
Honda ATC 70/125

MODEL COVERAGE

ATC 70
ATC 90
ATC 110
ATC 125

Covers 1985 and Earlier

INDEX

Serial Number Locations	2		
MAINTENANCE	2	ENGINE AND TRANSMISSION	9
Lubrication		Engine Removal	9
Checking Engine Oil	2	Top End	9
Chassis Lubrication	3	Right Crankcase Cover	13
Service Checks and Adjustments	3	Left Crankcase Cover	15
Drive Chain	3	Lower End and Transmission	17
Clutch	3	Engine Specifications	18
Throttle Cable	3	Engine Toque Specifications	22
Front Brake	3	General Torque Specifications	23
Rear Brake	4	FUEL SYSTEM	23
Tires	4	Gas Tank	23
Steering Stem Bearings	4	Carburetor	23
Fuel System	4	Fuel Petcock and Lines	24
Air Filter	4	ELECTRICAL SYSTEM	24
Fuel Filter	4	Charging System	25
Carburetor	5	Ignition System	24
Fuel Lines	5	Starting System	25
Spark Arrestor	5	Electrical Switches	26
Periodic Maintenance Intervals	5	CHASSIS	27
Recommended Lubricants	5	Wheels	27
TUNE-UP	6	Front Brake	27
Compression Test	6	Front Wheel Bearings	28
Camshaft Chain	6	Rear Brakes	28
Valve Clearance	6	Front End	29
Ignition Timing	7	Rear Axle	30
Contact Breaker Points	7	Chassis Specifications	31
Carburetor Adjustment	8	Chassis Torque Specifications	31
Tune-Up Specifications	8		

SERIAL NUMBER LOCATIONS

To avoid confusion when ordering parts, always supply the frame and engine serial numbers.

The frame serial number is stamped onto the left side of the steering head lug.

The engine serial number is stamped onto the lower left side of the crankcase behind the gearshift lever.

MAINTENANCE

NOTE: Common maintenance procedures are explained in detail in the "General Information" section of this manual.

LUBRICATION

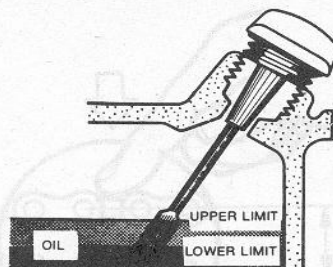
Checking Oil

1. Oil level should be checked before each ride.
2. A dipstick is fitted to the oil filler cap on the right crankcase cover.
3. Park the machine on a level surface.
4. Start the engine, allow it to idle for several minutes, then shut it off and let it sit for a minute or so.
5. Unscrew and remove the dipstick and wipe it clean.
6. Insert the dipstick, allowing the cap to rest on top of the threads of the hole. Do not screw it in when checking oil level.
7. The oil level should be between the minimum and maximum marks on the dipstick.
8. If level is too low, add enough oil to bring it up to the specified level.

CAUTION: Do not overfill the crankcase.

Changing Oil

1. Oil should be changed every 30 operating days if the machine is used under normal operating conditions.
2. At the same time the oil is changed, the oil filter screen and centrifugal filter should be cleaned. See "Oil Filters," below.
3. Oil should be API service rated "SE" or "SF." SAE 20W-40 or 20W-50 can be used when average air temperature is above freezing (32°F). Refer to the "Recommended Lubricants" chart for all temperature oil recommendations.
4. Run the machine until the engine reaches operating temperature.
5. Park the machine on a level surface.
6. Place a container of about 2 qts. capacity beneath the engine.
7. Remove the dipstick.
8. Remove the oil drain plug. Allow the oil to drain for several minutes.
9. With the ignition or kill switch "OFF," turn the engine over with the recoil starter. This will allow more of the oil to drain out.
10. Check the condition of the drain plug washer. Replace it if damaged.
11. Clean the threads of the drain plug. Install the plug and tighten it securely.
12. Clean the oil filters. See below.
13. Add the correct amount and grade of



Checking oil level

motor oil. Approximate capacities are as follows. Use the dipstick to check for level:

ATC 70	0.7 qts./0.7L
ATC 90	0.9 qts./0.9L
ATC 110	1.1 qts./1.0L
ATC 125	1.2 qts./1.1L

14. Check oil level as outlined above.

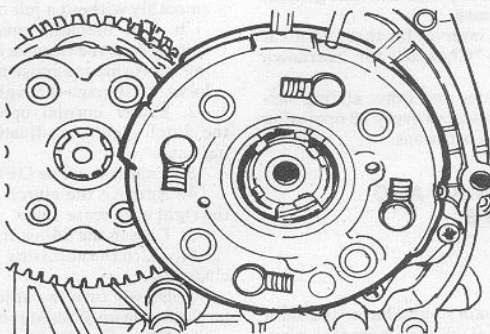
15. Start the engine and let it run for a minute or so. Check for leaks. Recheck level and top up if necessary.

NOTE: The oil change interval is based on normal operating conditions. If the machine is used under severe conditions (i.e. racing, high-speed riding, stop-and-go commercial use, in dusty environments, cold weather, etc.), changes should be made more frequently. This is especially true if the vehicle is used infrequently such as during the winter months.

Oil Filters

1. The machines are fitted with a centrifugal filter in the clutch housing. An oil filter screen is located in a slot beneath the clutch.
2. The filters should be cleaned each time the oil is changed, which will be every 30 operating days under normal conditions.
3. Have a clutch outer cover gasket and a crankcase cover gasket on hand. These items should be replaced.
4. Drain the oil as outlined above.
5. Install the drain plug.
6. Place a drip pan beneath the right crankcase cover.
7. On ATC 70 models, remove the right crankcase cover as follows:
 - a. Remove the exhaust pipe;

- b. Remove the footpegs;
 - c. Remove the carburetor manifold bolts;
 - d. Support the engine with a jack or suitable substitute to take the weight off the upper engine mounting bolt. Remove the bolt;
 - e. Loosen the lower engine mounting bolt;
 - f. Lower the engine;
 - g. Remove the right crankcase cover bolts;
 - h. Remove the right crankcase cover. If it is stuck, tap it with a plastic mallet to free it.
8. On other models, remove the seat. Remove the rear fender.
 9. Remove the starter motor bracket screws, if a starter motor is fitted.
 10. Remove the right crankcase cover screws. Remove the cover. If it is stuck, tap it with a plastic mallet to break it free.
 11. Remove the ball retainer and clutch cam plate side spring.
 12. Remove the oil passage pipe and spring from the center of the clutch.
 13. Remove the clutch cam plate.
 14. Remove the clutch lever.
 15. Remove the clutch outer cover screws. Remove the outer cover and release bearing.
 16. Using a clean, lint-free rag, wipe the center of the clutch housing to remove any foreign matter.
 17. Install the clutch outer cover and bearing. Using a new cover gasket is recommended.
 18. Install the cam plate.
 19. Install the clutch lever.
 20. Clean the oil passage pipe and spring in a clean solvent, dry them, lubricate lightly and re-install.
 21. Install the cam plate side spring and ball retainer, aligning the steel ball with the centerline of the clutch lever.
 22. Remove the oil filter screen from its slot below the clutch.
 23. Clean the screen in a clean solvent to remove any foreign matter.
 24. Check the residue for metal particles. If there are any, it indicates that severe engine wear is taking place. Determine the cause before operating the machine.
 25. If the screen cannot be cleaned, or if it is punctured or shows other signs of damage, replace it.



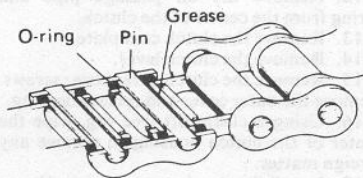
Clutch centrifugal oil filter

Honda ATC 70-125

26. Install the screen.
27. Check that the two locating dowel pins are in place on the crankcase cover mating surface.
28. Install a new crankcase cover gasket.
29. Install the crankcase cover. Tighten the screws gradually and evenly.
30. Add oil as directed under "Changing Oil," above. Check level. Start the engine and check for leaks.
31. After the machine has been sitting for a minute, make a final level check and top up the crankcase if necessary.

Drive Chain

1. The drive chain can be cleaned and lubricated through the inspection cap on the side of the chain case. Some models may be fitted with a lubrication port on the top rear of the case.
2. Standard chains can be lubricated with commercially available chain lubes or with SAE 80 or 90 oil.



O-ring chain construction

3. Later model ATC 110 and 125 machines are fitted with chains which have rubber O-rings to seal in grease around the pins. These chains should be cleaned only with kerosene. Gasoline and other petroleum-based solvents will damage the O-rings.
4. O-ring chains should be lubricated with SAE 80 or 90 oil or with commercially available chain lubes which are compatible with rubber. Do not use chain lubes unless this is clearly stated on the container.
5. Chain service interval is every 30 operating days.

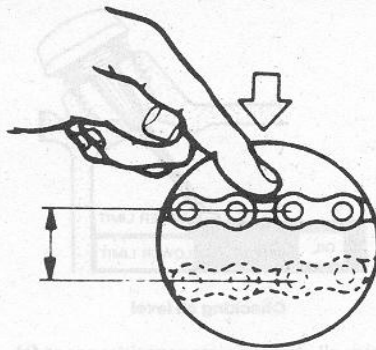
Chassis Lubrication

1. Chassis lubrication points include wheel and steering head bearings, brake cams and control pivots.
2. Bearings should be lubricated with a good grade of waterproof, medium weight bearing grease. Other points can take general purpose chassis grease.
3. The service interval for these points is every year. See "Chassis" for teardown procedures.
4. Control cables and other sliding surfaces should be lubricated every 30 operating days under normal conditions.

SERVICE CHECKS AND ADJUSTMENTS

Drive Chain

1. The drive chain should have 10-20mm (3/8-3/4 in.) of total up-and-down free-play. This is measured at the chain case inspection hole after removing the rubber cap.
2. Before checking or adjusting the



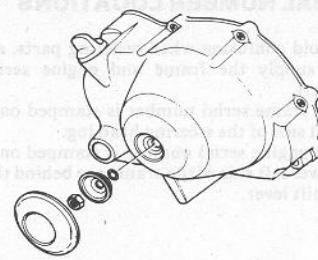
Checking drive chain free-play (10-20 mm/3/8-3/4 in.)

chain, the following conditions should be met:

- a. The chain should be clean and well lubricated. Dirty chains tend to get tight;
- b. The chain should have been checked for tight spots by slowly rotating the wheels and checking for variances in tension. If a tight spot exists, the chain free-play should be adjusted to the proper specification at that point. Note, however, that such a condition is indicative of a worn chain and probably worn sprockets which should be inspected and replaced as soon as possible.
3. Be sure the transmission is in Neutral.
4. Check chain free-play after removing the chain case inspection hole cap.
5. On ATC 125 and late ATC 110 machines, adjust the chain as follows:
 - a. Loosen the four rear wheel bearing holder bolts.
 - b. Turn the adjusting nut as required until free-play is correct.
 - c. Tighten the bearing holder bolts. Proper torque is 36-51 ft. lbs.
 - d. Recheck chain free-play.
 - e. Adjust the rear brake.
6. On early ATC 110 models and 70s and 90s, a chain adjustment mechanism is fitted to the chain case. Loosen the locknut or bolt and move the tensioner so that chain free-play is correct. Then tighten the nut or bolt.

Clutch

1. Clutch operation must meet the following standards:
 - a. The vehicle must go into First gear smoothly without a jolt or stalling;
 - b. The machine must begin to move smoothly as the throttle is opened and moving performance must not indicate power loss and slippage through the clutch.
2. Under normal operating conditions, the clutch should be adjusted every 30 operating days.
3. Engine must be OFF.
4. Remove the clutch adjuster cap from the right crankcase cover.
5. Loosen the adjusting screw locknut.
6. Turn the adjusting screw one full turn clockwise.
7. Slowly turn the adjusting screw counterclockwise until resistance is felt.
8. Back the adjusting screw off 1/8 turn clockwise.
9. Hold the adjusting screw in place and tighten the locknut to 14-18 ft. lbs.



Clutch adjuster

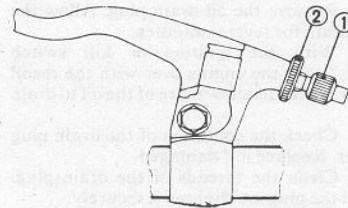
10. Install the cap.
11. Check clutch operation.

Throttle Cable

1. Throttle operation and cable free-play are important safety items which should be attended to without fail. Operation of the throttle should be checked each time before the machine is ridden. The cable adjustment should be checked every 30 operating days.
2. The tip of the throttle lever should move 5-10mm (3/16-3/8 in.) before the throttle slide begins to open.
3. The cable adjuster is fitted to the carburetor end of the cable. Remove the fuel tank and slide back the rubber cover over the adjuster. Loosen the adjuster locknut and turn the adjuster so that cable free-play is correct. Tighten the locknut.
4. On some models, a cable adjuster is fitted to the upper end of the cable as well as to the carburetor end. This adjuster can be used for minor cable adjustments. If two cable adjusters are fitted, use both of them so that neither one approaches the end of its range.
5. With the engine idling, turn the handlebars slowly from lock to lock and listen for any change in engine speed. If this happens, the throttle cable is either too tightly adjusted or is binding somewhere along its routing.
6. Check that the throttle lever returns to the closed position regardless of the position of the handlebars. If it seems to hang up at one point or another, check cable free-play, cable routing and cable and throttle lever lubrication.

Front Brake

1. The tip of the hand lever should have 15-20mm (5/8-3/4 in.) of free movement before the linings contact the drum.
2. Adjust, if necessary, by turning the wing nut at the wheel in until lever free-play is correct.
3. Make minor adjustment, if necessary, with the cable adjuster at the hand lever.



Cable adjuster (1) and locknut (2)

4. Apply the brakes fully and check the wear indicator position relative to the index mark on the brake plate. When the two align, the brake shoes must be replaced.

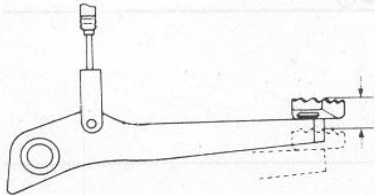
Rear Brake

ATC 70

1. The tip of the hand lever should have 15-20mm (3/8-3/4 in.) of free movement before the linings contact the drum.
2. Maintain this adjustment with the adjusting nut on the end of the brake rod.
3. Late models are fitted with a wear indicator on the brake plate. If the indicator aligns with the index mark on the brake plate when the brakes are fully applied, the brake shoes must be replaced.

ATC 90/110/125

1. The tip of the rear brake hand lever should have 15-20mm (5/8-3/4 in.) of free movement before the linings contact the drum.
2. Use the adjuster at the hand lever for minor corrections.
3. Use the adjuster at the foot pedal for major corrections.

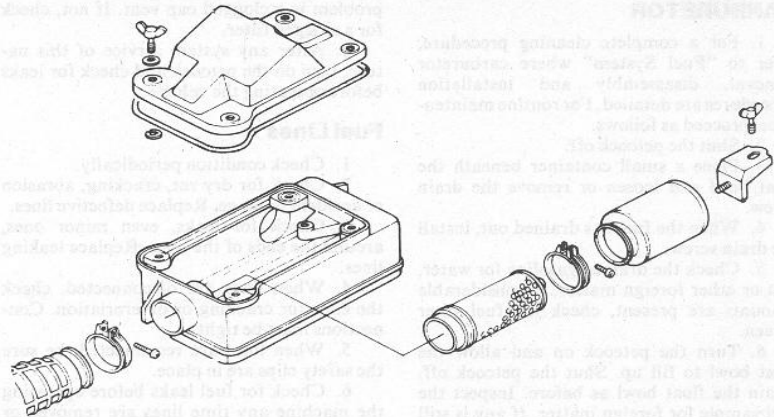


Brake pedal free-play (15-20 mm/5/8-3/4 in.)

4. The foot pedal should have 15-20mm (5/8-3/4 in.) of free movement before the linings contact the drum. This free-play is measured at the tip of the pedal.
 5. Use the adjuster on the cable at the brake drum to give the correct pedal travel.
- CAUTION:** Unless the brake pedal is properly adjusted, the hand lever will not be effective.
6. When the brakes are fully applied, check the wear indicator on the drum. If the index marks align, replace the brake shoes. See "Chassis."

Tires

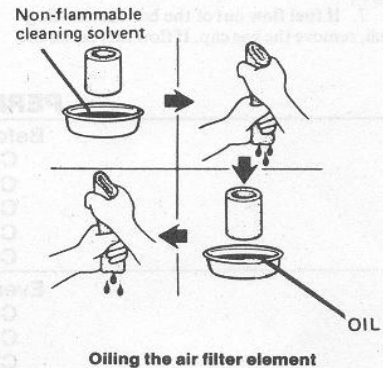
1. Periodically check each tire for cuts, embedded matter, excessive tread wear.
 2. Tire pressures must be checked when the tires are cold. A special low pressure gauge is needed for accurate readings.
 3. Proper tire pressures are as follows:
ATC 70
1970-81 3.0psi
1981-On 2.2 psi
ATC 90/110/125 2.2 psi
- CAUTION:** Always maintain tires at the recommended pressures.
4. If pressure is too low, pump up the tires with a hand-held pump.
- CAUTION:** Never apply high pressure air sources to the tire valves. Service station hoses are generally unsuitable for filling these low pressure tires.



Air cleaner assembly (ATC 125)

Steering Head Bearings

1. Bearing wear and adjustment should be checked periodically.
2. Raise the front end of the machine off the ground by placing a safe, sturdy support beneath the frame.
3. Turn the handlebars slowly from lock to lock.
4. Check for binding, rough rotation and/or bearing noise as the wheel is turned. If any is noted, adjust the bearings as outlined in "Chassis."
5. Grasp the lower end of the forks and attempt to move them back and forth in line with the machine. There must be no play evident. If play is found in the forks, the bearings must be adjusted or replaced. Refer to "Chassis" for procedures.



Oiling the air filter element

FUEL SYSTEM

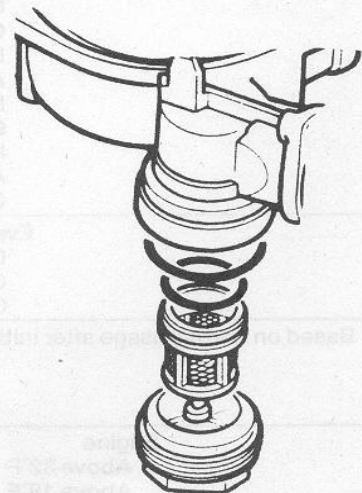
Fuel system maintenance involves cleaning the filter, cleaning or replacing the air filter and cleaning the carburetor. These procedures should be carried out every 30 operating days.

Air Filter

1. Wash the element in a safe, high flash point solvent. Squeeze it to dry thoroughly.
- CAUTION:** Do not wring the element out as the pores or fabric may be damaged.
2. Soak the element in SAE 80 or 90 gear oil. Squeeze off the excess.
 3. Fit the element on the frame and install the assembly in the case.

Fuel Filter

1. The fuel filter is fitted to the carburetor float bowl on some models and behind the petcock on others.
2. Turn the petcock to the off position.
3. Place a rag beneath the carburetor to soak up the small amount of gasoline which will come out.
4. Remove the filter cap from the float bowl or the petcock (two screws).
5. Remove the filter screen.
6. Clean the filter in solvent. If the filter cannot be cleaned or is crushed, punctured or otherwise ineffective, replace it.



Carburetor float bowl filter

7. If your model has the filter cap, clean the inside of the cap in solvent.
8. Check the condition of the O-ring(s). Replace if knicked, crushed or otherwise damaged, or if leaks are evident.
9. Filter caps should be tightened to 4 ft. lbs.
10. Turn the petcock on and check for leaks before operating the vehicle.

Honda ATC 70-125

CARBURETOR

1. For a complete cleaning procedure, refer to "Fuel System" where carburetor removal, disassembly and installation procedures are detailed. For routine maintenance, proceed as follows.

2. Shut the petcock off.

3. Place a small container beneath the float bowl and loosen or remove the drain screw.

4. When the fuel has drained out, install the drain screw.

5. Check the drained gasoline for water, dirt or other foreign matter. If considerable amounts are present, check the fuel filter screen.

6. Turn the petcock on and allow the float bowl to fill up. Shut the petcock off. Drain the float bowl as before. Inspect the fuel sample for foreign matter. If any is still present, check the fuel filter. Remove the gas tank and drain off the fuel. Check it for dirt and water. Flush out the tank before installing it.

7. If fuel flow out of the bowl seems sluggish, remove the gas cap. If flow increases, the

problem is a clogged cap vent. If not, check for a clogged filter.

