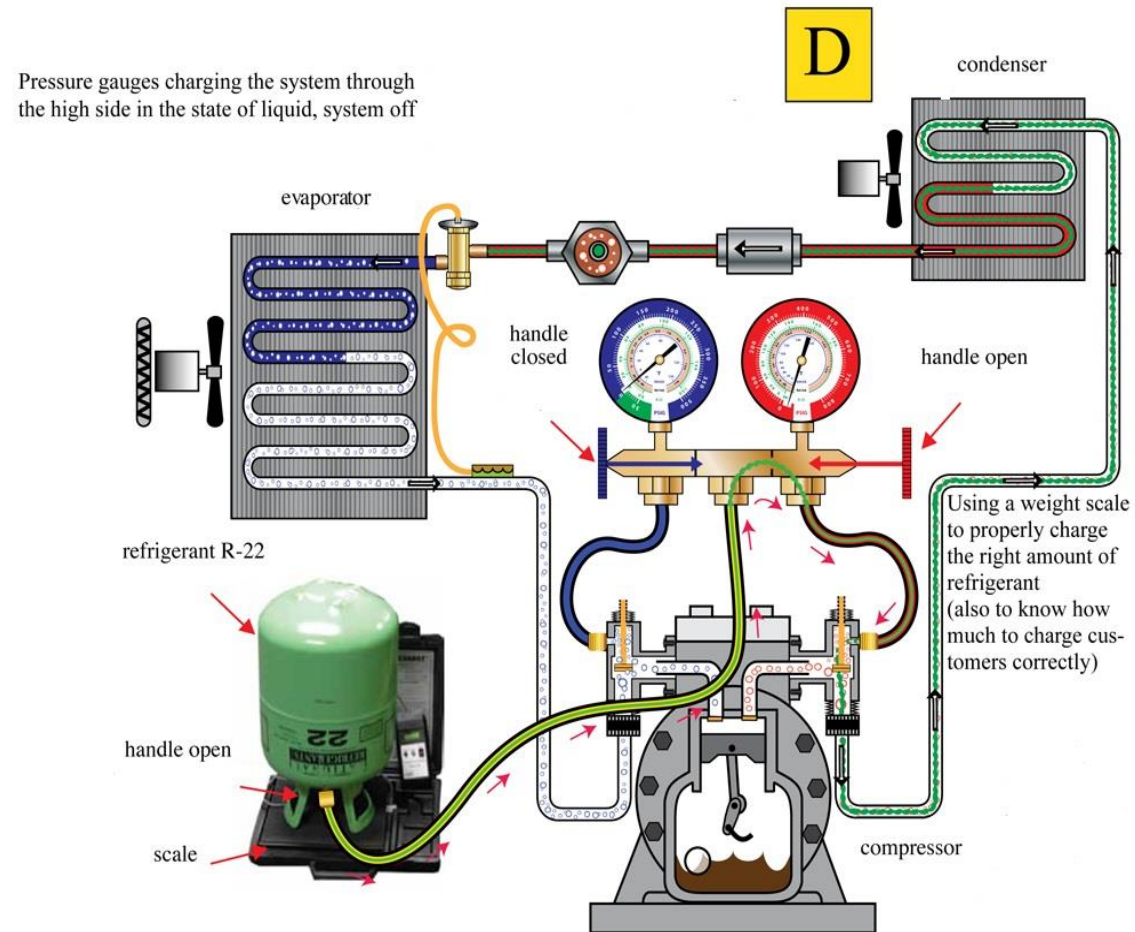




Good Tools & Equipment for Better Servicing Practices and Role of Good Servicing Practices

