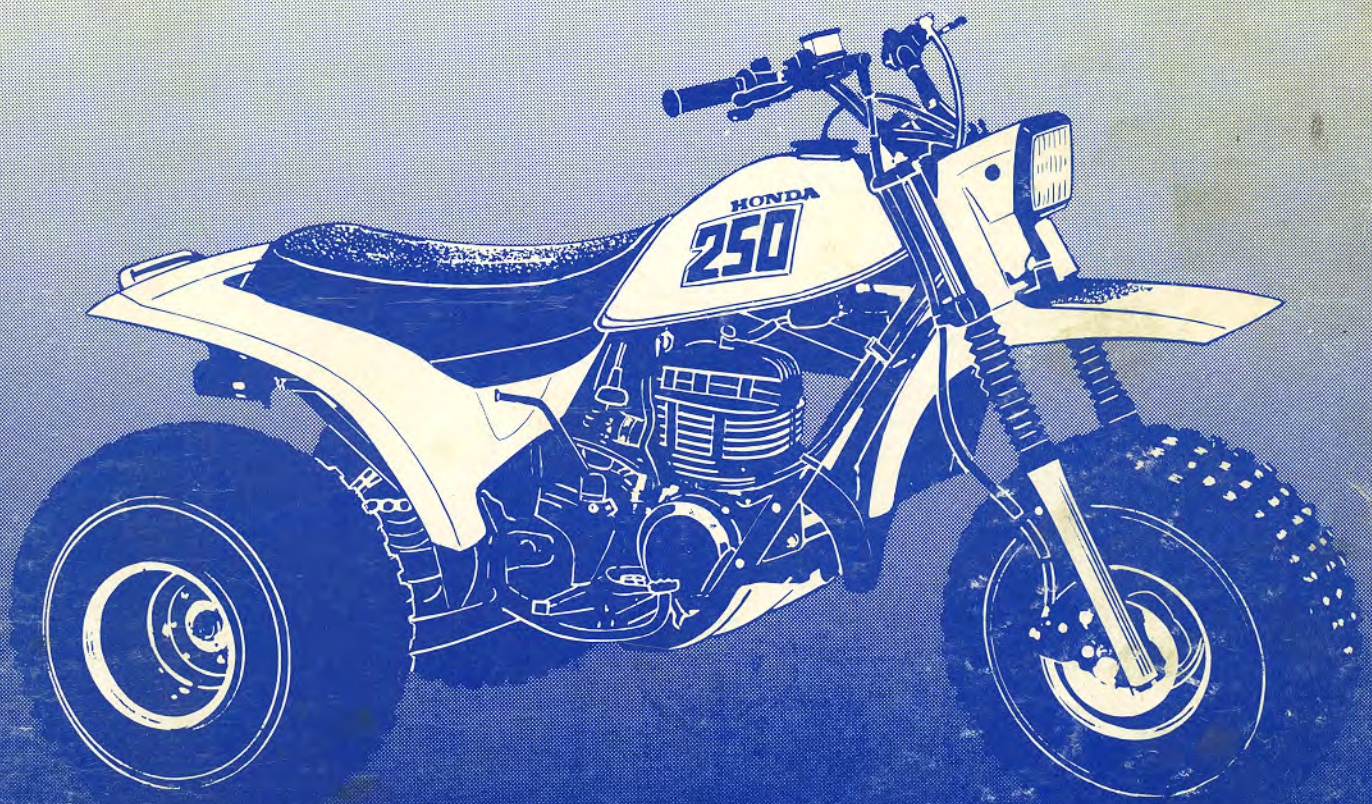


Official

HONDA

SHOP MANUAL

ATC250R



'81-'84

IMPORTANT SAFETY NOTICE

 **WARNING** : *Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.*

CAUTION : *Indicates a possibility of personal injury or equipment damage if instructions are not followed.*

NOTE : *Gives helpful information.*

Detailed descriptions of standard workshop procedures, safety principles and service operations are not included. It is important to note that this manual contains *some* warnings and cautions against some specific service methods which could cause **PERSONAL INJURY** to service personnel or could damage a vehicle or render it unsafe. Please understand that those warnings could not cover all conceivable ways in which service, whether or not recommended by Honda might be done or of the possibly hazardous consequences of each conceivable way, nor could Honda investigate all such ways. Anyone using service procedures or tools, whether or not recommended by Honda, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized by the service methods or tools selected.

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HONDA ATC 250R

HOW TO USE THIS MANUAL

Sections 1 and 2 apply to the whole ATC while sections 3 through 15 describe parts of the ATC, grouped according to location.

Find the section you want on this page, then turn to the table of contents on page 1 of that section.

Most sections start with an assembly or system illustration, general instructions, specifications, torque values, general instructions, tools and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know the source of a problem, see section 16, TROUBLESHOOTING.

Refer to section 17 for 1982 service information and section 18 for 1983 service information.

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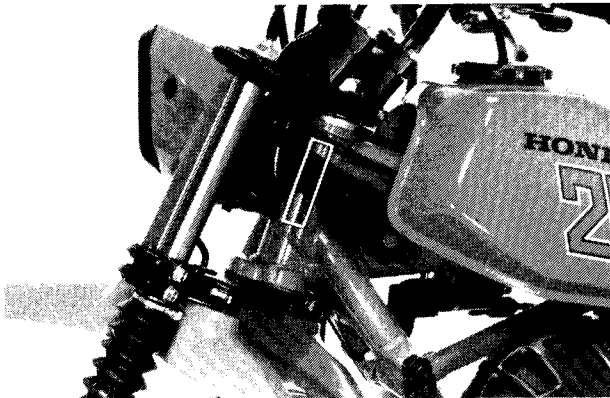
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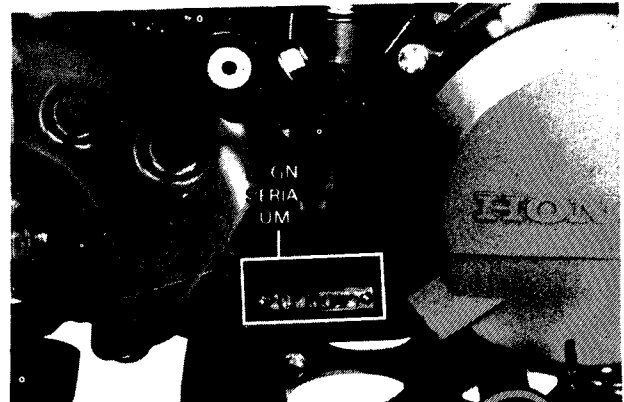
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MODEL IDENTIFICATION



The frame serial number is stamped on the steering head left side.



The engine serial number is stamped on the crankcase lower right side.



The carburetor identification number is on the carburetor body right side.



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GENERAL SAFETY

WARNING

If the engine must be running to do some work, make sure the area is well-ventilated. Never run the engine in a closed area. The exhaust contains poisonous carbon monoxide gas.

WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your work area.

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that don't meet HONDA's design specifications may damage the vehicle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this vehicle. Metric bolts, nuts, and screws are not interchangeable with English (SAE) fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger-diameter or inner bolt first. Then tighten to the specified torque diagonally in 2-3 steps, unless a particular sequence is specified.
6. Clean parts in non-flammable or high flash point solvent upon disassembly.
7. Lubricate any sliding surfaces before reassembly.
8. After reassembly, check all parts for proper installation and operation.



SPECIFICATIONS

Dimensions	Overall length	1,795 mm (70.7 in)
	Overall width	1,075 mm (42.3 in)
	Overall height	1,040 mm (40.9 in)
	Wheelbase	1,197 mm (47.1 in)
	Seat height	710 mm (28.0 in)
	Foot peg height	295 mm (11.6 in)
	Ground clearance	115 mm (4.5 in)
	Dry weight	137 kg (302 lb)
	Weight distribution	Front Rear
Frame	Type	Double cradle
	Front suspension and travel	Telescopic fork, 170 mm (6.7 in)
	Rear suspension and travel	Swingarm, Pro-link, 110 mm (4.3 in)
	Front tire size type	22 x 11.0-8 ATV tire
	Front tire pressure	15 kPa (0.15 kg/cm ² , 2.2 psi)
	Rear tire size type	22 x 11.0-8 ATV tire
	Rear tire pressure	15 kPa (0.15 kg/cm ² , 2.2 psi)
	Front brake	Single disc
	Rear brake	Internal expanding shoe
	Fuel capacity	8.4 lit (2.2 US gal, 1.9 Imp gal)
	Fuel reserve capacity	1.9 lit (0.50 US gal, 0.42 Imp gal)
	Caster angle	69°
Trail length	45 mm (1.8 in)	
Front fork oil	174 cc (5.88 US ozs, 4.90 Imp ozs)	
Engine	Type	Air cooled 2 stroke engine
	Cylinder arrangement	Single cylinder 3° inclined from vertical
	Bore x stroke	70 x 64.4 mm (2.756 x 2.353 in)
	Displacement	248 cm ³ (15.07 cu. in)
	Compression ratio	6.6 : 1
	Transmission oil capacity	1.1 lit (1.2 US qt. 1.0 Imp qt)
	Lubrication system	Gasoline/oil mixture
	Fuel required	Gasoline 20 : oil 1 (pre-mixed) (R.O.N. 92-100)
Air filtration	Oiled polyurethane form	



Carburetor	Type Venturi dia Setting mark Float level Air screw opening Idle speed Jet needle Throttle lever free play	Piston valve 27 mm (1.06 in) PE23A 18.5 mm (7.3 in) 1-3/8 1,300 ± 150 rpm 3rd STAGE 5 – 10 mm (3/16–3/8 in)
Drive train	Clutch Transmission Primary reduction ratio Gear ratio I II III IV V Final reduction ratio Gear shift pattern	Wet multi-plate type 5-Speed, constant mesh 3.250 1.900 1.591 1.240 1.000 0.839 3.385 (44 T/13 T) Left foot operated return system 1-N-2-3-4-5
Electrical	Ignition system Ignition timing "F" mark Full retard Starting system Alternator Spark plug USA model Canada model Spark plug gap Headlight Taillight	CDI 17° BTDC/2,000 rpm 14° BTDC/9,000 rpm Primary kickstarter 12V 0.073 kW/7,600 rpm B8ES (NGK) N-3 (CHAMPION) BR8ES (NGK) QN-3 (CHAMPION) 0.7–0.8 mm (0.028–0.031 in) 12V 60W/60W 12V 3.4W



TORQUE VALUES

ENGINE

ITEM	THREAD DIA. mm	TORQUE VALUES		
		N-m	kg-m	ft-lb
Cylinder head	8	24 – 29	2.4 – 2.9	17 – 21
Cylinder	10	38 – 48	3.8 – 4.8	27 – 35
AC generator rotor	12	65 – 75	6.5 – 7.5	47 – 54
Clutch center lock nut	20	40 – 50	4.0 – 5.0	29 – 36
Clutch spring bolt	6	8 – 12	0.8 – 1.2	6 – 9
Drive/balancer gear	10	40 – 50	4.0 – 5.0	29 – 36
Drive sprocket	6	8 – 12	0.8 – 1.2	6 – 9
Crankcase/crankcase cover	6	8 – 12	0.8 – 1.2	6 – 9
Carburetor intake pipe	6	8 – 12	0.8 – 1.2	6 – 9

FRAME

ITEM	THREAD DIA. mm	TORQUE VALUES		
		N-m	kg-m	ft-lb
Handlebar upper holder	8	18 – 25	1.8 – 2.5	13 – 18
Steering stem nut	—	70 – 100	7.0 – 10.0	51 – 72
Pinch bolts	8	18 – 25	1.8 – 2.5	13 – 18
Front/rear rim nut	8	18 – 25	1.8 – 2.5	13 – 18
Front/rear wheel nut	8	18 – 25	1.8 – 2.5	13 – 18
Front axle nut	14	70 – 110	7.0 – 11.0	51 – 80
Brake disc	8	18 – 25	1.8 – 2.5	13 – 18
Brake caliper pin bolt	8	15 – 20	1.5 – 2.0	11 – 14
Brake caliper flange bolt	8	18 – 25	1.8 – 2.5	13 – 18
Brake caliper hex bolt	8	20 – 25	2.0 – 2.5	14 – 18
Brake hose	—	30 – 40	3.0 – 4.0	22 – 29
Engine hanger bolt	10	38 – 48	3.8 – 4.8	27 – 35
Swingarm pivot bolt	14	70 – 110	7.0 – 11.0	51 – 80
Rear axle nut (inner)	32	35 – 45	3.5 – 4.5	25 – 33
(outer)	32	120 – 140	12.0 – 14.0	87 – 101
Rear hub nut	14	80 – 100	8.0 – 10.0	58 – 72
Final driven sprocket	8	18 – 25	1.8 – 2.5	13 – 18
Rear brake arm bolt	6	8 – 12	0.8 – 1.2	6 – 9
Rear shock absorber (upper and lower)	8	38 – 48	3.8 – 4.8	27 – 35

Torque specifications listed above are for the most important tightening points. If a torque specification is not listed, follow the standards given below.

STANDARD TORQUE VALUES

Item	Torque Value N-m (kg-m) (ft-lb)	Item	Torque Value N-m (kg-m) (ft-lb)
5 mm bolt and nut	4.5–6.0 (0.45–0.6) (3–4)	5 mm screw	3.5–5.0 (0.35–0.5) (3–4)
6 mm bolt and nut	8–12 (0.8–1.2) (6–9)	6 mm screw	7–11 (0.7–1.1) (5–8)
8 mm bolt and nut	18–25 (1.8–2.5) (13–18)	6 mm flange bolt and nut	10–14 (1.0–1.4) (7–10)
10 mm bolt and nut	30–40 (3.0–4.0) (22–29)	8 mm flange bolt and nut	20–30 (2.0–3.0) (14–22)
12 mm bolt and nut	50–60 (5.0–6.0) (36–43)	10 mm flange bolt and but	30–40 (3.0–4.0) (22–29)



TOOLS

SPECIAL

TOOL NAME	NUMBER	ALTERNATE	NUMBER	REF. PAGE
Crankcase disassembler	07935-9610000	Right/left crankcase separation		9 - 4
*Tire disassembling tool	07722-0010000	Bead braker	M987X-350-XXXXX	10 - 12
*Lock nut socket 17 x 27mm	07907-4150000			7 - 4
Snap ring pliers (internal)	07914-3230001	Master cylinder snap ring		11 - 9
*Lock nut wrench 41mm	07916-9180000	Rear axle nut		12 - 9
*Hollow set wrench 6mm	07917-3230000	Front fork (lower)		10 - 19
*Primary gear holder	07924-KA50000	Crankshaft holder		8 - 6
*Steering stem driver	07946-4300100	Steering stem driver Attachment (Available in U.S.A.)	07946-3710600	10 - 30
Steering stem driver	07946-3710600		GN HT-54	10 - 30
*Needle bearing remover installer (swingarm)	07946-KA50000		M967-038-XXXXX	13 - 12
Ball race driver	07953-3330000			10 - 28

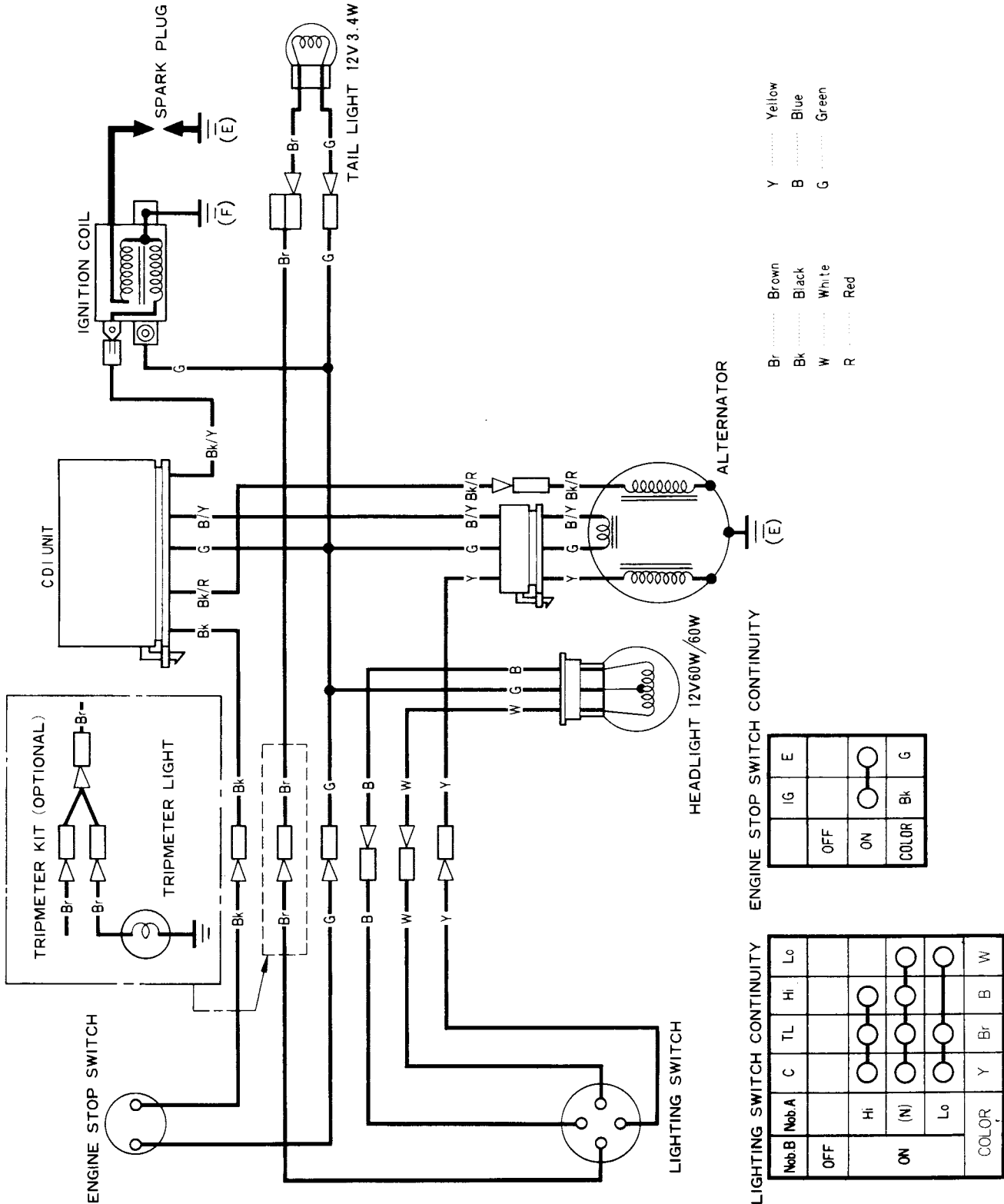
COMMON

TOOL NAME	NUMBER	ALTERNATE	NUMBER	REF. PAGE
Float level gauge	07401-0010000			3 - 9
*Pin spanner	07702-0010000	Adjustable pin spanner (Available in U.S.A.)	M9361-412-099788	10 - 27
*Lock nut socket 30 x 32mm	07716-0020400			10 - 27
*Extension	07716-0020500			10 - 27
*Universal holder	07725-0030000			6 - 2
*Flywheel puller	07733-0010000	Flywheel puller	07933-0010000	6 - 2
Attachment 32 x 35mm	07746-0010100			9 - 2
Pilot 25 mm	07746-0040600			
Attachment 52 x 55mm	07746-0010400			
Pilot 22mm	07746-0041000			
*Attachment 37 x 40mm	07746-0010200	Attachment	07946-3640000	
Pilot 17mm	07746-0040400			
Pilot 15mm	07746-0040300			10 - 16
*Attachment 42 x 47mm	07746-0010300	Attachment	07946-3290000	10 - 16
Pilot 20mm	07746-0040500			13 - 13
Attachment 62 x 68mm	07746-0010500			12 - 6
Pilot 35mm	07746-0040800			13 - 13
Fork seal driver body	07747-0010100			10 - 23
*Fork seal attachment (C)	07747-0010400	Fork seal driver	07947-1180001	10 - 23
*Driver handle	07749-0010000	Driver handle	07749-6110000	10 - 16
Pin spanner	89201-KA4-8100			2 - 16
Pin spanner	89202-KA4-8100			2 - 16

* Equivalent tools are available in the U.S.A. for these tools identified by asterisk (*).



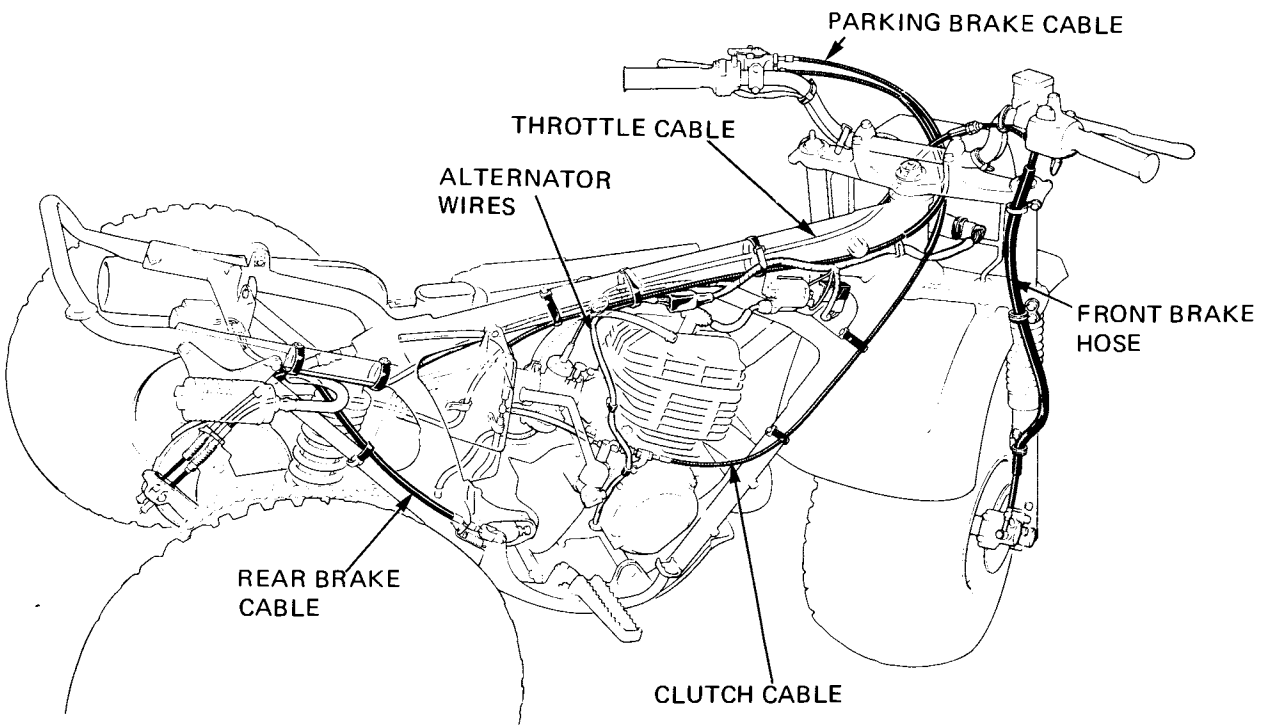
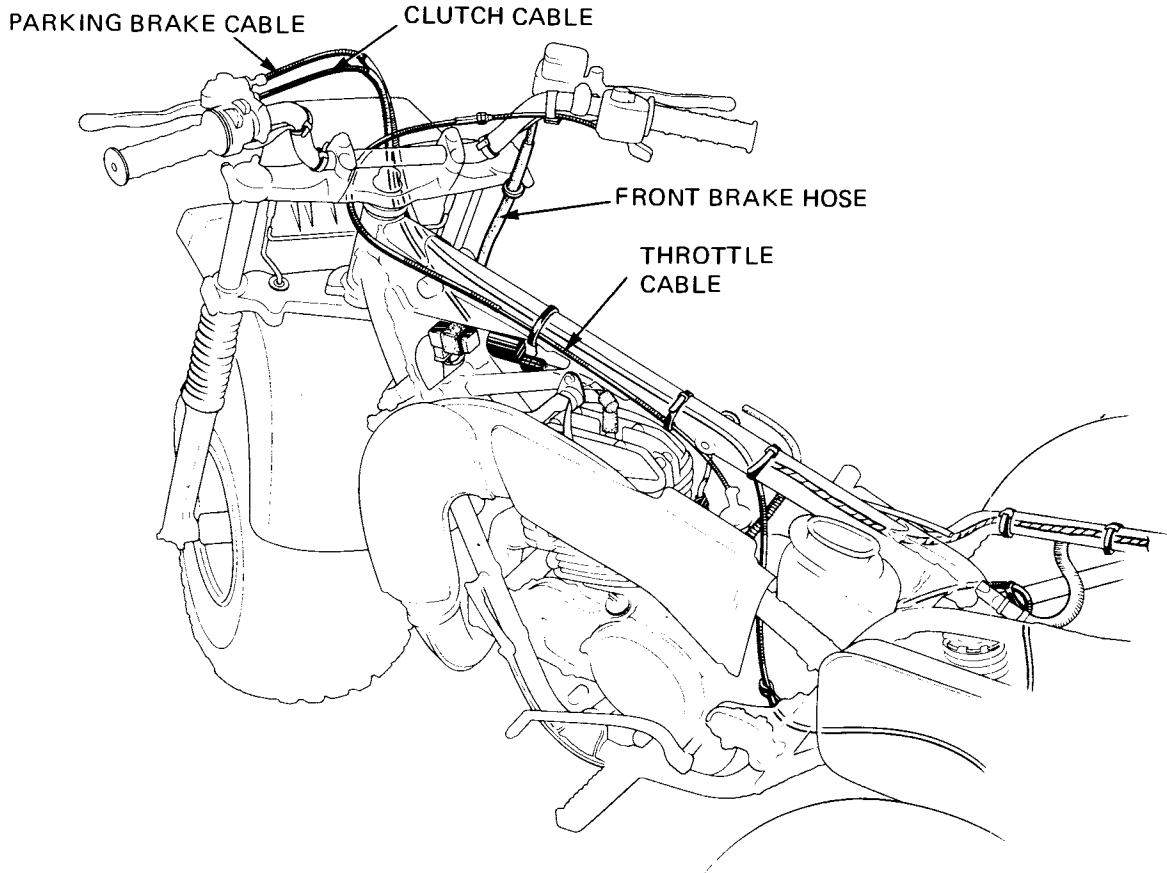
WIRING DIAGRAM

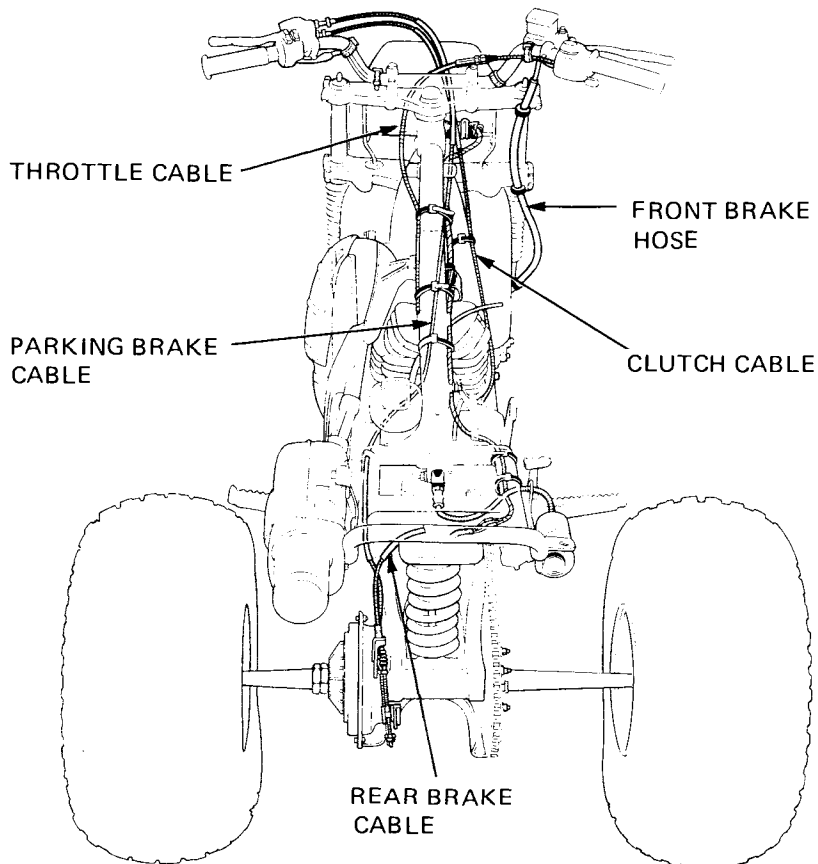
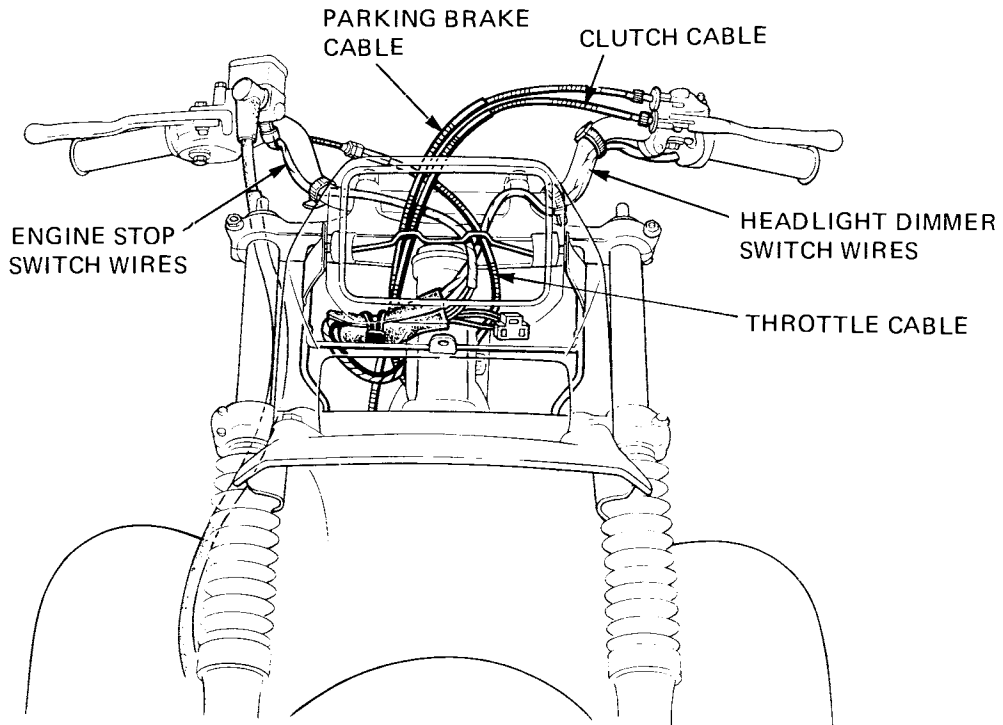


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CABLE & HARNESS ROUTING







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AIR CLEANER CLEANING	2 - 4	REAR BRAKE	2 - 13
SPARK PLUG	2 - 5	TIRES	2 - 14
CLUTCH ADJUSTMENT	2 - 6	STEERING HEAD BEARINGS	2 - 15
CYLINDER COMPRESSION	2 - 6	SUSPENSION	2 - 15
IGNITION TIMING	2 - 7	LIGHTING EQUIPMENT	2 - 16
THROTTLE OPERATION	2 - 7	LUBRICATION POINTS	2 - 17
FUEL LINE/FUEL VALVE	2 - 8		

SERVICE INFORMATION

SPECIFICATIONS

Transmission oil capacity

Oil capacity

1.1 lit (1.17 US qt, 0.97 Imp qt) at disassembly

0.9 lit (0.95 US qt, 0.79 Imp qt) at draining

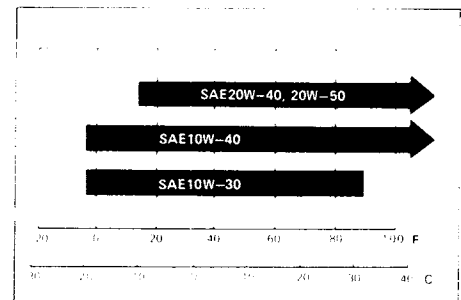
Transmission oil recommendation

Use HONDA 4-STROKE OIL or equivalent.

(SAE 10W-40, Type "SE")

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

OIL VISCOSITY



<ENGINE>

Spark plug gap		0.7 - 0.8mm (0.028 - 0.031 in)
Spark plug type:	USA model	B8ES (NGK), N-3 (CHAMPION)
	Canada model	BR8ES (NGK), QN-3 (CHAMPION)
Clutch lever free play		10 - 20mm
Cylinder compression		1,100 ± 100 kPa (11 ± 1 kg/cm ² , 156 ± 14 psi)
Ignition timing:	Initial	17 ± 3° BTDC at 2,000 rpm
	Full retard	14 ± 3° BTDC at 9,000 rpm
Throttle lever free play		5 - 10mm (3/16 - 3/8 in)
Idle speed		1,300 ± 150 rpm

<CHASSIS>

Drive chain free play		10 - 20mm (3/8 - 3/4 in)
Drive chain length (16 pins):	Standard	254.5mm (10.02 in)
	Service limit	255.7mm (10.07 in)
Front/rear rim size		8.27 mm x 8.0 mm (0.326 in x 0.315 in)

MAINTENANCE

Rim runout: Axial	4.0mm (0.15 in)
Radial	4.0mm (0.15 in)
Front/rear tire size	22 x 11 – 8.0 DUNLOP ATV tire
Front/rear tire pressure	15 kPa (0.15 kg/m ² , 2.2 psi)
Front/rear tire circumference	1,760mm (69.3 in)
Front suspension air pressure	10 – 50 kPa (0.1 – 0.5 kg/cm ² , 1.4 – 7.0 psi)
Rear suspension preload	10mm (0.47 in)

TORQUE VALUE

Oil drain plug 20 – 25 N-m (2.0 – 2.5 kg-m, 14 – 18 ft-lb)

MAINTENANCE SCHEDULE

The maintenance intervals shown in the following schedule are based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate		INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operation days)	Refer to page
TRANSMISSION	NOTE (1), (2)	R	R	
AIR CLEANER ELEMENT	NOTE (2)		C	2 – 4
SPARK PLUG			I	2 – 5
CARBURETOR		I	I	2 – 8
FUEL LINE		I: (EVERY YEAR)		2 – 8
FUEL STRAINER		C: (EVERY YEAR)		2 – 8
THROTTLE OPERATION		I	I	2 – 7
DRIVE CHAIN		I.L	I.L	2 – 9
BRAKE SHOES/PADS	NOTE (3)	I: (EVERY YEAR)		2 – 12
CHAIN SLIDER		I	I	2 – 11
FRONT FORK OIL/AIR			R: (EVERY YEAR)	2 – 15
FRONT BRAKE FLUID		I	IR: (EVERY YEAR)	2 – 12
SUSPENSION			I	2 – 16
SWINGARM BEARING		I.L	I.L	13 – 12
BRAKE CONTROL LINKAGE		I	I	2 – 12
CLUTCH		A	A	2 – 6
SPARK ARRESTER			C	14 – 2
ALL NUTS, BOLTS, FASTENERS		I	I	
LIGHTING EQUIPMENT		I	I	2 – 16
TIRES		I	I	2 – 14
STEERING HEAD BEARING		A: (EVERY YEAR)		2 – 15

NOTE: (1) Replace every 30 operating days or every 3 months, whichever comes first.
 (2) Service more frequently when riding in dusty areas
 (3) Service more frequently after riding in very wet or muddy conditions.

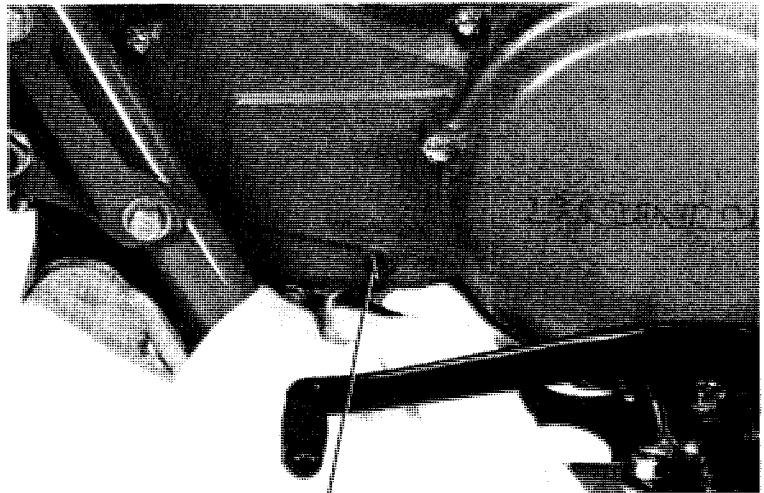


TRANSMISSION OIL

OIL LEVEL CHECK

Stop the engine and remove the oil level check bolt from the left crankcase cover.

A small amount of oil should flow out of the oil level check bolt hole.



OIL CHECK BOLT HOLE

OIL CHANGE

Remove the oil filler cap.

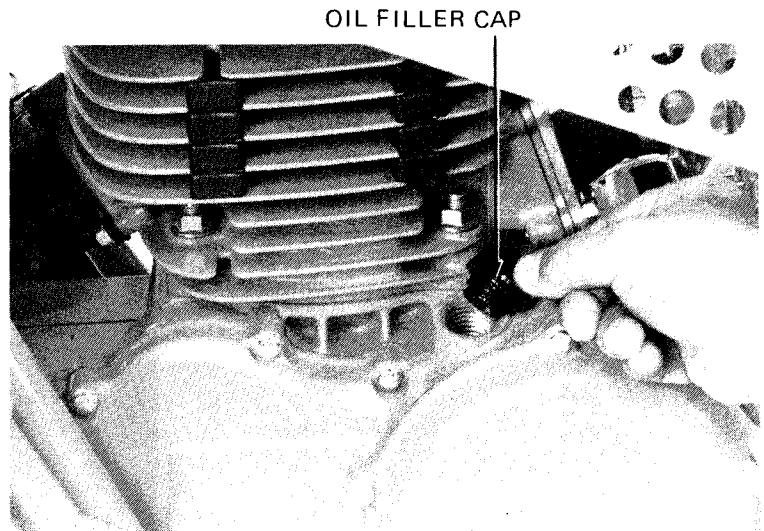
Remove the oil drain plug and drain the oil.

Reinstall the drain plug.

TORQUE: 20–25 N·m (2.0–2.5 kg·m,
14–18 ft·lb)

CAUTION:

Make sure that the sealing washer on the drain plug is in good condition.



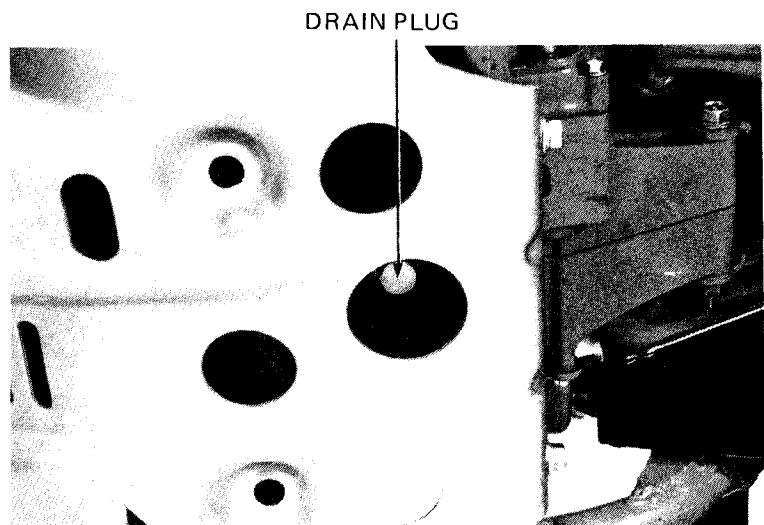
OIL FILLER CAP

Refill the transmission up to the proper level.

OIL CAPACITY: 1.1 ltr (0.9 ltr at change)

SPECIFIED OIL: 10W–40 or equivalent

Start the engine and check for leaks. Stop the engine and recheck the oil level.

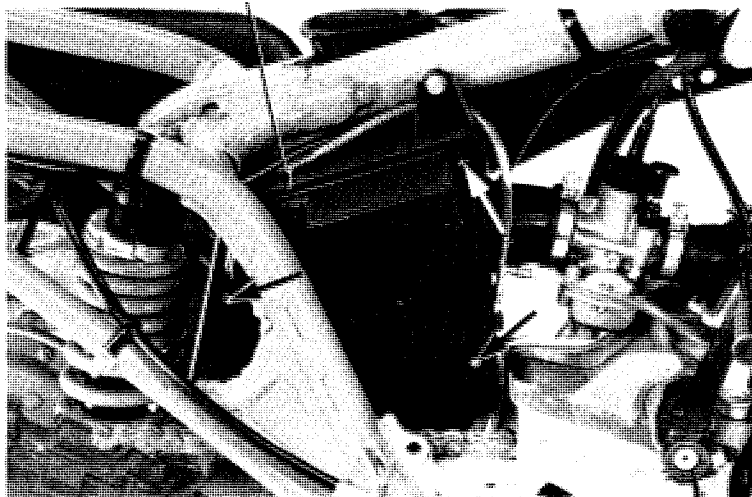


DRAIN PLUG

AIR CLEANER CLEANING

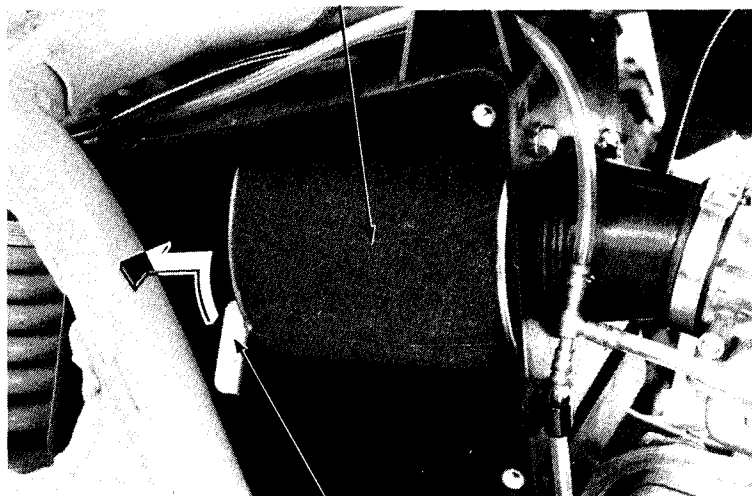
Remove the seat.
Remove the screws attaching the air cleaner case cover and the cover.

CLEANER CASE COVER



Remove the air cleaner holder and air cleaner element.

ELEMENT

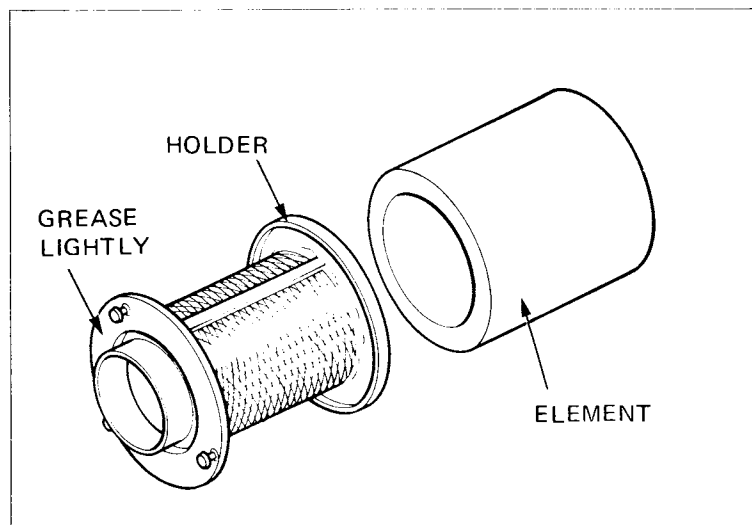


ELEMENT HOLDER

Remove the element from the holder.

NOTE

When reassembling the air cleaner, lightly grease the sealing edge of the holder, as shown.





Wash the element in non-flammable or high flash point solvent, squeeze out the solvent thoroughly, and allow to dry.

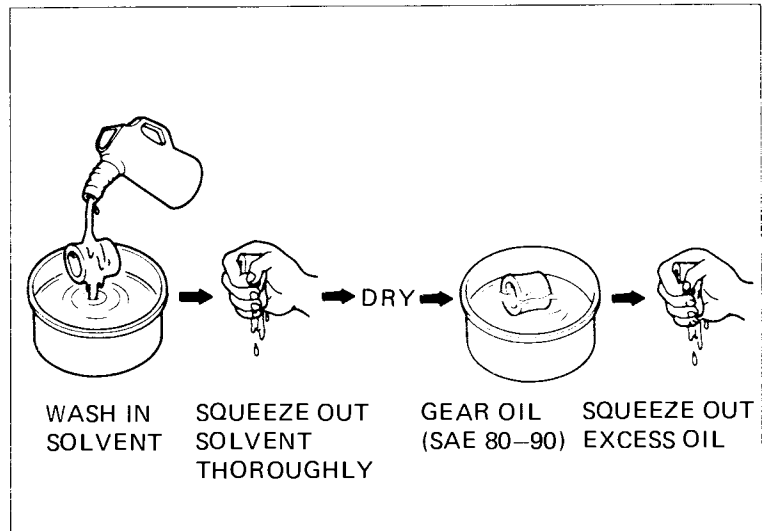
Soak the element in gear oil (SAE 80–90) and squeeze out excess.

Place the element onto the element holder.

Grease the sealing edge of the holder.

Install the element holder into the air cleaner case.

Install the air cleaner case cover.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

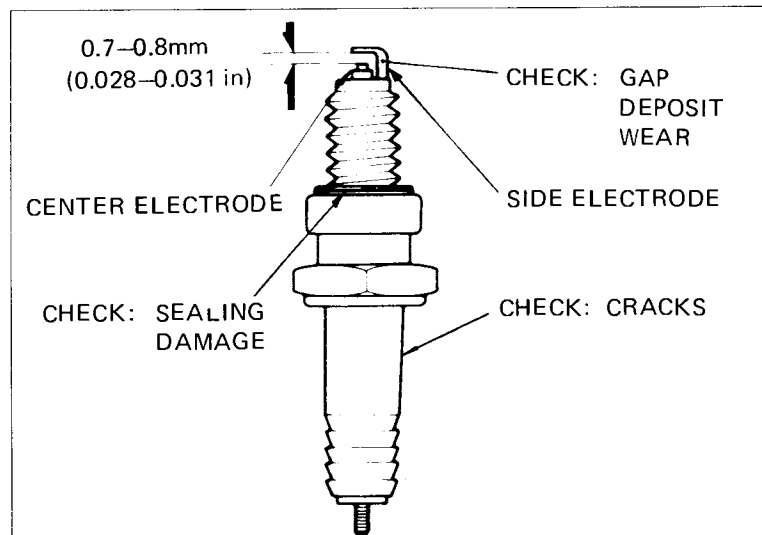
Visually inspect the spark plug electrodes for wear. The center electrode should have square edges and the side electrode should have a constant thickness. Discard the spark plug if there is apparent wear or if the insulator is cracked or chipped. Measure the gap with a wire-type feeler gauge and adjust by carefully bending the side electrode.

SPARK PLUG GAP:

0.7–0.8mm (0.028–0.031 in)

RECOMMENDED REPLACEMENT PLUG:

	NGK	CHAMPION
USA model	B8ES	N-3
Canada model	BR8ES	QN-3



Check the sealing washer and replace with a new one if damaged.

With the sealing washer attached, thread the spark plug in by hand to prevent cross-threading.

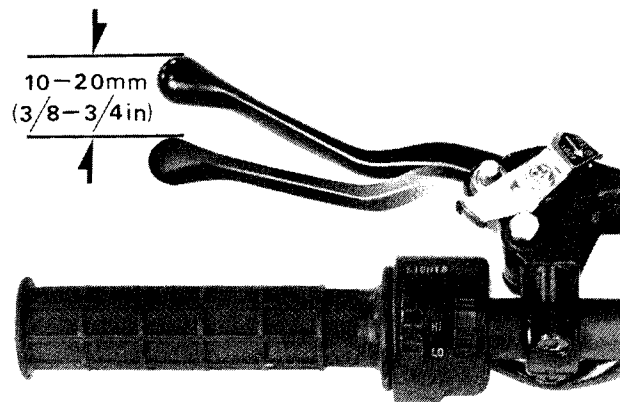
Tighten the spark plug to the specified torque.

TORQUE: 12–19 N·m (1.2–1.9 kg·m, 9–14 ft·lb)

Connect the spark plug cap.

CLUTCH ADJUSTMENT

Measure the clutch lever free play:
FREE PLAY: 10–20 mm (3/8–3/4 in)



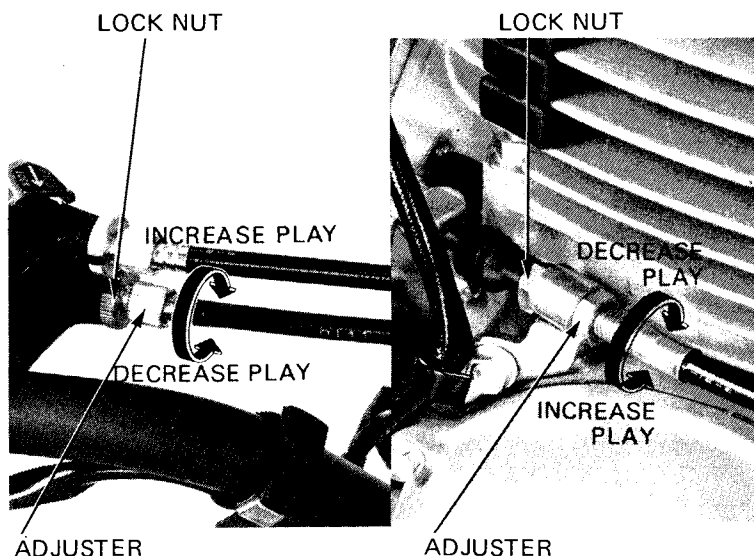
Perform minor adjustments with the upper adjuster.

Loosen the lock nut and turn the adjuster.
Tighten the lock nut.

Perform major adjustments with the lower adjuster.

Loosen the lock nut and turn the adjuster.
Tighten the lock nut.

Check the clutch operation.



CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Insert a compression gauge.
Pull the starter valve all the way up.
Fully open the throttle.
Operate the starter pedal several times.

NOTE

Watch for compression leaking at the gauge connection. A soap solution is useful for this.

COMPRESSION: 980–1,183 kPa (10.0–11.6 kg/cm², 142–165 psi)

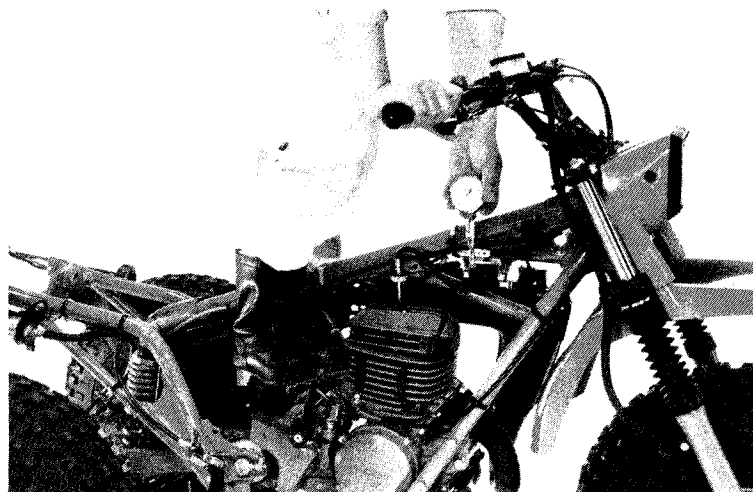
SERVICE LIMIT: 883 kPa (9.0 kg/cm², 128 psi)

Low compression can be caused by:

- Blown cylinder head gasket
- Worn piston rings
- Worn cylinder

High compression can be caused by:

- Carbon deposits in combustion chamber or on piston head.





IGNITION TIMING

NOTE

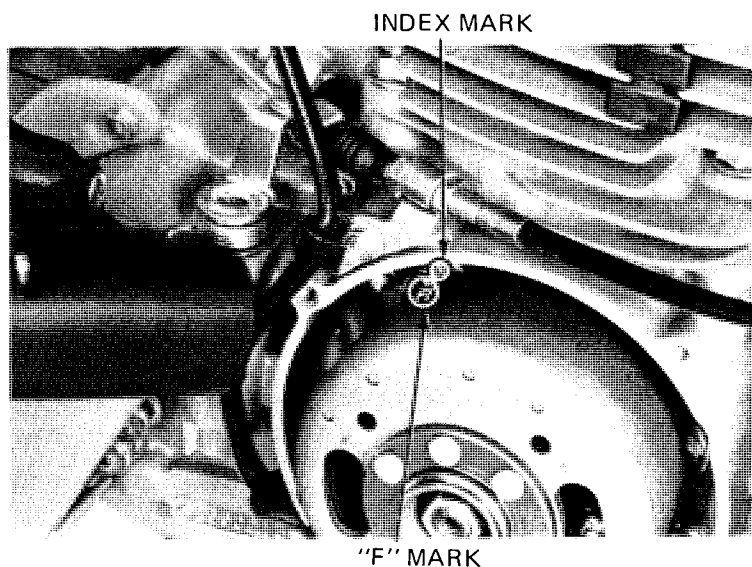
The C D I ignition timing is not adjustable. If the ignition timing is incorrect, check the C D I unit and A C generator and replace any faulty parts.

IGNITION TIMING CHECK

Remove the generator cover.

Timing is correct if the index mark aligns with the "F" mark at 2,000 rpm

IGNITION TIMING: $17 \pm 3^\circ$ BTDC/2,000 rpm



THROTTLE OPERATION

Check for smooth throttle lever full opening and automatic full closing in all steering positions.

Make sure there is no deterioration, damage or kinking in the throttle cable.

Replace any damaged parts.

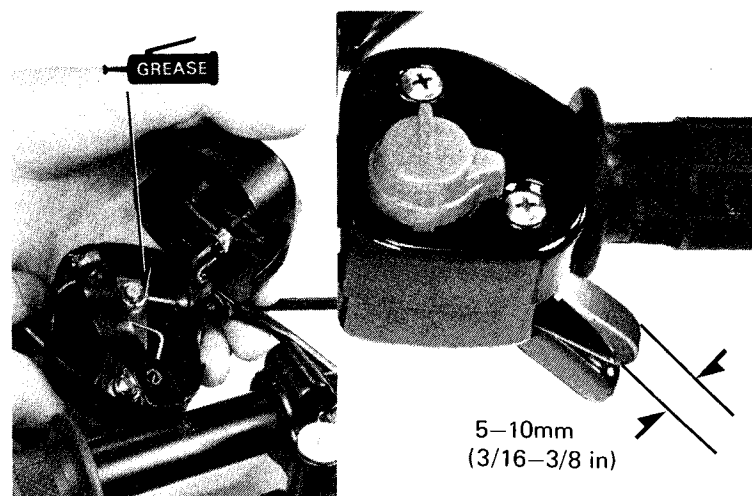
Disconnect the throttle cable at the upper end.

Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.

Install the throttle cable in the reverse order of removal.

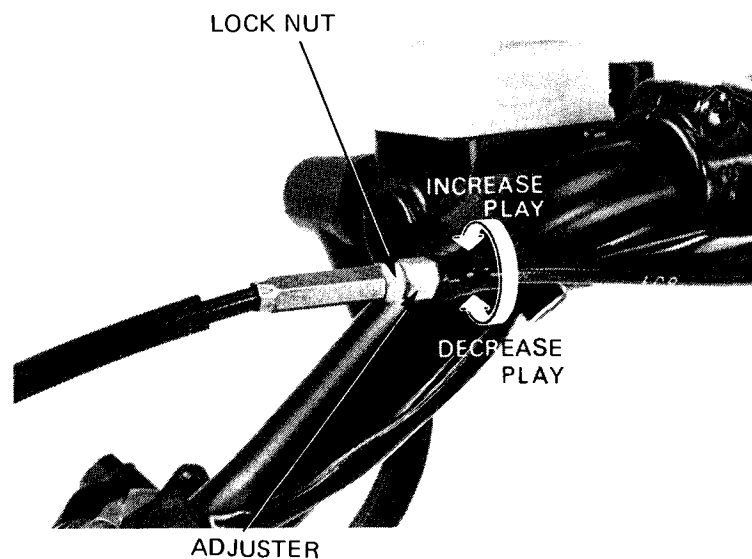
Make sure the throttle lever free play is 5–10mm (3/16–1/8 in) at the tip of the throttle lever.

Adjust as follows:



Adjust the throttle lever free play by loosening the lock nut and turning the adjuster.

When adjustment is satisfactory, tighten the lock nut.



IDLE SPEED ADJUSTMENT

NOTE

The engine must be warm for accurate idle adjustment.

Attach an engine tachometer.

Turn the throttle stop screw to obtain the specified idle speed (Page 3-1).

When the engine misses or runs erratically, proceed as follows:

Screw in the air screw until it lightly seats, then turn it out as specified (1-3/8 turns out).

Reset idle speed with the throttle stop screw.

Turn the air screw to find the highest idle speed. Reset idle speed with the throttle stop screw.

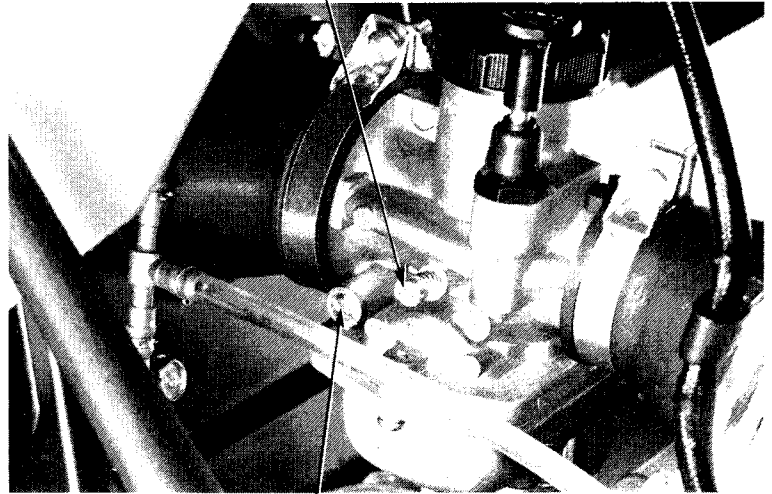
Make sure that the engine does not miss on run erratically. If necessary, repeat the above steps.

FUEL LINE AND FUEL VALVE

Inspect the fuel valve in all positions. Check that the fuel line is intact and has clamps at each connection.

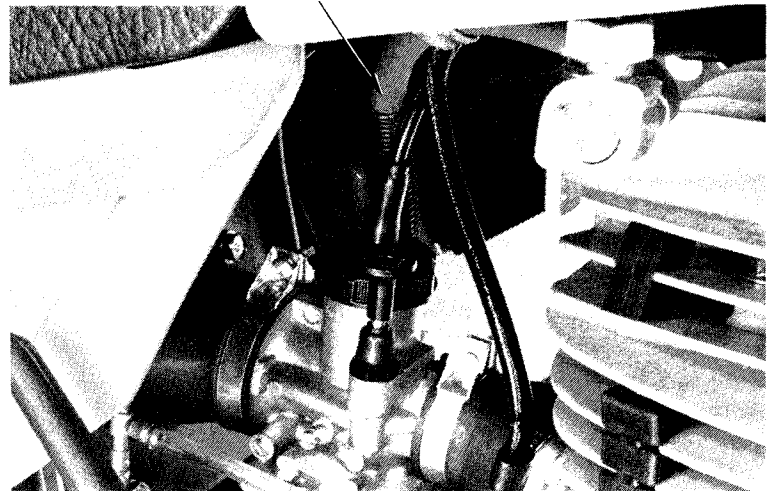
Replace any parts that are damaged, leaking or show signs of deterioration.

THROTTLE STOP SCREW



AIR SCREW

FUEL LINE



FUEL STRAINER

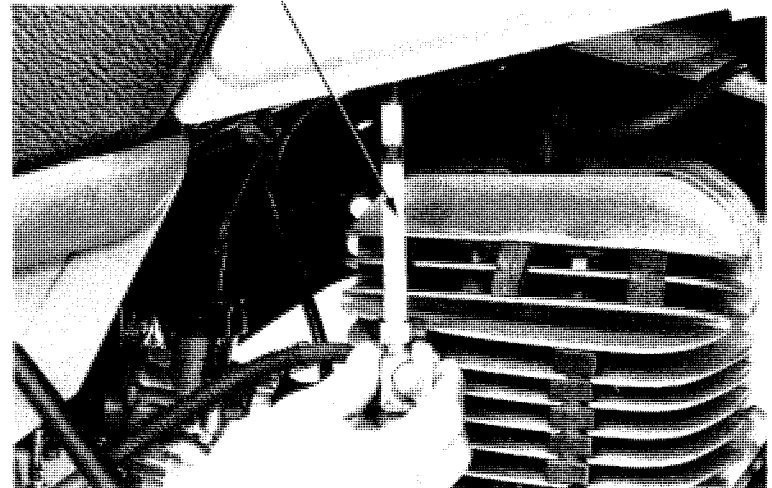
Disconnect the fuel tube.
Drain fuel from the fuel tank.

WARNING

Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.

Remove the fuel valve by loosening the valve nut. Remove and clean the strainer. Install the strainer and valve. Attach the fuel line. Fill the fuel tank and turn the fuel valve to "ON" and check for leaks.

FUEL STRAINER





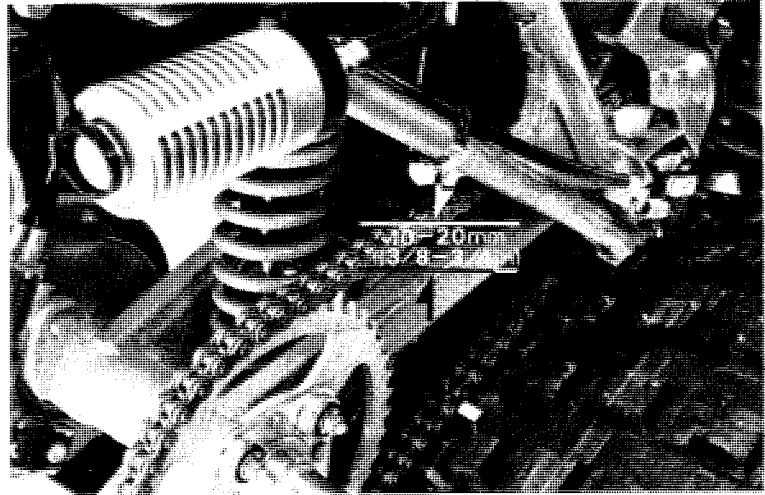
DRIVE CHAIN

INSPECTION

Shift the transmission into neutral.

Measure the drive chain slack midway between the sprockets.

CHAIN SLACK: 10–20mm (3/8–3/4 in)



LOCK NUT ADJUSTER SCALE

DRIVE CHAIN ADJUSTMENT

To adjust the drive chain, remove the cotter pin from the swing arm pivot bolt, and loosen the pivot bolt nut.

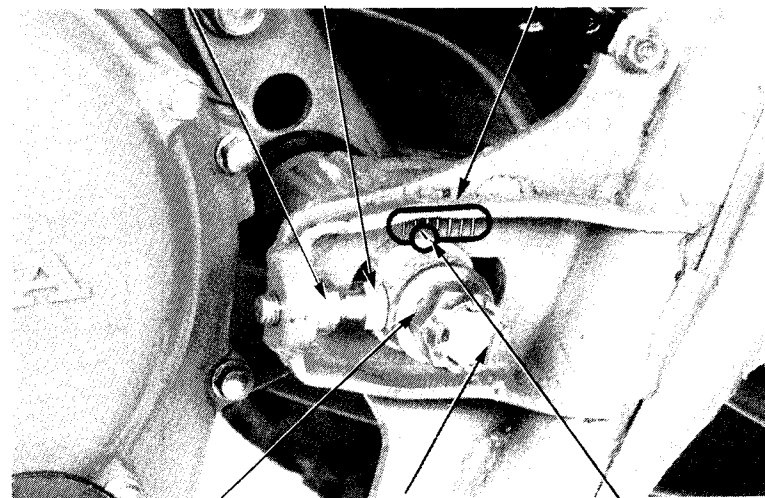
Loosen the drive chain adjuster lock nuts and turn the adjusting bolts.

CAUTION:

*Be sure that the index mark aligns with the same reference marks on the scale on both sides.
Tighten the pivot nut and install a new cotter pin.*

TORQUE: 70–110 N·m (7.0–11.0 kg-m,
51–80 ft-lb)

Retighten both lock nuts.



PIVOT BOLT NUT COTTER PIN INDEX MARK

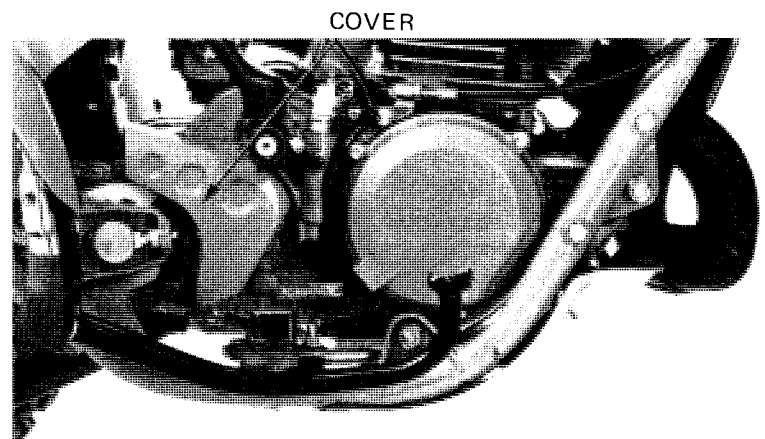
WARNING

Check the rear brake pedal play after the drive chain tension has been adjusted.

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

Remove the drive sprocket cover.

Remove the drive chain.



COVER



MAINTENANCE

Clean the drive chain with kerosene or a non-flammable or high flash point solvent that will not damage the O-rings, and wipe dry.

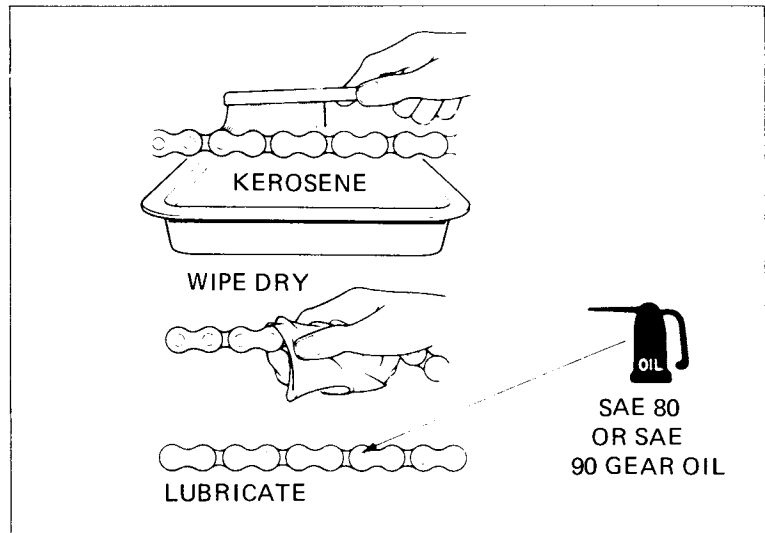
CAUTION:

Do not use a steam cleaner, high pressure washers or solvents as these will damage the O-rings.

Lubricate the drive chain with SAE 80 or 90 gear oil.

CAUTION:

Do not use commercial aerosol chain lubricants. They contain solvents which could damage the O-rings.



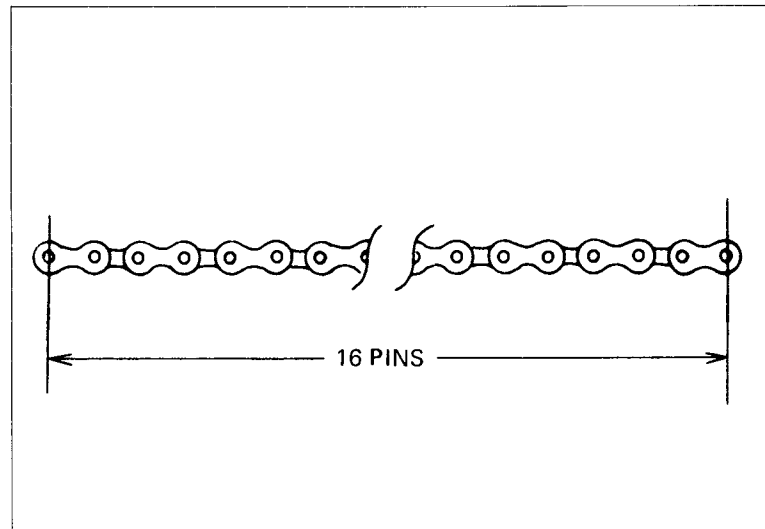
Inspect the drive chain and O-rings for possible wear or damage. Replace the chain if it is worn excessively or damaged.

Measure the drive chain length with the chain held so that all links are straight.

16 PINS LENGTH:

STANDARD: 254.5 mm (10.02 in)

SERVICE LIMIT: 255.7 mm (10.07 in)



Measure the drive chain master link pin diameter.

STANDARD: 5.18 mm (0.204 in)

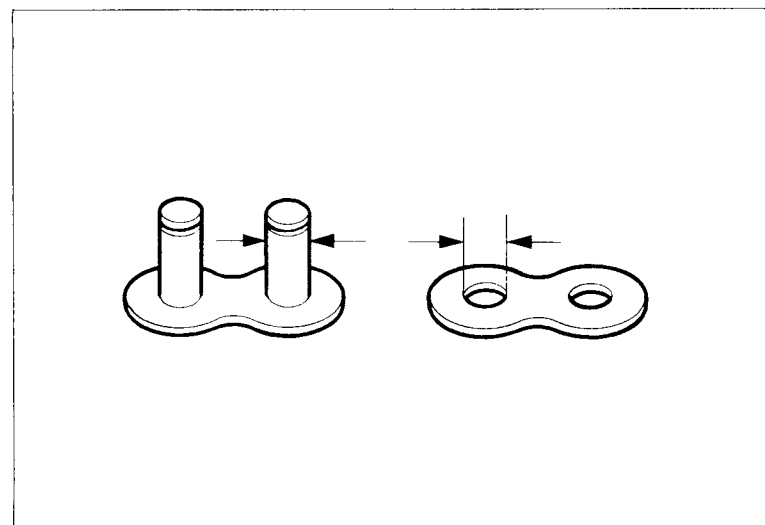
SERVICE LIMIT: 5.0 mm (0.197 in)

Measure the drive chain master link plate I.D.

STANDARD: 5.13 mm (0.202 in)

SERVICE LIMIT: 5.40 mm (0.213 in)

Replace the master link if beyond the service limits.

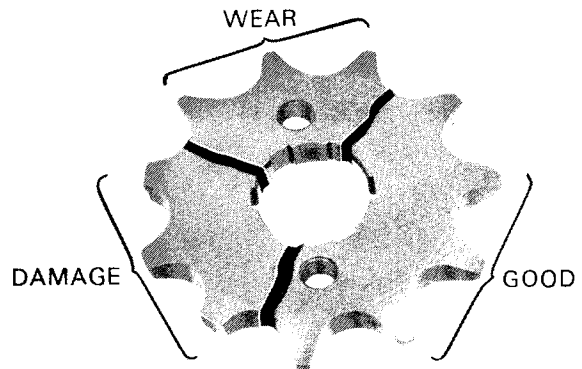




Inspect the sprocket teeth for excessive wear or damage. Replace if necessary.

NOTE

Never install a new drive chain on worn sprockets or a worn chain on new sprockets. Both chain and sprockets must be in good condition, or the new replacement chain or sprockets will wear rapidly.



INSTALLATION

Install the drive chain.
Install the master link with O-rings and chain retaining clip.

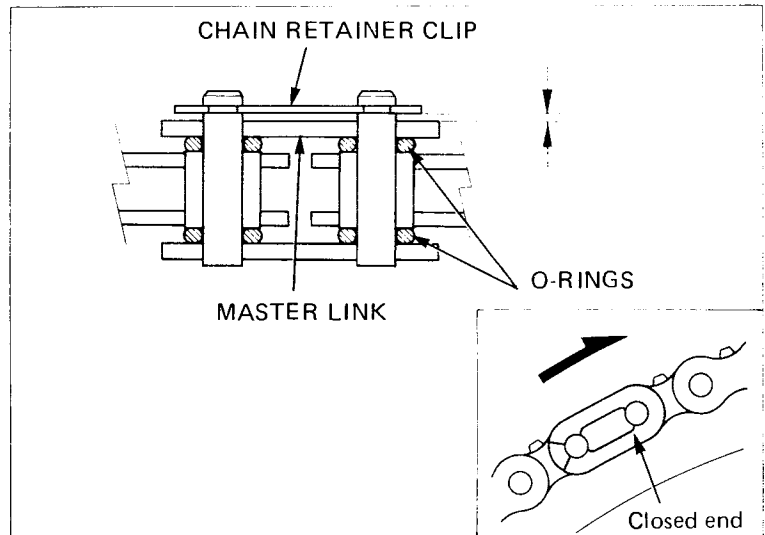
NOTE

The closed end of the clip should face the direction of drive chain travel.

Install the drive sprocket cover.
Adjust the drive chain.

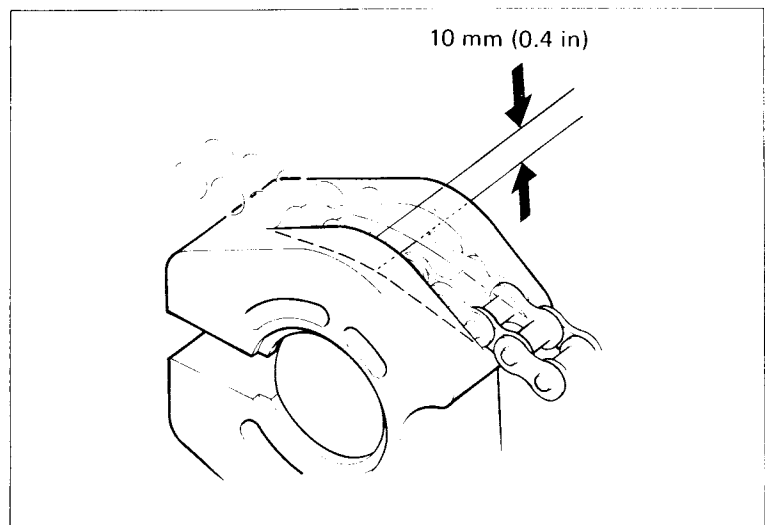
CAUTION:

*Do not assemble the drive chain without the four O-rings.
Be sure that there is no space between the master link and chain retaining clip.*



CHAIN SLIDER INSPECTION

Check the drive chain slider.
Replace the slider if the depth of the groove exceeds 10 mm (0.4 in) (Page 13-10).



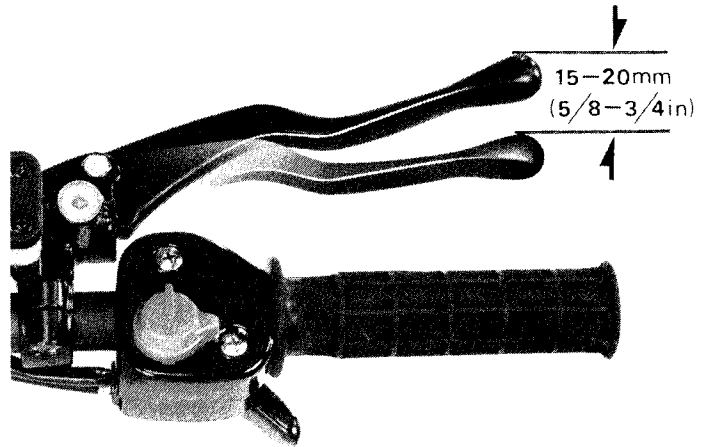
FRONT BRAKE

BRAKE LEVER FREE PLAY

Measure the brake lever free play.

FREE PLAY: 15–20 mm (5/8–3/4 in)

If free play is excessive, refer to page 11–2.



BRAKE FLUID INSPECTION

Check that the brake fluid reservoir is filled to the upper level mark on the reservoir.

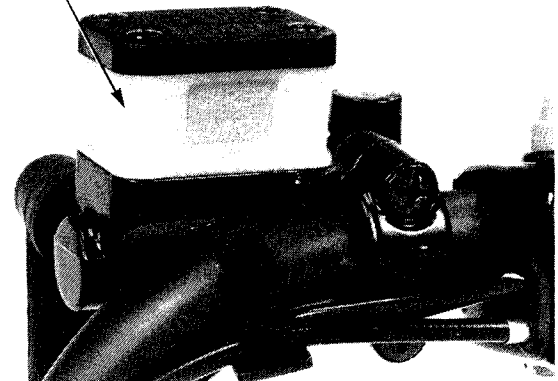
If the level is lower than the upper level mark, fill the reservoir with DOT-3 brake fluid up to the level mark.

