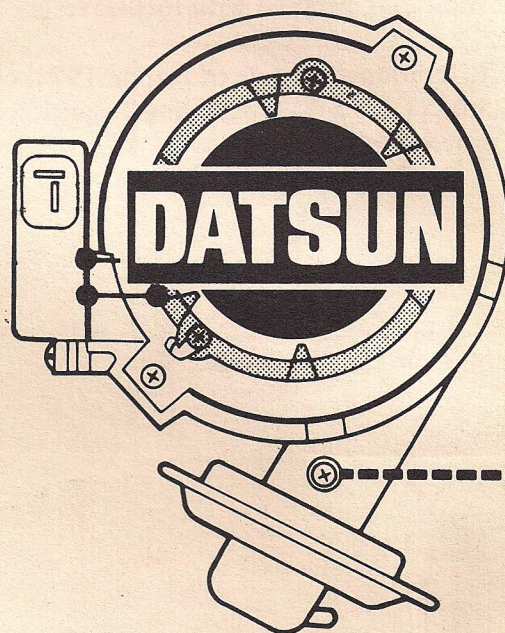


Transistor Ignition **TROUBLE- SHOOTING**

(ALL 1974 THRU
1979 MODELS)



NATIONAL SERVICE
TECHNICAL TRAINING
DEPARTMENT

TRIGNITION SYSTEM TROUBLESHOOTING

ALL 1974 THRU 1979 MODELS

TRIGNITION SYSTEM TROUBLESHOOTING USING THE KENT-MOORE J-26350 ANALYZER

The recently distributed Kent-Moore J-26350 Transistor Ignition System Analyzer provides a quick, simple and highly accurate method of checking the entire transistor ignition system. The four adapter harnesses included in the Analyzer Kit, permit rapid diagnosis of all 1974 through 1979 Datsuns equipped with trignition. When using the J-26350 Analyzer, perform all tests in the following sequence. If a vehicle fails any test, correct the indicated problem before proceeding with further testing.

Preliminary Steps.

1. Before connecting the analyzer, make a quick check of the vehicle battery condition and cranking performance. Cranking speed should be between 300-400 rpm, and battery cranking voltage must be at least 9.6v.
2. If possible, start the engine and allow it to run 5-15 minutes with the hood closed. This will bring all components to normal operating temperature.

If the vehicle will not start, check for spark at the ignition coil high tension wire. If a strong spark is noted, the problem is in the ignition system secondary circuit or some other engine system. If no spark is indicated, proceed with further tests.

NOTE: If the vehicle is a 1974 260-Z with a production date of March, 1974, or earlier, see 1975 Technical Bulletin TS75-065 (EE75-002) regarding Trignition Unit and Connector Replacement before proceeding.

Connecting the Analyzer.

3. TURN THE IGNITION KEY TO "OFF".
4. Disconnect the vehicle harness from the trignition unit. On models with screw type connectors, first remove the trignition unit from the kick panel.

5. Select the appropriate analyzer harness and connect it to the analyzer with the connector body screw facing "UP". Make sure the connector locks securely in place. (See Fig. 1)



Fig. 1

6. Connect one end of the analyzer harness to the trignition unit and the other to the vehicle harness as follows:
- 1974 and 1974.5 260-Z Models: Simply plug in the white connectors. If the vehicle is equipped with an automatic transmission, be sure to connect the analyzer's white pigtail lead to the vehicle's black/yellow lead.
 - 1977 49-State B210 High Mileage Model and All 1978 Models: Simply plug in the black connectors.
 - Models equipped with screw type connectors:
 - 1975-76 Federal 280-Z with 7-wire harness: Attach all seven harness terminals at each end, including the yellow pigtail lead. (See Fig. 2)

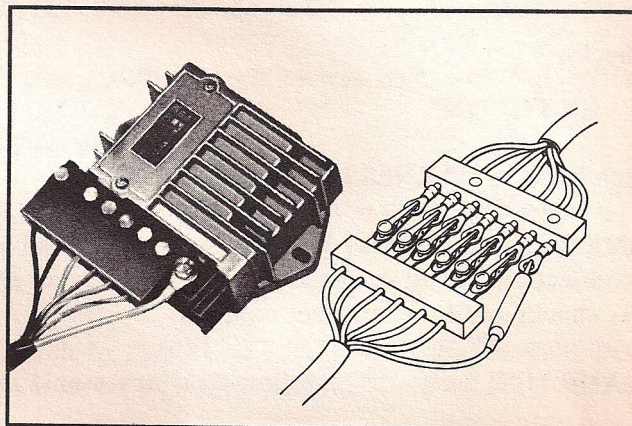


Fig. 2 7-Wire Hook-Up

- (2) 1975-76 California 280-Z with 6-wire harness: Attach all six *harness body* connectors. Disregard the yellow pigtail lead. (See Fig. 3)

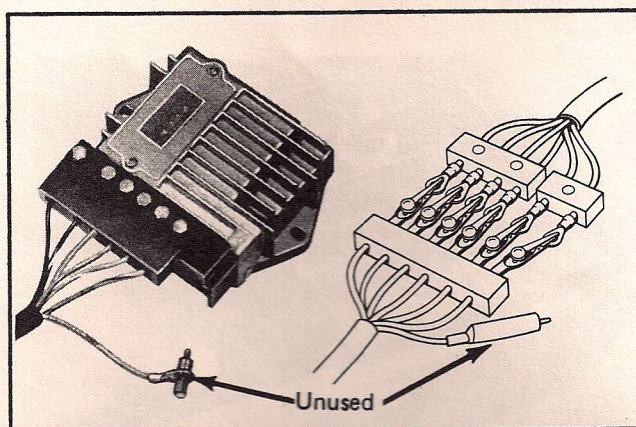


Fig. 3 6-Wire Hook-Up

- (3) All models with 5-wire harness: Connect the harness as shown in Fig. 4.

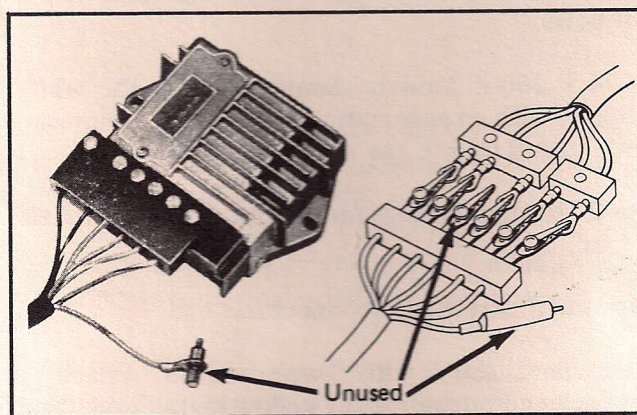


Fig. 4 5-Wire Hook-Up

Performing Analyzer Checks.

