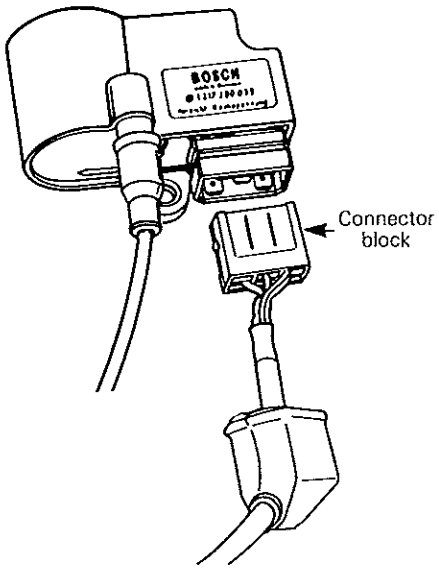
TESTING PROCEDURE

COUNTINUITY TESTS

The charging coils, triggering coils, lighting coils high tension wires and emergency cut-off switches can be tested using an ohmmeter.

NOTE: Values are taken at 20°C (68°F), always remember that resistance increases with temperature.

Disconnect the multiple connector at the electronic box unit and run a resistance test between the pins of the connector block.



Trigger coil:

Between white/red and brown (ground) on MX-6 125 model.

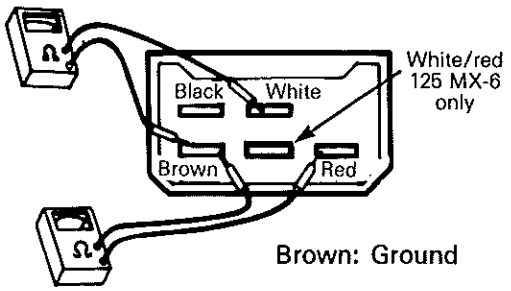
Between white and brown (ground) on all other models:

MAX.: 67 ohms
MIN. : 59 ohms

Charging coil:

Between red and brown (ground), all models:

MAX.: 550 ohms
MIN. : 450 ohms



Lighting coils:

60W, 6 poles ignition unit: (5 coils parallel)

– Between yellow/black wire and yellow wire (ground):

MAX.: 0.46 ohms
MIN. : 0.38 ohms

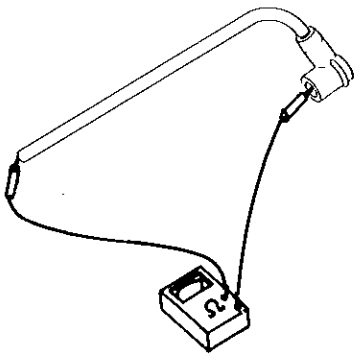
60W, 6 poles ignition unit with timing box (125 MX-6)

– The ignition system operation with timing box requires that the lighting coils leads be connected together and does not allow any test on the lighting coils.

CAUTION: Do not connect any lights or electrical equipment on the 125 MX-6 lighting coils or the ignition timing advance curve will be altered.

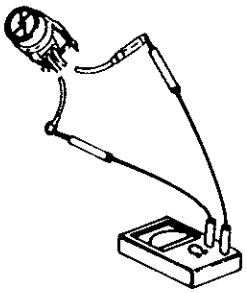
NOTE: While testing the coils with the ohmmeter it may occur that the readings alter. To make sure the proper reading is obtained, inverse the test lead of the ohmmeter and perform the test again. Take the highest reading.

High tension wire



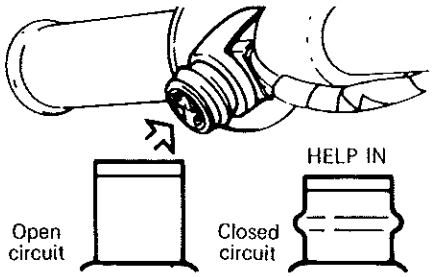
RESISTANCE = 0 ohm = continuity

Emergency cut-off switch.

