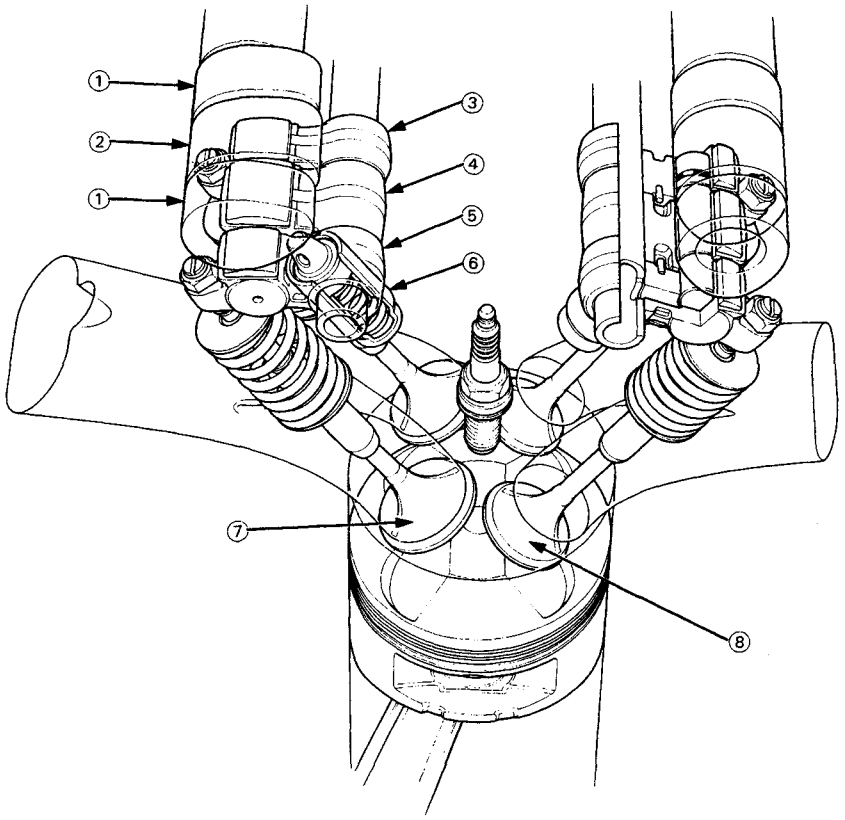
Variable Valve Timing and Valve Lift Electronic Control System (VTEC)

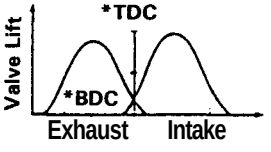
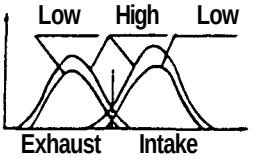
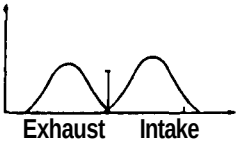
Outline

The engine is equipped with multiple cam lobes per cylinder, providing one valve timing and lift profile at low speed and a different profile at high speed. Switch-over from one profile to the other is controlled electronially, and is selected by monitoring current engine speed and load.



① CAM LOBES FOR LOW RPM
② CAM LOBES FOR HIGH RPM
③ PRIMARY ROCKER ARM
④ MID ROCKER ARM
⑤ SECONDARY ROCKER ARM
⑥ LOST MOTION ASSEMBLY
⑦ INTAKE VALVE
⑧ EXHAUST VALVE

In general, it would be ideal if the high rpm performance of a racing engine and the low rpm performance of a standard passenger car engine could be combined in a single engine. This would result in a maximum performance engine with a wide power band. Two of the major differences between racing engines and standard engines are the timing of the intake/exhaust valves and the degree of valve lift. Racing engines have longer intake/exhaust timing and a higher valve lift than standard engines. The Honda Variable Valve Timing and Valve Lift Electronic Control System takes this into account. When valve actuation is set for low rpm timing and lift, low rpm torque is better than in a standard engine. When valve actuation is then switched for high rpm timing and lift, output improves to the level given by a racing engine. Until now, few variable valve timing systems have been commercialized. In those that have, only the time that both valves are open (intake/exhaust overlap) could be changed. Honda's system is the first in the world in which both the valve timing and the degree of valve lift can be changed as needed, making it the most advanced valve train mechanism available.

	Racing Engine	VTEC Engine	Standard Engine
Valve Timing (exhaust/intake) Valve Lift			
Max. Power	O	O	
Low rpm Torque		O	O
Idling Stability		O	O

*TDC = Top Dead Center *BDC = Bottom Dead Center
O = Optimum Characteristic

The engine is equipped with two valve timing and valve lift settings which change according to driving conditions.