

1998 - 2003



**Service Intervals
and
Recommended
Maintenance**

VT750C / CD / CD2

SHADOW/SHADOW DELUXE/ACE

Disclaimer:

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Honda VT750 Shadow A.C.E. (American Classic Edition)

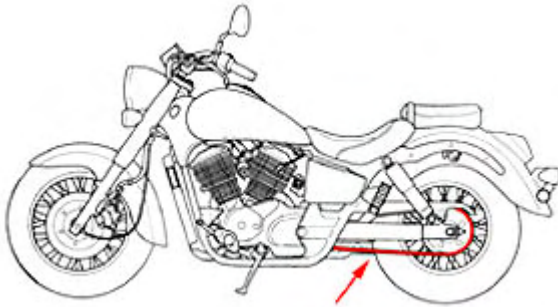
Service Intervals and Recommended Maintenance

Task	Maintenance Item	Notes:	1000 km (600 mi)	6400 km (4000 mi)	12800 km (8000 mi)	19200 km (1200 mi)	25600 km (16000 mi)	32000 km (20000 mi)	38400 km (24000 mi)
01	Drive Chain		Inspect & Lube Every 800 km (500 mi)						
02	Brake Fluid	(4)		I	I	R	I	I	R
03	Brake Wear			I	I	I	I	I	I
04	Brake System		I		I		I		I
05	Brake Light Switch				I		I		I
06	Headlight Aim				I		I		I
07	Clutch System		I	I	I	I	I	I	I
07	Side Stand				I		I		I
09	Suspension				I		I		I
10	Nuts, Bolts, Fasteners		I		I		I		I
11	Wheels/Tires		I	I	I	I	I	I	I
12	Steering Head Bearings		I		I		I		I
13	Fuel Line				I		I		I
14	Throttle Operation				I		I		I
15	Carburetor Choke				I		I		I
16	Air Cleaner	(2)				R			R
17	Crankcase Breather	(3)		C	C	C	C	C	C
18	Spark Plugs			I	R	I	R	I	R
19	Valve Clearances		I		I		I		I
20	Engine Oil		R		R		R		R
21	Engine Oil Filter		R		R		R		R
22	Carb. Synchronization				I		I		I
23	Engine Idle Speed		I	I	I	I	I	I	I
24	Radiator Coolant	(4)			I		I		R
25	Cooling System				I		I		I
26-31	Replacement Instructions and Adjustments for Brakes, Coolant, and Pilot Screw								
	I = Inspect								
	C = Clean								
	R = Replace								
	Note 1 : At higher odometer readings, repeat at the frequency interval established here.								
	Note 2: Service more frequently when riding in unusually wet or dusty areas.								
	Note 3: Service more frequently when riding in rain or at full throttle.								
	Note 4: Replace every 2 years, or at indicated odometer interval, whichever comes first.								

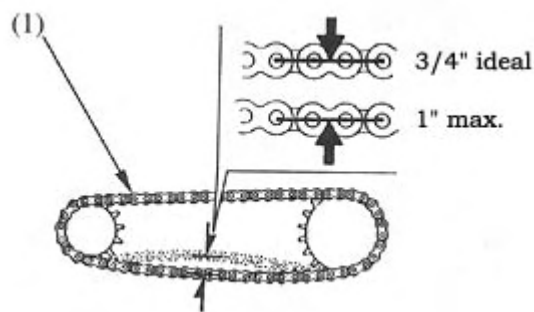
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Task #01 - Drive Chain



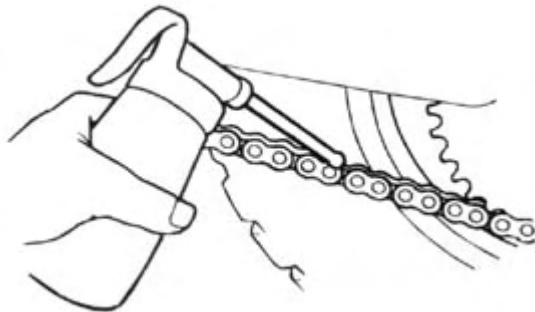
The service life of the drive chain is dependent upon proper lubrication and adjustment. Poor maintenance can cause premature wear or damage to the drive chain and sprockets. The drive chain should be inspected prior to every day's riding, adjusted for slack when required and lubricated every 800km or following any riding done in rain.



Inspection:

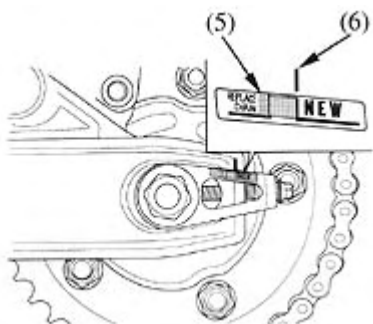
Check the slack in the lower drive chain run about halfway between the sprockets. Ideally you want about 3/4" of play. When the play reaches 1" you need to adjust the chain tension. Also check for Damaged Rollers, Loose Pins or Missing O-rings. The chain requires replacement for any of those. Dry or Rusted links require immediate lubrication. Kinked or Binding Links require lubrication and also need to be worked free. If they can't be worked free then the chain needs to be replaced.

Lubrication:



The drive chain on this motorcycle is equipped with small O-rings between the link plates. These O-rings retain grease inside the chain to improve its service life. Therefore, it is not a good idea to use high pressure water or steam cleaning to clean this chain. You should use an **SAE 80** or **90** gear oil or an O-ring safe **chain wax** to lube this chain. Personally, I prefer the chain wax as it does not spray the tire and chain guard and when applied properly, it makes for less chain noise while riding.

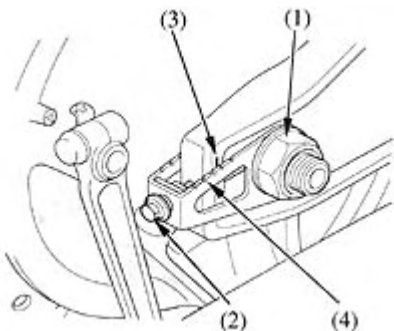
Before lubing, I ride my bike for 20 mins to warm the chain up, then I clean my chain with a lightweight oil such as LPS-1 or 2, using a dry cloth to wipe off the dirt and excess oil. Then I spray a nice even coat of gear wax and let it sit for 30 mins before riding.



Wear Inspection:

Check the chain wear label on the left-hand swing arm when adjusting the chain. If the arrow mark (6) is in the red zone (5) after adjusting the slack to the proper amount, then the chain is worn and requires replacement.

Replacement Chain (stock sprocket): DID525V8 or RK525SMOZ5



Adjustment:

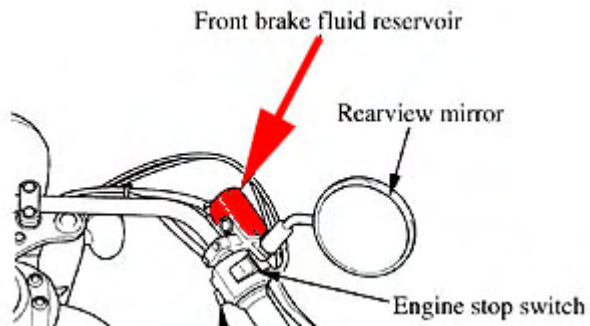
1. Place the motorcycle on it's side stand with the transmission in neutral.
2. Loosen the axle nut (1).
3. Turn both adjusting bolts (2) an equal number of turns until the correct drive chain slack is obtained. (counterclockwise to tighten chain) Roll the motorcycle forward and check tension again. Then check that the axle is aligned by making sure the index marks (3) align with the scales (4) on both sides of the swing arm.
4. Tighten axle nut to **69 ft-lbs (93 N-m)** torque.



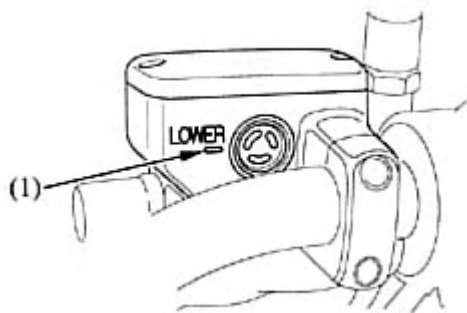
Sprockets:

Check the rear sprocket for excessively worn teeth or broken and missing teeth. Use the diagram to the left as a guide. Do this more often if your bike has an aluminum rear sprocket instead of steel.

Task #02 - Brake Fluid



The Brake fluid level should be checked before every day's ride and during every maintenance cycle. The fluid should be changed every 2 years or at 19,200 km (12,000 miles), whichever comes first. The recommended brake fluid is **Honda DOT 4**.

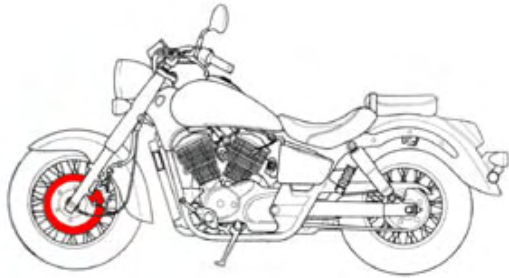


Inspection:

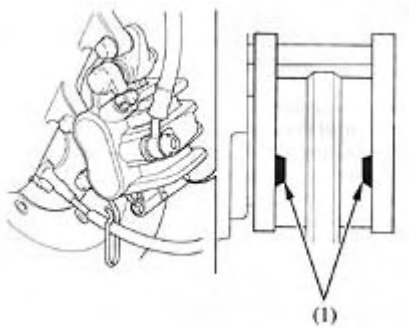
With the motorcycle in an upright position, check the fluid level using the sight glass on the reservoir. If the level is at or below the LOWER level mark (1), check your brake pads for wear. If your pads are not worn, then check your brake system closely for leaks.

- Break Wear Inspection

Task #03 - Brake Wear



The front brake wear is measured at the pads on the brake unit itself, and they should be checked at each regular maintenance interval.

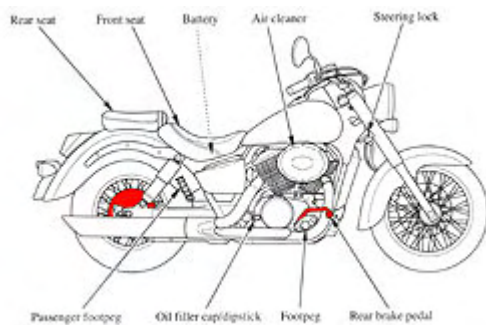


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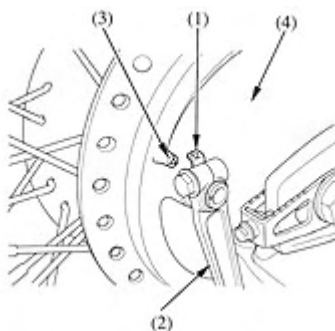
Looking up at the pads from under the caliper assy, you will see cutouts (1) on each pad. If either pad is worn to the base of the cutout, then you must replace both pads as a set.

See Also...

- Front Brake Pad Replacement
- Front Brake Disc Inspection & Limits



The rear brake is equipped with a brake wear indicator on the drum itself.



Inspection:

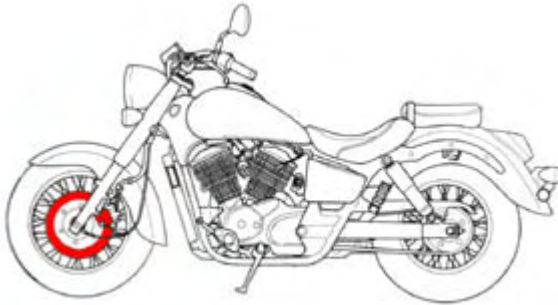
Have someone apply the rear brake. An arrow (1) attached to the brake arm (2) moves toward a reference mark (3) on the drum (4). If when the rear brake is applied, the arrows align, then the rear brake is worn to limits and the shoes must be replaced.

See Also...

- Rear Brake Shoe Replacement

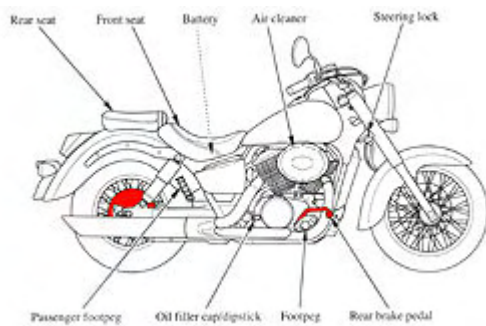
Task #04 - Brake System

The 750 ACE has excellent brakes for its class. The brakes are also one of the most important safety items on your motorcycle and should be checked frequently and maintained to the highest standards. Both the front and rear brakes are completely independent of each other and if one should fail, then the other brake will still work.



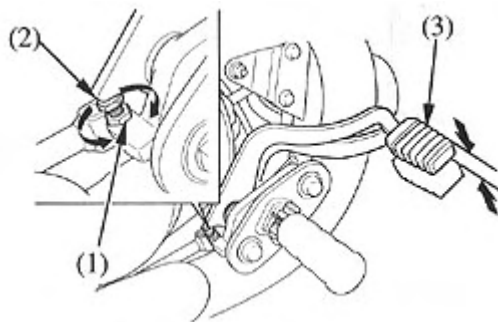
The front brake on the ACE is a Disc-type brake and it provides most of the stopping power during normal use. Inspection of this brake includes checking the pads for wear, checking the fluid level of the reservoir, checking the disc for condition and wear and checking the whole system for leaks. The front brake system is completely hydraulic and self adjusting. No adjustment of the calipers, brake lever or stoplight switch is possible or needed for this brake.

- Brake Wear
- Brake Fluid Level
- Front Brake Pad Replacement



The rear brake on the ACE is a more simple Drum-style brake. In normal use, this brake only provides about 25% of the stopping power. Any more and the rear wheel would lock up. It is also the brake most often used when the bike is standing still at a light, for example. It is inspected for wear at the drum, pedal height and free play and the stop light switch actuation point.

- Brake Wear Inspection
- Brake Light Switch Adjustment
- Brake Pedal Height Adjustment
- Brake Pedal Free Play Adjustment

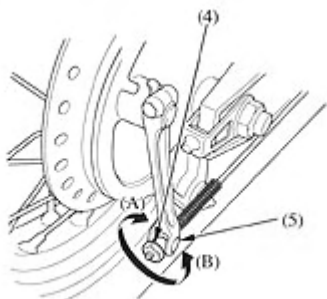


Pedal Height:

A stopper bolt is provided to allow adjustment of the pedal height. Loosen the locknut (1) and turn the stopper bolt (2). When the height is where you want it, tighten the locknut (1).

Free Play:

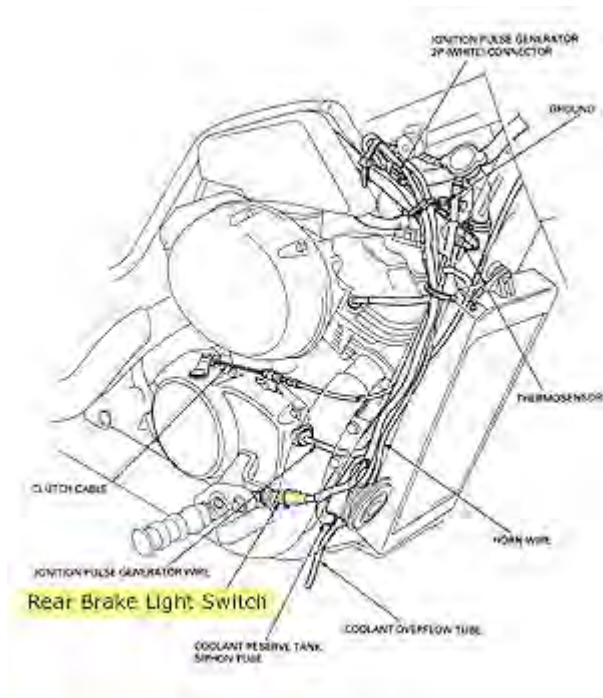
Whenever pedal height is adjusted or when the rear brake is getting worn, you should check and adjust the free play at the brake pedal. Measured at the tip of the brake pedal (3), free play should be kept between 20-30mm (0.8-1.2in).



Make free play adjustments by forcing the brake arm forward (5) and then turning the adjusting nut (4). Turning it in the direction of (A) decreases free play while turning it in the direction of (B) increases free play. Make sure the adjusting nut cut-out is seated on the brake arm (5) when finished.

WARNING: It has been my experience that this adjusting nut can back off on it's own (perhaps due to the increased vibration of my aftermarket pipes) and I had a near disaster on the 401 HWY once when it backed off so far that I had no rear brakes. I would recommend installing a second 'jam nut' behind this adjuster. I installed a fiber lock nut as a jam nut and it has not moved at all since then.

Task #05 - Brake Light Switch



Check the brake light switch operation and adjustment by applying the brakes with the ignition turned on. Operation of either the front brake lever or the rear brake pedal should illuminate the rear brake light.

Note: The front brake light switch is incorporated into the handlebar lever assy and is not adjustable. If the switch fails to operate, then you will have to find the fault and/or replace the switch assembly.

The rear brake switch is adjustable. Proper adjustment of the switch will have the light coming on just before the brakes actually engage. Before adjusting this switch, make sure you have your rear brake pedal height and free play properly adjusted in accordance with the instructions.

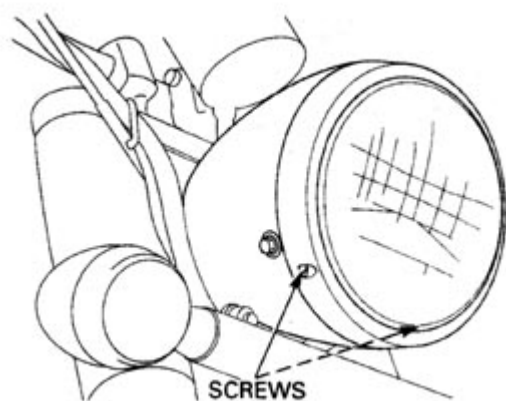
To adjust the rear brake switch, grasp the switch body firmly and turn just the adjustment nut. Make sure you do not allow the switch body itself to turn as the wires inside can break off. After you have made the adjustment, double check that it operates properly.

