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Aircraft Pneumatic System

Types of the Aircraft pneumatic system

- 1. High Pressure Pneumatic System**
- 2. Medium Pressure Pneumatic System**
- 3. Low Pressure Pneumatic System.**

1.High Pressure Pneumatic System

- Pressure Limit is 1000Psi to 3000 Psi
- High pressure pneumatic systems are sometimes used for:
 1. Brakes
 2. Opening and closing doors
 3. Driving hydraulic pumps, alternators, starters, water
 4. injection pumps, etc.
 5. Operating emergency devices such as brakes and
 6. landing gear

System layout

- Used for one time emergency or back-up.
- Completely discharged when used.
- These use pressurized air or nitrogen containers
- Some Cases containers that are re-charged during flight the action of compressors installed in the system.
- This type of installation allows the pneumatic system to operate components repeatedly rather than just once in a manner similar to a hydraulic system.
- **Mostly twin reciprocating engine aircraft equipped with on-board compressors.**

SOURCES

- **Engine-driven and**
- **Other on-board compressors,**
- **Ground air, and**
- **Ground nitrogen sources.**
- **Some have two stages of compression, while others have three, depending on the maximum desired operating pressure.**
- **Air and nitrogen storage containers for pneumatic systems are filled on the ground with either a ground-based compressor or a high pressure bottle transfer for nitrogen.**

STORAGE

- **The high pressure storage cylinder is typically a light weight, wire-wrapped, steel-constructed reservoir.**
- **Following points are Important for Safe Use.**
 - 1. The date of manufacture and safe working pressure**
 - 2. Date stamped for the performance test**
 - 3. Regular Visual Inspection**
 - 4. Removed periodically for hydrostatic checks.**

CHARGING

- **There are two ways of charging (Pressurizing)**
 - 1. On-board compressor**
 - 2. Ground source**
- The typical high-pressure storage bottle has two ports
 - 1. One Valve is for Ground Operated Compressor**
 - 2. Another Valve is used for the On board Compressor**

