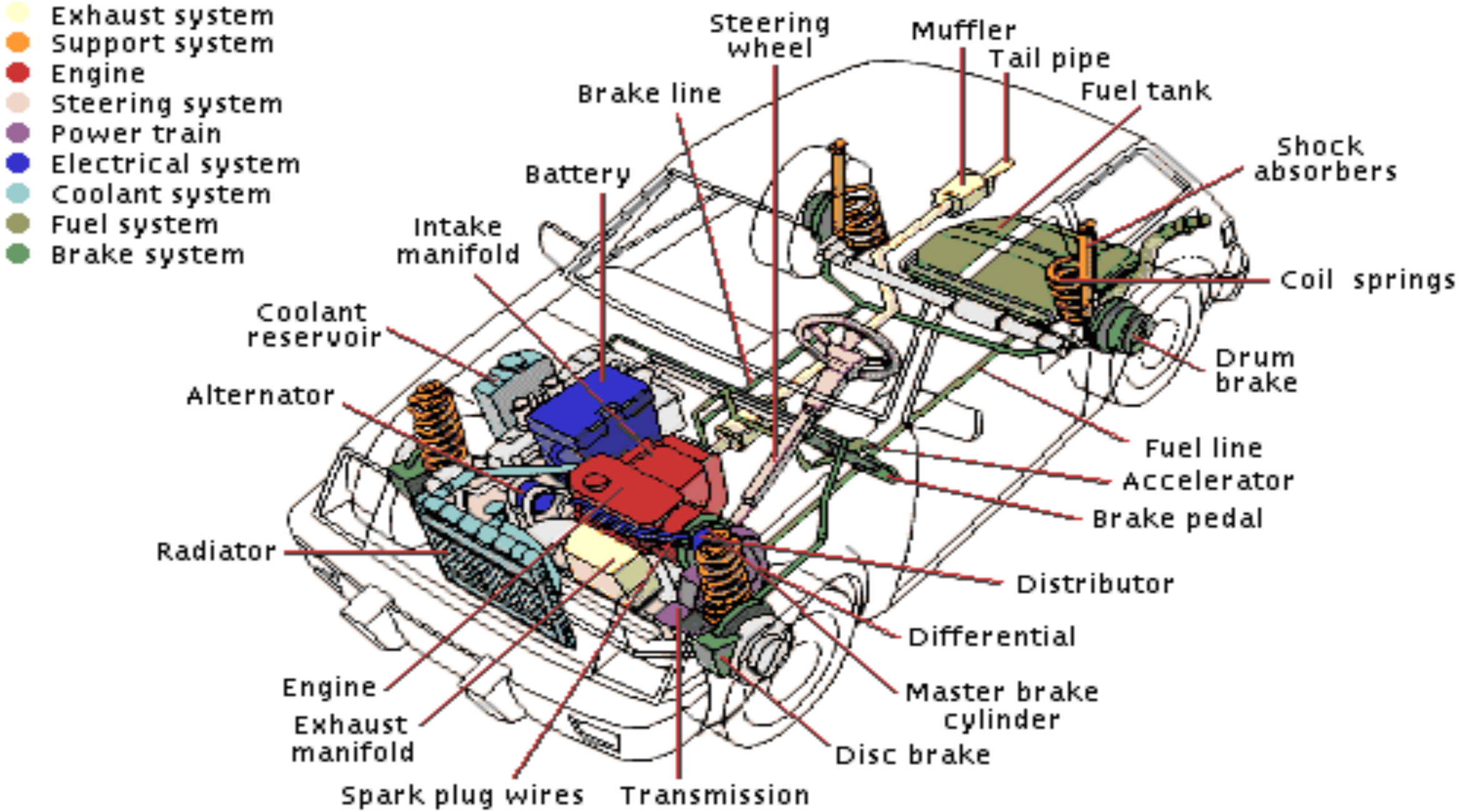
Human Body Systems / Manmade Systems- Performance Management

Prof RM Belokar 25.01.2023 TM 202223-2

Types of systems in human body

Key facts about the human body systems	
System of organs	A group of organs that work together to perform one or more functions in the body.
Musculoskeletal system	Mechanical support, posture and locomotion
Cardiovascular system	Transportation of oxygen, nutrients and hormones throughout the body and elimination of cellular metabolic waste
Respiratory system	Exchange of oxygen and carbon-dioxide between the body and air, acid-base balance regulation, phonation.
Nervous system	Initiation and regulation of vital body functions, sensation and body movements.
Digestive system	Mechanical and chemical degradation of food with purpose of absorbing into the body and using as energy.
Urinary system	Filtration of blood and eliminating unnecessary compounds and waste by producing and excreting urine.
Endocrine system	Production of hormones in order to regulate a wide variety of bodily functions (e.g. menstrual cycle, sugar levels, etc)
Lymphatic system	Draining of excess tissue fluid, immune defense of the body.
Reproductive system	Production of reproductive cells and contribution towards the reproduction process.
Integumentary system	Physical protection of the body surface, sensory reception, vitamin synthesis.


Exhaust system
Support system
Engine
Steering system
Power train
Electrical system
Coolant system
Fuel system
Brake system
Steering wheel
Muffler
Tail pipe
Fuel tank
Brake line
Shock absorbers
Battery
Intake manifold
Coil springs
Coolant reservoir
Drum brake
Alternator
Fuel line
Accelerator
Brake pedal
Radiator
Distributor
Differential
Master brake cylinder
Engine
Exhaust manifold
Disc brake
Spark plug wires
Transmission

- There are many systems that make up the modern vehicle, some working with others to perform a larger, sometimes more complex, task and others working individually in order to accomplish an individual job.

