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Experiment : 6

Object : To understand the contraction principle of working circuit ,dismantlig ,  
assembling , possible faults , testing methods of following appliances

- a). Ceiling Fan
- b). Table Fan

A): Ceiling Fan

Tools Required

Insulator combinational players	150 mm
Screwdriver	75mm
Insulated nose plier	150 mm
Hammer 250 gram	
Die set of spanners	
Test lamp	40 watt

Material Required

Mobile oil , grease , empire , sleeves

Theory : Construction and working principle

There may be of three main types of fan i.e

- 1) DC table fans or ceiling fans
- 2) AC table fan or ceiling fan
- 3) AC/DC table fan or ceiling fan

An electric fan is simply an electric motor ,  
fan rotating blades to throw the air

DC fans are of DC series motor in which the rotating part armature is connected in series  
with stationary part i.e field coils when the current is given show the motor the magnetic field is  
set up in the field winding which experience a force in armature tending to move it at right angle  
to the field and the blades attached with the shaft of the armature displac the air.

The same principle applies to the AC fans but these is some difference in  
the construction of AC fans is called stator or armature .  
In the case of AC fans mainly two types of single phase motors .  
These all types of motor work on the principle of inductor type motor

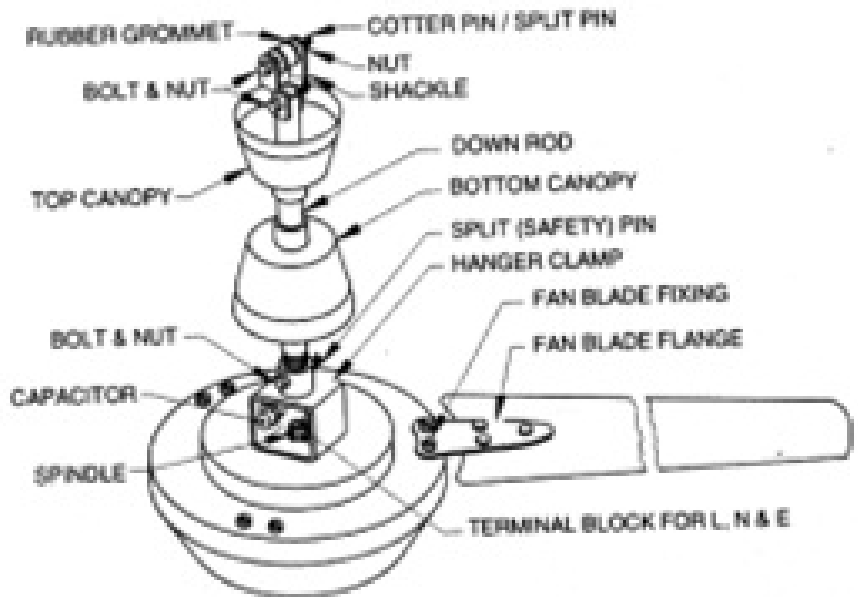
In case of AC / DC fan universal motor are used in which the wound armature and field  
winding are connected in series which work on the principle of electric motor

The speed fan are controlled by the speed of regulators.  
The regulators is wound with ewake wire and consists of a number of resistance in  
steps and the fans works on the speed which we require.

Main components of AC cooling Fans

- Bobin
- Shackle
- Top canopy
- Bottom canopy
- Bolt to hold canopy
- Terminals conection
- Capacity housing
- Hanging rod or suspension rod

Split pin  
 Capacitor  
 Upper cover  
 Back cover  
 Head cover  
 Shank  
 Blades  
 Motor (1/50Hz)(stator & rotor)  
 Decreasing cup  
 Speed regulation



Types of tests : Continuity and short circuit test on running windings or main winding.

- 1) If lamp glow dim it show continuity.
- 2) If lamp does not give light means open circuit
- 3) If the glows bright represents a short circuit

Result

Hence, we studied about the construction, principle of circuit, testing methods of Ceiling fans.

Precautions

- 1) Test main winding, auxiliary winding and capacitor separately.
- 2) If there is short or open circuit fault in more than one coil , then disconnect each coil and test them separately .

