

MOBILITIES, TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT

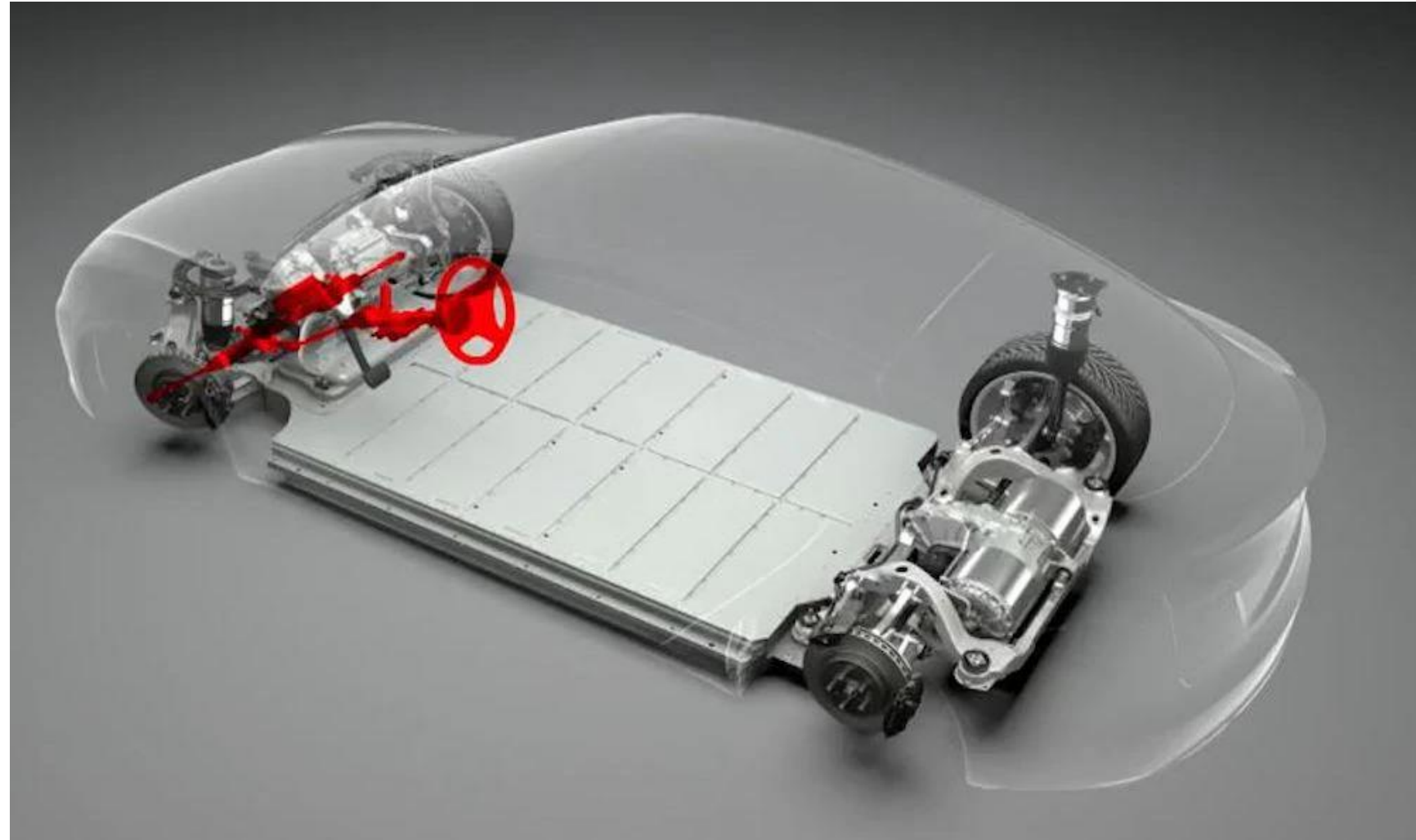
Kubatbek Muktarbek uulu, PhD.

