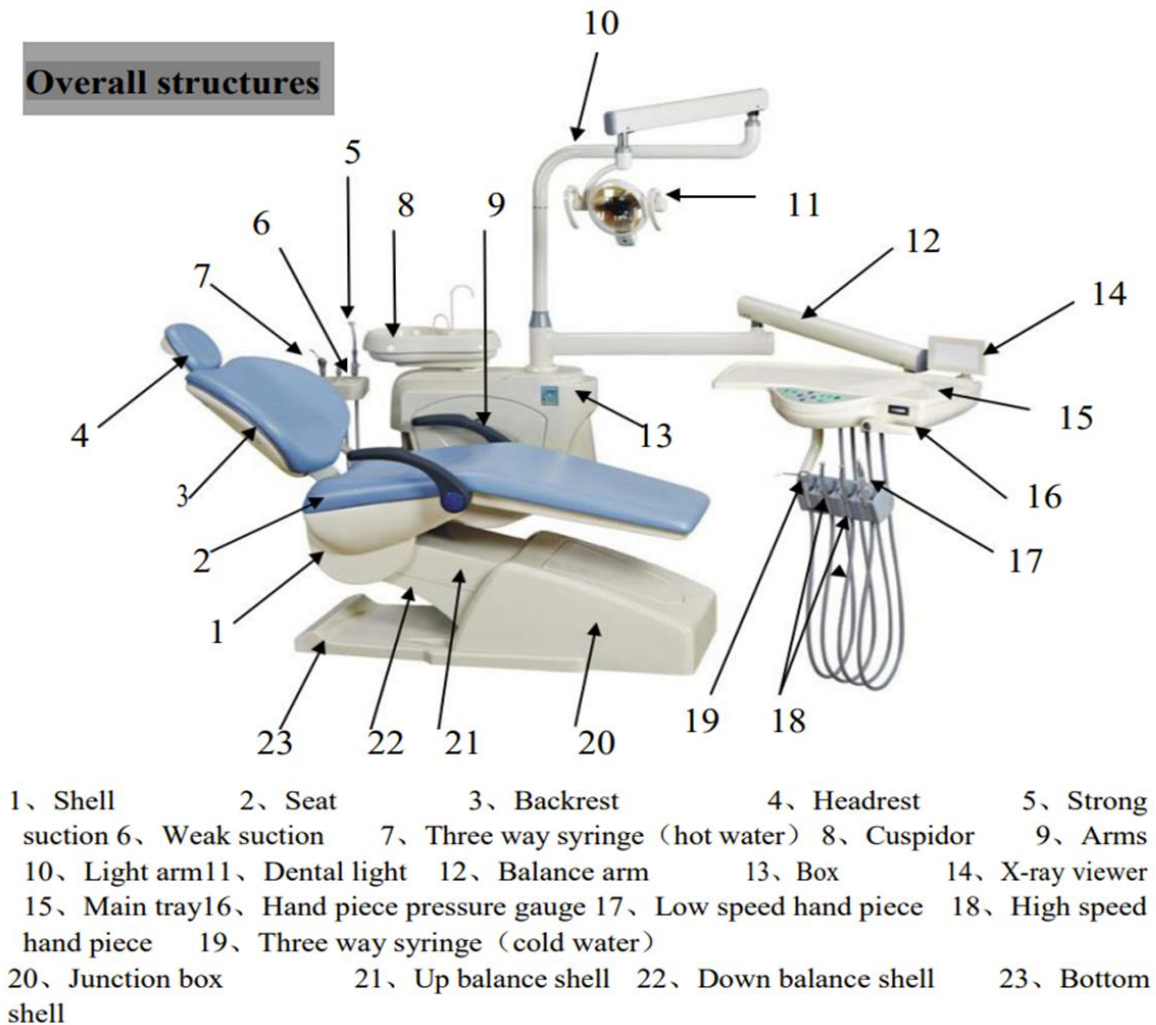


Dental system-part 1

Overall structures



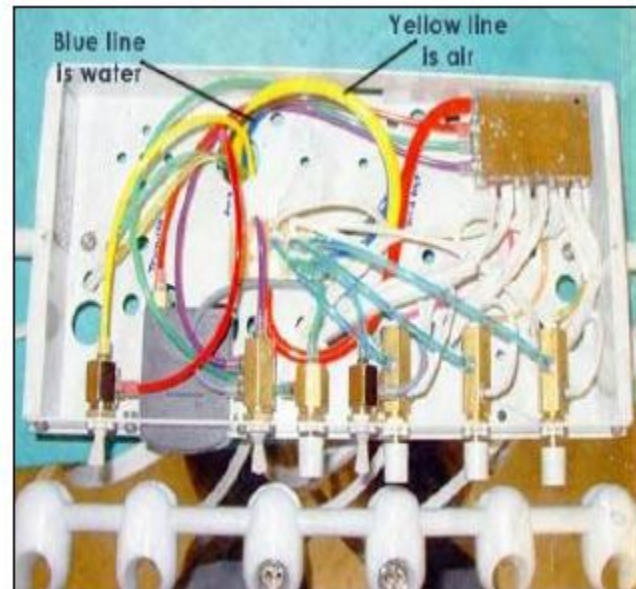
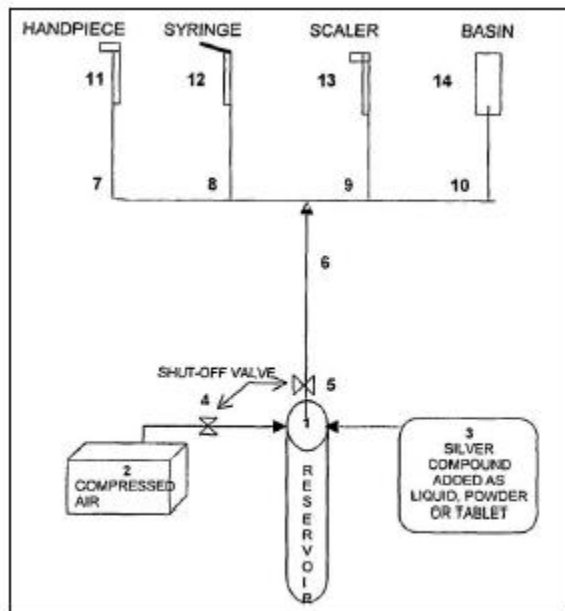
Dental unit delivery systems

- Front delivery: Positioned over the patient's lap.
- Side delivery: Positioned at either side of the patient's chair.
- Rear delivery: Positioned behind the dental chair.

Rheostat: A foot-controlled device placed on the floor near the operator to control the function of the dental handpieces.



Dental unit waterlines: supplies water through hoses or water lines into dental handpiece.



Air-water syringe: is an instrument that is attached to the dental unit.

□ **Functions**

- Deliver a stream of water.
- Deliver a stream of air.
- Deliver a combined spray of air and water.



Operating light is used to illuminate the oral cavity during a procedure.



Oral evacuation system is a means for removing water, saliva, blood, and other fragments during a dental procedure.

□ **Types:**

- Saliva ejector
- High volume evacuator (HVE)



Disposable traps: Filtering mechanisms for the saliva ejector and high volume evacuator.

