FABRICATION OF AUTOMATIC RIVETING MACHINE

SYNOPSIS

It was decided to fabricate a Pneumatic Riveting machine of 30 kg. Capacity with the intention of putting into practice our theoretical knowledge in designing and fabrication process.

The structure is a simple one making use of square rod (solid). Rectangular blocks (hollow) and thin sheets readily available without restoring casting. The structure has minimum number of welding joints and it is easy to assemble.

The machine incorporates a pneumatic cylinder and controls which are commercially available.

Compressed air from the compressor storage tank used as the working fluid.

Depending upon the type of rivet head different types of Rams and Anivls are used.

INTRODUCTION

Riveting is one the type of permanent fastening. They are generally used to fasten mental plates and rolled steel section in structural works, such as bridges and rook trusses and in the construction of pressure vessels such as storage tanks, boilers, etc., Riveted joints are effective in designs subjected to pronounced vibration loads. Where welded joints are less reliable. Riveted joints may also be employed to connect metals which are difficult to weld together and in the joints which

permit no heating in welding due to possible tempering or warming of the finished machine parts.

The use of rivets and machine riveting has been constantly expanding for both job-shop and production-line operations. The automotive, electronic appliances, electronic furniture, hardware, military, sheet metal are among the many in which riveting is a popular fastening method. This growth in riveting has occurred because of further refinement of high sped riveting techniques and because over the years, it is inherent advantages have become more and more valuable with changes in manufacturing.

OBEJECTIVE OF THE PROJECT

Once the number of location of rivets in an assembly are known, the goal is to set these rivets properly at the lowest in-place-cost and with a satisfactory rate of return on machine investment. Riveting procedures, types of rivet setting machines, riveting fixtures, machine layouts and maintenance procedures must all be established. These factors must considered with respect not only to the particular riveting job but also over all riveting capabilities and volume requirements of the assembly plant.

Before any decision can be made on rivet setting procedures certain facts about the assembly are needed specially. Theses questions should be answered.

1) How many assemblies must be riveted over what period of time?

2) What is the maximum production rate that may be required?

3) How many different rivet sizes, diameter and length are involved in the assembly?

4) Will the parts to be riveted require special handling?

5) Are any of the parts to be riveted made of fragile Materials?

ADVANTAGES OF RIVETS

1) Rivets are much lower in cost than coparable thread.

2) They are produced tremendous quantities in high sped heading machines.

3) Unit labour costs for setting rivets are low.

4) Rivets can be used to join dissimilar materials in varying thickness as long as its shank length.

5) Any material than can be cold worked can be made into rivets.

6) Wide variety surface finishes are available.

7) Rivets can also serve as pivot shafts, spacers, electric, contacts, stop and inserts.

8) The riveted joint is a positive joint and thus quality is determined by visual inspection.

9) Quality is immediately apparent on completion of the operation.

10) If assembly is loose, it can be seen by the operator and corrective action taken.

LIMITATIONS OF RIVETS

Rivets have some limitations, too.

1) Their tensile and fatigue strengths are lower than those of bolts.

2) High tensile loads can pull out the clinch and severe vibrations can loosen the Riveted joints may not be either watertight or airtight.

3) The strength of a riveted joint is usually many times more than required by most applications.