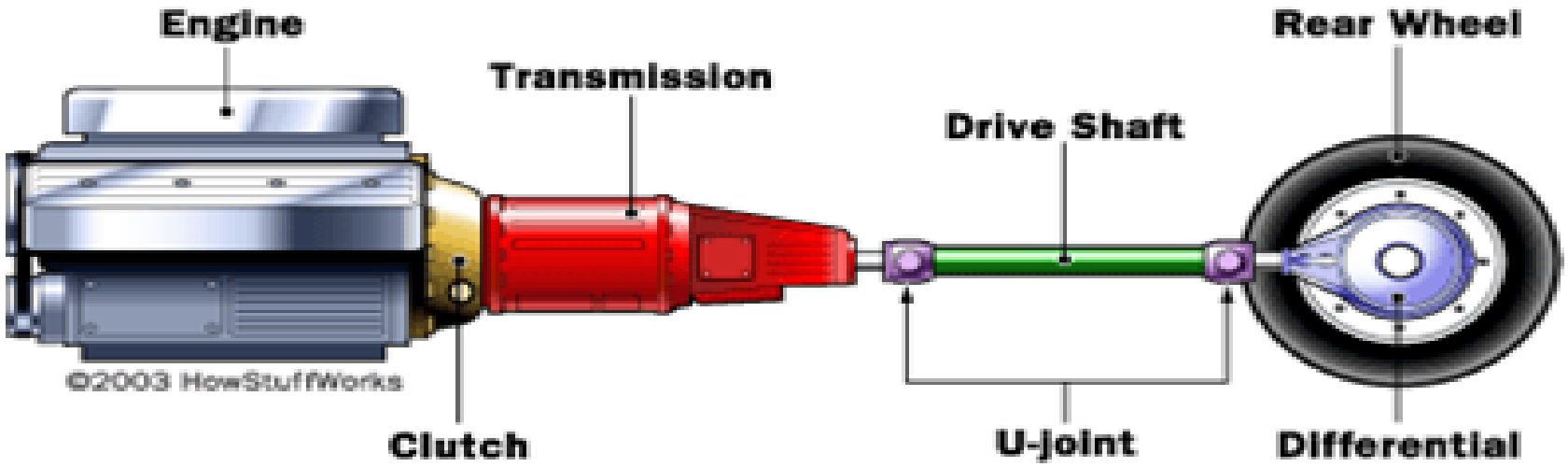


Manual Transmission

What is a Transmission?

- The word '*Transmission*' means the whole of the mechanism that transmits the power from the engine crankshaft to the rear wheels, providing the suitable variations of the engine torque at the road wheels, whenever required.

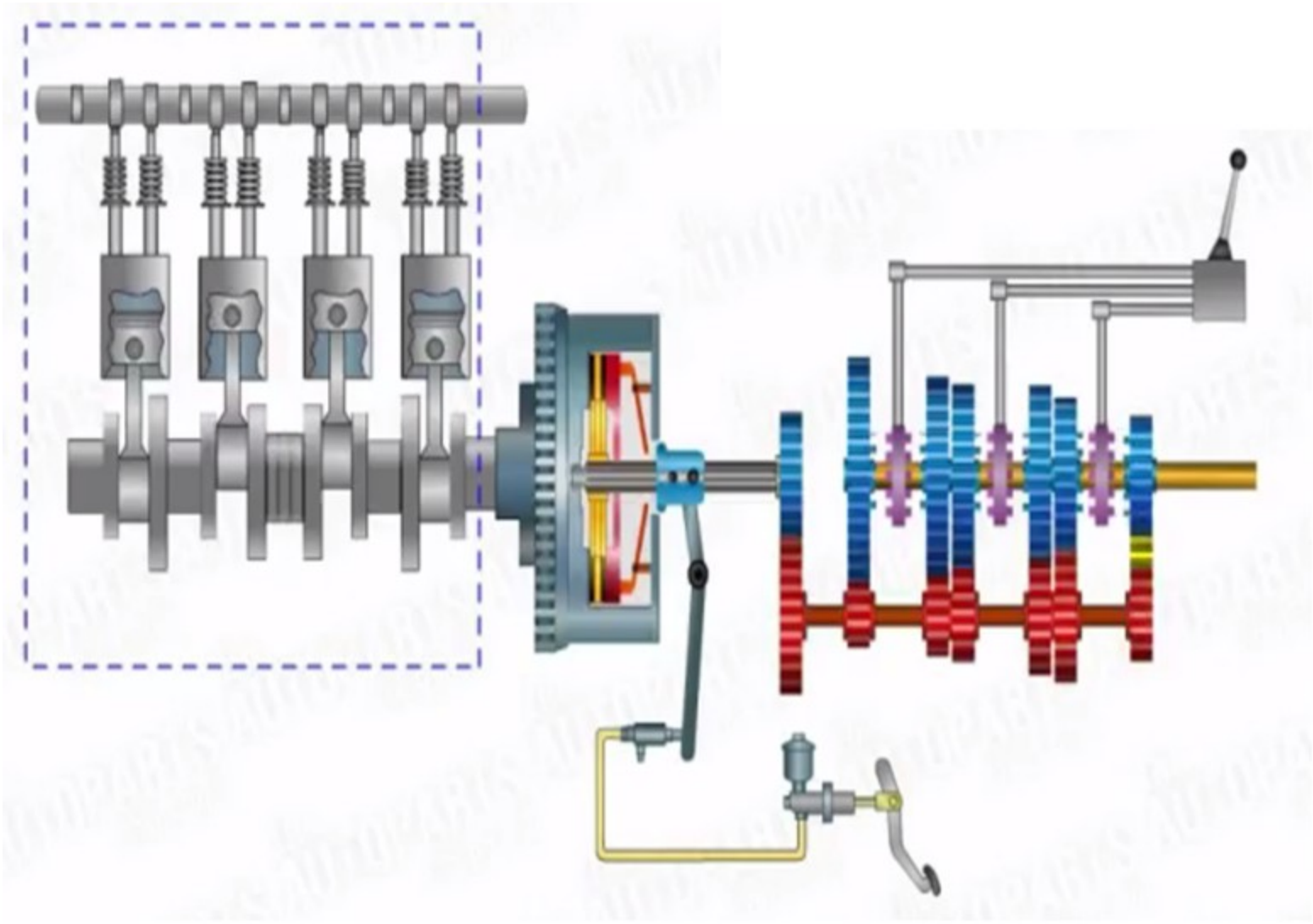
Types of Transmission

- **Manual transmission**
- **Fully automatic Transmission**
- **Semi-Automatic Transmission**
- **Continuously Variable Transmission**

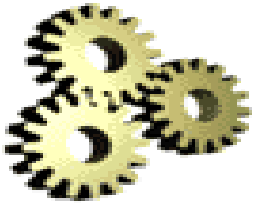
Manual Transmission

Components of Manual Transmission:

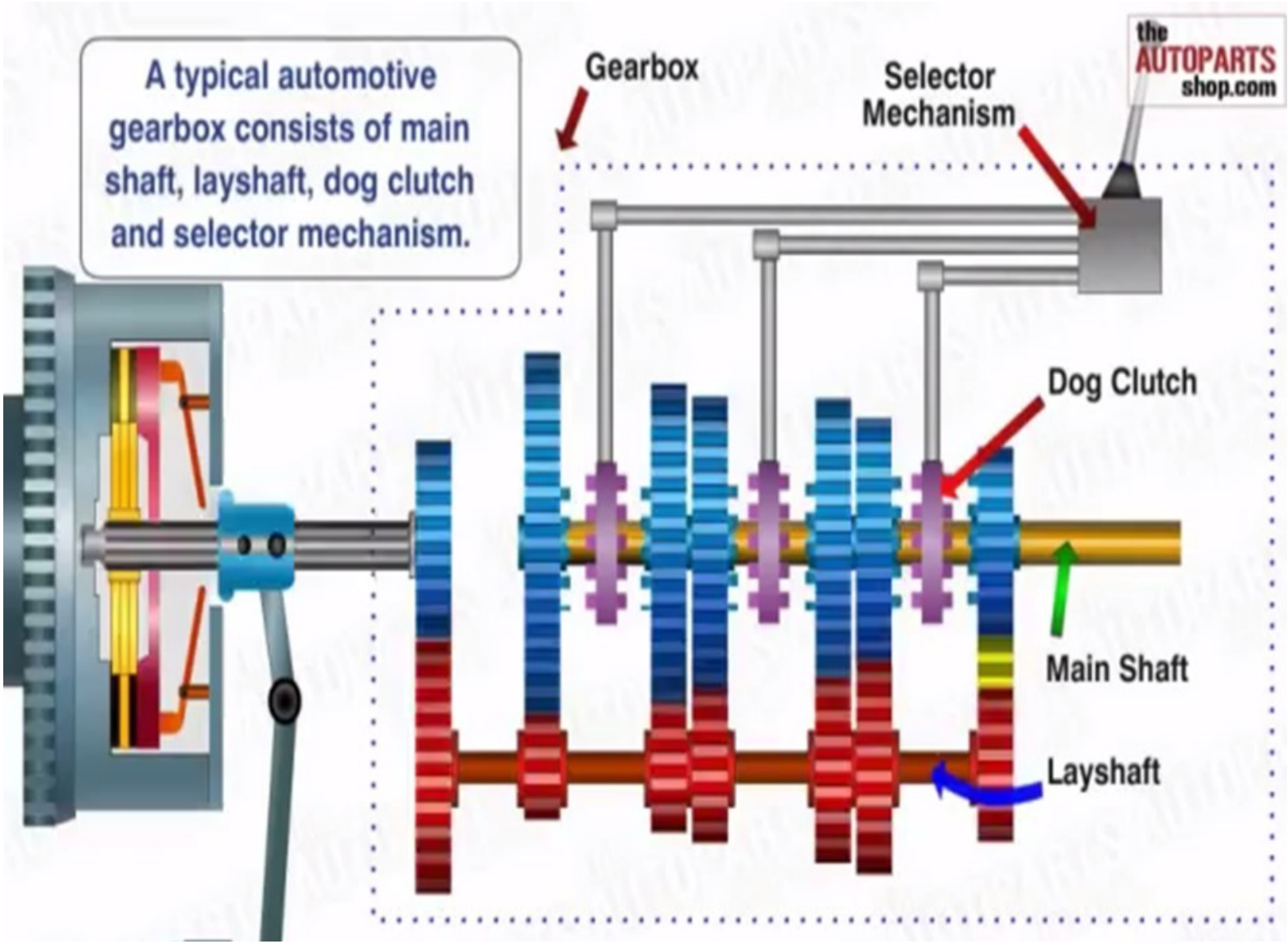
- **Clutch**
- **Gearbox**
- **Differential**