Task #06 - Headlight Aim

Headlight aim is very important and should be checked regularly. A misadjusted headlight might not shine far enough down the road for you to see properly or it might be so high that it blinds oncoming traffic. Also, there are usually regulations in the area you reside about exactly how a headlight should be aimed and you should review these before doing any adjustments yourself.

The procedure I have put below is a basic means of adjusting your headlight and should satisfy most regulations. If in doubt, get a certified shop to check it.

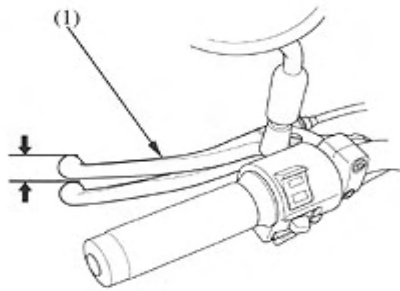
The first thing you need to do is find a nice level area to park your bike that has a light colored flat surface about 25 feet in front of it. A driveway and a garage door might work here, as long as it is level. You also have to be mounted on your bike to simulate a proper riding condition when you take your measurements. A buddy helping you here might be handy.



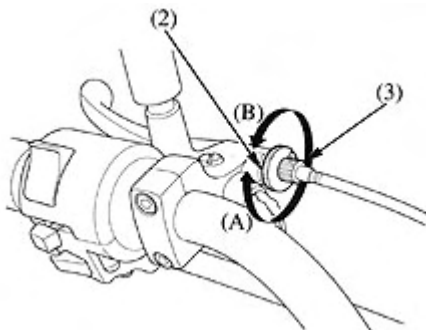
First, with your weight on the bike and the bike held upright, take a measurement from the center of your headlight to the ground. Now go to the wall that is 25 feet in front of you and mark a spot at the same height. Draw a line through this mark (use a level). Now draw another line two inches lower. Go back to the bike and turn on the low beam. You want to adjust the low beam so that the upper area of the light just rests on the lower line and is a little to the right of your bike's centerline. To adjust the headlight beam vertically, you turn the adjustment screw on the bottom of the headlight can. To adjust the headlight beam horizontally, you turn the screw on the side of the headlight can.

If your headlight has a combined low/high beam lamp in the same reflector, then you only have to adjust for the low beam. If you have a separate high beam lamp, then you have to adjust for high beam separately. To adjust the high beam, follow the same steps but aim the upper area of the light to just touch the upper line instead of the lower.

Task #07 – Clutch

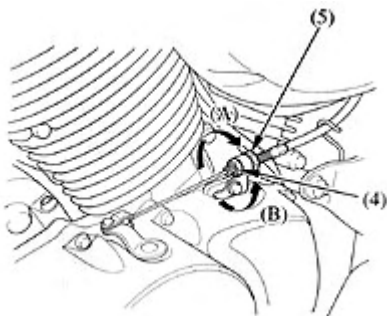


Clutch Adjustment may be required if the motorcycle stalls when shifting into gear or tends to creep; or if the clutch slips, causing the engine to race ahead when accelerating hard or climbing steep hills. Free play at the lever (1) should be kept between 10-20mm (0.4-0.8in).



For minor adjustments, adjust the free play at the lever end as follows...

1. Loosen the locknut (2) and turn the adjuster (3). Direction (A) increases free play while direction (B) decreases free play.
2. Tighten the locknut (2) when done.



If the adjustment can't be reached at the lever end, then adjust it further from the clutch end as follows...

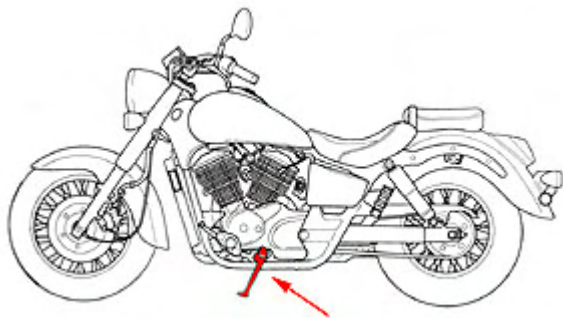
1. Loosen the locknut (4) and turn the adjusting nut (5) as required. Direction (A) increases free play and direction (B) decreases it. Tighten the locknut (4) when done.

NOTE: If proper adjustment can't be made using both methods above, then you may need to replace the clutch.

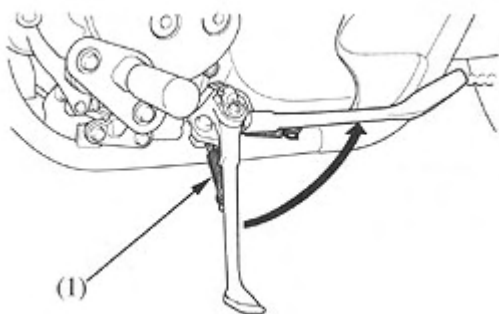
Other Checks:

Check the clutch cable for kinks or signs of wear that could cause sticking or failure. Lubricate the clutch cable with a good penetrating lubricant to prevent premature wear and failure. Apply the lubricant to both ends of the cable and work it in by operating the clutch lever several times.

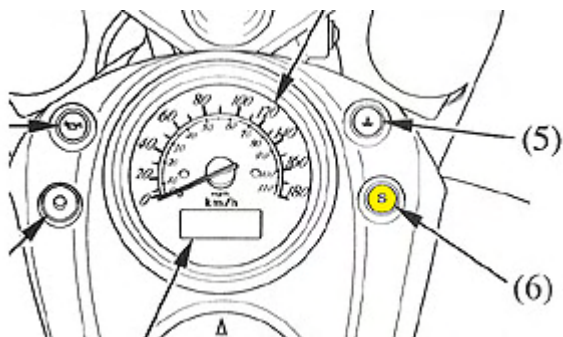
Task #08 - Side Stand



The ACE is equipped with a side stand only, on the left side of the bike. It only needs to be checked for damage or loss of return spring tension and for the safety cut-out switch proper operation.



Sit on the bike and keep it vertical. Check the side stand for proper movement and for return spring tension. A broken or damaged spring (1) can allow the side stand to drop while riding, causing it to scrape and causing the engine to quit.

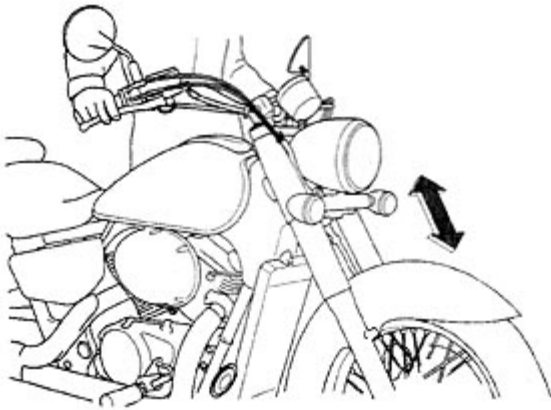


To check the safety cut-out feature, sit on the bike and turn the ignition on. With the side stand down, the side stand light (6) on the tank gauge cluster should be illuminated. Move the side stand up and the light should go out.

Next, start the engine and with the clutch in, put the bike in gear. Now lower the side stand... the engine should stop as soon as you lower it.

Task #09 - Suspension

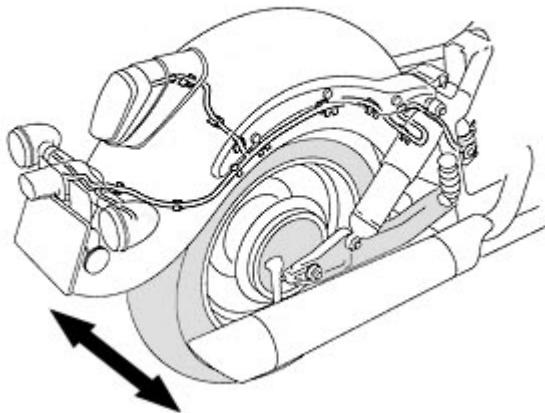
Warning: Loose, worn or damaged suspension parts impair motorcycle stability and control. Repair or replace any damaged components before riding. Riding a motorcycle with faulty suspension increases your risk of an accident and possible injury.



FRONT

Check the action of the fork by operating the front brake and compressing the front suspension several times. Check the entire fork assembly for signs of leaks, damage or loose fasteners. Replace damaged components which cannot be repaired and tighten all nuts and bolts.

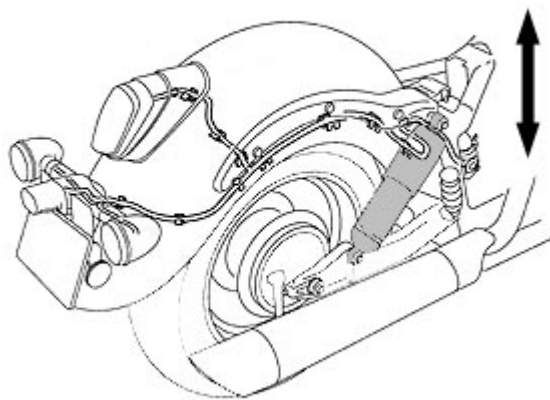
Swing Arm Bearing Wear Check



REAR

Support the motorcycle securely using a lift or hoist and raise the rear wheel off the ground. Check for worn swing arm bearings by grabbing the rear wheel and attempting to move the wheel side to side. Replace the bearings if any looseness is noted.

Rear Shock Inspection



Check the action of the shock absorbers by compressing them several times. Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners. Replace damaged components which cannot be repaired and tighten all nuts and bolts.

Refer to shock absorber service.

Task #10 - Nuts, Bolts and Fasteners

Check that all chassis nuts, bolts and screws are tightened to their correct torque values as per the service manual, pages 1-13 to 1-16 (see below) at the interval shown in the Maintenance Schedule. Also check that all cotter pins, slip clips, hose clamps and cable stays are in place and properly secured.

All the above said, I doubt anyone is going to go around and re-torque every nut and bolt on the bike, but you should at the very least, put a wrench on all the major attachments (like wheel nuts, triple-tree attachments, etc) and check for tightness. Make it also a practice to be constantly touching things on your bike, whenever you are working on it. Don't be shy and tug and pull on things to check if they are loose. Also, constantly keep your eyes roaming over things, looking for something that has come loose or is missing. After a while, you'll find that "out of place" things jump right out at you.

Here also are scans of all the torques, directly from the factory service manual. I figured this was the best way to post the torque values as I did not want to rip off the work of other people who took the time to transcribe the values into a web page (Like Blacktop did on his site). I also did not want to run the risk of introducing errors using OCR software or by me typing them all out, so scans you get! Use them wisely... at the very least, try and get a hold of an accurate torque wrench when doing critical work on areas where proper torque is needed (like cylinder head bolts, as an example).

GENERAL INFORMATION**TORQUE VALUES**

FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)	FASTENER TYPE	TORQUE N·m (kgf·m, lbf·ft)
5 mm hex bolt and nut	5 (0.5, 3.6)	5 mm screw	4 (0.4, 2.9)
6 mm hex bolt and nut	10 (1.0, 7)	6 mm screw	9 (0.9, 6.5)
8 mm hex bolt and nut	22 (2.2, 16)	6 mm flange bolt (8 mm head)	9 (0.9, 6.5)
10 mm hex bolt and nut	34 (3.5, 25)	6 mm flange bolt (10 mm head) and nut	12 (1.2, 9)
12 mm hex bolt and nut	54 (5.5, 40)	8 mm flange bolt and nut	26 (2.7, 20)
		10 mm flange bolt and nut	39 (4.0, 29)

- Torque specifications listed below are for important fasteners.
- Others should be tightened to standard torque values listed above.

NOTES: 1. Apply sealant to the threads.
 2. Apply a locking agent to the threads.
 3. Apply grease to the threads.
 4. Stake.
 5. Apply oil to the threads and flange surface.
 6. Apply oil to the threads and O-ring.
 7. U-nut.
 8. ALOC bolt: replace with a new one.
 9. Left hand threads
 10. CT bolt
 11. CT bolt (one-side only)

ENGINE				
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
MAINTENANCE:				
Spark plug	4	12	14 (1.4, 10)	
Crankshaft hole cap	1	22	15 (1.5, 11)	NOTE 3
Timing hole cap	1	30	15 (1.5, 11)	NOTE 3
Valve adjusting screw lock nut	6	7	23 (2.3, 17)	NOTE 5
Oil drain bolt	1	14	30 (3.1, 22)	
Oil filter cartridge	1	20	10 (1.0, 7)	NOTE 6
Vacuum plug	2	5	3 (0.3, 2.2)	
LUBRICATION SYSTEM:				
Oil pressure switch	1	PT1/8	12 (1.2, 9)	NOTE 1
Oil pressure switch cord terminal screw	1	4	2 (0.2, 1.4)	
Oil pump cover bolt	3	6	13 (1.3, 9)	NOTE 10
COOLING SYSTEM:				
Water pump cover bolt	3	6	13 (1.3, 9)	NOTE 10
CLUTCH/GEARSHIFT LINKAGE:				
Clutch lifter plate bolt	4	6	12 (1.2, 9)	
Clutch center lock nut	1	18	128 (13.0, 94)	NOTE 4, 5
Primary drive gear bolt	1	12	88 (9.0, 65)	NOTE 5
Gearshift return spring pin	1	8	23 (2.3, 17)	
Oil pump driven sprocket bolt	1	6	15 (1.5, 11)	NOTE 2
ENGINE MOUNTING:				
Left rear cover bolt	1	6	12 (1.2, 9)	
Drive sprocket bolt	2	6	10 (1.0, 7)	
Drive chain guide plate bolt	2	6	12 (1.2, 9)	NOTE 11

GENERAL INFORMATION

ENGINE (Cont'd)				
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf·m, lbf·ft)	REMARKS
ALTERNATOR/STARTER CLUTCH:				
Flywheel bolt	1	12	127 (13.0, 94)	NOTE 5, 9
Stator mounting socket bolt	4	6	12 (1.2, 9)	NOTE 2
Starter one-way clutch housing bolt	6	8	29 (3.0, 22)	NOTE 2
Stator wire holder socket bolt	1	6	12 (1.2, 9)	NOTE 2
Ignition pulse generator bolt	2	6	12 (1.2, 9)	NOTE 2
CYLINDER HEAD/VALVES:				
Air cleaner housing stay mounting bolt	1	6	13 (1.3, 9)	NOTE 10
EVAP air injection reed valve cover bolt	2	5	5 (0.5, 3.6)	NOTE 10
Cylinder head cover bolt	4	6	10 (1.0, 7)	
Cam sprocket bolt	4	7	23 (2.3, 17)	NOTE 2
Camshaft end holder bolt	4	6	10 (1.0, 7)	
Camshaft holder 8 mm bolt	6	8	23 (2.3, 17)	
8 mm nut	4	8	23 (2.3, 17)	
Cam chain tensioner mounting bolt	4	6	10 (1.0, 7)	
Cylinder head 6 mm bolt	2	6	12 (1.2, 9)	NOTE 5
8 mm bolt	4	8	23 (2.3, 17)	NOTE 5
8 mm nut	2	8	23 (2.3, 17)	NOTE 5
10 mm nut	8	10	47 (4.8, 35)	NOTE 5
Cylinder head fin socket bolt	15	6	10 (1.0, 7)	
Crankcase breather case cover bolt	3	6	12 (1.2, 9)	
CRANKCASE/CRANKSHAFT/TRANSMISSION:				
Crankcase 8 mm bolt	13	8	23 (2.3, 17)	
Connecting rod bearing cap nut	8	8	33 (3.4, 25)	NOTE 5
Neutral switch	1	10	12 (1.2, 9)	
ELECTRIC STARTER:				
Starter motor cable nut	1	6	10 (1.0, 7)	

