Refrigerant Recovery

Aspects covered

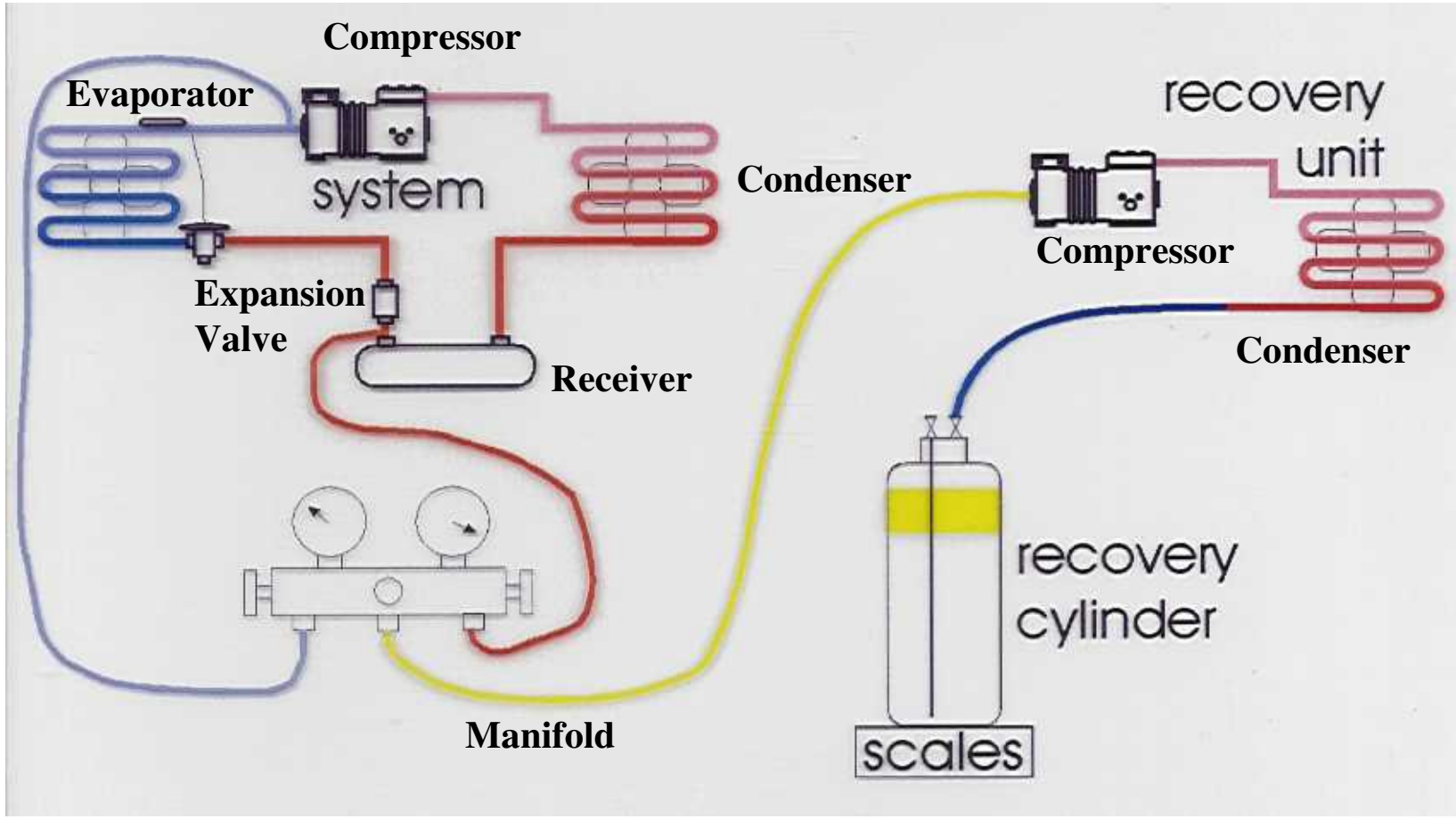
- **Necessity**
- **Principles**
- **Procedures**
- **Making a machine**

Refrigerant Recovery- What and Why?

