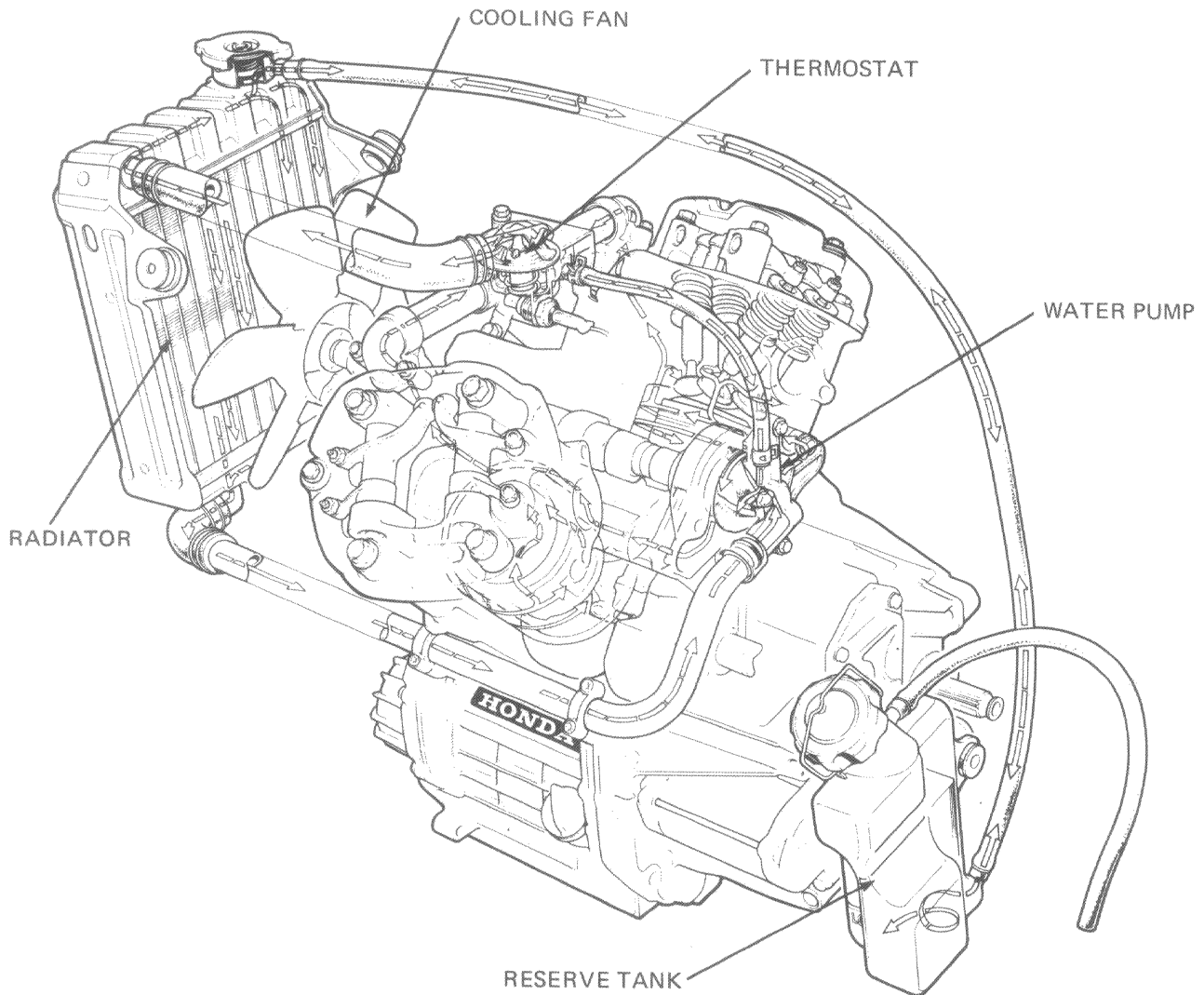




## COOLING SYSTEM

The cooling system consists of the radiator, reserve tank, thermostat, fan, water pump and water jackets that surround the cylinders and cylinder heads. The water pump is driven by the camshaft and draws cool water from the bottom of the radiator and pumps it through the water passage at the rear of the engine case into the water jacket of each cylinder. The coolant circulates around the cylinder bores and is directed upward into the cylinder heads where it cools the combustion chambers, valves, and valve seats. After cooling the cylinder heads, the coolant flows through the thermostat, if it is open, into the top of the radiator. In the radiator, the temperature of the coolant is reduced as it dissipates heat to the fan's air stream.



### ● COOLANT FLOW

- When the engine is cold, the thermostat bellow contracts and closes the valve. This causes the coolant to circulate only in the engine water jackets. Only a small amount of coolant is returned through the by-pass hose into the radiator, causing the engine to warm up quickly.
- As the coolant warms, the bellow expands and the valve opens. This allows the coolant to flow to the radiator where it is maintained at the desired operating temperature.
- The radiator cap incorporates two valves, the relief valve and vacuum valve. The valve allows air and vapor or coolant to escape into the reserve tank if pressure exceeds that for which the system is designed, thereby maintaining a safe pressure in the system. The vacuum valve prevents formation of vacuum in the system when the engine begins to cool after it has been shut off. A pressure drop in the radiator causes the valve to open, allowing coolant from the reserve tank into the radiator. The design prevents loss of coolant by evaporation except that through the breather in the reserve tank and eliminates frequent refilling of the system.

