

b) The measuring cell is a specially designed double walled cell for maintaining the temperature of the liquid constant during the experiment. A fine micrometer screw is provided at the top which can lower or raise the reflector plate in the liquid in the cell through a known distance. It has a quartz crystal fixed at its bottom. High frequency generator is connected to the cell by the help of a cable provided with the instrument.

#### **PRECAUTION:**

Do not switch on the generator without completely filling the experimental liquid in the cell.

#### **MEASUREMENT:**

Insert the cell in the square base socket and clamp it with the help of a screw provided on one of its sides. Unscrew the knurled cap of cell and lift it away from double walled construction of the cell. In middle portion of it pour experimental fluid (water to start with) and screw back the knurled cap. In the present experiment, we do not propose to circulate liquid, therefore inlet and outlet (provided for liquid circulation) should be sorted by the help of a rubber tubing).

Connect the output terminal of the high frequency generator with the cell by coaxial shielded cable provided with the instrument. Switch the generator on and make adjustment (as explained earlier) to get good maximum deflection. The microammeter is used to notice the maximum deflection while it is moved up and down in the liquid. The micrometer is then slowly moved till the microammeter of high frequency generator shows a maximum. A number of reading of maximum, anode current are passed on and micrometer reading to current maxima are noted. An average of separation between such successive positions gives, once the wavelength is known the velocity of ultrasonic waves is water: determined as explained earlier.

#### **Record, Result and Report:**

Show a record of observations of temperature of liquid employed and positions of micrometer corresponding to current maxima for the liquid used. Calculate velocity of the ultrasonic waves using eq. (1).