

INSTRUMEN PENGUKUR ALIRAN

KARAKTERISTIK ALIRAN DAN VOLUME ALIRAN

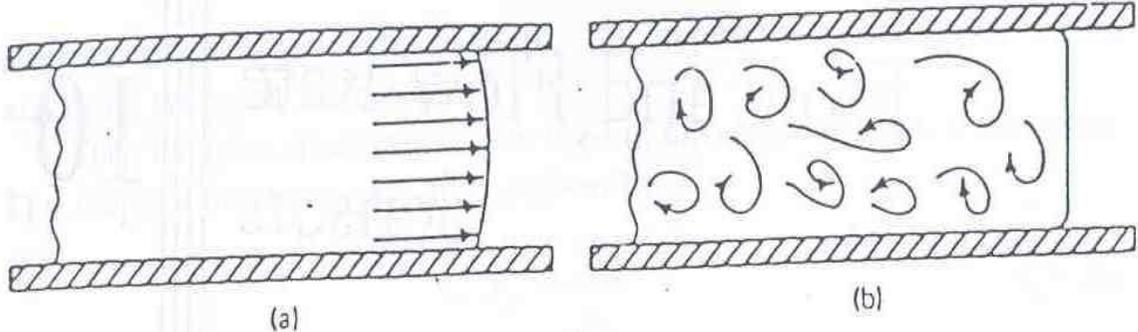


Figure 10-1 (a) Laminar flow; (b) turbulent flow.

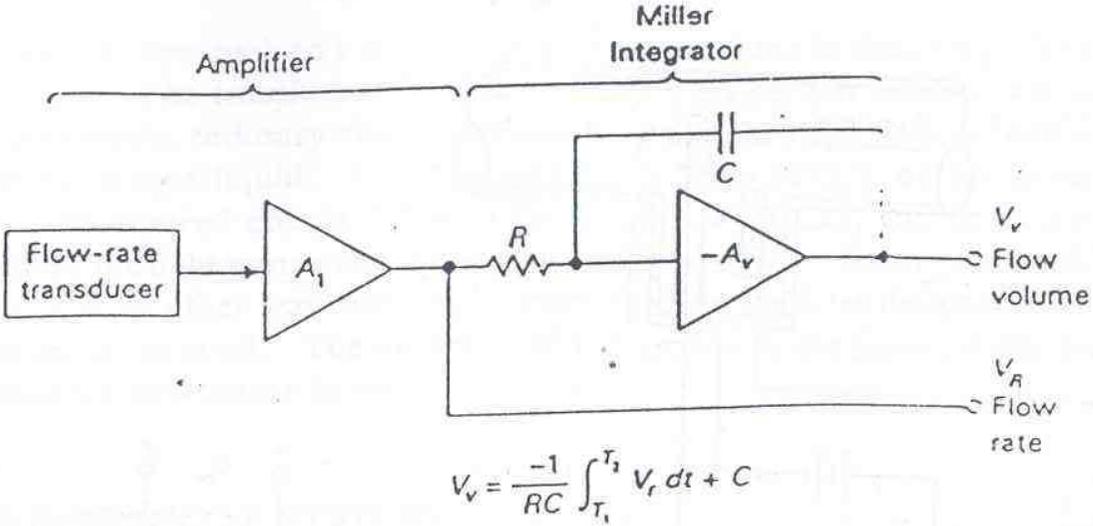


Figure 10-2 Integration of flow signal produces flow volume.

PENGUKUR ALIRAN DENGAN TERMISTOR DAN PHOTOTRANSISTOR

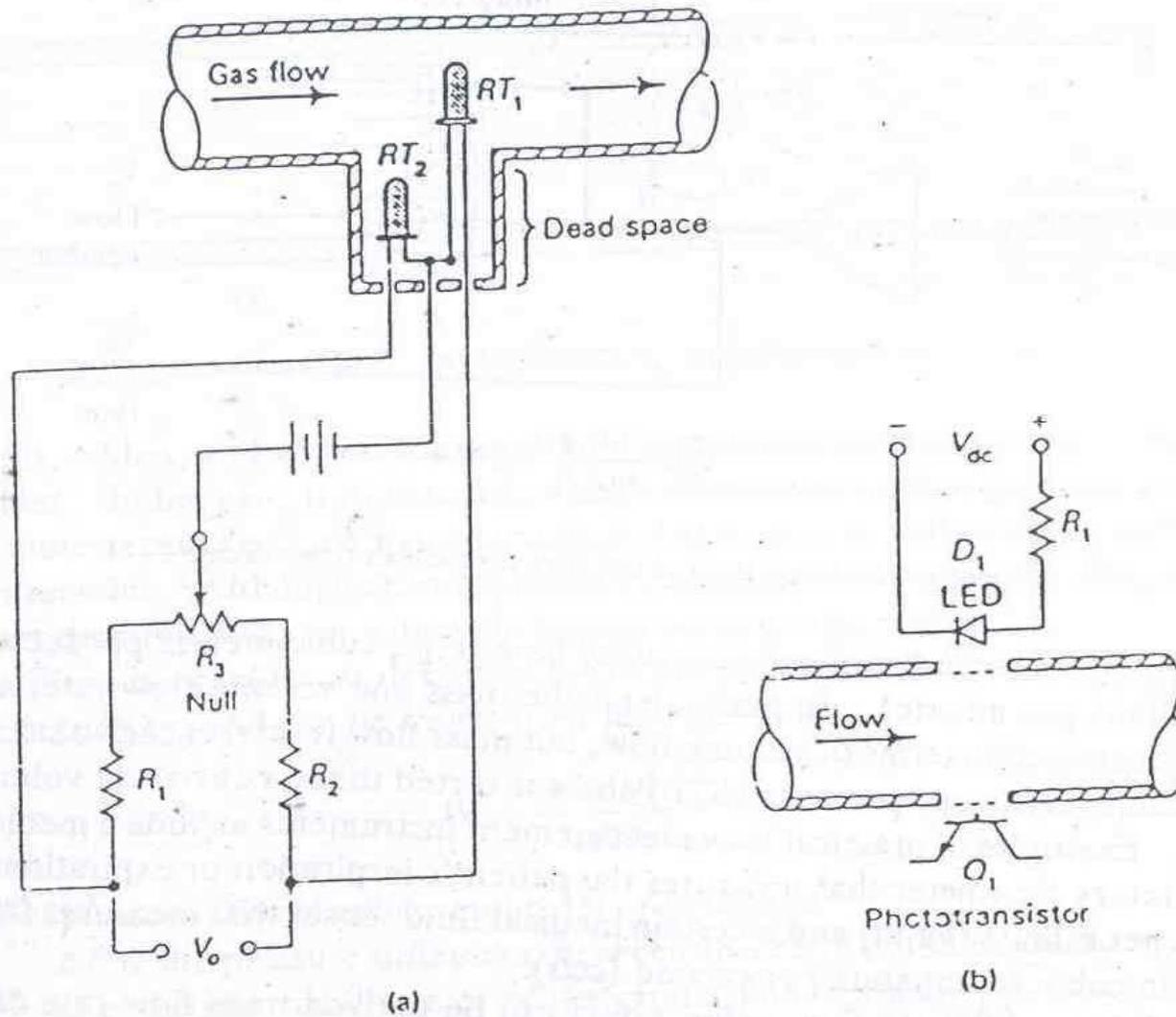


Figure 10-3 (a) Thermistor flow sensor; (b) electro-optical flow sensor.

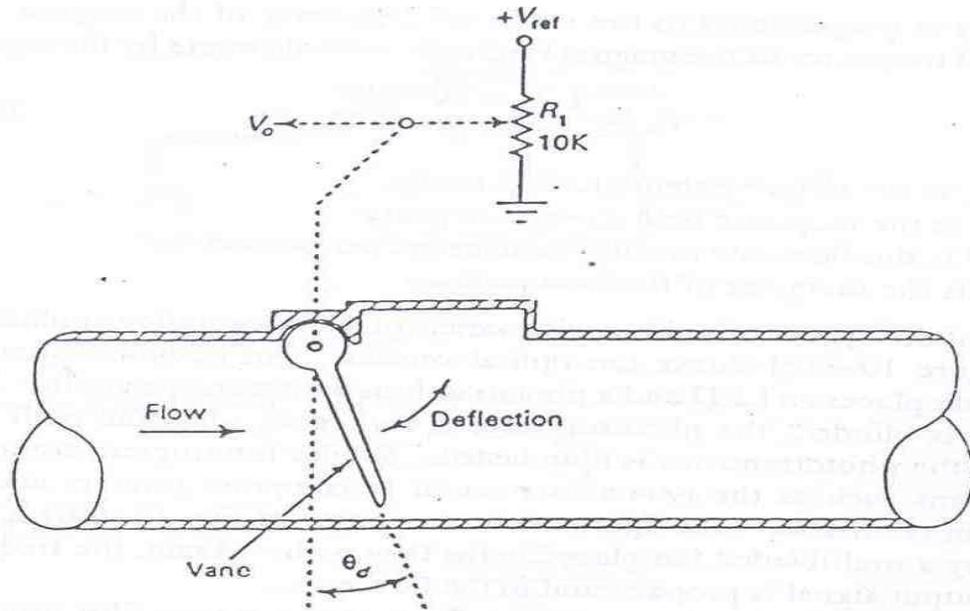


Figure 10-5 Vane flow meter.