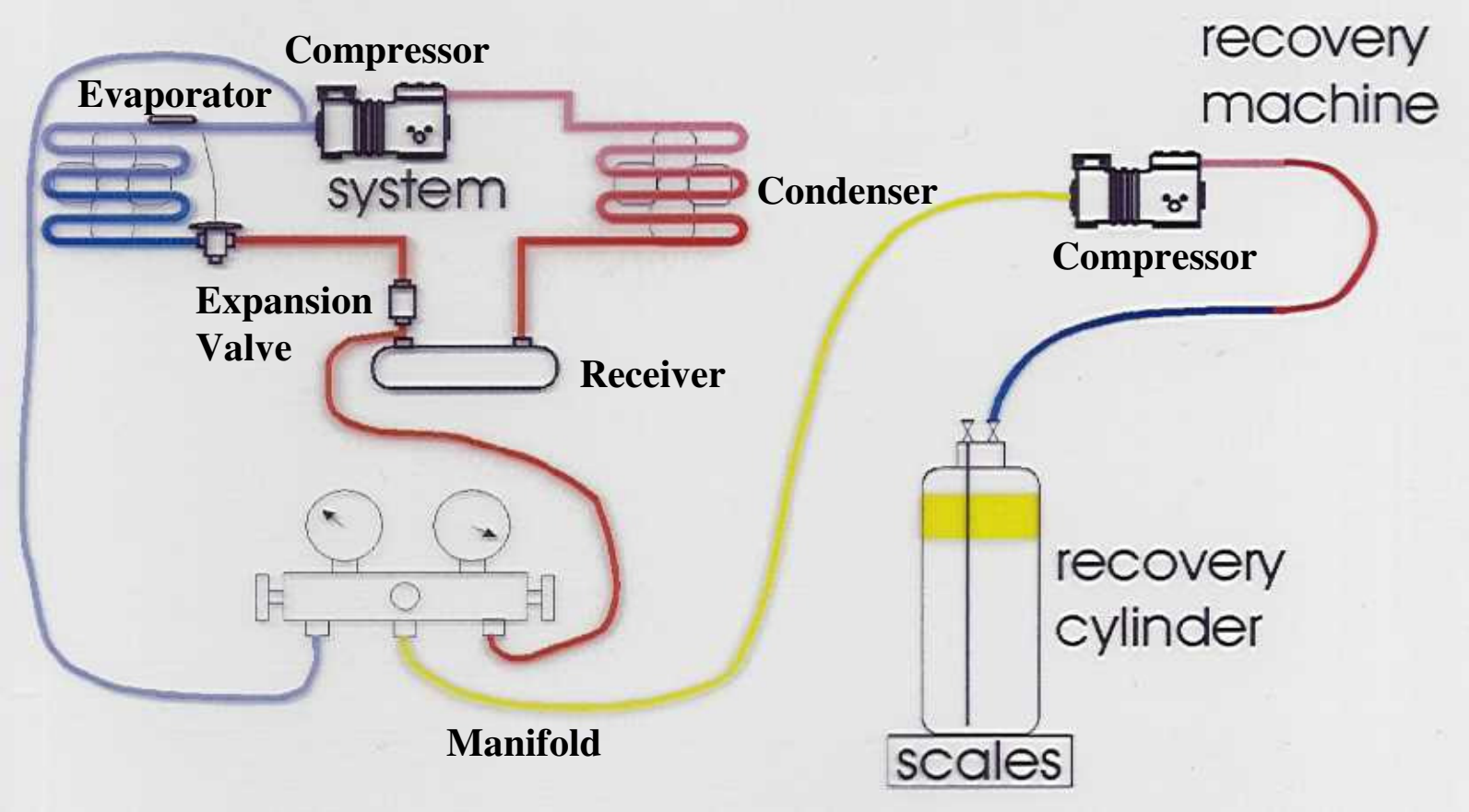
Recover

- **CFCs & HCFCs**
  - ***– because they destroy ozone and cause climate change***
- **HFCs**
  - ***– because they cause climate change***