GENERAL INFORMATION

FRAME				
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N-m (kgf-m, lbf-ft)	REMARKS
FRAME/BODY PANELS/EXHAUST SYSTEM:				
Exhaust pipe joint nut	4	8	25 (2.5, 18)	
Muffler bracket nut	2	8	26 (2.7, 20)	
Muffler mounting bolt	2	8	26 (2.7, 20)	
Front seat bolt	1	8	26 (2.7, 20)	
Rear seat bolt	1	6	9 (0.9, 6.5)	
Rear fender 8 mm bolt	6	8	26 (2.7, 20)	
Grab rail 10 mm bolt	2	10	64 (6.5, 47)	
24 mm nut	1	14	88 (9.0, 65)	
14 mm bolt	1	14	108 (11.0, 80)	
Fuel tank bolt	1	8	19 (1.9, 14)	
Fuel valve	1	22	34 (3.5, 25)	
Battery box bolt	1	6	10 (1.0, 7)	
Tool box cover screw	4	4	2 (0.2, 1.4)	
MAINTENANCE:				
Air cleaner housing cover bolt	6	6	2 (0.2, 1.4)	
Side stand assembly	2	10	34 (3.5, 25)	
Side stand pivot bolt	1	10	10 (1.0, 7)	
lock nut	1	10	29 (3.0, 22)	
Brake pedal stopper lock nut	1	6	10 (1.0, 7)	
Spoke nipple	104	4	4 (0.4, 2.9)	
COOLING SYSTEM:				
Radiator mounting bolt	1	6	2 (0.2, 1.4)	
Radiator coolant drain bolt	2	6	13 (1.3, 9)	
Fan motor bolt	3	5	3 (0.3, 2.2)	
Cooling fan nut	1	5	3 (0.3, 2.2)	
Radiator filler bolt	2	6	9 (0.9, 6.5)	
Thermostat housing cover bolt	2	6	9 (0.9, 6.5)	
Fan motor switch	1	PT 1/8	8 (0.8, 5.8)	NOTE 1
Water pump cover bolt	2	6	13 (1.3, 9)	
ENGINE MOUNTING:				
Front engine mounting bolt	2	10	54 (5.5, 40)	
Rear engine mounting bolt	1	10	54 (5.5, 40)	
Front engine bracket bolt	2	8	26 (2.7, 20)	
Rear engine bracket bolt	2	8	26 (2.7, 20)	
Gearshift arm pinch bolt	1	6	12 (1.2, 9)	
CLUTCH GEARSHIFT LINKAGE:				
Footpeg set arm bolt	4	8	26 (2.7, 20)	
Gearshift pedal pivot bolt	1	10	34 (3.5, 25)	
FRONT WHEEL/SUSPENSION/STEERING :				
Steering stem nut	1	24	103 (10.5, 76)	See page 13-40
Top thread A	1	26	—	
Top thread B	1	26	—	
Top bridge pinch bolt	2	8	26 (2.7, 20)	
Bottom bridge pinch bolt	2	10	49 (5.0, 36)	
Handlebar upper holder bolt	4	8	23 (2.3, 17)	
Handlebar lower holder nut	2	8	26 (2.7, 20)	
Handlebar switch screw	4	5	3 (0.3, 2.2)	
Clutch lever holder bolt	2	6	12 (1.2, 9)	
Front axle	1	14	59 (6.0, 43)	
Front axle pinch bolt	2	8	22 (2.2, 16)	
Front brake disc bolt	6	8	42 (4.3, 31)	NOTE 8
Fork cap	2	38	22 (2.2, 16)	
Fork socket bolt	2	8	29 (3.0, 22)	NOTE 2

GENERAL INFORMATION

FRAME (Cont'd)				
ITEM	Q'TY	THREAD DIA. (mm)	TORQUE N·m (kgf-m, lbf-ft)	REMARKS
REAR WHEEL/SUSPENSION:				
Rear axle nut	1	18	93 (9.5, 69)	NOTE 7
Driven sprocket nut	5	12	88 (9.0, 65)	NOTE 7
Rear shock absorber mounting bolt	4	8	26 (2.7, 20)	
Swingarm pivot nut	1	14	88 (9.0, 65)	NOTE 7
Swingarm pivot adjusting bolt	1	26	25 (2.5, 18)	
Swingarm pivot lock nut	1	26	64 (6.5, 47)	
Drive chain slider screw	2	5	3 (0.3, 2.2)	
Brake pedal pivot bolt	1	10	34 (3.5, 25)	
Rear brake stopper arm bolt	2	8	20 (2.0, 14)	
Rear brake arm bolt	1	8	29 (3.0, 22)	
Rear brake middle rod joint bolt	1	10	34 (3.5, 25)	
HYDRAULIC BRAKE:				
Brake caliper mounting bolt	2	8	30 (3.1, 22)	NOTE 6
Caliper pin bolt	1	8	26 (2.7, 20)	
Bracket pin bolt	1	8	13 (1.3, 9)	
Pad pin	1	10	18 (1.8, 13)	
Pad pin plug	1	10	3 (0.3, 2.2)	
Brake caliper bleeder	1	8	6 (0.6, 4.3)	
Brake lever pivot bolt	1	6	1 (0.1, 0.7)	
Brake lever pivot nut	1	6	6 (0.6, 4.3)	
Master cylinder holder bolt	2	6	12 (1.2, 9)	
Master cylinder cover screw	2	4	2 (0.2, 1.4)	
Front brake light switch screw	1	4	1 (0.1, 0.7)	
Brake hose oil bolt	2	10	34 (3.5, 25)	
BATTERY/CHARGING SYSTEM:				
Battery box cover screw	3	6	10 (1.0, 7)	
LIGHTS/METERS/SWITCHES:				
Side stand switch mounting bolt	1	6	10 (1.0, 7)	NOTE 8
Thermosensor	1	PT 1/8	12 (1.2, 9)	NOTE 1

Task #11 - Wheels & Tires

While making sure the fork is not allowed to move, raise the front wheel and check for play. Turn the wheel and check that it rotates smoothly with no unusual noises.

If faults are suspect, inspect the wheel bearings. Take note that it is often found that the front wheel bearing on the right-hand side will wear out faster than all the others. This is because that wheel bearing is exposed to rain and moisture due to the left-hand leaning stance of the bike on it's side stand and the natural way the tire sits turned to the left.

Inspect the spokes for loosen by tapping them with a screwdriver. They should sound clearly and all alike. If one sounds different or makes a "dull" sound, then tighten it with a spoke wrench or something similar. The torque should be **2.9 foot pounds (4 N-m)**.

Now raise the rear wheel and check for play and for spoke tightness as well. With the rear tire, you can have play in the wheel bearings and ALSO the swing arm pivot bearings, so if you suspect any faults, make sure you isolate which area it comes from (wheel bearings or pivot bearings).

Check the tire pressures according the values below...

Load under 90 kg (200 lb) = Front-29 psi, Rear-29 psi

Load over 90 kg (200 lb) = Front-29 psi, Rear-36 psi

Maximum Load = 170 kg (375 lb)

Stock Tire Sizes:

120/90-17 64S (front)

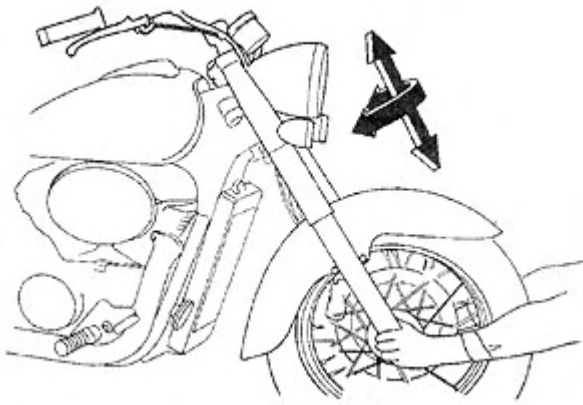
170/80-15 M/C 77S (rear)

Stock Brands:

Dunlop - D404F (front) + D404 (rear)

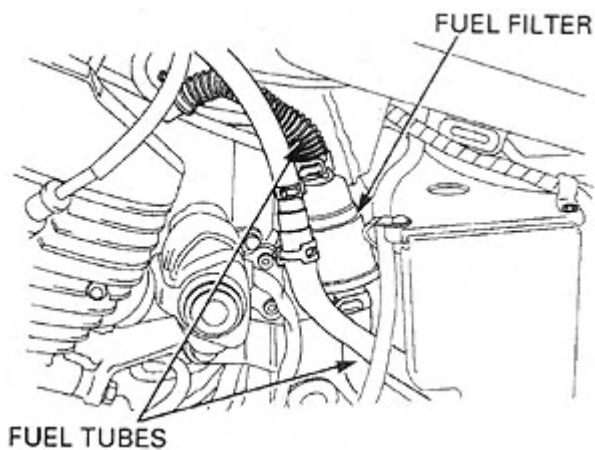
Bridgestone - G701 (front) + G702 (rear)

Task #12 - Steering Head Bearings



Support the motorcycle securely and raise the front wheel off the ground. Check that the handlebar moves freely from side to side. If the handlebar moves unevenly, binds or has vertical play, then inspect the steering head bearings

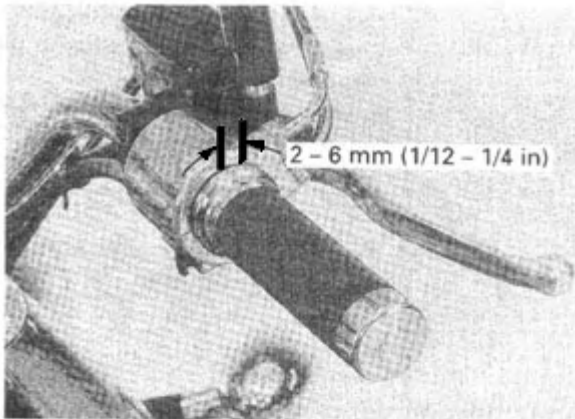
Task #13 - Fuel Line & Filter



Remove the left-side cover. Check the fuel lines for deterioration, damage or leakage. Replace the fuel lines if necessary.

Turn the fuel valve off. Disconnect the fuel tube from the bottom of the fuel filter (pump-to-filter). Remove the fuel filter and rubber cushion from the filter bracket and then remove the other fuel tube. Remove the rubber cushion from the filter and inspect the filter for damage and contamination. Replace the filter if necessary, taking note that the arrow on the filter body must be pointing towards the fuel pump (down).

Task #14 - Throttle Operation



Check for any deterioration or damage to the throttle cables.

Check the throttle grip for smooth operation. Check that the throttle returns to full closed from full open, smoothly and automatically in all handlebar positions. If the throttle does not operate smoothly, then disassemble the switch housing and disconnect the throttle cables at the right grip. Then lubricate the cables thoroughly by spraying a cable lubricant or light weight oil down the cable ends and operating the cable back and forth repeatedly. Reassemble the throttle cables and switch housing and then readjust the free play as per the instructions below.

With the engine idling, turn the handlebar all the way from stop to stop and ensure that the idle speed does not change. If the idle speed changes, then check the freeplay (below) and also check the cables for proper routing, interference and security.

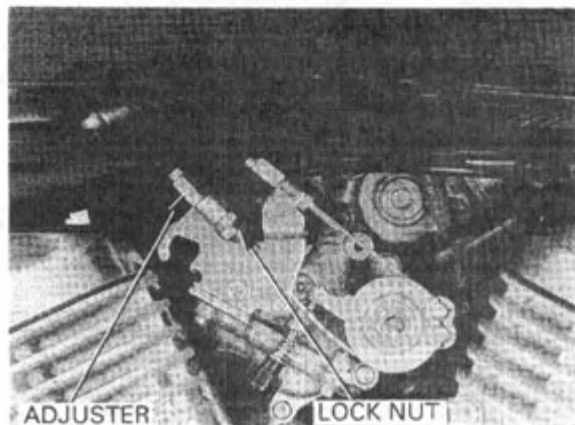
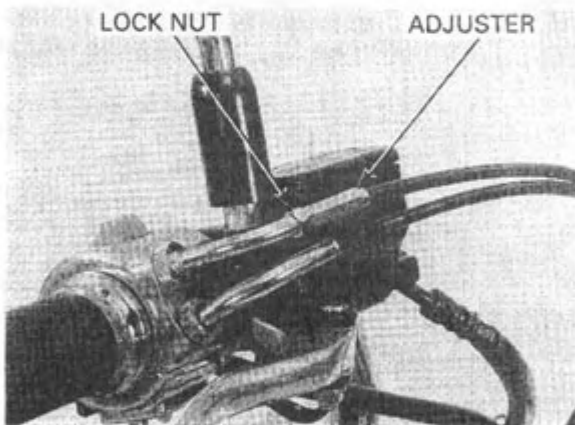
Throttle Free Play:

Measure the Free Play at the throttle grip flange. Free play should be **2-6 mm (1/12 - 1/4 in)**.

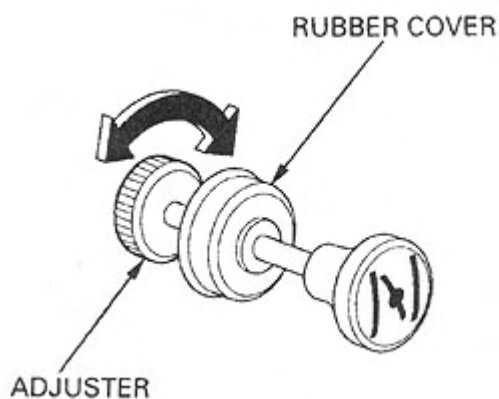
For minor adjustments, use the adjusters at the upper ends of the cables (on the grip). Loosen the lock nut and turn the adjust to obtain the free play. After the adjustment, tighten the lock nut securely and reposition the boot properly.

If you can not get the proper free play with the upper adjusters, then adjust using the lower fittings, on the carb end. Same thing... loosen the lock nuts, turn the adjusters until you have the proper free play and then re-secure the lock nuts.

After you have made ANY adjustments, recheck the throttle operation and free play as outlined above.



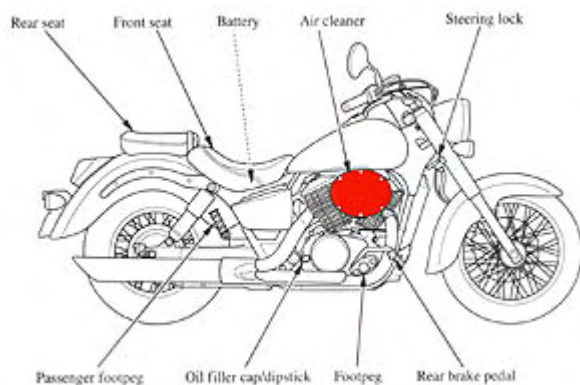
Task #15 - Carburetor Choke



The choke system uses a fuel enriching circuit controlled by an SE valve (**S**tarting **E**nrichment). The choke knob on the left side of the motorcycle operates a split cable that operates the enriching circuit of each carburetor.

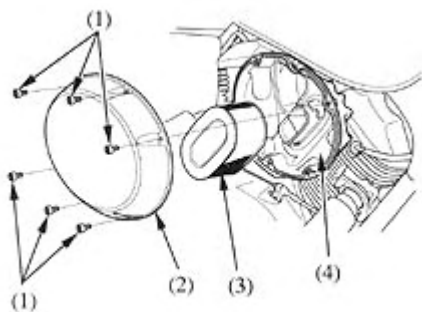
Check for smooth operation of the SE valve knob. Check for any deterioration or damage to the valve cable. If the operation is not smooth, then pull the rubber cover away and lubricate the cable with a cable lubricant or a light-weight oil. To adjust the friction, turn the adjuster under the rubber cover. If you find that there is an excessive "spring-back" on the cable, then the cables may be routed wrong or binding, in which case, you may have to remove the carbs and re-route the cables if you can't get the knob to stay open for starting.

Task #16 - Air Cleaner



The air cleaner should be replaced approximately every 19,000 km (12,000 miles). Change it sooner if you do a lot of riding in unusually wet or dusty areas.

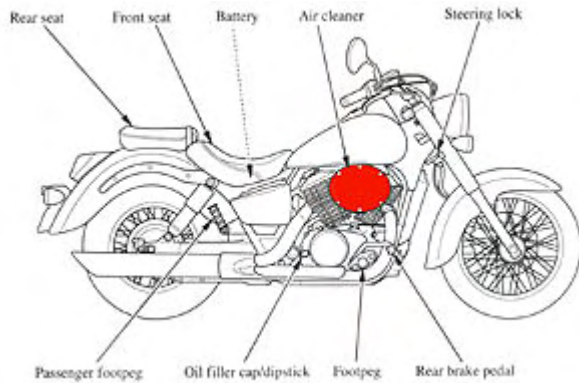
Also, if you are caught and have to do a long ride in heavy rain, then afterward, you should pull the air cleaning housing cover and wipe out the inside of the case(4). I have found that water and mud can collect in here during a long ride in rain.



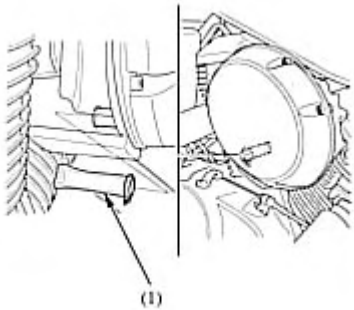
Replace Air Cleaner:

1. Remove the six bolts(1) holding the cover(2) in place, and remove the cover.
2. Pull out the air cleaner(3) and discard.
3. Clean out the inside of the case(4).
4. Install a new air cleaner.
5. Place the cover(2) back on and secure with the six bolts(1).

Task #17 - Crankcase Breather



The air cleaner case has a small tube in the bottom that allows the engine crankcase to vent. Attached to this tube is a plastic sleeve that catches any oils and crud that is vented. This tube should be cleaned out during every routine maintenance check. Also, as mentioned in the air cleaner section, if you drive through a lot of rain or dust, then you should also clean out the inside of the case as well as the vent tube.



Clean Crankcase Breather:

1. locate the tube at the bottom of the air cleaner housing on the back side.
2. With a pair of narrow needle-nose pliers, squeeze the clip holding the drain trap in place(1) and pull it off.
3. Clean the trap and the drain tube on the case and then reinstall the trap, using the pliers to hold the clip open until the trap is seated on the drain.

Task #18 - Spark Plugs

The ACE has two spark plugs per cylinder, so four plugs in total. They should be inspected at every service and replaced every 12,800km or as conditions dictate.

Inspecting your spark plugs can tell you a great deal about the condition of your engine and how well in tune it is. To help, I have constructed a simple guide for reading the conditions of your plugs. The pictures and information were compiled from several other charts that various plug makers have published.

Recommended Plugs:

1. Standard: **DPR8EA-9**(NGK) or **X24EPR-U9**(DENSO)
2. Cold Climate (below 5°C, 41°F): **DPR7EA-9** or **X22EPR-U9**
3. Extended High Speed Riding: **DPR9EA-9** or **X27EPR-U9**

Recommended spark plug Gap:

0.80 - 0.90mm (0.031 - 0.035in)

To replace your plugs:

1. Disconnect the spark plug boots from the spark plugs. Avoid using pliers or any other tool to do this as you can damage the plugs or the boot.
2. Clean any dirt from around the spark plug bases BEFORE removing the plug, to prevent it from falling into a cylinder. Then remove the spark plug using the plug wrench supplied in your tool kit.
3. Inspect the plug using the guide above.
4. Check the spark plug gap using a feeler gauge and the values listed above. Adjust as necessary.
5. Reinsert the new plug (with washer attached) and thread it in by hand to prevent cross-threading. Hand tighten the plug, then make an additional 1/2 turn to compress the washer. If reinstalling a used plug, you should only turn the plug an additional 1/8 to 1/4 turn instead. The spark plug needs to be secure, but DO NOT over tighten as the heads are made of aluminum and it is very easy to strip the threads.