The curing light is used to “harden” or light-cure dental materials. The light used falls under the visible blue light spectrum. *The two main dental curing lights are halogen and LED.* The wavelength of the halogen curing system is (410-480) nm and for the LED curing system is (420-490) nm. The light intensity is ranged from 600 to 1220 mW/cm². The intensity of the curing light is strongly affected by *the angles and distance*.



An amalgamator is used to triturate dental materials by vigorously shaking the ingredients. The speed is up to 4,800 rpm.

- ☐ Central vacuum compressor provides the suction needed for the oral evacuation systems.
- ☐ Central air compressor provides compressed air for the air-water syringe and air-driven hand pieces.
- **Note:** triturate (mean crush or grind) the mixing or grinding of a powder such as the mixing of silver alloy and mercury to form amalgam.



Dental Systems Components:

1. Projector: LED light with intensity (15000-30000) lux Projector
2. Chair
3. Basin
4. Cup
5. Saliva ejector
6. Foot switch
7. Fast turbine
8. Micro-motor: A. air motor (17-20KR\m) B. Micro motor (500KR\m)
9. Triple syringe (Water, Air, Spray)
10. Dental X-ray



Three cycle of Dental system:

Electrical cycle		Air cycle		Water cycle	
1.	Chair	1.	Triple syringe	1.	Saliva ejector
2.	Projector	2.	Fast turbine	2.	Basin
3.	Basin	3.	Slow turbine	3.	Cup
4.	Cup			4.	Triple syringe
5.	Saliva ejector				
6.	Foot switch				
7.	Triple syringe				
8.	Fast turbine				
9.	Slow turbine				