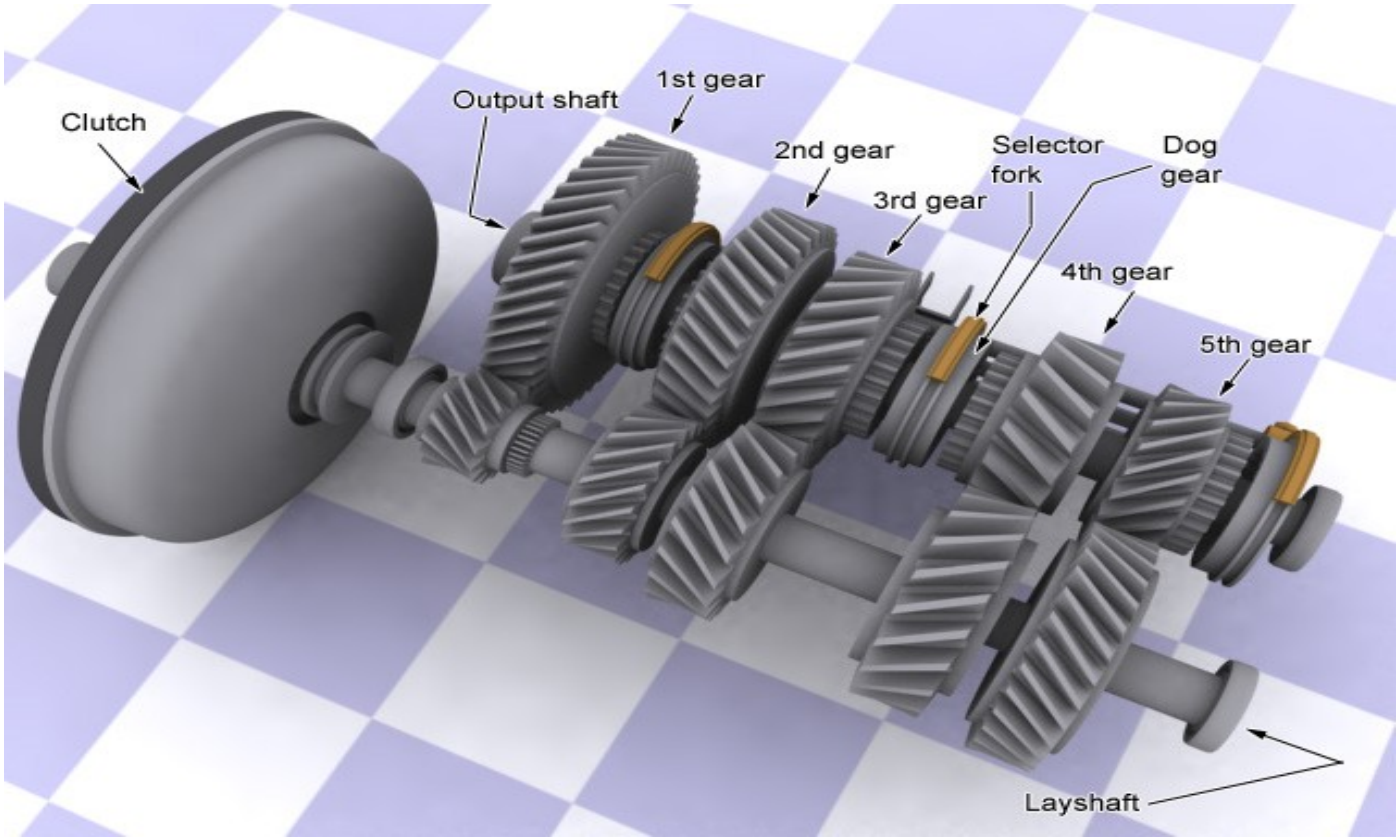
Types of Gearbox



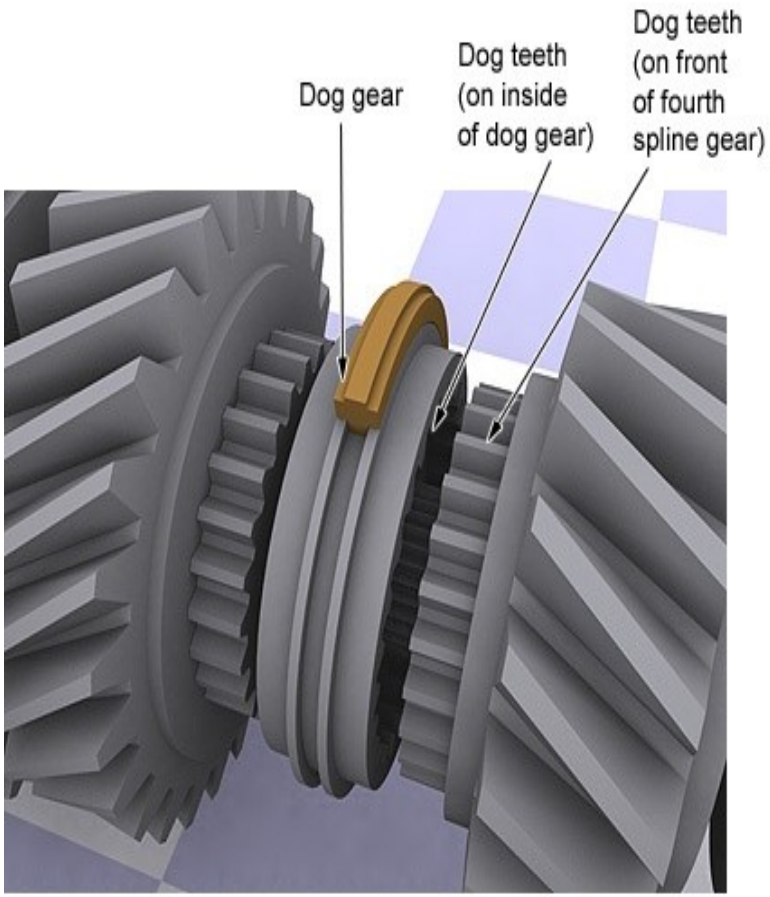
- **Constant mesh type**
- **Synchromesh type**
- **Sliding mesh type**

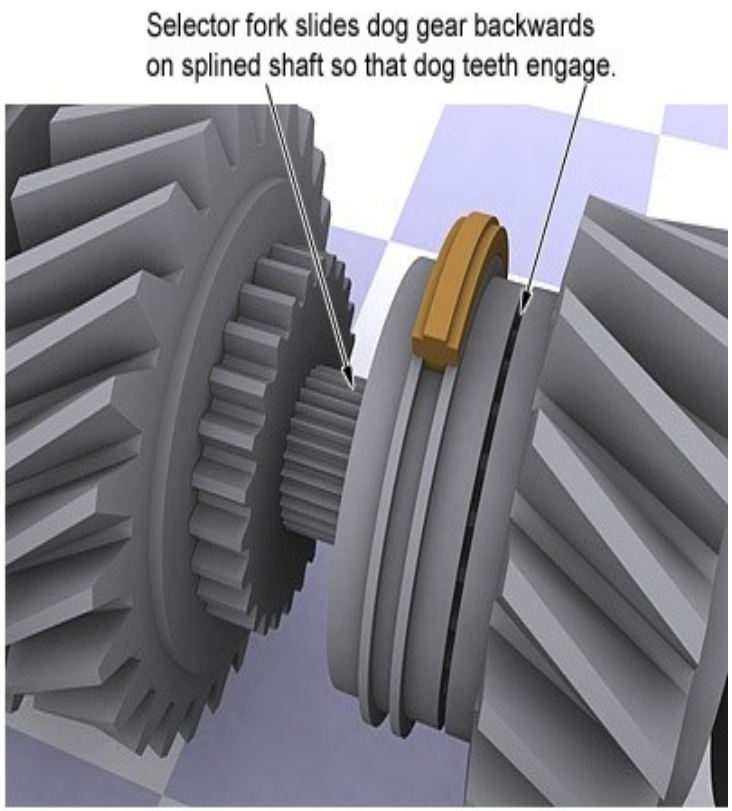

A typical automotive gearbox consists of main shaft, layshaft, dog clutch and selector mechanism.
Gearbox
Selector Mechanism
the AUTOPARTS shop.com
Dog Clutch
Main Shaft
Layshaft

