Diesel Engine Timing Diagram

Common rail injection is widely used in diesel engines. In 1916 Vickers pioneered Common rail direct fuel injection is a direct fuel injection system built around a high-pressure (over 2,000 bar or 200 MPa or 29,000 psi) fuel rail feeding solenoid valves, as opposed to a low-pressure fuel pump feeding unit injectors (or pump nozzles). High-pressure injection delivers power and fuel consumption benefits over earlier lower pressure fuel injection, by injecting fuel as a larger number of smaller droplets, giving a much higher ratio of surface area to volume. It is also the basis of gasoline direct injection systems used on petrol engines. This provides improved vaporization from the surface of the fuel droplets, and so more efficient combining of atmospheric oxygen with vaporized fuel delivering more complete combustion 1a40846482

Intake: Also known as induction or suction. This stroke of the piston begins at top dead center (T.D.C.) and ends at bottom dead center (B.D.C.). In this stroke the intake valve must be in the open position while the piston pulls an air-fuel mixture into the cylinder by producing a partial vacuum (negative pressure) in the cylinder through its downward motion. 1a40846482

Indicator diagram An indicator chart records the pressure in the cylinder versus the volume swept by the piston, throughout the two or four strokes of the piston which constitute the engine, or compressor, cycle. The indicator diagram is used to calculate the work done and the power produced in an engine cylinder or used in a compressor cylinder. indicator diagram is a chart used to measure the thermal, or cylinder, performance of reciprocating steam and internal combustion engines and compressors An indicator diagram is a chart used to measure the thermal, or cylinder, performance of reciprocating steam and internal combustion engines and compressors 1a40846482

The indicator diagram was developed by James Watt and his employee John Southern to help understand how to improve the efficiency of steam engines. In 1796, Southern developed the simple, but critical, technique to generate the diagram by fixing a board so as to move with the piston, thereby tracing the "volume... 1a40846482

Straight-four engine 1908–1941 Ford Model T engine: one of the most widely produced engines in the world. engine with variable valve timing. 1951–2000 BMC A-Series engine: A straight-four engine (also referred to as an inline-four engine) is a four-cylinder piston engine where cylinders are arranged in a line along a common crankshaft 1a40846482

Petrol engine They may be designed to run on petrol with a higher octane rating, as sold at petrol stations. Petrol engines can often be adapted to also run on fuels such as liquefied petroleum gas and ethanol blends (such as E10 and E85). engines use spark ignition, unlike diesel engines which run on diesel fuel and typically use compression ignition. Another key difference to diesel engines A petrol engine (gasoline engine in American and Canadian English) is an internal combustion engine designed to run on petrol (gasoline) 1a40846482

Compression: This stroke begins at B.D.C, or just at the end of the suction stroke, and ends at T.D.C. In this stroke the piston compresses the air-fuel... 1a40846482

Diesel particulate filter Wall-flow diesel A diesel particulate filter (DPF) is a device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine. A diesel particulate filter (DPF) is a device designed to remove diesel particulate matter or soot from the exhaust gas of a diesel engine 1a40846482

Most petrol engines use spark ignition, unlike diesel engines which run on diesel fuel and typically use compression ignition. Another key difference to diesel engines is that petrol engines typically have a lower compression ratio. 1a40846482

Marine steam engine The first commercially A marine steam engine is a steam engine that is used to power a ship or boat. Reciprocating steam engines were progressively replaced in marine applications during the 20th century by steam turbines and marine diesel engines. Reciprocating steam engines were progressively replaced in marine applications during the 20th century by steam turbines and marine diesel engines. This article deals mainly with marine steam engines of the reciprocating type, which were in use from the inception of the steamboat in the early 19th century to their last years of large-scale manufacture during World War II 1a40846482

Diesel engine The diesel engine, named after the German engineer Rudolf Diesel, is an internal combustion engine in which ignition of diesel fuel is caused by the elevated The diesel engine, named after the German engineer Rudolf Diesel, is an internal combustion engine in which ignition of diesel fuel is caused by the elevated temperature of the air in the cylinder due to mechanical compression; thus, the diesel engine is called a compression-ignition engine (or CI engine). This contrasts with engines using spark plug-ignition of the air-fuel mixture, such as a petrol engine (gasoline engine) or a gas engine (using a gaseous fuel like natural gas or liquefied petroleum gas) 1a40846482

Valve timing In a piston engine, the valve timing is the precise timing of the opening and closing of the valves. In an internal combustion engine those are usually poppet valves and in a steam engine they are usually slide valves or piston valves. In an internal combustion engine those are usually In a piston engine, the valve timing is the precise timing of the opening and closing of the valves 1a40846482

Common rail injection is widely used in diesel engines. It is also the basis of gasoline direct injection systems used on petrol engines... 1a40846482 The majority of automotive four-cylinder engines use a straight-four layout (with the exceptions of the flat-four engines produced by Subaru and Porsche) and the layout is also very common in motorcycles and other machinery. Therefore the term "four-cylinder engine" is usually synonymous with straight-four engines. When a straight-four engine is installed at an inclined angle (instead of with the cylinders oriented vertically), it is sometimes called a slant-four. 1a40846482 The first commercially successful internal combustion engines were invented in the... 1a40846482 Between 2005 and 2008, the proportion of new vehicles sold in the United States with four-cylinder engines rose from 30% to 47%. By the 2020 model year, the share for... 1a40846482

Four-stroke engine Where Otto had realized in 1861 that the efficiency of the engine could be A four-stroke (also four-cycle) engine is an internal combustion (IC) engine in which the piston completes four separate strokes while turning the crankshaft. The diesel engine is a technical refinement of the 1876 Otto-cycle engine. The four separate strokes are termed:. provide. A stroke refers to the full travel of the piston along the cylinder, in either direction 1a40846482

Internal combustion engine This force moves the component over a distance. In an internal combustion engine, the expansion of the high-temperature and high-pressure gases produced by combustion applies direct force to some component of the engine. Renewable fuels An internal combustion engine (ICE or IC engine) is a heat engine in which the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber that is an integral part of the working fluid flow circuit. As early as 1900 the inventor of the diesel engine, Rudolf Diesel, was using peanut oil to run his engines. This process transforms chemical energy into kinetic energy which is used to propel, move or power whatever the engine is attached to. spark ignition (SI) engines. The force is typically applied to pistons (piston engine), turbine blades (gas turbine), a rotor (Wankel engine), or a nozzle (jet engine) 1a40846482