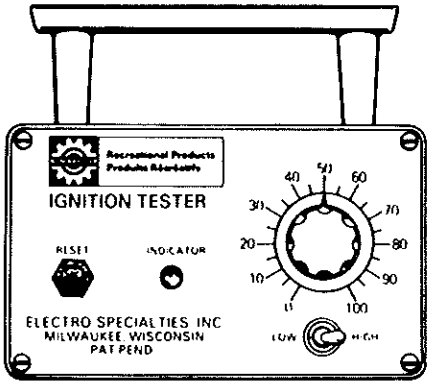


RESISTANCE

Open circuit:	1000 ohms minimum
Closed circuit:	.001 ohms maximum



BOMBARDIER IGNITION TESTER (P/N 419 0033 00)



General

The Bombardier ignition tester is an electrical energy measuring device capable of measuring the peak energy output of a coil.

The tester is of solid state construction and performs as a comparator. The correct value of energy output is indicated in each test and is then compared with the value taken from the engine being tested.

The energy output is verified by means of a 0-100 scale on the tester. The greater the energy output, the greater the value indication on the scale. The indication is in the form of an incandescent lamp that lights when the scale knob is set at the position corresponding to the energy output.

The tester has two input ranges selected by a toggle switch. The LOW range is sensitive to AC or DC voltages from 0.5 to 27 volts. The HIGH range is sensitive to AC or DC voltages from approximately 75 to 500 volts.

Test condition

All tests are performed on the vehicle at cranking speed. It would seem logical that removal of spark plug whould allow the engine to turn over faster, therefore raising the output level of the ignition system. It was found that vigorous cranking against compression causes the flywheel to snap over, raising the output higher than by cranking without compression. **Test values listed are taken against compression.**

CAUTION: Never crank engine with spark plug wire detached from spark plug unless emergency cut-off switch is at off position otherwise electronic box damage may occur.

Always crank vigorously as in actual starting.

Read all instructions **thoroughly** and, as you become familiar with this test instrument, it will be possible to test a complete ignition system is a matter of minutes.

Always proceed in the following order:

1. Connect tester **P** and **N** clip leads as illustrated.
2. Follow test procedure sequence.
3. After every test that lights the indicator lamp, **reset** the indicator circuit by depressing the reset button.

ANALYSIS OF TEST RESULTS

Indicator lamp lights at specific setting

Output is as specified. Test results should repeat 3 times. If readings do not repeat, output is erratic and cause should be investigated (loose connections or components, etc.).

Indicator lamp lights at a lower setting

This indicates that the output is less than that designed to operated the engine in a satisfactory manner. The engine may run at lower setting but be subject to hard starting and misfiring. Be certain that correct engine cranking conditions were met before condemning the ignition.

Indicator lamp does not light

One component is defective. Proceed as instructed to find defective component(s).

Intermittent ignition problems

In dealing with intermittent problems there is no easy diagnosis. For example, problems that occur only at normal engine operating temperature have to be tested under similar conditions.

In most cases of temperature and/or vibration failure, only parts replacement can solve the problem as most of these failures return to normal when engine is not running.

Double trouble

There is always the possibility of more than one defective part. If after a component has been replaced, the problem still persists, carefully repeat the complete test procedure to find the other defective part.

ANALYSER TEST AND MAINTENANCE

At test simulator is provided with each tester as a means to test the lamp, detector circuit, and batteries.

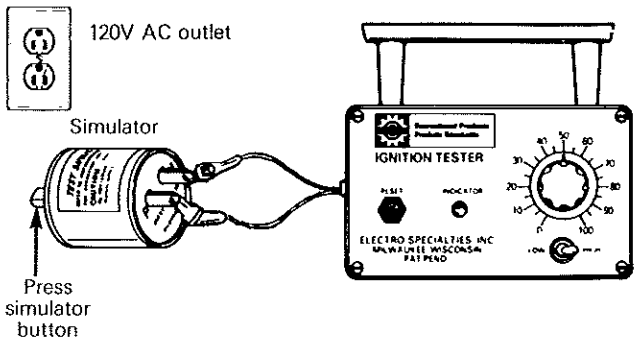
High scale test

a) Place switch in HIGH position. Plug the simulator into an electric outlet (120V AC) for ten seconds.