8. After any system service of this nature, turn on the petcock and check for leaks before operating the vehicle.

Fuel Lines

1. Check condition periodically.

2. Check for dry rot, cracking, abrasion or accident damage. Replace defective lines.

3. Check for leaks, even minor ones, around the ends of the lines. Replace leaking lines.

4. When lines are disconnected, check the ends for cracking or deterioration. Connections must be tight.

5. When lines are reconnected, be sure the safety clips are in place.

6. Check for fuel leaks before operating the machine any time lines are removed or replaced.

SPARK ARRESTOR

1. The spark arrestor should be

decarbonized every 30 operating days. Excessive carbon buildup will cause sluggish performance and possible engine overheating.

2. Park the machine in an open area free of flammable material.

3. On 1985 and later ATC 125 machines, remove the bolt and sealing washer.

4. On other models, remove the spark arrestor bolts and pull it out of the exhaust pipe.

5. On models with a removable spark arrestor, use a wire brush to remove build-up carbon from the unit.

6. On all models, start the engine and, after it reaches operating temperature, rev it several times to blow out the carbon.

CAUTION: Hot carbon particles may represent a fire hazard if this procedure is carried out in an unsuitable location.

7. Shut off the engine.

8. After the exhaust system has cooled, replace the arrestor on those machines with a removable unit.

9. On 1985 and later 125s, install the bolt and sealing washer and tighten the bolt to 22-29 ft. lbs.

PERIODIC MAINTENANCE INTERVALS^①

Before every ride

Check engine oil level

Check tire pressure

Check throttle operation

Check brake adjustment

Check operation of lights, if equipped

Every 30 operating days

Change engine oil

Clean oil filters

Check air filter element

Check battery level, if equipped

Clean fuel system

Lubricate and adjust drive chain

Adjust clutch

Decarbonize spark arrestor

Check tightness of critical fasteners

Inspect tires for condition

Adjust cables

Carry out general chassis lubrication

Every year

Check condition of fuel lines

Check brake shoes

Check wheel and steering head bearings

^① Based on normal usage after initial break-in is completed

RECOMMENDED LUBRICANTS

Engine

Above 32°F

SAE 20W-40, SAE 20W-50, service rated "SE" or "SF"

Above 18°F

SAE 10W-40, service rated "SE" or "SF"

18-85°F

SAE 10W-30, service rated "SE" or "SF"

Below 45°F

SAE 5W, service rated "SE" or "SF"

Drive chain (O-ring)

SAE 80 or 90 oil

Commercial chain lubes compatible with rubber

Drive chain (standard)

Commercial chain lubes

SAE 80 or 90 oil

RECOMMENDED LUBRICANTS

Air filter
SAE 80 or 90 gear oil
Wheel and steering head Bearings
Waterproof, medium-weight bearing grease
General lubrication
Waterproof, medium-weight chassis grease
Cables
Light motor oil
Commercial cables lubricants
Molybdenum disulphide-based lubricant

TUNE-UP

NOTE: Common tune-up procedures are explained in detail in the "General Information" section of this manual.

CAUTION: All tune-up procedures done with the engine running must be carried out with the machine on level ground in a well-ventilated area. The parking brake should be applied.

Keep children and other innocents away from hot, running engines. Never leave the vehicle running and unattended.

COMPRESSION TEST

1. A compression check should be made before each tune-up since this will provide a general idea of engine condition.

2. It is necessary to have a gauge with the proper adapter if a screw-in type gauge is used. Plug holes are 10mm and 70cc engines, 12mm on the others. The less expensive "hold-in" type gauge can also be used. Oil the rubber tip to ensure a good seal.

3. The engine must be at operating temperature.

4. Be sure the choke is fully on.

5. Turn the ignition switch "OFF."

6. Fit the gauge. Push the throttle lever wide open and turn the engine over with the recoil starter.

7. The highest gauge reading is the compression.

8. Standard compression is about 175 ± 22 psi.

9. Low compression may be caused by valves which are too tightly adjusted, burned or otherwise damaged, worn piston rings, piston and/or cylinder or other worn engine components.

10. If the compression reading is too low, squirt some motor oil into the cylinder and repeat the test. If the gauge reading is higher, suspect worn rings, piston or cylinder as the cause. If the reading does not increase, suspect problems in the valve train.

11. If the test shows that compression is too high, the problem is likely due to carbon deposits on the piston crown and cylinder. Remove the cylinder head and decarbonize the top end.

CAM CHAIN TENSION

1985 and Later

Cam chain tension is maintained automatically by a spring-loaded plunger operated

by oil pressure. No routine adjustment is required.

1984 and Earlier

1. Cam chain adjustment is made with the engine idling. The adjustments can be made in two ways: either with the adjusting screw or with the tensioner bolt.

The adjusting screw locks the spring-loaded tensioner rod in place, and loosening it will allow tension to be automatically taken up.

The tensioner bolt allows the tensioner rod to be moved, compressing the tensioner itself.

The adjusting screw is located at the bottom of the left crankcase cover. The tensioner bolt is just below the adjusting screw, beneath a cover bolt.

2. With the engine idling, loosen the adjusting screw locknut and back the screw off (counterclockwise) about 1 1/2 turns. Tighten the adjusting screw. If chain operation is now quiet, tighten the adjusting screw locknut, since the adjustment is now complete. If chain operation is still noisy, proceed as follows:

3. Remove the tensioner cover bolt. Loosen the adjusting screw locknut and back off the adjusting screw about 1 1/2 turns.

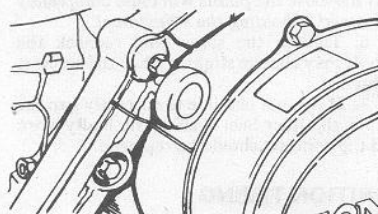
4. Turn the tensioner bolt in or out slowly until proper chain operation is obtained. If the chain chatters, it is too loose and the tensioner bolt should be turned clockwise; if the chain whines, it is too tight, and the tensioner bolt should be turned counterclockwise.

5. When chain operation is quiet, replace the cover bolt, tighten the adjusting screw and the adjusting screw locknut. Adjustment is now complete. Tighten the cover bolt to 14-25 ft. lbs.

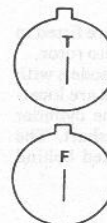
VALVE ADJUSTMENT

NOTE: Valves must be adjusted when the engine is cold.

1. Remove the spark plug.



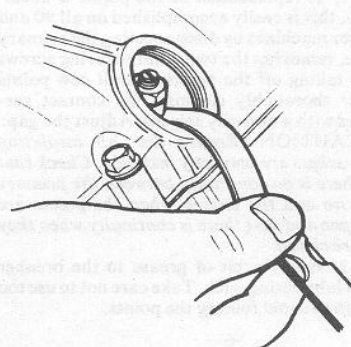
Timing inspection hole



TOP DEAD CENTER

IGNITION TIMING MARK

Rotor timing marks



Checking valve clearance

2. Remove the intake and exhaust valve adjuster covers.

3. Remove the timing inspection hole cap on the left crankcase cover, if one is fitted. If not, remove the recoil starter assembly.

4. Turn the engine over slowly while watching the intake rocker arm and the magneto rotor.

NOTE: The rotor must be turned counterclockwise.

5. When the intake rocker arm opens the valve and then begins to close it, check the magneto rotor timing marks relative to the timing index mark. When the "T" mark on the rotor aligns with the index mark, stop. The piston should now be at TDC on the compression stroke.

6. Check for rocker arm clearance at the valves. Each rocker arm should have a slight amount of free-play. If they do not, the piston is probably at TDC on the exhaust stroke. Turn the rotor 360°, align the "T" mark and check again.

7. Valve clearances are as follows:

ATC 70, 90: 0.05mm/0.002 in.

ATC 110, 125 0.07mm/0.003 in.

These figures are for both intake and exhaust valves. A feeler gauge blade of the proper

Honda ATC 70-125

thickness should be a light slip fit between the valve and the adjuster.

8. If adjustment is necessary, loosen the adjuster locknut and turn the adjuster so that the feeler gauge blade is a slip fit. Hold the adjuster in place and tighten the locknut (torque: 11-13 ft. lbs.)

9. After the locknut is tightened, recheck clearance.

10. Install and tighten the adjuster covers to 7-10 ft. lbs.

11. Tighten the spark plug to 9-14 ft. lbs.

CONTACT BREAKER POINTS

Location

1. On the ATC 70, the points are fitted to the stator plate beneath the magneto rotor.

2. On ATC 90 and ATC 110 models with breaker point ignitions, the points are located in a case on the left side of the cylinder head and are driven off the camshaft. The timing advance mechanism is fitted behind the breaker point plate.

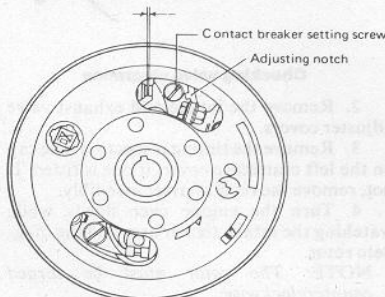
Replacement

ATC 90, 110

1. If replacement of the points is necessary, this is easily accomplished on all 90 and 110cc machines by disconnecting the primary wire, removing the two point securing screws and taking off the points. Install new points after thoroughly cleaning the contact surfaces with a non-oily solvent. Adjust the gap.

CAUTION: Ensure that all insulating washers are correctly installed. Check that there is no continuity between the primary wire and the engine when the points are open and that there is continuity when they are closed.

2. Apply a bit of grease to the breaker cam lubricating wick. Take care not to use too much to avoid fouling the points.



ATC 70 breaker points

ATC 70

1. Remove the recoil starter. Use the special puller to remove the magneto rotor after removing the rotor nut.

NOTE: The puller has a **LEFT-HAND** thread.

2. Disconnect the primary wire; remove the points' securing screw. Install the new point set.

CAUTION: Ensure that all insulating washers are correctly installed. Check that there is no continuity between the primary wire and the engine when the points are open, and that there is continuity when they are closed.

3. Apply a bit of grease to the breaker cam lubricating wick. Take care not to apply too much to avoid fouling the points.

4. Install the rotor. Torque the nut to 22-28 ft. lbs.

5. Adjust the point gap. Adjust the ignition timing.

Gapping

Gapping is necessary to compensate for wear of the contact surfaces due to electrical arcing and for wear of the breaker point fiber heel. As the heel wears the points will open later relative to the rotation of the crankshaft, retarding the timing.

Points should be filed (if necessary) and cleaned before gapping.

NOTE: On ATC 70 machines the ignition timing is adjusted by changing the point gap. Therefore these operations must be carried out at the same time.

ATC 90/110

1. Remove the points cover.

2. Turn the engine over slowly until the points are open to their maximum gap.

3. With the proper feeler gauge, check the gap. The proper specification for all models is 0.012-0.016 in. (0.3-0.4 mm). The feeler gauge should be a slip fit between a correctly gapped point set.

4. If adjustment is necessary, loosen the two screws which secure the points to the base plate, and use a thin screwdriver at the pry slot provided to bring the gap to the proper specification.

NOTE: Loosen the screws just enough to allow the points to be moved. If too loose, the points will snap shut instead of holding the adjustment.

5. Tighten the screws and recheck the gap. It may change slightly when the screws are tightened.

6. If it is not possible to gap the points correctly, the fiber heel is probably worn and the points should be replaced.

ATC 70

1. On this model, adjusting the point gap is the only method of adjusting the ignition timing, so timing should be checked whenever the points are gapped.

2. Remove the recoil starter.

3. Turn the engine over, observing the points through the cutout in the rotor until they are opened to their maximum gap.

4. With a feeler gauge blade, check point gap. Proper gap is 0.012-0.016 in. (0.3-0.4mm).

5. If adjustment is necessary, loosen the point securing screw and use a thin screwdriver at the pry slot provided to bring the gap within the proper specification.

NOTE: Loosen the securing screw just enough to allow the gap to be adjusted. If it is too loose the points will close completely instead of holding the adjustment.

6. Tighten the screw and recheck the gap. It may change slightly when the screw is tightened.

7. If it is not possible to correctly gap the points, the fiber heel is evidently badly worn and the point set should be replaced.

IGNITION TIMING

CAUTION: Running-engine adjustments

must be carried out in a well-ventilated area. Be sure the machine is parked on a level surface and that the parking brake is set.

ATC 70

The timing on these models is accomplished by changing the point gap.

1. Remove the spark plug and the recoil starter.

2. Clean and gap the points to the proper specification as outlined under "Gapping."

3. Hook up the ohmmeter to ground and to the black wire coming from the points.

4. Turn the rotor slowly in the normal direction of rotation (counterclockwise). When the "F" mark on the rotor and the stationary timing mark on the crankcase align, the meter should indicate that the points have just begun to open.

5. If the points open after the "F" mark passes the stationary mark, the timing is too retarded; if they open before the "F" mark aligns, the timing is too advanced.

6. As noted above, ignition timing is corrected by changing the point gap. If the timing was retarded, increase the point gap. If it was advanced, decrease the point gap.

NOTE: It should be possible to set the timing perfectly while maintaining the point gap within the specification given (0.012-0.016 in 0.3-0.4mm). If the timing marks will not align when the point gap is within this specification, the points must be replaced. Wear of the fiber heel is one cause of this condition.

ATC 90/110 (Breaker Points)

1. Remove the recoil starter and the points cover. Remove the spark plug and intake valve cover.

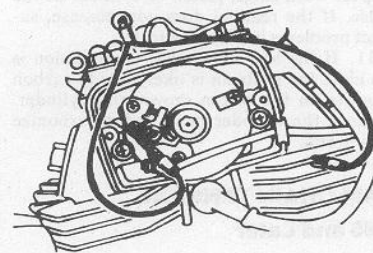
2. Hook the tester up.

3. Turn the engine over so that the engine is just beginning its compression stroke. (The intake valve will go down and come up). Turn the rotor slowly in the normal direction of rotation (counterclockwise). At the instant in which the "F" mark on the rotor aligns with the mark on the crankcase cover, the points should begin to open as indicated by the reaction of the test light or the meter.

4. If the points open before the marks align, the timing is too advanced. If they open after the "F" mark passes the stationary mark, the timing is too retarded.

5. If the timing is not correct, loosen the two philips screws which secure the breaker base plate to the engine. Loosen them just enough to allow the plate to be rotated.

6. Turn the plate using a thin screwdriver applied to the pry slot provided so that the



Timing light on breaker point ignition 90 and 110s

Honda ATC 70-125

points open just as the "F" mark lines up with the stationary mark. If the timing was too advanced, turn the plate counterclockwise. If too retarded, rotate the plate clockwise.

7. Tighten the breaker plate screws and recheck the timing. Sometimes this will cause the plate to move slightly and throw the timing off.

ATC 110/125 (CDI)

1. Remove the timing inspection hole cap on the left crankcase cover.

2. Connect a timing light according to the light manufacturer's instructions.

3. Connect an electronic tachometer if idle speed is not known.

4. Observe the rotor timing marks through the inspection hole while the engine is running.

5. At 1700 rpm (± 100 rpm), the "F" mark on the rotor should align with the index mark on the hole.

6. If adjustment is necessary, remove the pulse generator cover on the left side of the cylinder head.

7. Loosen the two base plate screws and turn the plate with a small screwdriver applied to the pry point until the "F" mark aligns with the index mark at 1700 rpm.

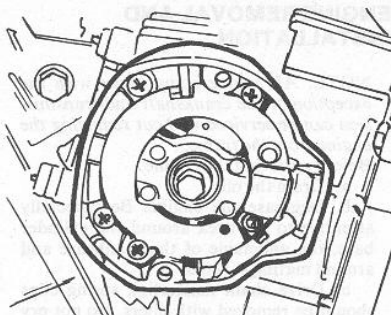
8. Tighten the base plate screws. Check that timing is still correct.

9. Shut the engine off.

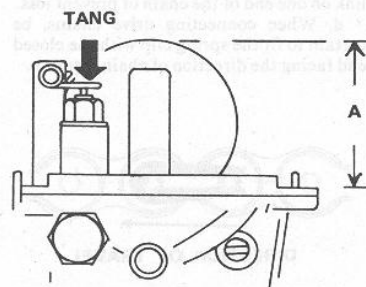
10. Turn the engine over with the recoil starter until the pulse rotor aligns with the pulse generator.

11. The air gap between the rotor and the pulse generator should be 0.3-0.4mm (0.01-0.02 in.).

12. Adjust by loosening the two small screws which mount the generator to the base plate.



Base plate screws (CDI)



Adjust float level ("A") by bending the tang

13. Install the cover. Install the timing inspection hole cap.

NOTE: Once set properly, the CDI ignition should not require adjustment. Unless the proper equipment (tach and strobe

light) is available, ignition timing should not be attempted.

CARBURETOR

Float Level

1970-77

1. Remove the carburetor.

2. Remove the float bowl.

3. Remove the float bowl gasket.

4. Float level is defined as the measured distance from the float bowl mating surface (gasket removed) to the top of the float when the float tang is just touching the end of the needle.

5. With the float held in this position, measure the distance from the mating surface to the top of the float. It should be 20.0mm (0.78 in.).

6. If the float level is not within 10% of this value, check for foreign matter on the needle tip or seat. Check for wear of the needle tip. Float needle, seat or both must be replaced if worn or corroded.

7. If the components are in acceptable condition, adjust the float level by bending the float tang up or down.

1978 AND LATER

1. Float level is not adjustable. Generally this item need not be checked until considerable mileage has been covered or fuel system problems arise.

2. Remove the carburetor.

3. Remove the float bowl (2 screws).

4. Remove the float bowl gasket.

5. Float level is defined as the measured distance from the float bowl mating surface (gasket removed) to the top of the float when

TUNE-UP SPECIFICATIONS

VALVE CLEARANCE (INTAKE & EXHAUST)	
ATC 70, 90	0.05mm/0.002 in.
ATC 110, 125	0.07mm/0.003 in.
BREAKER POINT GAP	
	0.3-0.4mm/0.012-0.016 in.
SPARK PLUG	
OEM	NGK
Type	
ATC 70	
1970-81	C7HS
1982-On	CR7HS
ATC 90	D8HS
ATC 110	
1979-81	D8HA, D8HS
1982-On	DR8ES-L
ATC 125	DR8ES-L
Gap	0.6-0.7mm/0.024-0.028 in.
Torque	9-14 ft lbs.
COMPRESSION	
Standard	175 \pm 22 psi
Minimum	128 psi
CARBURETOR	
Idle speed	
ATC 70	1500 \pm 100 rpm
ATC 90	1200 \pm 100 rpm
ATC 110, 125	1700 \pm 100 rpm
Float level	
1970-77	20.0mm/0.78 in.
1978-On	10.7mm/0.42 in.

Honda ATC 70-125

the float tang is just touching the end of the needle.

6. With the float held in this position, measure the distance from the mating surface to the top of the float. It should be 10.7mm (0.42 in.).

7. If the float level is not within 10% of this value, check for foreign matter on the needle tip or seat. Check for wear of and needle tip. Float, needle and seat, or all three must be replaced if the level is not correct.

Idle Speed and Mixture

NOTE: These items must be adjusted when the engine is at operating temperature.

CAUTION: Park the machine on a level surface in a well-ventilated area and set the parking brake.

1. Check that the throttle cable adjustment is correct so that the cable has enough slack to permit the throttle slide to close fully.

2. Screw the pilot in carefully until it is seated, then back it out about 1 1/2 turns.

3. Start the engine and, when it has reached operating temperature, adjust the idle speed as follows:

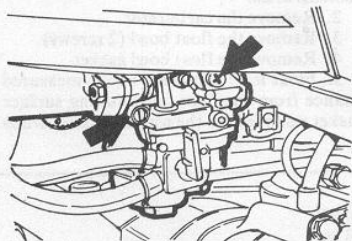
ATC 70: 1500 \pm 100 rpm

ATC 90: 1200 \pm 100 rpm

ATC 110, 125: 1700 \pm 100 rpm

4. Turn the pilot screw in slowly until the engine stalls, then back it out one full turn.

5. Readjust idle speed, if necessary, to the specification given.



Carburetor pilot (left) and throttle stop (idle) screws

6. Shut the engine off and adjust the throttle cable as outlined in "Maintenance."

NOTE: If proper idling cannot be obtained using this method, it may be that the fuel system is clogged. Check petcock, filter screen, carburetor, gas cap vent. Other possible causes include a dirty or worn spark plug, a plug which is too cold, improperly adjusted valves or air leaks in the intake system.

ENGINE AND TRANSMISSION

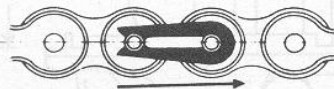
NOTE: Engine component removal and installation procedures are given in the following text. Specifications are in the chart at the end of this section. For service procedures and inspection techniques to valves, piston, clutch and other components, refer to "Engine Rebuilding" in the "General Information" section of this manual.

ENGINE REMOVAL AND INSTALLATION

NOTE: All engine components with the exception of the crankshaft and transmission can be serviced without removing the engine from the frame.