Best Installation & Servicing Practices and IMPORTANCE OF USING PROPER TOOLS

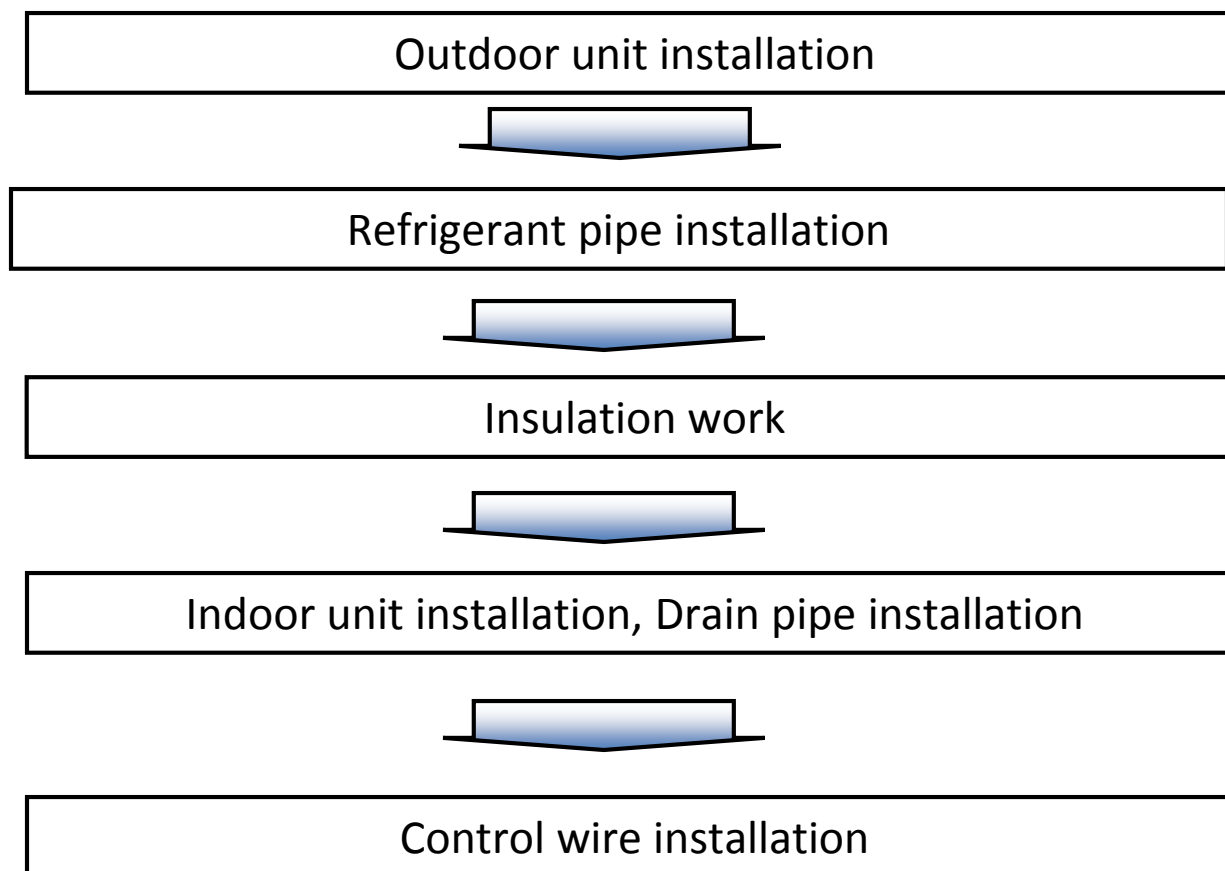


**NOTHING IS
MORE
IMPORTANT
THAN LIFE AND
HENCE IT'S
MANDATORY TO
FOLLOW**



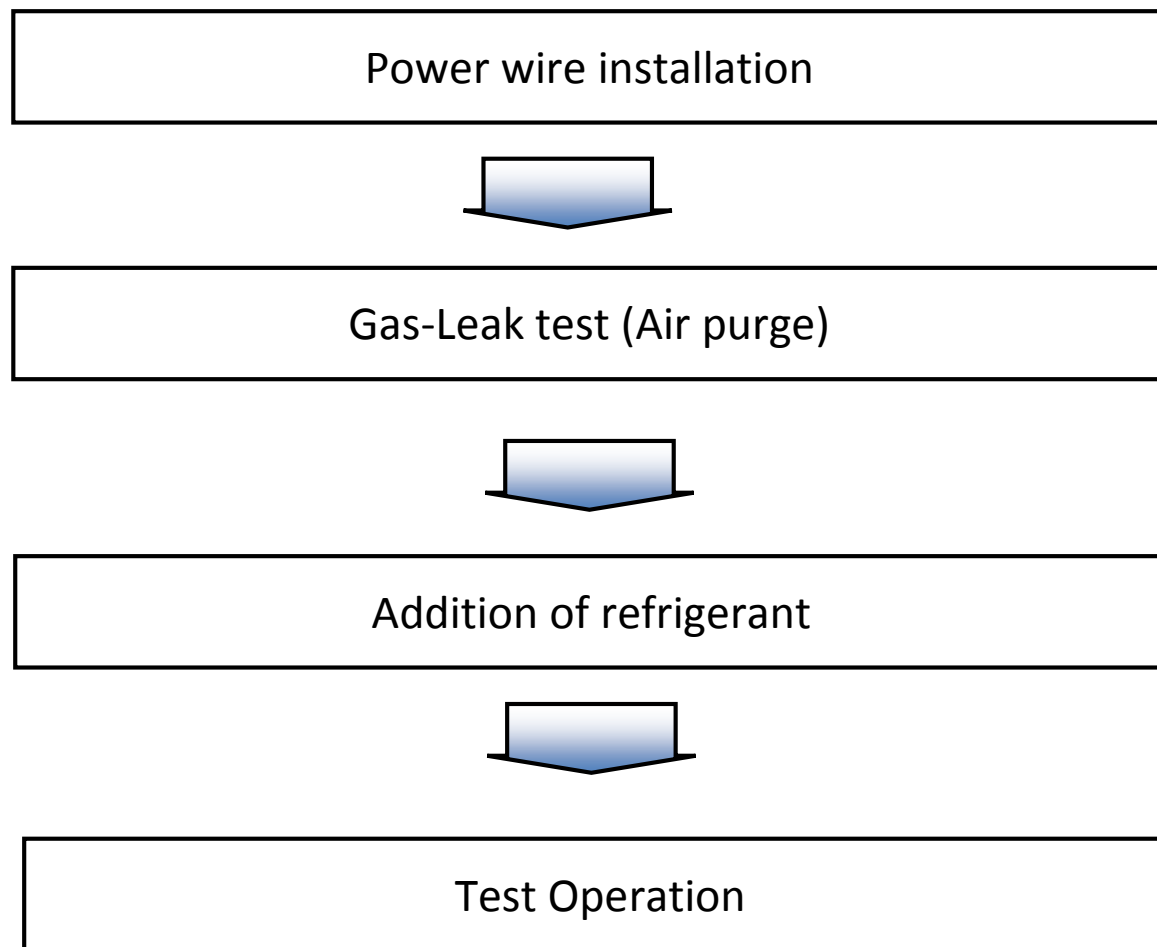
Best Installation & Servicing Practices

Flow of Installation work

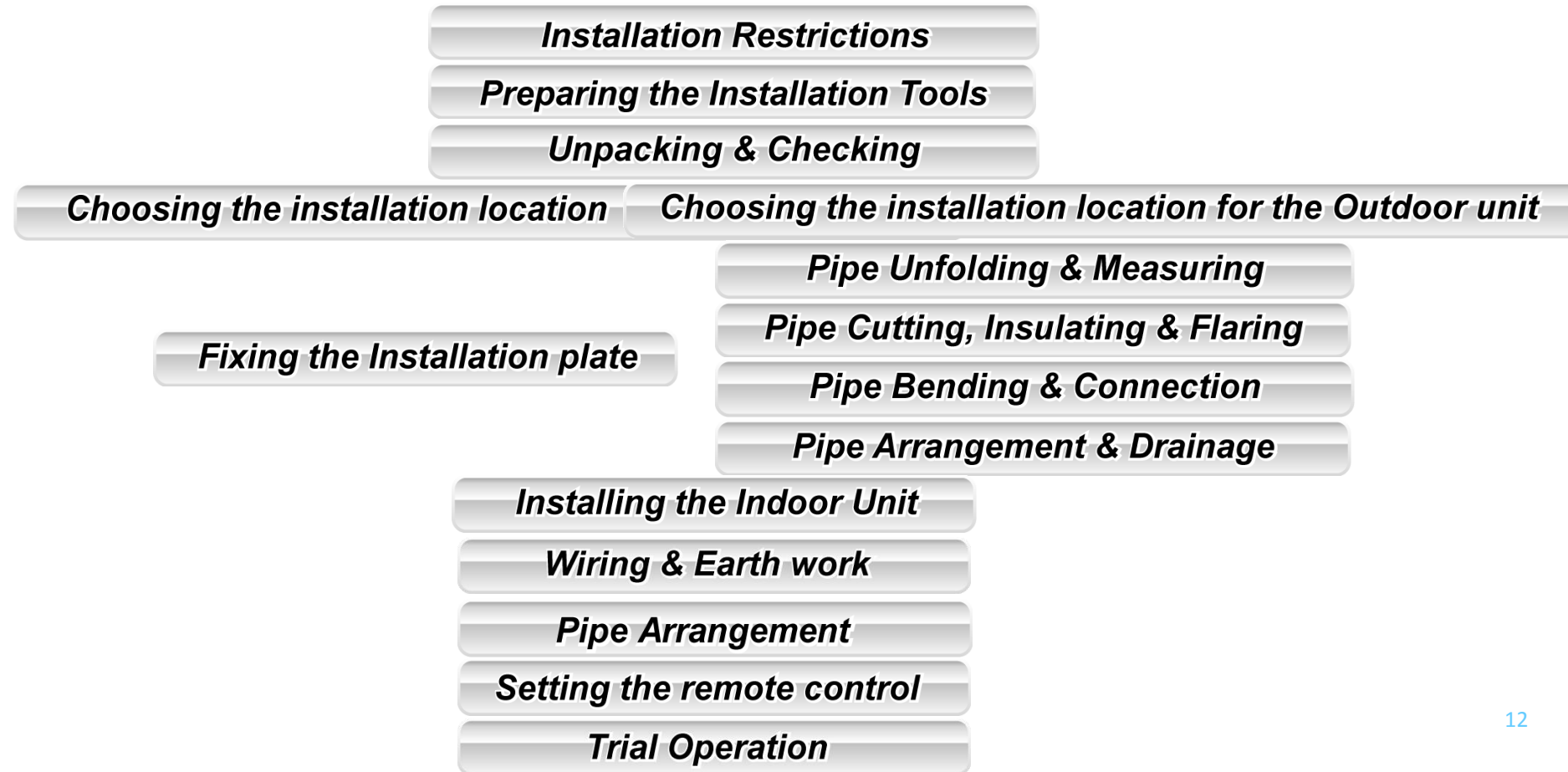