Reinstall the spark plug boots.

Reading your Spark Plugs



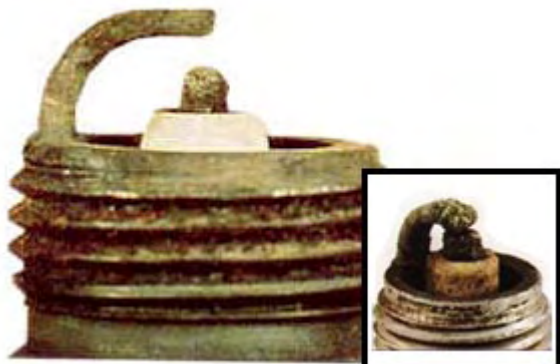
Normal:

Brown to grayish-tan color and slight electrode wear. Correct heat range for engine and operating conditions.



Worn:

Rounded electrodes with a small amount of deposits on the firing end. Normal color. Causes hard starting in damp or cold weather and poor fuel economy. The voltage required to fire the plug has approximately doubled and will continue to increase with additional miles of travel. Replace with new plugs.



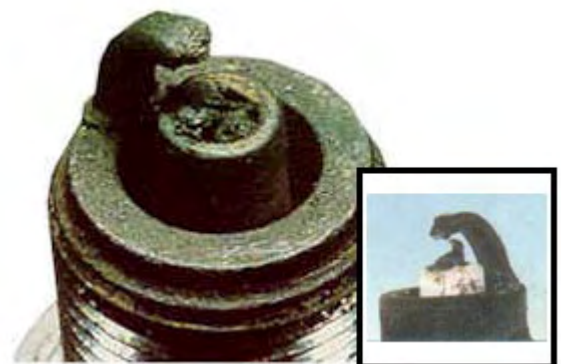
Overheating:

Blistered, white insulator, eroded electrode and absence of deposits. Results in shortened plug life. This is often caused by over advanced ignition timing, poor engine cooling system efficiency (scale, stoppages, low coolant level), a very lean air/fuel mixture, or a leaking intake manifold. When these conditions prevail, even a plug of the correct heat range will overheat.



Oil Fouled:

Oily coating caused by poor oil control. Oil is leaking past worn valve guides or piston rings into the combustion chamber. Causes hard starting, misfiring and hesitation.



Pre-Ignition:

Melted electrodes. Insulators are white, but may be dirty due to misfiring or flying debris in the combustion chamber. Can lead to engine damage. Check for the correct plug heat range, over advanced ignition timing, lean fuel mixture, insufficient engine cooling and lack of lubrication.



Detonation:

Insulators may be cracked or chipped. Can lead to piston damage. The explosion that occurs in this situation applies extreme pressures on internal engine components. Prime causes include ignition time advanced too far, lean air/fuel mixtures, and insufficient octane rating of the gasoline.



Mechanical Damage:

May be caused by a foreign object in the combustion chamber or the piston striking an incorrect reach (too long) plug. Causes a dead cylinder and could result in piston damage. Find out what caused the damage and repair it! When this condition is discovered, check the other cylinders to prevent a recurrence, since it is possible for a small object to "travel" from one cylinder to another where a large degree of valve overlap exists.



Gap Bridging:

Combustion deposits lodge between the electrodes. Heavy deposits accumulate and bridge the electrode gap. The plug ceases fire, resulting in a dead cylinder. Combustion deposits thrown loose may lodge between the electrodes, causing a dead short and misfire. Fluffy materials that accumulate on the side electrode may melt to bridge the gap when the engine is suddenly put under a heavy load.

Task #19 - Valve Inspection / Adjustment

NOTE: Inspect and adjust the valve clearances while the engine is cold (below 35°C or 95°F).

Inspecting and adjusting the valve clearances is probably the most difficult task that a regular ACE owner might attempt on their own. Any owner that has a basic aptitude for maintenance and doesn't mind spending a day tearing their bike down can do this task and the biggest benefit is that it will save a hefty fee from the dealer. Most bike shops, if they do the job properly, will charge at least 2 hours shop labor, if not more. If you are going to do this yourself, then expect to take around 4 to 5 hours. Also, you will need a good work area with lots of room to lay out the parts you need to disassemble. As for tools, you will need the basic kit that is included with the bike, as well as a couple of special tools just for this job. They are a feeler gauge and a 4mm open end wrench for the tappets, or a special tool built for the job.

Required Tools:

- Wrenches - 4mm, 8mm, 10mm, 12mm
- Sockets - 8mm, 10mm, 12mm
- Allan Keys - 22mm Hex (5/32" Hex), 5mm Hex
- Feeler Gauge Set
- Needle Nose Pliers
- Philips Screwdriver
- Slotted Screwdriver

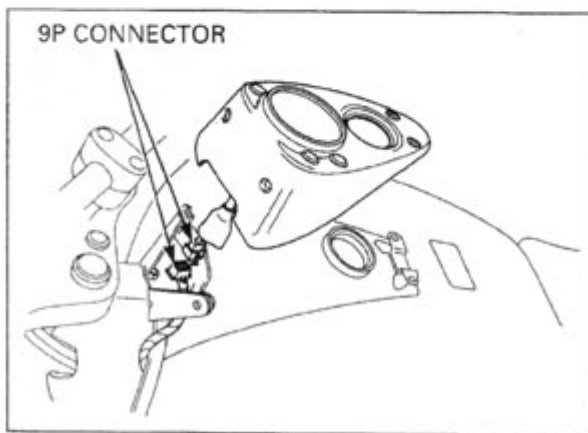
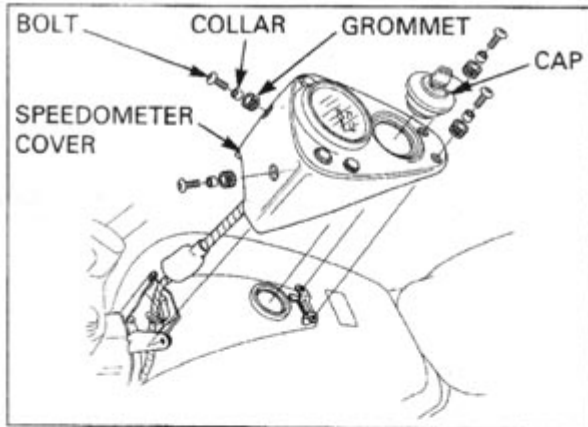
Step 1: Prepare the bike:

Park your bike on a flat surface on it's side stand where you can work uninterrupted for 4-6 hours. Also, it would be good to lay out a piece of cardboard or a workbench so you can lay the various parts down and keep track of the hardware etc.

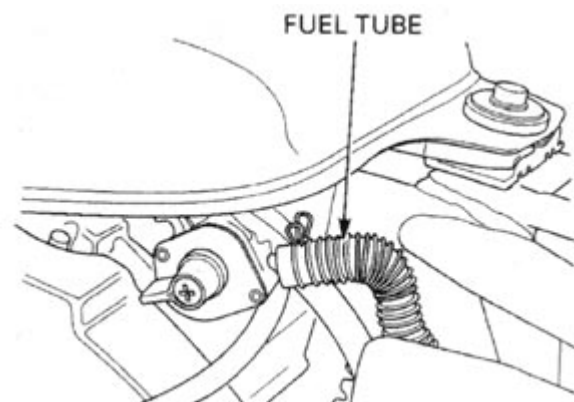
Start by removing the seat(s) and the side covers.

Step 2: Remove the gas tank:

NOTE: Before disconnecting the fuel line, turn the fuel valve "OFF".

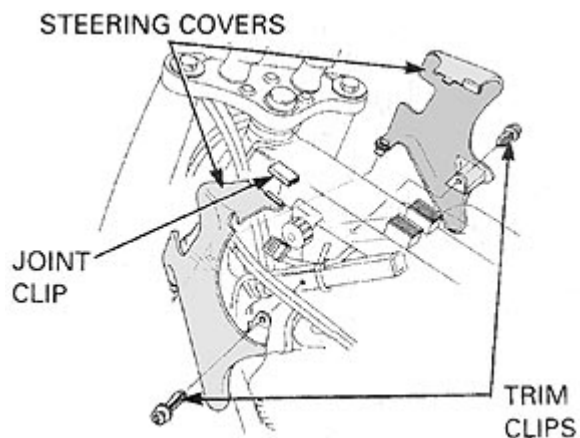


Remove the speedometer by removing the four hex-head bolts. Lift the assembly up and disconnect the 9-pin connector. Now is a good time to clean under there!



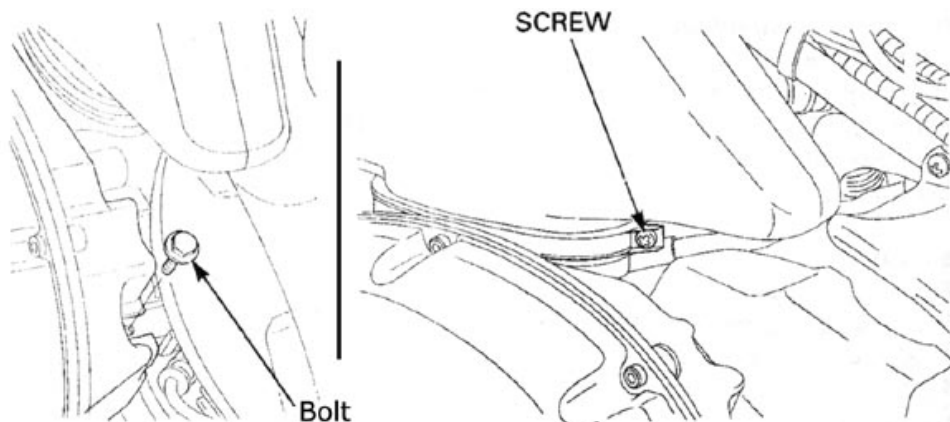
Place a rag under the fuel valve to catch any fuel that comes out then remove the fuel tube from the valve by squeezing the clip ends and sliding the clip back down the tube. Pull the tube from the valve. On the other side of the tank there is a slim air vent tube that you can just pull off the tank easily. Remove the fuel tank mounting bolt and then slide the tank back a bit and lift it clear of the bike. Make sure the speedometer harness is out of the clip holder on top.

Step 3: Remove the Steering Cover:

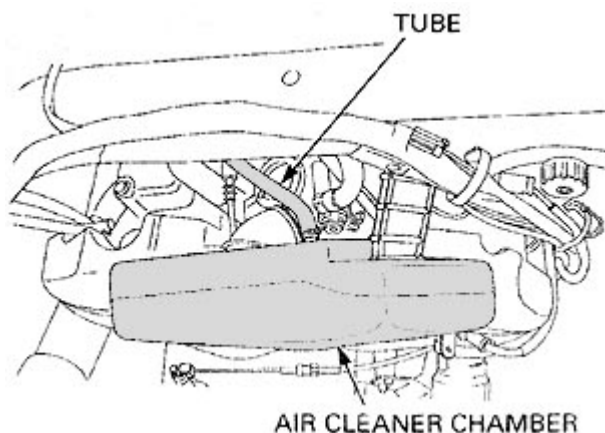


Remove the trim clips, then remove the two halves as an assembly. Remove the joint clip if you wish to separate the halves.

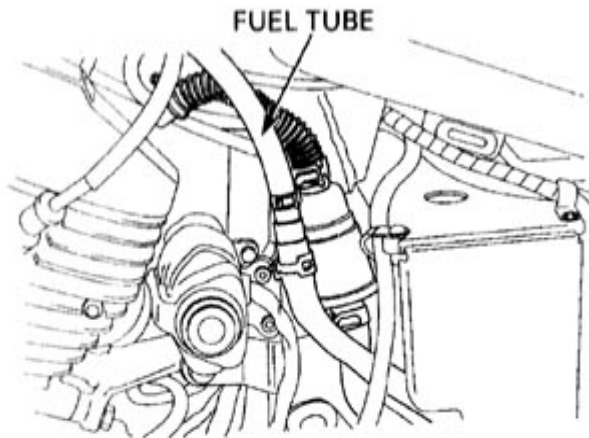
Step 4: Remove the Air Cleaner & Air Chamber:



Remove the two (2) air cleaner housing bolts (not the 6 hex head bolts for the cover!). Then loosen the air cleaner housing to chamber band clamp with the screw. Pull the air cleaner housing away.

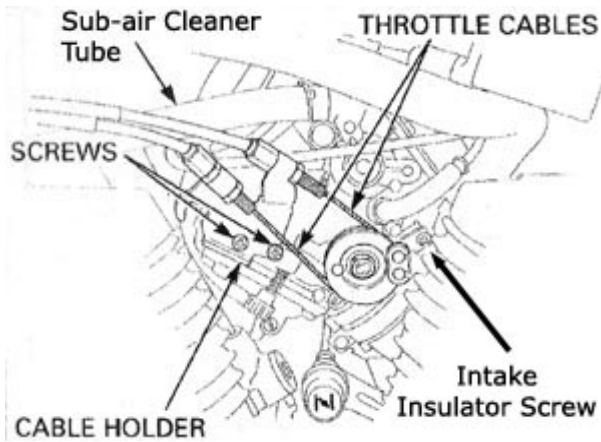


For the air chamber, you need to loosen the band clamps at the intakes for the carburetors. Then pull the chamber a little ways from the frame and disconnect the crankcase breather tube from the chamber. Remove the air chamber.

Step 5: Remove the Carburetors:

Loosen the carburetor drain screws and drain the carbs.

Disconnect the fuel tube from the fuel joint.



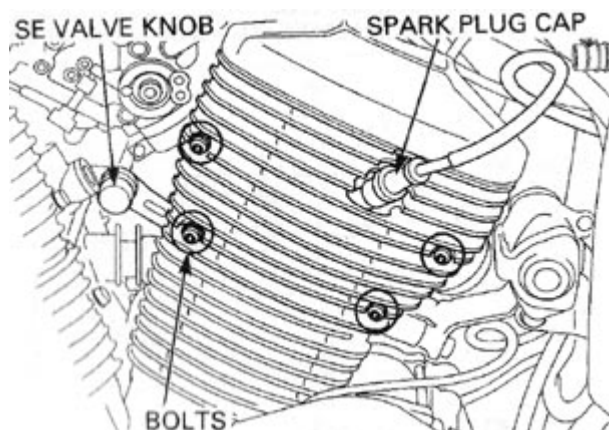
Remove the screws and throttle cable holder.

Disconnect the sub-air cleaner tube.

Loosen the intake insulator band clamp screw for the rear cylinder.



Remove the throttle cables from the throttle link.

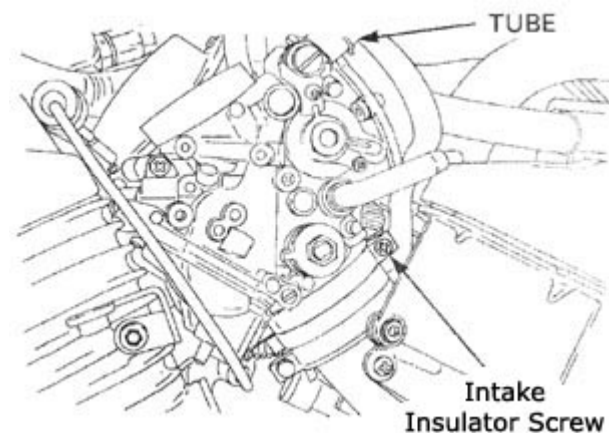


Remove all the spark plug caps.

Remove the bolts and then remove the rear cylinder left side fins and choke (SE Valve) knob and bracket.



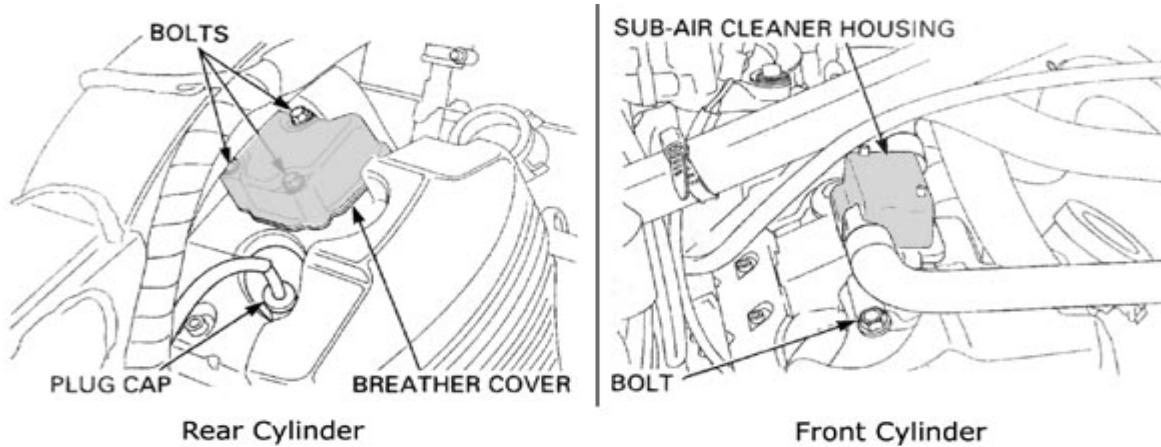
I also removed the forward cylinder ignition coil from the frame and moved it and the two plug wires back and out of the way... to give a bit more access room above the cylinders.