Before removing the engine:

- Drain the oil.
- Degrease the engine. Be especially attentive to the area around the cylinder base, the underside of the crankcase and around mating surfaces.
- Drive chain masterlink spring clips should be removed with pliers. Do not pry the clip off with a screwdriver or it will be distorted and will have to be replaced. After disconnecting the chain, install the masterlink on one end of the chain of prevent loss.
- When connecting drive chains, be certain to fit the spring clip with the closed end facing the direction of chain rotation.



DIRECTION OF TRAVEL

Masterlink spring clip closed end must be installed as shown

ATC 70

- Remove the skid plate.
- Remove the chain case.
- Remove the recoil starter assembly.
- Remove the exhaust pipe nuts at the cylinder head and the muffler mounting bolts. Remove the exhaust system.
- Remove the footpeg mounting bar.
- Remove the carburetor manifold bolts from the cylinder head.
- Remove the Neutral indicator e-clip. Remove the gearshift lever.
- Remove the left crankcase cover.
- Loosen the chain tensioner. Unbolt the engine sprocket.
- Disconnect the spark plug lead. Loosen the spark plug.
- Detach the wiring harness from the frame and disconnect the wires at the connectors.
- Place a jack or other adjustable support beneath the engine.
- Remove the upper and lower engine mounting bolts.
- Remove the engine from the left side of the frame.
- Installation is the reverse of removal. Tighten the engine mounting bolts to 14-18 ft. lbs. Tighten the footpeg bar to 14-18 ft. lbs.

ATC 90/110/125

- Disconnect the spark plug lead and loosen the plug.
- Remove the seat and rear fender assembly.
- On the ATC 125, be sure that the petcock is "OFF" and remove the two screws securing the petcock to the carburetor. Remove the mounting bolt at the rear of the fuel tank and remove the tank.

- Remove the carburetor manifold bolts from the cylinder head.
- Disconnect the battery ground (negative) cable from the battery (ATC 125).
- Disconnect the starter motor cable from the starter motor (ATC 125).
- Remove the left rear wheel.
- Remove the skid plate.
- Remove the chain case axle cover.
- Remove the chain case.
- Remove the exhaust pipe nuts from the cylinder head. Remove the muffler mounting bolts. Remove the exhaust system.
- Remove the footpeg bar.
- Locate the wiring connectors for points or pulse generator and disconnect.
- Locate the magento/alternator wiring connectors on the frame and disconnect.
- Locate the connector of the Neutral indicator wire on the frame and disconnect it.
- Disconnect the breather tube from the crankcase, if fitted.
- Disconnect the drive chain.
- Support the engine by placing a support beneath it.
- Remove the cylinder head bracket.
- Remove the rear engine mounting bolts and take the engine out of the left side of the frame.
- Installation is the reverse of removal. Tighten the cylinder head bracket fasteners to 14-18 ft. lbs. and the rear engine mounting bolts to 22-29 ft. lbs.

TOP END

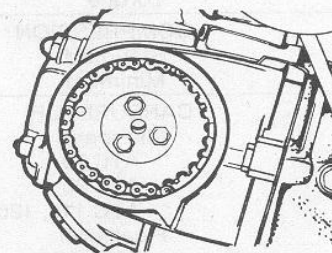
The following section deals with the removal and installation of the cylinder head, cylinder, piston and related components. Inspection and service procedures are outlined under "Engine Rebuilding" in the "General Information" section of this manual. Specifications are included in the chart at the end of this section.

CAUTION: When removing cylinder head and cylinder, be sure to note the exact locations of all dowel pins, O-rings and collars on head and cylinder base mating surfaces. Proper installation of these components is critical.

ATC 70

REMOVAL

- The engine need not be removed from the frame to remove the cylinder head and cylinder. Remove the exhaust system and the carburetor and manifold from the cylinder.
- Remove the magneto or alternator rotor cover. Remove the spark plug and the valve adjuster caps. Turn the engine over until the intake valve goes down and comes up, and turn it a bit farther so that the "T"



Cam sprocket bolts and sprocket timing mark (arrow) (ATC 70)

Honda ATC 70-125

mark on the rotor aligns with the stationary index mark.

3. Loosen each cylinder head cover nut 1/4 of a turn at a time until they are loose, then remove them. Note that one or two of the nuts are different and must be installed in the location from which they were removed.

On most models, there is one hex nut and three capnuts; an oil sealing washer is fitted beneath the hex nut.

4. Tap the head cover lightly with a plastic mallet to free it if stuck.

5. Remove the bolt from the right side of the cylinder head. This will enable the left side cover to be removed.

6. Remove the two screws on the right side cylinder head cover and remove the cover.

7. Check that the piston is at TDC (the "O" mark on the cam sprocket will be toward the top of the head).

8. Remove the three sprocket mounting bolts, and push in on the camshaft to disengage it from the sprocket. Remove the sprocket after disengaging it from the cam chain.

NOTE: It may be necessary to hold the camshaft in position while removing the sprocket bolts and this can be done if the engine is in the frame by engaging the transmission except for centrifugal clutch models. If the engine is not in the frame, secure the magneto rotor or the counter-shaft sprocket.

9. Remove the cylinder head mounting bolt on the left side of the head. Remove the head, tapping around the mounting surface with a plastic mallet if it is stuck.

10. When the head is removed, remove the two locating pins at the head mating surface and ensure that they are in place when the head is refitted. To remove the rocker arms, thread a suitable bolt into the right side of the rocker arm shafts and pull them out. Keep each rocker arm shaft with its own rocker arm for proper installation. Push the camshaft out of the head.

NOTE: The cylinder head or cylinder mounting bolt can be used to remove the rocker arm shafts.

11. Unscrew and remove the cam chain guide roller pin from the left side of the cylinder and remove the guide roller.

12. Remove the cylinder mounting bolt on the left side and pull off the cylinder. Do not allow the piston to strike the studs as it comes out of the cylinder. Check the location of the two hollow dowel pins on the cylinder studs. Remove these and make sure that they are installed when assembling the top end.

13. To remove the piston, remove the wrist pin circlips with needlenose pliers and push out the wrist pin.

NOTE: Use steady pressure while removing the wrist pin. Support the piston with your other hand. Do not strike or attempt to force out the pin. If it is stuck apply gentle and even heat to the piston crown with a propane torch until the pin is free.

INSPECTION

Refer to the "Engine Rebuilding" section of "General Information" and to the specifications charts at the end of this section for inspection techniques and service limits, respectively.

INSTALLATION

1. If the piston rings were removed or

replaced, be sure that they are installed correctly.

2. Check the profiles of the compression rings. The two rings are not interchangeable. The ring with the plain profile is the top ring and the wedge-shaped ring is the second compression ring.

3. Be sure to install the compression rings with the manufacturer's mark near the end-gap facing upwards.

4. Piston ring end-gaps should be arranged as follows:

a. On models with a one-piece oil ring, arrange end-gaps of the three rings 120° apart around the piston, but not at the very front or rear of the piston or directly above the wrist pin holes.

b. On models with a multi-piece oil ring, end-gaps of the two compression rings and the oil expander should be arranged 120° apart around the piston, but not at the very front or rear of the piston and not directly above the wrist pin holes. The end-gaps of the oil rails should be arranged at about 3/4 in. (20mm) or more - one on either side of the expander end-gap.

5. Install one wrist pin circlip and place the piston on the connecting rod. The triangular mark on the piston crown must be positioned on the cam chain side. Insert the wrist pin and the other circlip. Use new circlips and be sure that they are properly seated. Arrange the circlip end-gaps so that they do not align with the cutouts on the piston. Lubricate the wrist pin, rings, and piston skirt with motor oil.

6. Be sure that the O-ring is in place in the crankcase oil passage and the hollow dowel pins are installed on the cam chain side studs. Fit a new cylinder base gasket. Install the cylinder, compressing the rings with your fingers as the piston enters the bore. Feed the cam chain through the cylinder as it is seated. Install and tighten the cylinder mounting bolt.

7. Install the cam chain guide roller and the roller pin.

8. Install the two hollow pins on the studs: one on the top right stud, the other on the left bottom. Fit the O-rings to the oil passage and to the stud oil passage; fit the head gasket.

9. Install the head, complete with rocker arms and cam, threading the cam chain with its sprocket through, and securing them with a length of wire or a screwdriver.

10. Turn the magneto rotor so that the "T" mark on the rotor is aligned with the index mark on the crankcase. Set the cam sprocket "O" mark at the top of the head. Install and tighten the sprocket bolts to 4-7 ft. lbs. Thread locking compound should be used on these bolts. Lubricate the top end components.

11. The remainder of the procedure is the reverse of disassembly. Note that the cylinder head cover hex nut (on most models) and its copper washer are installed on the lower left stud. Install the head mounting bolt. Tighten the head cover nuts in a cross pattern and in increments of 2-3 ft. lbs. until the proper torque of 6.5-8.7 ft. lbs. is reached. Adjust the cam chain and tappet clearance before starting the engine.

NOTE: The cylinder head cover may be fitted with an arrow mark. If so, install it so that the arrow points towards the exhaust port (down).

ATC 90/110/125

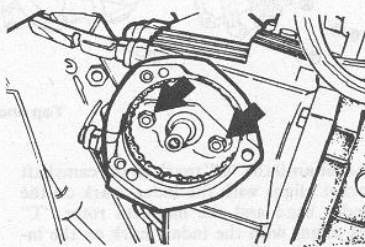
REMOVAL

1. The cylinder head, cylinder and piston can be removed with the engine still in the frame.

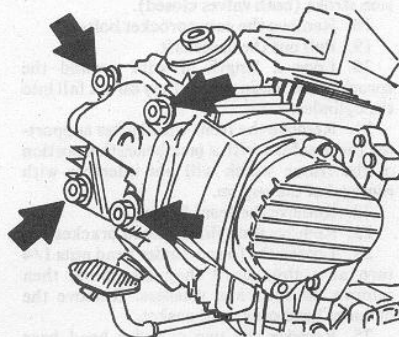
2. Disconnect the spark plug lead and remove the plug. Remove the valve adjuster caps.

3. Remove the exhaust pipe nuts at the cylinder head.

4. Remove the three muffler mounting bolts.



Cam sprocket bolts (ATC 90-125)



Cylinder head nuts

5. Remove the exhaust system.

6. Remove the manifold bolts on the head and remove the carburetor and manifold.

7. Remove the breaker point or pulse generator cover on the left side of the cylinder head.

8. Disconnect the pulse generator or point wire from the plastic connector on the harness and remove the wire clamp from the cylinder head, if equipped.

9. Remove the base plate screws (2) and remove the base plate.

10. Remove the rotor or advance mechanism bolt.

11. Remove the rotor or advance mechanism.

12. Remove the pin from the camshaft.

13. Remove the three screws securing the points or generator housing. Remove the housing and gasket from the head.

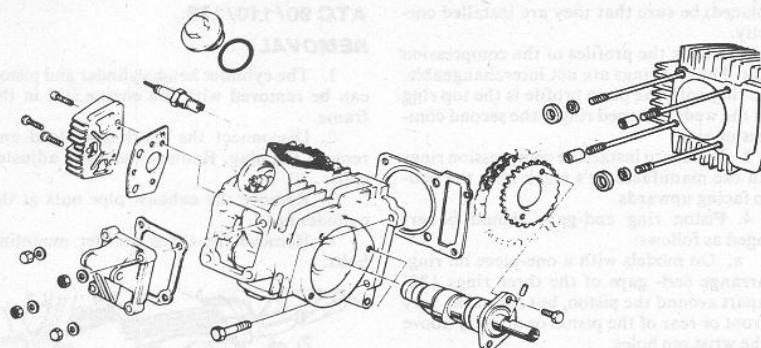
14. Locate the cam chain tensioner assembly on the left under side of the crankcase.

15. On 1984 and earlier machines, loosen the cam chain locknut and tensioner adjusting screw. On 1985 and later machines, remove the tensioner sealing bolt, washer, tensioner spring and pushrod.

16. Removing the timing inspection hole cap on the left crankcase cover.

17. Use the recoil starter to turn the en-

Honda ATC 70-125



Top end assembly

gine over until the "O" mark on the camshaft sprocket aligns with the index mark on the cylinder head and the magneto rotor "T" mark aligns with the index mark on the inspection hole. The sprocket bolts will be in line with the centerline of the cylinder. This positions the piston at TDC on the compression stroke (both valves closed).

18. Remove the cam sprocket bolts.

19. Pull out the camshaft.

20. Loop a length of wire around the sprocket and chain so that they do not fall into the cylinder.

21. Remove the front wheel after supporting the machine with a jack beneath a portion of the frame which will not interfere with removal of the engine.

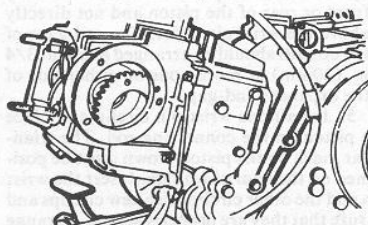
22. Remove the front fender.

23. Remove the cylinder head bracket.

24. Loosen the four cylinder head nuts 1/4 turn at a time until they are loose, then remove the nuts and washers. Remove the cylinder head cover and gasket.

25. Remove the two cylinder head base bolts on the left side of the head, if fitted.

26. Remove the head.



Cylinder head base screws

27. Remove the sprocket from the cam chain.

28. Remove the head gasket.

29. Remove the two cylinder base bolts on the left side of the cylinder, if fitted.

30. Remove the cam chain guide roller bolt from the left side of the cylinder. Remove the roller.

31. Remove the two dowel pins from the cylinder head studs.

32. Remove the O-rings from the cylinder head studs.

33. Carefully pull off the cylinder taking care that the piston does not strike the studs when the cylinder is removed.

34. Remove the cylinder base gasket.

35. Check that the cylinder base dowel pins are in place in the crankcase. If further engine work is contemplated, remove the pins to prevent loss.

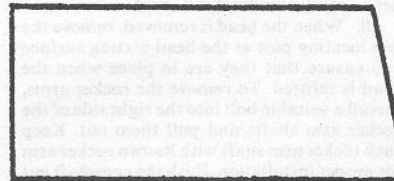
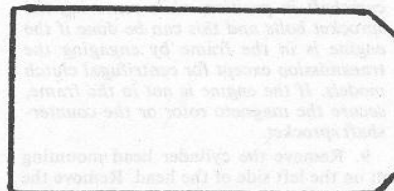
36. Stuff a clean, lint-free rag into the crankcase.

37. Remove the piston wrist pin circlips with a needlenose pliers. Push out the wrist pin with a suitable drift. Remove the piston.

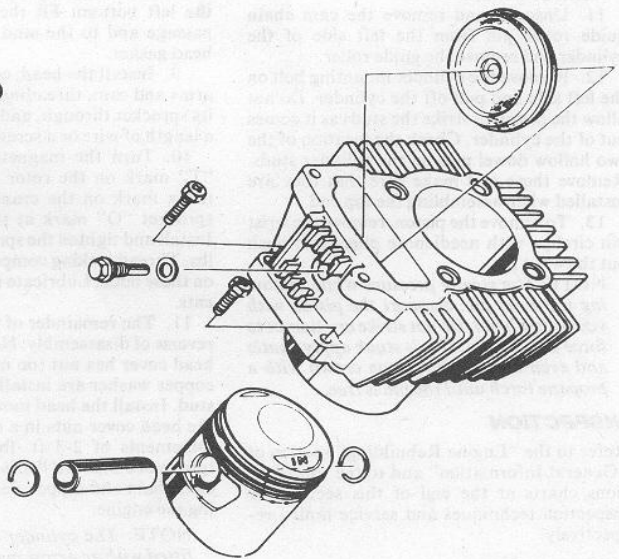
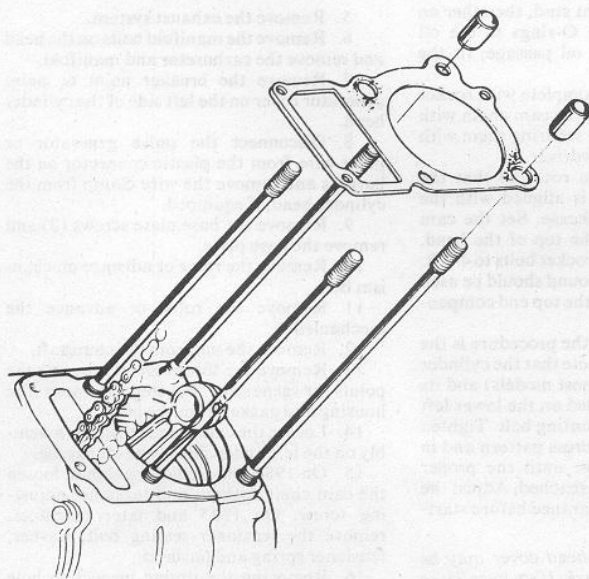
38. Remove the four screws and take off the finned cylinder head cover and gasket from the right side of the head.

39. Pull out the rocker arm shafts with a needlenose pliers and remove the rocker arms. Keep each shaft with its own rocker arm and mark them to ensure that they are installed in their original locations during assembly.

40. To remove the valve assemblies, compress the valve springs and remove the keepers.

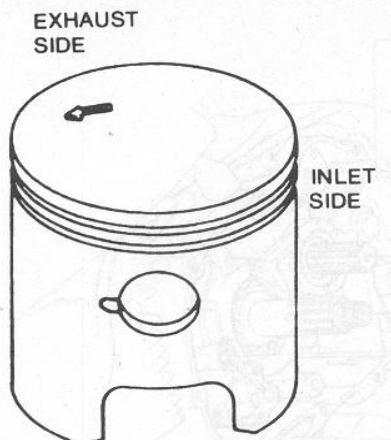


Compression ring profiles

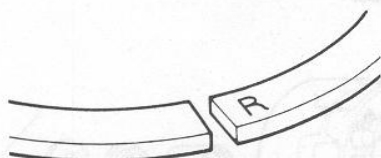


Cylinder and piston assembly

Honda ATC 70-125



Arrow must point towards the exhaust side (ATC 90-125). On ATC 70s, position piston crown triangle mark on cam chain side



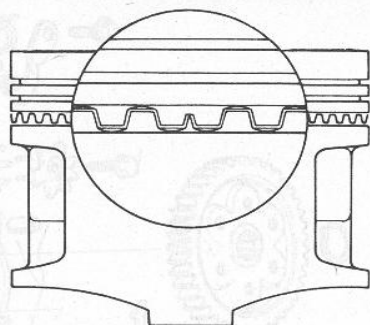
Install rings with manufacturer's mark up

INSPECTION

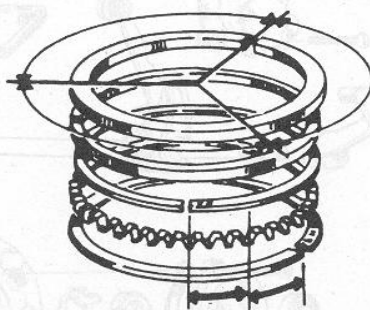
Refer to the "Engine Rebuilding" section of "General Information" and to the specifications chart in this section for inspection techniques and service limits.

INSTALLATION

1. If the piston rings were removed or replaced, be sure that they are installed correctly.
2. The two compression rings are not interchangeable. The top ring has a plain profile, while the second is wedge-shaped.
3. Be certain to install the compression rings with the manufacturer's mark near the end-gap facing upwards.
4. The piston ring end-gaps should be arranged as follows:
 - a. End-gaps of the two compression rings and the oil expander ring should be arranged 120° apart around the piston but not at the very front or rear of the piston and not directly above the wrist pin holes.
 - b. The end-gaps of the oil rails should be arranged at about 3/4 in. (20mm) or more on either side of the oil expander ring end-gap.
5. Thoroughly clean the cylinder mating surface.
6. Check that the two dowel pins are in place on the right side cylinder head studs.
7. Use a new cylinder base gasket.
8. Install the piston on the connecting rod so that the "IN" mark on the piston crown is on the intake side.
9. Use new wrist pin circlips. Be sure the circlips are properly seated. The circlip end-gaps should not align with the cut-outs at the wrist pin hole.

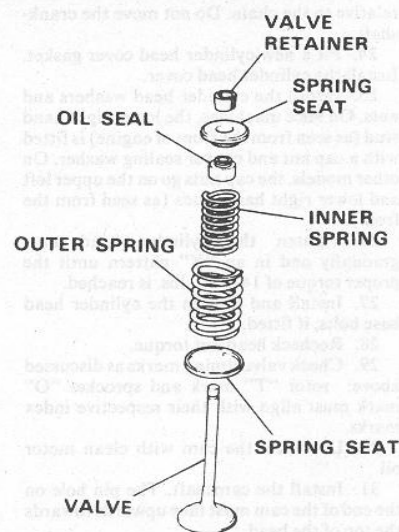


Ends of the oil ring expander must abut, not overlap

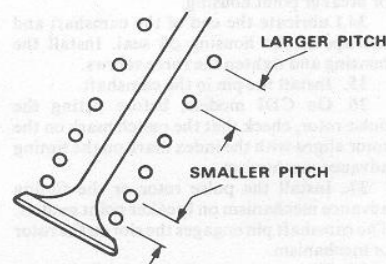


Position ring end gaps around the piston as shown

10. Lubricate the piston and rings. Check that the ring end-gaps are properly aligned.
11. Compress the rings and slide the cylinder over the piston. Pull the cam chain through the cylinder.
12. When the cylinder is seated, install and tighten the cylinder base bolts, if fitted.
13. Fit the cam chain guide roller. Tighten the roller bolt to 7-10 ft. lbs.
14. Use new valve seals when assembling the head.
15. Valve springs are progressively wound. They are installed with the close coils against the head.
16. Lubricate valve stems before inserting them into the guides.
17. After the valve and spring assemblies have been installed, rap the end of each valve smartly with a plastic mallet to ensure that the keepers are properly seated.
18. Lubricate each rocker arm shaft and slip it into place. Use a new gasket beneath the finned cover.
19. Be sure the dowel pins, O-rings and



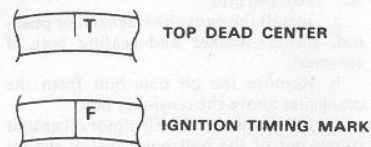
Valve assembly



Progressively wound valve springs are fitted with the close coils against the head

collars are in place on the correct cylinder head studs.

20. Use a new cylinder head gasket.
21. Pull the cam chain taut and ensure that it is not jammed or kinked anywhere.



Rotor timing marks

22. Thread the cam sprocket on the chain. Turn the engine so that the magneto rotor "T" mark is aligned with the inspection index mark. The piston will be at TDC. At this point, fit the chain over the cam sprocket so that the "O" mark on the sprocket is at the top of the cylinder head and the sprocket bolt holes are aligned with the centerline of the cylinder.
23. Install the cylinder head. Pull the cam sprocket through. With the rotor "T" mark aligned with the index mark, the "O" mark on the sprocket must align with the index mark on the head. If it does not, move the sprocket

Honda ATC 70-125

relative to the chain. Do not move the crankshaft.

24. Fit a new cylinder head cover gasket. Install the cylinder head cover.

25. Install the cylinder head washers and nuts. On 90cc machines, the lower right hand stud (as seen from the front of engine) is fitted with a cap nut and copper sealing washer. On other models, the cap nuts go on the upper left and lower right hand studs (as seen from the front).

26. Tighten the cylinder head nuts gradually and in an "X" pattern until the proper torque of 14-16 ft. lbs. is reached.

27. Install and tighten the cylinder head base bolts, if fitted.

28. Recheck head nut torque.

29. Check valve timing marks as discussed above: rotor "T" mark and sprocket "O" mark must align with their respective index marks.

30. Lubricate the cam with clean motor oil.

31. Install the camshaft. The pin hole on the end of the cam must face upwards towards the top of the head.

32. Install the sprocket bolts. Using a non-permanent thread-locking compound is recommended. Torque the bolts to 6-9 ft. lbs.

33. Fit a new gasket behind the generator or breaker point housing.

34. Lubricate the end of the camshaft and the lips of the housing oil seal. Install the housing and tighten the three screws.

35. Install the pin in the camshaft.

36. On CDI models, before fitting the pulse rotor, check that the punch mark on the rotor aligns with the index mark on the timing advance mechanism.

37. Install the pulse rotor or the timing advance mechanism on breaker point models. The camshaft pin engages the slot on the rotor or mechanism.

38. Tighten the cam bolt to 6-9 ft. lbs.

39. Install the base plate assembly.

40. On CDI models, turn the crankshaft so that the "F" mark on the magneto rotor is aligned with the inspection hole index mark.

41. On CDI models, turn the pulse generator base plate so that the pulse generator tooth aligns with the pulse rotor index mark. Tighten the base plate screws.

42. 1985 and later:

a. Install the cam chain tensioner pushrod, spring, washer and sealing bolt, if removed.

b. Remove the oil hole bolt from the crankcase above the tensioner bolt.

c. Fill the pushrod with motor oil until it comes out of the bolt hole. Install the oil hole bolt.

43. Adjust cam chain tension (see "Maintenance.")

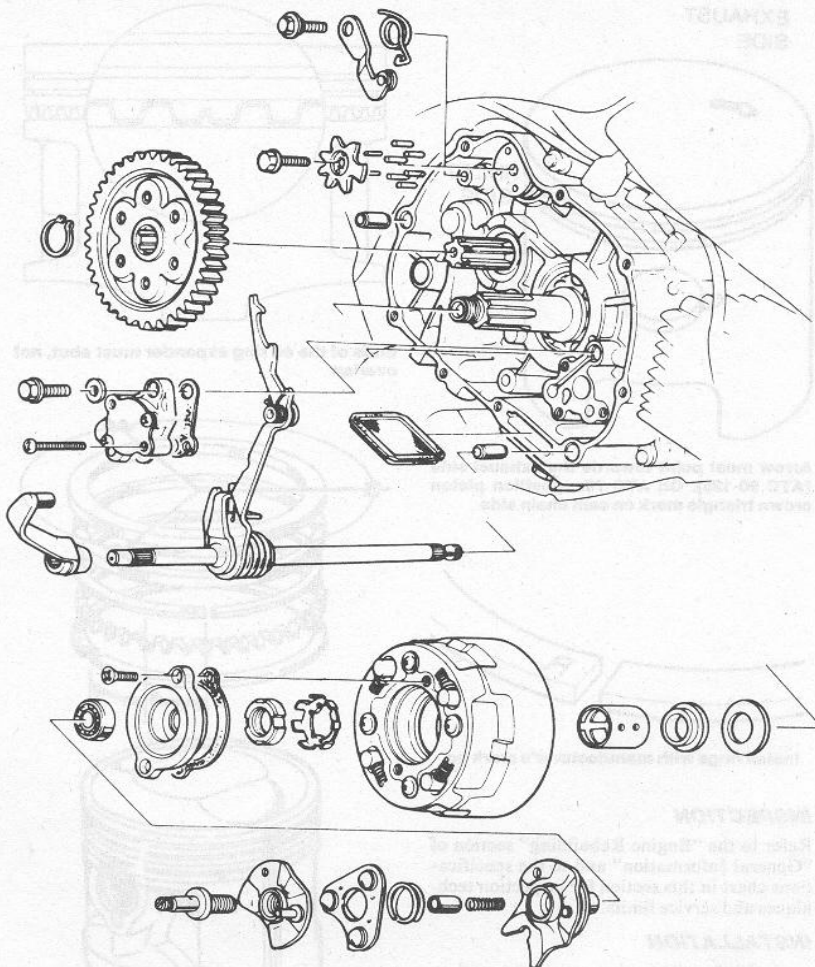
44. Turn the engine over slowly with the recoil starter. If resistance is felt, stop immediately and determine the cause. Check that the timing marks all align after one complete engine revolution.

45. Adjust valve clearance as outlined in "Maintenance."

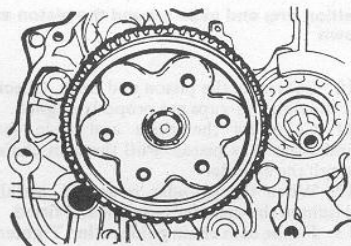
46. The remainder of the procedure is the reverse of removal. Tighten the cylinder head bracket hardware to 14-18 ft. lbs., where applicable.

RIGHT CRANKCASE COVER COMPONENTS

The right crankcase cover contains the



Right crankcase cover components



Primary driven gear circlip

clutch, oil pump, primary driven gear and external shift mechanism. All of these components can be serviced without removing the engine from the frame.

Removal

ATC 70

1. Drain the engine oil.
2. Remove the exhaust pipe.
3. Remove the footpegs.

4. Remove the carburetor manifold bolts from the cylinder head.

5. Support the engine with a jack or suitable substitute to take the weight off the upper engine mounting bolt. Remove the bolt.

6. Loosen the lower engine mounting bolt.

7. Lower the engine until the right crankcase cover is clear of the frame.

8. Place a drip pan beneath the crankcase cover to catch any residual oil which may come out.

9. Remove the cover bolts. Remove the cover. If it is stuck, tap it with a plastic mallet to break it free.

10. Note the locations of the dowel pins on the cover mating surface. Be sure that they are not misplaced.

11. For safety while working, raise the engine and slip the upper engine mounting bolt into place.

12. Remove the components as outlined under "All Models," below.

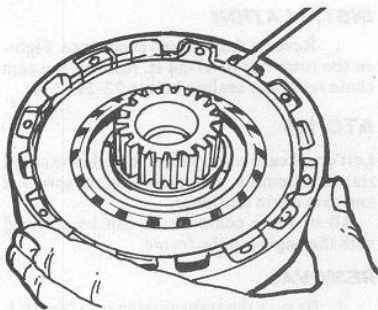
ATC 90/110/125

1. Remove the seat.
2. Drain the crankcase oil.

3. Place a drip pan beneath the right crankcase cover.
4. Remove the starter motor bracket, if fitted.
5. Remove the crankcase cover screws.
6. Remove the crankcase cover. If it is stuck, tap it with a plastic mallet to break it free.
7. Note the locations of the two locating dowel pins on the mating surface.
8. Remove the components as outlined under "All Models," below.

ALL MODELS

1. Remove the ball retainer and clutch cam plate side spring.
2. Remove the oil passage pipe and spring.
3. Remove the clutch cam plate.
4. Remove the clutch outer cover screws.
5. Remove the release lever.
6. Bend up the locking tap on the clutch nut washer.
7. Remove the clutch nut.
8. Remove the clutch assembly.
9. Remove the clutch center guide.
10. Remove the primary driven gear snap ring.
11. Remove the primary driven gear.
12. To remove the oil pump, remove the hex head bolt and the three pump mounting screws.
13. Remove the gearshift pedal pinch bolt and carefully pull the pedal off the shaft.
14. Clean the exposed splines of the shift shaft to remove any burrs or sharp edges so they won't damage the oil seal.
15. Remove the shift drum stopper bolt and the stopper.
16. Disengage the fingers of the shift arm from the shift drum pins and pull the external shift mechanism out of the case.
17. Remove the shift drum stopper plate, if required.

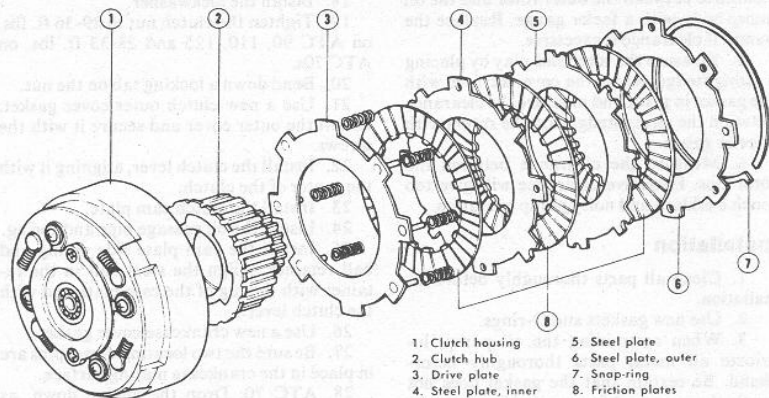


Removing the clutch snap-ring

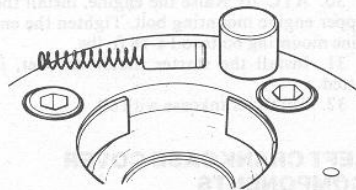
Inspection

CLUTCH

1. Compress the clutch assembly and remove the large snap-ring on the inner side. Carefully release pressure and separate the components.
2. Remove the snap-ring to separate the primary drive gear from the clutch hub.
3. If further disassembly is required, remove the clutch damper springs from the housing. Remove the four phillips screws from the outer side of the housing and separate the drive plate, clutch springs and housing.



Clutch assembly

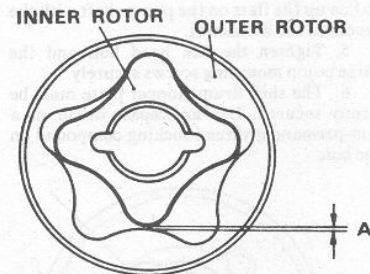


Clutch roller, plunger and spring assembly

4. To complete disassembly, remove the clutch weight stopper ring from the drive plate.
5. Measure clutch spring free length.
6. Check friction plates for worn or damaged friction material. Measure thickness and compare to the given specification.
7. Check steel plates for warpage.
8. Check plate tabs for chipping, wear or other damage.
9. Measure primary gear ID and center guide OD and compare to the specifications.
10. Check gear teeth for pitting, chipping or other damage. Check gears for heat discoloration.

SHIFT MECHANISM

1. Check the splines of the gearshift shaft. If the splines are broken or torn to the extent that it is difficult to properly secure the shift lever, replace the shaft.
2. Check the condition of the shift arm. Be sure that it is not bent. Check that the shift fingers are not bent or worn.

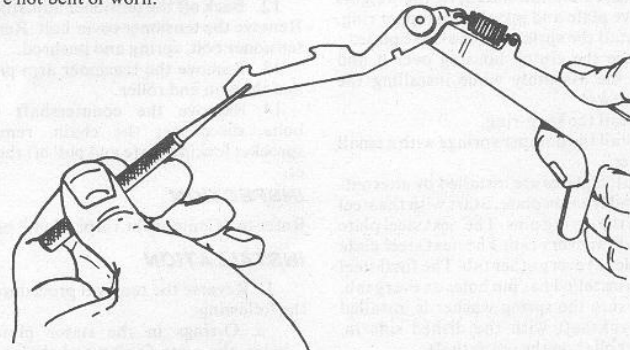


Rotor tip clearance ("A")

3. Check the condition of the springs in the shift linkage, especially the shift lever return spring. If any spring is broken, has lost its tension, or fails to hold its component properly, replace it.
4. Check the condition of the shift drum stopper roller and replace it if worn. The stopper spring should hold the stopper firmly against the stopper plate.
5. Check the stopper plate and pins for wear. Replace if damage.

OIL PUMP

1. Remove the cover screws and remove the cover.
2. Remove the inner and outer rotors.
3. Check all parts for scoring, discoloration or other obvious signs of wear.
4. Install the rotors and measure the



Check shift fingers for damage

Honda ATC 70-125

clearance between the outer rotor and the oil pump body with a feeler gauge. Replace the pump if clearance is excessive.

5. Measure the rotor end-play by placing a straightedge across the cover surface with the gasket in place and measure the clearance between the straightedge and the rotors with a feeler gauge.

6. Measure the clearance between the rotor tips. Excessive clearance will give too much backlash and noisy pump operation.

Installation

1. Clean all parts thoroughly before installation.

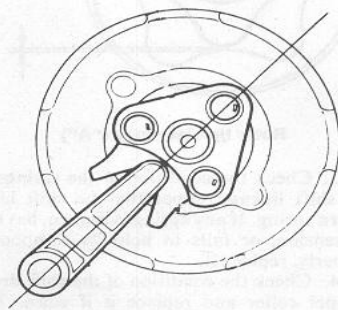
2. Use new gaskets and O-rings.

3. When assembling the oil pump, lubricate all metal parts thoroughly beforehand. Be certain that the gasket does not touch the rotors. After assembly, turn the pump by hand. There should be little resistance.

4. Install the pump on the engine. Be sure to line up the flats on the pump shaft with the recess on the driveshaft.

5. Tighten the hex head bolt and the three pump mounting screws securely.

6. The shift drum stopper plate must be firmly secured. Use an impact driver or a non-permanent thread-locking compound on the bolt.



Install the clutch lever as shown

7. Install the external shift mechanism shaft assembly, locating the ends of the return spring on either side of the stopper pin and engaging the fingers of the shift arm with the shift drum pins. Be careful when installing the shaft as there is an oil seal on the left side of the engine.

8. Install the shift drum stopper.

9. Install the primary driven gear.

10. To assemble the clutch, fit the weights on the drive plate and install the stopper ring.

11. Install the springs on the drive plate.

12. Place the clutch housing over it and compress the assembly while installing the phillips screws.

13. Install the snap-ring.

14. Install the damper springs with a small screwdriver.

15. Clutch plates are installed by alternating steel and friction plate. Start with the steel plate with the spring pins. The next steel plate has cut-outs at every tab. The next steel plate has pin holes at every other tab. The final steel plate to be installed has pin holes on every tab.

16. Be sure the spring washer is installed on the crankshaft with the dish side in. Install the collar on the crankshaft.

17. Install the clutch assembly.

18. Install the lockwasher.

19. Tighten the clutch nut to 29-36 ft. lbs. on ATC 90, 110, 125 and 28-33 ft. lbs. on ATC 70s.

20. Bend down a locking tab on the nut.

21. Use a new clutch outer cover gasket. Install the outer cover and secure it with the screws.

22. Install the clutch lever, aligning it with the center of the clutch.

23. Install the clutch cam plate.

24. Install the oil passage pipe and spring.

25. Install the cam plate side spring and ball retainer. Align the steel ball in the retainer with the lug of the cam plate and with the clutch lever.

26. Use a new crankcase cover gasket.

27. Be sure the two locating dowel pins are in place in the crankcase mating surface.

28. ATC 70: Drop the engine down, as before, so that the cover can be installed.

29. Install the cover and tighten the screws evenly.

30. ATC 70: Raise the engine, install the upper engine mounting bolt. Tighten the engine mounting bolts to 14-18 ft. lbs.

31. Install the starter motor bracket, if fitted.

32. Fill the crankcase with oil.

LEFT CRANKCASE COVER COMPONENTS

ATC 70

Left crankcase cover components include the recoil starter, magneto, engine sprocket and cam chain tensioner assembly.

All of these components can be serviced with the engine in the frame.

REMOVAL

1. Drain the oil.

2. Remove the recoil starter assembly.

3. Remove the exhaust pipe.

4. Remove the footpeg bar.

5. Remove the chain case.

6. Remove the E-clip and remove the Neutral indicator.

7. Remove the left crankcase cover.

8. Remove the starter pulley from the rotor.

9. Remove the rotor nut. Using the special puller, remove the rotor.

10. Remove the rotor nut. Using the special puller, remove the rotor.

11. Remove the two screws which secure the coil stator plate. Tap the plate lightly to rotate it, then remove it.

12. Back off the tensioner adjusting screw. Remove the tensioner cover bolt. Remove the tensioner bolt, spring and pushrod.

13. Remove the tensioner arm pivot bolt, and the arm and roller.

14. Remove the countershaft sprocket bolts, disconnect the chain, remove the sprocket locking plate and pull off the sprocket.

INSPECTION

Refer to "Component Inspection," below.

INSTALLATION

1. Reverse the removal procedures. Note the following:

a. O-rings in the stator plate screw holes, the plate O-ring and the crankshaft oil seal must be replaced.

b. Tighten the rotor nut to 24-27 ft. lbs. Tighten the starter driven pulley bolts to 6-9 ft. lbs. Tighten the cam chain tensioner sealing bolt to 15-18 ft. lbs. Tighten the engine sprocket plate bolts to 10 ft. lbs.

ATC 90/110

Left crankcase cover components include the recoil starter assembly, magneto, engine sprocket and cam chain tensioner assembly.

All of these components can be serviced with the engine in the frame.

REMOVAL

1. Be sure the transmission is in Neutral.

2. Remove the gearshift lever pinch bolt and carefully pull the lever off its shaft.

3. Remove the three bolts that secure the recoil starter assembly. Remove the recoil starter.

4. Remove the gasket.

5. Remove the starter driven pulley bolts and pulley.

6. Remove the rotor nut and washer.

7. Using the special puller, remove the rotor.

8. Disconnect the magneto wires at the connectors.

9. Remove the stator bolts and take off the stator.

10. If disassembly past this point is required, drain the engine oil.

11. Remove the sub-transmission cover.

12. Remove the sub-transmission gears.

13. Remove the left crankcase cover screws and the cover.

14. Remove the gasket and dowel pins.

15. Remove the cam chain tensioner sealing bolt, spring and pushrod.

16. Disconnect the drive chain to remove the engine sprocket.

INSPECTION

Refer to "Component Inspection", below.

INSTALLATION

1. Reverse the removal procedure. Tighten the rotor nut to 47-54 ft. lbs. and the cam chain tensioner sealing bolt to 22-29 ft. lbs.

ATC 125

Left crankcase components include the recoil starter assembly, magneto, engine sprocket and cam chain tensioner.

All of these components can be serviced with the engine in the frame.