Constant Mesh Type



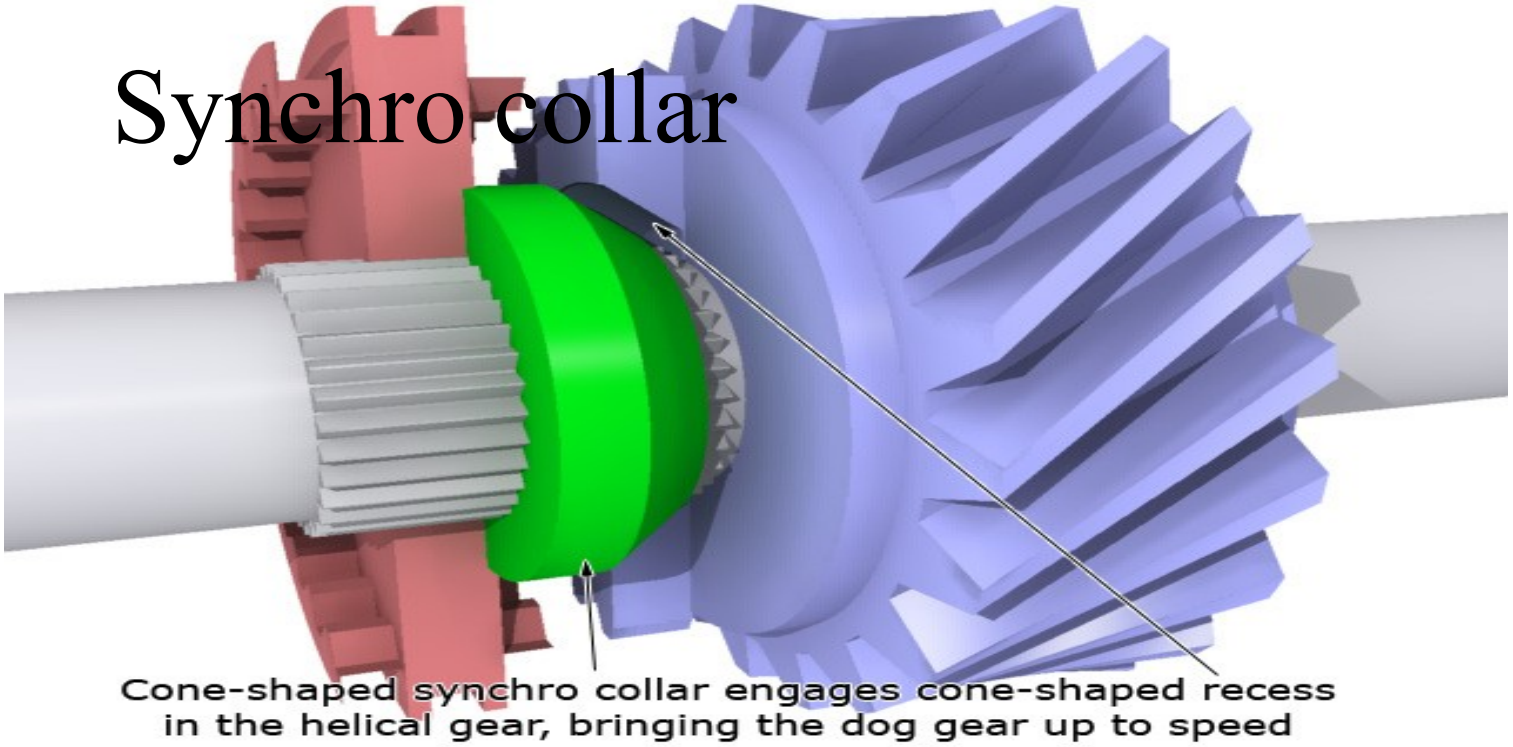
Dog Gear


Dog gear
Dog teeth (on inside of dog gear)
Dog teeth (on front of fourth spline gear)

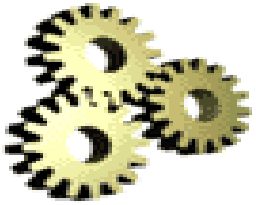

Selector fork slides dog gear backwards on splined shaft so that dog teeth engage.