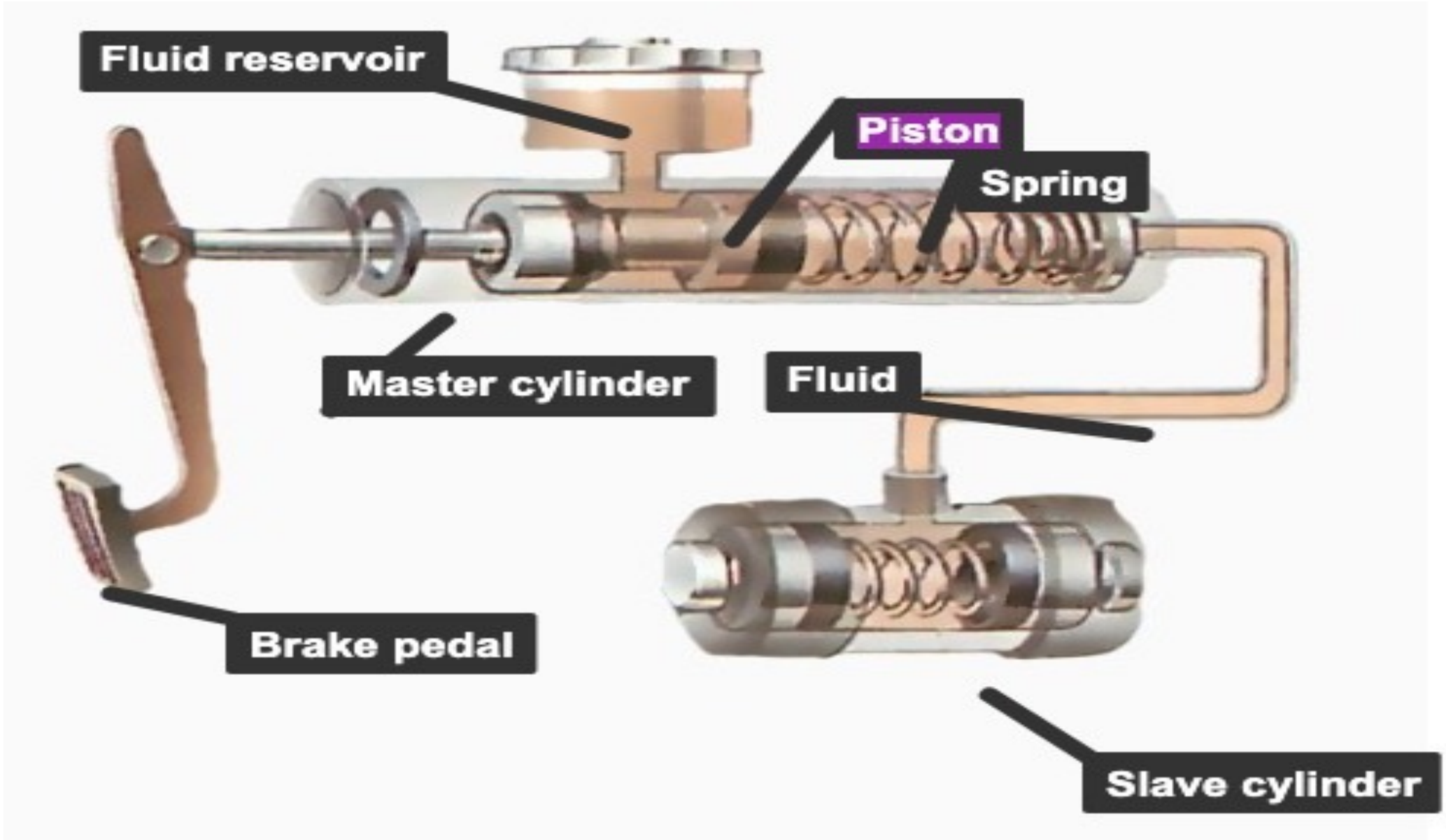
- The following is a list of the major systems that make up the modern vehicle.

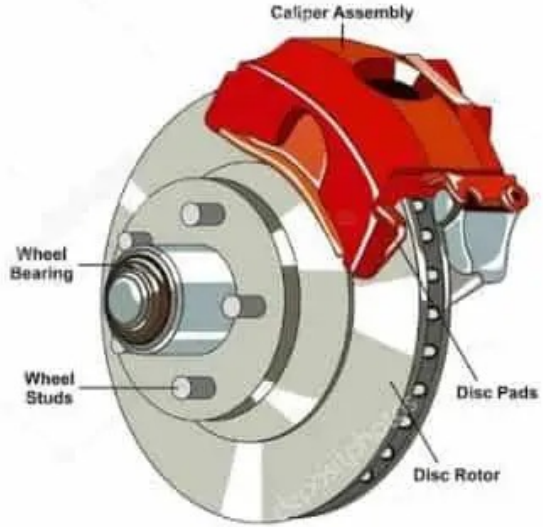
- **The Engine – including lubrication and cooling.**
- **The Fuel System – including evaporative emission.**
- **The Ignition System**

- **The Electrical System – including starting and charging.**
- **The Exhaust System –including emission control.**
- **The Drive Train – including the transmission.**
- **The Suspension and Steering Systems**
- **The Brake System**
- **The Frame and Body**

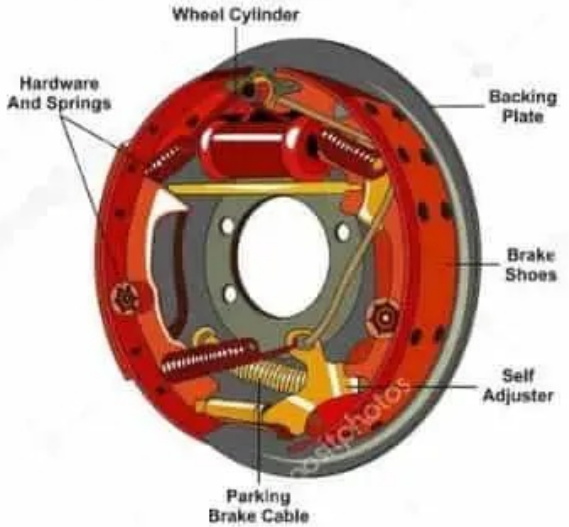
Types of braking systems

1. **Foot brake and Handbrake**
2. **Internal expanding brakes**
3. **External contracting brakes**
4. **Mechanical braking system**
5. **Power braking system**
6. **Vacuum braking system**
7. **Air braking system**
8. **Hydraulic braking system**
9. **Electric braking system**
10. **Self-energizing brakes**
11. **Power-assisted braking system**