Disconnect the sub-air cleaner tube from the front side carburetor.

Loosen the intake insulator band clamp screw on the forward cylinder and remove the carburetors together through the LEFT HAND side of the bike. (Note: the Honda service manual incorrectly says to remove through the right hand side. They will only fit through the left hand side!!!)

NOTE: As you remove the carburetors, take note of the routing for the choke cables. Maybe draw a picture or take a picture with your digital camera. Because the carbs can be re-installed with these cables routed wrong and then the choke may be difficult to open or may have too much spring-back on it, like I found out on my bike.

Step 6: Remove the sub-air cleaner housings:

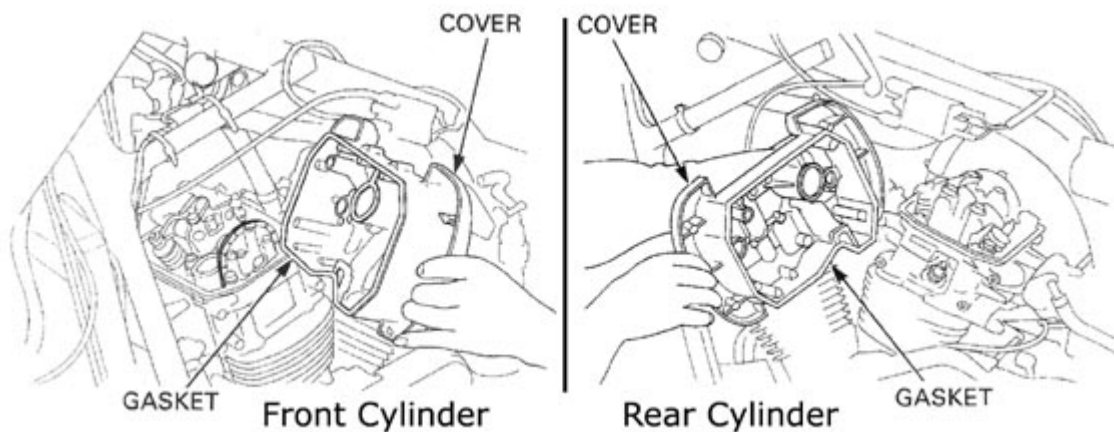
Remove the sub-air cleaner housings from both cylinders. The rear cylinder is only held on with one bolt and the front cylinder's is held on with 3 bolts.

Also remove the remaining fin covers from both sides of the front cylinder.

Step 7: Remove the Thermostat Housing Mounting Bolt:

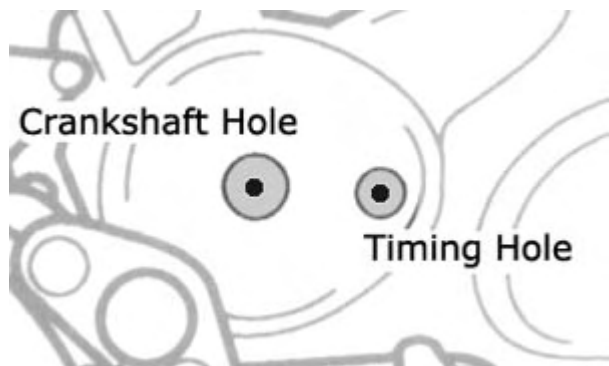
Remove the mounting bolt holding the thermostat housing and move the housing upward to give you room to remove the cylinder head covers.

Step 8: Remove the Cylinder Head Covers and Gaskets:

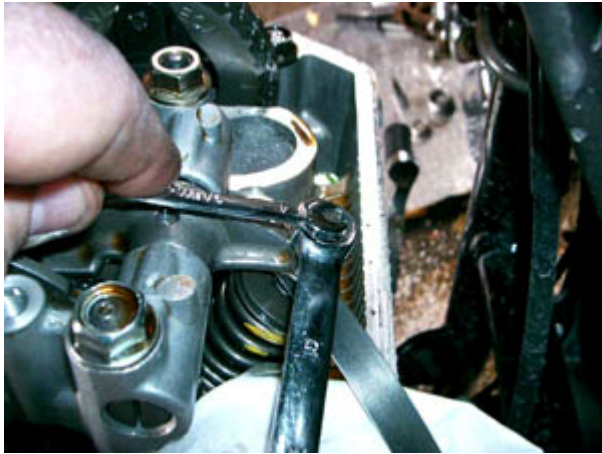


Remove the cylinder head covers and gaskets. Take care not to damage the gaskets or to scratch the clear coat finish on the covers. You might also have to remove the coolant lines to get the covers out. If you do, watch that you don't spill coolant onto the heads and in the oil. Take it slow and careful here!

Step 9: Remove the caps from the Crankcase and Timing Holes:



Remove the caps from the crankcase hole and the timing hole on the left-side crankcase cover.

Step 10: Inspect / Adjust the Valve Clearances:**Notes:**

Adjust the Front Cylinder Valves first.

Valve Clearance Limits:

In: 0.13-0.17 mm (0.005-0.007 in)

Ex: 0.18-0.22 mm (0.007-0.009 in)

Front Cylinder:

You need to find Top Dead Centre (TDC) on the compression stroke of this cylinder. The easiest way to do this is to use a socket on the crankshaft nut (via the crankcase hole) and rotate the crankshaft **counterclockwise**. Make sure the bike is in neutral. Now watch the rocker arms as you rotate the crankshaft slowly. They will move up and down. When you see all the rocker arms in the up position, look in the timing hole and keep rotating the crank slowly until you see the "FT" Mark line up with the line on the edge of the timing hole. That means the front cylinder is now at TDC and all the valves are closed (compression stroke).

Now measure the clearances with the feeler gauge. There are two intake valves (side by side) and one exhaust valve per cylinder. Start with the largest gap you can allow. For example, on the exhaust valve, try to insert an 0.009" gauge between the rocker and the tappet. If you can insert this gauge easily, then the gap is excessive. Once you have determined that there is adjustments to be made, adjust each valve to it's minimum limit. To adjust the valve, loosen the lock nut (using a 10mm box-end wrench) then turn the tappet adjusting screw using a 4mm box-end wrench until the gauge just fits but still has some drag. Now tighten the lock nut back up. Recheck the gap after you tighten the lock nut, because when you do the tightening, it tends to pull everything together and loosen the gap up a bit. It might take a little trial and error to hit the gap you are shooting for after everything is tight. Once you are happy about the gaps, recheck that ALL the lock nuts are tight!

Rear Cylinder:

Repeat this process with the rear cylinder now., but this time you are rotating the crank until the rear cylinder rockers are all up and the mark you are lining up in the timing hole says "RT". Again, once you are happy with the clearances, double-check that the lock-nuts are tight! By tight, I mean they should be **torqued to 17 foot-pounds**, so don't go Arnold on them and try to torque them to 100 ft-pounds!

Step 11: Put it all back together!:

Now that the valve clearances have been checked and adjusted, you can start putting everything back together. Just go in reverse of the instructions above and take note of the following...

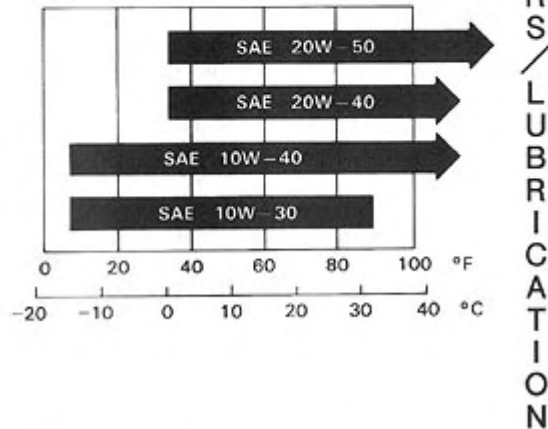
- Clean the gasket surfaces on the cylinder heads before re-installing the covers
- Put a little grease on the threads of the crankcase hole and timing hole caps
- Make sure you route the choke cables properly as you insert the carbs
- Make sure you tighten the carb drain screws before opening the fuel valve
- You lose a little oil from the heads, check the level after you run it
- If you had to disconnect the coolant lines to get the head covers off, make sure you check the coolant level after running the bike.

Task #20 - Engine Oil & Filter

Recommended Oil Viscosity

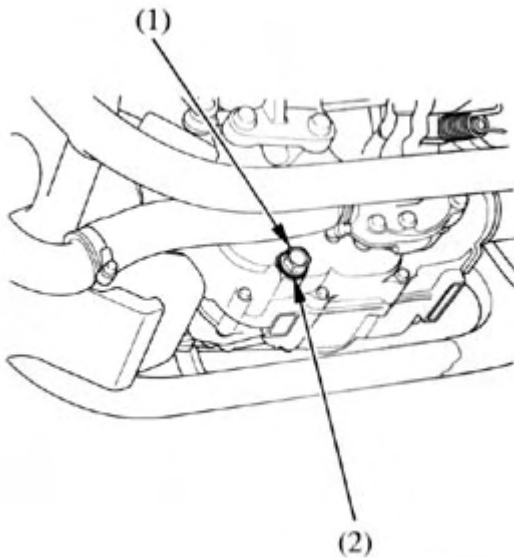
SAE 10W-40

Other viscosities shown in the chart below may be used when the average temperature in your riding area is within the indicated range.

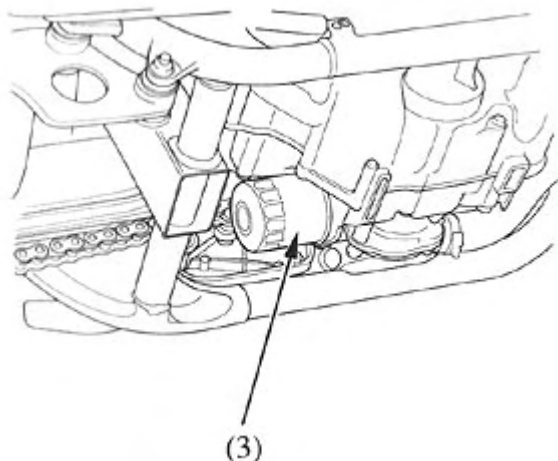


Engine oil is the most important factor in the performance and life of your engine and as such, it should be changed at the recommended intervals.

Honda recommends you use an **SAE 10W-40 4-Stroke Oil**. You can also use other viscosities as per this chart, if the average temperatures in your riding area are within the limits.

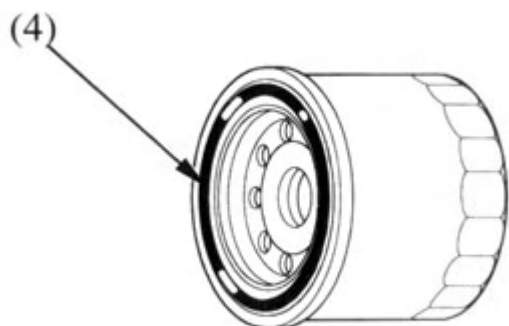


First warm the oil up by taking your bike for a short ride. To drain the oil, remove the oil filler cap/dipstick (#5 on bottom picture), the crankcase drain plug (1) and the gasket(2). Make sure to drain the oil in an approved container and dispose of it properly.

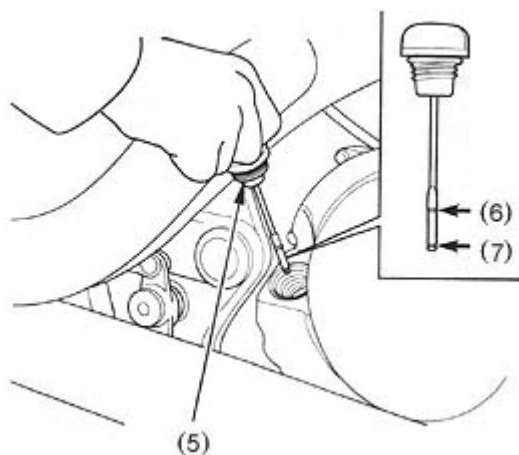


Remove the oil filter (3) with a filter wrench or by hand and let the remaining oil drain out. Discard the oil filter.

HINT: If you don't have a proper oil filter wrench and the filter is on too tight to remove by hand, you can use a long screwdriver and punch a hole through the filter (in one side and out the other). Then you can just turn the screw driver a bit to break the torque. Pull the screwdriver out and remove it the rest of the way by hand. Messy, but a good trick to get the filter off in a pinch.



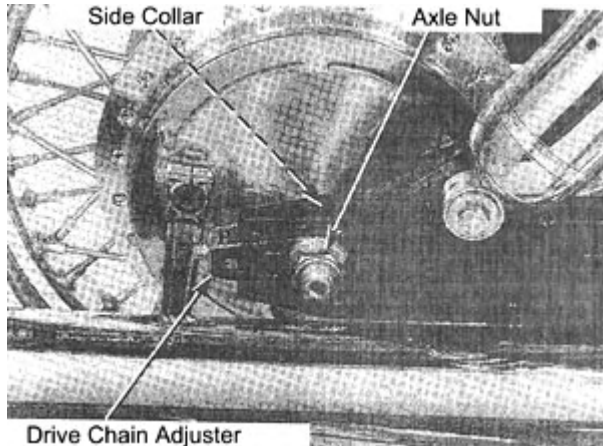
Apply a thin coat of oil to the new oil filter rubber seal (4). Install the new filter and snug it up **BY HAND**. The torque is only supposed to be 7 ft.lbs. and you can easily do this just with your hands. Use a rag if your hands are too greasy for a good grip.



Check the condition of the oil plug gasket(2) and re-use if it's ok. Replace it every other oil change or any time it looks worn. Fill the crankcase with the new oil until it reads on the dipstick(5) and then secure the cap. **Apx. 2.4 litres capacity**

Start the engine and let it idle for 2-3 minutes. While it is idling, check that there are no leaks from the plug or the filter. Stop the engine and let it sit for several minutes, then check the level again and make sure the oil is at the upper(6) on the dipstick.

Task #21 - Removal & Installation of the Wheels

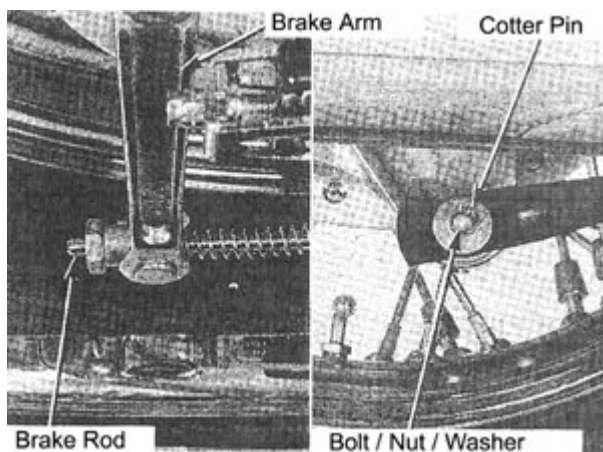


Rear Wheel Removal:

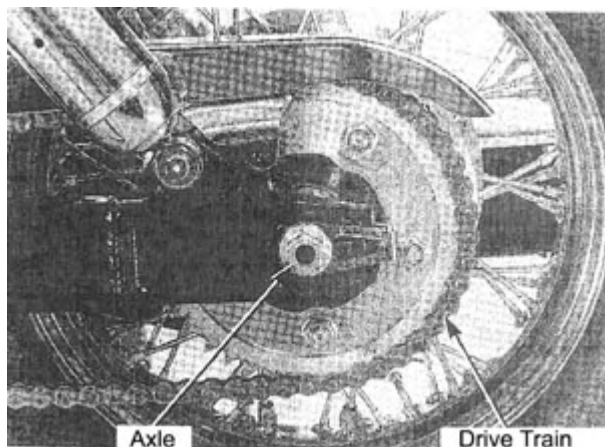
To easily remove the rear wheel from the motorcycle, you will need to be able to jack the bike up a fair distance, apx. 1 foot or more. A motorcycle lift is ideal for this.

WARNING: Do not jack the bike using the oil filter.

1. Break the torque on the axle nut before jacking the bike;
2. Jack the bike and secure it;
3. Loosen the axle nut;
4. Loosen the drive chain adjusters on both sides of the swing arm.



5. Disconnect the brake rod from the brake arm;
6. Remove the cotter pin, nut, washers and bolt from the stopper arm on the brake panel.



7. Remove the axle nut, right side collar and rear axle (note the positions of the two side collars for reassembly);

8. Slide the rear wheel forward and remove the chain from the rear sprocket;

9. Remove the rear wheel.

Installation:

1. Position the wheel between the swing arms and loosely install the chain over the rear sprocket, then slide the axle (from the left side) through the swing arm, side collar, wheel hub, other side collar and opposite swing arm. (NOTE: You might find it easier to have help. Also, I always preferred holding the wheel against the left side collar and left swing arm until the axle was into the wheel hub, then position the right side collar before sliding the axle the rest of the way.)