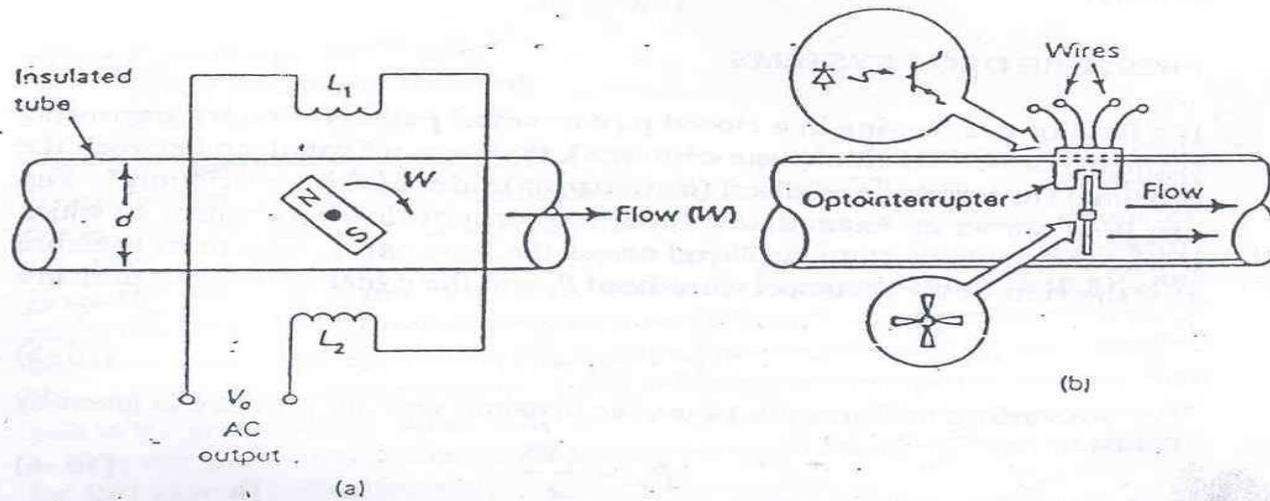


Figure 10-6 (a) Magnetic flow sensor; (b) rotor wheel flow sensor.

PENGUKUR ALIRAN MENGGUNAKAN PERBEDAAN TEKANAN

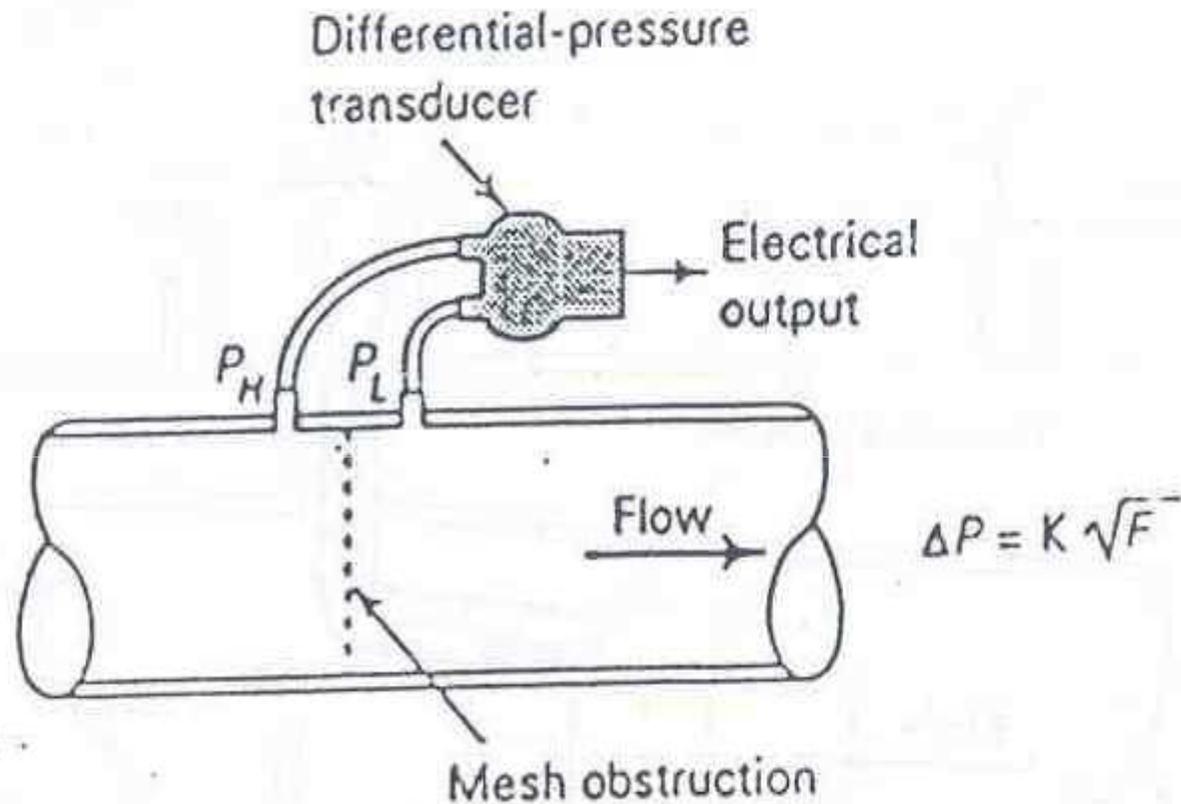


Figure 10-7 Pressure-drop flow measurement using wire mesh.

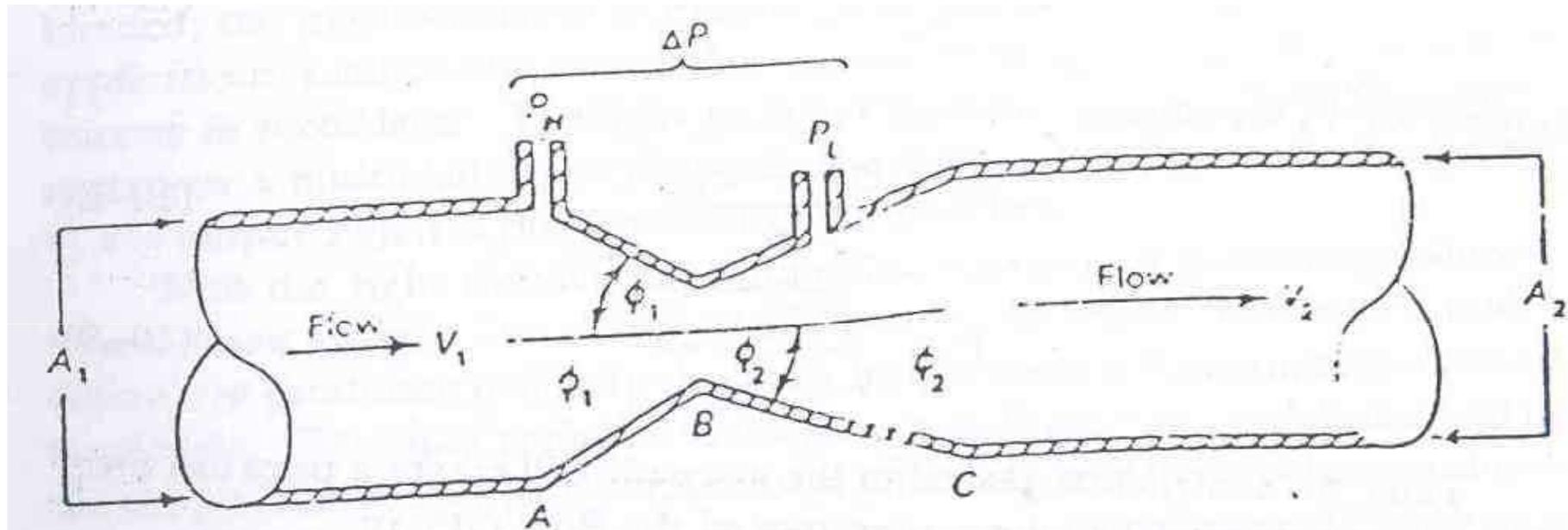


Figure 10-9 Diameter-change pressure-drop flow

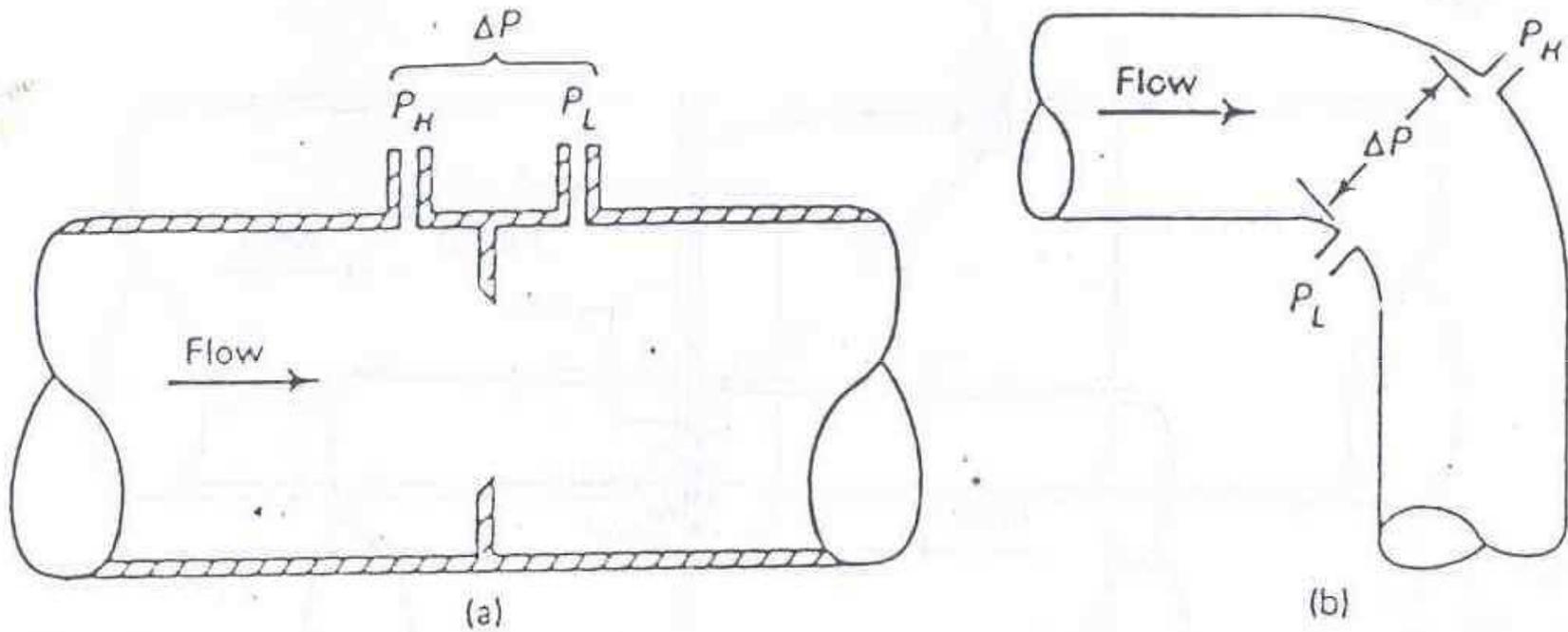


Figure 10-10 (a) Obstruction pressure-drop flowmeter; (b) direction-change pressure-drop flow sensor.

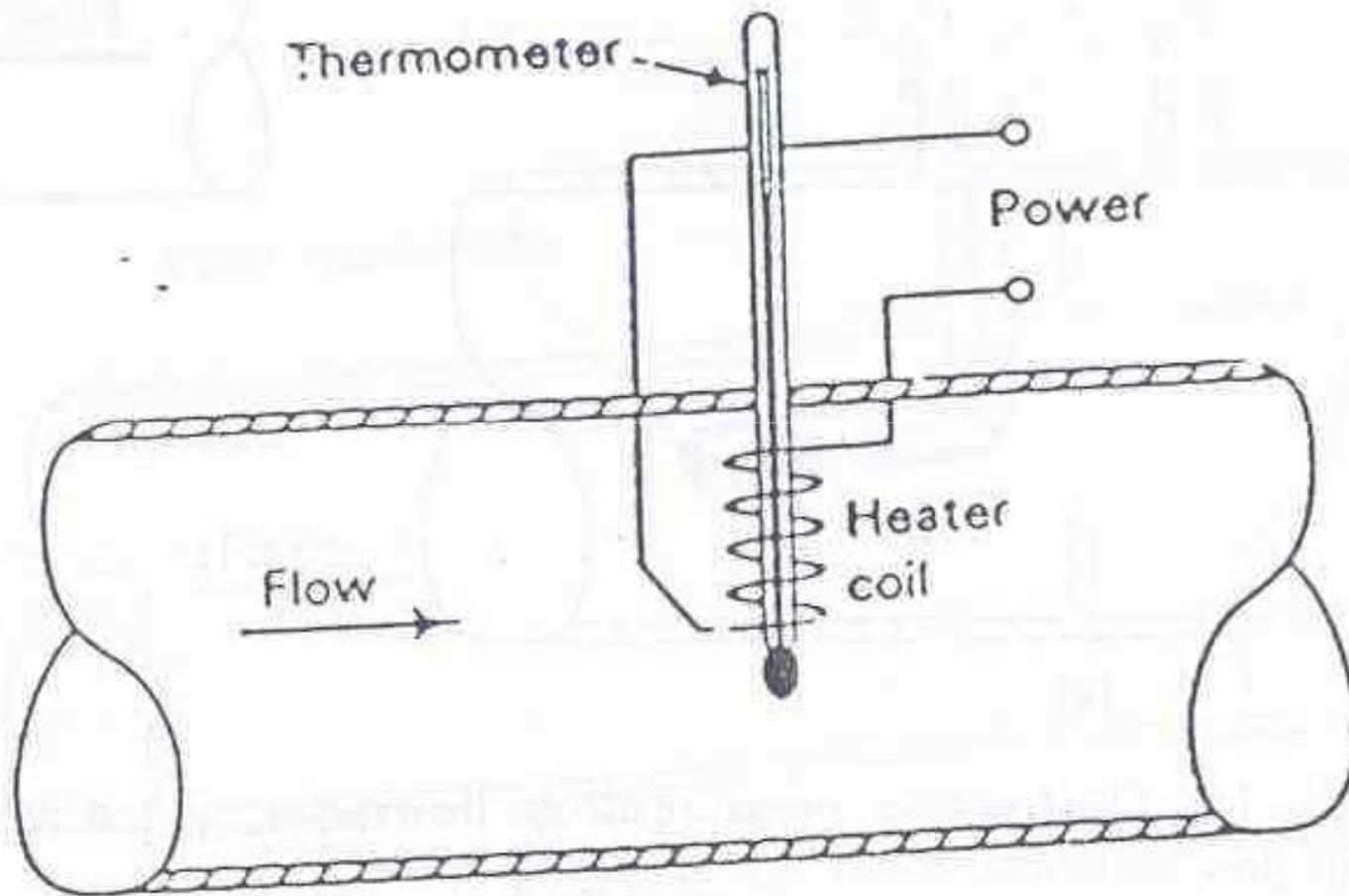


Figure 10-11 Self-heated thermometer flow sensor.

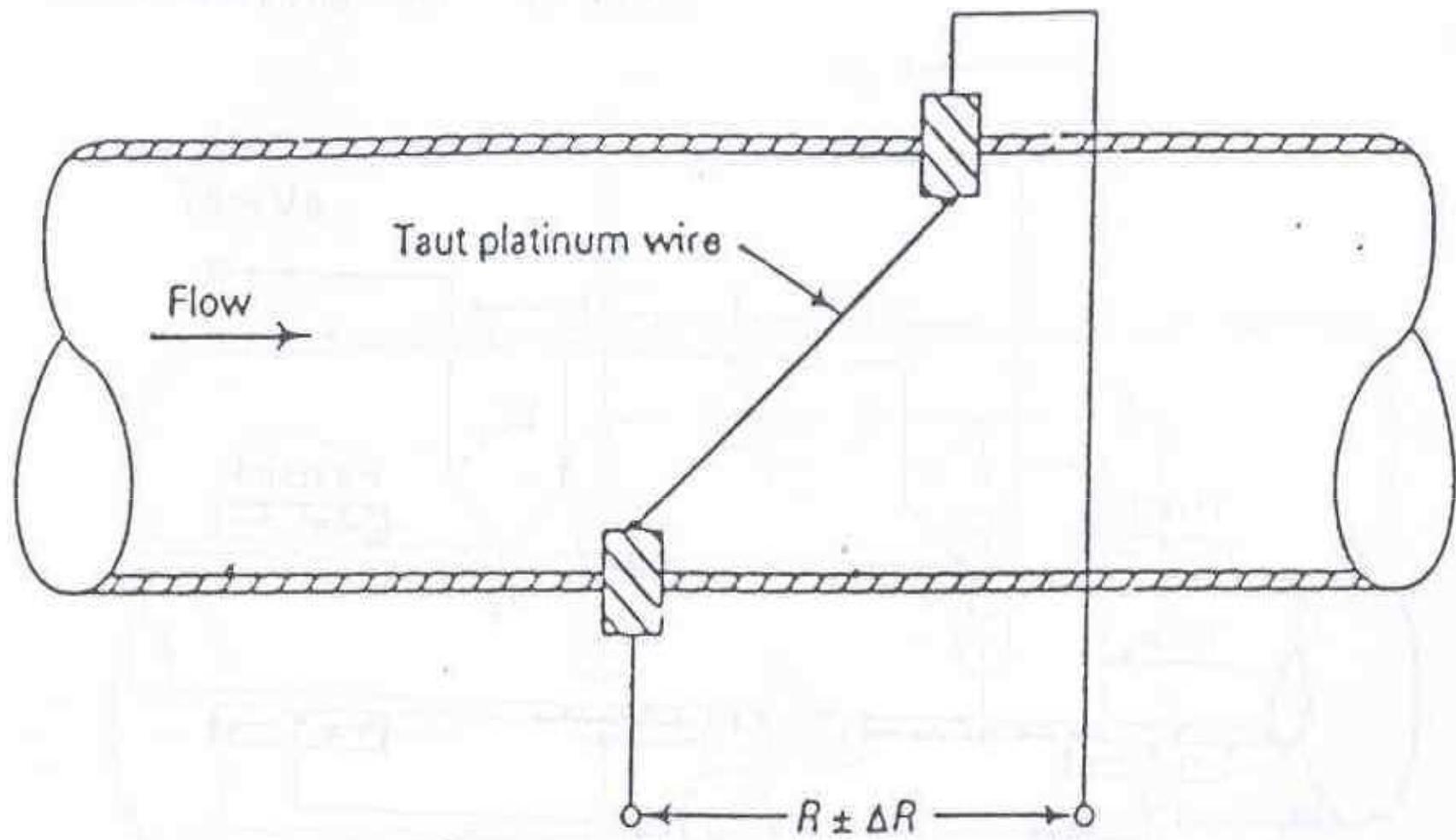


Figure 10--12 Taut platinum wire resistive flow sensor.

