

5. ELECTRICAL SYSTEM

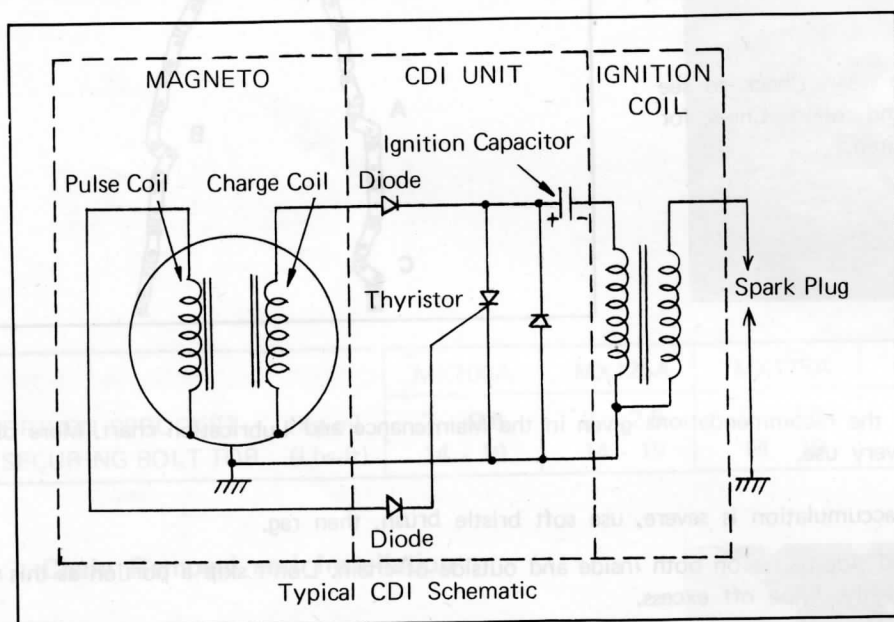
5-1. CDI IGNITION SYSTEM (175cc - 500cc Engines)

