HONDA MODEL ST90

OWNER'S MANUAL

IMPORTANT NOTICE

- OPERATOR ONLY.

  This motorcycle is designed and constructed as an operator only model. The vehicle load limit and seating configuration do not safely permit the carrying of a passenger.

- READ OWNER'S MANUAL CAREFULLY.

CONSUMER INFORMATION

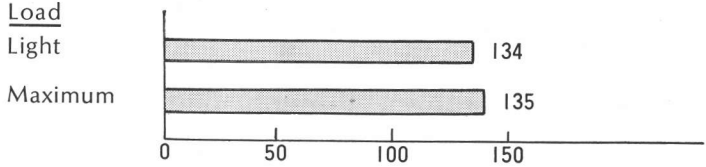
VEHICLE STOPPING DISTANCE

This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies without locking the wheels under different conditions of loading.

The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions.

Description of vehicles to which this table applies: HONDA **ST90**

Fully Operational Service Brake



Stopping Distance in Feet from 50 mph.*

* The maximum speed attainable by accelerating at maximum rate from a standing start for one mile.

ACCELERATION AND PASSING ABILITY

This figure indicates passing times and distances that can be met or exceeded by the vehicles to which it applies, in the situations diagrammed on the next page.

The low-speed pass assumes an initial speed of 20 MPH and a limiting speed of 35 MPH. The high-speed pass assumes an initial speed of 50 MPH and a limiting speed of 80 MPH.

NOTICE: The information presented represents results obtainable by skilled drivers under controlled road and vehicle condition and the information may not be correct under other conditions.

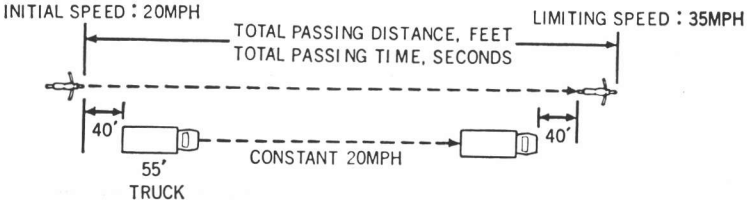
Description of vehicles to which this table applies: HONDA **ST 90**

SUMMARY TABLE:

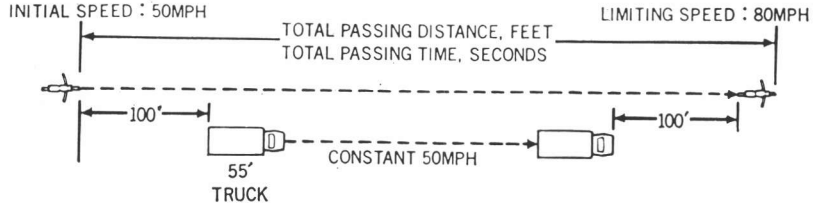
Low-speed pass..... **425** Feet; **10** Seconds

High-speed pass..... Not Capable

LOW-SPEED



HIGH-SPEED



PREFACE

It is with great pleasure that we welcome you as a new owner of the HONDA ST90. Further, we wish to thank you for selecting a HONDA product.
The ST90 features a quiet engine and light weight construction, and has been designed for easy handling.

This Owner's Manual is a guide for the proper operation and servicing of your ST90. Read it thoroughly so that you will be able to maintain your ST90 in the best condition for the utmost in riding pleasure.
Your HONDA dealer will provide you with complete periodic inspection and he is always happy to give you assistance in case you have any problem. We wish you many miles of safe and happy riding.

MOTORCYCLE TRAFFIC SAFETY

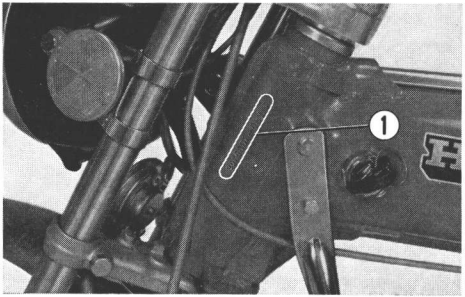
A motorcycle is only as safe as its operator. The safe rider will spend much time learning to ride and developing his riding skills in an uncongested area before venturing into traffic.

1. In many motorcycle traffic accidents, the automobile driver does not see the motorcyclist in time to avoid an accident. The motorcyclist can make other motorists more aware of his presence by:
   - Wearing brighter, more visible clothing.
   - Using the headlight anytime while riding.
   - Avoiding the "blind spot" of other vehicles and driving defensively.
2. Many motorcycle accidents occur at intersections, parking lot entrances and exits, and driveways. The motorcyclist must show extra caution at these locations.
3. Excessive speed is a factor in many motorcycle accidents. Obey the speed limits and NEVER travel faster than conditions warrant.
4. Many motorcycle accidents involve inexperienced riders. A new motorcyclist should thoroughly familiarize himself with his motorcycle before attempting to ride on public roads. NEVER lend your motorcycle to an inexperienced rider.
5. Most fatal motorcycle accidents are due to head injuries. The motorcyclist should ALWAYS wear a helmet. He should also wear other protective apparel including eye protection, boots, gloves, and heavy clothing.

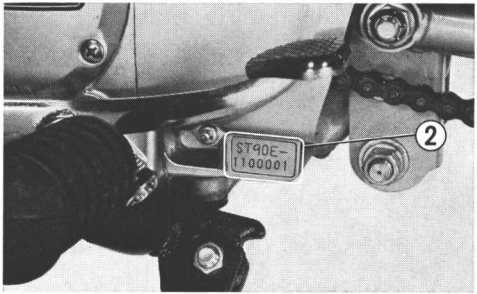
CONTENTS

SERIAL NUMBER LOCATION

The frame serial number ① is stamped on the left of the steering head. The engine serial number ② is located on the lower left side of the engine. These numbers are required when registering the motorcycle. Refer to the frame or engine serial number when ordering replacement parts to ensure that you will obtain the correct parts for your model series.

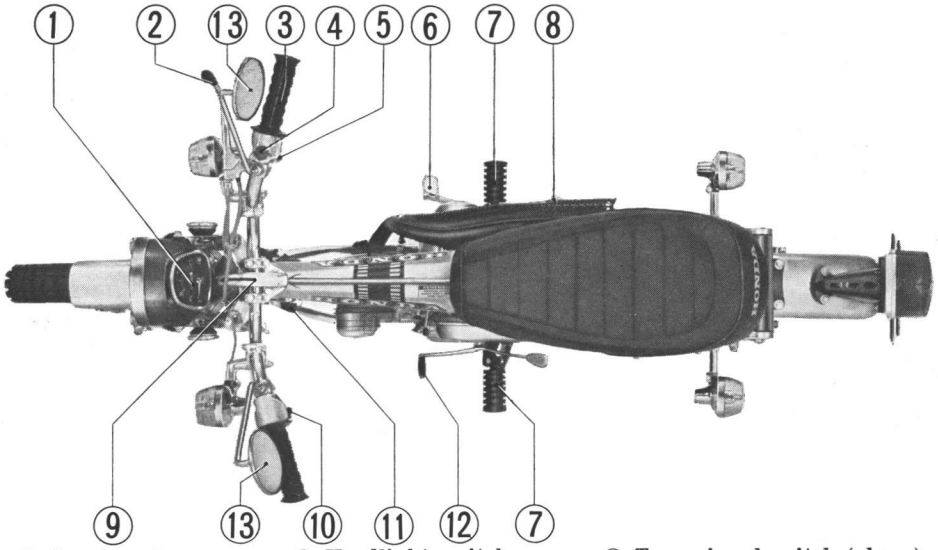


① **Frame serial number**

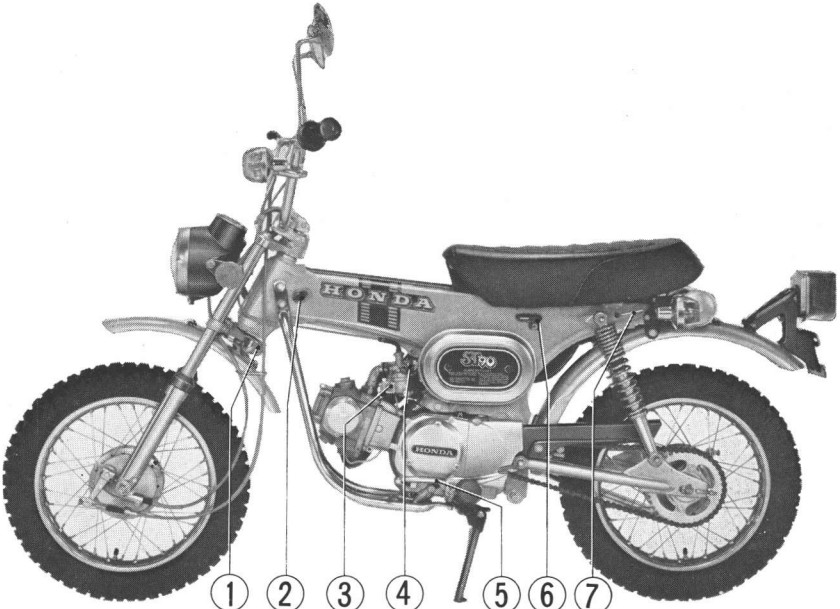


② **Engine serial number**

CONTROL LOCATIONS



① Speedometer
② Front brake lever
③ Throttle grip
④ Ignition switch
⑤ Headlight switch
⑥ Rear brake pedal
⑦ Foot pegs
⑧ Kick starter
⑨ Clamp lever
⑩ Turn signal switch (above)
Horn button (below)
⑪ Main switch
⑫ Gear change pedal
⑬ Rear view mirror

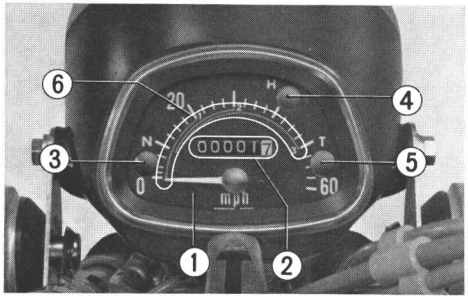


① Steering lock
② Main switch
③ Fuel valve
④ Choke handle
⑤ Gear change pedal
⑥ Helmet holder
⑦ Seat latch

① Kick starter ② Rear brake pedal

Speedometer

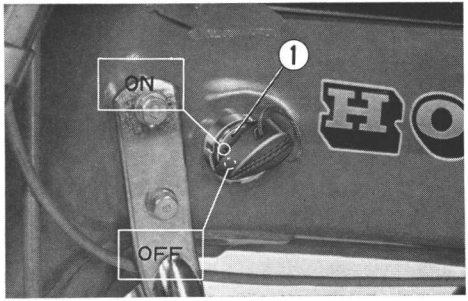
The speedometer ① is mounted on the head light case. Instrument and indicator light functions are shown in the adjacent table.



Ref. No.	Description	Function
1	Speedometer	Indicates driving speed.
2	Odometer	Indicates total accumulated distance traveled.
3	Neutral indicator lamp (green)	Lamp will be on when the transmission is in neutral.
4	High beam indicator lamp (blue)	Lamp will be on when headlight is on high beam
5	Turn signal indicator lamp (amber)	Lamp flashes when either turn signal light is operating.
6	Gear speed range indicators	Indicates proper speed for each gear.

Main Switch

The main switch ① is located on the left side of the steering head. Functions of the respective switch positions are shown in the chart below.

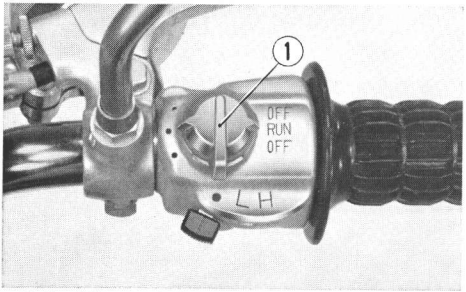


① **Main switch**

Key Position	Function	Key Removal
OFF (black dot)	All electrical circuits are open; engine will not start.	Key can be removed.
ON (red dot)	Electrical circuits are closed; engine can be started; headlight and tail/stop light can be operated; neutral indicator lamp lights with the transmission in neutral position.	Key cannot be removed.

Ignition Switch

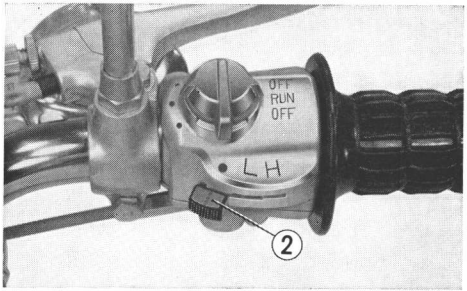
The three position ignition switch ① is located on top of the right handlebar grip switch housing. In the "RUN" position (center) the ignition circuit will be completed and engine will operate. In the "OFF" position (either side of center) the ignition circuit will be open and the engine will not operate. This switch is intended primarily as a safety or emergency switch and can normally remain in the "RUN" position.



① **Ignition switch**

Headlight Switch

The headlight switch ② is located on the right handlebar grip switch housing. It can be operated without taking the hand off the handlebar grip. The red dot is the "OFF" position (headlight and taillight off). "L" is the low beam position (low beam light and taillight on). "H" is the high beam position (high beam light and taillight on). The headlight will only operate when the main switch is in the "ON" position.



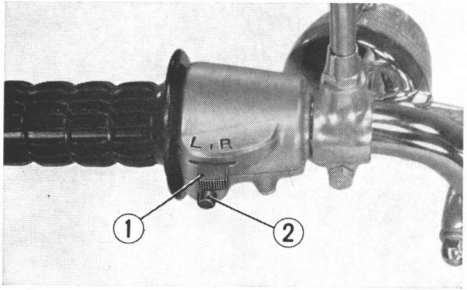
② **Headlight switch**

Turn Signal Switch

The turn signal switch ① is located on the left handlebar grip switch housing. It can be operated without taking the hand off the handlebar grip. To signal a left turn move the switch to the "L" position. To signal a right turn move the switch to the "R" position.

Horn Button

The horn button ② is located on the left handlebar grip switch housing. When the horn button is pressed the horn will operate.



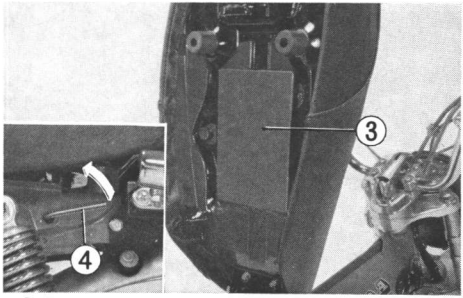
① Turn signal switch ② Horn button

Document Compartment

The document compartment ③ is located under the seat.

The seat can be raised by releasing the seat latch ④ located at the rear of the seat.

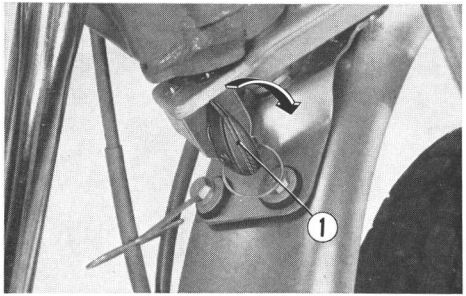
Put this owner's manual and other documents in the vinyl sack and place them in the document compartment. When washing your motorcycle, be careful not to direct a blast of wear at the bottom of the seat.



③ Document compartment ④ Seat latch

Steering Lock

The steering lock ① is located on the steering stem directly below the steering head. Turn the handlebar to the left, insert the key into the lock, turn clockwise 180° and remove the key. This locks the steering and helps to prevent theft.

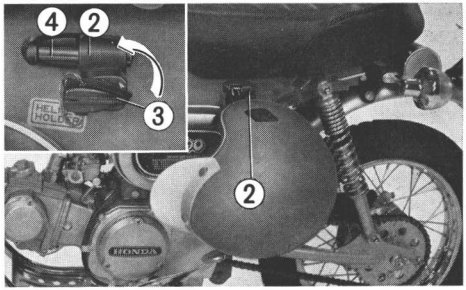


① **Steering lock**

Helmet Holder

The helmet holder ② eliminates carrying your helmet when parking. The holder can be locked to prevent theft.

1. Unlock the holder with the main switch key ③.
2. Hang your helmet on the holder pin ④ and push the pin. This action automatically locks the helmet holder.



② **Helmet holder**
③ **Main switch key**
④ **Holder pin**

Fuel Valve

The fuel valve is mounted on the left side of the carburator.

● "S" Position.

When the fuel valve lever ① is turned to the "S" position, fuel cannot flow from the fuel tank to the carburetor. Set the valve lever in this position whenever the motorcycle is not in use.

● "ON" position.

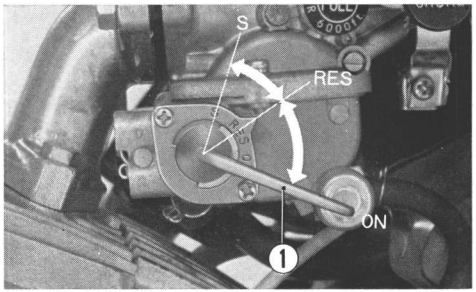
When the fuel valve lever is turned to the "ON" position, fuel will flow from the main fuel supply to the carburetor.

Set the valve lever in this position when the engine is to be operated from the main fuel supply.

● "RES" position.

When the fuel valve lever is turned to the "RES" position, fuel will flow from the reserve fuel supply to the carburetor. The fuel valve lever should be set in this position only after the regular fuel supply has been consumed. The reserve fuel supply is 0.1 gal.

Switching to the reserve fuel supply this serves as a warning to the rider that it is time to refill the fuel tank. Remember to return the valve to the "ON" position after refueling.



① **Fuel valve lever**

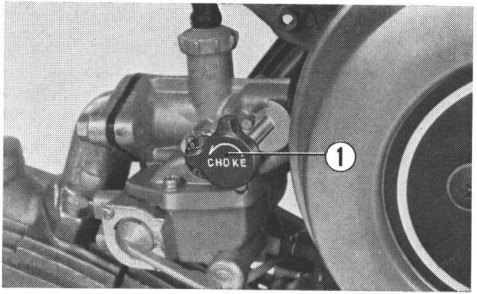
Choke Handle and Altitude Compensator Knob

The choke handle ① and a altitude compensator knob ② are located on the left side of the carburetor.

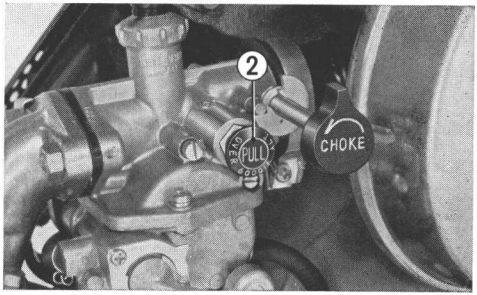
Turning the choke handle counterclockwise will close the choke to produce a rich fuel mixture for starting the engine when cold. As the engine attains normal operating temperature, the choke must be opened by turning the choke handle clockwise.

The carburetor is equipped with an altitude compensator to provide leaner fuel mixture needed in high altitude operation.

Pull the compensator knob out when riding at altitudes above 6,000 feet. The knob must be pushed in when riding at altitudes below 6,000 feet.



① **Choke handle**



② **Altitude compensator knob**

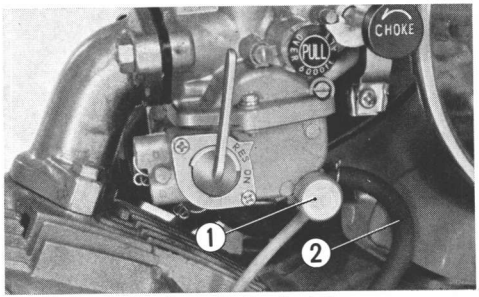
Fuel Drain

A fuel drain is provided to empty the carburetor and fuel tank for storage or transport.

The fuel drain is opened by turning the carburetor drain knob ① counterclockwise. If the fuel valve lever is set in the "S" position, the carburetor only will drain. With the fuel valve set in the "RES" position, all fuel in the fuel tank and carburetor will drain.

When draining fuel, place the lower end of the carburetor drain tube ② into a suitable gasoline container.

Before refilling the fuel tank, close the fuel drain by turning the carburetor drain knob clockwise until tight.



① Drain knob ② Drain tube

Fuel Tank

The fuel tank is located under the seat. The seat can be opened by releasing the seat latch ①.

Fuel tank capacity is 0.7 US gal. including 0.1 US gal. in the reserve supply. The fuel tank cap ② is removed by twisting counterclockwise. Use low-lead or regular gasoline with a Research Octane number of 91 or higher or a Pump Octane number of 86 or higher.

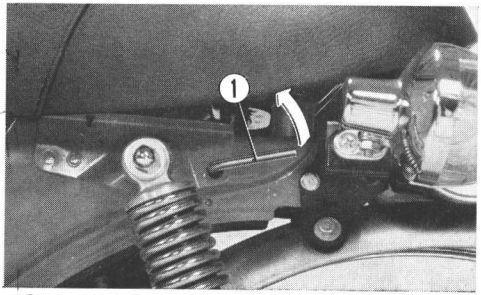
When refueling, take care to exclude dirt, water or other contaminants from the fuel tank.

NOTE:

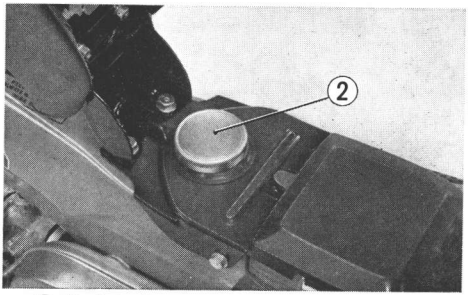
Pump Octane is the octane formula specified by the Cost of Living Council.

WARNING:

Gasoline is flammable and explosive under certain conditions. Always stop the engine and do not smoke or allow open flames or sparks near the motorcycle when refueling or draining fuel.



① Seat latch



② Fuel tank cap

Engine Oil Recommendation

Use only high detergent, premium quality motor oil certified to meet or exceed US automobile manufacturer's requirements for Service Classification SE. Motor oils intended for Service SE will show this designation on the container.

The regular use of special oil additives is unnecessary and will only increase operating expenses.

Engine oil should be changed at the intervals prescribed in the maintenance schedule on page 30.

NOTE:

Engine oil is a major factor affecting the performance and service life of the engine. Non-detergent and low quality oils are specifically not recommended.

Viscosity

Viscosity selection should be based on the average atmospheric temperature in your riding area. Change to the proper viscosity oil whenever the average atmospheric temperature changes substantially.

Recommended oil viscosity:

General, all temperatures

SAE 10W-30 or SAE 10W-40

Alternate:

Above 59°F	**SAE 30**
32° to 59°F	**SAE 20 or 20W**
Below 32°F	**SAE 10W**

PRE-RIDING INSPECTION

At the start of each riding day, perform a general inspection to be certain the motorcycle is in good, safe operating condition. This inspection will require only a few minutes and can save you much time and expense in the long run. Check the following items and adjust or service if necessary. Refer to the appropriate section of this manual for detailed maintenance instructions.

1. ENGINE OIL LEVEL—Measure oil level and add oil if necessary (page 33).
2. FUEL—Check fuel level and fill tank if low (page 17).
3. BRAKES—Check operation of front and rear brakes. Adjust free play if necessary (pages 51~54).
4. TIRE PRESSURE—Check with a tire pressure gauge (page 20).
5. DRIVE CHAIN—Check condition of chain and measure chain slack. Adjust if drive chain tension is incorrect. Lubricate if drive chain appears dry. Replace if drive chain is badly worn or damaged (pages 48~51).
6. THROTTLE—Check throttle operation in all steering positions. Adjust if free play is incorrect. Replace or correct cable routing if throttle does not operate freely in all steering positions (page 45).
7. LIGHTING EQUIPMENT—Check headlight and tail/stoplight. Replace any bulb which fails to light (page 59).

TIRE RECOMMENDATIONS

Correct tire pressures will help extend tire service life and will provide the best handling characteristics and riding comfort. Check tire pressures frequently, and maintain the pressures shown in the following chart:

Cold tire pressures psi (kg/cm²)	Front: 18 (1.3)
	Rear: 24 (1.7)
Vehicle capacity load	220 lbs (100 kg) operator only
Tire size	Front: 3.00–14
	Rear: 3.00–14

CAUTION:

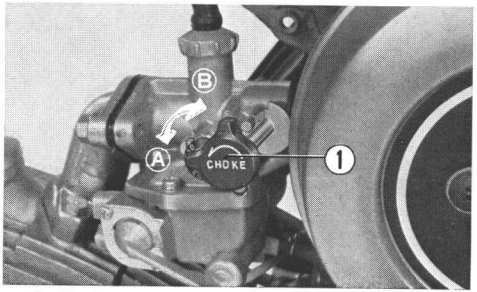
- **Overinflation or underinflation of the tires will cause abnormal tread wear or other damage and create a safety hazard. Riding with underinflated tires will cause the tires to slip on the rims damaging the innertube valves. Severe underinflation may result in loss of the tire from the rim.**
- **Check tire pressures frequently and adjust if necessary.**
- **Replace the tires when the tread depth at the center of the tire is less than 0.12 in. (3 mm).**

Starting a Cold Engine

1. Turn the fuel valve lever to the "ON" position (page 14).
2. Turn the ignition switch to the "RUN" position (page 11).
3. Insert the key into the main switch and turn to the "ON" position. Observe the green neutral indicator lamp on the lower left side of the speedometer. The lamp will light when the transmission is in the neutral position.
4. Turn the choke handle ① to the fully closed position Ⓐ.
5. Open the throttle slightly and operate the kick starter with the right foot, starting from the top of the stroke and following through to the bottom with a rapid and continuous motion. Operate several times until engine starts.

   If the engine fails to start after several repeated attempts, it may have become flooded with excess fuel. To clear the engine, turn off the main switch and turn the choke handle to the fully open position Ⓑ, open the throttle fully and crank the engine using the kick starter pedal.

   Turn the main switch to the "ON" position and follow the starting procedure outlined in steps 1 through 4.



① **Choke handle**

6. After starting, warm up the engine until the engine properly responds to the throttle with the choke fully open (position Ⓑ).

Starting in Extremely Cold Weather

Prime the engine before starting by cranking several times with the kick starter pedal. The main switch should be "OFF", the choke fully closed and the throttle opened slightly. Follow the starting procedure for a cold engine.

Starting a Warm Engine

When the engine is to be re-started while still warm, proceed as for cold engine starting, however, do not use the choke.

WARNING:

Exhaust gases contain poisonous carbon monoxide. Never run the engine in a closed garage or in a confined area.

BREAK-IN PROCEDURE

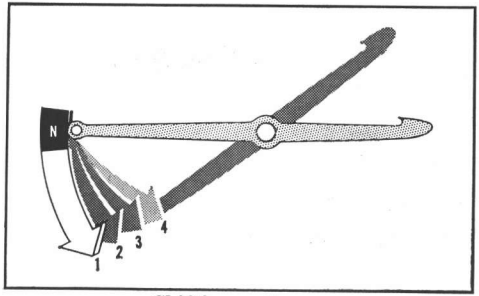
During the first 600 miles (1,000 km), operate your new ST90 so the engine neither pulls laboriously nor exceeds 80% of the maximum rpm in any gear. Avoid full throttle operation, and select your gear changes to spare the engine undue stress. Careful break-in procedure during the initial mileage will measurably extend the service life of the engine.

1. After the engine has been warmed up, the motorcycle is ready for riding.
2. While the engine is idling, depress the forward end of the gear change pedal to shift into low (1st) gear.

WARNING:

Ensure that the side stand is retracted before riding the motorcycle.

3. Increase engine speed by opening the throttle slightly.
4. When the motorcycle attains a moderate speed, close the throttle, and shift to 2nd gear by depressing the gear change pedal.
5. This sequence is repeated to progressively shift to 3rd (top) gear.
6. When decelerating the motorcycle, coordination of the throttle and the front and rear brakes is important.
   1) The smooth gradual application of both the front and rear brakes together with the required throttle coordination will, under most conditions, assure good control and stability during deceleration. As the motorcycle speed is reduced, it is common practice to downshift the transmission progressively into the gear appropriate for the speed of the motorcycle.
   2) For maximum deceleration and



Shifting pattern

braking, close the throttle, apply both the front and rear brakes simultaneously. This maneuver requires smooth coordination of the controls. Both front and rear brakes should be applied equally. Independent use of only the front or rear brake reduces stopping performance. Excessive brake application may cause either wheel to lock, reducing control of the motorcycle. Avoid locking the wheels. If excessive brake application causes either wheel to lock, reduce applied pressure on the brake pedal or lever.

WARNING:

The exhaust pipe and muffler become very hot during operation. Wear clothing which will completely cover the legs while riding, and avoid any contact with unshielded portions of the exhaust system.

SAFE RIDING SUGGESTIONS

1. Always make a PRE-RIDING INSPECTION prior to riding your motorcycle (see page 19).
2. Never ride a motorcycle without a helmet and it is recommended that the motorcyclist wear boots, gloves, eye protection, and bright clothing to further enhance rider safety.
3. Handlebar fairings and luggage racks or saddle bags may adversely affect the handling characteristics of the motorcycle. Extra care must be taken in loading and riding motorcycles with this equipment.
4. Place both hands on the handlebars and your feet on the foot rests while riding.
5. Obey all federal and local law regulations and use your headlight in the daytime hours to make the motorcycle more visible to other motorists.

6. It is recommended that you become familiar with your new HONDA ST90 by riding in an uncongested area before riding on the public roadways.
7. Be sure to signal when making a turn or changing lanes.
8. Do not ride on the roadway shoulder. Remember a motorcyclist should always preserve nature and respect property.

PARKING

When parking the motorcycle, place the main switch in the "OFF" position and remove the key. Also, the steering should be locked and the fuel valve lever turned to the "S" position.

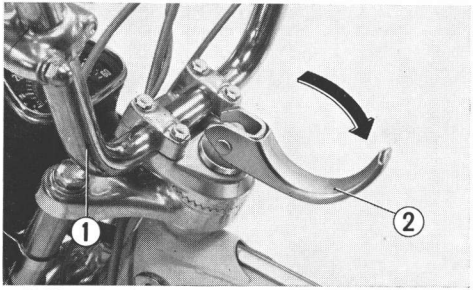
A motorcycle is only as safe as its operator. The safe rider will spend much time learning to ride and developing his riding skills in an uncongested off-road area free of obstacles before venturing into areas of varied terrain.

1. Always obey local off-road riding laws and regulations and show respect for private property by obeying posted signs.
2. Always preserve nature and watch for fire hazards such as dry grass conditions, etc.
3. Clean up trash and do not litter.
4. When off-road riding, ride in the company of a friend on another motorcycle so that you can be of mutual assistance to each other in the event of trouble.
5. Remember to always wear protective apparel including a safety helmet, eye protection, gloves, boots, and heavy clothing.
6. Familiarity with your motorcycle is critically important in off-road riding. NEVER ride beyond your ability and experience.
7. Know the terrain on which you are riding. Always ride so that your visbility is sufficient to give adequate warning of upcoming hazards.
8. NEVER ride faster than conditions warranty.
9. Don't modify your exhaust system. Remember that excessive noise antagonizes everyone and creates a bad image for motorcycles.
10. Many off-road motorcycles are not legally equipped to be ridden on the highway. Remember to walk an off-road motorcycle when crossing the public highways, roads or streets.

TRANSPORTING TIPS

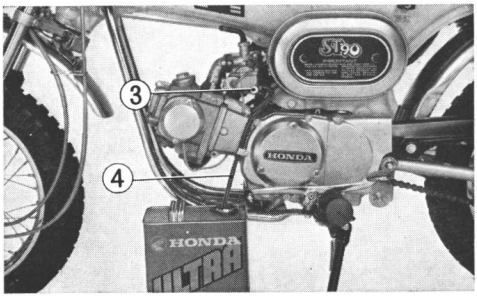
The HONDA ST 90 has been specially designed to fit in a limited carrying space for transporting to and from the riding area. The handlebar is easily moved to reduce the overall width of the ST 90.

1. The handlebar ① is provided with a clamp which locks the handlebar mount to the fork bridge. Unlatching the clamp releases the mount and permits the handlebar to be pivoted to conform with available storage space. Raise the clamp lever ②, and pivot the handlebar up to 90° in a counterclockwise direction. Do not allow the control cables to bind or stretch taut.

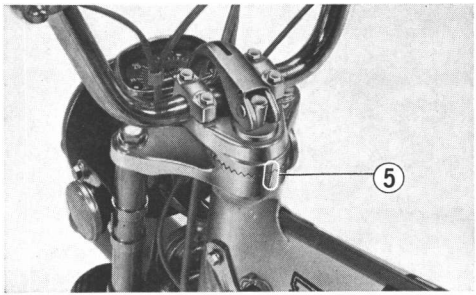


① **Handlebar** ② **Clamp lever**

2. You must drain all fuel before transporting.
   a. Turn the carburetor fuel valve lever to the "RES" position. This will allow all gasoline in the fuel tank to drain through the carburetor.
   b. Place the free end of the carburetor drain tube into a suitable gasoline container.
   c. Open the carburetor drain by turning the drain knob ③ counterclockwise. (see caution on page 16).
   d. When all fuel has been drained from the ST90, close the carburetor drain knob.
   e. Turn the carburetor fuel valve lever to the "S" position.
3. When returning the handlebar to the riding position, align the index marks ⑤ at the handlebar mount before closing the clamp lever.

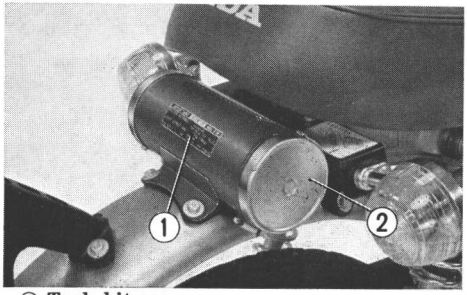


③ **Fuel drain knob** ④ **Drain tube**



⑤ **Index marks**

The tool kit case ① is located on the rear fender. To open, turn the case cap ② counterclockwise. To close, align the tab of the cap with the slot on the case and turn it clockwise. Minor adjustment and parts replacement can be performed with the tools contained in the kit. Adjustments or repairs which cannot be performed with the tools in the kit should be referred to your HONDA dealer.



① Took kit case
② Took kit case cap

Listed below are the items included in the tool kit.

- 10×12 mm open end wrench
- 14×17 mm open end wrench
- Spark plug wrench
- Wrench handle
- Pliers
- No. 3 phillips screwdriver
- No. 2 phillips screwdriver
- No. 2 standard screwdriver
- Screwdriver grip: for screwdriver
- Tool bag

MAINTENANCE SCHEDULE

The mileage intervals shown in the MAINTENANCE SCHEDULE are intended as a guide for establishing regular maintenance and lubrication periods for your HONDA. Sustained severe or high speed operation under adverse conditions will necessitate more frequent servicing. To determine specific recommendations for conditions under which you use your motorcycle, consult your authorized HONDA dealer.

WARNING:

If your HONDA ST 90 is involved in an accident, have your HONDA dealer carefully inspect the major components, e.g. frame, suspension and steering parts for misalignment or damage to ensure further safe operation

CAUTION:

To maintain the safety and reliability of your HONDA motorcycle do not modify the motorcycle and use only genuine HONDA parts when servicing or repairing.

MAINTENANCE SCHEDULE

This maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD			
		Perform at every indicated month or mileage interval, whichever occurs first.			
	500 miles	1 month 500 miles	3 months 1,500 miles	6 months 3,000 miles	12 months 6,000 miles
ENGINE OIL—Change.	●		○		
CENTRIFUGAL OIL FILTER—clean.					○
OIL FILTER SCREEN—Clean.					○
SPARK PLUG—Clean and adjust gap or replace if necessary.				○	
*CONTACT POINTS AND IGNITION TIMING—Clean, check, and adjust or replace if necessary.	●			○	
*VALVE TAPPET CLEARANCE—Check, and adjust if necessary.	●			○	
*CAM CHAIN TENSION—Adjust.	●			○	
POLYURETHANE FOAM AIR FILTER ELEMENT—Clean.	(service more frequently if operated in dusty areas.)		○		
*CARBURETOR—Check, and adjust if necessary.	●			○	
THROTTLE OPERATION—Inspect cable. Check, and adjust free play.	●			○	
FUEL FILTER SCREEN—Clean.				○	
FUEL LINES—Check.				○	
*CLUTCH—Check operation, and adjust if necessary.	●			○	
DRIVE CHAIN—Check, lubricate, and adjust if necessary.	**●	○			
SPARK ARRESTOR—Purge			○		

MAINTENANCE SCHEDULE

This maintenance schedule is based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

	INITIAL SERVICE PERIOD	REGULAR SERVICE PERIOD — Perform at every indicated month or mileage interval, whichever occurs first.			
	500 miles	1 month / 500 miles	3 months / 1,500 miles	6 months / 3,000 miles	12 months / 6,000 miles
*BRAKE SHOES—Inspect, and replace if worn.				○	
BRAKE CONTROL LINKAGE—Check linkage, and adjust free play if necessary.	●			○	
*WHEEL RIMS AND SPOKES—Check. Tighten spokes and true wheels, if necessary.	●			○	
TIRES—Inspect and check air pressure.	●	○			
FRONT FORK OIL—Drain and refill.	***●				○
FRONT AND REAR SUSPENSION—Check operation.	●			○	
REAR FORK BUSHING—Grease. Check for excessive looseness.				○	
*STEERING HEAD BEARINGS—Adjust.					○
BATTERY—Check electrolyte level, and add water if necessary.	●		○		
LIGHTING EQUIPMENT—Check and adjust if necessary	●	○			
ALL NUTS, BOLTS, AND OTHER FASTENERS—Check security and tighten if necessary.	●	○			

Items marked * should be serviced by an authorized Honda dealer, unless the owner has proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.

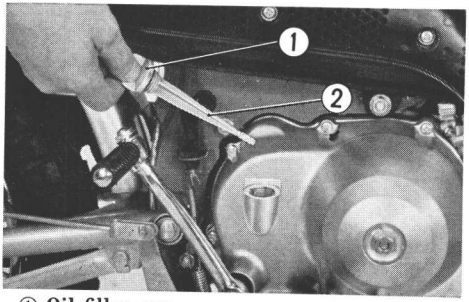
** Initial service period 200 miles.

*** Initial service period 1,500 miles.

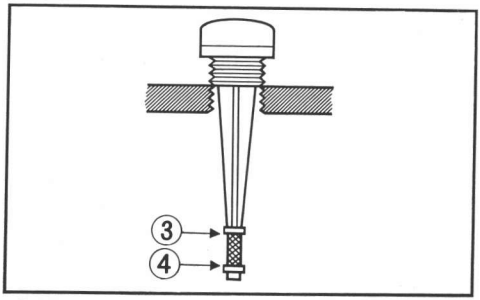
Engine Oil Level

Check engine oil level at the start of each day the motorcycle is to be operated.

The oil filler cap ① is located on the right crankcase cover and contains a dipstick ② for measuring oil level. Oil level must be maintained between the upper ③ and lower ④ oil level marks on the dipstick. Oil level must be checked with the motorcycle standing upright on level ground and the oil filler cap touching the surface of the filler opening but not screwed in.



① **Oil filler cap**
② **Dipstick**

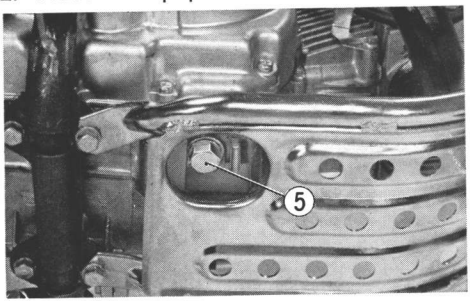


③ **Upper oil level mark**
④ **Lower oil level mark**

Engine Oil Change

Engine oil should be changed in accordance with the maintenance schedule on page 31. Use only motor oil of the grade and viscosity recommended on page 18. When changing oil, drain the used oil from the crankcase while the engine is warm. This will ensure complete and rapid draining.

1. Remove the oil filler cap ① (page 33) from the right crankcase cover.
2. Place a drip pan under the engine to catch the oil, and then remove the drain plug ⑤ with a 17 mm wrench.
3. After the oil stops draining from the crankcase, operate the kick starter several times to drain any oil which may be left in the engine.
4. When the oil has been completely drained, reinstall the drain plug making sure that the sealing washer used on the plug is in good condition.
5. Fill the crankcase with approximately **1.0** US qt. **(1.0 ℓ)** of recommended grade oil. Make sure that the oil level is between the upper ③ and lower ④ oil level marks (page 33) on the dipstick.



⑤ **Drain plug**

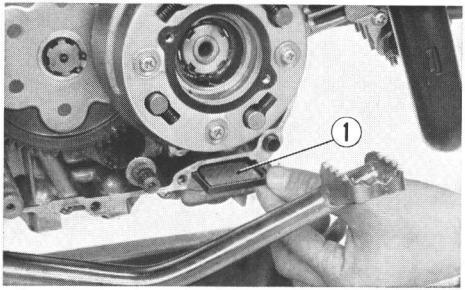
NOTE:

When operating the motorcycle under unusually dusty conditions, oil changes must be performed at more frequent intervals than specified in the maintenance schedule

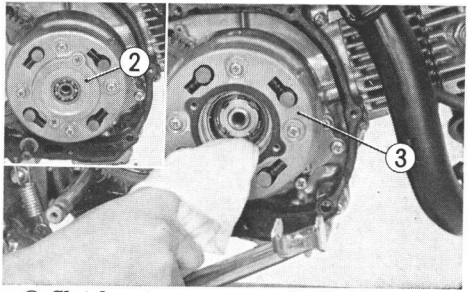
Oil Filter Cleaning

The oil filter is a centrifugal and screen type.

1. Drain the engine oil in accordance with Engine Oil Change on page 34.
2. Remove the engine protector.
3. Remove the foot pegs and kick starter pedal from the engine.
4. Remove the rear brake adjusting nut.
5. Remove the right crankcase cover.
6. Separate the right crankcase cover gasket from the right crankcase.
7. Pull out the filter screen ① from the right crankcase and wash it with clean solvent.
8. Remove the clutch outer cover ② from the clutch outer ③ by unscrewing the two screws.
9. Remove all metal chips and dirt from the center of the clutch outer with a clean rag.
10. Ressembly of the component parts is performed in the reverse order of the procedure above. Replace damaged or defective crankcase gasket with a new gasket.



① **Filter screen**



② **Clutch outer cover** ③ **Clutch outer**

Spark Plug Replacement and Adjustment

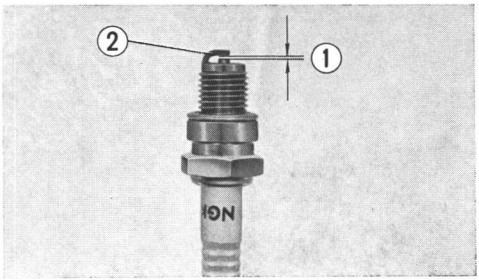
The standard spark plug for this model is NGK D-6 HS or ND X20FS.

Be sure to clean mud and sand from around the spark plug before removing it.

1. Detach the spark plug lead and remove the spark plug with the spark plug wrench provided in the tool kit.
2. Inspect the electrodes and center porcelain of the spark plug for deposits, eroded electrodes, or carbon fouling. If the spark plug deposits are heavy, or the electrodes appear to be eroded excessively, replace the spark plug with a new one. If the spark plug is carbon or wet fouled, the plug can sometimes be cleaned with a stiff wire brush.
3. Adjust the spark plug gap ① to **0.024–0.028 in. (0.6–0.7 mm).** The gap can be measured with a feeler gauge. The adjustment is made by carefully bending the side (grounded) electrode ②.

Before installing the spark plug, clean any oil or dirt from the spark plug seat in the cylinder head.

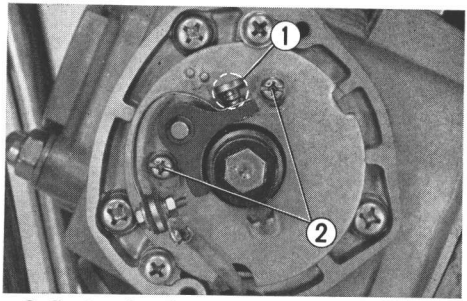
Install the spark plug by hand until finger tight. Use the spark plug wrench to tighten the plug an additional 1/2 to 3/4 turn or until the sealing gasket is compressed.



① Spark plug gap
② Side electrode

Contact Breaker Point Gap Adjustment

1. Remove the point and generator covers.
2. Open the contact breaker points ① with your finger or small screwdriver blade and check for pitting. If pitted or burned, the points should be replaced and the condenser checked. A gray discoloration is normal and can be removed with a point file. Filing should be done carefully and kept to a minimum. Clean the point contacts after filing with chemical point cleaner or a clean piece of unwaxed paper such as a business card.
3. Rotate the generator rotor counterclockwise to find the point where the breaker point gap is at maximum and check using a feeler gauge.
   The standard gap is **0.012–0.016 in. (0.3–0.4 mm).**
4. When adjustment is necessary, loosen the contact breaker plate locking screws ② and move the contact breaker plate to achieve correct gap. When properly gapped, retighten the locking screws.
5. Recheck after tightening.



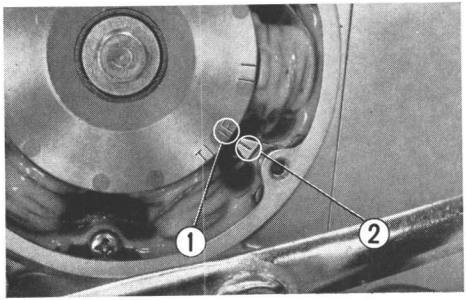
① Contact breaker points
② Contact breaker plate locking screws

Ignition Timing Adjustment

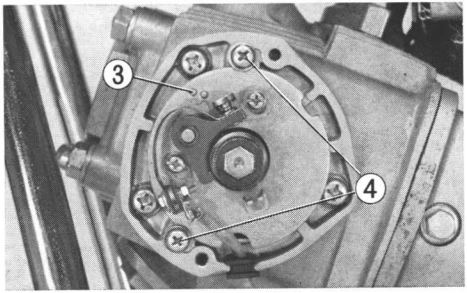
Do not perform this operation until point gap has been adjusted.

1. Rotate the generator rotor counterclockwise and align the "F" mark ① to the index mark ②. At this time, the contact breaker points should just start to open.
2. To adjust, loosen the two base plate locking screws ④ and move the contact breaker base plate ③. Moving the plate clockwise will advance the timing.
3. After performing the ignition timing adjustment, recheck the contact breaker point gap ① (page 37) to ensure that it has not changed.

Static ignition timing is relatively accurate and will give satisfactory engine performance; however, the use of a



① "F" mark
② Index mark



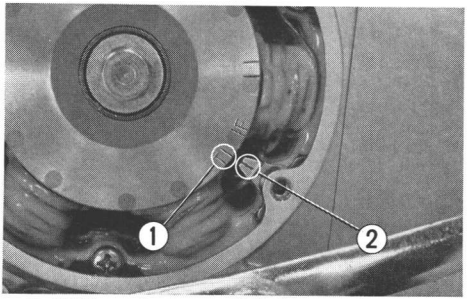
③ Contact breaker base plate
④ Base plate locking screws

stroboscopic timing light will provide more precise timing.
When using a stroboscopic timing light to check the timing, idle the engine at 1,300 rpm.
Perform the adjustment in the same manner as described on page 38.

Valve Tappet Clearance Adjustment

Excessive valve tappet clearance will cause tappet noise, and little or no clearance will cause valve damage and loss of power. Therefore, valve tappet clearance should be properly maintained.
Valve tappet clearance is checked with the engine cold.

1. Remove the generator cover and tappet adjusting hole caps.
2. Rotate the generator rotor counterclockwise until the "T" mark ① on the generator rotor lines up with the index mark ② on the stator.



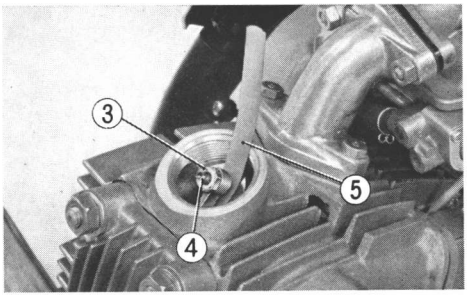
① "T" mark ② Index mark

In this position, the piston may be either on the compression or the exhaust stroke.

The adjustment is made with the piston at the top of the compression stroke when both the intake and exhaust valves are closed. This condition can be determined by moving the tappets with the fingers through the tappet adjusting holes. If the tappets are free, it is an indication that the valves are closed and that the piston is on the compression stroke. If the tappets are tight and the valves are open, rotate the generator rotor 360° and realign the "T" mark with the timing index mark.

Check the clearance of both valves by inserting a **0.002 in. (0.05 mm)** feeler gauge between the adjusting screw and the valve stem.

If it is necessary to make an adjustment, loosen the adjusting screw lock nut ③ and turn the adjusting screw ④ so that the valve clearance offers slight resistance when the feeler gauge ⑤ is inserted. After completing the adjustment, tighten the adjusting screw lock nut while holding the adjusting screw to prevent it from turning. Finally, recheck the clearance to make sure that the adjustment has not changed.

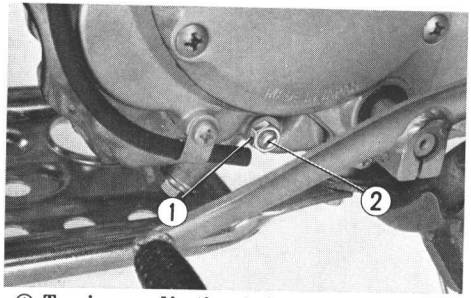


③ **Adjusting screw lock nut**
④ **Adjusting screw**
⑤ **Feeler gauge**

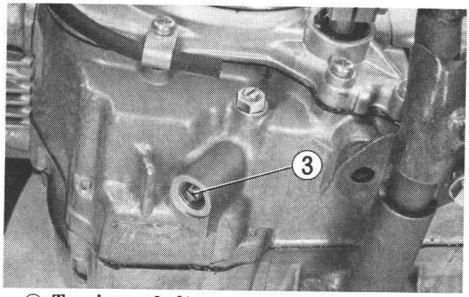
Cam Chain Adjustment

Too tight or too loose a cam chain will adversely affect the engine. Make tension adjustment while the engine is idling.

1. To adjust, loosen the lock nut ① and loosen tensioner adjusting bolt ② approximately one half turn.
2. If the chain is still noisy even after the above adjustment, remove the engine protector, loosen 14 mm sealing bolt located at the left bottom side of the crankcase, and screw in the tensioner bolt ③ gradually until it is no longer noisy. After completing the adjustment, tighten the tensioner adjusting bolt lock nut and 14 mm sealing bolt.



① **Tensioner adjusting bolt lock nut**
② **Tensioner adjusting bolt**



③ **Tensioner bolt**

Air Filter Maintenance

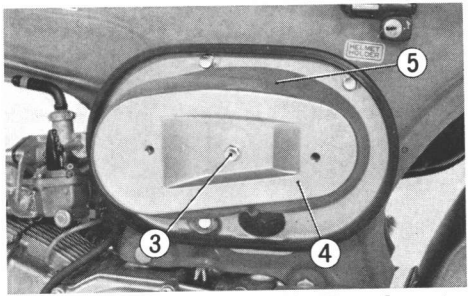
When the air filter is clogged, it affects engine performance and; therefore, should be cleaned periodically.

1. Unscrew the air filter cover attaching screw ① and remove the cover ②.
2. Unscrew the hex bolt ③ and remove the air filter element plate ④.
3. Pull out the air filter element ⑤ from the air filter case.
4. Wash air filter element in clean stoddard solvent and allow to dry thoroughly.
5. Soak air filter element in clean gear oil (SAE 80–SAE 90) until saturated, then squeeze out excess oil.
6. Reinstall air filter elment.
7. Reinstall air filter cover.

WARNING:

Gasoline or low flash point solvents are highly flammable and must not be used to clean air filter element.

① **Air filter cover attaching screw**
② **Air filter cover**

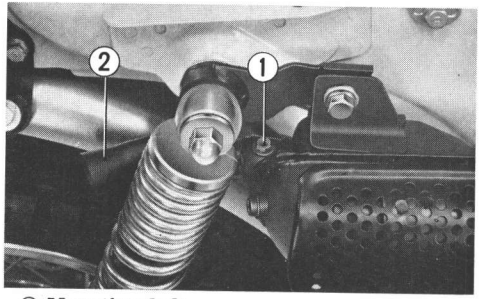


③ **Hex bolt**
④ **Air filter element plate**
⑤ **Air filter element**

Spark Arrestor Maintenance

The exhaust system spark arrestor must be purged of accumlated carbon periodically.

1. Remove the spark arrestor mounting bolt ①.
2. Remove the spark arrestor ② from the muffler outlet.
3. Start the engine and purge accumulated carbon from the muffler by momentarily revving up the engine.



① Mounting bolt
② Spark arrestor

4. Clean the spark arrestor of carbon.
5. Stop the engine and reinstall the spark arrestor and mounting bolt.

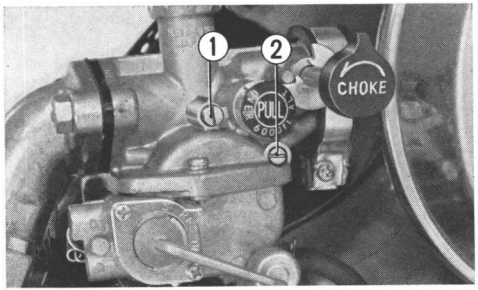
WARNING:

- **Do not perform this operation immediately after the engine has been run because the exhaust system becomes very hot.**
- **Because of the increased fire hazard ensure that there are no combustible materials in the area when purging the spark arrestor.**
- **Exhaust gases contain poisonous carbon monoxide. Perform this operation only in a well ventilated area.**

Carburetor Adjustment

The carburetor should be adjusted only after the engine has attained operating temperature.

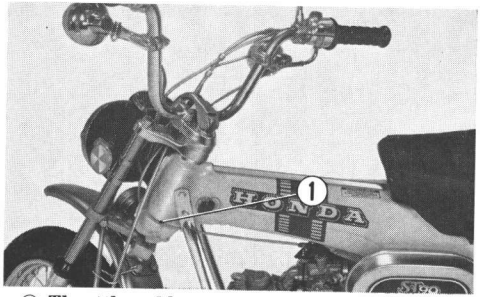
1. Adjust the idle speed screw ① until the engine idles at approximately **1,300** RPM. Turn the idle speed screw clockwise to increase idle speed or counterclockwise to decrease idle speed.
2. Turn the air screw ② clockwise until you hear the engine misfire or decrease in speed, then counterclockwise until the engine again misfire or decreases in speed. Set the air screw exactly between these two positions. Turning the air screw clockwise creates a richer fuel mixture, while turning the air screw counterclockwise creates a leaner fuel mixture. Usually the correct setting (between extremes of richness and leanness) will be found to be 1·1/2–1·3/4 turns open from a fully closed position.
3. If idle speed changes after adjusting fuel mixture, readjust the idle speed screw.



① **Idle speed screw**
② **Air screw**

Throttle Cable Inspection

Check for smooth rotation of the throttle grip from the fully open to the fully closed positions. Check both when at full left and full right steering positions. Inspect the condition of the throttle cable ① from the throttle grip down to the carburetor. If the cable is kinked, chafed or improperly routed, it should be replaced and/or re-routed. Recheck cable for tension or stress at both full left and full right steering positions.

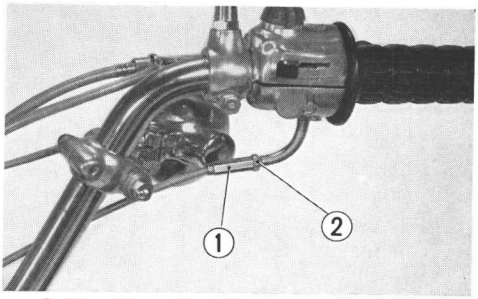


① **Throttle cable**

Throttle Grip Free Play Adjustment

Standard throttle grip free play is approximately 10–15° of grip rotation. This free play can be attained by adjustment of the throttle cable adjuster.

Loosen the lock nut ② and turn the adjuster ① until grip free play becomes 10–15°.

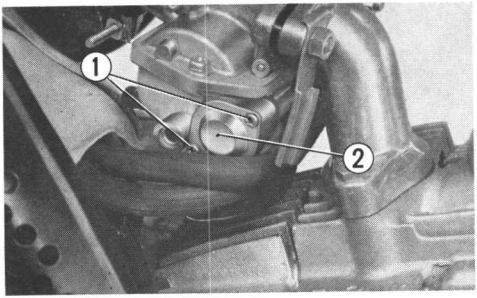


① **Throttle cable adjuster**
② **Lock nut**

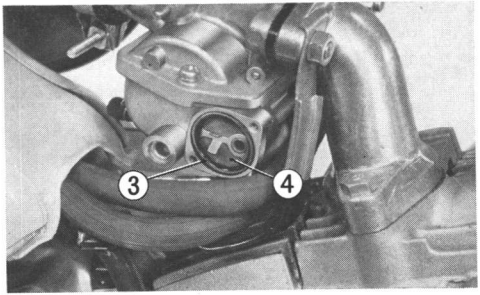
Fuel Strainer Maintenance

The fuel strainer is incorporated in the carburetor body. Accumulation of dirt in the strainer will restrict the flow of fuel and cause the carburetor to malfunction; therefore, the fuel strainer should be serviced periodically.

1. Turn the fuel valve lever to the "S" position.
2. Remove the fuel strainer cover ② by removing the two retaining screws ①.
3. Remove the O-ring seal ③ and the filter screen ④.
4. Wash the cover, O-ring, and screen in solvent and reassemble. Turn the fuel valve lever to the "ON" position and check for leaks.



① **Retaining screws**
② **Fuel strainer cover**



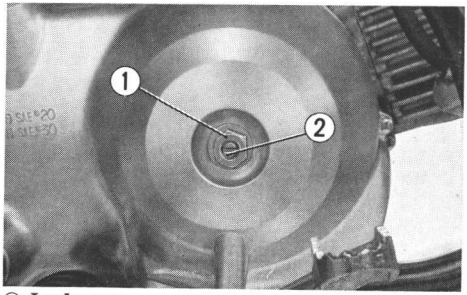
③ **"O" ring seal**
④ **Filter screen**

Clutch Adjustment

1. The clutch is adjusted with the engine off. Loosen the adjuster lock nut ①.
2. Turn the clutch adjuster ② clockwise about one turn.
3. Turn the adjuster counterclockwise and stop when the screw meets resistance.
4. From this point, back the adjuster off clockwise 1/8 to 1/4 turn, and tighten the lock nut.

Make sure that the clutch operates properly after adjustment.

- The engine should start easily with the kick starter without the clutch slipping.
- When shifting gears, the clutch action should be smooth and light, especially when shifting to the neutral position.



① Lock nut
② Clutch adjuster

Drive Chain Maintenance

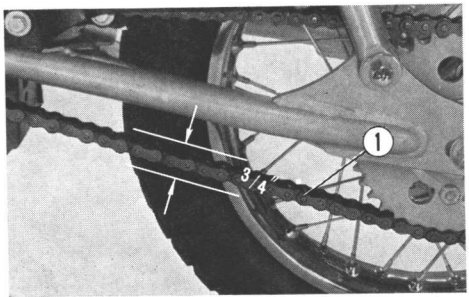
Proper tensioning and lubrication will help extend the service life of the drive chain ① and ensure smooth power transmission to the rear wheel. Under severe usage, or when the motorcycle is ridden in unusually dusty areas, more frequent maintenance is necessary.

Tension Adjustment:

1. Place the motorcycle on a support block to raise the rear wheel off the ground. Shift the transmission into neutral.
2. Check vertical movement of the lower length of the drive chain at a point midway between the sprockets. Move the chain up and down with your fingers and observe the amount of slack. Drive chain tension should be adjusted to allow approximately 3/4" vertical movement at this point.
   Rotate the rear wheel and check drive chain tension throughout its length.

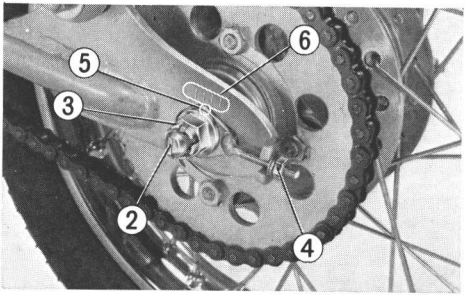
Drive chain tension should remain constant as the wheel is rotated.

If the chain is found to be slack in one segment of its length and taut in another, this indicates that some of the links are either worn or kinked and binding. Kinking and binding can frequently be eliminated by lubrication.



① **Drive chain**

3. If the drive chain is found to require adjustment, the procedure is as follows:
   a. Remove the rear axle nut cotter pin ② and loosen the rear axle nut ③.
   b. Turn the adjusting nuts ④ on both the right and left chain adjusters to increase or decrease chain tension. Align the chain adjuster index marks ⑤ with the reference marks ⑥ on both sides of the rear fork.
   c. Tighten the rear axle nut and secure the nut with a new cotter pin.
   d. Recheck drive chain tension.
   e. Rear brake pedal free travel is affected when repositioning the rear wheel to adjust drive chain tension. Check rear brake pedal free travel and adjust as necessary (page 53).



② **Cotter pin**
③ **Rear axle nut**
④ **Adjusting nut**
⑤ **Index mark**
⑥ **Reference mark**

Lubrication:

Commercially prepared drive chain lubricants may be purchased at most motorcycle shops and should be used in preference to motor oil or other lubricants. Saturate each chain joint so that the lubricant will penetrate the space between adjacent surfaces of link plates and rollers.

Removal and Cleaning:

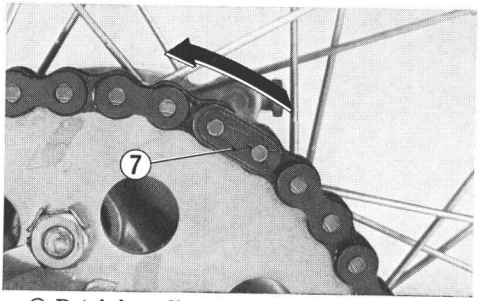
When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.

1. Carefully remove the master link retaining clip with pliers. Do not bend or twist the clip. Remove the master link. Remove the drive chain from the motorcycle.
2. Clean the drive chain in solvent and allow to dry. Inspect the drive chain for possible wear or damage. Replace any chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.
3. Inspect the sprocket teeth for possible wear or damage. Replace if necessary. Never use a new drive chain on badly worn sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprocket will wear rapidly.
4. Lubricate the drive chain.
5. Pass the chain over the sprockets and join the ends of the chain with the master link. For ease of assembly, hold the chain ends against adjacent rear sprocket teeth while inserting the master link.

   Install the master link retaining clip ⑦ (page 51) so that the closed end of the clip will face the direction of forward wheel rotation.

   The master link is the most critical part affecting the security of the drive chain. It is recommended that a new master link retaining clip be installed whenever the drive chain is reassembled.

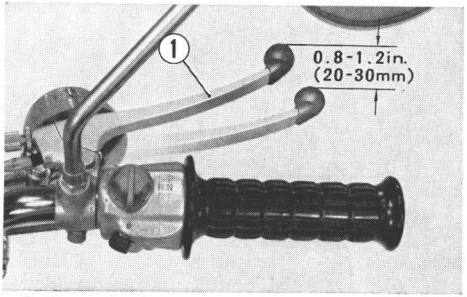
6. Adjust the drive chain to the proper tension, following the instructions on pages 48~49.



⑦ **Retaining clip**

Front Brake Adjustment

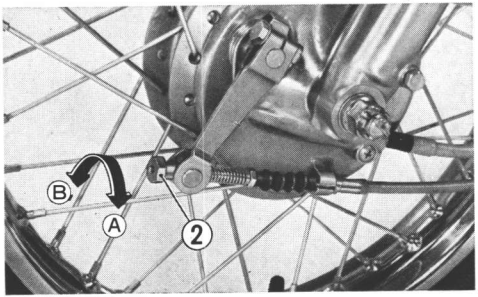
1. Raise the front wheel off the ground by placing a support block under the engine. Spin the front wheel by hand and measure the distance the front brake lever ① must be moved before the brake starts to engage.
   Free play at the end of the brake lever should be **0.8~1.2 in. (20~30 mm).**
   Major adjustments should be made using the adjuster located at the front wheel.



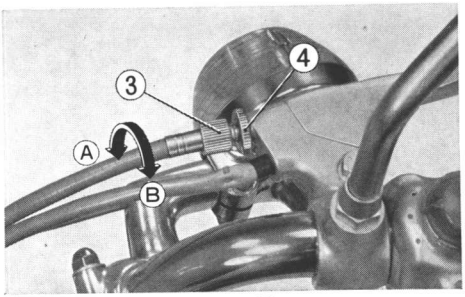
① **Front brake lever**

The adjustment is made by turning the front brake adjusting nut ②.
Turning the nut in the direction Ⓐ will decrease the brake lever free play, and turning the nut in the direction Ⓑ will increase the free play.

2. Minor adjustments can be made with the front brake cable adjuster on the front brake lever.
Loosen the lock nut ④ and turn the front brake cable adjuster ③. Turning the adjuster in direction Ⓐ will decrease the brake lever free play and turning the adjuster in direction Ⓑ will increase the free play.



② **Front brake adjusting nut**

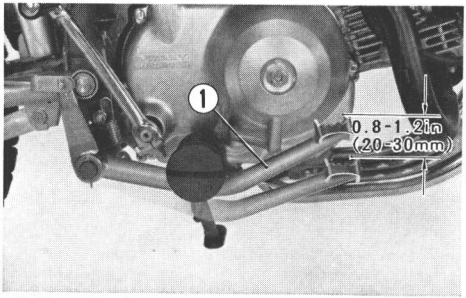


③ **Front brake cable adjuster**
④ **Lock nut**

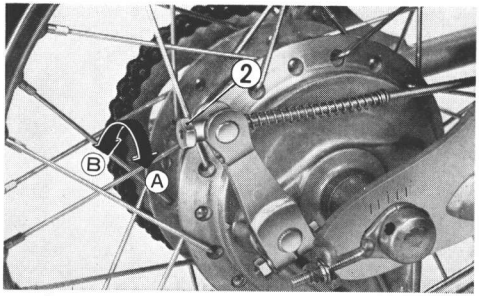
Rear Brake Adjustment

Rear brake pedal free play, measured at the tip of the rear brake pedal ①, should be maintained at **0.8–1.2 in. (20–30 mm)**. Free play is the distance the brake pedal moves before the brake starts to engage.

Adjust the pedal free play by turning the rear brake adjusting nut ②. Turning the adjusting nut in direction Ⓐ will decrease the brake pedal free play and turning the nut in direction Ⓑ will increase the free play.



① **Rear brake pedal**



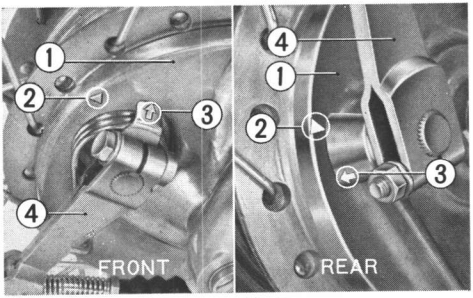
② **Rear brake adjusting nut**

Brake Wear Indicator

On the ST90, wear indicators are provided for the front and rear brakes. When the brake is applied, an arrow ③, adjacent to the brake arm ④, moves toward a reference mark ② on the brake backing plate ①. The distance between the arrow and the reference mark, on full application of the brake, indicates brake lining thickness. If the arrow aligns with the reference mark on full application of the brake, replace the brake shoes.

NOTE:

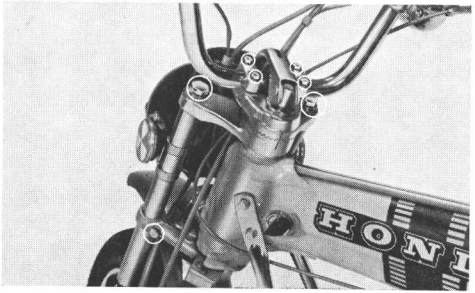
- **When brake service is necessary, or when brake adjustment is impossible (refer to pages 51~53), see your authorized Honda motorcycle dealer. When replacing brake shoes, install only genuine Honda parts.**



① **Backing plate**
② **Reference mark**
③ **Arrow**
④ **Brake arm**

Front Suspension Inspection

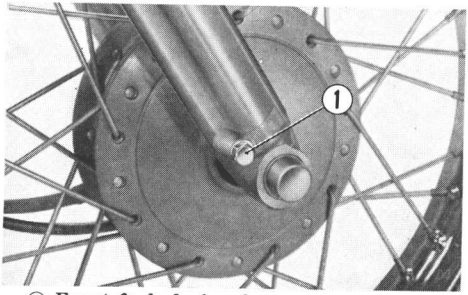
Check front fork action by locking the front brake and pumping the forks up and down several times. The suspension should function smoothly, with no oil leakage from the fork legs. Damaged, binding, or leaking front forks should be repaired before the motorcycle is operated. Check security of all front fork and handlebar mounting bolts illustrated below.



Front Fork Oil Change

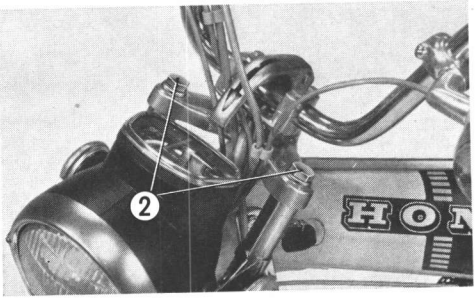
To maintain good riding characteristics and increase fork service life, the oil in the front forks should be changed periodically.

1. Remove drain plugs ① from each fork leg and pump the forks several times to ensure complete draining.
2. Reinstall drain plugs and block up the front of the motorcycle.
3. Remove the oil filler plugs ② (page 56).



① **Front fork drain plug**

4. Refill each fork leg with **3.6~3.7 ozs. (105~110cc)** of premium quality automatic transmission fluid (ATF).
5. Install filler plugs, and remove block from under the motorcycle.



② **Oil filler plugs**

Rear Suspension Inspection

Check the rear suspension periodically by careful visual examination. Note the following items.

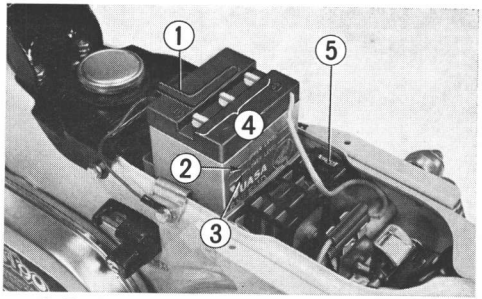
1. Rear fork bushing—this can be checked by pushing hard against the side of the rear wheel while the motorcycle is on a support block and feeling for looseness of the fork bushings.
2. Check the side stand spring for damage.
3. Check all suspension component attachment points for security of their respective fasteners.

NOTE: If any of the above components appear damaged or worn, consult your Honda dealer for further inspection.

Battery Maintenance

If the motorcycle is operated with an insufficient (low) battery electrolyte level, sulfation and battery plate damage may occur. Inspecting and maintaining the electrolyte level is a simple, quick operation, and should be performed frequently as indicated in the maintenance schedule (page 30).

1. The battery is mounted on the battery compartment which is located under the seat. Open the seat and remove the battery cover, retaining strap and check the battery electrolyte. The correct electrolyte level is between the upper ② and lower ③ level marks on the battery case.
2. To correct the electrolyte level, remove the battery cell caps ④ from the cells needing level correction. A small syringe or plastic funnel should be used. Carefully add the proper amount of distilled water to bring the electrolyte level of the cells between the upper and lower marks. For maximum battery performance and life, only distilled water should be added; however, in an emergency situation where electrolyte level is found to be low and distilled water is not available, drinking water of a low mineral content can be used. Reinstall the cell caps.

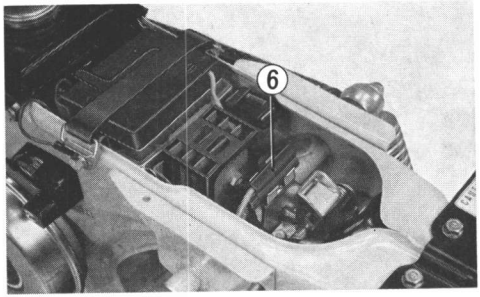


① **Battery**
② **Upper level mark**
③ **Lower level mark**
④ **Battery cell caps**
⑤ **Spare fuse holder**

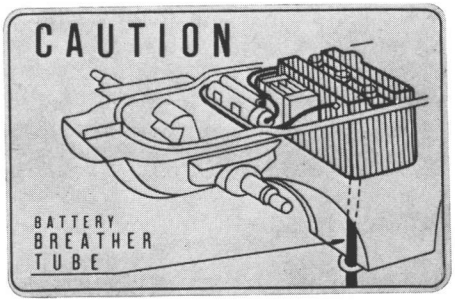
NOTE: Battery removal may be necessary when battery electrolyte (SPECIFIC GRAVITY) reading is below 1.20, indicating the need for battery recharging.

CAUTION: The battery vent tube must be properly routed to prevent battery acid and corrosive fumes from contacting the motorcycle. Correct battery breather tube routing is shown in the following illustration.

When installing the battery, be careful not to pinch or kink the breather tube.

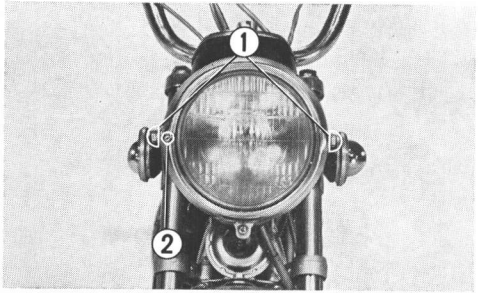


⑥ Fuse holder



Headlight Beam Adjustment

The headlight must be kept properly adjusted for safe nighttime riding.
Vertical adjustment is made by pivoting the headlight case on its mounting bolts ①. Horizontal adjustment is made by turning the adjusting screw ② located on the headlight rim.

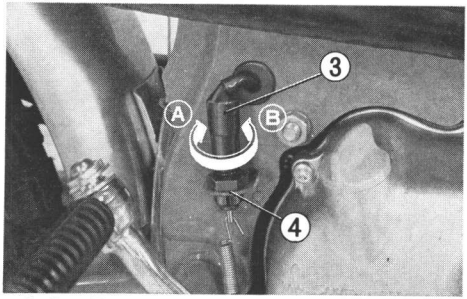


① **Headlight mounting bolts**
② **Adjusting screw**

Stoplight Switch Adjustment

The stoplight switch adjustment is performed with the stoplight switch ③ located on the right side near the rear of the engine.

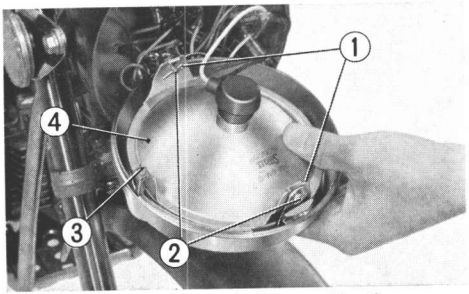
1. First check the adjustment of the rear brake pedal in accordance with the procedure on page 53 to make sure that the brake is properly adjusted.
2. Turn the main switch "ON" (red dot position).
3. Adjust the stoplight switch so that the stoplight will come on when the brake pedal is depressed to the point where the brake just starts to engage. If the stoplight comes on too late, turn the switch adjusting nut ④ in direction Ⓐ. If the stoplight comes on too early, turn the adjusting nut in direction Ⓑ.



③ **Stoplight switch** ④ **Adjusting nut**

Headlight Bulb Replacement

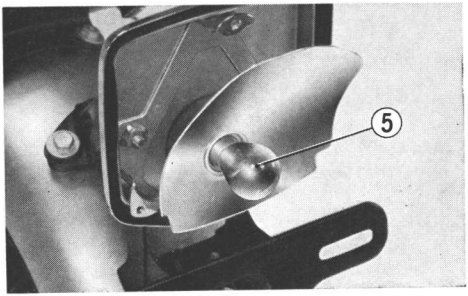
1. Remove the headlight rim from the headlight case after removing the mounting screw.
2. Remove the two lock pins ①, and unscrew the lock screws ②, and beam adjusting screw ③.
3. Remove the sealed beam unit ④ from the headlight rim.



① Lock pins
② Lock screws
③ Beam adjusting screw
④ Sealed beam unit

Tail/Stoplight Bulb Replacement

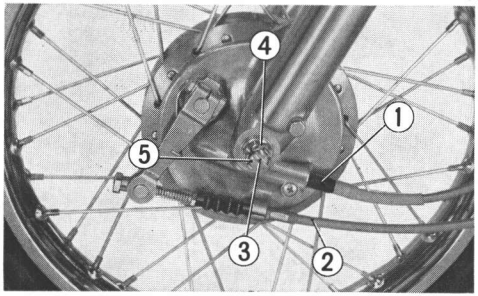
1. Remove the two tail/stoplight lens screws.
2. Press the bulb ⑤ inward and twist to the left, and the bulb can be removed.
3. Replace with a good bulb.
4 When installing the taillight lens, do not overtighten the screws.



⑤ Tail/stoplight bulb

Front Wheel Removal

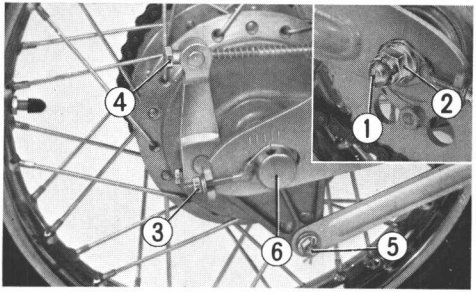
1. Raise the front wheel off the ground by placing a support block under the engine.
2. Disconnect the speedometer cable ① and front brake cable ② from the front brake backing plate.
3. Remove the cotter pin ③, and the front axle nut ④.
4. Pull out the front axle ⑤, and the front wheel can be removed from the frame.



① **Speedometer cable**
② **Front brake cable**
③ **Cotter pin**
④ **Front axle nut**
⑤ **Front axle**

Rear Wheel Removal

1. Place a support block under the engine to raise the rear wheel off the ground.
2. Remove the cotter pin ①, loosen the rear axle nut ②, drive chain adjusting nuts ③, and disconnect the drive chain.
3. Remove the rear brake adjusting nut ④ and rear brake rod from the brake arm.
4. Remove the rear torque arm bolt ⑤ at the rear brake backing plate.
5. Pull out the rear axle ⑥, and the rear wheel can be removed from the frame.



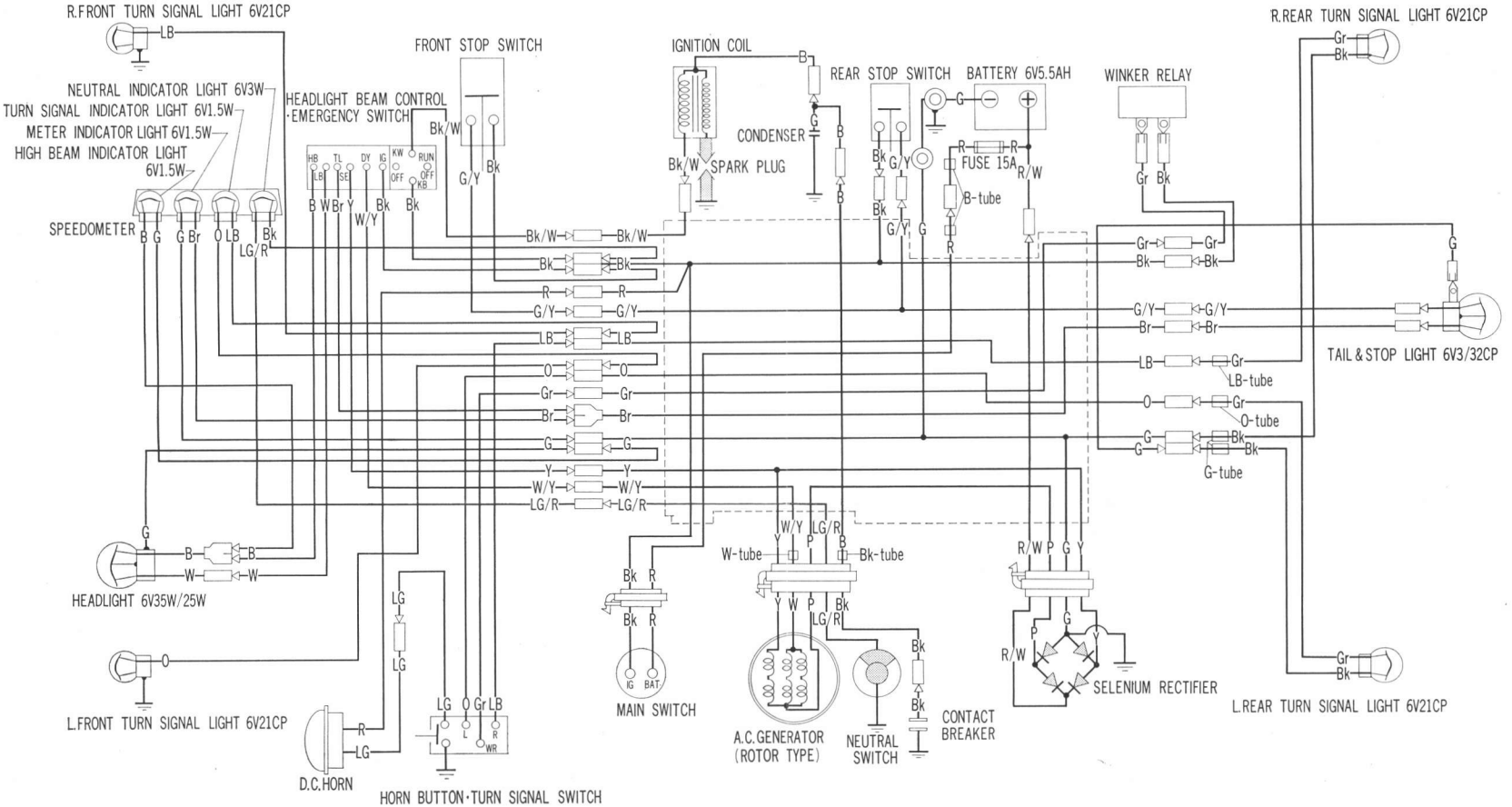
① **Cotter pin**
② **Rear axle nut**
③ **Drive chain adjusting nut**
④ **Rear brake adjusting nut**
⑤ **Torque arm bolt**
⑥ **Rear axle**

Item	
DIMENSIONS	
Overall length	1,755 mm (69.1 in.)
Overall width	760 mm (29.9 in.)
Overall height	1,030 mm (40.6 in.)
Wheel base	1,170 mm (46.1 in.)
WEIGHT	
Dry weight	86 kg (190 lbs)
CAPACITIES	
Engine oil	1.0 liter (1.0 US qt.)
Fuel tank	2.5 liter (0.7 US gal.)
Fuel reserve tank	0.5 liter (0.1 US gal.)
Passenger capacity	Operator only
ENGINE	
Bore and stroke	50.0 × 45.6 mm (1.969 × 1.795 in.)
Compression ratio	8.2 : 1

Item	
Displacement	89 cc (5.4 cu-in.)
Contact breaker point gap	0.3~0.4 mm (0.012~0.016 in.)
Spark plug gap	0.6~0.7 mm (0.024~0.028 in.)
Valve tappet clearance	0.05 mm (0.002 in.)
CHASSIS AND SUSPENSION	
Caster	62°
Trail	67 mm (2.6 in.)
Tire size, front pressure	3.00–14 (4 PR), 18 psi
Tire size, rear pressure	3.00–14 (4 PR), 24 psi
POWER TRANSMISSION	
Primary reduction	3.722
Final reduction	2.666
Gear ratio, 1st	2.538
2nd	1.647
3rd	1.045

Item	
ELECTRICAL	
Battery	6 V–5.5 AH
Generator	A.C. generator, 0.049 kw/8,000 rpm.
LIGHTS	
Headlight	6 V–25/35 W
Tail/stoplight	6 V–3/32 cp
Turn signal light	6 V–21 cp (SAE TRADE NO. 1129)
Meter light	6 V–1 cp (SAE TRADE NO. 51)
Neutral indicator light	6 V–2 cp (SAE TRADE NO. 55)
Turn signal indicator light	6 V–1 cp (SAE TRADE NO. 51)
High beam indicator light	6 V–1 cp (SAE TRADE NO. 51)

ST 90 WIRING DIAGRAM



HEADLIGHT BEAM CONTROL·EMERGENCY SWITCH ARRANGEMENT

HEADLIGHT BEAM CONTROL SWITCH								EMERGENCY SWITCH		
terminal / position	IG	TL	LB	HB	DY	SE	terminal / position	terminal / position	KB	KW
							OFF	OFF		
L	○	○	○		○	○	ON	RUN	○	○
(N)	○	○	○	○	○	○		OFF		
H	○	○	○	○	○	○				
wire colour	Bk	Br	W	B	W/Y	Y		wire colour	Bk	Bk/W

MAIN SWITCH ARRANGEMENT

terminal	BAT	IG
OFF		
ON	○	○
wire colour	R	Bk

W……White
B……Blue
O……Orange
Y……Yellow
G……Green
R……Red
P……Pink
Gr……Grey
Bk……Black
Br……Brown
LB……Light Blue
LG……Light Green