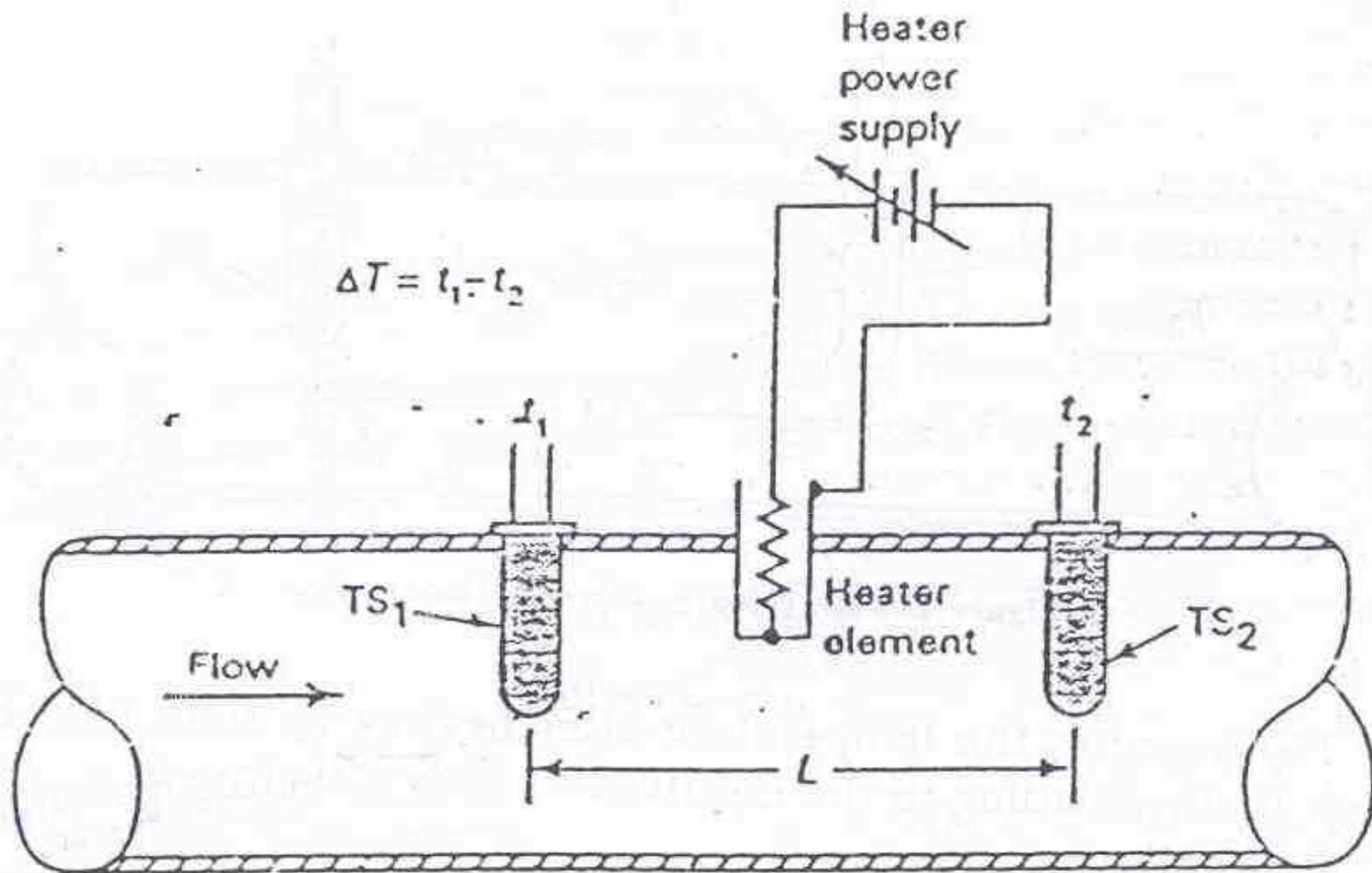


Figure 10-13 Temperature-drop flow sensor.

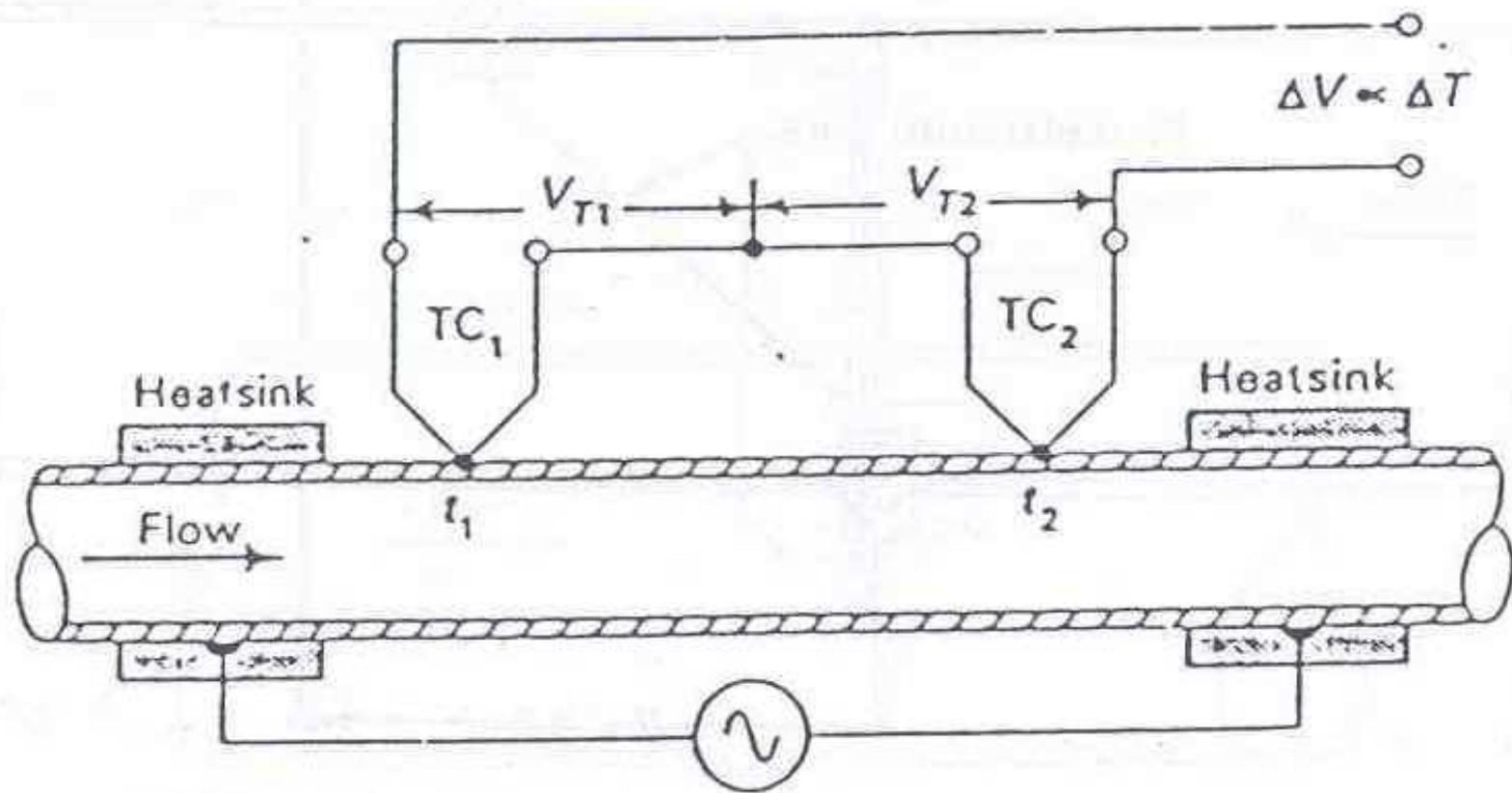


Figure 10-14 Thermocouple heat-drop flow sensor.