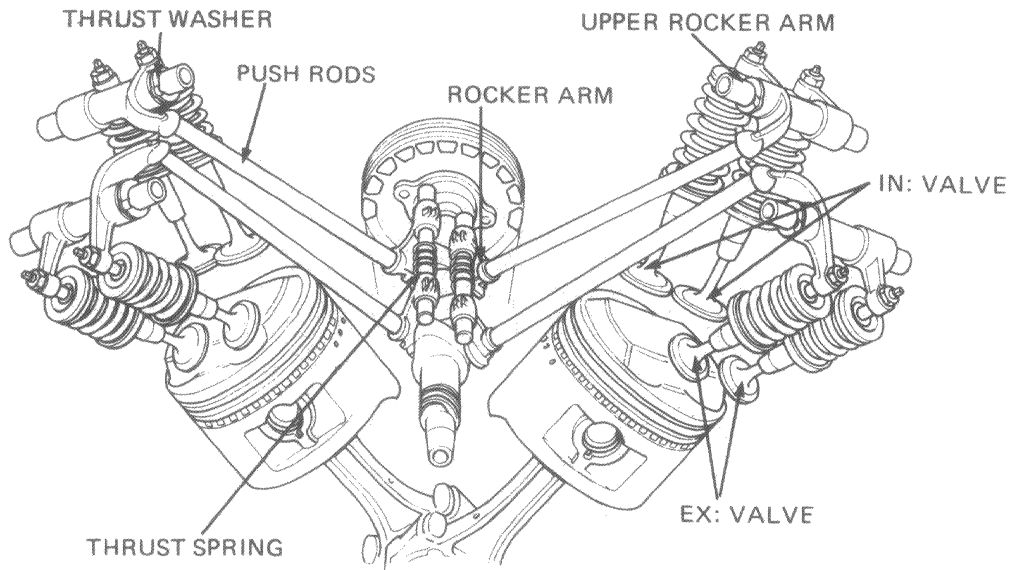


## VALVE TRAIN

### • PUSH ROD OPERATED 4 VALVE DESIGN

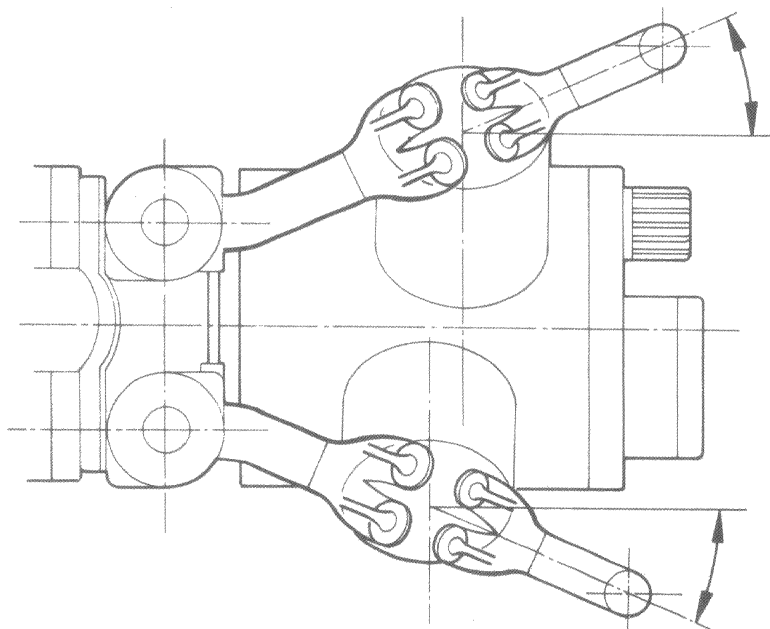
The engine is a V-2, 4-valve, dual rocker arm, OHV design. In the V-2 engine, the cylinders are arranged in two banks of one cylinder each, with the two banks set at 44 degrees to each other for rigid construction. Motion is transmitted from a single camshaft through four push rods to the rocker arms. A durable silent chain drives the camshaft. The rocker arm wave washers contribute to smooth quiet operation.

Four valves per cylinder, high compression ratio, short stroke crankshaft and other unique design features enable the CX500 to out perform other motorcycles of comparable size.



### • TWISTED CYLINDER HEAD

The cylinder heads are twisted at 44° to each other. This provides fuel-air passages that are short and practically straight from the carburetors to the exhaust pipes to ensure effective breathing.