Check the entire system for leaks, if the level is low.

CAUTION:

Do not mix different types of fluid in the reservoir. Mixing different types may not provide optimum braking performance.

UPPER LEVEL MARK



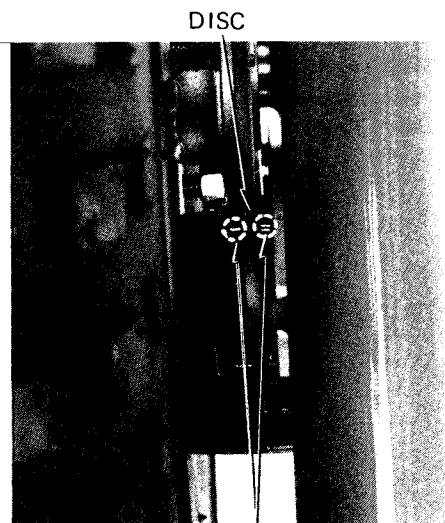
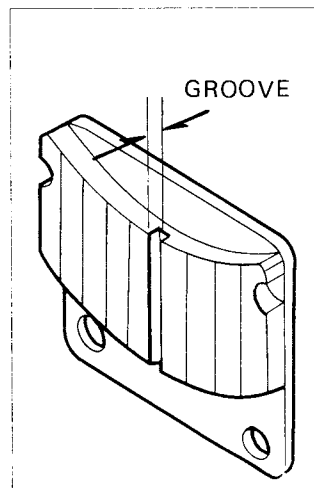
BRAKE PAD WEAR

Check each brake pad for wear.

SERVICE LIMIT: If either pad wears to the bottom of the groove, both pads must be replaced.

NOTE

Always replace the brake pads in pairs to assure even disc pressure.



PADS

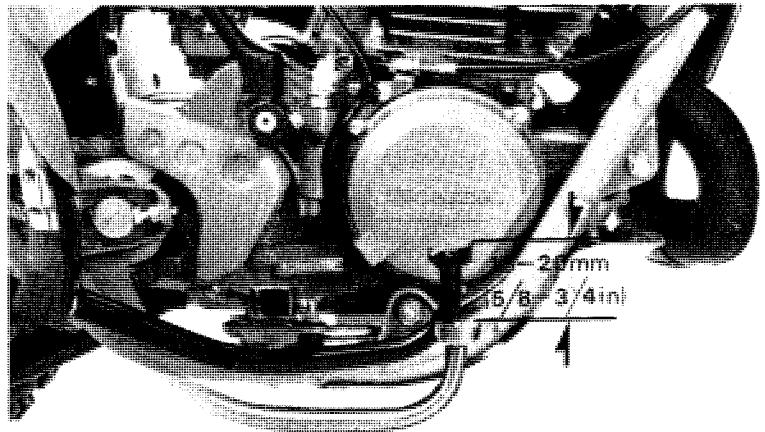


REAR BRAKE

BRAKE PEDAL FREE PLAY

Measure the brake pedal free play.

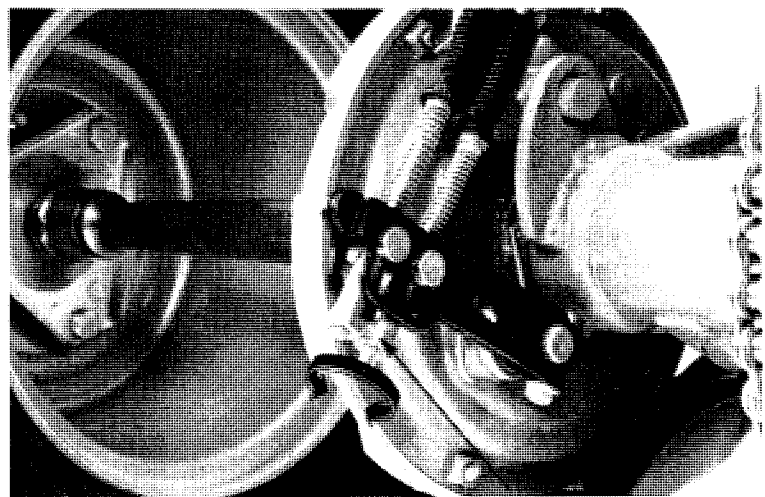
FREE PLAY: 15–20mm (5/8–3/4 in)



If adjustment is necessary, turn the rear brake cable adjusting nut.

NOTE

Make sure the cut-out on the adjusting nut is seated on the brake arm pin.

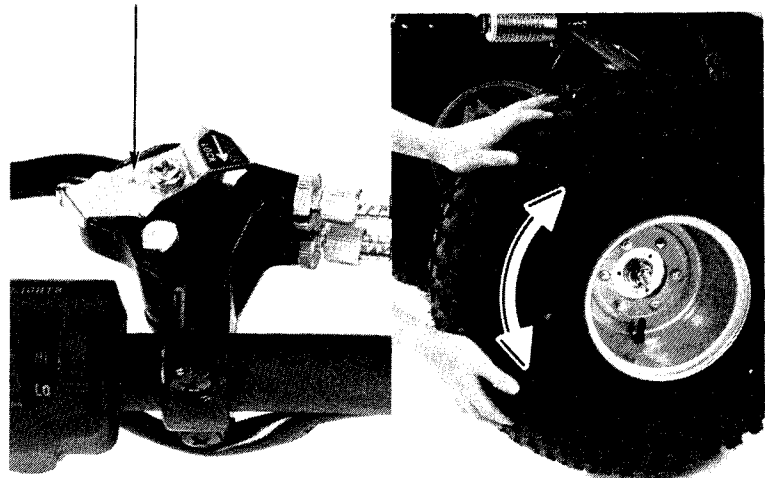


ADJUSTING NUT

PARKING BRAKE

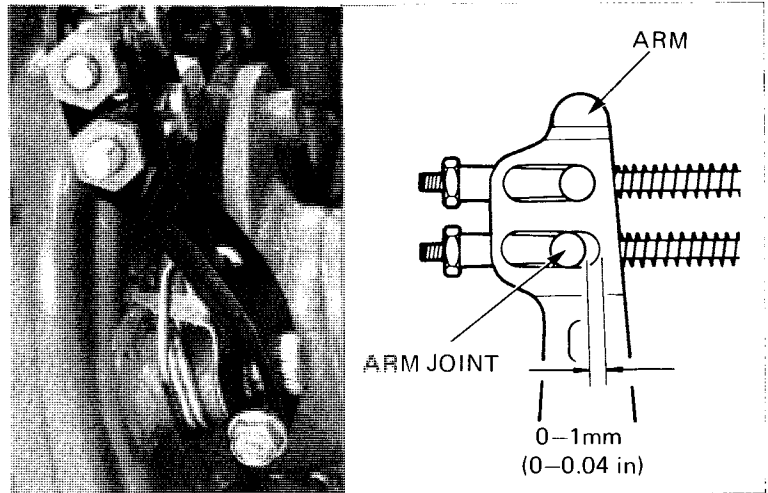
Apply the parking brake to lock the rear wheels.

PARKING BRAKE LEVER



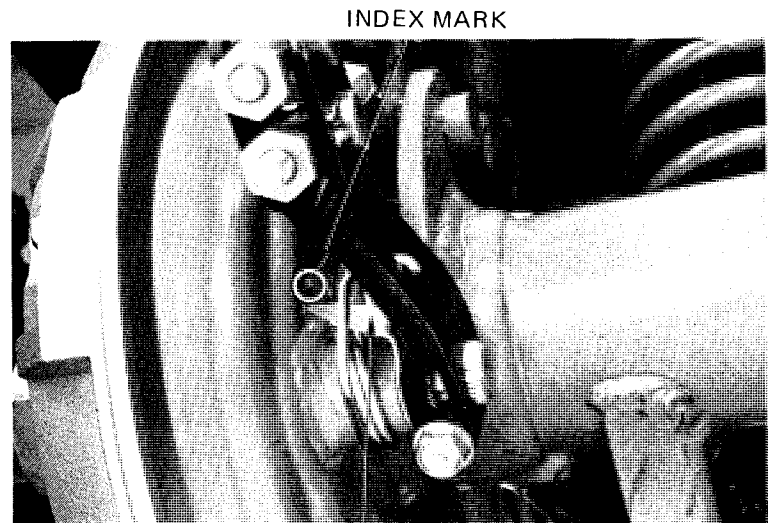
Be sure the brake pedal is properly adjusted (page 2-13). Turn the adjusting nut at the brake cable end until the clearance between the arm joint and arm is 0–1.0 mm (0–0.04 in).

Minor adjustments can be made by loosening the lock nut at the lever and turning the adjusting bolt.



BRAKE WEAR

Replace the brake shoes if the indicator plate aligns with the brake panel index mark when the rear brake pedal is applied.



TIRES

Check the tire for cuts, imbedded nails, or other sharp objects.

NOTE

Tire pressure should be checked when the tires are COLD.

Check the tire pressure and measure the tire circumference.

TIRE PRESSURES:

Recommended pressure:

15 kPa (0.15 kg/cm², 2.2 psi)

Minimum pressure:

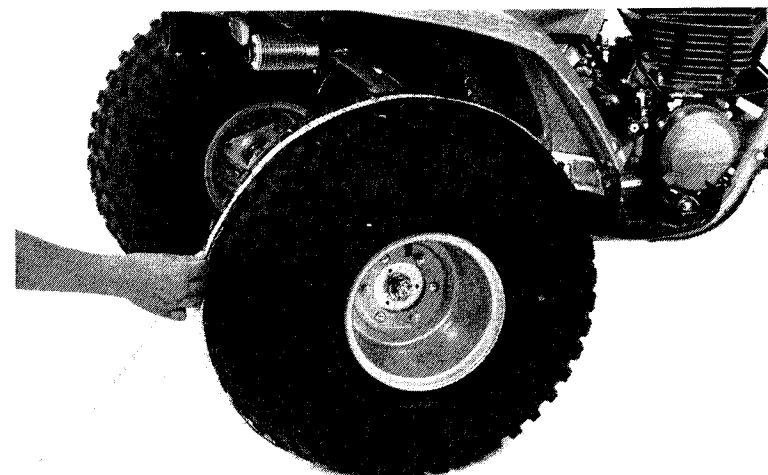
12 kPa (0.12 kg/cm², 1.7 psi)

Maximum pressure:

18 kPa (0.18 kg/cm², 2.6 psi)

STANDARD TIRE CIRCUMFERENCE:

1,760 mm (69.3 in)





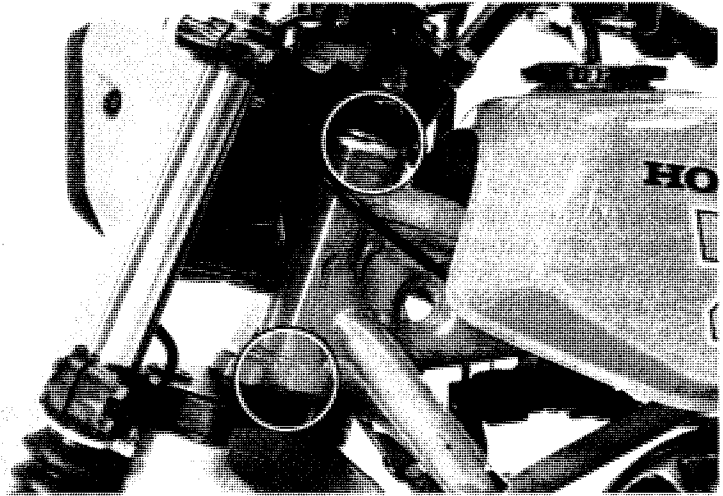
STEERING HEAD BEARINGS

NOTE

Make sure the cables do not interfere with the rotation of the handlebar.

Raise the front wheel off the ground and make sure that the handlebar rotates freely.

If the handlebar moves unevenly, binds or has vertical play adjust the steering head bearing by turning the steering head adjusting nut with a pin spanner (Page 10-31).



SUSPENSION

FRONT SUSPENSION

Check the action of the front forks by compressing them several times.

Check the entire fork assembly for signs of leaks or damage.

Replace damaged components which cannot be repaired.

NOTE

Do not repair bent fork tubes. They must be replaced.

Tighten all nuts and bolts to the specified torque values.

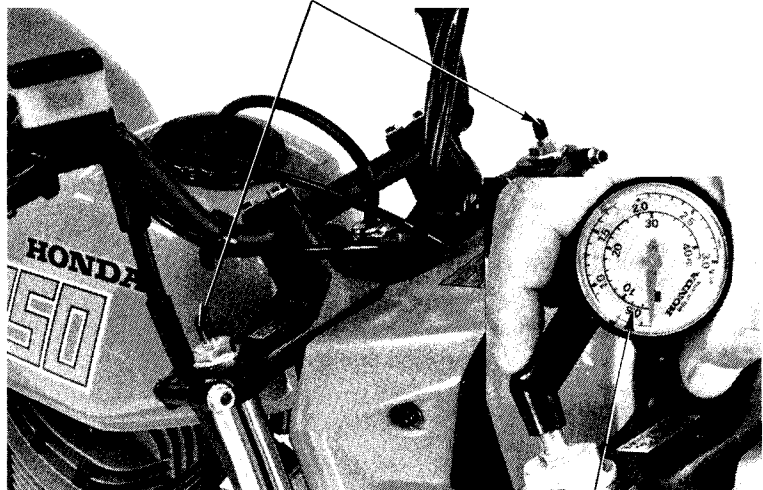
Raise the front of the vehicle so that there is no weight on the front wheel.

Check air pressure in each fork tube (Page 10-25)

AIR PRESSURE: 10–50 kPa (0.1–0.5 kg/cm²,
1.4–7.0 psi)



AIR VALVE CAPS



PRESSURE GAUGE

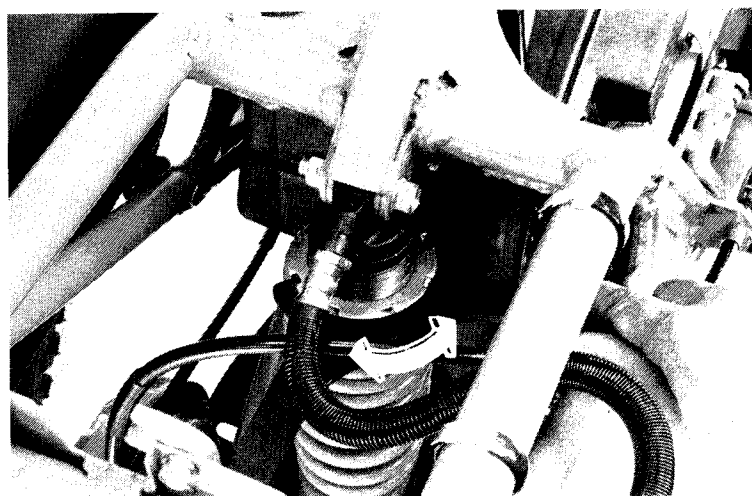
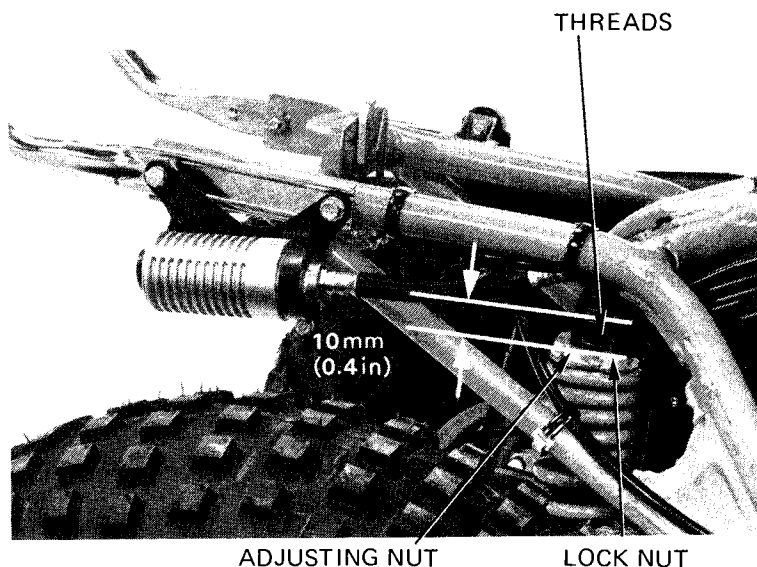
REAR SUSPENSION

SPRING PRELOAD ADJUSTMENT

The rear shock spring preload can be adjusted for the rider's weight and riding conditions.

1. Remove the seat/rear fender.
2. Place a support under the engine to raise the rear wheels off the ground.
3. Measure the distance between the top of the threads and adjuster lock nut.
Distance: 10 mm (0.4 in)
4. To adjust preload, loosen the lock nut with a pin spanner and turn the adjusting nut.
5. Tighten the lock nut and reinstall the seat unit.

See section 13 for shock disassembly.



LIGHTING EQUIPMENT

Apply the parking brake.
Start the engine.

Check the headlight and taillight by operating the headlight ON-OFF switch and dimmer switch:

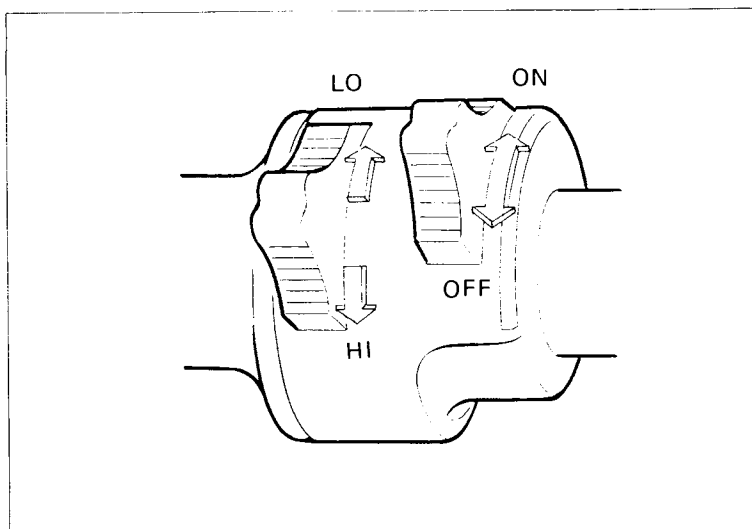
Headlight ON-OFF switch:

- OFF : Lights are OFF
- ON : Headlight and taillight are ON

Headlight dimmer switch:

- HI : Headlight high beam and taillight are ON.
- LO : Headlight low beam and taillight are ON.

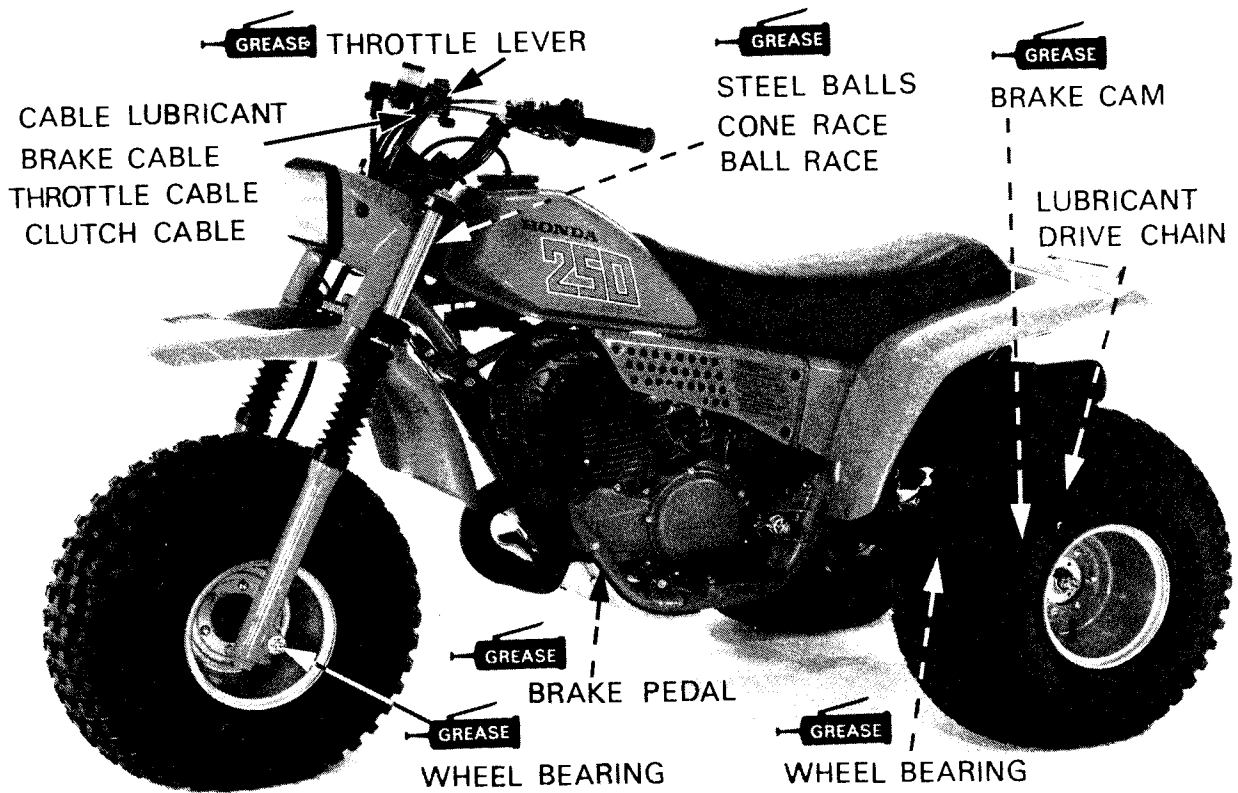
Replace the bulb or switch as necessary.

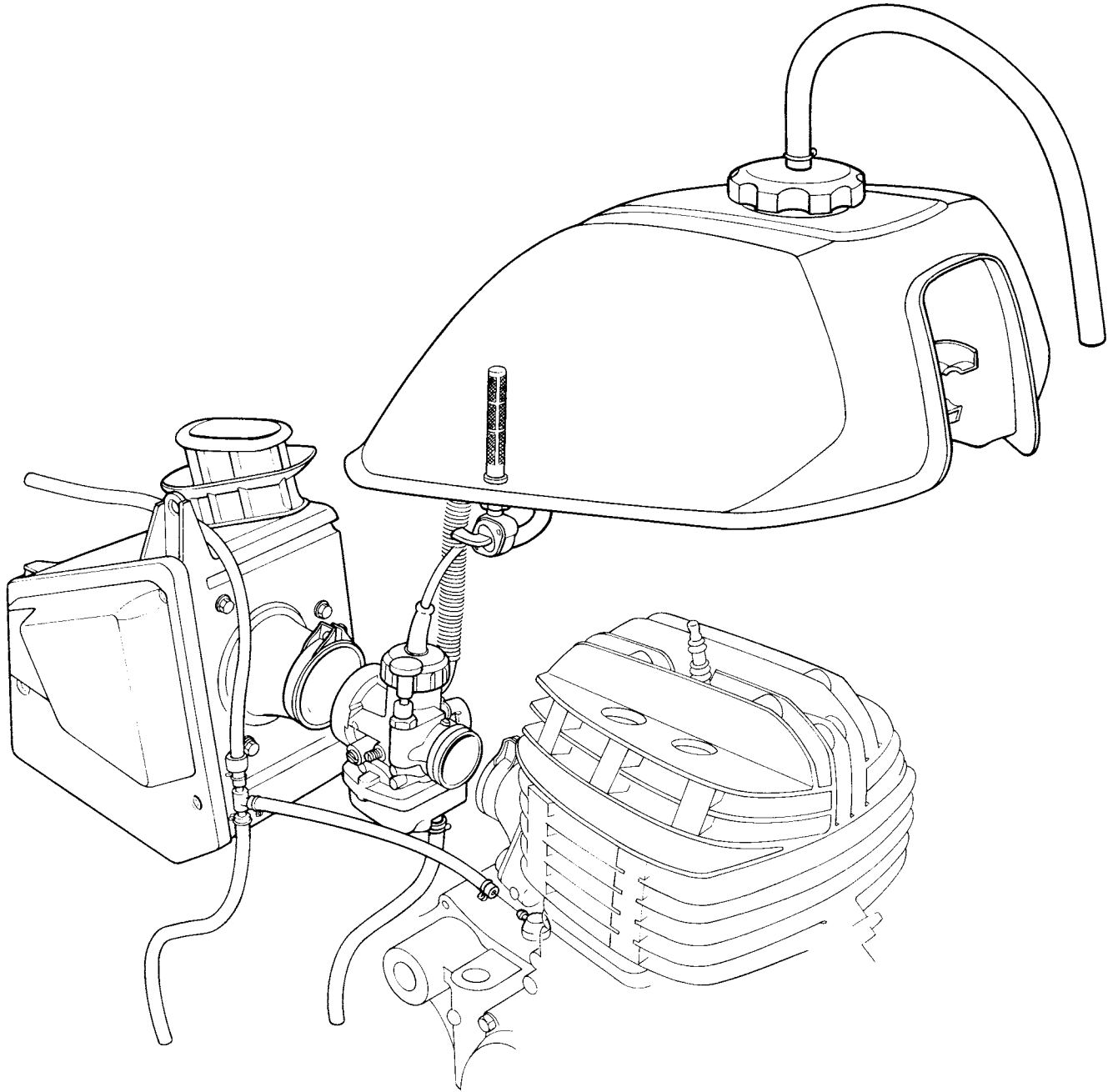




LUBRICATION POINTS

Use general purpose grease when no other specification is given. Apply oil or grease to any 2 sliding surfaces and cables not shown here.







SERVICE INFORMATION	3 – 1	CARBURETOR DISASSEMBLY/	3 – 7
TROUBLESHOOTING	3 – 1	INSPECTION	
FUEL TANK	3 – 2	CARBURETOR REASSEMBLY	3 – 9
AIR CLEANER CASE	3 – 3	FLOAT LEVEL ADJUSTMENT	3 – 9
CRANKCASE BREATHER	3 – 4	THROTTLE VALVE/CABLE	3 – 10
CARBURETOR REMOVAL	3 – 5	INSTALLATION	
THROTTLE VALVE DISASSEMBLY	3 – 6	CARBURETOR INSTALLATION	3 – 11

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or flames.
- The float bowl has a drain plug that can be loosened to drain residual fuel.
- When disassembling fuel system parts, note the locations of the O-rings. Replace them during assembly.

TOOL

Common

Float Level Gauge 07401-0010000

SPECIFICATIONS

Fuel tank capacity 8.4 lit (2.2 US gal, 1.9 Imp gal)
 Fuel reserve capacity 1.9 lit (0.50 US gal, 0.42 Imp gal)

Carburetor

Identification mark	PE23A
Type	Piston valve
Venturi dia	27 mm (1.1 in)
Float level	18.5 mm (0.7 in)
Air screw opening	1-3/8
Idle speed	1,300 ± 150 rpm
Main jet	# 158
Jet needle	3rd STAGE
Throttle lever free play	5-10 mm (3/16-3/8 in)

TROUBLESHOOTING

Engine cranks but won't start

1. No fuel in tank
2. No fuel to carburetor
3. Too much fuel getting to cylinder
4. No spark at plug (ignition malfunction)
5. Air cleaner clogged

Engine Idles roughly, stalls, or runs poorly

1. Idle speed incorrect
2. Ignition malfunction
3. Low compression
4. Rich mixture
5. Lean mixture
6. Air cleaner clogged
7. Air leaking into inlet pipe
8. Fuel contaminated

Lean mixture

1. Carburetor fuel jets clogged
2. Fuel cap vent clogged or blocked
3. Fuel filter clogged
4. Fuel line kinked or restricted
5. Float valve faulty
6. Float level too low
7. Air vent tube clogged

Rich mixture

1. Choke stuck closed
2. Faulty float valve
3. Float level too high
4. Carburetor air jets clogged
5. Air cleaner dirty



FUEL TANK

Remove the seat/rear fender.
Turn the fuel valve OFF, and disconnect the fuel tube.
Remove the fuel tank.

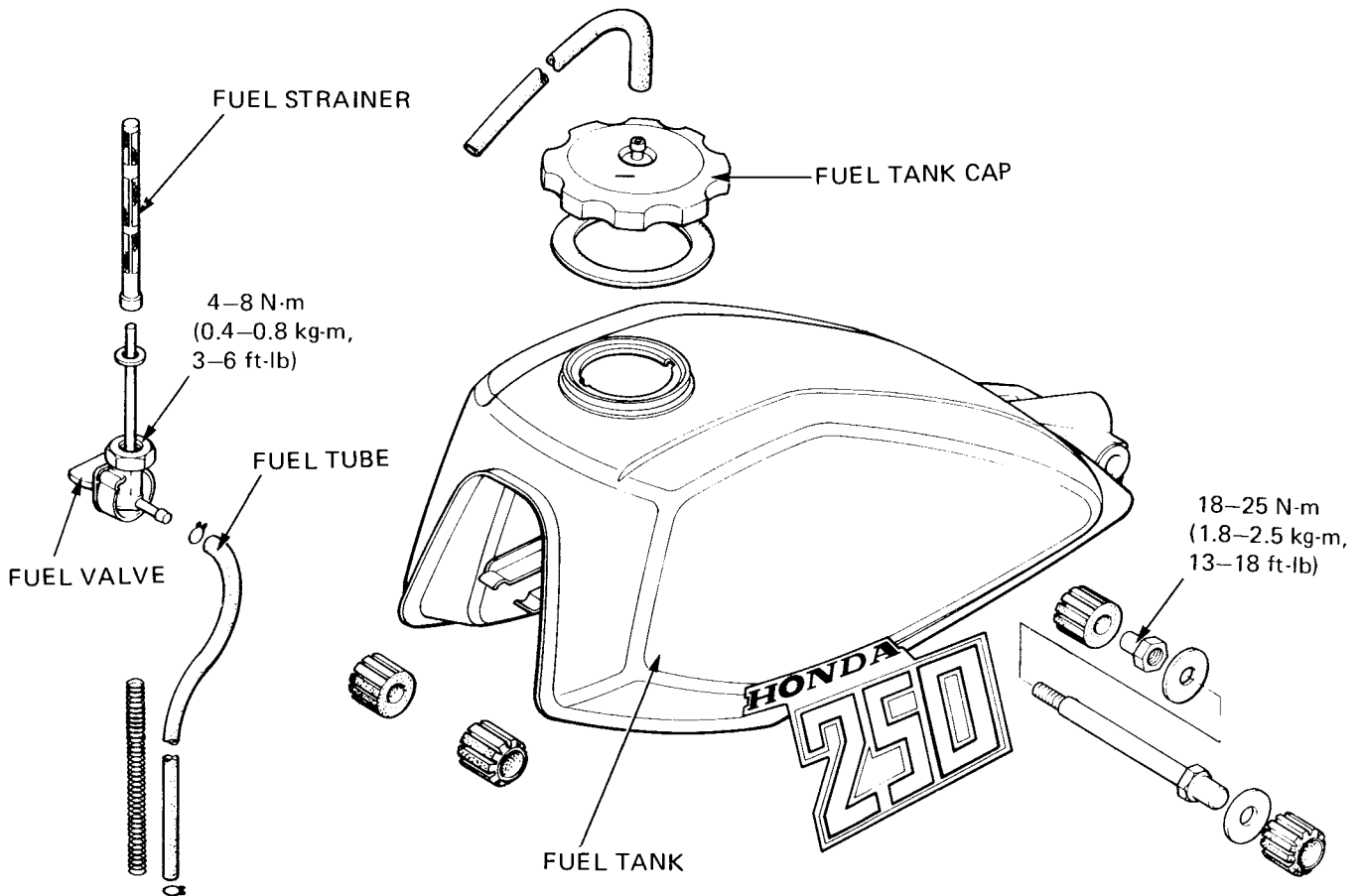
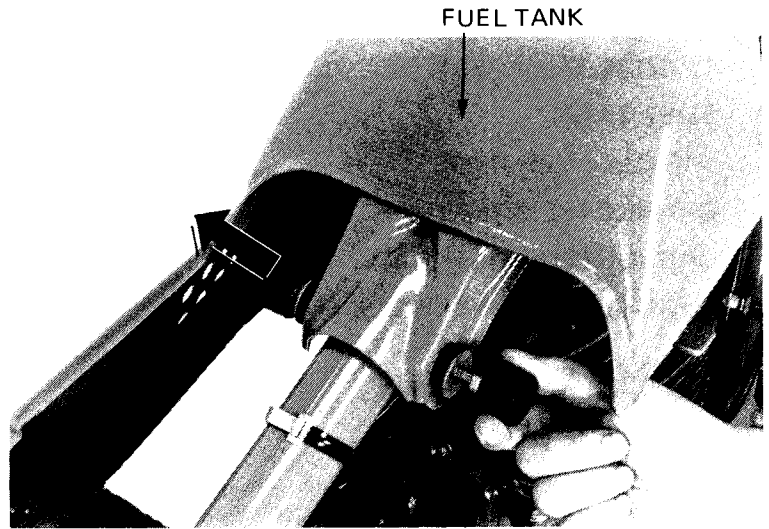
WARNING

Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.

Check that fuel flows freely out of the fuel valve.
If the flow is restricted, clean the fuel strainer.
Install the fuel tank and connect the fuel tube.
Install the seat/rear fender.

NOTE

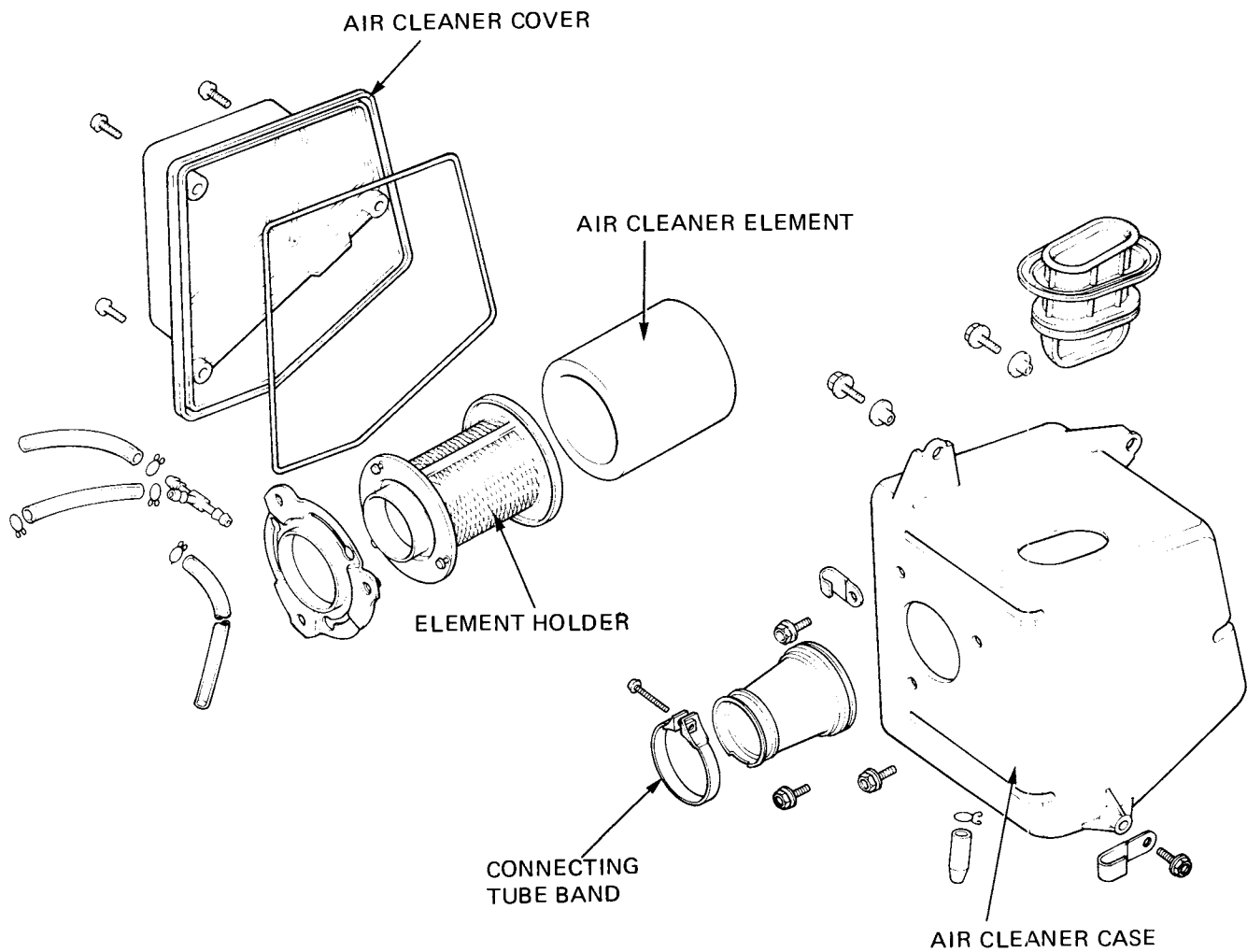
- After assembly, make sure there are no fuel leaks.
- Do not overtighten the fuel valve lock nut.





AIR CLEANER CASE

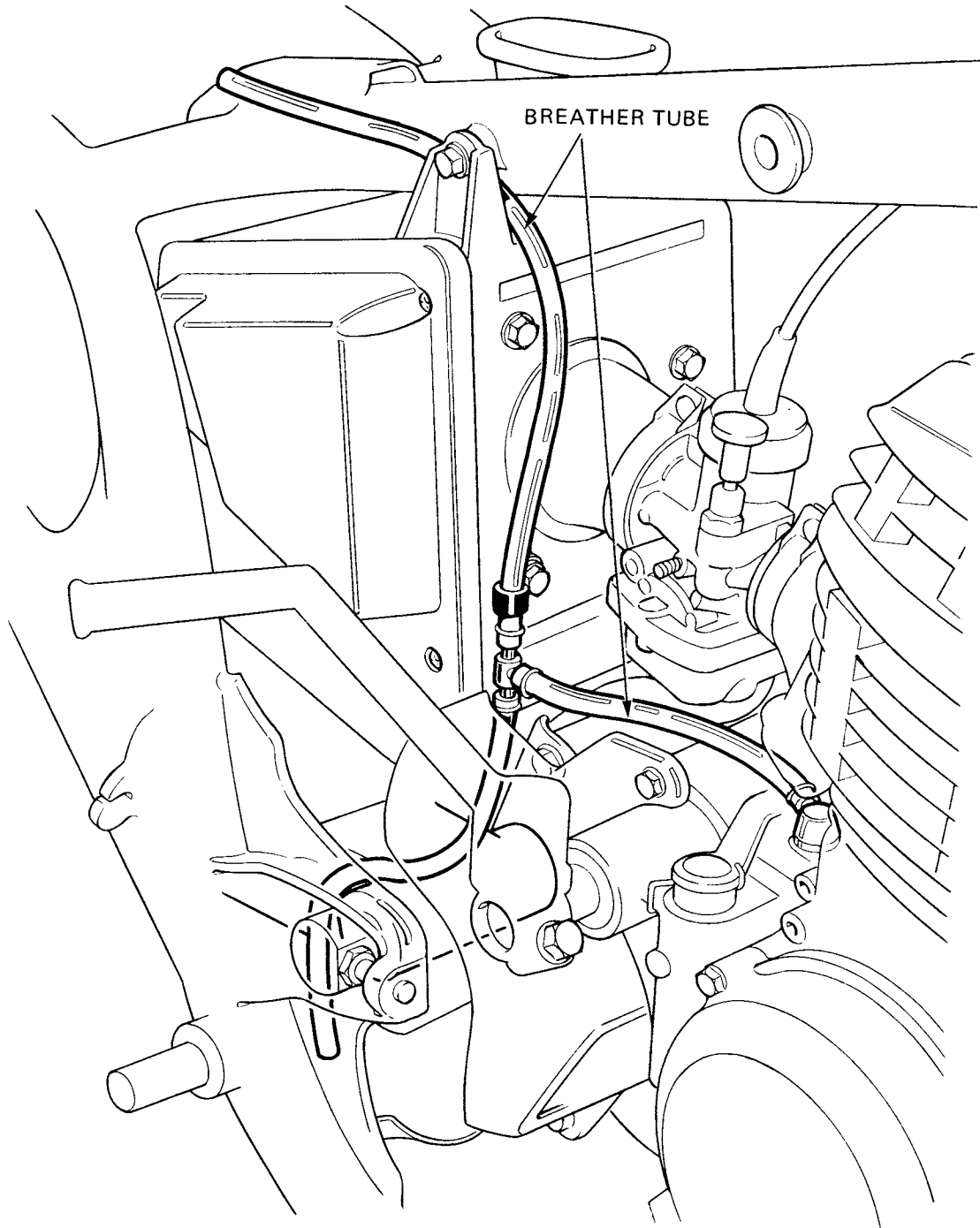
- Remove the seat/rear fender.
 - Remove the air cleaner case cover.
 - Remove the element holder and air cleaner element.
 - Loosen the connecting tube band.
 - Remove the bolts and air cleaner case.
- For air cleaner element service, see Page 2-4.





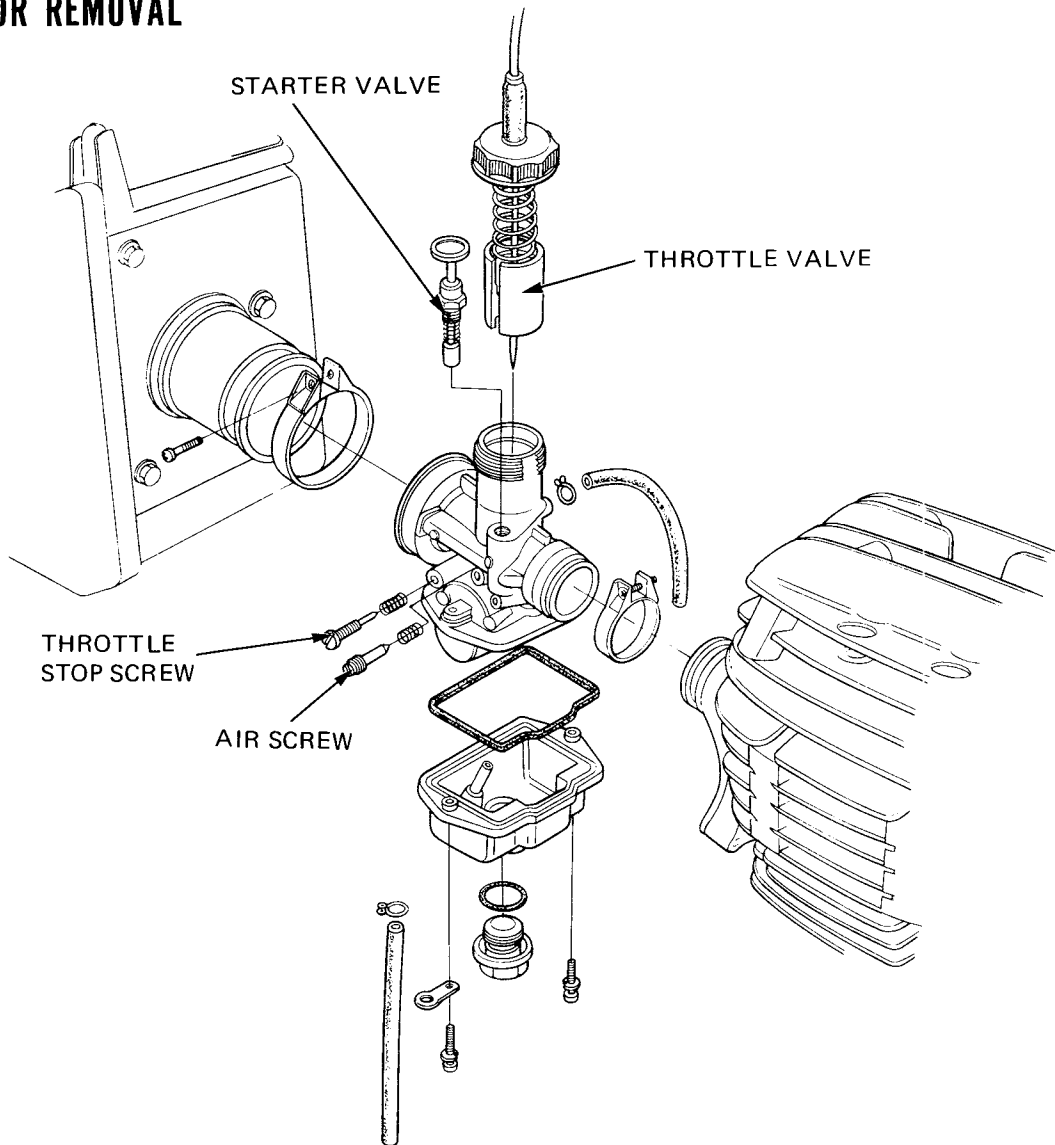
CRANKCASE BREATHER

Route the crankcase breather tube as shown.



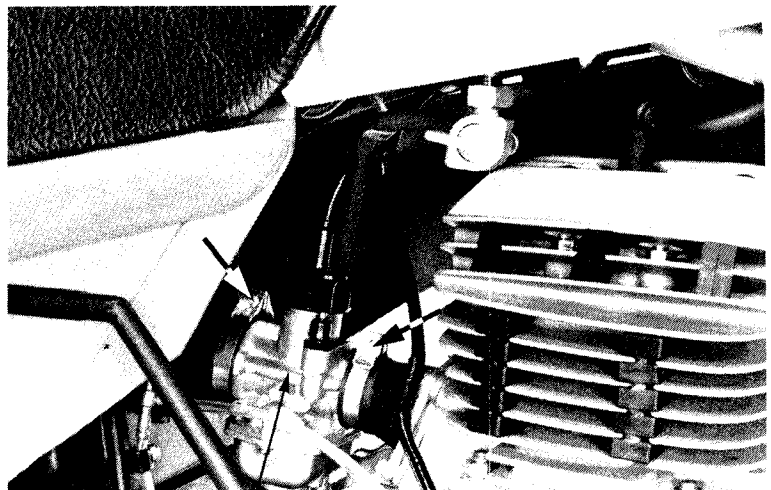


CARBURETOR REMOVAL



Remove the seat/rear fender.
Turn the fuel valve OFF and disconnect the fuel line.

Loosen the screws securing the carburetor bands.

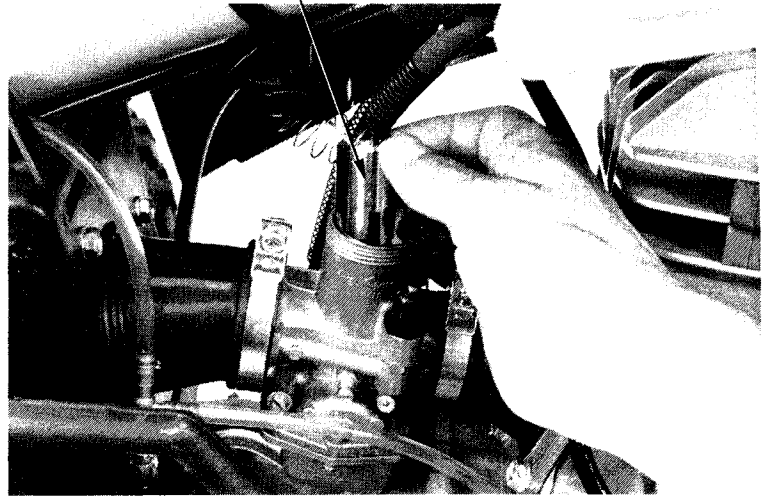


CARBURETOR

THROTTLE VALVE DISASSEMBLY

Remove the carburetor top and pull out the throttle valve.

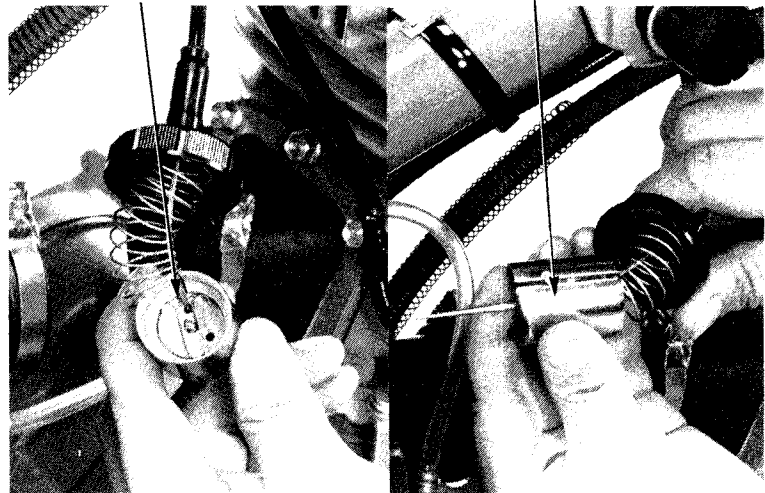
THROTTLE VALVE



Remove the retainer plate clip. Disconnect the throttle cable from the throttle valve.

RETAINER PLATE CLIP

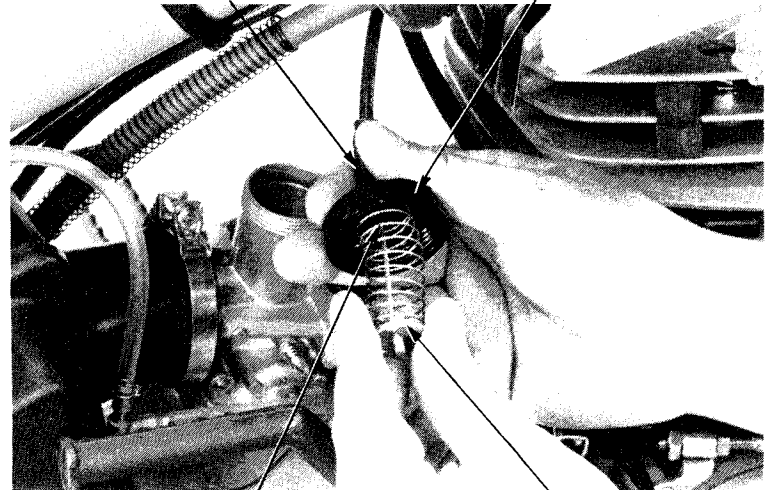
THROTTLE VALVE



Remove the retainer plate, spring, carburetor top and sealing cap.

SEALING CAP

CARBURETOR TOP

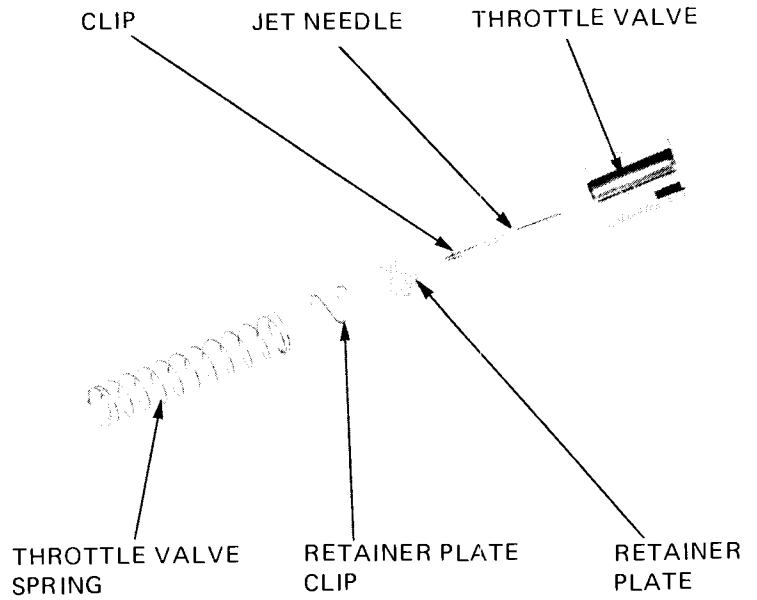


SPRING

RETAINER PLATE



Remove the jet needle.
Check the jet needle and throttle valve for wear or damage.



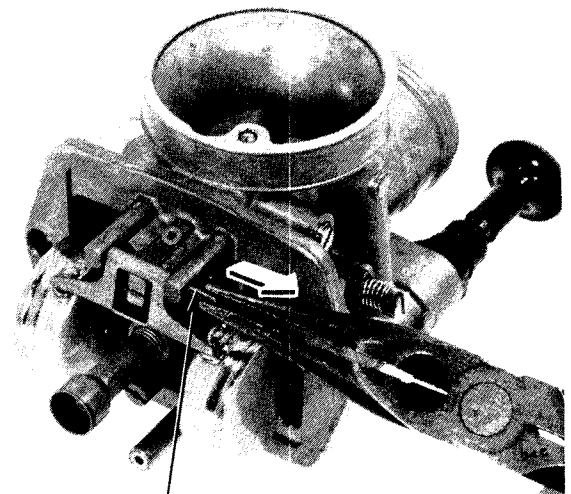
CARBURETOR DISASSEMBLY/ INSPECTION

Remove the float chamber and pull the float pin off the chamber.

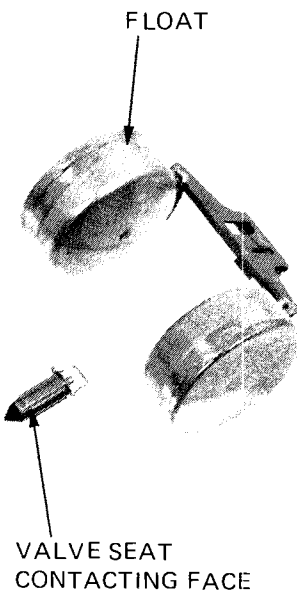
CAUTION:

Remove the float pin in the direction of the arrow.

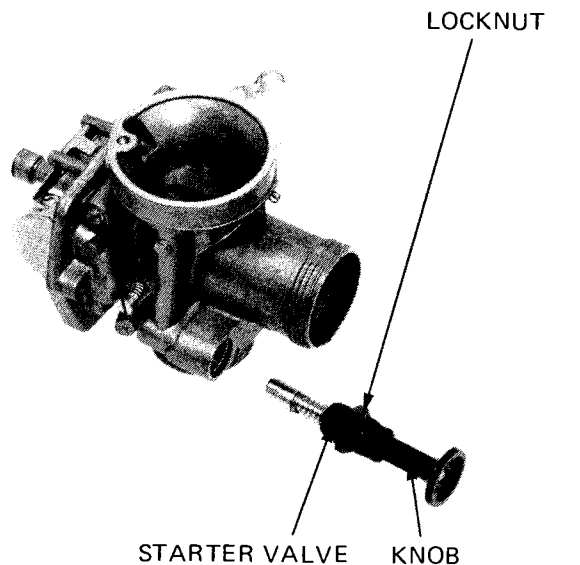
Remove the carburetor float and float valve.



Check the valve and seat for wear or damage.
Replace the valve and seat as a set if either part is worn or damaged.
Check the float for deformation or presence of fuel.



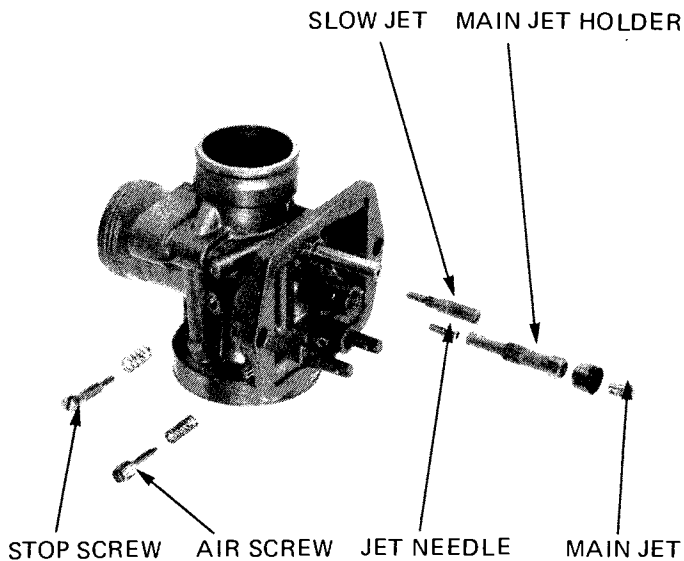
Unscrew the lock nut and remove the starter valve.
 Check each part for wear or damage.
 Inspect the starter valve.
 The knob should be held securely when pulled out fully.



Remove the main jet, main jet holder, needle jet holder and needle jet.
 Remove the slow jet.
 Remove the stop and air screws.

NOTE

Before removing the stop and air screws, record the number of rotations until they rest lightly, so they can be returned to their original positions.



Blow open all jets and body openings with compressed air.

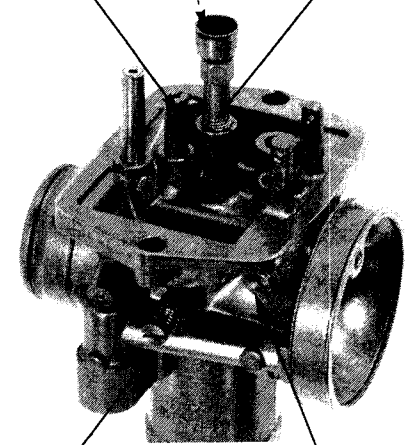




CARBURETOR REASSEMBLY

Install the needle jet, main jet holder and main jet.
Install the slow jet.
Install the air and stop screws by turning them into their original positions.

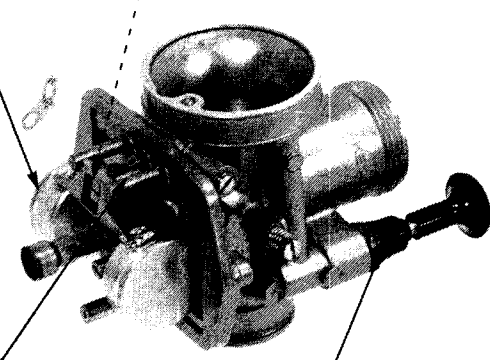
NEEDLE JET MAIN JET MAIN JET HOLDER



STOP SCREW AIR SCREW

Install the starter valve.
Install the float valve, float and float pin.
Check the float for operation.

FLOAT FLOAT VALVE



FLOAT PIN CHOKE (STARTER VALVE)

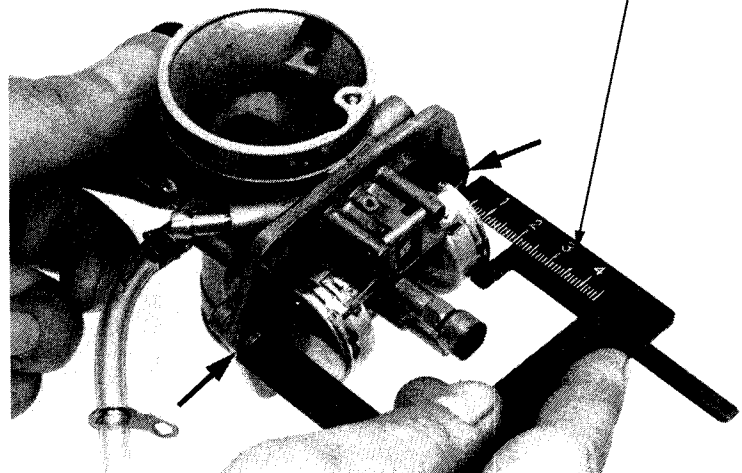
FLOAT LEVEL ADJUSTMENT

Measure the float level at the float chamber mating face as shown by the arrows at the base of float gauge.

FLOAT LEVEL: 18.5 mm (0.7 in)

Install the float chamber.

FLOAT GAUGE
07401-0010000

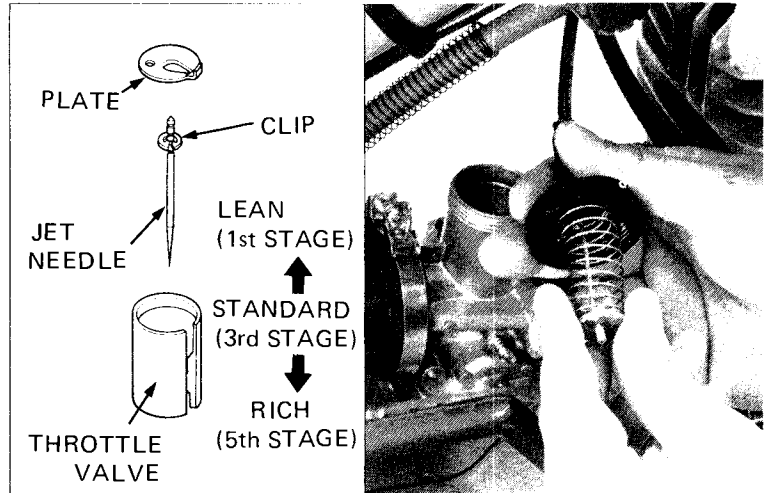


THROTTLE VALVE/CABLE INSTALLATION

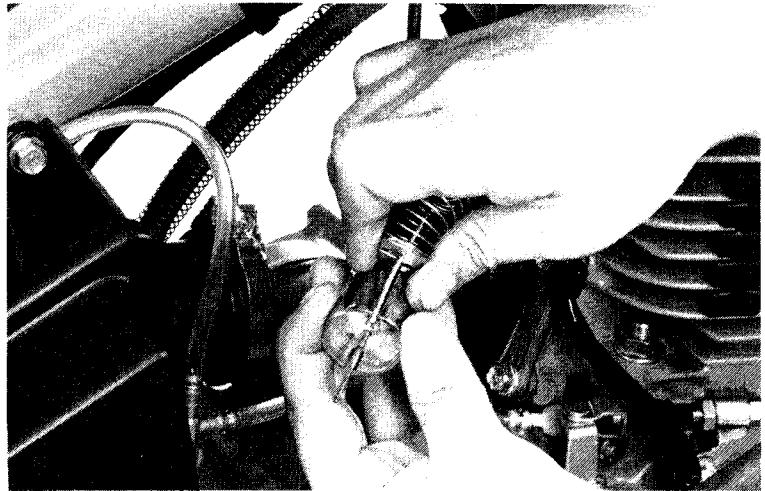
Install the jet needle on the throttle valve
Install the sealing cap, carburetor top, return spring and retaining plate.

NOTE

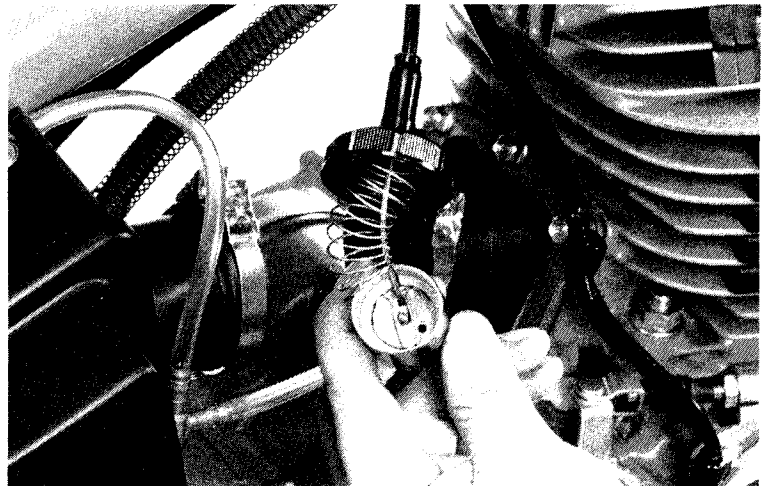
Install the plate with the lug facing up.



Compress the spring and insert the throttle cable into the throttle valve.



Insert the retaining plate into the recess of the throttle valve fully and secure with the clip.





CARBURETOR INSTALLATION

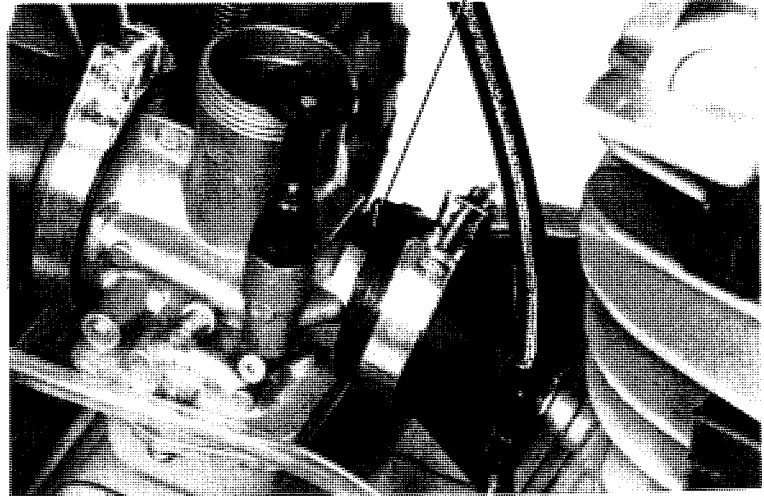
Carburetor installation is essentially the reverse order of removal.

NOTE

Align the lug on the carburetor with the groove of the carburetor insulator band.

Tighten the insulator and connecting tube band screws.

CARBURETOR INSULATOR



Slide the throttle valve into the carburetor body.

NOTE

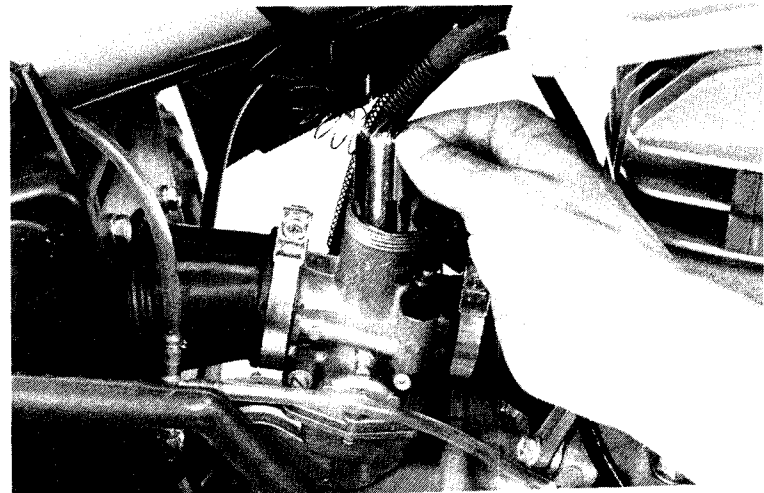
Align the groove in the valve with the stop screw on the carburetor body.

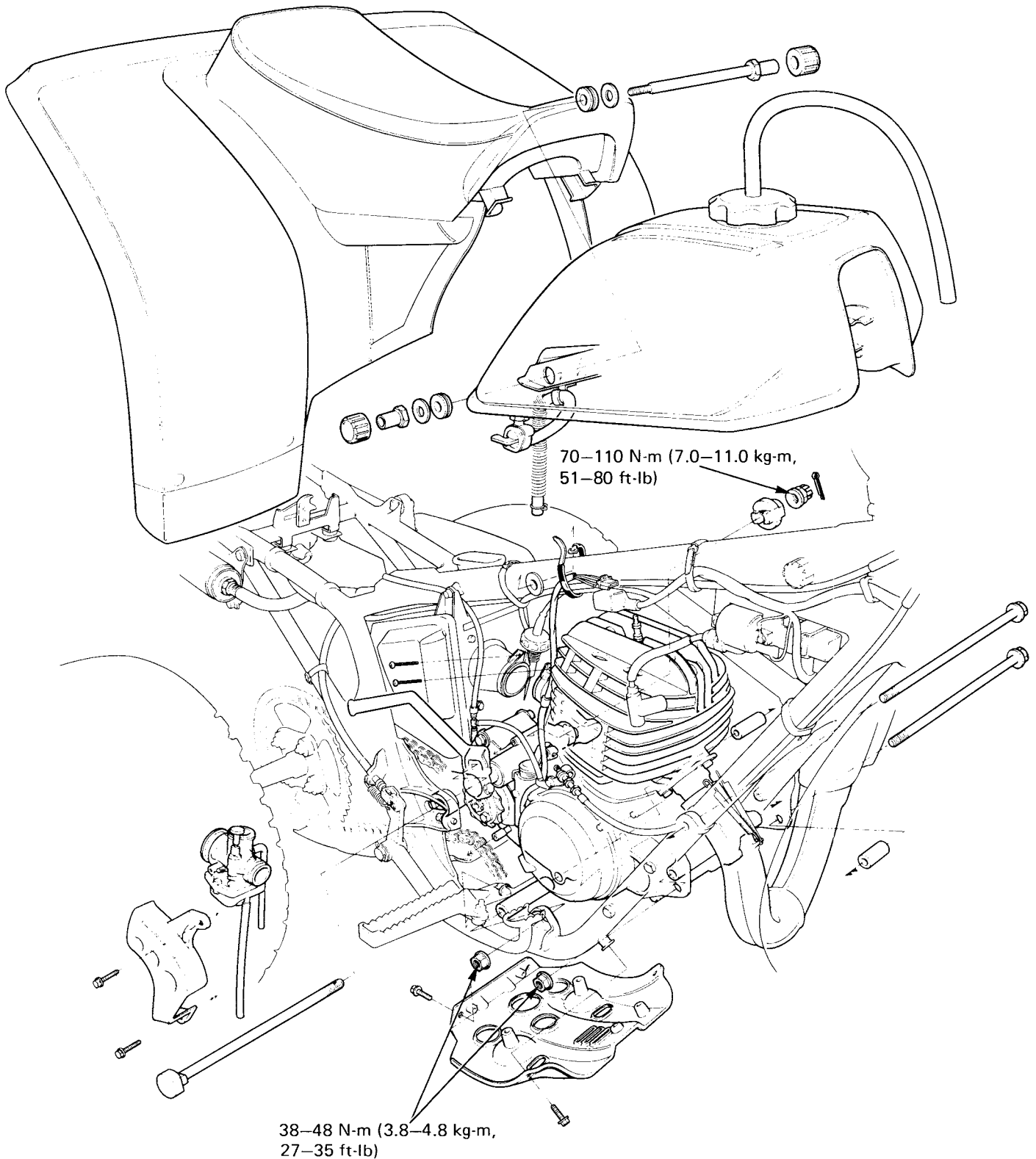
Hand-tighten the carburetor top.

CAUTION:

Hand-tighten the top until it is just snug, not tight. Overtightening could damage the carburetor. Do not use tools to tighten the carburetor top.

Adjust the carburetor after installation. (Page 2-8)







SERVICE INFORMATION	4 – 1
ENGINE REMOVAL	4 – 2
ENGINE INSTALLATION	4 – 4

SERVICE INFORMATION

GENERAL INSTRUCTIONS

Operations requiring engine removal:

- Gearshift linkage Section 8.
- Balancer and balancer idler gear Section 8
- Kickstarter Section 9
- Crankshaft and transmission Section 9

4

SPECIFICATIONS

Engine dry weight	30 kg (66.2 lb)
Transmission oil capacity	1.1 lit (1.2 US qt, 1.0 Imp qt) after disassembly 0.9 lit (1.0 US qt, 0.8 Imp qt) after draining

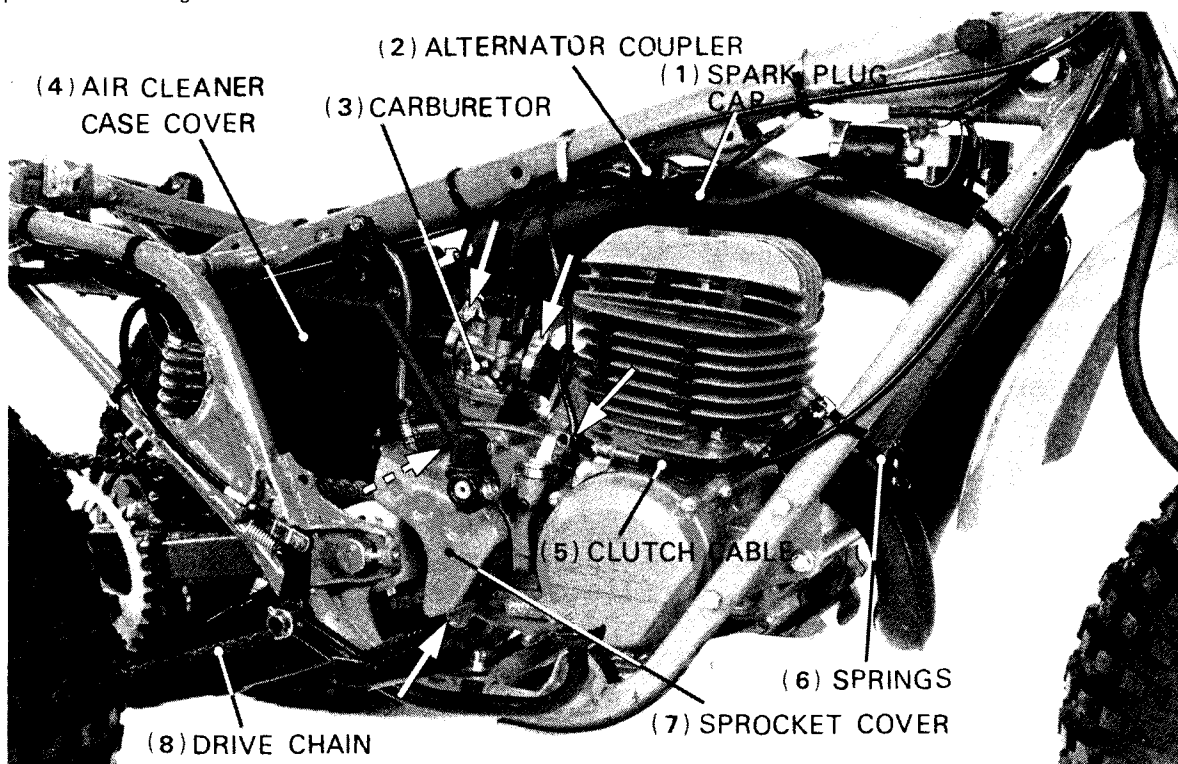
TORQUE VALUES

Engine hanger bolt (10 mm)	38–48 N·m (3.8–4.8 kg·m, 27–35 ft·lb)
Swingarm pivot bolt (14 mm)	70–110 N·m (7.0–11.0 kg·m, 51–80 ft·lb)

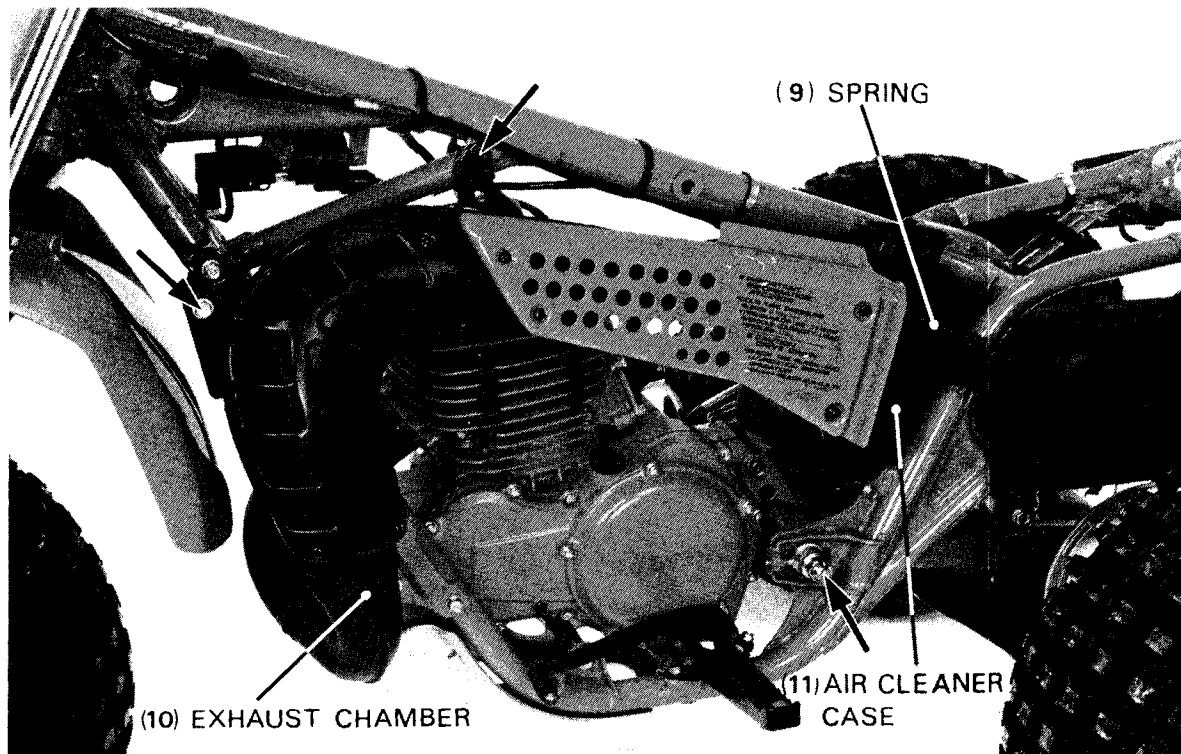


ENGINE REMOVAL

- Remove parts from the right side.