7. TURN IGNITION KEY TO "ON".
8. Turn analyzer switch knob to HARNESS.
9. Push analyzer LAMP TEST button. All lamps should light. If all lamps do not light, recheck analyzer connections. If all connections are OK, analyzer is defective. Proceed with volt-ohmmeter checks and have analyzer repaired.
10. Release analyzer LAMP TEST button. The following lamps should remain ON:
 - Battery
 - Coil continuity
 - Advance control relay circuit (vehicles with dual pickup coils only: 1974-74.5 260-Z; 1975-76 49-State 280-Z).

If any of the above lamps do not remain ON, check the following table:

Lamp Out	Possible Cause
Battery	Low battery voltage, loose or corroded connections, loose analyzer harness connection.
Coil Continuity	Defective ballast resistor (where applicable) or ignition coil. Loose or corroded connections in ignition system primary circuit.
Advance Control Relay Circuit	<ol style="list-style-type: none"> 1. Engine coolant temperature below about 100°F (normal for a cold engine). Recheck for light ON when engine is at normal operating temperature. 2.. Defective temperature switch or EGR/Retard Relay. 3. Loose or corroded connections in Advance Control Relay Circuit.

11. With analyzer switch in HARNESS TEST position, crank the engine.

a. Observe BATTERY and COIL CONTINUITY lamps.

(1) Lamps stay ON – O.K.

(2) Lamps FLASH – voltage available at trignition unit during cranking is below 9.0. Recheck battery, starting system, and trignition unit power supply circuit (Ignition Switch, Ignition Relay, Connectors, Wiring).

(3) Lamps OUT – voltage available at trignition unit during cranking is below 8.4. Recheck battery, starting system, and trignition unit power supply (Ignition Switch, Ignition Relay, Connectors, Wiring).

b. Observe ADVANCE and RETARD lamps.

(1) For vehicles with dual pickup coils (1974-74.5 260-Z; 1975-76 Federal 280-280-Z) *both* lamps should be ON while cranking.

(2) For vehicles with a single pickup coil, only RETARD lamp should be ON.

With ignition key in ON position:

12. Turn analyzer switch to TRIG-UNIT OUTPUT – LOW RPM. Push ALL TRIG UNITS test button (on vehicles equipped with E12-13 or E12-06K trig units, press *both* buttons).

13. Turn analyzer switch to TRIG-UNIT OUTPUT – HIGH RPM. Push ALL TRIG UNITS test button (on vehicles equipped with E12-13 or E12-06K trig units, press *both* buttons).

TRIG-UNIT OUTPUT lamp should illuminate. If not, replace trig unit and retest.

MANUAL TESTING OF TRIGNITION SYSTEMS USING A VOLT-OHMMETER

If a J-26350 Trignition Analyzer is not available, a volt-ohm-milliammeter (V.O.M.) may be used to diagnose trignition problems. While this method requires more time, it can nevertheless, provide accurate results. Follow the steps in the sequence below. If a "FAIL" result is indicated, correct the problem before continuing. If all tests indicate "OK", replace the trig unit.

Do not replace the unit until all tests have been completed and indicate "OK".

Preliminary Steps.

1. Make a quick check of the battery condition and cranking performance. Cranking speed should be between 300-400 rpm, and battery cranking voltage must be at least 9.6v.
2. If possible, start the vehicle and let it run for 5-15 minutes with the hood closed. This will bring all components to normal operating temperature.

If the vehicle will not start, check for spark at the ignition coil high tension wire. If a strong spark is noted, the problem is in the ignition system secondary circuit or some other engine system. If no spark is indicated, proceed with further tests.

NOTE: If the vehicle is a 1974 260-Z with a production date of March, 1974, or earlier, see 1975 Technical Bulletin TS75-065 (EE75-002) regarding trignition unit and connector replacement *before proceeding*.

3. It is not necessary to disconnect the trig unit harness when performing the tests that follow.

On models with screw type terminals, you may want to remove the trig unit from the kick panel for better access.

On models with quick-disconnect plugs, simply insert the meter probes into the back of the appropriate connector cavity *on the trignition unit side*.

TRIGNITION TESTING PROCEDURE

Experience has proven that most trignition problems are caused by poor power input to the trig box, a poor trig box ground, or a pick-up coil which fails at high temperature. When performing the following tests, use a good quality volt-ohm-milliammeter which can measure accurately in the following ranges:

0-20 V D.C.

0-3 V D.C.

0-1000 Ω

0-10 V A.C.

TEST	METER & RANGE	CONDITIONS	SPECIFICATION	RESULT	IF N.G. CHECK
1a. Trig Box Power Supply	Voltmeter (0-20)	Key On	No lower than 1 v less than battery voltage (11.5 min.)		Wiring from ignition switch to trignition box.
1b. Trig Box Power Supply (Cranking)	Voltmeter (0-20)	Ignition key to "Start", engine cranking	No lower than 1 v less than battery voltage (8.5 min.)		Wiring from ignition switch to trignition box.
2a. Trig Unit Ground Circuit	Voltmeter (0-3)	Ignition key to "Start"; engine cranking	.5 v or less		Wiring from trignition box to ground
2b. Trig Unit Ground Circuit	Voltmeter (0-3)	Ignition key to "Start"; engine cranking	.5 v or less		Wiring from chassis ground to battery negative post

BEFORE PROCEEDING WITH PICKUP COIL TESTS, MAKE SURE THAT ENGINE & PICKUP COIL ARE AT OR ABOVE NORMAL OPERATING TEMPERATURE.