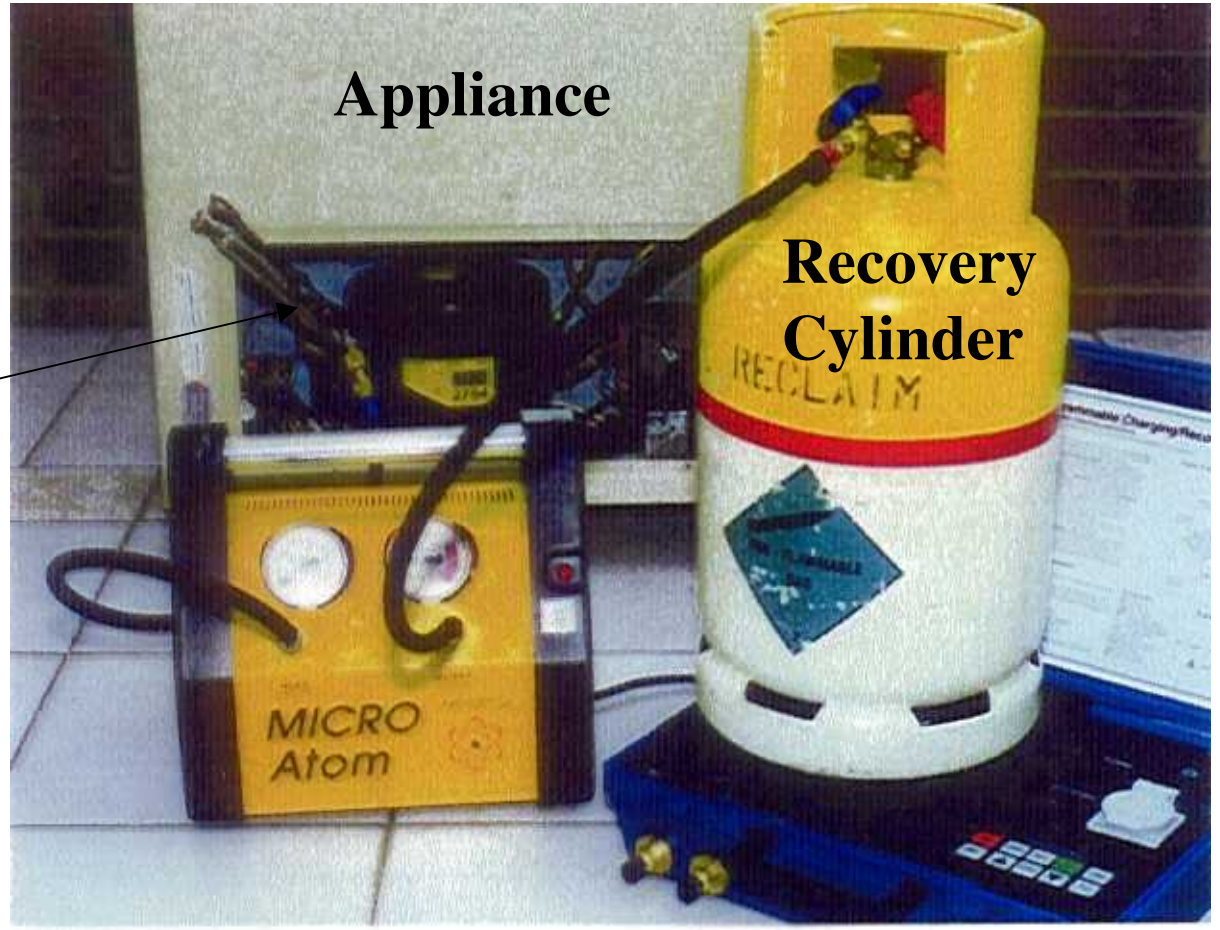
Recovery Machine with Condenser



Recovery Machine without Condenser



A Typical Recovery System



Piercing Plier

Weighing Balance

Recovery Machine

Recovery Cylinder

- **Do not use disposable cylinders**
- **Fill up to 80% of Cylinder Capacity**
- **Do not mix the refrigerant cylinders**
- **Label the cylinders**

Recovery Procedure

- Connect appliance to recovery machine inlet
- Connect recovery machine outlet to cylinder
  - Weigh cylinder
- Open valves and start machine
- Recover until:
  - 2 psig, if appliance is serviced
  - as low as possible, if appliance is scrapped
- Stop machine and close valves