2. Install the axle nut, but don't tighten it yet;

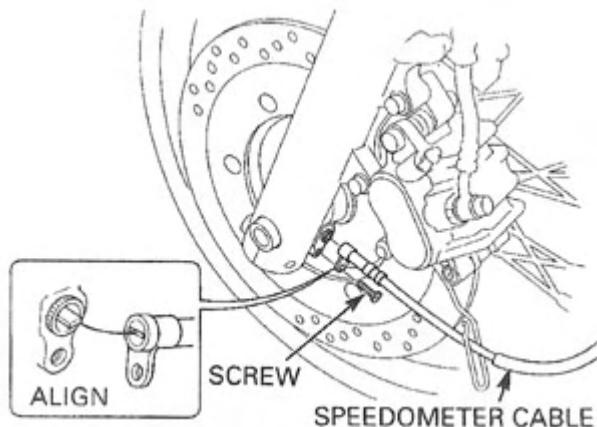
3. Connect the brake stopper arm to the brake panel with bolt, seat washer, washer and nut. Tighten the nut to **14 lb.ft.**;

4. Install the NEW cotter pin. Connect the brake rod to the brake arm;

5. Adjust the drive chain (Ref: Task 01 - Drive Chain);

6. Adjust the rear brake free play (Ref: Task 04 - Brake System);

7. Tighten the axle nut to **69 lb.ft.**.

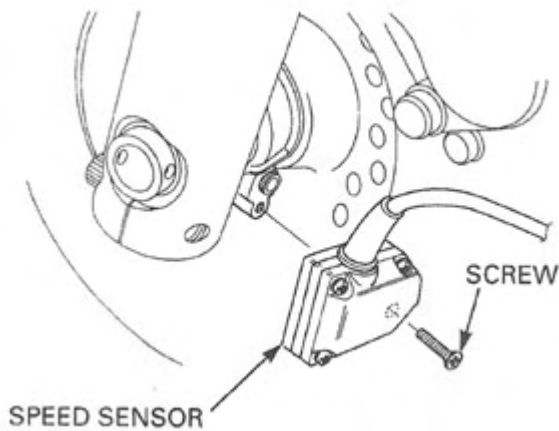


Front Wheel Removal:

1. Raise and support the motorcycle using a lift or jack;

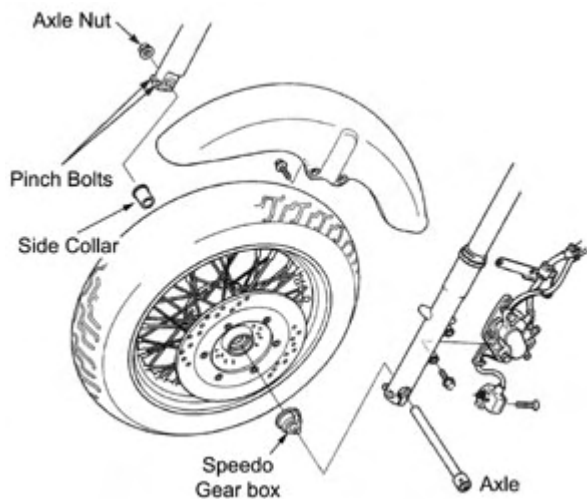
2. Remove the screw and speedometer cable from the speedometer gear.

Note: VT750C and VT750CD/CD2 (1998-2000)



2. Remove the screw and speed sensor from the speedometer gear.

Note: VT750C3/VT750CD3 VT750CD/CD2 (after 2000)



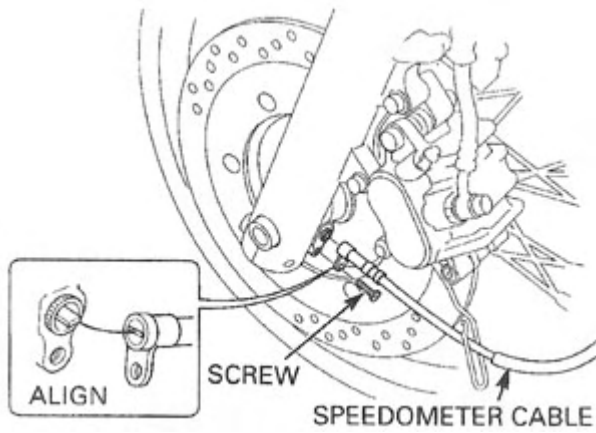
3. Loosen the axle pinch bolts(4);

4. Loosen then remove the axle bolt from the axle and then remove the axle and front wheel.

NOTE: Do not operate the front brake lever while the front wheel is removed. This will make it difficult to fit the brake disc between the pads when reinstalling the wheel.

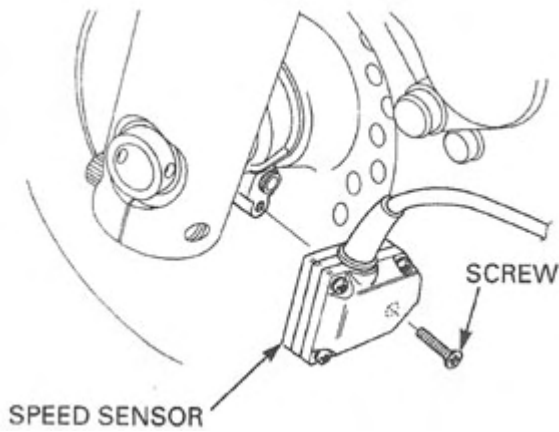
Installation:

1. Install the front wheel between the fork legs, so that the brake disc is positioned between the pads, being careful not to damage the pads;
2. Apply a thin coat of grease to the front axle and install it through the fork legs and wheel hub;
3. Position the lug on the speedometer gear box against the back of the stopper on the fork leg;
4. Install and tighten the front axle bolt to **42 lb.ft.**;
5. Lower the bike so that the front wheel is touching the ground. Then, while holding the front brake on... pump the front suspension up and down several times to seat the axle and check front brake operation;
6. Tighten the axle pinch bolts to **16 lb.ft.**



7. Install the speedometer cable and tighten the screw securely.

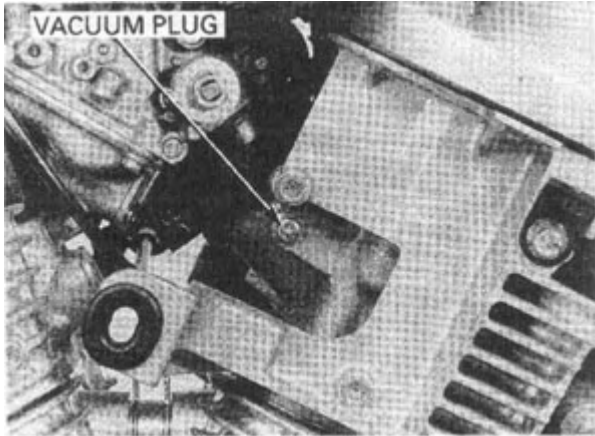
Note: VT750C and VT750CD/CD2 (1998-2000)



8. Install the speed sensor and tighten the screw securely.

Note: VT750C3/VT750CD3 VT750CD/CD2 (after 2000)

Task #22 - Carburetor Synchronization

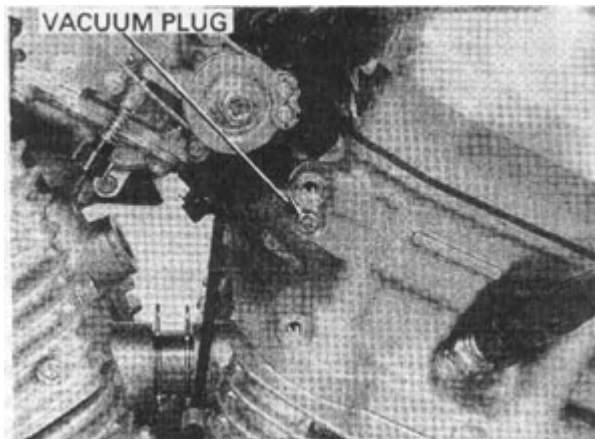


NOTE: Perform this task with the engine at normal operating temperature and transmission in neutral. Place the motorcycle on a level surface.

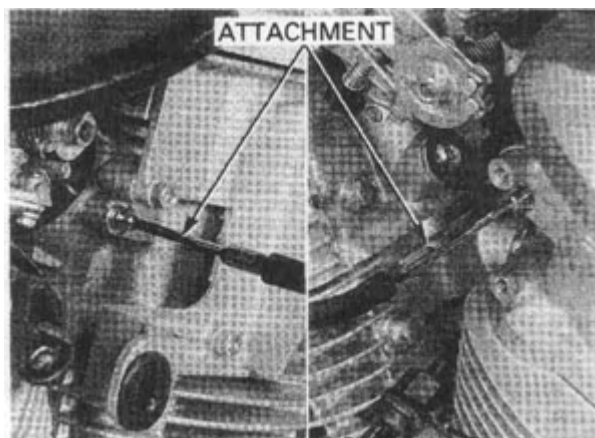
Remove the fuel tank mounting bolt and carefully raise the tank and support it above the frame and near enough to attach a tube from the tank to the fuel inlet tube.

Remove the air cleaner housing (see valve task).

Remove the rear cylinder head left-side fin.

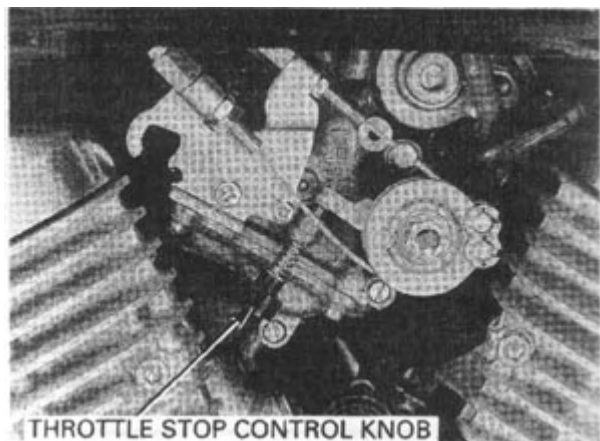


Remove the vacuum plugs and washers from the cylinder head intake ports.



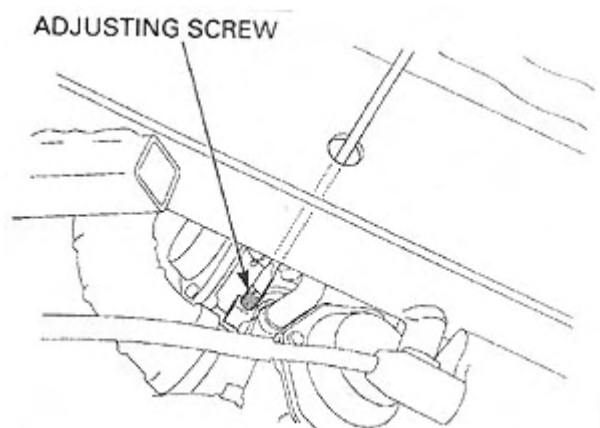
Connect the vacuum gauge and adapters.

TOOL: Vacuum Gauge Attachment
07510-3000200 or 07LMJ-001000A (USA only)



Connect a suitable tube between the tank and the fuel inlet line. Turn fuel valve on and start engine. Adjust the idle speed to 1,000 +/- 100 rpm.

Check the difference in vacuum between each carburetor.



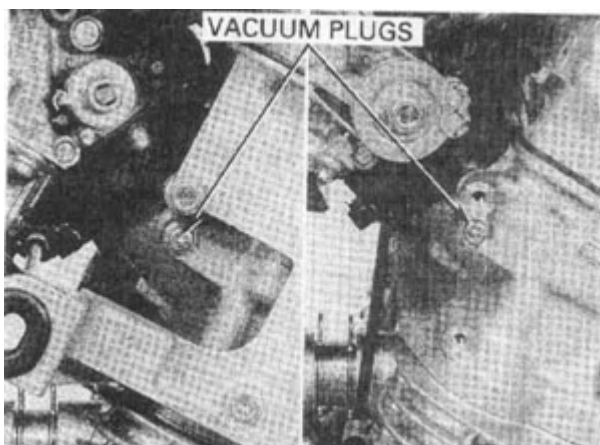
Note: The base carburetor is the REAR carb. (No.1)

Carburetor Vacuum Difference:

27 kpa (20 mm Hg 0.7 in Hg)

Synch the carbs by turn the adjusting screw located between the two carbs and accessible through the hole provided in the frame.

Be sure that synchronization is stable by snapping the throttle several times and re-checking idle speed and vacuum difference. You might have to re-adjust idle and synch several times to find the proper "balance".

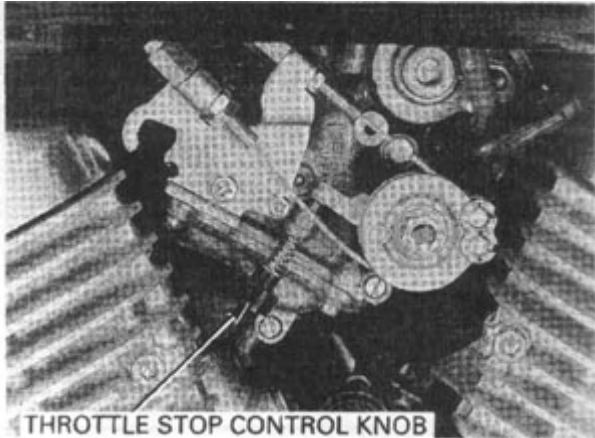


When everything seems stable and adjusted, stop engine and disconnect the vacuum gauge and adapters.

Install the vacuum plugs and washers and tighten to **3 N-m (2.2 lbf-ft)** of torque.

Install the rear cylinder head left-side fin, the air cleaner housing and the gas tank.

Task #23 - Engine Idle Speed



NOTE: Perform this task with the engine at normal operating temperatures and the transmission in neutral. Place the motorcycle on a level surface. Engine **MUST** be warm for proper adjustment.

Hook a tachometer up to the ignition and adjust the idle speed using the throttle stop control knob. Idle speed should be **1000 +/- 100 rpm**.

Task #24 - Radiator Coolant

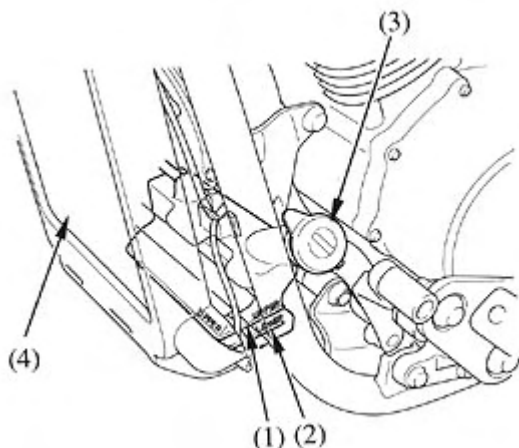
The ACE has a liquid cooled engine and therefore you must maintain a proper level of radiator coolant, just like in a car. Honda recommends that you use only Honda HP coolant or an equivalent high quality ethylene glycol antifreeze containing corrosion protection inhibitors specifically recommended for use in aluminum engines.

NOTICE:

Using coolant with silicate inhibitors may cause premature wear of water pump seals or blockage of radiator passages. Using tap water may cause engine damage. Use only low-mineral drinking water or distilled water as part of the anti-freeze solution.

Your ACE comes with a 50/50 solution of antifreeze and distilled water. A higher concentration of antifreeze decreases the performance of the cooling system and is only recommended when additional protection from freezing is needed.

A concentration of less than 40% antifreeze will not provide proper corrosion protection for your aluminum engine. So basically, you should just keep it a 50/50 mixture or buy a pre-mixed product that is equivalent to 50/50.



The reserve tank is located behind the radiator(4). Check the coolant level in the reserve tank while the engine is at normal operating temperature. It should be between the UPPER(1) and the LOWER(2) level marks. When the coolant level is at the LOWER mark, then add new coolant up to the UPPER mark. **Always** add coolant to the reserve tank only. Do not attempt to open the radiator cap while the engine is hot.

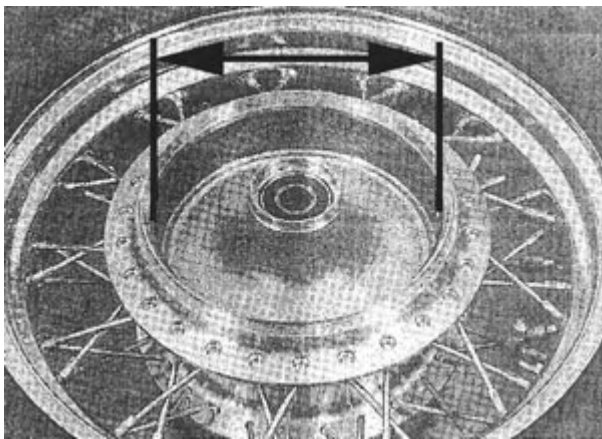
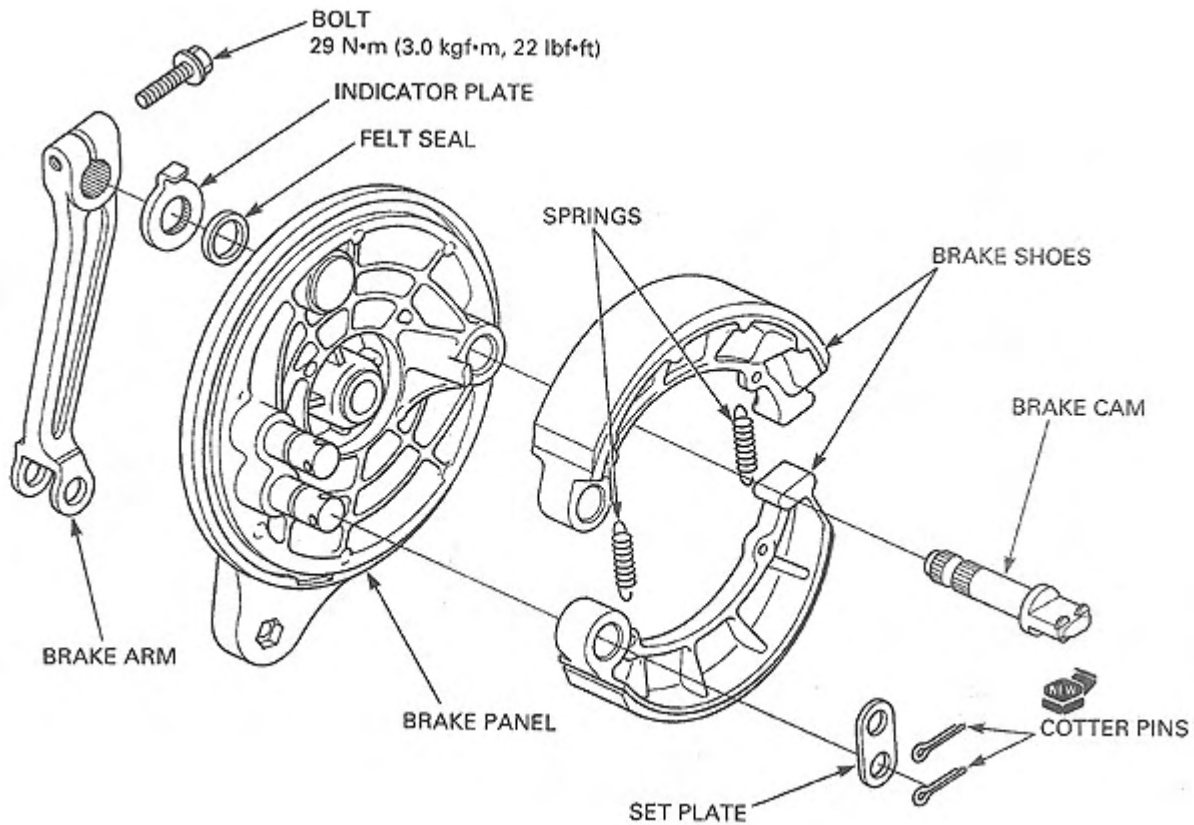
Task #25 - Cooling System

Wash the motorcycle, paying particular attention to the radiator grill. Take the motorcycle for a run to bring it up to operating temperature and then let it sit and idle until the fan comes on. If the fan fails to come on, shut the motorcycle off before it gets too hot and fix the fan motor before proceeding with this task.