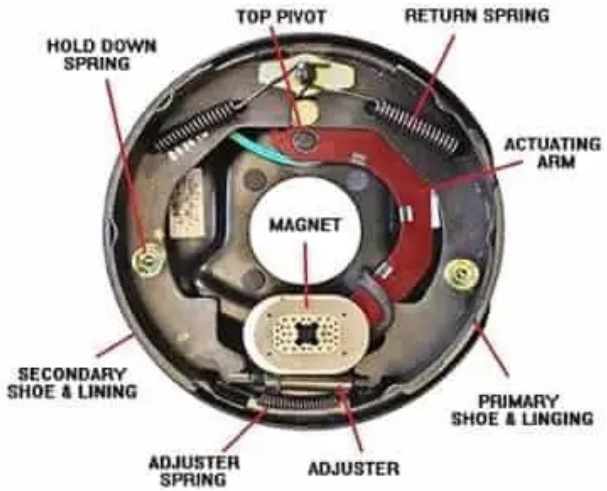

Fluid reservoir
Piston
Spring
Master cylinder
Fluid
Brake pedal
Slave cylinder



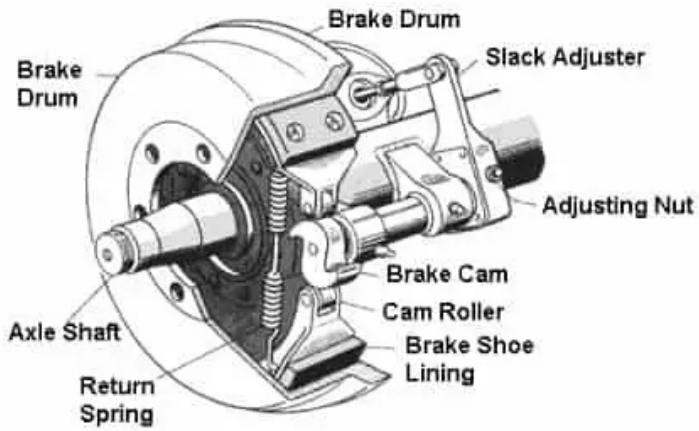
