1. INTRODUCTION:

1.1 Definition
Hacksaw Machines offered by us are used for metal cutting ranging from transportable model to giant size machine. Owing to smooth & speedy functioning abilities, these hacksaw machines operations spontaneously for aiding the worker in consistently carrying his work with ultimate competence. The sewing machine is a machine tool designed to cut material to a desired length or contour. It functions by drawing a blade containing cutting teeth through the work piece. The sewing machine is faster and easier than hand sawing and is used principally to produce an accurate square or mitered cut on the work piece

1.2 Scotch Yoke Mechanism
Scotch yoke is a mechanism for converting the linear motion of a slider into rotational motion or vice-versa. The piston or other reciprocating part is directly coupled to a sliding yoke with a slot that engages a pin on the rotating part. The shape of the motion of the piston is a pure sine wave over time given a constant rotational speed. The Scotch yoke (also known as slotted link mechanism) is a reciprocating motion mechanism, converting the linear motion of a slider into rotational motion, or vice versa. The piston or other reciprocating part is directly coupled to a sliding yoke with a slot that engages a pin on the rotating part. The location of the piston versus time is a sine wave of constant amplitude, and constant frequency given a constant rotational speed. Machines are mechanical devices used to accomplish work. A mechanism is a heart of a machine. It is the mechanical portion of the machine that has the function of transferring motion and forces from a power source to an output. Mechanism is a system of rigid elements (linkages) arranged and connected to transmit motion in a predetermined fashion. This setup is most commonly used in control valve actuators in high-pressure oil and gas pipelines. Although not a common metalworking machine nowadays, crude shapers can use Scotch yokes. Almost all those use a Whitworth linkage, which gives a slow speed forward cutting stroke and a faster return. It has been used in various internal combustion engines, such as the Bourke engine, SY Tech engine, and many hot air engines and steam engines. The term Scotch yoke continues to be used when the slot in the yoke is shorter than the diameter of the circle made by the crank pin. For example, the side rods of a locomotive may have Scotch yokes to permit vertical motion of intermediate driving axles.

1.3 Construction
The Scotch yoke mechanism is constructed with iron bars. Here the crank is made in some length and the yoke is also made using the same material. It is noted that the minimum length of the yoke should be double the length of the crank. The crank and yoke is connected with a pin. Iron bars are welded to both sides of the yoke to get the reciprocating motion. The yoke with the iron bars is fixed on the display board with the help of c clamp. Now the crank is welded to the end of the shaft of the motor. Now the pin on the crank is connected to the yoke. The pin used to connect yoke and crank is a bolt.

2. HACKSAW MACHINE

2.1 Types of Hacksaw Machine
(1) Light duty hacksaw machine.
(2) Hydraulic hacksaw machine.
(3) Power hacksaw machine.
(4) Circular band hacksaw machine.
(5) Horizontal swing type band saw machine.
(6) Band hacksaw machine.
(7) Jigsaw machine.
(8) Universal type circular hacksaw machine.

Fig -1: Hacksaw Machine [1]
The hacksaw blade has 2 main characteristics:

1. Teeth pitch which is the number of teeth per 25 mm.
2. Blade length which is the length between the centers of its pin holes.
3. Blades are available in standardized lengths, 10 or 12 inches (254 or 305 mm) for standard hand hacksaw.
4. The pitch of the teeth can be anywhere from fourteen to thirty-two teeth per inch (tpi) for a hand blade, with as few as three tpi for a large power hacksaw blade.

a. Hacksaw blades are normally quite brittle, so care needs to be taken to prevent brittle fracture of the blade.

b. Hacksaw blades have used high speed steel for their teeth, giving greatly improved cutting and tooth life.

c. Hacksaw blades have two holes near the ends for mounting them in the saw frame and the 12 inch / 300 mm dimension refers to the center to center distance between these mounting holes.

A sensor's sensitivity indicates how much the sensor's output changes when the input quantity being measured changes. For instance, if the mercury in a thermometer moves 1 cm when the temperature changes by 1 °C, the sensitivity is 1 cm/°C (it is basically the slope Dy/Dx assuming a linear characteristic). Some sensors can also affect what they measure; for instance, a room temperature thermometer inserted into a hot cup of liquid cools the liquid while the liquid heats the thermometer. Sensors are usually designed to have a small effect on what is measured; making the sensor smaller often improves this and may introduce other advantages. Technological progress allows more and more sensors to be manufactured on a microscopic scale as micro sensors using MEMS technology. In most cases, a micro sensor reaches a significantly higher speed and sensitivity compared with macroscopic approaches.