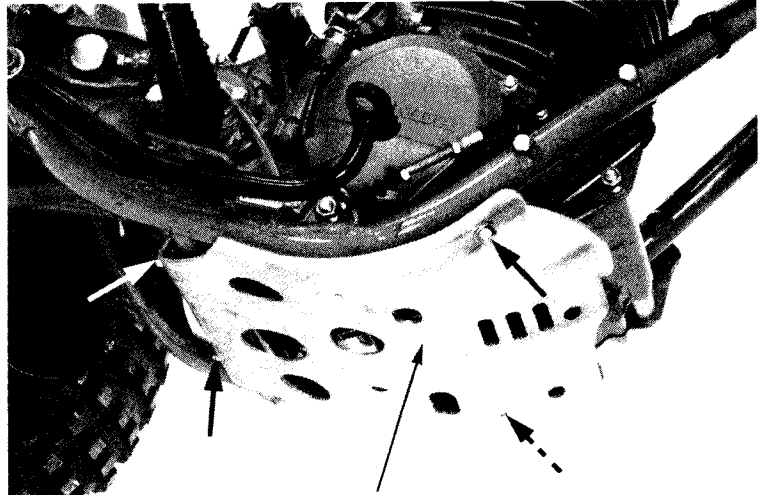


- Remove parts from the left side.



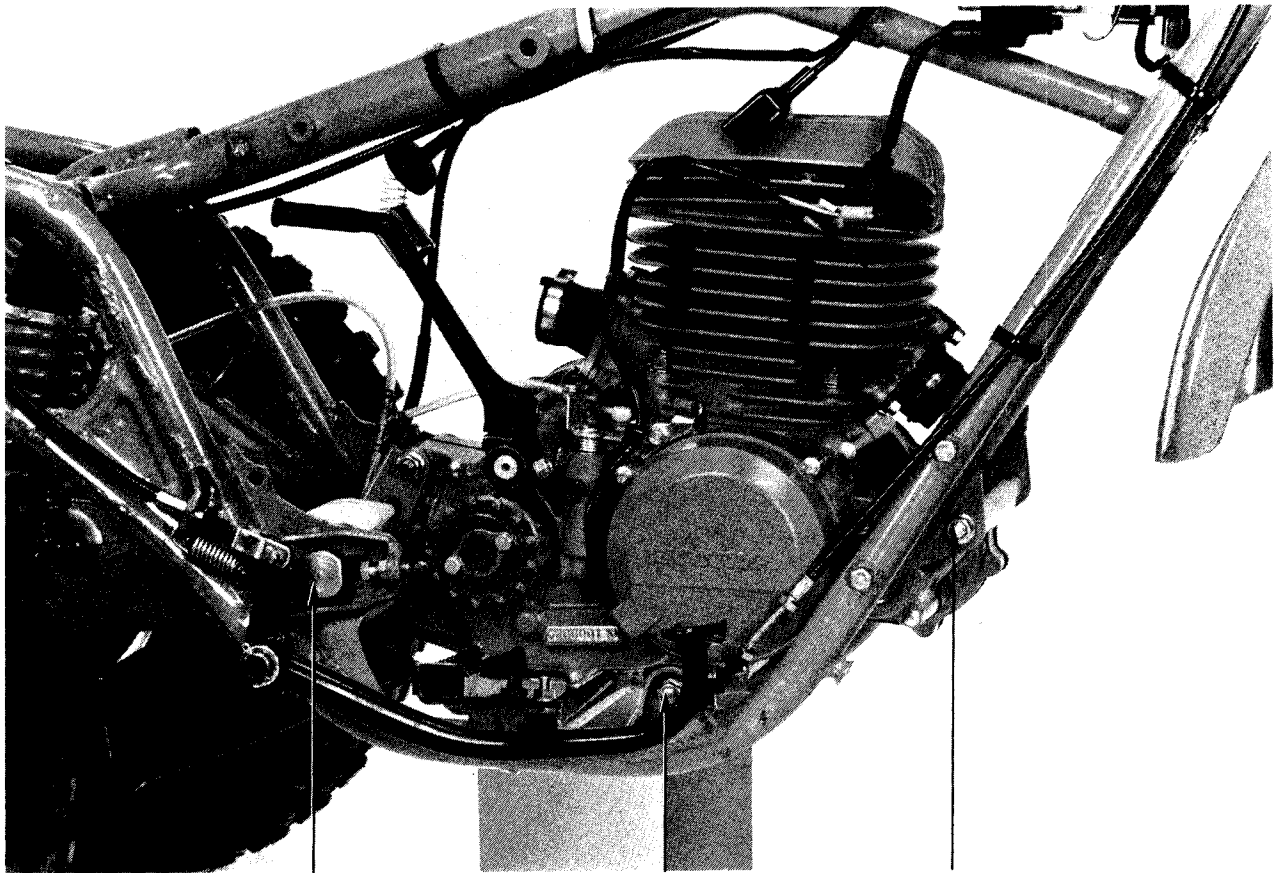


Remove the skid plate



SKID PLATE

Place a padded block under the engine and remove the engine hanger bolts (1) and (2) and swingarm pivot bolt.



SWINGARM
PIVOT BOLT

(2)

(1)



ENGINE INSTALLATION

Installation of the engine is essentially the reverse order of removal.

Insert the rear engine hanger bolt through the left frame bracket, collar, engine case, collar and right frame bracket.

Insert the front engine hanger bolts through the left frame bracket, collar, engine case and right frame bracket.

Insert the swingarm pivot bolt through the engine rear hanger and swingarm.

Install the nuts and tighten the three engine hanger bolts and pivot bolt to the specified torque values.

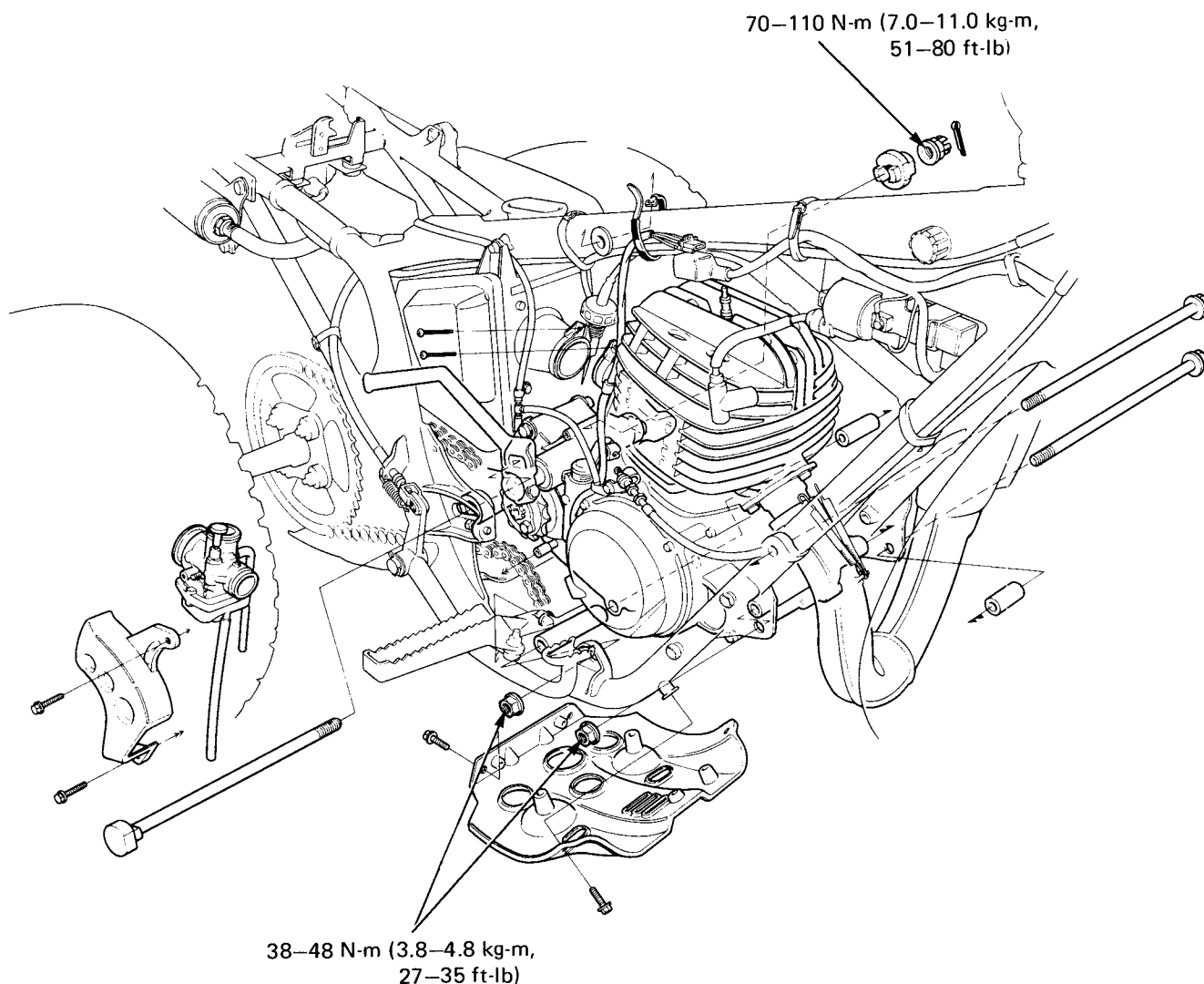
TORQUE: Hanger bolts: 38–48 N-m (3.8–4.8 kg-m, 27–35 ft-lb)

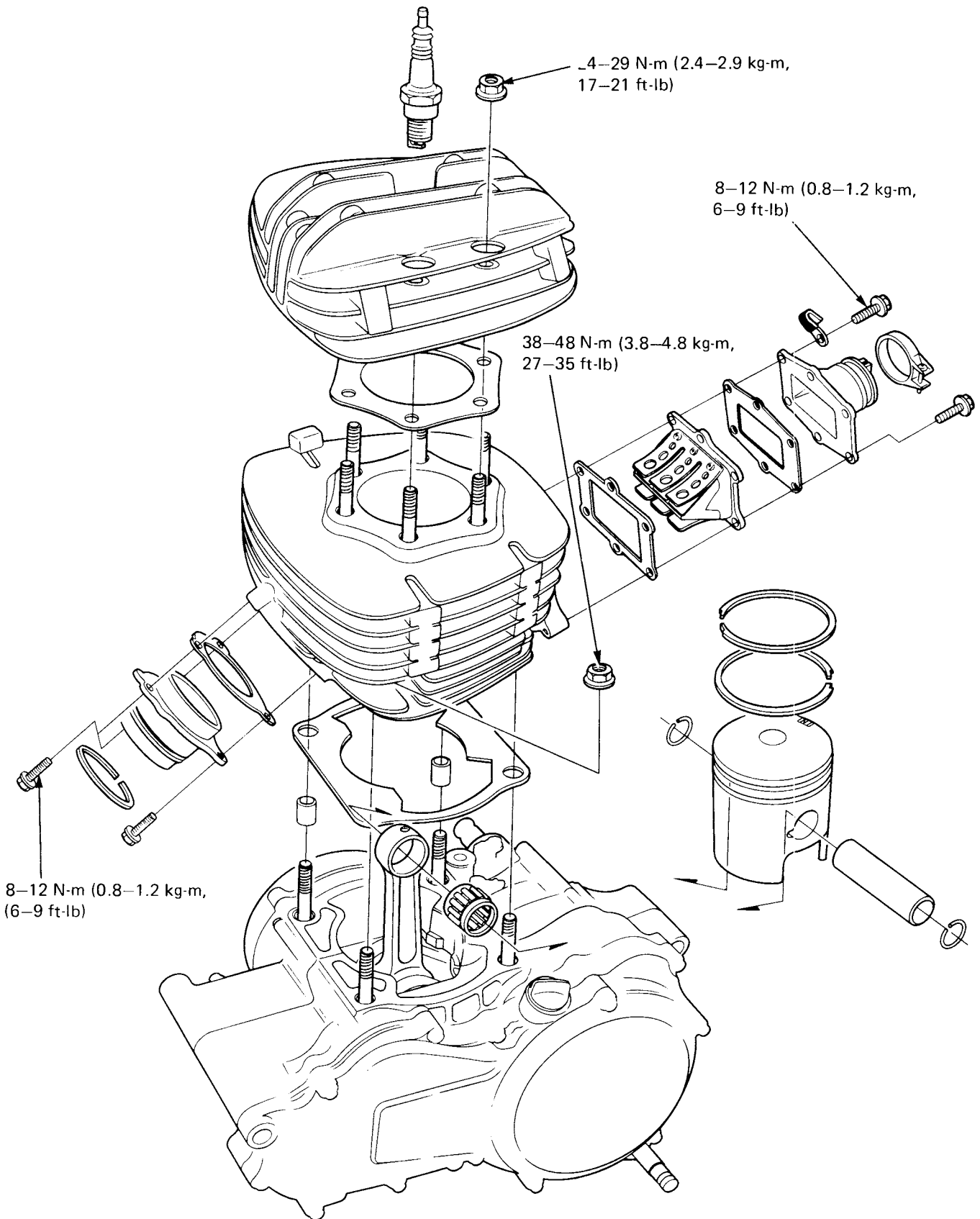
Pivot bolt: 70–110 N-m (7.0–11.0 kg-m, 51–80 ft-lb)

Install all removed parts (Page 4-2)

Perform the following inspections and adjustments:

- Check the locations of the cables and wires (Page 1-7)
- Adjust the clutch lever free play (Page 2-6)
- Adjust the drive chain slack (Page 2-9)





5. CYLINDER HEAD / CYLINDER / PISTON



HONDA
ATC 250R

SERVICE INFORMATION	5 - 1
TROUBLESHOOTING	5 - 1
CYLINDER HEAD	5 - 2
CYLINDER/PISTON	5 - 4
REED VALVE	5 - 9

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- All cylinder head maintenance and inspection can be accomplished with the engine installed.
- Before disassembling the engine, clean the engine thoroughly so not to allow dirt and dust to fall into the cylinder and crankcase.
- Remove all traces of gasket material from the mating surfaces of the cylinder head, cylinder and crankcase.
- Use caution when servicing the cylinder and piston to prevent damage to them.
- Before assembling, apply clean 2-stroke engine oil to all sliding surfaces of parts.

SPECIFICATIONS

ITEM	STANDARD mm (in)	SERVICE LIMIT mm (in)
Cylinder head warpage	0 - 0.10 (0 - 0.004)	0.20 (0.008)
Cylinder bore	70.000 - 70.015 (2.753 - 2.756)	70.050 (2.758)
Piston O.D. (10 mm (3/8 in) from piston skirt bottom)	69.920 - 69.940 (2.753 - 2.754)	69.870 (2.751)
Cylinder-to-piston clearance	0.060 - 0.095 (0.002 - 0.004)	0.150 (0.006)
Piston pin bore	18.007 - 18.013 (0.708 - 0.709)	18.027 (0.710)
Piston pin O.D.	17.994 - 18.000 (0.707 - 0.708)	17.980 (0.708)
Piston-to-piston pin clearance	0.007 - 0.019 (0.0003 - 0.0007)	0.050 (0.002)
Piston ring end gap (top/bottom)	0.20 - 0.40 (0.008 - 0.016)	0.50 (0.020)
Connecting rod small end I.D.	21.997 - 22.000 (0.8660 - 0.8661)	22.020 (0.867)

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed

1. Blown cylinder head gasket
2. Loose spark plug
3. Worn, stuck or broken piston rings
4. Worn or damaged cylinder and piston
5. Faulty reed valve

Compression too high, overheating or knocking

1. Excessive carbon buildup in cylinder head or on piston top.

Abnormal noise—piston

1. Worn cylinder and piston
2. Worn piston pin or piston pin hole
3. Worn connecting rod small end bearing

Abnormal noise—piston rings

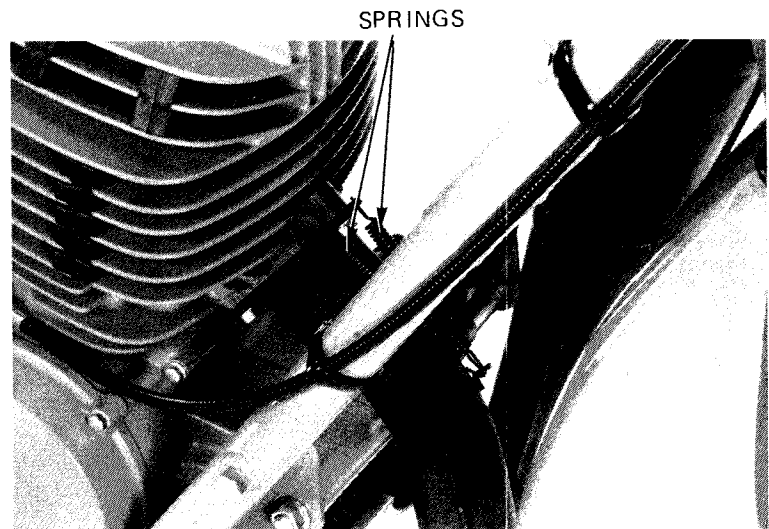
1. Worn, stuck or broken piston rings
2. Worn or damaged cylinder



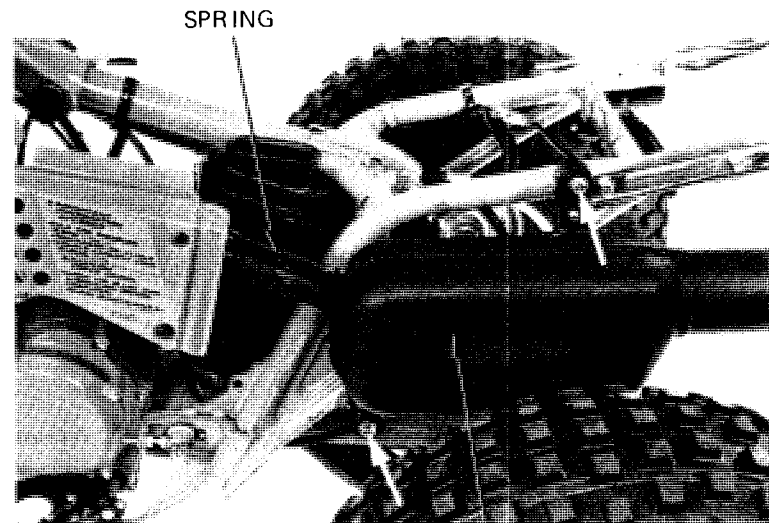
CYLINDER HEAD

REMOVAL

Remove the seat/rear fender and fuel tank.
Remove the two exhaust pipe springs.

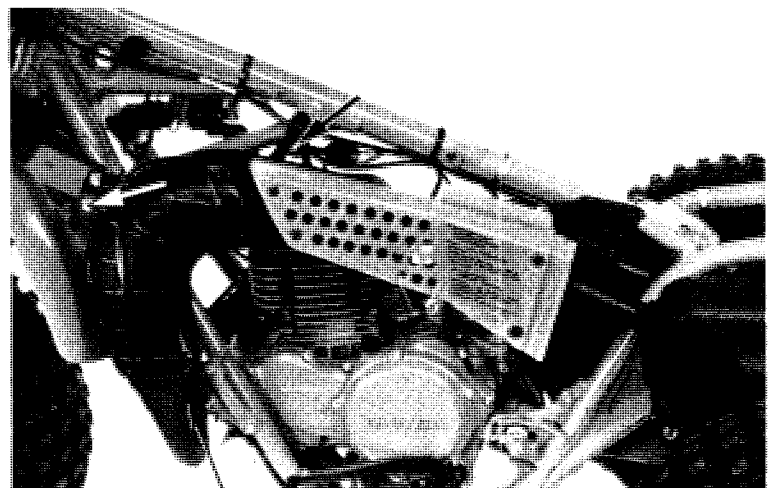


Loosen the two exhaust muffler 8 mm flange bolts.
Remove the exhaust muffler spring.



MUFFLER

Remove the two exhaust chamber 8 mm flange bolts and remove the chamber.





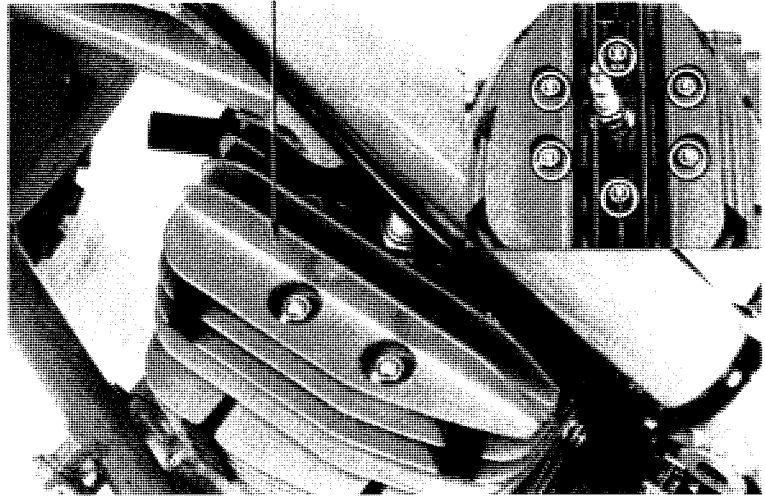
CYLINDER HEAD/CYLINDER/PISTON

Remove the spark plug.
Remove the six flange nuts attaching the cylinder head to the cylinder.

NOTE

To avoid warping the cylinder head, use a criss-cross pattern to loosen each nut about 1/4 turn, then remove the nuts.

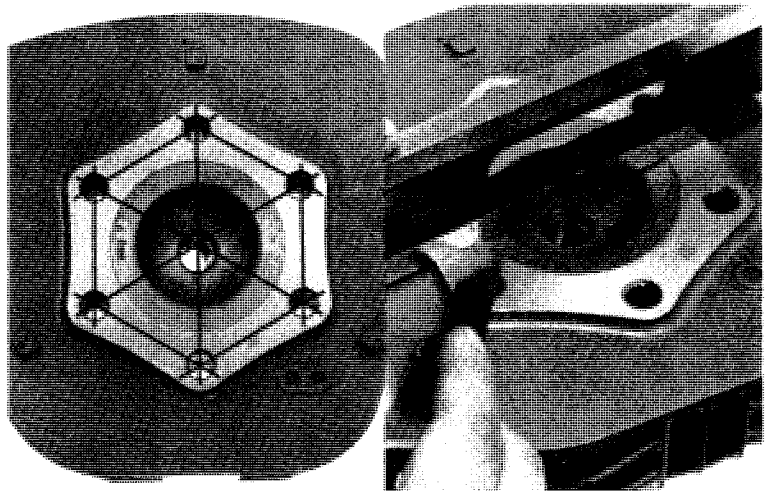
CYLINDER HEAD



INSPECTION

Check the cylinder head for warpage with a straight edge and feeler gauge in the directions shown.

SERVICE LIMIT: 0.20 mm (0.008 in)



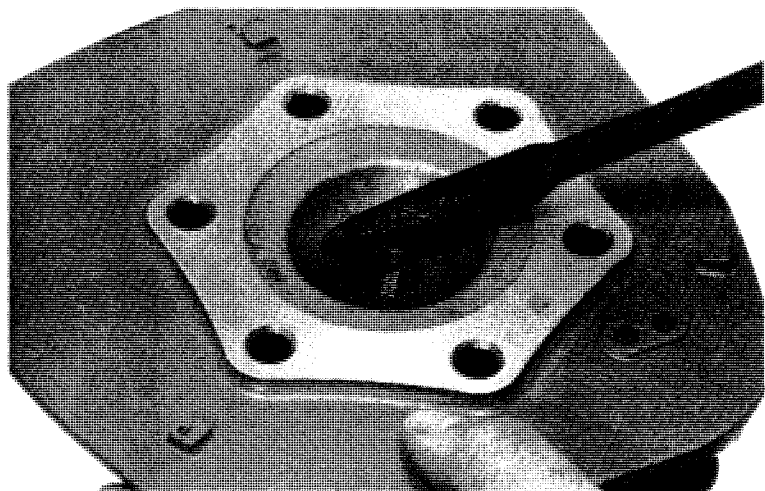
DECARBONIZING

Remove the carbon deposits from the combustion chamber.

Clean the head gasket surface of any gasket material.

NOTE

Avoid damaging the gasket surfaces.



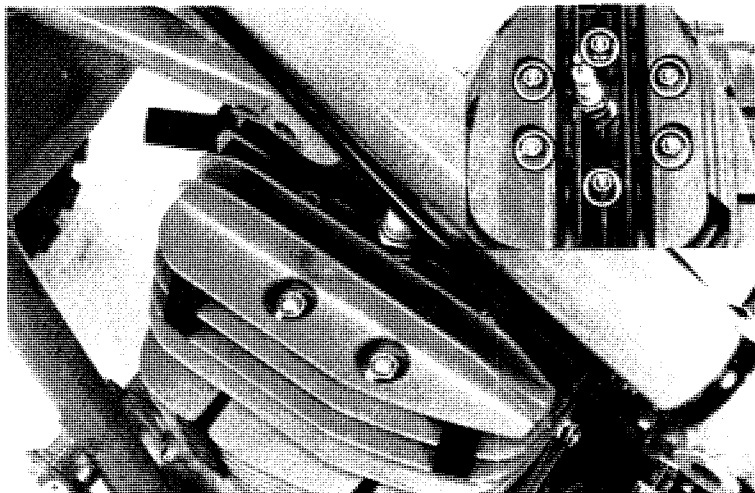


INSTALLATION

Install the cylinder head using a new cylinder head gasket.

Install the six flange nuts and tighten to the specified torque in a crisscross pattern in 2-3 steps.

**TORQUE: 24–29 N-m (2.4–2.9 kg-m,
17–21 ft-lb)**



CYLINDER/PISTON

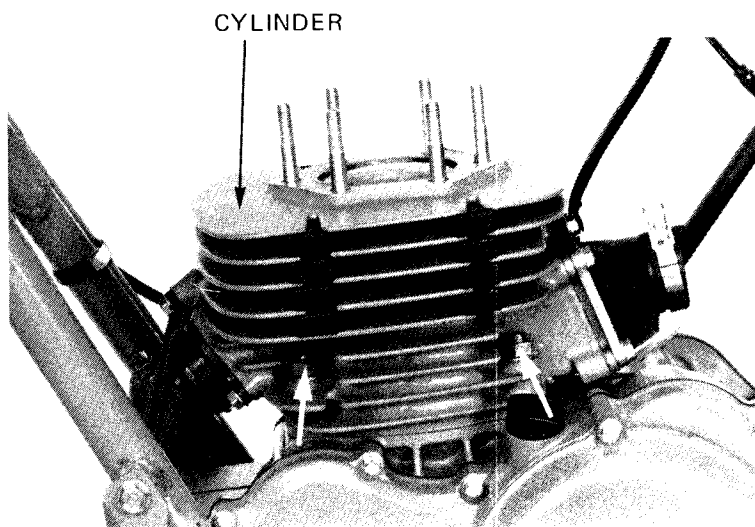
CYLINDER REMOVAL

Remove the exhaust system (Page 5-2).

Remove the cylinder head (Page 5-3).

Remove the carburetor.

Remove the four flange nuts attaching the cylinder to the crankcase.

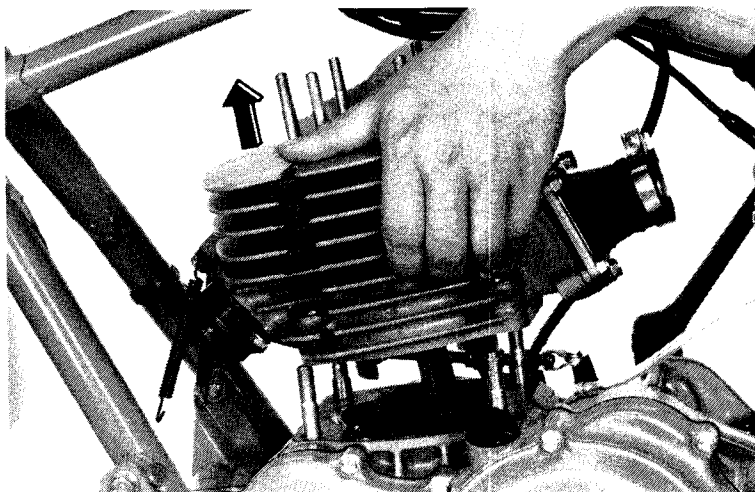


Remove the cylinder.

CAUTION:

Do not pry or strike the cylinder or cooling fins.

Place a clean shop towel into the crankcase to keep debris out.

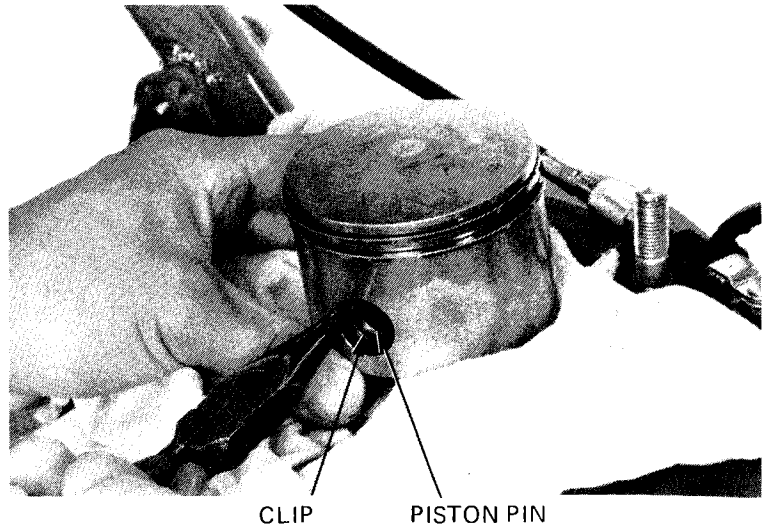


PISTON REMOVAL

Remove the piston pin clip using a pair of needle-nose pliers. Press the piston pin free of the piston.

NOTE

- Do not damage or scratch the piston.
- Do not apply force to the piston pin.
- Do not let the clip fall into the crankcase.

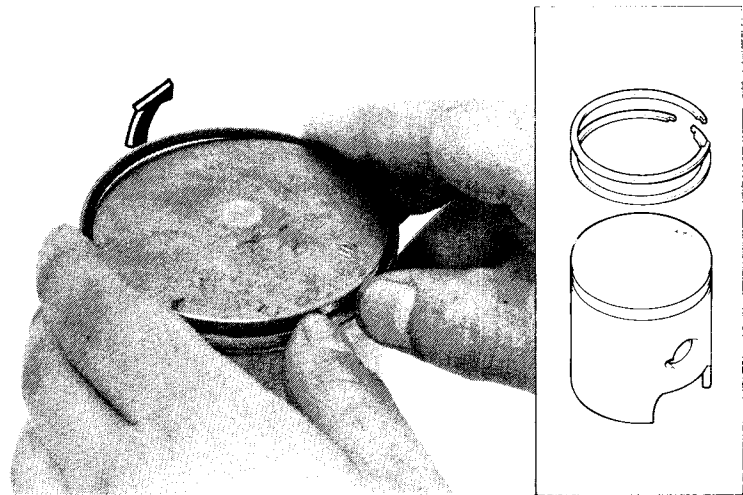


PISTON RING REMOVAL

Spread each piston ring and remove by lifting it up at a point just opposite the gap.

CAUTION:

Do not damage the piston rings by spreading the ends too far.

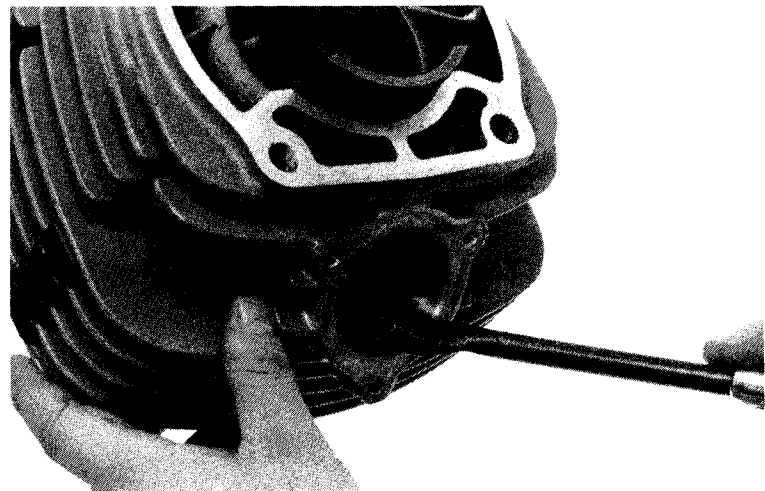


CYLINDER/PISTON INSPECTION

Check the cylinder and piston for wear or damage. Clean carbon deposits from the exhaust port area.

CAUTION:

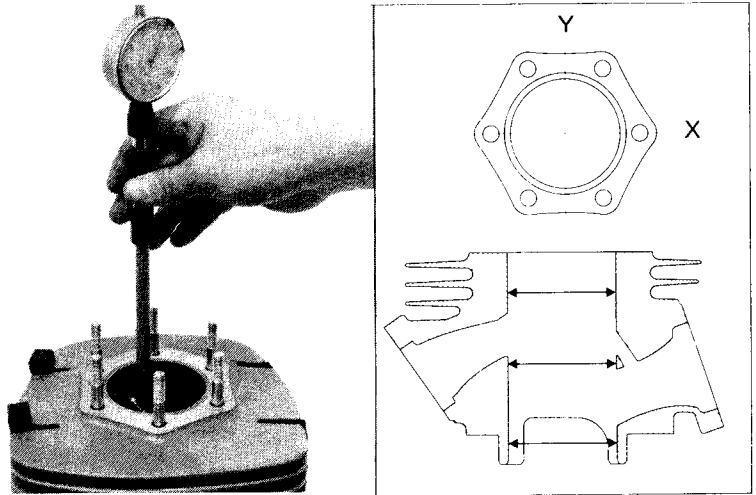
Do not damage the cylinder.





Inspect the cylinder bore for wear at three levels in X and Y directions. Take the minimum figure measured to determine the cylinder wear. Avoid the port area.

SERVICE LIMIT: 70.050 mm (2.758 in)

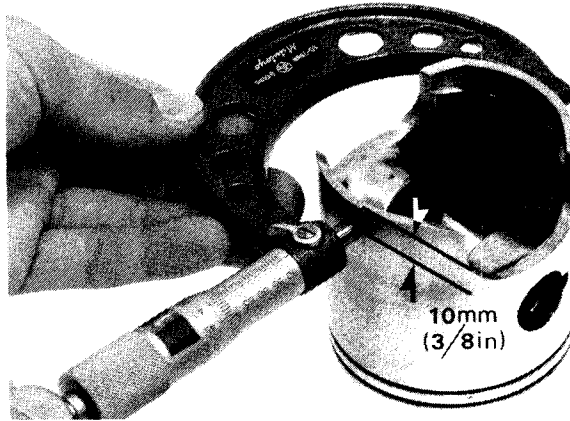


Measure the piston O.D. at a point 10 mm (3/8 in) from the bottom of the skirt and 90 degrees to the piston pin hole.

SERVICE LIMIT: 69.870 mm (2.751 in)

Calculate the piston-to-cylinder clearance

SERVICE LIMIT: 0.150 mm (0.006 in)



Measure the piston pin bore I.D.

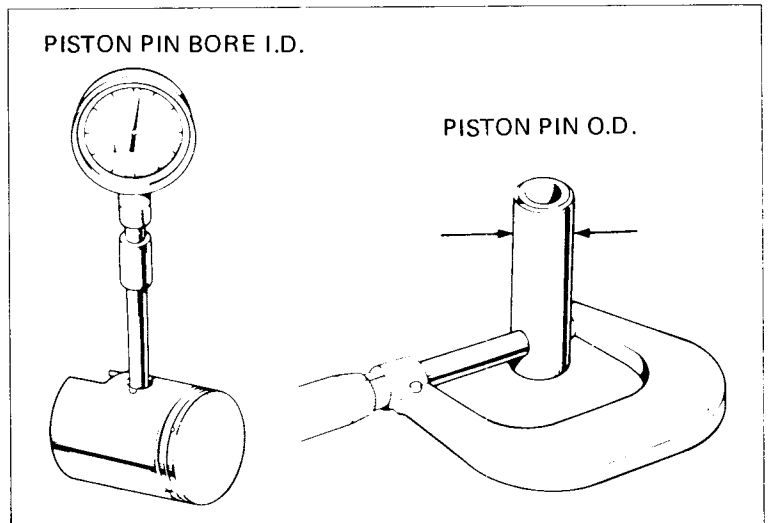
SERVICE LIMIT: 18.027 mm (0.710 in)

Measure the piston pin O.D.

SERVICE LIMIT: 17.980 mm (0.708 in)

Calculate the piston pin-to-piston clearance.

SERVICE LIMIT: 0.050 mm (0.002 in)



PISTON RING INSPECTION

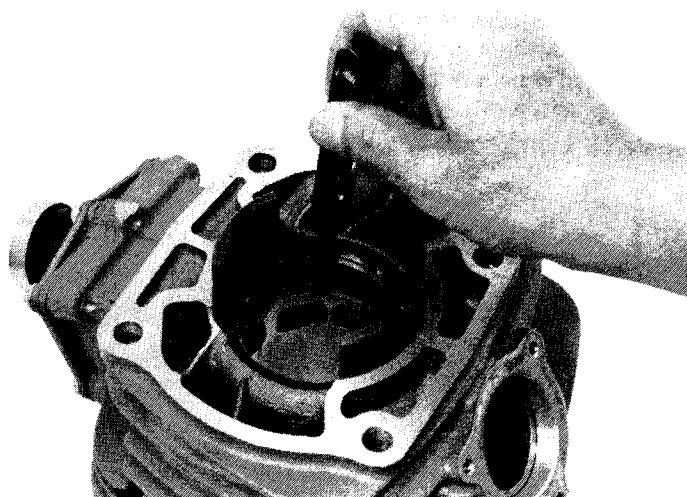
Insert the piston rings into the cylinder. Use the piston to square the ring in the cylinder.

Measure each piston ring's end gap with a feeler gauge.

SERVICE LIMITS:

TOP: 0.5 mm (0.02 in)

BOTTOM: 0.5 mm (0.02 in)

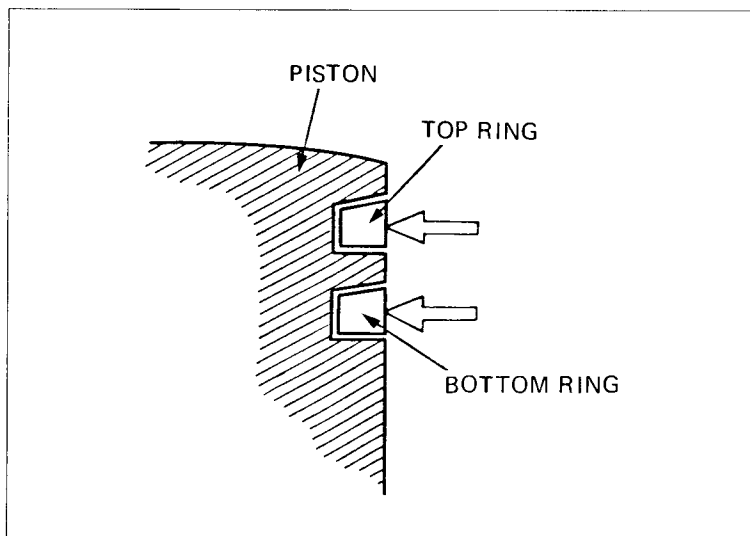


Install the top and bottom rings (Page 5-8).

NOTE

Press each piston ring into place at several points to make sure that it is flush with the piston surface.

If not, clean carbon deposits from the ring groove. The rings should be free enough to be rotated in the ring lands.

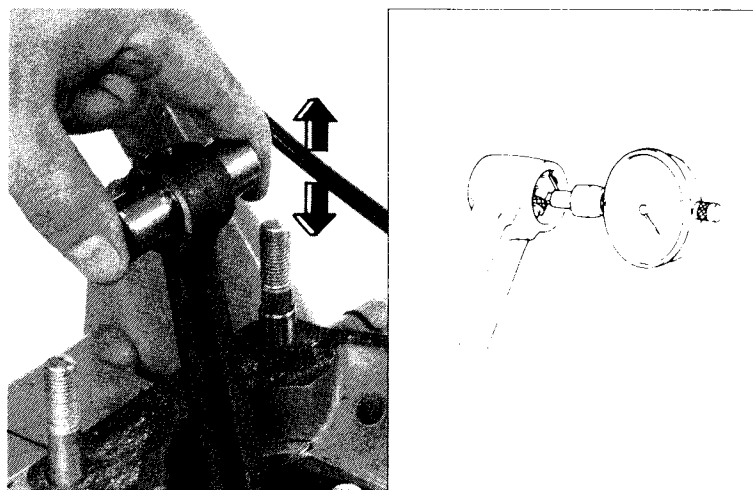


CONNECTING ROD INSPECTION

Install the bearing and piston pin in the connecting rod small end and check for excessive play. If it appears loose, measure as shown.

Measure the connecting rod small end I.D.

SERVICE LIMIT: 22.020 mm (0.867 in)

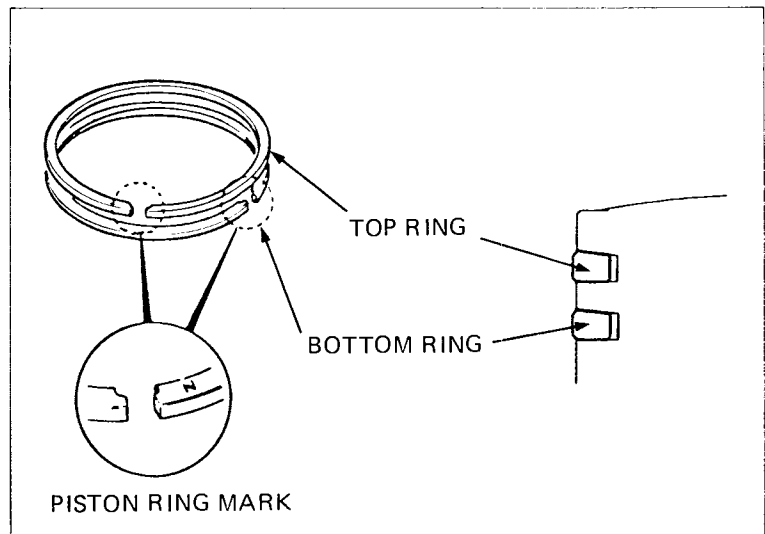




PISTON/CYLINDER INSTALLATION

NOTE

- Install the piston rings with the manufacturer's marks facing up.
- Do not interchange the top and bottom rings.



Lubricate the small end bearing and piston pin with clean 2-stroke oil.

Install the connecting rod small end bearing, piston and piston pin.

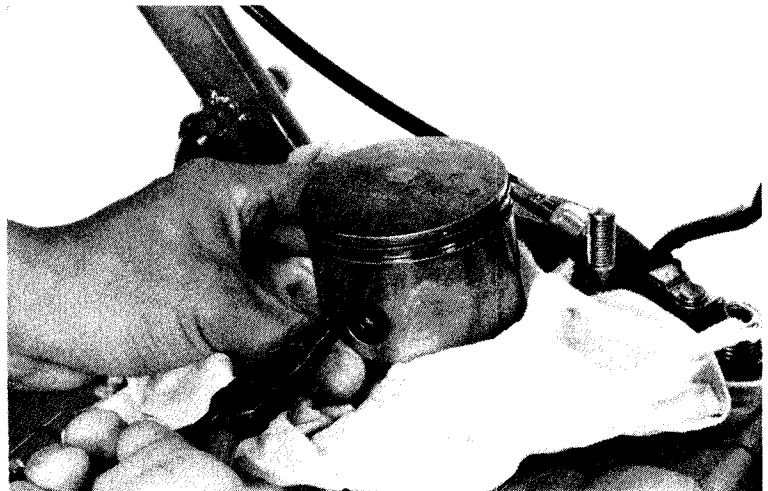
NOTE

- Install the piston with the "IN" mark facing the intake side.

Install the piston pin clip.

NOTE

- Use new pin clips. Never re-use old clips.
- Do not let the clips fall into the crankcase.



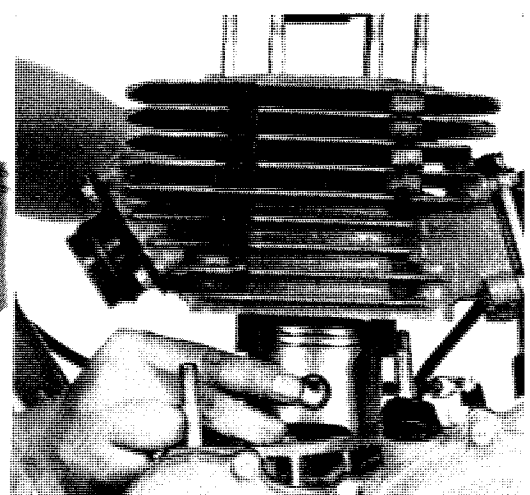
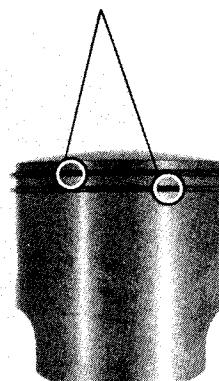
Align each ring end gap with the dowel pin in the ring land.

Place the cylinder base gasket on the crankcase. Lubricate the piston with 2-stroke oil and install the cylinder over the piston while compressing the piston rings.

CAUTION:

Do not rotate the cylinder, since this may cause the piston rings to pop out into a cylinder port.

DOWEL PINS

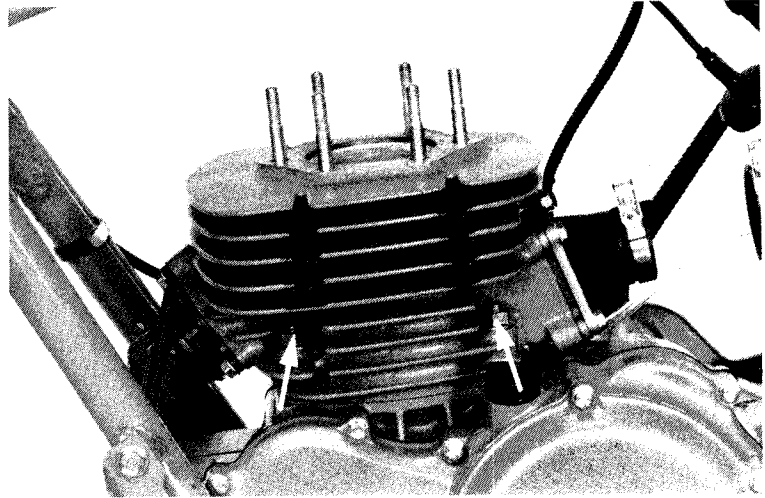




CYLINDER HEAD/CYLINDER/PISTON

Install the four flange nuts and tighten to the specified torque in a crisscross pattern in 2-3 steps.

TORQUE: 38–48 N·m (3.8–4.8 kg·m,
27–35 ft·lb)



CYLINDER HEAD

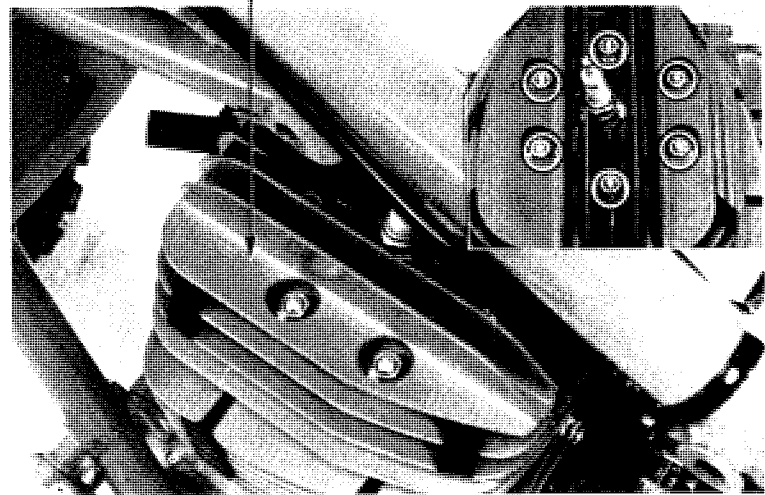
Install a new cylinder head gasket, and install the cylinder head (Page 5-4).

Install the exhaust chamber and springs.

Install the exhaust muffler and spring.

Perform the following inspections:

- Cylinder compression (Page 2-6); compression leaks
- Engine noise
- Secondary air leaks



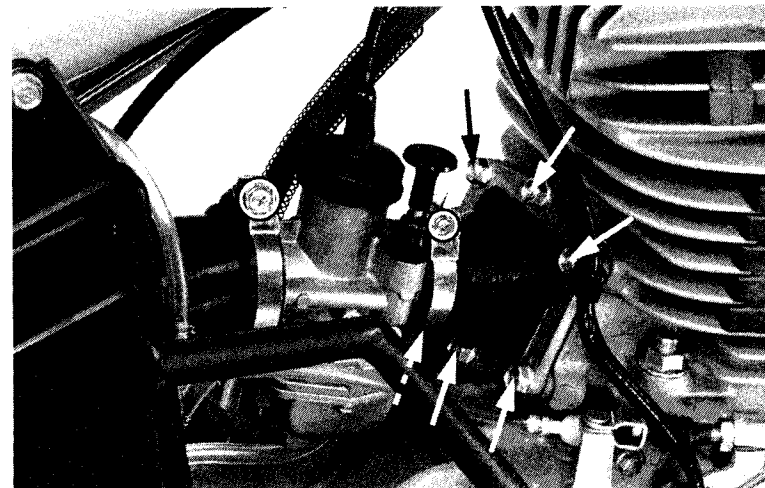
REED VALVE

REED VALVE REMOVAL

Loosen the carburetor band screw.

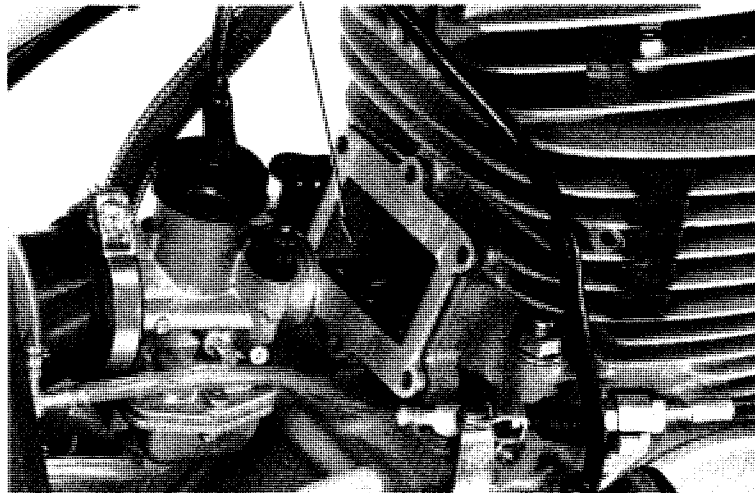
Remove the six intake pipe bolts.

Remove the intake pipe.





Remove the reed valve from the cylinder.

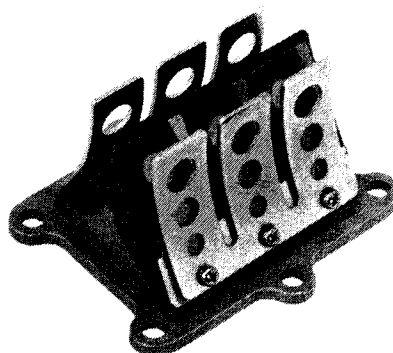


REED VALVE INSPECTION

Check the reed for damage or fatigue and replace if necessary. Replace the valve with a new one if the seat rubber is cracked or damaged, or if there is clearance between the reed and seat.

CAUTION:

Do not disassemble or bend the reed stopper as this may cause improper engine performance. The reed valve must not be disassembled. If the stopper, reed or seat is faulty, replace the assembly.

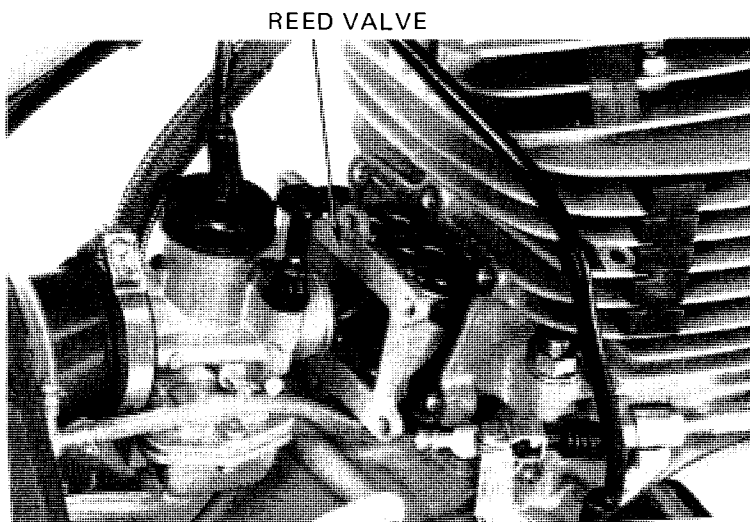


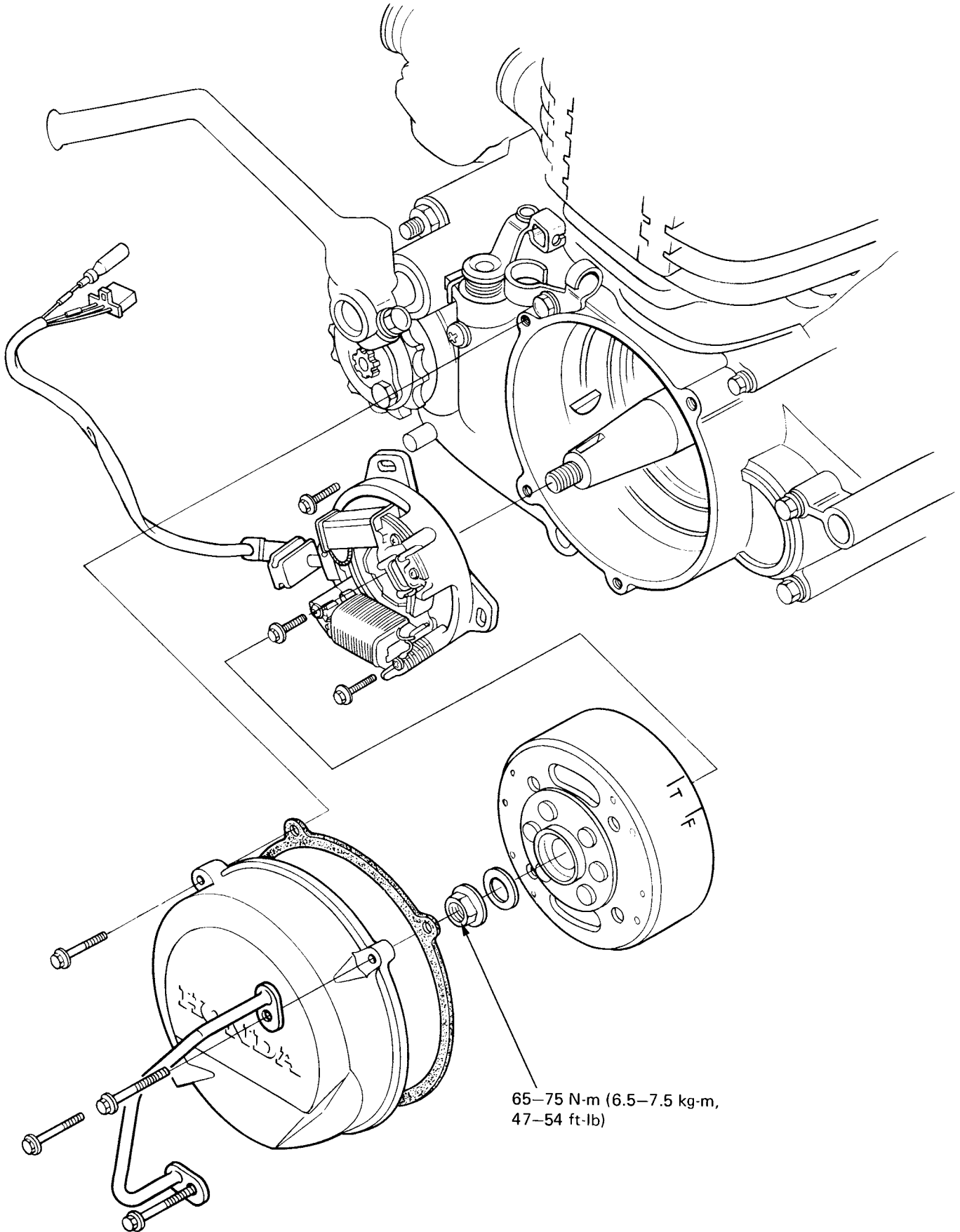
REED VALVE INSTALLATION

Installation of the reed valve is essentially the reverse order of removal.

NOTE

After installation, check for secondary air leaks around the reed cage and intake pipe.







6. AC GENERATOR

SERVICE INFORMATION	6 - 1
AC GENERATOR REMOVAL	6 - 2
AC GENERATOR INSTALLATION	6 - 4

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The AC generator can be serviced without removing it from the engine. Do not remove the pulse generator from the stator base.
- For AC generator inspection, refer to Section 15.

TOOLS

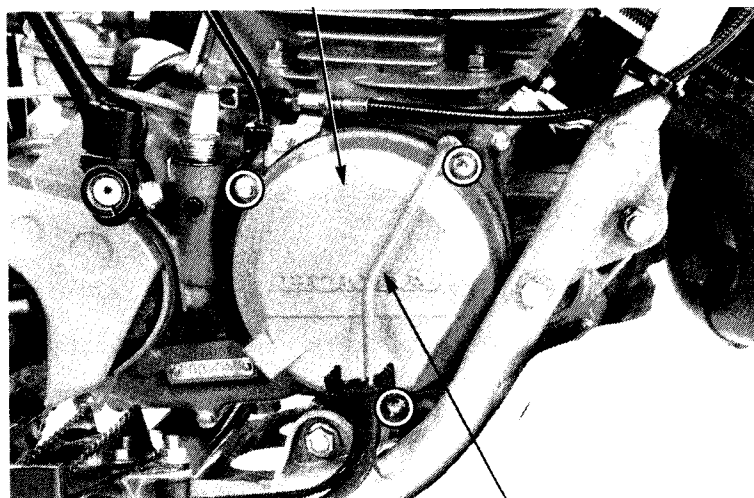
Common	
Universal Holder	07725-0030000
Flywheel Puller	07733-0010000 or 07933-0010000



AC GENERATOR REMOVAL

Remove the three flange bolts and remove the generator cover guard and cover.

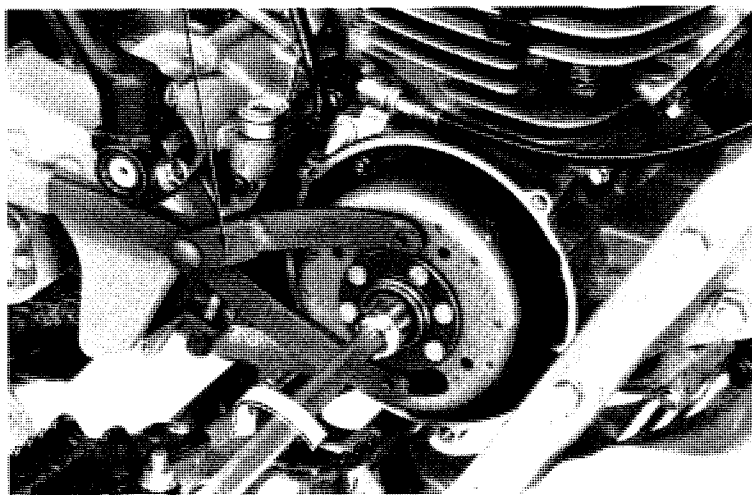
GENERATOR COVER



COVER GUARD

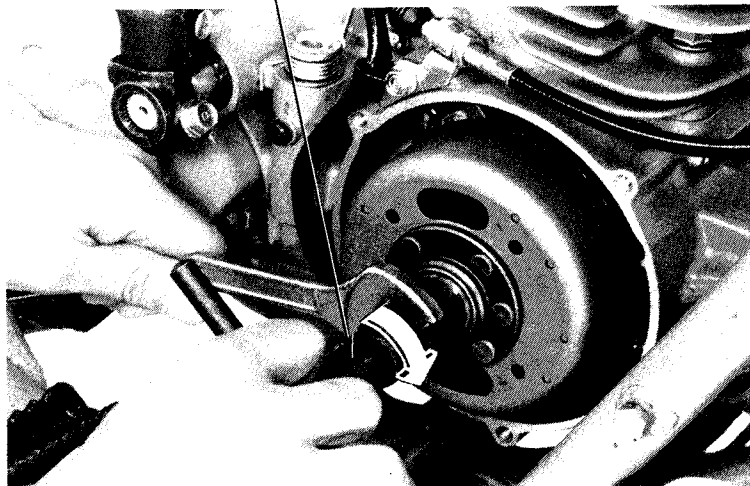
Remove the 12 mm nut attaching the flywheel.

UNIVERSAL HOLDER 07725-0030000



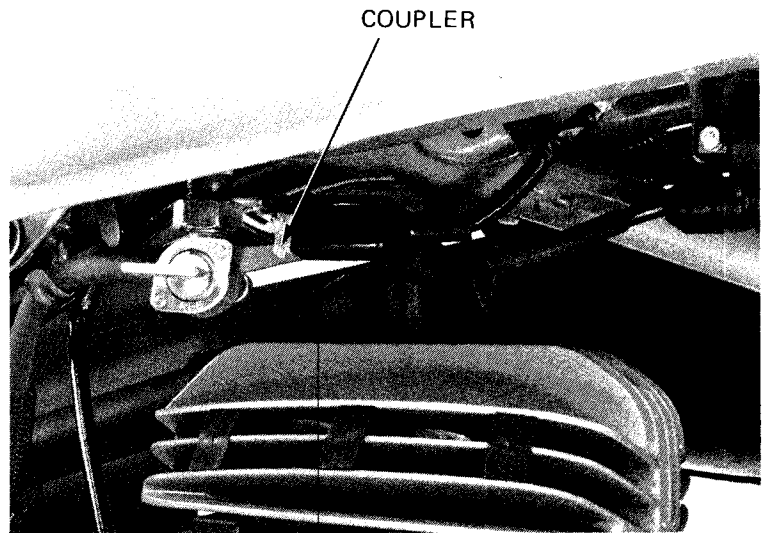
FLYWHEEL PULLER 07733-0010000 or
07933-0010000

Remove the flywheel and woodruff key from the crankshaft.





Disconnect the AC generator wire coupler.

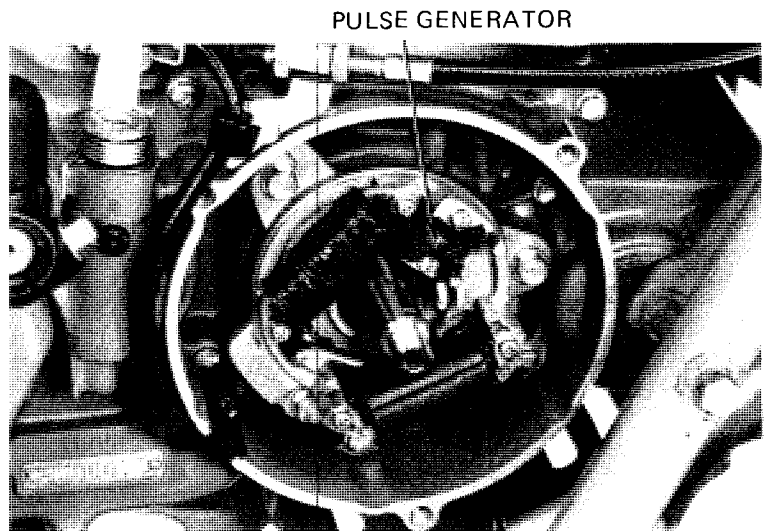


Remove the AC generator stator.

CAUTION:

- Do not separate the pulse generator from the stator base.
- Protect the generator assembly to prevent damage to the components.

For AC generator inspection, refer to pages 15-3 and 15-5.



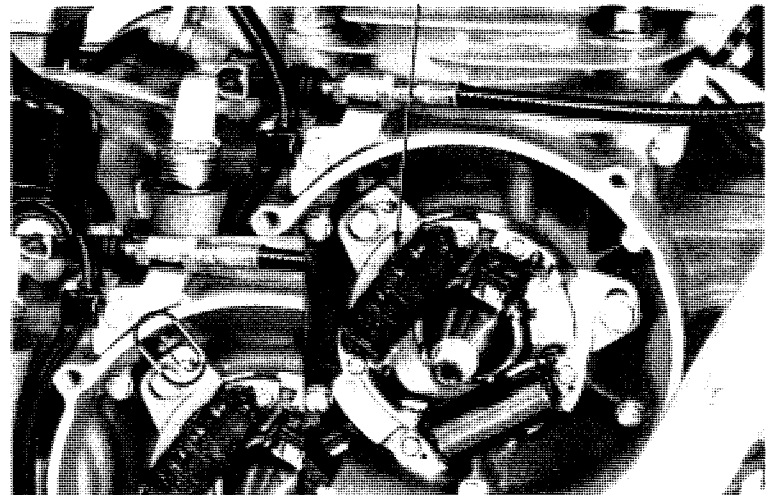


AC GENERATOR INSTALLATION

Install the stator.

NOTE

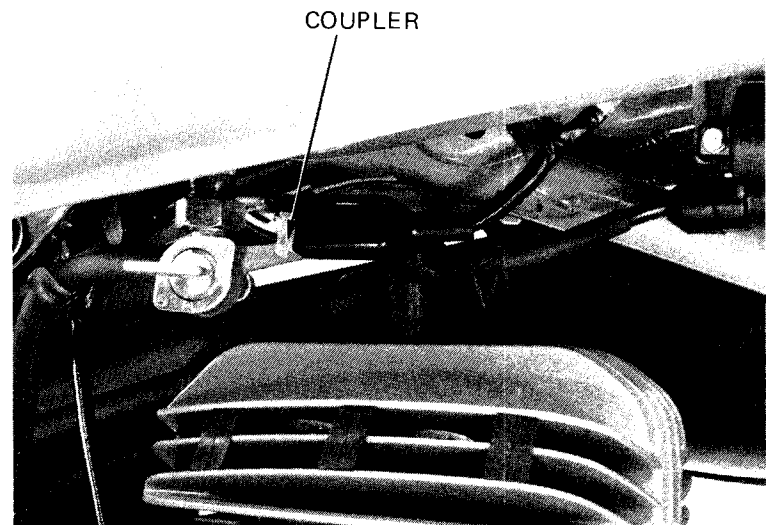
Install the stator with the aligning line aligned with the index mark on the crankcase.



Connect the AC generator coupler

NOTE

Secure the AC generator wires to the frame.



Install the woodruff key in the crankshaft keyway, then install the flywheel on the crankshaft.

NOTE

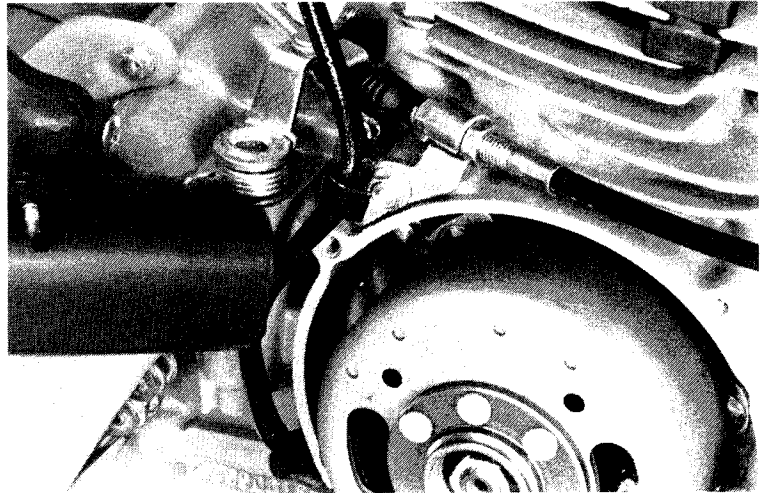
- Check that there is no debris inside the flywheel before installation. The magnets tend to attract steel filings and other ferrous debris.
- Clean the tapered hole in the flywheel of burrs and other faults; repair if necessary.

TORQUE: 65–75 N·m (6.5–7.5 kg·m,
47–54 ft·lb)

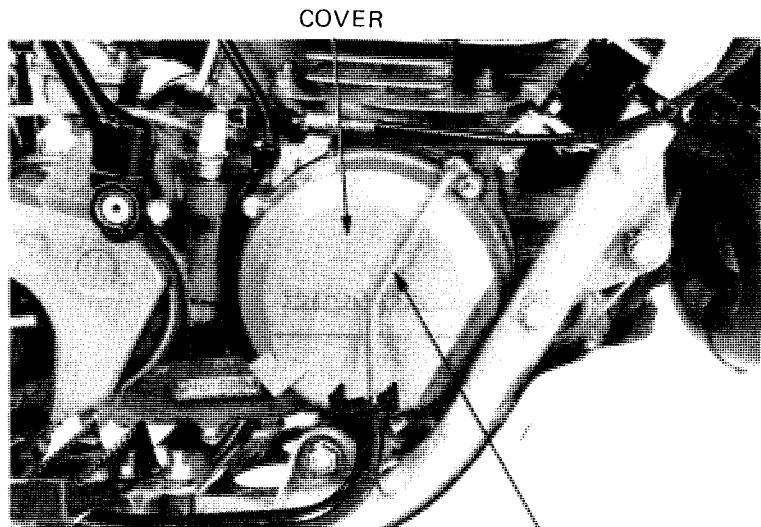




After installing the flywheel, start the engine and inspect the ignition timing (Page 2-7).

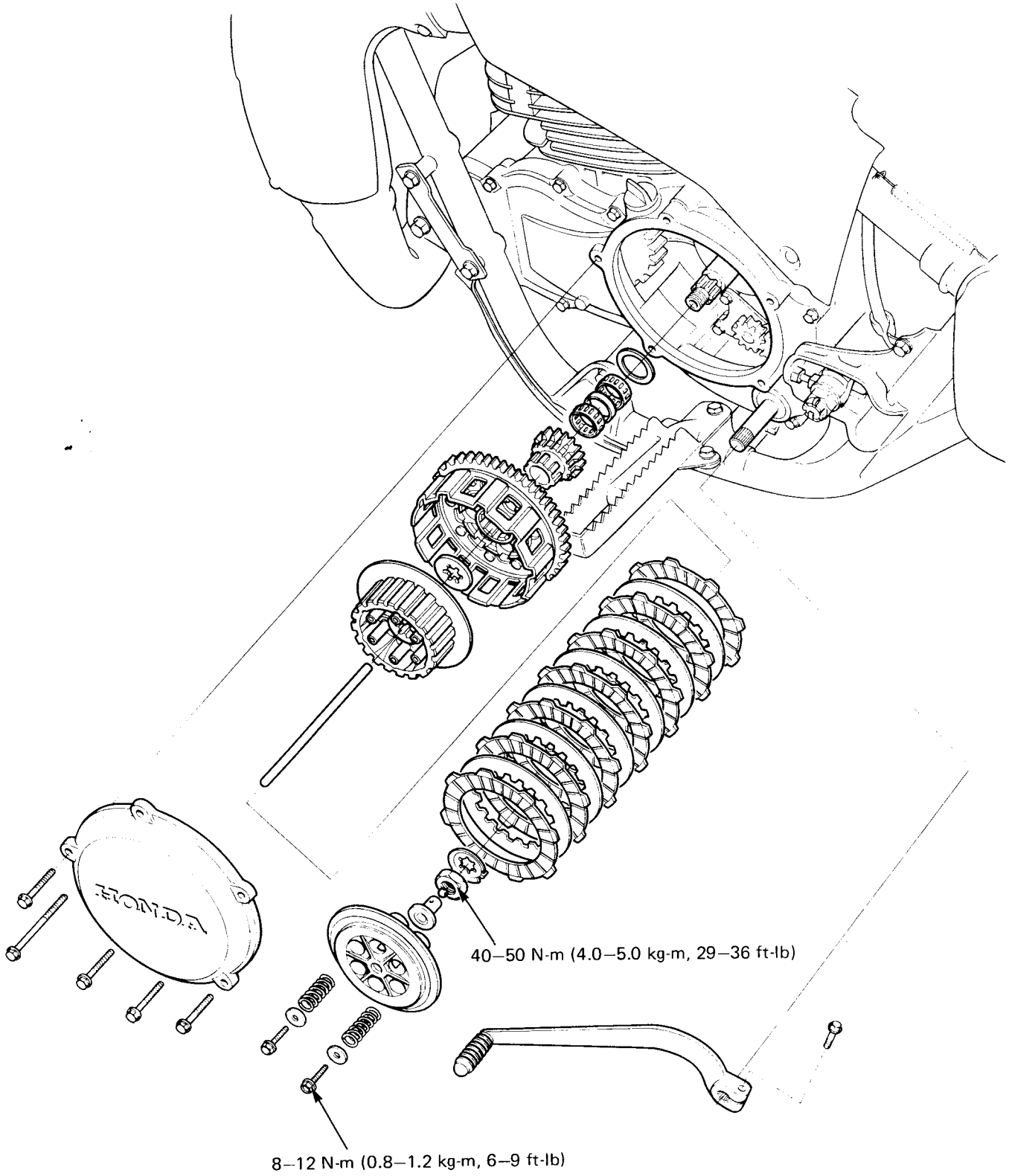


Install the generator cover and cover guard.



COVER

COVER GUARD





SERVICE INFORMATION	7 - 1
TROUBLESHOOTING	7 - 1
CLUTCH	7 - 2
CLUTCH ARM	7 - 9

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- All clutch maintenance and inspections can be accomplished with the engine installed.
- Avoid damaging or scratching the case mating surfaces.
- Before inspecting, clean all removed parts in solvent; dip the parts in clean transmission oil before they are installed.

SPECIFICATIONS

ITEM	STANDARD mm (in)		SERVICE LIMIT mm (in)	
	Clutch spring free length/preload	21.0/18-20 kg	(0.83/39.7-44.1 lb)	21.0/14 kg
Clutch disc thickness	2.62-2.78	(0.103-0.109)	2.45	(0.096)
Clutch plate warpage	—	—	0.2	(0.008)

7

TOOL

SPECIAL

07907-4150000 Lock nut wrench socket 27 mm Commercially available in U.S.A.

TROUBLESHOOTING

Clutch slips when accelerating

1. No free play
2. Discs worn
3. Springs weak

Clutch operation feels rough

1. Outer drum slots rough

Abnormal engine vibration

1. Balancer out of time

Vehicle creeps with clutch disengaged

1. Too much free play
2. Plates warped

Excessive lever pressure

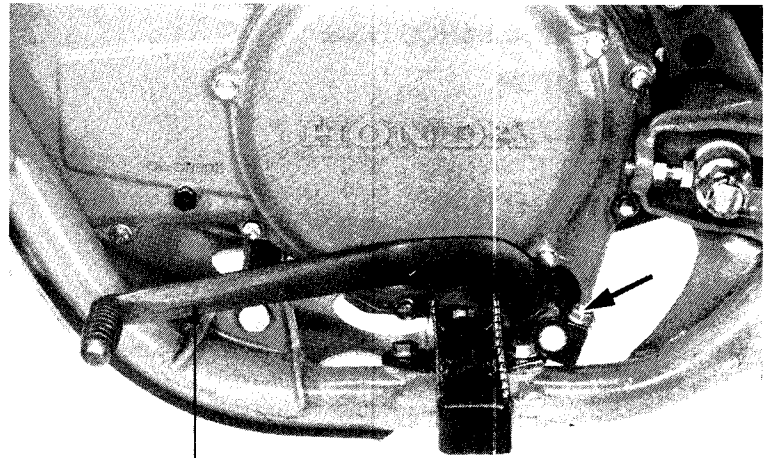
1. Clutch cable kinked, damaged or dirty
2. Lifter mechanism damaged
3. Clutch cable not routed properly



CLUTCH

CLUTCH REMOVAL

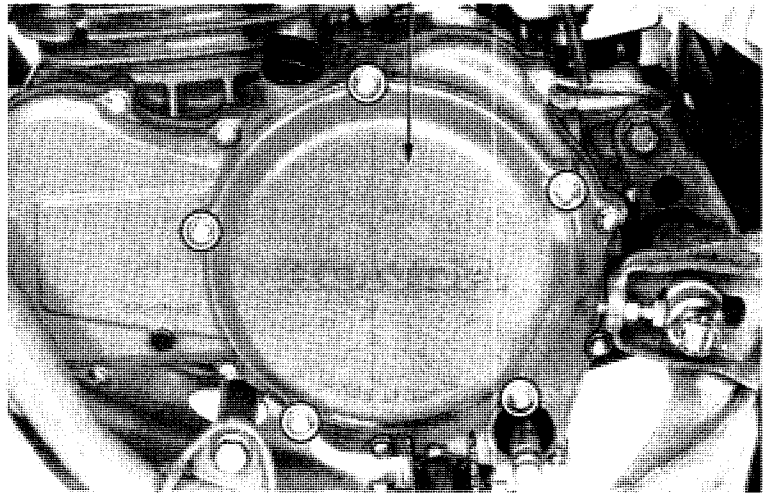
Remove the gear change pedal.