Mail: muktarbek_k@auca.kg

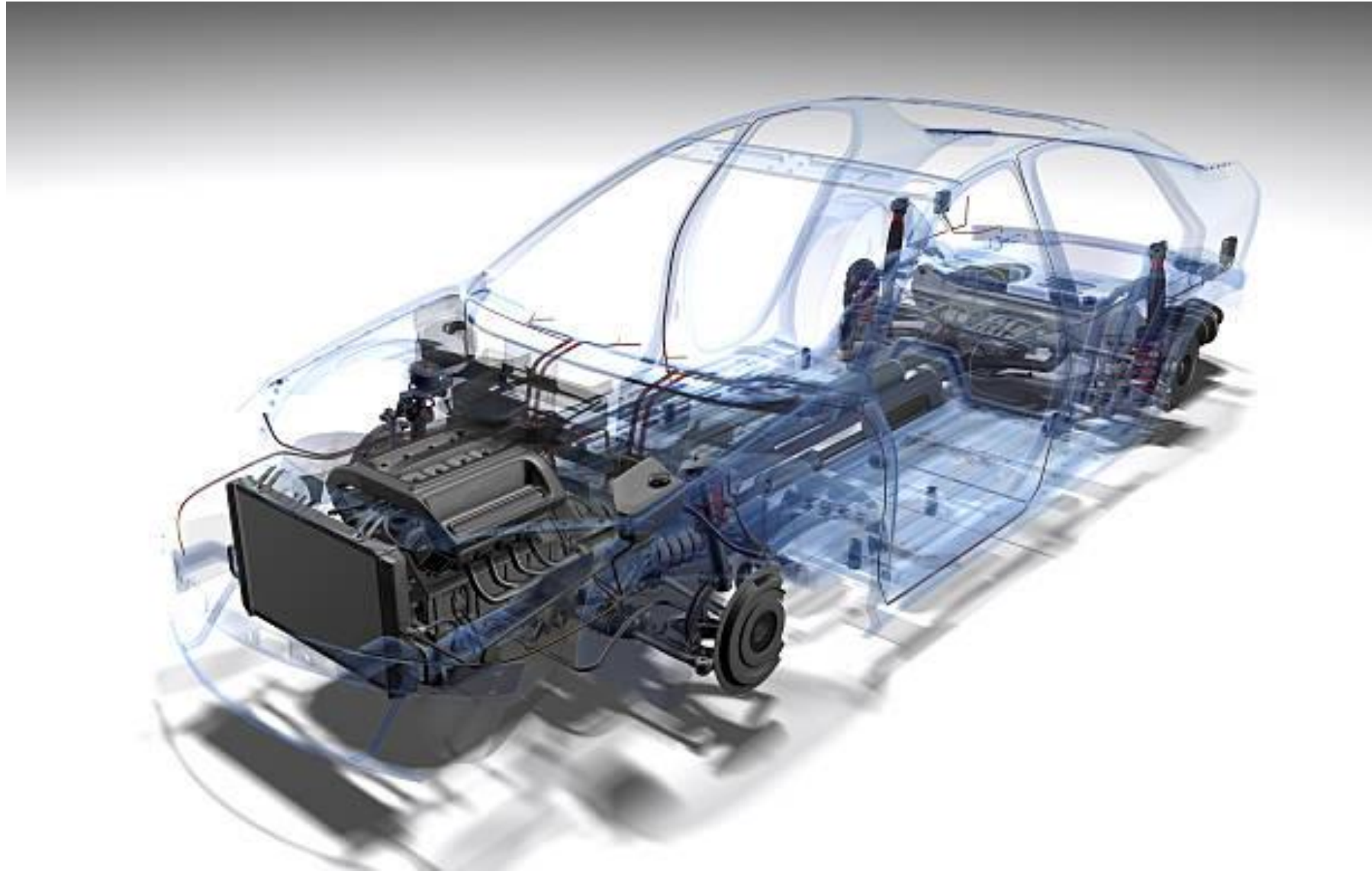


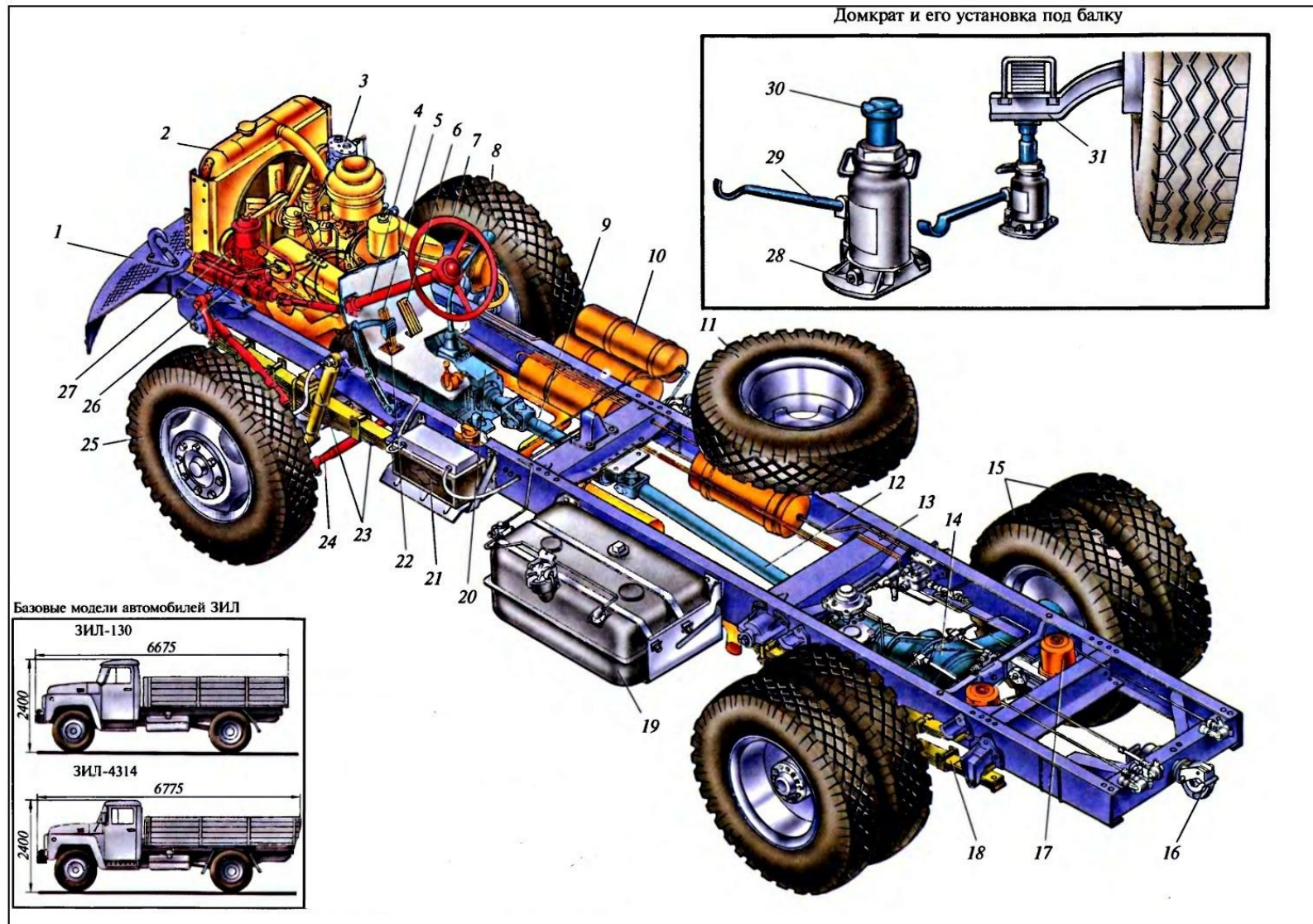
Today's topics

Future of Electric Vehicle Technology

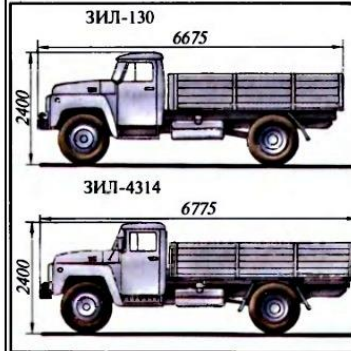


Combustion engine car x-ray view





Базовые модели автомобилей ЗИЛ

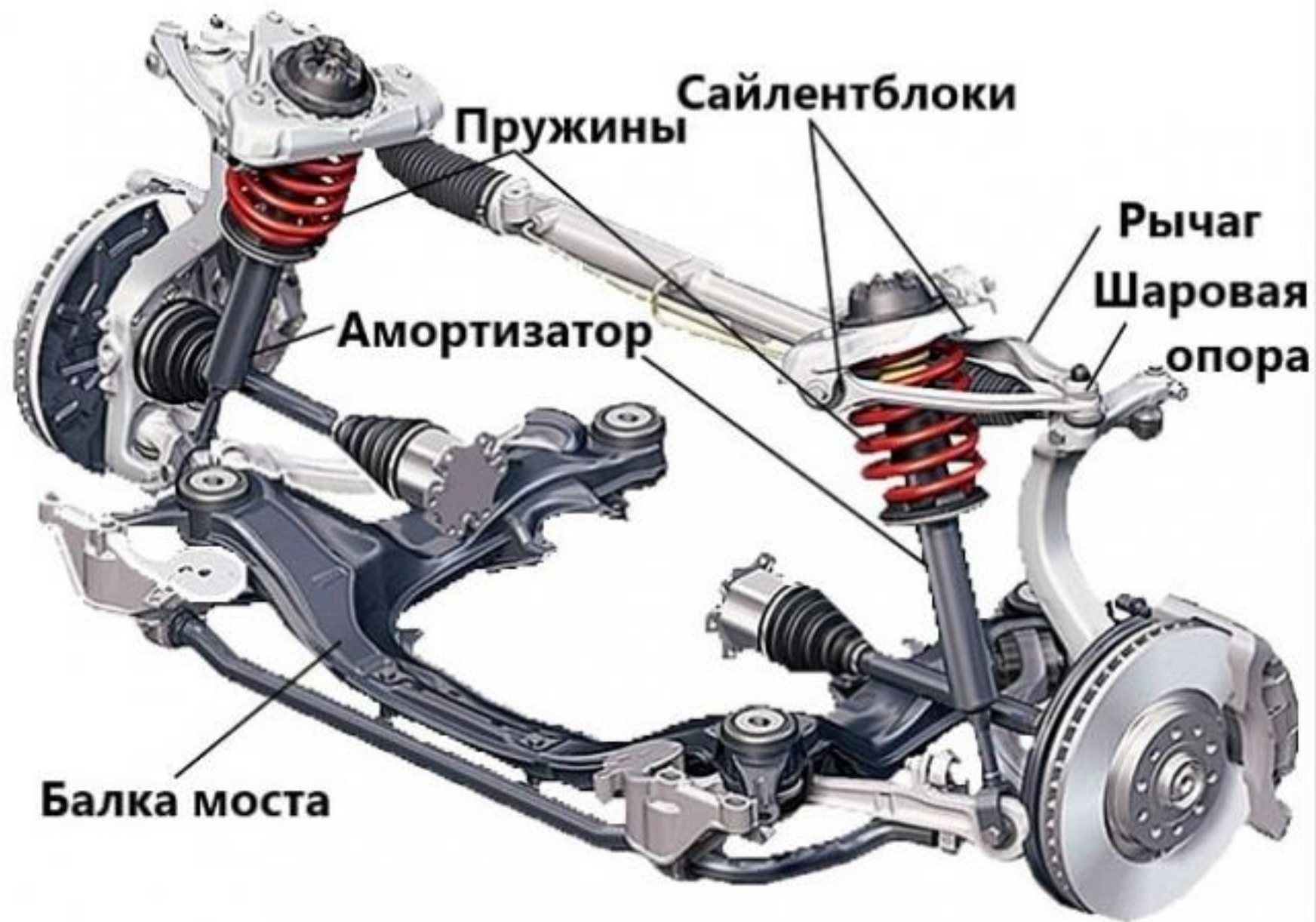


УСТРОЙСТВО ШАССИ АВТОМОБИЛЯ ЗИЛ 130:

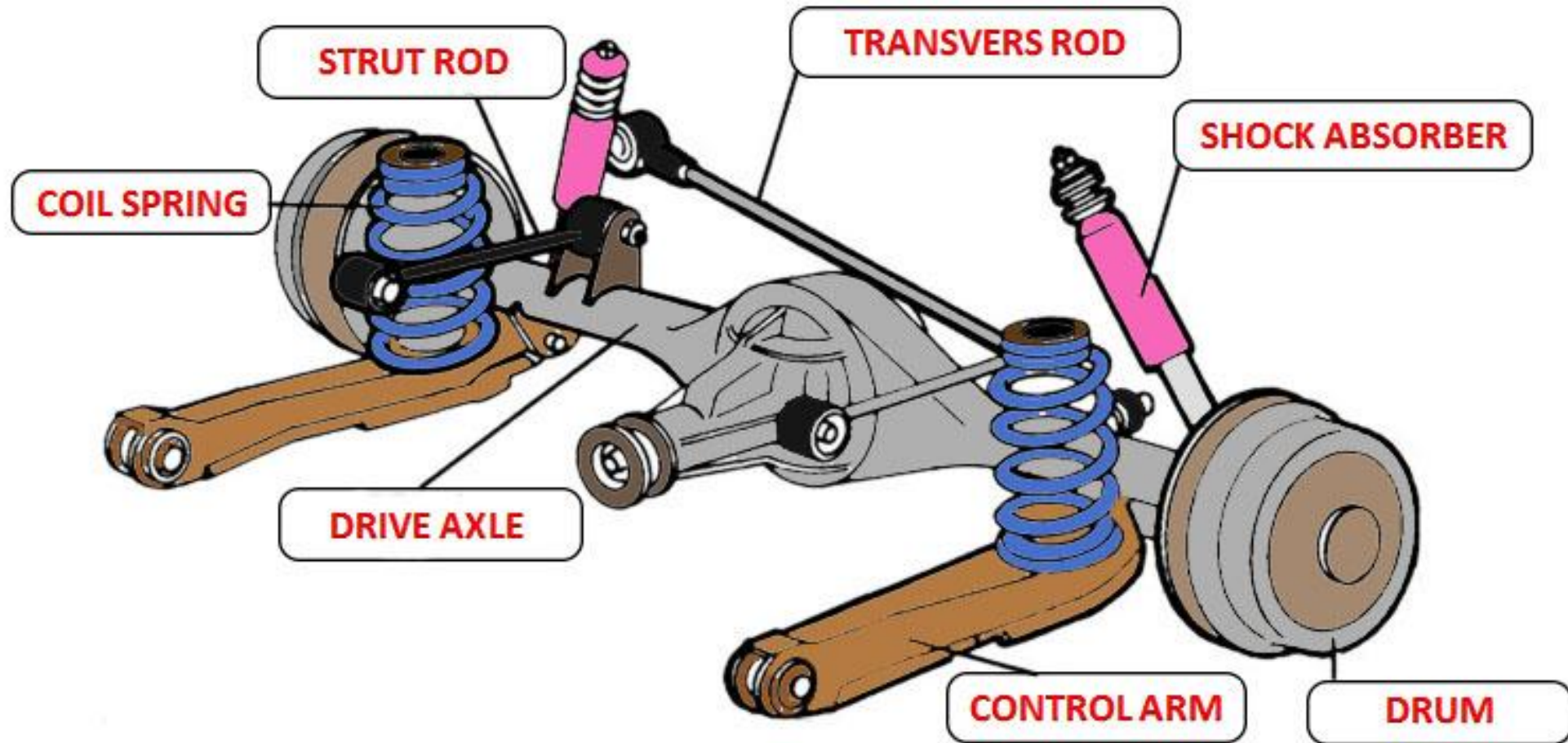
● 1 — бампер; 2 — радиатор; 3 — компрессор; 4 — колонка рулевого управления; 5 — педаль рабочего тормоза; 6 — педаль управления дроссельными заслонками; 7 — рулевое колесо; 8 — рычаг переключения передач; 9 — промежуточный карданный вал; 10 — воздушный баллон тормозной системы; 11 — запасное колесо; 12 — карданный вал; 13 — рама; 14 — ведущий мост; 15 — ведущие колеса; 16 — тягово-сцепное устройство; 17 — тормозная камера; 18 — задняя подвеска; 19 — топливный бак; 20 — коробка передач; 21 — аккумуляторная батарея; 22 — педаль сцепления; 23 — передняя подвеска; 24 — рулевой привод; 25 — ведомое колесо; 26 — рулевой механизм с гидроусилителем; 27 — насос гидроусилителя; 28 — запорная игла; 29 — монтажная лопатка; 30 — подъемный винт; 31 — балка

