

IGNITION OPERATION and DIAGNOSING FAULTS - QUESTIONAIRE No. 1

PLEASE PRINT

NAME : DATE :

DEALERSHIP :

1. Name the 4 types of ignition systems used on small engines.

- 1.
- 2.
- 3.
- 4.

2. What does the abbreviation of these various ignition systems mean.

- (a) B.P.I.
- (b) T.C.I.
- (c) C.D.I.
- (d) S.S.I.

3. What is the objective of any ignition system.

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4. Name the 2 voltage circuits in the B.P.I., T.C.I. and the basic C.D.I. system.

- (a)
- (b)

5. What is the step-up ratio of an ignition coil.

6. What does KV. stand for.

7. How many volts in 1 KV.

8. How much voltage would you normally expect to find on the;

- (a) Primary circuit
- (b) Secondary circuit
- (c) Spark plug

9. Briefly describe, what is ignition reserve voltage.

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10. If the spark plug uses about 10 Kv. then how much voltage should the ignition coil produce to have enough voltage in reserve to cope with the changing conditions that the spark plug encounters.
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11. Name some of the conditions that effect the spark plug voltage.
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12. Is the working voltage within all types of ignition systems
(a) Very similar
(b) Vastly different.
13. How many voltage circuits to test in the S.S.I. system, and name them.
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1. Name the 2 types of ignition testing methods and briefly describe them.
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2. Name the two Polarities of the voltage in any electrical circuit.
(1) (2)
3. When checking the ignition coil Output Voltage, you have a low or no voltage reading with the Kv. Polarity switch in the (+) position, what would be the next test procedure.
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4. When testing the ignition coil Primary Voltage, you have a low or no voltage reading with the Black test lead connected to ground and the Red test lead connected to the coil primary terminal, what would be the next test procedure.
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5. When testing the ignition coil Primary Voltage on the Breaker Point Ignition (B.P.I.) system, you have a low In Circuit voltage reading, in either polarity, of about 50 volts, what would be the next test, and how much voltage would you expect to read.
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6. Briefly describe all of the Dynamic testing procedures for checking the complete 2 part Transistor Controlled Ignition (T.C.I.) system and what voltage readings would you normally expect to read at each test point.
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7. When checking the 2 part C.D.I. system, you have a low voltage reading of only 5 Kv. when testing the ignition coil Output Voltage.
 - (a) What is the next test procedure for this system.
 - (b) What voltage reading would you expect to read.
 - (c) If the voltage reading is OK, which is the faulty part.
 - (d) If low or no voltage reading, which is the faulty part.
 - (e) Name some of the conditions on the engine that may cause or contribute to the low or no voltage reading.
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8. Briefly describe the Dynamic testing procedures for checking the one piece Solid State Ignition (S.S.I.) system and what are the voltage readings.
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IGNITION OPERATION and DIAGNOSING FAULTS - QUESTIONNAIRE No. 3

1. (a) Name the 3 main parts in the 3 Part C.D.I. system.
1. 2. 3.
- (b) How much In Circuit voltage would you normally expect to read from each of those parts.
1. 2. 3.
- (c) What voltage would you expect to read when testing the Exciter Coil,
1. In Circuit voltage. 2. Open Circuit voltage.....
- (d) What voltage would you expect to read when testing the Pulser Coil,
1. In Circuit voltage. 2. Open Circuit voltage

2. When Dynamic testing the 3 Part C.D.I. system you have no voltage reading when checking the high voltage output of the C.D.I. unit (Secondary Voltage), this indicates that either the C.D.I. Unit, Exciter Coil or the Pulser Coil is faulty, briefly describe the test procedures you would use to determine the condition of each of these 3 parts and the voltage you would expect to read when testing each of those parts.

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3. What, if any, is the major difference in the voltage readings between the 3 Part C.D.I. system and the 3 Part T.C.I. system.

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4. What are the various In Circuit and Open Circuit voltage tests and the amount of voltage expected when checking the complete 3 Part T.C.I. system.

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5. (a) Name the 4 main parts in the 4 Part T.C.I. system.

1. 2.
3. 4.

(b) Name the 4 voltage circuits in the 4 Part T.C.I. system and the amount of voltage you would expect to read when testing these individual parts.

1.
2.
3.
4.

(c) What voltage would you expect to read when testing the Exciter Coil
Open Circuit voltage.

6. What, if any, is the major difference in the voltage readings between the 4 Part T.C.I. system and the 4 Part C.D.I. system.

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7. Briefly describe the 3 types of ignition systems you may encounter on Twin Cylinder engines.

8. On the Wasted Spark ignition coil system fitted to most twin cylinder engines
- (a) How much voltage and what polarity would you expect to read when testing the ignition coil Output Voltage on each of the 2 high voltage leads.

 - (b) Aproximately how much voltage would be required by the spark plug which uses (-) Negative voltage,Kv. and the spark plug that uses (+) Positive voltage,Kv.
 - (c) As the spark plug electrode erodes away, what influence does this have on the voltage required by the spark plug.

 - (d) Why is it especially important that the wasted spark ignition system is in good condition.

9. If you have an engine in for service and the customer complains that it is lacking overall performance and assuming that the fuel and mechanical condition is OK. and there is adequate voltage for the spark plug, what test would you perform next and what equipment would you use.

10. On an engine fitted with a 1 or 2 piece electronic ignition system and the ignition timing is out by a few degrees,
- (a) what parts on the engine would you check for adjustment which may cause this out of timing condition.

 - (b) If all of the ignition parts are adjusted correctly, what other condition could cause the ignition to be out of timing.

11. On an engine fitted with a multi part ignition system and the ignition timing is out considerably, what part would you consider to be the most likely cause of this problem.

 What are some of the problems associated with this part which will cause the ignition to be out of timing.

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