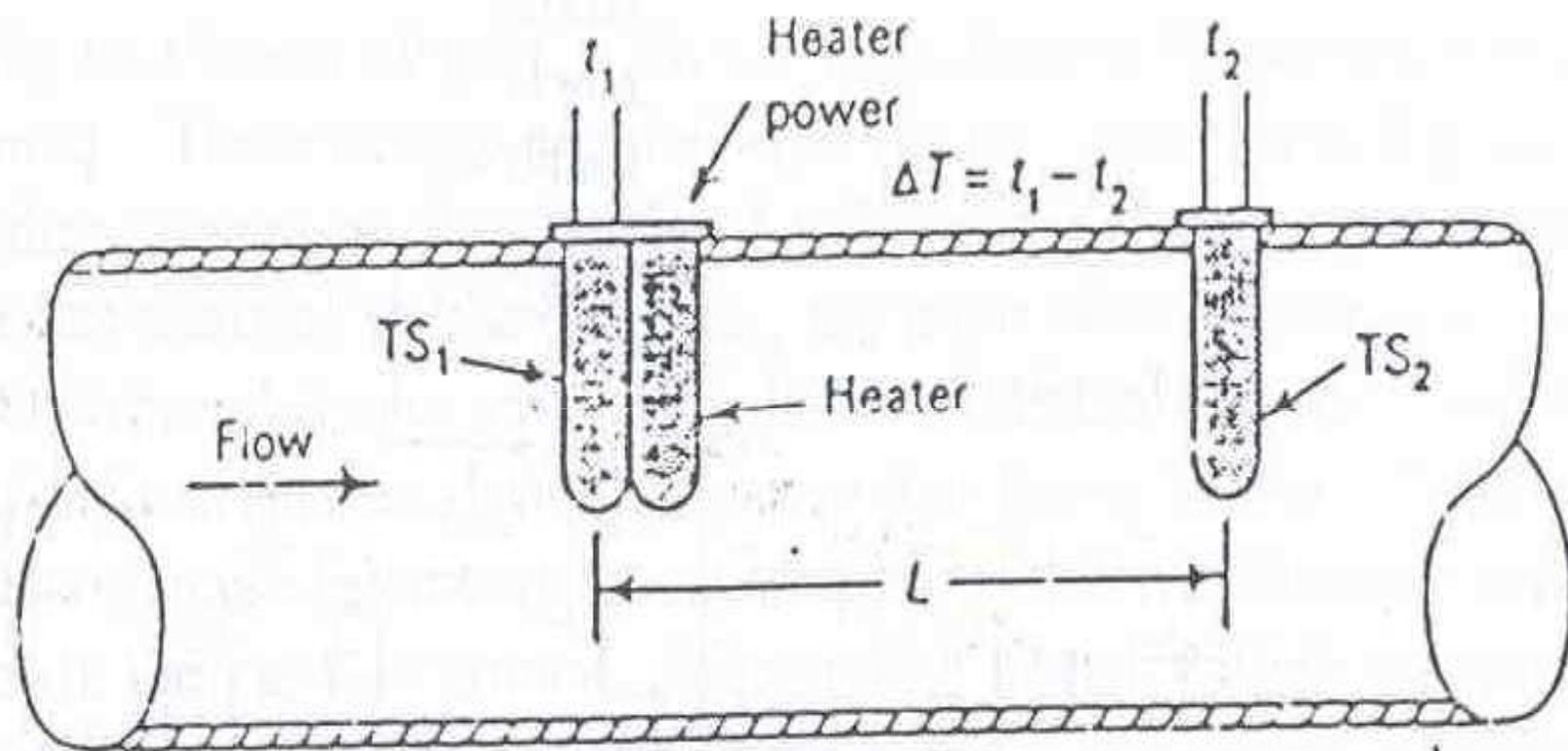


Figure 10-15 Heater-element flow sensor.

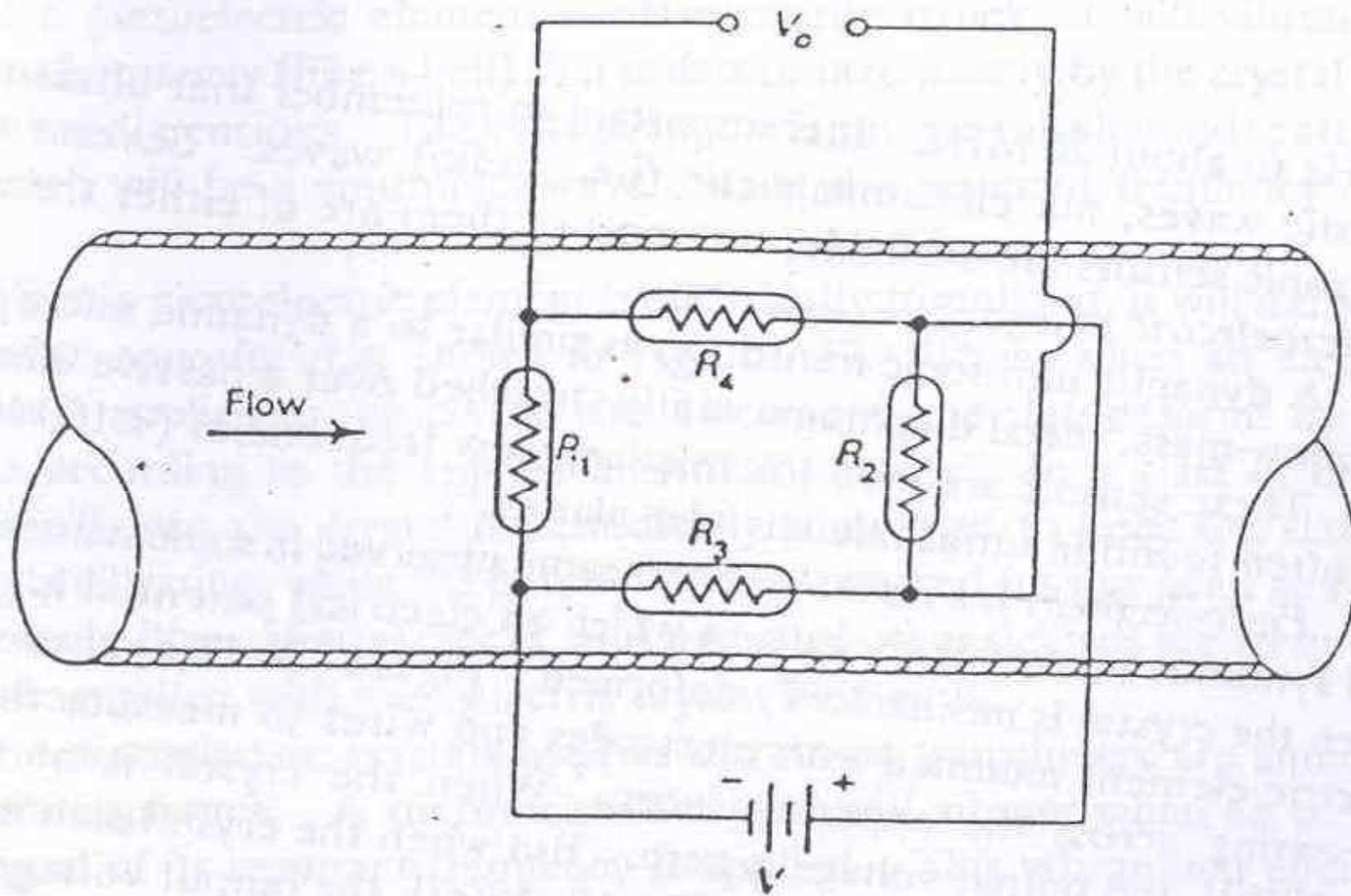


Figure 10-16 Resistive bridge sensor.

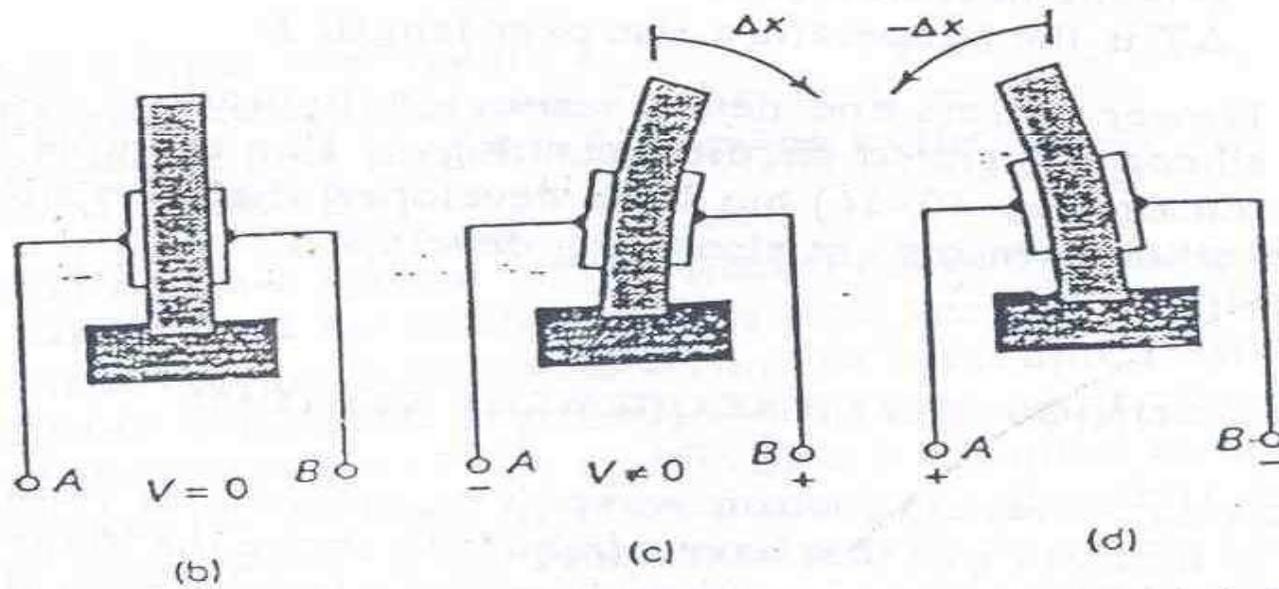
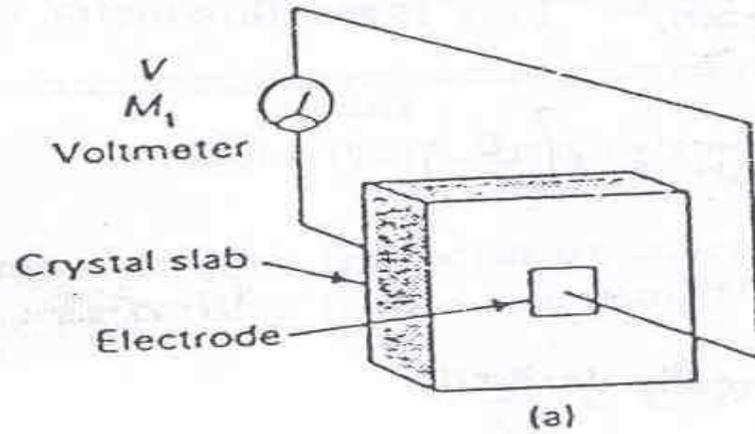


Figure 10-17 (a) Piezoelectric crystal sensor element; (b) at rest; (c) right deflection; (d) left deflection.