Best Installation & Servicing Practices

Flow of Installation work



Best Installation Practices



Importance of PROPER Tools



Copper Piping Using Spring Bender



Copper Piping Using Tube /Pipe Bender



PART NO.	TUBE O.D. (in.)	RADIUS TO CENTER OF TUBE (in.)	WEIGHT EACH (lbs.)
664-FH-04	1/4	9/16	1.2
664-FH-06	3/8	15/16	3.7
664-FH-08	1/2	1-1/2	7.6

PART NO.	TUBE O.D. (mm)	RADIUS TO CENTER OF TUBE (mm)	WEIGHT EACH (lbs.)
664-FH-6MM	6	15	1.2
664-FH-8MM	8	24	3.7
664-FH-10MM	10	24	3.7
664-FH-12MM	12	38	7.6



Torque Wrenches



Flaring Tool Clutch Type



Ratchet



Tube Cutter

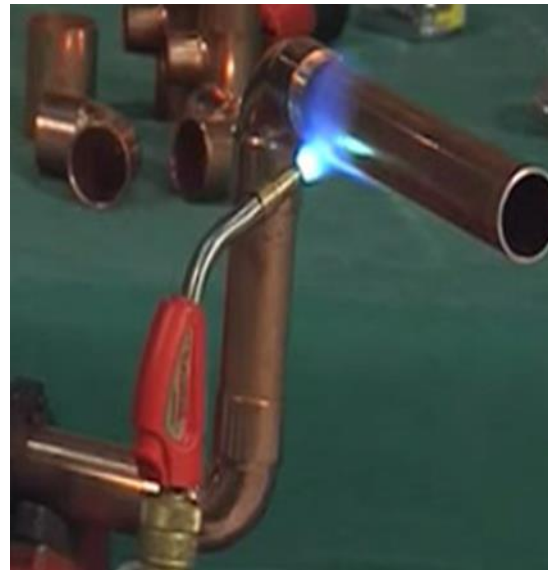
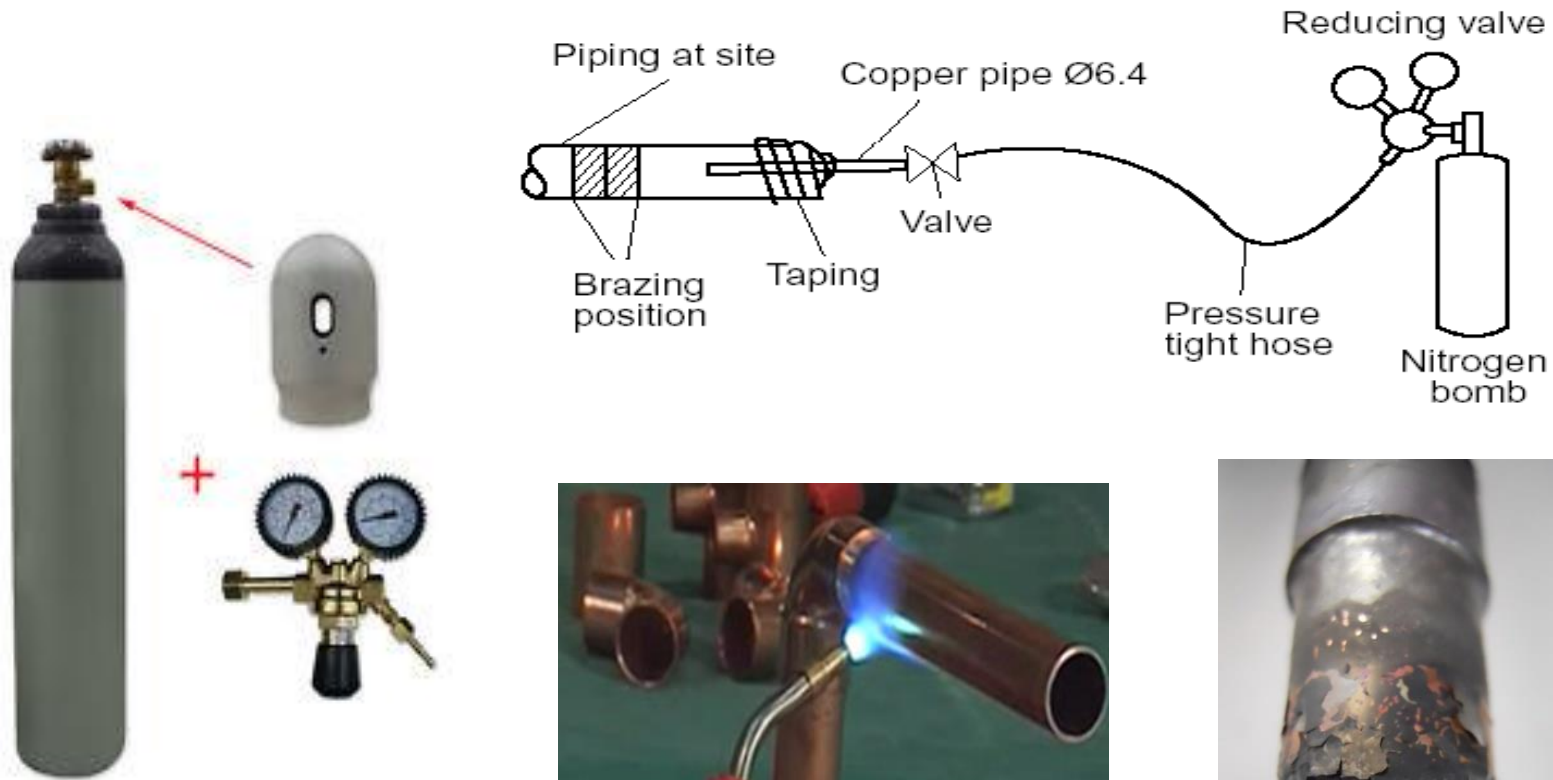