Block Diagram of Air Cycle

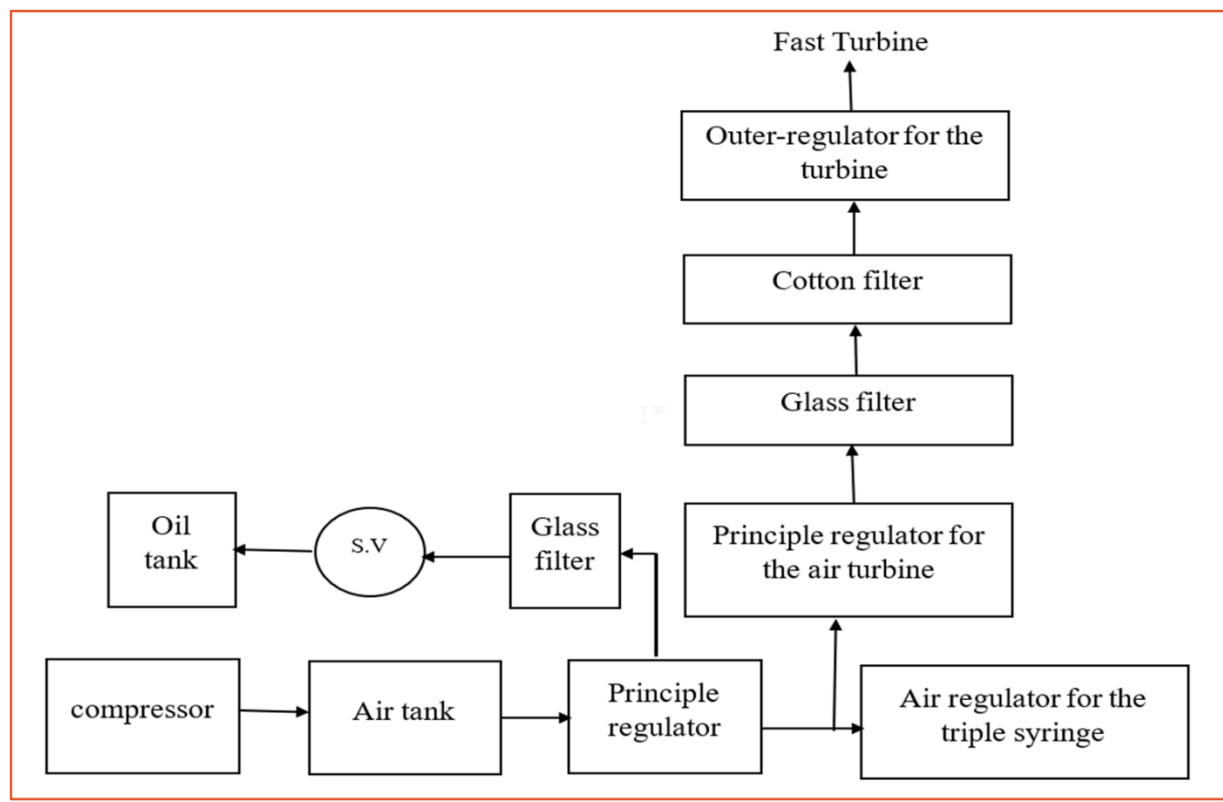


Figure: Block diagram of Air cycle

Air Cycle

Air in this device should pass through two filter first is glass filter which contain fiber glass with wide pore the second is the cotton filter with fine pore which serve for air purification the air is used by the following devices.

1-slow speed turbine (rotate with speed 17-20 KR/min)



2-high speed turbine (rotate with speed 150-500 KR/min)





3-Triples syringe which mixed air with water to discharge it as spray.