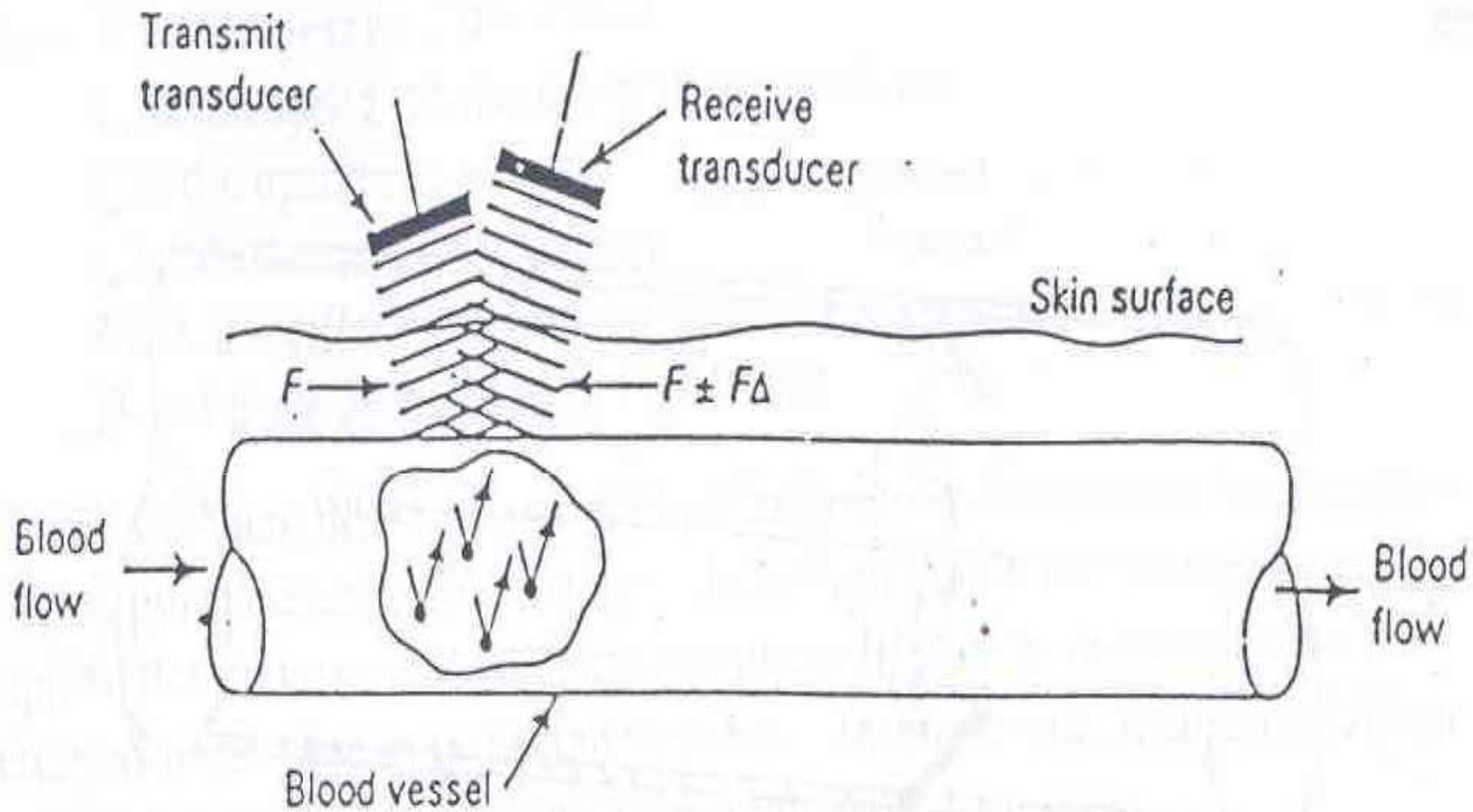


Figure 10-18 Ultrasonic Doppler flowmeter.

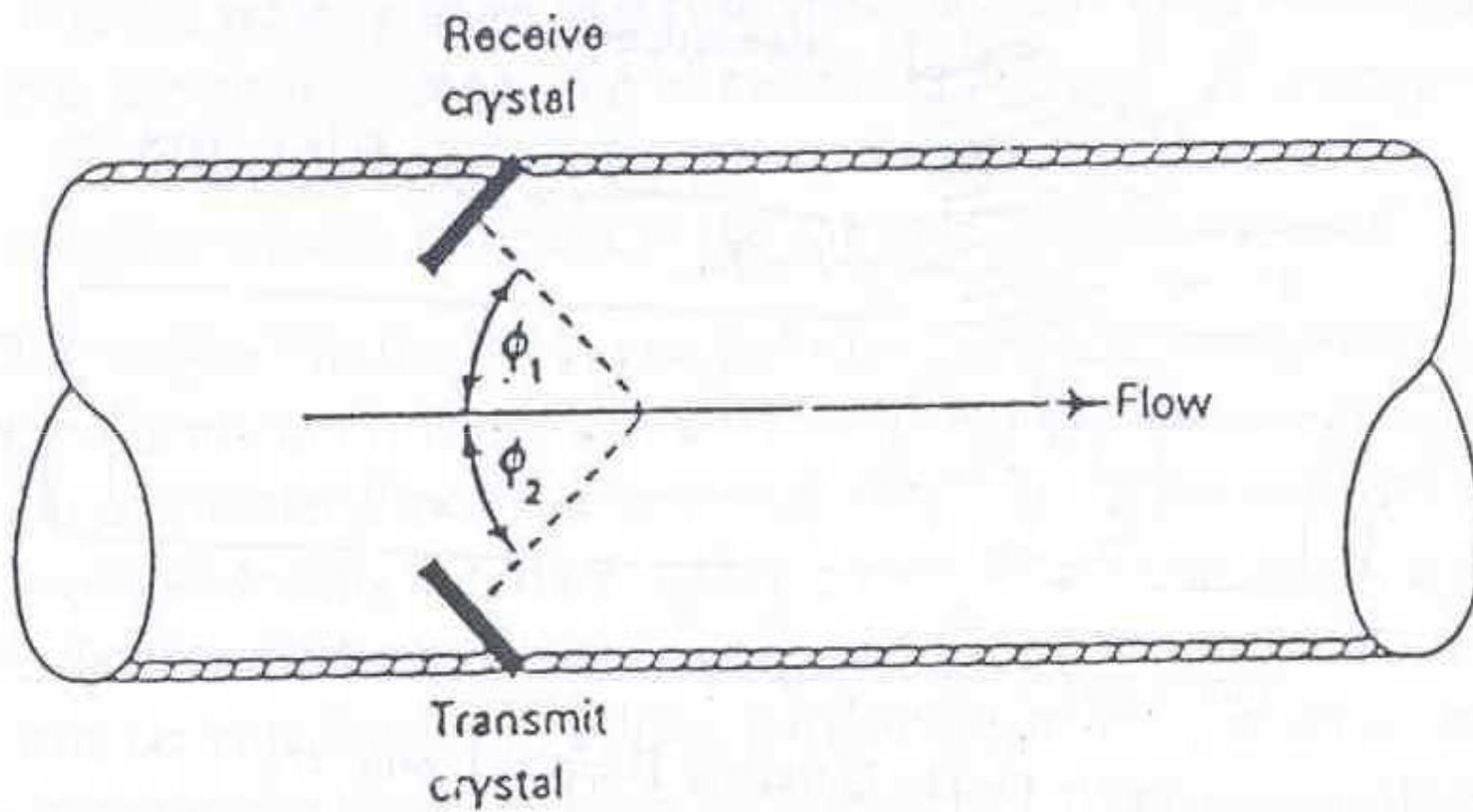


Figure 10-19 Ultrasonic flowmeter.