Swaging Tool



Brazing Work

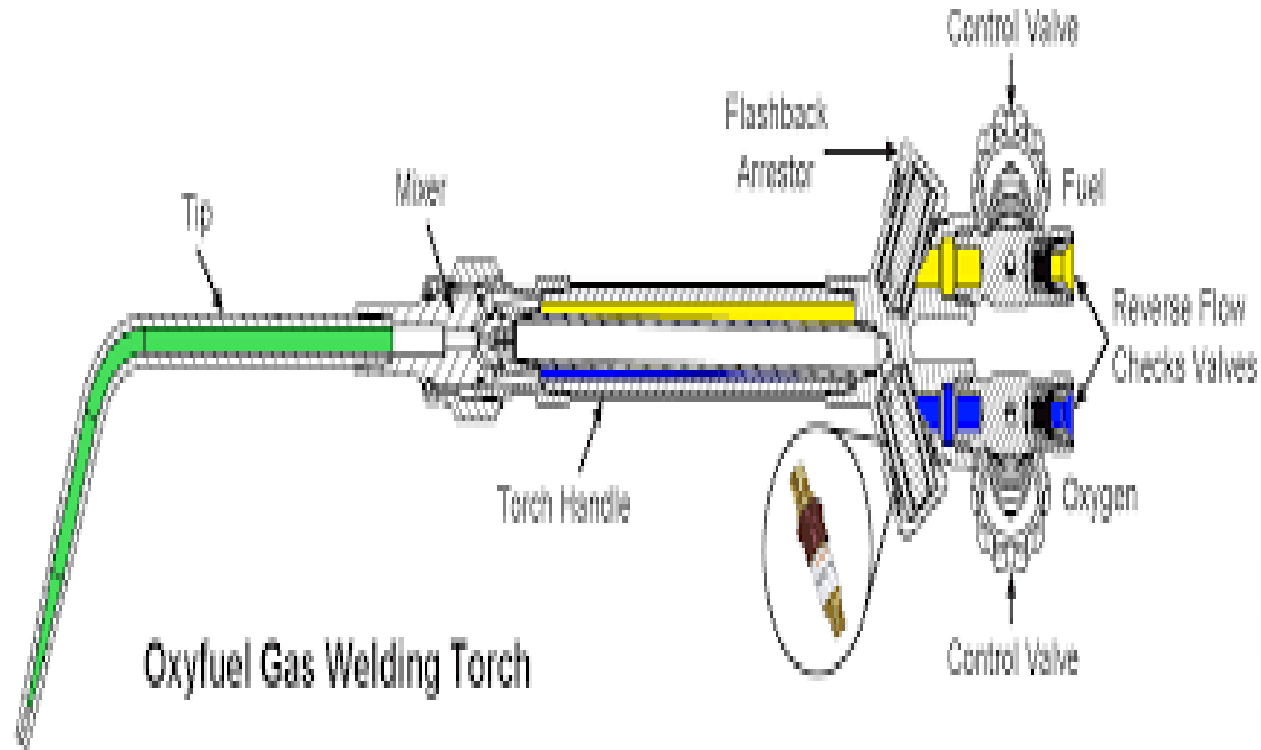
Bleed Off Brazing Using Dry Nitrogen



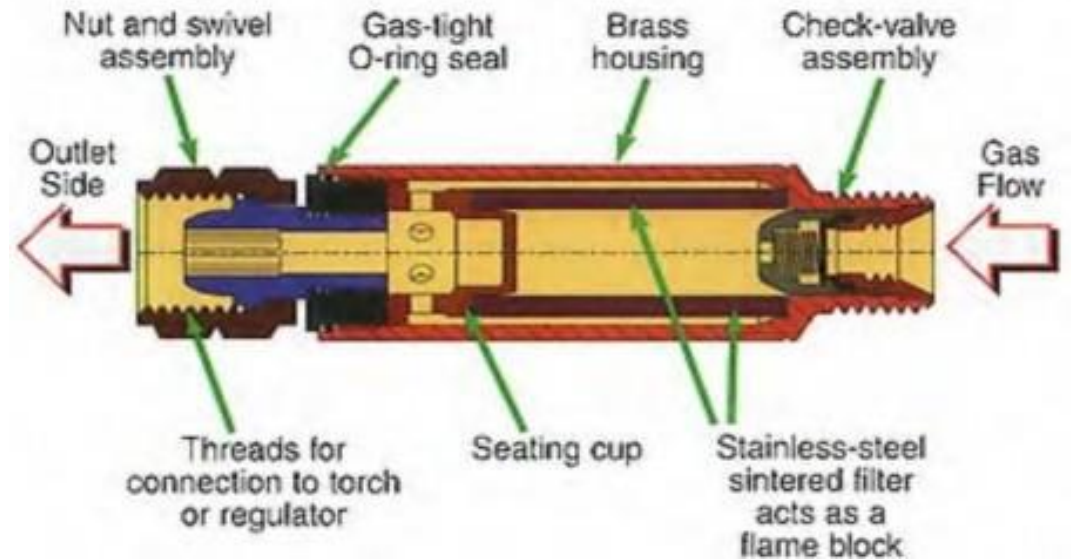
Oxygen & Acetylene Regulators



Brazing Torch with Flashback Arrestor



The Flashback Arrestor Prevents the reverse flow of gases and flashback.



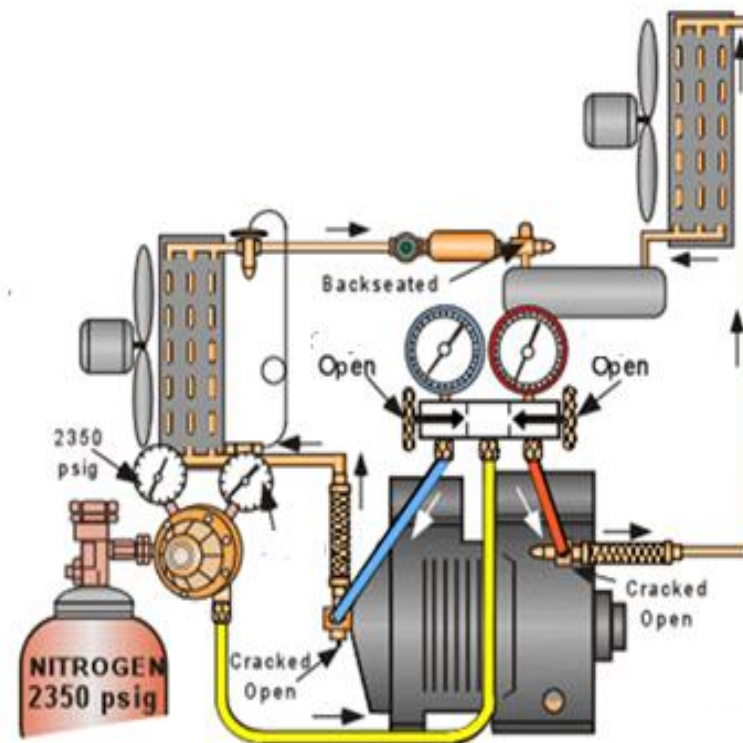
Safety During Brazing

- Metal sheets or other fire-resistant materials can be placed between the area and flammable materials to reduce possibility of ignition.
- If floor is not made of a fire-resistant material such as concrete, steps should be taken to protect it.
- Appropriate fire dousing equipment such as fire extinguishers or buckets of sand should be within reach



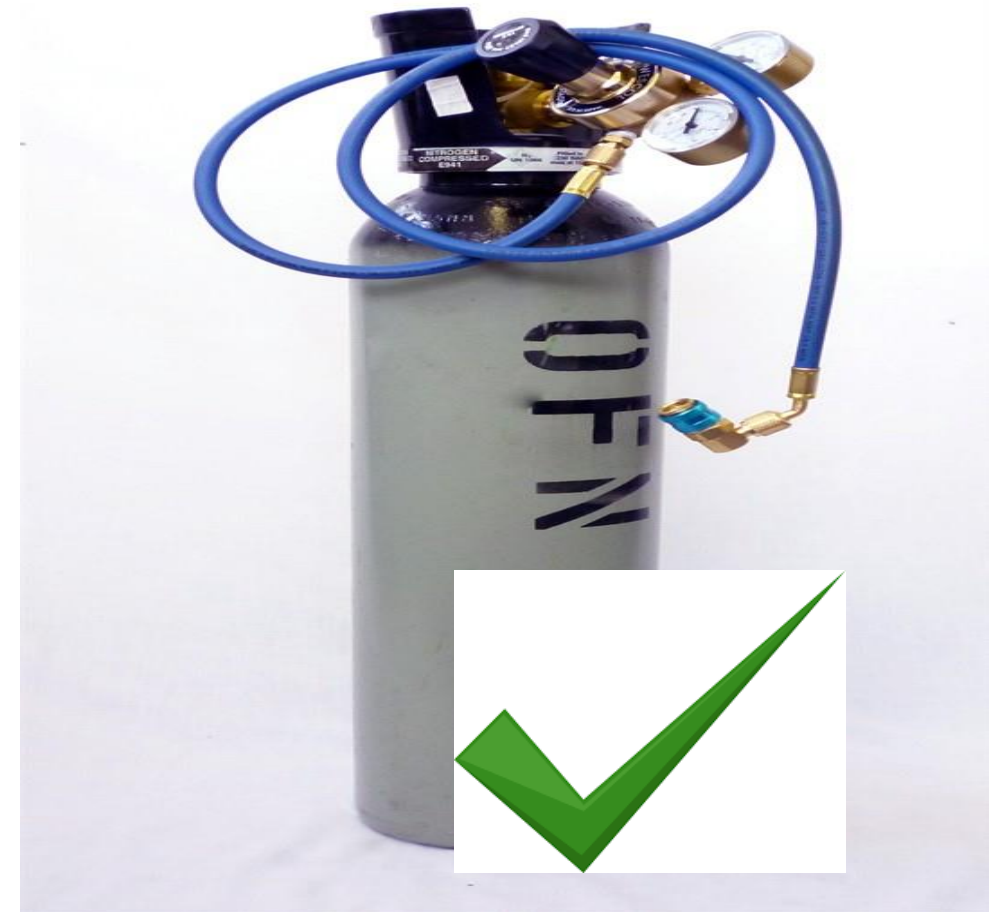
What Is Pressure Testing

Pressure testing is a process followed to check leaks in Copper Piping & System. Whenever Copper Piping is done for a new system piping piping has to be pressure tested tested before the process of Evacuation & Commissioning