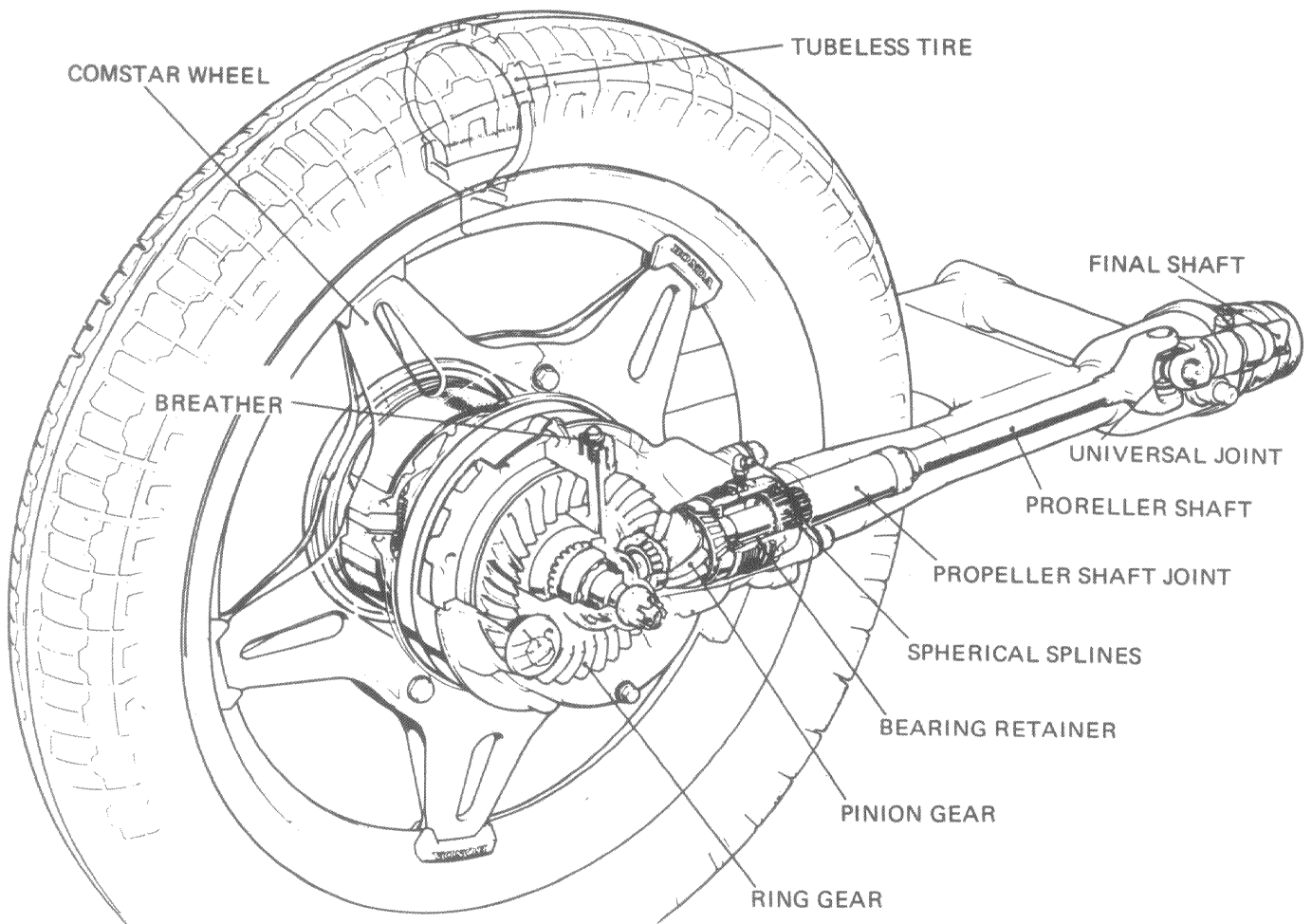
● **SHAFT DRIVE**

The power transmitting system uses a shaft drive in that power from the engine is transmitted by way of:

Final shaft — Universal joint — Propeller shaft — Propeller shaft joint — Pinion gear — Ring gear — Driven flange — Rear wheel.  
The pinion gear uses spherical splines to allow relative movement between the propeller shaft and this gear when the rear wheel moves up and down. The final gear case is filled with hypoid gear oil and is equipped with a breather. The pinion gear bearing retainer is packed with special grease.

● **TUBELESS TIRE**

The front and rear wheels incorporate a tubeless tire. It will carry nails and other puncturing objects for a considerable mileage without sudden puncture or blowout, thus providing added safety. Since the tubeless tire has no inner tube, heat caused by tire flexing is radiated to the air through the rim more effectively.