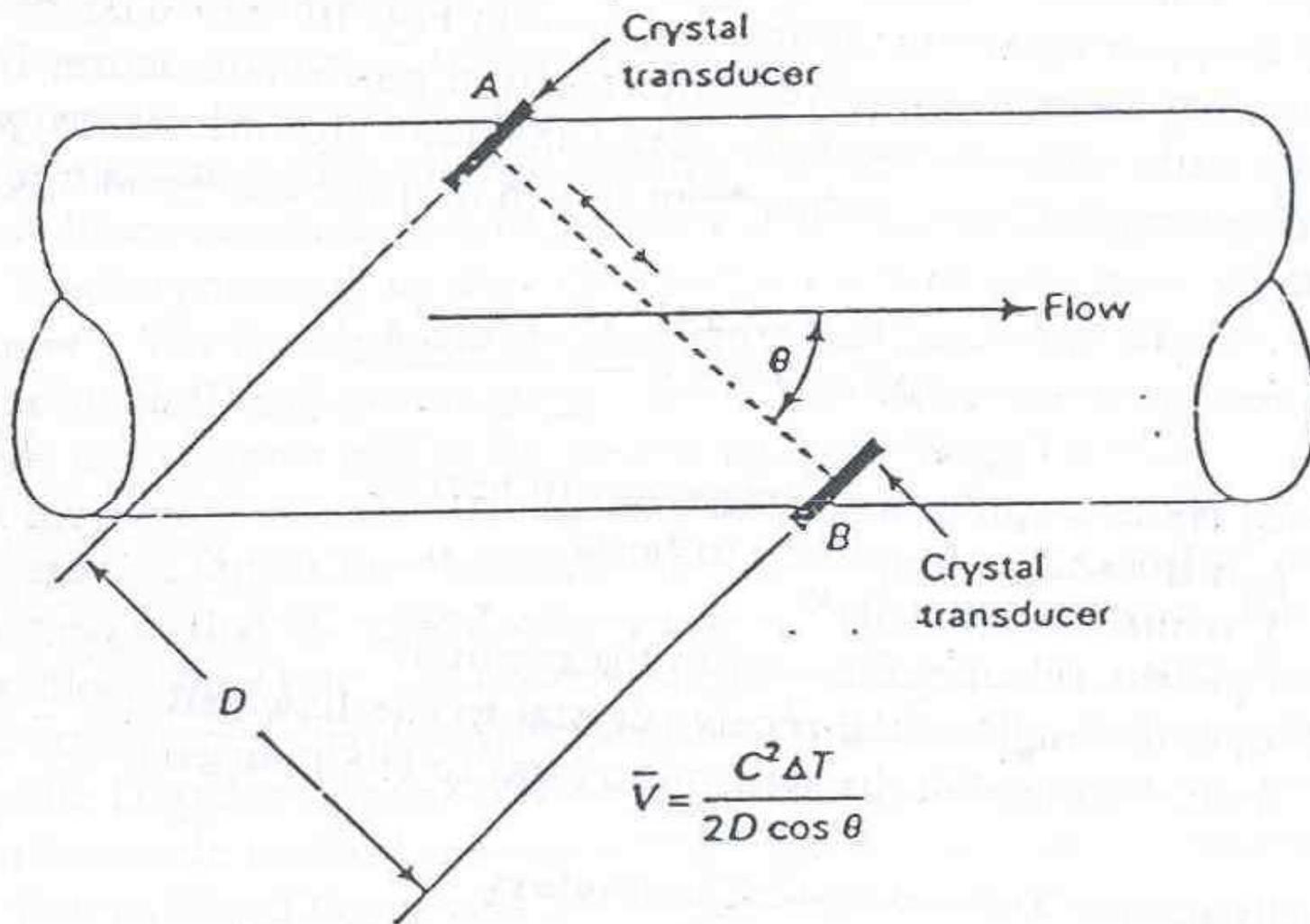


Figure 10-20 Ultrasonic transit-time flowmeter.

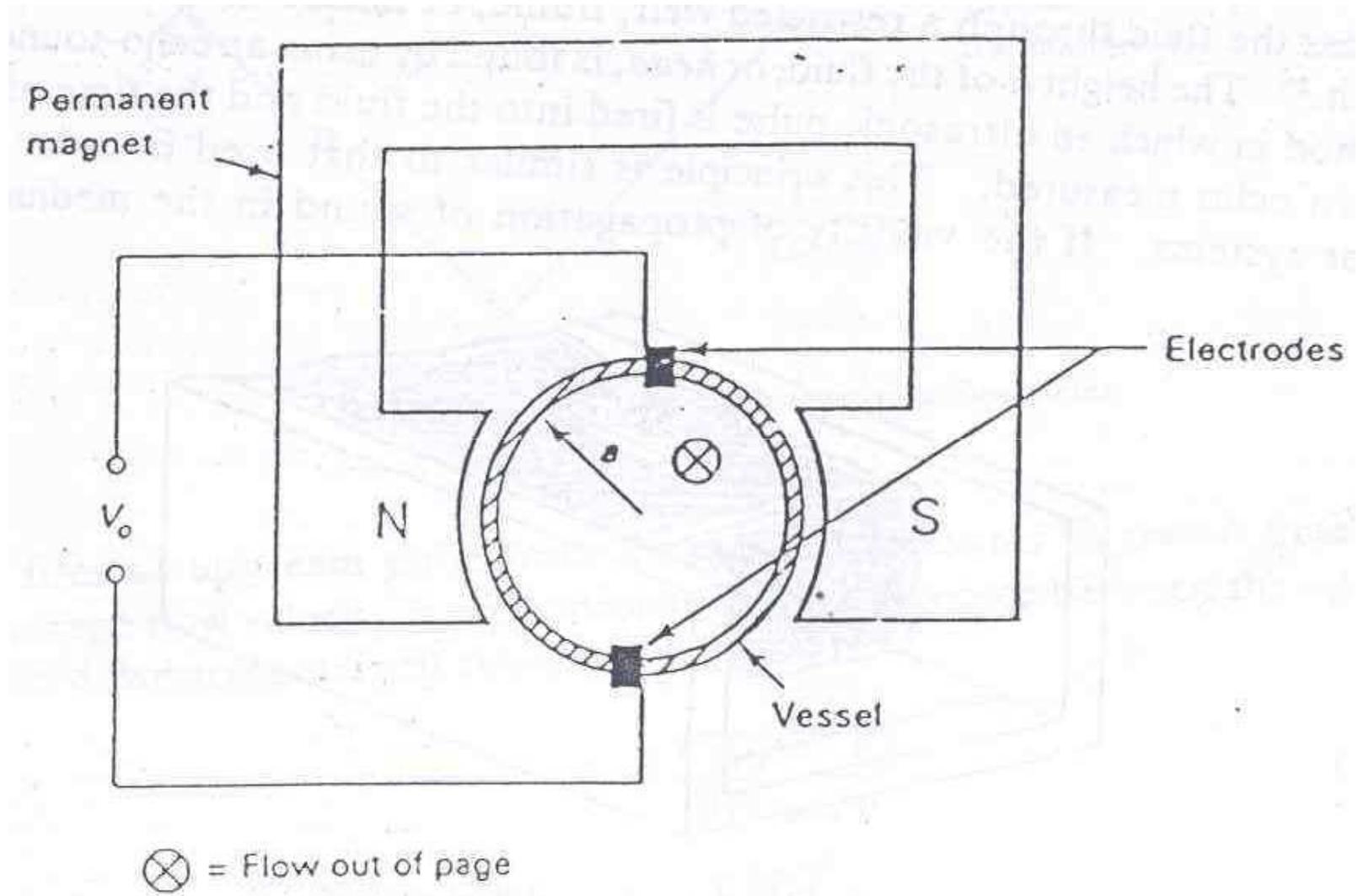
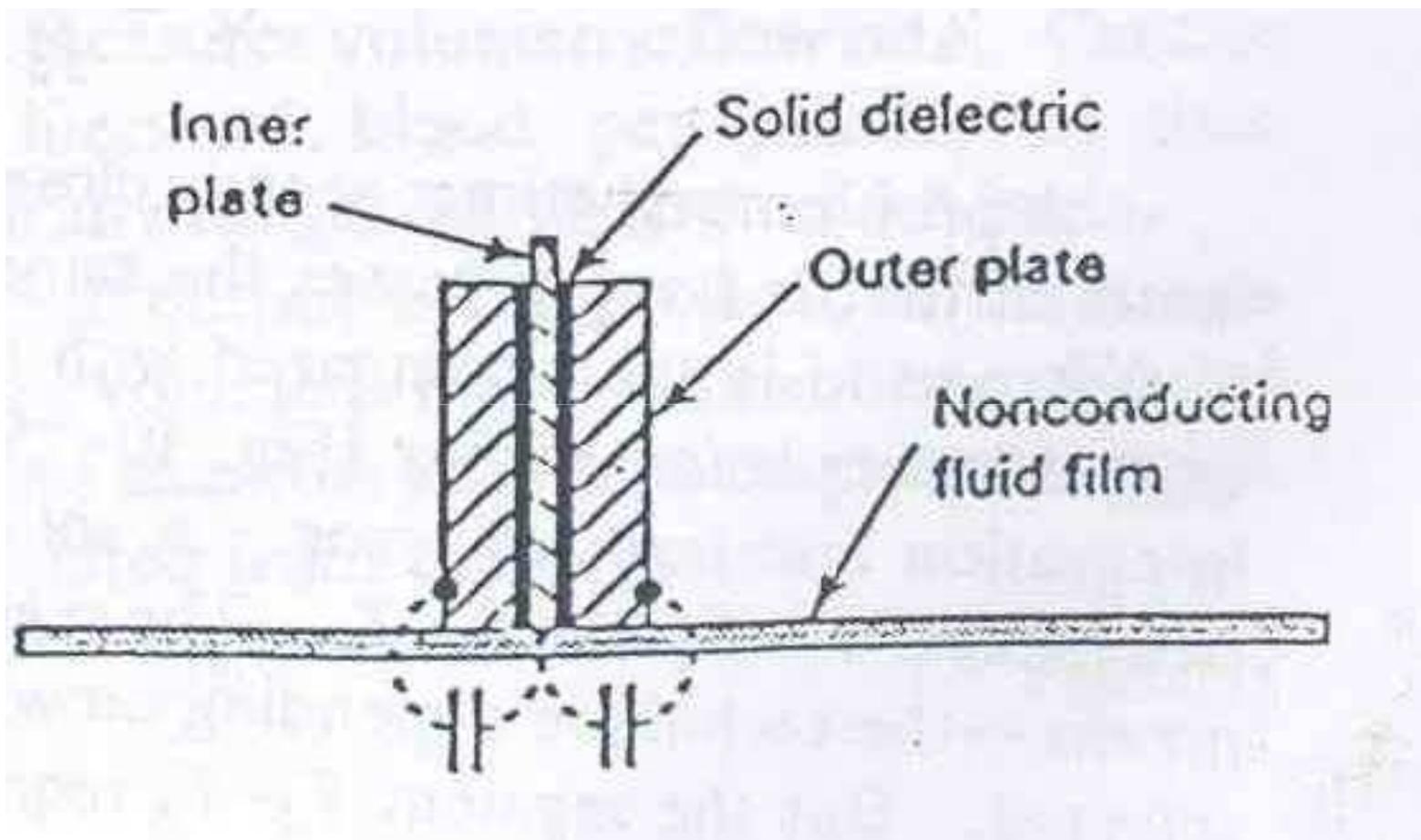


Figure 10-22 Magnetic flow sensing.