3a. Pick-up coil resistance	Ohmmeter (x 10 scale)	Key Off	1. 260Z - 450-750 Ω 2. All 1979 - Approx. 400 Ω 3. All others - approx. 720 Ω		Pick-up coil and wiring
3b. Advance pick-up coil resistance 7 WIRE HARNESS VEHICLES ONLY	Ohmmeter (x 10 scale)	Key Off	1. 260Z - 450-750 Ω 2. All others - approx. 720 Ω		Advance pick-up coil wiring
4. Advance control relay circuit 7 WIRE HARNESS VEHICLES ONLY	Voltmeter (0-20)	Key On	Coolant temp. above approx. 150 ^o f, 12v Coolant temp. below approx. 80 ^o f, 0 v		Thermal switch, EGR-Advance/Retard Relay, Wiring & connectors between relay & trignition unit.
5a. Pick-up coil output	AC Voltmeter (0-5v A.C.)	Ignition key to "Start"; engine cranking	Rhythmic deflection (reading will steady and increase as engine speed increases).		Pick-up coil and wiring to trig box; also reluctor
5b. Advance pick-up coil output 7 WIRE HARNESS VEHICLES ONLY	AC Voltmeter (0-5 v A.C.)	Ignition key to "Start"; engine cranking	Rhythmic deflection (reading will steady and increase as engine speed increases)		Pick-up coil and wiring to trig box; also reluctor

Perform tests in the above sequence. If a vehicle fails any test, check the components and/or wiring as indicated before proceeding. If a vehicle passes all of the above tests and still has no spark, replace the trig box.

NOTE: These procedures and specifications are general, but apply to most Datsuns. If additional problems should be encountered, or exact specifications needed, refer to the appropriate Service Manual.

METER

Voltmeter

RANGE

D.C., 0 – 20 volts

CONDITIONS

Ignition Key "ON"

SPECIFICATIONS

No lower than 1.0 volt less than battery voltage; **11.5 minimum.**

IF N.G. , CHECK

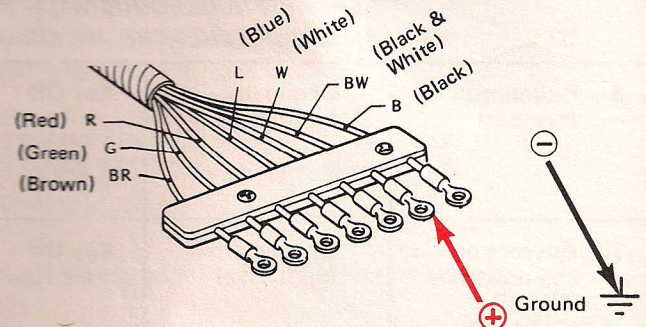
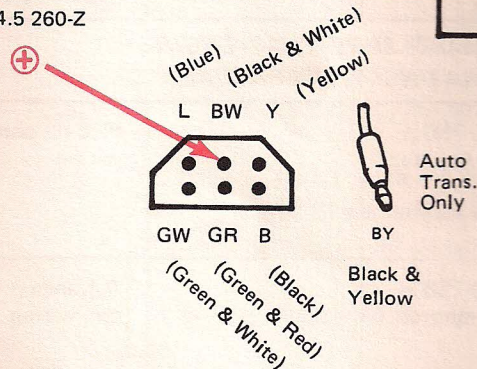
Wiring and connectors from ignition switch to Trig. unit; also, ignition relay where applicable.

If above are O.K., proceed to tests 2a. and 2b.

1974–74.5 260-Z

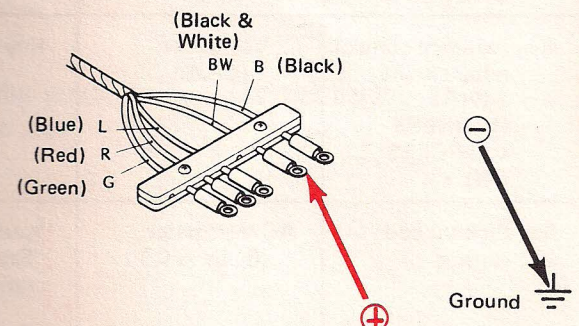
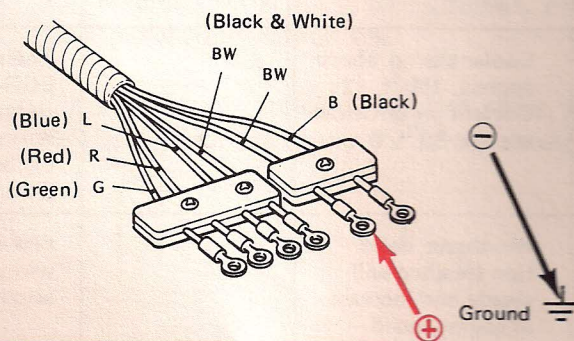
PLACE TEST PROBES AS SHOWN

7 Wire Harness



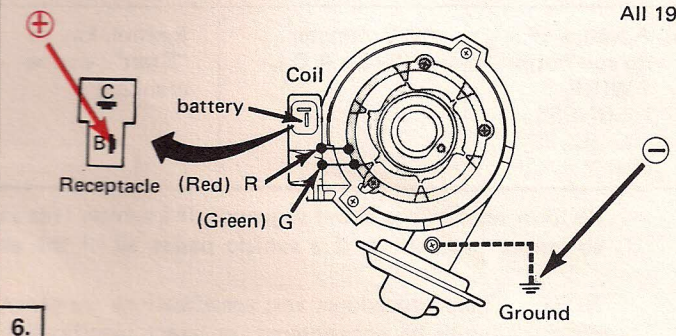
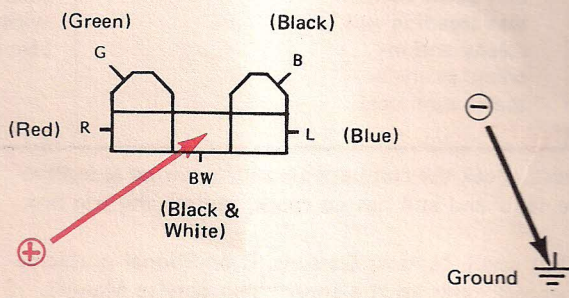
6 Wire Harness

5 Wire Harness



1977 B210 FU & All 1978

All 1979



If O.K., proceed to test 1b. ➡

METER

Voltmeter

RANGE

D.C., 0–20 volts

CONDITIONS

Ignition key to "START"; Engine cranking

SPECIFICATIONS

No lower than 1.0 volts less than battery voltage: **8.6 minimum**

IF N.G., CHECK

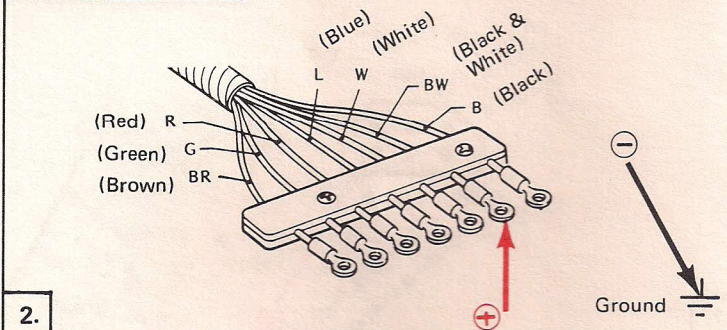
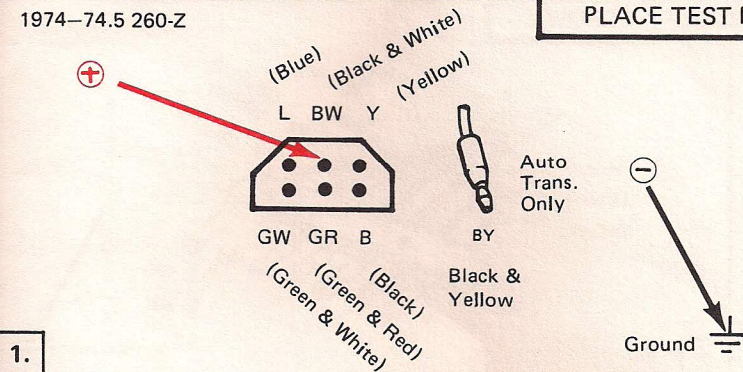
Wiring and connectors from ignition switch to Trig unit; also, ignition relay where applicable.

If above are O.K., proceed to tests 2a. and 2b. ➔

1974–74.5 260-Z

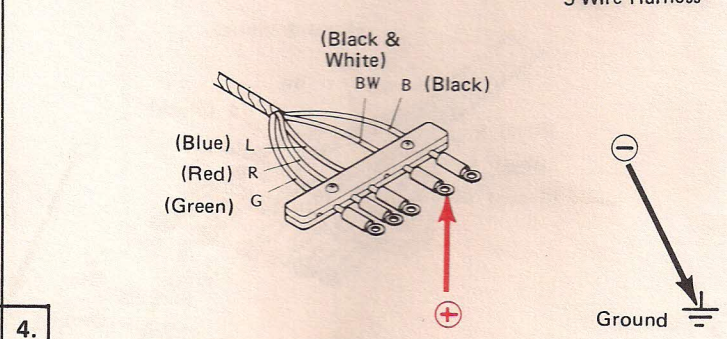
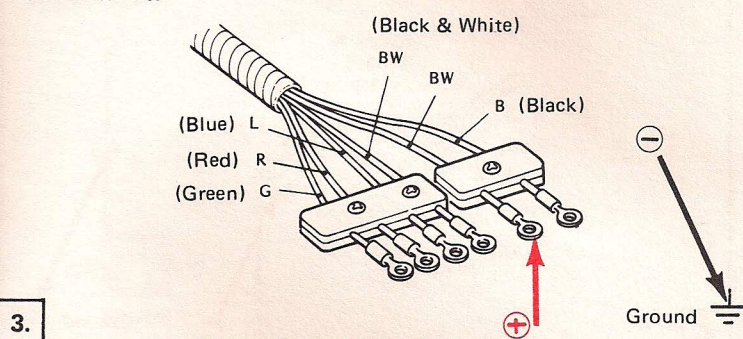
PLACE TEST PROBES AS SHOWN

7 Wire Harness



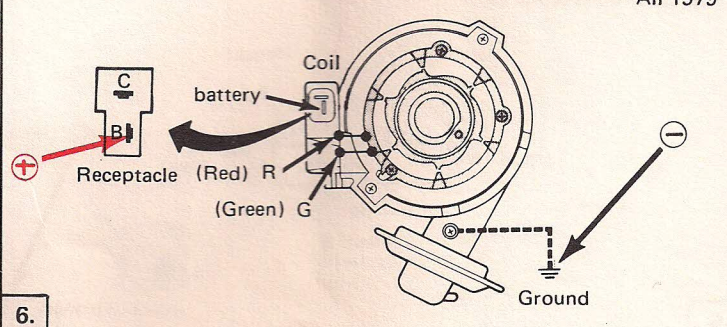
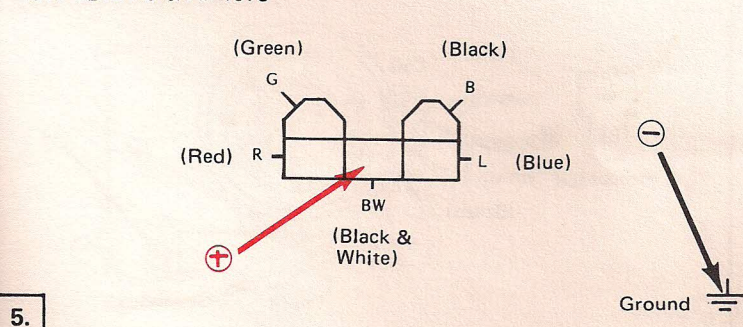
6 Wire Harness

5 Wire Harness



1977 B210 FU & All 1978

All 1979



If O.K., proceed to test 2a. ➔

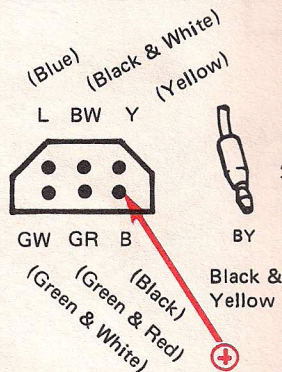
METER	Voltmeter
RANGE	D.C., 0-3 volts
CONDITIONS	Ignition key to "START", engine cranking
SPECIFICATIONS	0.5 volts or less
IF N.G. CHECK	Wiring and connectors from Trig. unit to chassis ground terminal.

1974-74.5 260-Z

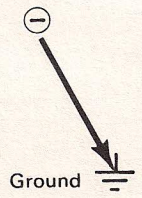
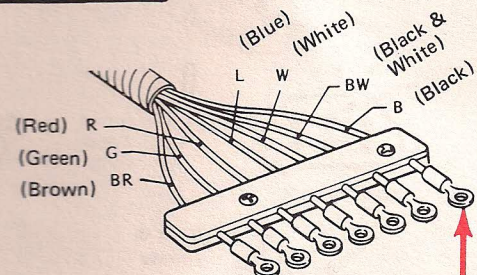
PLACE TEST PROBES AS SHOWN

7 Wire Harness

1.