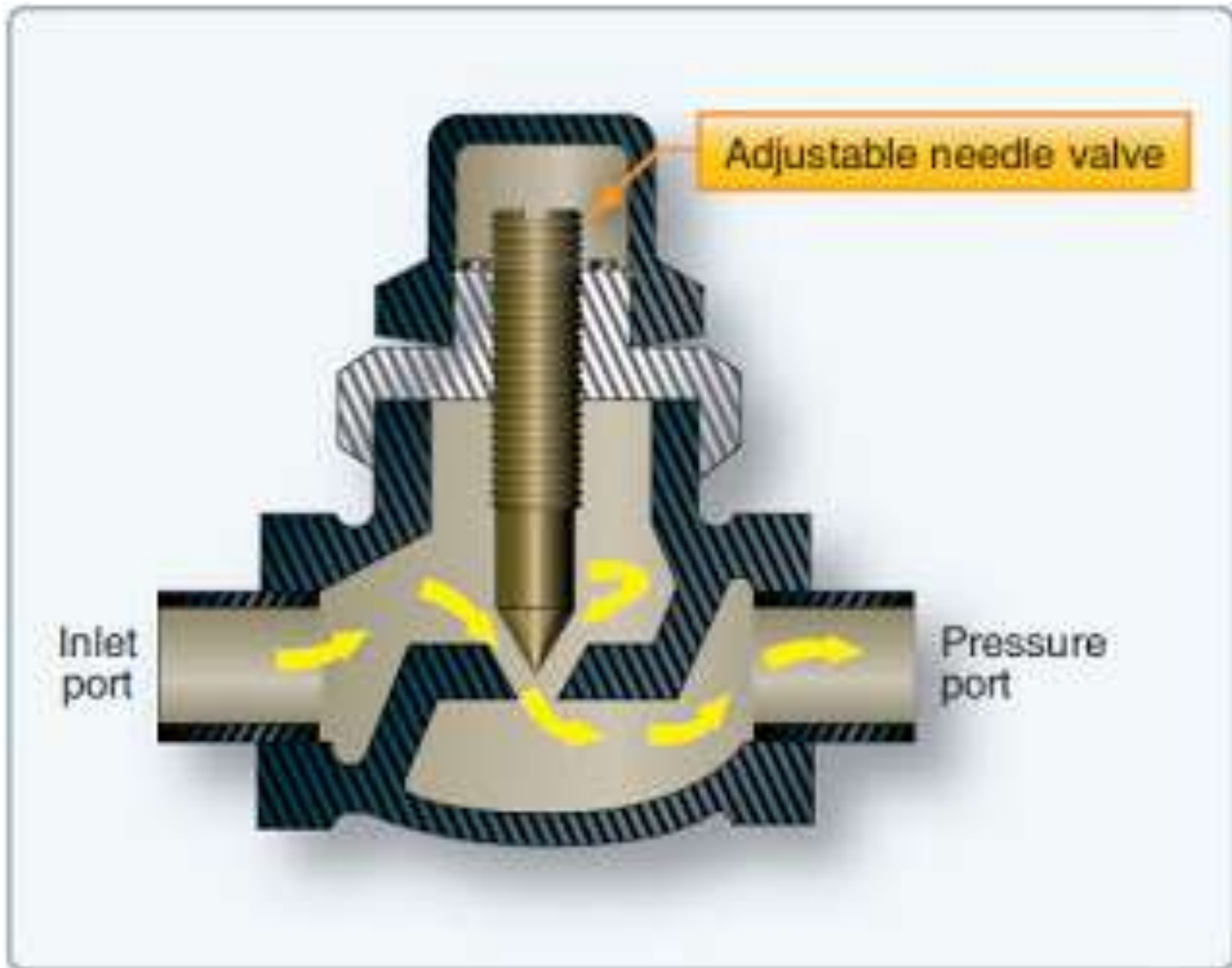
DISTRIBUTION

- **Pneumatic power is distributed through high pressure steel or stainless steel lines.**
- **The use of check valves is common to prevent back flow.**
- **A shuttle valve is often used to close off the normal system flow and allow flow of high pressure pneumatic air to operate the component**

