

-28- The temperature becomes higher than the ignition point of the fuel.

(C) Combustion Stroke (See Figure 2-3) With the intake valve S and exhaust valve E closed, the fuel, pressurized by the fuel injector, is injected in an atomized state shortly before the end of the compression stroke of the piston (P), that is, when the crank reaches top dead center, and it self-ignites upon contact with the high-temperature air. The fuel undergoes explosive combustion within the cylinder, and the rapid expansion force of the combustion gas pushes down the piston, which, via the connecting rod, becomes the rotational force of the crankshaft. This stroke is called the combustion stroke or power stroke.

(D) Exhaust Stroke (See Figure 2-3 (1)) If the exhaust valve E is opened, the combustion gas is discharged into the atmosphere as the piston rises past bottom dead center, and the exhaust is completely finished when it reaches top dead center.

[Diagram: Cycle diagram]

BOS) ATR (A) a P Explosion PP2 B Exhaust Stroke Intake Stroke P1 V2 (1) SA →V1 Piston Stroke Stop

Figure 2-4: Indicator Diagram of a 4-Cycle Engine

As a result, the crankshaft makes two revolutions during the 4 strokes (2 reciprocations) of the piston (P), and the power stroke during this time occurs only once.

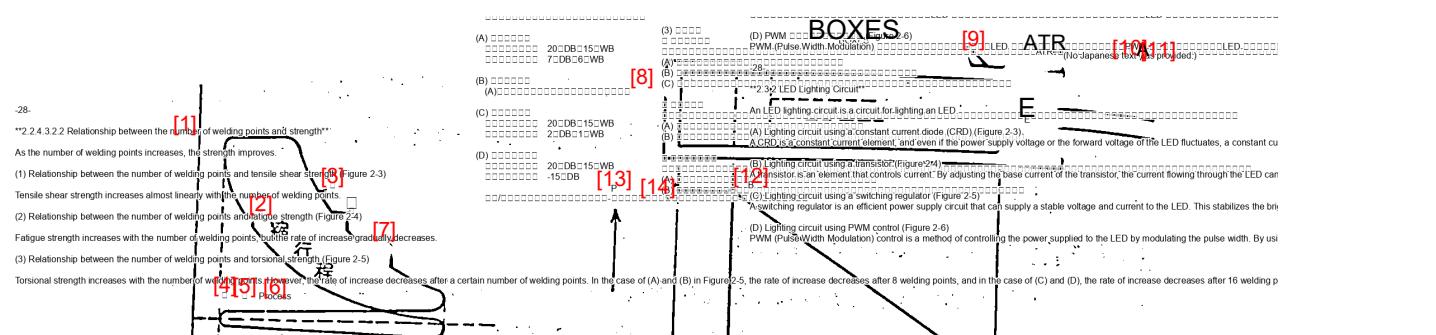


Diagram Key:

[14] -28- 2.2.4.3.2.2 Relationship between the number of welding points and strength** As the nu...

Figure 2-4 shows the indicator diagram (PV diagram) of a 4-cycle engine. It illustrates the change in the state of the gas inside the cylinder when gas is introduced into the cylinder and the piston is pushed from position A to position B, or conversely, when the piston is pushed from position B to A by the expansion force of the gas. In general, the pressure is represented by P on the vertical axis and the volume is represented by V on the horizontal axis, and the relationship between the two (the change in gas volume and pressure inside the cylinder) is shown in the diagram.

If the volume when pushed in is V_2 and its pressure is represented by P_2 , then, if the volume when the piston is at A is V_1 and the pressure is P_1 , this diagram is called a PV diagram or indicator diagram.