A. Description

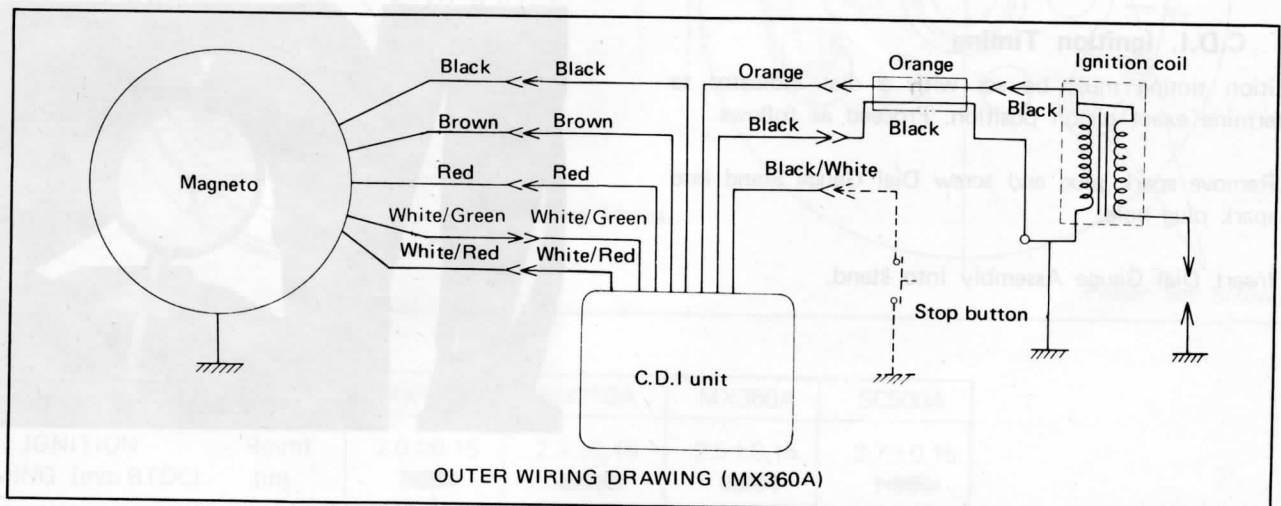
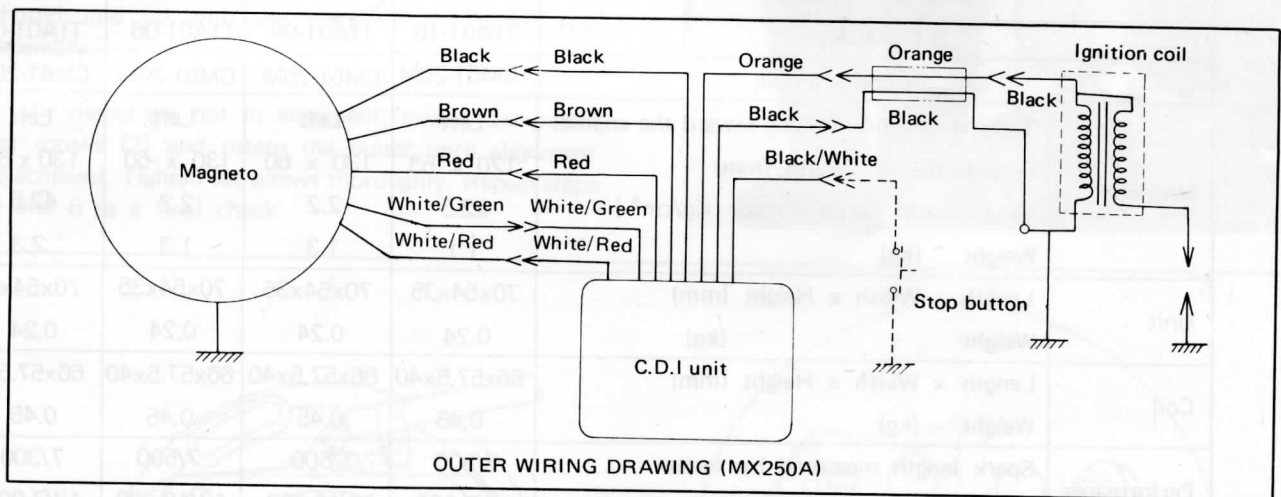
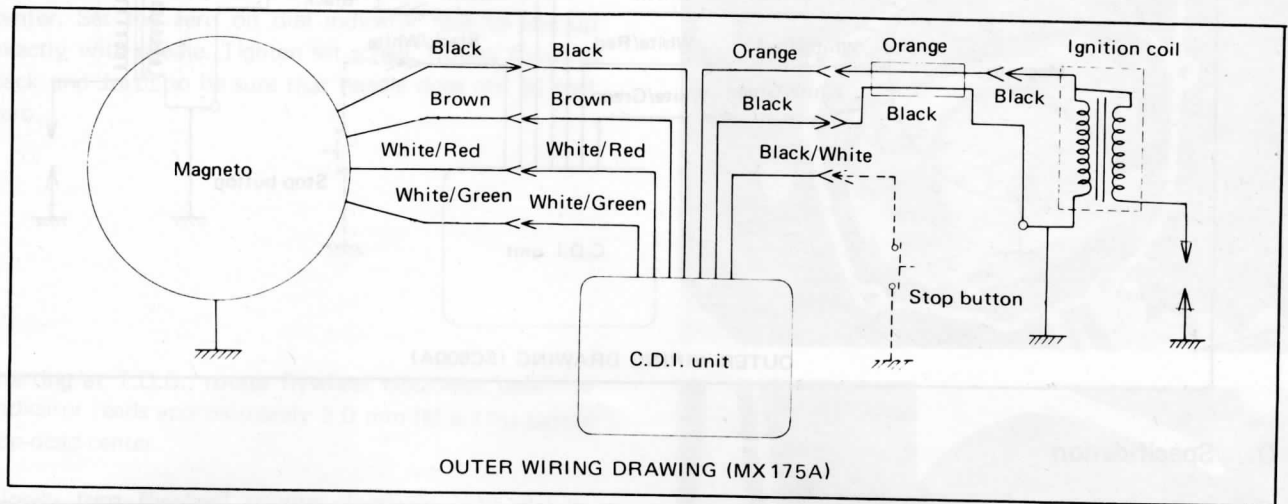
The capacitor discharge ignition (CDI) system used on the 175cc-500cc engines eliminates the need for a mechanical contact breaker and its inherent disadvantages. A simple electronic circuit using a large storage capacitor and a Thyristor (Silicon Control Rectifier) provides a correctly-timed, high-intensity voltage to the spark plug.