▼ CAUTION: After charging, do not touch plug terminals while pressing test buttom. A mild shock will result.

b) Remove the simulator from the outlet, and connect the "P" and "N" leads from the tester to the simulator as indicated on the bottom of the simulator.

c) Set the tester dial to 50, or below. Depress the button of the simulator. The indicator lamp on the tester should light.



◯ **NOTE:** For each test performed by the simulator it must be recharged.

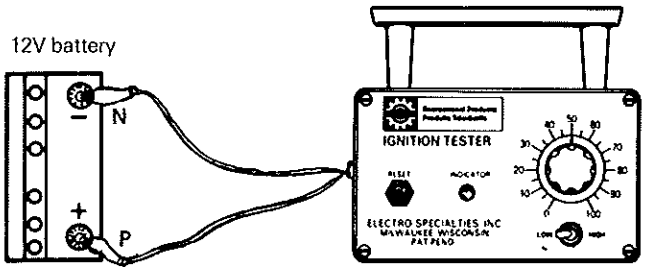
Low scale test

a) Place switch in LOW position.

b) Set tester dial to 50, or below.

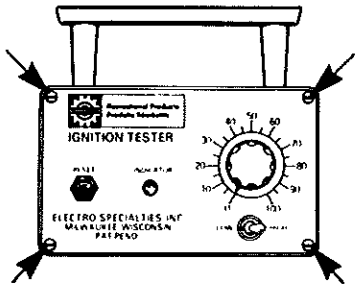
c) Connect **N** lead to negative terminal of 12 volt battery. Connect **P** lead to positive terminal of a fully charged 12 volt battery. Indicator lamp should light.

If lamp does not light, check tester batteries. If they are installed correctly and are good, check the clip lead for faulty connections. If no fault can be found, refer to the warranty statement for instructions for sending the tester back to Electro-Specialties, Inc.

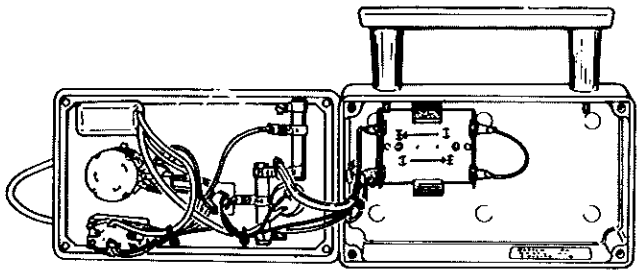


Battery replacement

1. Remove the four (4) screws securing cover to case.



2. Carefully lift cover.
3. Replace batteries with size "C" Alkaline batteries. Be sure to observe polarity markings on battery holder or lamp will not light.



4. Install cover on case carefully being certain that no wires are pinched between cover and case. Secure cover.

NOTE: Weak batteries will not impair tester operation or calibration. The light will glow dim.

Indicator knob alignment

Check indicator knob alignment by turning knob fully clockwise. The white mark on the knob must align with the no. 100 on the scale. If the mark does not line up with the no. 100, loosen the knob set screw, line the mark on the knob with the no. 100, and tighten the set screw. Recheck alignment.

NOTE: If after adjustment, the knob is turned fully counter-clockwise and it does not exactly align with the 0, it is no consequence.

The ignition tester may give false readings if the rivets on the back cover come in contact with metal.

INDEX PAGE

6 poles ignition system, 60W

test no. 1: charging coil output 5
test no. 2: trigger coil output 5
test no. 3: lighting coils output 6

6 poles ignition system, 60W with timing box (125 MX-6)

test no. 1: charging coil output 7
test no. 2: trigger coil output 7
test no. 3: timing box static verification 8

IGNITION TROUBLE SHOOTING CHARTS 9-10

6 POLES IGNITION SYSTEM (60W)

Test no. 1 Charging coil output

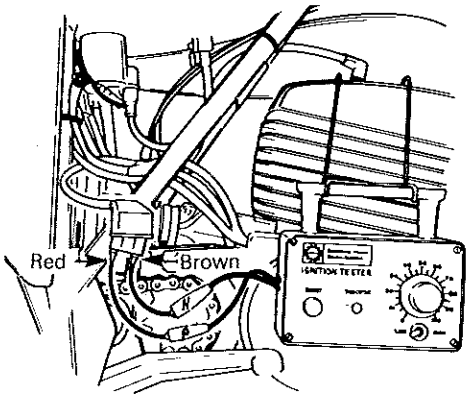
1. Disconnect wire connector at C.D.I. electronic box.
2. Connect tester P lead to the **red** wire coming from the charging coil using the harness adaptor, as illustrated. Connect test N lead, to the ground wire **(brown)**.
3. Set tester switch at LOW position and dial at **85.**
4. Set transmission in neutral, then kick start pedal down vigorously.