B): Table fan

Material and tools required

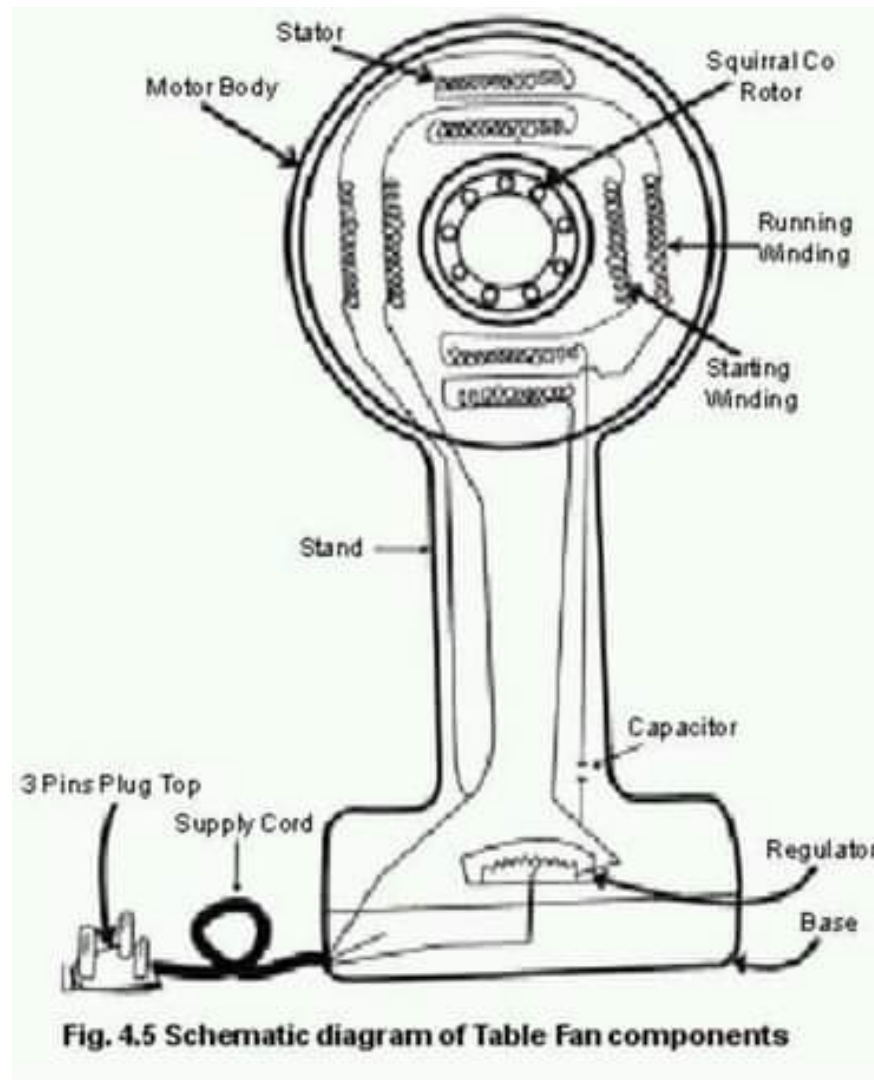
Insulated combination pliers	150 mm
Screwdriver	75mm
Insulated nose plier	150 mm
Mallet	
P/E set of spanners	
Test lamp	
Mobile oil	
Empire	
Sleeves	
Sandpaper	
Piece of clothes	

Theory : Construction and working principle

Main components of table fan are following

Metal body made of cast iron

Stator made of lamination on its cores  
 Stator winding (running starting winding of enamelled or aluminium wires)  
 Rotor (symbol with copper birds and crest under hydraulic pressure with iron course in short circuited on both sides)  
 Front side and back sides are cover made of cast iron with bushes a ball bearing  
 Back canopy  
 Oscillating gearbox  
 Front canopy  
 Stand and base  
 Discover and end plate  
 Oscillating rod and knob  
 Regulator and knob  
 Condenser  
 Blades  
 Front and back wire guard for safety  
 Nut bolt washers handle and other insulating material according to requirements  
 Supply cord  
 3 pin plug



Types of tests : Continuity and short circuit test on running windings or main winding.

- 1) If lamp glow dim it show continuity.
- 2) If lamp does not give light means open circuit
- 3) If the glows bright represents a shot circuit

Result

Hence, we studied about the constraction, principle of circuit, testing methods of Table fans.

Precautions

Do not test in series supply  
 Don't oil more and when the fan is molten do not touch it

Fan should be Earth properly

All the time of overheating and repairing the all parts should be saved from damage

Avoid scratches