Block Diagram of Water Cycles

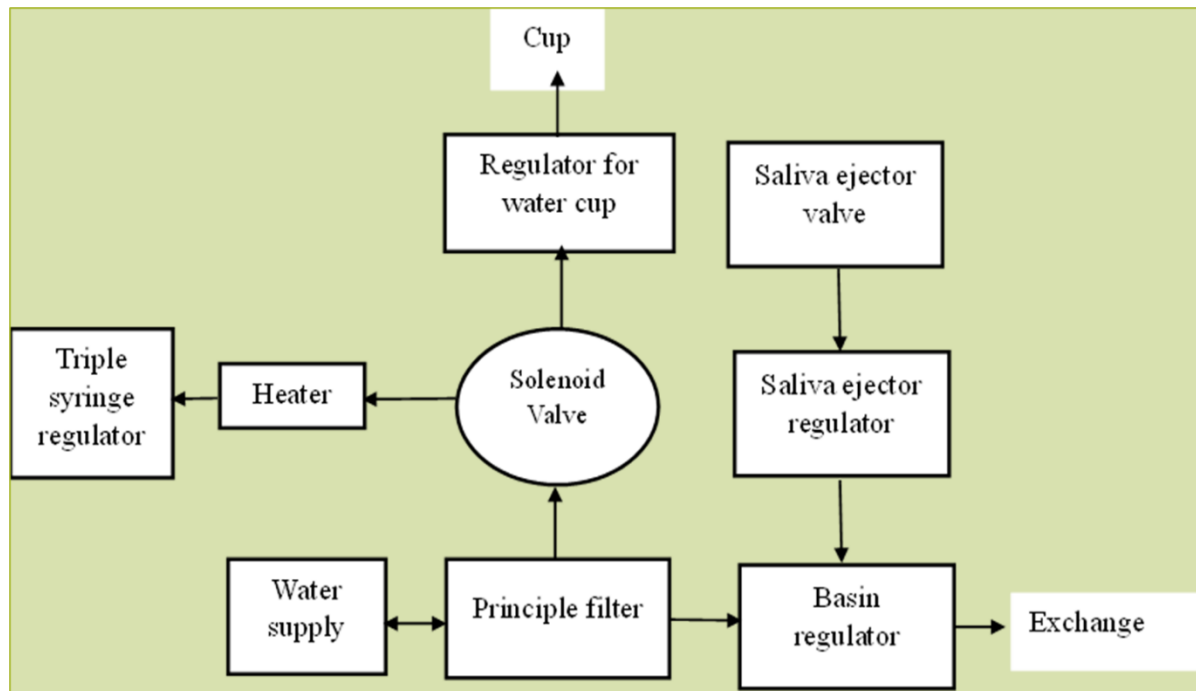


Figure: Block diagram of Water cycle

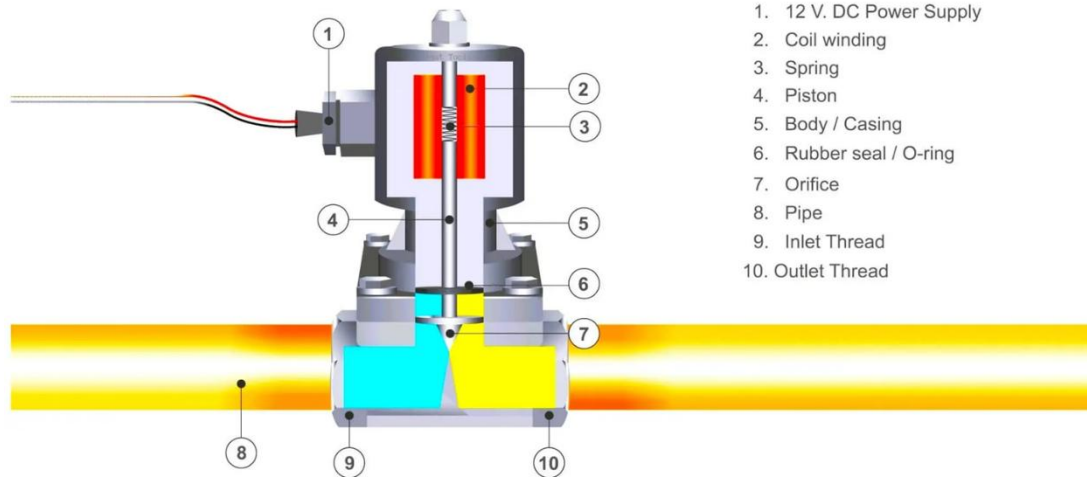
Water Cycle

Water come from the source and then enter filter for its purification, then through the valve and the heater at last go through triple syringe either by automatic or mechanic manner. Also from the valve the water go through the regulator to the cup. The waste water and the saliva go through the Basin for discharge out.



Solenoid Valve

InstrumentationTools.com



Parts of Solenoid Valve

1. 12 V. DC Power Supply
2. Coil winding
3. Spring
4. Piston
5. Body / Casing
6. Rubber seal / O-ring
7. Orifice
8. Pipe
9. Inlet Thread
10. Outlet Thread