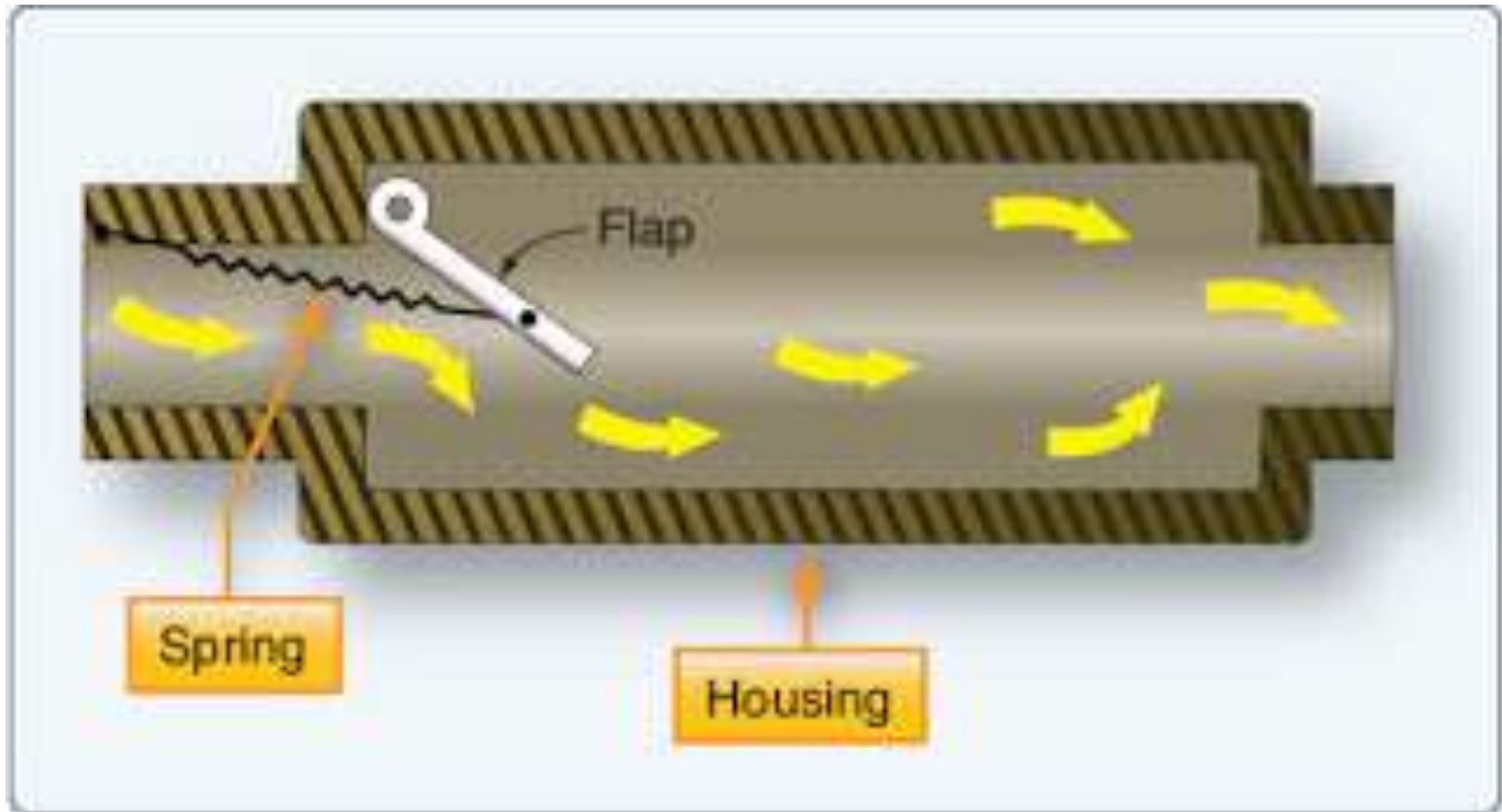
SUPPLY REGULATION

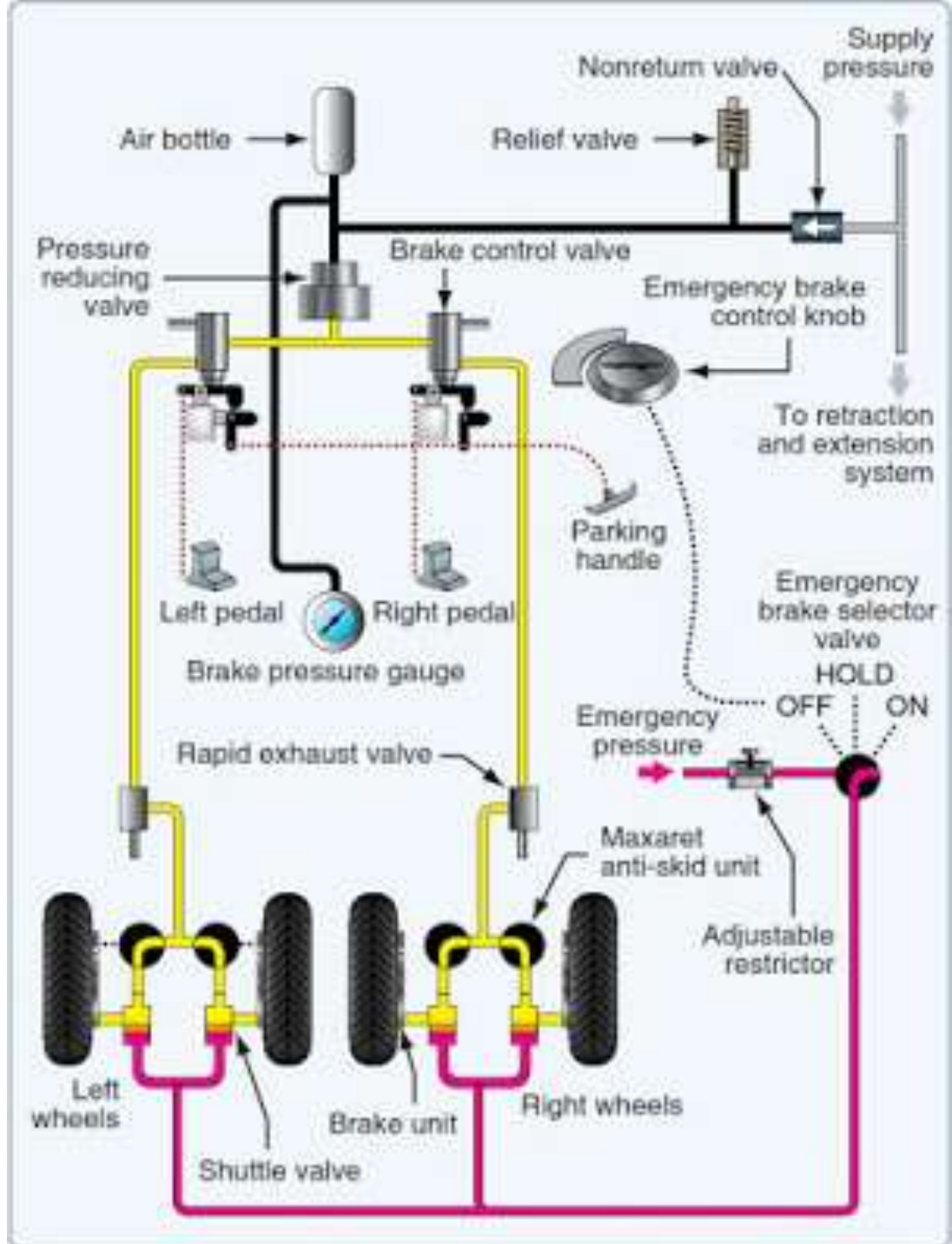
- Pressure Regulator valve is used in case pressure relief valve failed.
- Check valves are used to prevent back flow to the compressor.
- Selector valve or control valve to direct the air.
- Pressure reducing valves are used to Lower the system pressure to that require by a particular component or sub system.
- Restrictors and variable restrictors are use to control the speed of the component(s) operated by pneumatic.