**C.D.I. SYSTEM**

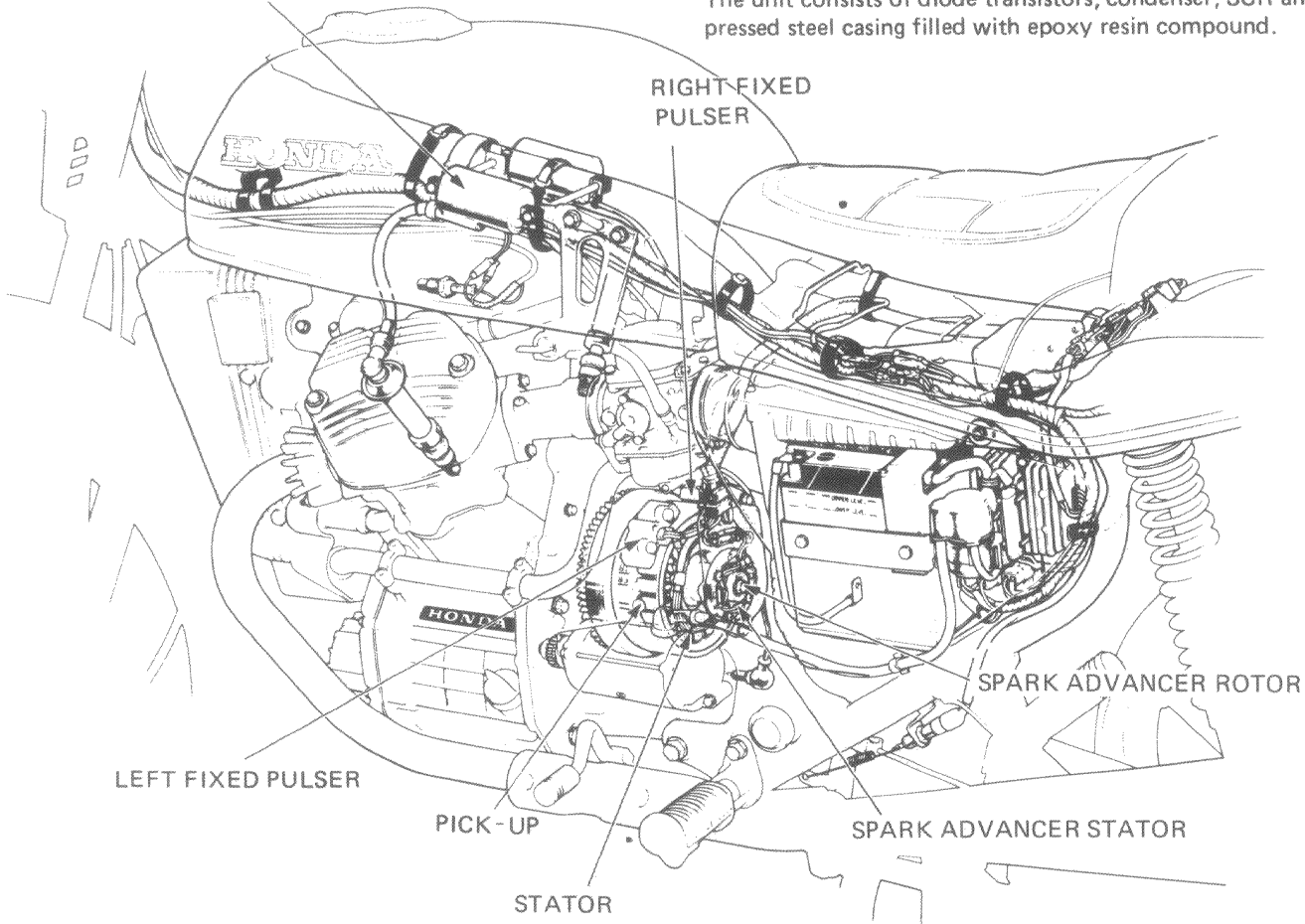
The C.D.I. system is designed to take advantage of the short-stroke, 4-valve engine. The term "C.D.I." stands for Capacitive Discharge Ignition.

IGNITION COIL

C.D.I. UNIT

The unit consists of diode transistors, condenser, SCR and pressed steel casing filled with epoxy resin compound.