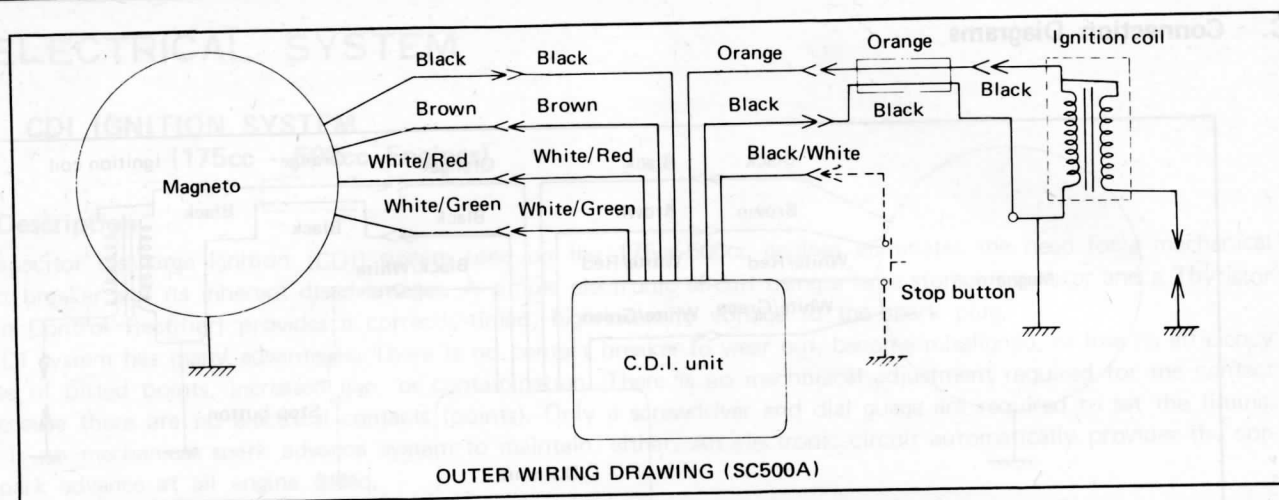
The CDI system has many advantages. There is no contact breaker to wear out, become misaligned, or lose its efficiency because of pitted points, increased gap, or contamination. There is no mechanical adjustment required for the contact gap because there are no electrical contacts (points). Only a screwdriver and dial gauge are required to set the timing. There is no mechanical spark advance system to maintain, either. An electronic circuit automatically provides the correct spark advance at all engine speed.

B. Schematic



C. Connection Diagrams





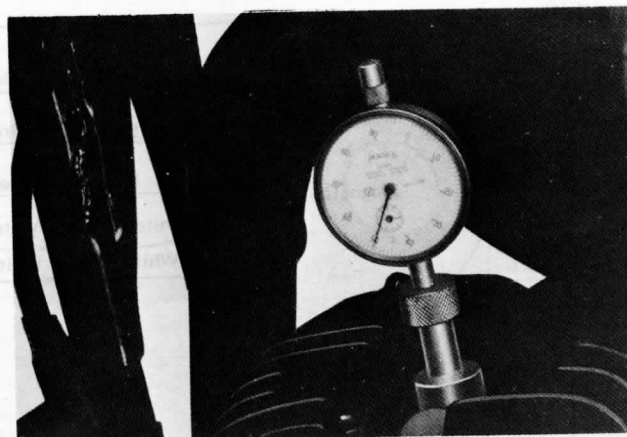
D. Specification

Model		455	364	365	363
Magneto - Model		F-140-50	M100-13	M100-13	F145-03
C.D.I. - Model		TIA01-10	TIA01-06	TIA01-06	TIA01-08
Ignition coil - Model		CM61-20M	CM61-20M	CM61-20M	CM61-20M
Magneto	Turning direction (facing toward the engine)	Left	Left	Left	Left
	Outside dia. x Length (mm)	120 x 53	130 x 60	130 x 60	130 x 62
	Movement of inertia of rotor (Kg/cm ²)	22.5	2.2	2.2	42.5
	Weight (kg)	1.1	1.3	1.3	2.3
Unit	Length x Width x Height (mm)	70x54x35	70x54x35	70x54x35	70x54x35
	Weight (kg)	0.24	0.24	0.24	0.24
Coil	Length x Width x Height (mm)	66x57.5x40	66x57.5x40	66x57.5x40	66x57.5x40
	Weight (kg)	0.45	0.45	0.45	0.45
Performance	Spark length measured by tester	7/500	7/500	7/500	7/300
	(mm/r.p.m.)	13/5,000	13/10,000	13/10,000	13/7,000