Nitrogen Pressure Regulators

Nitrogen Cylinder With 2 Stage Regulator & Hose



Nitrogen Pressure Regulators



Single Stage Regulator



Double Stage Regulator

Evacuation / Vacuumizing Refrigeration System



- **Compound Gauge**

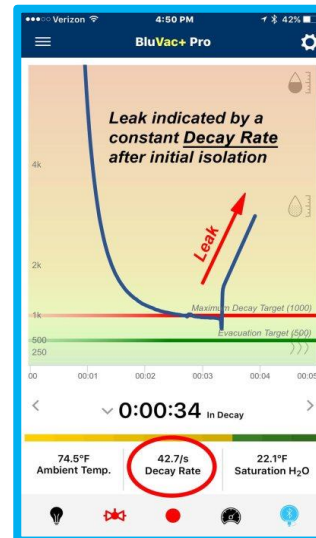
Compound / Vacuum Gauge

are susceptible to errors.

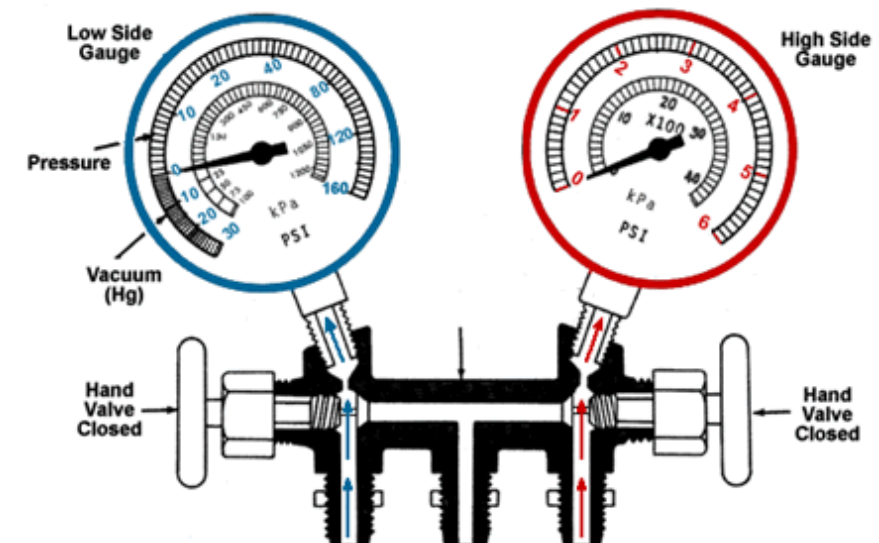
Difficult to read Vacuum below
29" of Mercury (25400 Microns).

- **Vacuum Gauge.**

- **Electronic Vacuum Gauge**
(very sensitive).