Auto Trans.
OnlyBlack &
Yellow

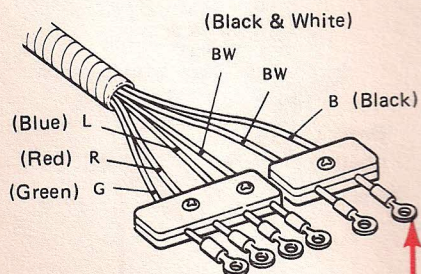
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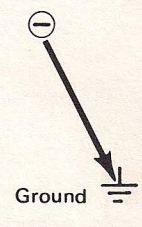
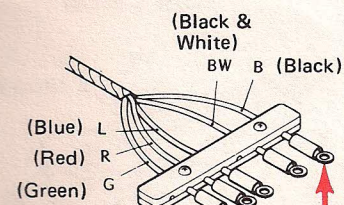
6 Wire Harness

5 Wire Harness

3.



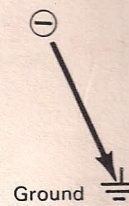
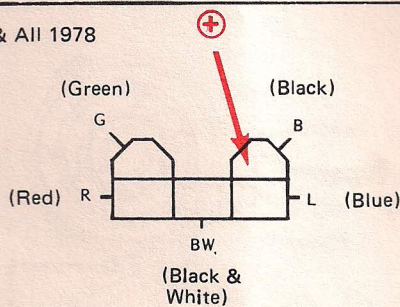
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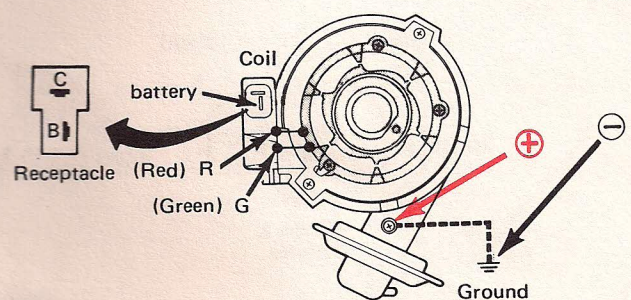
1977 B210 FU & All 1978

All 1979

5.



6.



Ground

← If N.G., correct problem and repeat Tests 1a. and 1b.

If O.K., proceed to Test 2b. →

7 TEST 2b – TRIG UNIT GROUND CIRCUIT

METER Voltmeter

RANGE D.C., 0–3 volts

CONDITIONS Ignition key to "START", engine cranking

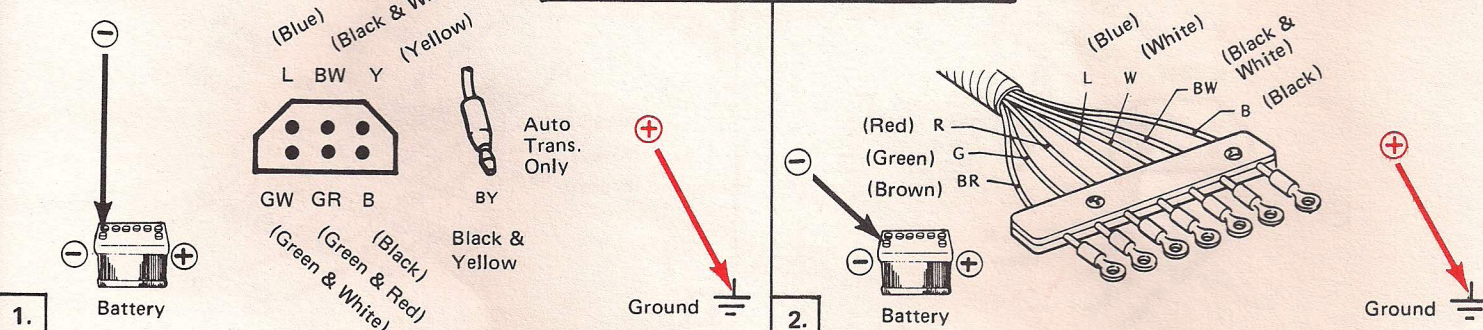
SPECIFICATIONS **0.5 volts or less**

IF N.G., CHECK Wiring from chassis ground to battery negative post, including battery cable terminals.