RIGHT-FIXED PULSER



LEFT FIXED PULSER

SPARK ADVANCER ROTOR

PICK-UP

SPARK ADVANCER STATOR

STATOR

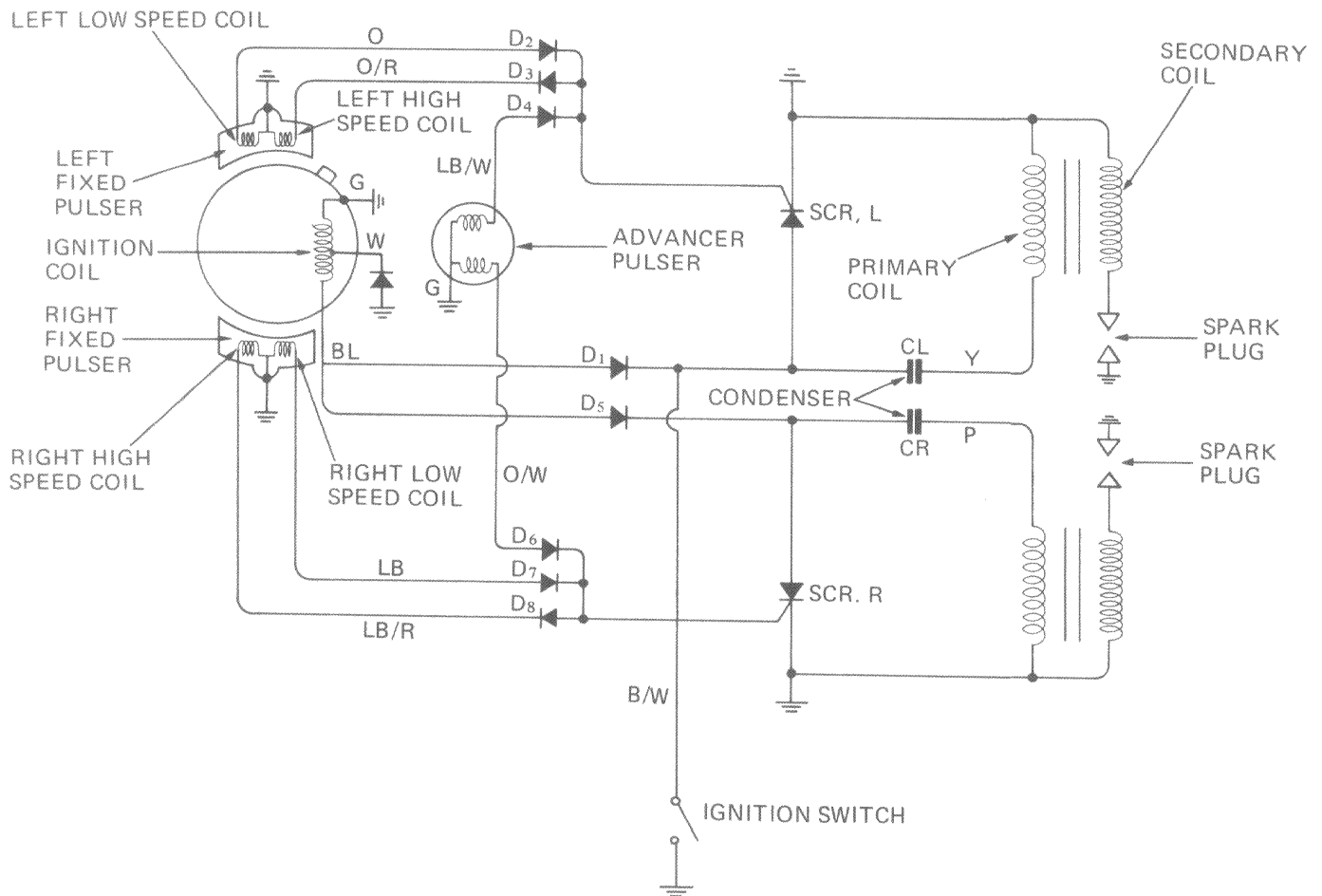
The ignition primary coil and charging coil are inside the stator.

● **FEATURES**

- There are no contact points to require attention.
- C.D.I. can develop more voltage potential at the spark plugs than conventional systems and is more resistant to spark plug fouling.
- Working on AC, the secondary voltage is more stable, regardless of battery condition.
- The timing advance will not be subject to errors and is virtually free from wear.
- The overall design eliminates initial and periodic adjustments and maintenance services.



