

Experiment No. 18

Statement:

Installation of repair patch of Aluminum alloy sheet on Aircraft structure

Desired Learning Objectives

2. To participate the trainees with aircraft structure repairing

Equipment / Material Required

3. Following are the requirements: -
 - (a) Pneumatic drill machine
 - (b) Pneumatic hammer
 - (c) Bucking Bars
 - (d) Piece of Aluminium Sheet
 - (e) Twist drill.
 - (f) Measuring tape
 - (g) Rivets
 - (h) Counter sunk drill
 - (i) Rivet cutter
 - (j) Centre punch
 - (k) Deburring tool

Safety Precautions

4. During this practical, students must be briefed about following precautions:
 - (i) While working, don't not carry loose item such as (Ring, Watch, loose clothes)
 - (ii) Use rigging shoes while working on aircraft body.
 - (iii) Never point the Drill Machine at anybody.
 - (iv) Never depress the Trigger mechanism unless the Set is held tightly against a Block of work piece.
 - (v) Never treat a Drill machine as a toy.
 - (vi) First stop the drill machine then Safely remove the air hose
 - (vii) Use appropriate size of rivet as specified in technical manual.
 - (viii) Use appropriate size (gauge) of sheet as specified in technical manual.

- (ix) Holes must be laid out in correct locations, taking into account the pitch and edge distance requirements.
- (x) Holes must be centre-punched by using a backing Plate to avoid sheet distortion. Parts are to be assembled securely together and supported while being drilled with a **sharpened bit of the correct size**.
- (xi) Holes are deburred.

Procedure

- (i) Measure the damage area with the help of measuring tape.
- (ii) Cut the Aluminium alloy sheet according to the measurement of damage area.
- (iii) Mark the position of holes on aluminium alloy patch with lead pencil.
- (iv) Mark the holes on aluminium alloy patch with the help of centre punch.
- (v) Drill out the holes on aluminium alloy patch by using appropriate size of twist drill.



Fig: 6.2.1 Pneumatic Gun

- (vi) Remove the sharp edges of holes by using de-burring tool.



Fig: 6.2.2 De-burring tool

(vii) Use the countersunk bit if required.



Fig: 6.2.3 Countersunk bit

(viii) Position the aluminium patch over damage area

(ix) Insert the appropriate rivets in the holes.

(x) The rivets are usually driven by means of a **pneumatic hammer and a Bucking Bar to "back up" the Rivets**. In order to install Countersunk Rivets, it is necessary to provide a conical depression in the surface of the skin so that the Head of the rivet is flushed with the surface.



Fig: 6.2.4 Backing Bar

Conclusion:
