Supplement

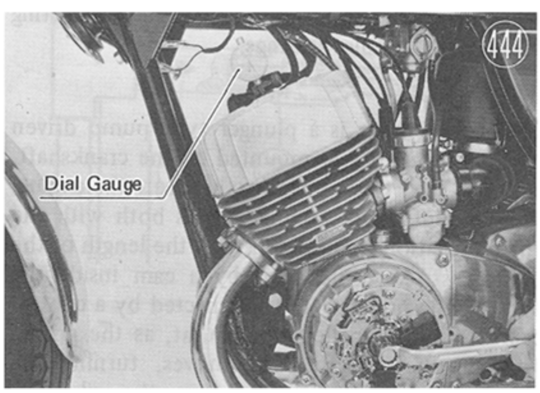
1. ENGINE : DETAILED MAINTENANCE

1) Ignition Timing Adjustment (H1-E)

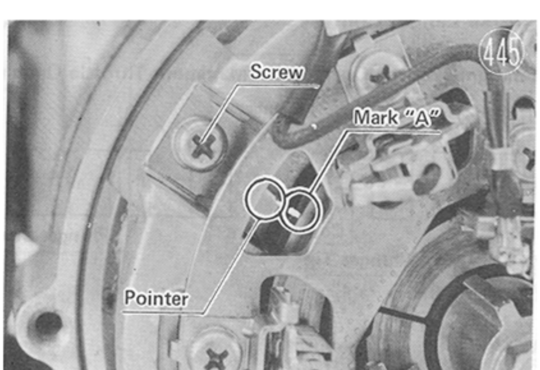
Failure to keep the ignition correctly adjusted leads to such troubles as loss of power, poor acceleration, knocking, and overheating. But with the CDI system the timing operation is electrical, rather than mechanical, so that ignition does not change as parts wear (because there are no moving parts to wear besides the carbon brushes), and once timing is set it never needs to be re-adjusted unless parts are replaced, screws should come loose, or the ignition is disassembled for some reason.

a. Adjustment procedure:

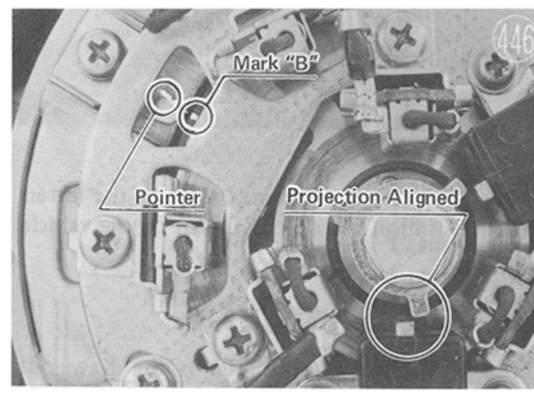
- Take out the two dynamo cover mounting screws and remove the dynamo cover and gasket.
- Remove the spark plug from the left cylinder head, and mount a dial gauge and TDC finder (special tool) in the spark plug hole.
- Use a 13 mm wrench on the SG (signal generator) rotor mounting bolt to turn the crankshaft counterclockwise, and find top dead center.



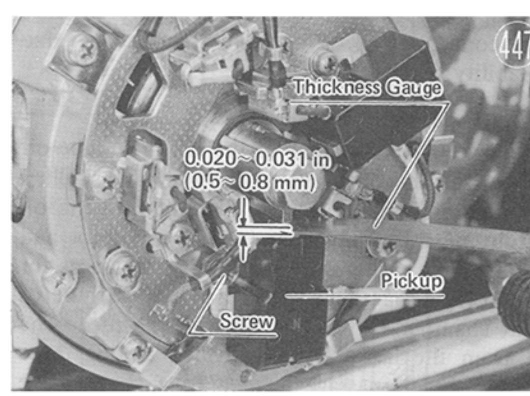
- Zero the dial gauge at TDC, and then turn the crankshaft clockwise to 23° (1.157 in, 2.94 mm) before TDC, which in terms of piston position means the piston is 0.1157 in. (2.94 mm) from TDC.
- At the 23° BTDC point, the mark (A) stamped on the end of the generator rotor should coincide with the pointer. If they are not aligned, loosen the pointer mounting screw, align the pointer with the mark, and then firmly tighten the screw again.



- Turn the crankshaft counterclockwise until another generator rotor mark (B) appears, and align this mark with the pointer.
- At this point the left edge of the SG rotor projection must coincide with the right edge of the pickup projection. If these do not coincide, loosen the three mounting plate screws, set a screwdriver to the pry points and align the pickup and SG rotor projections properly, and then tighten the screws well.



- Turn the SG rotor back counterclockwise a little to line up the SG rotor projection with the pickup projection so they are in a straight line, and measure the gap between them with a thickness gauge. The gap is correctly adjusted when it is 0.020 ~ 0.031 inch (0.5 ~ 0.8 mm).

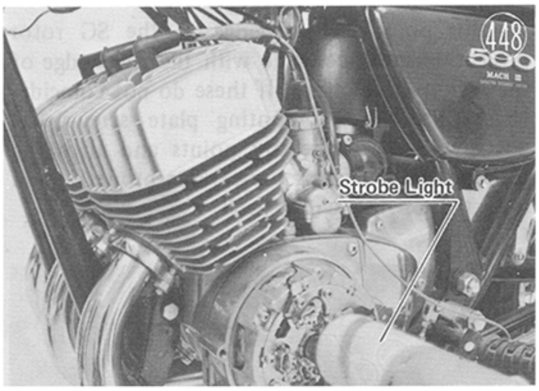


- If the gap is outside this range, loosen the mounting screw on either side of the pickup, move the pickup up or down until the correct gap is obtained, and then tighten the screws again.

b. Timing check procedure:

- Remove the dial gauge and TDC finder, and screw the spark plug back in.

- Set up a strobe light, connecting the two leads to the battery and the single lead to the left spark plug.
- Open the fuel tap and turn the ignition to the ON position.
- Kick start the engine and set it to 4,000 rpm.
- Check that under the strobe light the pointer is pointing to mark (A).



NOTE: The (A) & (B) marks refer to the letters in the illustration and do not appear on the vehicle itself.

2) Lubrication System (H2-B)

The lubrication system used is the Kawasaki Injectlube. In this system, oil is kept in a separate tank, from which it is pumped to the engine by the oil pump and mixed with the gasoline. The rate at which the oil is pumped, which varies with the needs of the engine, is controlled by engine rotational speed and throttle opening. With the idle lubrication that results, engine performance is vastly improved, and the fresh, high viscosity oil supplied directly to the crankshaft bearings and connecting rod big ends increases engine durability.

(1) Oil passage

Fig. 450 is a diagram of the H2 Injectlube oil passages. The oil input to the pump is supllied by a hose from the engine oil tank, and the oil output of the pump goes to the carburetor and the cylinder. There are three outlet passages for oil injection via check valve into each carburetor froat chamber to mix the oil with the fuel. The oil from the last outlet is divided among three passages, each passage leading to a check valve installed at the rear side of a cylinder from where the oil goes to lubricate the connecting rod big end via the crankshaft bearings, oil holder and crank pin, in that order. A notch cut into the big end of the connecting rod enables the fuel/oil mixture to reach the crank pin and crankshafts bearings.

In order to lubricate the main bearing at the right end, there is a small hole in the scavenge passage in the right side of the crankcase, and this goes through to the right main bearing.

On the scavenge stroke a small portion of the fuel-oil (plus air) mixture being drawn in through the scavenge port, goes through this hole to the main bearing for lubrication. In addition, after the engine is stopped the gasoline volatizes from the fuel-oil mixture still adhering to the scavenge port wall, and the oil that remains runs down the scavenge port wall and into the hole to the bearing.

Of the vaporized fuel mixture that is drawn into the crank chamber, the small portion of it that is not well mixed with air and vaporized (that is, some of the oil) clings to the crankcase walls, crank web, and so on, and from there runs down to collect in the bottom of the crankcase as a liquid pool. Left like this, when engine rpm is raised the oil would be thrown around and find its way into the combustion chamber, where the gas mixture now made excessively rich in oil would cause such problems as white smoke in the exhaust.

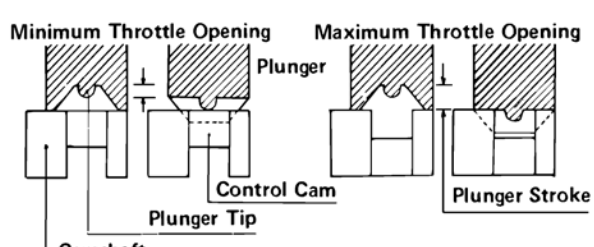
To solve this problem before it occurs, a check valve is provided in the bottom of the crank chamber. The check valve not only lets oil be discharged, but it sends it back to the main bearings on the crankshaft. In other words, when the crank web rotates, the fuel-oil adhering to it is flung outward and hits the collected in the bottom of the crankcase. This pushes the oil down there through the check valve and through passages to lubricate the main bearings, and the connecting rod big-end needle bearings.

(2) Oil Pump

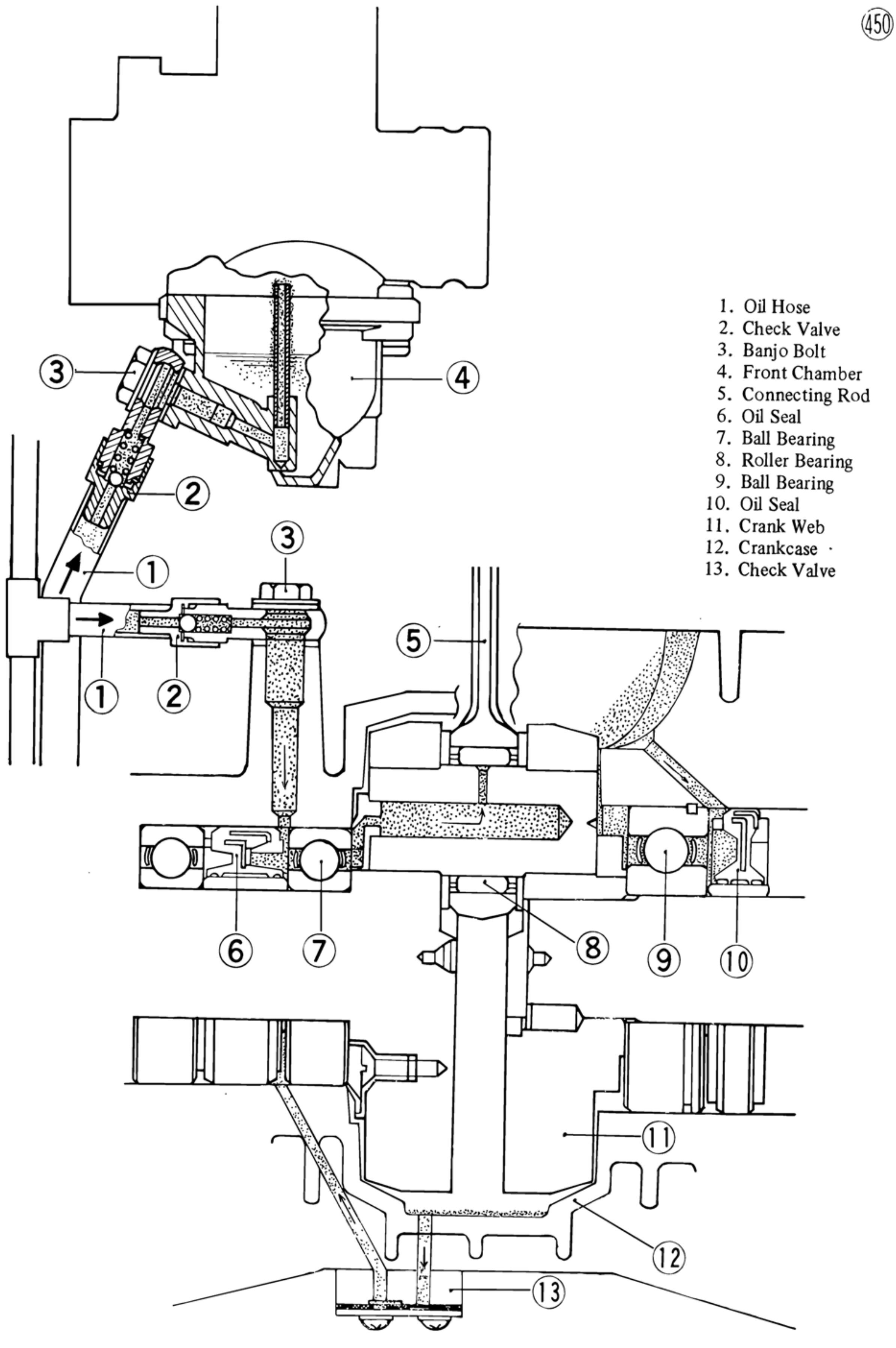
The oil pump is a plunger type pump driven by the oil pump gear mounted on the crankshaft, and it is used to supply oil to lubricate the engine. The amount of oil pumped varies both with the engine rotational speed and with the length of the plunger stroke, controlled by a cam inside the pump. The pump lever is ocnnected by a control cable to the throttle grip so that, as the grip is twisted, the pump lever moves, turning the camshaft and thereby increasing the oil flow.

Fig. 449 shows that when the cam is turned from the maximum flow to the minimum flow position, the plunger tip will strike the cam with less travel, thereby pumping less oil. Since there are two high points on the plunger cam face, there are two complate pumping cycle for each revolution of the pulnger.

Stroke Length Control 449



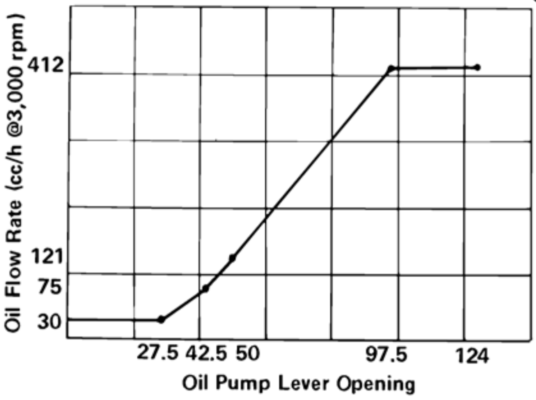
Oil Passage



1. Oil Hose
2. Check Valve
3. Banjo Bolt
4. Front Chamber
5. Connecting Rod
6. Oil Seal
7. Ball Bearing
8. Roller Bearing
9. Ball Bearing
10. Oil Seal
11. Crank Web
12. Crankcase
13. Check Valve

Pump operation and the path for oil flow through the pump are shown in Fig. 453, and the oil flow rate is shown in Fig. 451. The pump shaft has a worm gear at the end which meches with the teeth cut into the center of the plunger. A spring pushes the plunger follower and plunger so that the plunger cam face rests against the camshaft. As the plunger turns, the cam on its face causes it to moves back and forth according to the height of the cam.

Oil Flow Rate (451)



Oil is drawn into the pump through inlet A, and it goes through passage B and into oil chamber C, from where it flows to passage D. When the plunger rotates and descends, the plunger follower follows it down, enlarging pump chambers F and G and starting to create a low pressure in them. But just at this point, the rotation of the plunger follower causes plunger follower inlet passage I to coincide with inlet hole E, so oil flows in through passages B and P to fill pump chambers F and G and equalize the pressure.

As the plunger and follower rotate further and start rising again, holes I and E are no longer aligned, so the decrease in the volume of chambers F and G starts to pressurize the oil. Just at this time, however, plunger follower outlet passages H and J coincide with holes K and L and so the oil is forced out these holes.

This completes 180° of plunger and follower rotation. The second 180° follows exactly the same pattern, except that at the end, outlet passages H and J coincide with holes N and M instead.

The oil pumped out of K, L, and M, goes to the left, right, and center carburetors, respectively, while the oil from N goes through a pipe to check valves at the back of the cylinders. From the three check valves the oil goes to lubricate the crankshaft main bearings and the connecting rod big end needle bearings.

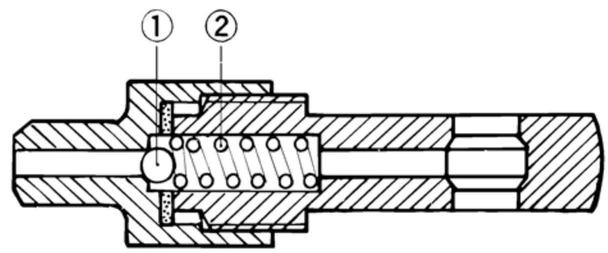
(3) Check Valves

The check valves open when oil pressure is in the direction of the arrow, and arrow oil arrow in the oil direction only. When the engine is stopped – and therefore the oil pump is also stopped – the check valves stop oil flow, and any oil that has passed a check valve is prevented from returning.

As the check valves can not be disassembled, if they become clogged or if they do not function properly, replace the check valves and oil pipe together.

To clean a check valve, use a squirt can filled with solvent. Never use compressed air as this will distort the valve spring and cause the valve to malfunction.

Check Valve (452)



(4) Pump repair

Pump repair is limited to replacement of the "O" rings and pump shaft oil seal, since these are the only parts that may be expected to deteriorate. Other moving parts are well lubricated by the oil in the pump, and wear very little.

If the "O" rings deteriorate or are damaged, the pump will lose compression, pump output will drop, and oil may leak from the pump. When pump trouble is suspected, inspect the "O" rings and replace any defective ones. If the trouble is with parts other than the "O" rings, replace the pump assembly.

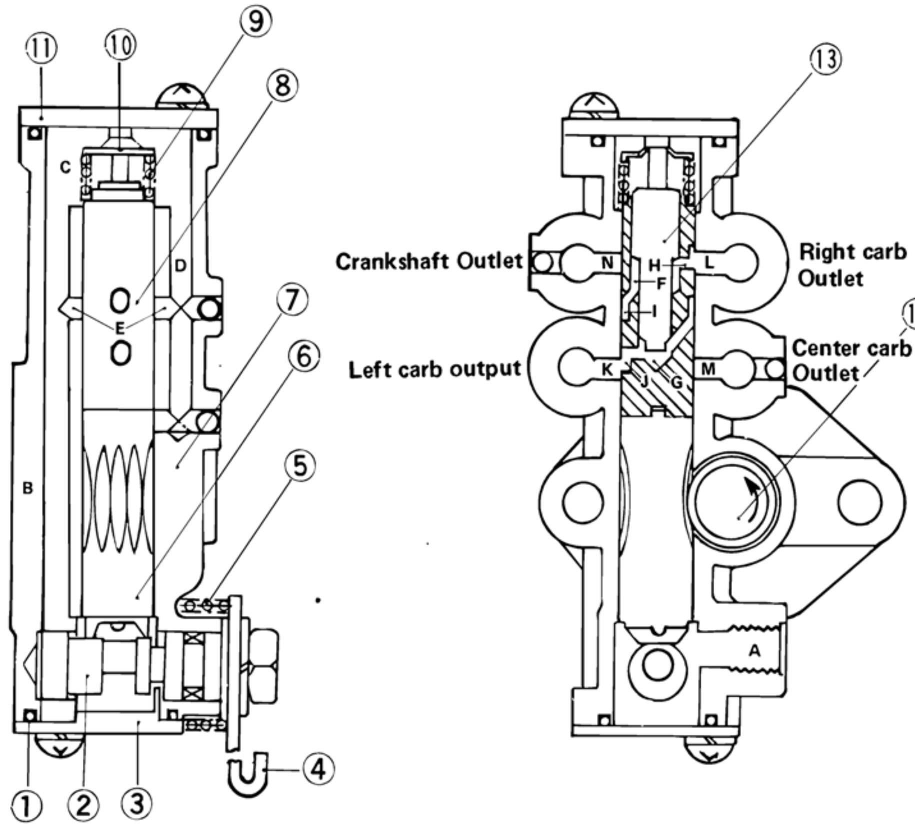
When the pump is disassembled or if the engine oil tank runs out of oil, air will enter the pump and must be bled out. To bleed the pump, remove the two banjo bolt until oil starts coming out of the outlet, and then screw the banjo bolts back in (See Page. 46).

(5) Oil pump performance test

If a drop in oil pump performance is suspected, check the rate that the oil is being pumped as follows.

- **USE A 20 : 1 RATIO OF GASOLINE TO OIL IN THE FUEL TANK IN PLACE OF THE GASOLINE NORMALLY USED.**
- Remove the oil pump cover.
- Detach the banjo bolt and oil hose from the right carburetor, and install a screw (6 mm) in the carburetor.
- Loosen the banjo bolt on the other end, and pull out the check valve. Retighten the banjo bolt.
- Run the output hose into a container.
- Start the engine, and keep it at 2,000 rpm.
- Pulling up on the oil pump cable, collect the oil that is being pumped for 3 minutes. If the quantity of oil collected corresponds with that shown in the table, the oil pump is operating properly.

453



1. O Ring
2. Control Cam
3. Cap
4. Pump Lever
5. Spring
6. Plunger
7. Pump Body
8. Plunger Follower
9. Spring
10. Spring Seat
11. Cap
12. Pump Shaft
13. Piston

Table 41 Oil Pump Output

Output/3 minutes @2,000 rpm
0.166~0.199 oz. (4.9~5.9 cc)

- If the oil pump output is subnormal, disassemble the pump, inspect the "O" rings and oil seal, and replace any defective. If the trouble is with parts other than the "O" rings or oil seal, replace the oil pump as an assembly. The pump is precision made with no allowance for replacement of individual parts.
- Loosen the banjo bolt on the oil pump, and push back the check valve in its place. Retighten the banjo bolt.
- Take out the screw from the right carburetor, and install the banjo bolt and oil hose.
- Replace the oil pump cover.

2. FRAME

1) Front Fork Tubes (H2-B, H1-E)

(1) Fork tube disassembly

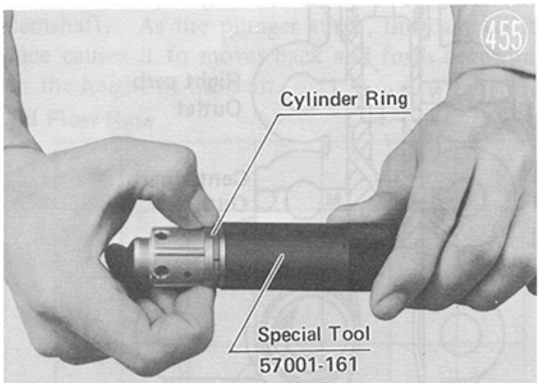
- Remove the top bolt ② and dump out the spring ⑳ and the fork oil.
- Take the dust seal ㉕ off the outer tube ㉙.
- Holding the cylinder ㉒ with a special tool, remove the Allen bolt ㉝ from the bottom of the tube, and pull out the inner tube ㉑.

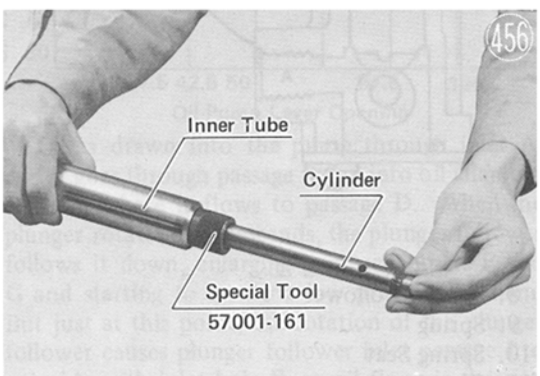
- Remove the circlip ㉔ inside the inner tube, using circlip pliers, and the cylinder assembly ㉒ will come out of the tube.
- Remove the circlip ㉖ from the outer tube with a sharp hook.
- Also pull the oil seal ㉘ out with a hook.

NOTE: If the oil seal is removed, it must be replaced.

(2) Assembly note:

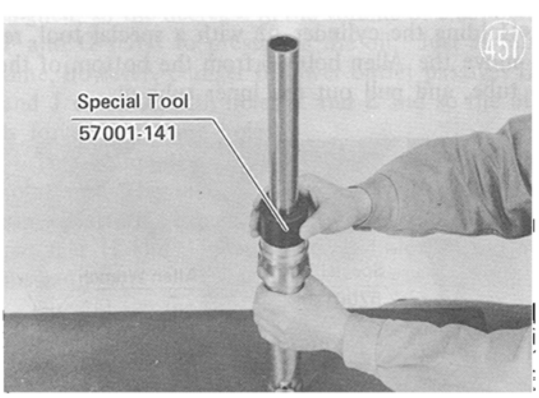
•Use a special tool for inserting the cylinder assembly into the inner tube.





•Install the cylinder assembly in proper order as shown in Fig. 459.

•Use a special tool for installing the oil seal.

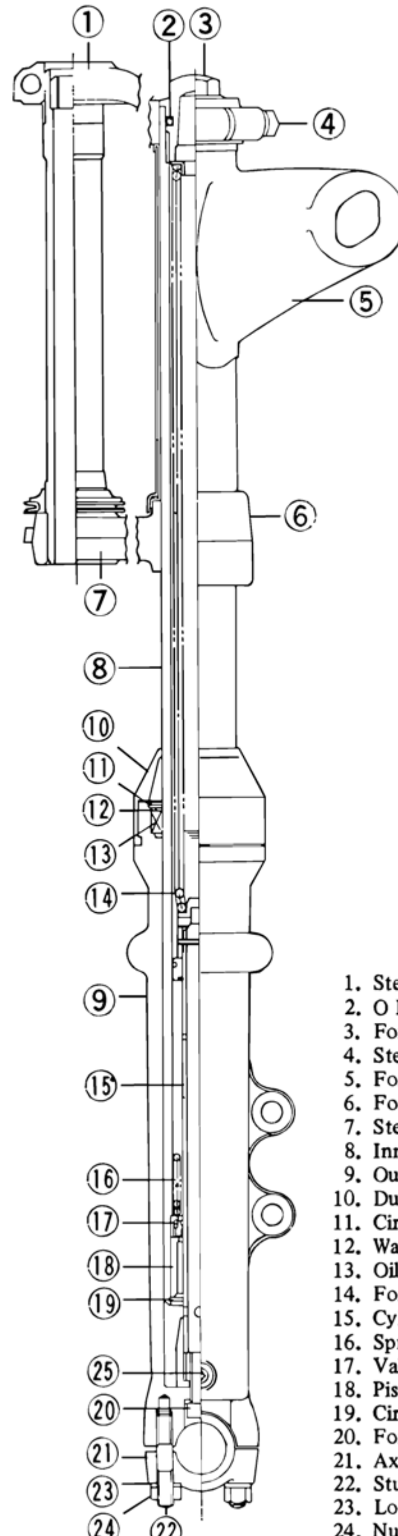


(3) Construction, Operation

The front fork consists of the two front shock absorbers, mounted to the frame head pipe via the steering stem and stem head.

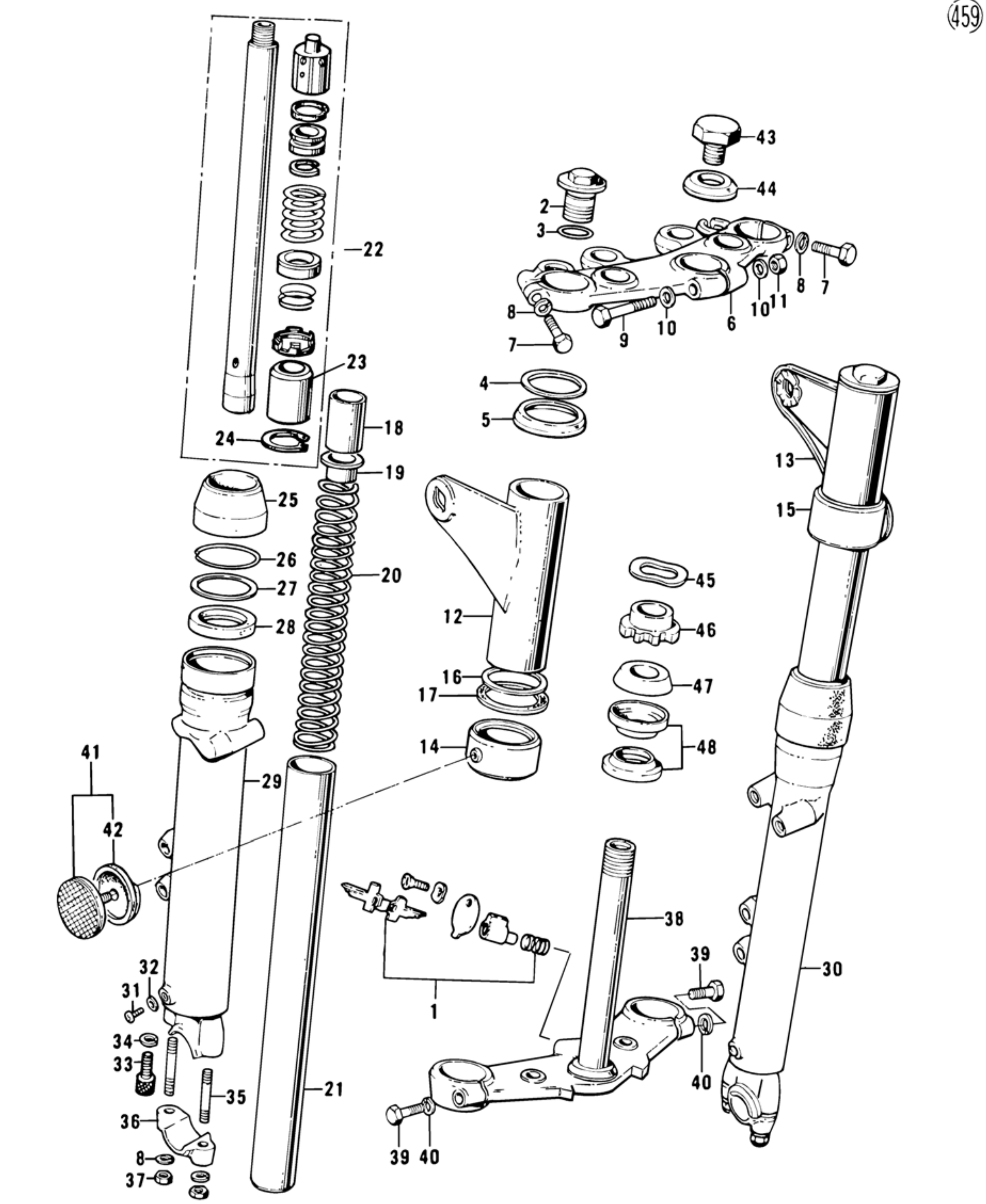
Each shock absorber is a telescopic tube made up of an inner tube, outer tube, springs, cylinder, piston and valve. Shock damping is accomplished by the springs, by air being compressed in the tubes, and by the flow resistance of the fork oil flowing between the inner and outer tubes.

Front Fork Cross Section 458



1. Steering Stem Head
2. O Ring
3. Fork Top Bolt
4. Stem Head Clamp Bolt
5. Fork Cover
6. Fork Cover Guide
7. Steering Stem
8. Inner Tube
9. Outer Tube
10. Dust Seal
11. Circlip
12. Washer
13. Oil Seal
14. Fork Spring
15. Cylinder Assembly
16. Spring
17. Valve
18. Piston
19. Circlip
20. Fork Cylinder Bolt
21. Axle Clamp
22. Stud Bolt
23. Lock Washer
24. Nut
25. Drain Screw

Front Fork



1. Lock Ass'y
2. Top Bolt
3. O Ring
4. Gasket
5. Washer
6. Stem Head
7. Clamp Bolt
8. Lock Washer
9. Stem Head Clamp Bolt
10. Lock Washer
11. Nut
12. Headlight Stay
13. Headlight Stay
14. Stay Guide
15. Stay Guide
16. Washer
17. Gasket
18. Spacer
19. Spring Guide
20. Spring
21. Inner Tube
22. Cylinder Assembly
23. Piston
24. Circlip
25. Dust Seal
26. Circlip
27. Washer
28. Oil Seal
29. Outer Tube
30. Outer Tube
31. Drain Plug
32. Gasket
33. Allen Bolt
34. Lock Washer
35. Stud
36. Axle
37. Nut
38. Steering Stem
39. Clamp Bolt
40. Lock Washer
41. Reflector
42. Dumper Rubber
43. Stem Head Bolt
44. Washer
45. Washer
46. Stem Lock Nut
47. Stem Cap
48. Bearing Race

Oil is prevented from leaking out of the tubes by an oil seal on the upper part of the outer tube. A dust seal on the outside of the tubes stops dirt and water from entering and damaging the oil seal and the tube surfaces.

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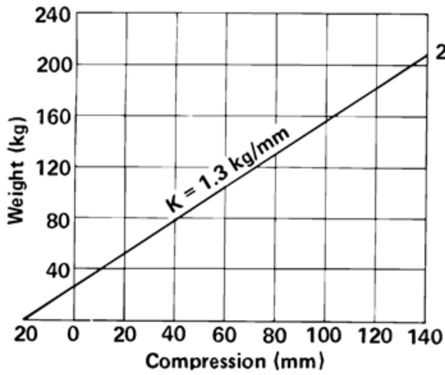
Spring Force



a. Compression stroke

When a load is placed on the front fork, or when the front wheel hits a bump, the inner tube ① of the shock absorber moves downward (relative to the outer tube ②) and the spring ③ is compressed.

The descending inner tube forces the oil in the outer tube to flow through the hole in the cylinder ④ into the inner tube, thereby compressing the air in the inner tube. At this same time, the oil chamber formed by the cylinder, valve ⑤ and inner tube is growing larger and a negative pressure is developed in it, so oil from the bottom of the outer tube also flows past the piston ⑥, opens the valve, and flows through into that chamber.

Near the end of the compression stroke, the space between the tapered lower end of the cylinder and the piston becomes smaller and offers increased resistance to the flow of oil until, just before the end of the stroke, oil flow is completely prevented and an oil lock condition occurs.

b. Extension stroke

The outer and inner tubes are pushed apart by spring tension whenever the load is taken off the front wheel or the wheel drops into a hole. As the tubes move apart, the oil chamber formed by the cylinder, valve and inner tube grows smaller, but since the valve is a non-return type, the oil cannot return through the valve the way it came. Instead, it flows through a hole in the upper part of the cylinder, and the resistance to this flow through the hole dampens the fork extension. Near the end of the extension stroke, the cylinder spring starts being compressed and further slows fork extension so that it does not suddenly top out.

Either too much or too little oil in the forks will adversely affect their shock damping ability. If there is too much oil or if the oil is too heavy, the shock absorbers will be too hard; too little oil or to light an oil will make the fork soft and decrease damping ability, and may cause the fork to be noisy during operation.

Compression Stroke

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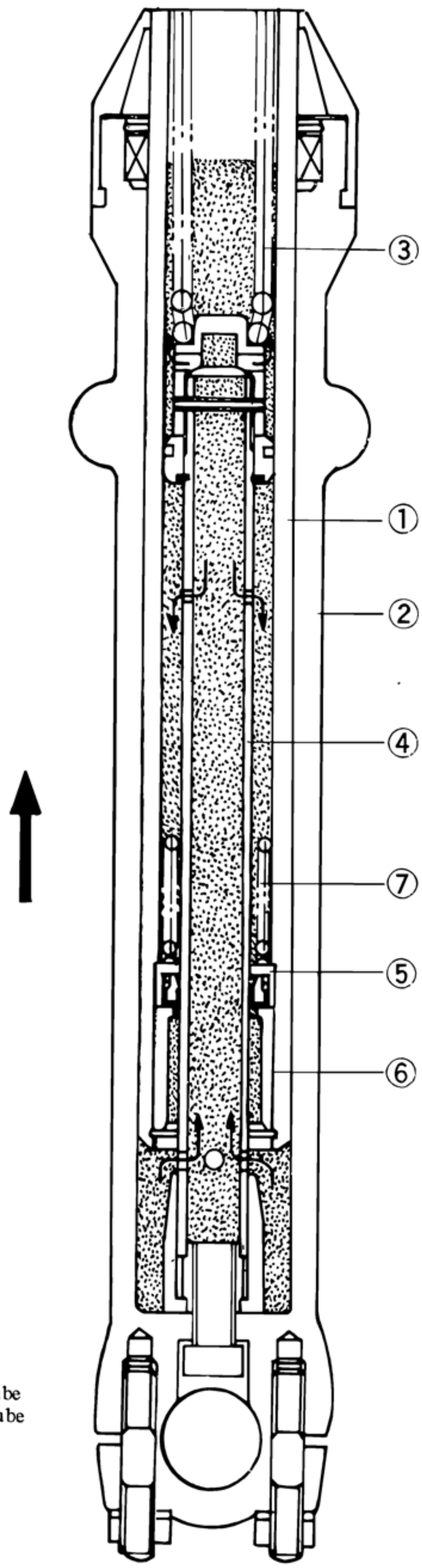


1. Inner Tube
2. Outer Tube
3. Spring
4. Cylinder
5. Valve
6. Piston
7. Spring

If the inner tube becomes bent, dented, scored or otherwise damaged, it in turn will damage the oil seal and allow oil leakage. If the tube is bent badly enough, poor handling may also result. 1

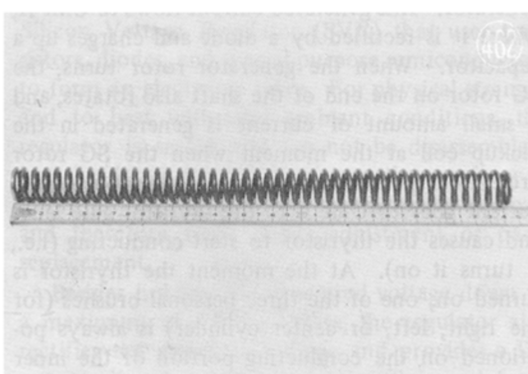
Contaminated or deteriorated oil will also affect shock damping, and in addition will accelerate wear of the internal fork parts. For this reason it should be changed periodically.

c. Spring tension

Since the spring becomes shorter as it weakens, check its free length to find out if it is weak. If the spring of either fork is shorter than the service limit, replace it. If the length of the replacement spring and that of the remaining old spring vary greatly, replace both old springs to keep the shock absorbers balanced and thereby maintain motorcycle stability.

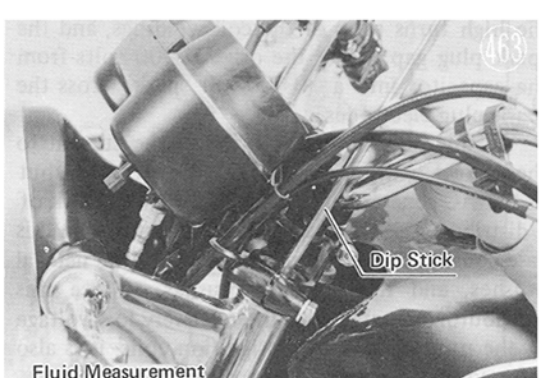
Table 42 Fork Spring Free Length

Standard	Service Limit
13.58 in. (345 mm)	13.19 in. (335 mm)

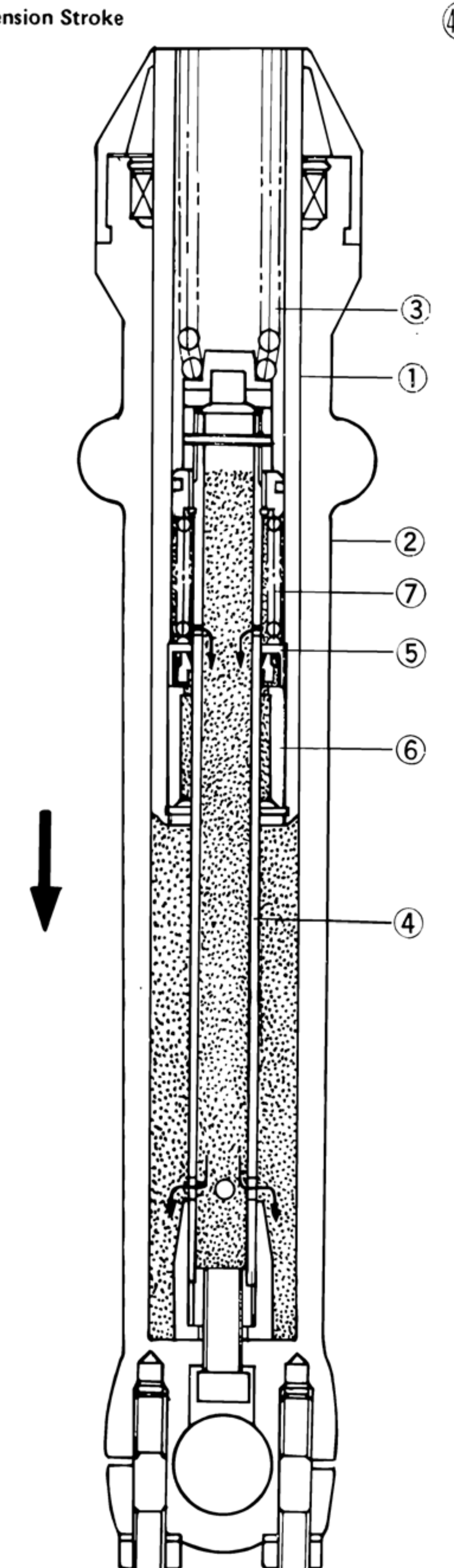


d. Fork oil

Place a jack or stand under the engine to that the front wheel is raised off the ground to check fork oil. Remove the top bolt from the inner tube. Insert a rod down into the tube and measure the distance from the top of the tube to the oil level. If the oil is below the correct level, add enough oil to bring it up to standard, but do not overfill the fork.



Extension Stroke

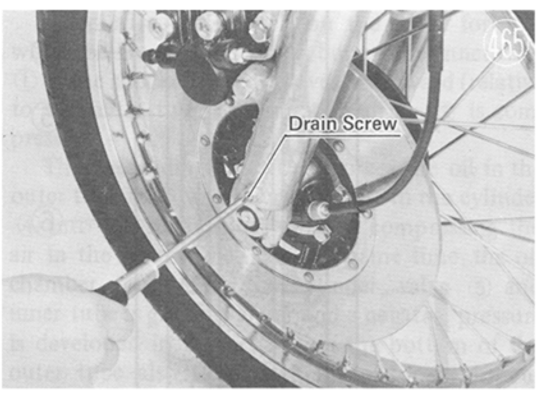


1. Inner Tube
2. Outer Tube
3. Spring
4. Cylinder
5. Valve
6. Piston
7. Spring

Table 43 Fork oil

	Type	Amount per side	Oil level from top of tube
H1	SAE 10W	5.7 oz (170 cc)	15.2 in (385 mm)
KH500	SAE 10W	5.9 oz (175 cc)	16.2 in (412 mm)
H2	SAE 10W	5.9 oz (175 cc)	14.9 in (379 mm)

Every 6,000 miles (10,000 km), or less if the oil appears dirty, the front fork oil should be changed. To drain out the old oil, first remove the drain screw from the lower end of the outer tube on each side. Stand the motorcycle on both wheels and push down on the handlebars a few times to pump out the oil. Replace the drain screws, remove the top bolt from each side, and pour in the specified type and amount of oil.



e. Inner tube damage

Visually inspect the inner tube and repair any damage, or replace the tube if the damage is not repairable. Since inner tube damage will also damage the oil seal, replace the seal, too.

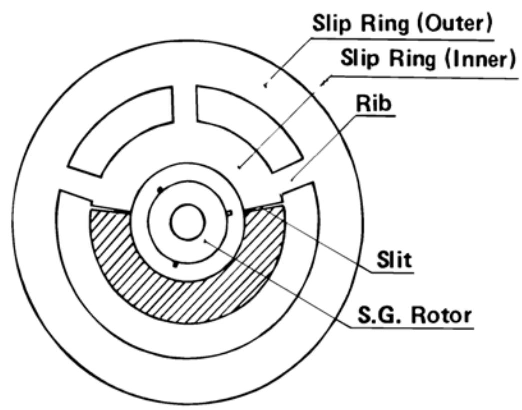
3. ELECTRICAL SYSTEM

1) Ignition Circuit (H1-E)

The main components of the AC generator are the starter, rotor, SG (signal generator) rotor, pickup, yoke plate, and carbon brushes (neutral brushes and personal brushes). On the front of the rotor there are two concentric slip rings, an outer ring and an inner ring, that are in constant contact with the carbon brushes. Two slits break the inner ring into two parts which have no electrical continuity between them. One half of the broken inner ring is connected by three ribs to the outer ring, so there is electrical continuity between the outer ring and that half of the inner ring. Two neutral brushes ride around the outer ring, and three personal brushes ride on the inner ring.

The AC generator has six sets of starter coils. Five of these are connected in series-parallel for battery charging, and the sixth winding is mounted on the inner part of the starter and is used alone for the ignition system. A yoke plate is fixed to the starter, and on the plate are mounted pickups (N and S), the two neutral brushes, and the three personal brushes.

AC generator Rotor 466



When the engine is kicked over, the AC generator rotor on the end of the crankshaft rotates and a current is generated in the ignition winding of the generator. This generated current flows to Unit A, where it is rectified by a diode and charges up a capacitor. When the generator rotor turns, the SG rotor on the end of the shaft also rotates, and a small amount of current is generated in the pickup coil at the moment when the SG rotor projection passes the pickup projection. This current goes to Unit A to the thyristor gate lead, and causes the thyristor to start conducting (i.e., it turns it on). At the moment the thyristor is turned on, one of the three personal brushes (for the right, left, or center cylinder) is always positioned on the conducting portion of the inner slip ring, and this brush and the thyristor together complete the path for discharging the capacitor. The capacitor's current goes first through the primary winding of the ignition coil corresponding to the personal brush aligned on the inner ring, then next through the personal brush to the inner ring, through the three ribs to the outer ring, from the outer ring through the neutral brush to ground, up through the thyristor, and finally back to the other side of the capacitor. The sudden current flow through the ignition coil, in combination with the high turns ratio of the coil windings, and the spark plug gap, make the original 300 volts from the capacitor into a 30,000-volt spark across the spark plug electrodes.

The mechanism that distributes the current to the correct ignition coil is called a distributor, but in the AC generator the rotor is doing the work of a distributor. So actually, the "distributor" in this case consists of the AC generator rotor, the neutral brushes, and the personal brushes. Since this distributor operates with the relatively low voltage of the primary side of the ignition coils, it is also referred to as a low-voltage distributor.

The capacitor in Unit A is connected in series with the ignition coils, so whether it is charging or discharging, all its current must pass through the distributor. This is why the arc-suppression circuit of Unit B is used; any arcing voltages that may occur during capacitor charging (due to brush jumping, a broken lead, etc.) are absorbed by C_2, R_1, and R_2, while any arcing tendency during discharging (firing) is taken care of by R_1.

2) Regulator/Rectifier (H1-E)

The faster that the AC generator rotates, the faster that the lines of magnetic flux cut through the stator coils, and due to this the higher the voltage that is generated. If the generator output is sent to the load circuits under these conditions, when the engine is turning at high rpm the battery would overcharge, light bulbs would burn out, and there would be various other electrical problems. To avoid this, a device is installed to always keep the generator voltage below a certain level, and this device is the regulator.

Permanent magnets are used in the generator rotor, and for this reason the magnetic flux itself can not be controlled, so in this motorcycle the generated voltage is controlled directly with a Silicon Voltage Regulator (SVR) that uses transistors, diodes, and special-purpose semiconductors to form an electronic relay. For physical strength and to best withstand ambient conditions, the regulator is sealed and can not be disassembled, but this is no disadvantage since the regulator is electronic and contains no moving parts to wear, and therefore never needs adjustment or parts replacement.

Besides holding the generated voltage down to a maximum of 15 ~ 16 volts, the regulator also rectifies the generator voltage and provides a DC output directly, thus eliminating the need for a separate rectifier. The rectifier performs full-wave rectification (that is, it changes both halves of the AC cycle to DC in order to obtain a smoother DC output) with silicon diodes in a bridge circuit (see Fig. 391, page 102), based on the principle that the diodes will conduct from the – side to the + side only, and not in the opposite direction. In the rare cases when a diode does go bad, the condition of the diode can be confirmed easily since it will then conduct in both directions, or sometimes not conduct at all in either direction.

(1) Rectification when A is +, B is –

On the half cycle of the AC voltage when the AC generator is at the polarity shown in Fig. 468, current from the generator goes from the B side of the generator toward the BCR (Bi-Controlled Rectifier). A very small portion of the current flows through the BCR out the gate lead (G) and through diode D_2. This current "gates" or turns on the BCR instantly so current can then flow through the BCR and in the direction of arrow 2 to ground. From ground, the current flows up into the negative terminal of the battery to charge it, then through diode D_1, through a rectifier diode (arrow 5), and back to the generator at side A.

Diode D_1 is not actually a part of the rectifier circuit. This diode is used to allow charging current to go through the battery, but to stop any current from flowing in the opposite direction out of the battery and through R_1 and R_2 to discharge the battery while the engine is running slowly or is stopped.

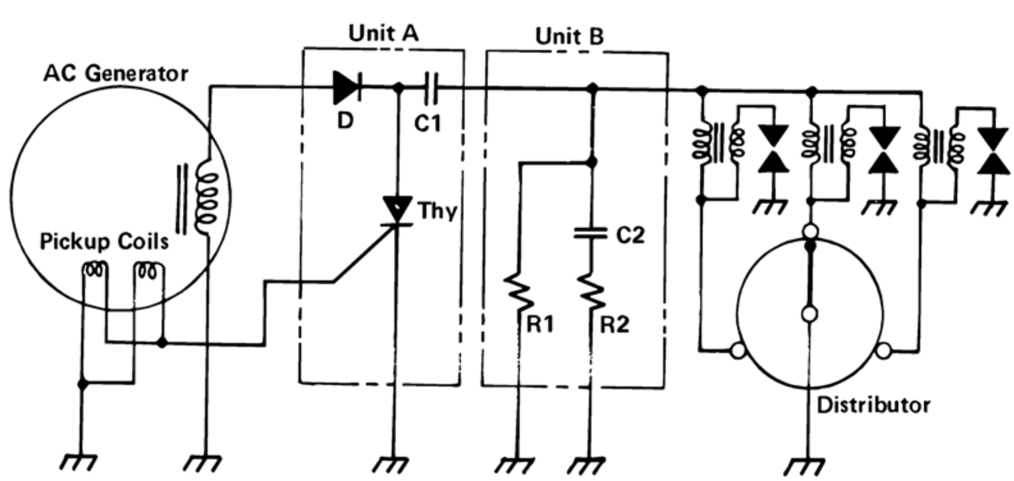
When the battery is well charged and the engine is running slowly or is stopped, or any time the battery voltage is higher than generator voltage, the battery voltage bucks the generator voltage and the charging current described above (and likewise that described in the following paragraph) will not flow into the battery.

(2) Rectification when A is–, B is +

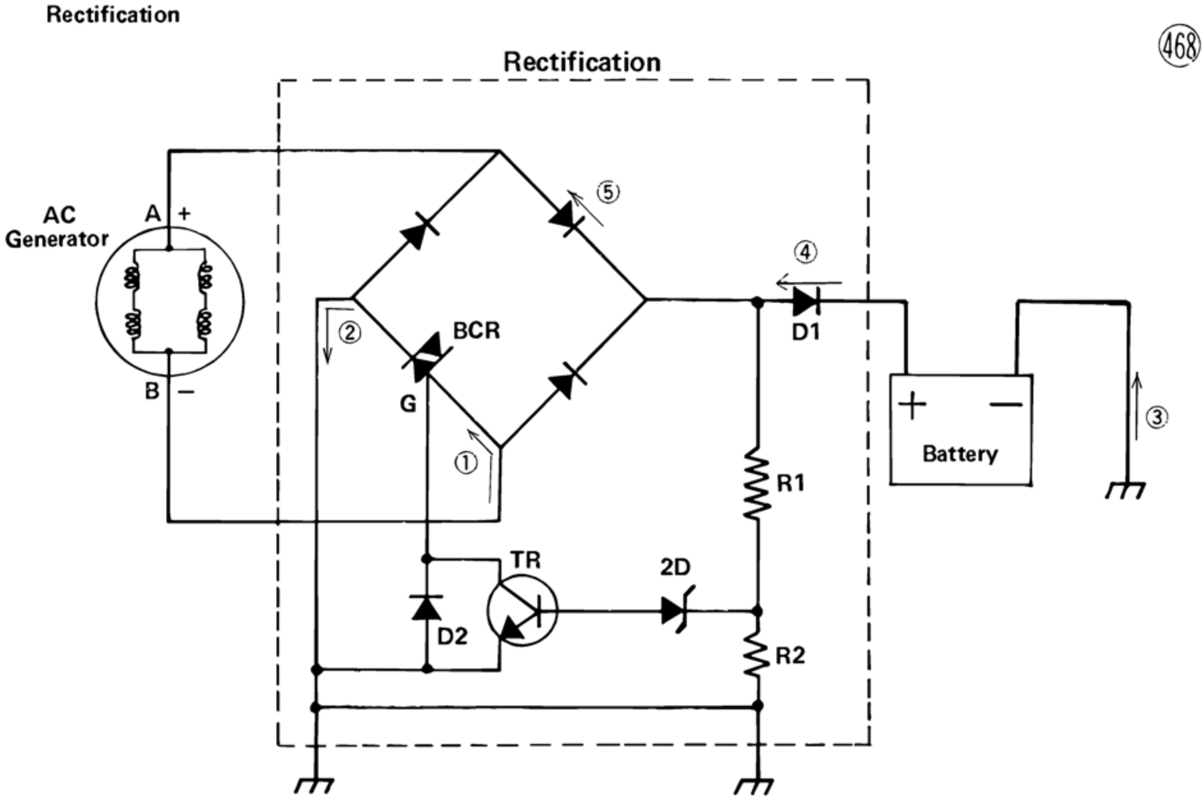
On the half cycle when the generator is at the polarity shown in Fig. 469, current from the generator flows from the generator from side A, through a rectifier diode (arrow 1) and to ground.

Ignition Circuit

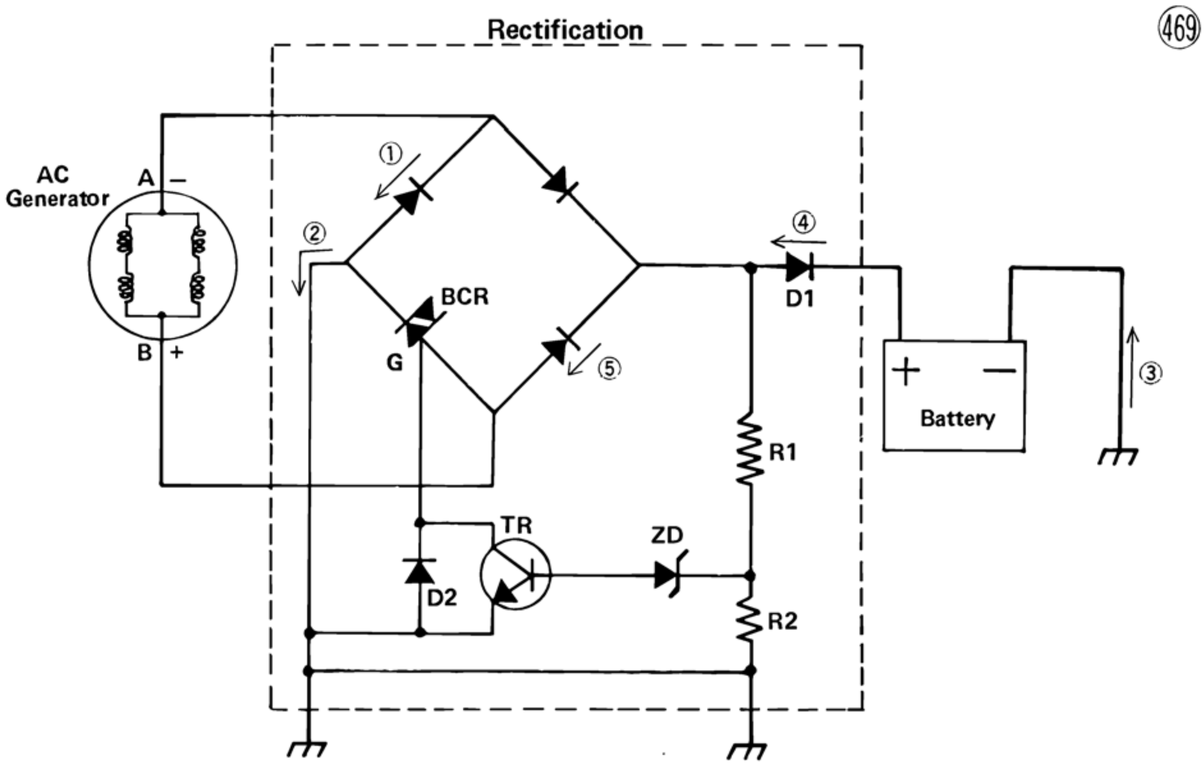
467



Rectification



Rectification



From ground, the current flows up into the negative side of the battery to charge it, through diode D_1 and the rectifier diode (arrow 5), and back into the generator on side B.

(3) Regulation

In either of the cases of rectification explained above, there is also another path for current in the regulator, and this is through R_2 and R_1. This is a very small current, but it serves to always keep a representative portion of the generator voltage at the cathode of the Zener diode (ZD).

The Zener diode "monitors" this voltage and signals the transistor (TR) any time too high a voltage is generated. The transistor then conducts to turn on the BCR and regulate the voltage. At this point, though, you will notice that the BCR in para. (1) above is already being turned on by a current through D_2, and is serving as an integral part of the battery charging circuit. So it can be seen that the regulator circuit operates only on the half of the AC cycle when the generator polarity is as shown in Fig. 468 or 469.

Looking at Fig. 470 then, here is how the regulator works when the generator voltage is too high. Current from A starts to flow through the path shown by arrows 1, 2, 3, 4, and 5 to charge the battery, and a small current also flows up through R_2 and R_1 for ZD to monitor. As the voltage on this half cycle continues to rise excessively, Zener diode ZD breaks down and starts conducting in the direction of arrow 6. This starts the transistor (TR) conducting (arrow 7) to gate the BCR. As soon as the BCR turns on, the current coming through the first rectifier (arrow 1) suddenly finds a short circuit path back to the other side of the generator (arrow 8 and 9), and so the excess current is effectively returned to the generator and the voltage is kept from becoming too high.

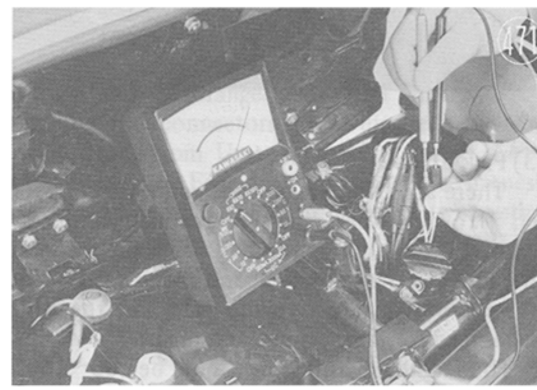
3) Dynamo Test

Open the seat and use a hand tester to measure the resistance of the charge windings, ignition windings, and pick-up coils.

(1) Charge windings

The charge windings consist of five armature coils connected in a series-parallel arrangement. To test them unplug the 2-pin connector connecting the two yellow wires, and using the meter on the R x 1 scale, touch one tester lead to each of the two terminals on the dynamo side. At this time the meter should give a reading between 0.20~0.30Ω. If the reading is less than this there is probably a (layer) short, and if there is more than 0.30Ω resistance or if the meter gives no indication at all, then there is an open wire in the dynamo leads or windings.

If the dynamo is found to be bad with this resistance check, replace the stator.

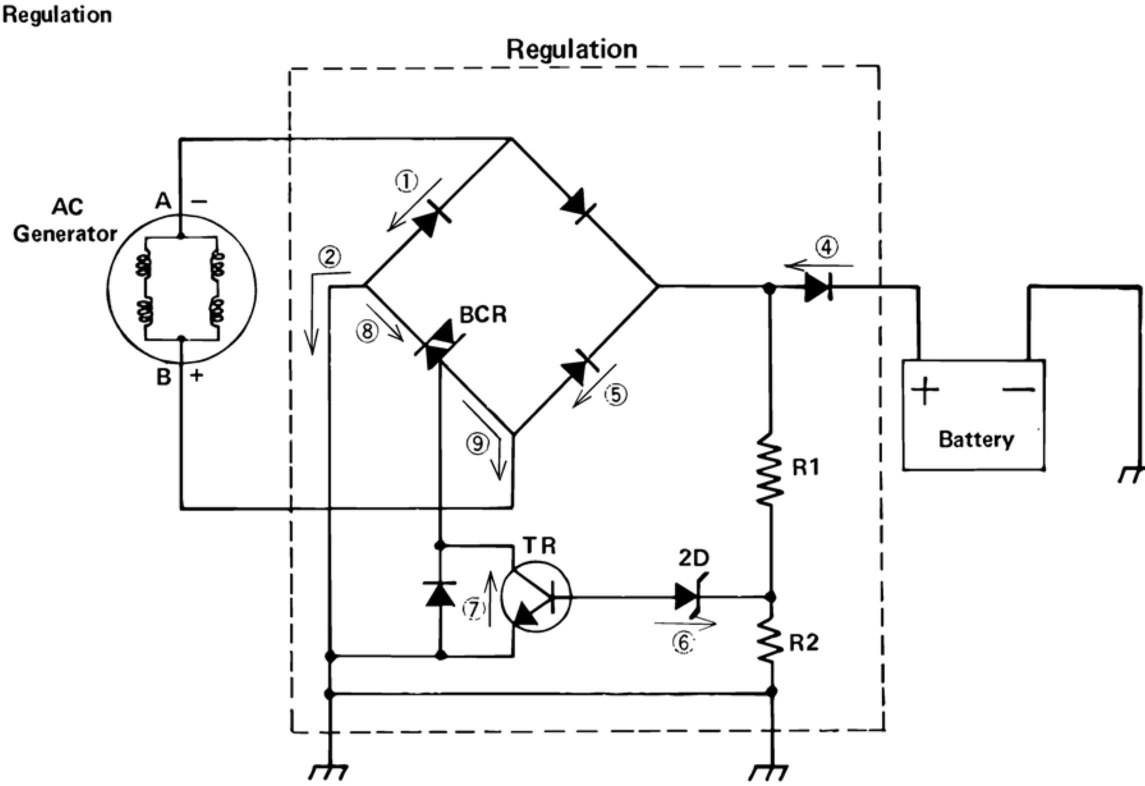


(2) Ignition winding

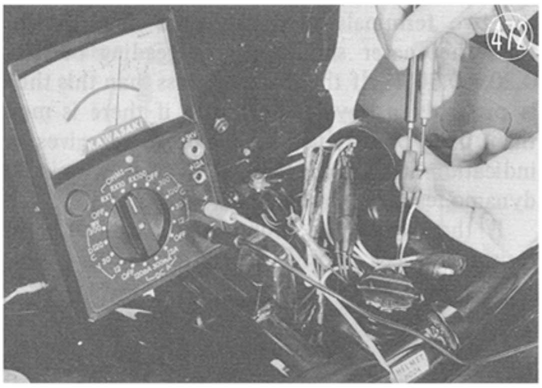
There is only one ignition winding. To test it unplug the 2-pin connector that connects the brown leads and the orange leads, and using the meter on the R x 10 resistance range, touch one

Regulation

470



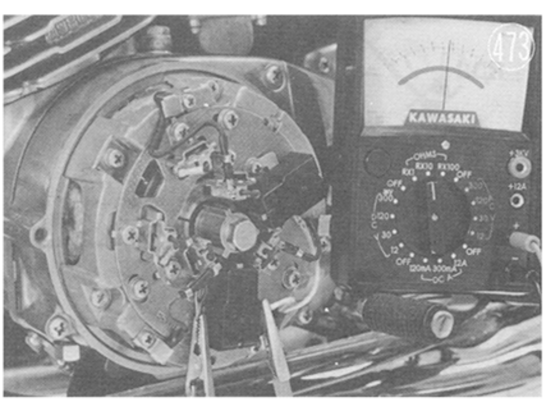
meter lead to each of the connector terminals on the dynamo side and measure the resistance of the winding. There should be a reading between 92 ~ 140Ω. If the dynamo is found to be bad with this resistance check, replace the stator.



(3) Pick-up coils

There are two pick-up coils connected in parallel. To test them, unplug the connector that connects the white wires, and using the meter on the R x 10 range, touch one meter lead to the white wire on the dynamo side and the other meter lead to frame ground terminal.

The reading at this time should be 100~160Ω. If it is not, measure each pick-up coil separately to determine which is bad. This is done by unscrewing the pick-up coil ground terminal and measuring the resistance between the white wire and the ground wire of the coil. The resistance of each coil should be 210~310Ω. If the pick-up coils is found to be bad with this resistance check, replace the pick-up coils.



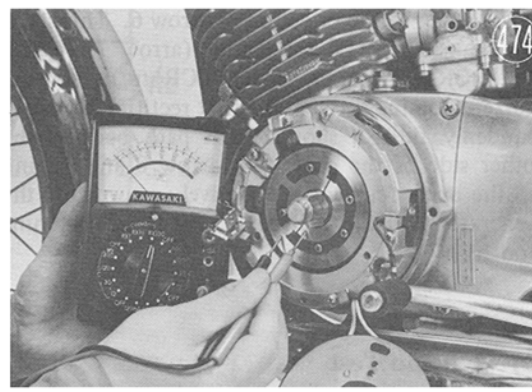
4) Distributor Test

The distributor is tested by measuring the resistance between the slip rings on the face of the distributor rotor. The dynamo rotor is inside the left engine cover, so for access to it remove the dynamo cover, and then take out the mounting plate screws and the screws that are used for mounting the personal brushes. Remove the personal brushes from the mounting plate, and take the resistance measurements with the plate left hanging. Before taking the measurements, clean the slip ring slits and remove any foreign matter that may affect the resistance.

(1) Resistance between outer and inner rings

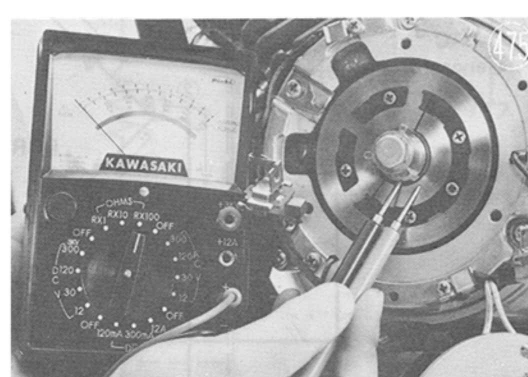
Measure the resistance between the rings by touching one meter lead to the outer ring, and the other meter lead to the separated half of the inner ring. With the meter set to the highest resistance scale (R x 100 or higher), there should be a reading of infinity (i.e. no reading) if the distributor is good. If the meter needle moves at all, the dynamo rotor is bad and must be replaced.

NOTE: Do not touch the metal part of the meter leads with bare hands during measurement, as this will affect the reading.



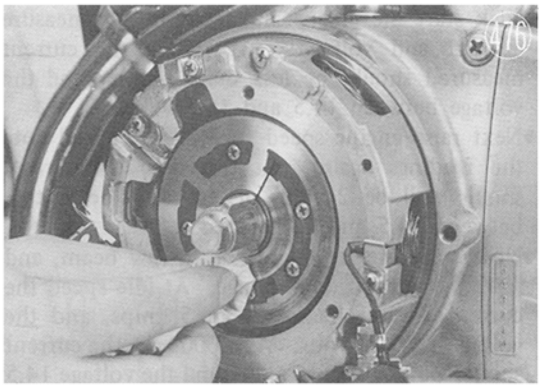
(2) Resistance between inner ring and shaft

With the meter set to the highest resistance scale (R x 100 or higher), touch one meter lead to the inner ring and the other to the shaft at the center. The meter should read inifnity (i.e. no reading). (See the note for the previous paragraph.)



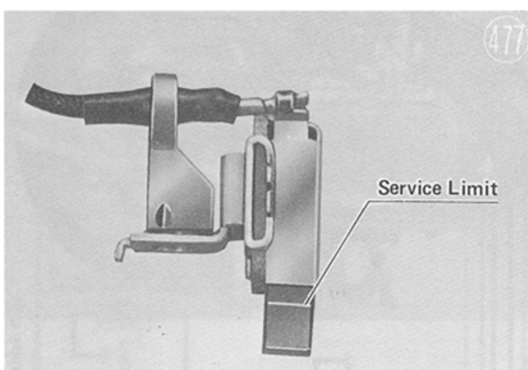
(3) Slip ring inspection

If the insulation between the slip rings is poor or if the rings are extremely dirty, wipe the rings with contact cleaner or benzine or a clean, soft cloth. If the ring surface is scratched or rough, correct it with very fine emery cloth.



(4) Carbon brushes

There are two neutral and three personal carbon brushes, which gradually wear down in time. A line marked in the side of each brush indicates the limit to which the brush can be safely used, and the brush must be replaced when it wears down to this line.

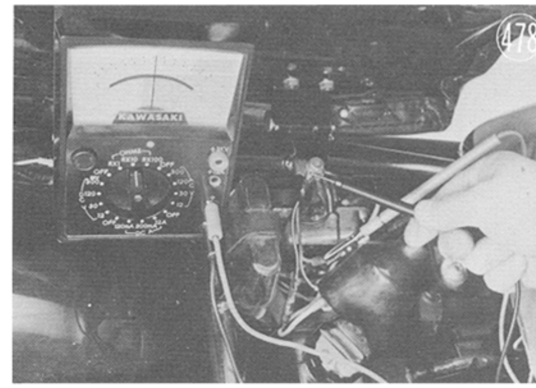


5) CDI Unit Test

Both CDI Unit A and Unit B are located at the left rear of the battery, and their connections are under the seat. The larger unit on the bottom is Unit A, and the smaller one on top is Unit B. Unit B consists only of resistors and capacitors so testing with a hand tester is usually sufficient, but Unit A contains thyristors, diodes, and other semiconductors and so must be tested with the Electrotester (special tool).

(1) Unit B

The construction of Unit B is as shown in Fig. 467. When making resistance tests of this unit, disconnect the yellow lead that connects it to Unit A, set the tester to the R x 10 range, and touch one lead to the yellow wire from Unit B, and the other meter lead to the frame ground terminal. A reading of 300Ω is normal. A reading of 30Ω indicates a probable bad capacitor, while a reading of infinity (no reading) means that resistor R_1 is probably bad. In any case, if the resistance read is not close to 300Ω, the unit is bad and must be replaced.

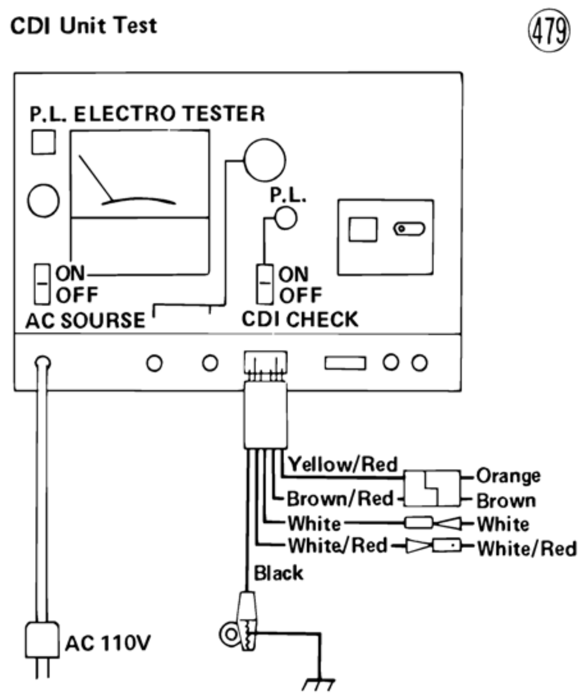


(2) Unit A

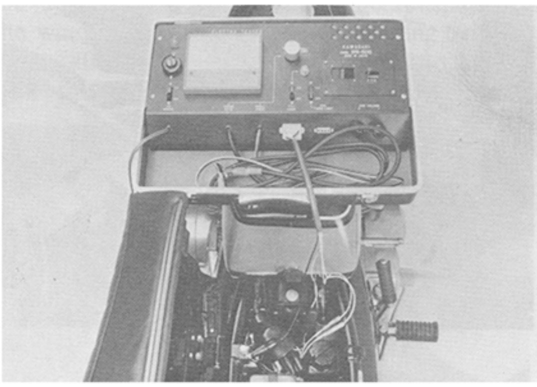
To test Unit A, the Electrotester must be used; the hand tester will not test it properly.

- Unplug the 2-pin connector that connects the brown and the orange leads from Unit A.
- Unplug the connectors the white/red and the white leads from Unit A.
- As shown in Fig. 479, connect the harness provided with the Electrotester between the connectors from the unit, and the CDI-CHECK of the Electrotester.
- Plug the Electrotester into a 110VAC outlet, and put the tester AC POWER switch in the ON position. The pilot light (PL) indicates that the power is on.
- Set the motorcycle ignition switch to the ON position and the engine stop switch to the RUN position.
- Set the CDI-CHECK switch of the Electrotester to the ON position.
- The ignition unit is good if the pilot light stays on. If the light does not come on, the unit is bad and

CDI Unit Test



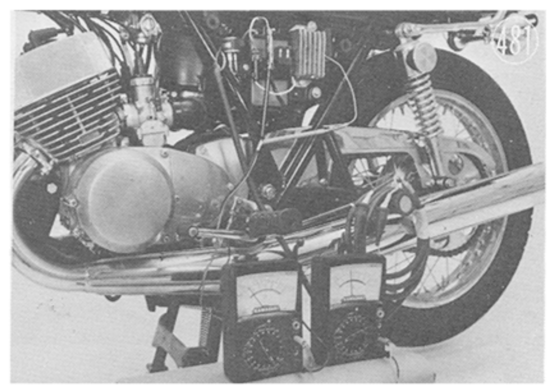
must be replaced.



6) Regulator Test

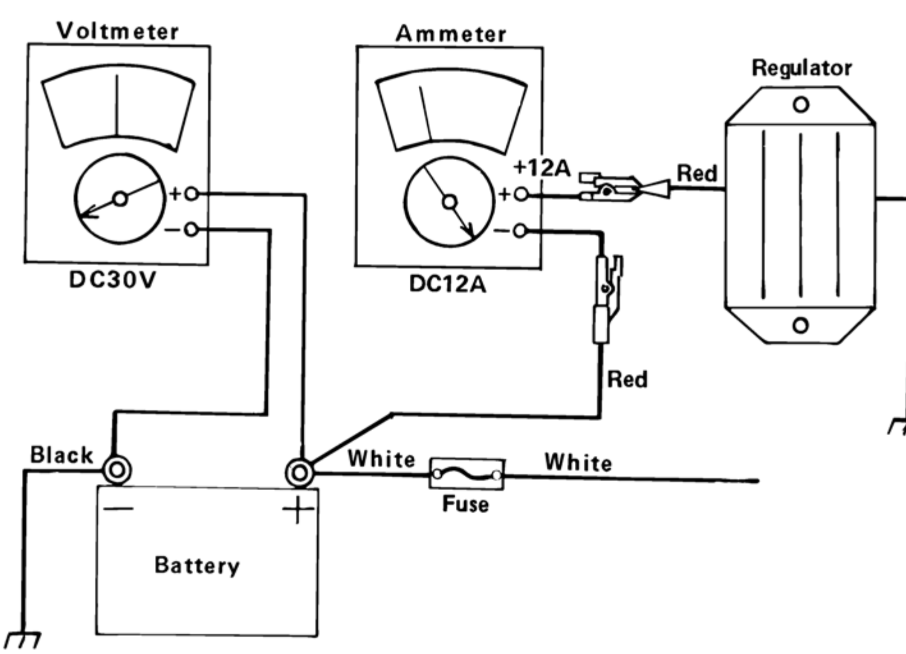
The regulator is located inside the left side cover. It is tested using two hand testers while still mounted on the motorcycle. Before starting regulator testing, check the battery voltage and make usre the battery is charged up to at least 13 volts.

- Unplug the connector of the red lead that comes out of the regulator, and connect the positive (+) tester lead to the wire on the regulator side, and the negative (–) meter lead to the wire on the battery side. Set the tester to the 12 amp DC range so that current can be measured with this meter.
- Set the other tester to the 30VDC range, and connect the positive (+) tester lead to the plus terminal of the battery, and connect the negative (–) meter lead to the minus side of the battery.
- Kick start the engine and let it idle to measure current and voltage. At idling, the current measured should be less than 2 amps, and the voltage between 14.5 and 15.5 volts.
- Next raise engine speed to 3,000 rpm and note the readings again. At this time the current should still be 2 amps or less, and the voltage between 14.5 and 15.5 volts.
- Now turn the headlight on to low beam, and read the current and voltage. At idle speed the current should be less than 5 amps, and the voltage 12~13 volts. At 3,000 rpm the current should be less than 5 amps, and the voltage 14.5 ~15.5 volts.
- If the readings specified above can not be obtained, and provided that the generator, battery, etc. are good, the regulator is bad and must be replaced.

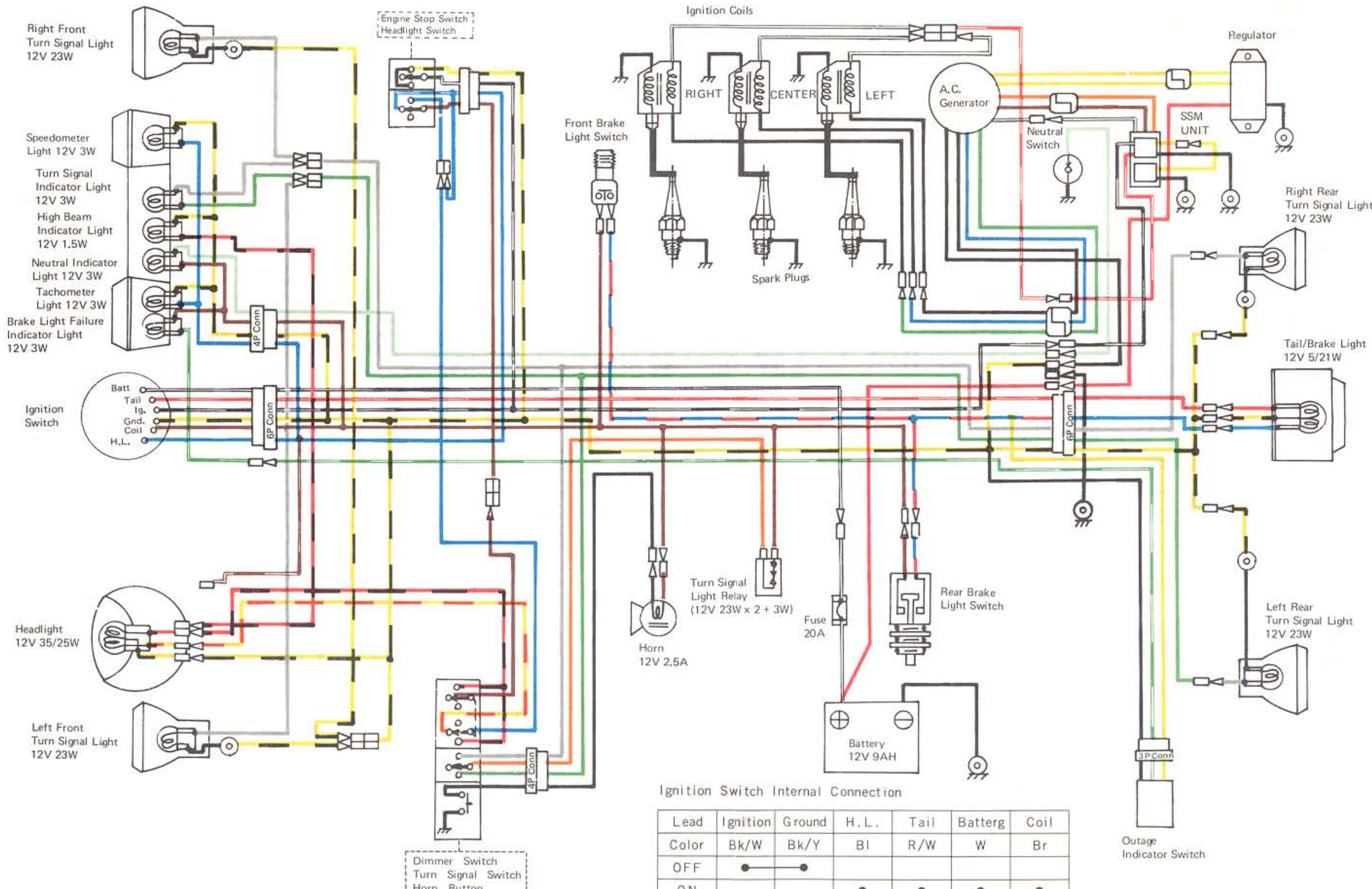


Regulator Test

482



H1-E Wiring Diagram (US Model)

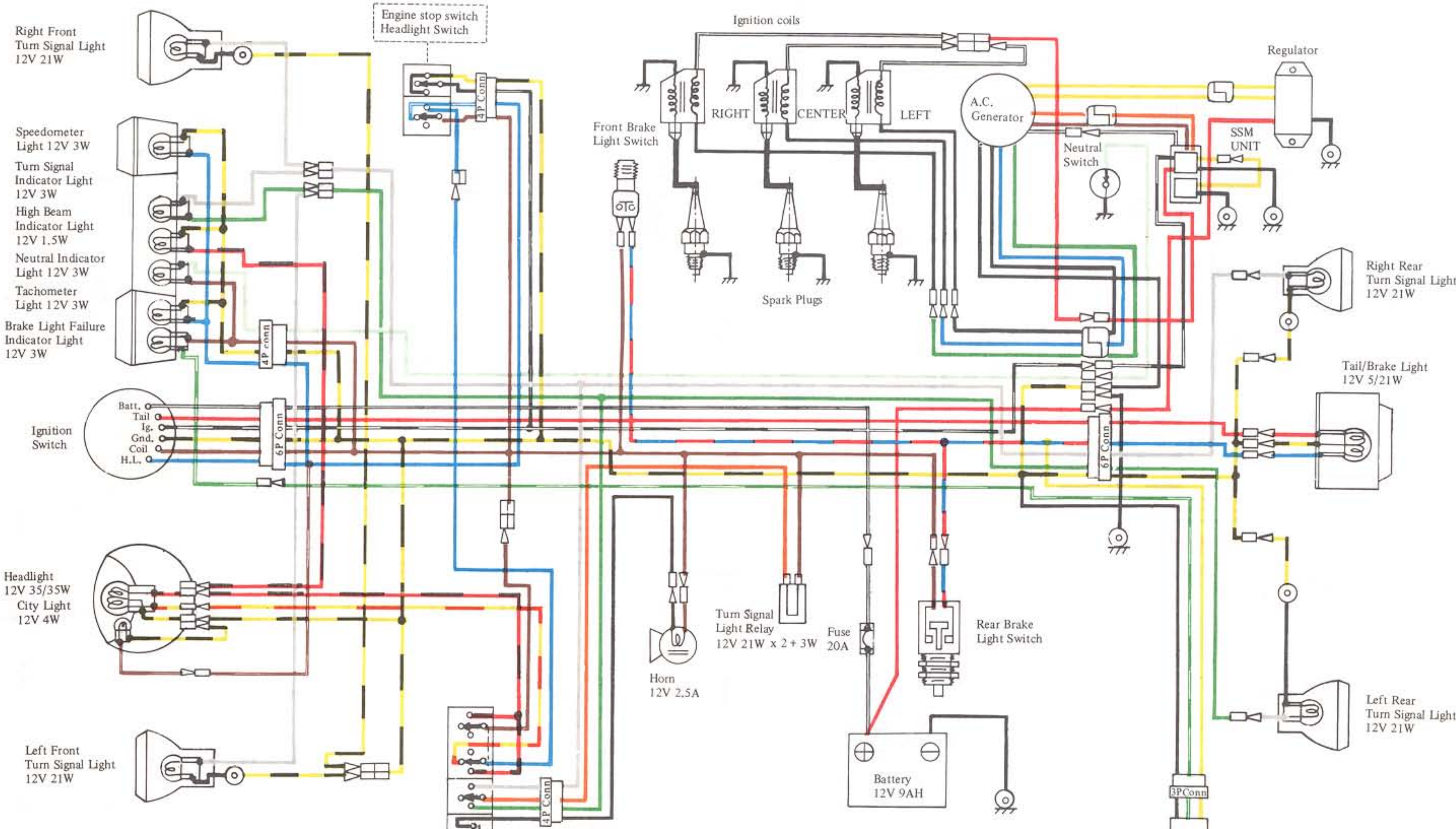


Ignition Switch Internal Connection

Lead	Ignition	Ground	H.L.	Tail	Batterg	Coil
Color	Bk/W	Bk/Y	Bl	R/W	W	Br
OFF	●	●				
ON			●	●	●	●
PARK	●	●		●	●	

(136-3)

H1 E Wiring Diagram (European Model)

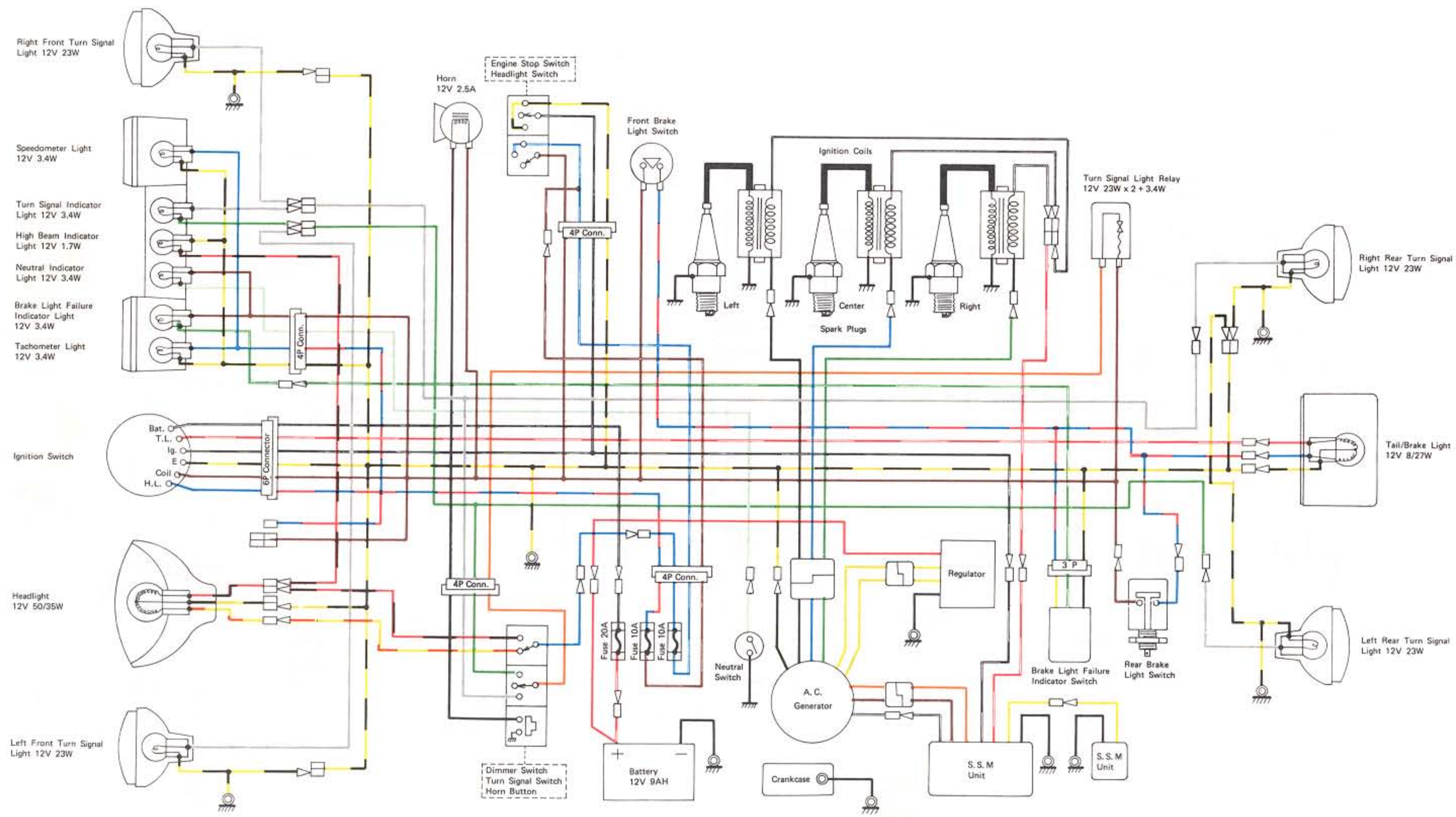


Ignition Switch Internal Connection

Lead	Ignition	Ground	H.L.	Tail	Battery	Coil
Color	Bk/W	Bk/Y	Bl	R/W	W	Br
OFF	●	●				
ON			●	●	●	●
PARK	●	●		●	●	

(138-2)

KH500-A8 Wiring Diagram (US Model)

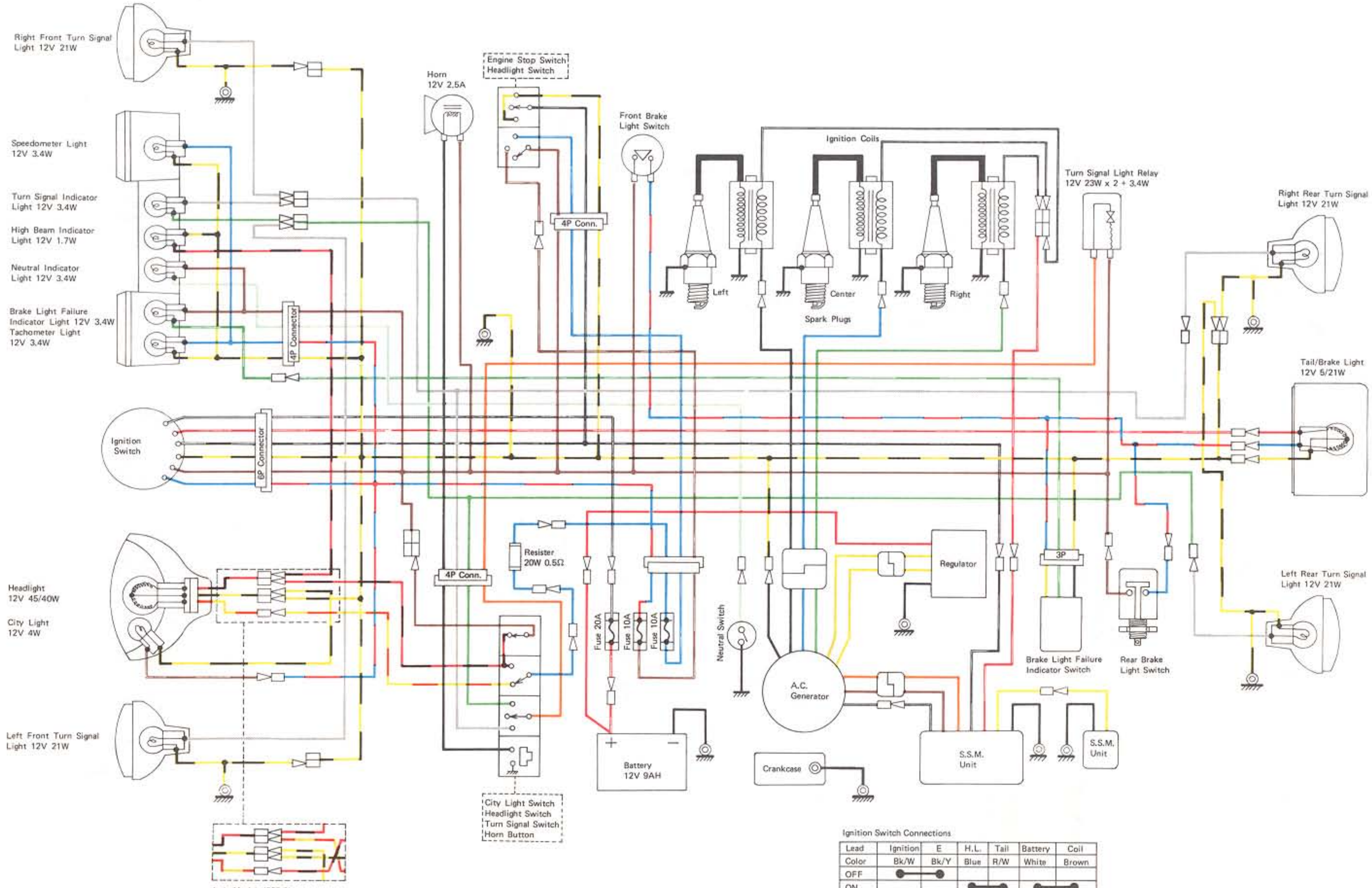


Ignition Switch Connections

Lead	Ignition	E	H.L.	Tail	Battely	Coil
Color	Bk/W	Bk/Y	Blue	R/W	White	Brown
OFF	●	●				
ON			●	●	●	●
PARK	●	●		●	●	

(191-3)

KH500-A8 Wiring Diagram (European Model)

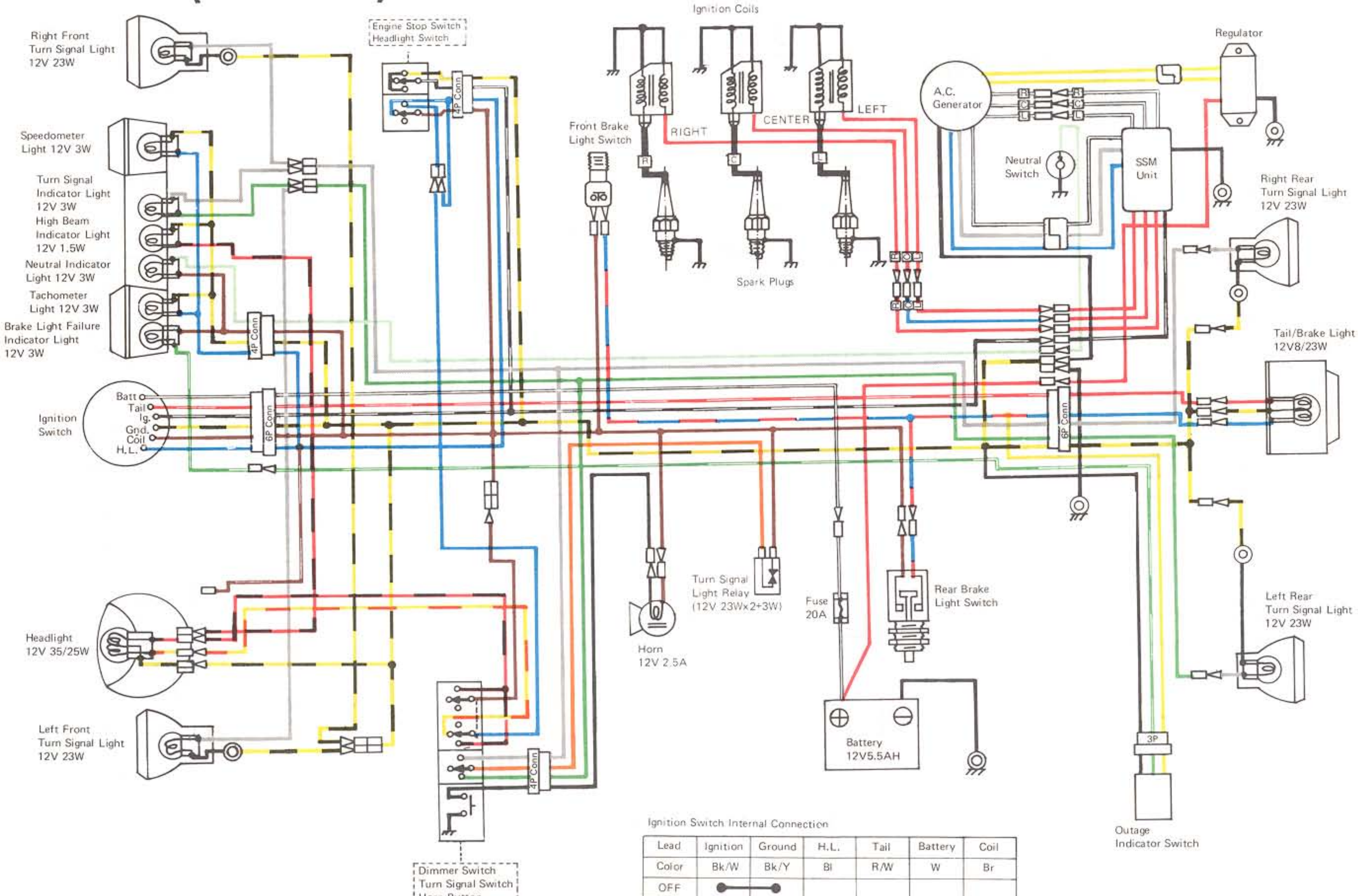


Ignition Switch Connections

Lead	Ignition	E	H.L.	Tail	Battery	Coil
Color	Bk/W	Bk/Y	Blue	R/W	White	Brown
OFF	●—	—●				
ON			●—	—●	●—	—●
PARK	●—	—●		●—	—●	

(209-1)

H2-B Wiring Diagram (US Model)

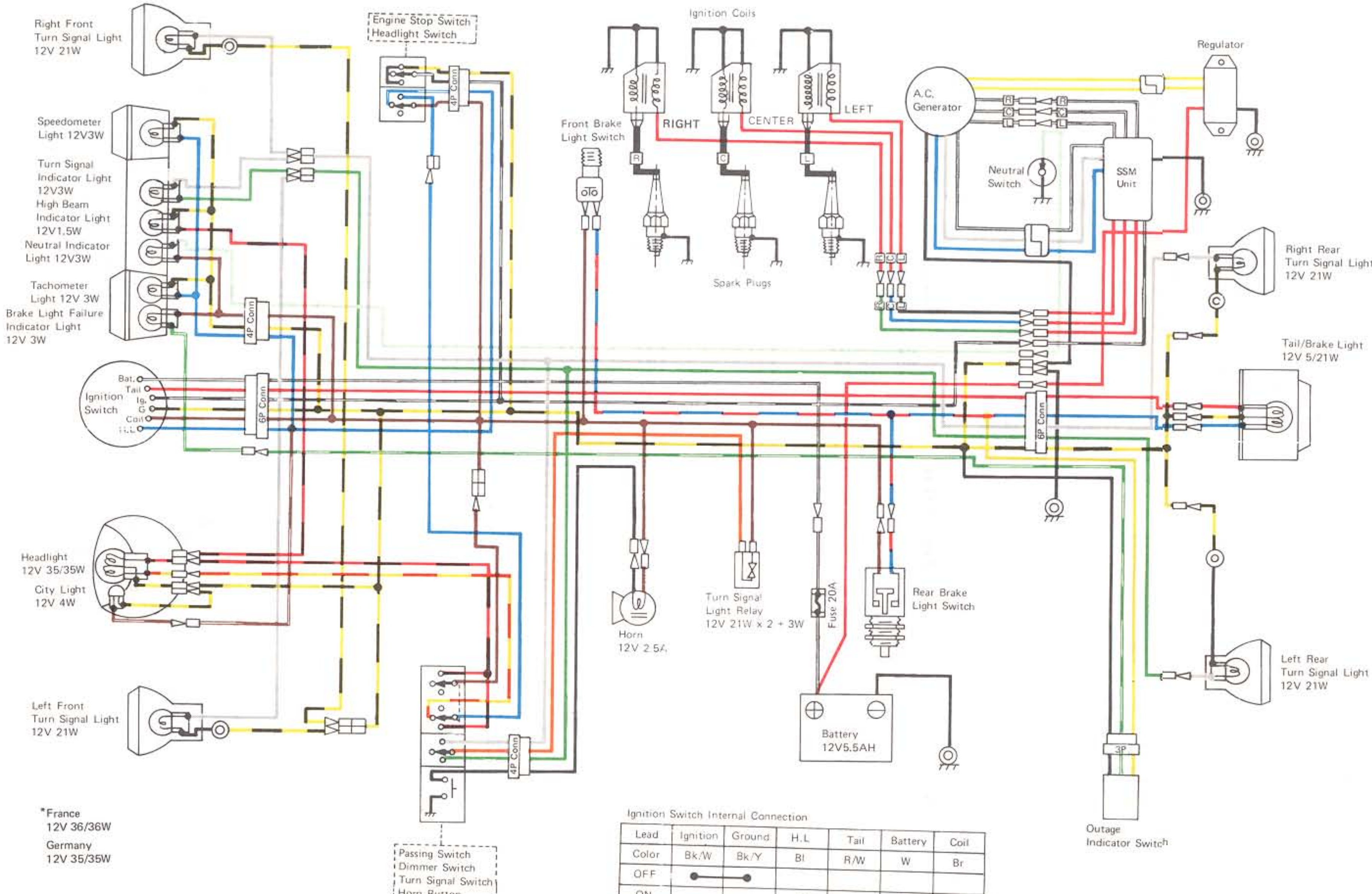


Ignition Switch Internal Connection

Lead	Ignition	Ground	H.L.	Tail	Battery	Coil
Color	Bk/W	Bk/Y	Bl	R/W	W	Br
OFF	●—	—●				
ON			●—	—●	●—	—●
PARK	●—	—●		●—	—●	

(147–2)

H2-B Wiring Diagram (European Model)



Ignition Switch Internal Connection

Lead	Ignition	Ground	H.L	Tail	Battery	Coil
Color	Bk/W	Bk/Y	Bl	R/W	W	Br
OFF	●	●				
ON			●	●	●	●
PARK	●	●		●	●	

(156–1)