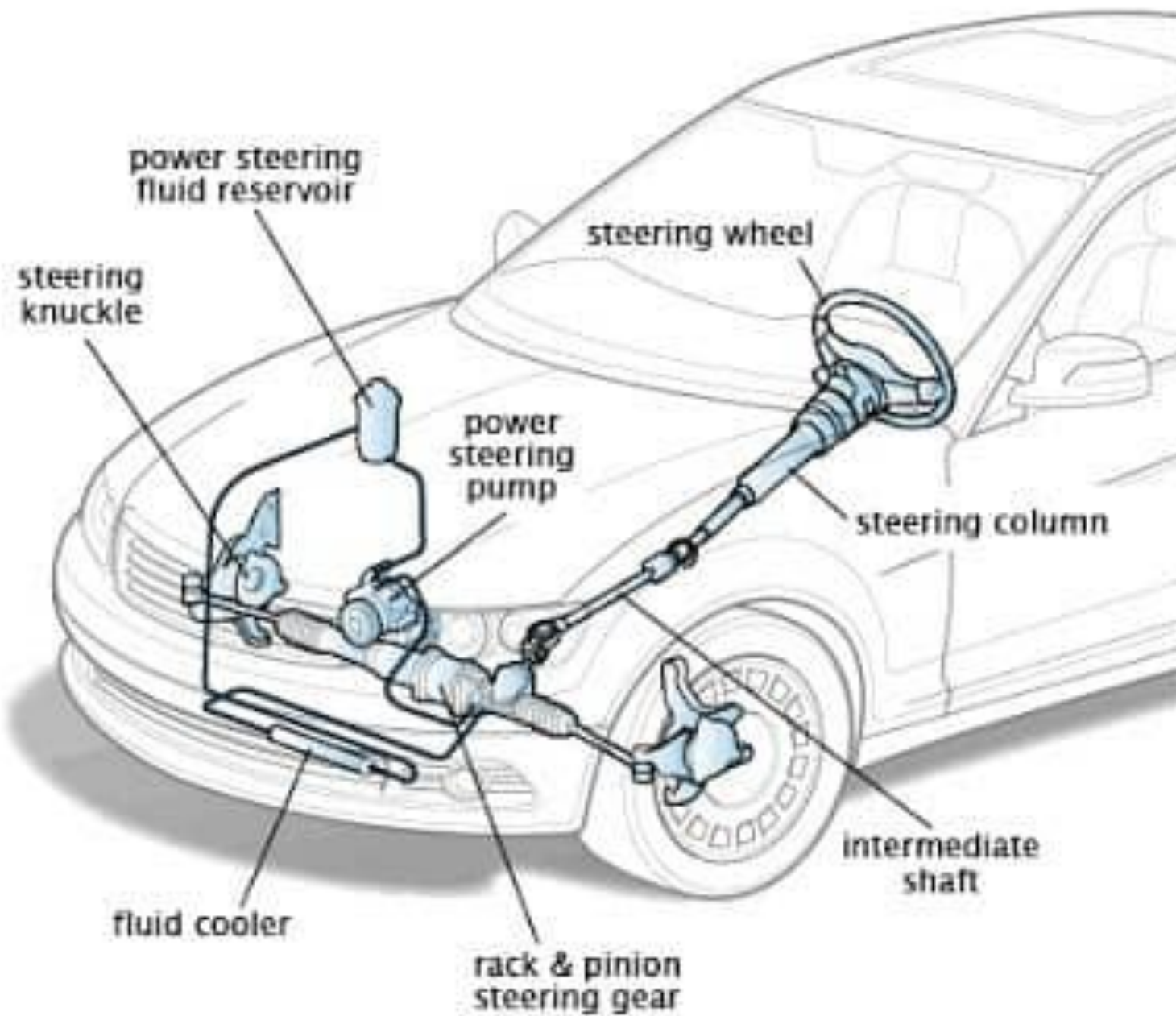


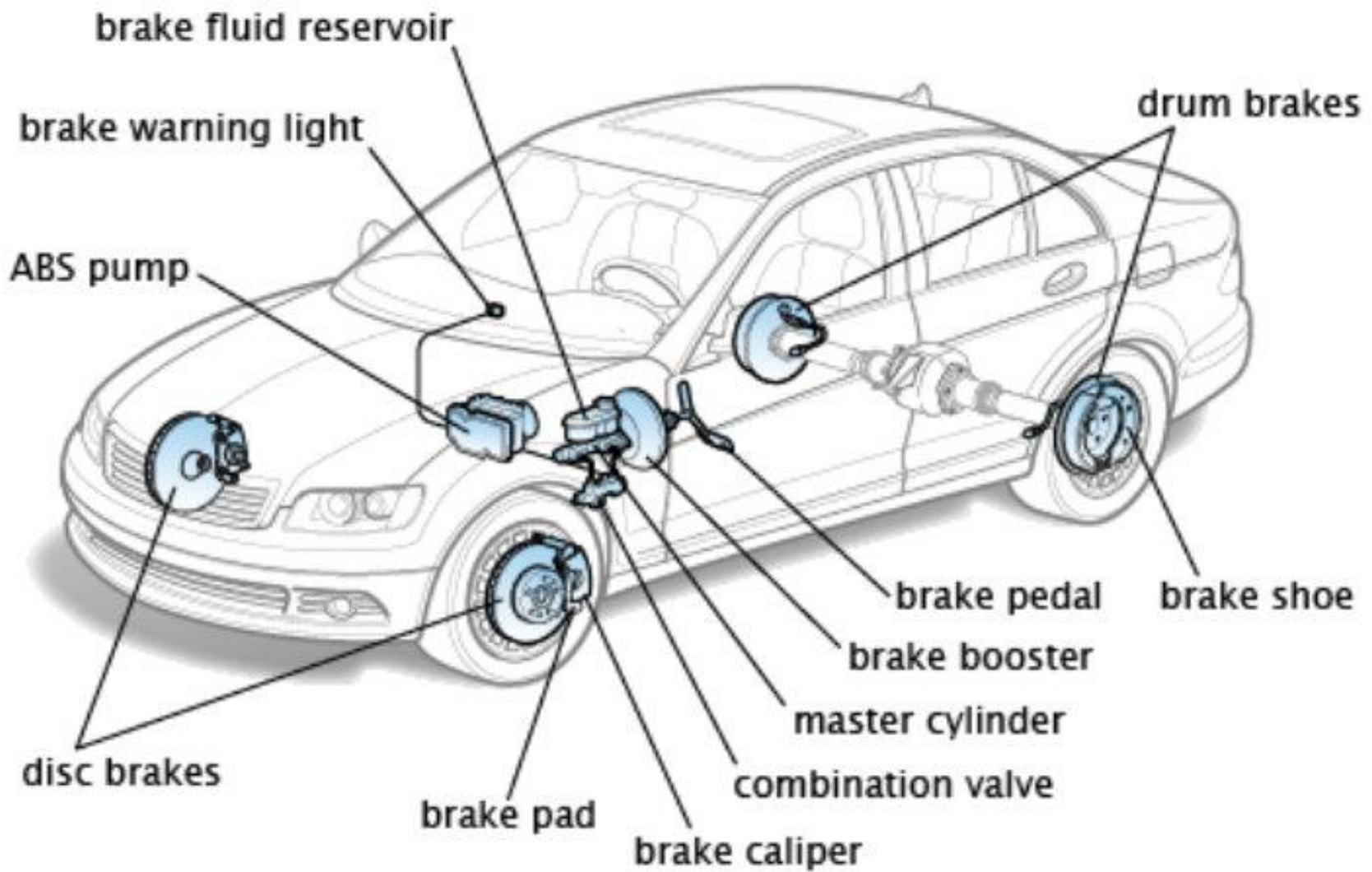




SUSPENSION CONSTRUCTION







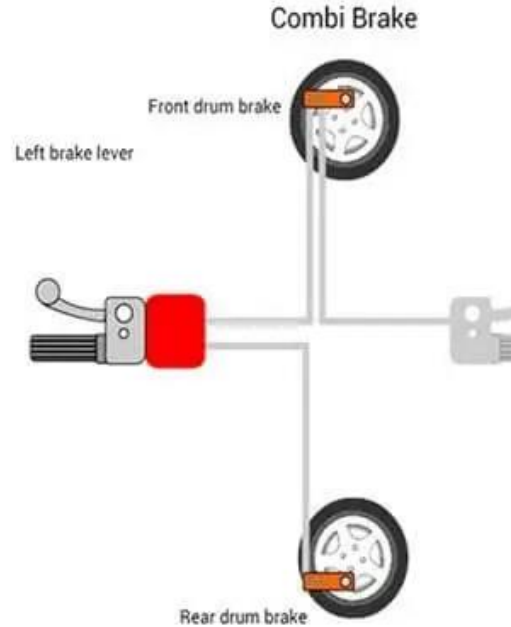
Types of Brakes



Drum



Disc

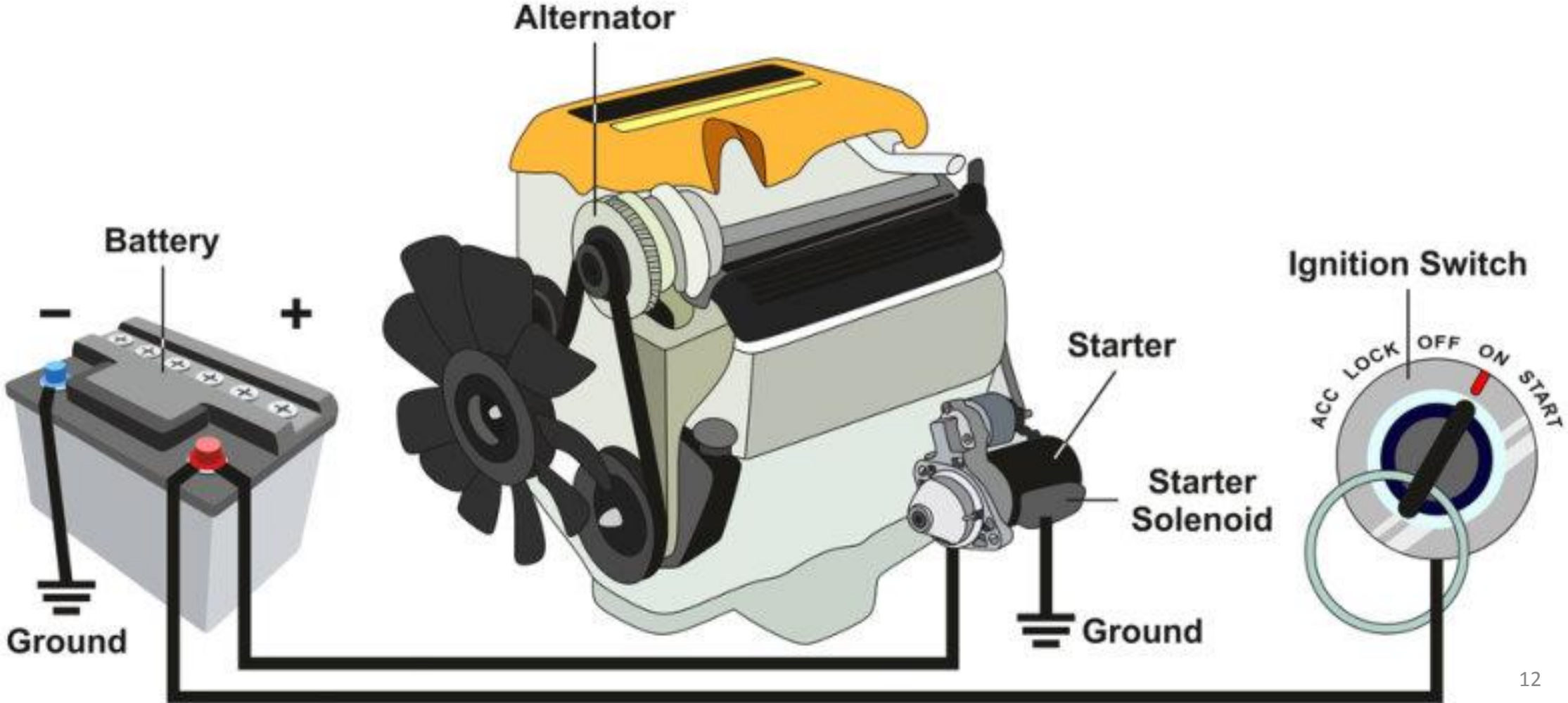