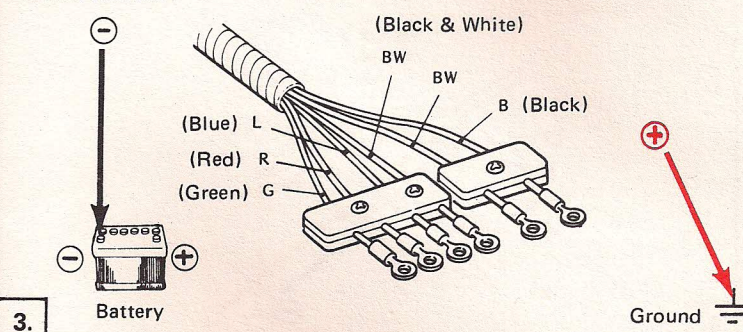
1974–74.5 260-Z

PLACE TEST PROBES AS SHOWN

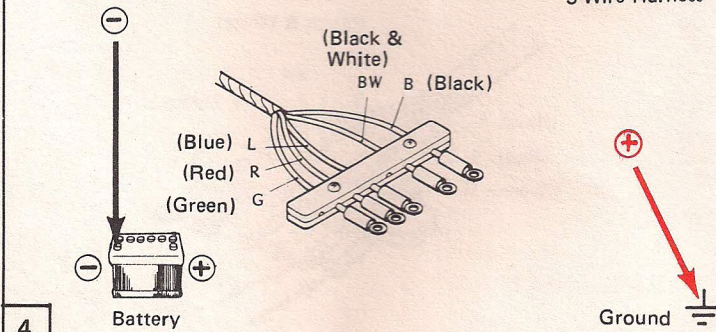
7 Wire Harness



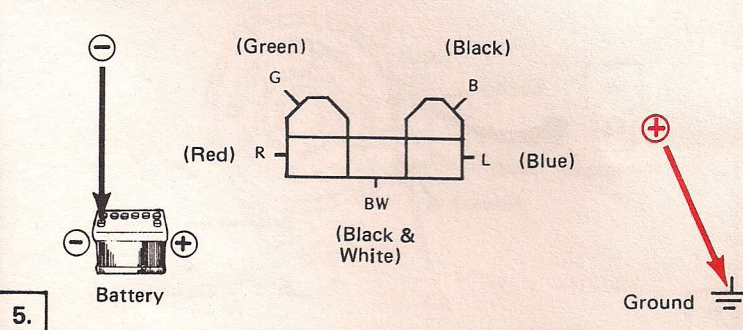
6 Wire Harness



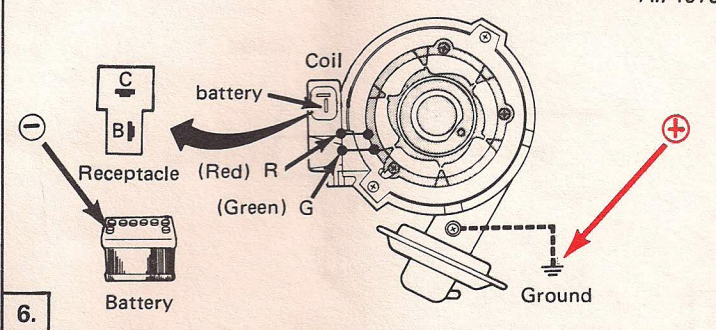
5 Wire Harness



1977 B210 FU & All 1978



All 1979



← If N.G., correct problem and repeat Tests 1a. and 1b.

If O.K., proceed to Test 3a. →

8

TEST 3a — PICK-UP COIL RESISTANCE

METER

Ohmmeter

RANGE

x10 or x100

CONDITIONS

Ignition key "OFF"

- SPECIFICATIONS
1.

All 260-Z —

450 to 750 Ω
2.

All 1979 —

Approx. 400 Ω
3.

All others —

Approx. 720 Ω

NOTES

Engine and pick-up coil must be at or above normal operating temperature.

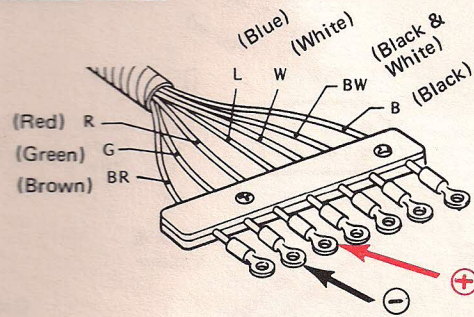
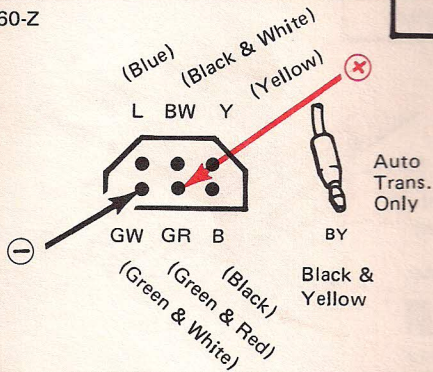
IF N.G., CHECK

Pick-up coil; wiring and connectors between pick-up coil and Trig. box.

1974–74.5 260-Z

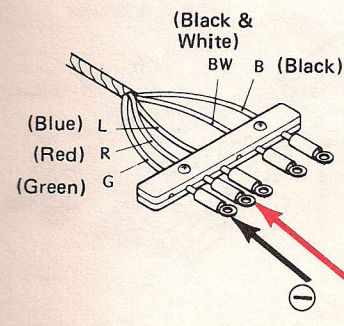
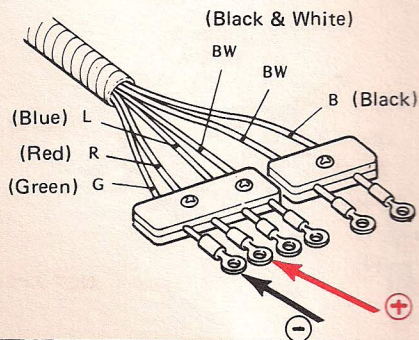
PLACE TEST PROBES AS SHOWN

7 Wire Harness



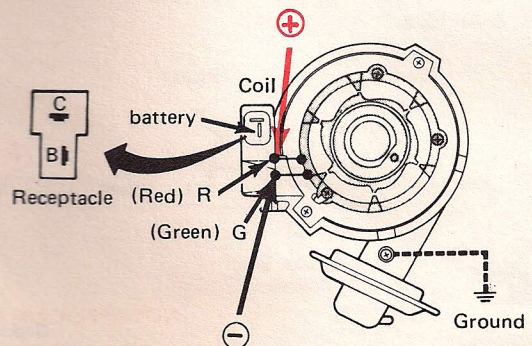
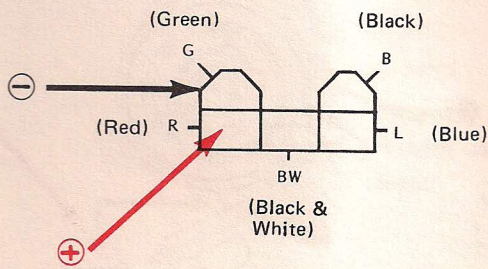
6 Wire Harness

5 Wire Harness



1977 B210 FU & All 1978

All 1979



If O.K., 7-wire harnesses proceed to Test 3b.

All others proceed to Test 5.

METER Ohmmeter

RANGE x10 or x100

CONDITIONS Ignition key "OFF"

SPECIFICATIONS

1. 260-Z **450 to 750 Ω**
2. 280-Z **Approx. 720 Ω**

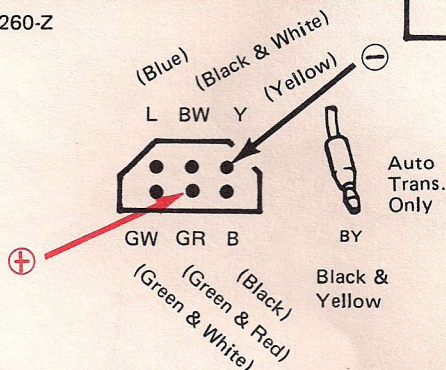
NOTES Engine and pick-up coil must be at or above normal operating temperature.

IF N.G., CHECK Pick-up coil; wiring and connectors between pick-up coil and Trig. box.

