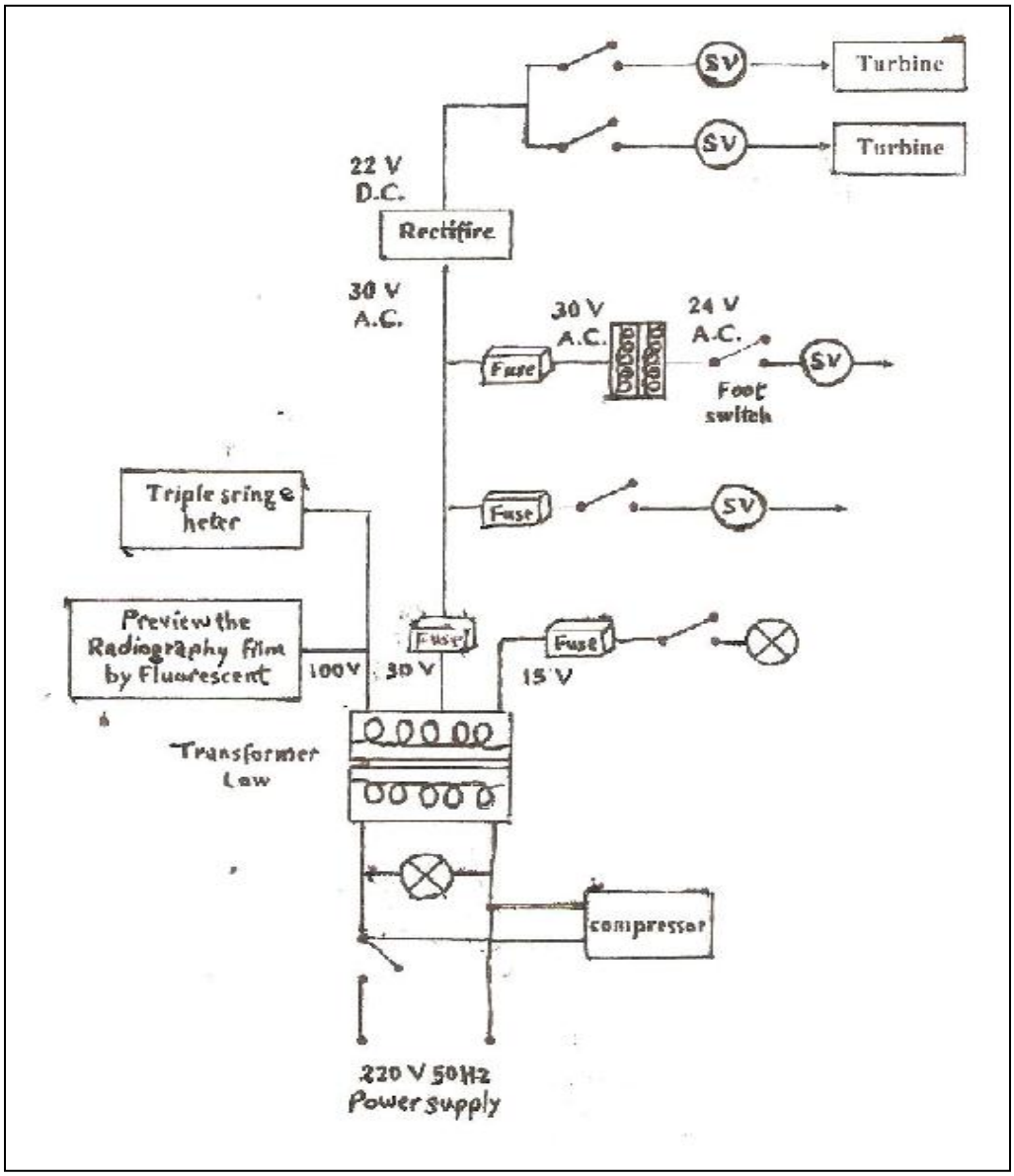
Dental system-part 2

Block Diagram for electrical circuit for Dental device



The air flow for compressor and tank:

Compressor-consists from electric motor and pump which connect directly or through a belt. It draw atmospheric air from the filter and directed it by the one direction check valve to the reservoir until filling of reservoir. The air pressure in the reservoir is controlled by pressure meter, and the air compressor is controlled automatically by pressure switch which tied respectively with motor. The range of work pressure it between 5-7 bar. The air in air tank should be empty at the end of the day or week .because of water drops may accumulate in the tank which may lead to the following problems:

1-Break the inner surface of the reservoir.

2-Reduce the size of compressed air.

