

EXPERIMENT NO 7

Aim: - To study constructional details of a centrifugal compressor.

Apparatus: - Model of centrifugal compressor.

Theory: - The centrifugal compressor are used to apply large quantity of air at low pressure, the compressor consist of a rotating impeller diffuser and casing. The impeller consists of a disc on which radial blades are attached. The impeller of a centrifugal compressor can be run at a speed of 20,000 to 30,000 rpm. The diffuser is other important part of compressor which surrounds the impeller and delivery passage for air flow. The air coming out from the diffuser is other important part of compressor which surrounds the impeller and delivery passage for air flow. The air coming out from the diffuser is collected in casing and then taken out from outlet. The air enters with low velocity and atmospheric pressure. The air moves radially outwards passing through the impellor increases the momentum of air flowing through it. Causing rise in pressure and temperature of air. The air leaving due impeller enters diffuser where its velocity is reduced by providing more cross-sectional for flow. The part of K.E of air if converted into pressure energy and pressure of air for flow. The part of K.E is converted into pressure energy and pressure of air further increased nearly half of the total pressure rise is achieved by impellor and remaining half in diffuser. A pressure ratio of '4' can be achieved in a single stage compressor for high pressure ratio of 12:1 is possible with multistage compressor. The change of pressure and velocity of air shown. The impeller which are generally used are can of the two type and subjected to equal and axial forces in opposite direction which is advantage of single eye impellor.

Viva Questions:-

1. What are the uses of compressed air?
2. Classify the centrifugal compressor?