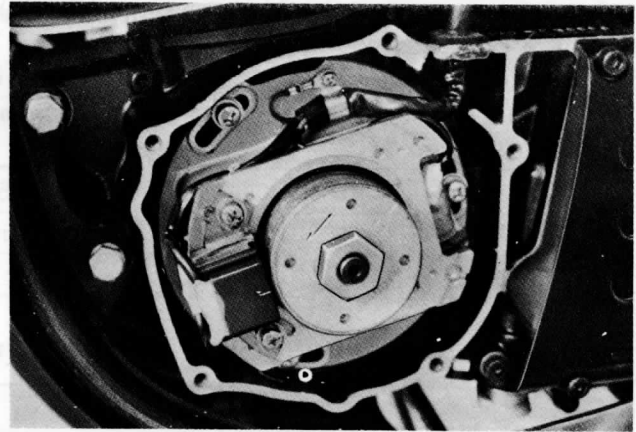
E. C.D.I. Ignition Timing

Ignition timing must be set with a dial indicator to determine exact piston position. Proceed as follows:

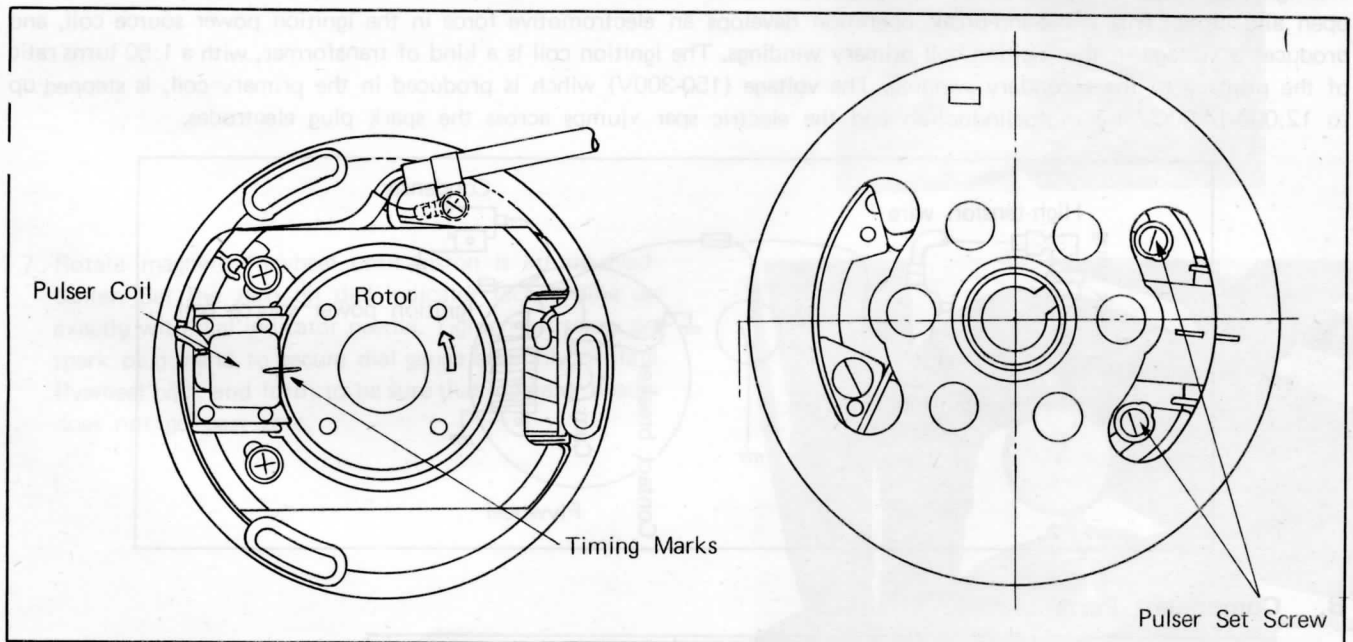
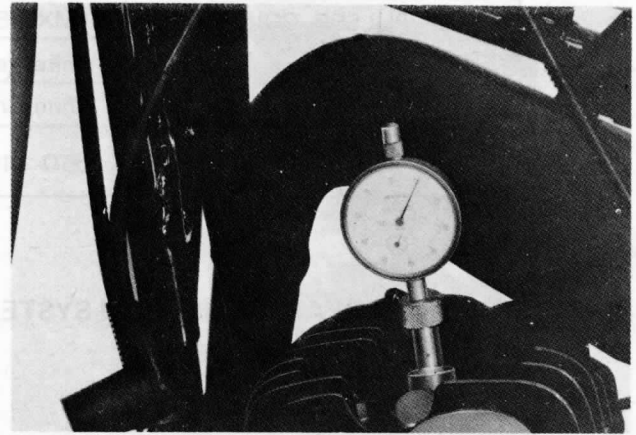
1. Remove spark plug and screw Dial Gauge Stand into spark plug hole.
2. Insert Dial Gauge Assembly into stand.