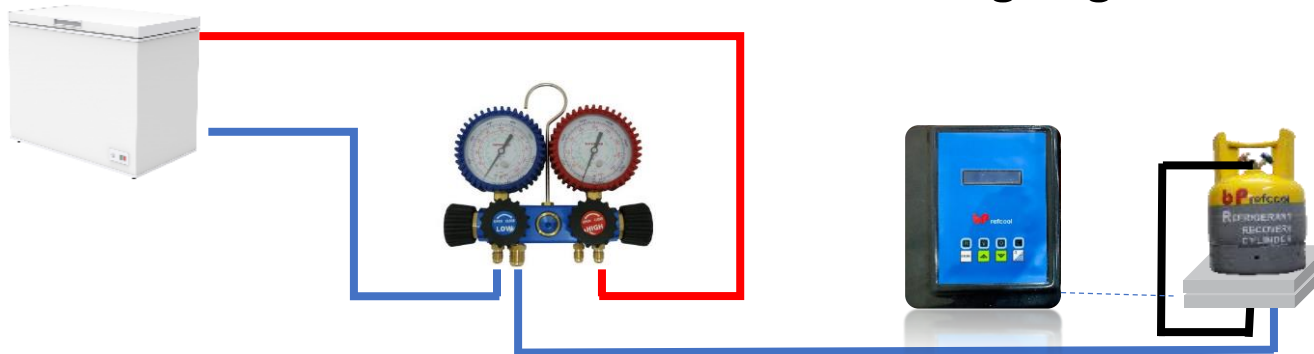
Double Stage Vacuum Pump



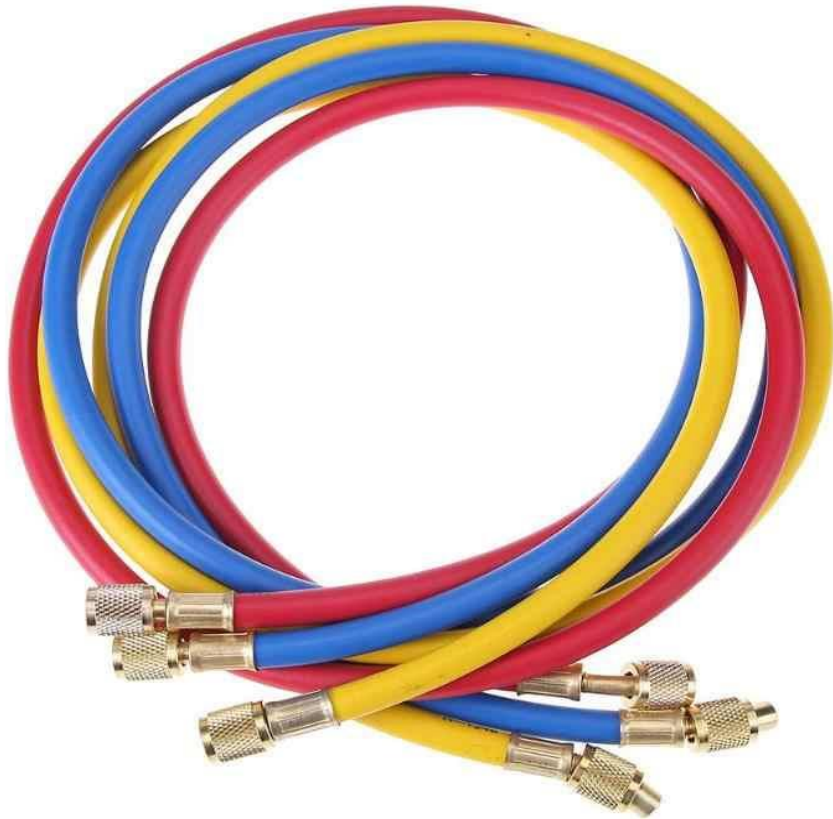
Refrigerant Weighing Unit



Gas Charging Station with Electronic Weighing Scale



Use of Proper Charging Hoses



**Important to use
the correct hose
for the correct
Refrigerant**

**Always check the
operating / test
pressure of the hoses
that you are using**

Gas Charging Tools



Recovery System



Vacuum Pump



Pressure Gauges

Gauge Manifold



Single Gauge Manifold



Double Gauge Manifold

Leak Detectors

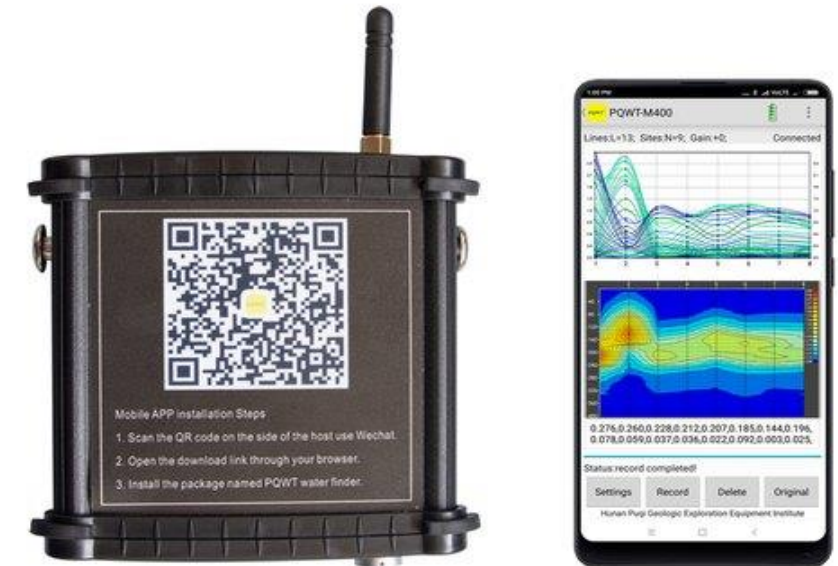


Electronic Leak Detector

Leak Detectors



Halide Torch



Ultrasonic Leak Detector

Voltage Detector or Proximity Sensor





Analog / Digital / Infrared Thermometer





Hygrometer / Sling Psychrometer





Clamp Meter



Megger

Indoor Air Quality Monitors



Servicing Procedure



OBJECTIVE

- Importance Of Service
- Preventive Maintenance
- Dry Service
- Wet Service
- Do's & Do'nt's

Servicing

- ❖ Why is it important to service Airconditioner
 - ❖ An Airconditioner Filters, Coils, and Fins require regular maintenance for unit to function effectively and efficiently throughout its years of service.
- ❖ What are the benefits
 - ❖ Neglecting necessary maintenance ensures a steady decline in Airconditioner performance while energy bills steadily increases

Servicing

What Is Dry Service Of Airconditioner

Frequency Dry Service : Quarterly Or Once In Four Months

1. Cleaning Of Filters.
2. Cleaning Of Evaporator & Condenser Coil with Blower. (Ensure dust does not spread, Safety aspects to be Considered)
3. Cleaning Of Blower & Condenser Fan.
4. Checking Of Loose Contacts Of Electrical Spares Like Relay, Capacitors, Contactors, Stabilizers Etc.,

Servicing

What Is Wet Service Of Airconditioner

Frequency Wet Service : Once In Six Months

Note:

Use proper Hand Gloves & Safety Goggles / Mask

- ❖ Please ensure all Electrical spares, Electrical cables etc... are properly covered with thick Plastic sheet / Tarpaulin so that water does not get sprayed on to Electrical parts.
- ❖ Ensure that Airconditioner & Electrical parts are completely Dry & Moisture free before switching on Airconditioner.



Servicing

What Is Wet Service Of Airconditioner

1. Cleaning of Filters with Soap Water.
2. Cleaning of Evaporator & Condenser Coil High Pressure Water Jet Pump with Soap Solution & Water Stored in a Small Tub.(Ensure Dust / Water does not Spread, Safety Aspects to be Considered).
3. Cleaning Of Blower & Condenser Fan thoroughly with Soap Water solution & Scotch Brite.
4. Checking of Loose Contacts of Electrical Spares like Relay, Capacitors, Contactors, Stabilizers Etc.,



Servicing

What is preventive maintenance of Airconditioner

- ❖ Check and inspect Condensate Drain.
- ❖ Blocked Drain can result in water leak damaging walls etc..
- ❖ Check controls of system.
- ❖ Check Refrigerant Pressures.
- ❖ Overcharge or Under charge Refrigerant will make your system less efficient.
- ❖ Consumes more Power.
- ❖ Increasing energy costs and reducing life of equipment.
- ❖ Clean and adjust Blower Fan to provide proper Airflow.
- ❖ Airflow problems can reduce system's efficiency by up to 15%.

Dirty Blower



Clean Blower





Do's & Don'ts



Servicing

DO'S

- ✓ Always Use Proper Tools.
- ✓ Wear Gloves & Goggles while using Chemicals for Cleaning / Drilling.
- ✓ Check for Calibration of Measuring Instruments.
- ✓ Keep your Hands Dry while working.
- ✓ Use a Wooden Plank if Possible while working on Wet Surfaces.
- ✓ Clean Area as it was before you started work.