Check the radiator grill for clogging or damage. Straighten bent fins with a small flat-bladed screwdriver and remove insects, mud or other obstructions with compressed air or low pressure water. Replace the radiator if it is obstructed over more than 20% of its surface area.

Also, check closely for leaks in the cooling hoses, the water pump and the thermostat.

Task #26 - Rear Brake Shoe Replacement

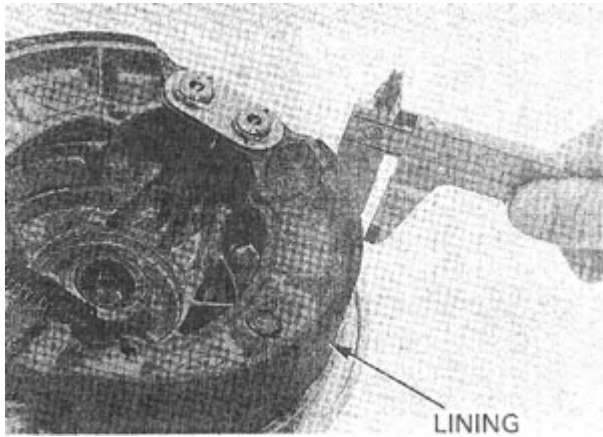


Remove the rear wheel. (ref: Task 21 - Removal & Installation of the Wheels)

Pull the Brake Panel from the rear wheel.

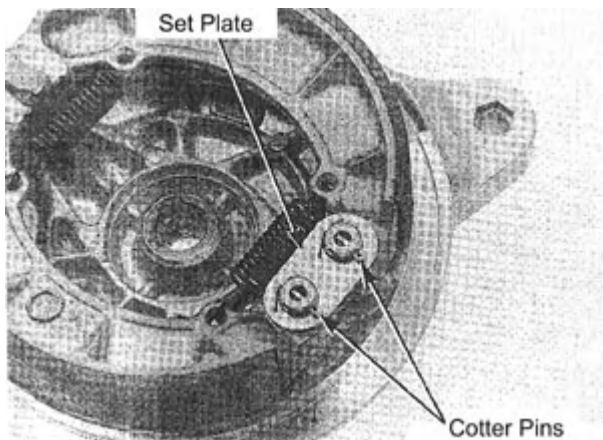
Measure the brake drum inside diameter (see photo).

Service Limit: 181mm (7.13in)



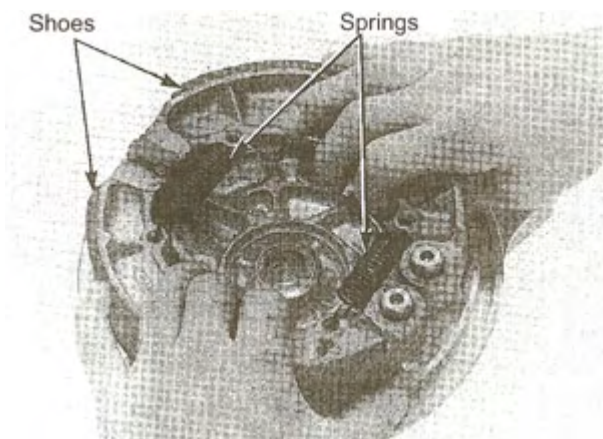
Measure the brake lining thickness.

Service Limit: 2mm (0.1in)

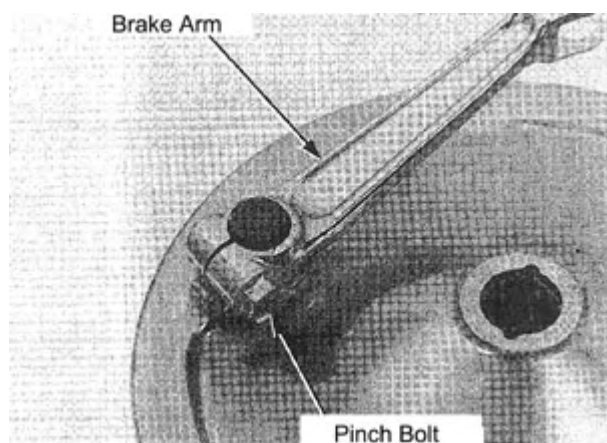


Disassembly:

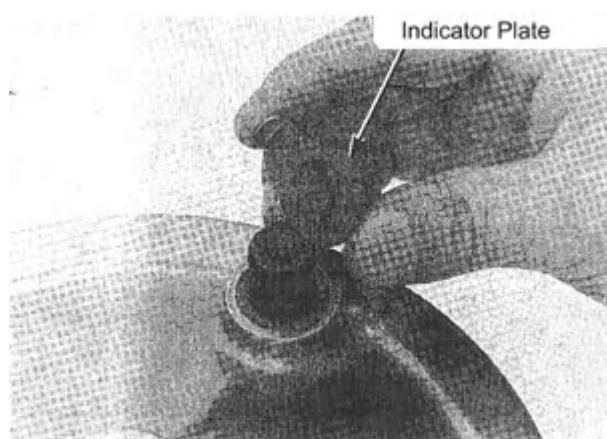
Remove the Cotter Pins and Set Plate.



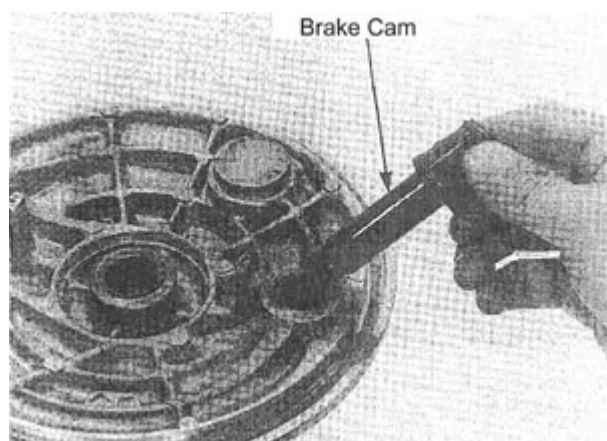
Remove the Brake Shoes and Springs.



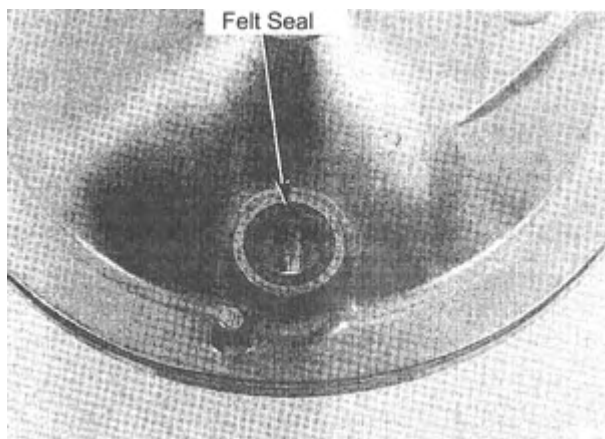
Remove the Pinch Bolt and Brake Arm.



Remove the Indicator Plate.



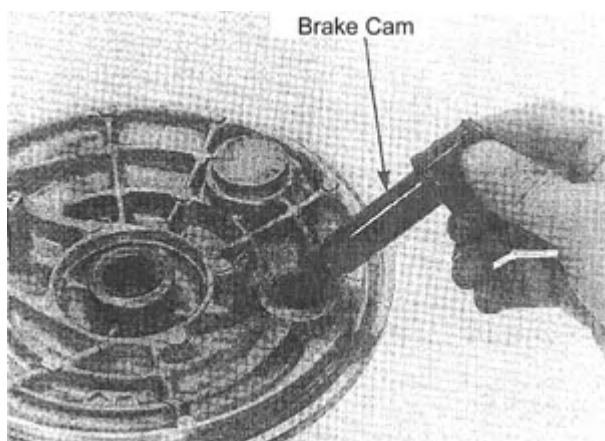
Remove the Brake Cam.



Remove the Felt Seal.

CLEANING:

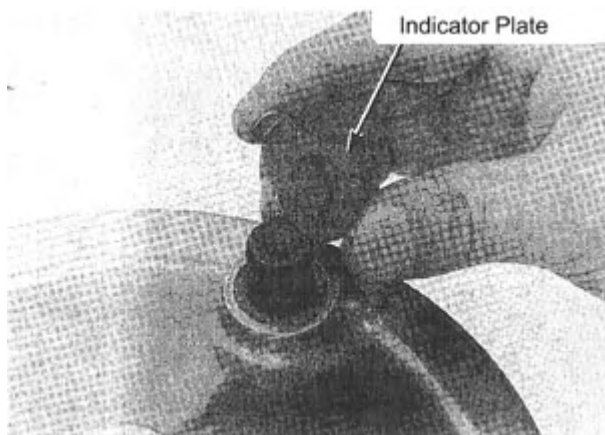
Thoroughly clean out the inside of the brake drum and the brake panel before installing the new shoes.



Assembly:

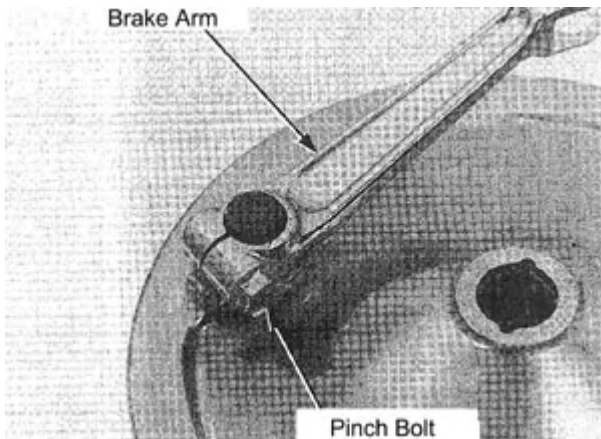
Reference the exploded diagram above and the photos on the left for the following assembly instructions.

Grease the shaft of the brake cam and install it into the brake panel.

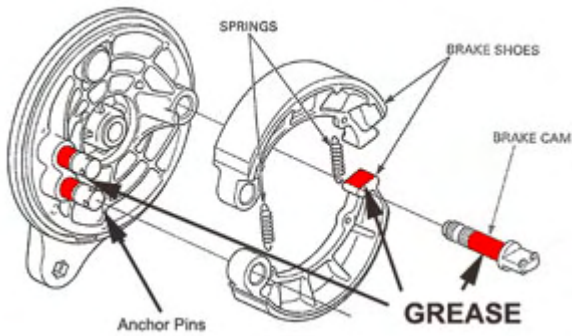


Apply oil to the felt seal and install it onto the front of the brake panel, fitting it over the cam shaft.

Install the Indicator Plate on the brake cam, making sure to align the wide tooth on the plate with the wide groove on the cam.



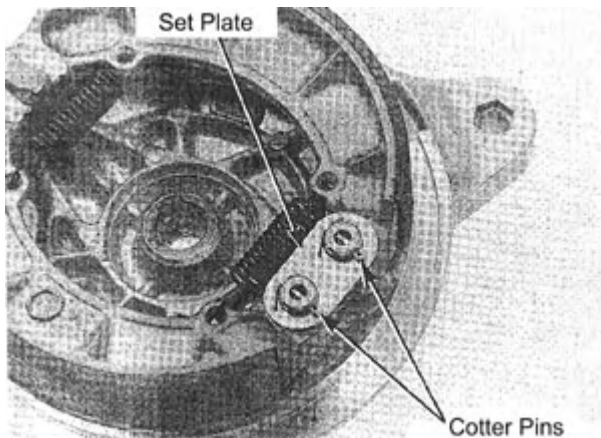
Install the brake arm on the brake cam, aligning the punch marks on the arm with those on the cam. Install and tighten the pinch bolt to **22 ft.lb. (3.0 kgf.m)**.



Apply grease to the brake shoe-to-cam contact surfaces.

Apply grease to the anchor pins.

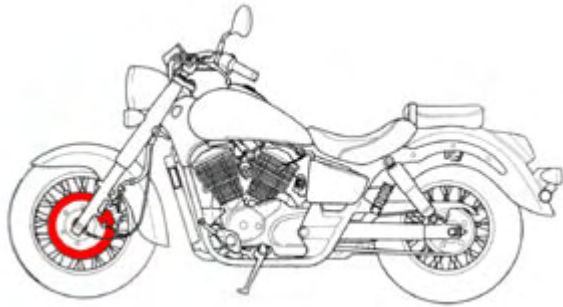
Attach the springs to the new shoes and install them onto the brake panel.



Install the Set Plate and NEW Cotter Pins.

Install the brake panel back onto the wheel and re-install the rear wheel onto the motorcycle. (ref: Task 21 - Removal & Installation of the Wheels)

Task #27 - Front Brake Pad Replacement

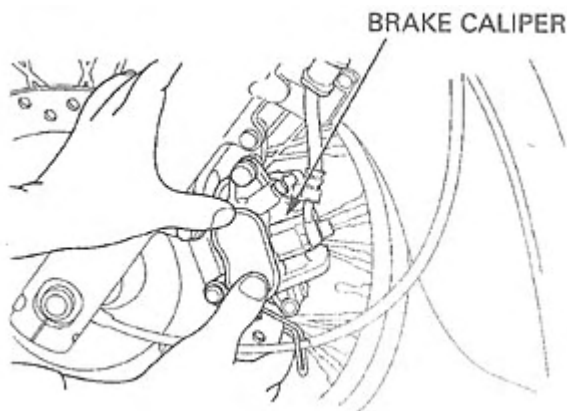


Warning!!!

A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean contaminated disc with a high quality brake degreasing agent.

See Also...

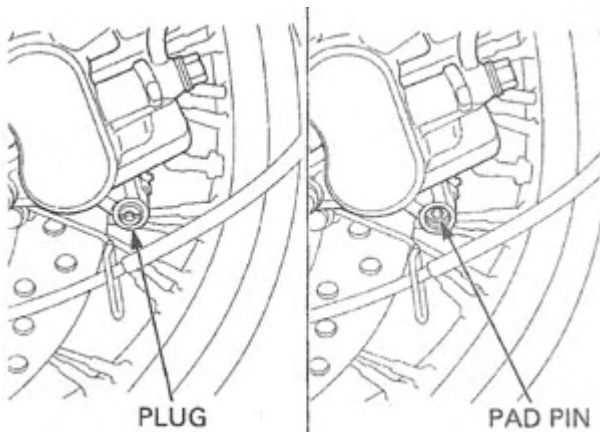
- Front Brake Bleeding



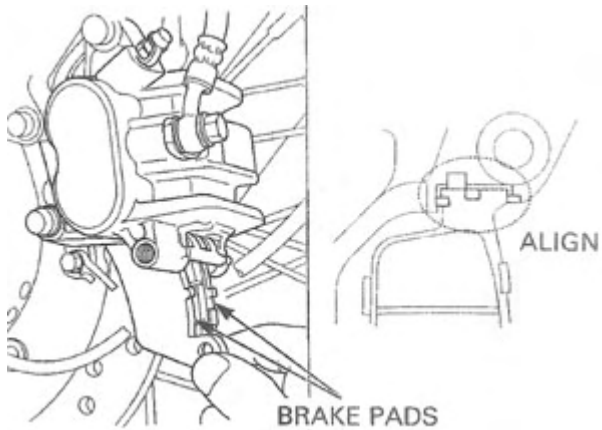
Push the caliper pistons all the way in by pushing the caliper body inward to allow for installation of new brake pads.

NOTE:

Watch the brake fluid level in the reservoir as this operation will raise it.

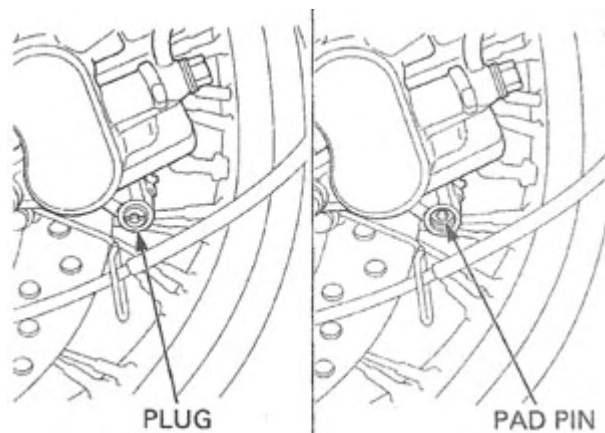


Remove the pad pin plug and loosen the pad pin under the plug.