International Experience

- In many countries, law doesn't permit venting of refrigerants
- Refrigerants have to be recovered and recycled or recovered and destroyed
- Most R&R systems are certified
- In developed countries:
  - Most CFCs, HCFCs & HFCs are recovered
  - Most technicians have/ share recovery machines
  - There exist many recycling centres

Recycling, Reclamation and Destruction

- **Uncontaminated refrigerant can be reused**
- **Contaminated refrigerant can be recycled, but you need**
  - **recycling centres**

    or
  - **recycling machine**

Making a Recovery Machine

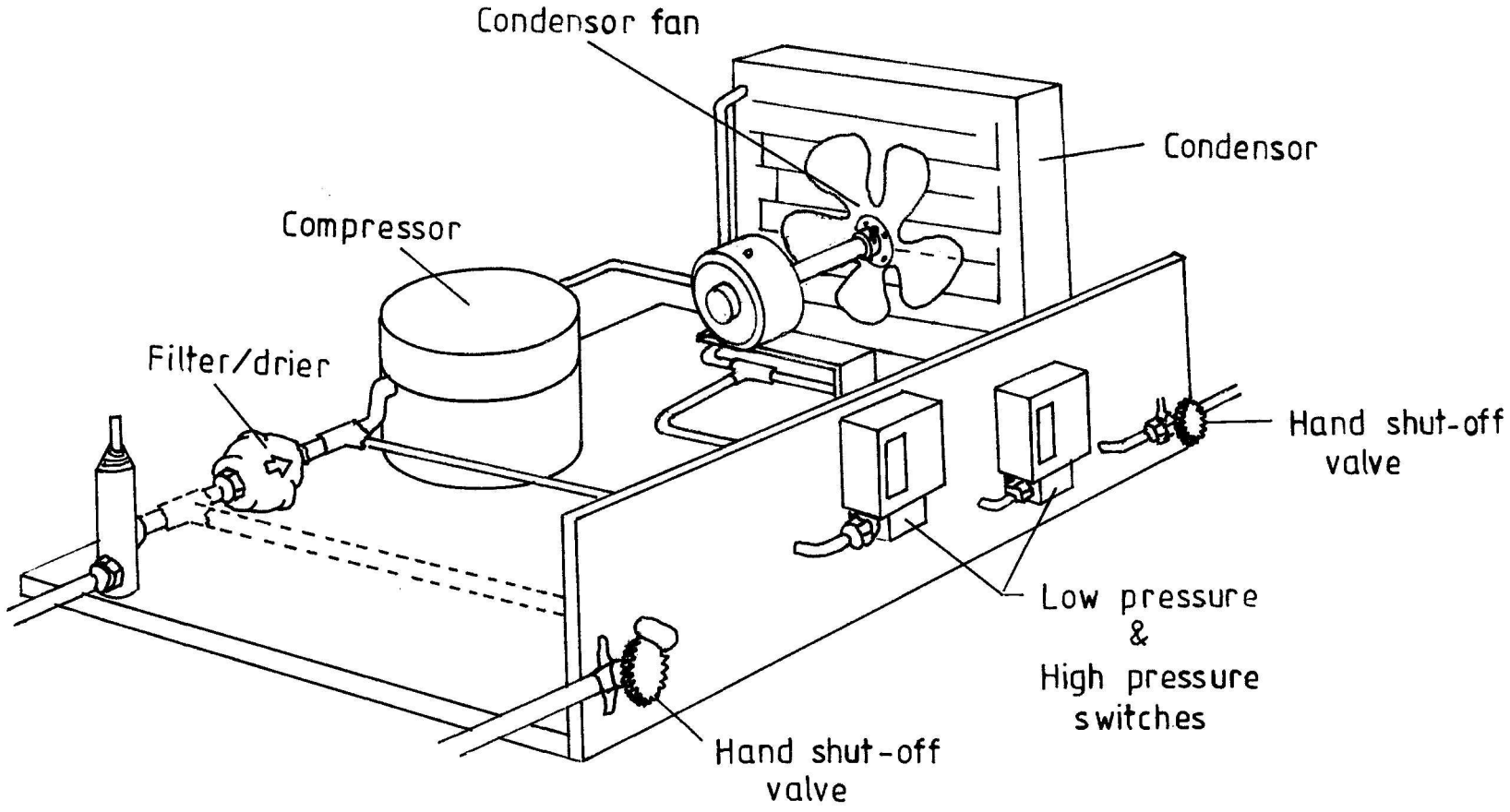
- Components required
- Assembling the machine
- Operation
- Maintenance and reliability