A. **Indicator lamp lights:** Charging coil output is up to specifications. Repeat test at least three (3) times to verify reading and check for consistency.

B. **Indicator lamp lights at lower setting:** Charging coil output is weak. Check for resistance, bad connections or broken flywheel magnets; replace if necessary.

C. **Indicator lamp lights intermittent:** Check for bad connections or loose components.

D. **Indicator lamp does not light:** Replace charging coil and repeat test, ensure proper grounding.



Test no. 2 Trigger coil output

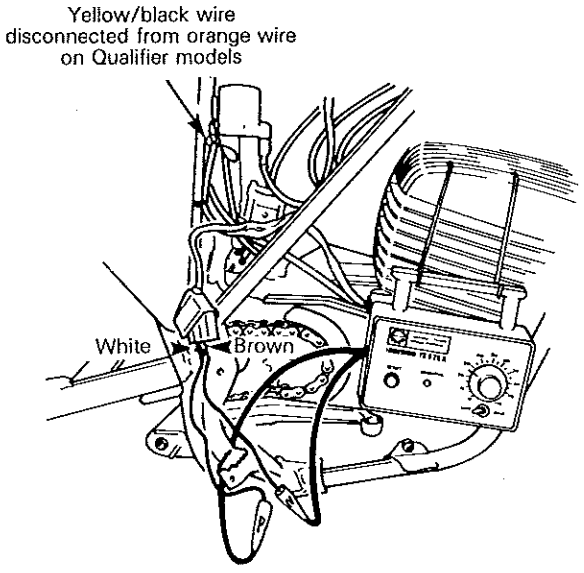
1. Disconnect wire connector at C.D.I. electronic box.
2. **On Qualifier models, disconnect the yellow/black wire from the orange wire (wiring harness).**
3. Connect test P lead to the **white** wire leading from trigger coil using the harness adaptor, as illustrated. Connect tester N lead to the ground wire **(brown)**.
4. Set tester switch at LOW position and dial at **25.**
5. Set transmission in neutral, then kick start pedal down vigorously.

A. **Indicator lamp lights:** Trigger coil output is up to specifications. Repeat test at least three (3) times to verify reading and check for consistency.

B. **Indicator lamp lights at lower setting:** Trigger coil output is weak. Check for resistance, bad connections or broken flywheel magnets. Replace if necessary.

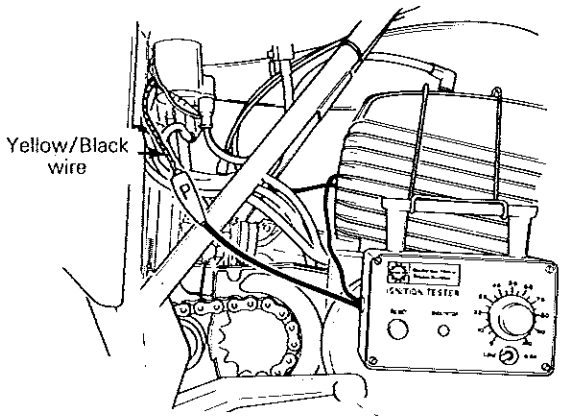
C. **Indicator lamp lights intermittent:** Check for bad connections or loose components.