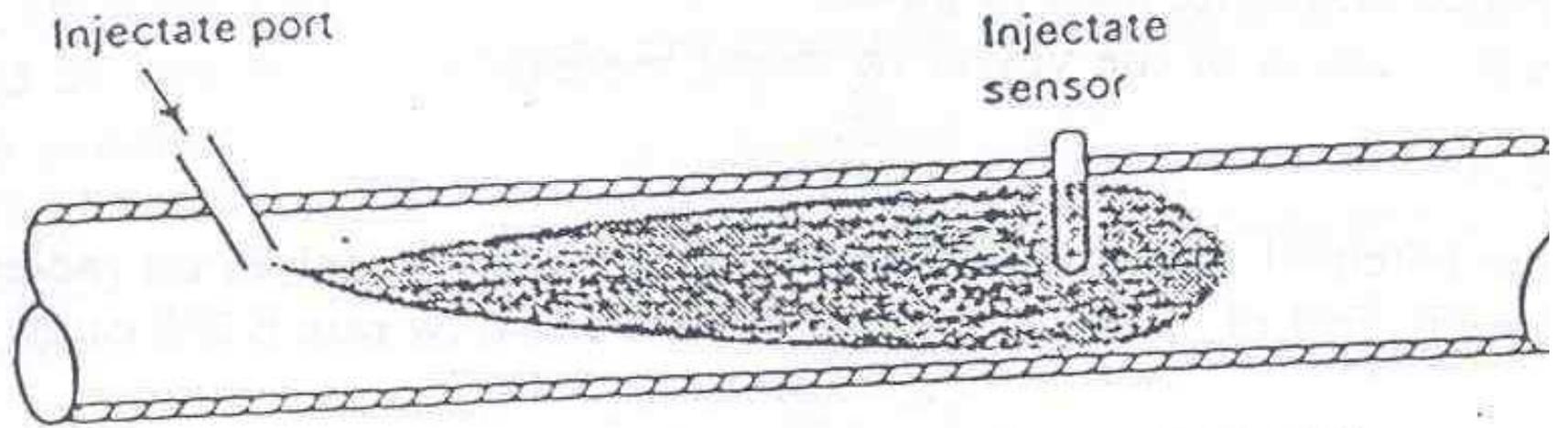


Figure 10-24 Dye injection/dilution flow measurement.

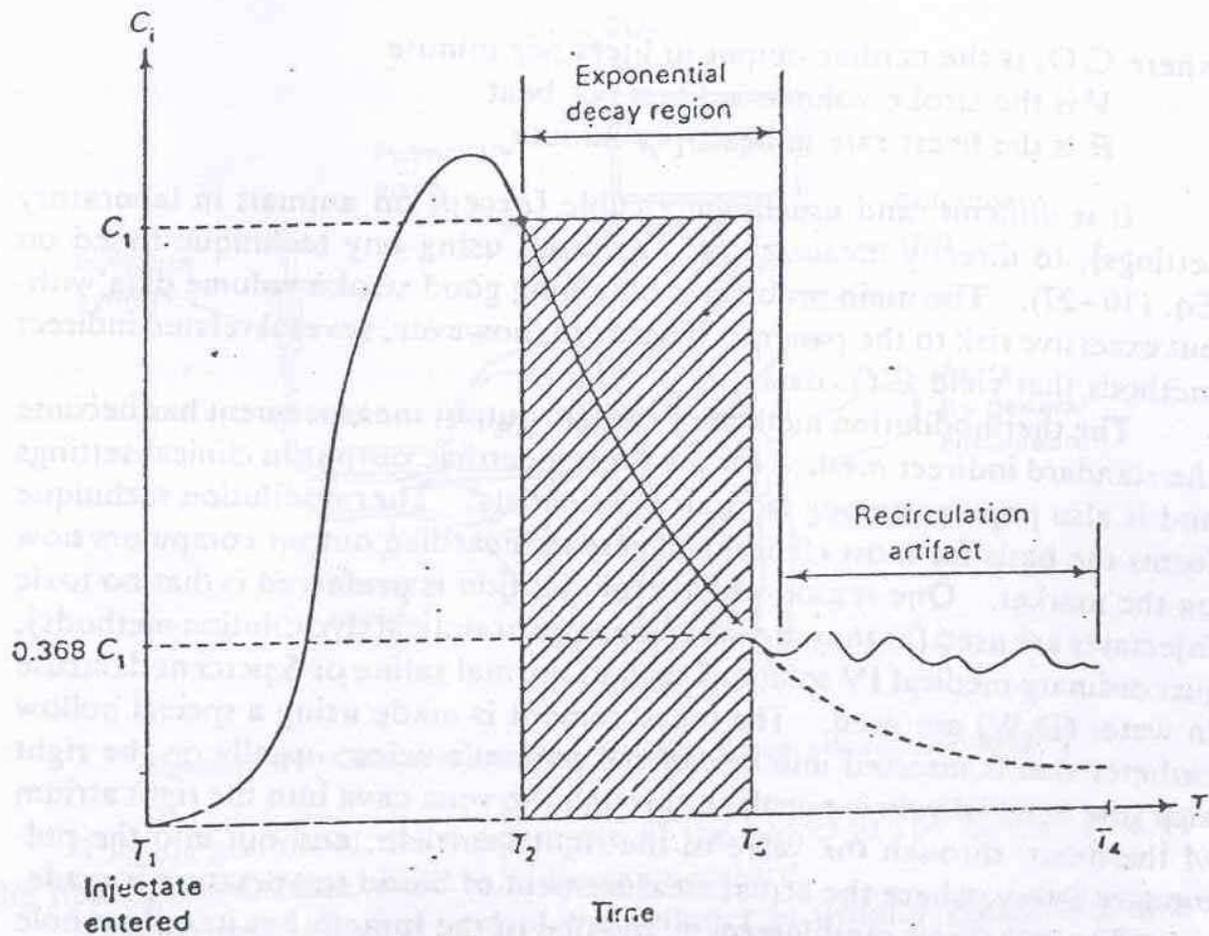


Figure 10-25 Geometric integration of the exponential decay portion of the flow waveform in dye-injection measurement.

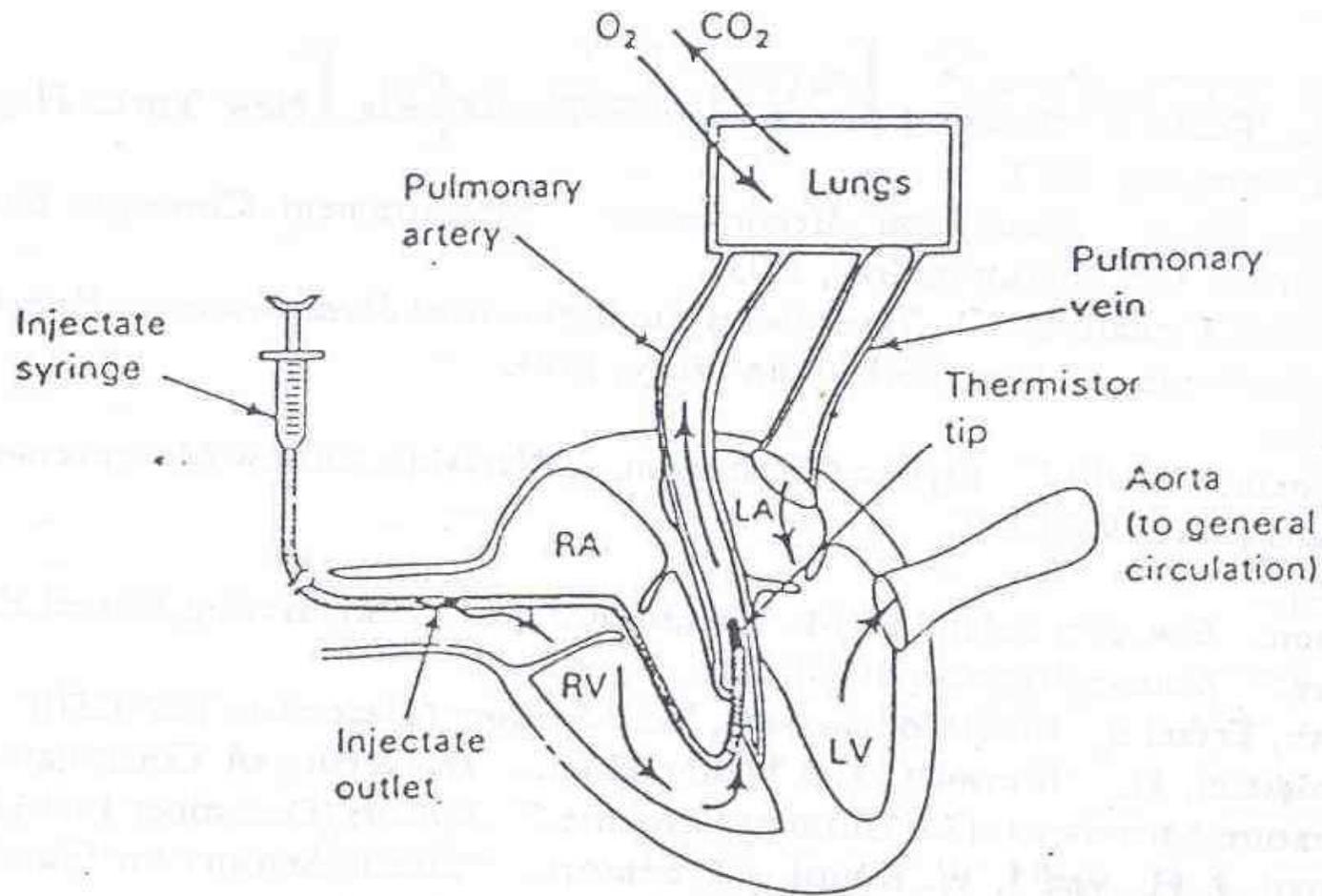


Figure 10-26 Cardiac output flow-detection system (thermodilution).

TERIMA KASIH