The block diagram air flow for compressor and tank:

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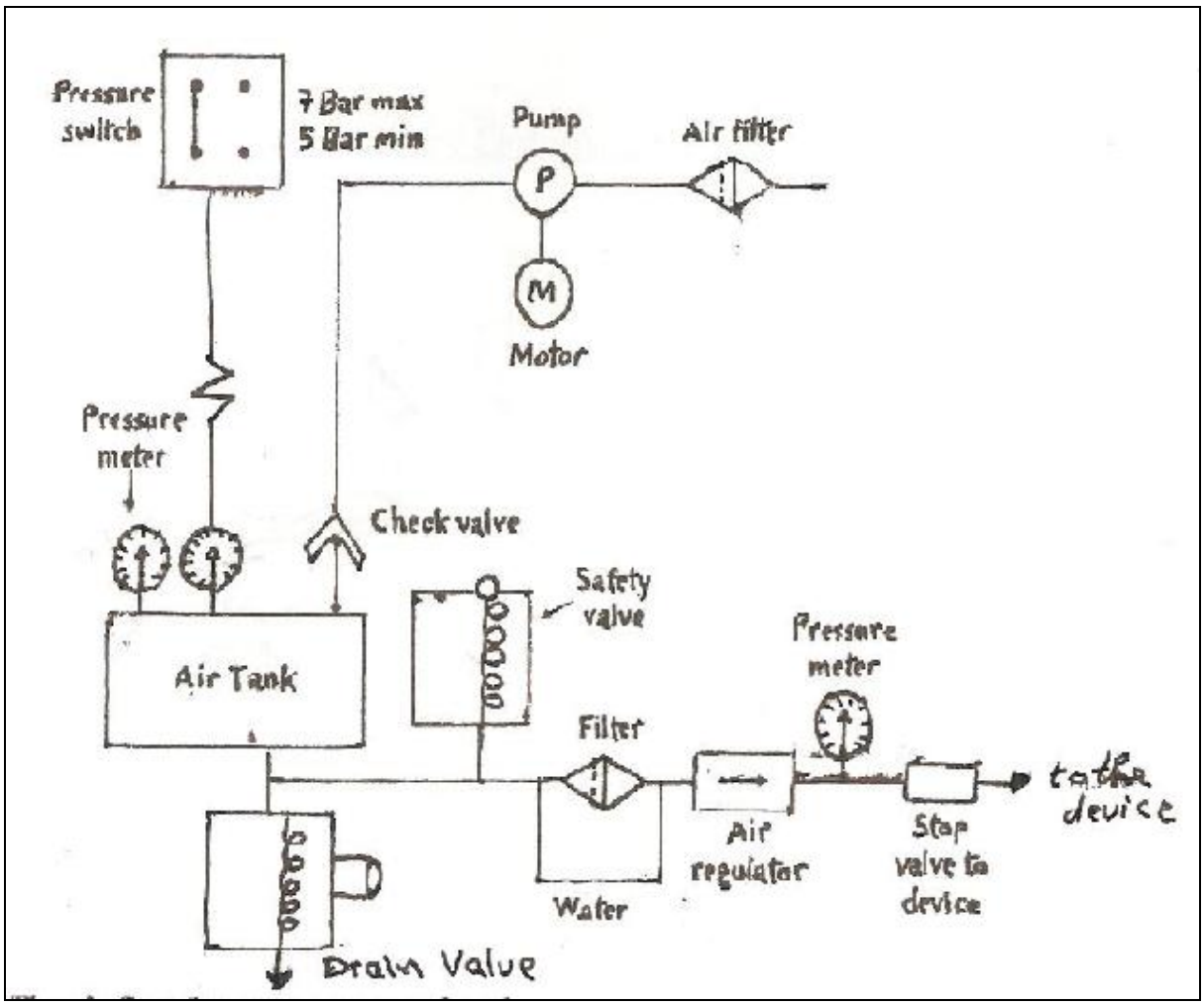