Servicing

DONT'S

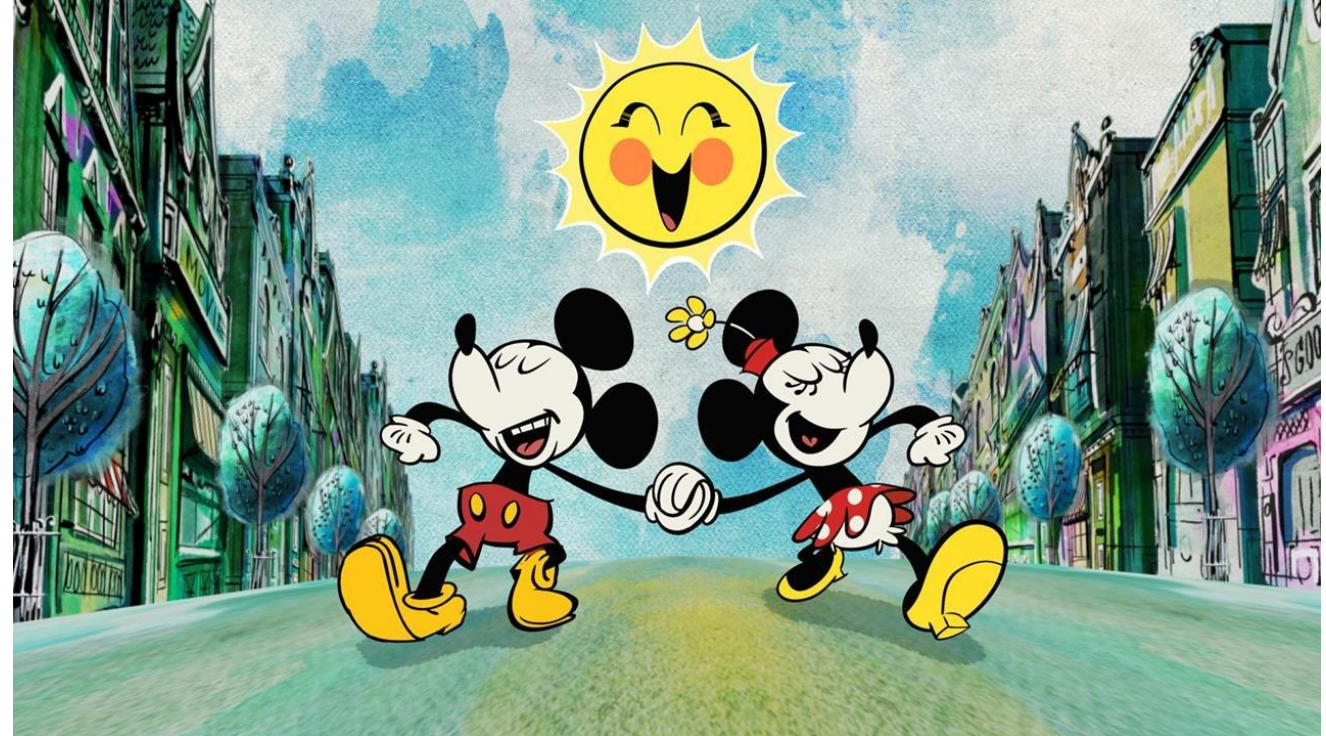
- Do not use Faulty Instruments.
- Avoid using Sharp Tools while Cleaning Coils Etc.,
- Do not work Bare Foot, Use proper Footwear.
- Do not do Chemical Cleaning with Bare Hands.
- Do not work with Wet / Oily Hands.
- Avoid working On a Surface where Water Is Stagnant.



Servicing

Common Points

- ❖ Educate Customer On How To Operate The Ac Using Remote.
- ❖ Explain Setting Of Temperature, Use Of Swing Mode, Adjusting Of Louvers, Sleep Mode, Timer Facility.
- ❖ Advice Customer For Periodic Cleaning Of Filters & Advantages Of Same.
- ❖ Advice Customer For Quarterly Servicing By Trained Technician & Its Advantages .



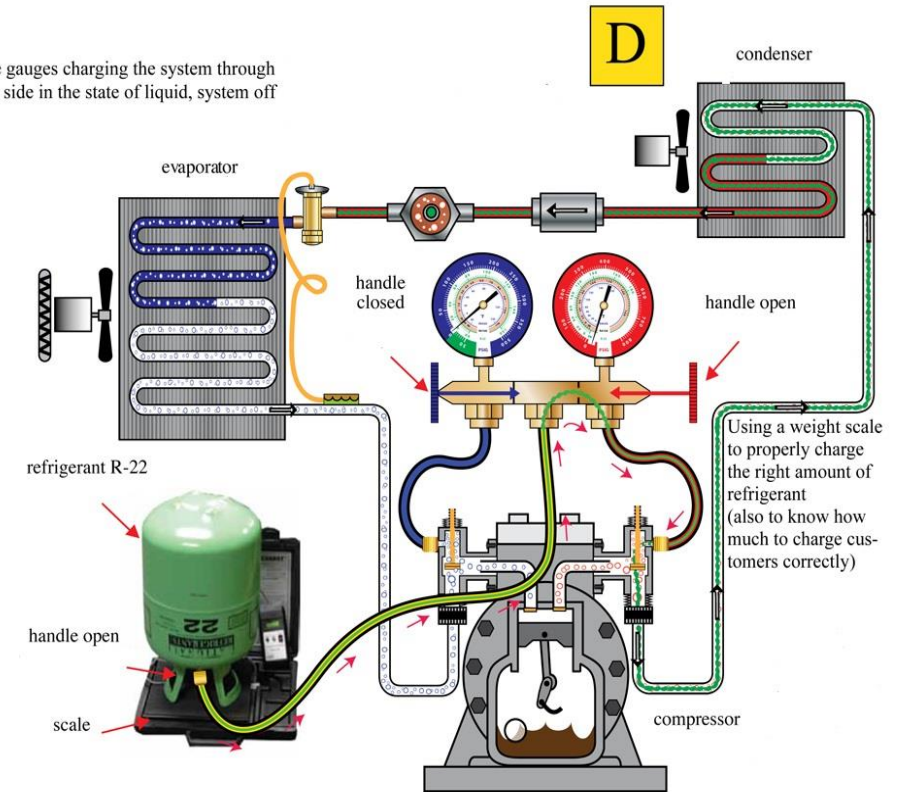
**NOTHING IS
MORE
IMPORTANT
THAN YOUR LIFE
SO FOLLOW**



All in One Tool kit



Pressure gauges charging the system through the high side in the state of liquid, system off



PPE Stands for
Personal
Protective
Equipment







Good Tools & Equipment for Better Servicing Practices and Role of Good Servicing Practices

*Thank
You!*