Disc Brake



Drum Brake

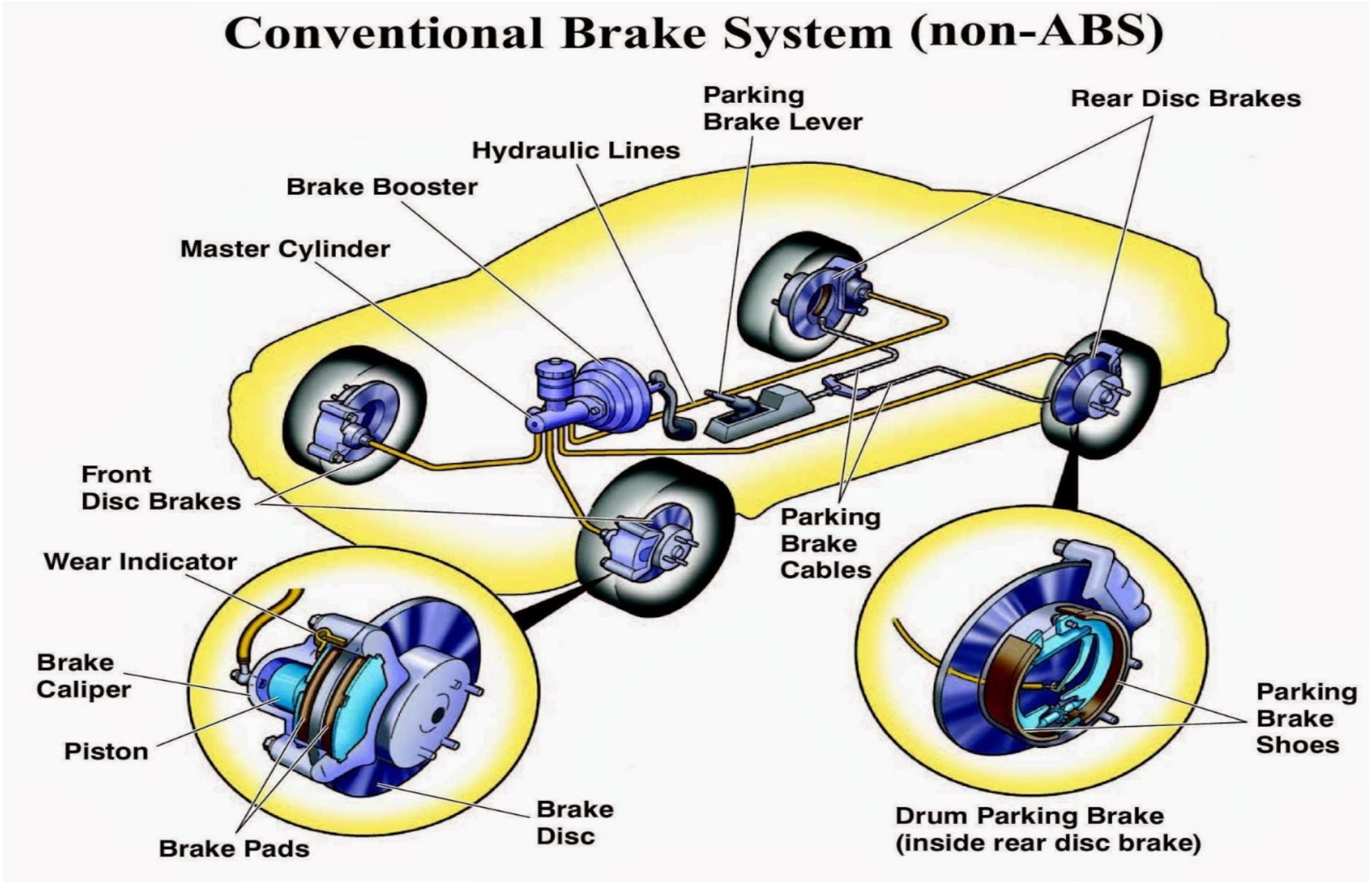


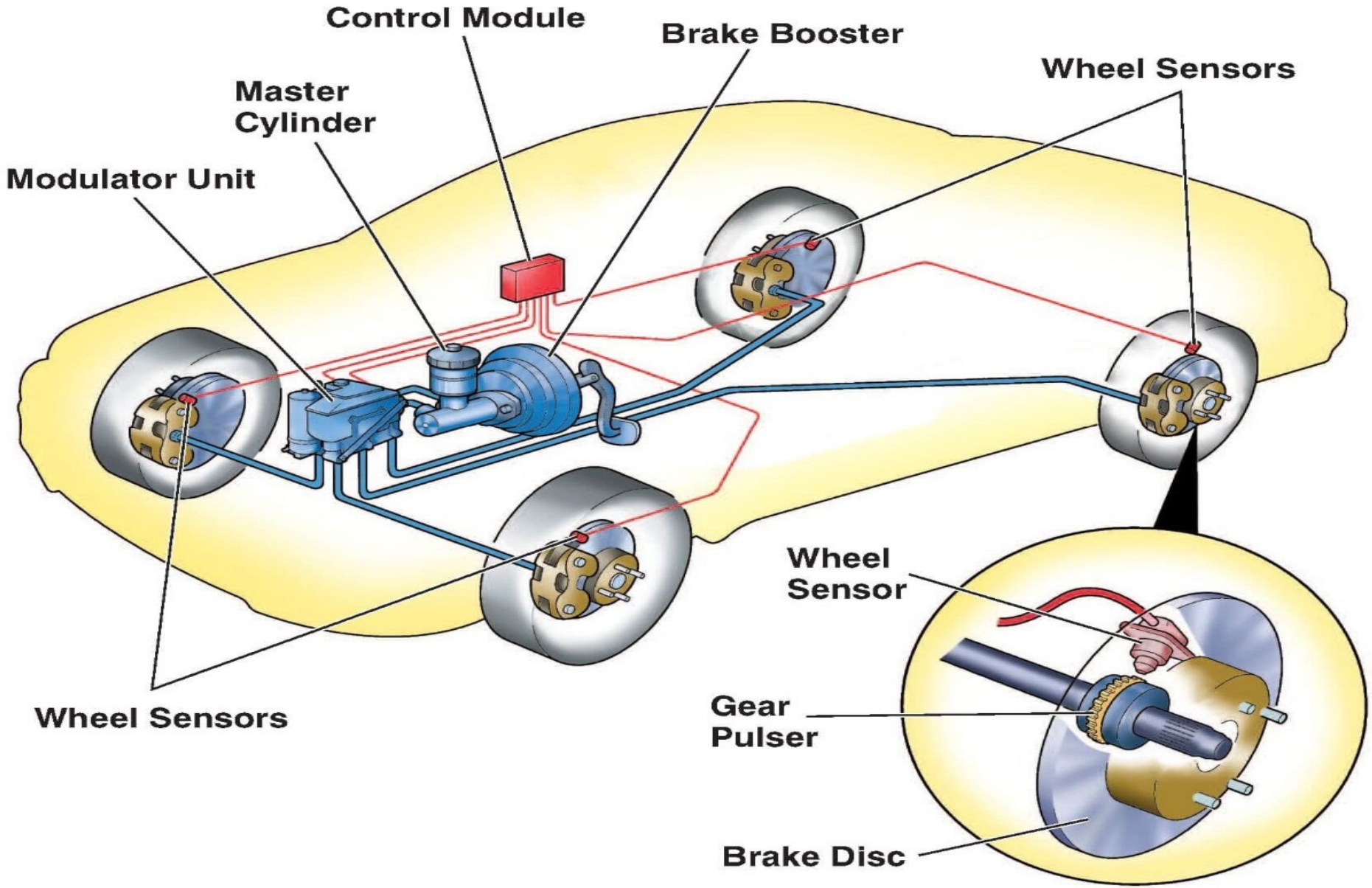
Electric Brake



Air Brake

Conventional Brake System (non-ABS)