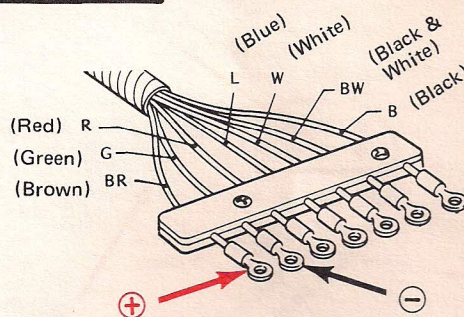
1974-74.5 260-Z

PLACE TEST PROBES AS SHOWN

7 Wire Harness

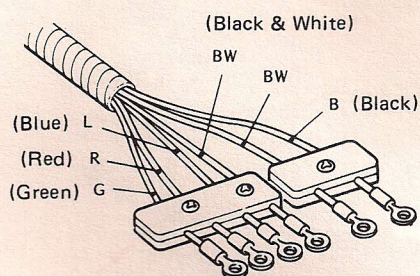


1.



2.

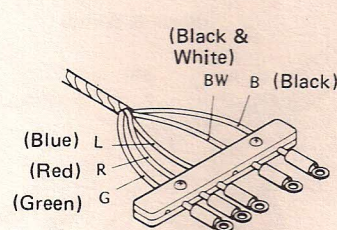
6 Wire Harness



NOT APPLICABLE

3.

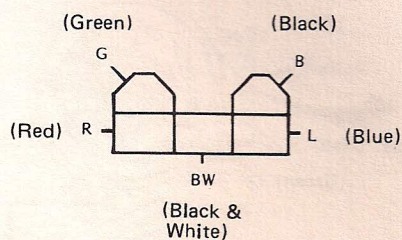
5 Wire Harness



NOT APPLICABLE

4.

1977 B210 FU & All 1978

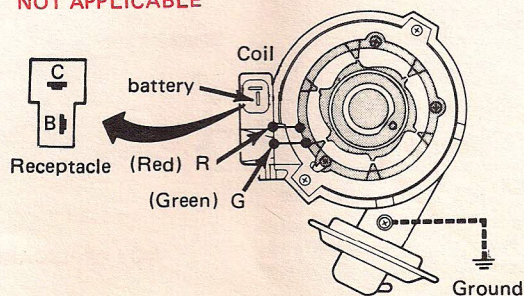


NOT APPLICABLE

5.

NOT APPLICABLE

All 1979



6.

If O.K., proceed to Test 4 ➔

METER Voltmeter

RANGE 0 to 20 volts

CONDITIONS Ignition Key "ON"

SPECIFICATION

1. 260-Z
 - a. Coolant temp. below 80°F. **0 volts**
 - b. Coolant temp. above 110°F. **12 volts**
2. 280-Z
 - a. Coolant temp. below 120°F. **0 volts**
 - b. Coolant temp. above 150°F. **12 volts**

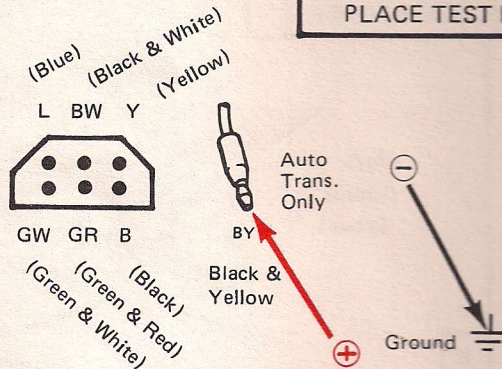
NOTES At coolant temperatures between specified limits, reading may be either 0 or 12 volts. If tested cold, recheck when hot; if tested hot, recheck when cold.

IF N.G., CHECK Thermal switch, EGR-advance/retard relay, wiring and connectors between the relay and the Trig unit.

1974-74.5 260-Z

PLACE TEST PROBES AS SHOWN

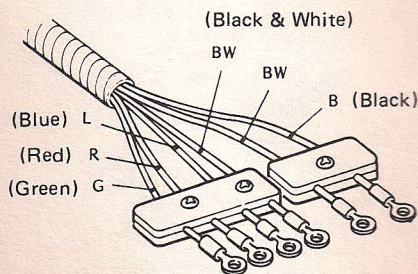
7 Wire Harness



1.

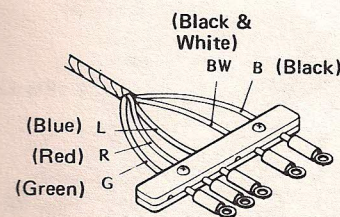
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6 Wire Harness



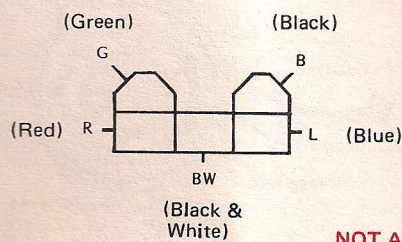
3.

5 Wire Harness



4.

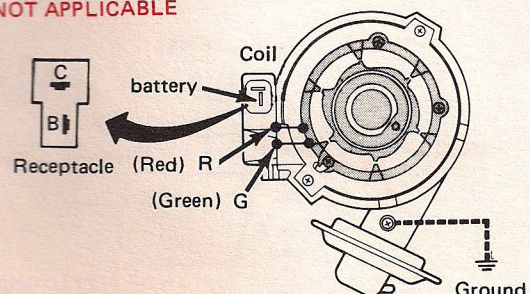
1977 B210 FU & All 1978



5.

NOT APPLICABLE

All 1979



6.

If O.K., proceed to Test 5a. ➡

METER Voltmeter

RANGE A.C., 0 to 5 or 0 to 10 volts

CONDITIONS Ignition key to "START", engine cranking.

SPECIFICATIONS **Rhythmic needle deflection during cranking; steady reading with engine running.**

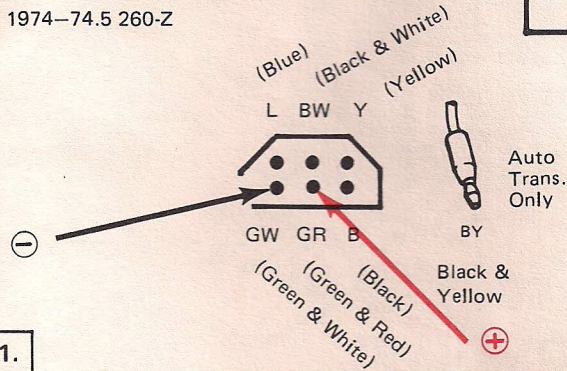
NOTES Reading will increase as engine speed increases.

IF N.G., CHECK Pickup coil; reluctor, wiring and connections between the pickup coil and the Trig unit.