Components needed

- condensing unit
- pressure switches
- shut off valves
- fittings and pipings
- on / off switch
- drier

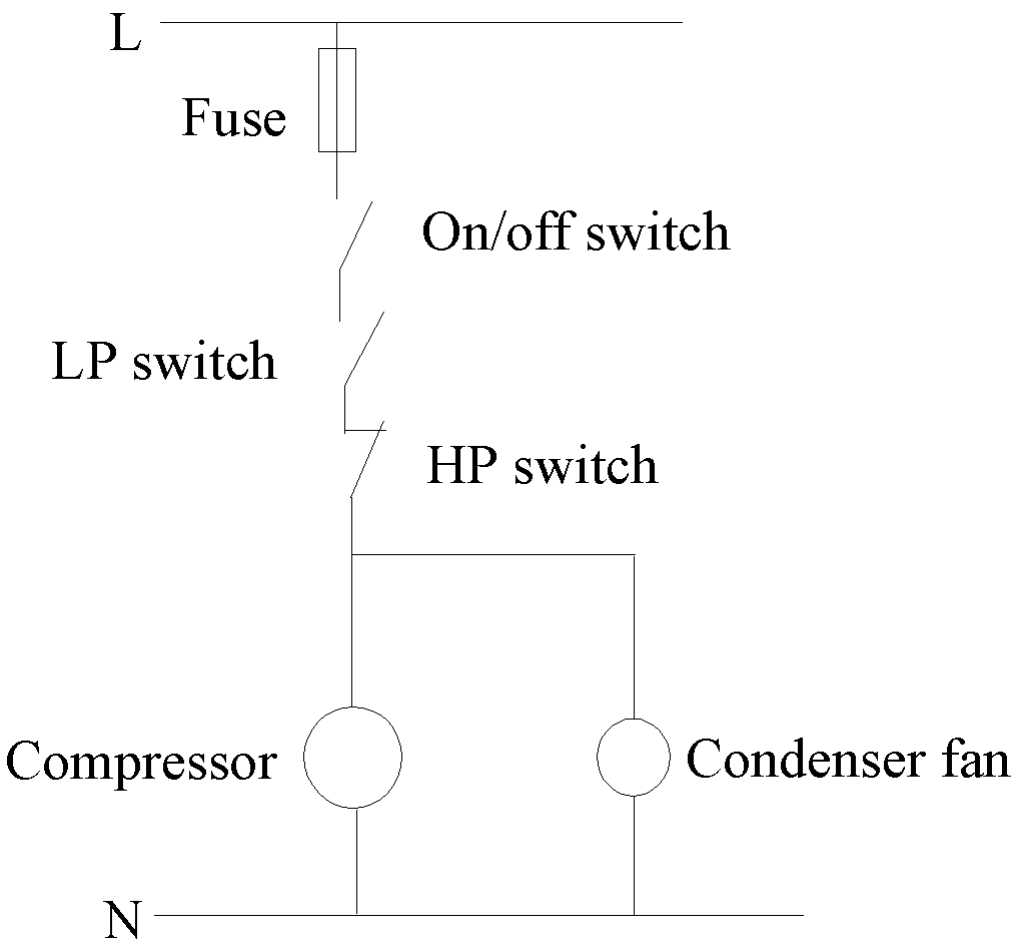
Components needed

Recovery Machine Assembly



A recovery machine made in India

Wiring Diagram



Pressure Switch Settings

- **LP switch:**

  -0.3 bar (4 psig) cut-out

  1.0 bar (15 psig) differential

- **HP switch**

  20 bar (290 psig) : for HCFC22

  15 bar (220 psig) : for CFC12/HFC134a

Operation & Maintenance

- Have separate recovery machine for each refrigerant
- Use with correct refrigerant
- Do not allow liquid into machine

Maintenance & Reliability

- **Replace filter drier after maximum 100 hours of operation**

- **Check whether the compressor is working properly, before using it**