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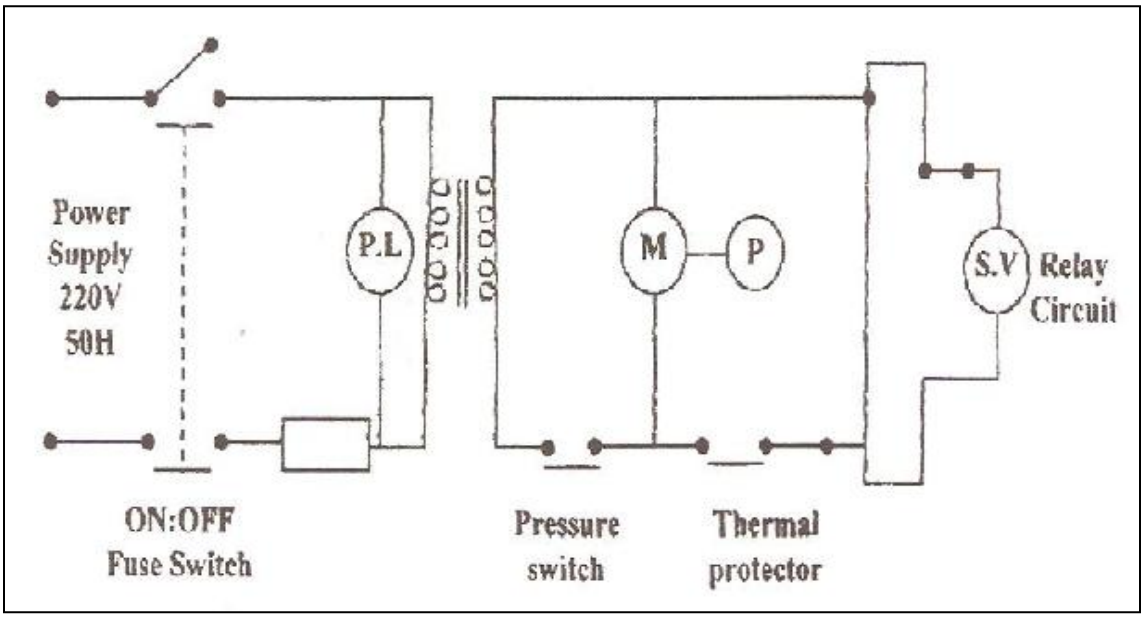
Electric circuit of the compressor



Preventive maintenance of compressor:

1. Weekly Maintenance

A. Check the oil level through the lens of the oil level control, must be level between the lines (mm, max) must use quality oil for compressor.

B. Empty air tank using vacuum valve.

2. Monthly maintenance

A. Check the compressor and air lines of diversions

B. Inspection and cleaning or replacement candidate entering the air.

C. examination and cleaning of the pressurize pipeline connectivity KP the compressor & remove dust.

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Slow Turbine

It is a part of dental chair device depends on air by its work and has the following advantages: -

1-high speed 17-20 Krpm.

2-small size

3-Move by air force

4-few fault

It consists of the following parts:-

1. The clutch part with hand piece.
2. Spring and cylindrical holders.
3. Set of ball bearing enable for rotation.
4. The spinner part is the heart of *the* device contain of metal *sheet* of mica
5. Container containing entry and exit holes air
6. Lever change the direction of rotation
7. Digging machine.

Mode of operation "operation principle"

The movement of turbine depend on air force .The compressed air with pressure ranging from 5-7 bar enters through the entrance hole and push the plate of mica forward to rotate in high speed the iron core of the turbine with the help of ball bearing.

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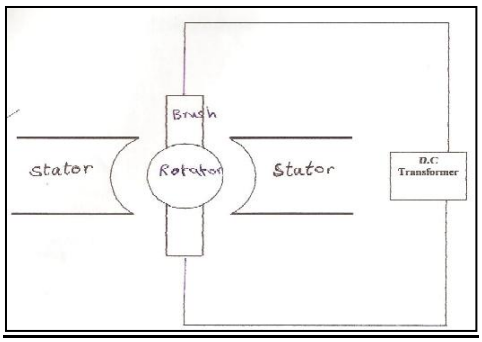

The micro motor circuit

Micro Motor

It is a very small electric motor which replaced the turbine machine and has the following

Advantage:-

1-Small in size, occupies a major place in die device,

2-working on a few constant voltage 22-24 volts.

3-motor speed can be controlled by potentiometer.

4-Rapid turnover motor brushes.

One of the most important faults of this device is the erosion of the brushes due to friction.

Principle of work

1-low voltage transformer to convert input voltage from 220 V to 30 V.

2-Rectifier circuit to convert 30 V -AC to 22-24 V DC.

3-The Dc voltage inter the rotator by brushes connection which produce magnetic field which intersect with the magnetic field of the permanent magnet of the motor which lead to its rotation

Chair Action:

1. Chair rise up: by clicking on the key to rise the chair electric motor as well as the hydraulic pump will work and push the hydraulic fluid from the reservoir and valve that starts to open so the hydraulic fluid inter the cylinder and push the piston to rise the chair.

2. Chair go down: this action depend on the weight of the patient and the chair itself. By opening the valve which control the return of the hydraulic fluid to the tank.

3. Forward and backward movement:

By clicking on forward key, the sensor as well as the motor will push the hydraulic fluid through the opened valve and push the chair piston forward and vice versa moving backward.