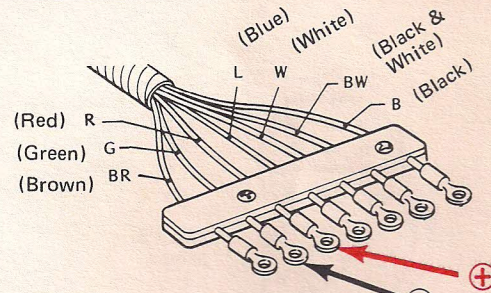
1974-74.5 260-Z

PLACE TEST PROBES AS SHOWN

7 Wire Harness



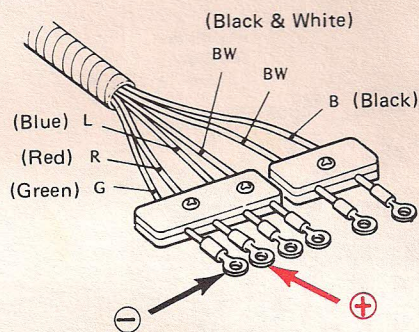
1.



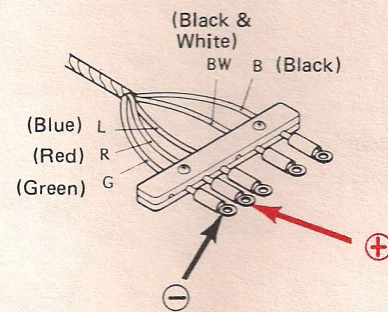
2.

6 Wire Harness

5 Wire Harness



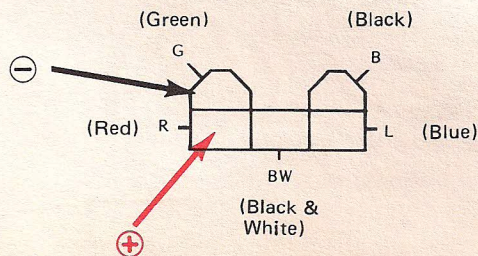
3.



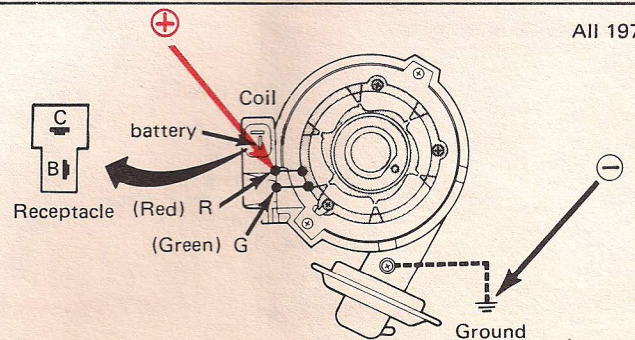
4.

1977 B210 FU & All 1978

All 1979



5.



6.

All except 7-wire harness.
If O.K. and still no spark, replace Trig unit.

7-wire harnesses.
If O.K. proceed to Test 5b →

METER Voltmeter

RANGE A.C., 0 to 5 or 0 to 10 volts

CONDITIONS Ignition key to "START", engine cranking.

SPECIFICATIONS **Rhythmic needle deflection during cranking; steady reading with engine running.**

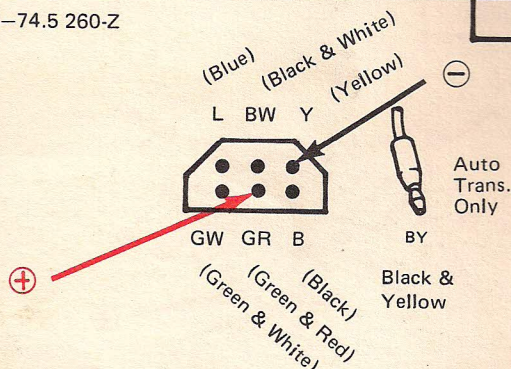
NOTES Reading will increase as engine speed increases.

IF N.G., CHECK Pickup coil, wiring and connectors between pickup coil and Trig unit.

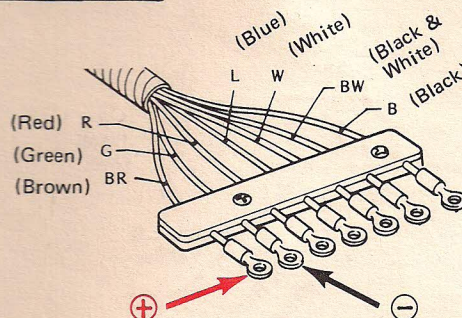
1974-74.5 260-Z

PLACE TEST PROBES AS SHOWN

7 Wire Harness

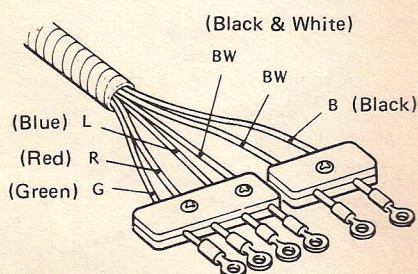


1.



2.

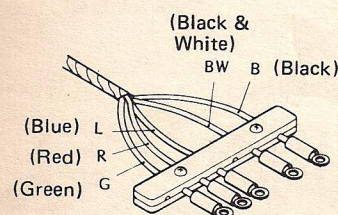
6 Wire Harness



3.

NOT APPLICABLE

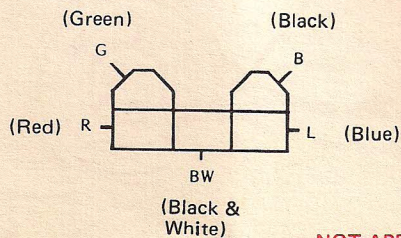
5 Wire Harness



4.

NOT APPLICABLE

1977 B210 FU & All 1978

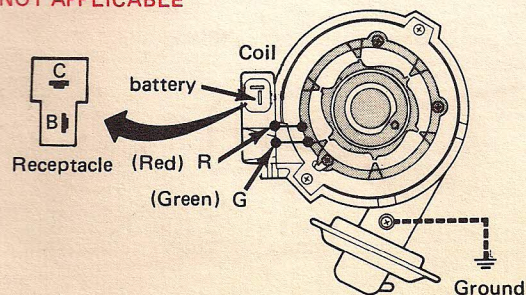


5.

NOT APPLICABLE

NOT APPLICABLE

All 1979



6.

If O.K. and still no spark, replace the Trig unit.