REMOVAL

1. Be sure the transmission is in Neutral.

2. Remove the gearshift lever pinch bolt and carefully pull the lever off its shaft.

3. Remove the recoil starter assembly (3 screws).

4. Remove the gasket.

5. If further disassembly is required.

6. Remove the pulley bolt.

7. Remove the pulley.

8. Remove the air cleaner hose.

9. Disconnect the alternator wires.

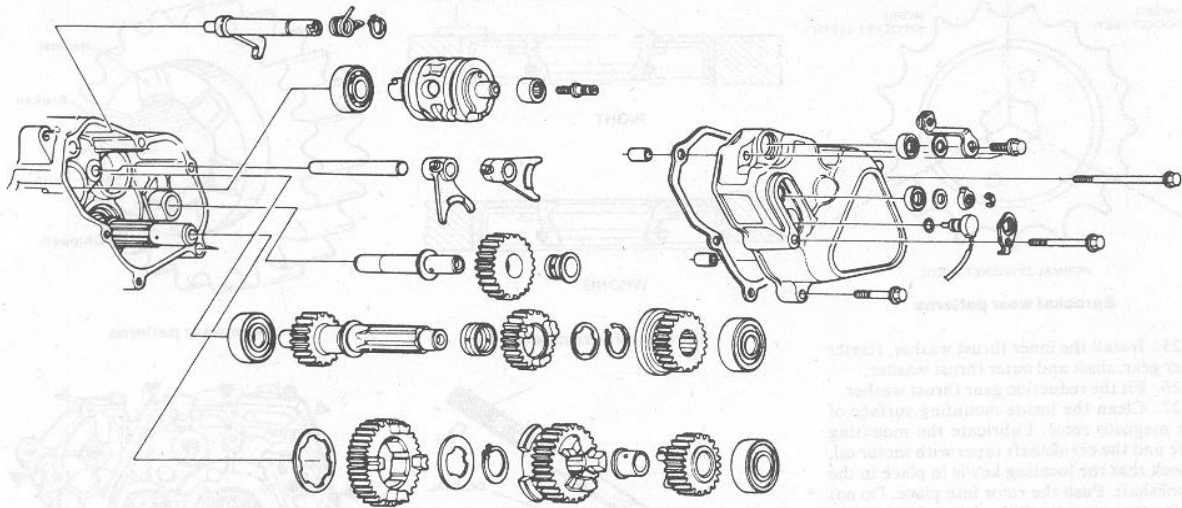
10. Remove the Neutral indicator E-clip and washer.

11. Remove the sub-transmission cover bolts.

12. Remove the dowel pins.

13. Remove the gasket.

14. Remove the sub-transmission components.



Sub-transmission components

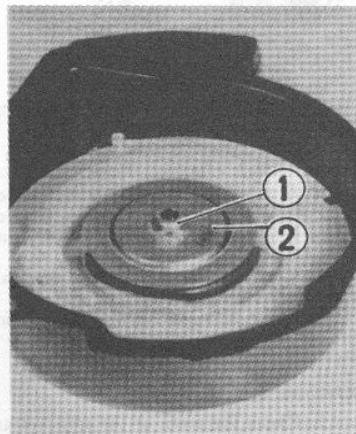
15. Remove the left crankcase cover bolts.
16. Remove the flywheel with a suitable puller.
17. Remove the thrust washers, starter idler gear and shaft.
18. Remove the starter reduction gear washer.
19. Remove the bolt securing the starter driven gear set plate. Remove the plate.
20. Remove the starter driven gear and the needle bearing.
21. Remove the seven bolts securing the left crankcase cover spacer and remove the spacer.
22. Remove the two dowel pins from the crankcase mating surface.
23. Remove the two screws securing the cam chain tensioner guide sprocket set plate. Remove the sprocket.
24. Unscrew and remove the cam chain tensioner oil hole bolt and washer.
25. Remove the tensioner sealing bolt and washer and the spring and pushrod.
26. Disconnect the drive chain at the masterlink.
27. Remove the engine sprocket and bushings.

INSPECTION

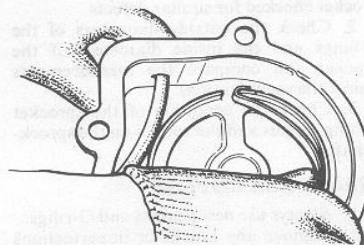
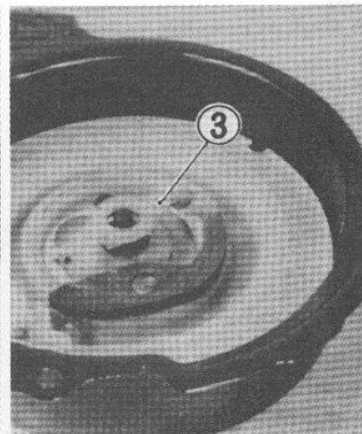
Refer to "Component Inspection", below.

INSTALLATION

1. Use new gaskets and O-rings.
2. Clean all metal parts in a safe solvent and dry thoroughly.
3. Lubricate all metal parts with motor oil before assembly.
4. Grease the lips of all seals before installation.
5. Wrap the starter rope around the pulley in a clockwise direction when viewed from the ratchet side of the pulley.
6. Install the recoil spring in the housing, hooking the end of the spring in the place provided.
7. Grease the spring thoroughly.
8. Install the pulley shaft collar.



Recoil starter nut (1), ratchet cover (2) and guide (3)

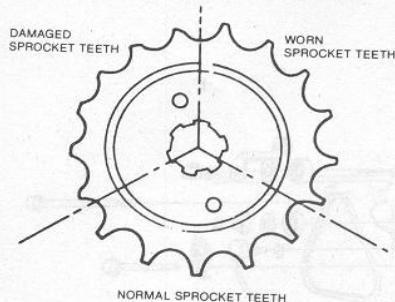


Engage the end of the coil spring into the boss provided

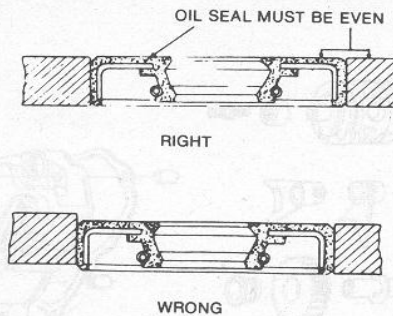
9. Grease the pulley shaft and install the pulley, hooking the end of the spring on the starter housing hook.
10. Turn the pulley two full turns clockwise.
11. Pull the starter rope through the hole and install the handle. Knot the end of the rope. Fit the handle cover.

12. Grease the ratchet and install it on the pulley.
13. Install the spring, spring seat and ratchet guide.
14. Install the cover. Install the cover nut.
15. Check recoil starter operation.
16. Lubricate the engine sprocket bushings and install bushings and sprocket.
17. Connect the drive chain.
18. Install the cam chain guide sprocket and set plate.
19. Fit a new crankcase cover spacer gasket.
20. Check that the two locating dowel pins are in place on the crankcase mating surface.
21. Install the spacer and secure it with the seven bolts. Bolts should be tightened gradually and evenly.
22. Install the starter driven gear spacer on the crankshaft.
23. Install the starter driven gear and needle bearing.
24. Install the driven gear set plate and bolt.

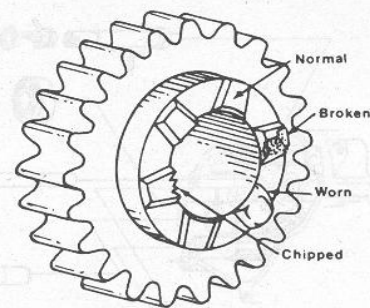
Honda ATC 70-125



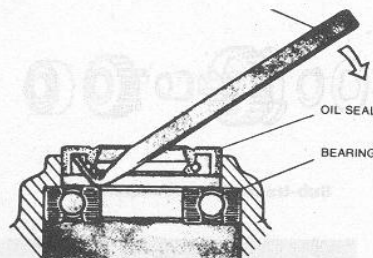
Sprocket wear patterns



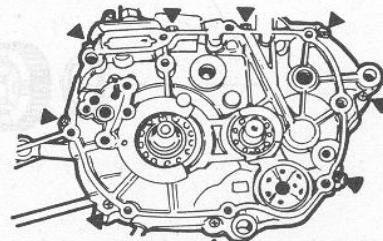
Correct oil seal installation



Gear wear patterns



Correct oil seal removal



Crankcase screws (ATC 125)

25. Install the inner thrust washer, starter idler gear, shaft and outer thrust washer.
26. Fit the reduction gear thrust washer.
27. Clean the inside mounting surface of the magneto rotor. Lubricate the mounting hole and the crankshaft taper with motor oil. Check that the locating key is in place in the crankshaft. Push the rotor into place. Do not strike the rotor. It will be driven home when the pulley is installed.
28. Install the left crankcase cover.
29. Grease the oil seal lips and install the pulley, aligning the flats with the groove in the rotor.
30. Install the pulley bolt, washer and O-ring.
31. Tighten the pulley bolt to 29-36 ft. lbs.
32. Install the recoil starter assembly.
33. Install the sub-transmission components.
34. Check that the two locating dowel pins are in place on the cover mating surface.
35. Fit a new cover gasket.
36. Install the sub-transmission cover.
37. Install the neutral indicator washer, indicator and E-clip.
38. The remainder of the procedure is the reverse of disassembly. Do not forget to fill the crankcase with oil before starting the engine.

Component Inspection

RECOIL STARTER

1. Remove the nut (ATC 125) or E-ring (other models) and remove the ratchet cover.
2. Remove the components.
3. Remove the handle cover.
4. Undo the rope knot. Remove the handle.
5. Remove the starter pulley.

CAUTION: Wear eye protection and use care when removing the pulley. The coil spring may pop out when it is removed.

6. Check the rope for a frayed or worn condition and replace it if necessary.
7. Check the condition of the coil spring.
8. Check the ratchet components for damage.

MAGNETO

1. Do not drop the rotor as the magnetic properties may be affected. Place it where it will not pick up stray bits of metal.
2. Be sure that the rotor is perfectly clean before installation.
3. For electrical tests, refer to the "Electrical System" section.
4. Check the inside of the rotor and the stator coil core ends for scoring which would

indicate that they have been in contact. This condition must be rectified.

5. Check that the stator is secure on its mount.

6. If stator and rotor have been in contact, check the crankshaft bearings. This condition is sometimes caused by bad bearings which allow play in the crankshaft.

7. Check the rotor for cracks, especially around the mounting taper.

8. Check the stator for burned insulation, broken wires or other obvious signs of damage.

ENGINE SPROCKET

1. Check the teeth of the sprocket and ensure that they are not hook-shaped, broken or worn. If wear is evident, the sprocket should be replaced and the chain and rear sprocket checked for similar defects.

2. Check the outside diameters of the bushings and the inside diameters of the sprocket and compare the measurements against the specifications.

3. Check the condition of the sprocket bushing splines and the splines on the sprocket shaft.

CRANKCASE COVERS

1. Always use new gaskets and O-rings.
2. Remove any knicks or imperfections from the mating surfaces with an oilstone or silicon carbide paper.
3. Oil seals can be pried out with a small screwdriver. When installing new seals, press them straight in with a block of wood or the like which will cover the entire seal. Lubricate seal lips before installation.
4. Bearings can be checked for condition in place. Remove bearings by taking off any retaining plates. Heat the cover slightly and drive the old bearing(s) out. Installation is the reverse of removal.

GEAR ASSEMBLIES

1. Check the condition of all gear teeth for wear, pitting or cracks. Pay close attention to the base of each tooth since this is where most damage shows up.

2. Check the engaging dogs on sub-transmission gears.

3. Check dimensions of gears, shafts and shift forks against the specifications given.

4. Check the shaft splines.

5. Check the condition of the shift fork fingers. They should be straight and the tips must be undamaged.

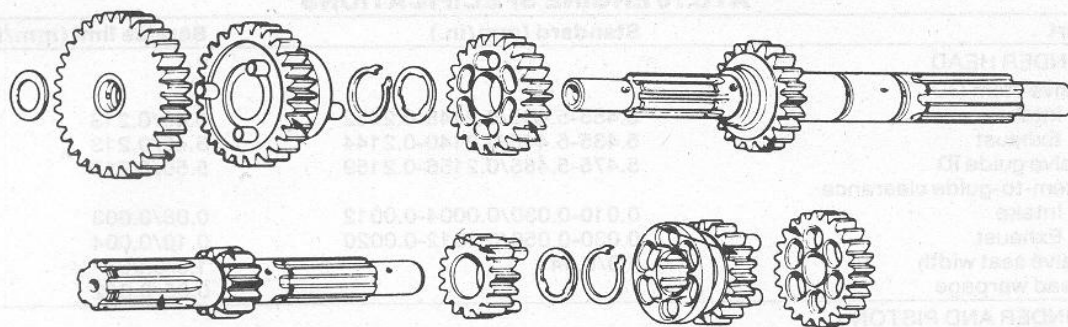
6. Check that the shift fork shaft is not bent.

7. Check all components for heat damage.

LOWER END AND TRANSMISSION

Splitting The Crankcase

1. Remove the engine from the frame.
2. Remove the cylinder head, cylinder and piston.
3. Remove the clutch and gearshift linkage.
4. Remove the recoil starter assembly.
5. Remove the magneto.
6. Remove the cam chain tensioner assembly.
7. Remove the sub-transmission, if equipped.
8. Remove the crankcase screws.
9. Place the engine with the left crankcase down and tap upwards on the right crankcase half with a plastic mallet to separate the case halves.
10. Remove the dowel pins and the gasket.
11. Remove the crankshaft assembly.
12. Remove the gear clusters.



Transmission assembly (ATC 125)

Inspection

CRANKSHAFT

The crankshaft is a pressed-together unit. The connecting rod big end bearing is the caged-needle type. In the event of damage to the con rod, bearing or crankpin, the crankshaft must be replaced as an assembly.

1. Lubricate the big end bearing with oil, and rotate the rod slowly around the crankpin. The movement must be smooth and silent.

2. With a dial gauge, check the up-and-down (radial) movement of the con rod. Compare the reading with the specification given. If rod movement is in excess, of the specifications, the big end bearing is worn and the crankshaft must be replaced.

3. With a feeler gauge, check the clearance between the con rod big end and the crankshaft flywheel. Compare the measurement with the specification given for axial clearance.

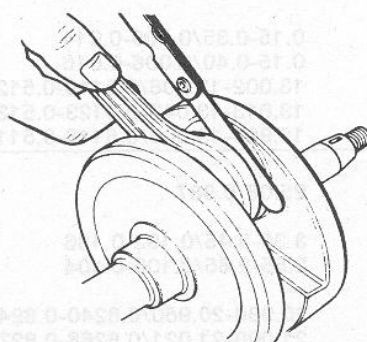
4. Place the crankshaft on a set of V-blocks, and check the crankshaft run-out with a dial gauge. Check both ends of the crank. Compare the run-out reading with the specification given. If excessive, the crank must be replaced.

Crankshaft run-out will be one half of the true indicated reading of the gauge.

CRANKCASES

1. Check for damage to the bearing bosses, especially for stress cracks around the bearing boss.

2. Be sure that both case half mating surfaces are free of any traces of old gasket or gasket material.



Checking big end side clearance

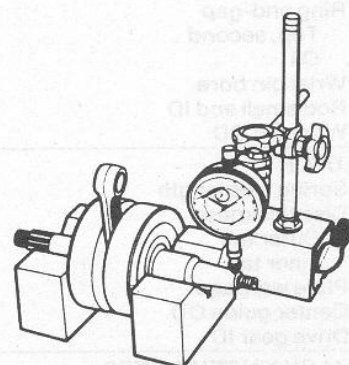
3. Place each case half on a flat surface and check for warpage by probing around the mating surface with a feeler gauge. Maximum acceptable case warpage is 0.05 mm (0.002 in.). If warped, cases should be replaced.

4. Minor scratches on the mating surfaces can be removed with an oilstone, although it is not permissible to remove much metal.

5. Case halves must be scrupulously clean before assembly. Be sure that all oil passages are clear and that the two dowel pins fitted between the case halves are installed.

TRANSMISSION

1. Check gears, shafts and shift linkage



Measuring crankshaft run-out

as outlined in the "Engine Rebuilding" section of "General Information."

2. Compare measurements with the specifications in the charts.

NOTE: Mark shift forks for position before disassembly.

Crankcase Assembly

1. Reverse the disassembly procedure.

2. Lubricate all components before putting the case halves together.

3. Be sure the crankcase dowel pins and the gasket are properly positioned.

4. Tighten the crankcase screws gradually and evenly.

5. Crankcase screw torque is 5-8 ft. lbs.

ATC 70 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limi (mm/in.)
CYLINDER HEAD		
Cam lobe height	26.07/1.026	25.69/1.01
Cam bearing clearance	0.010-0.025/0.0004-0.0010	0.05/0.002
Cam side clearance	0.004-0.036/0.0002-0.0014	0.10/0.004
Rocker arm shaft OD	9.978-9.989/0.3928-0.3933	9.91/0.004
Rocker arm ID	10.000-10.015/0.3937-0.3943	10.10/0.398
Valve spring free length		
Inner	25.1/0.99	23.9/0.94
Outer	28.1/1.11	26.9/1.06

Honda ATC 70-125

ATC 70 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limit (mm/in.)
CYLINDER HEAD		
Valve stem OD		
Intake	5.455-5.465/0.2148-0.2152	5.40/0.213
Exhaust	5.435-5.445/0.2140-0.2144	5.40/0.213
Valve guide ID	5.475-5.485/0.2156-0.2159	5.50/0.217
Stem-to-guide clearance		
Intake	0.010-0.030/0.0004-0.0012	0.08/0.003
Exhaust	0.030-0.050/0.0012-0.0020	0.10/0.004
Valve seat width	1.0/0.04	1.6/0.06
Head warpage		0.05/0.002
CYLINDER AND PISTON		
Cylinder ID	47.005-47.015/1.8506-1.8510	47.05/1.852
Piston OD	46.98-47.00/1.850-1.8504	46.90/1.847
Ring-to-groove clearance	0.015-0.045/0.0006-0.0018	0.12/0.005
Ring end-gap		
Top, second	0.15-0.35/0.006-0.014	0.5/0.02
Oil	0.15-0.40/0.006-0.016	—
Wrist pin bore	13.002-13.008/0.5119-0.5121	13.06/0.51
Rod small end ID	13.013-13.043/0.5123-0.5135	13.1/0.52
Wrist pin OD	12.994-13.000/0.5116-0.5118	12.98/0.511
CLUTCH		
Spring free length	25.08/0.987	23.1/0.91
Disc thickness		
Outer tab	3.35-3.45/0.132-0.136	3.0/0.12
Inner tab	2.55-2.65/0.100-0.104	2.3/0.09
Plate warpage	—	0.2/0.01
Center guide OD	20.930-20.950/0.8240-0.8248	20.90/0.823
Drive gear ID	21.000-21.021/0.8268-0.8276	21.05/0.829
CAM CHAIN TENSIONER		
Spring free-length	82.8/3.26	77.0/3.0
Pushrod OD	11.985-12.000/0.4718-0.4724	11.94/0.47
OIL PUMP		
Body clearance	0.10-0.15/0.004-0.006	0.20/0.008
Rotor tip clearance	0.15/0.006	0.25/0.010
End clearance	0.02-0.07/0.001-0.003	0.12/0.005
TRANSMISSION		
Gear IDs		
M2, M4, C3	17.016-17.043/0.6699-0.6710	17.10/0.673
C1	17.006-17.018/0.6695-0.6700	17.07/0.672
Mainshaft OD	16.983-16.994/0.6686-0.6691	16.95/0.667
Countershaft OD	16.966-16.984/0.6680-0.6687	16.95/0.667
Shift drum OD	33.950-33.975/1.3366-1.3376	33.93/1.336
Shift fork ID	34.000-34.025/1.3386-1.3396	34.07/1.341
Fork finger thickness	4.86-4.94/0.191-0.195	4.6/0.18
CRANKSHAFT		
Big end side clearance	0.10-0.35/0.004-0.014	0.6/0.02
Big end radial clearance	0-0.012/0-0.0005	0.05/0.002
Run-out	0-0.012/0-0.0005	0.10/0.004

ATC 90 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limit (mm/in.)
CYLINDER HEAD		
Rocker arm ID	10.00-10.02/0.3937-0.3943	10.1/0.3976
Rocker arm shaft OD	9.972-9.987/0.3926-0.3932	9.92/0.3906
Valve stem OD		
Intake	5.455-5.465/2.148-0.2152	5.435/0.2140
Exhaust	5.435-5.445/0.2140-0.2144	5.415/0.2133

Honda ATC 70-125

ATC 90 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limit (mm/in.)
CYLINDER HEAD		
Stem-to-guide clearance		
Intake	0.010-0.030/0.0004-0.0012	0.06/0.0024
Exhaust	0.030-0.050/0.0012-0.0020	0.08/0.0032
Valve seat width	0.70-1.20/0.0276-0.0472	1.50/0.059
Valve guide ID	5.475-5.485/0.2156-0.2160	5.525/0.2175
Valve spring free-length		
Inner	26.5/1.043	25.5/1.004
Outer	31.8/1.252	30.6/1.205
CYLINDER AND PISTON		
Cylinder ID	50.00-50.01/1.9685-1.9689	50.1/1.9724
Piston OD	49.97-49.99/1.9674-1.9681	49.9/1.9646
Piston-cylinder clearance	0.025-0.050/0.001-0.002	0.1/0.004
Wrist pin clearance	0.002-0.004/0.0008-0.0016	0.05/0.002
Piston ring-to-groove clearance	0.010-0.045/0.0004-0.0018	0.12/0.0047
Ring end-gap		
Compression	0.15-0.35/0.0059-0.0139	0.5/0.020
Oil	0.15-0.40/0.0059-0.0158	0.50/0.020
CRANKSHAFT		
Big end radial play	0-0.01/0-0.0004	0.05/0.002
Big end side clearance	0.10-0.35/0.0039-0.0138	0.80/0.0315
Run-out	0.03/0.0012	0.10/0.0039
CLUTCH		
Friction disc thickness	2.65-2.75/0.104-0.108	2.25/0.087
Plate warpage	0.10/0.004	0.2/0.008
Spring free-length	27.0/1.063	26.0/1.024
TRANSMISSION		
Shift fork ID	42.00-42.03/1.654-1.655	42.07/1.656
Shift drum OD	41.95-41.98/1.652-1.653	41.93/1.651
Shift fork finger width	5.96-6.04/0.2347-0.2378	5.70/0.2244
Gear backlash	0.084-0.170/0.0033-0.0067	0.25/0.0098
CAM CHAIN TENSIONER		
Spring free-length	82.8/3.26	77.0/3.0
Pushrod OD	11.985-12.000/0.4718-0.4724	11.94/0.47
OIL PUMP		
Body clearance	0.10-0.15/0.004-0.006	0.20/0.008
Rotor tip clearance	0.15/0.006	0.25/0.010
End clearance	0.02-0.07/0.001-0.003	0.12/0.005

ATC 110 ENGINE SPECIFICATIONS①

Part	Standard (mm/in.)	Service limit (mm/in.)
CYLINDER HEAD		
Cam journals		
R	17.927-17.938/0.7058-0.7062	17.90/0.705
L	25.917-25.930/1.0204-1.0209	25.88/1.019
Cam lobe height	24.90-24.98/0.980-0.983	24.6/0.97
Valve spring free-length		
Inner	26.5/1.04	24.0/0.94
Outer	31.8/1.25	28.5/1.12
CYLINDER AND PISTON		
Cylinder ID	52.020-52.030/2.0480-2.0484	52.07/2.050
Piston OD	51.970-51.990/2.0461-2.0468	51.80/2.039
CLUTCH		
Spring free-length	24.5/0.965	23.5/0.925

① Other specifications are the same as the ATC 125

Honda ATC 70-125

ATC 125 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limit (mm/in.)
CYLINDER HEAD		
Cam journals		
R	17.934-17.945/0.7060-0.7065	17.90/0.705
L	25.932-25.945/1.0210-1.0215	25.90/1.020
Cam lobe height	24.118-24.278/0.9495-0.9558	23.8/0.94
Rocker arm ID	10.000-10.015/0.3937-0.3943	10.10/0.398
Rocker arm shaft OD	9.972-9.987/0.3926-0.3932	9.92/0.391
Rocker arm-to-shaft clearance	—	0.08/0.003
Cylinder warpage	—	0.10/0.004
Valve spring free length		
Inner	31.1/1.22	29.9/1.18
Outer	35.0/1.38	33.7/1.32
Valve stem OD		
Intake	5.450-5.465/0.2146-0.2152	5.435/0.2139
Exhaust	5.430-5.445/0.2138-0.2144	5.415/0.2132
Valve guide ID	5.475-5.485/0.2157-0.2161	5.525/0.2175
Stem-to-guide clearance		
Intake	0.010-0.035/0.0004-0.0014	0.08/0.003
Exhaust	0.030-0.055/0.0012-0.0022	0.10/0.004
Valve face width	1.2-1.5/0.05-0.06	1.8/0.07
Valve seat width	1.0/0.04	1.6/0.06
Cam bearing ID		
R	18.000-18.018/0.7087-0.7094	18.05/0.711
L	26.000-26.020/1.0236-1.0244	26.05/1.026
Cam journal clearance		
R	—	0.12/0.005
L	—	0.16/0.006
CYLINDER AND PISTON		
Cylinder ID	55.000-55.010/2.1654-2.1657	55.10/2.169
Taper/out-of-round	—	0.05/0.002
Warpage (head mating surface)	—	0.10/0.004
Piston OD	54.955-54.985/2.1636-2.1648	54.90/2.161
Wrist pin bore	15.002-15.008/0.5906-0.5909	15.04/0.592
Wrist pin OD	14.994-15.000/0.5903-0.5906	14.96/0.589
Piston-to-pin clearance	0.002-0.014/0.0001-0.0006	0.02/0.001
Ring-to-groove clearance		
Top	0.015-0.050/0.0006-0.0020	0.12/0.005
Second	0.010-0.045/0.0004-0.0018	0.12/0.005
Ring end-gap		
Top, second	0.10-0.25/0.004-0.010	0.50/0.020
Oil	0.3-0.9/0.01-0.04	—
Rod small end bore	15.016-15.034/0.5912-0.5919	15.05/0.593
CLUTCH		
Spring free-length	21.1/0.83	20.2/0.80
Warpage	—	0.20/0.008
Disc thickness	2.65-2.75/0.104-0.108	2.5/0.10
Drive gear ID	24.000-24.021/0.9449-0.9457	24.10/0.949
Center guide OD	22.00-22.10/0.866-0.870	21.85/0.860
OIL PUMP		
Body clearance	0.15-0.20/0.006-0.008	0.25/0.010
Rotor tip clearance	0.15/0.006	0.20/0.008
CAM CHAIN TENSIONER		
Spring free-length	82.8/3.3	77.0/3.0
Pushrod OD	11.985-12.000/0.4718-0.4724	11.94/0.94
ENGINE SPROCKET		
Bushing OD	21.960-21.993/0.8657-0.8659	21.90/0.862
Sprocket ID	19.992-20.008/0.7870-0.7877	19.94/0.785

Honda ATC 70-125

ATC 125 ENGINE SPECIFICATIONS

Part	Standard (mm/in.)	Service limit (mm/in.)
CRANKSHAFT		
Run-out	—	0.10/0.004
Big end side clearance	0.15-0.55/0.006-0.022	0.65/0.03
Radial clearance	0.0-0.008/0.0-0.0003	0.05/0.002
Small end ID	15.106-15.034/0.5912-0.5919	15.05/0.593
Crankshaft bearing play		
Axial	0.10-0.35/0.004-0.014	0.8/0.03
Radial	0.003-0.015/0.0001-0.0006	0.05/0.002
TRANSMISSION		
Shift fork ID	42.075-42.100/1.6565-1.6575	42.15/1.659
Shift drum OD	41.950-41.975/1.6516-1.6526	41.8/1.65
Fork/drum clearance	0.118-0.150/0.0046-0.0059	0.155/0.006
Drum groove width	6.10-6.20/0.240-0.244	6.4/0.25
Shift fork finger thickness	5.96-6.04/0.234-0.238	5.70/0.224
Gear ID		
C1	14.000-14.027/0.5512-0.5522	14.10/0.555
M2	18.000-18.018/0.7087-0.7094	18.08/0.712
M4	20.000-20.021/0.7874-0.7882	20.10/0.791
C3	14.000-14.027/0.5512-0.5522	14.10/0.555
Shaft OD		
C1	13.966-13.984/0.5498-0.5506	13.93/0.548
M2	17.966-17.984/0.7073-0.7080	17.93/0.706
C3	19.966-19.984/0.7861-0.7868	19.93/0.785
M4	13.966-13.984/0.5498-0.5506	13.93/0.548

ENGINE TORQUE SPECIFICATIONS

Part	Torque (ft lbs)
ATC 70	
Crankcase screws	5.8-8.0
Cylinder head stud nut	6.5-8.7
Cylinder side bolt	5.8-8.0
Cylinder head side bolt	7.4-10.8
Camshaft sprocket bolts	3.6-6.5
Cylinder head right-side cover	5.1-6.5
Cylinder head left-side cover	5.8-8.7
Valve adjuster locknut	5.1-7.2
Cam chain tensioner pushrod	10.8-18.1
Oil pump	5.8-8.7
Shift drum bolt	6.5-10.8
Shift drum stopper plate	6.5-9.4
Shift drum stopper	7.2-11.6
Clutch hub nut	27.5-32.5
Right crankcase cover	5.8-8.7
Left crankcase cover	5.8-8.0
Alternator/magneto rotor	23.9-27.5
Engine sprocket	6.5-10.8
Oil drain bolt	18.1-25.3
Carburetor	6.5-10.1
Spark plug	9-14
ATC 90/110/125	
Cylinder head nuts	14-16
Cam sprocket bolts	6-9
Cam chain guide roller bolt	7-10
Pulse rotor	6-9
Clutch nut	29-36
Starter driven pulley (125)	29-36
Drum stopper plate bolt	17-20
Carburetor-to-manifold nuts	5-7
Driven sprocket nuts	17-22
Gearshift pedal pinch bolt	9-10
Crankcase screws	5-8

Honda ATC 70-125

GENERAL TORQUE SPECIFICATIONS^①

Part	Torque (ft lbs.)
5 mm screws	2.5-3.6
6 mm screws	5-8
5 mm bolts, nuts	3.5-4.5
6 mm bolts, nuts	6-9
8 mm bolts, nuts	13-18
10 mm bolts, nuts	22-29
12 mm bolts, nuts	36-43
6 mm bolt w/8 mm head	5-8
6 mm flange bolts, nuts	7-10
8 mm flange bolts, nuts	17-22
10 mm flange bolts, nuts	25-33

① Unless otherwise noted

FUEL SYSTEM

GAS TANK

Removal

1. Remove the seat and rear fender.
2. Set the petcock to "Off."
3. Remove the carburetor float bowl drain screw and allow the gas to empty into a suitable container. Dispose of it properly.
4. On models with the petcock on the gas tank, disconnect the fuel line(s) from the carburetor.
5. On models with the petcock on the carburetor, remove the screws which secure the petcock to the carburetor.
6. Detach the rubber band from the rear of the gas tank, or remove the mounting bolt depending on which is fitted.
7. Remove the tank.

Installation

1. Reverse the removal procedure.
2. When installing the tank, be sure to engage the rubber cushions at the front with the seats on the tank.
3. Be sure all fuel line connections are tight.
4. Be certain the petcock is secured.
5. Check for leaks before operating the machine.

CARBURETOR

NOTE: Removal and installation procedures may vary slightly depending on model and year.

Removal (All Models)

1. Set the fuel petcock "OFF."
2. Unscrew the carburetor top and pull the throttle slide assembly out. Wrap the assembly in a clean rag and place it out of the way to avoid damage.
3. Remove the choke cable clamp screw, if fitted.
4. Disconnect the choke cable from the carburetor if a cable-operated choke is fitted.
5. Detach the carburetor air vent tube from the clamp on the frame.
6. Loosen the air cleaner clamp screw at the carb intake.

7. Disconnect the overflow line from the carburetor.

8. Remove the manifold bolts from the cylinder head and remove the carburetor complete with manifold.

Disassembly

ATC 70/90

1. If disassembly of the throttle slide components is desired, compress the return spring against the carburetor cap, disengage the cable from the slide, take out the spring clip, needle, and clip.
2. Remove the float bowl petcock filter (if so equipped) by removing the filter plate, O-ring, and filter screen.
3. Remove the float bowl screws or flip up the retainer and separate the float bowl from the carburetor body. Do so carefully, to avoid damage to the floats. Remove and discard the float bowl gasket.

NOTE: If the bowl is stuck, tap carefully with a plastic mallet to break the seal.

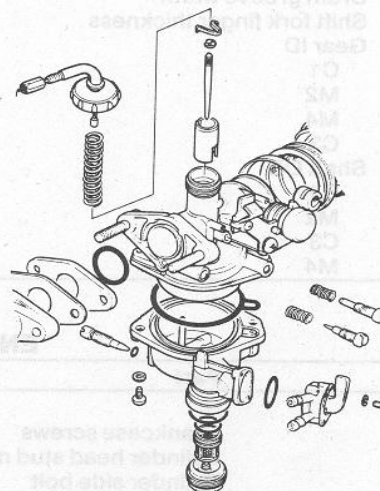
4. Push out the float pivot pin with a small dowel, and take out the floats. Remove the float needle from its seat. Unscrew the seat itself.

5. Unscrew the main jet.
6. Several types of needle jet (located directly above the main jet) are fitted. Some models have only the jet itself, while others have a jet holder or nozzle with the needle jet located above it. Unscrew the needle jet located above it. Unscrew the needle jet or jet holder if a means is provided (such as a hex head), or simply push the jet holder and/or jet out of the carburetor body with a wooden dowel.
7. Unscrew and remove the pilot jet.

8. Remove the pilot air and throttle stop screws and springs, and the drain knob (if fitted).

ATC 110/125

1. Remove the nuts securing the manifold to the carburetor and separate the components.
2. Unscrew and remove the fuel filter bolt from the float bowl.
3. Remove the fuel filter.
4. Remove the O-ring.
5. Disconnect the air vent tube.
6. Remove the two screws which secure the float bowl. Remove the float bowl carefully. If it is stuck, hold it in place and wrap it with the plastic screwdriver handle to break it free.



Carburetor assembly (ATC 110/125)

7. Remove the float bowl O-ring.
8. Pull out the float pivot pin.
9. Lift off the float and needle.
10. Unscrew and remove the pilot jet.
11. Remove the main jet from the needle jet holder. Unscrew and remove the needle jet holder. Shake the needle jet out of the carburetor body. If it will not come out, push it out from the top of the carb with a wooden dowel.
12. Turn the pilot screw clockwise while counting the number of turns until it bottoms. Then unscrew and remove it. Be sure to return it to the original setting when assembling.
13. Unscrew and remove the throttle stop screw.
14. Compress the throttle slide spring and disengage the throttle cable from the slide.
15. Remove the needle clip retainer and shake the needle out of the slide. Do not remove the needle clip from the needle.

Inspection (All Models)

NOTE: Refer to the "General Information" section for carburetor rebuilding techniques.

1. Clean all metal parts in a clean, safe solvent.
2. Blow air and fuel passages in the carburetor body clear with compressed air.
3. Check the condition of the needle and replace it if it is knicked or scored.
4. Clean all jets with solvent and com-

pressed air. Do not attempt to clean fuel passages with wire or the like, since the calibrated bores may be damaged.

5. Check the float for fuel leakage. Replace it if it is punctured or gas-logged.

6. Check the float needle and needle seat for wear or corrosion. Replace the needle if damage is noted.

7. Clean the fuel filter screen in solvent. If foreign matter cannot be removed, or if the filter is crushed, deformed or punctured, replace it.

Assembly and Installation (All Models)

1. Use new O-rings and gaskets.
2. Install jets carefully and do not over-tighten them when installing.
3. Be sure the needle clip is set to the original groove in the needle.
4. Be sure the pilot screw is set to the position it was originally.
5. Tighten manifold bolts to 5-7 ft. lbs.
6. Be sure that all fuel lines are secure before operating the machine. After the carburetor is installed, turn on the fuel petcock and check for leaks.

FUEL PETCOCK

Tank-Mounted

1. On early models, the petcock is mounted on the fuel tank.
2. Set the petcock lever off and disconnect the line(s) from the carburetor.
3. Put the end(s) of the line(s) in a small container and check fuel flow in the "On" and "Reserve" positions.
4. If fuel flow is sluggish, remove the gas cap. If flow increases, the cap vent is clogged. If it does not, the petcock filter is clogged.

Carburetor-Mounted

1. The petcock is mounted on the carburetor float bowl by two screws.
2. To check petcock operation, set it to the "OFF" position, remove the mounting screws and pull it off the float bowl.
3. Place a suitable receptacle beneath the petcock and turn it to the "ON" and "RESERVE" positions. If there is no fuel flow, determine the cause.
4. If removing the fuel tank cap increases fuel flow, the problem is a clogged cap vent.
5. If fuel flow is sluggish, remove and clean the gas tank.
6. If fuel flow is questionable, remove the petcock from the lines, being prepared for the gasoline which will come out. If flow from the lines seems normal, replace the petcock.

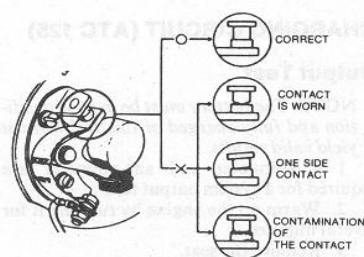
FUEL LINES

1. Fuel lines should be checked for condition every year.
2. Replace lines that are damaged by abrasion, hardened, cracked or otherwise defective.
3. Be sure that safety clips are fitted to both sides of gas lines.
4. Whenever lines are disconnected or replaced, check for leaks before operating the machine.

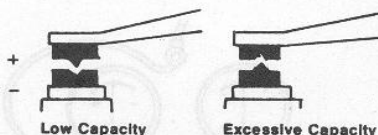
ELECTRICAL SYSTEM

Hard starting or misfiring are often caused by ignition system troubles, but since electrical malfunctions are often trickier to pin down than carburetor faults, it is wise to ensure that systems other than the ignition circuit are in serviceable condition before beginning any work.

1. In the event of hard starting, misfiring or cutting out, first check that all electrical connections are clean, dry and tight.
2. Check the ignition and kill switches for continuity.
3. Check ignition timing accuracy. See "Maintenance."
4. Remove the spark plug. Clean and gap it to 0.6-0.7mm (0.024-0.028 in.).



Breaker point condition



Defective condensers often cause pitting

5. Connect the plug to the cap and ground it against the cylinder head. Turn the engine over with the electric starter. The spark produced should be thick and blue.
6. If there is no spark, or if the spark appears weak and yellow, repeat the test using a piece of metal, such as a nail, inserted into the cap and held about 1/8 in. away from the head. If the spark appears healthy, the plug was the problem.
7. If there is still no spark, or spark is weak, remove the spark plug cap and repeat the test.

8. If there is still no improvement, check the condition of the plug lead. Check for dirt or grease, cracks in the insulation, moisture, etc. If the lead is damaged, it should be replaced. This involves replacing the ignition coil as well.

9. On breaker point-equipped machines, check the point contact surfaces for pitting or wear. Severe pitting is often caused by a defective condenser. Clean and gap the points as outlined in "Maintenance." If this does not solve the problem, inspect main ignition circuit components as outlined below.

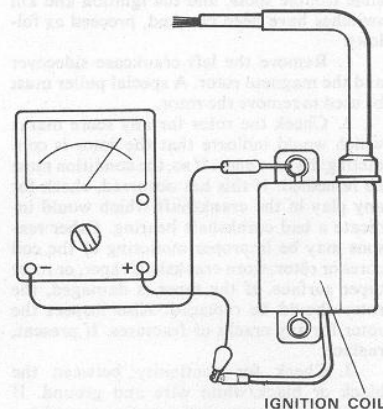
Ignition Coil

ATC 70

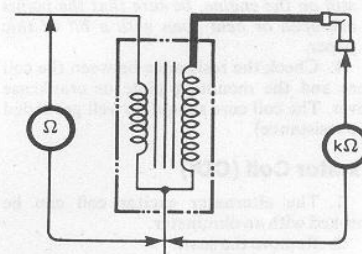
1. An ohmmeter is required to test the ignition coil.
2. Disconnect the plug lead.
3. Disconnect the primary wire from the coil and check the resistance between the coil's primary wire terminal and ground. It should be about 1.5 ohms.
4. Check resistance between the spark plug cap and the ignition coil's primary wire terminal. It should be 8-9 Ω ohms.
5. If either of the measurements are not within specification, replace the ignition coil.
6. Replace the coil if the meter indicates open or shorted coils in either case.

ATC 110/125

1. An ohmmeter is required to test the ignition coil.
2. Disconnect the spark plug lead.
3. Disconnect the primary wire from the coil (black/yellow).
4. Disconnect the green wire from the coil.
5. Remove the coil from the frame.
6. Remove the spark plug cap from the high tension lead.



Checking primary winding resistance (ATC 70)



Checking primary and secondary winding resistance (ATC 90-125)

7. Check the resistance across the two low tension leads. It should be about 1.8 ohms or less. If the resistance is not in this range, replace the coil.

8. Check the resistance across the coil terminal to which the green lead was connected and the high tension cable. Resistance should be 4.1 Ω ohms. If the reading is not

Honda ATC 70-125

within this range, the secondary winding is defective and the coil must be replaced.

9. Static resistance tests provide a general clue to coil condition, but cannot detect high voltage insulation leaks. Therefore, even if the resistance readings are acceptable, there is a chance that the coil is defective. Replacing the coil temporarily with one which is known to be good is the only sure check.

Breaker Point Ignition

CONDENSER

1. The condenser can be checked if a capacitance tester is available. Condensers should have a capacitance of approximately 0.25mf. Checking with a "megger" (high-voltage ohmmeter) should yield a resistance of 10M ohms at 1,000v.

2. As noted above, sparking at the points, or points which pit or burn rapidly would indicate a defective condenser. Bad condensers will cause mounds and matching depressions on the points, as illustrated.

MAGNETO

Assuming that all other ignition circuit components have been eliminated as the possible trouble spots, and the ignition and kill switches have been checked, proceed as follows:

1. Remove the left crankcase sidecover and the magneto rotor. A special puller must be used to remove the rotor.

2. Check the rotor for any score marks which would indicate that the rotor is contacting the core ends. If so, the condition must be remedied. If this has occurred, check for any play in the crankshaft which would indicate a bad crankshaft bearing. Other reasons may be improper mounting of the coil cores or rotor, worn crankshaft taper, or rotor taper surface. If the taper is damaged, the rotor should be replaced. Also inspect the rotor for any cracks or fractures. If present, replace.

3. Check for continuity between the black or black/white wire and ground. If continuity does not exist, the primary exciting coil is either broken internally, or is poorly grounded.

NOTE: If this test is made with the coils still on the engine, be sure that the points are open or held open with a bit of this paper.

4. Check the resistance between the coil core and the mounting plate or crankcase cover. The coil core should be well grounded (no resistance).

Excitor Coil (CDI)

1. The alternator excitor coil can be checked with an ohmmeter.

2. Remove the seat.

3. Disconnect the black/red lead at the connector.

4. Check the resistance between the black/red lead and a good ground on the engine. Resistance should be 110-400 ohms.

5. If the reading is not within this range, the alternator stator must be replaced.

Pulse Generator (CDI)

1. The pulse generator is located on the end of the camshaft. The unit can be checked with an ohmmeter.

2. Disconnect the pulse generator wires at the plastic connector. Leads are green and blue/yellow.

3. Resistance across the leads should be 90 ohms.

4. If the reading obtained is not within 10% of the specification, replace the pulse generator.

5. The pulse generator is located beneath the "CDI" cap. It can be removed after the two mounting screws are taken off.

6. If a new pulse generator is fitted, check that the air gap between the pulse rotor and the generator is set at 0.3-0.4mm (0.01-0.02 in.).

CDI Unit

A special tester is needed to check the CDI unit. If all other components in the circuit are found to be serviceable, the CDI unit can be checked most easily by replacing it with one which is known to be in working order.

CHARGING CIRCUIT (ATC 125)

Output Test

NOTE: The battery must be in good condition and fully charged or this test will not yield valid results.

1. A voltmeter and an ammeter are required for a system output test.

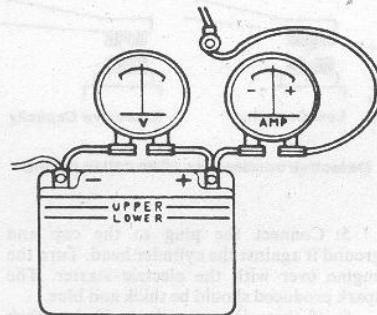
2. Warm up the engine by running it for several minutes.

3. Remove the seat.

4. Remove the battery holder and cover.

5. Disconnect the red lead at the fuse. Connect the ammeter between the red leads.

6. Connect the voltmeter across the battery terminals.



Output test set-up

7. Start the engine and note the readings.

8. The voltmeter should read 14 VDC.

9. The ammeter should read 2.4 a 2,000 rpm and 7.5 a 10,000 rpm.

10. If the readings obtained are not within specification, check the voltage regulator and the alternator charging coil as outlined below.

Voltage Regulator

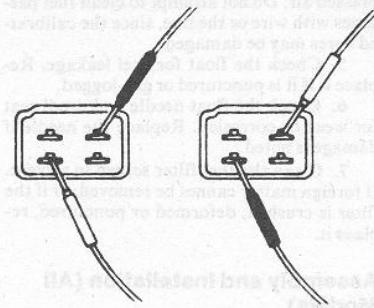
1. The voltage regulator can be checked either with an ohmmeter or with a self-powered continuity light.

2. Remove the seat.

3. Disconnect the regulator wires at the connector.

4. Regulator leads are yellow, yellow, green, red and black.

5. The check is carried out by testing



Reversing probe polarity

continuity across each pair of leads, and then reversing the polarity of the meter probes to check for continuity in the opposite direction. (Continuity will be indicated by a reading of 0.2 to 100 ohms depending on the lead involved. "No continuity" will be indicated by an infinite resistance reading.) For each pair of leads there must be continuity in one direction only.

Example: Yellow-green: 1-20 ohms

Green-yellow: Infinity

6. Resistance should be 0.1-1.0 ohms.

7. If the reading is not within this range, replace the alternator stator.

8. Check resistance between each lead and ground on the engine. Resistance must be infinite. Replace the stator if the meter shows any continuity between the wiring and ground.

STARTING SYSTEM (ATC 125)

Testing

1. If, when the starter button is pressed, the starter spins, but the engine does not, the problem is either the starter clutch or the starter motor gears in the left crankcase cover.

2. If the engine turns over very slowly, check the battery for a low state of charge. Check that the engine oil is not too heavy for conditions. If these items are not the problem, suspect a defective starter motor.

3. If nothing at all happens when the starter button is pushed, check all electrical connections in the circuit. Check that the battery is properly charged. Check the ignition switch, starter button switch, neutral switch. Check the starter solenoid. If all of these items are in proper operating condition, check the starter motor.

Starter Solenoid

1. Remove the starter solenoid cover.

2. When the starter button is pressed, there should be an audible "Click" at the solenoid.

3. Disconnect the solenoid high tension leads and the low tension wires at the plastic connector.

4. With an ohmmeter or continuity light, check the resistance of the low tension primary coil (yellow/red and green/red wires). There should be only a few ohms resistance. If this circuit shows an open condition, the solenoid must be replaced.

5. Put 12 VDC across the low tension wires. Check for continuity across the high

tension terminals. There should be no resistance. If the high tension terminals do not show continuity, the solenoid is defective and must be replaced.

Starter Motor

Removal

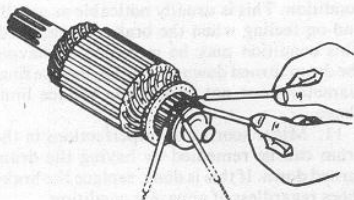
1. Be certain the ignition switch is "OFF".
2. Disconnect the ground cable at the battery.
3. Remove the exhaust pipe nuts at the cylinder head.
4. Remove the muffler mounting bolts. Remove the exhaust system.
5. Disconnect the high tension lead at the starter motor.
6. Remove the starter motor bracket bolts and the mounting screws and bolts. Remove the starter motor.

DISASSEMBLY

1. Remove the starter motor gear snap-ring.
2. Remove the gear. Remove the inner snap-ring and the thrust washers, if any, behind it. Note the number of washers. They must all be installed when the unit is assembled.
3. Remove the starter motor screws and take off the case end to expose the brushes.
4. Note the number and location of shims on the armature shaft when the cover is taken off.

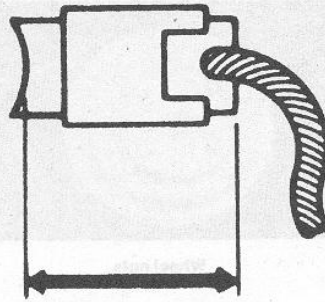
INSPECTION

1. Electrical tests can be carried out with an ohmmeter or a self-powered test light.
2. Check that continuity exists between each of the commutator segments. If one or more of them is "dead," the motor must be replaced.



Checking commutator segment continuity

3. Check that there is no continuity between the commutator segments and the armature core. Anything less than infinite resistance here will require replacement of the motor.
4. Check that there is no continuity between the commutator segments and the armature bars.
5. Check that there is no continuity between the brush which is wired to the stator (field) coil and the high tension cable terminal. Lack of continuity here indicates that the field coil is open and the motor must be replaced.
6. Check the commutator segments for signs of wear, scoring or other contact damage.
7. Clean the commutator with a rag and a safe solvent to remove carbon dust and other foreign matter.
8. Check the condition of the carbon



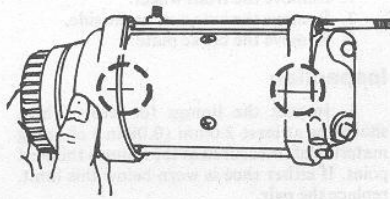
Measure brush length

brushes. Brushes with cracked or oddly worn contact surfaces should be replaced.

9. Measure brush length. Replace them as a set if either measures under 6.5mm (0.26 in.).
10. Check brush spring tension. It should be 410 gr. (14.5 oz.).
11. Check the armature for contact damage as might occur if the armature bars touch the field coils. If any is evident, replace the motor.
12. Discoloration of the commutator segments occurring on two adjacent segments indicates grounded coils. This requires replacement of the motor.
13. Check the condition of the bushings in the end caps. If they are cracked or otherwise damaged, or the armature shows signs of contact damage, the unit must be replaced.

ASSEMBLY

1. Clean all parts thoroughly.
2. Use a small amount of light duty grease to lubricate the bushings in the end caps.



When assembling the starter, align the case marks

3. Be sure that all shims are in place on the brush side of the armature.
4. Be sure that the brush springs are in place and that the brushes are in good contact with the commutator.
5. Check that the brush side end cap O-ring is in good condition.
6. Insert the armature into the case.
7. Install the brush holder with brushes.
8. When assembling the starter motor, align the pin on the brush holder with the notch in the case.
9. Install the rear cover, aligning the slot with the brush holder pin.
10. Align the marks on the motor case and the end covers before tightening the screws.

INSTALLATION

1. Reverse the removal procedure.
2. Lubricate the O-ring before fitting the motor.

ELECTRICAL SWITCHES (ATC 110,125)

Ignition Switch

1. The ignition switch can be checked with an ohmmeter or a self-powered test light.
2. Remove the headlight.
3. Disconnect the ignition switch wires at the connectors (black/white, green, red, black).
4. When the ignition switch is in the "OFF" position, there should be continuity between the black/white and the green leads only.
5. When the ignition switch is in the "ON" position, there should be continuity between the red and the black leads only.
6. If the switch fails either test, replace it.

Engine Stop Switch

1. The switch can be checked with an ohmmeter or self-powered test light.
2. Remove the headlight.
3. Disconnect the stop switch leads at the connectors (green and black/white).
4. When in the "RUN" position, there should be no continuity.
5. In both "OFF" positions, there should be continuity between the green and black/white leads.
6. The switch is a part of the left switch housing which is replaced as an assembly.

Lighting Switch

1. The switch can be checked with an ohmmeter or a self-powered test light.
2. Remove the headlight.
3. Disconnect the switch wires at the plastic connectors (brown, black/brown, white and blue).
4. When the lighting switch is "OFF" there must be no continuity between any of the wires.
5. When the lighting switch is in the "LO" position, there must be continuity between the brown, black/brown and white leads.
6. When the lighting switch is in the "N" position, there must be continuity across all four wires.
7. When the lighting switch is in the "HI" position, there must be continuity between the brown, black/brown and blue leads.
8. If the switch fails any one of these tests, it must be replaced. The switch is a part of the left switch housing which is replaced as an assembly.

Starter Button

1. The button can be checked with an ohmmeter or a self-powered test light.
2. Remove the headlight.
3. Disconnect the green/red and the light green/red button wires at the connectors.
4. There must be continuity across these wires only when the starter button is pushed.
5. If there is always continuity, or if no continuity is indicated when the button is pressed, the switch assembly must be replaced.

Neutral Switch

1. The neutral switch is a part of the starting circuit which will work only if the

Honda ATC 70-125

switch is closed, indicating that the transmission is in Neutral.

2. The switch can be checked with an ohmmeter or a self-powered test light.

3. Remove the seat.

4. Remove the air cleaner tube.

5. Disconnect the neutral switch wire at the connector (light green/red).

6. Check for continuity between the lead and ground on the engine case. When the transmission is in Neutral, there must be continuity.

7. When the transmission is in any other gear, the switch must be open (no continuity).

8. The switch can be replaced after removing the E-clip which secured it to the sub-transmission cover.

CHASSIS

WHEEL REMOVAL AND INSTALLATION

Front

ATC 70/90

1. Park the machine on a level surface.
2. Apply the parking brake.
3. Remove the axle nut cotter pin. Loosen the axle nut.

4. Raise the front wheel off the ground by placing a sturdy, safe support beneath the frame.

5. Remove the axle nut.

6. Remove the axle. Take out the wheel. Note the spacers on both sides.

7. Installation is the reverse of removal. Be sure the spacers are in place on both sides of the wheel. Tighten the axle nut to 43-58 ft. lbs. Use a new cotter pin.

ATC 110

1. Park the machine on a level surface.
2. Engage the parking brake.
3. Remove the axle nut cotter pins.
4. Loosen the axle nuts.
5. Raise the front of the machine by placing a sturdy, safe support beneath the frame and the front wheel will come out of the forks.

6. Installation is the reverse of removal. Be sure that all spacers are in place on the sides of the wheel. Be sure the axle collars enter the forks. Tighten the two axle nuts evenly until the proper torque of 36-51 ft. lbs. is reached. Use new axle nut cotter pins.

ATC 125

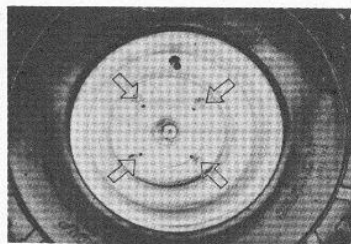
1. Park the machine on a level surface.
2. Engage the parking brake.
3. Disconnect the front brake cable.
4. Remove the axle nut cotter pins.
5. Loosen the axle nuts.
6. Raise the front of the machine by placing a suitable safe support beneath the frame and the front wheel will come out of the forks. Note the spacer on the left side.

7. Installation is the reverse of removal. Note the following:

a. Be sure the spacer is in place on the left side of the wheel.

b. Be sure to engage the brake plate with the anchor on the fork leg.

c. Be sure the axle collars enter the forks on both sides.



Wheel nuts

d. Tighten the axle nuts evenly until a torque of 36-51 ft. lbs. is reached.

e. Use new axle nut cotter pins.

Rear (All Models)

1. Park the machine on a level surface.
2. Engage the parking brake.
3. Loosen each of the wheel nuts or bolts on the wheel you wish to remove.

4. Support the rear wheel(s) off the ground by placing a jack or suitable safety stand beneath the frame.

5. Remove the wheel nuts or bolts.

6. Remove the wheel.

7. To install the wheel, be sure to put it on the hub with the tire valve facing out.

8. Install the wheel nuts or bolts and tighten them in an "X" pattern a bit at a time until the proper torque of 14-18 ft. lbs. is reached.

FRONT BRAKE

Removal

1. Remove the front wheel.
2. Remove the axle nut, brake side.
3. Remove the brake plate.

Inspection

1. Inspect the linings for wear. There should be at least 2.0mm (0.08 in.) of lining material left measured at the lining's thinnest point. If either shoe is worn below this limit, replace the pair.

2. Inspect the linings for scoring or grooves. These may be caused by particles of dirt which enter the drum. If badly scored, the linings should be replaced and the drum inspected closely for the same type of damage.

3. Be sure that the linings are free of any oil or grease. Lubricant-impregnated linings must be replaced.

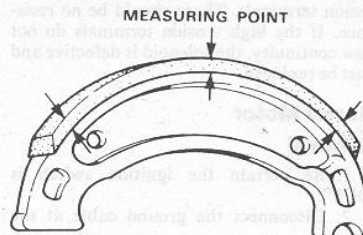
4. If the linings are in usable condition, rough up the surfaces with coarse sandpaper to break the glaze. Clean them thoroughly afterwards with alcohol or laquer thinner.

5. Clean foreign matter from the brake plate with a rag.

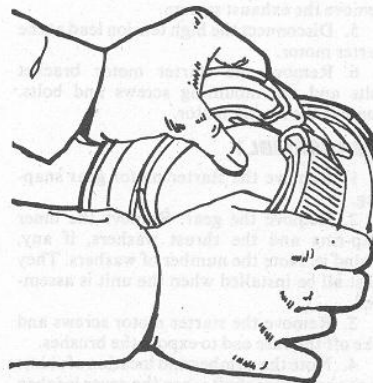
CAUTION: Brake dust may present a health hazard. Do not blow the brake assemblies clear with a high pressure compressed air source or the particulates may be inhaled.

6. Inspect the brake drum surface for condition. The drum must be free of scoring or rust.

7. Rust can be removed from the brake drum surface with sandpaper. Polish the surface until it is shiny, then clean it thoroughly.



Checking brake lining thickness



Removing brake shoes from the brake plate

8. Alcohol or laquer thinner can be used to remove dirt or deposits from the drum.

9. Measure the inside diameter of the brake drum. If it measures more than 111mm (4.4 in.), replace it.

10. Measure the diameter of the drum in two directions to check for an out-of-round condition. This is usually noticeable as an off-and-on feeling when the brakes are applied. This condition may be remedied by having the drum turned down on a lathe, but the final diameter must not exceed the service limit above.

11. Minor scoring or imperfections in the drum can be remedied by having the drum turned down. If this is done, replace the brake shoes regardless of apparent condition.

12. Check the brake drum rubber seal for condition and replace it if it is cracked or otherwise damaged.

13. Check the brake drum for cracks or other critical defects.

14. The brake drum is a part of the front wheel hub. To remove it, remove the four mounting nuts. Nuts should be tightened to 14-18 ft. lbs. when installing.

15. Check the wheel bearings in the brake drum. See "Front Wheel Bearings," below.

Disassembly

1. Disconnect the brake cable from the brake lever by removing the adjuster wing nut.

2. Remove the brake lever pinch bolt.

3. Carefully pry the brake lever off the splined cam shaft.

4. Expand the brake shoes by hand and pull them and the return springs off the brake plate by folding them together.

5. Tap the brake cam out of the brake plate taking care not to lose the seals and wear

indicator plate. Note the spring on the inside of the brake plate as well.

6. Clean dirt, brake dust and other foreign matter from the brake plate with a solvent-soaked rag.

7. Check the plate closely for stress cracks or other damage.

8. Check the condition of the brake shoe springs. Replace them if they are rusted, broken, deformed or weakened.

9. Check the brake cam spring and replace it if it is damaged.

10. Check that the brake cam is not bent.

11. Check that the splines on the cam are in good condition.

12. Clean the cam in solvent. Remove rust or corrosion with sandpaper.

13. The cam must turn freely in the brake plate hole. If it does not, determine the cause and remedy it.

14. Check the condition of the grease seals in the brake plate and replace them if damaged. They can be pried out.

Assembly

1. Install the grease seals and spacer in the brake plate if they were removed.

2. Lubricate the brake cam with a good grade of medium-weight chassis grease.

3. Fit the washer and the cam spring on the cam.

4. Insert the cam into the plate. Be sure that the spring end is fitted into the hole in the cam and the other end is hooked over the anchor on the plate.

5. Lubricate the brake shoe pivot with chassis grease.

6. Fit the outer cam grease seal if it is not already in place. Install the wear indicator plate. The tab aligns with the cam cut-out.

7. Install the brake lever, aligning the punch mark on the lever with the punch mark on the end of the cam.

8. Install and tighten the lever pinch bolt.

9. Clean hands thoroughly to avoid contaminating the brake linings.

10. Assemble the shoes and return springs and spread them by hand to fit over the pivot and the cam. Be sure they are properly seated.

11. Work the brake lever by hand and observe operation.

Installation

1. Installation is the reverse of removal.

2. If the brake drum/hub was removed from the wheel, install it and tighten the four nuts in an "X" pattern until a torque of 14-18 ft. lbs. is reached.

3. Grease the wheel bearing seal lips before inserting the axle.

4. Be certain that the axle spacer is in place on the left side of the wheel and that the axle collars are properly positioned when inserting the wheel into the forks.

5. Tighten the axle nuts to 36-51 ft. lbs. and use new cotter pins.

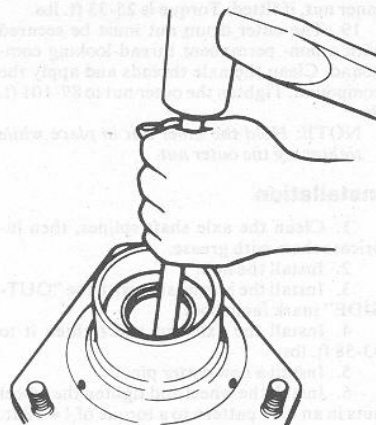
6. Adjust the brake as described in "Maintenance."

FRONT WHEEL BEARINGS

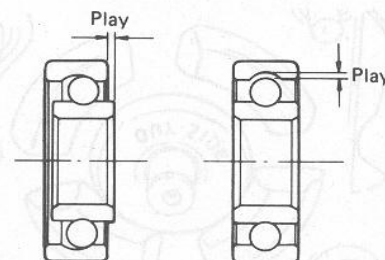
The front wheel bearings are pressed into the wheel hub and can be removed or serviced after the hub is removed from the wheel.

1. Remove the front wheel.

2. Remove the brake plate (ATC 125).



Removing bearings from the hub



Bearing axial and radial play

3. Remove the hub nuts and take off the hub.

4. Pry out the grease seals on either side.

5. Bearings should be inspected in place, since removal usually damages them.

6. Check each bearing for play of the inner race relative to the outer. Maximum allowable radial (up- and-down) play is 0.05mm (0.002 in.). Maximum axial (in-and-out) play is 0.10mm (0.004 in.). If either bearing exceeds these limits, replace the pair.

7. Check the bearing rotation. If any roughness, binding or noise is noted, replace the set.

8. Remove the bearings by reaching into the hub with a suitable drift and driving out one of them. Remove the spacer. Remove the remaining bearing in the same manner.

9. Lubricate new bearings with a good quality, medium-weight bearing grease. Put a quantity of the lubricant inside the hub as well.

10. Bearings should be driven into the drum until fully seated. A driver large enough to cover the whole bearing should be used so that it can be driven straight in.

11. After the first bearing is installed, fit the spacer, then the other bearing.

12. Press grease seals in carefully.

13. When installing the hub on the wheel, tighten the fasteners in a cross pattern to a torque of 14-18 ft. lbs.

REAR BRAKE

Removal

1. Remove the skid plate.

2. Remove the right rear wheel.

3. Remove the axle nut cotter pin.

4. Remove the axle nut.

5. Remove the hub.

6. On larger models, remove the two brake drum nuts from the axle. Remove the washer if fitted.

7. Remove the brake drum cover bolts. Remove the cover.

8. Remove the O-ring from the axle, if fitted.

9. Pull off the brake drum.

10. Brake components are now exposed for inspection and service.

Inspection

1. Inspect the linings for wear. There should be at least 2.0mm (0.08 in.) of lining material left at the thinnest point. If either shoe is worn below this limit, replace the pair.

2. Inspect the linings for scoring or grooves. These may be caused by particles of dirt which enter the drum. If badly scored, the linings should be replaced and the drum inspected closely for the same type of damage.

3. Be sure the linings are free of oil and grease. Lubricant-impregnated linings must be replaced.

4. If the linings are in usable condition, rough up the surfaces with sandpaper to break the glaze. Clean them thoroughly afterwards with alcohol or laquer thinner.

5. Clean foreign matter from the brake plate with a rag.

CAUTION: Brake dust may present a health hazard. Do not blow the brake assembly clear with a high pressure compressed air source or the particulates may be inhaled.

6. Inspect the brake drum surface for condition. The drum must be free of rust or scoring.

7. Rust can be removed from the drum surface with sandpaper. Polish the surface until it is shiny, then clean it thoroughly.

8. Alcohol or laquer thinner can be used to remove dirt or deposits from the drum.

9. Measure the inside diameter of the drum. Service limits are 111mm (4.4 in.) for ATC 70s up to 1975 131mm (5.2 in.) for ATC 70s after 1975, and 141mm (5.6 in.) for other models.

10. Measure the diameter of the drum in two directions to check for an out-of-round condition. This is usually noticeable as an off-and-on feeling when the brakes are applied. This condition may be remedied by having the drum turned down on a lathe, but the final diameter must not exceed the service limit, above.

11. Minor scoring or imperfections in the drum can be remedied by having the drum turned down. If this is done, replace the brake shoes regardless of apparent condition.

12. Check the splines on the brake drum and those on the axle for condition. If they are worn or show other signs of damage, replace the components.

13. Check the brake drum cover seals and axle O-ring for condition and replace any unserviceable components. If there was evidence of foreign matter inside the brake, the seals should be replaced regardless of apparent condition.

14. Be sure that the drum is free of stress cracks, accident damage, etc.

Honda ATC 70-125

Disassembly

1. Disconnect the brake rod from the brake lever by removing the adjuster wing nut.
2. Remove the cotter pin and washer from the brake shoe pivot which are fitted to some models.
3. Expand the brake shoes by hand and pull them and the return springs off the brake plate by folding them together.
4. Remove the brake lever pinch bolt.
5. Carefully pry the brake lever off the splined shaft.
6. Remove the wear indicator plate.
7. Tap the brake cam out of the brake plate taking care not to lose any seals which may come out.
8. Clean dirt, brake dust and other foreign matter from the brake plate with a solvent-soaked rag.
9. Check the brake plate closely for stress cracks or other damage.
10. Check the condition of the brake shoe springs. Replace them if they are rusted, broken, deformed or weakened.
11. Check the brake cam spring and replace it if it is damaged.
12. Check that the brake cam is not bent.
13. Check that the splines on the cam are in good condition.
14. Clean the cam in solvent. Remove rust or corrosion with sandpaper.
15. The cam must turn freely in the brake plate hole. If it does not, determine the cause and remedy it.
16. Check the condition of the cam dust seal and the grease seals in the brake plate and replace them if damaged. Grease seals can be pried out.

Assembly

1. Install the grease seals in the brake plate if they were removed.
2. Lubricate the brake cam with a good grade of medium-weight chassis grease.
3. Fit the cam spring on the cam, inserting the end of the spring into the hole in the cam.
4. Install the brake cam. Fit the outer end of the spring over the anchor on the brake plate.
5. Install the dust seal on the outer side of the cam.
6. Lubricate the brake shoe pivot with chassis grease.
7. Install the wear indicator plate, aligning the tab with the cam cut-out.
8. Install the brake lever, aligning the punch mark on the lever with the punch mark on the cam.
9. Install and tighten the lever pinch bolt.
10. Clean hands thoroughly to avoid contaminating the brake linings.
11. Assemble the shoes and return springs and spread them by hand to fit over the pivot and the cam. Be sure they are properly seated. Install the washer and cotter pin, if fitted.
12. Work the brake lever by hand and observe operation.
13. Install the brake drum.
14. Lubricate the axle O-ring and install it, if fitted.
15. Lubricate the center seal of the brake drum cover with grease.
16. Install the cover.
17. Install the washer, if fitted.
18. Install and tighten the brake drum

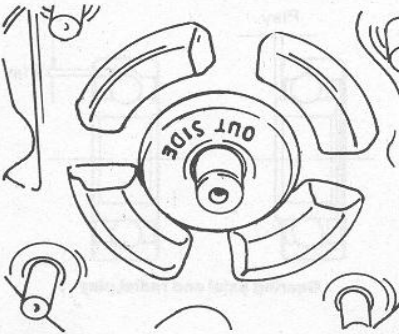
inner nut, if fitted. Torque is 25-33 ft. lbs.

19. The outer drum nut must be secured with a non-permanent thread-locking compound. Clean the axle threads and apply the compound. Tighten the outer nut to 87-101 ft. lbs.

NOTE: Hold the inner nut in place while tightening the outer nut.

Installation

1. Clean the axle shaft splines, then lubricate them with grease.
2. Install the hub.
3. Install the hub washer with the "OUTSIDE" mark facing out.
4. Install the axle nut and tighten it to 43-58 ft. lbs.
5. Install a new cotter pin.
6. Install the wheel and tighten the wheel nuts in an "X" pattern to a torque of 14-18 ft. lbs.
7. Connect the rear brake rod and adjust the brake as outlined in "Maintenance."

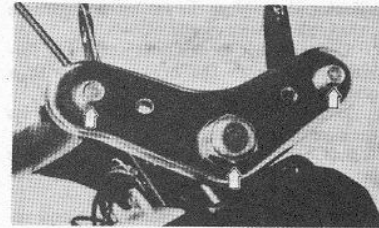


Install the hub washer with the "OUTSIDE" out

FRONT END

Bearing Adjustment

1. The steering stem bearings are uncaged steel balls. They are adjusted by means of a ring nut beneath the upper triple clamp.
2. To check the bearing adjustment, support the front wheel off the ground. Grasp the fork sliders with both hands.
3. Attempt to move the forks by pulling out on the sliders. If play or movement can be felt, the bearings are too loosely adjusted or worn.
4. Turn the forks slowly from the lock-to-lock. Movement should be smooth, silent, and effortless. If any binding or uneven movement is felt, the balls and the races are either too tightly adjusted, unlubricated, or are worn. If the steering feels uniformly stiff, the bearings are too tightly adjusted. If any noise is noted, the bearings are damaged, or some are missing.
5. With the front wheel off the ground, release the front forks from a few degrees off the centered position. The forks should fall freely to either side of their own weight. If they will not, the bearings are too tightly adjusted, the steering stem is bent, the races are extremely worn, or some of the bearings are missing.
6. Bearings can be adjusted with a hammer and punch or a pin wrench on the adjuster nut under the upper triple clamp after the



Upper triple clamp steering stem nut and fork tube bolts (arrows)

triple clamp is removed. To do this, remove the handlebars; remove the upper triple clamp fork tube bolts and the steering stem nut and washer. Tap upwards to remove the upper triple clamp.

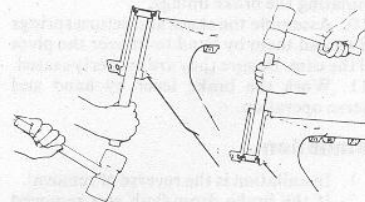
7. Tighten or loosen the adjusting nut until operation is as described above.

8. If proper adjustment is not possible, the bearing and races will probably have to be replaced.

9. On the ATC 70, tighten the steering stem nut to 36-51 ft. lbs. and the fork tube bolts to 29-35 ft. lbs. On other models, tighten the steering stem nut and the fork tube bolts to 36-51 ft. lbs.

Removal

1. Park the machine on a level surface.
2. Apply the parking brake.
3. Support the front end off the ground by placing sturdy, safe supports beneath the frame.
4. Remove the front wheel.
5. Remove the front fender.
6. Remove the handlebars.
7. Remove the headlight, if fitted.
8. Remove the fork tube bolts and the steering stem nut and washer. Tap the upper triple clamp upwards with a mallet to free it if stuck.



Removing and installing steering stem races in the frame

9. Loosen the steering stem bearing adjuster nut with a pin wrench, then hold the steering stem up while unscrewing the adjuster nut the rest of the way off. Remove the steering stem top cone race and the balls from the top race.

10. Carefully pull the steering stem out from the bottom. Some of the ball bearings from the lower race will most likely fall out at this time so be prepared for this. Remove the rest of the balls from the lower race when the stem is removed.

11. Remove the bottom cone race, dust seal, dust seal, and dust seal washer from the steering stem if they are to be replaced. If the steering system has been damaged and is to be replaced, the upper and lower races and balls should also be replaced.

NOTE: A chisel is usually necessary to remove the lower cone race from the steering stem.

12. The bearing races in the frame are a press-fit and should not be removed unless replacement is necessary. Inspect them first. If replacement is necessary, the old races can be removed by reaching through the frame lug with a suitable punch and tapping the races out from the inside of the lug.

New races are installed using a suitable sized bushing driver: i.e., one which will drive the race squarely into its seat. Be certain that the race goes straight in.

These races can also be installed using a block of hardwood, of sufficient size to cover the race, in place of a bushing driver.

Inspection

1. Wash the bearings in a suitable solvent.
2. Clean all of the old grease from the bearing race surfaces, the steering stem, and the frame lug.
3. Inspect the bearing race surfaces. They must be clean and smooth. That is, free from any cracks, scoring, indentations, or rust. Run your finger around the bearing race surfaces. Note any roughness or ripples on the race surfaces. If either is damaged, replace both races and balls.
4. Check the balls themselves for rust, pitting, or flat spots. Replace the bearings as a set if any such damage occurs.
5. Check the dust seal for condition and replace if necessary.
6. Check the steering stem for cracks or a bent condition; this is especially important if the bike has been involved in a spill.

Installation

1. Install the dust seal washer, dust seal, and bottom cone race onto the steering stem. Use a good grade of bearing grease to coat the bottom cone race and the top race in the frame lug.

2. Embed the balls into the grease of the top frame race and the bottom cone race. Place a coat of grease on the two remaining races.

NOTE: There are 21 balls in each race.

3. When the balls are in place, slip the steering stem through the frame lug and hold it in place, while refitting the top cone race and threading on the adjuster nut.

4. Tighten the adjuster nut, and move the steering stem back-and-forth to work the grease into the bearings, then back off the adjuster nut until the steering stem turns with ease, but has no play.

5. Install the upper triple clamp. Check that the stem moves freely of its own weight from 5°-10° off center; if not check for:

- a. Steering bearings too tight;
- b. Bent steering stem;
- c. Worn races or balls.

6. Install the flat washer, and steering stem nut.

7. Tighten the steering stem nut to 36-51 ft. lbs.

8. Tighten the fork bolts to 29-35 ft. lbs. on the ATC 70 and 36-51 ft. lbs. on the other models.

9. The remainder of the procedure is the reverse of removal.

REAR AXLE

ATC 70

REMOVAL

1. Remove the seat/fender assembly.
2. Remove the skid plate.
3. Place a jack beneath the frame to support the rear wheel off the ground.
4. Remove the rear wheels.
5. Remove the wheel hubs.
6. Remove the chain case.
7. Loosen the tensioner. Disconnect the chain.
8. Remove the rear sprocket.
9. Remove the brake assembly as directed under "Rear Brake," above.
10. Remove the axle.

INSPECTION

1. Inspect components as directed under "Rear Axle" for ATC 90-125 machines, below. Procedures are similar.

2. The bearings can be driven out of their holder after the grease seals on either side are pried out.

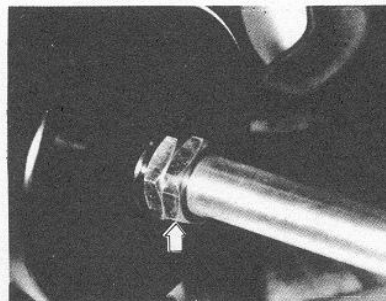
INSTALLATION

Reverse the removal procedure.

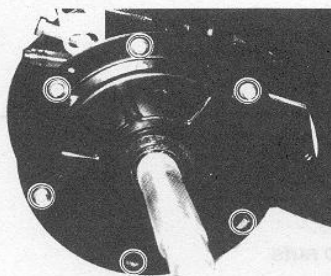
ATC 90/110/125

REMOVAL

1. Remove the seat.
2. Remove the five skid plate mounting bolts and the skid plate.



Brake drum nuts



Brake cover bolts

3. Support the rear end of the vehicle with safe, sturdy stands placed beneath the frame.

4. Remove the rear wheel nuts and take off the wheel.

5. Remove the axle nut dust caps, if fitted.

6. Remove the cotter pins.

7. Remove the axle nuts and washers.

8. Pull the hubs off the axle.

9. Disconnect the carburetor overflow tube from the clamps on the chain case.

10. Remove the three bolts securing the seal cover around the rear axle and take off the cover.

11. Remove the chain case mounting bolts.

12. Undo the clamps.

13. Remove the outer chain case half.

14. Back off the rear brake adjuster nut.

15. Loosen the drive chain adjuster nut.

16. Loosen the four bearing holder mounting bolts.

17. Disconnect the drive chain. Be sure to remove the masterlink spring clip with a pliers. Prying the clip off will make it unusable. Put the masterlink on one end of the chain to avoid loss.

18. Remove the two brake drum nuts from the axle.

19. Remove the washer.

20. Remove the brake drum cover bolts.

21. Remove the O-ring from the axle.

22. Pull off the brake drum.

23. Use a plastic mallet to drive the axle out from the right side.

24. Remove the chain case inner half bolts (four). Remove the case half.

25. Remove the rear brake adjuster nut and disconnect the brake rod from the brake lever.

26. Remove the trailer hitch upper mounting bolts.

27. Remove the bearing holder from the frame.

INSPECTION

Axle

1. Check sprocket condition.
2. To remove the sprocket, remove the four damper cover nuts, the damper cover and snap-ring.
3. Check the dampers for damage.
4. Check all axle splines for condition.
5. Check axle run-out. When measured in the middle of the axle, the serviceable limit for run-out is 3.0mm (0.12 in.). This is 1/2 of the Total Indicated Reading of the gauge.
6. Check the condition of the O-ring behind the axle flange and replace it if necessary.
7. Assembly is the reverse of disassembly. Grease axle splines before installation. Lubricate the O-ring before fitting it to the axle. Tighten the damper nuts to 17-22 ft. lbs.

Bearing Holder

1. Pry out the grease seals on either side.
2. Bearings should be checked in place, since removal will usually damage them.
3. Check for excessive play of the inner race relative to the outer. Maximum allowable radial (up- and-down) play is 0.05mm (0.002 in.). Maximum allowable axial (in-and-out) play is 0.10mm (0.004 in.).
4. Check the bearings for rough or binding rotation, excessive noise, etc.
5. Replace bearings in sets.
6. Bearings can be removed by driving them out with a hammer and suitable drift. Remove one bearing and take out the spacer and any shims. Drive out the remaining bearing.
7. Pack new bearings with a good grade of medium-weight bearing grease. Place a

Honda ATC 70-125

quantity of the lubricant in the bearing holder as well.

8. Install bearings with the marked side out.

9. Install the right side bearing first, driving it straight in with a suitably sized bearing driver until it is firmly seated.

10. Install the spacer along with any shims which may be fitted.

11. Install the remaining bearing.

12. Press grease seals straight into the holder.

13. Lubricate the seal lips before assembly.

INSTALLATION

1. Install the bearing holder and fit the four bolts, but do not tighten them yet since the chain must be readjusted.

2. Fit the chain adjuster nut.

3. Connect the brake rod.

4. Install the inner chain case half.

5. Install the axle from the left side of the machine.

6. Check that the brake shoe assemblies are in place.

7. Install the brake drum.

8. Lubricate and install the brake drum O-ring.

9. Lubricate the center seal of the brake drum cover. Install the cover and secure it with the six bolts.

10. Clean the axle threads thoroughly.

11. Fit the washer on the axle.

12. Install the brake drum inner nut and tighten it to 25-33 ft. lbs.

13. The brake drum outer nut must be secured with a non-permanent threadlocking compound. Apply the compound to the threads of the axle, then install the nut.

14. Hold the inner nut in place while the

outer is tightened to the proper torque of 87-101 ft. lbs.

15. Connect the drive chain. The closed end of the masterlink spring clip must face the direction of chain rotation.

16. Adjust the chain as outlined in "Maintenance" and tighten the four bearing holder bolts to 51-58 ft. lbs.

17. The remainder of the procedure is the reverse of removal. Note the following:

a. Grease the wheel hub splines before fitting the hubs.

b. Install the hub washers with the "OUTSIDE" mark facing out.

c. Tighten the axle nuts to 36-58 ft. lbs.

d. Use new axle nut cotter pins.

e. Tighten the wheel nuts gradually and in an "X" pattern until the final torque of 36-43 ft. lbs. is reached.

f. Adjust the rear brake after assembly.

CHASSIS TORQUE SPECIFICATIONS

Part	ATC 70	Torque (ft. lbs.)
Front axle nut		43-58
Fork tube bolts		29-35
Steering stem nut		36-51
Handlebar clamp bolts		14-18
Lower handlebar clamp nuts		29-35
Drive chain tensioner		18-24
Rear axle nuts		43-58
Rear wheel bolts		14-18
Brake cam holder		5-9
Brake anchor pin		5-9
Rear fender		11-15
Seat		4-7
Rear fender bracket		4-7
Footpeg guard		
8 mm		14-18
10 mm		29-35
Footpegs		14-18
Engine mounting bolts		14-18
Rear wheel hub nuts		14-18
Front wheel hub nuts		14-18
	ATC 90, 110, 125	
Front axle nuts		36-51
Fork tube bolts		36-51
Steering stem nut		36-51
Handlebar clamp bolts		13-22
Lower handlebar clamp nuts		29-35
Front wheel hub nuts		14-18
Rear axle nut		43-58
Rear wheel nuts		14-18
Rear wheel hub nuts		14-18
Sprocket damper holder nuts		15-20
Rear brake nuts		
Inner		25-33
Outer		87-101
Bearing holder bolts		36-51

Honda ATC 70-125

GENERAL TORQUE SPECIFICATIONS^①

Part	Torque (ft lbs.)
5 mm screws	2.5-3.6
6 mm screws	5-8
5 mm bolts, nuts	3.5-4.5
6 mm bolts, nuts	6-9
8 mm bolts, nuts	13-18
10 mm bolts, nuts	22-29
12 mm bolts, nuts	36-43
6 mm bolt w/8 mm head	5-8
6 mm flange bolts, nuts	7-10
8 mm flange bolts, nuts	17-22
10 mm flange bolts, nuts	25-33

① Unless otherwise noted