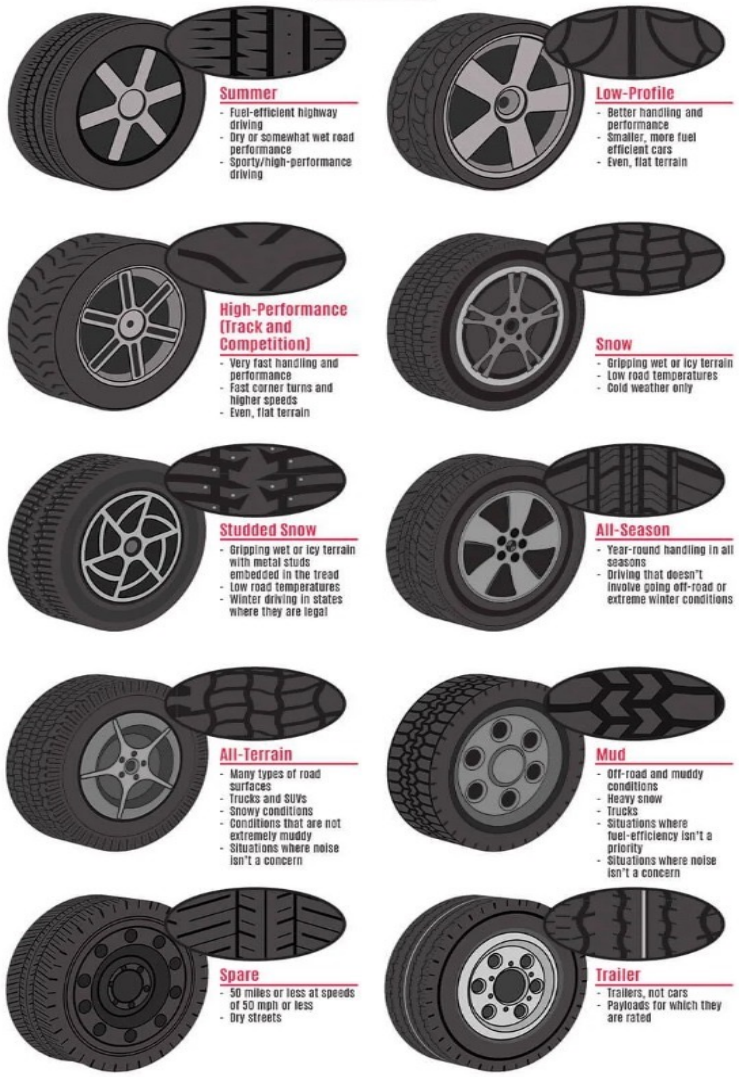



Control Module
Brake Booster
Wheel Sensors
Master Cylinder
Modulator Unit
Wheel Sensors
Wheel Sensor
Gear Pulser
Brake Disc

A GUIDE TO DIFFERENT TYPES OF TIRES

(AND WHAT THEY'RE FOR)

Type of Tire



Summer
- Fuel-efficient highway driving
- Dry or somewhat wet road performance
- Sporty/high-performance driving

Low-Profile
- Better handling and performance
- Smaller, more fuel efficient cars
- Even, flat terrain

High-Performance (Track and Competition)
- Very fast handling and performance
- Fast corner turns and higher speeds
- Even, flat terrain

Snow
- Gripping wet or icy terrain
- Low road temperatures
- Cold weather only

Studded Snow
- Gripping wet or icy terrain with metal studs embedded in the tread
- Low road temperatures
- Winter driving in states where they are legal

All-Season
- Year-round handling in all seasons
- Driving that doesn't involve going off-road or extreme winter conditions

All-Terrain
- Many types of road surfaces
- Trucks and SUVs
- Snowy conditions
- Conditions that are not extremely muddy
- Situations where noise isn't a concern

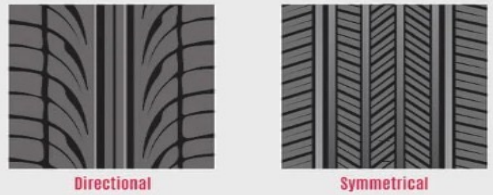
Mud
- Off-road and muddy conditions
- Heavy snow
- Trucks
- Situations where fuel-efficiency isn't a priority
- Situations where noise isn't a concern