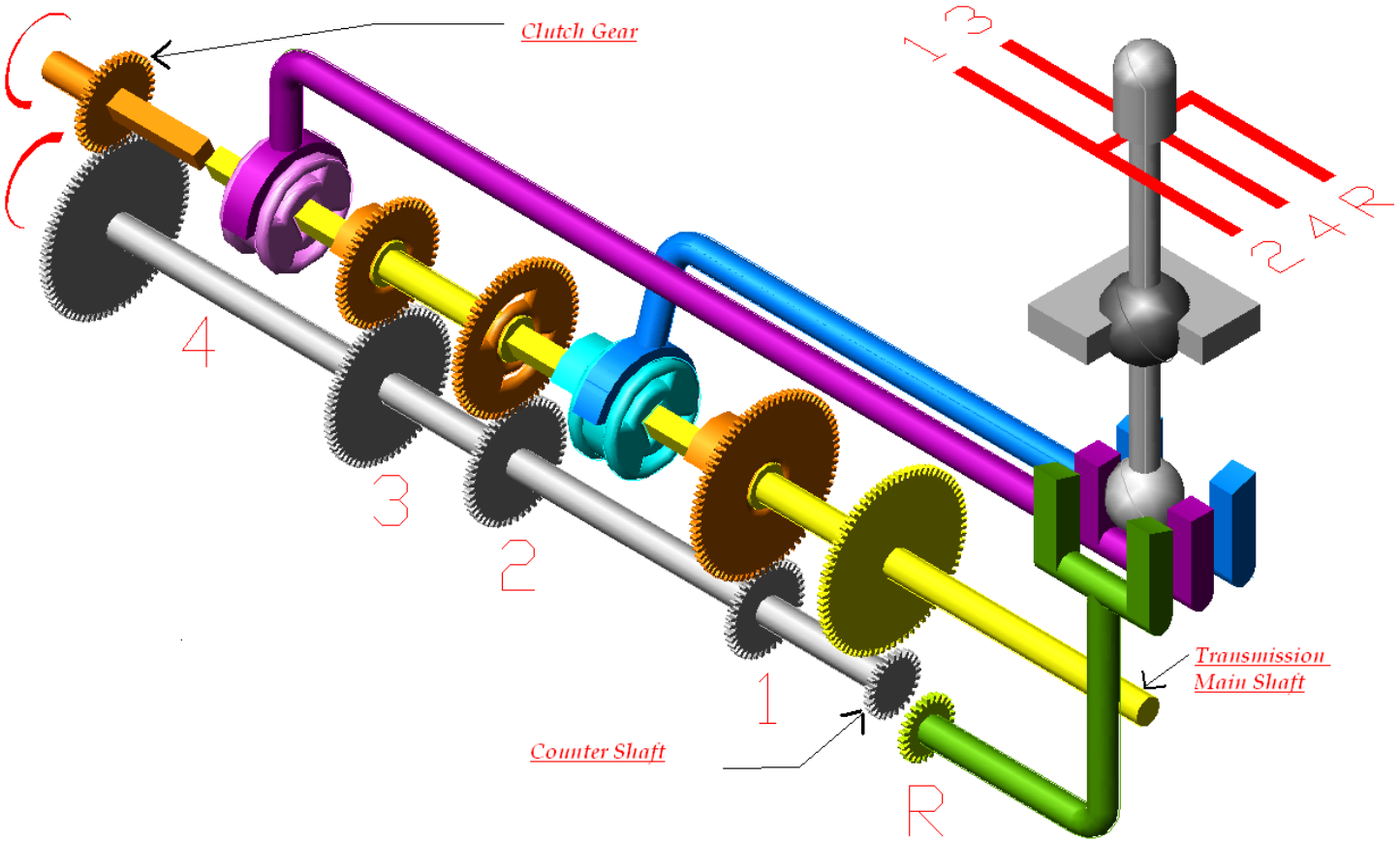
Synchromesh type Gearbo

Synchro-collar

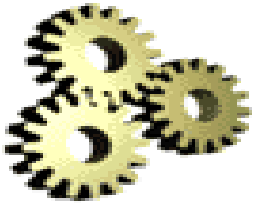


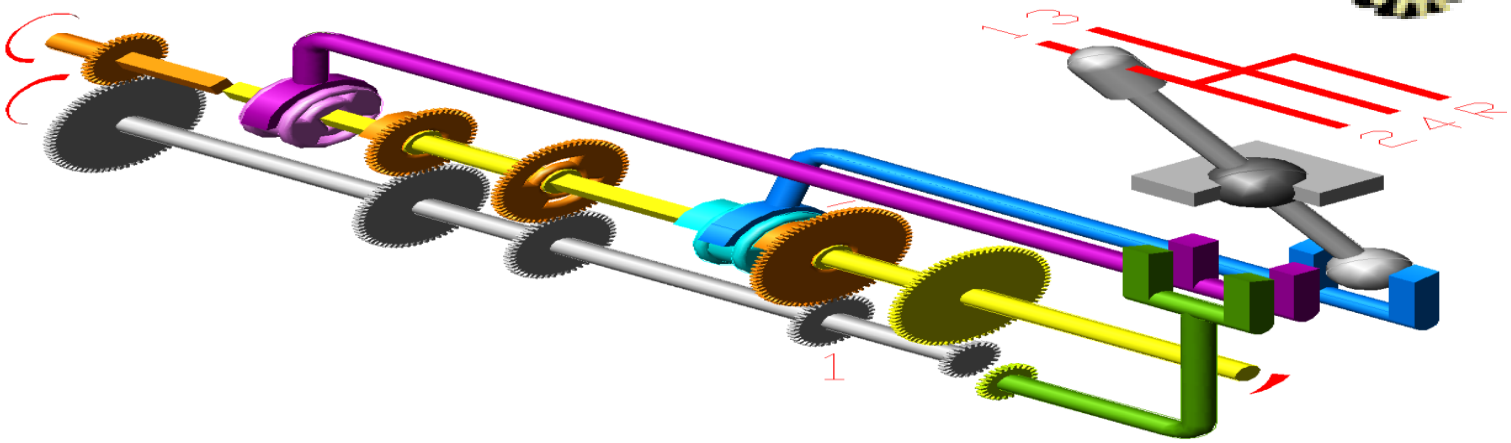
Sliding Mesh type

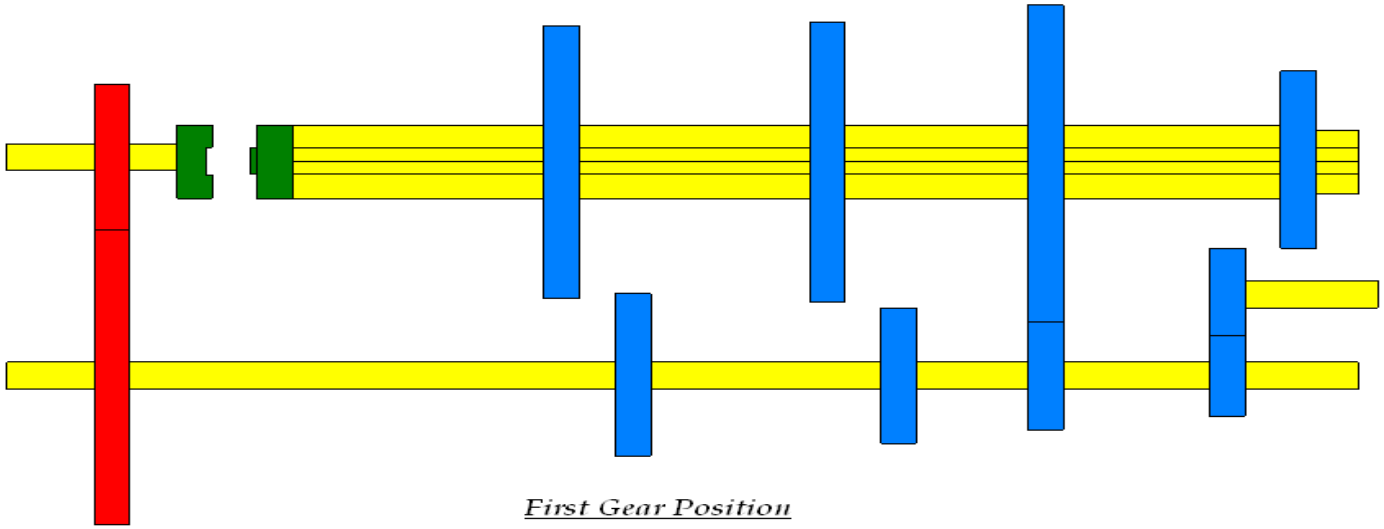




First Gear

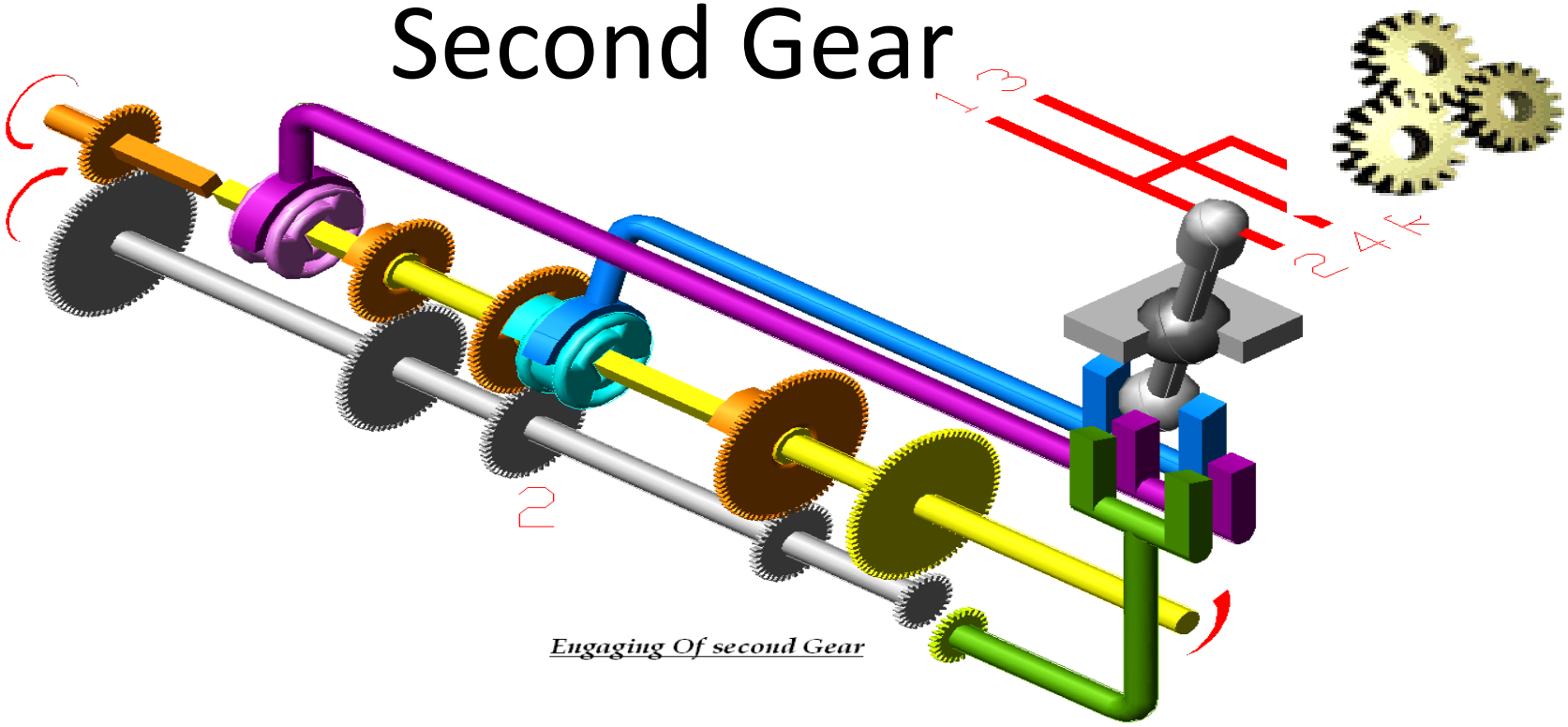




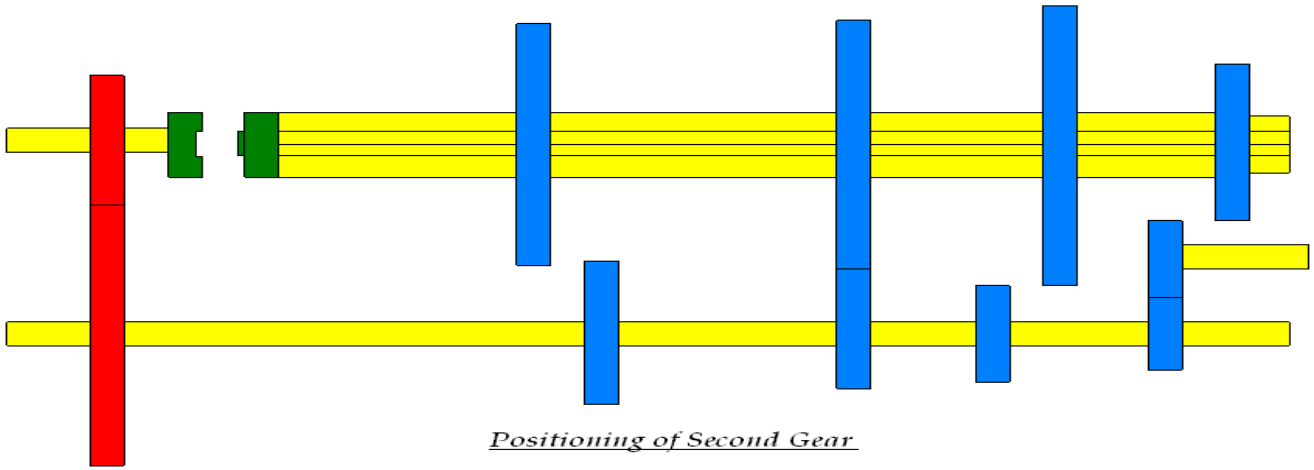


First Gear Position

Second Gear

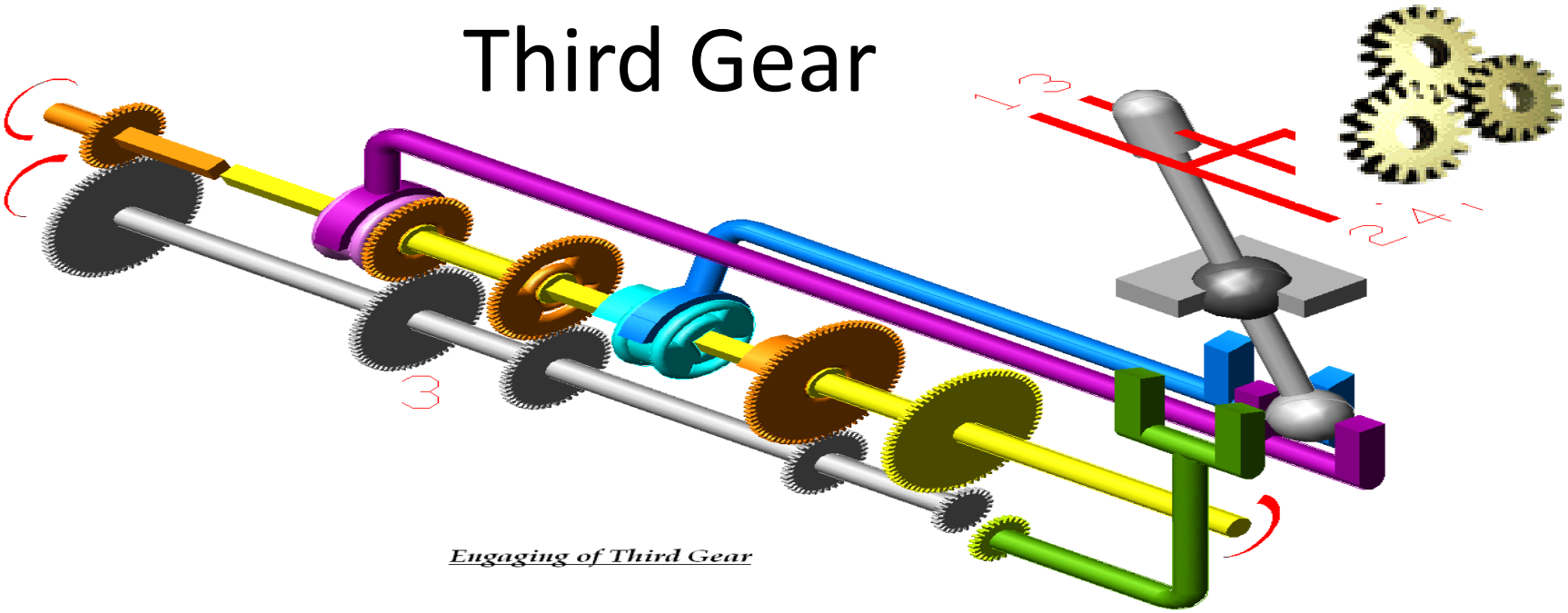


Engaging Of second Gear