3. Remove left engine crankcase cover.
4. Rotate magneto flywheel until piston is at top-dead-center. Set the zero on dial indicator face to line up exactly with needle. Tighten set screw. Rotate flywheel back and forth to be sure that needle does not go past zero.



5. Starting at T.D.C., rotate flywheel clockwise until dial indicator reads approximately 2.0 mm (M x 175) before-top-dead-center.
6. Slowly turn flywheel counter-clockwise until dial indicator reads ignition advance setting listed in Specifications Table. At this time, the mark on the flywheel should line up with the mark on the pulser coil assembly.
7. If the marks are not in alignment, loosen the pulser set screws (2) and rotate the pulser until alignment is achieved. Tighten set screws thoroughly. Repeat steps 5 and 6 as a final check.



		MX175A	MX250A	MX360A	SC500A
CDI IGNITION TIMING (mm BTDC)	:(mm)	2.0±0.15	2.3±0.15	2.5±0.15	2.7±0.15
	(in)	0.787	0.906	0.984	1.063
		0.0787	0.0906	0.0984	0.1063

F. Checking CDI Magneto Charge Coil and Pulser Coil

The resistance of the magneto ignition coil windings is as specified below. To locate the cause of trouble (broken coil, short-circuit, etc.), measure the resistance across each lead as shown in chart.

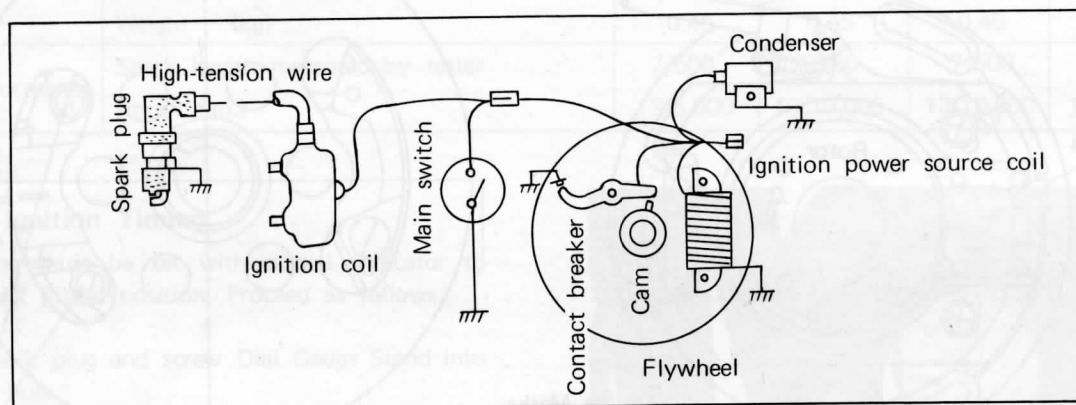
CHARGING COIL		MX175A	MX250A		MX360A		SC500A	
WIRE	FROM:	Brown	Brown	Red	Brown	Red	Brown	White/Red
COLORS:	TO:	Black	Black	Black	Black	Black	Black	White/Green
RESISTANCE (ohms)		170 Ω $\pm$ 10%	790 Ω $\pm$ 10%	84 Ω $\pm$ 10%	790 Ω $\pm$ 10%	84 Ω $\pm$ 10%	204 Ω $\pm$ 10%	85 Ω $\pm$ 10%

PULSER COIL		MX175A	MX250A	MX360A	SC500A
WIRE	FROM:	White/Red	White/Red	White/Red	White/Red
COLORS:	TO:	White/Green	White/Green	White/Green	White/Green
RESISTANCE (ohms)		55 Ω $\pm$ 10%	54 Ω $\pm$ 10%	54 Ω $\pm$ 10%	88 Ω $\pm$ 10%

5-2. CONTACT BREAKER IGNITION SYSTEM (MX100A & MX125A)

A. Description of Operation

The ignition system consists of the components as shown below. As the flywheel rotates, the contact breaker points open and close. This make-and-break operation develops an electromotive force in the ignition power source coil, and produces a voltage in the ignition coil primary windings. The ignition coil is a kind of transformer, with a 1:50 turns ratio of the primary to the secondary winding. The voltage (150-300V) which is produced in the primary coil, is stepped up to 12,000-14,000V by mutual induction and the electric spark jumps across the spark plug electrodes.



B. Component Parts

PART NAME	MANUFACTURER		MODEL/TYPE	
	MX100A	MX125A	MX100A	MX125A
Flywheel Magneto	Hitachi	Hitachi	F140-03	F140-03
Ignition Coil	"	"	CM61-20H	CM61-20H
Contact Breaker Ass'y	"	"	—	—
Condenser	"	"	—	—