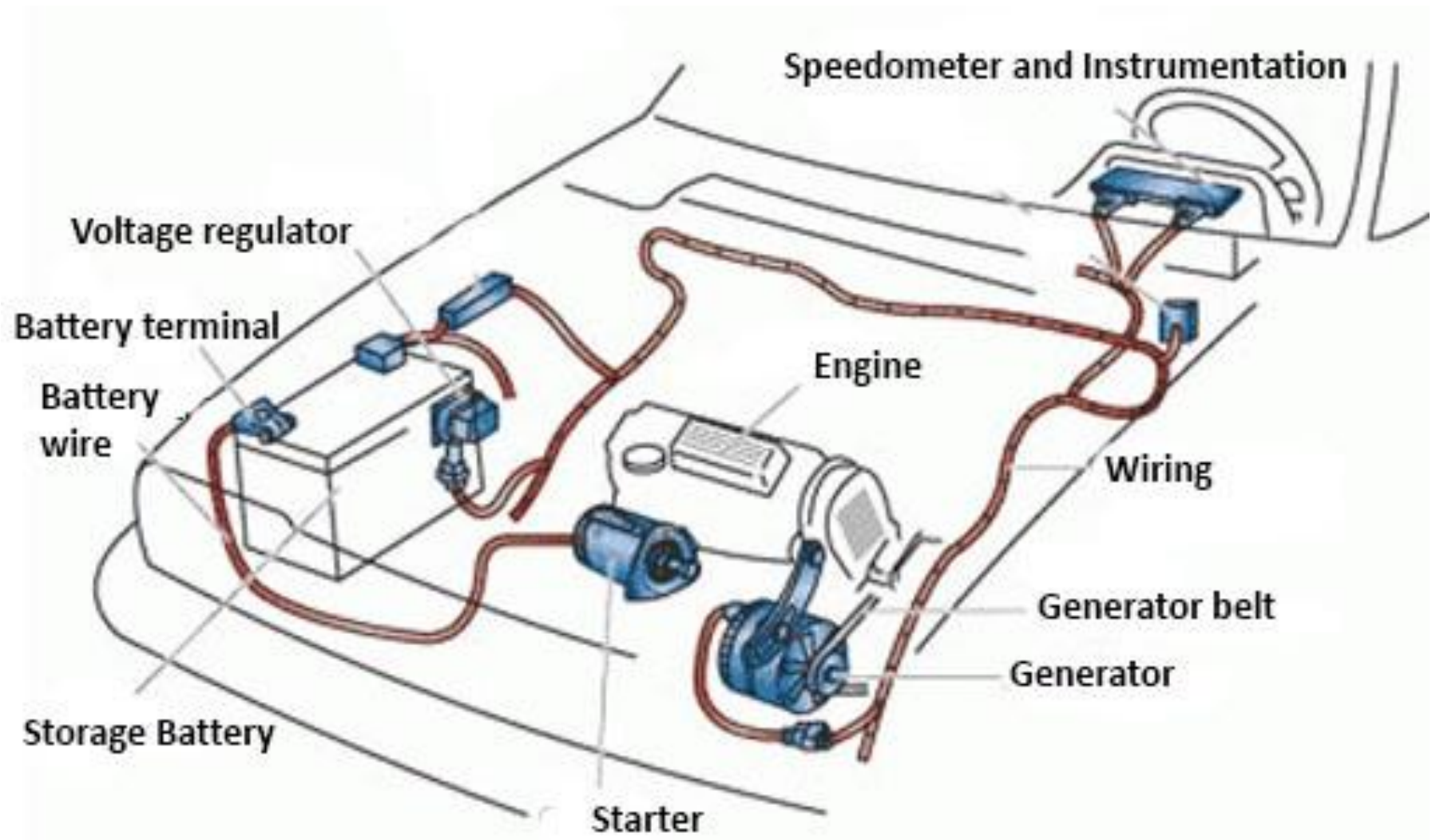
CBS



ABS

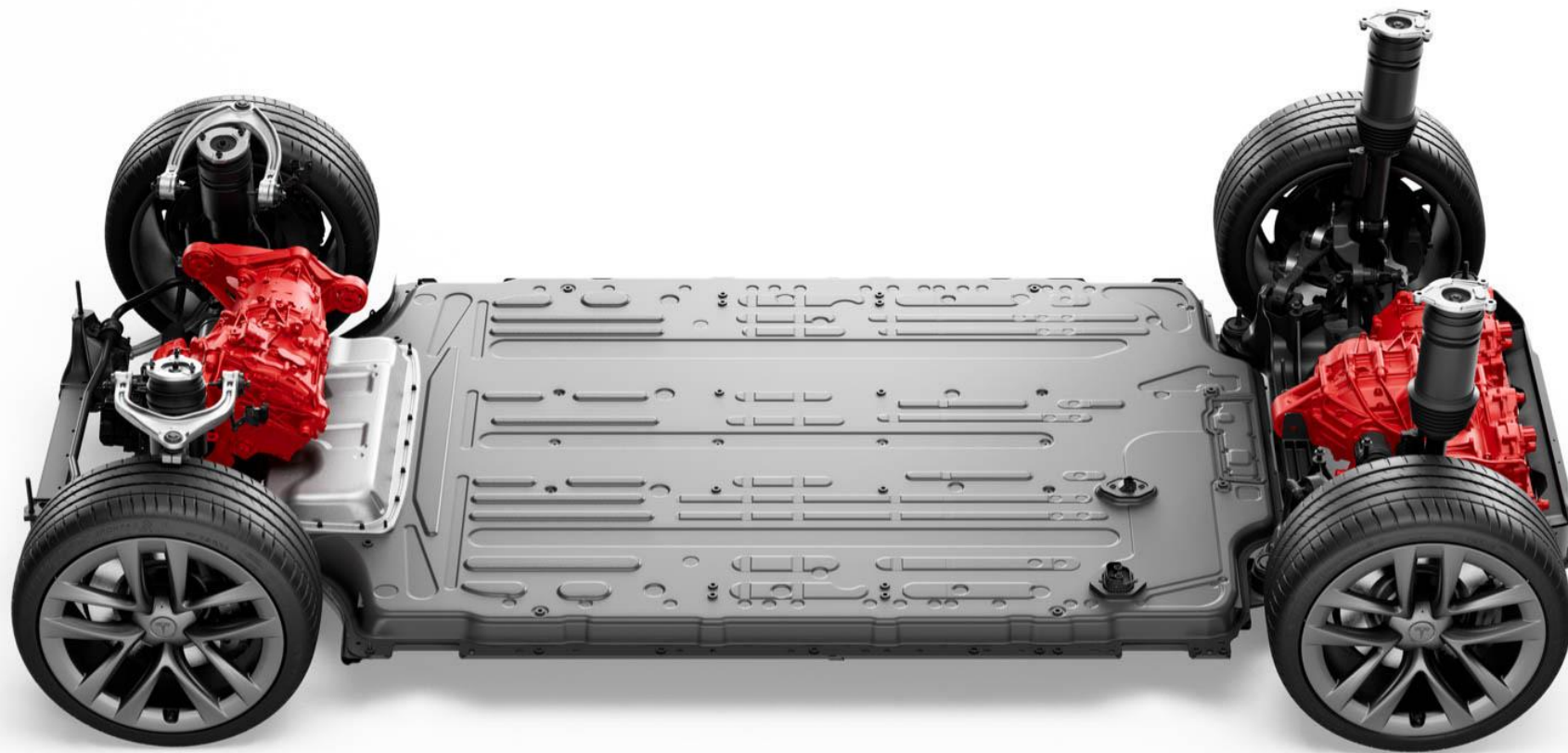
Starting System



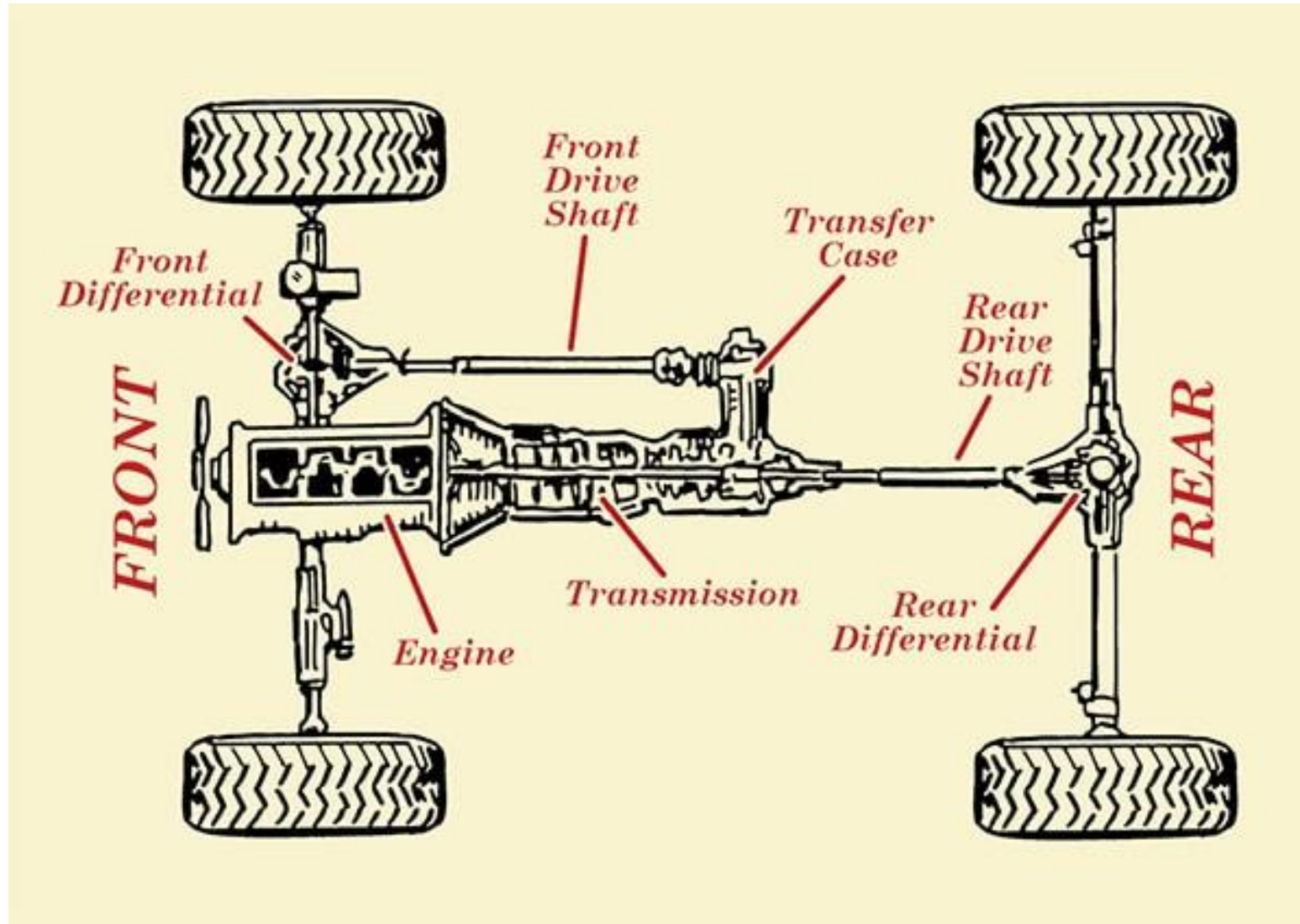


VEHICLE ELECTRICAL SYSTEM CONSTRUCTION