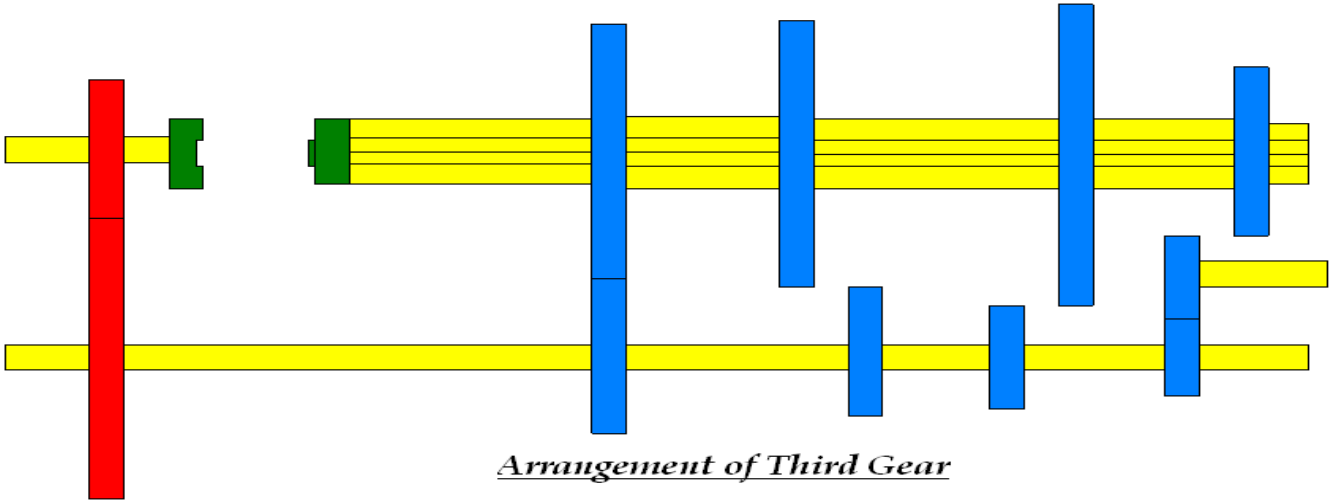


Positioning of Second Gear

Third Gear

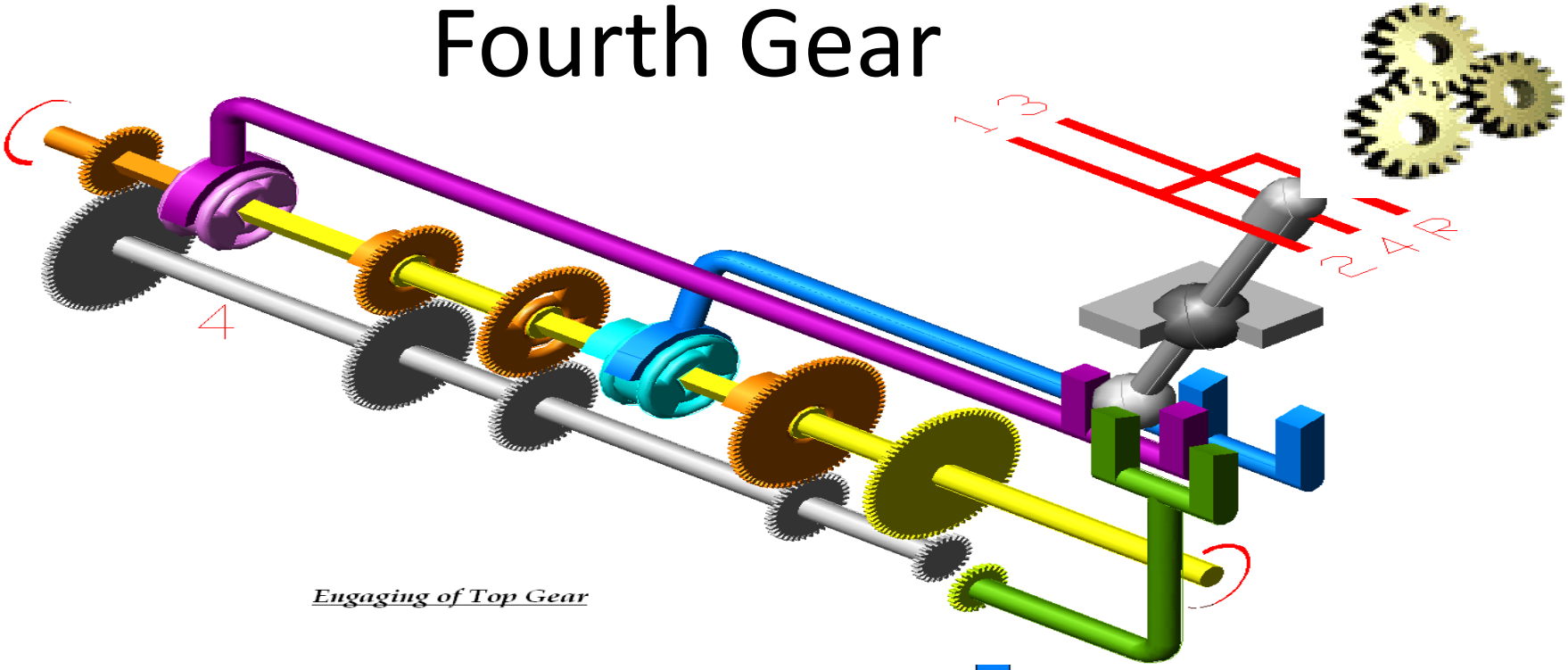


Engaging of Third Gear

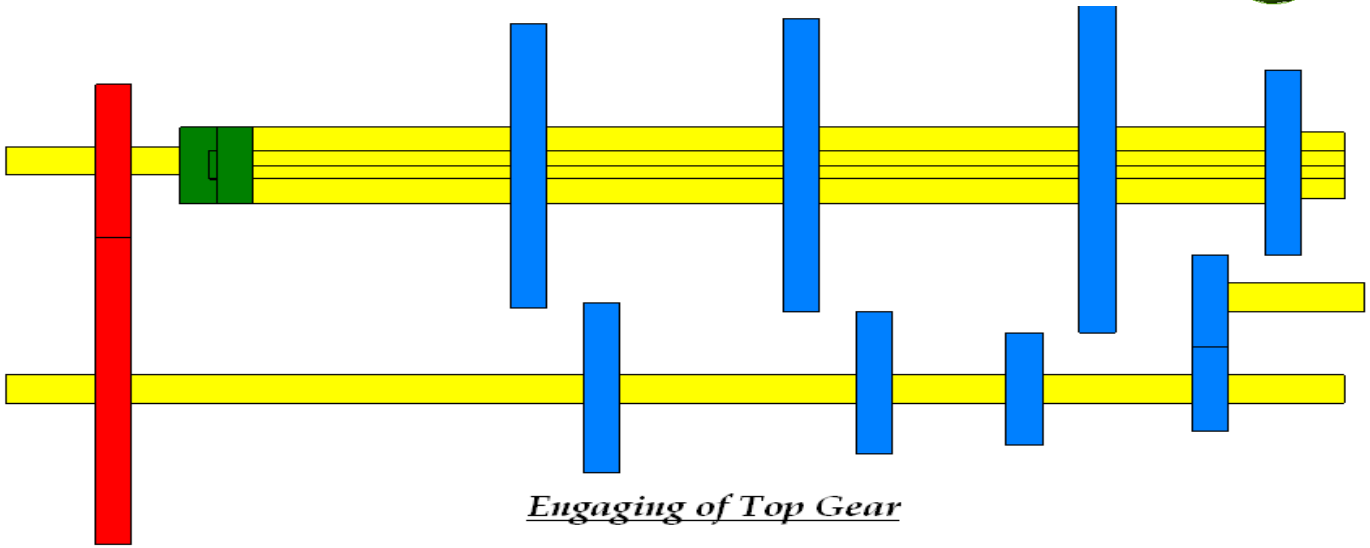


Arrangement of Third Gear

Fourth Gear

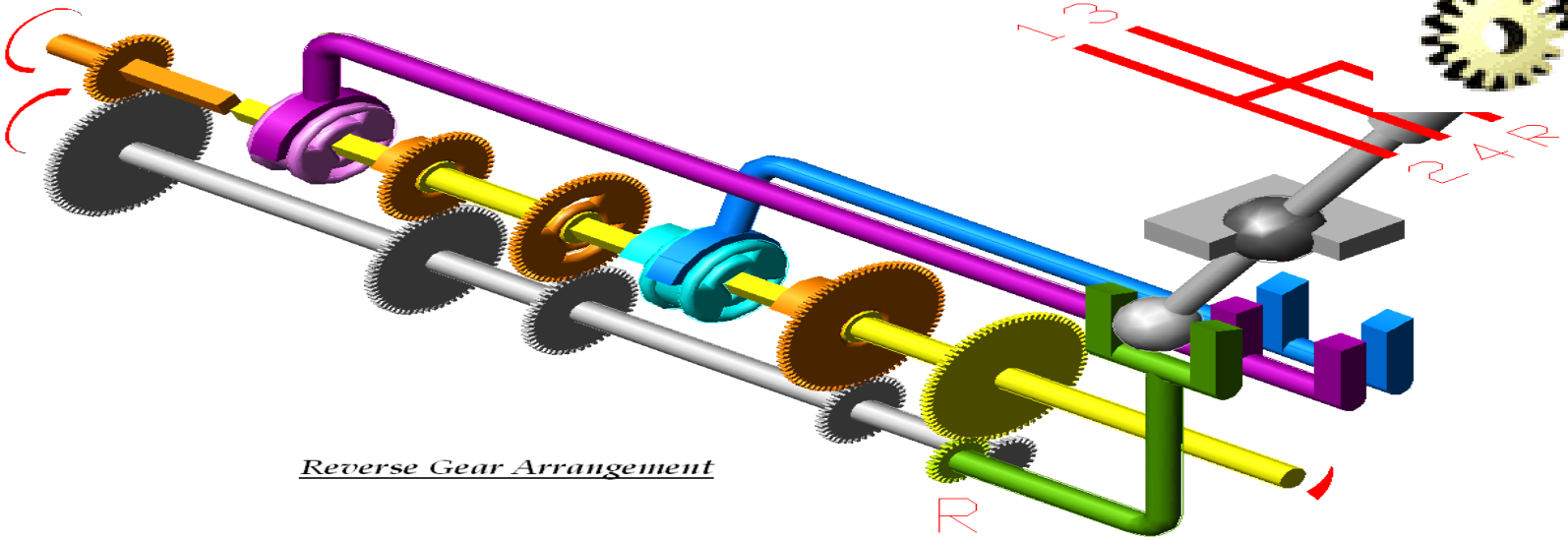


Engaging of Top Gear

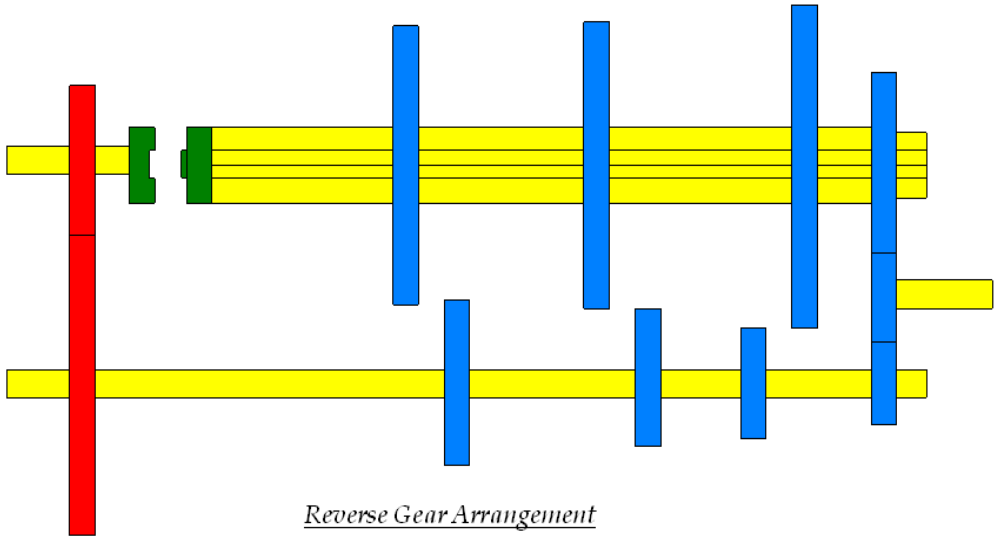


Engaging of Top Gear

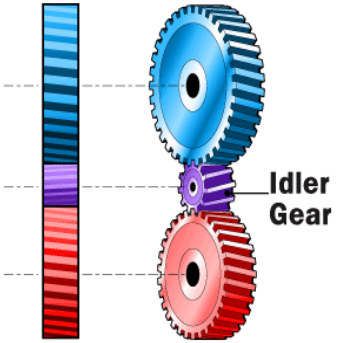
Reverse Gear



Reverse Gear Arrangement

