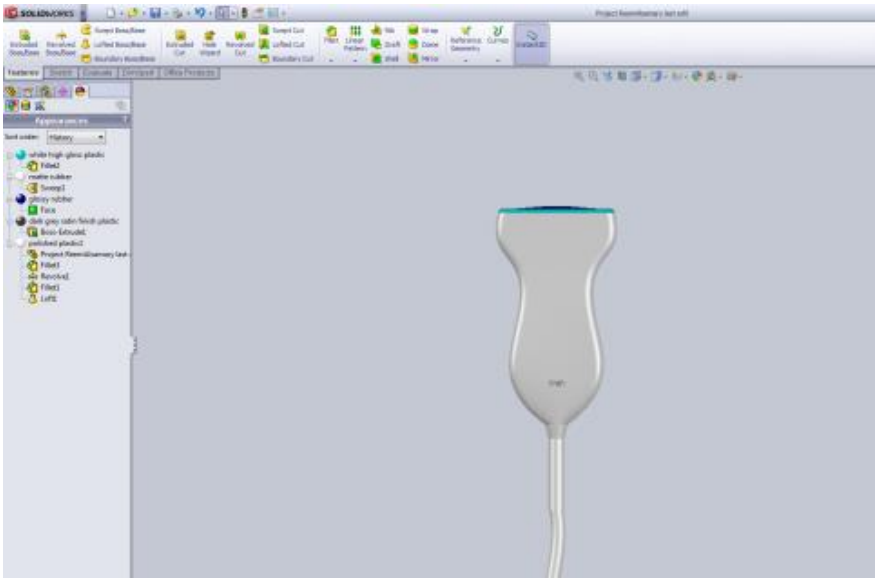
Fillet Feature :

I usud it to make the surface of body softer .

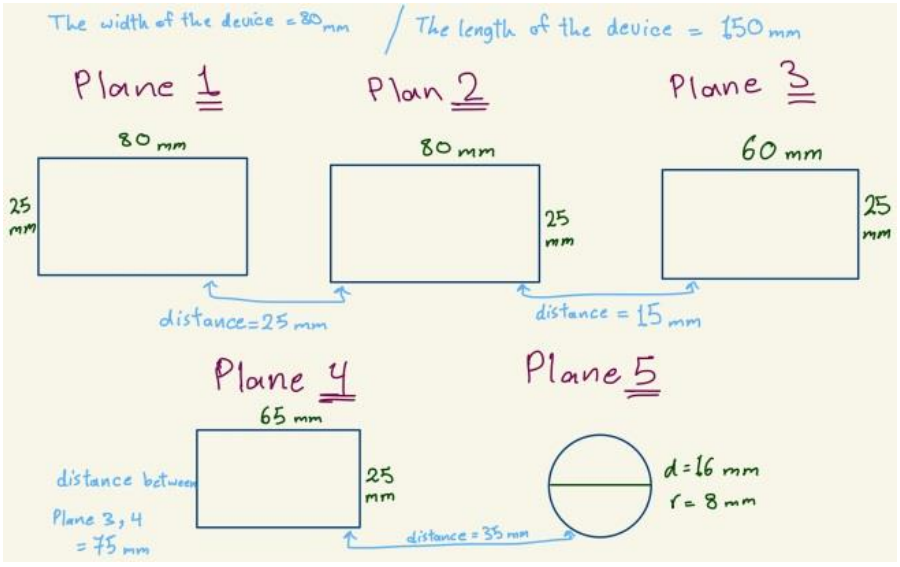


Color and texture Feature :

For the device appearance .



Dimention I usued for design this device .



Final result for the Linear probes