CHANGE PEDAL

Remove the clutch cover.

CLUTCH COVER

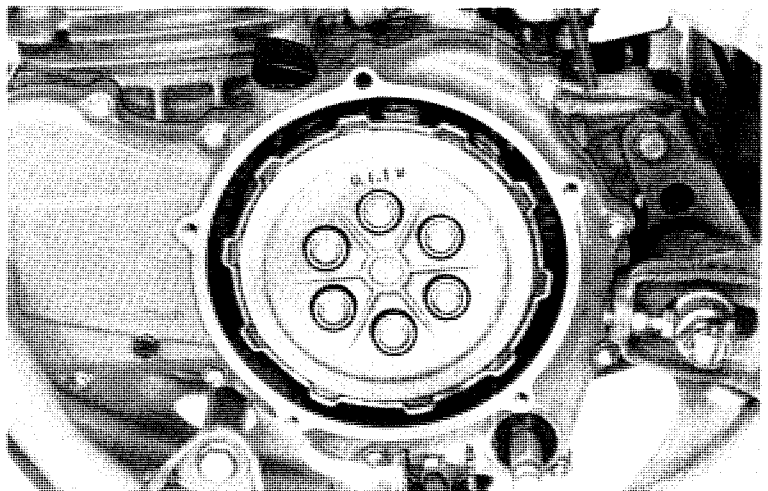


Remove the six clutch bolts and clutch springs.

NOTE

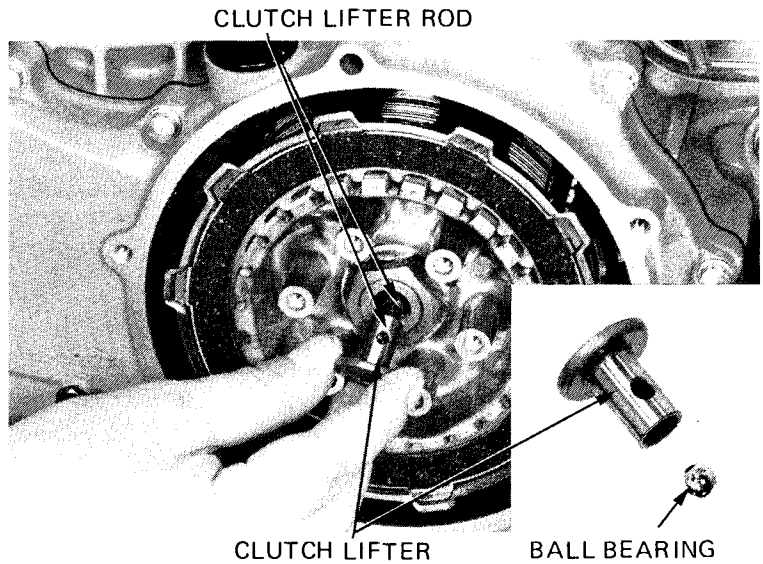
Loosen the bolts in a crisscross pattern in 2-3 steps.

Remove the clutch pressure plate.

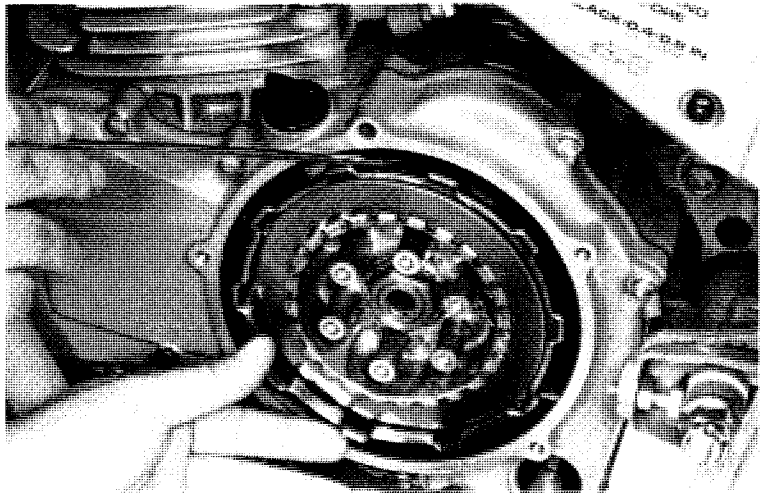




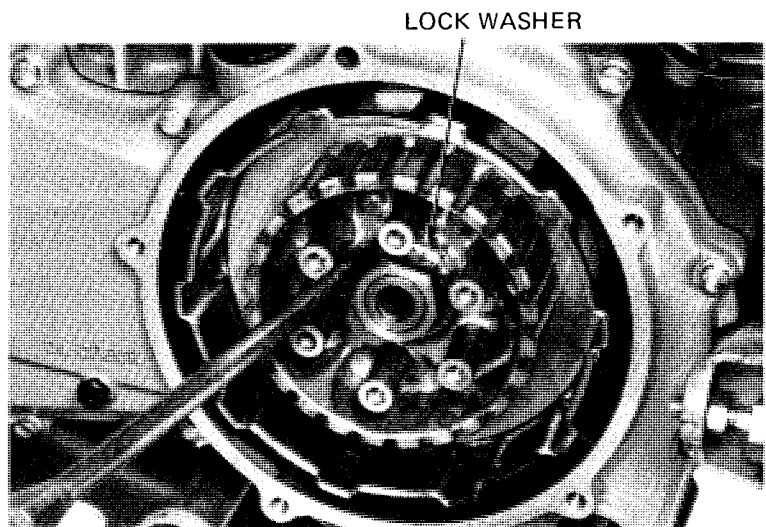
Remove the clutch lifter, steel ball and clutch lifter rod.



Remove the seven clutch friction discs and six clutch plates.



Straighten the tabs of the lock washer.



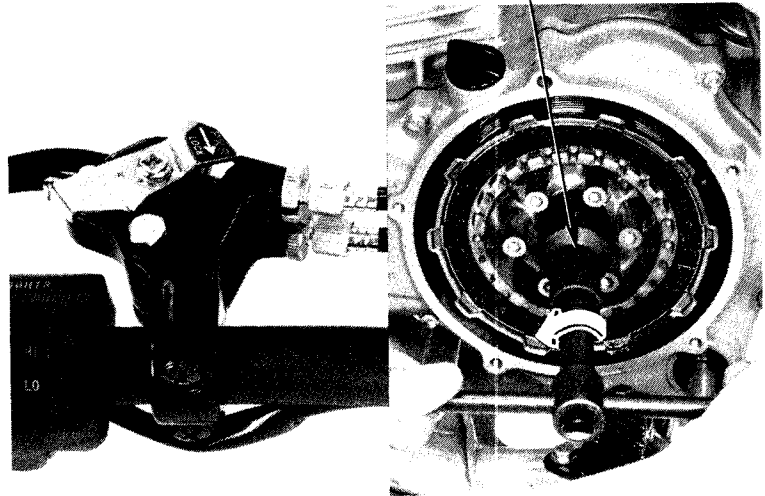


CLUTCH/CLUTCH ARM

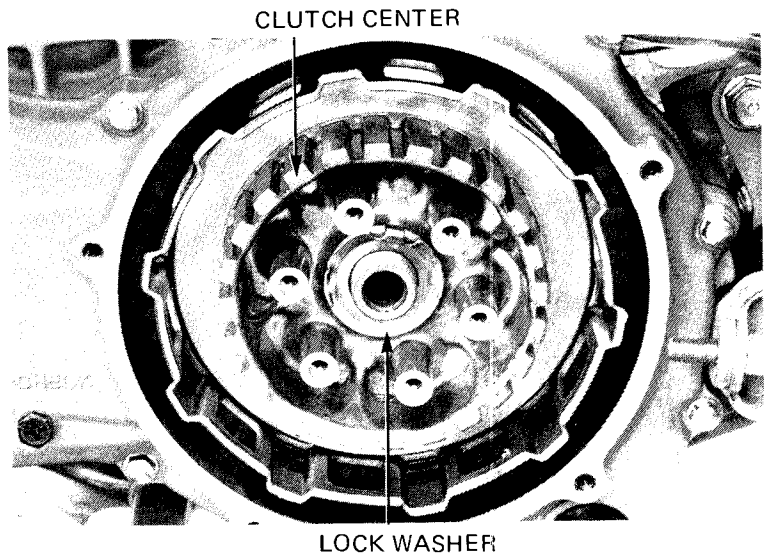
LOCK NUT WRENCH SOCKET
07907-4150000 or 27 mm DEEP SOCKET

Shift the transmission into low and apply the parking brake.

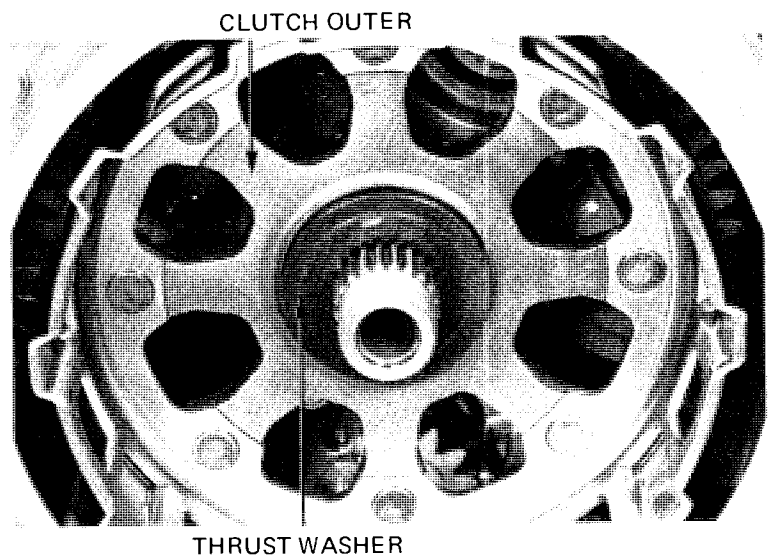
Remove the clutch lock nut.



Remove the lock washer and clutch center.

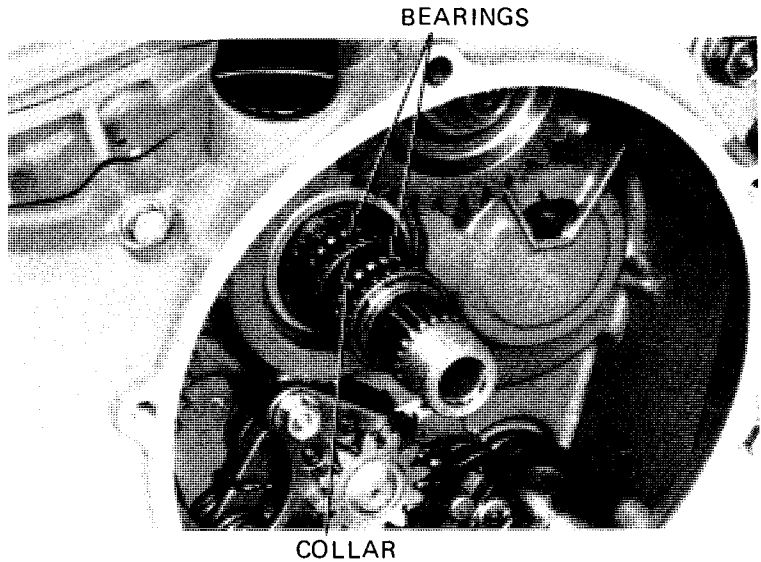


Remove the thrust washer and clutch outer.





Remove the needle bearings and bearing collar.

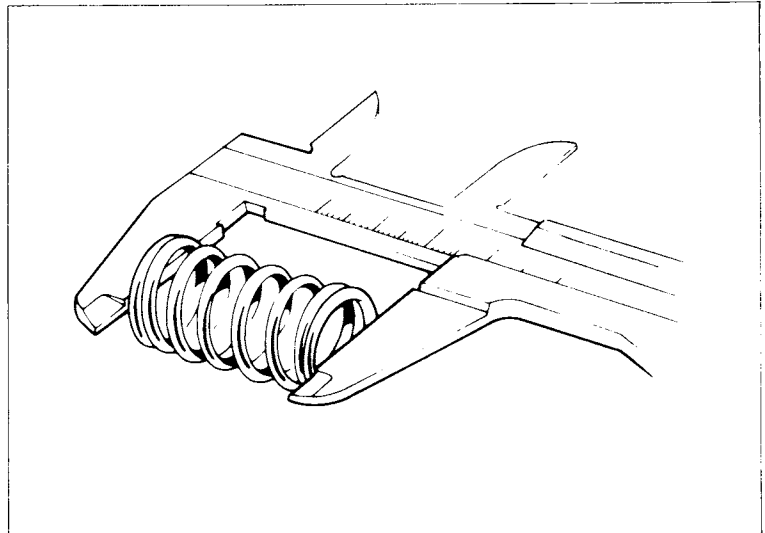


CLUTCH SPRING INSPECTION

Measure each clutch spring free length.

SERVICE LIMIT: 30.0 mm (1.18 in)

Replace the clutch springs as a set if any one of them is beyond the service limit.

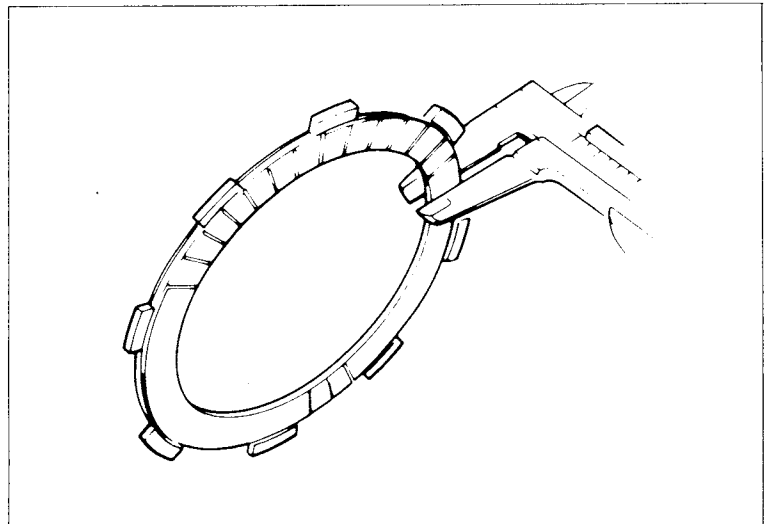


CLUTCH DISC INSPECTION

Replace the clutch discs if they show signs of scoring or discoloration.

Measure each clutch disc thickness.

SERVICE LIMIT: 2.45 mm (0.096 in)



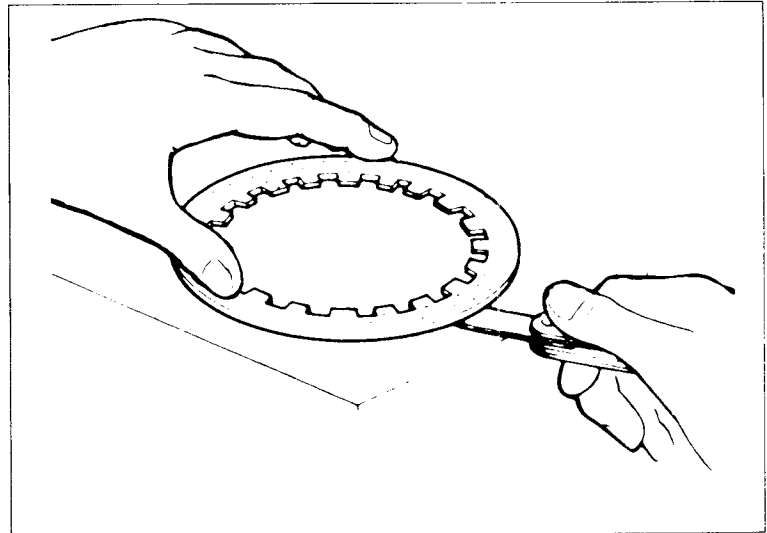


CLUTCH/CLUTCH ARM

CLUTCH PLATE INSPECTION

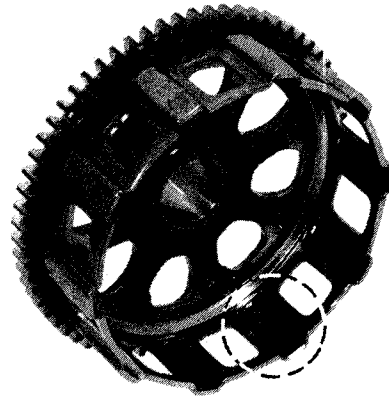
Check for plate warpage on a surface plate, using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.008 in)



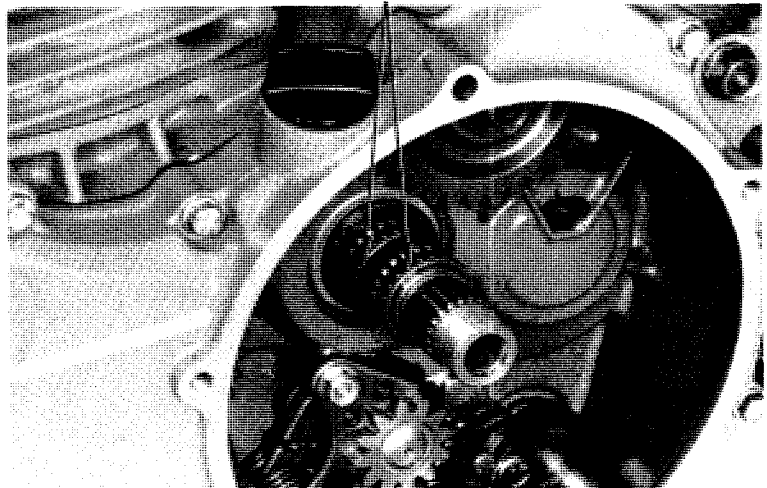
CLUTCH OUTER INSPECTION

Check the slots in the outer drum for nicks, cuts or indentations made by the friction discs.



BEARINGS

Check each needle bearings and gear for wear or damage.





CLUTCH INSTALLATION

Install the clutch outer and thrust washer.

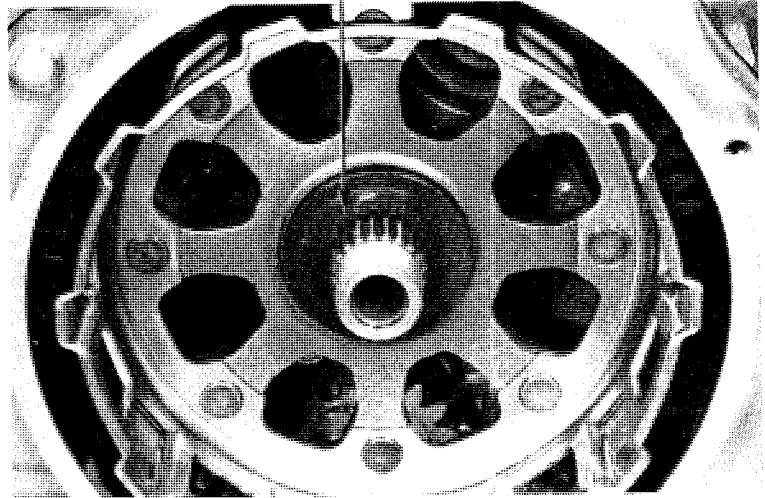
NOTE

Rotate the thrust washer to align the teeth of the thrust washer with the splines of the mainshaft.

Install the clutch center.

Coat the clutch plates and discs with transmission oil.

THRUST WASHER



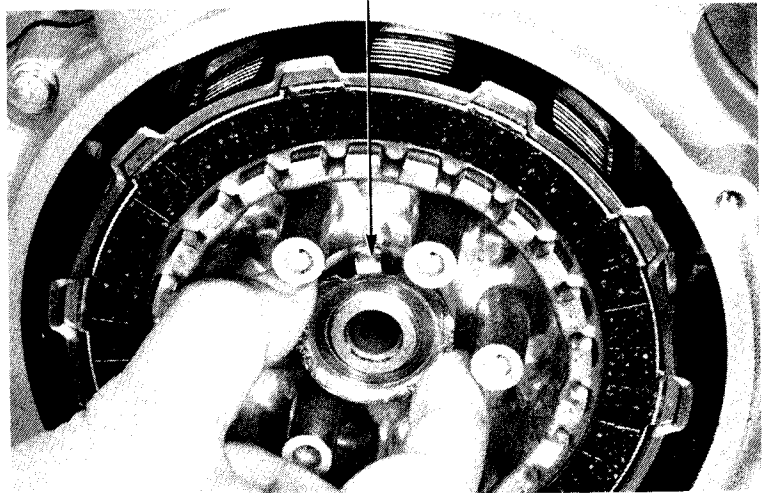
Install the discs and plates alternately, starting with a disc.

Install a new lock washer.

NOTE

Align the tab of the lock washer with the groove of the clutch center.

LOCK WASHER



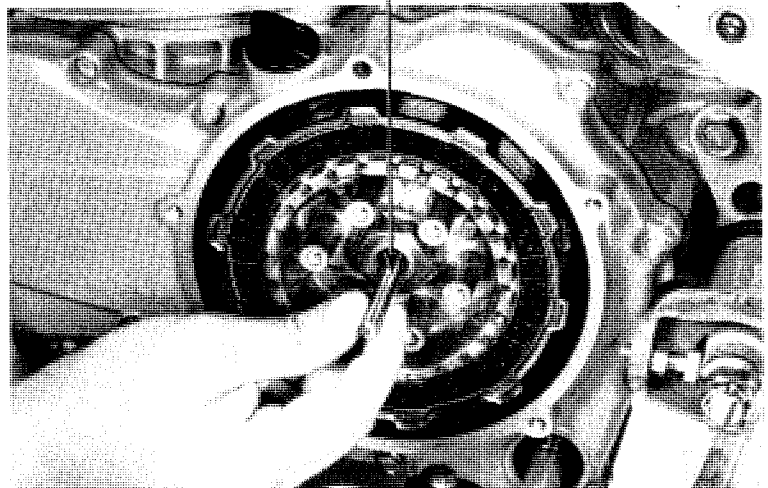
Install the lock nut and tighten to the specified torque.

**TORQUE: 40–50 N·m (4.0–5.0 kg·m,
29–36 ft·lb)**

Bend the tabs of the lock washer up against the lock nut.

Install the clutch lifter rod.

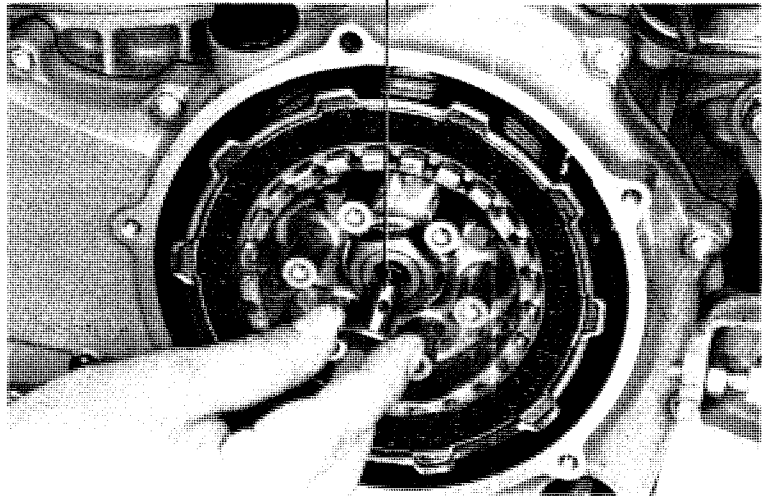
LIFTER ROD





Insert the steel ball into the clutch lifter and place the lifter into the clutch center.

CLUTCH LIFTER



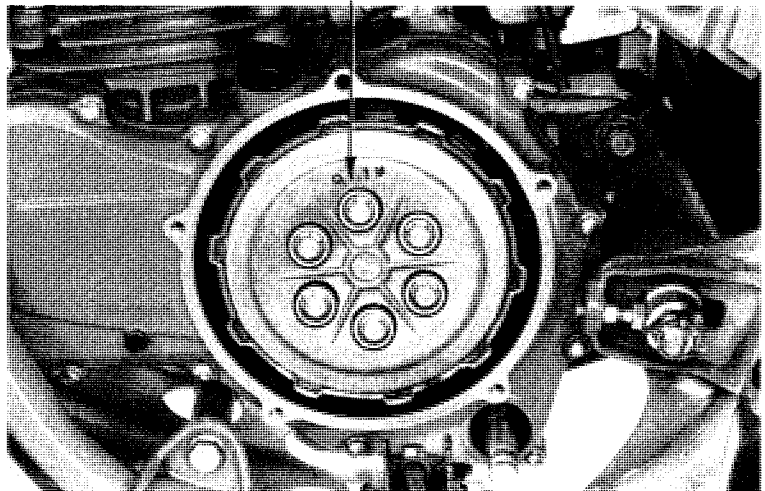
Install the clutch plate and clutch springs.
Install the six clutch bolts.

NOTE

Tighten the clutch bolts in a crisscross pattern in 2-3 steps.

**TORQUE: 8–12 N·m (0.8–1.2 kg·m,
6–9 ft·lb)**

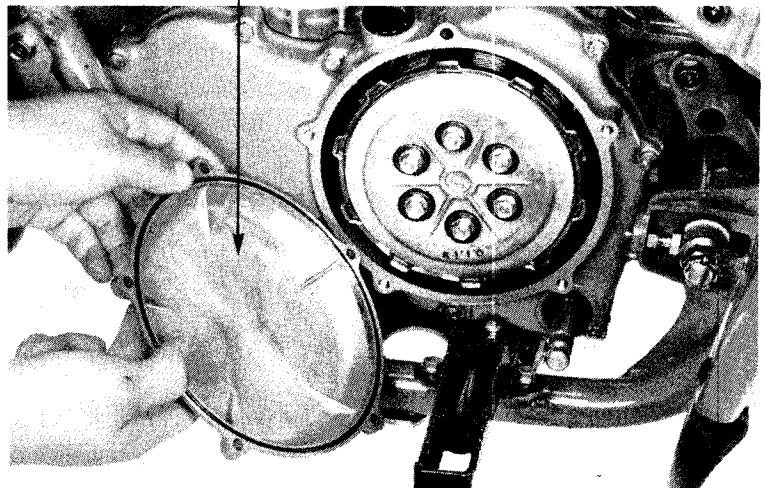
CLUTCH PLATE



Seat the O-ring in the groove of the clutch cover.

Install the clutch cover.
Install the gear change pedal.

CLUTCH COVER

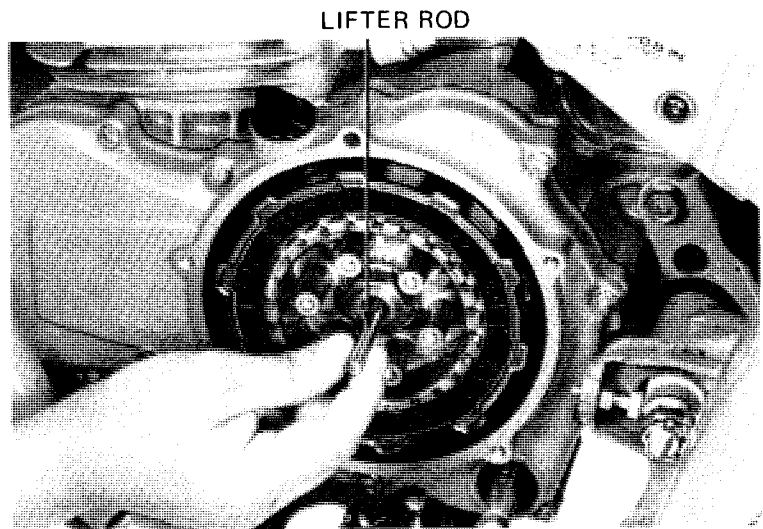




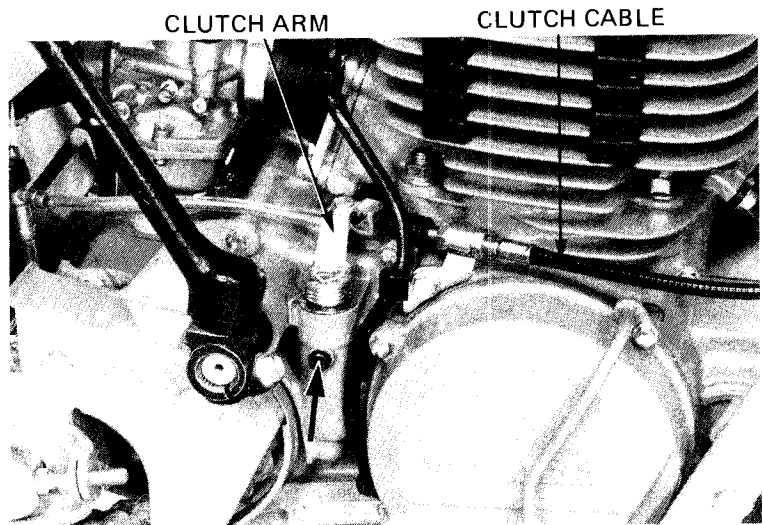
CLUTCH ARM

CLUTCH ARM REMOVAL

Remove the clutch lifter rod. (Page 7-3).



Disconnect the clutch cable from the clutch arm.
Remove the screw attaching the clutch arm, and
remove the clutch arm.

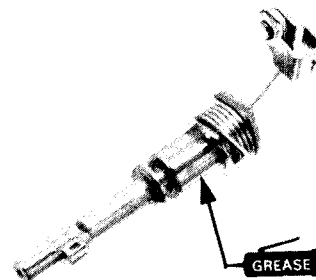


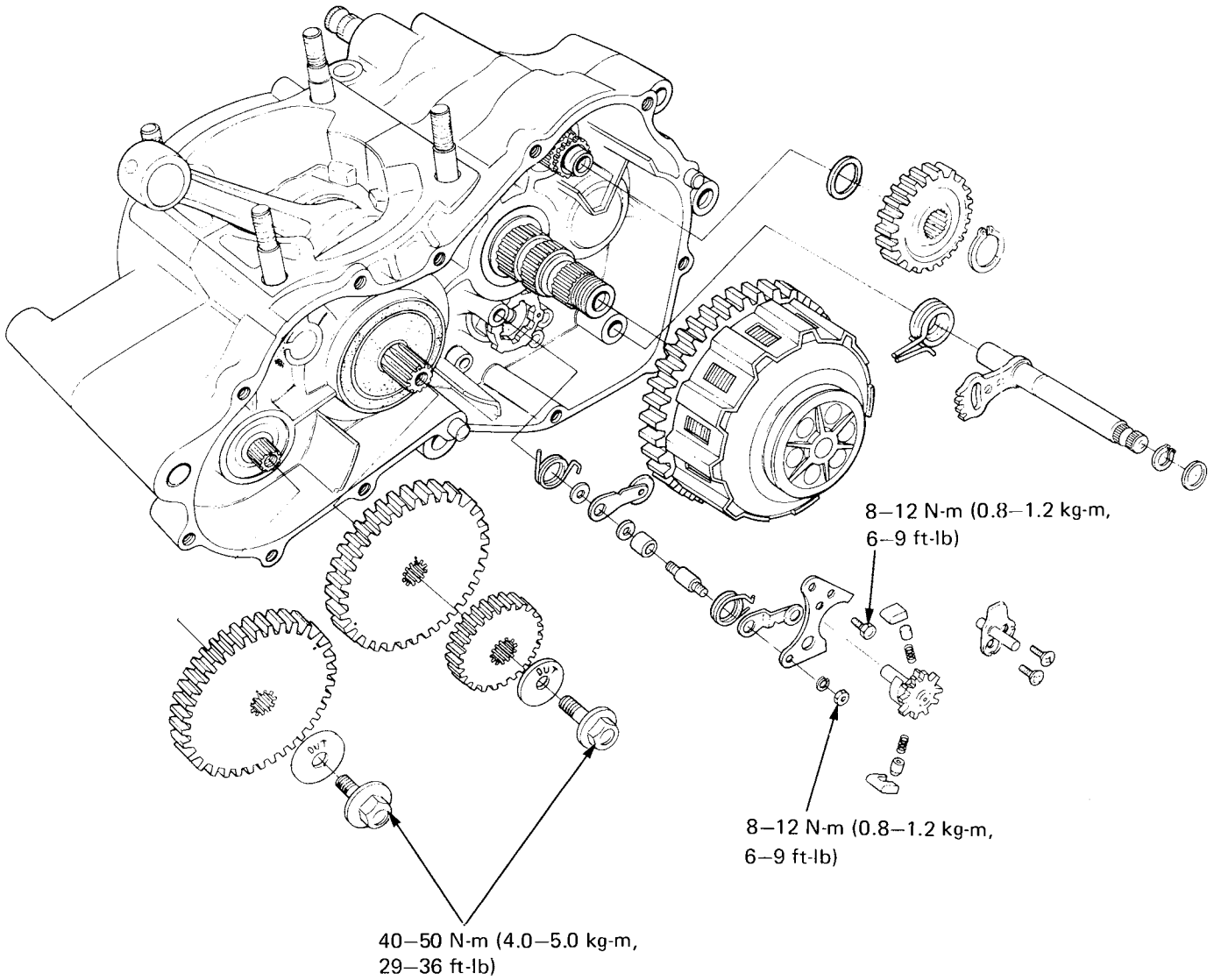
Check the O-ring for damage, fatigue or other faults.
Check the clutch arm for bending.

The installation sequence is essentially the reverse
order of removal.

NOTE

Apply grease to the clutch lifter shaft before
assembly.







SERVICE INFORMATION	8 - 1
SHIFT LINKAGE	8 - 2
BALANCER GEARS	8 - 6

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section includes shift linkage and balancer gear repairs which require left crankcase cover removal.
- The engine must be removed from the vehicle before performing repairs on the shift linkage or balancer (Section 4).

Engine removal	Section 4
Clutch removal	Section 7

TOOL

Special Gear holder	07924-KA50000	Equivalent tool is commercially available in USA.
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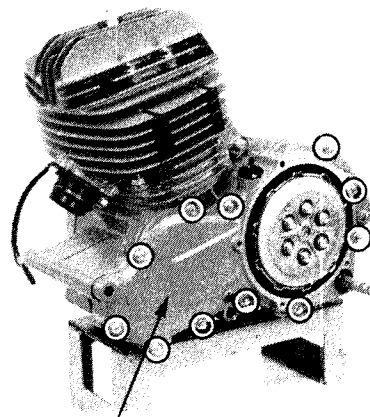
SHIFT LINKAGE

REMOVAL

Remove the engine (Section 4).
Remove the clutch cover (Page 7-2).

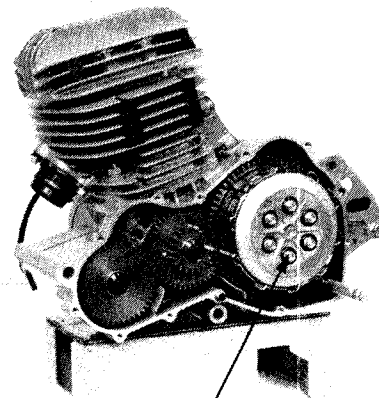


Remove the left crankcase cover bolts.



LEFT CRANKCASE COVER

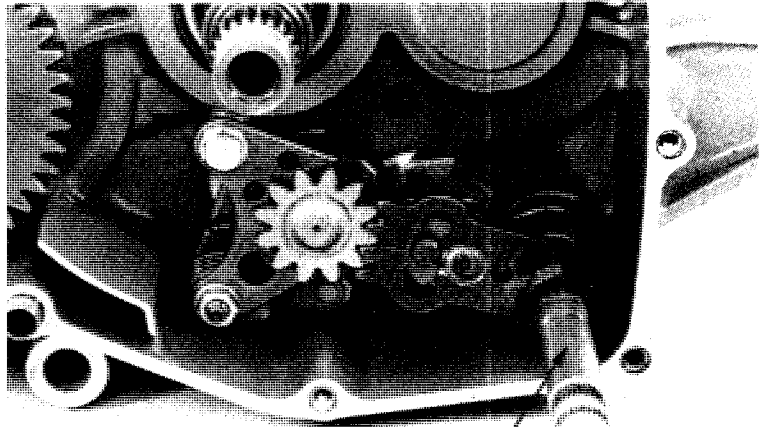
Remove the clutch (Page 7-2).



CLUTCH



Remove the gearshift spindle.



GEARSHIFT SPINDLE

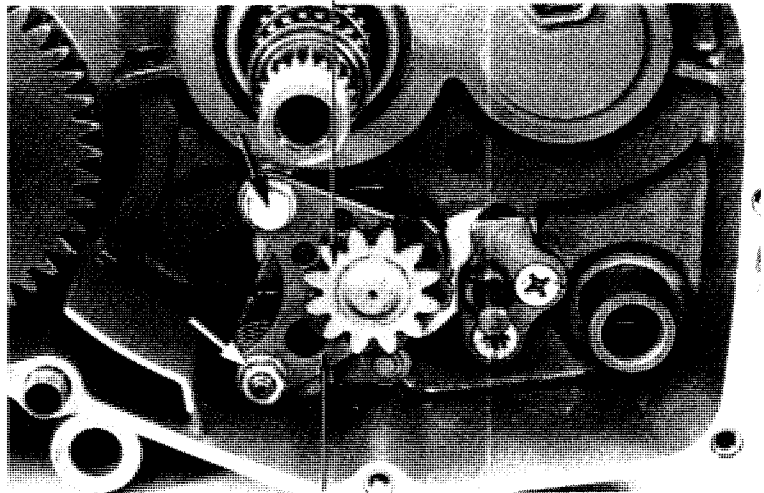
DRUM SHIFTER

Remove the nut and bolt and remove the guide plate.

Remove the drum shifter while holding the two ratchet pawls.

NOTE

The ratchet pawls are spring loaded. Take care while removing them to avoid loss of the plungers or springs.

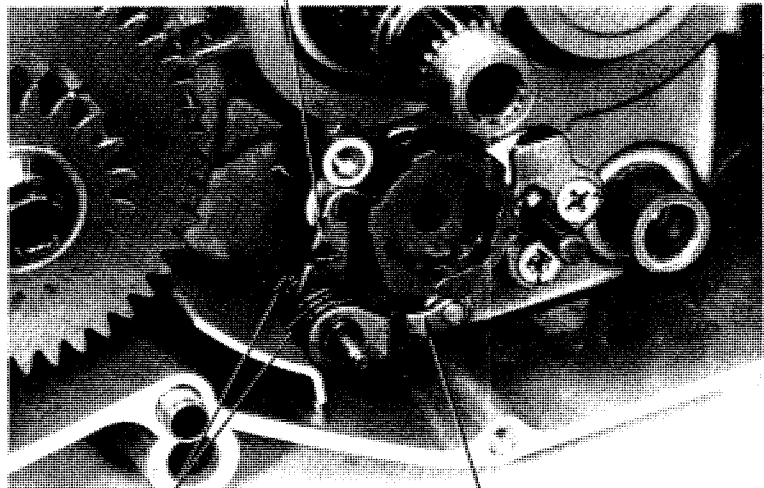


GUIDE PLATE

DRUM STOPPER

Remove the neutral stopper arm and return spring.

Remove the drum stopper arm and return spring.



RETURN SPRINGS

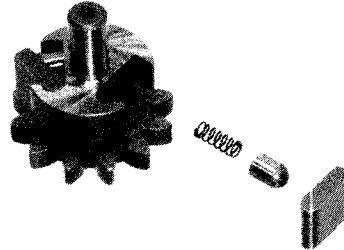
NEUTRAL STOPPER



INSPECTION

Inspect the drum shifter teeth for wear or damage.

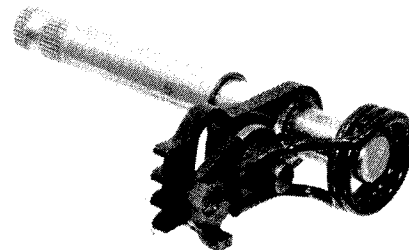
Inspect the ratchet, plunger pawls and plunger springs for damage.



Inspect the stopper arms and arm springs for damage.



Inspect the gearshift spindle and return spring for damage.

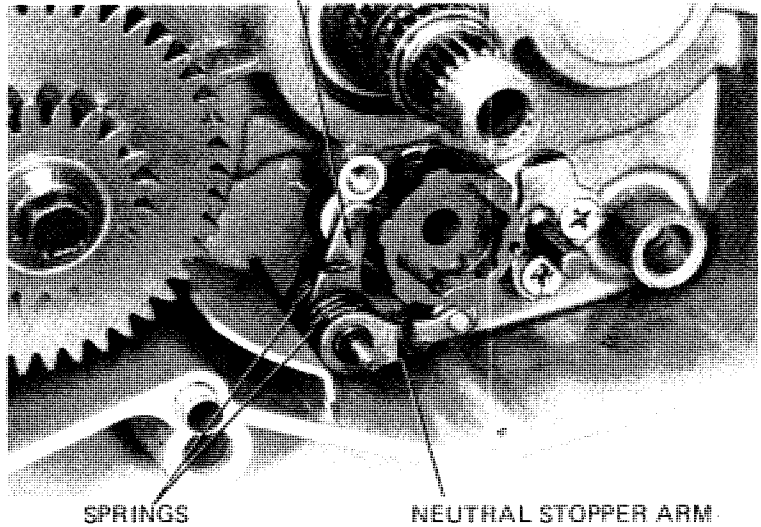




INSTALLATION

Place the gearshift drum in the neutral position.
Install the drum stopper arm, neutral stopper arm and springs.

DRUM STOPPER ARM

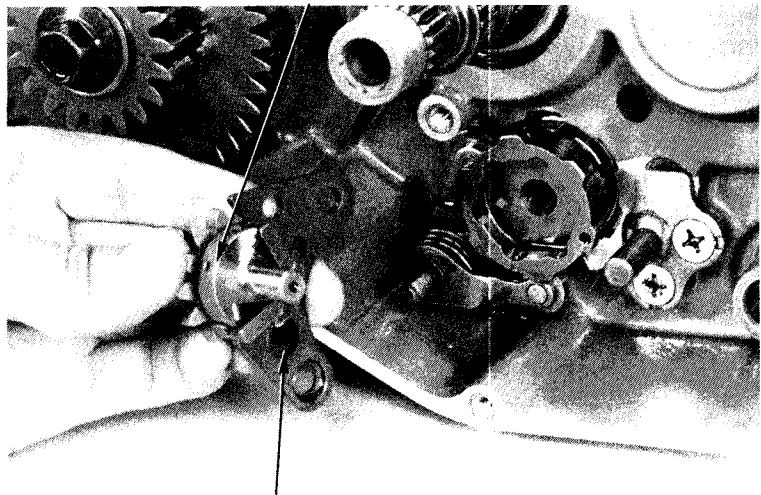


SPRINGS

NEUTRAL STOPPER ARM

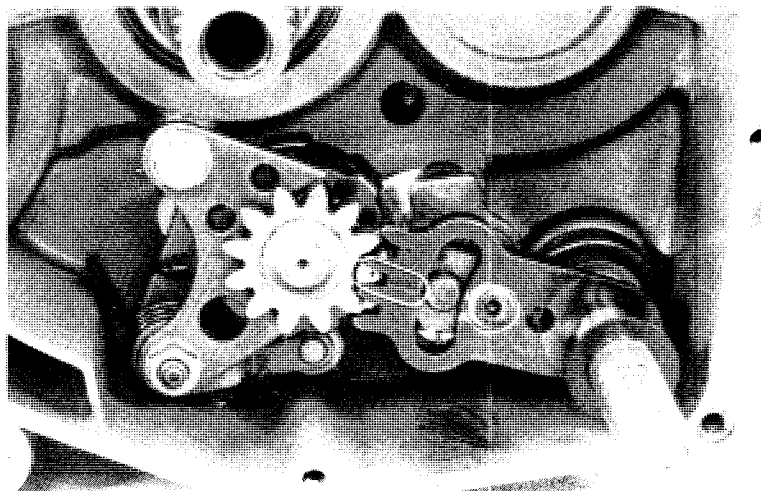
Install the plunger spring, plunger pawls and ratchet pawls A and B in the drum shifter.
Install the drum shifter on the guide plate.
Install the drum shifter and guide plate on the shift drum.
Be sure the ratchet pawls are correctly installed.

DRUM SHIFTER



GUIDE PLATE

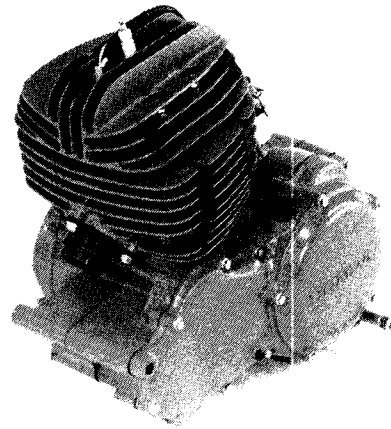
Install the drum shifter and gearshift spindle by aligning the index mark on the spindle ratchet with the punch mark on the drum shifter tooth.





BALANCER GEARS

Remove the left crankcase cover (Page 8-2).
Remove the clutch (Page 7-2).

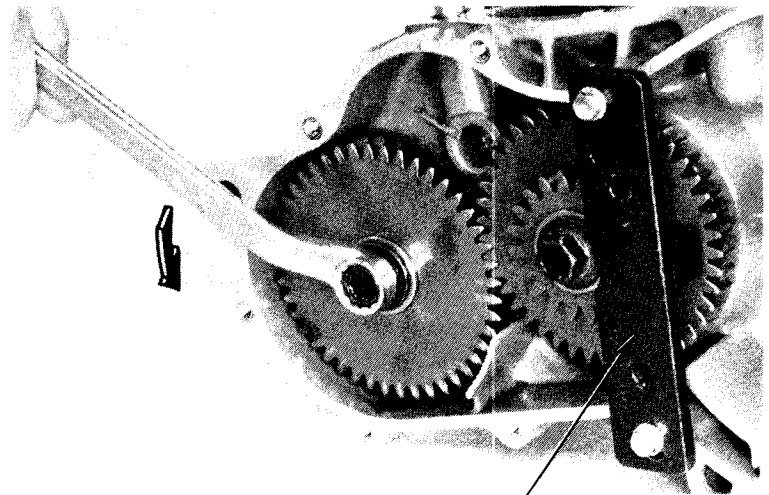


Hold the primary drive gear by attaching the GEAR HOLDER to the crankcase.

NOTE

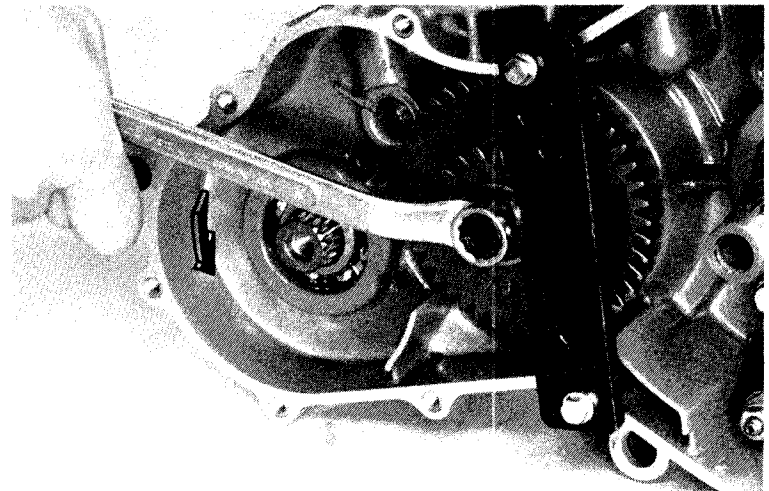
Alternate gear holders are commercially available in the USA.

Remove the 10 mm balancer gear special bolt and remove the gear.



GEAR HOLDER
07924-KA50000 or equivalent

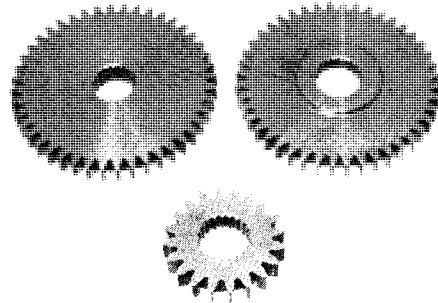
Remove the 10 mm balancer idle gear special bolt and remove the primary drive and balancer idle gears.





GEAR INSPECTION

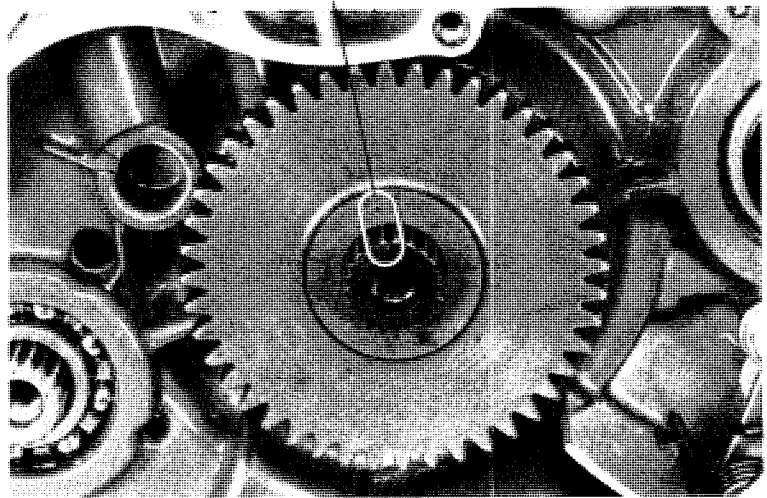
Inspect each gear for wear or damage.;



GEAR INSTALLATION

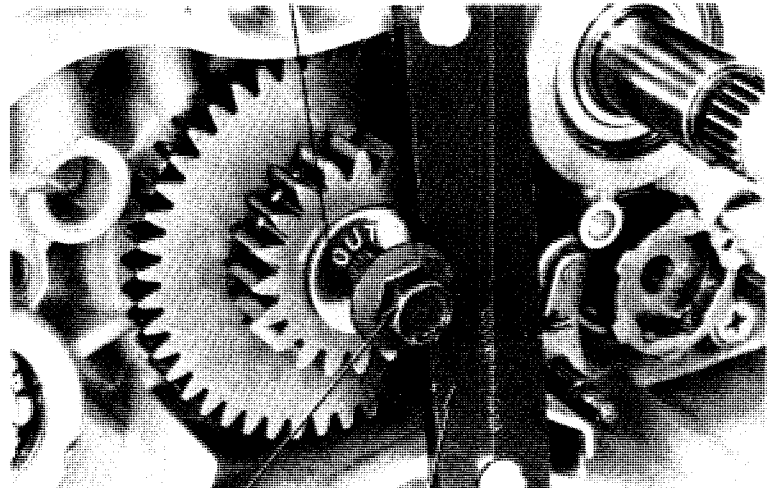
Install the balancer idle gear on the crankshaft, aligning the punch mark on the idle gear with the punch mark on the crankshaft.

PUNCH MARKS



Install the primary drive gear on the crankshaft. Hold the primary drive gear by attaching the GEAR HOLDER to the left crankshaft. Install the thrust washer with the marking "OUT" facing out and install the 10 mm special bolt.

THRUST WASHER

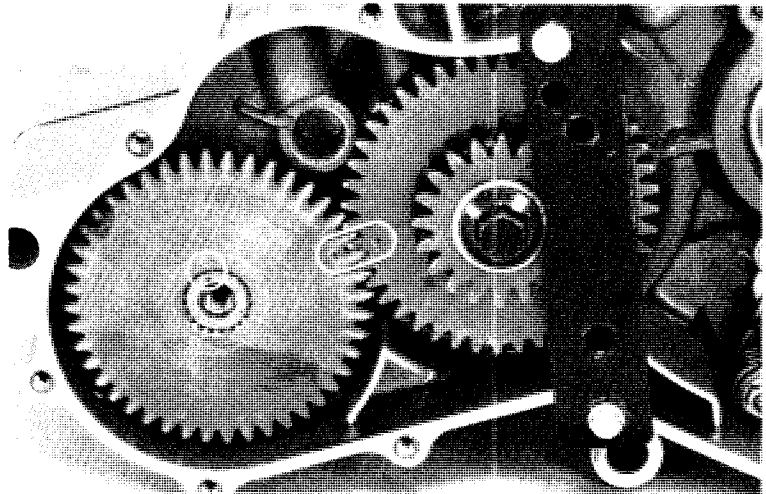


10 mm SPECIAL BOLT

GEAR HOLDER
07924-4300000 or equivalent

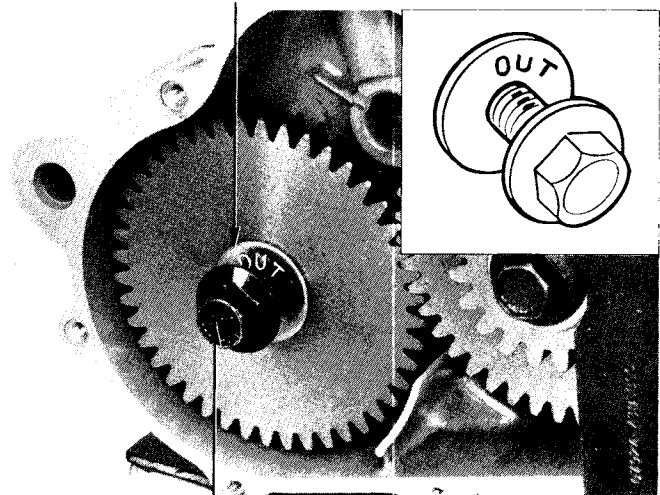


Align the punch marks on the balancer gear and on the balancer shaft and install the gear.



Install the thrust washer with the mark "OUT" facing out and install the 10 mm special bolt.

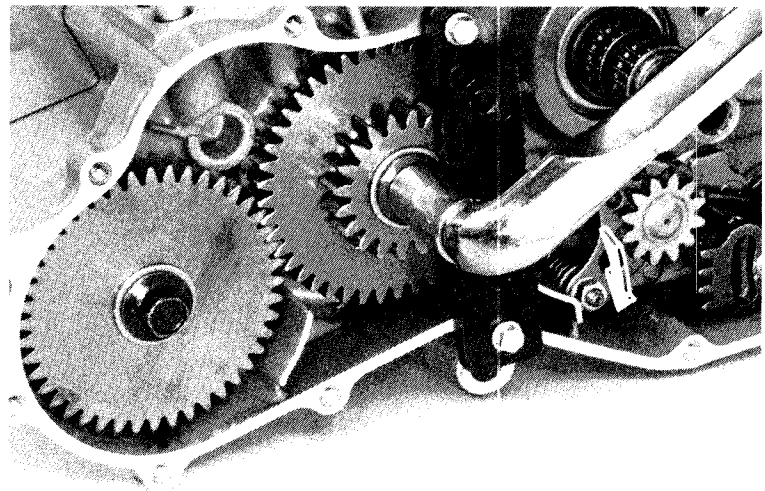
THRUST WASHER



10 mm SPECIAL BOLT

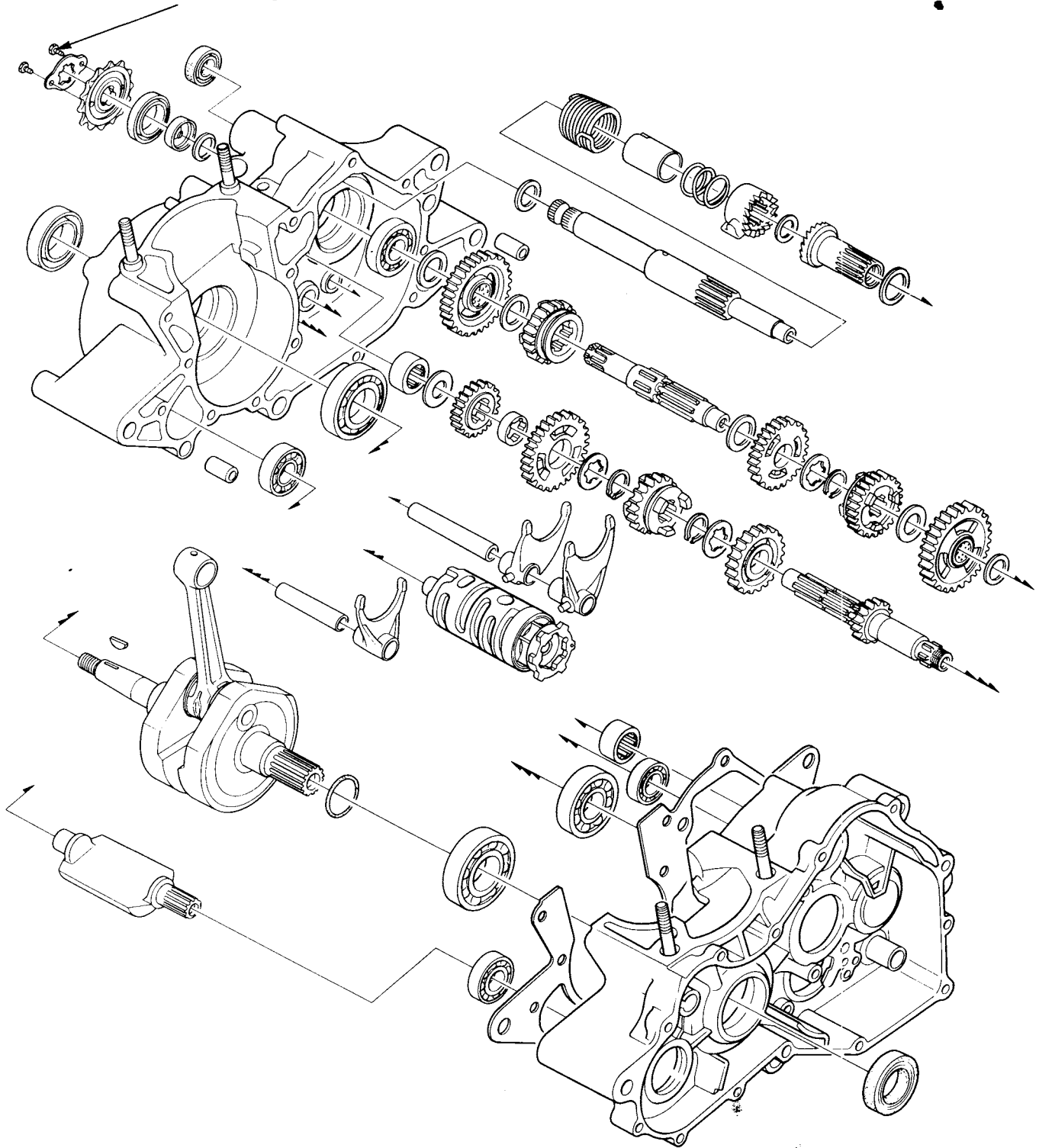
Tighten both 10 mm special bolts to the specified torque.

**TORQUE: 40–50 N·m (4.0–5.0 kg·m,
29–36 ft·lb)**





8-12 N-m (0.8-1.2 kg-m, 6-9 ft-lb)



9



SERVICE INFORMATION	9 - 1
TROUBLESHOOTING	9 - 2
CRANKCASE SEPARATION	9 - 3
KICKSTARTER	9 - 4
TRANSMISSION	9 - 7
CRANKSHAFT	9 - 10
CRANKCASE ASSEMBLY	9 - 15

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Fill the cavity between the double lips of the crankshaft oil seals with gasoline resistant grease. Check the lips for burs.
- Kickstarter, transmission and crankshaft service requires crankcase separation.

TOOLS

Special	
Crankcase disassembler	07953-9610000
Common	
Universal holder	07725-0030000
Attachment 32 x 35 mm	07746-0010100
Pilot 25 mm	07746-0040600
Attachment 52 x 55 mm	07746-0010400
Pilot 22 mm	07746-0041000
Attachment 37 x 40 mm	07746-0010200
Pilot 17 mm	07746-0040400
Attachment 42 x 47 mm	07746-0010300
Pilot 20 mm	07746-0040500
Attachment 62 x 68 mm	07746-0010500
Pilot 35 mm	07746-0040800



SPECIFICATIONS

ITEM		STANDARD mm (in)	SERVICE LIMIT mm (in)
Shift fork I.D.		12.000 – 12.021 (0.4724 – 0.4733)	12.050 (0.4744)
Shift fork end thickness		5.430 – 5.500 (0.2138 – 0.2165)	5.30 (0.2087)
Shift fork shaft O.D.		11.960 – 11.984 (0.4709 – 0.4718)	11.95 (0.4705)
Gearshift drum O.D.	At 12 mm	11.955 – 11.980 (0.4707 – 0.4717)	11.93 (0.4697)
Gear I.D.	M 4 gear	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.9870)
	M 5 gear	28.020 – 28.041 (1.1031 – 1.1040)	28.07 (1.1051)
	C 1 gear	20.020 – 20.041 (0.7882 – 0.7890)	20.07 (0.7902)
	C 2 gear	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.9870)
	C 3 gear	25.020 – 25.041 (0.9850 – 0.9859)	25.07 (0.9870)
Main shaft O.D.	At 24 mm	23.987 – 24.000 (0.9837 – 0.9449)	23.96 (0.9443)
	At 25 mm	24.959 – 24.980 (0.9826 – 0.9835)	24.93 (0.9815)
Counter shaft O.D.	At 20 mm	19.979 – 20.000 (0.7866 – 0.7874)	19.95 (0.7854)
	At 25 mm	24.959 – 24.980 (0.9826 – 0.9835)	24.93 (0.9815)
	At 25 mm	24.979 – 25.000 (0.9834 – 0.9843)	24.95 (0.9823)
Connecting rod big end side clearance		0.200 – 0.600 (0.0079 – 0.0236)	0.70 (0.028)
Connecting rod big end radial play		0.008 – 0.020 (0.0003 – 0.0008)	0.03 (0.001)
Crankshaft runout at journals			0.10 (0.004)

TROUBLESHOOTING

Engine noise

1. Main journal bearing worn
2. Crankpin bearing worn
3. Transmission bearing worn

Jumps out of gear

1. Gear dogs worn
2. Shift forks bent
3. Shift shaft bent
4. Shift drum stopper damaged

Hard shifting

1. Incorrect clutch adjustment
2. Shift forks bent
3. Shift shaft bent
4. Shift spindle pawl bent or damaged
5. Shift drum cam slot damaged

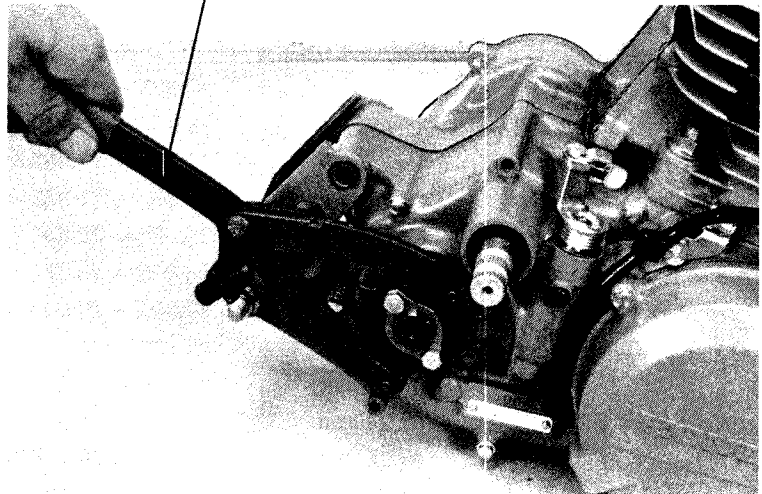
CRANKCASE SEPARATION

Remove the engine from the frame (Page 5-2).
Hold the drive sprocket with a universal holder.
Remove the fixing plate bolts, plate and sprocket.

NOTE

- If the sprocket needs to be replaced, replace both the sprocket and fixing plate as a matched set.
- Replace both drive and driven sprockets as a set, and the drive chain.

UNIVERSAL HOLDER
07725-0030000



Perform the following operations:

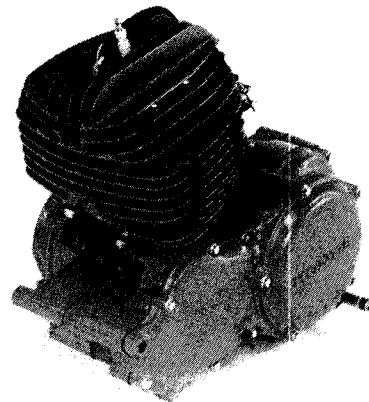
Cylinder head/cylinder/piston removal. (Section 5)

Clutch removal. (Section 7)

Gearshift spindle/neutral stopper removal.
(Section 8)

Balancer gear/balancer idler gear removal.
(Section 8)

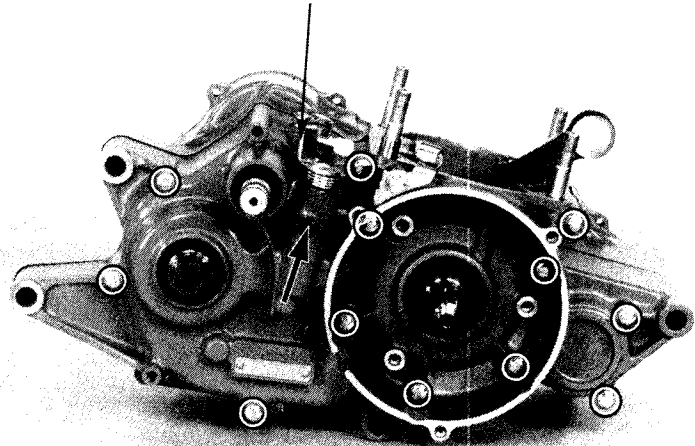
AC generator removal. (Section 6)



Remove the screw attaching the clutch arm, and
remove the clutch arm.

Remove the right crankcase attaching bolts.

CLUTCH ARM

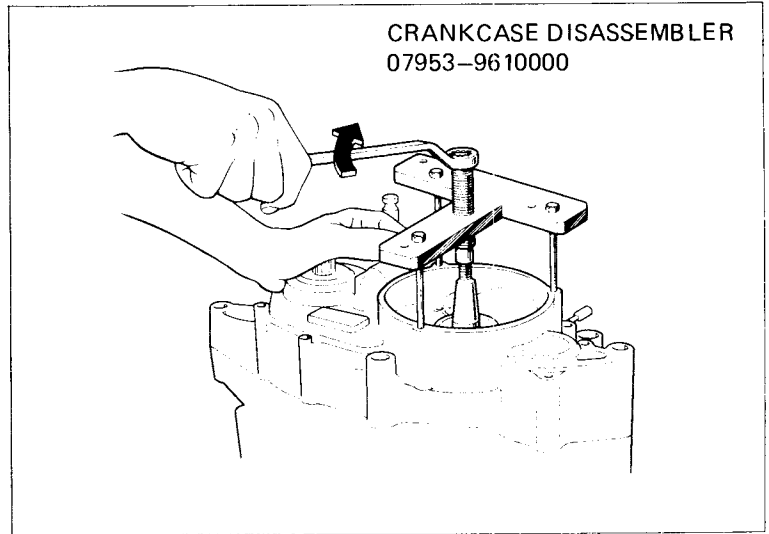




Set up the special tool on the right crankcase.
Remove the right crankcase.

NOTE

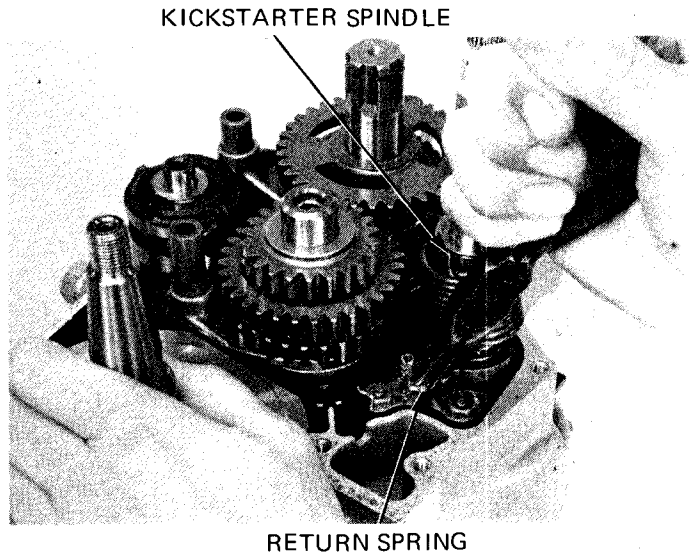
Separate the right and left crankcases from each other while tapping them at several locations with a soft hammer. Do not pry the crankcase apart with the end of a screwdriver.



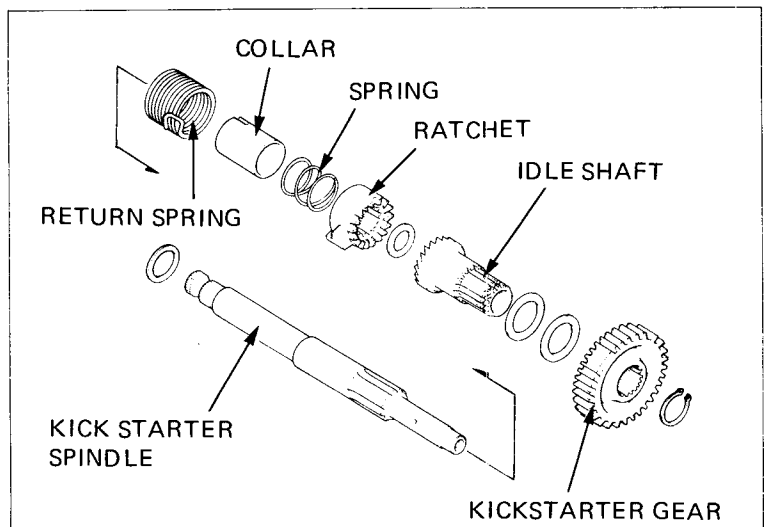
KICKSTARTER

KICKSTARTER SPINDLE REMOVAL

Remove the kick return spring from the ratchet guide plate, then remove the kickstarter spindle.



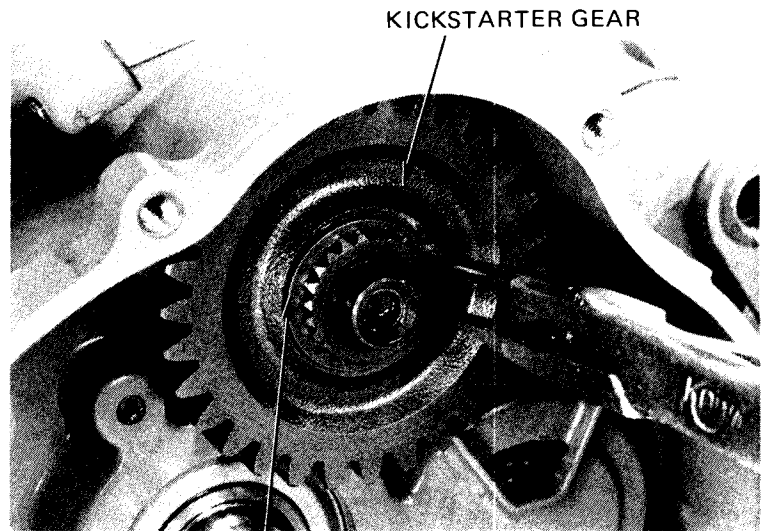
Disassemble the kickstarter.





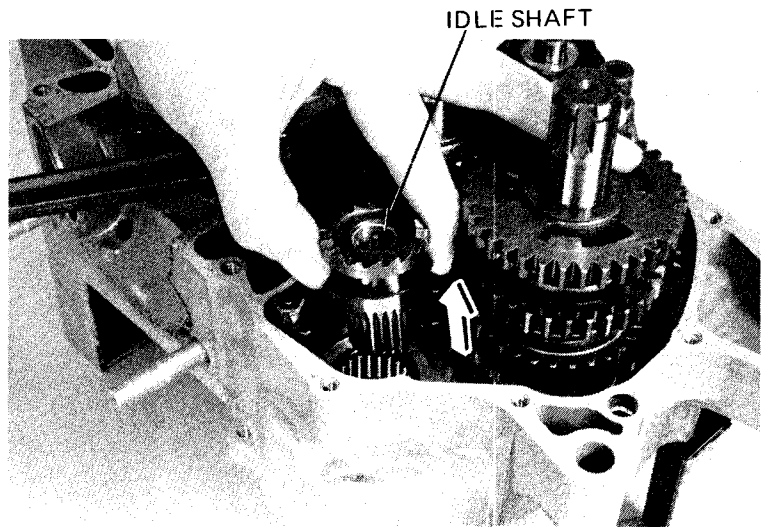
KICKSTARTER GEAR REMOVAL

Remove the snap ring, kickstarter gear and washer.



SNAP RING

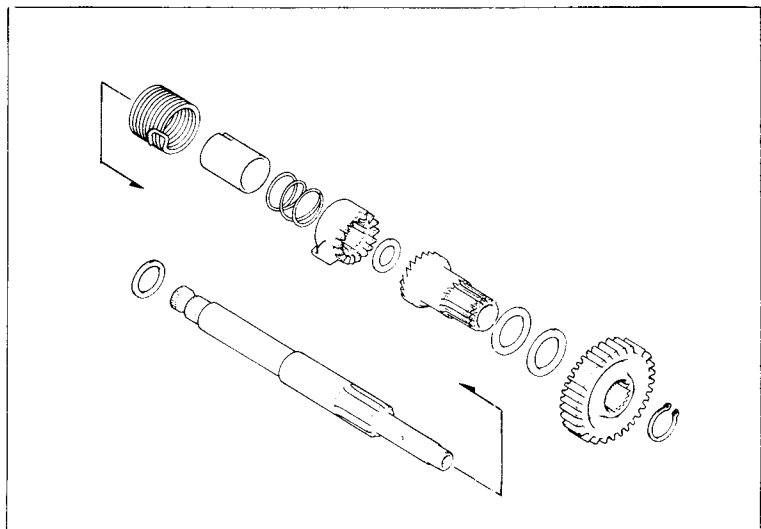
Remove the ratchet idler shaft.



KICKSTARTER INSPECTION

Inspect the kickstarter spindle, drive ratchet, ratchet idler shaft and kickstarter gear for wear or damage.

Inspect the starter return and ratchet springs for fatigue.





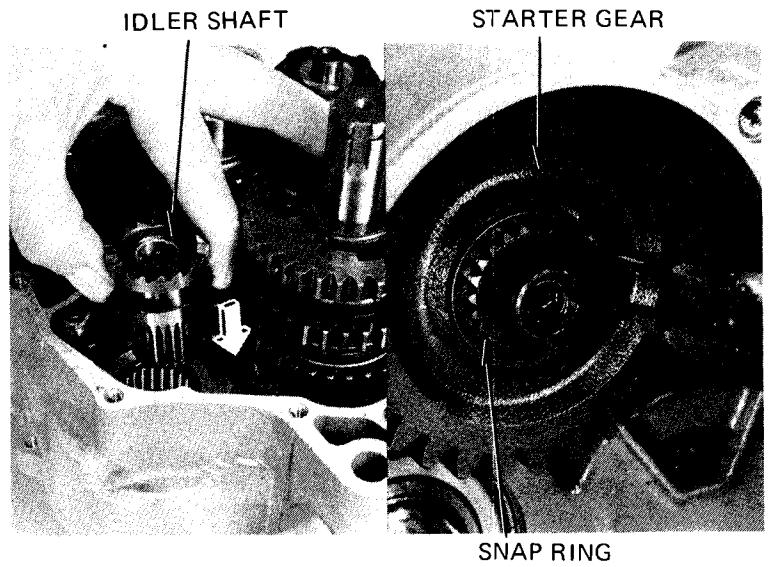
KICKSTARTER INSTALLATION

Install the ratchet idler shaft in the right crankcase.

Install the starter gear on the idler shaft and secure with the snap ring.

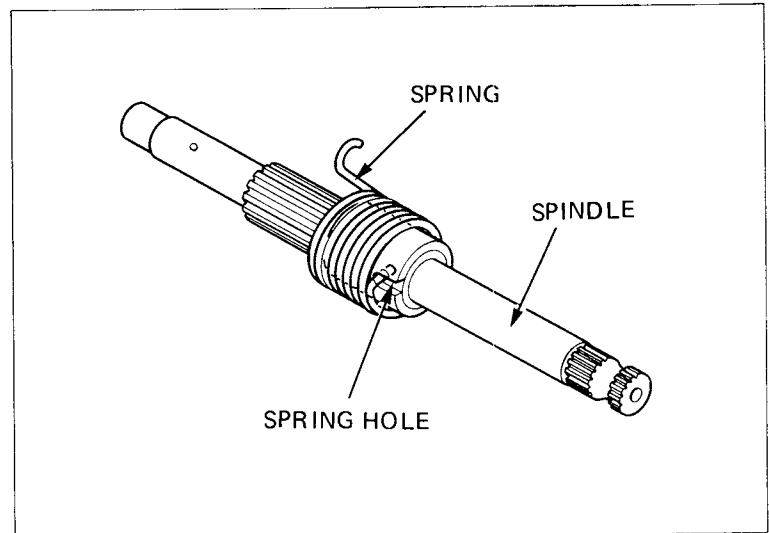
NOTE

Install the snap ring with the chamfer toward the gear.

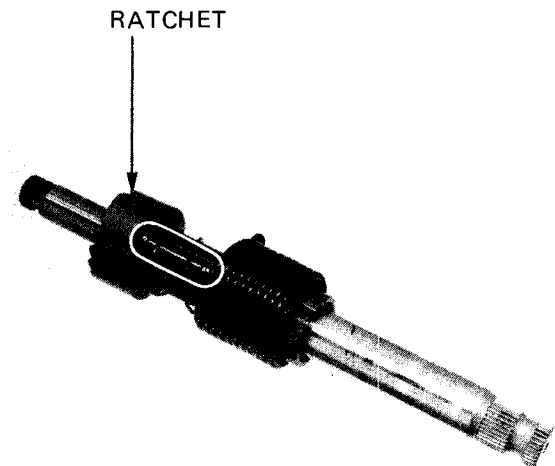


Slide the kickstarter return spring over the kickstarter spindle with the end of the spring inserted in the spring hole.

Place the collar over the spindle with the groove of the collar aligned with the spring.



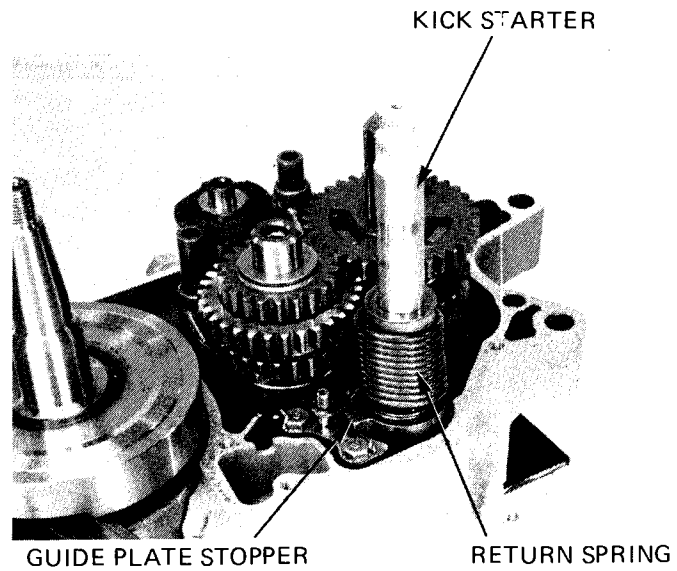
Slide the ratchet spring over the spindle. Align the punch marks on the ratchet and spindle and install the ratchet onto the spindle.



Install the kick starter in the crankcase with the drive ratchet resting against the guide plate stopper as shown.

Install the kick return spring.

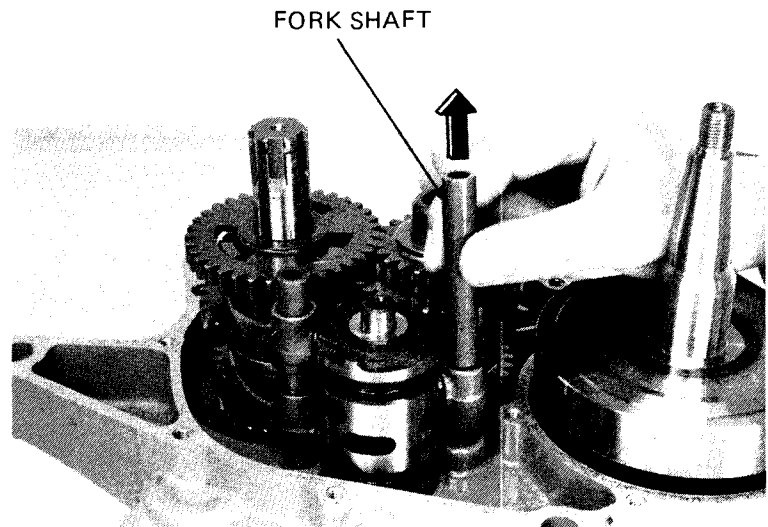
Install the kickstarter lever temporarily and check the operation of the kickstarter.



TRANSMISSION

SHIFT FORK/SHIFT FORK SHAFT/ SHIFT DRUM REMOVAL

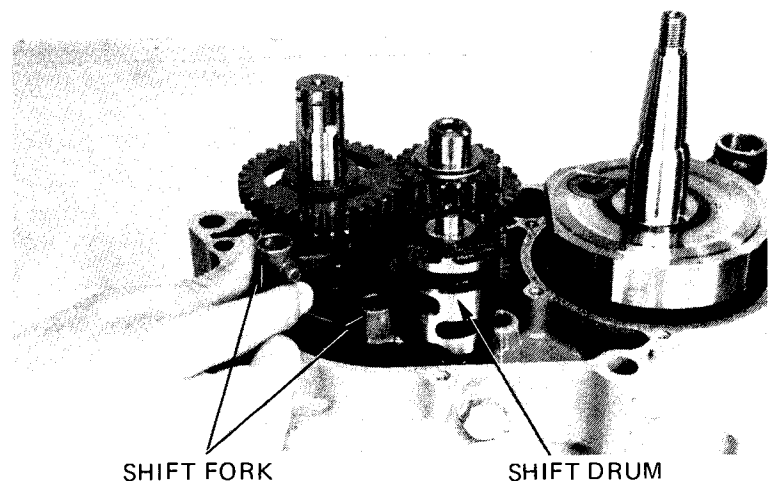
Remove the two shift fork shafts.



Remove the shift drum and shift forks.

NOTE

The shift forks are identified with "R", "C" and "L" for right, center and left positions, respectively.



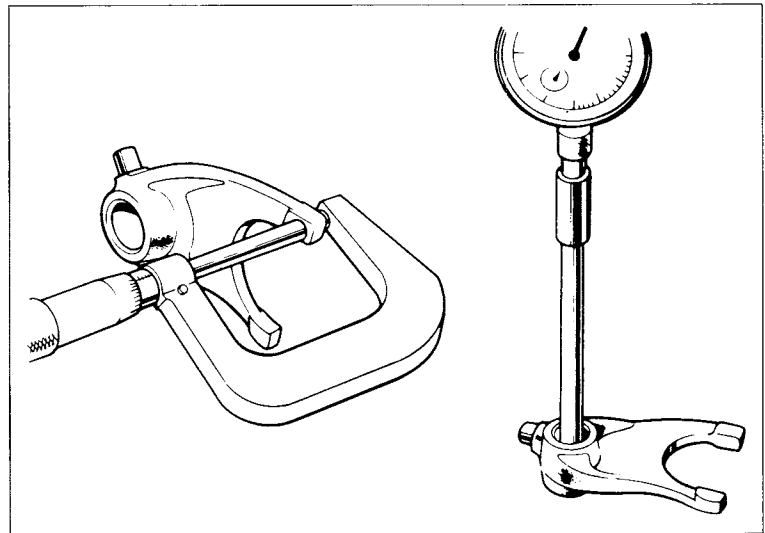


SHIFTFORK/SHIFT FORK SHAFT/ SHIFT DRUM INSPECTION

Check each shift fork for wear, bending or any other damage. Measure the I.D. and shift claw thickness.

SERVICE LIMITS:

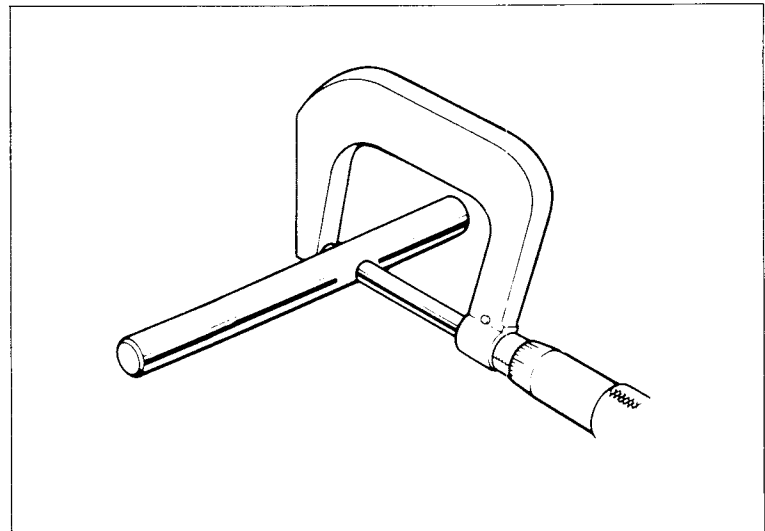
Claw thickness: 5.30mm (0.209 in)
I.D.: 12.050 mm (0.474 in)



Check the shift fork shaft for wear, damage or bending.

Measure the O.D.

SERVICE LIMIT: 11.950 mm (0.470 in)



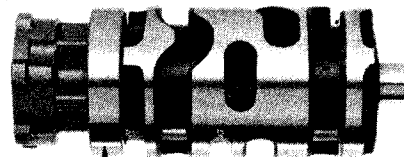
Inspect the shift drum grooves and replace the drum if they are damaged or show excessive wear.

Measure the shift drum O.D.

SERVICE LIMITS: 11.93 mm (0.4697 in)

NOTE

If the shift drum bearing is worn or damaged, the shift drum must be replaced as an assembly.

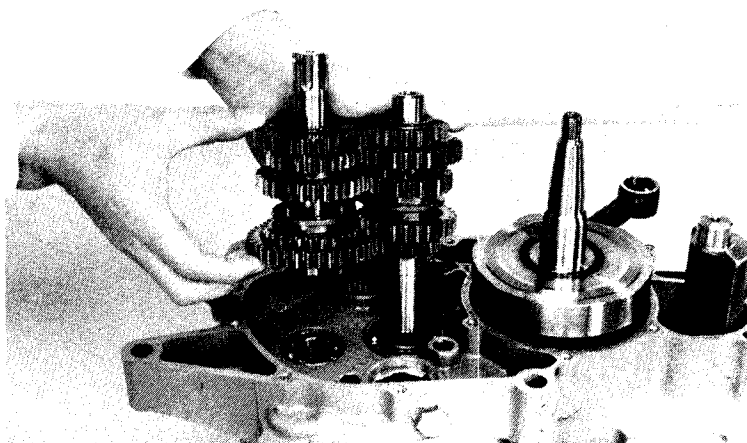


BEARING



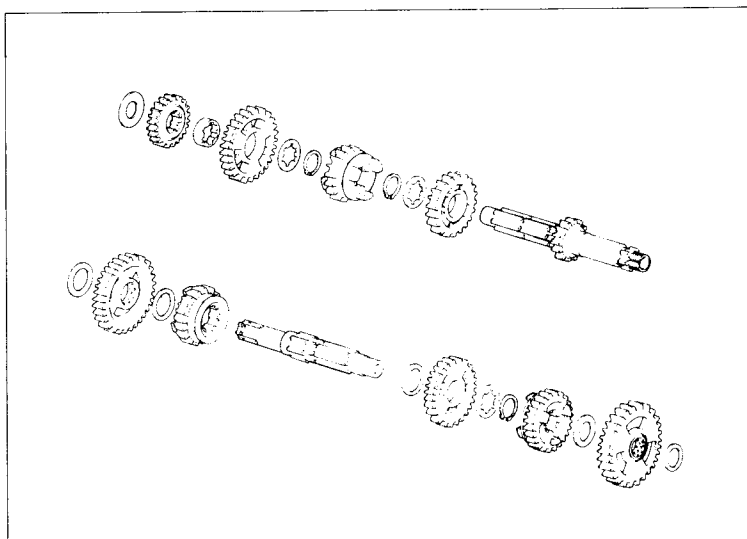
TRANSMISSION REMOVAL

Remove the transmission from the left crankcase.



TRANSMISSION INSPECTION

Inspect each gear for wear or damage.



GEAR INSPECTION

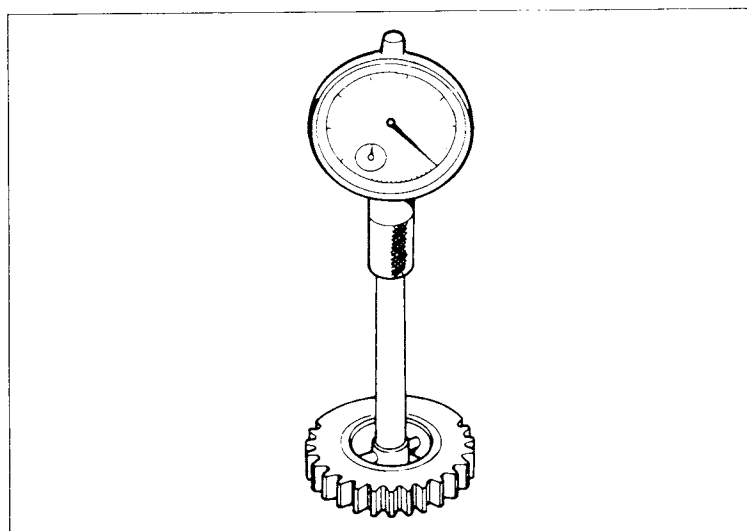
Inspect each gear I.D.

STANDARD:

- M 4 gear: 25.020–25.041mm (0.9850–0.9859 in)
- M 5 gear: 28.020–28.041mm (1.1031–1.1040 in)
- C 1 gear: 20.020–20.041mm (0.7882–0.8035 in)
- C 2 gear: 25.020–25.041mm (0.9850–0.9859 in)
- C 3 gear: 25.020–25.041mm (0.9850–0.9859 in)

SERVICE LIMITS:

- M 4 gear: 25.07mm (0.9870 in)
- M 5 gear: 28.07mm (1.1051 in)
- C 1 gear: 20.07mm (0.7902 in)
- C 2 gear: 25.07mm (0.9870 in)
- C 3 gear: 25.07mm (0.9870 in)





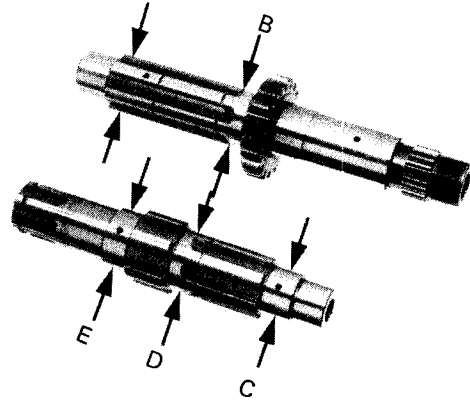
Measure the O.D. of the mainshaft and counter-shaft.

STANDARD:

- A : 27.959–27.980mm (1.1007–1.1016 in)
- B : 24.959–24.980mm (0.9826–0.9835 in)
- C : 19.979–20.000mm (0.7866–0.7874 in)
- D : 24.959–24.980mm (0.9826–0.9835 in)
- E : 24.979–25.000mm (0.9834–0.9843 in)

SERVICE LIMITS:

- A : 27.960mm (1.1008 in)
- B : 24.930mm (0.9815 in)
- C : 19.950mm (0.7854 in)
- D : 24.930mm (0.9815 in)
- E : 24.950mm (0.9823 in)

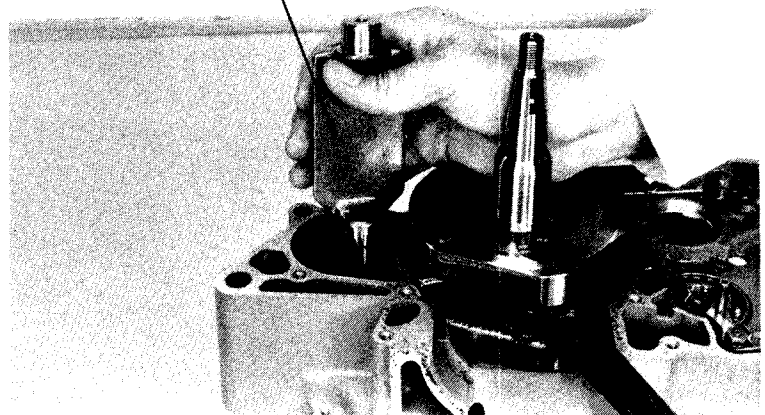


CRANKSHAFT

CRANKSHAFT REMOVAL

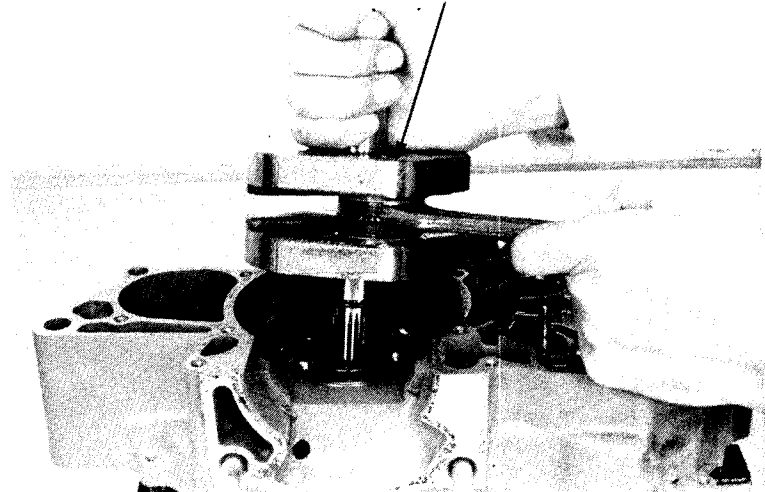
Remove the balancer.

BALANCER



Remove the crankshaft from the left crankcase.

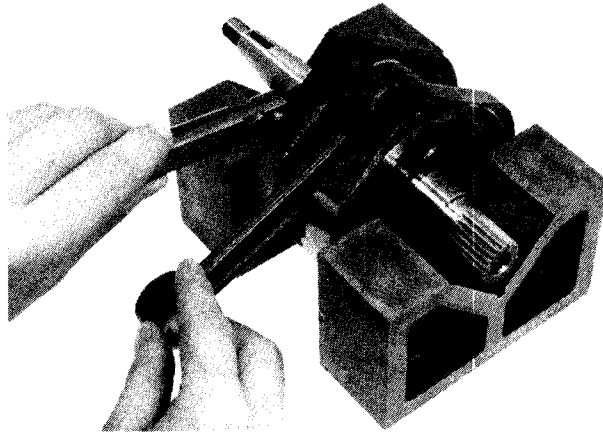
CRANKSHAFT



CRANKSHAFT INSPECTION

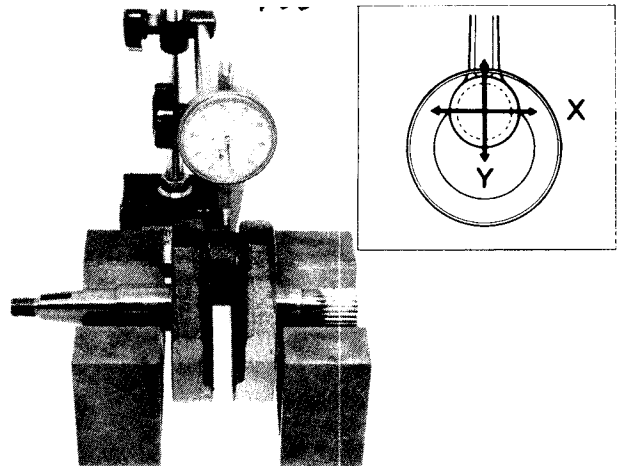
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT: 0.85 mm (0.033 in)



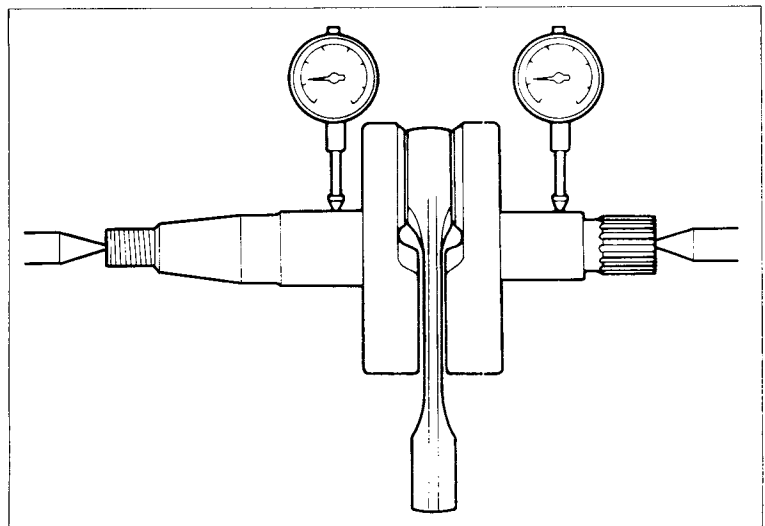
Measure the connecting rod big end radial clearance at two points in the X and Y directions.

SERVICE LIMIT: 0.05 mm (0.002 in)



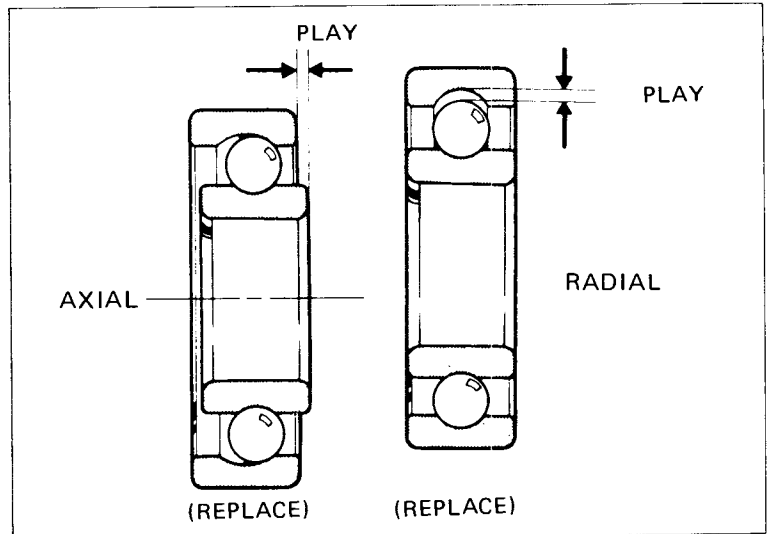
Set the crankshaft on a stand or V-blocks and read runout using a dial gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)





Spin the crankshaft bearing by hand and check for play. The bearing must be replaced if it is noisy or has excessive play.



CRANKSHAFT ASSEMBLY

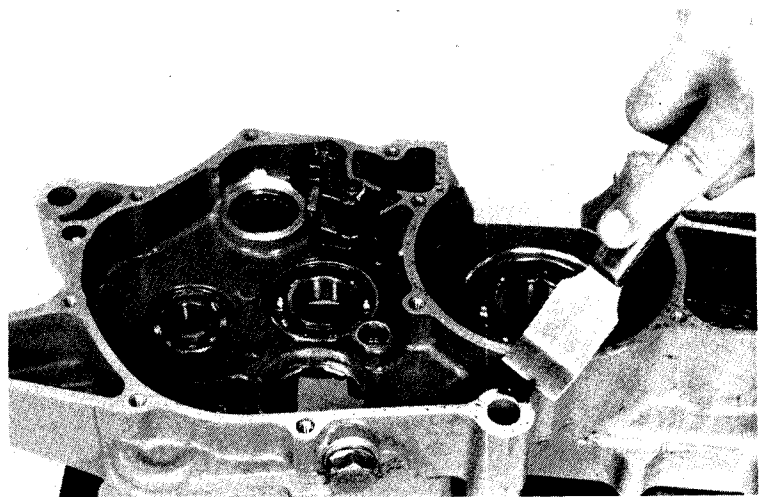
Wash the right and left crankcases in solvent and blow dry with compressed air. Check for damage.

CAUTION:

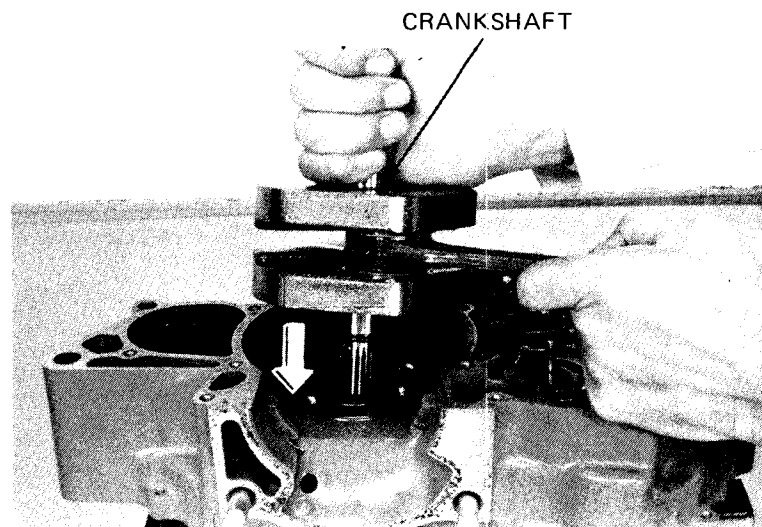
Do not spin the bearings with compressed air. This could damage the bearings.

NOTE

- Apply clean engine oil to all moving and sliding surfaces.
- Remove all traces of gasket material from the gasket surfaces. Remove roughness or irregularities, if any, using an oil stone.

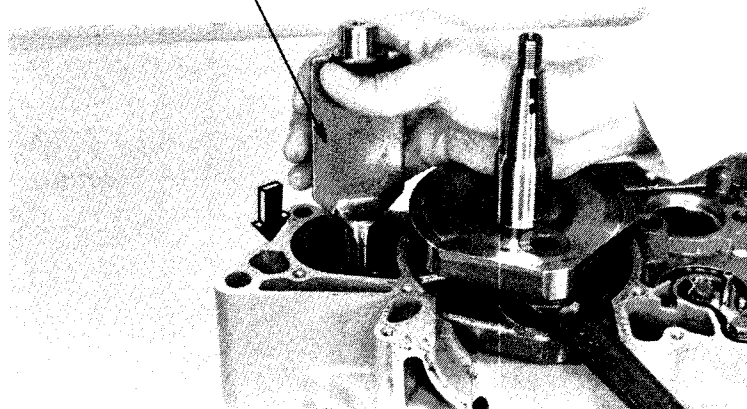


Apply clean 2-stroke oil to the journal and crankpin bearings.
Coat the sealing lips of each oil seal with gasoline-resistant grease.
Install the crankshaft in the left crankcase.



Install the balancer.

BALANCER

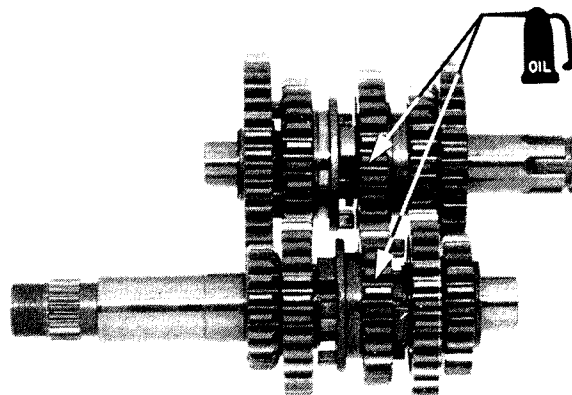


TRANSMISSION INSTALLATION

Install the gears on the mainshaft and countershaft. Apply clean transmission oil to the gears before installation.

NOTE

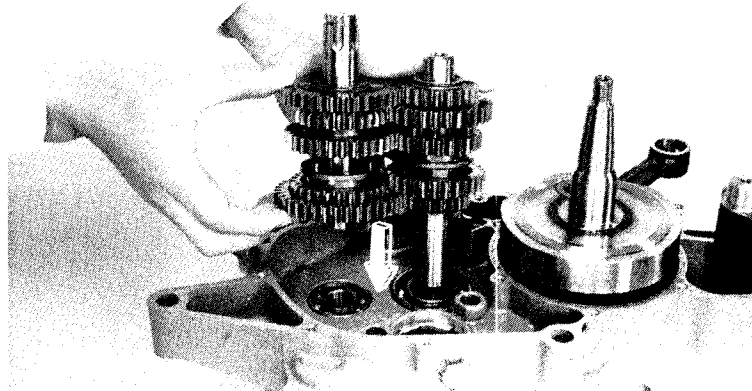
Make sure the gears rotate freely on the shafts.



Install the countershaft and mainshaft in the left crankcase.

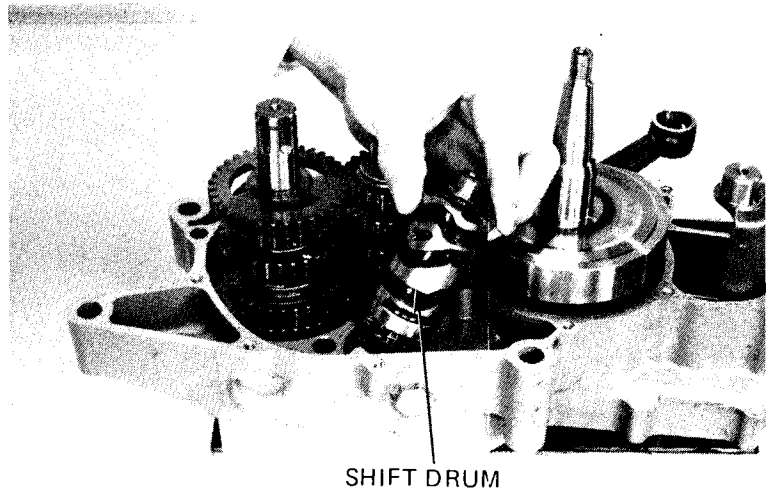
NOTE

Install the countershaft oil seal after the right and left crankcases have been assembled.





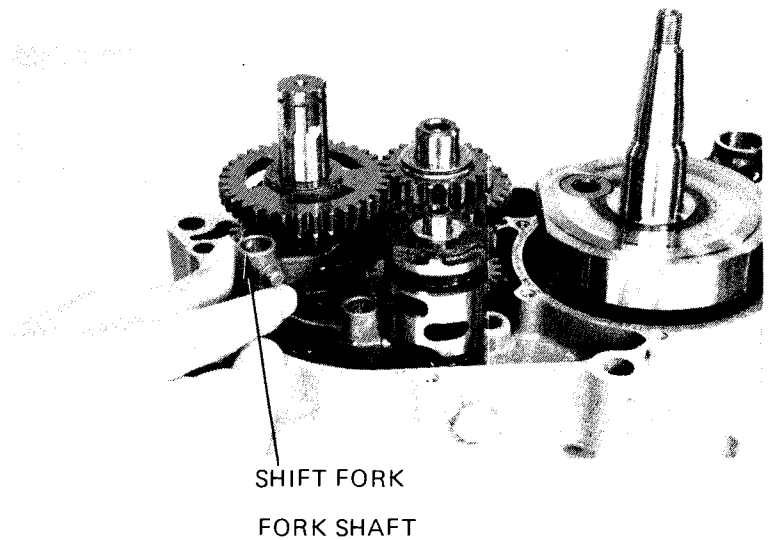
Install the shift drum.



Install the shift forks.

NOTE

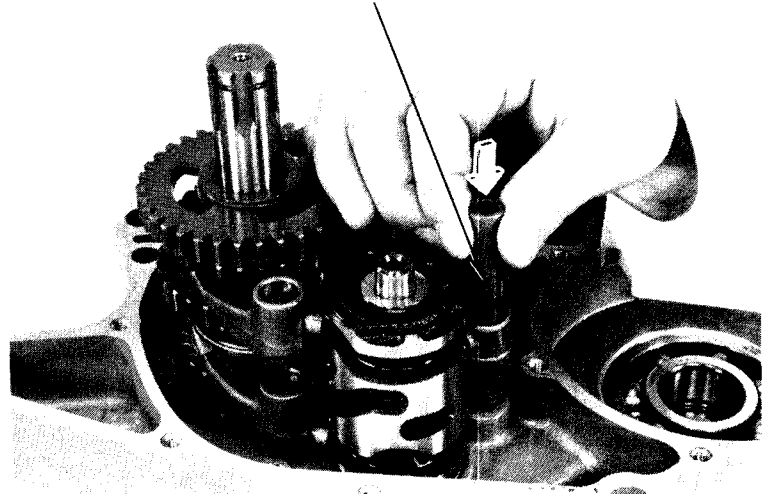
The shift forks are identified with "R", "C", and "L" for right, center, and left positions respectively.



Slide the shift fork shafts through the shift forks.

NOTE

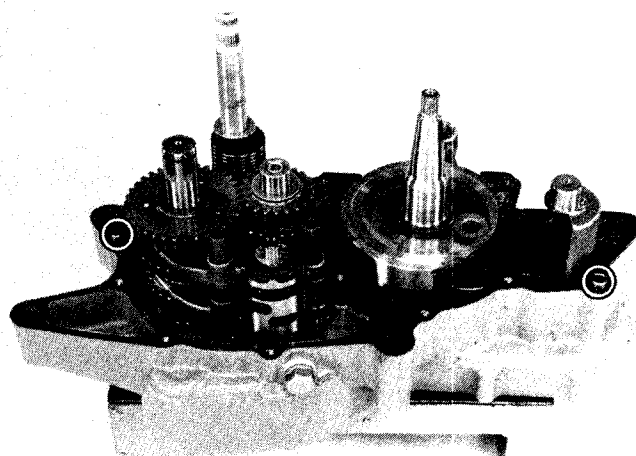
With the transmission in neutral, rotate each shaft to be sure it rotates freely.





CRANKCASE ASSEMBLY

Place a new gasket on the crankcase and insert the dowel pins.



Assemble the right and left crankcase.

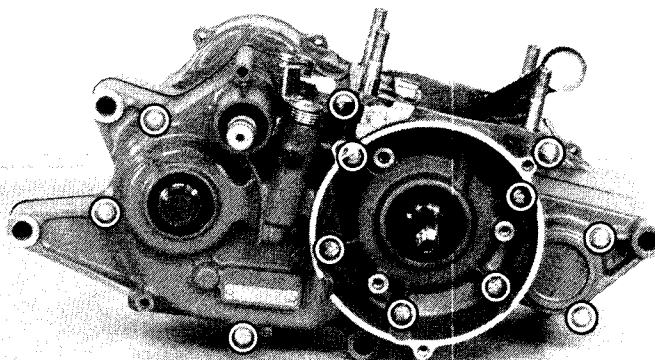
NOTE

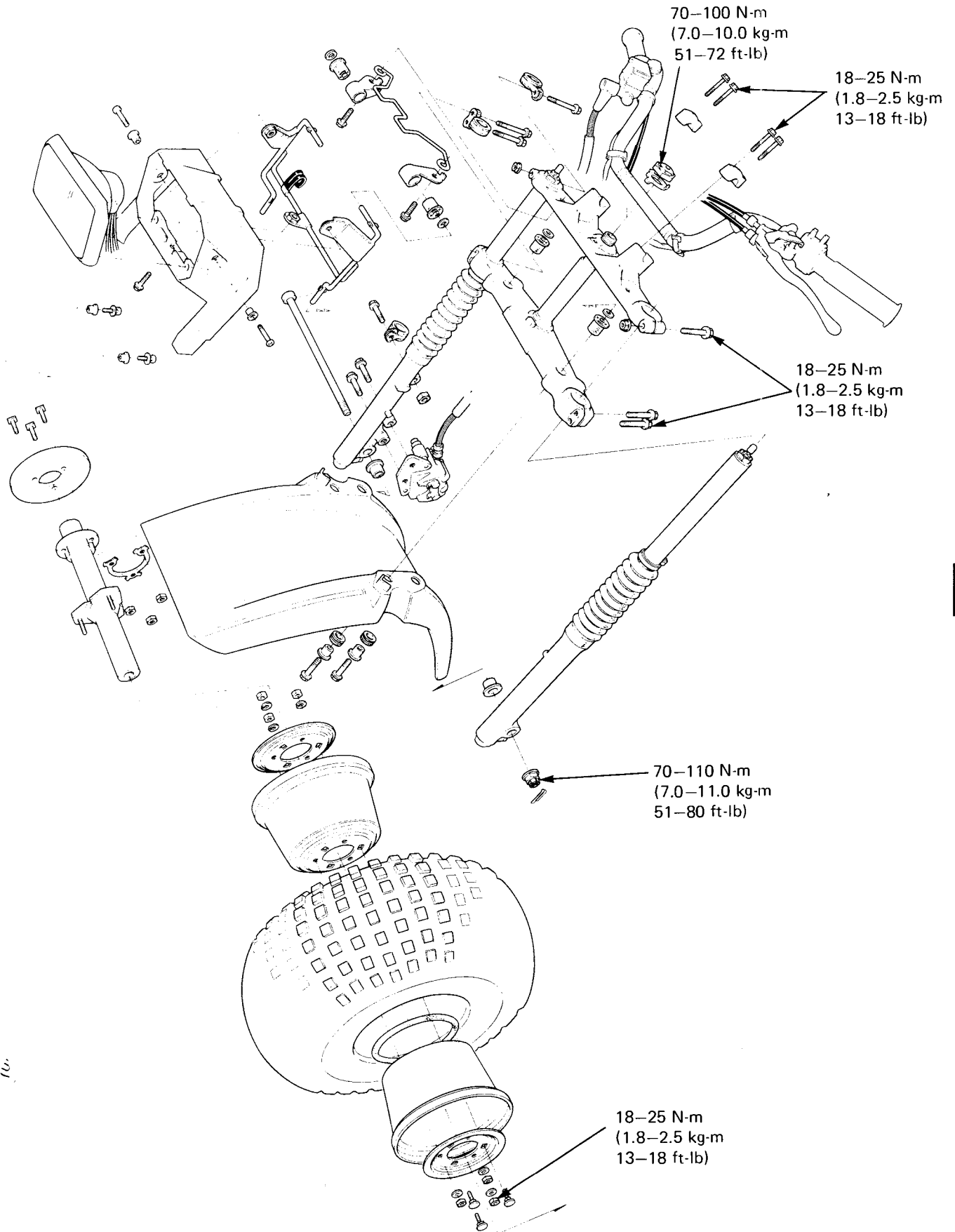
Assemble the right and left crankcases while lightly tapping around them with a plastic hammer.

Install the shift plate, shift spindle and shift arm. Check for smooth shifting.

NOTE

Rotate the countershaft by hand to see if the transmission shifts smoothly.





10

10. FRONT WHEEL/FRONT FORK/STEERING



HONDA
ATC 250R

SERVICE INFORMATION	10 - 1
TROUBLESHOOTING	10 - 2
HEADLIGHT	10 - 3
HANDLEBAR	10 - 7
FRONT WHEEL	10 - 10
FRONT FORK	10 - 18
STEERING STEM	10 - 26

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section covers maintenance of the front wheel, front fork and steering system.
- A jack or other support is required to support the ATC.

TOOLS

SPECIAL

Hollow Set Wrench 6 mm	07917 - 3230000 or Commercially available in USA
Tire Disassembling Tool	07722 - 0010000 or M987X - 350 - XXXXX (USA only)
Ball Race Driver	07953 - 3330000
Steering Stem Driver	07946 - 4300100 or 07946 - 3710600 (USA only)
Steering Stem Driver Attachment	GN HT-54 (USA only)

COMMON

Pin Spanner	07702 - 0010000 or M9361 - 412 - 099788 (USA only)
Lock Nut Socket 30 x 32 mm	07716 - 0020400 or Commercially available in USA
Extension	07716 - 0020500 or Commercially available in USA
Attachment 42 x 47 mm	07746 - 0010300 or 07946 - 3290000
Pilot 15 mm	07746 - 0040300
Front Fork Oil Seal Driver Body	07747 - 0010100
Front Fork Oil Seal Attachment (C)	07747 - 0010400 or 07947 - 1180001 (USA only)
Driver Handle	07749 - 0010000 or 07749 - 6110000

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Front axle runout		0.3 mm (0.01 in)	0.5 mm (0.02 in)
Front wheel bearing play	Radial	—————	0.05 mm (0.002 in)
	Axial	—————	0.10 mm (0.004 in)
Front fork spring free length	A	90.1 mm (3.55 in)	88.3 mm (3.48
	B	421.9 mm (16.61 in)	413.5 mm (16.28
Front fork tube runout		—————	0.20 mm (0.008 in)
Front wheel rim runout	Radial	—————	4.00 mm (0.157 in)
	Axial	—————	4.00 mm (0.157 in)

TORQUE VALUES

Handlebar upper holder bolt	18 – 25N-m (1.8 – 2.5kg-m, 13 – 18ft-lb)
Steering stem nut	70 – 100N-m (7.0 – 10.0kg-m, 51 – 72ft-lb)
Fork tube pinch bolts	18 – 25N-m (1.8 – 2.5kg-m, 13 – 18ft-lb)
Front rim nut	18 – 25N-m (1.8 – 2.5kg-m, 13 – 18ft-lb)
Front wheel nut	18 – 25N-m (1.8 – 2.5kg-m, 13 – 18ft-lb)
Front axle nut	70 – 110N-m (7.0 – 11.0kg-m, 51 – 80ft-lb)

TROUBLE SHOOTING**Hard steering**

1. Steering stem nut too tight
2. Faulty steering stem bearings
3. Damaged steering stem ball race and/or cone race
4. Insufficient tire pressure

Steers to one side or does not track straight

1. Bent front forks
2. Bent front axle, wheel installed incorrectly
3. Unequal rear tire pressure or circumference

Front wheel wobbling

1. Distorted rim
2. Worn front wheelbearing
3. Faulty tire
4. Axle not tightened properly

Soft suspension

1. Weak fork springs
2. Insufficient fluid/air front forks

Hard suspension

1. Incorrect fluid/air in front forks
2. Fork damaged.

Front suspension noise

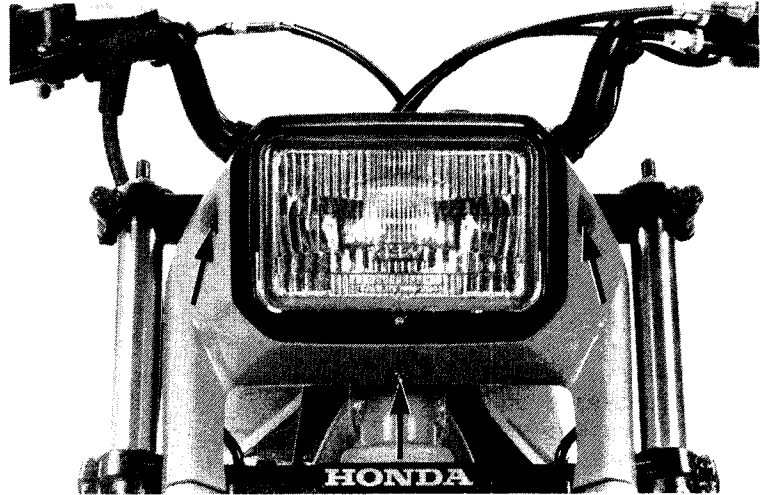
1. Slider binding
2. Loose front fork fasteners
3. Insufficient fluid in forks



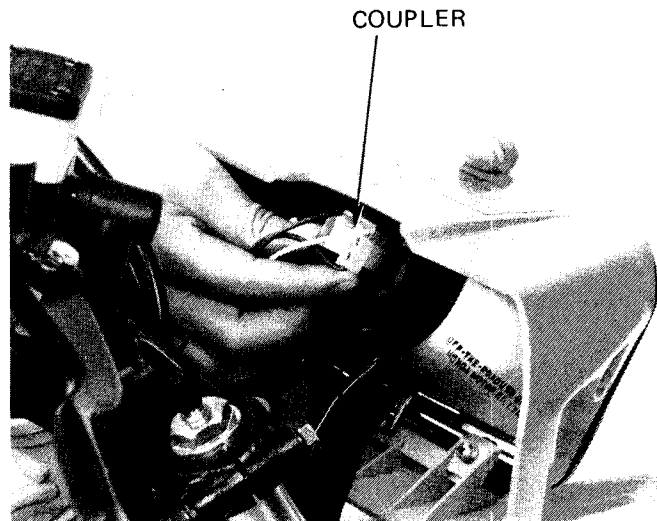
HEADLIGHT

HEADLIGHT CASE REMOVAL

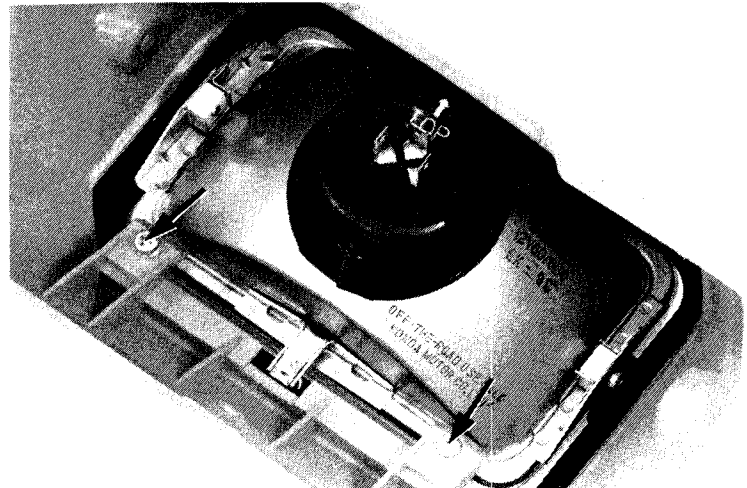
Remove the two screws and bolt attaching the headlight case to the headlight case brackets.



Disconnect the headlight coupler from the headlight and remove the headlight and case as an assembly.



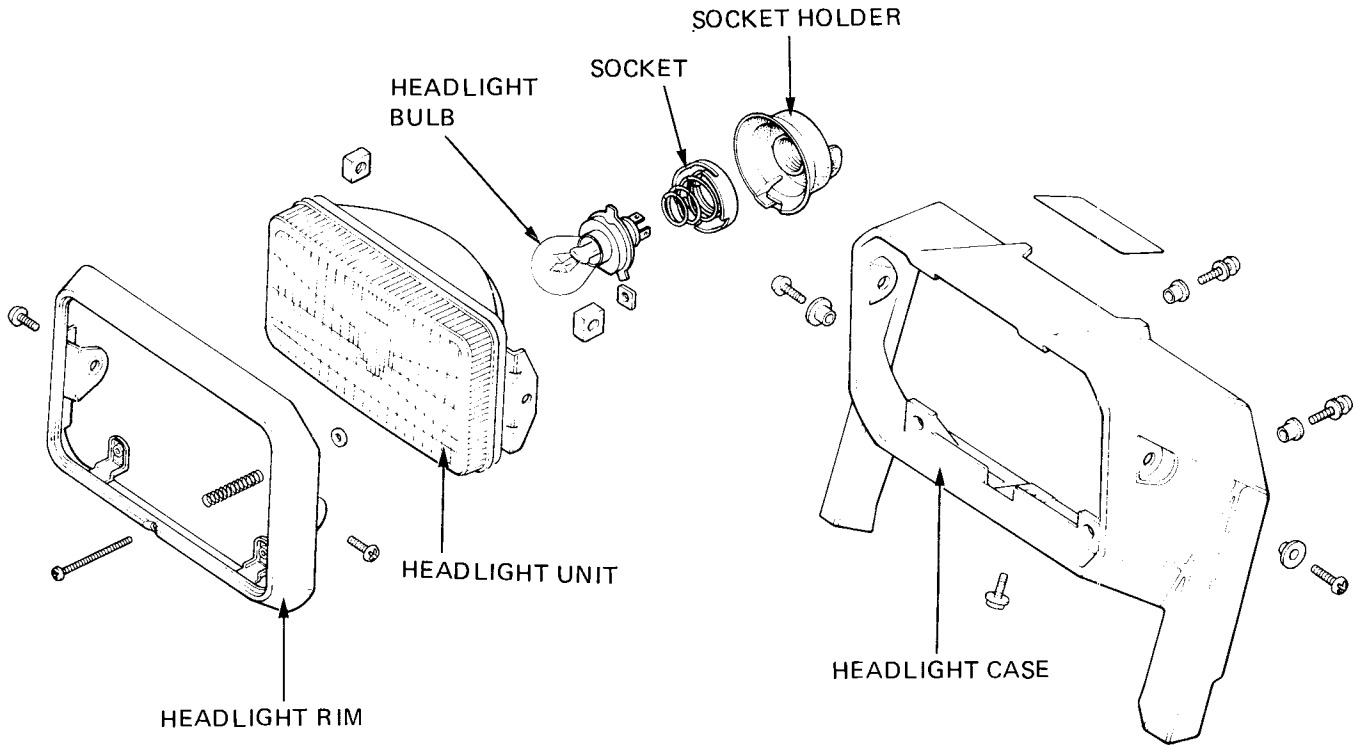
Separate the headlight from the headlight case by removing the two screws.





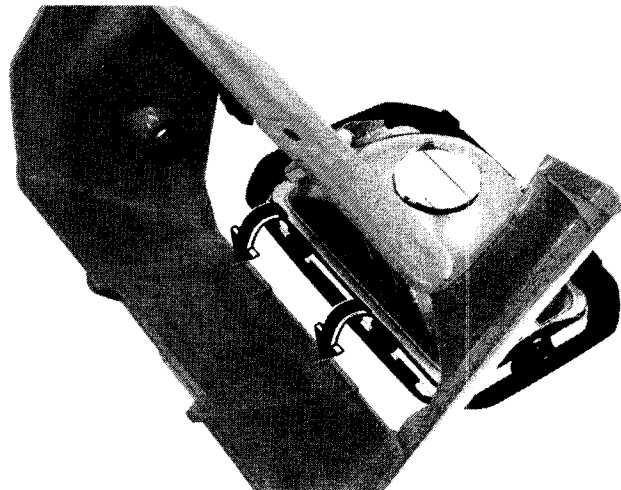
HEADLIGHT DISASSEMBLY

Disassemble the headlight.



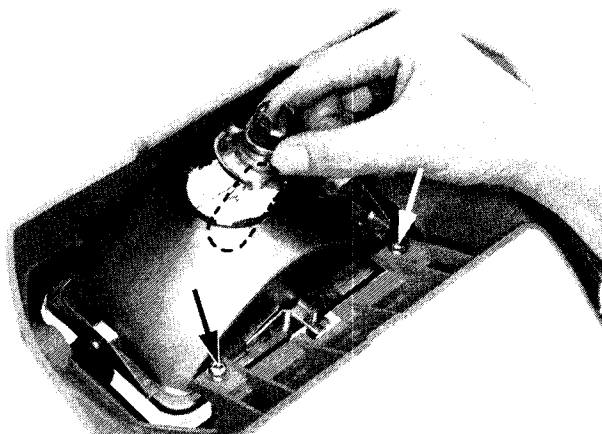
HEADLIGHT CASE INSTALLATION

Position the headlight on the headlight case, engaging the lugs of the case with the grooves of the headlight.

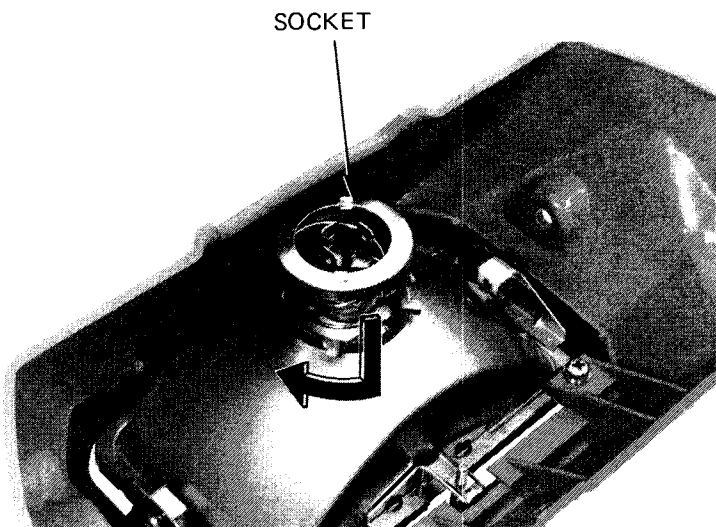




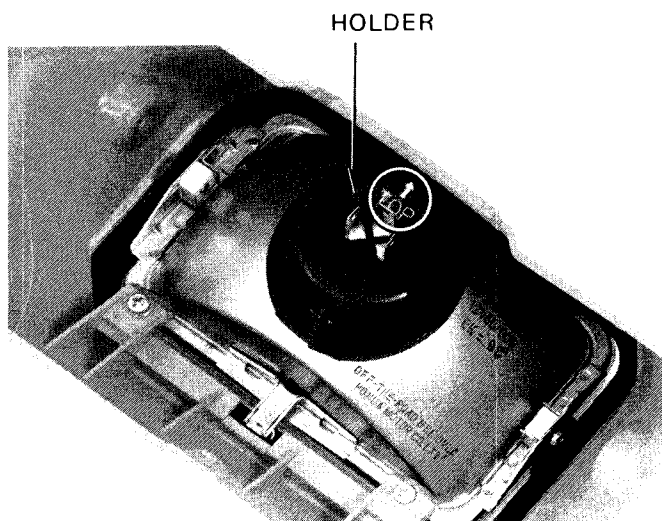
Install the headlight using the two screws.
Install the bulb in the headlight with the lugs of the bulb aligned with the cutouts of the headlight.



Place the headlight bulb socket spring over the bulb.
Install the bulb socket on the bulb by aligning the grooves with the lugs of the bulb and turning it in the direction of the arrow while pressing it down by hand.

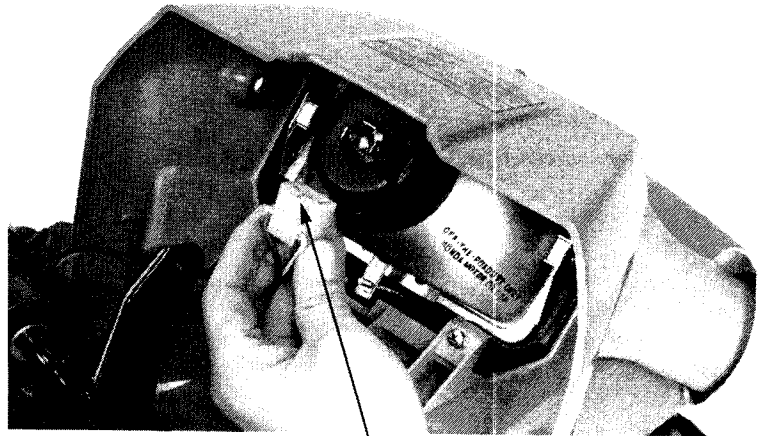


Install the socket holder on the socket with the arrow mark facing up.



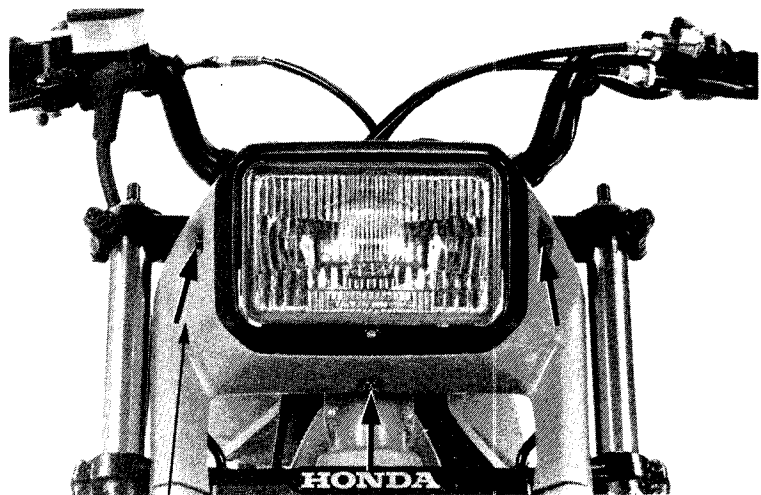


Connect the headlight coupler to the headlight socket terminals.



COUPLER

Position the headlight case assembly on the bracket and install it using the two screws and bolt.

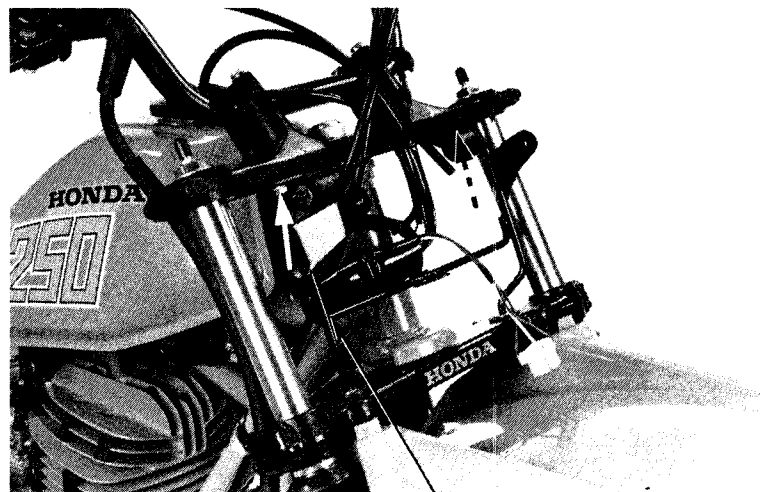


HEADLIGHT CASE

HEADLIGHT BRACKET REMOVAL/ INSTALLATION

Remove the two bolts attaching the headlight bracket mount holders to the fork bridge. Remove the bracket.

Install the bracket in the reverse order of removal.



BRACKET

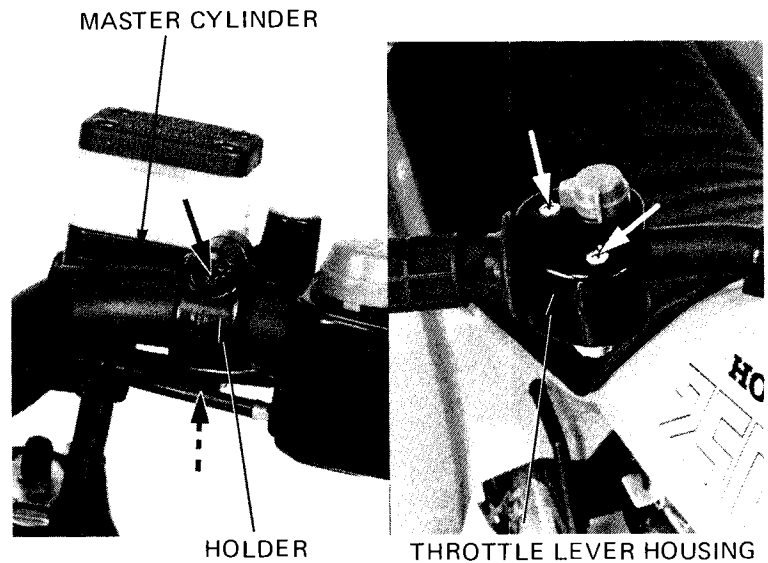


HANDLEBAR

REMOVAL

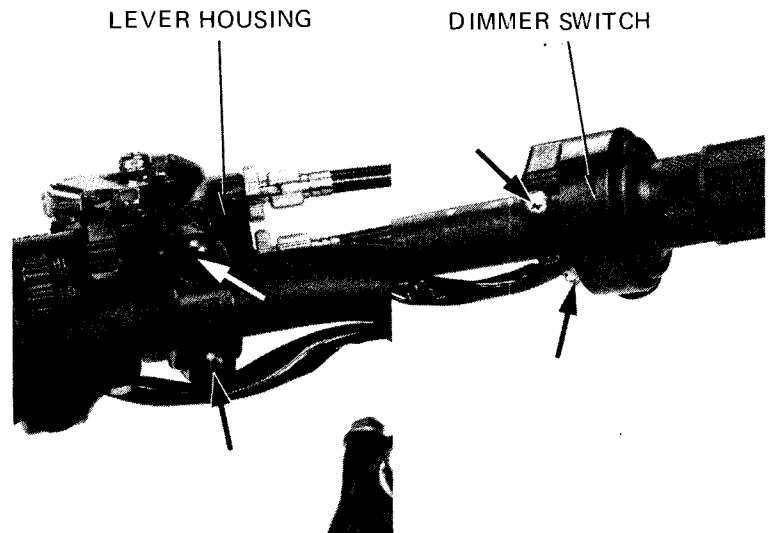
Remove the two screws attaching the front brake master cylinder holder to the master cylinder.
Remove the master cylinder.

Remove the two screws attaching the throttle lever housing.
Remove the throttle lever housing.

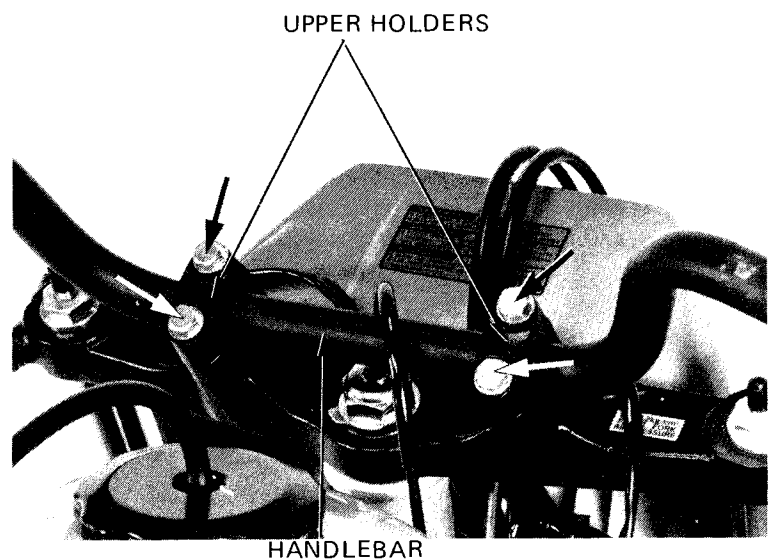


Remove the two screws attaching the clutch lever housing.
Remove the clutch/parking lever housing.

Remove the dimmer switch by removing the attaching screws.



Remove the handlebar upper holders and handlebar.

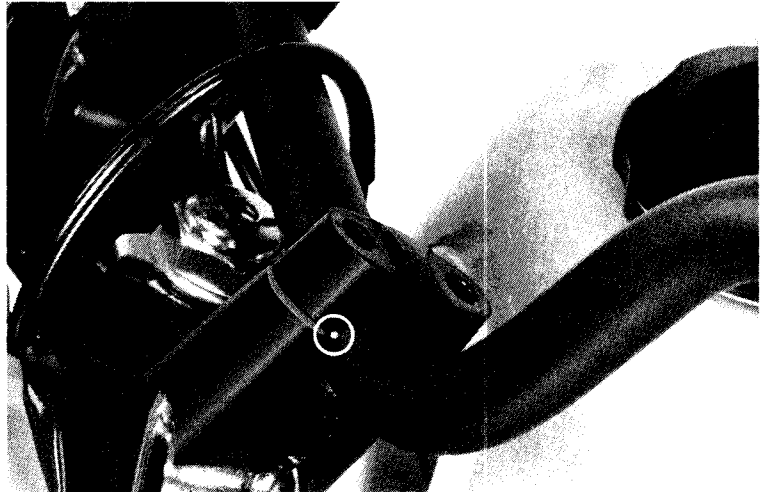




INSTALLATION

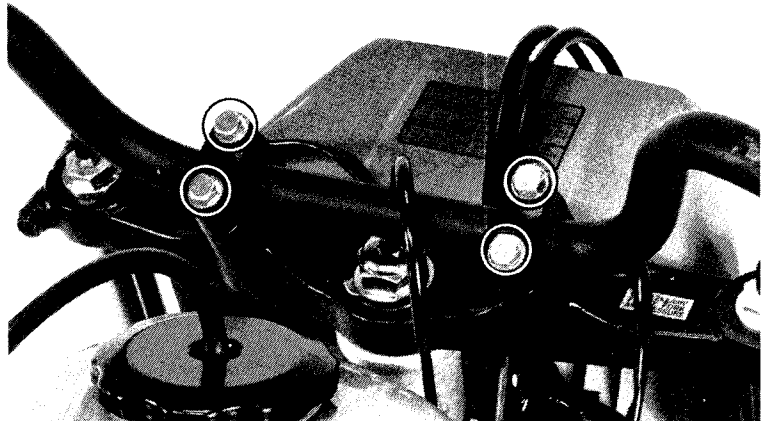
Place the handlebar into position, aligning the punch marks on the handlebar with top of the handlebar lower holders.

Install the handlebar upper holders with the punch marks forward.



Tighten the front bolts to the specified torque first, then tighten the rear bolts to the same torque.

TORQUE: 18–25 N·m (1.8–2.5 kg·m,
13–18 ft·lb)



Position the throttle lever housing on the handlebar and install it using the throttle lever housing holder and two screws.

LEVER HOUSING





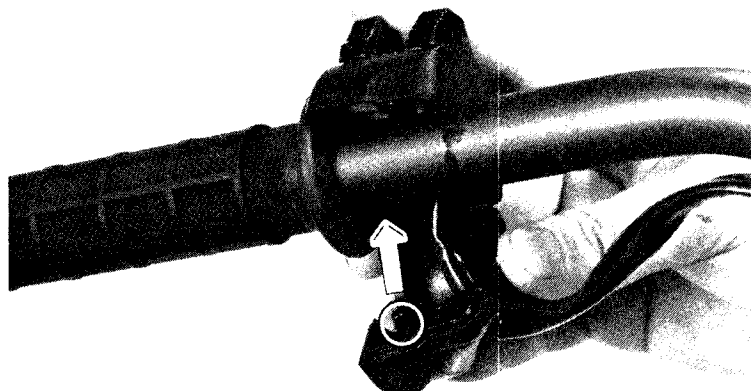
FRONT WHEEL/FRONT FORK/STEERING

Install the brake master cylinder holder with the marking "△" up and punch mark on the handlebar in line with the split in the holder and master cylinder.

Tighten the forward bolt first, then tighten the rear bolt.



Install the dimmer switch assembly with the dowel aligned with the hole in the handlebar.

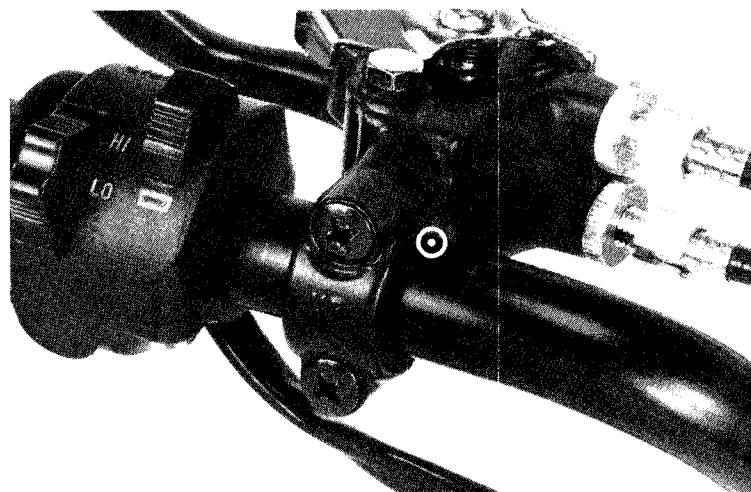


Install the clutch/parking lever housing with the split in the lever housing aligned with the punch mark on the handlebar.

Tighten the upper screw first, then tighten the lower screw.

Perform the following inspections after installing the handlebar:

- Front brake lever free play and function
- Clutch lever free play
- Throttle free play and return
- Operation of electrical components
- Operation of parking brake lever





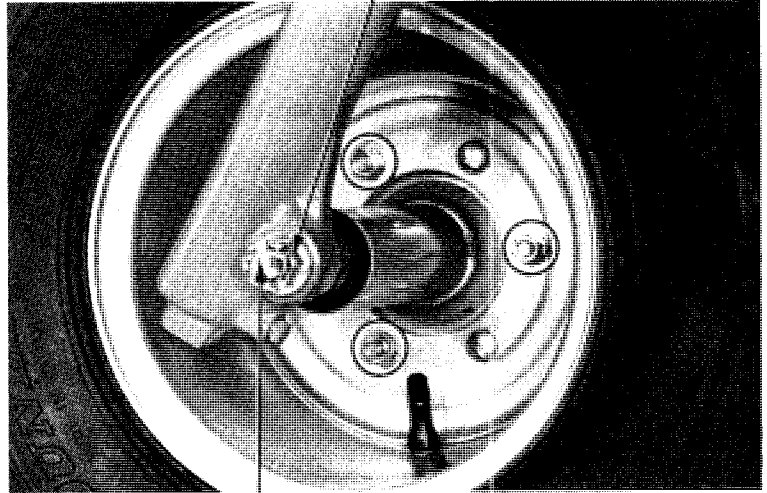
FRONT WHEEL

FRONT WHEEL REMOVAL

Raise the front wheel off the ground by placing a block or safety stand under the engine.

Remove the cotter pin and axle nut.
Remove the three wheel nuts.

AXLE NUT



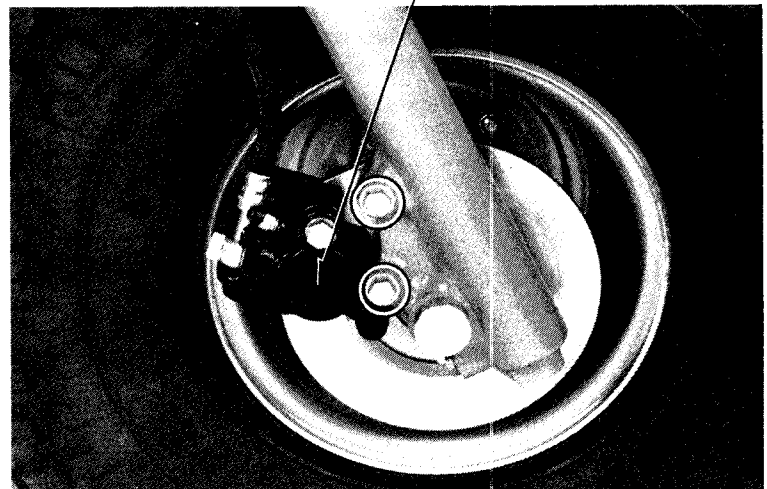
COTTER PIN

Remove the two caliper bolts and remove the caliper from the right fork leg.

NOTE

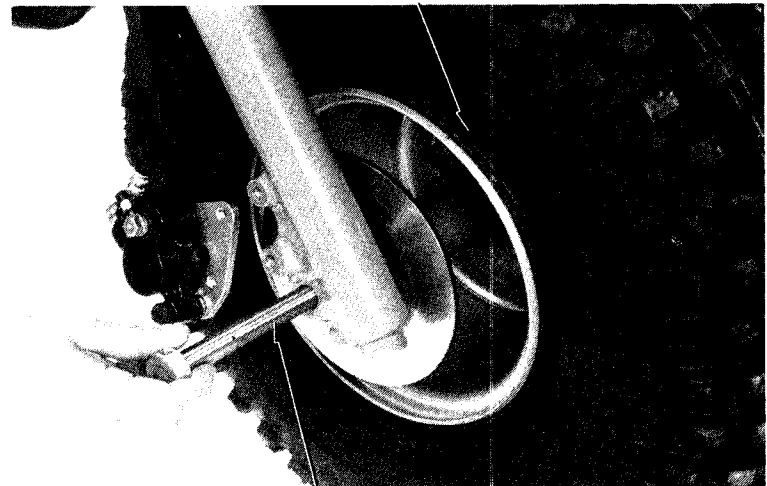
Place a small wooden wedge between the brake pads to keep them from being forced out at the caliper.

CALIPER



Remove the axle shaft and front wheel.

FRONT WHEEL

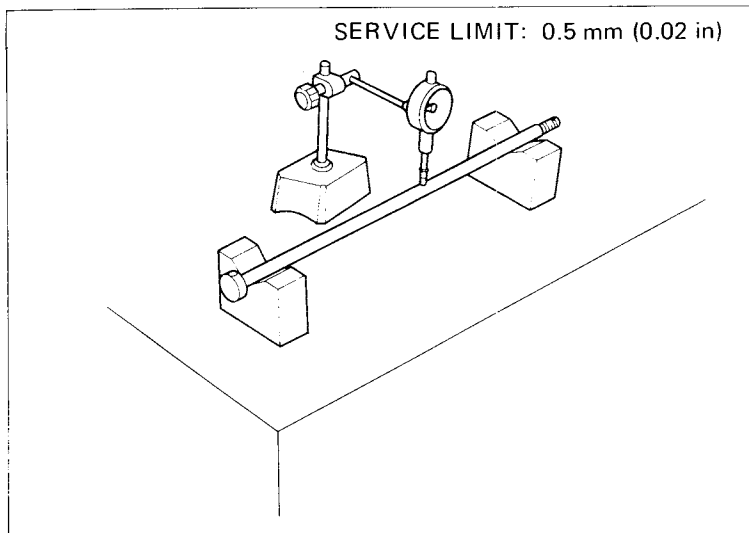


AXLE SHAFT

FRONT AXLE INSPECTION

Set the axle in V-blocks, rotate and measure the runout.

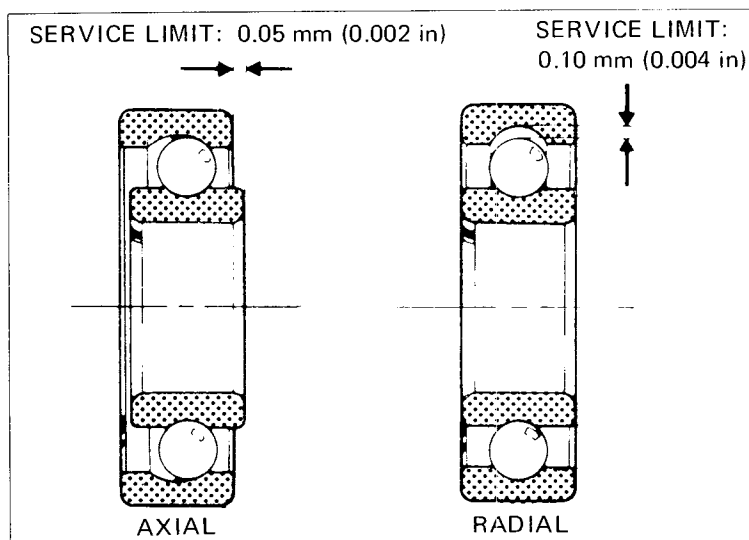
Actual runout is 1/2 of th total indicator reading.



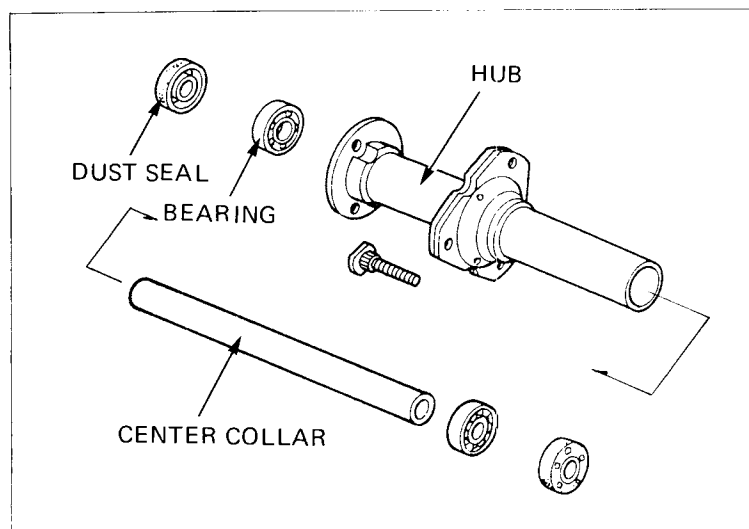
WHEEL BEARING INSPECTION

Check the wheel bearings by placing the wheel between V-blocks and spinning the wheel by hand.

Replace the bearings with new ones if they are noisy or have excessive play.



Remove the dust seals.
Drive the bearings and center collar out.





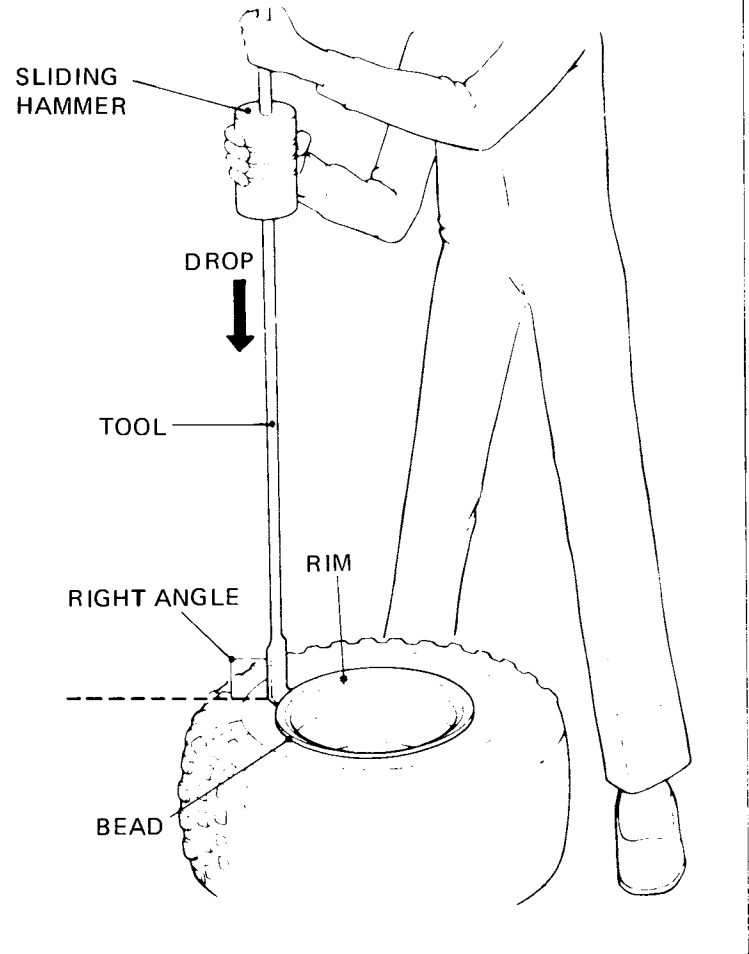
TIRE REMOVAL

Deflate the tire.
Break both tire beads loose.