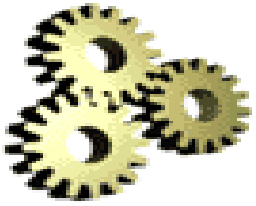


Reverse Gear Arrangement



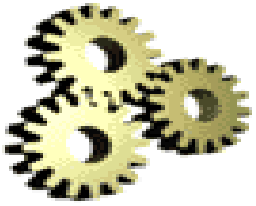
Reverse Gear Arrangement

Sliding Mesh



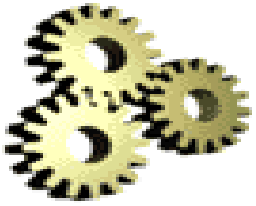
- Oldest and the simplest type of transmission
- Spur gears were used
- Main shaft gears splined to the main shaft
- Gear shift is achieved by sliding the gears on main shaft
- Low mechanical efficiency
- Noisy operation

Constant Mesh



- The gears on the main shaft and lay shaft are in constant mesh
- Main shaft gears are free to rotate
- Gear engagement is achieved by dog clutches splined to the main shaft
- Helical gears are used

Synchro Mesh



- Gears are in constant mesh
- Instead of dog clutch synchroniser unit is used
- Each pair of gear has one synchroniser unit
- Gears are first brought into frictional contact which equalizes their speed after which the actual engagement takes place