Spare
- 50 miles or less at speeds of 50 mph or less
- Dry streets

Trailer
- Trailers, not cars
- Payloads for which they are rated

Parts Geek®

Types of Tread Patterns

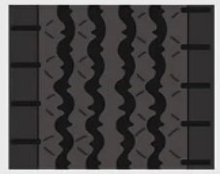


Directional

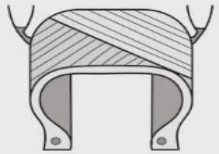
Symmetrical

Asymmetrical

Directional/Asymmetrical

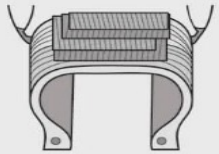


Rib



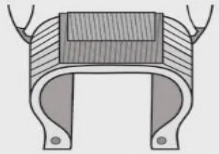
Bias Ply

Lug



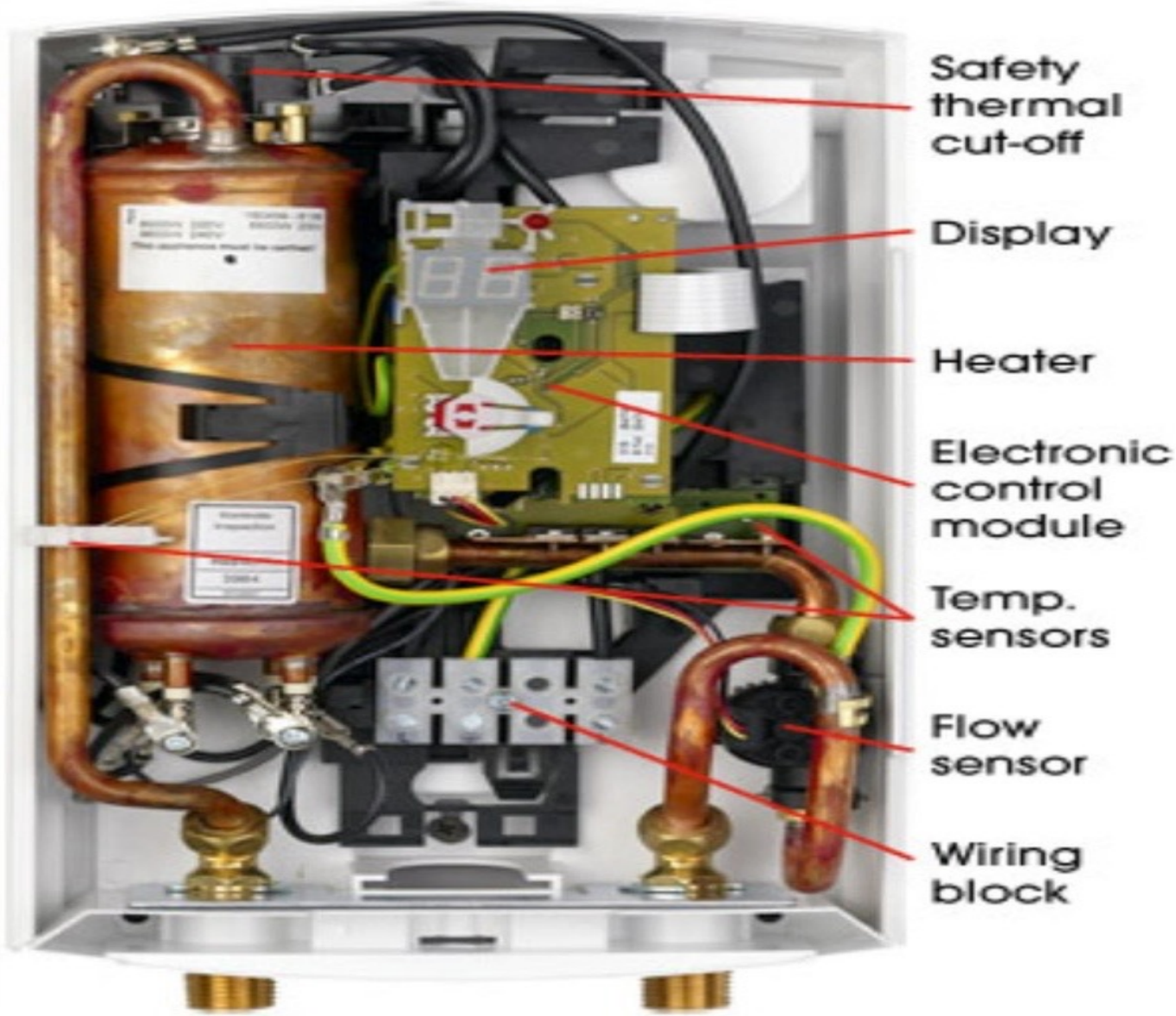
Bias Belted

Block



Radial Ply

Gyser system



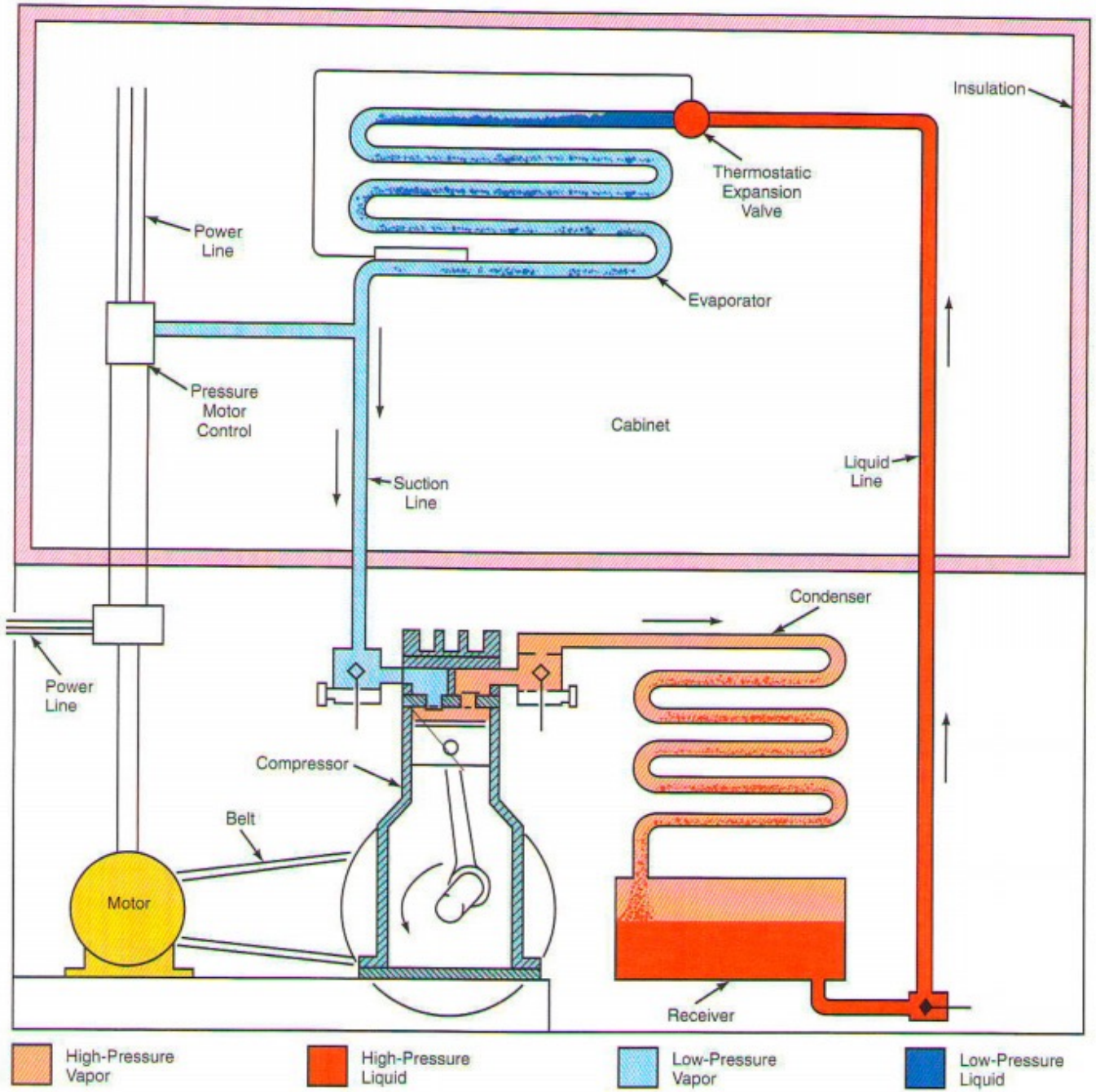
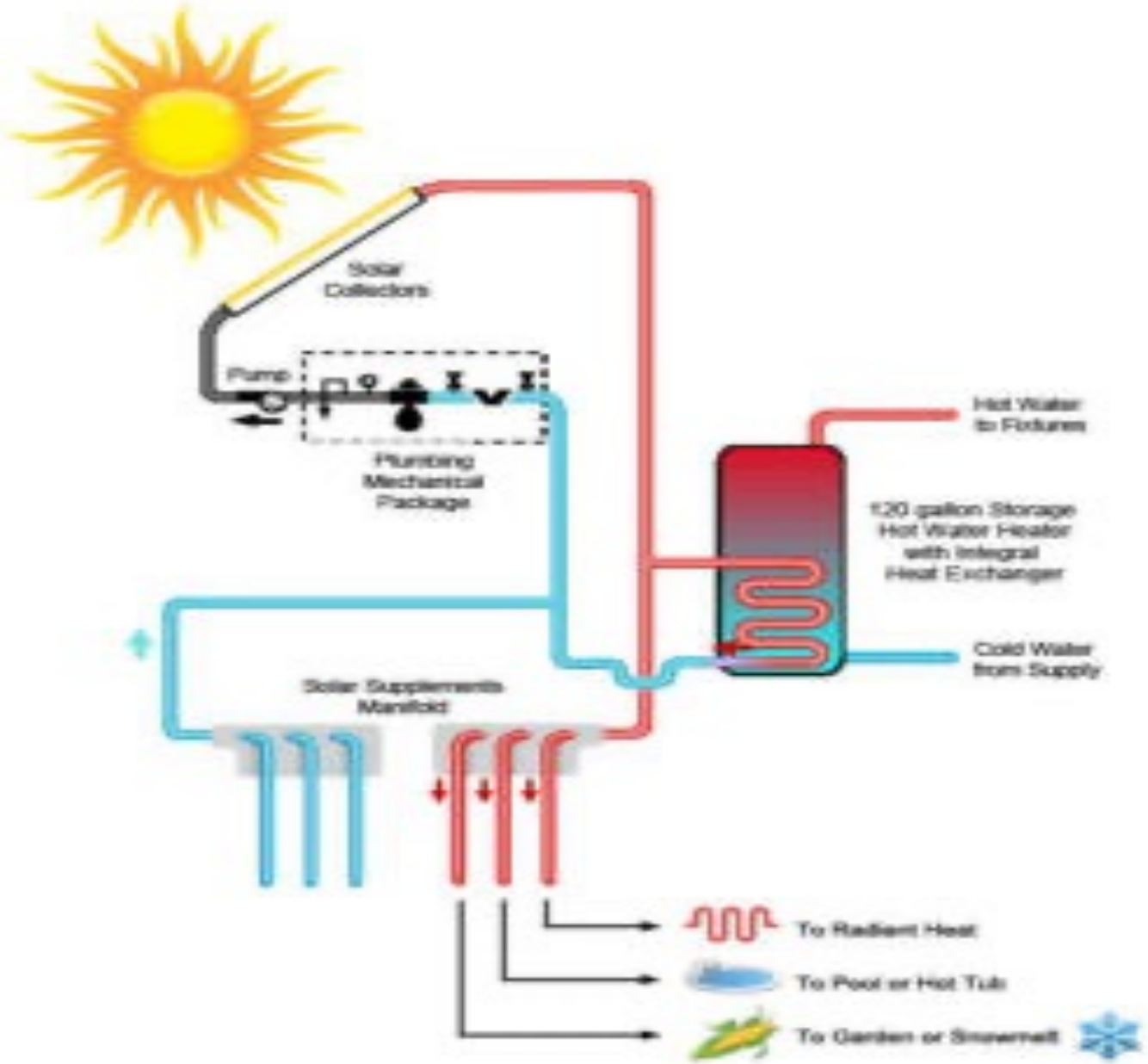
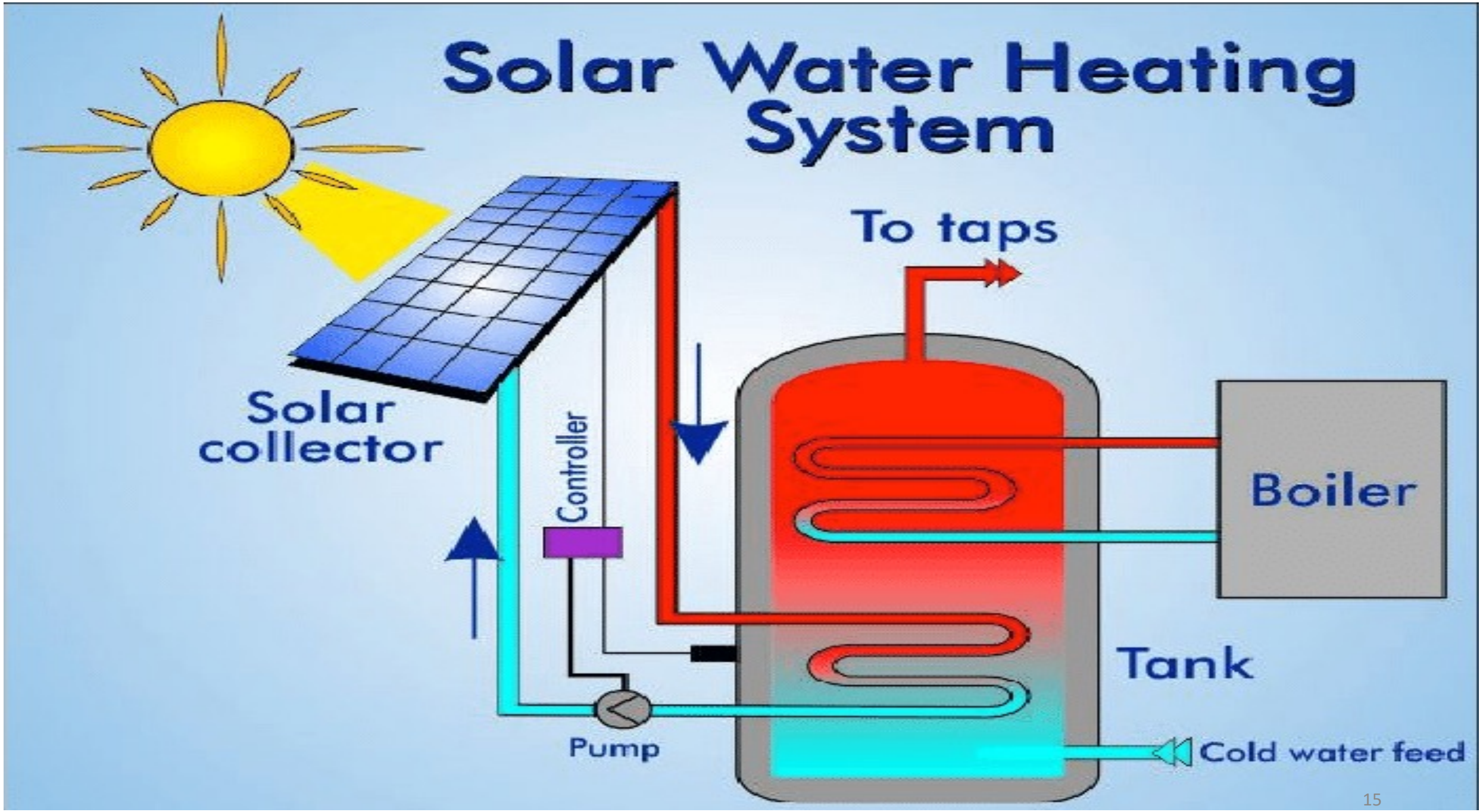
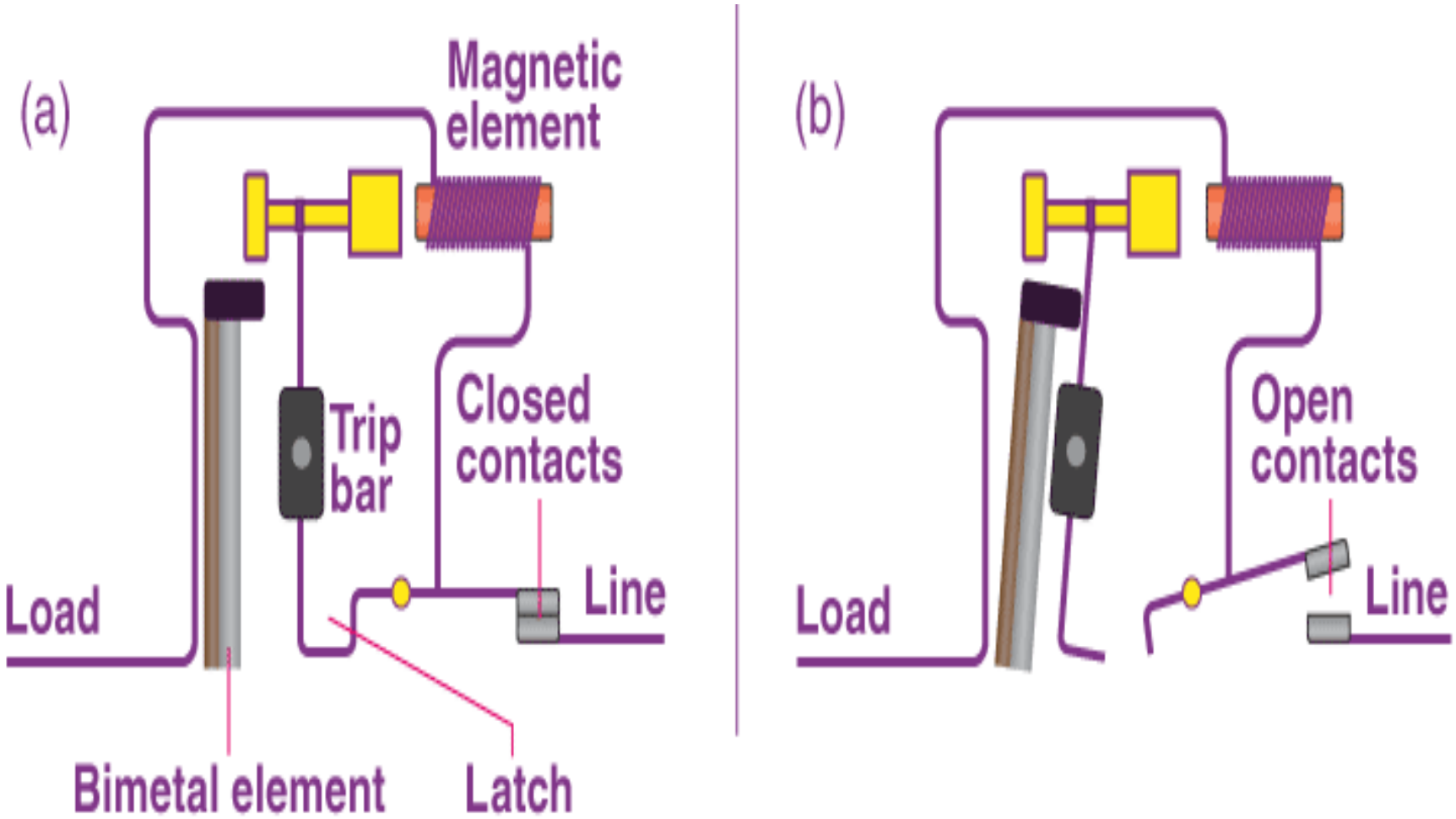


Figure 3-5. *Compression system using external-drive (open) compressor. A crankshaft seal is required at the place where crankshaft extends through crankcase of the compressor.*


Solar Collectors
Pump
Plumbing Mechanical Package
Hot Water to Fixtures
120 gallon Storage Hot Water Heater with Integral Heat Exchanger
Cold Water from Supply
Solar Supplements Manifold
To Radiant Heat
To Pool or Hot Tub
To Garden or Snowmelt


Solar Water Heating System
To taps
Solar collector
Controller
Boiler
Tank
Pump
Cold water feed



Working Principle of MCB