• C.D.I. UNIT (CAPACITIVE DISCHARGE IGNITION)

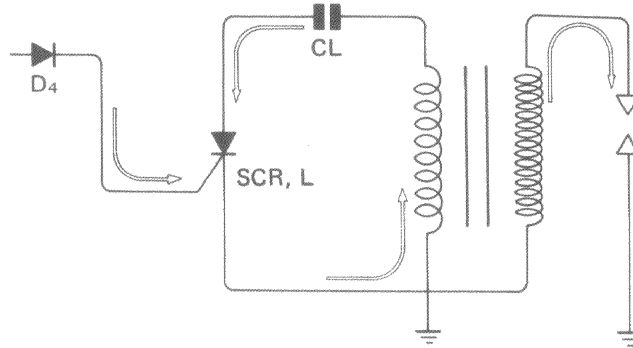


- As the AC generator rotor turns, current is induced in the AC generator (AC generating coil). This current is rectified as it passes through the diode D1 and is stored in the condenser CL. During this process, the SCR, L is kept OFF.
- An electric pulse is generated by the left fixed pulser when the pick up reaches the point where ignition must start. This is due to changes in the flux. The pulse is rectified by diode D2 and is applied to SCR, L gate. As this happens, SCR, L turns ON which in turn discharges the energy stored in the condenser through the primary coil. Sufficient potential is then developed at the spark plug to ignite the air-fuel mixture in the combustion chamber.
- Same sequence of events takes place for the right cylinder 280 degrees after ignition takes place in the left cylinder, in relation to the crankshaft rotation.

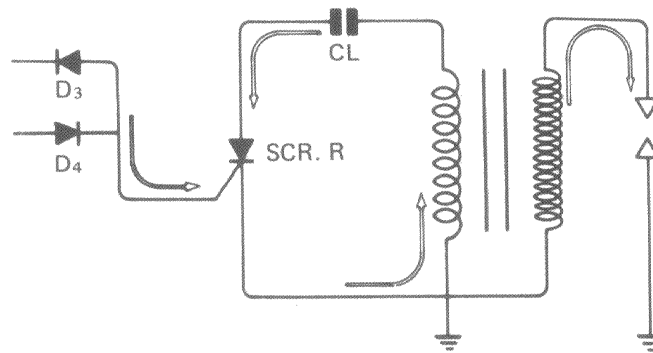


**TECHNICAL FEATURES**

- To advance timing, the signal from the fixed pulser is replaced by the output signal from the spark advancer pulser. The output signal applies to SCR, L gate through the diode D4 and fires the spark plug, performing the same function as the conventional system. The faster the engine speed, the faster the SCR, L is triggered to advance the timing.

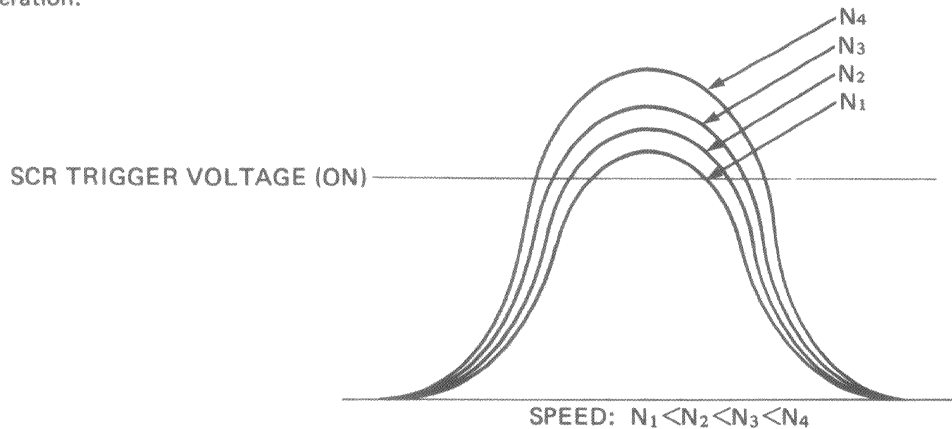


- The negative pulse from the fixed pulser balances the positive pulse from the spark advance pulser when the maximum advance is reached. This limits timing advance.