NOTE

- Do not use tire irons to break the bead away from the rim flange; this could damage the rim seal and cause an air leak.
- If it is difficult to break the beads or if rust has formed on the rim, apply a soap and water solution or tire mounting lubricant to the rim periphery.

TIRE DISASSEMBLING TOOL
07772-0010000 or M987X-350-XXXXX



Remove the rim bolts.
Remove the rims, O-ring and rim plates.

Check the rim for damage.
Check the tire for cuts, tears, wear or other damage.
Replace if necessary.



TIRE REPAIR (WITH COLD PATCH)

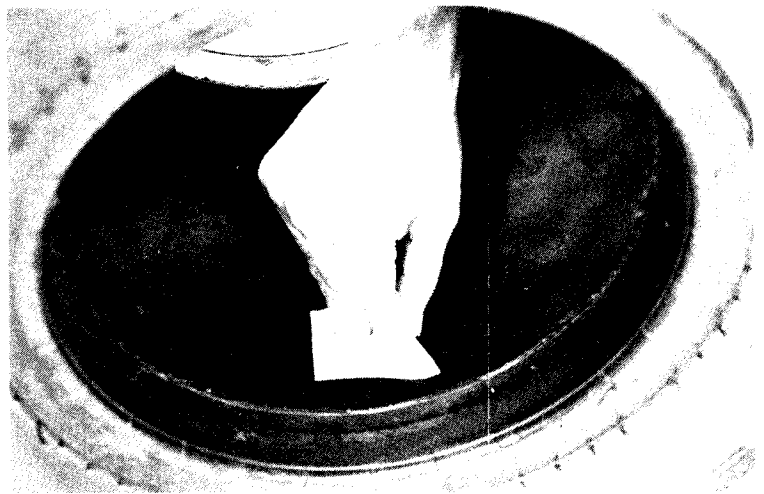
Check the tire tread for puncturing objects.
Chalk mark the punctured area and remove the puncturing object.



Clean and roughen the punctured area with a tire rubber cleaner or a wire brush. Clean the area with non-flammable solvent.

NOTE

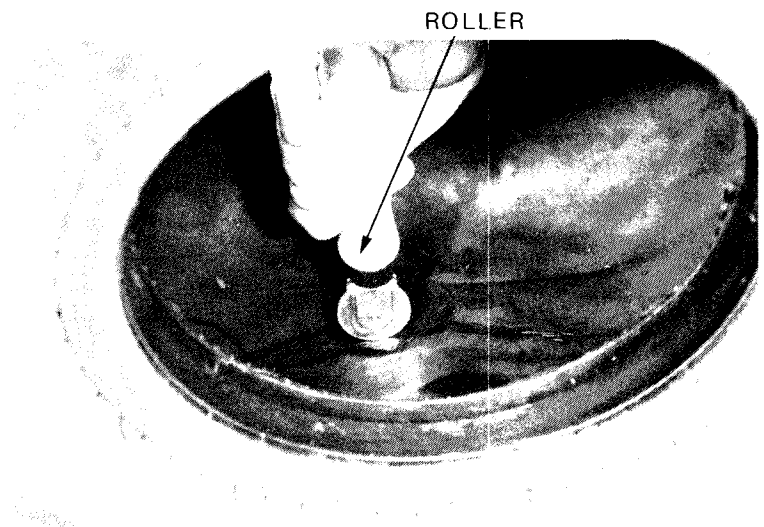
Use a solvent that will not leave an oily residue.
Do not use gasoline.



Apply rubber cement around the torn area and allow it to dry. Remove the lining from the patch and center it over the puncture. Press the patch against the puncture using a special roller.

NOTE

- Allow the cement to dry until tacky before applying a patch.
- Do not touch the cement surface with dirty or greasy hands.



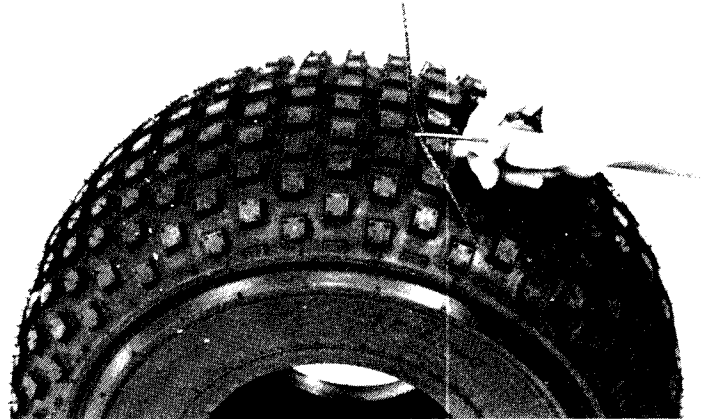


TIRE REPAIR (EXTERNAL WITH RUBBER PLUG)

NOTE

This method is an emergency repair only. Replace the plug at the first opportunity with a cold patch.

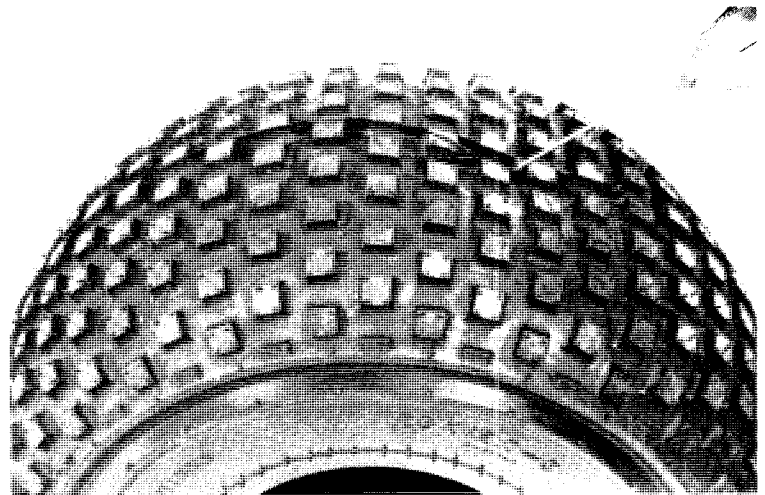
Remove the puncturing object.
Insert a rubber plug through the eye of an inserting needle.
Apply patching cement to the plug.



Center the needle on the plug and insert until the plug is all the way in the tire.
Twist the needle several times.

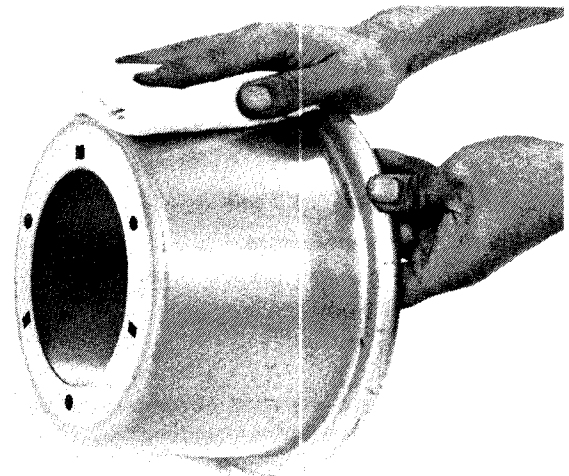
Pull the needle straight out so that the plug is about 10 mm (3/8 in) above the tread surface. Trim the plug 2 mm (1/16 in) above the surface.

Repeat the above procedure if the puncture is large.



TIRE ASSEMBLY

Clean the rim bead seat and flanges.
Apply clean water to the rim flanges, bead seat and base.



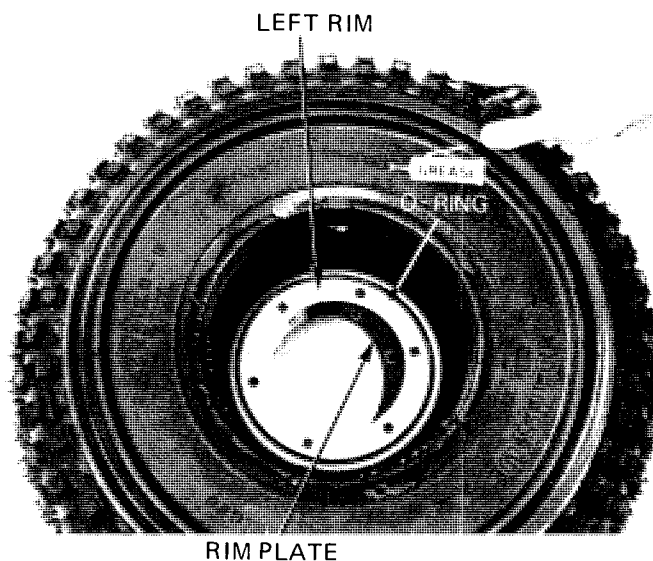
Insert the rim plate into the tire.

Place the rim with the valve on the rim plate and position the tire.

Seat a new O-ring in the groove of the rim.

NOTE

Lightly grease the O-ring.



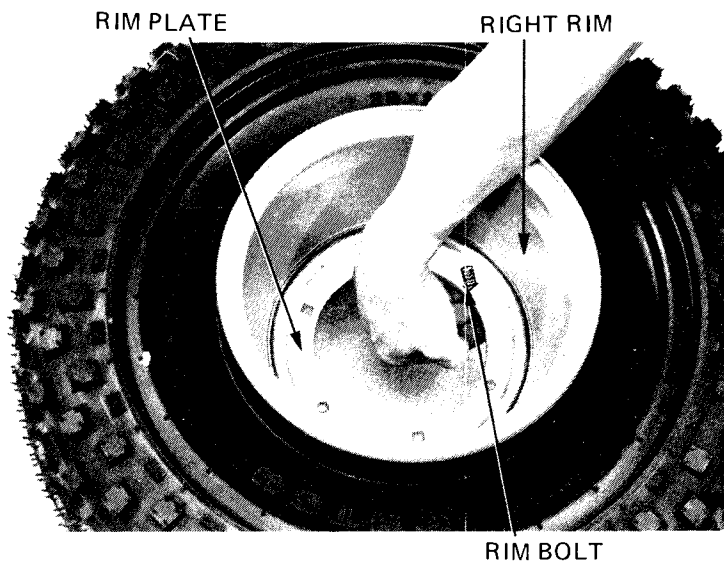
Install the other rim and rim plate.
Align the rim bolt holes and install the bolts.
Install each washer and tighten the nuts.

TORQUE: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)

Inflate the tire to seat the tire bead.

NOTE

Use tire mounting lubricant or a soap and water solution to help seat the tire bead.



Deflate the tire. Wait 1 hour and inflate the tire to the specified pressure.

TIRE PRESSURES:

Maximum pressure:

18 kPa (0.18 kg/cm², 2.6 psi)

Recommended pressure:

15 kPa (0.15 kg/cm², 2.2 psi)

Minimum pressure:

12 kPa (0.12 kg/cm², 1.7 psi)

Measure the tire circumference.

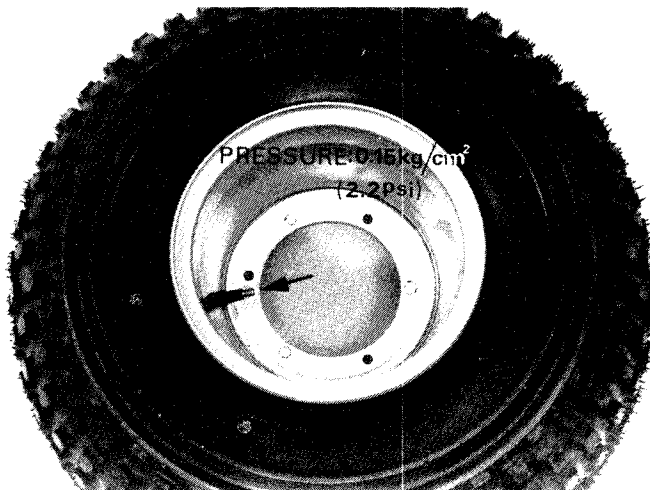
STANDARD TIRE CIRCUMFERENCE:

1,760 mm (69.3 in)

NOTE

The tires must have the same circumference to prevent improper steering and handling.

Check for air leaks and install the valve cap.





FRONT WHEEL ASSEMBLY

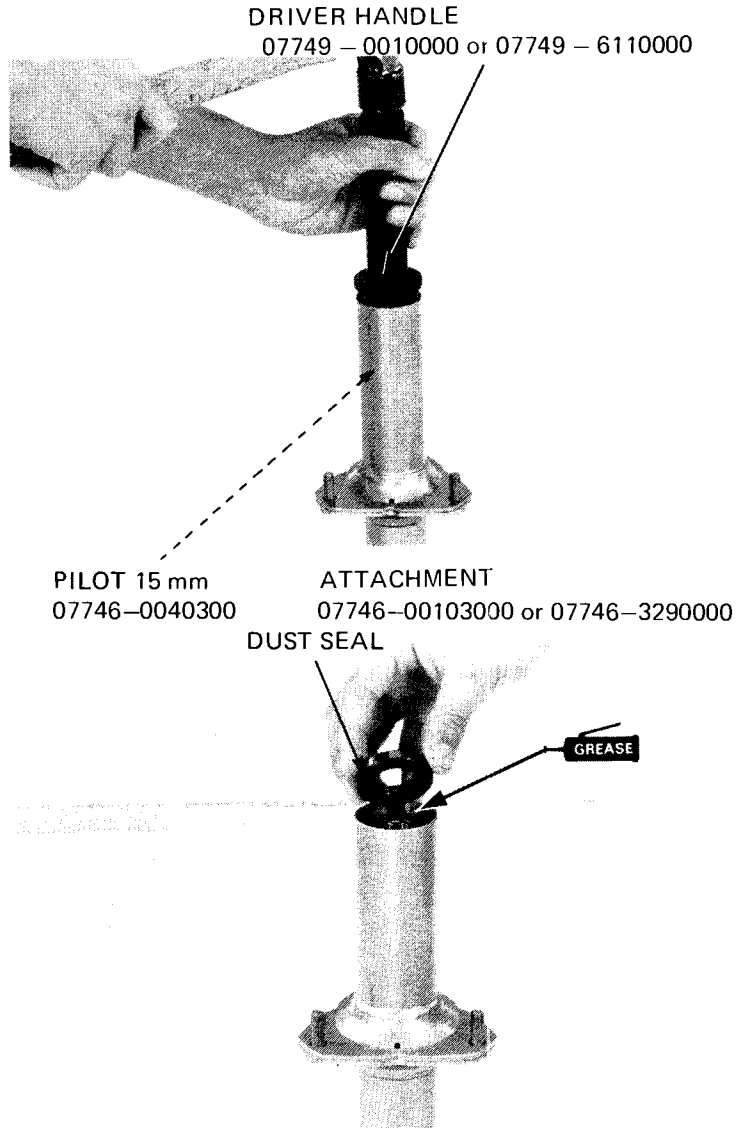
Pack all front wheel bearing cavities with wheel bearing grease.

Drive in the left bearing.

Install the collar and drive in the right bearing.

NOTE

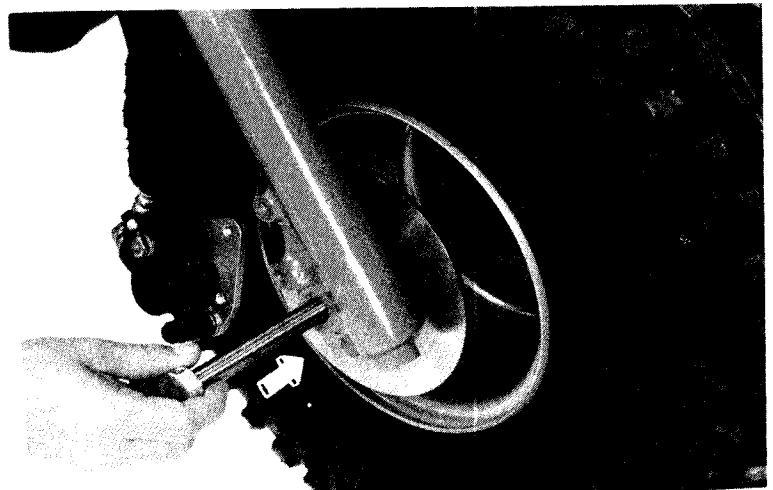
Do not allow the bearings to tilt while driving them in.



Apply grease to the inside of each dust seal.
Install the dust seals and distance collars.

FRONT WHEEL INSTALLATION

Install the front wheel and axle shaft.

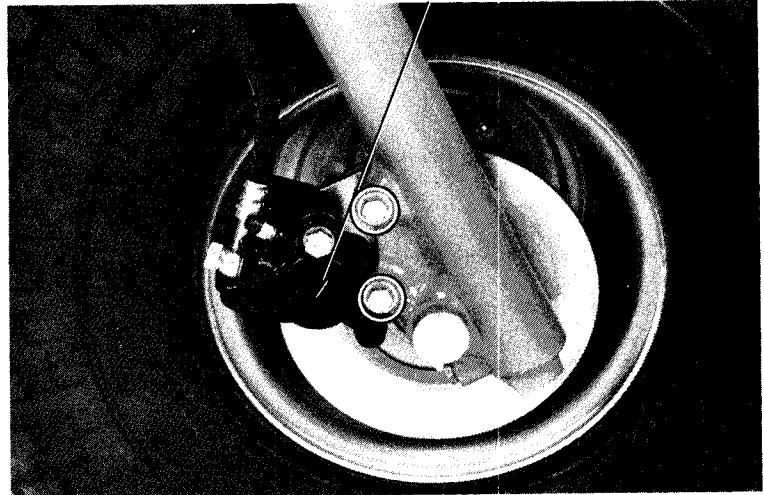




Position the caliper on the right fork leg and install, using the two bolts.

TORQUE: 20–25 N-m (2.0–2.5 kg-m,
14–18 ft-lb)

CALIPER



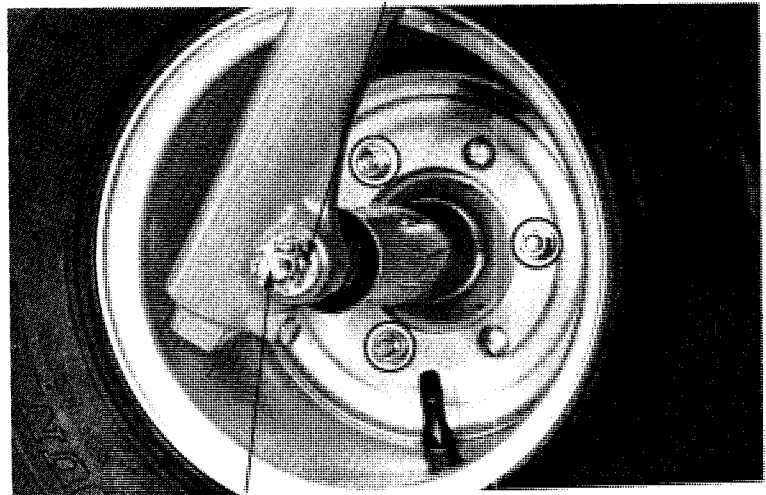
Install the wheel on the wheel hub with the three hub nuts.

TORQUE: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)

Tighten the axle nut and install a new cotter pin.

TORQUE: 70–110 N-m (7.0–11.0 kg-m,
51–80 ft-lb)

AXLE NUT



COTTER PIN



FRONT FORK

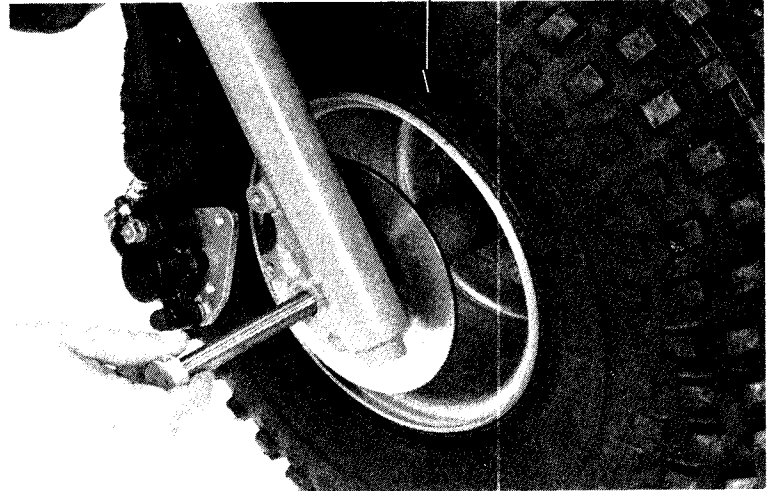
FRONT FORK REMOVAL

Remove the brake caliper.
Remove the front wheel (Page 10-10).

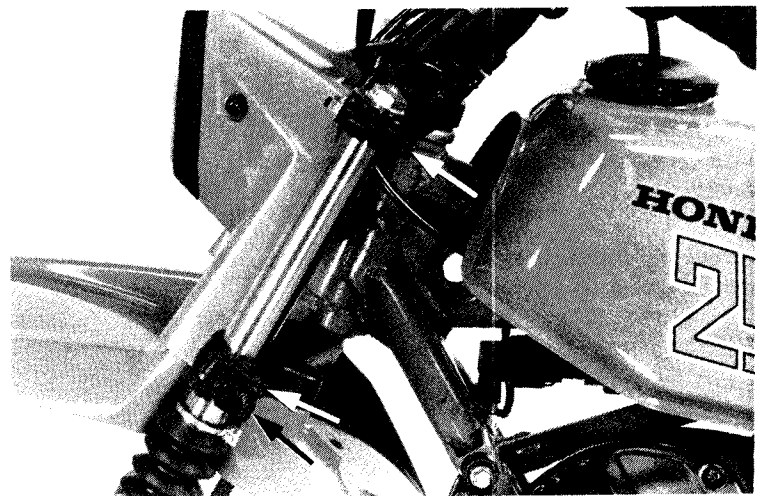
NOTE

Do not loosen the brake hose unless it is absolutely necessary. Whenever the brake hose is loosened or removed, it is necessary to bleed air from the brake. Refer to page 11-2 for bleeding procedures.

FRONT WHEEL

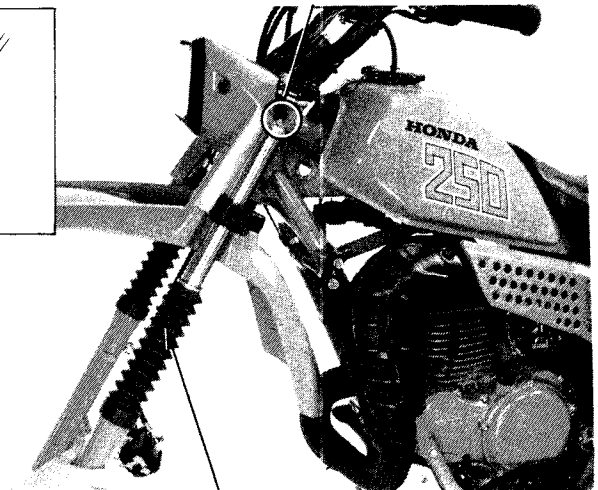
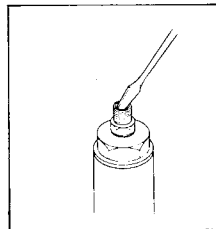


Loosen the fork tube pinch bolts.



Press on the air valves to depressurize the forks.
Remove the front forks.

AIR VALVE



FRONT FORK



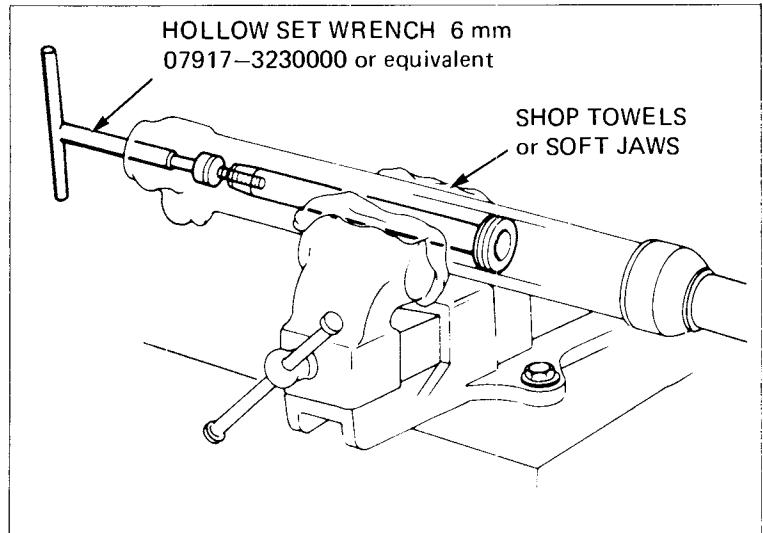
FRONT WHEEL/FRONT FORK/STEERING

Hold the fork slider in a vise with soft jaws or a shop towel.

Remove the hex bolt.

CAUTION:

Do not overtighten the slider in the vise. Overtightening will damage the slider.



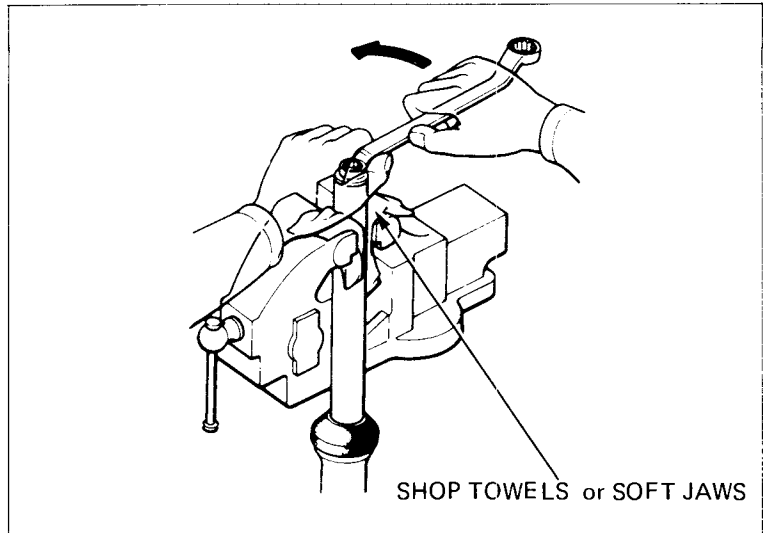
Hold the fork tube in a vise with soft jaws or a shop towel. Avoid the sliding surface.

Remove the fork cap bolt.

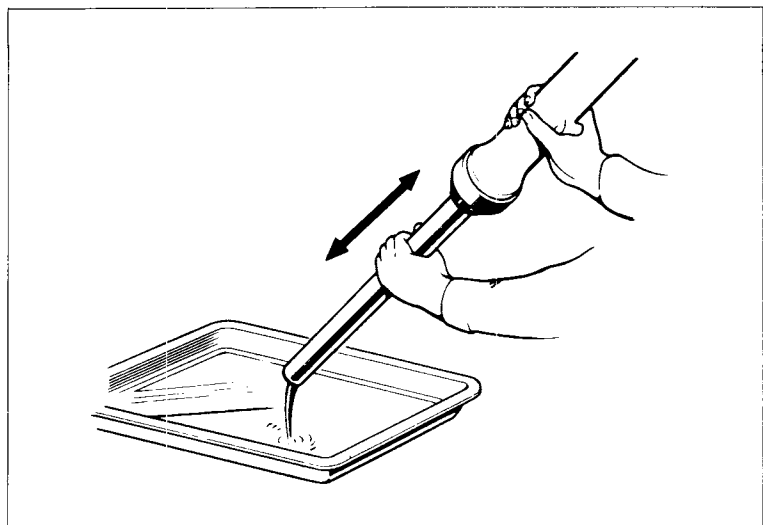
WARNING

The fork cap is under spring pressure. Use care when removing the cap to keep it from causing injury.

Remove the fork springs, piston, oil lock piece and rebound spring.



Turn the fork tube upside down and pump it to help drain the fork fluid.



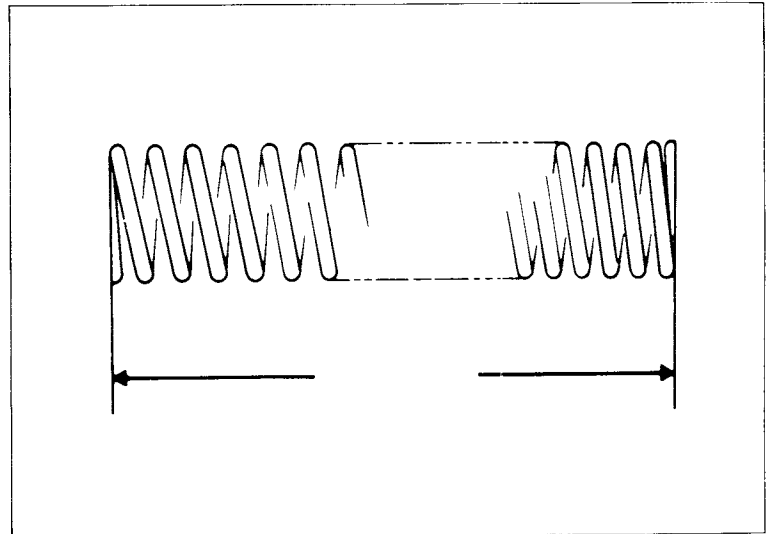


FORK SPRING INSPECTION

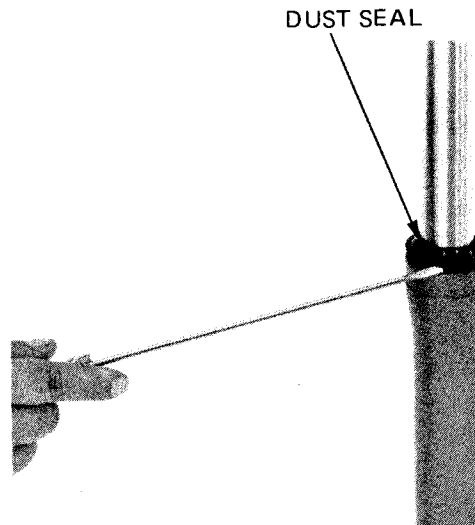
Measure the free length of the fork springs.
Replace the springs if they are shorter than the service limit.

SERVICE LIMIT:

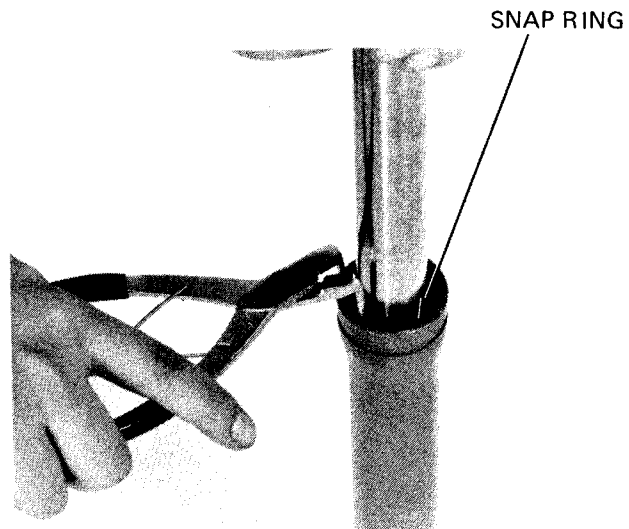
- Spring A: 88.3 mm (3.48 in)
- Spring B: 413.5 mm (16.28 in)



Remove the dust seal.



Remove the snap ring with the snap ring pliers.
Remove the back-up ring.
Remove the fork tube from the slider.



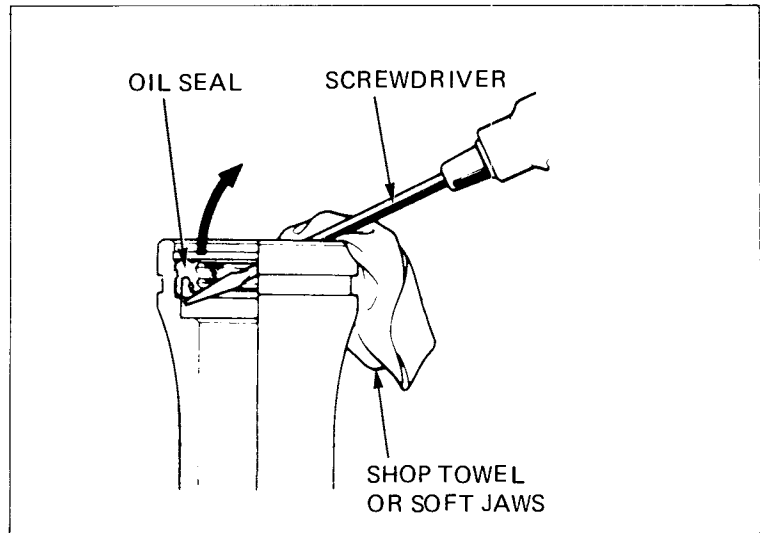


FRONT WHEEL/FRONT FORK/STEERING

Remove the oil seal using a screwdriver with a dull or rounded edge.

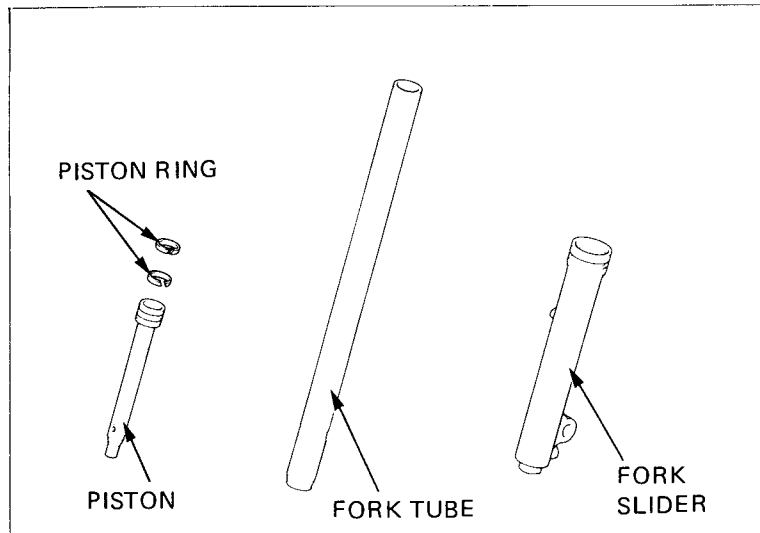
NOTE

Avoid damaging the inner and outer surfaces of the fork slider when removing the oil seal.



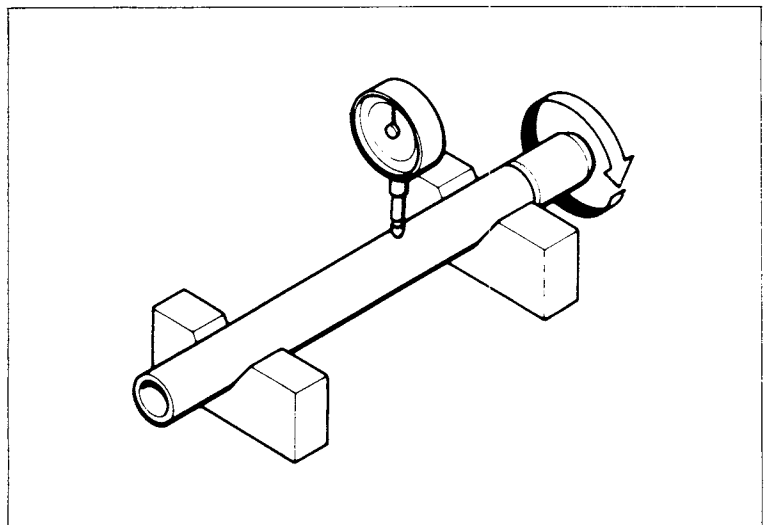
FORK TUBE, PISTON AND FORK SLIDER INSPECTION

Check the fork tube, piston and oil lock piece for score marks, scratches or abnormal wear.
Replace components which are worn or damaged.



Place the fork tube in V blocks and read the runout.
Take 1/2 of the total indicator reading to determine the actual wear.

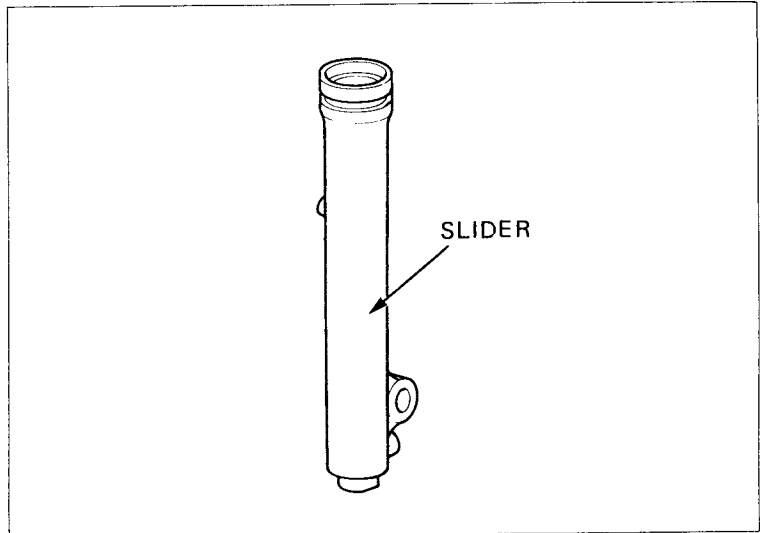
SERVICE LIMIT: 0.20 mm (0.008 in)





FORK SLIDER

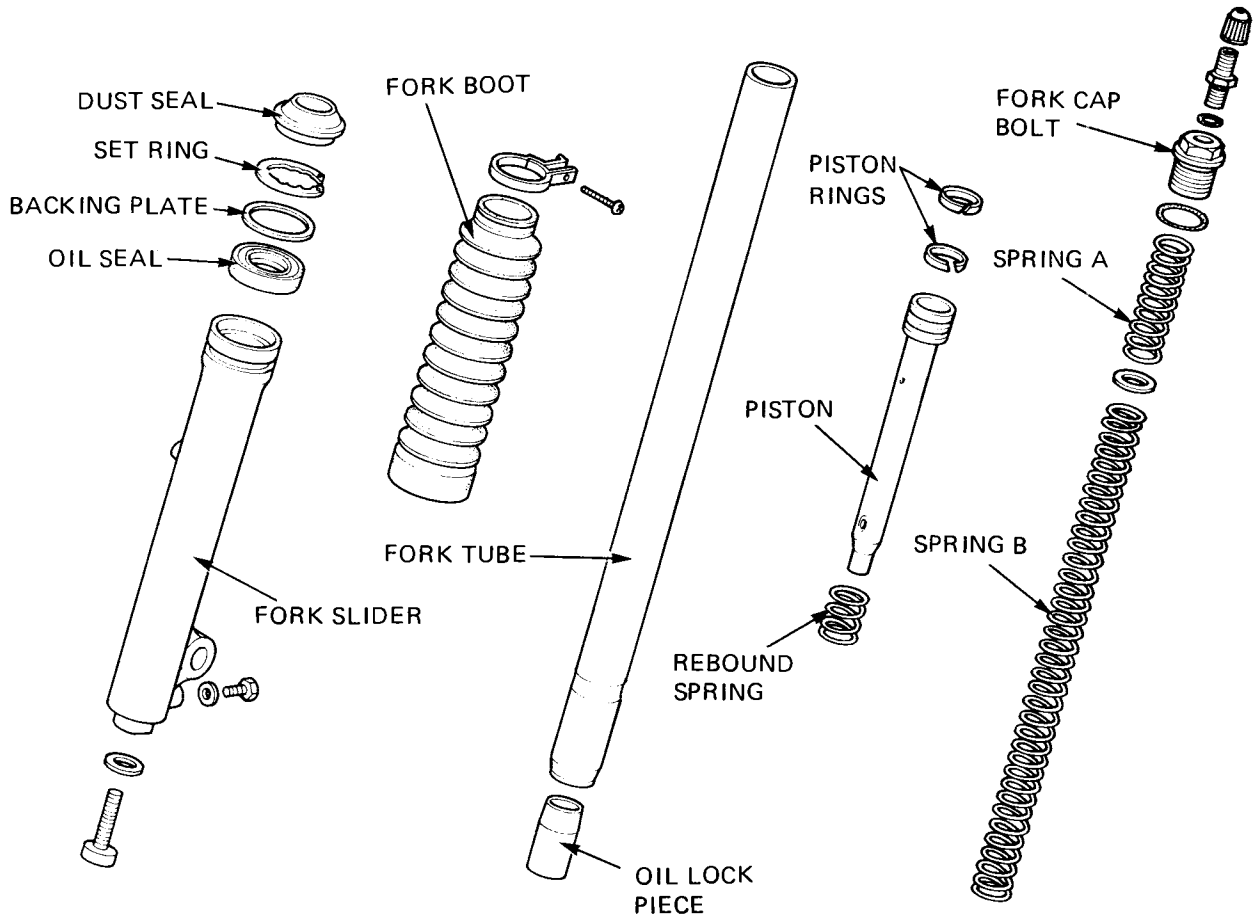
Check the slider for score marks, scratches or abnormal wear.



FRONT FORK ASSEMBLY

NOTE

Wash all removed parts in solvent and wipe them off thoroughly before assembly.



Install the piston ring on the piston.
Install the oil lock piece fork tube, rebound spring and piston.

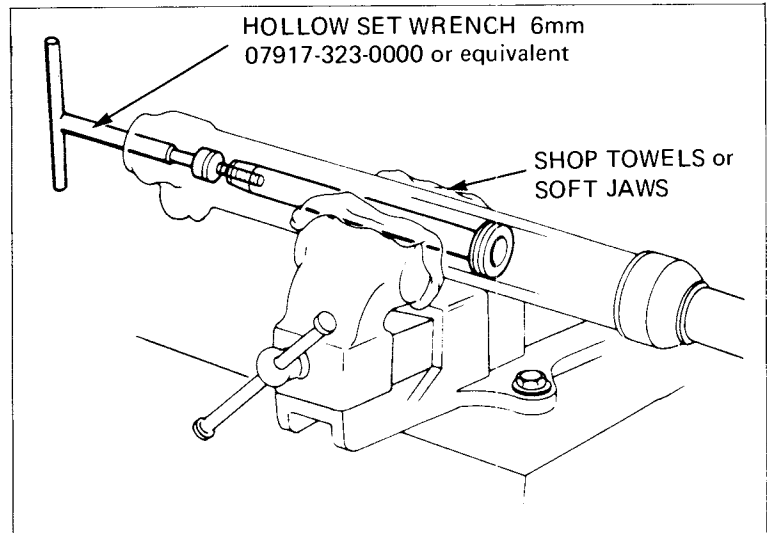
FRONT WHEEL/FRONT FORK/STEERING

Clean the hex bolt threads and apply a locking agent to the threads.

NOTE

- To tighten the hex bolt, it may be necessary to install the fork springs and tighten the fork bolt temporarily.
- Take care not to distort the slider in the vise.

TORQUE: 15–25 N·m (1.5–2.5 kg·m,
11–18 ft·lb)

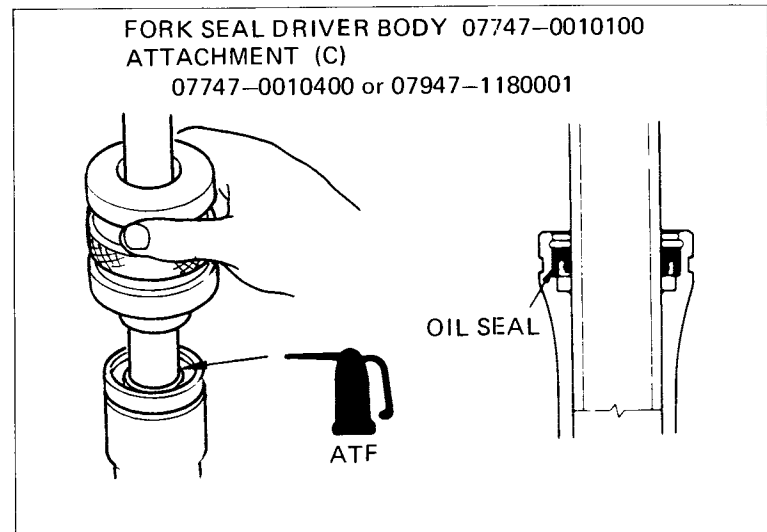


Install the oil seal into the top of the slider.
Apply ATF to the oil seal and drive it in with the fork seal driver.

NOTE

Use the old oil seal with fork seal driver attachment to install the new oil seal.

The fork seal is seated when the groove in the slider is seen at top of the seal.
Install the backing plate, snap ring and dust seal.



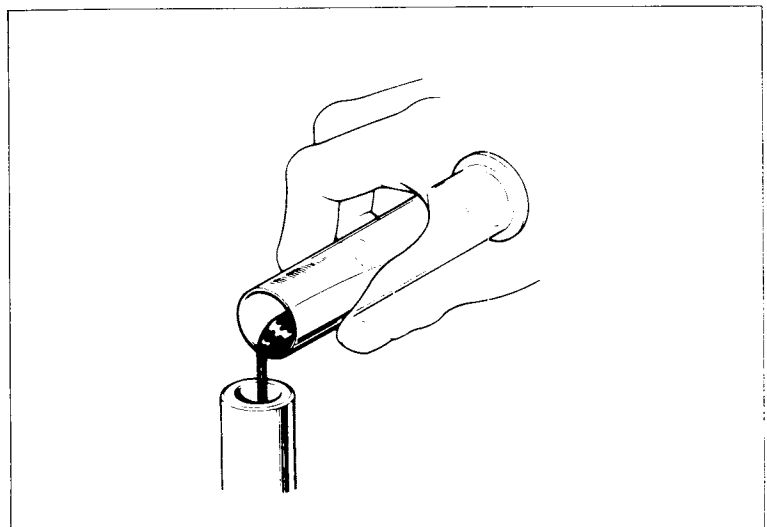
Fill the forks with the specified amount of ATF.
Refer to Page 2-15 for adjustment.

SPECIFIED FLUID: ATF or equivalent
CAPACITY: 172–177 cc (5.8–6.0 ozs)

NOTE

Do not overfill. Overfilling causes improper suspension performance.

Install the fork springs.



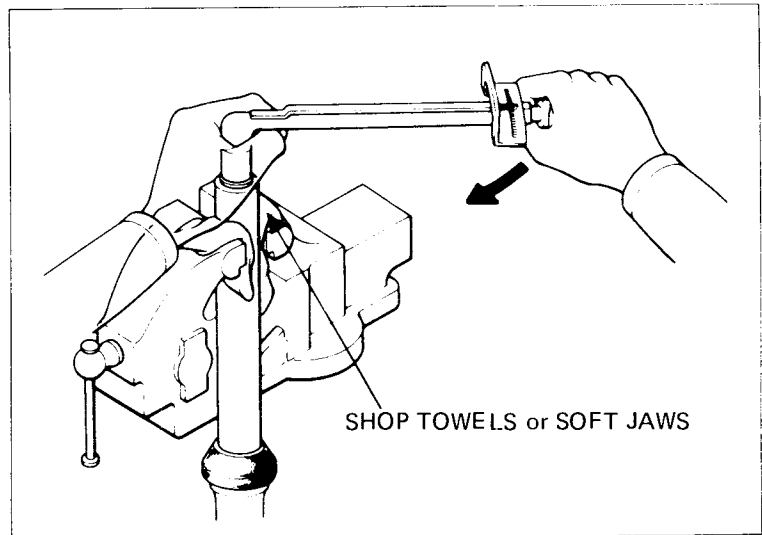


Tighten the fork caps;

TORQUE: 15–35 N·m (1.5–3.5 kg·m,
11–25 ft·lb)

CAUTION:

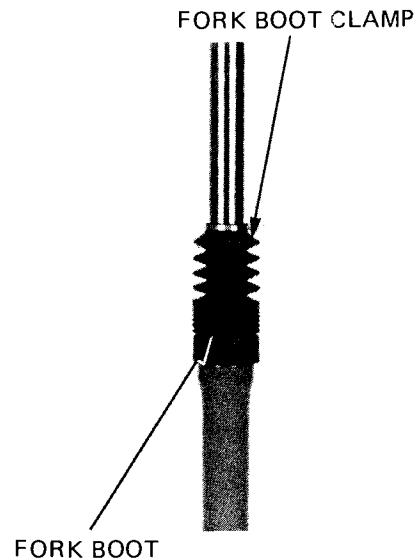
Use shop towels or soft jaws to avoid damaging the fork tube.



Install the fork boot and boot clamp.

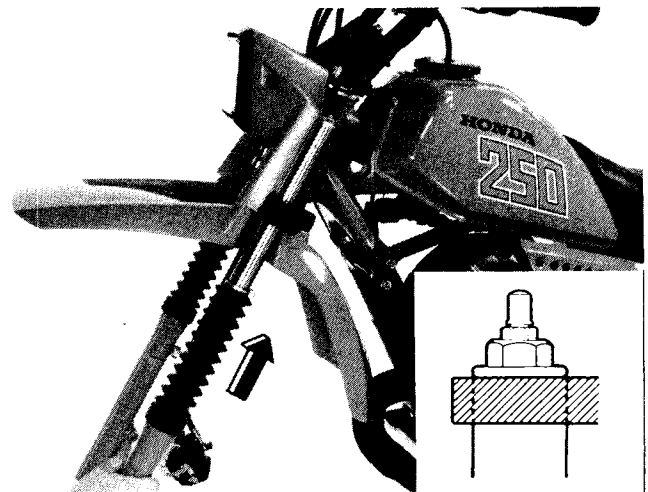
NOTE

Do not tighten the clamps until the forks are properly installed on the vehicle.



FRONT FORK INSTALLATION

Install the front forks into the fork bridge and steering stem while rotating them. Be sure that the top of each tube is flush with the top of the fork bridge.



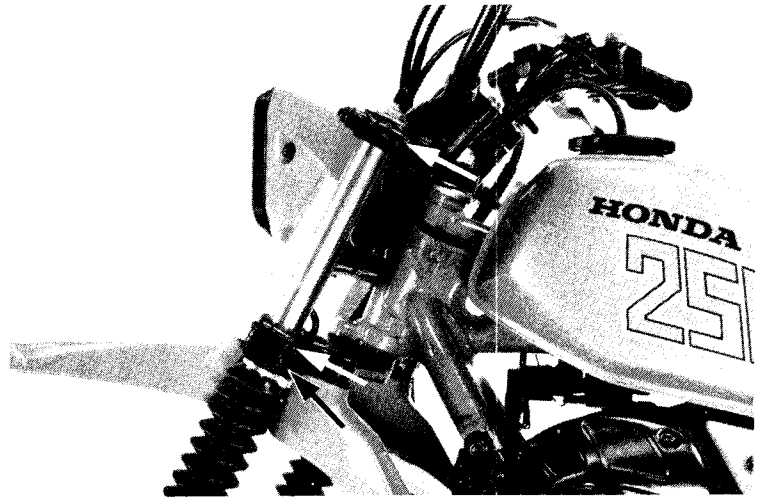


FRONT WHEEL/Front FORK/STEERING

Tighten the fork tube pinch bolts.

TORQUE VALUES:

Fork tube pinch bolts: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)



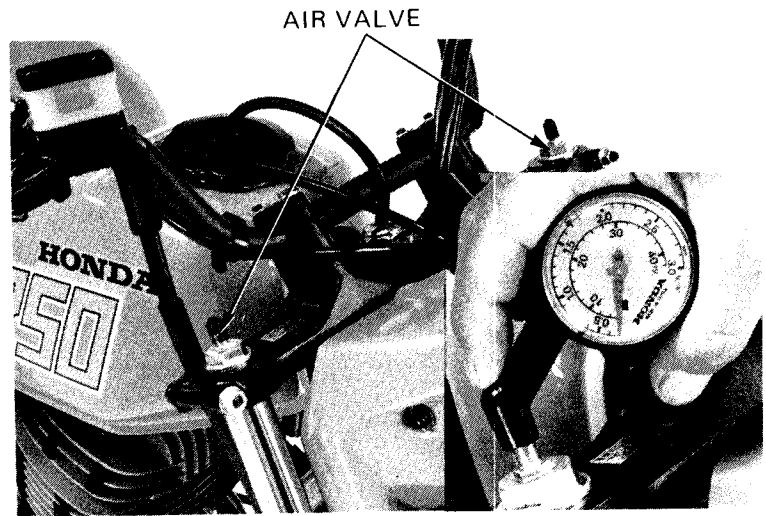
Fill each fork tube with air through the air valve.

STANDARD AIR PRESSURE:

10–50 kPa (0.1–0.5 kg/cm², 1.4–7.0 psi)

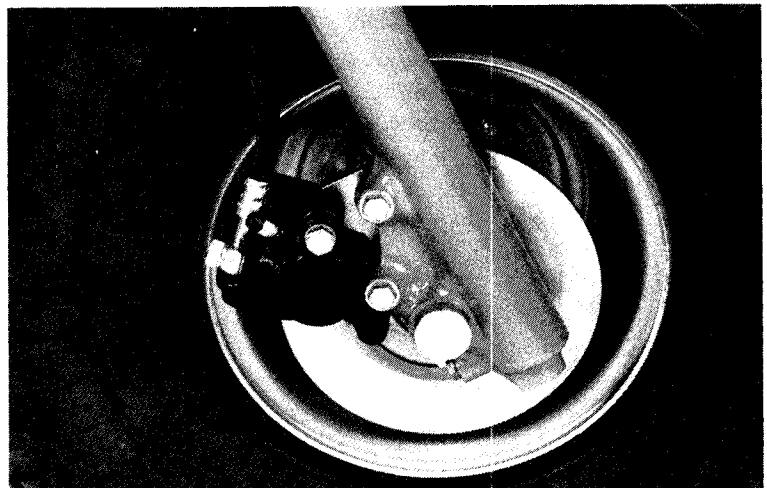
NOTE

- Check and adjust air pressure when the fork tube are cold and with the front wheel off the ground, for accurate pressure readings.
- Some pressure will be lost when using the gauge. Determine the amount of loss and compensate accordingly.
- Be sure that the air pressure in both fork tubes is equal.
- Use of more than 100 kPa (1.0 kg/cm², 14.2 psi) is not recommended because fork action becomes very stiff.
- Depress the valve core to decrease air pressure.



Install the air valve caps.

Install the front wheel. (Page 10-16).





STEERING STEM

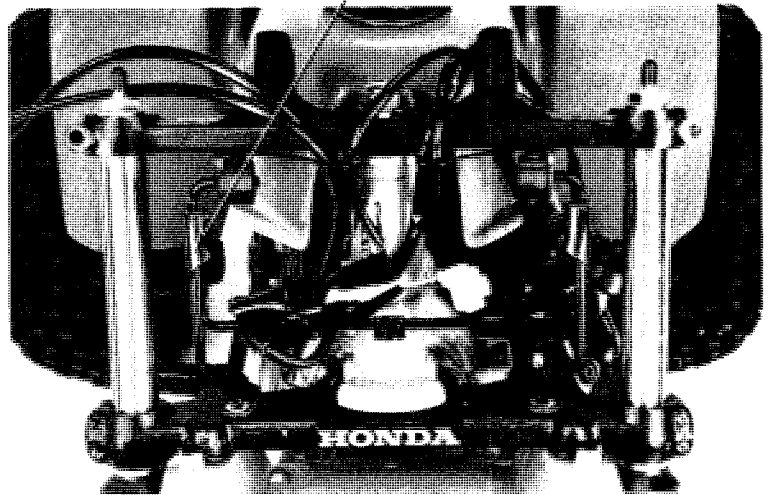
FORK BRIDGE REMOVAL

Remove the headlight and headlight case (Page 10-3).
Remove the handlebar (Page 10-7).
Remove the front wheel (Page 10-10).



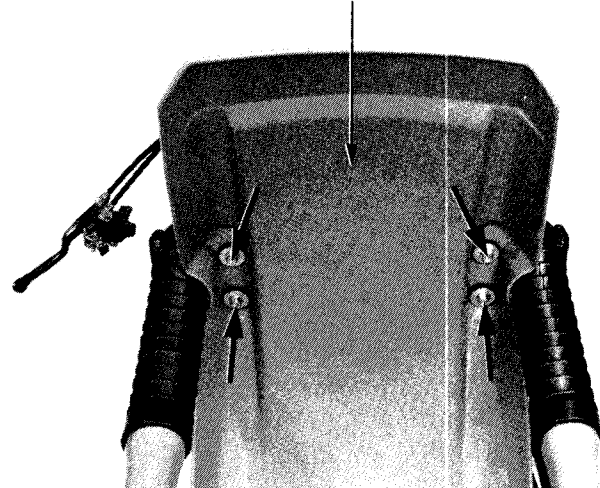
Remove the headlight case bracket. (Page 10-6).

BRACKET

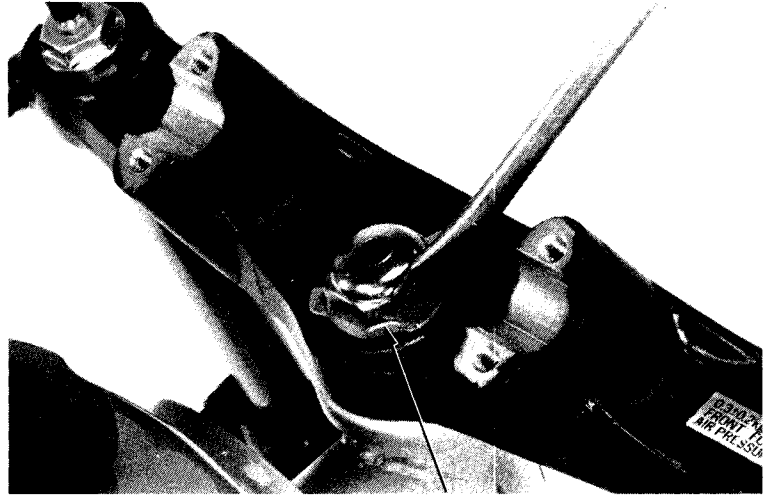


Remove the front fender.

FRONT FENDER



Straighten the tab of the stem washer.

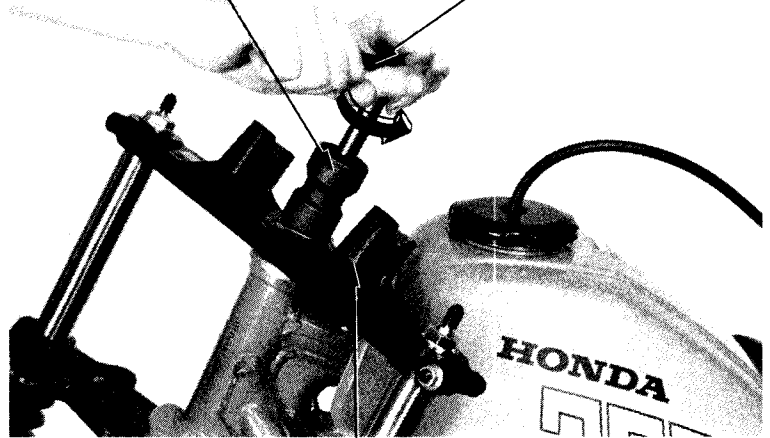


STEM WASHER

LOCK NUT SOCKET 30 x 32mm
07716-0020400 or 07916-3710100

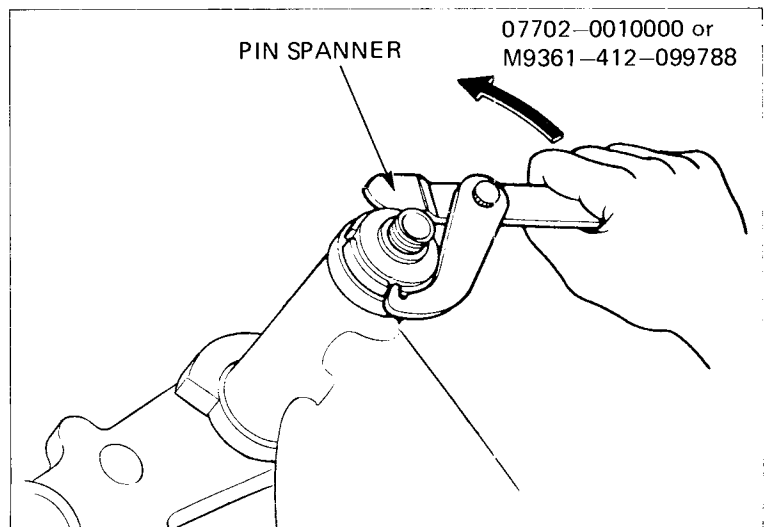
EXTENSION
07716-0020500

Loosen the two fork tube pinch bolts.
Remove the steering stem nut and washer.
Remove the fork bridge.



FORK TOP BRIDGE

Remove the front fork tubes (Page 10-18).
Remove the steering head top thread nut.



PIN SPANNER

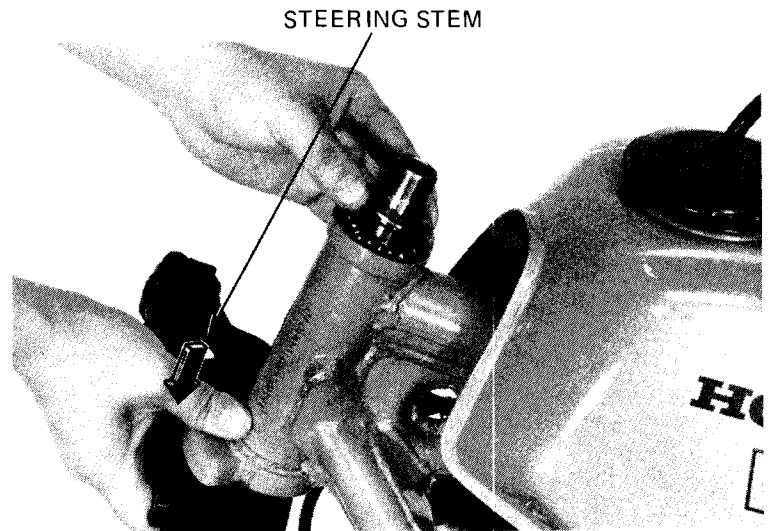
07702-0010000 or
M9361-412-099788



Remove the steering stem and bearings.

NOTE

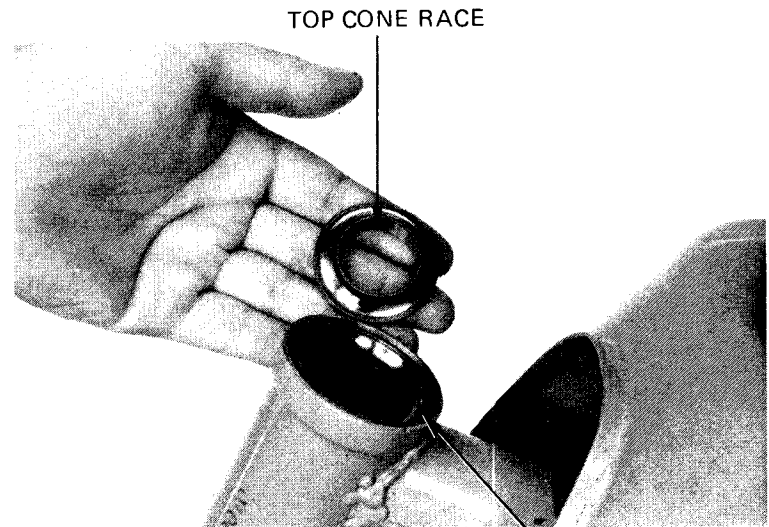
Do not allow the steel balls to fall.



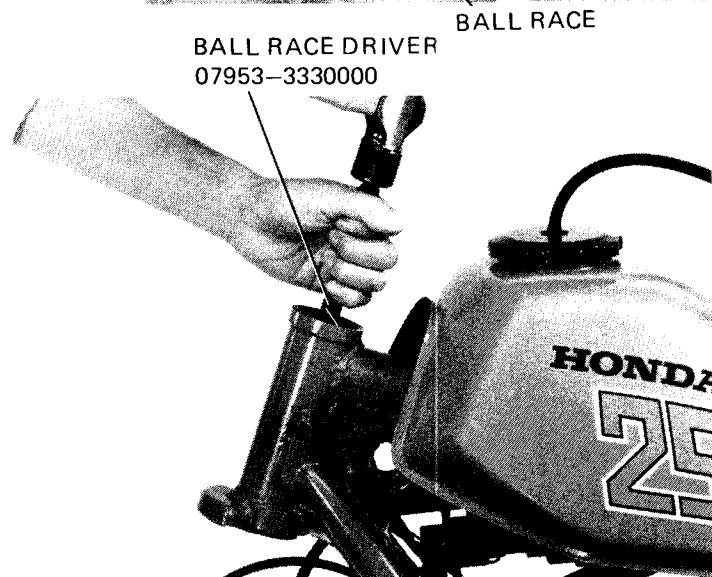
Check the top cone and ball races for wear or damage and replace if necessary.

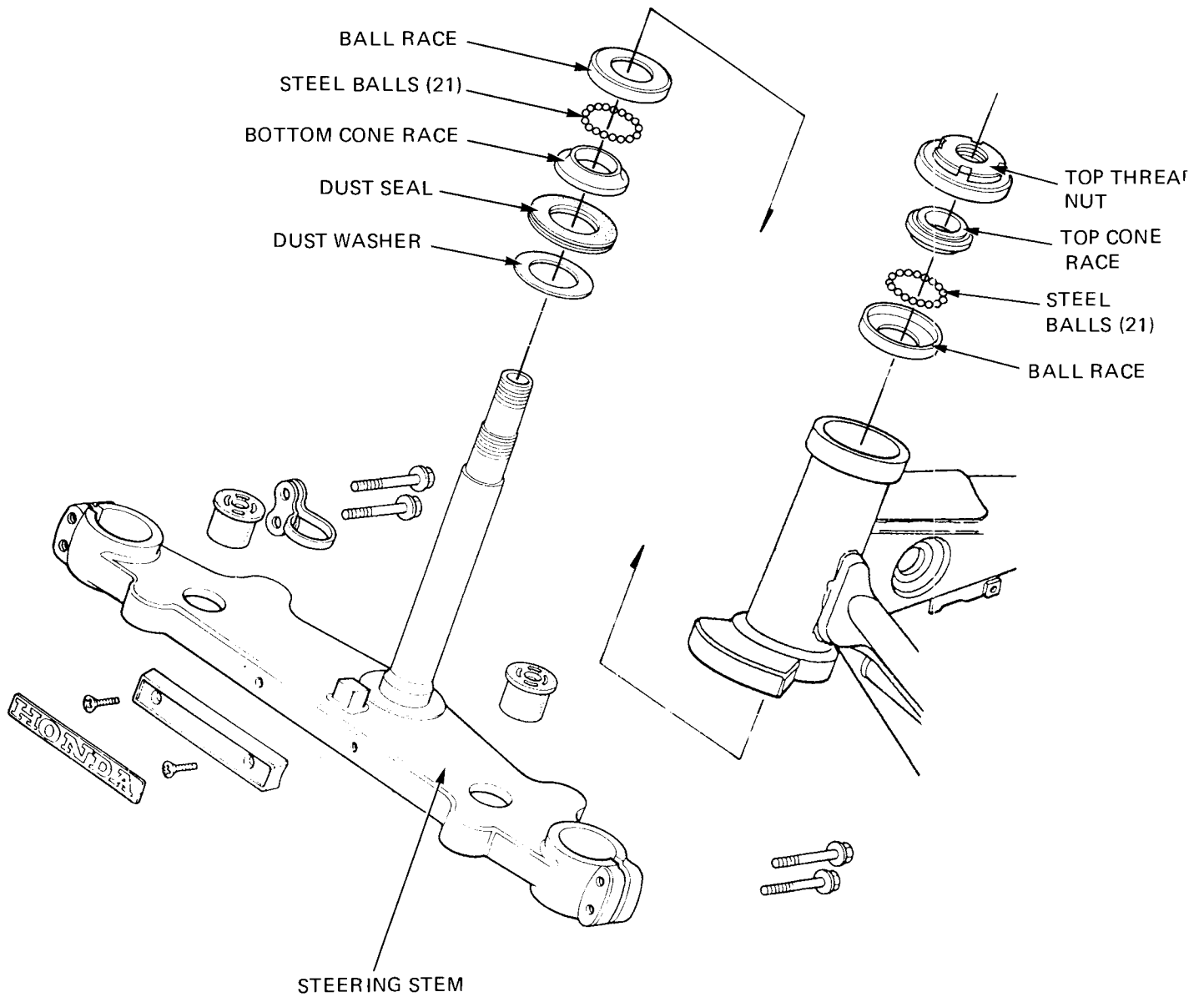
NOTE

Replace the balls and races as a set when any component is damaged.



Remove the ball races.





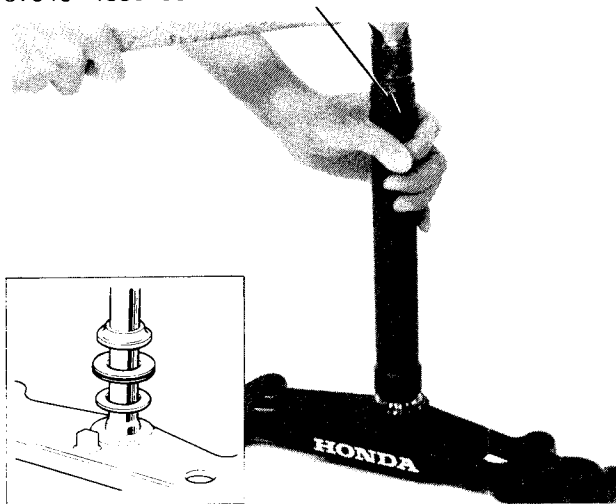


STEERING STEM DRIVER STEERING DRIVER ATTACHMENT
07946-4300100 or 07946-3710600 GN HT-54 (USA only)

STEERING STEM INSTALLATION

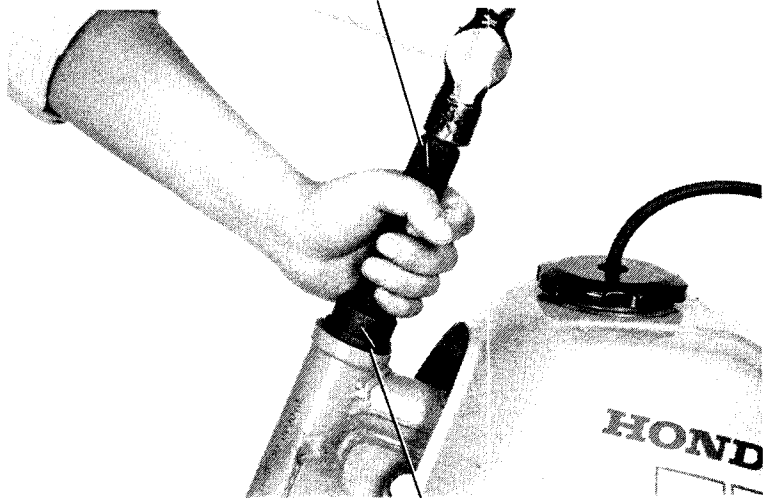
Install the washer and dust seal on the steering stem.

Drive the bottom cone race into the steering stem.



DRIVER HANDLE
07749-0010000 or 07749-6110000

Drive in the ball races with a ball race driver.



ATTACHMENT 42 x 47 mm
07746-0010300 or 07946-3290000

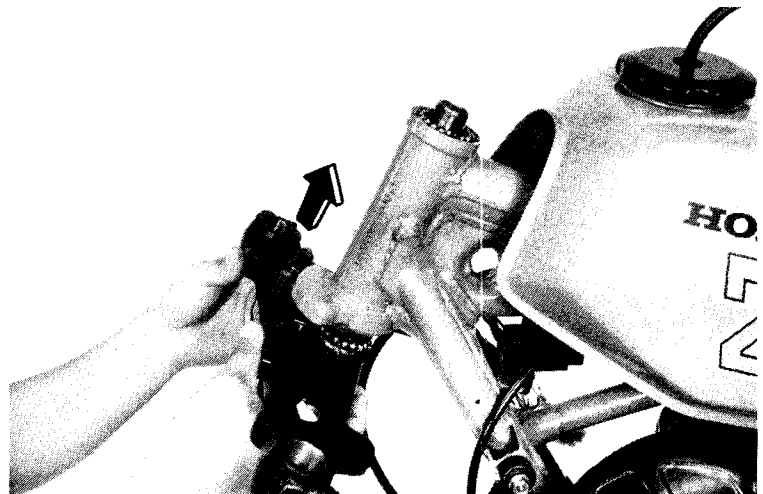
Apply grease to the ball races and bottom cone race and install the steel balls on the races.

NOTE

21 steel balls are used for both the top and bottom races.

Slide the steering stem through the steering head from the bottom.

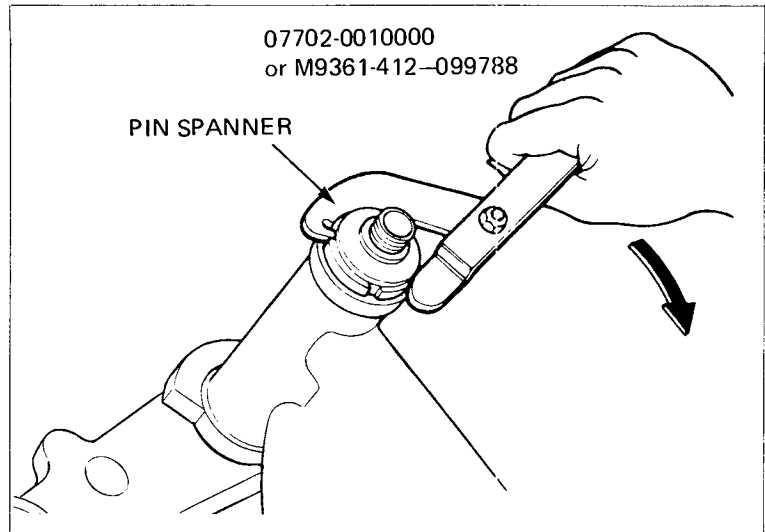
Install the top cone race.
Thread on the top thread nut.





Tighten the top thread nut until snug against the top cone race and back off about 1/8 turn.

Check that the stem rotates freely without axial play.

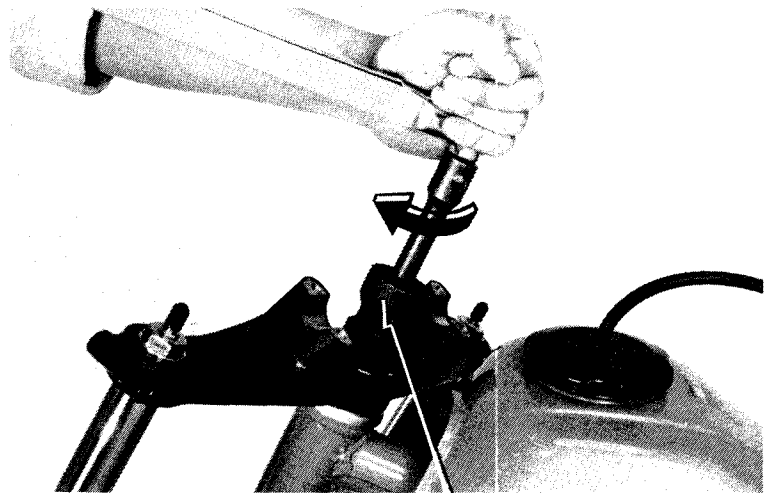


Install the fork bridge.
Install the stem washer.
Tighten the steering stem nut.
Install the front fork tubes.

**TORQUE: 70–100 N-m (7.0–10.0 kg-m,
51–72 ft-lb)**

Tighten the fork tube pinch bolts.