Remove the pad pin and the brake pads.

Install the new pads so that their ends rest on the pad retainer on the bracket properly.



Install the pad pin by pushing the pads against the pad springs to align the pad pin holes and the pin holes in the pads and the caliper.

Tighten the pad pin to 13 lb.ft. torque. (1.8 kgf.m)

Install and tighten the pad pin plug and torque to 2.2 lb.ft. (0.3 kgf.m)

After replacement, operate the brake lever to seat the caliper pistons against the pads.

Task #28 - Replacing the Coolant

NOTE: Perform this task only when the engine is cold. Under no circumstances should you open the radiator cap when the engine is still hot.

NOTE: Use only Honda compatible **Type 2 (non-silicate)** ethylene glycol based pre-mixed coolant. You can get it at a Honda bike or Honda car dealership and it usually comes in 3.85 litre jugs like the one pictured below. DO NOT use a Type 1 coolant as it has silicates in it which can cause premature wear of the water pump seals.

Required Tools:

- Wrenches - 8mm, 10mm, 12mm
- Sockets - 8mm, 10mm, 12mm
- Funnel
- Catch tray - Large
- Small Snub-nosed or Needle-nosed Pliers
- Philips Screwdriver
- Bike Lift (optional)

Step 1: Prepare the bike:

Park your bike in an area where spilled coolant won't be a big issue. It's impossible to change the coolant on this bike without getting some of it on the ground. I was able to catch the largest amount from the pump, but all the other areas I basically just let drain on the ground and then hosed up after. Therefore, make sure you do this in an area you can clean easily and that no children or pets are around. If you have a bike lift, it makes the job much easier.

Step 2: Move the gastank:



While the service manual asks you to remove the gas tank, you really only need to pull it aft a few inches, so you can access the radiator cap. Remove the seats and the tank mounting bolt and pull the tank back a few inches. Just be careful with the fuel line on the left hand side. With the tank back a few inches, you can easily remove the one clip on the neck cover and access the radiator cap (see arrow). Remove the radiator cap now.

Step 3: Drain the front cyclinder and water pump:

Put your container under the water pump and remove the drain plug, which is located on the bottom of the engine, left side, below the kick stand (see arrow). You are draining not only the front cylinder, but also the radiator and the big hoses, so there's almost 2 liters that comes out here. Leave the plug out for now.

Step 4: Drain the rear cyclinder:

Remove the drain plug on the rear cylinder (see arrow). There's really no way to catch this fluid and it will just drain over your engine, so wash it up after. Luckily, there is very little fluid that comes from this drain. Also, when you open this drain port up, this will release an air lock and let more fluid drain out the water pump. Let things drain for a few minutes and then put both drain plugs back in and torque the bolts to 9 lbf-ft. It is also advisable to use new sealing washers.

Step 5: Drain and flush the reservoir:



Remove the cap from the coolant reservoir.



The service manual tells you to remove the reservoir and drain and flush it off the bike, but that would mean removing the gas tank AND the radiator, which is a pain... so what I did was just remove the lower hose from the reservoir (see arrow) and let it drain out. Now, there's a little bit that is left below the hose level, so I took my garden hose and put it in the filler hole and gently rinsed out the reservoir until all the old fluid had been washed out. You can tell this when there is no more foaming and no green color anymore. Let the water drain out and then take the new coolant and put a little into the filler at a time until the new coolant displaces the water left in there and green coolant is running out the lower hose nipple. Now you can reconnect the hose.

Step 6: Filling and bleeding the new coolant:



Here is the coolant you should be using. It comes in 1 gallon (3.85 liter) jugs which is more than enough to do the ACE.



I use one of these type of funnels that can attach directly to a jug and has a nice flexible hose on the end and a shut off built in.

FILLING & BLEEDING:

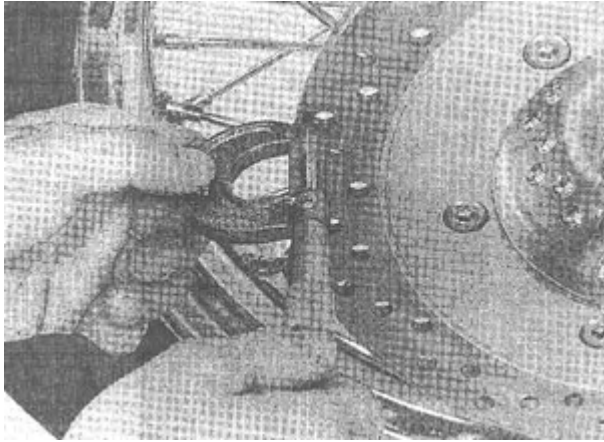
To fill the coolant, first fill the reservoir up to the upper level line. Then fill the radiator right up to the neck. Let it sit for a few minutes and you'll hear the fluid gurgling as it settles into the passages in the engine. Top up the rad again and wait a few more minutes. Now cap the radiator and start the engine and run it for 1 or 2 mins **ONLY**, snapping the throttle a couple of times. This will bleed the coolant and remove the air from inside the lines and passages. Shut the bike off and remove the radiator cap and top up the fluid again and recap. Also check the reservoir one more time and adjust the level if it's down a bit then cap it.

Step 7: Close up:

Re-secure the neck cover and put the gas tank back in position and bolt on. Install the seats. Finally, give the bike and work area a good hose down to remove any spilled coolant.

Ride the bike and recheck the level after a day or two. Remember, always check the level and top up the fluid using the reservoir **ONLY!** The radiator should only be opened when doing the complete replacement as described above. For day to day use, just adding fluid to the reservoir is sufficient.

Task #29 - Front Brake Disc Inspection & Limits

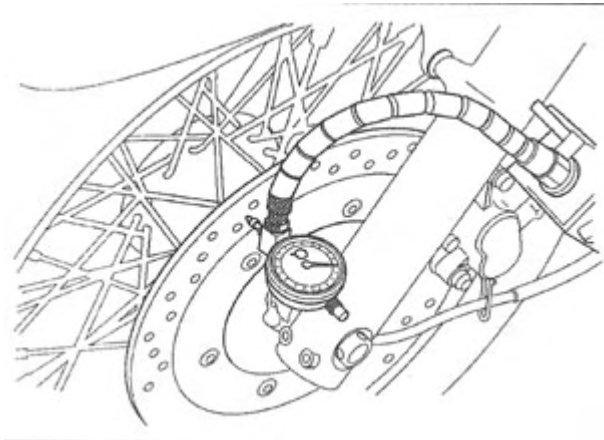


Visually inspect the disc for damage and cracks.

Measure the thickness of the disc at several points.

SERVICE LIMIT: 5mm (0.2 in)

Replace the brake disc if the smallest measurement is less than 5 mm.



Check the brake disc for warpage using a dial indicator while rotating the front wheel.

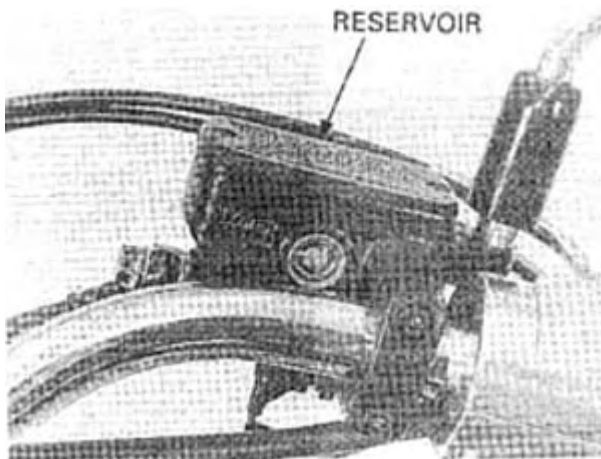
SERVICE LIMIT: 0.30mm (0.012in)

If you get more than 0.30mm deflection, then first check the front wheel bearings for excessive play. If the bearings appear fine, then replace the brake disc.

Task #30 - Front Brake Bleeding

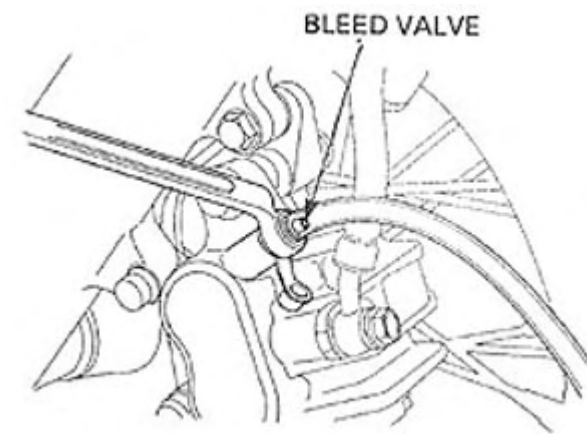
Warning!!!

- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling fluid on painted, plastic or rubber parts. cover these areas with a rag whenever the system is serviced
- Use only DOT 4 brake fluid from a sealed container
- Do not mix different types of fluid as they are not compatible



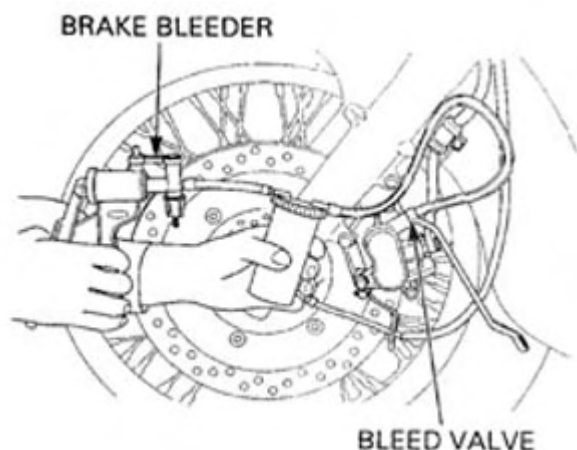
Brake Fluid Draining:

Turn the handlebar to the left until the reservoir is level. Remove the screws, reservoir cover, set plate and diaphragm.



Connect a tube to the Bleed Valve and put the other end in a clean container.

Loosen the Bleed Valve and pump the brake lever until no more fluid flows out of the Bleed Valve.



Brake Fluid Filling/Bleeding

There are two different basic methods of filling and bleeding the front brakes. You can do it either "top down" or "bottom up". The tool pictured to the left is a special Honda brake bleeding tool that sucks the fluid from the reservoir down. Some other special brake bleeders 'Push' the fluid up from a reservoir in the tool itself.

Most of you will not have access to these specialized tools, so the simplest way is to do a manual fill & bleed. First, close the bleed valve and put a CLEAN tube on the bleed valve and then set the open end of the tube into a CLEAN container and fill that container up with enough new brake fluid to cover the end of the tube. Always keep the end of the tube in the clean brake fluid so that you do not inadvertently suck air while bleeding.

Next, fill the reservoir up with new, clean brake fluid. Pump the brake lever until pressure is felt. Then, squeeze the brake lever with steady pressure and WHILE DOING this, crack open the bleed valve 1/2 turn. DO NOT release the brake lever while the fluid is flowing. Let the fluid flow for a short time and then close the bleed valve quickly WHILE STILL PUTTING PRESSURE ON THE BRAKE LEVER. Once the valve is closed, slowly ease up on the brake lever and let everything rest for a little while. Make sure you do not drain the reservoir while doing the bleeding.... so top it up between each cycle.

Repeat this procedure until you no longer see any air bubbles coming out of the tube, then test the feel of the brakes. If the lever feels spongy, keep bleeding a couple of more tries.

Once you are satisfied with the feel of the brakes, top up the reservoir to the full mark and then close it up, making sure that the set plate is between the diaphragm and the cover.

Task #31 - Pilot Screw Adjustment

The carburetors on the ACE have what is called Pilot Screws that set the air/fuel mixture for when the engine is at idle. These screws are set at the factory and then covered with brass plugs and normally, no adjustment is necessary on them. However, experience has taught us that a very large number of ACE's were delivered to customers with these screws incorrectly set and it is highly recommended that every ACE owner does this procedure to make sure these screws are set correctly. Also, any changes to the exhaust system may require you to re-adjust the Pilot Screws, such as the Stage 1 mod where the stock baffles are punched or Stage III where an aftermarket exhaust is used in conjunction with larger main jetting.

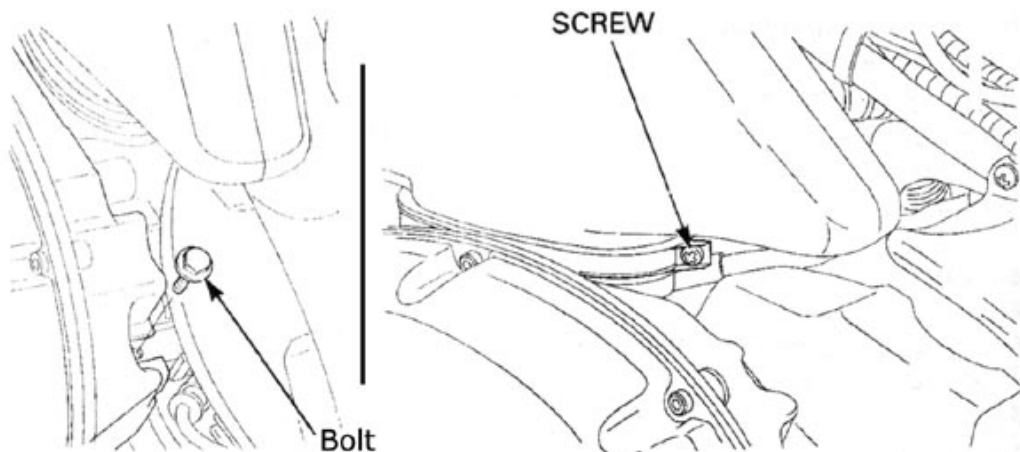
The reason why these screws need to be adjusted right is to prevent a condition known as "lean misfire". If the screws are set too lean (as is often the case for new bikes) the mixture at idle may become too lean and sometimes it won't completely ignite in the engine. This unburned fuel then collects in the exhaust and ignites there, causing a backfire. The rider would notice this as rapid "pops" or "bangs" on deceleration, sometimes called the "Rice Crispy Snap Crackle and Pop". This condition is NOT normal and NOT healthy for the engine. It creates serious back pressure in the exhaust and can cause damage not only to the exhaust but also the engine and valves.

Now the service manual has a detailed procedure for setting the Pilot screws that involves making changes to obtain a specific RPM drop at idle but this requires you to have a shop with an accurate tach and also, you can't properly adjust the forward cylinder with the air filter housing installed and running the bike without the air filter is not recommended. So I've created this "simplified" procedure that is more than adequate to meet the needs of the average ACE owner.

Step 1:

The first step is to remove the air filter housing. We are taking the whole housing off, which is easier than removing just the filter. Remove the two allen key bolts that secure the back of the housing and then loosen the screw on the clamp that secures the housing to the air box. Then just pull the housing off.

Caution: After each adjustment, reinstall the air filter before running the bike to test it. The bike will not run properly under power without the air filter attached.



Step 2:

Remove the plug covering the pilot screw on the left carb (rear cylinder - see Pic). A good way to do this is to drill a small hole in the plug (be careful that you only drill just enough to get through the plug and not into the screw behind it!). Then take a PK screw (or any sheet metal screw - the kind with a point that is self tapping) and screw it into the small hole you drilled until it grabs. Then just pull the plug out using a pair of pliers on the PK screw head. NOTE: If you bought the bike used, it's possible that the plugs have already been removed.



You will now see the small pilot screw under where the plug was. Take a small flat screwdriver and gently turn the pilot screw IN (clockwise) until it seats, counting the number of turns it takes. Use gentle force as this screw is very thin and has O-ring seals on it.

Now turn the screw OUT (counter-clockwise) the number of turns in the table below.

- Stock exhaust, no mods... **2 and ¼ turns** (What was supposed to be the factory setting)
- Stage I - Punched exhaust baffles, no new jets though ... **2 and ½ turns**
- Stage I - Punched exhaust or aftermarket pipes with baffles and Stage 1 Jets ... **3 Turns**
- Stage III - Aftermarket exhaust and Stage III jets ... **3 and ¼ turns**

Step 3:

Repeat the above procedure with the right carb (forward cylinder). Use the same settings as above. Some people choose to make the rear carb slightly more rich as it runs hotter, so if you want, make the back ¼ turn richer than the front (the back is the left carb, also known as the BASE carb)

Now reinstall the air filter housing and take the bike for a test run. Make sure to do lots of fast decelerations while downshifting to see if the exhaust pops on you. An occasional pop is not uncommon, especially when the bike is cold or the weather is cool and damp. If, however, you are still getting lots of the misfires, then go back and readjust each screw ¼ further out.



Caution... do not go more than 4 full turns out as the screw may come loose at about 4 and ½ turns. If you are unsure of where you left off, then reseal the screws and count out again to get the right setting.

For bikes with extreme set ups, such as open pipes and modified air intake systems, you MAY have to go one size up in the pilot jets to get rid of the lean idle condition. This is rare though and normally, you can adjust the Pilot Screws to get rid of those pops. If you have a normal Stage I or III and you can't seem to get rid of them, then look for another cause. Exhaust leaks are a common one. Also, over time, the jets in a bike's carbs can get clogged up. When I last did my Stage III jetting, I found my pilot jets almost half the diameter they were supposed to be so I cleaned them with some fine wire and the bike idles much better afterwards.

Final Step:

Once you have the screws set to where you want them, I would suggest sealing the screw holes with a dab of silicone rubber. This will keep them weatherproof and act as a thread locker. If you need to get back to them for another adjustment, just pry the silicone off with a small screwdriver.