All wheel drive...



Classic all wheel drive



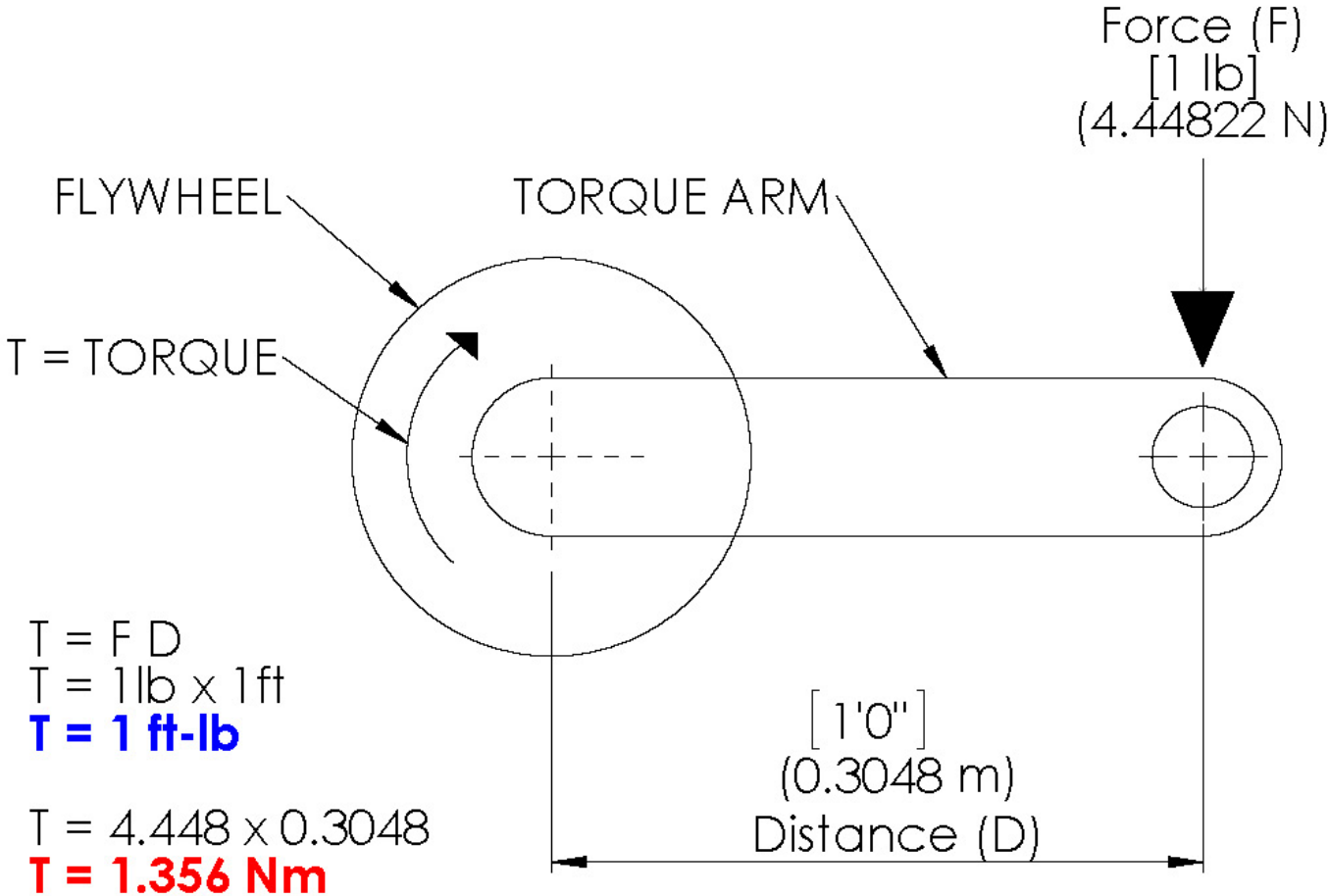
Electric car engine



Torque (Крутящий момент)



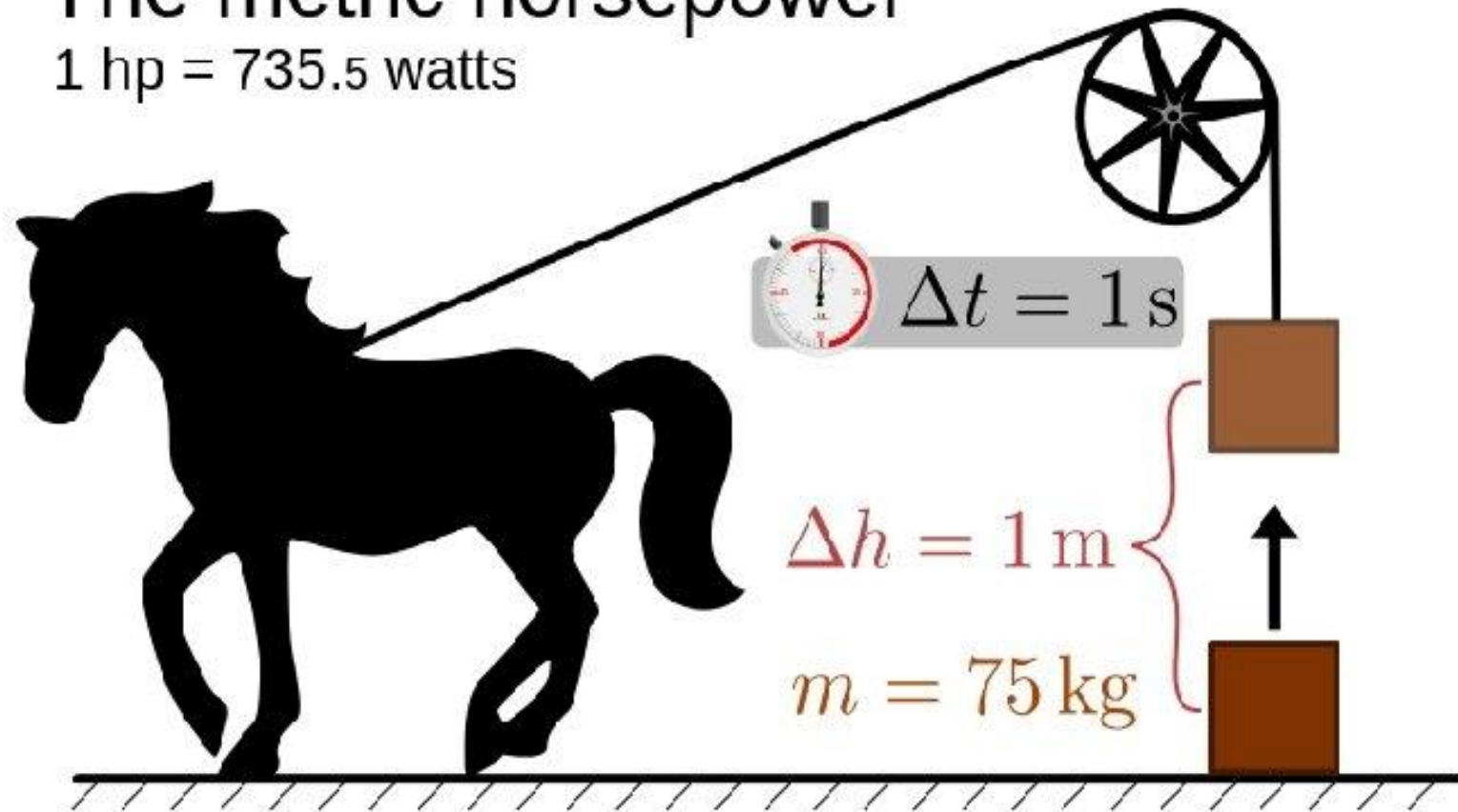
Torque production – Torque vs Horsepower