D. **Indicator lamp does not light:** Grounding is defective or trigger coil is faulty, check and replace if necessary.

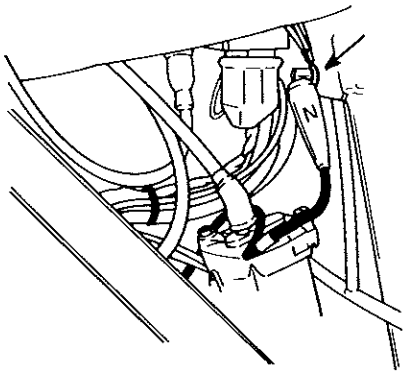


Test no. 3 Lighting coils output

1. Connect tester **P** lead to yellow/black wire leading from the magneto.



2. Connect tester **N** lead to the ground wire (yellow).



3. Set tester switch at LOW position and dial at **80**.
4. Set transmission in neutral, kick start down vigorously.

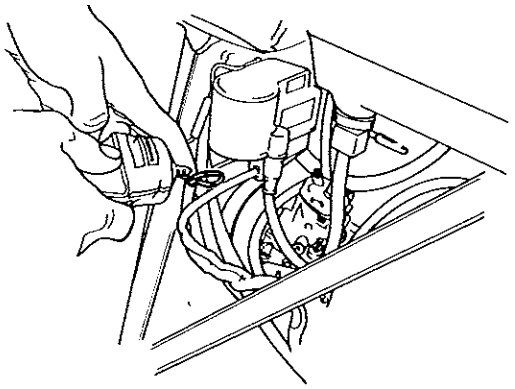
A. **Indicator lamp lights:** Lighting coils output is up to specificaitons. Repeat test at least three (3) times to verify reading and check for consistency.

B. **Indicator lamp lights at lower setting:** Lighting coils output is weak. Check for resistance, bad connections, or broken flywheel magnets. Replace if necessary.

C. **Indicator lamp lights intermittent:** Check for bad connections or loose components.

D. **Indicator lamp does not light:** Grounding is defective or lighting coils are faulty, check and replace if necessary.

On MX-6 250-400 models, when the lighting coils output test is completed, the yellow/black wire must be inserted into the magneto harness. Dielectric grease (or equivalent) must be used to provide water-proofing.



6 POLES IGNITION SYSTEM 60W WITH TIMING BOX (125 MX-6)

Test no. 1 Charging coil output

1. Disconnect wire connector at C.D.I. electronic box.
2. Connect tester **P** lead to the **red** wire coming from the charging coil using the harness adaptor, as illustrated. Connect test **N** lead, to the ground wire **(brown)**.
3. Set tester switch at LOW position and dial at **85.**
4. Set transmission in neutral, then kick start pedal down vigorously.

A. **Indicator lamp lights:** Charging coil output is up to specifications. Repeat test at least three (3) times to verify reading and check for consistency.

B. **Indicator lamp lights at lower setting:** Charging coil output is weak. Check for resistance, bad connections or broken flywheel magnets; replace if necessary.

C. **Indicator lamp lights intermittent:** Check for bad connections or loose components.

D. **Indicator lamp does not light:** Replace charging coil and repeat test, ensure proper grounding.

Test no. 2 Trigger coil output

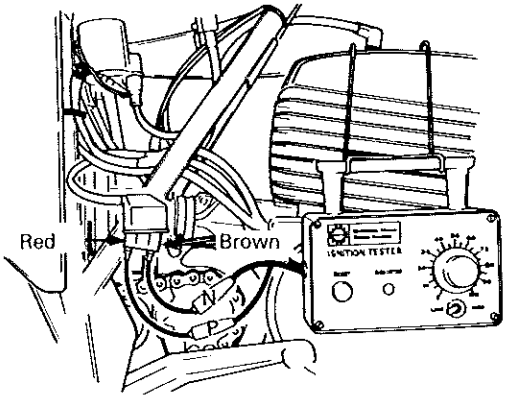
1. Disconnect wire connector at C.D.I. electronic box.
2. Connect test **P** lead to the **white/red** wire leading from trigger coil using the harness adaptor, as illustrated. Connect tester **N** lead to the ground wire **(brown)**.
3. Set tester switch at LOW position and dial at **70.**
4. Set transmission in neutral, then kick start pedal down vigorously.