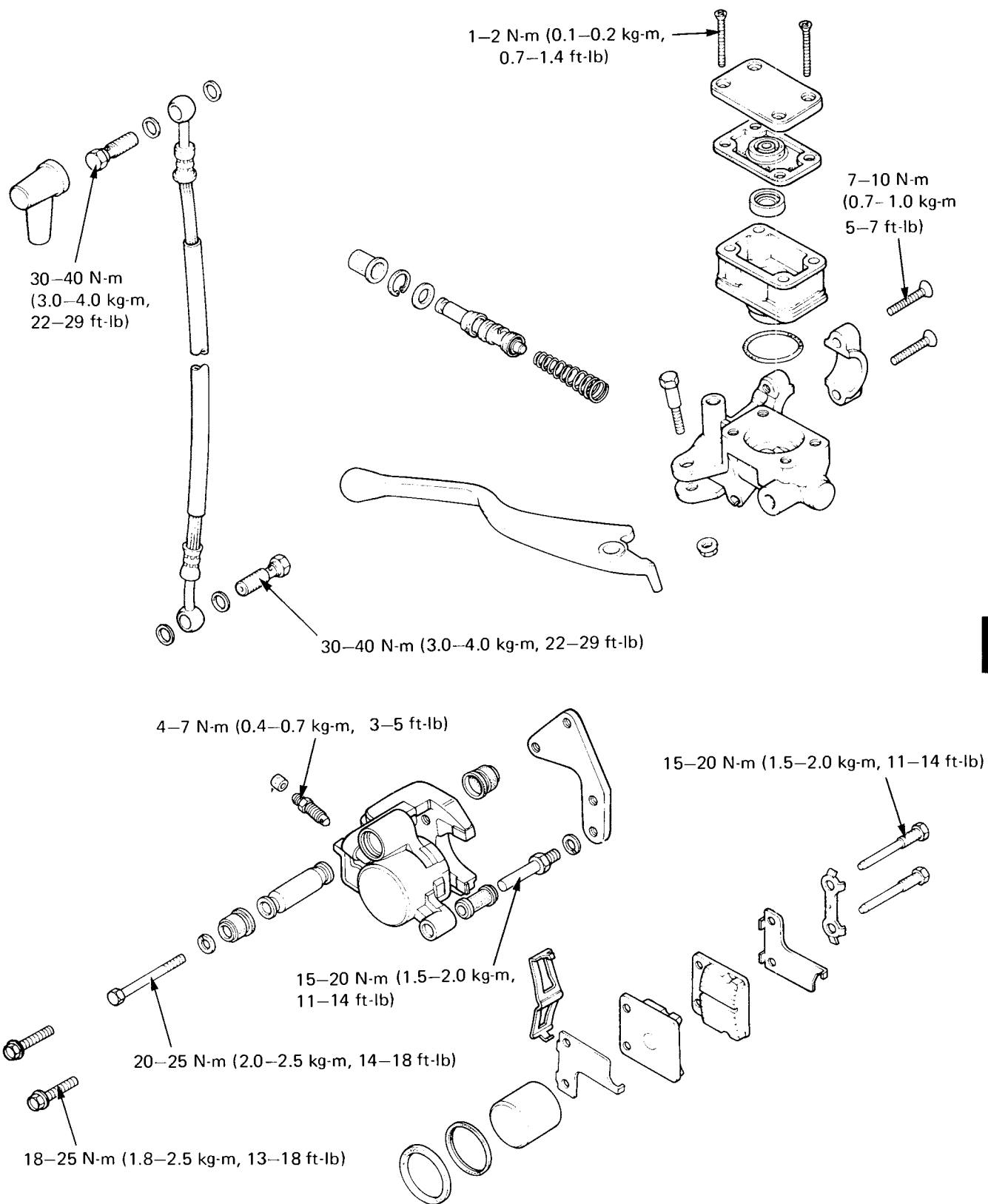
**TORQUE: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)**



LOCK NUT SOCKET 30 x 32 mm
07716-0020400 or 07916-3310100 or equivalent

Install the front fender.
Install the front wheel.
Install the handlebar (Page 10-8).
Install the headlight case bracket.
Install the headlight.





11. BRAKE MECHANISM(FRONT DISC BRAKE)



HONDA
ATC 250R

SERVICE INFORMATION	11 - 1
TROUBLESHOOTING	11 - 1
BRAKE FLUID/AIR BLEEDING	11 - 2
BRAKE PADS/DISC	11 - 3
BRAKE CALIPER	11 - 5
BRAKE MASTER CYLINDER	11 - 9

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The front brake pads can be replaced without disconnecting the brake hose. Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- The brake caliper should be disassembled before the master cylinder is disassembled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted surfaces or instrument lenses, as severe damage will result.

TOOLS

Special
Snap Ring Pliers (Internal) 07914-3230001

SPECIFICATIONS

ITEM	STANDARD MM (in)		SERVICE LIMIT mm (in)	
Disc thickness	3.8-4.2	(0.150-0.165)	3.00	(0.118)
Disc runout	0-0.15	(0-0.006)	0.30	(0.012)
Master cylinder I.D.	12.700-12.743	(0.5000-0.5017)	12.755	(0.5022)
Master piston O. D.	12.657-12.684	(0.4983-0.4994)	12.645	(0.4979)
Caliper cylinder I. D.	30.230-30.280	(1.1902-1.1921)	30.290	(1.1925)
Caliper piston O. D.	30.148-30.198	(1.1869-1.1889)	30.140	(1.1866)

TROUBLESHOOTING

Poor brake performance

1. Air bubbles in hydraulic system
2. Worn brake pads
3. Pads fouled or glazed
4. Hydraulic system leaking



BRAKE FLUID/AIR BLEEDING

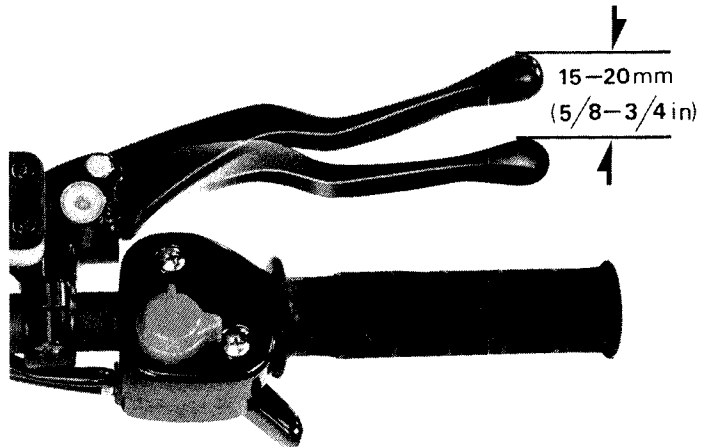
Check the front brake lever free play. If the play is excessive, check the brake pad for wear and bleed air from the brake hydraulic system.

FREE PLAY: 15–20 mm (5/8–3/4 in)

Remove the cap from the reservoir by removing the attaching screws. Remove the diaphragm.

CAUTION:

Avoid spilling fluid on painted surfaces, plastic lenses or rubber parts as it can cause damage to them.



Fill the brake fluid reservoir up to the UPPER LEVEL mark.

CAUTION:

Do not mix different types of fluid since they are not compatible.

SPECIFIED BRAKE FLUID: DOT-3

Connect an extension tube to the bleeder valve with the open end submerged in a glass jar.

With the brake lever pulled all the way back to the handlebar grip, turn the bleeder valve about 1/2 rotation out, then retighten.

NOTE

Do not release the brake lever until the bleeder valve has been closed.

Release the brake lever gradually and wait several seconds after it reaches the end of its travel.

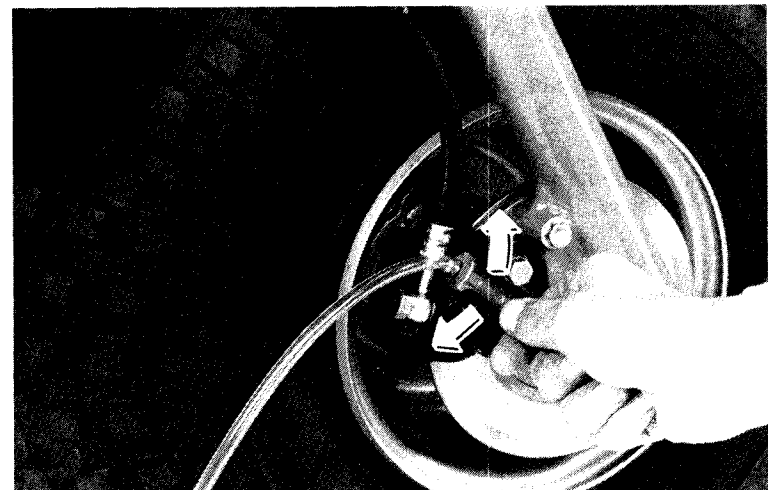
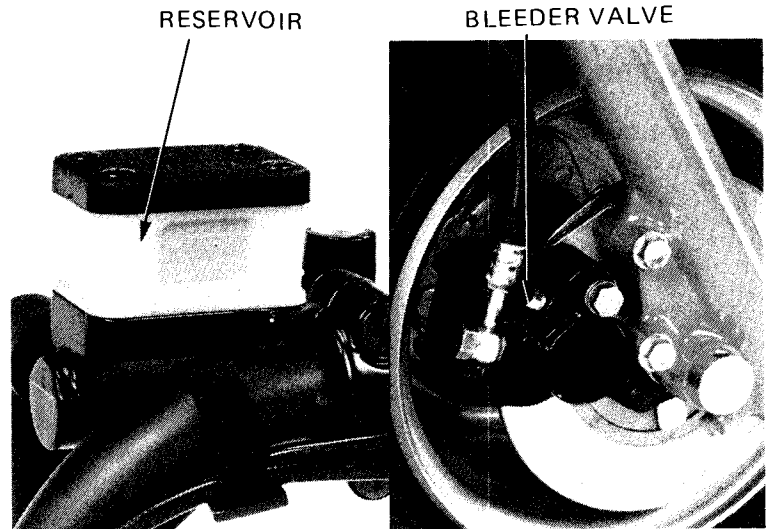
Repeat the above steps until there are no air bubbles in the fluid flowing out of the bleeder valve.

NOTE

- Keep the reservoir filled while bleeding the system.
- Do not reuse brake fluid.

Close the bleeder valve.

TORQUE: 4–7 N·m (0.4–0.7 kg·m,
3.0–5.0 ft·lb)





BRAKE MECHANISM (FRONT DISC BRAKE)

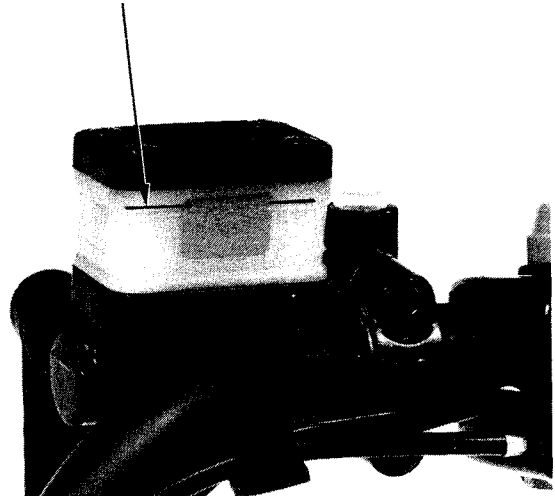
Fill the reservoir up to the UPPER FLUID LEVEL.

Check the entire system for leaks by operating the lever.

WARNING

A contaminated brake disc or pads reduces stopping power. Replace contaminated pads, and clean a contaminated disc with a good quality degreasing agent.

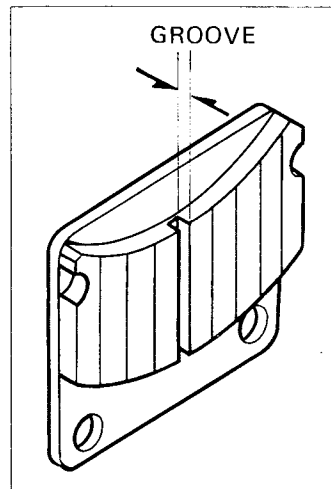
UPPER FLUID LEVEL



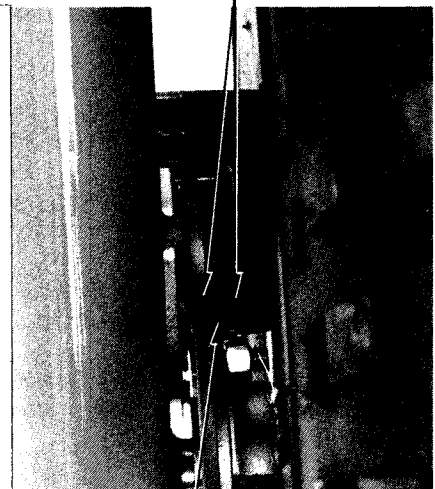
BRAKE PADS/DISC

BRAKE PAD INSPECTION

Replace both pads require replacement if either pad wears to the bottom of the groove.



PADS



DISC

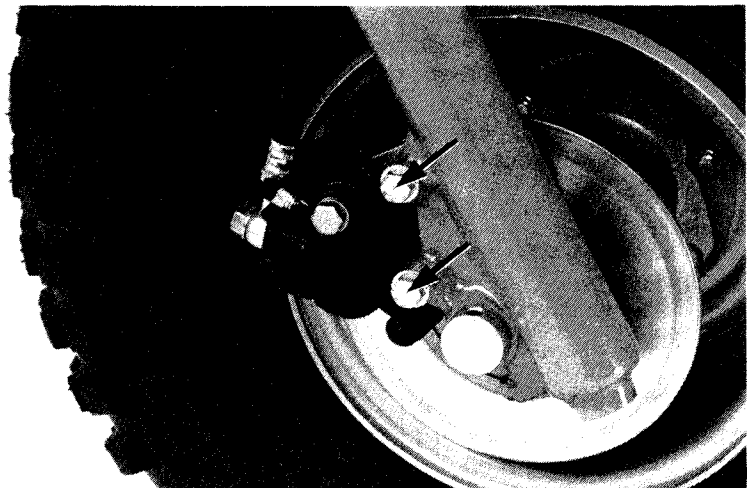
BRAKE PAD REPLACEMENT

Remove the three wheel nuts.

NOTE

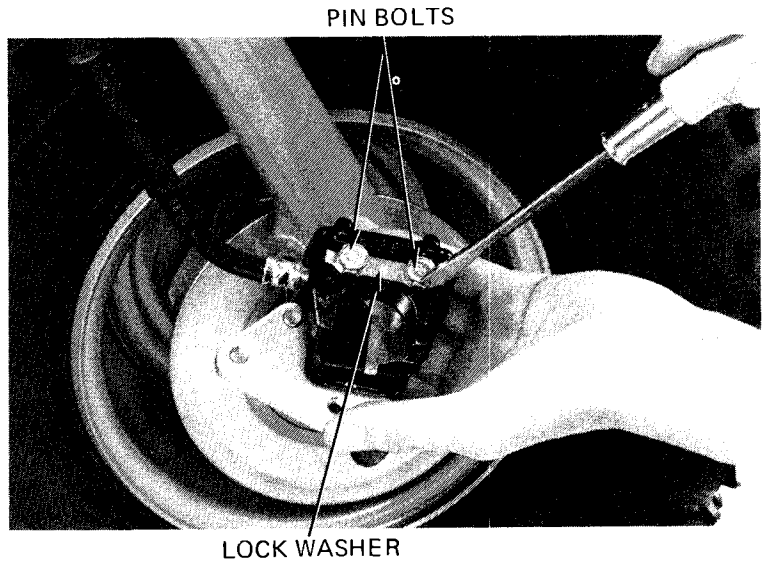
Do not disconnect the brake hose when replacing the brake pads.

Remove the two caliper bolts and remove the caliper from the fork leg.

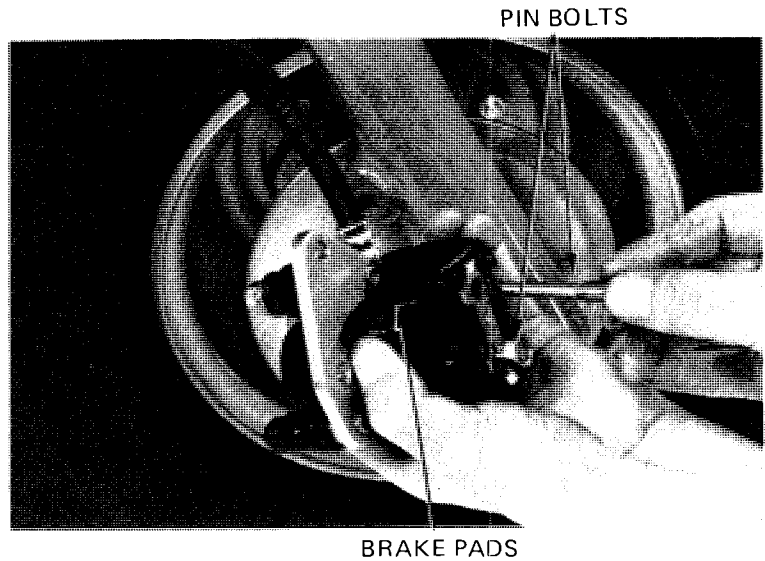




Straighten the tabs of the lock washer.
Loosen the two pin bolts.



Remove the pin bolts and brake pads.



Clean the brake caliper.
Install the pad spring on the caliper.
Install the brake pads and shims on the caliper bracket.
Close the caliper bracket with the pads.
Install the pin bolts loosely.

NOTE

- Replace both pads as a set.
- Install the shim on the back of the pad.
- Place the caliper bracket between the tabs of the brake pad spring.

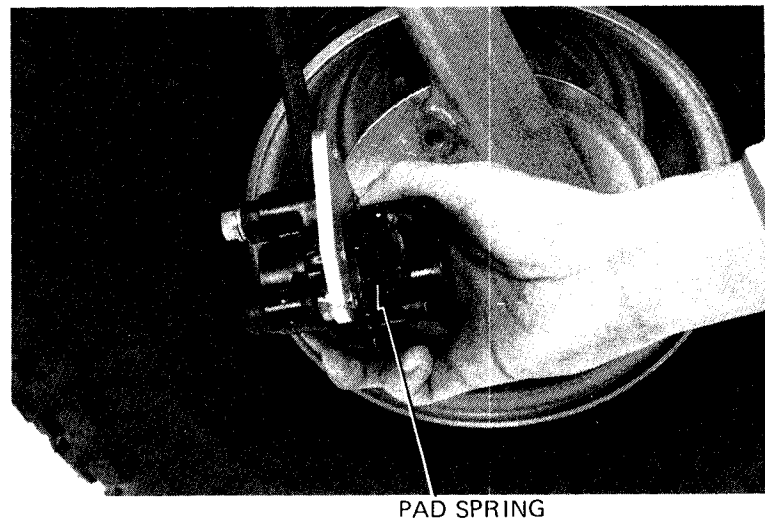
Tighten the pin bolts to the specified torque.

TORQUE: 15–20 N·m (1.5–2.0 kg·m)
11–14 ft·lb)

Install the caliper on the fork leg.

TORQUE: 18–25 N·m (1.8–2.5 kg·m)
13–18 ft·lb)

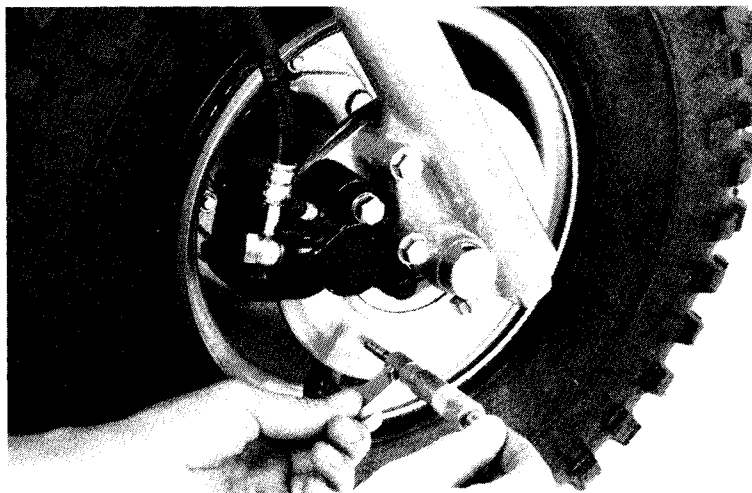
Install the 3 wheel nuts.



BRAKE DISC INSPECTION

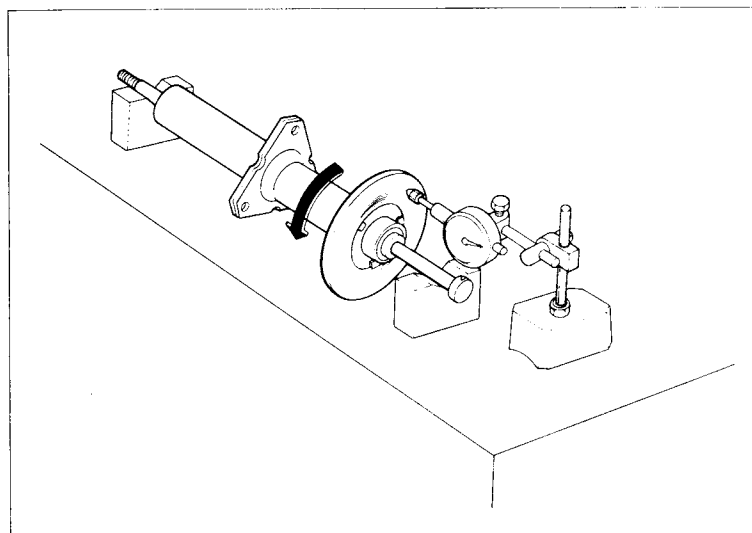
Measure the brake disc thickness.

SERVICE LIMIT: 3.0 mm (0.118 in)



Measure the brake disc warpage.

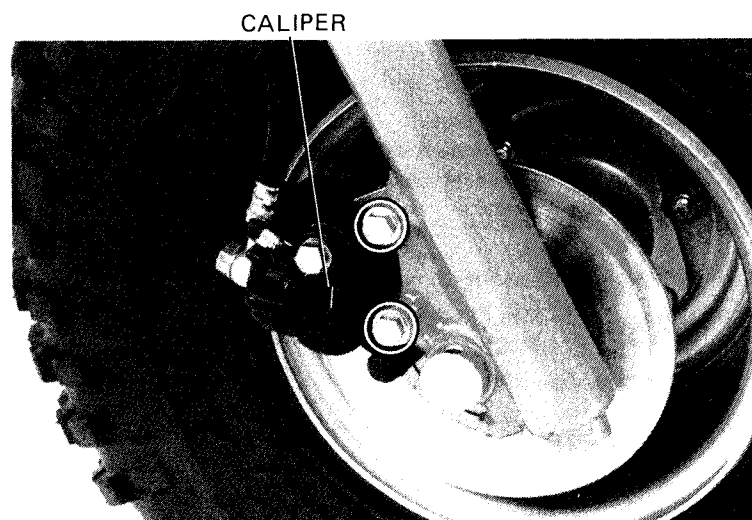
SERVICE LIMIT: 0.3 mm (0.012 in)



BRAKE CALIPER

BRAKE CALIPER REMOVAL

Remove the brake caliper (Page 11-3).
Remove the brake pads (Page 11-3).

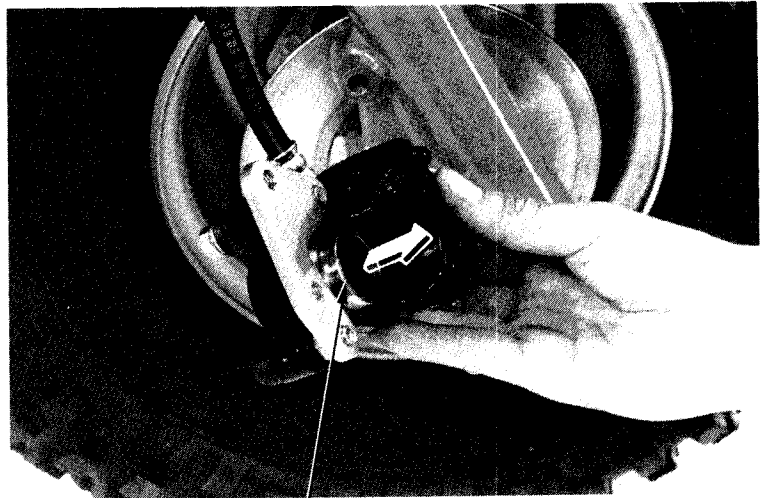




Operate the brake lever to force the piston out from the cylinder.

NOTE

- Place an oil pan under the caliper to receive drained brake fluid.
- Avoid spilling brake fluid on painted surfaces, plastic lenses or rubber parts.



CALIPER PISTON

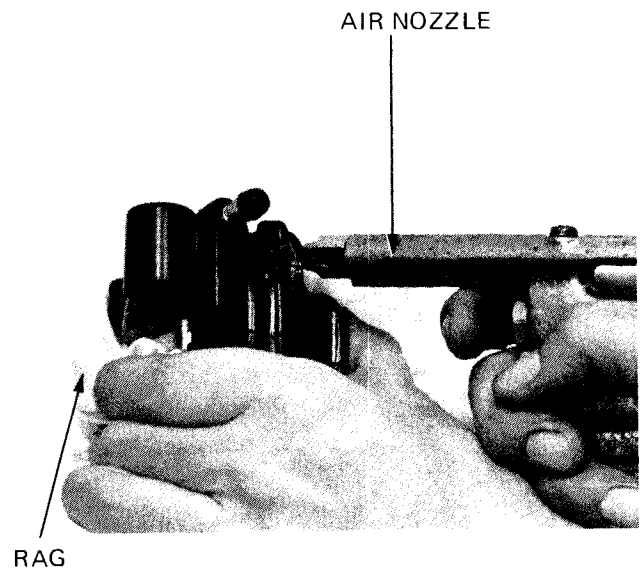
Disconnect the brake hose from the caliper.

If the piston is stuck in the caliper, do the following steps.

Place a shop towel or rag over the piston to prevent the piston and brake fluid from coming out, and apply a small amount of air pressure to the fluid inlet.

WARNING

Do not use high pressure air or bring the nozzle too close to the inlet.

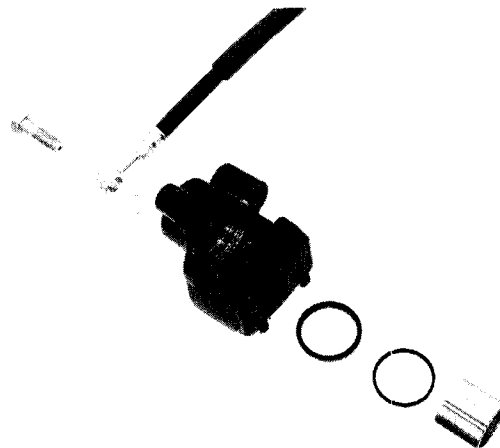


Remove the piston seal and metal stopper from the caliper cylinder.

Clean the caliper grooves with brake fluid.
Replace the piston seal and metal stopper with new ones.

CAUTION:

Do not use solvent for cleaning. Solvent can cause deterioration of rubber parts.

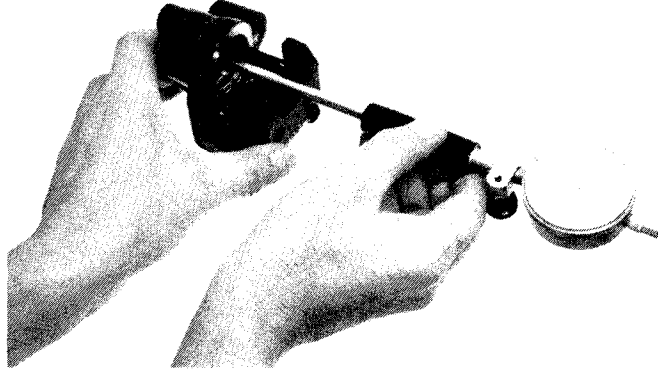


CALIPER CYLINDER INSPECTION

Check the caliper cylinder for scoring, scratches or other damage.

Measure the caliper cylinder I.D.

SERVICE LIMIT: 30.290 mm (1.1925 in)

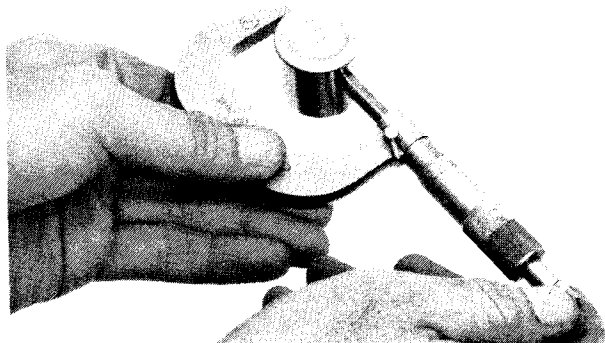


CALIPER PISTON INSPECTION

Check the piston for scoring, scratches or other damage.

Measure the caliper piston O. D.

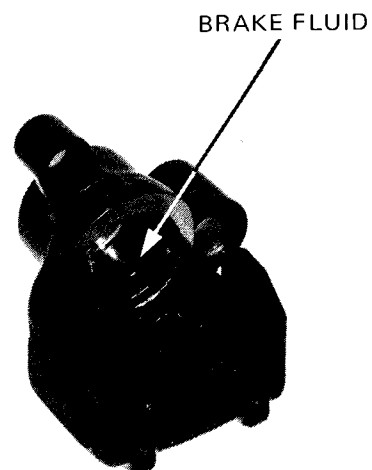
SERVICE LIMIT: 30.140 mm (1.1866 in)



BRAKE CALIPER ASSEMBLY

Lubricate the inside diameter of the caliper cylinder with brake fluid.

Install the piston seal and metal stopper.





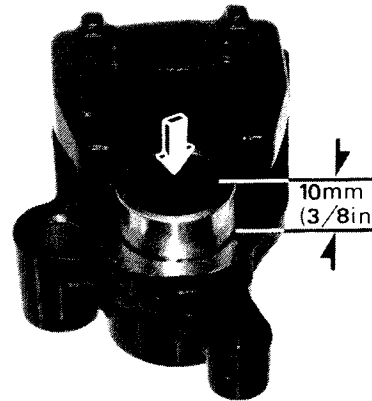
Install the piston with the concave end on the brake pad side.

Insert the piston into the caliper cylinder.

NOTE

Install the piston with the end about 10 mm (3/8 in) projecting above the caliper.

Wipe excess brake fluid off the caliper with a clean cloth.



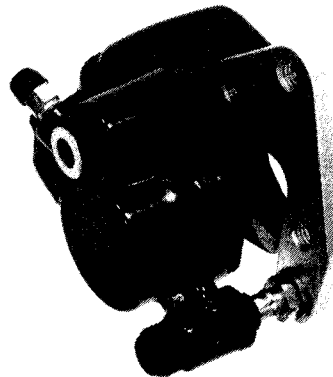
Install the pin boots and bushing in the caliper and lubricate the inside with silicon grease.

WARNING

Do not allow grease to touch the pads, or stopping power will be reduced.

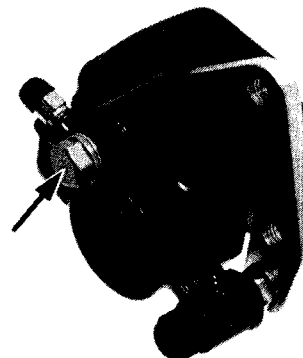
Install the sleeve in the boots.

Install the caliper bracket on the caliper.

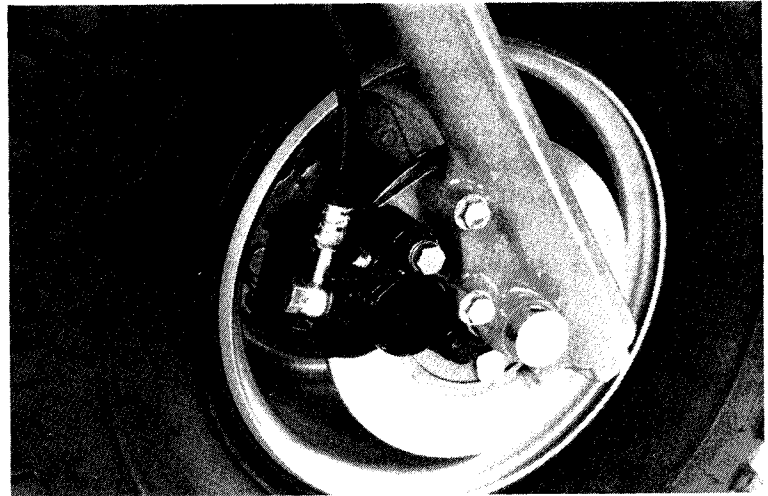


Install the caliper flange bolt.

**TORQUE: 20–25 N·m (2.0–2.5 kg·m,
14–18 ft·lb)**



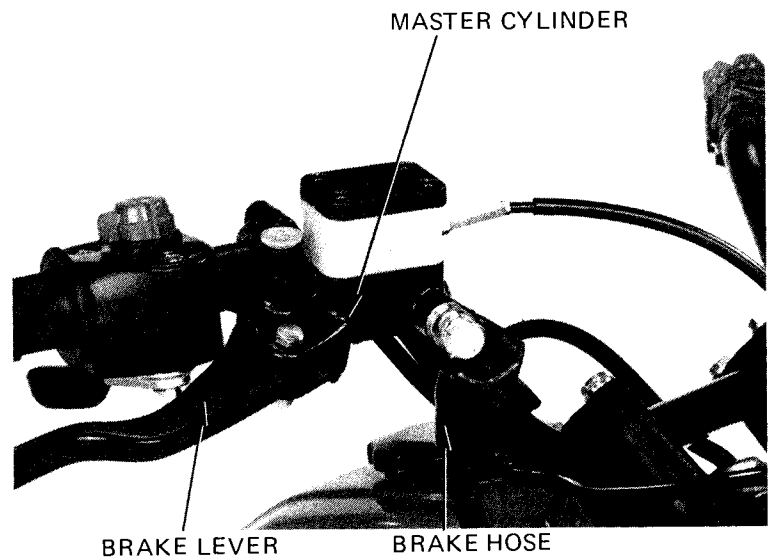
Install the pad springs, shims and pads.
Install the caliper on the fork leg.
Install the brake hose and tighten the brake hose bolt.
After the front brake has been installed, bleed air from the system (Page 11-2).



BRAKE MASTER CYLINDER

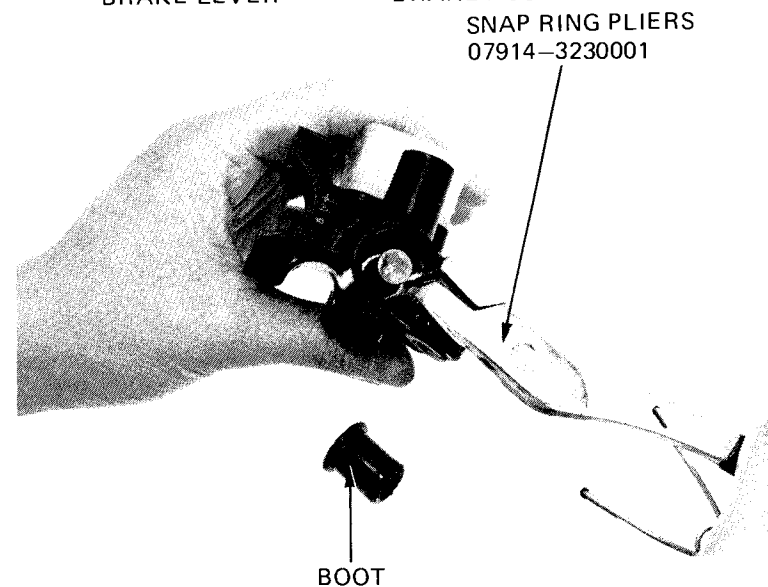
MASTER CYLINDER REMOVAL

Remove the brake lever and brake hose. Tie the hose to the handlebar to keep brake fluid from draining.
Remove the master cylinder from the handlebar.



MASTER CYLINDER DISASSEMBLY

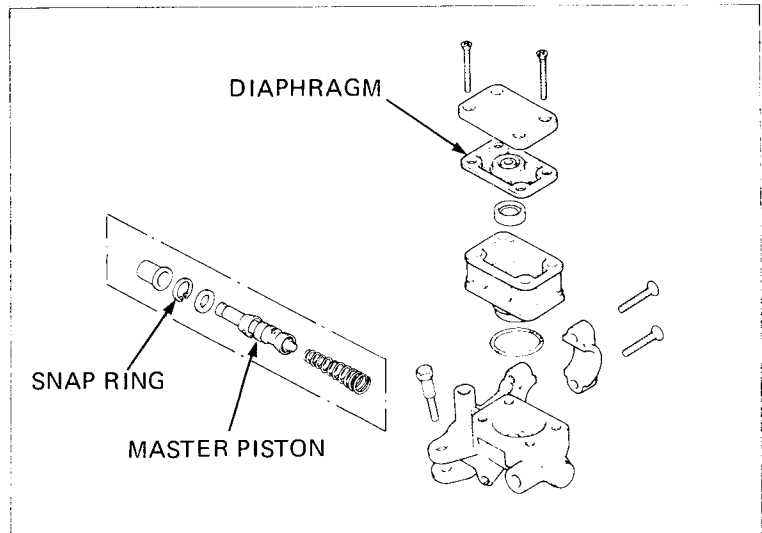
Remove the reservoir cap and diaphragm.
Remove the boot.
Remove the snap ring.
Remove the stopper plate, master cylinder piston and spring.





Remove the reservoir from the master cylinder.

Clean the master cylinder and reservoir in clean brake fluid.

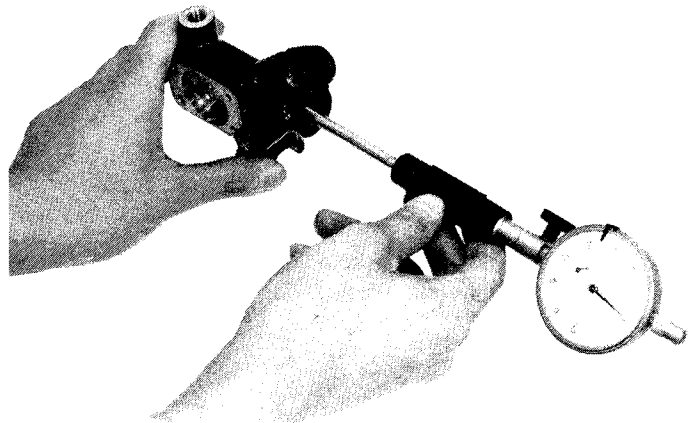


MASTER CYLINDER INSPECTION

Check the master cylinder for score marks, scratches or other damage.

Measure the master cylinder I. D.

SERVICE LIMIT: 12.755 mm (0.5022 in)

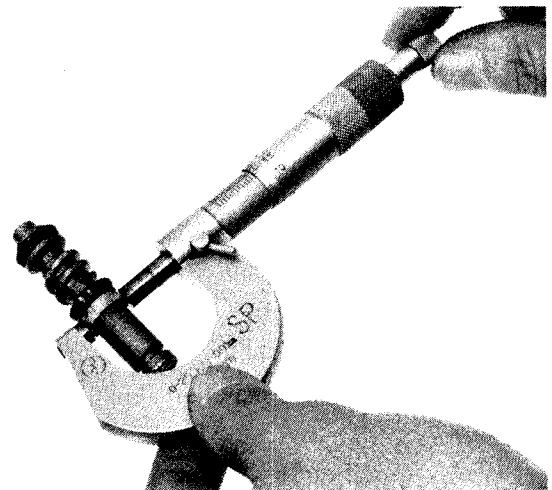


MASTER PISTON INSPECTION

Check the master piston for score marks, scratches or other damage.

Measure the master piston O. D.

SERVICE LIMIT: 12.645 mm (0.4979 in)





BRAKE MECHANISM (FRONT DISC BRAKE)

MASTER CYLINDER ASSEMBLY

Install the O-ring in the groove in the reservoir.

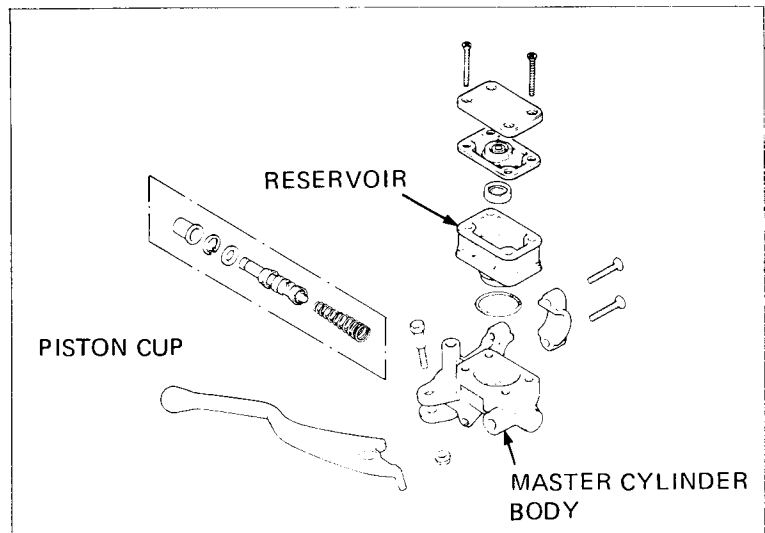
Clean the mating faces of the master cylinder body and reservoir and coat the surfaces with a small amount of adhesive (THREE-BOND No. 1211 or equivalent).

Apply silicon grease to the piston cup and pour a small amount of brake fluid into the cylinder.

NOTE

- Replace the master piston and spring as a set. Do not replace one without replacing the other.
- Check that the snap ring is seated in the groove.

Install the front stoplight switch.



MASTER CYLINDER INSTALLATION

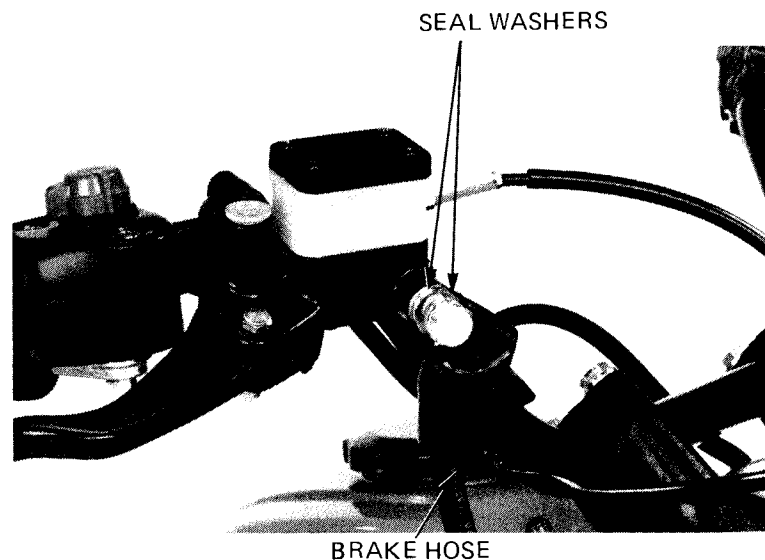
Install the master cylinder on the handlebar.

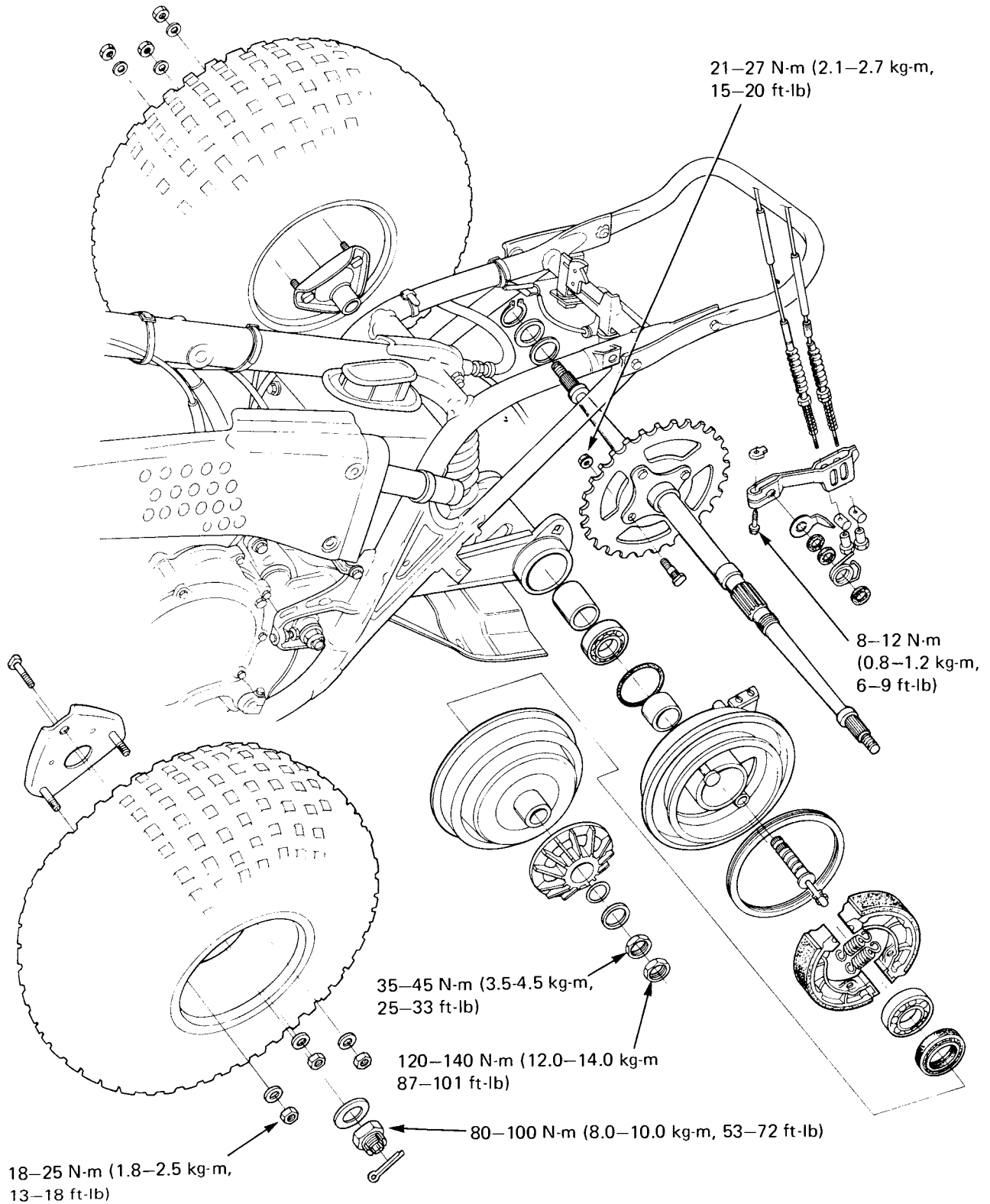
**TORQUE: 7–10 N-m (0.7–1.0 kg-m,
5–7 ft-lb)**

Install the brake hose and seal washers.

**TORQUE: 30–40 N-m (3.0–4.0 kg-m,
22–29 ft-lb)**

After the front brake has been installed, bleed air from the brake hydraulic system (Page 11-2).





12

12. REAR WHEEL / BRAKE / DRIVE MECHANISM



HONDA
ATC 250R

SERVICE INFORMATION	12 – 1
TROUBLESHOOTING	12 – 2
REAR WHEEL	12 – 3
REAR BRAKE	12 – 4
FINAL DRIVEN SPROCKET	12 – 10
REAR AXLE	12 – 13

SERVICE INFORMATION

GENERAL INSTRUCTION

- This section covers maintenance of the rear wheel and drive mechanism.
- A jack or block is required to support the ATC.

TOOLS

Special

Lock Nut Wrench 41 mm

07916 – 9180000 or commercially available 41mm wrench

Tire Disassembling Tool

07722 – 0010000 or M987X-350-XXXXX (Available in USA only)

Common

Attachment 62 x 68 mm

07746 – 0010500

Driver handle

07749 – 0010000

Pilot 35 mm

07746 – 0040800

TORQUE VALUES

Rear wheel rim nut	18 – 25 N-m	(1.8 – 2.5 kg-m, 13 – 18 ft-lb)
Rear brake arm bolt	8 – 12 N-m	(0.8 – 1.2 kg-m, 6 – 9 ft-lb)
Rear axle nut (inner)	35 – 45 N-m	(3.5 – 4.5 kg-m, 25 – 33 ft-lb)
(outer)	120 – 140 N-m	(12.0 – 14.0 kg-m, 87 – 101 ft-lb)
Rear wheel hub nut	80 – 100 N-m	(8.0 – 10.0 kg-m, 53 – 72 ft-lb)
Final driven sprocket	18 – 25 N-m	(1.8 – 2.5 kg-m, 13 – 18 ft-lb)
Final driven sprocket	18 – 25 N-m	(1.8 – 2.5 kg-m, 13 – 18 ft-lb)

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Rear axle runout	————	3.0 mm (0.12 in)
Rear brake drum I.D.	140 mm (5.51 in)	141.0 mm (5.55 in)
Rear brake lining thickness	4 mm (0.2 in)	2 mm (0.1 in)
Rear wheel bearing play	Radial	0.10 mm (0.004 in)
	Axial	0.05 mm (0.002 in)
Rear wheel rim runout	Radial	4.00 mm (0.157 in)
	Axial	4.00 mm (0.157 in)



TROUBLESHOOTING

Wobble or vibration in vehicle

1. Bent rim
2. Loose wheel bearing
3. Faulty rear axle bearing holder
4. Faulty tire
5. Axle not tightened properly

Poor brake performance

1. Improper brake adjustment
2. Worn brake shoes
3. Brake linings oily, greasy or dirty
4. Worn brake cam
5. Worn brake drum
6. Brake arm serrations improperly engaged
7. Brake shoes worn at cam contact area



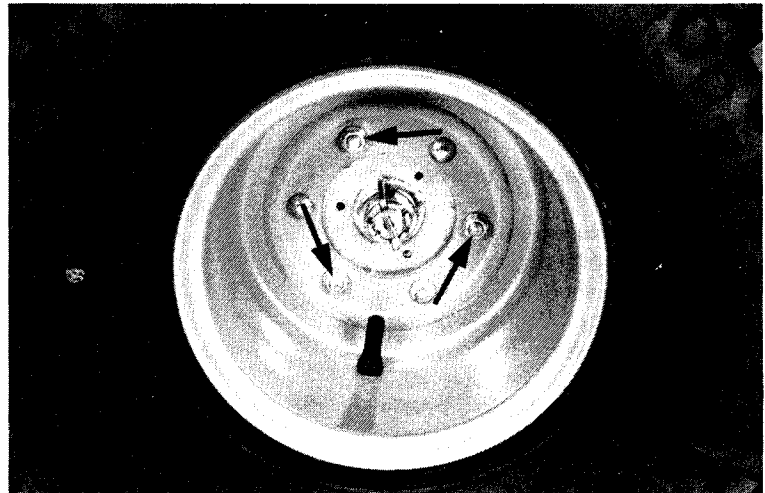
REAR WHEEL

REMOVAL

Raise the rear wheels off the ground with a jack or block under the engine.

Remove the rear wheel nuts.

Remove the rear wheels.

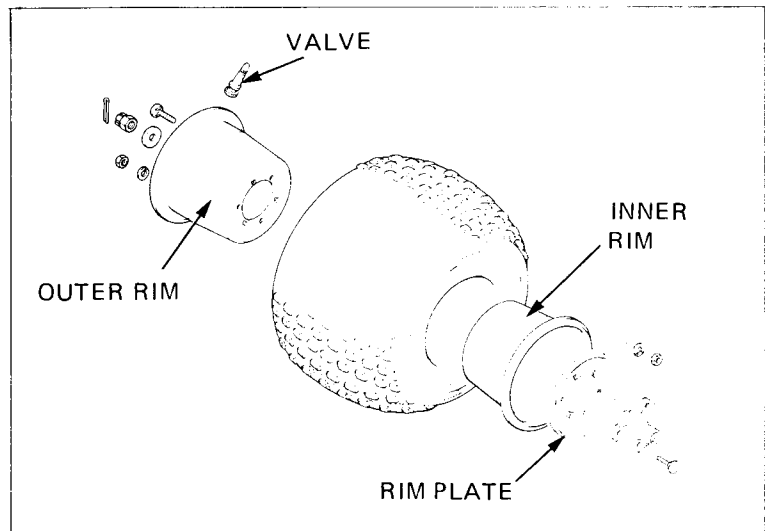


REAR TIRE DISASSEMBLY/ASSEMBLY

For tire disassembly, assembly and repair, refer to pages 10-12 to 10-15

NOTE

The rear tire has one rim plate on the inner rim.



INSTALLATION

Install each rear wheel with the tire valve facing out.

Tighten the wheel nuts.

TORQUE: 18-25 N-m (1.8-2.5 kg-m,
13-18 ft-lb)

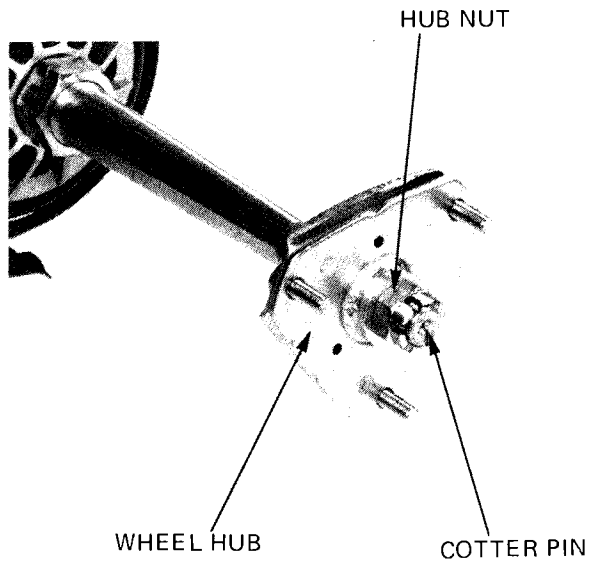




REAR BRAKE

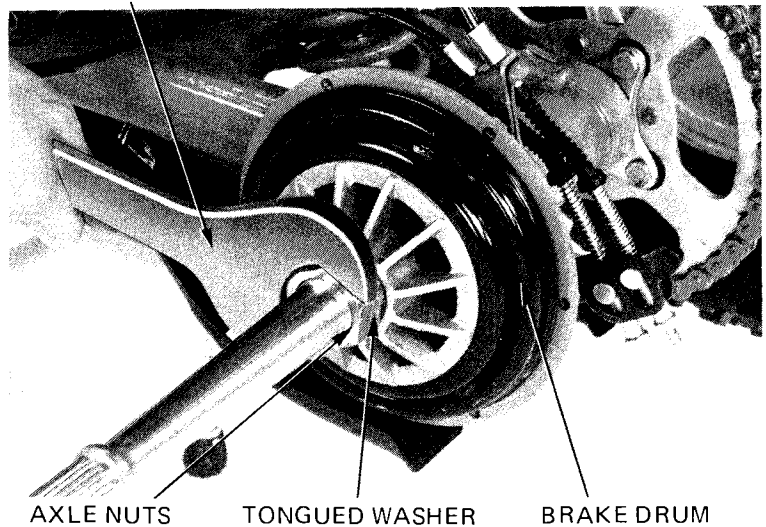
REMOVAL

Remove the left rear wheel (Page 12-3).
Remove the cotter pin and hub nut and remove the wheel hub.



LOCK NUT WRENCH 41 mm
07916-9180000 or COMMERCIALY AVAILABLE 41 mm

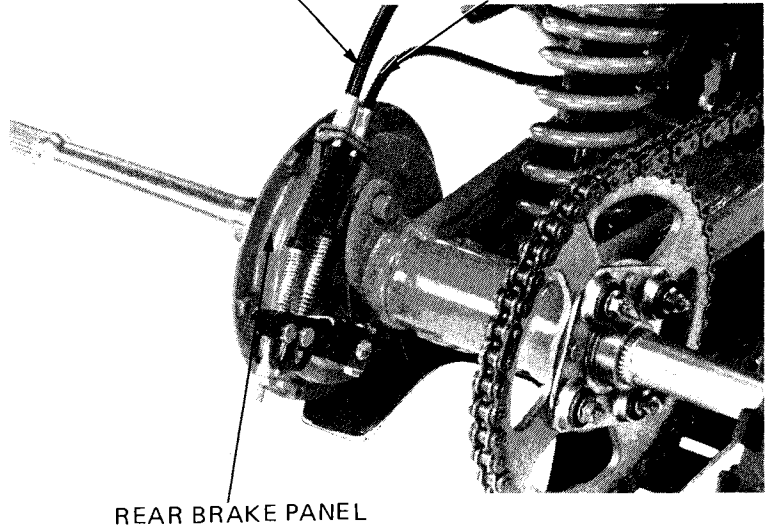
Remove the rear axle nuts.
Remove the tongued washer and rear brake drum.



PARKING BRAKE CABLE REAR BRAKE CABLE

Remove the rear and parking brake cables from the rear brake panel.

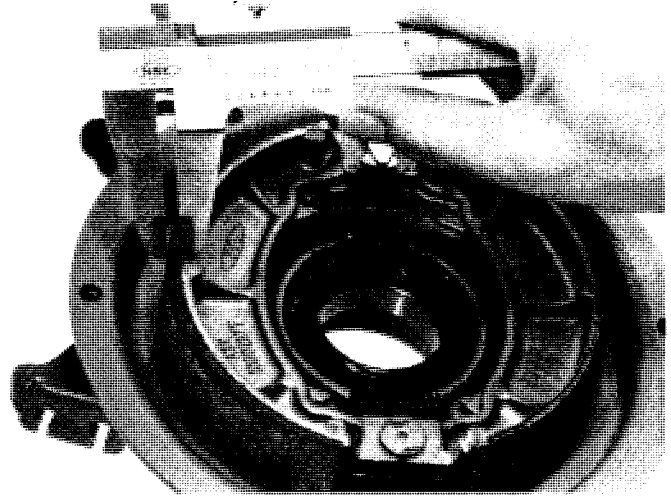
Remove the rear brake panel from the rear axle shaft.



REAR BRAKE LINING THICKNESS

Measure each brake lining thickness.

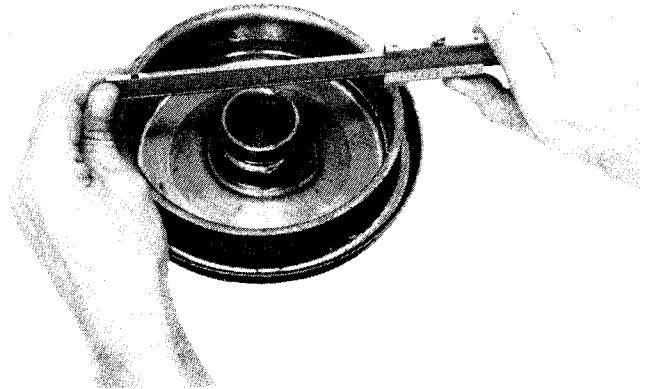
SERVICE LIMIT: 2.0 mm (0.08 in)



REAR BRAKE DRUM INSPECTION

Measure the rear brake drum I.D.

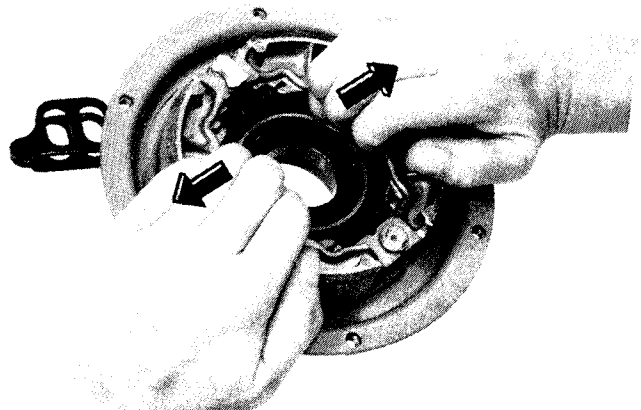
SERVICE LIMIT: 141.0 mm (5.55 in)



REAR BRAKE SHOE REPLACEMENT

Remove the brake shoes.

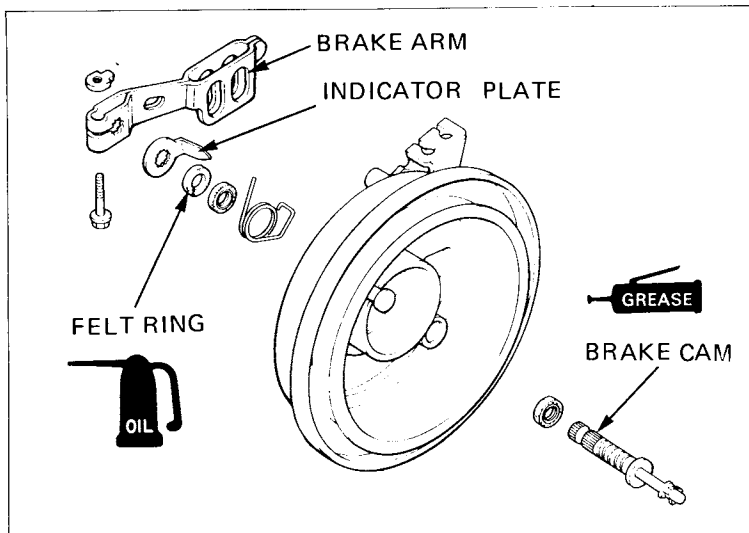
Replace the brake shoes as a set if one is beyond the service limit.





BRAKE CAM INSPECTION

- Remove the brake arm.
- Remove the indicator plate.
- Remove the brake cam.
- Remove the felt ring.
- Clean the shoe contacting faces of the brake cam.

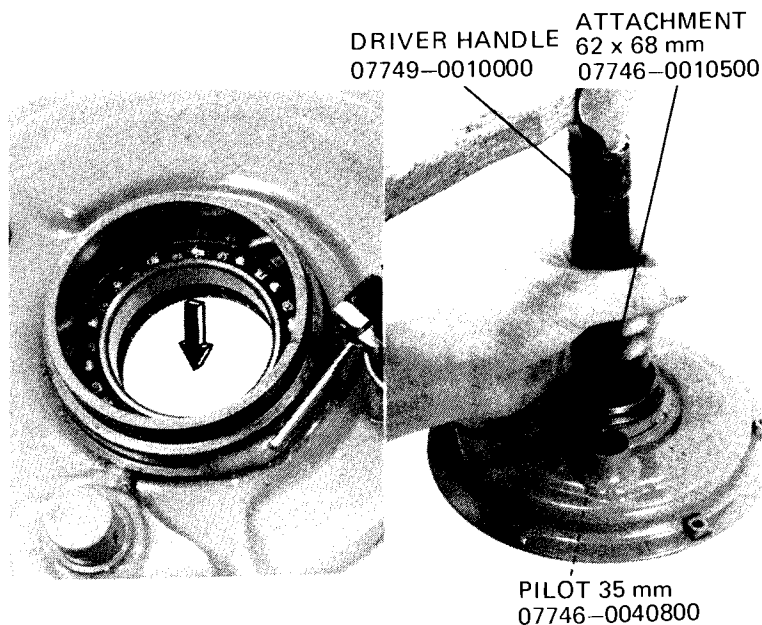


REAR WHEEL BEARING REPLACEMENT

Drive the bearing out from the brake panel together with the oil seal.

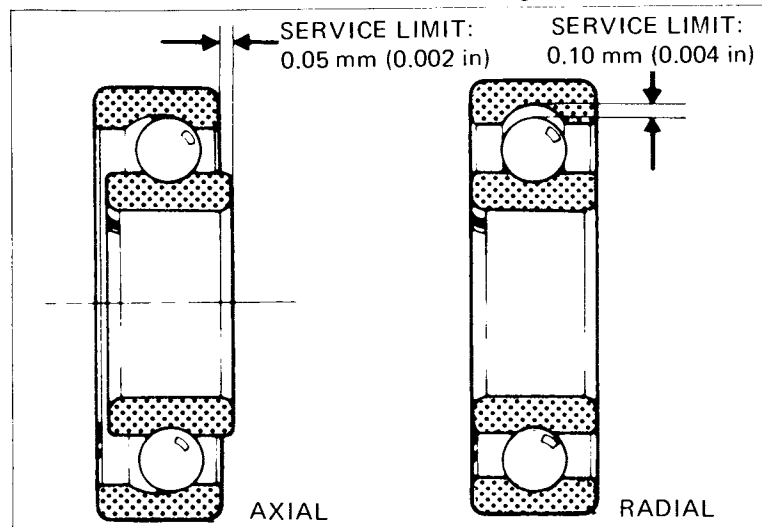
NOTE

Bearings removed in this manner should be considered damaged and should not be reused.



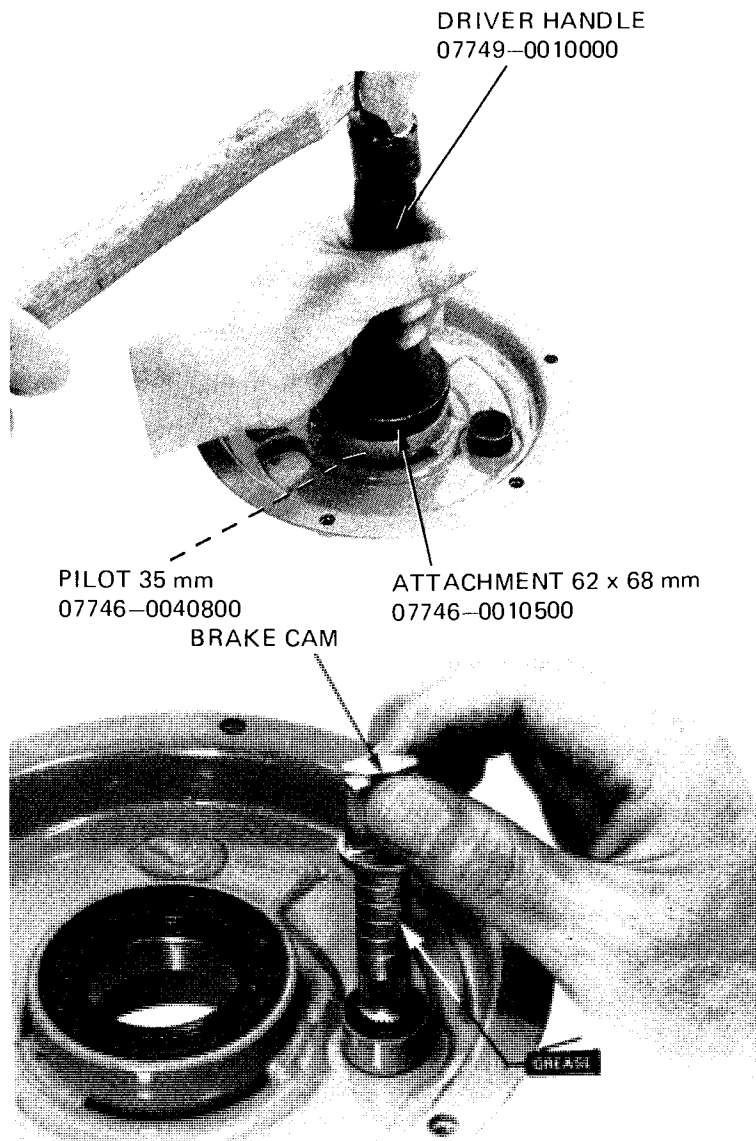
REAR WHEEL BEARING INSPECTION

Check the rear wheel bearing. Replace the bearing if it is noisy or has excessive play.



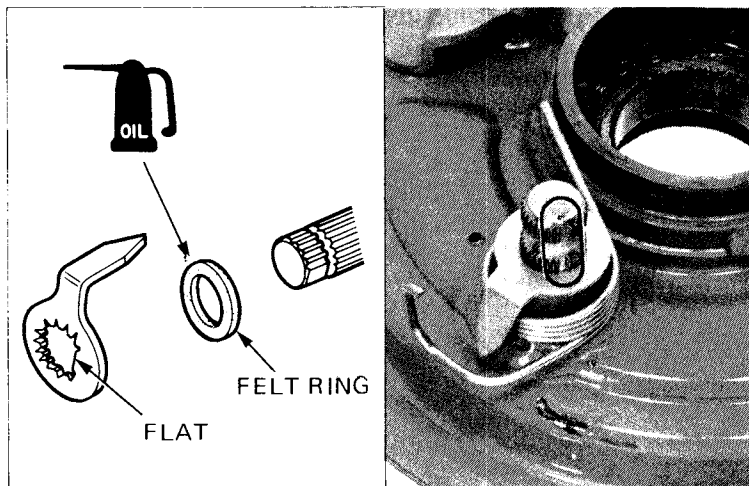
BRAKE PANEL INSTALLATION

Pack all bearing cavities with grease.
Drive the wheel bearing squarely into the brake panel.
Press the oil seal onto the bearing.



Lubricate the sliding surface of the brake cam with grease.
Install the brake cam in the brake panel.

Install the return spring.
Saturate the felt ring with engine oil and place it over the brake cam.
Install the wear indicator plate, noting the flat.





Install the brake arm.

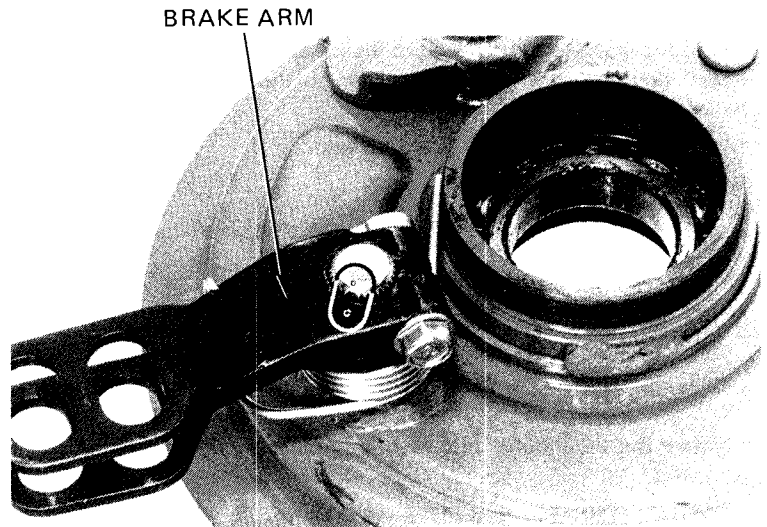
NOTE

Align the punch mark on the brake cam with the punch mark on the brake arm.

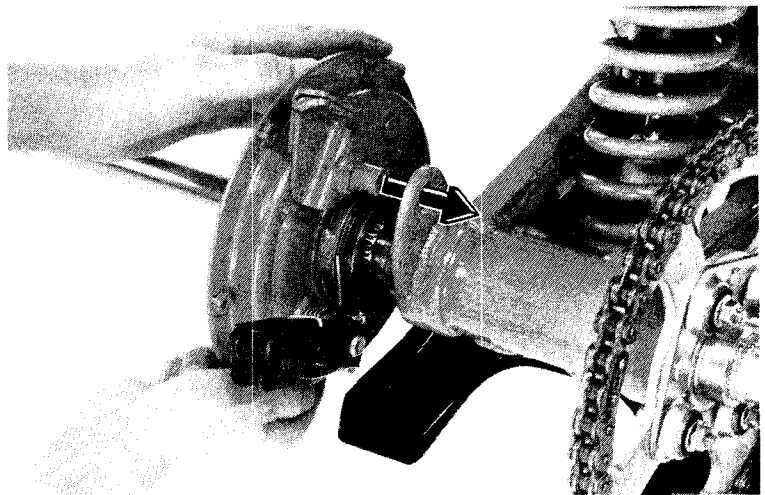
Tighten the brake arm bolt to the specified torque.

**TORQUE: 8–12 N·m (0.8–1.2 kg·m,
6–9 ft·lb)**

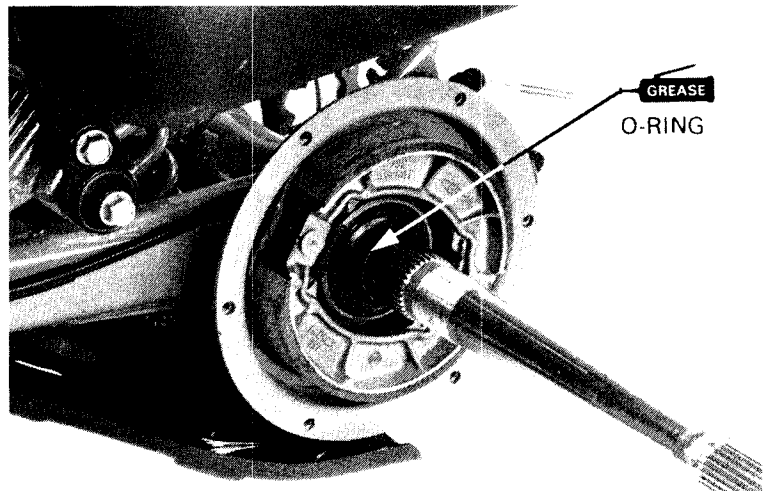
Install the brake shoes in the brake panel.



Install the brake panel on the rear axle.
Insert the rear brake and parking brake cables into the cable holder.
Connect the rear brake and parking brake cables to the brake arm with the brake adjusting nuts.



Coat the O-ring with grease and install it onto the axle.
Install the rear axle from the left side.





REAR WHEEL/BRAKE/DRIVE MECHANISM

Install the rear brake drum and tongued washer.
Install the axle inner nut and tighten to the specified torque.

**TORQUE: 35–45 N-m (3.5–4.5 kg-m,
25–33 ft-lb)**

Apply LOCKTITE ® or equivalent to the threads of the axle shaft.

NOTE

Clean all traces of grease off the shaft before applying LOCKTITE ® or equivalent.

Tighten the axle outer nut with a spanner at the inner nut.

**TORQUE: 120–140 N-m (12.0–14.0 kg-m,
87–101 ft-lb)**

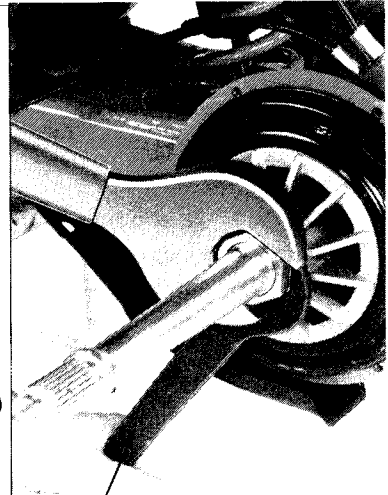
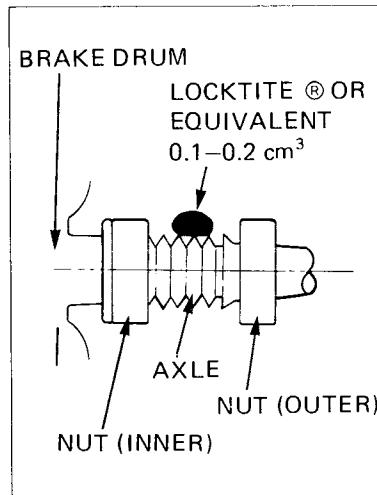
Install the hub and hub nut onto the axle and tighten the nut to the specified torque.

**TORQUE: 80–100 N-m (8.0–10.0 kg-m,
58–72 ft-lb)**

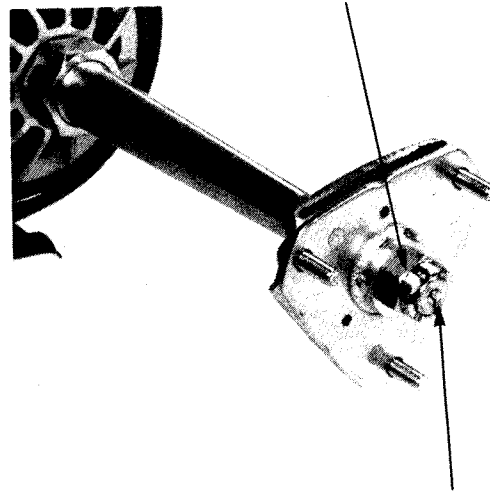
Install the cotter pin and spread the ends as shown.

Install the rear wheel.
Tighten the wheel nuts.