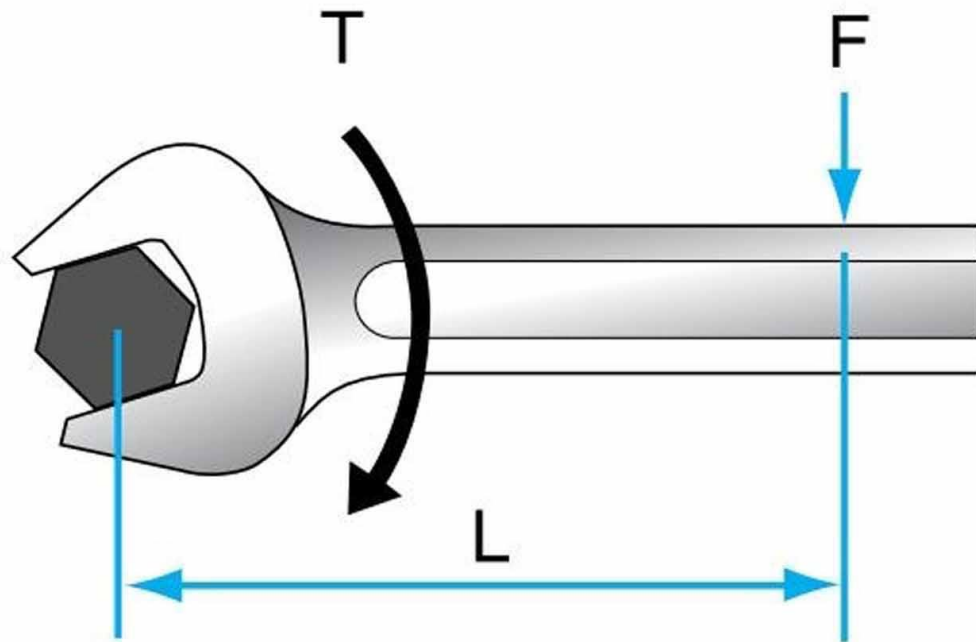
Torque vs. Horsepower

The metric horsepower

1 hp = 735.5 watts



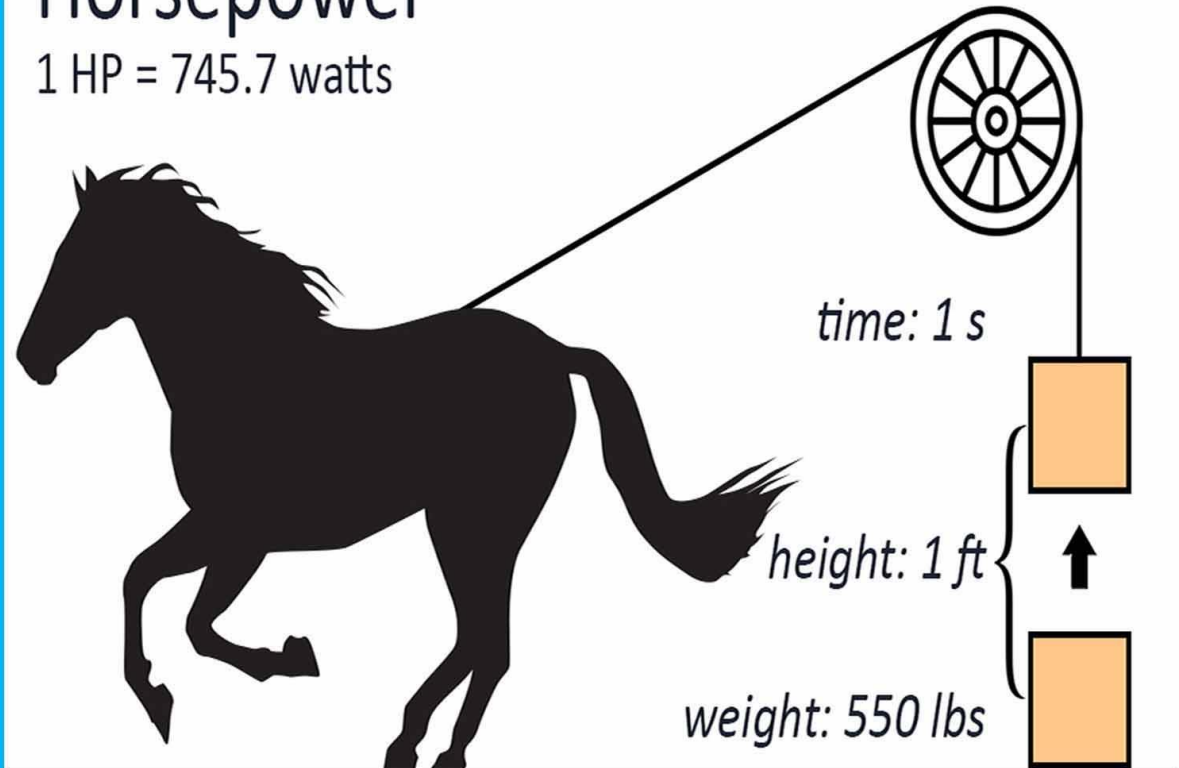
What Is The Difference Between Torque And Horsepower?



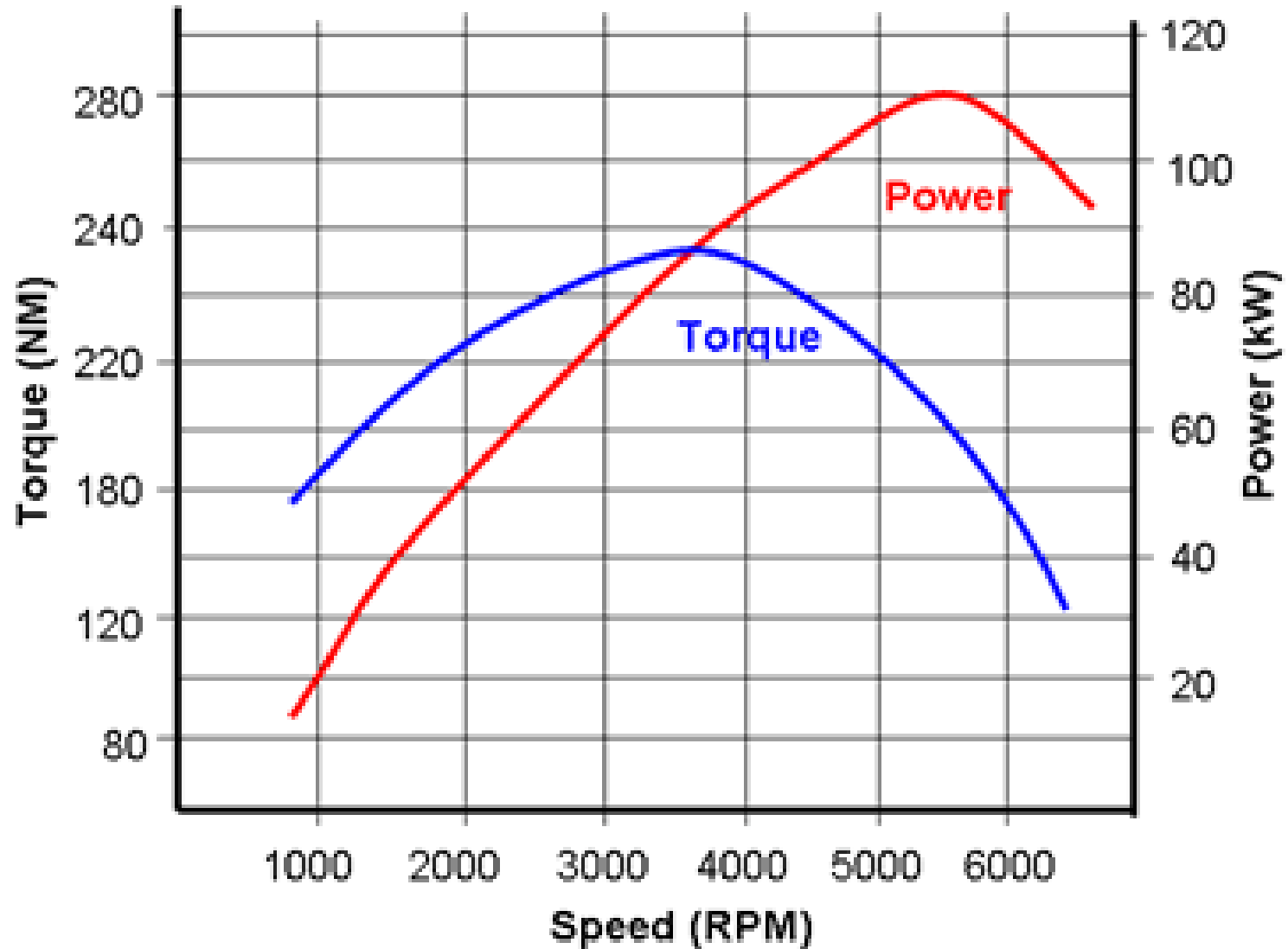
Torque $T = F$ (Force) \times L (Length)