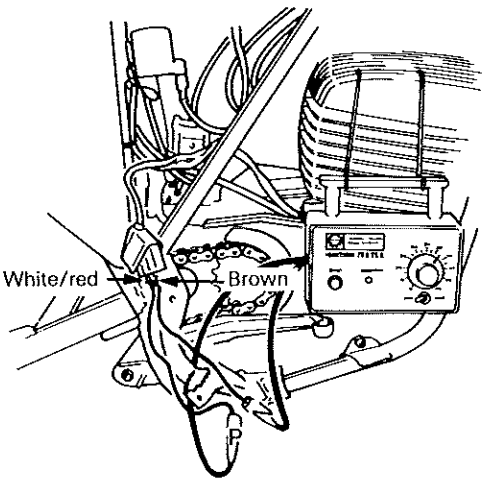
A. **Indicator lamp lights:** Trigger coil output is up to specifications. Repeat test at least three (3) times to verify reading and check for consistency.

B. **Indicator lamp lights at lower setting:** Trigger coil output is weak. Check for resistance, bad connections or broken flywheel magnets. Replace if necessary.

C. **Indicator lamp lights intermittent:** Check for bad connections or loose components.

D. **Indicator lamp does not light:** Grounding is defective or trigger coil is faulty, check and replace if necessary.





NOTE: The ignition system operation with timing box requires that the lighting coils leads be connected together and does not allow any test on the lighting coils.

CAUTION: Do not connect any lights or electrical equipment on the 125 MX-6 lighting coils or the ignition timing advance curve will be altered.

Test no. 3: Timing box static verification

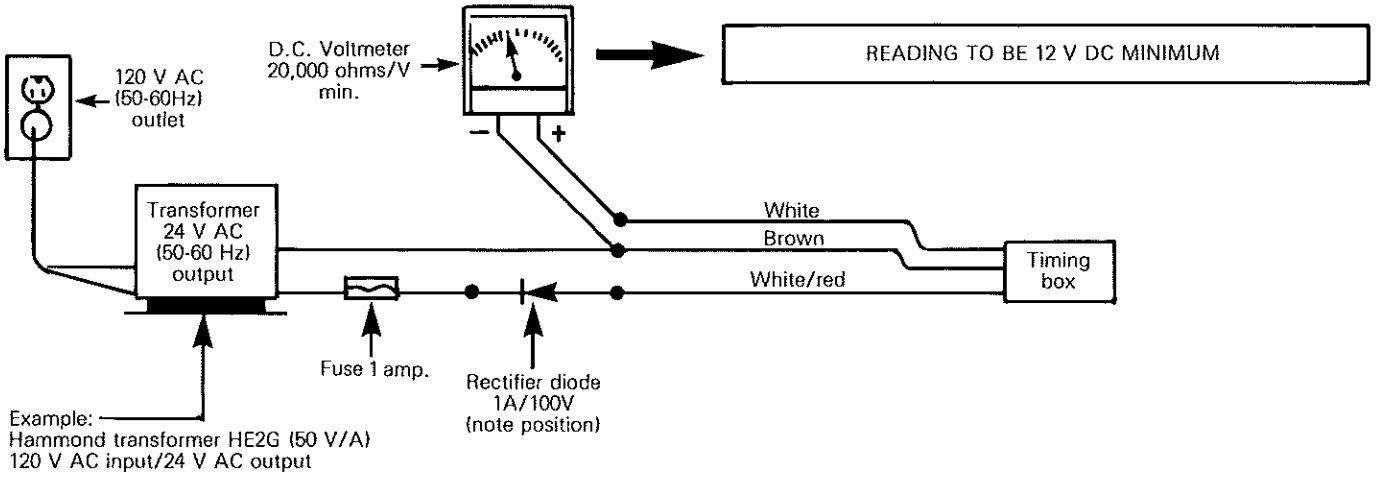
The timing box operation should be checked by following the procedure outlined under "Timing Box (125 MX-6)" in Section 03 Electrical Sub-Section 04 (Ignition Timing). However, a static test may also be performed on the timing box.

CAUTION: The following procedure must be carried out by a qualified technician and it is necessary that special equipment be available. It is highly recommended that the timing box static test be performed only by a specialized shop.