● **ADVANCER OPERATION**

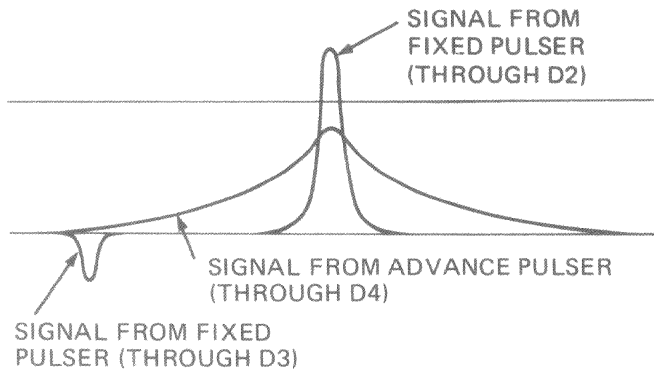
In C.D.I. ignition, timing advance depends on the build-up time of voltage on the advance pulser, which becomes faster as engine speed increases. The SCR L acts like a switching device, but there is a definite voltage at which it triggers. The overall operation of the C.D.I. system stems from these two facts. The faster the voltage build-up, the earlier the SCR is triggered, allowing the system to perform the same function as the conventional system. The fixed pulser controls until the advancer pulser comes into operation.





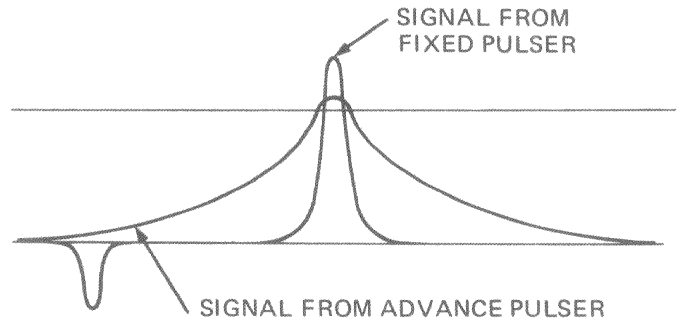
- PULSER WAVE FORMS AND SCR TRIGGER VOLTAGE BEFORE ADVANCE

Before advance starts, only the signal from the fixed pulser is applied to SCR gate through the diode D3.



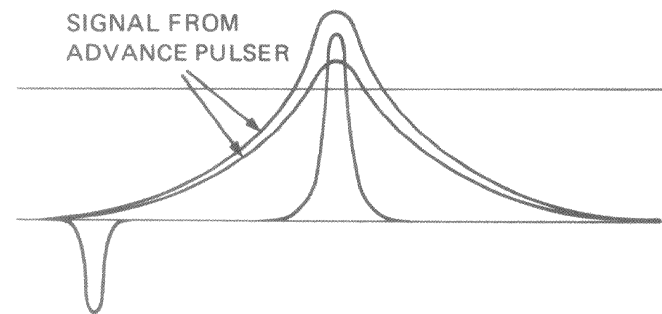
- PULSER WAVE FORMS WHEN ADVANCE STARTS

The voltage of the advance pulser rises to SCR trigger voltage faster than that of the fixed pulser. If there is an increase in engine speed, there will be a corresponding advance in timing.



- PULSER WAVE FORMS DURING TIMING ADVANCE

With further increases in engine speed, a transition occurs in the wave form, such as from A to B. That is, SCR is triggered sooner to advance the ignition timing.



- PULSER WAVE FORMS AT END OF ADVANCE

The negative pulse from the fixed pulser balances the positive pulse from the advance pulser, causing the timing to stop advancing.