Horsepower

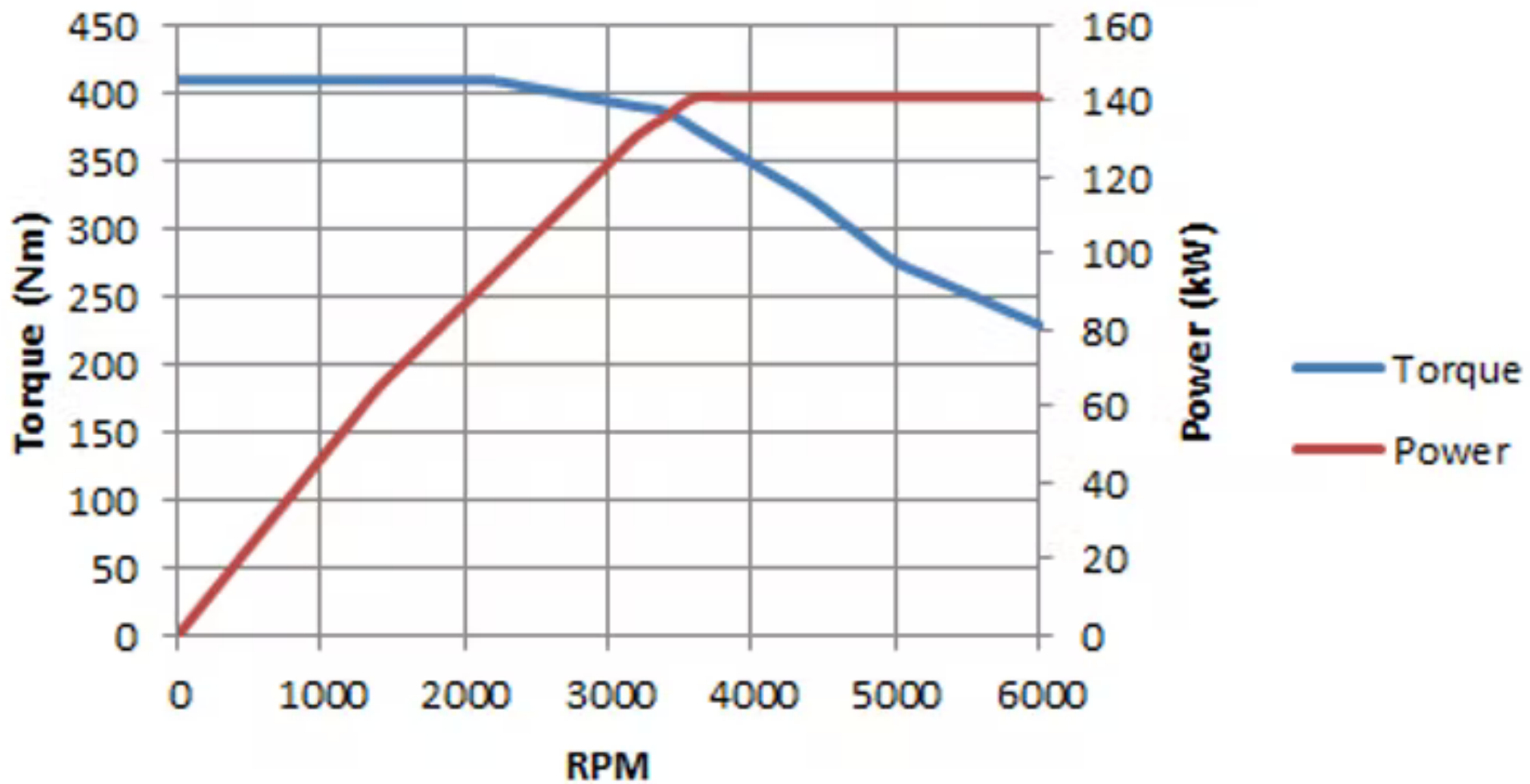
1 HP = 745.7 watts

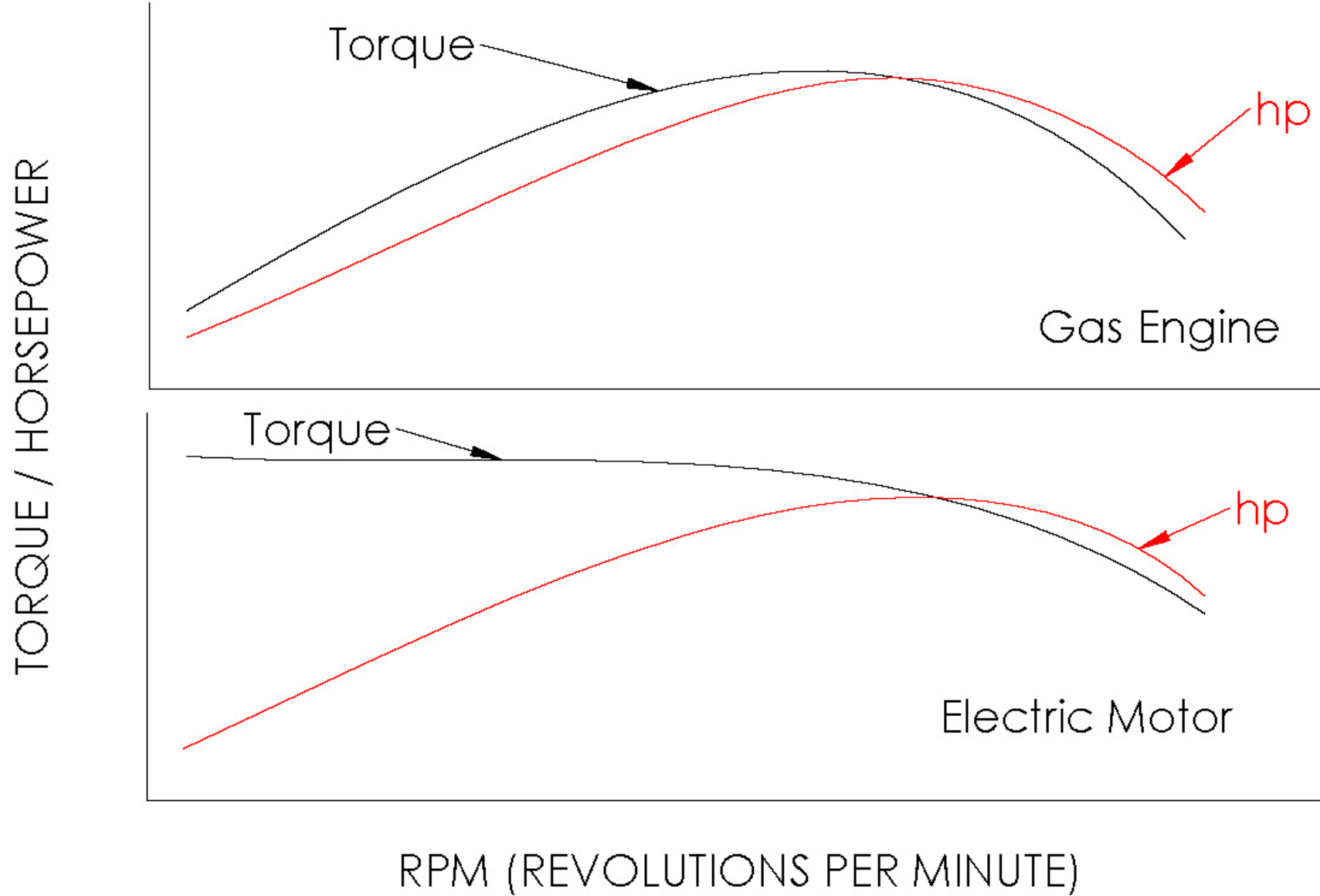


Engine Power and Torque Curves



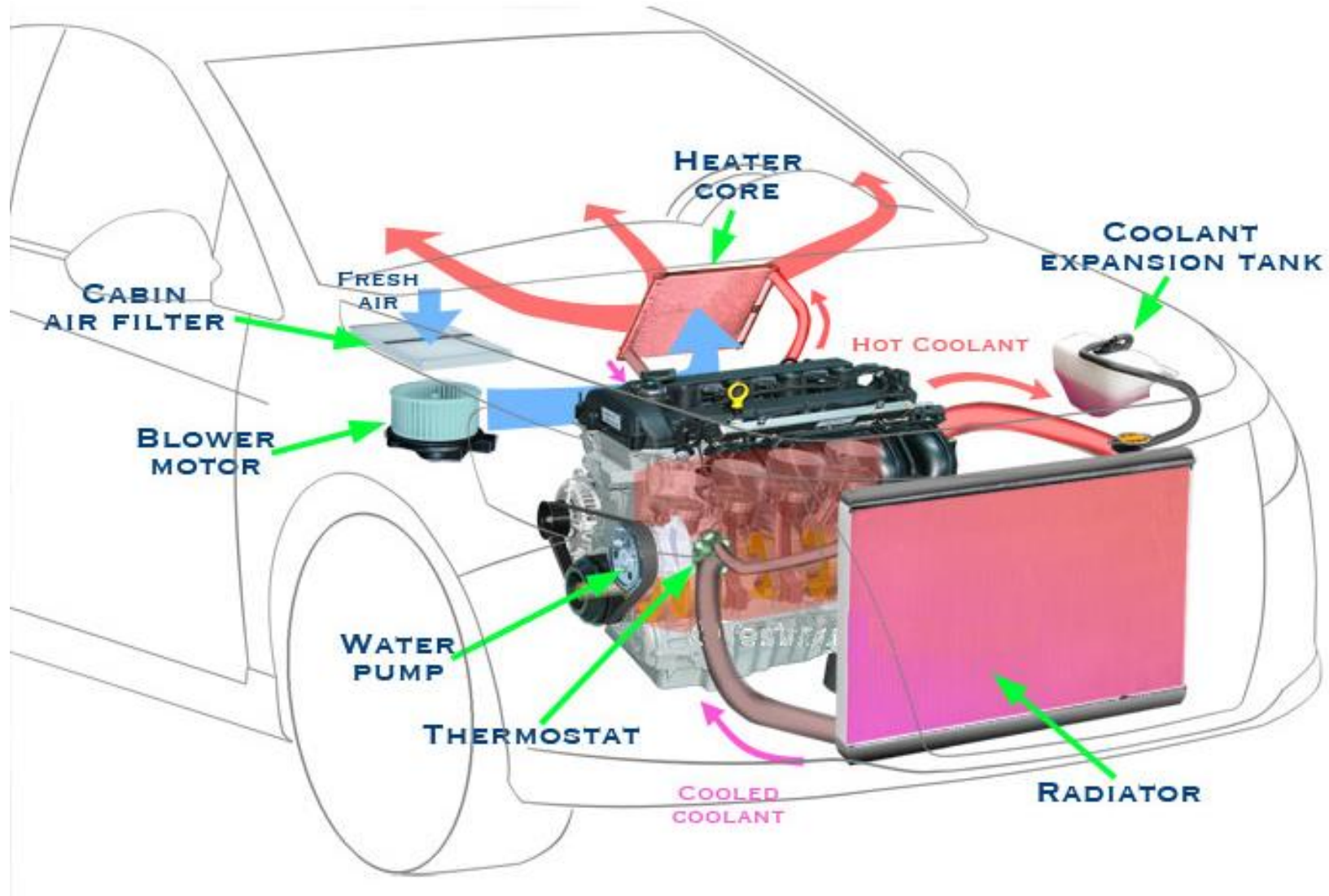
Typical Electric Motor Torque & Power Curves