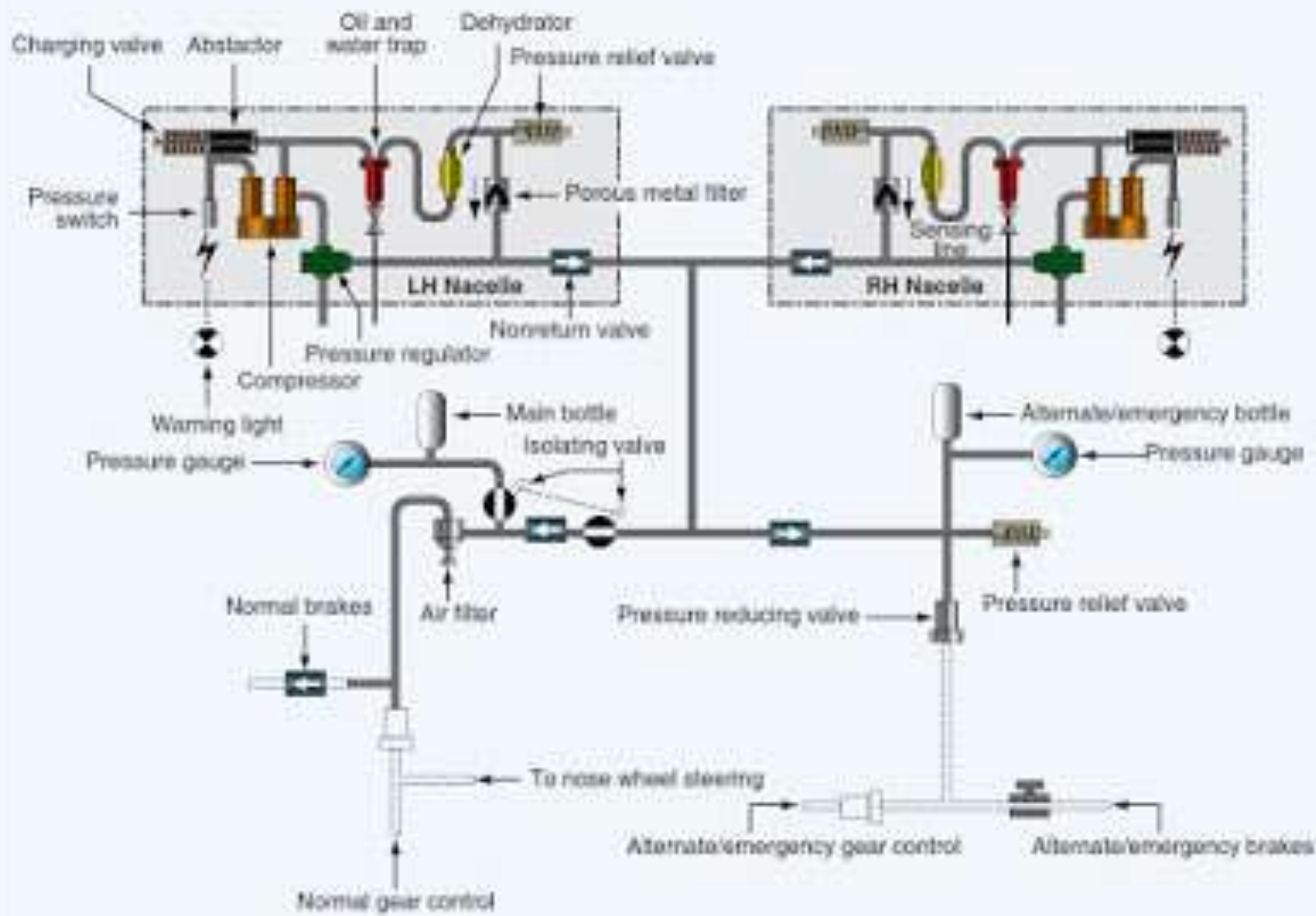
Restrictors



Check Valve







**Tigers are Nicer than Lions.
They share their food And Male
let females and Cubs eat first
but Lions will fight to death
over kill**





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