

Firing order

The **firing order** of an internal combustion engine is the sequence of ignition for the cylinders.

In a spark ignition (e.g. gasoline/petrol) engine, the firing order corresponds to the order in which the spark plugs are operated. In a diesel engine, the firing order corresponds to the order in which fuel is injected into each cylinder. Four-stroke engines must also time the valve openings relative to the firing order, as the valves do not open and close on every stroke.

Cylinder numbering

The numbering system for cylinders is generally based on the cylinder numbers increasing from the front to the rear of an engine. However, there are differences between manufacturers in how this is applied; some commonly used systems are as listed below.

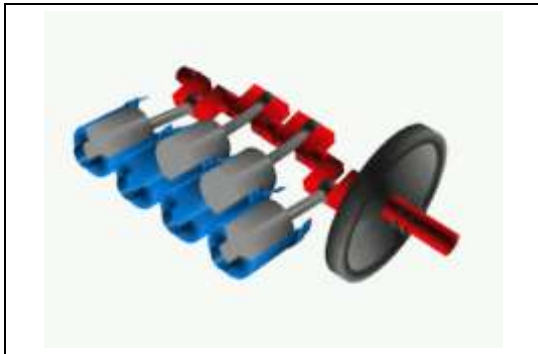


Fig 1 inline-4 engine

Straight engine

Cylinders numbered from front (#1 cylinder) to rear.

V engine

The frontmost cylinder is usually #1, however there are two common approaches

Numbering the cylinders in each bank sequentially (e.g. 1-2-3-4 along the left

bank and 5-6-7-8 along the right bank). This approach is typically used by V8 engines from Audi, Ford and Porsche.

Numbering the cylinders based on their position along the crankshaft (e.g. 1-3-5-7 along the right bank and 2-4-6-8 along the left bank). This approach is typically used by V8 engines from General Motors, and Chrysler.

Radial engine

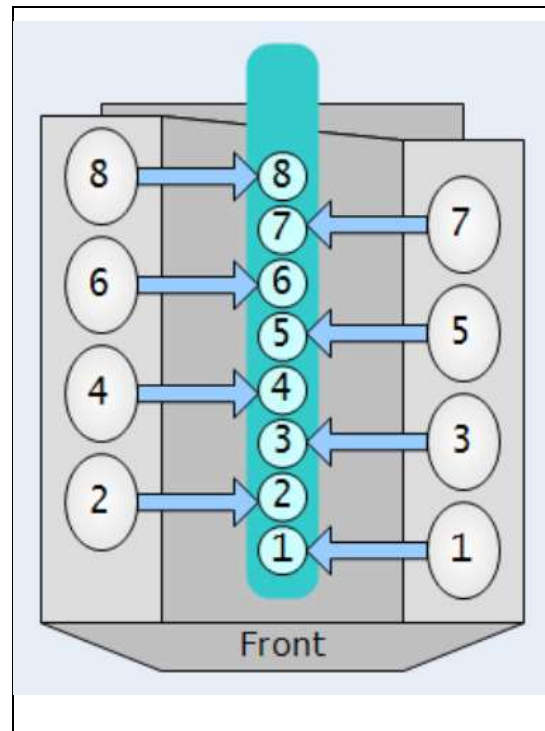


Fig 2 V8 engine with cylinder

Engine orientation with cars

The simplest situation is a longitudinal engine located at the front of the car, which means the engine's orientation is the same as the car. This illustrates that the rear of the engine is the end that connects to the transmission, while the front end often has the drive belt for accessories (such as the alternator and water pump). The left bank of the engine is on the left side of the car (when looking from behind the car), and vice versa for the right bank of the engine.

For a transverse engine located at the front of the car, whether the front of the engine is at the left-hand or right-hand side of the car is best determined based on the side of the car where the transmission is located (which corresponds to the rear of the engine).

Most transverse engine front-wheel drive models have the front of the engine at the right-hand side of the car (except for many Honda cars). As a consequence, the left bank of a transversely V engine is usually closest to the front of the car.

Numbering systems

Contrary to most car engines, a ship's engines are often numbered starting from the end of the engine with the power output. Large diesel truck and locomotive engines, particularly of European manufacture, may also be numbered this way.

Table 1
Example of ignition sequence according to engine layout

Number of cylinders	representative example
3	Saab 2-stroke engine
4	Many inline 4-cylinder engines and Ford Taunus V4 engines, British Ford Engine
5	in-line five-cylinder, Volvo 850, Audi 100
6	in-line six-cylinder, Opel Omega A, GM 3800 engine, GM 60 degree V6 engine, Mercedes-Benz M104 engine
7	star 7 cylinder engine
8	GM LS engine, BMW S65 engine, Ford Challenger V8, Cadillac V8 engine, Ferrari Dino V8
10	BMW S65 engine, Dodge Viper V10
12	2001 Ferrari 456GT V12
16	Cadillac V16 engine, Bugatti Veyron W16 engine

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