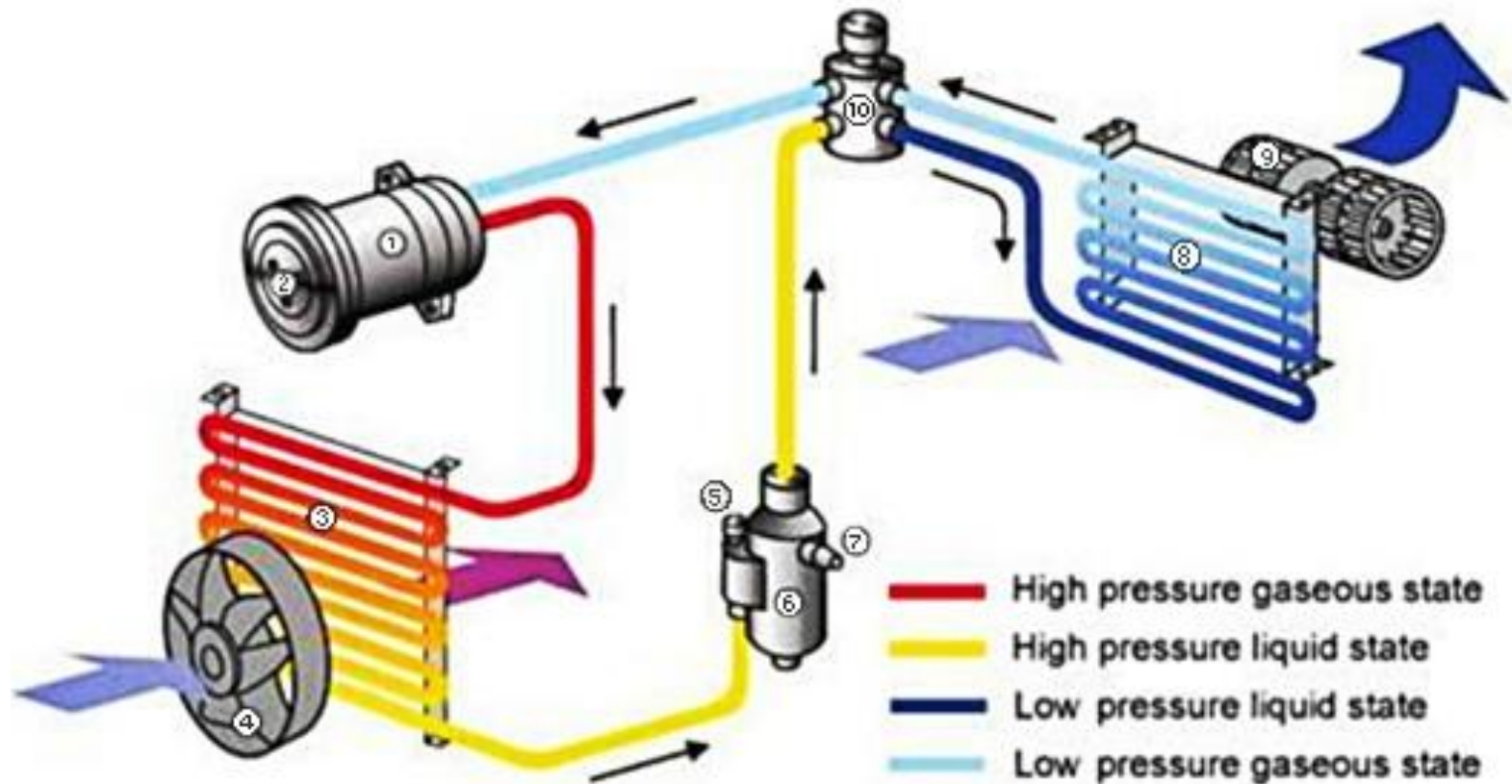




Combustion engine heating system



Air conditioning system of a combustion car

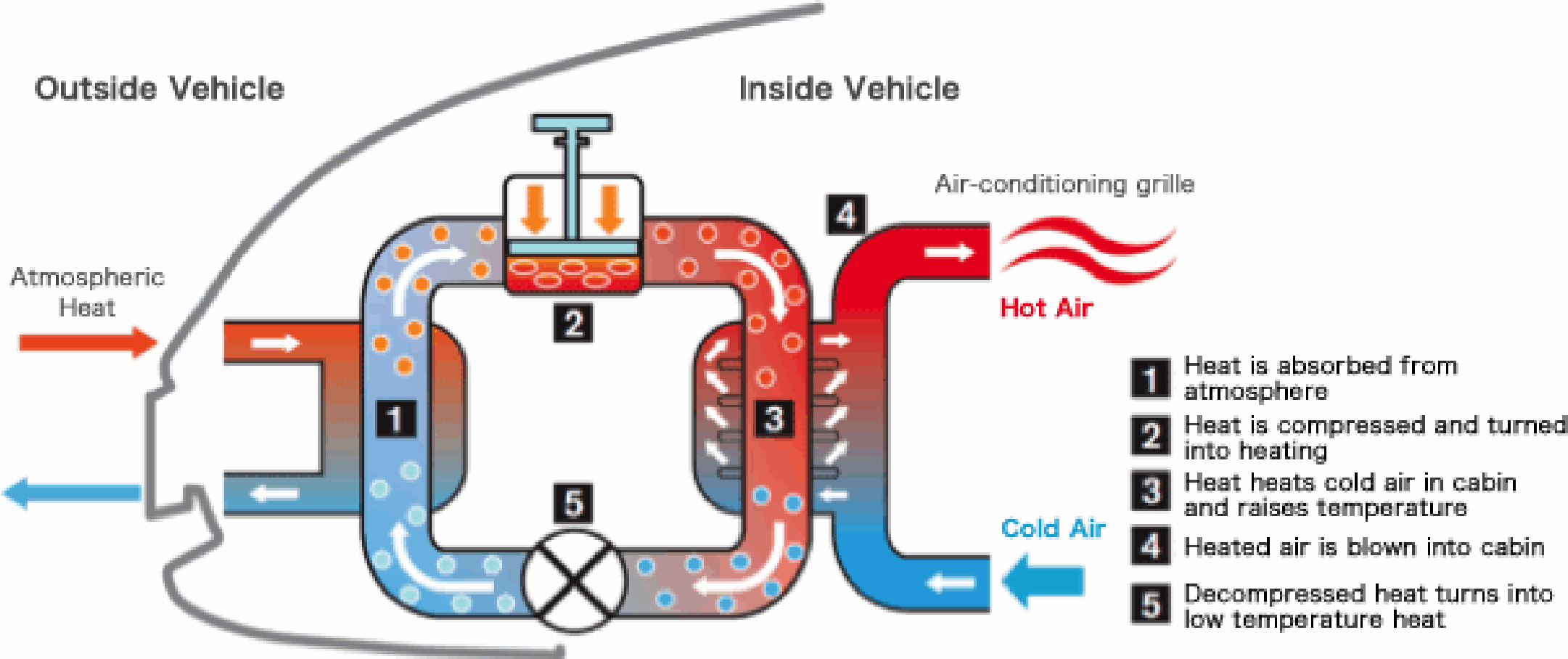


1 Compressor
2 Compressor clutch
3 Condenser
4 Condenser fan

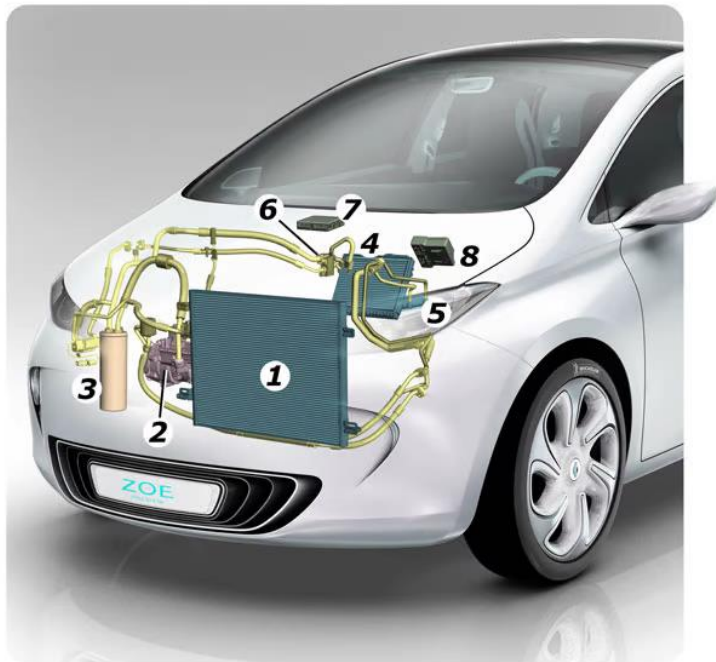
5 Pressure switch
6 Filter Drier
7 High pressure Service connection
8 Evaporator

9 Ventilation Blower
10 Expansion valve

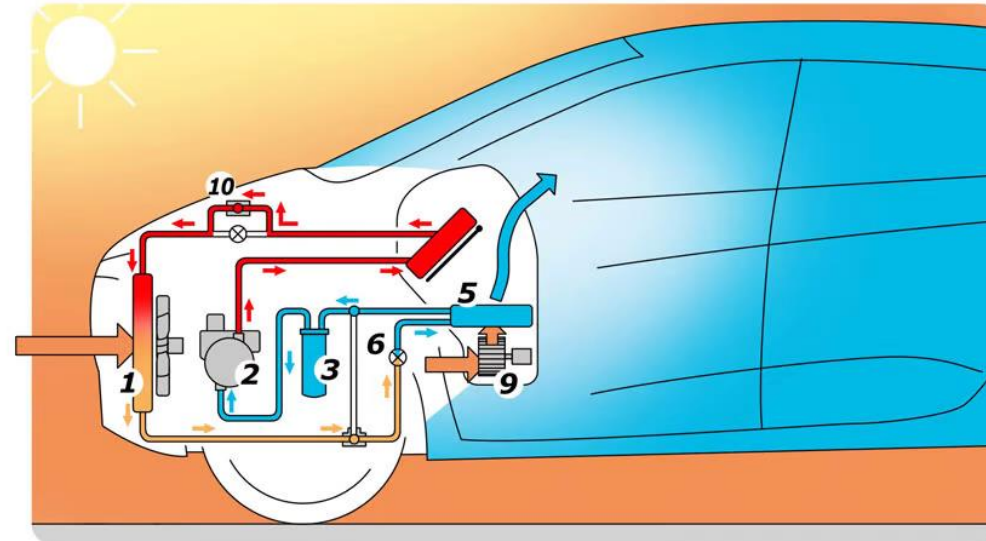
Thermal management of electric car



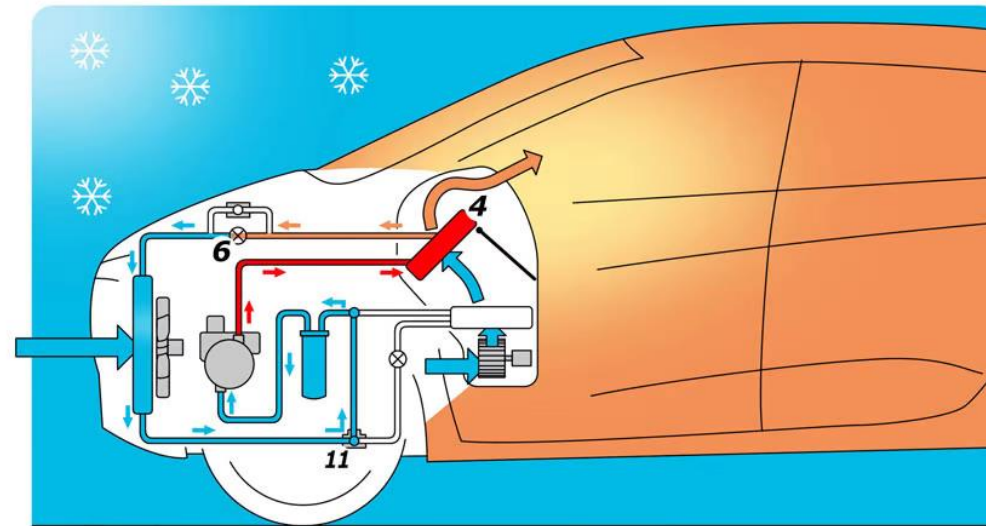
Heat pump



- 1 External condenser / evaporator
- 2 Electrical compressor
- 3 Accumulator
- 4 Inner condenser
- 5 Cockpit evaporator
- 6 Orifice tubes
- 7 Automatic air conditioning ECU
- 8 Heat pump ECU
- 9 Air conditioning fan
- 10, 11 Electrovalves



Air conditioning mode



Heating mode

Thank you for your attention!