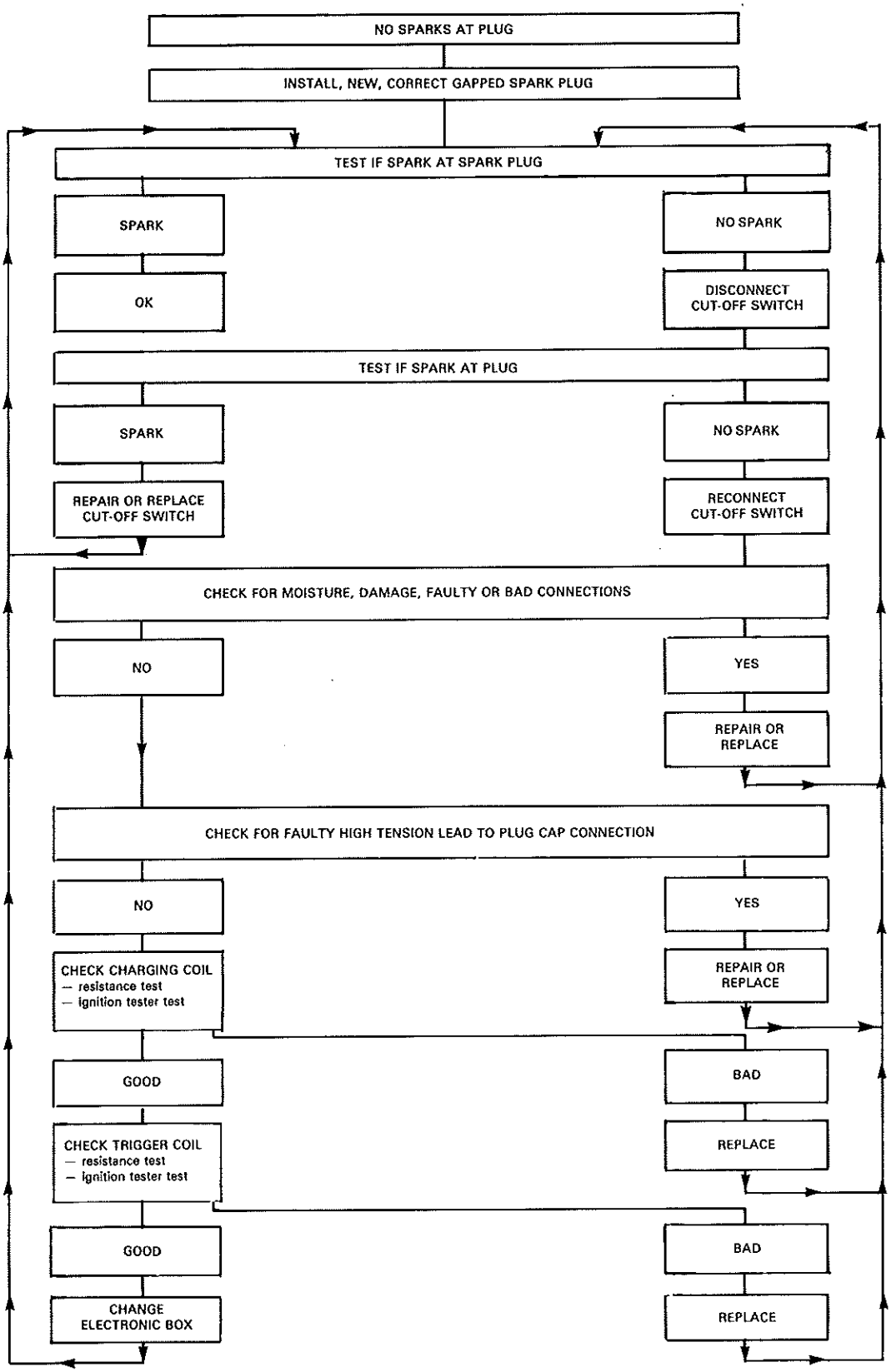
To perform the test proceed as illustrated; connect the wires according to the diagram and take a reading with a D.C. Voltmeter (20,000 ohms/V minimum).

If the voltmeter reading is 12 V D.C. or higher, the timing box is within the specifications.

CAUTION: Transformer output must not exceed 26 V AC or damage to the timing box could occur.



IGNITION TROUBLE SHOOTING CHART



125 MX-6
IGNITION TROUBLE SHOOTING CHART