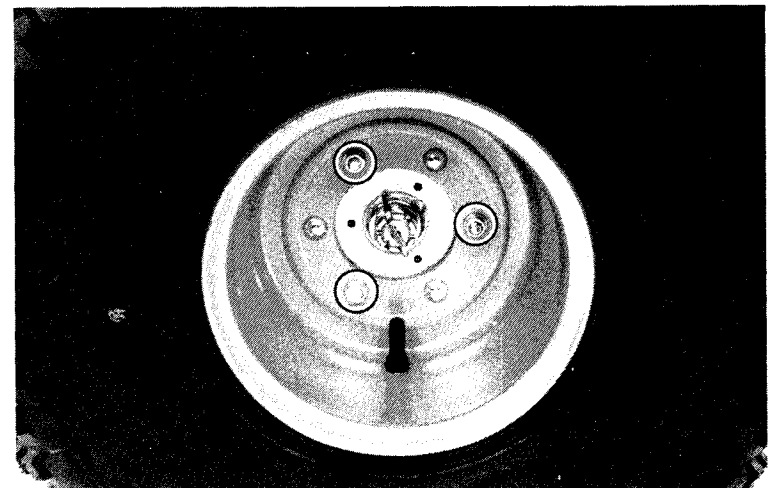
**TORQUE: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)**



LOCK NUT WRENCH 41 mm
07916–9180000 or COMMERCIALLY AVAILABLE
HUB NUT
41 mm RENCH



COTTER PIN





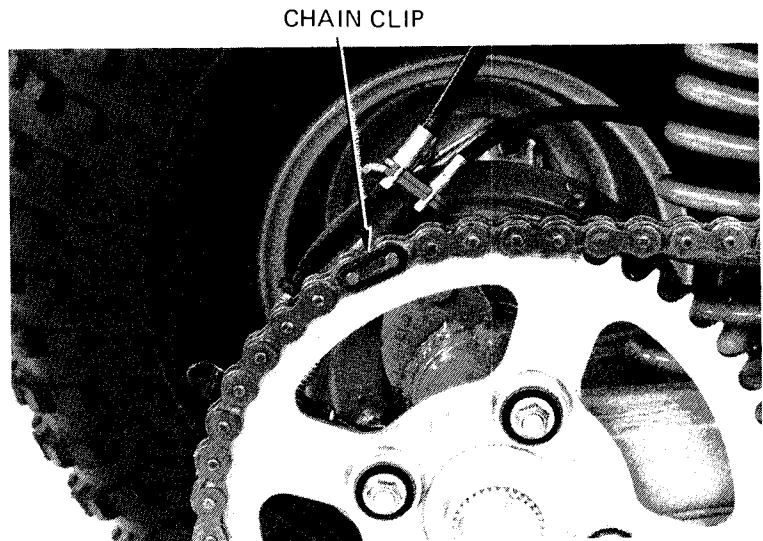
FINAL DRIVEN SPROCKET

REMOVAL

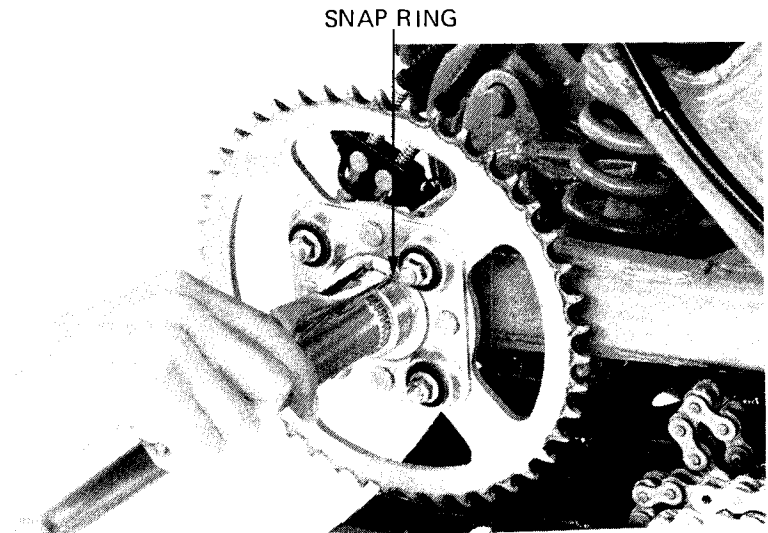
Remove the rear wheel.
(Page 12-3).

Remove the rear wheel hub.
(Page 12-4).

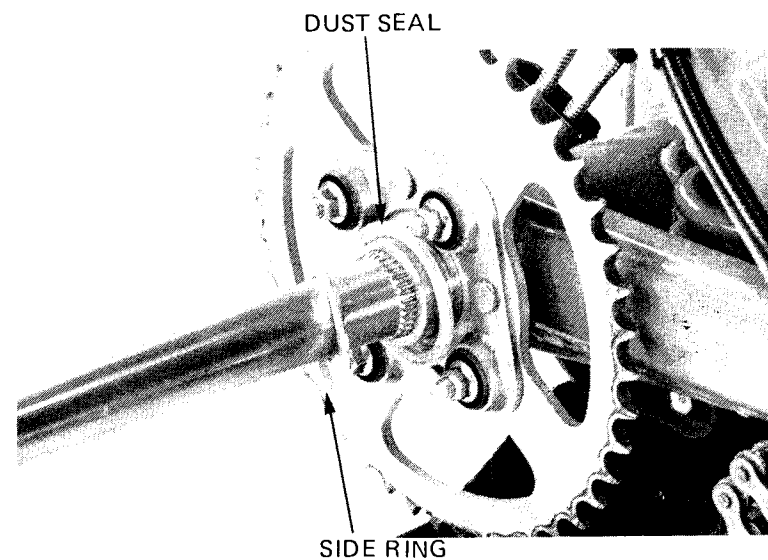
Remove the chain clip.
Remove the master link and drive chain.



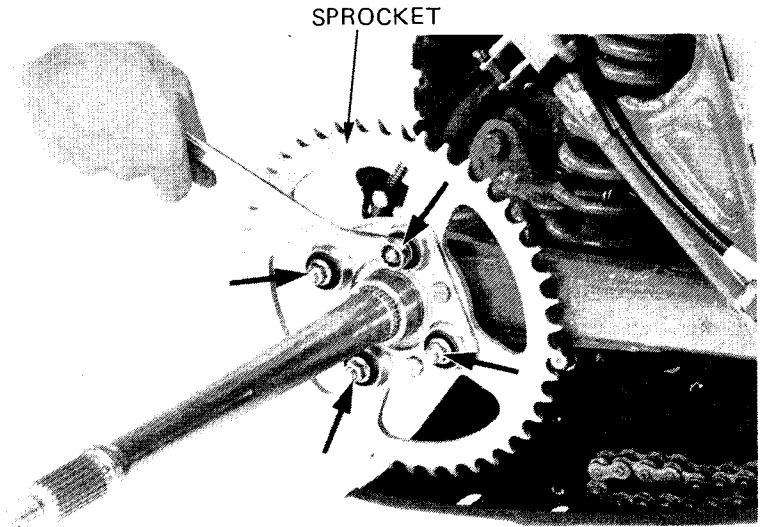
Remove the snap ring with snap ring pliers.



Remove the side ring and felt dust seal.



Remove the four driven flange nuts.
Remove the sprocket from the flange.

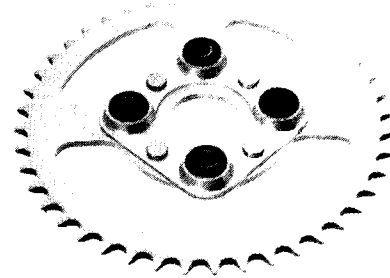


INSPECTION

Check the damper rubbers for damage.
Check the condition of the final driven sprocket teeth.
Replace the sprocket if it is worn or damaged or the damper rubbers are damaged.

NOTE

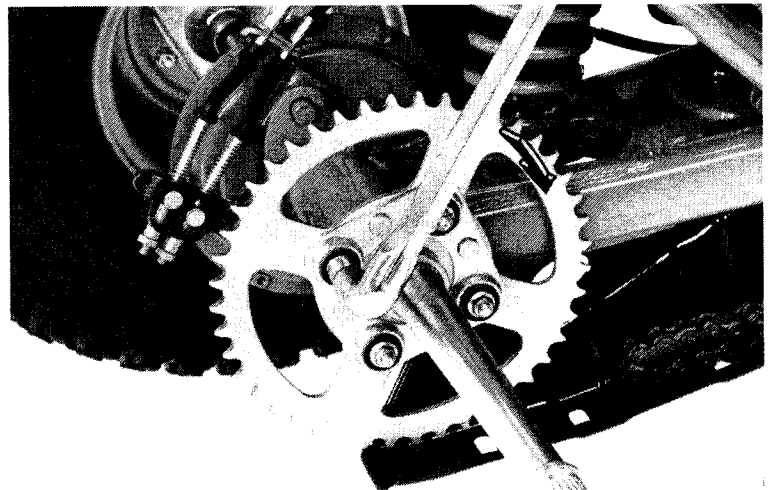
- If the driven sprocket is worn or damaged, the drive chain and the drive sprocket must be inspected.
- Never install a new drive chain on a worn sprocket or a worn chain on new sprockets. Both chain and sprockets must be in good condition or the replacement chain or sprockets will wear rapidly.



INSTALLATION

Install the sprocket on the flange and install with the four flange nuts.

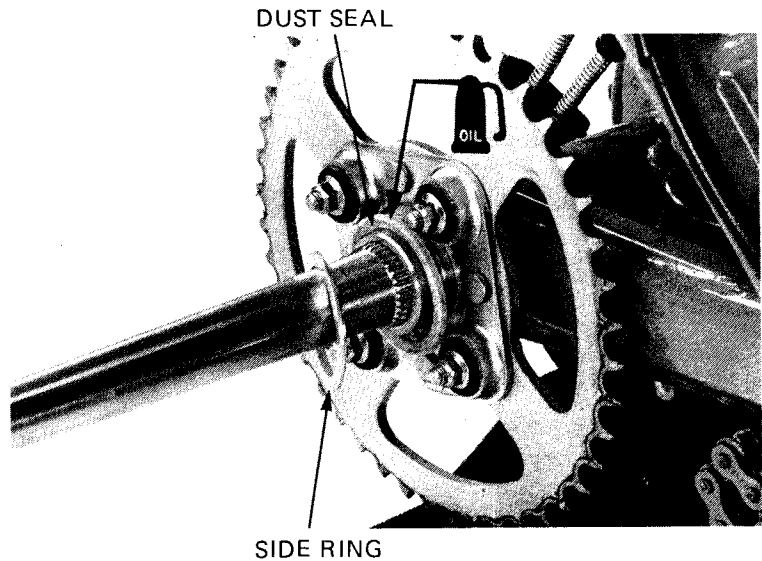
**TORQUE: 18–25 N·m, (1.8–2.5 kg·m,
13–18 ft·lb)**





Coat the dust seal with a small amount of clean engine oil.

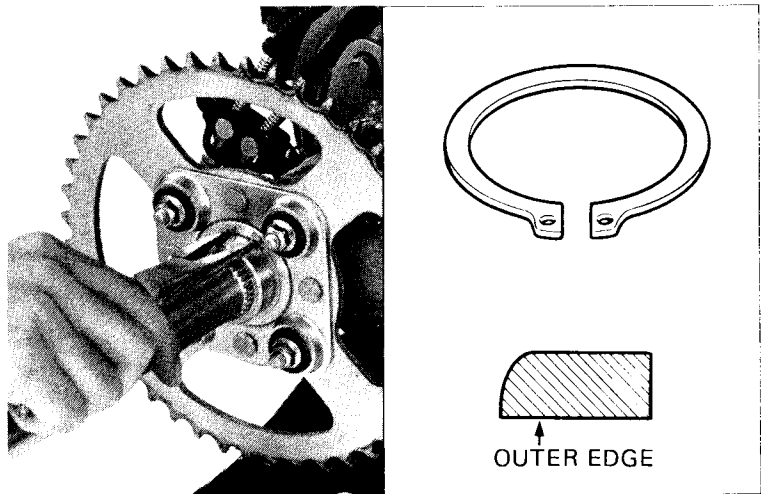
Install the dust seal and side ring onto the axle.



Install the snap ring with the snap ring pliers.

NOTE

Install the snap ring with the chamfered end toward the sprocket.



Install the drive chain.

Be sure to install the master link with the open end facing opposite the normal direction of wheel rotation.

Install the rear wheel hub and wheel.
Torque the hub and wheel nuts.

TORQUES:

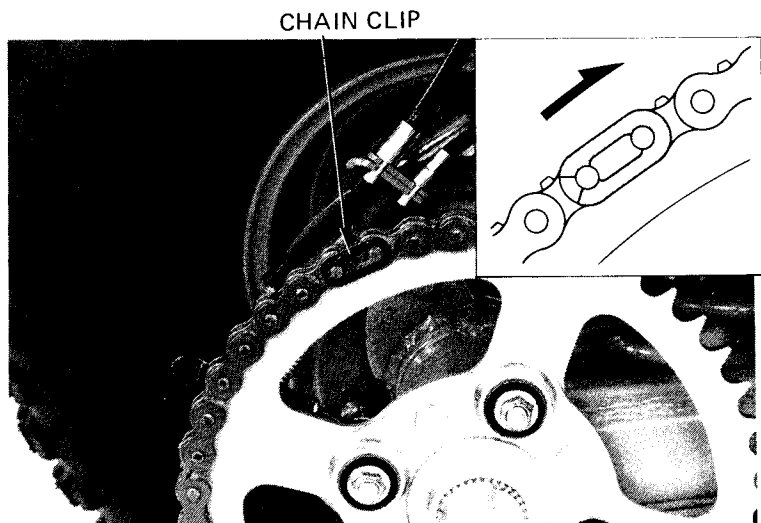
Hub nut: 80–100 N-m (8.0–10.0 kg-m,
58–72 ft-lb)

Wheel nut: 18–25 N-m (1.8–2.5 kg-m,
13–18 ft-lb)

Install a new cotter pin.

Adjust the drive chain slack (Page 2-9).

Lubricate the drive chain (Page 2-10).





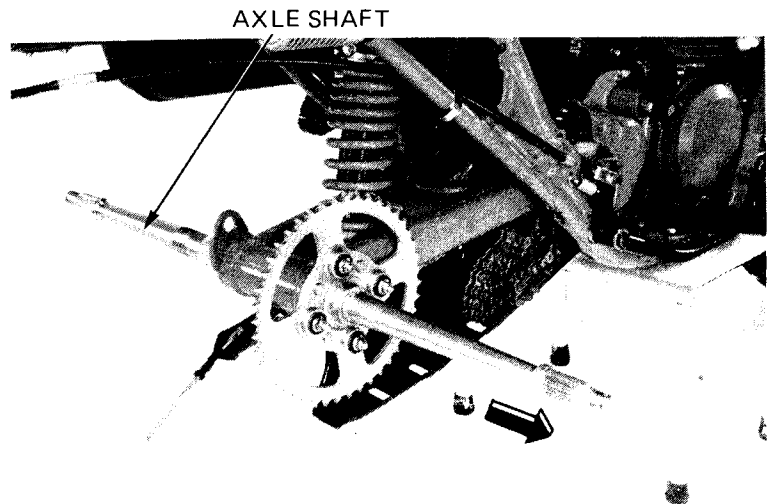
REAR AXLE

REMOVAL

Remove the rear brake panel (Page 12-4).

Remove the final driven sprocket (Page 12-10).

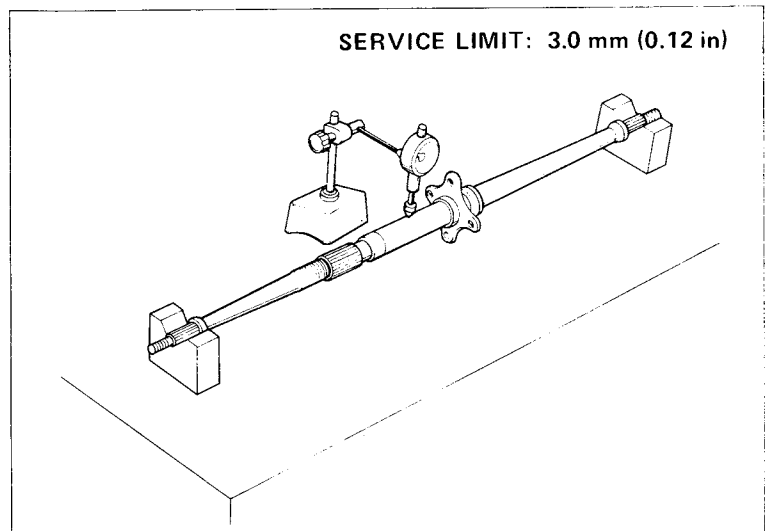
Withdraw the axle shaft towards the right.



INSPECTION

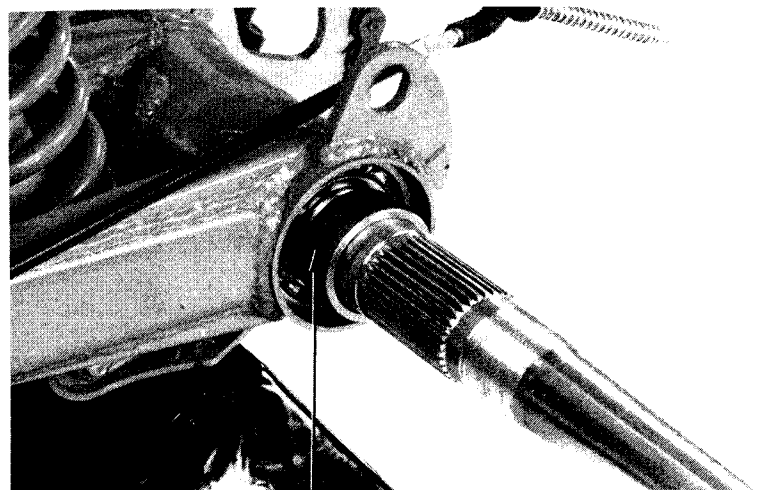
Place the rear axle in V-blocks and measure the runout.

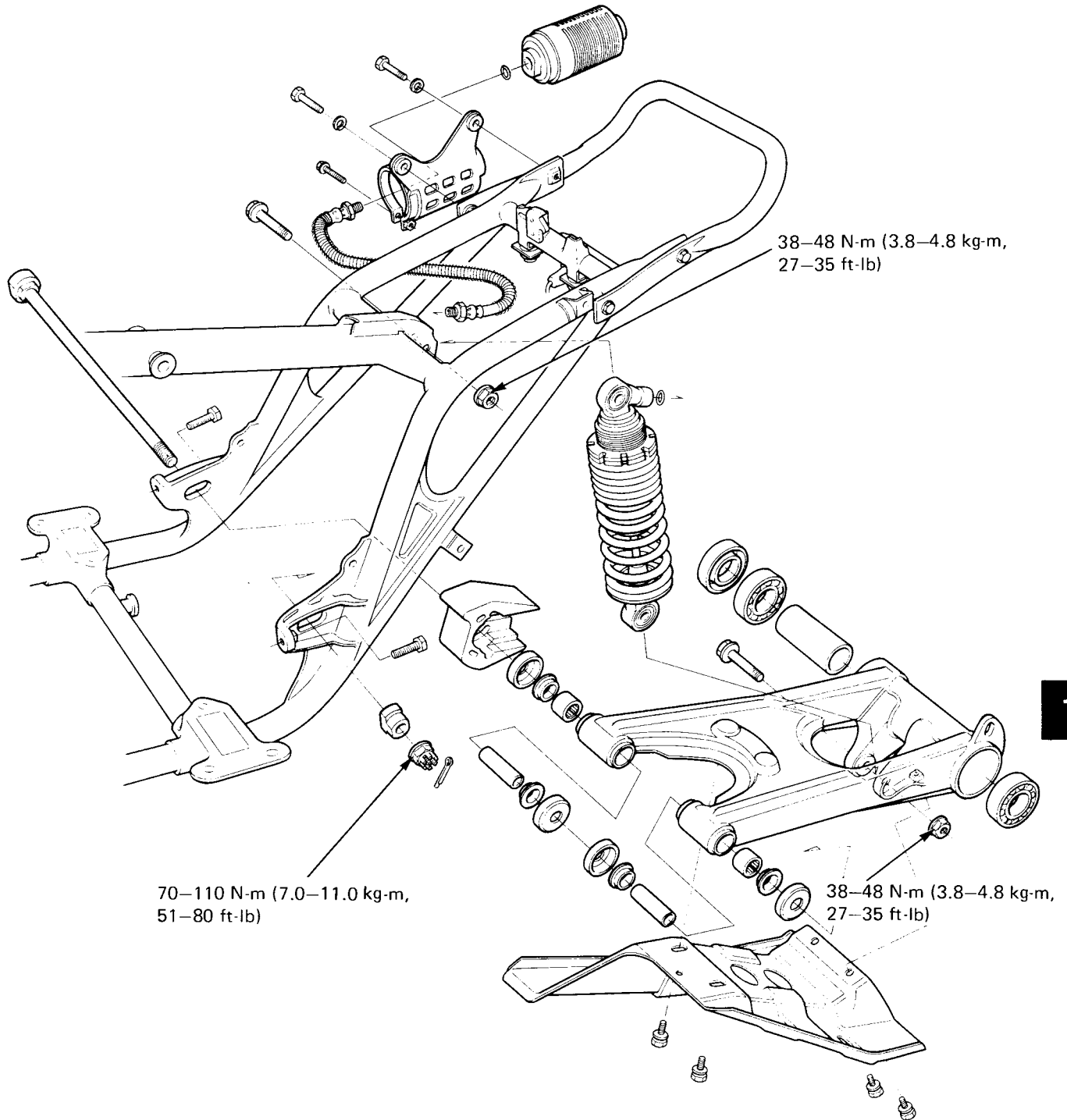
The actual runout is 1/2 of the total indicator reading.



INSTALLATION

Slide the axle through the swingarm.
Install the final driven sprocket (Page 12-11).
Install the brake panel collar on the axle.
Install the rear brake panel (Page 12-8).





13. REAR SUSPENSION



HONDA
ATC 250R

SERVICE INFORMATION	13 – 1
TROUBLESHOOTING	13 – 1
REAR SHOCK ABSORBER	13 – 2
SWINGARM	13 – 11

SERVICE INFORMATION

GENERAL INSTRUCTIONS

This section deals with rear shock absorber and swingarm repairs.

TOOLS

Special	
Needle Bearing Remover Installer (Swingarm)	07946-KA5000 or M967-038-XXXXX (USA only)
Common	
Pilot 20 mm	07746-0040500
Attachment 62 x 68 mm	07746-0010500
Pilot 35 mm	07746-0040800
Driver Handle	07749-0010000
Pin Spanner	89201-KA4-8100
Pin Spanner	89202-KA4-8100

SPECIFICATIONS

Rear shock absorber spring free length	231 – 234 mm (9.09 – 9.21 in)
Reservoir nitrogen gas pressure	2,000 ± 200 kPa (20 ± 2 kg/cm ² , 284 ± 28 psi)

TROUBLESHOOTING

Soft suspension

1. Weak spring
2. Improper rear suspension adjustment
3. Insufficient nitrogen pressure

Suspension noise

1. Loose fasteners

Hard suspension

1. Improper spring adjustment
2. Excessive nitrogen pressure
3. Bent shock absorber rod

Wobble or vibration

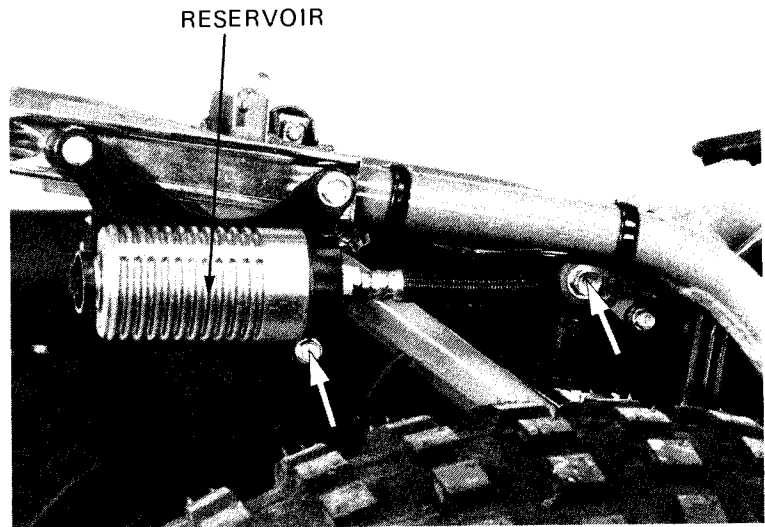
1. Worn swingarm bushings
2. Loose swingarm pivot bolt



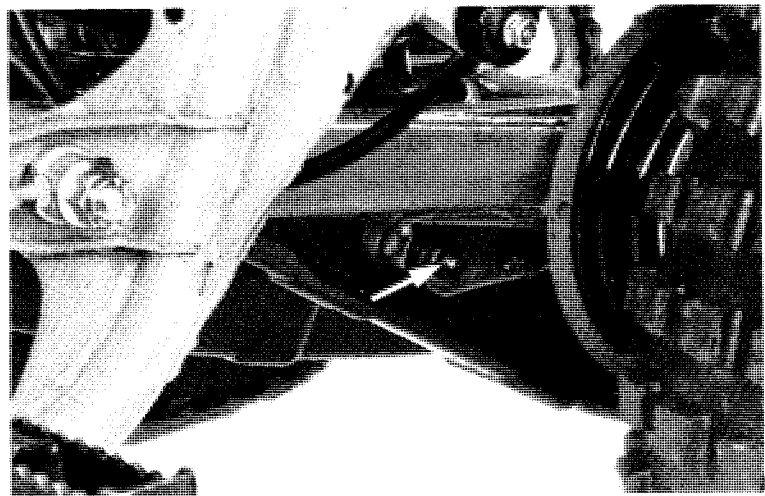
REAR SHOCK ABSORBER

REMOVAL

Remove the reservoir attaching bolts and reservoir.
Remove the rear shock absorber upper bolt.



Remove the rear shock absorber lower bolt.



DISASSEMBLY

Hold the lower eye of the shock absorber in a vise with soft jaws.

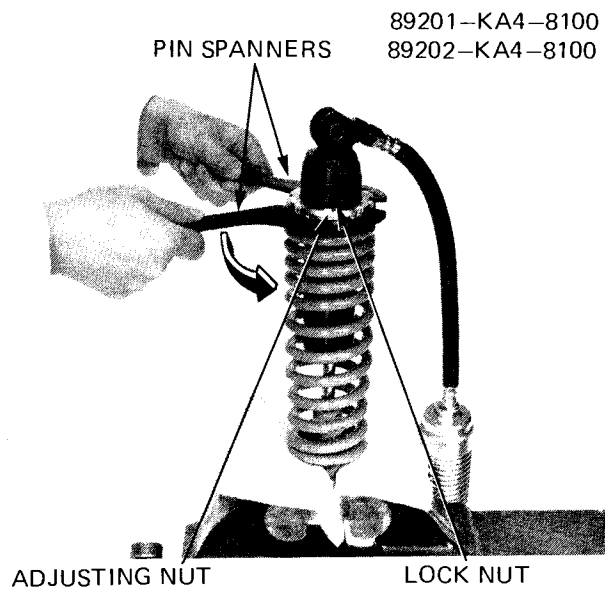
Loosen the lock nut and adjusting nut.

CAUTION:

Be careful not to damage the hose connection in the vise.

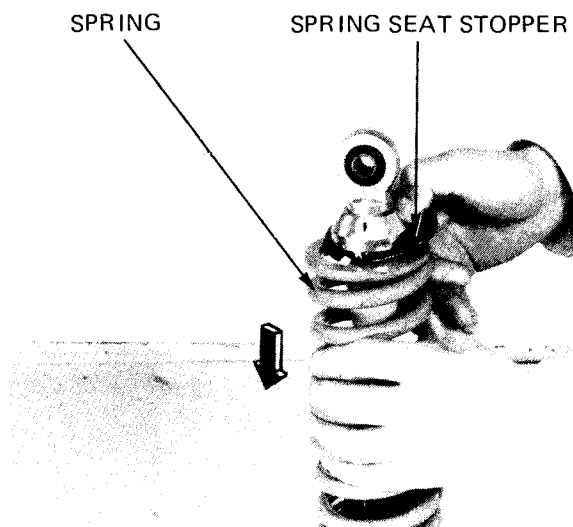
NOTE

The pin spanners are optional tools.



Remove the spring seat stopper by compressing the spring.

Remove the spring.



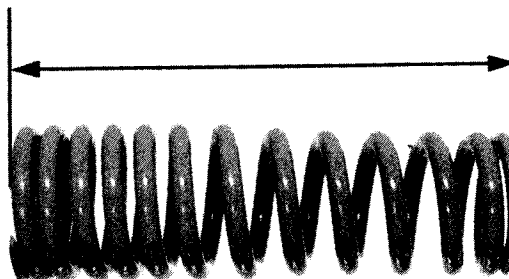
INSPECTION

Measure the spring free length.

STANDARD LENGTH:

231–234 mm (9.09–9.21 in)

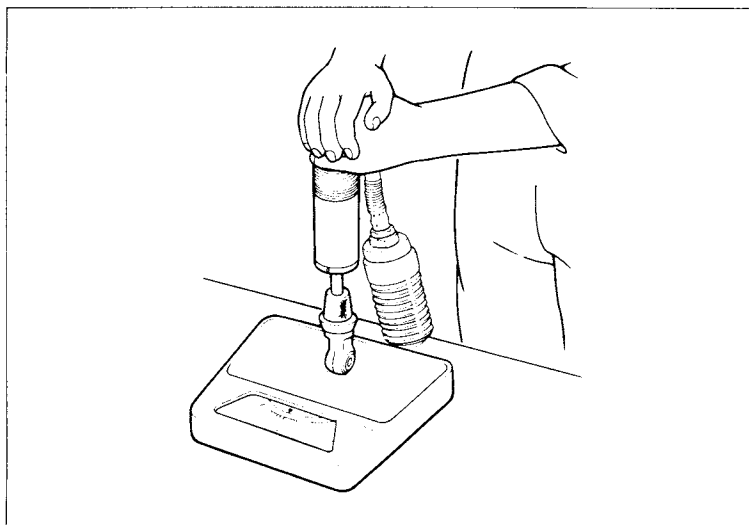
SERVICE LIMIT: 219 mm (8.6 in)

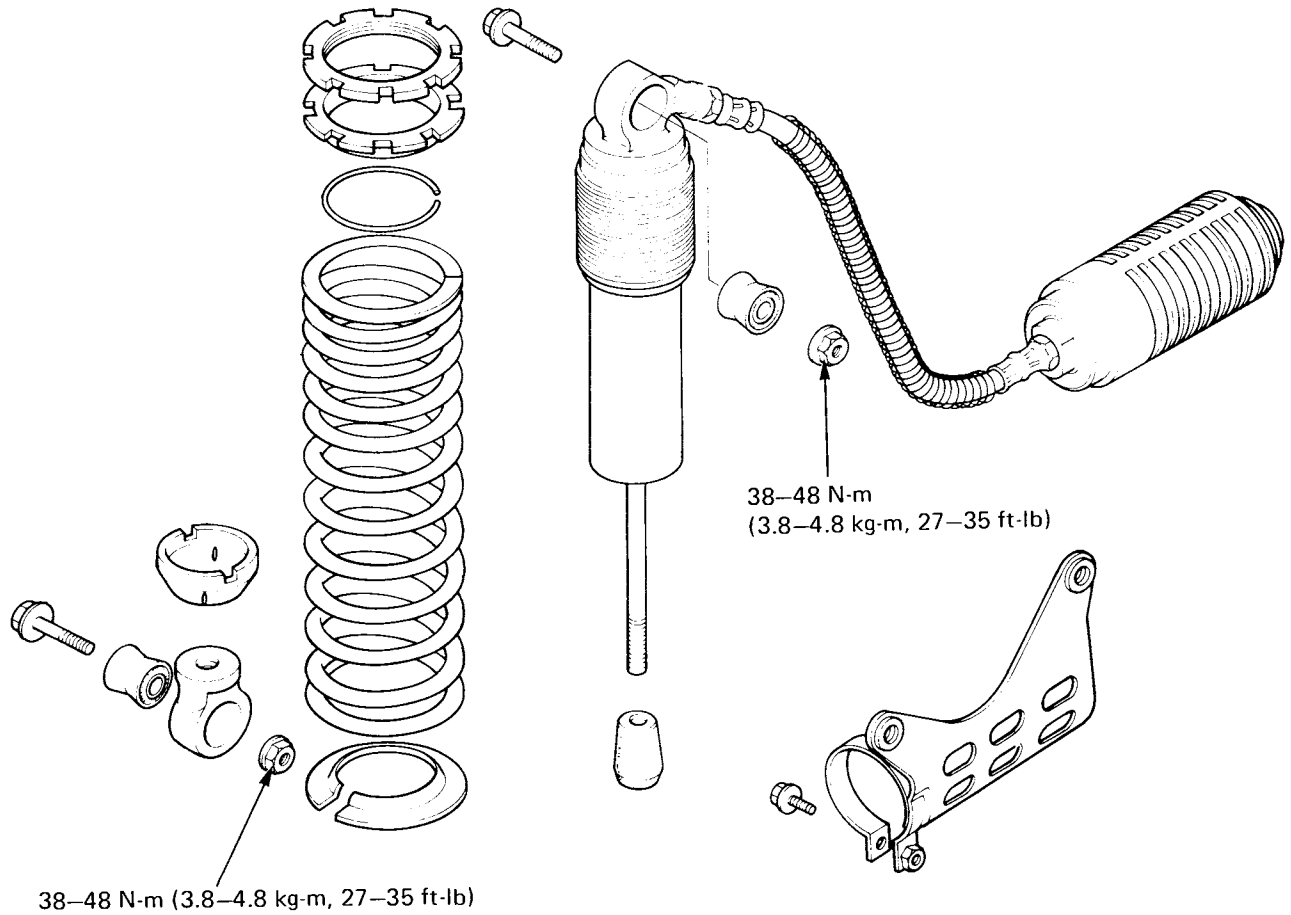


Visually inspect the damper unit for dents, oil leaks or other faults. Replace the damper unit if necessary. Place the damper rod on a scale and measure the force required to compress the damper until 10 mm (0.4 in).

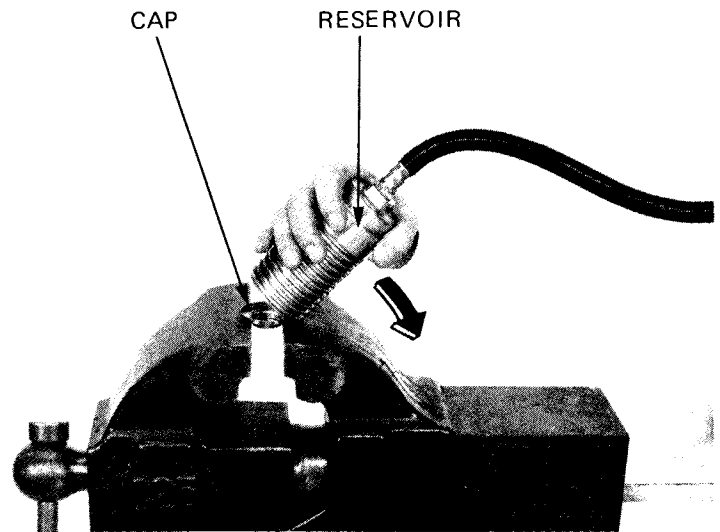
COMPRESSION FORCE: 22–30 kg (49–66 lbs)

If the force required is less than 22 kg (49 lbs), gas is leaking. Examine the damper rod and replace the damper until if bent or scored.





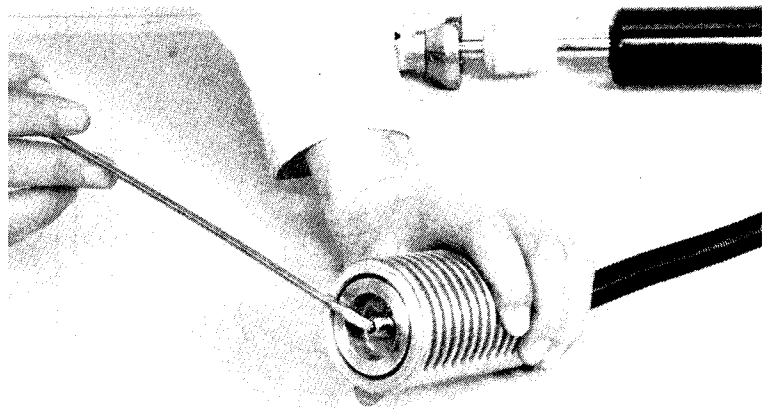
Remove the cap from the reservoir.



Depress the valve core to release the nitrogen from the reservoir.

CAUTION:

- *Be sure to release nitrogen gas pressure before disassembly.*
- *Point the valve away from you.*

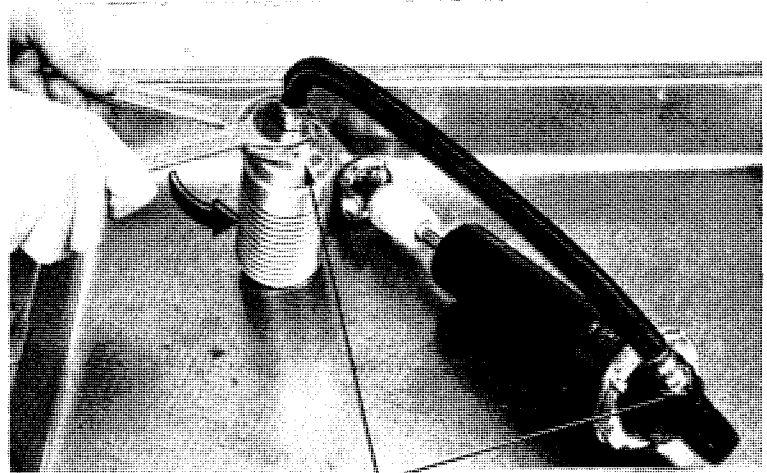


Remove the lock nuts.
Separate the reservoir, hose and damper complete.
Remove the spring lock nut and adjusting nut.

CAUTION:

Do not disassemble the damper unit.

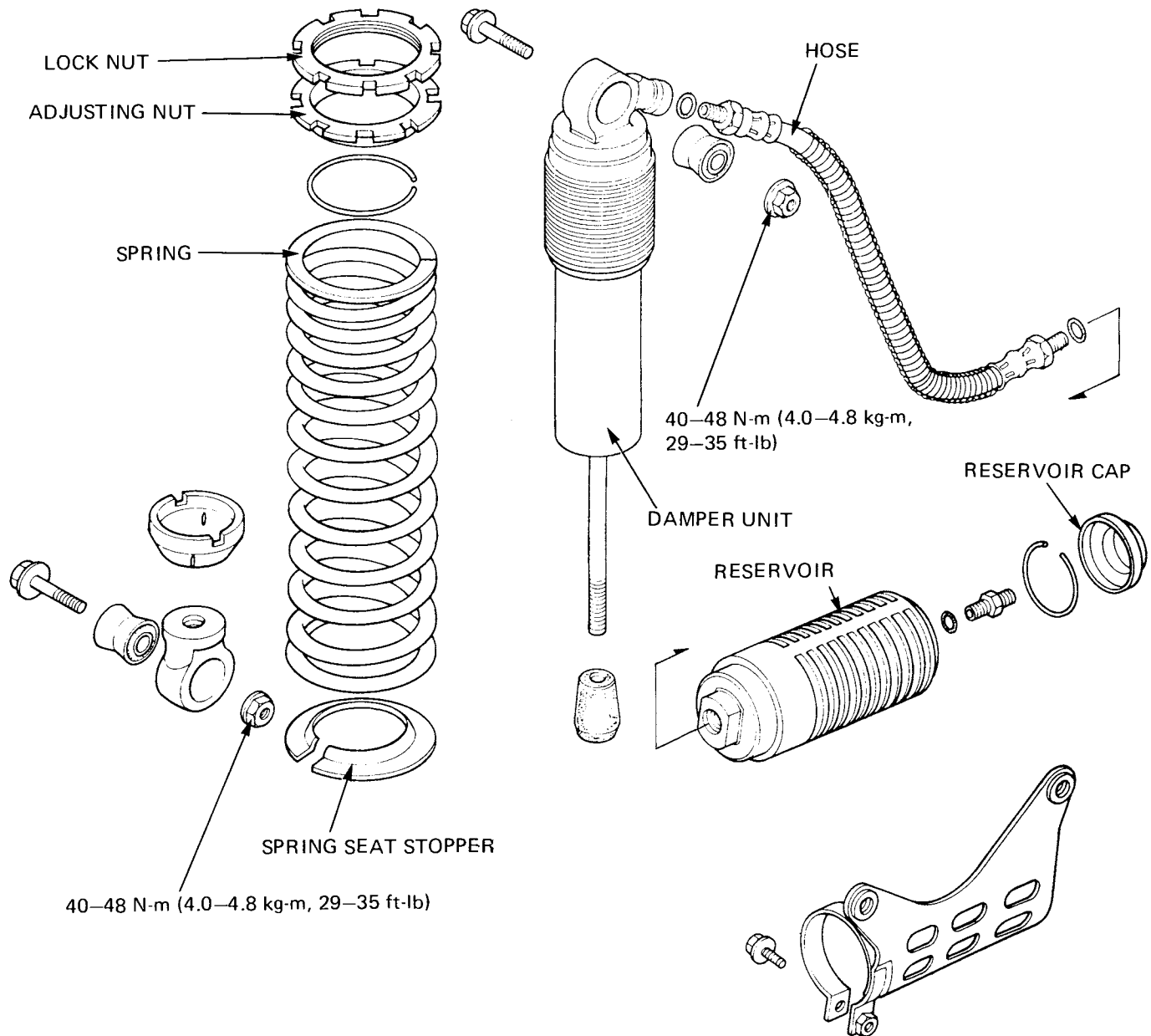
Drain the oil from the reservoir, hose and damper unit.



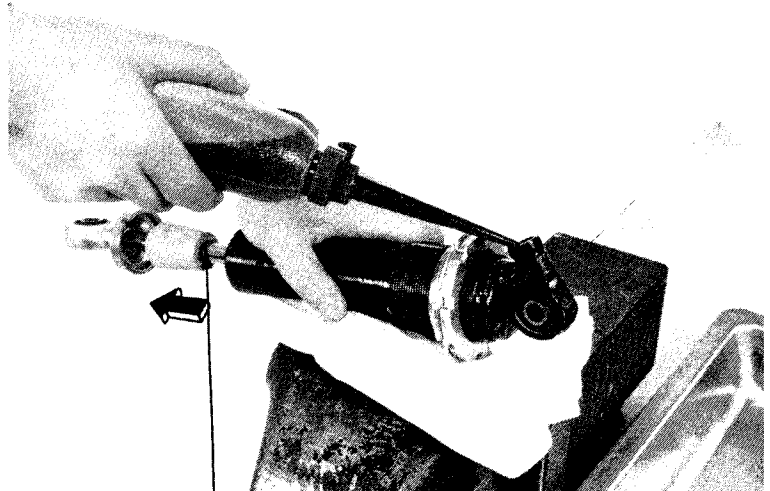
LOCK NUTS



ASSEMBLY



Thread the lock nut and adjusting nut onto the damper unit.
Hold the upper shock mount in a vise with soft jaws or a shop towel with the hole straight up.
Pull out the damper rod all the way.
Fill the damper with the recommended oil.
Recommended oil: HONDA ATF or equivalent.

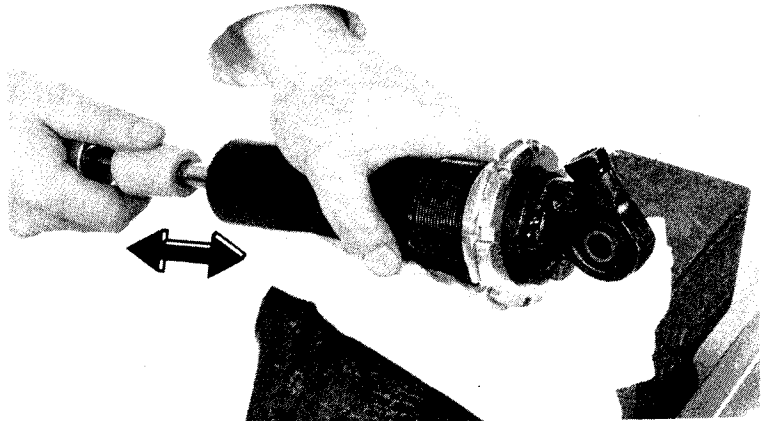


DAMPER ROD

Bleed air from the damper by moving the damper rod back and forth several times slowly.
Fill the damper with ATF as required.

NOTE

The damper should be as free of air as possible.



Fill the reservoir with ATF.

NOTE

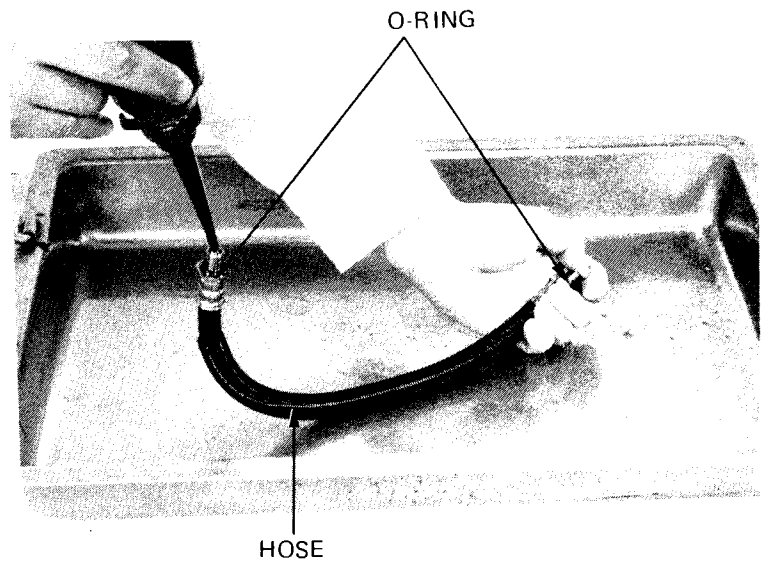
Make sure that there is no gas pressure in the reservoir.



RESERVOIR



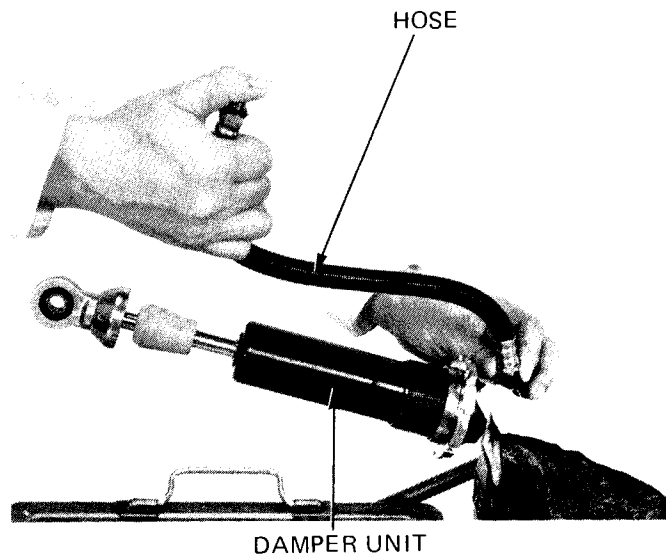
Install the O-rings on the hose joints.
Fill the hose with ATF.



Connect the hose to the damper unit.
Tighten the hose joint.

**TORQUE: 20–35 N·m (2.0–3.5 kg·m,
14–25 ft·lb)**

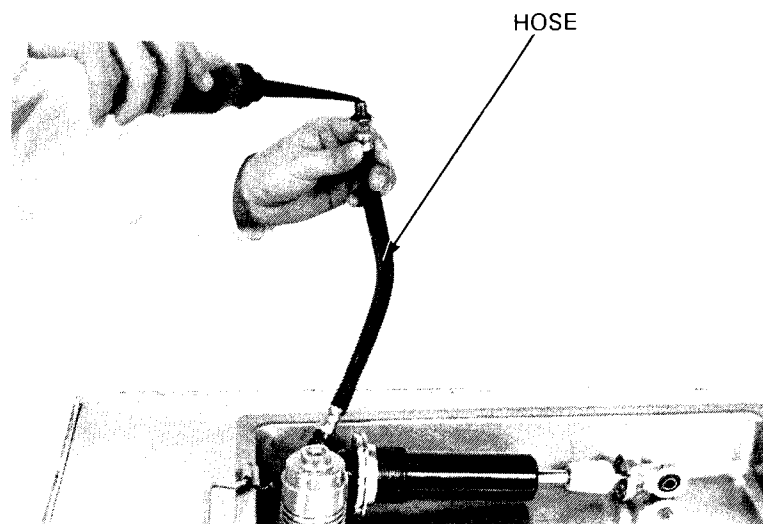
Fill the hose with ATF again. Make sure that the damper rod is pulled out fully when filling the hose.



If necessary, pour more ATF into the hose as shown.

NOTE

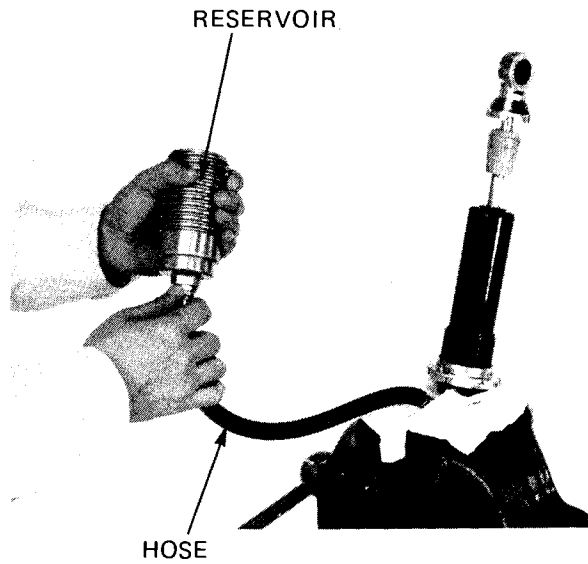
The shock should be as free of air as possible for optimum performance.



Connect the reservoir to the hose.

NOTE

Do not allow air to enter the damper oil.



Fill the reservoir with nitrogen to $20 \pm 2 \text{ kg/cm}^2$ ($284 \pm 28 \text{ psi}$)

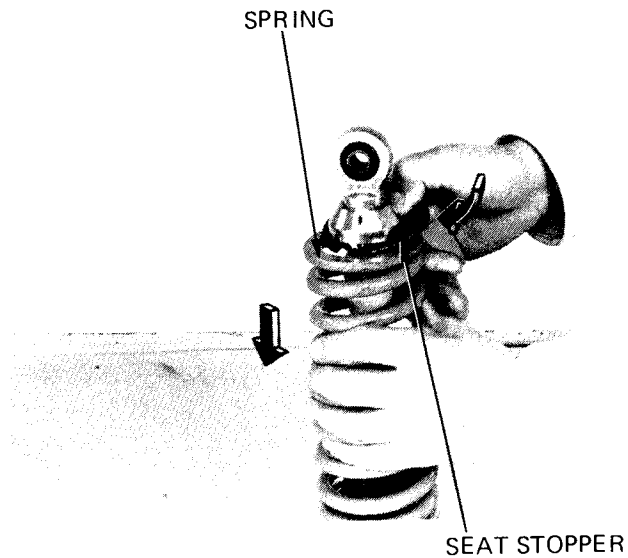
WARNING

- Use only nitrogen to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion.
- Adjust nitrogen pressure to only $20 \pm 2 \text{ kg/cm}^2$ ($284 \pm 28 \text{ psi}$).
- Install a new reservoir valve cap.





Install the spring on the shock absorber damper rod.
Install the spring seat stopper while compressing the spring by hand.

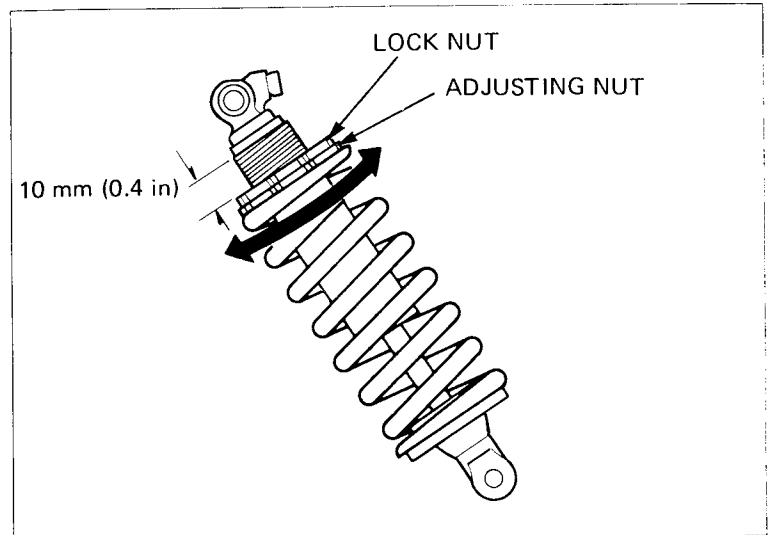


Adjust the spring length by turning the adjuster:

Standard length: 10.0 mm (0.4 in)

CAUTION:

Do not allow the spring length to exceed the above limits.



SHOCK ABSORBER INSTALLATION

Install the rear shock absorber and reservoir.

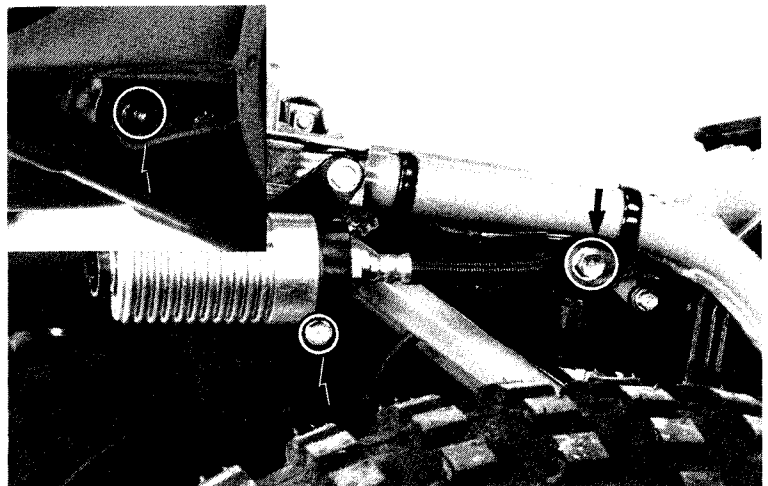
TORQUES:

Shock absorber upper/lower bolts:

38–48 N-m (3.8–4.8 kg-m, 27–35 ft-lb)

Reservoir bolt:

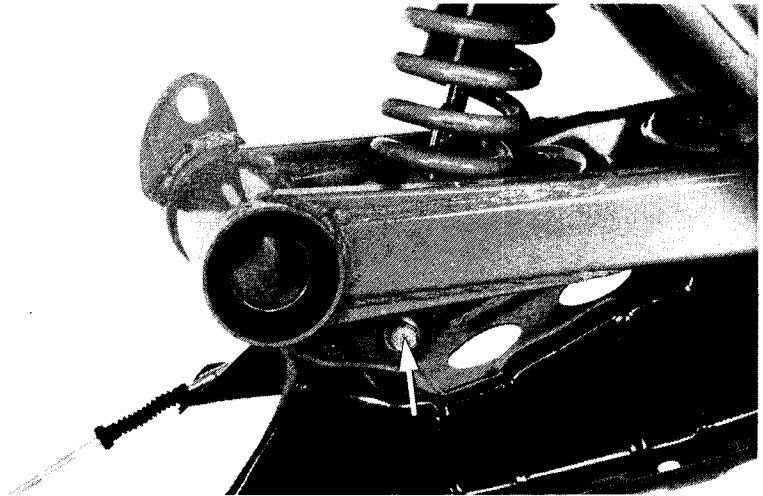
8–12 N-m (0.8–1.2 kg-m, 6–9 ft-lb)



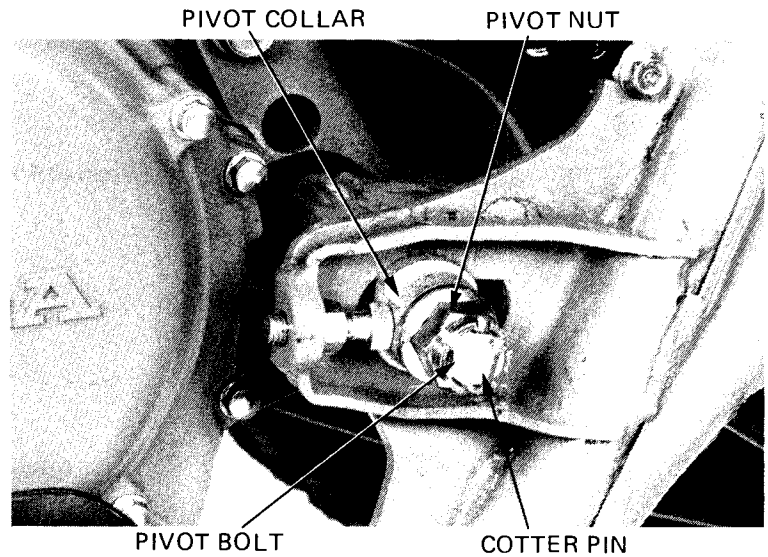
SWINGARM

REMOVAL

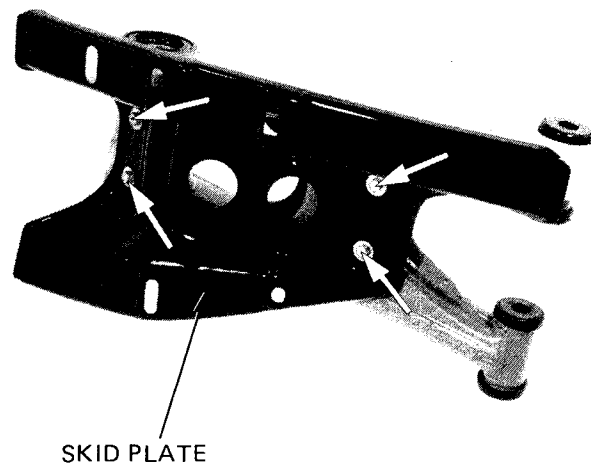
Remove the rear axle (Page 12-13).
Remove the shock absorber lower bolt.



Remove the cotter pin.
Remove the swingarm pivot nut and collar.
Withdraw the pivot bolt and remove the swingarm.



Remove the skid plate.





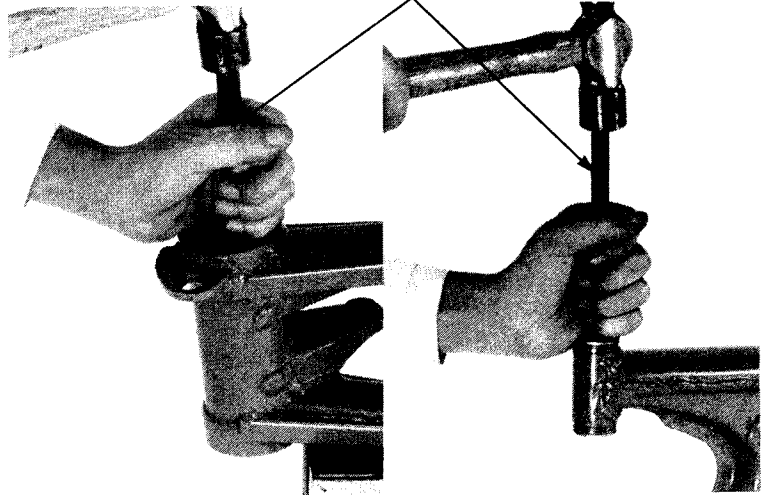
DISASSEMBLY

Remove the dust seal, bearings and collar from the axle end of the swingarm.
Remove the dust seal caps and pivot collars.
Remove the pivot bushings and bearings.

NOTE

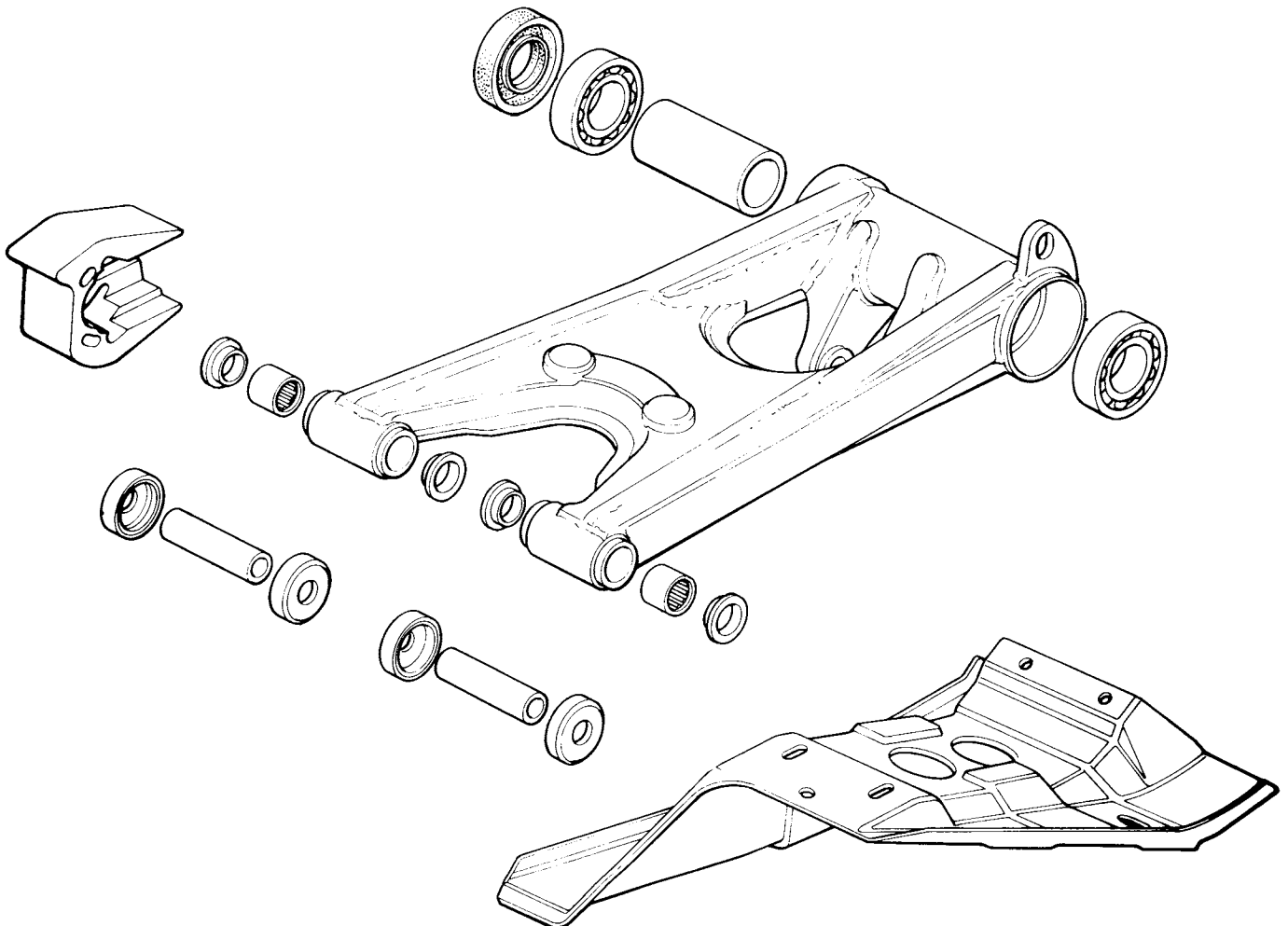
Bearings are damaged during removal.
New bearings must be installed if old bearings are removed.

NEEDLE BEARING REMOVER
07946-KA50000 or M967-038-XXXXX



INSPECTION

Check the swingarm for cracks or damage.



INSTALLATION

Drive in the left axle bearing.
Slide the collar into the swingarm and drive in the right axle bearing.
Install the dust seals.

Grease the pivot bearings.
Drive new needle bearings into the swingarm pivot holes until they are recessed about 1 mm. Then press in the pivot collars with a hydraulic press.

NOTE

- Press in needle bearings from the outer edge of the swingarm, as shown.
- Bearing manufacturer's marks should face out.

Install the collars and dust seal caps.

Place the swingarm into the frame and install the pivot bolt. Install the nut and torque it.

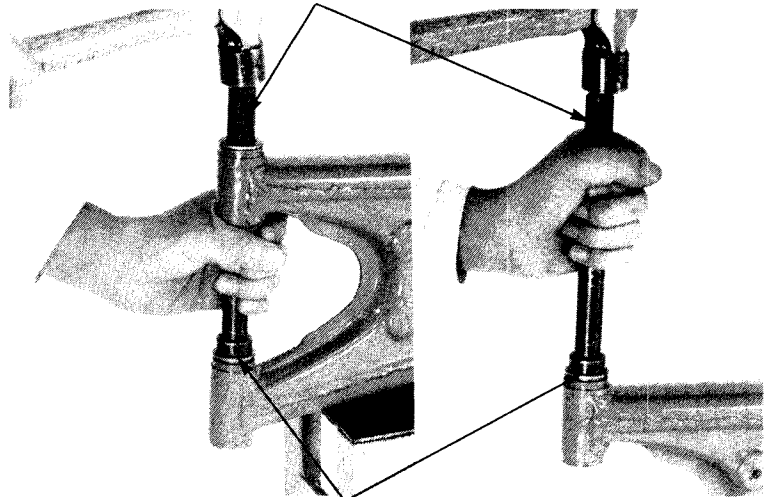
TORQUE: 70–110 N·m (7.0–11.0 kg·m, 51–80 ft·lb)

Install new cotter pin.

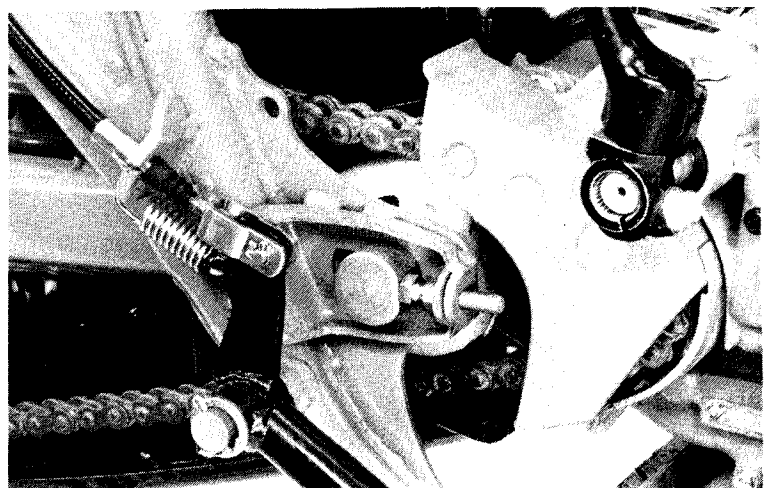
- Install the rear brake (Page 12-8).
- Install the driven sprocket (Page 12-11).
- Install the shock absorber bolt.
- Adjust the drive chain slack (Page 2-9).
- Install the skid plate.



PILOT 35 mm 07746-0040800 ATTACHMENT 62 x 68 mm
NEEDLE BEARING REMOVER 07746-0010500
07946-KA50000



PILOT 20 mm
07746-0040500





14. REAR FENDER/ EXHAUST SYSTEM

REAR FENDER
EXHAUST SYSTEM

14 - 1

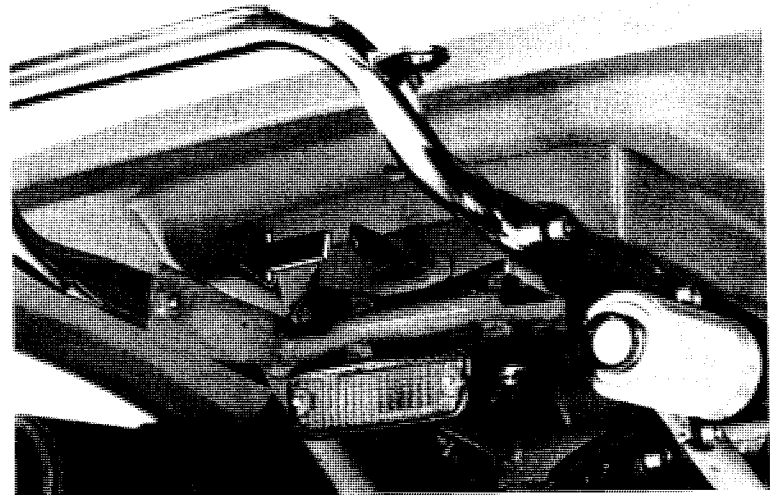
14 - 2

REAR FENDER

REMOVAL

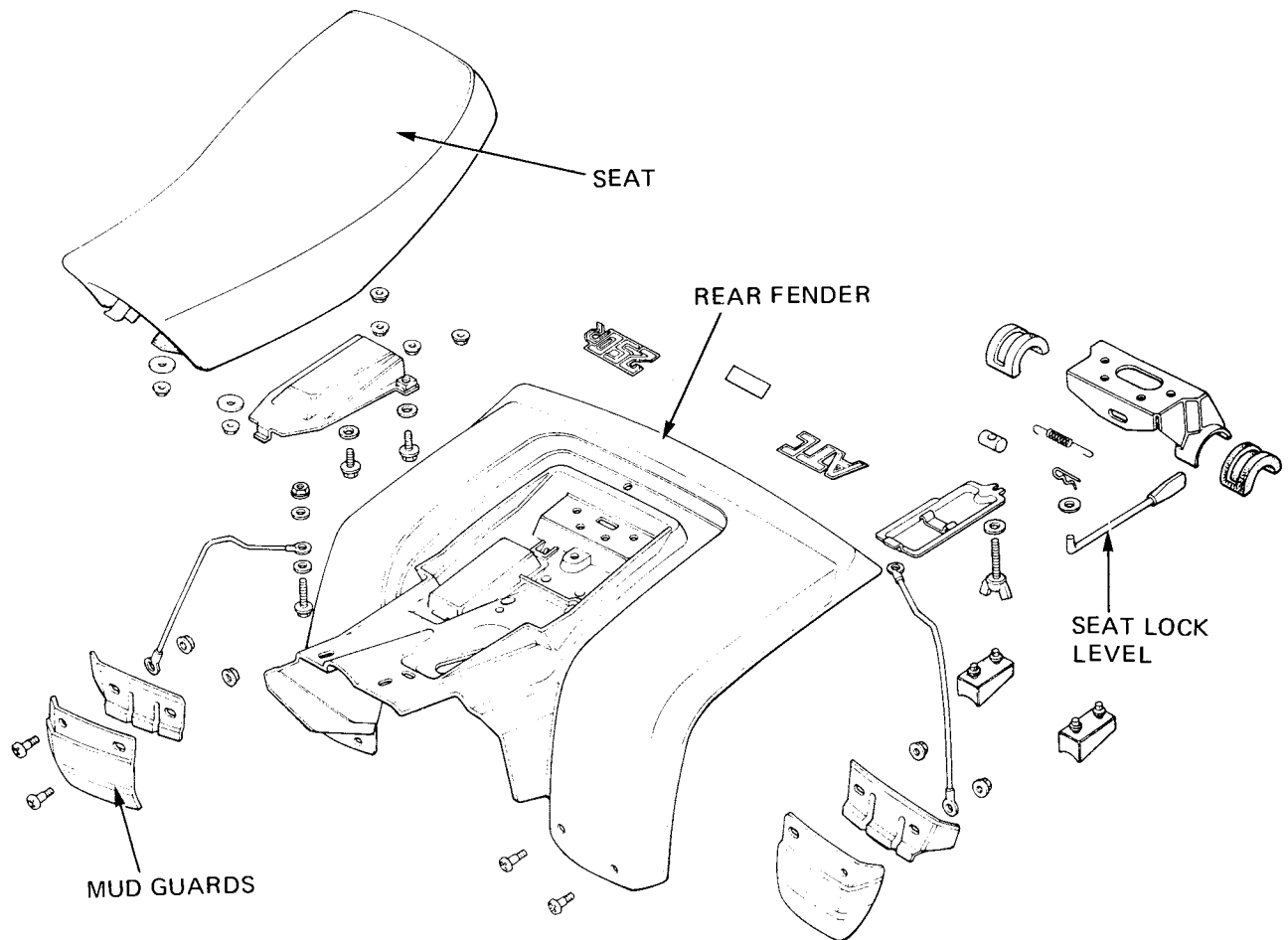
Release the seat lock by moving the lever in the direction shown on the lever.

Remove the seat and mud guards.



INSTALLATION

The installation sequence is the reverse order of removal.



14

EXHAUST SYSTEM

REMOVAL

WARNING

Do not service the exhaust pipe or muffler while they are hot.

- Remove the rear fender.
- Remove the exhaust chamber/muffler springs.
- Remove the exhaust chamber/muffler bolts.
- Remove the protectors.

NOTE

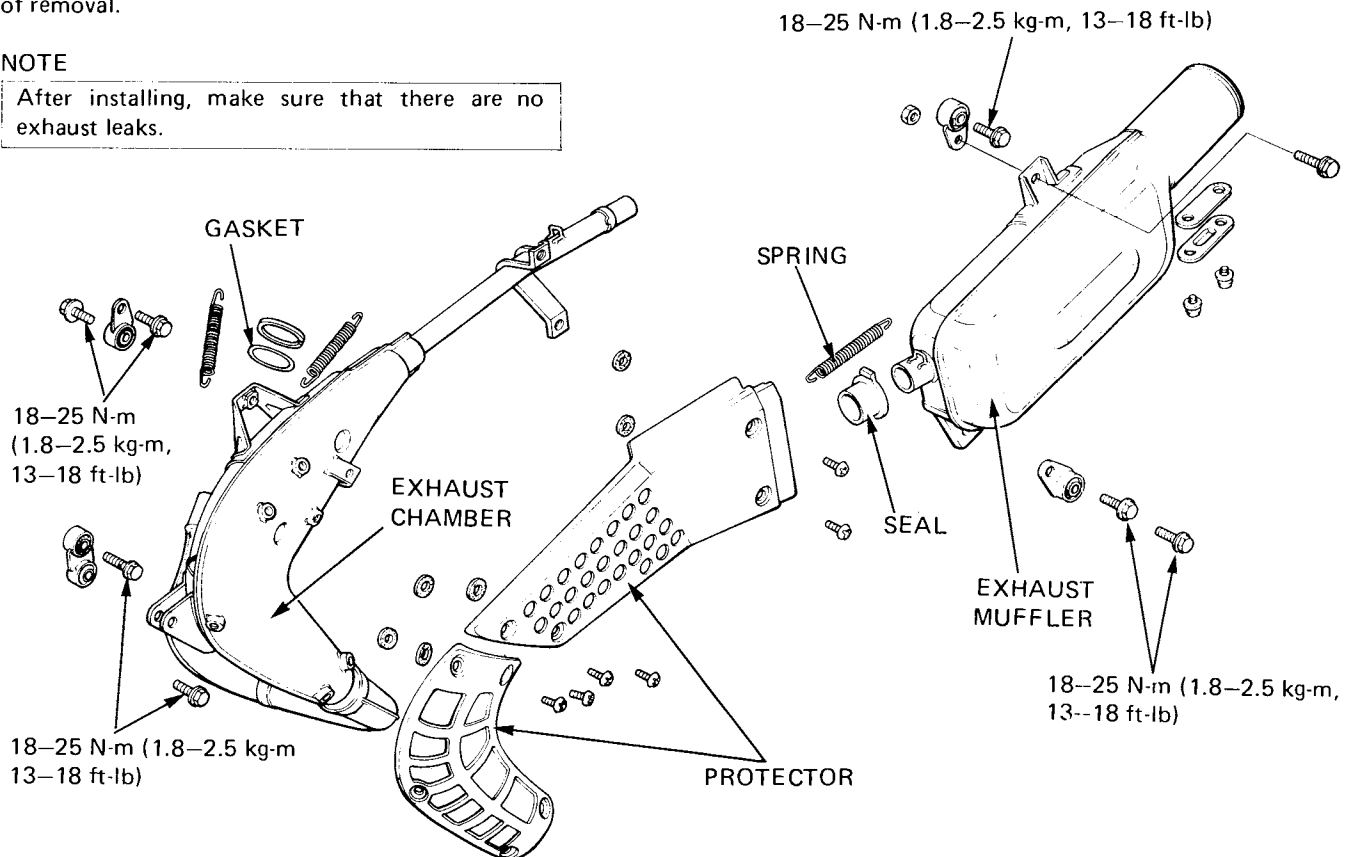
Check the gasket and pipe seal for wear.
Replace with a new parts as necessary .

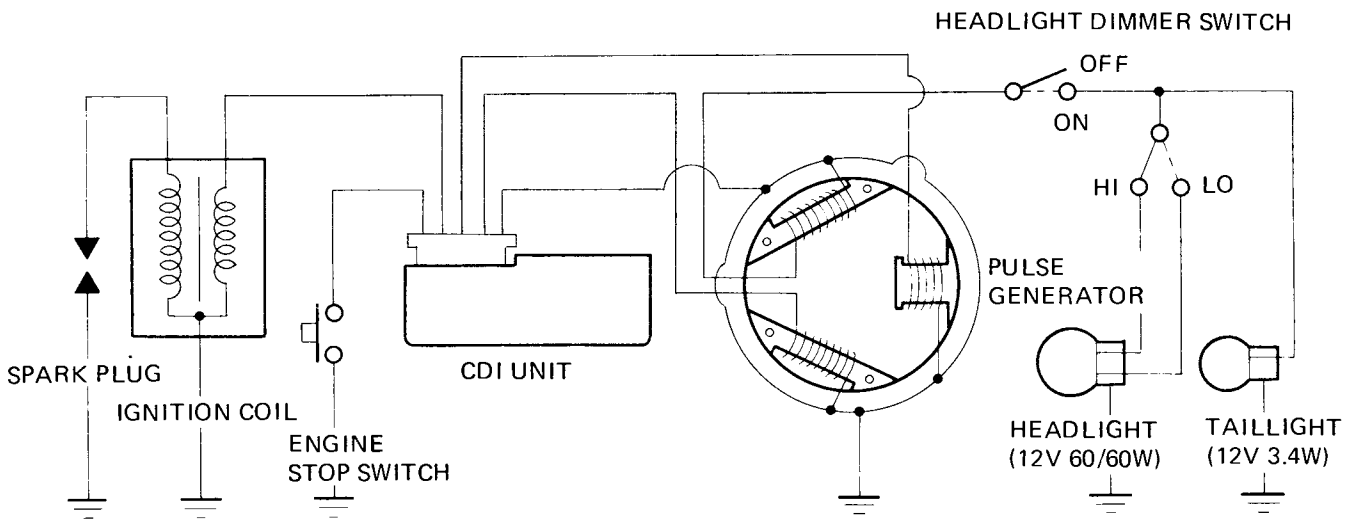
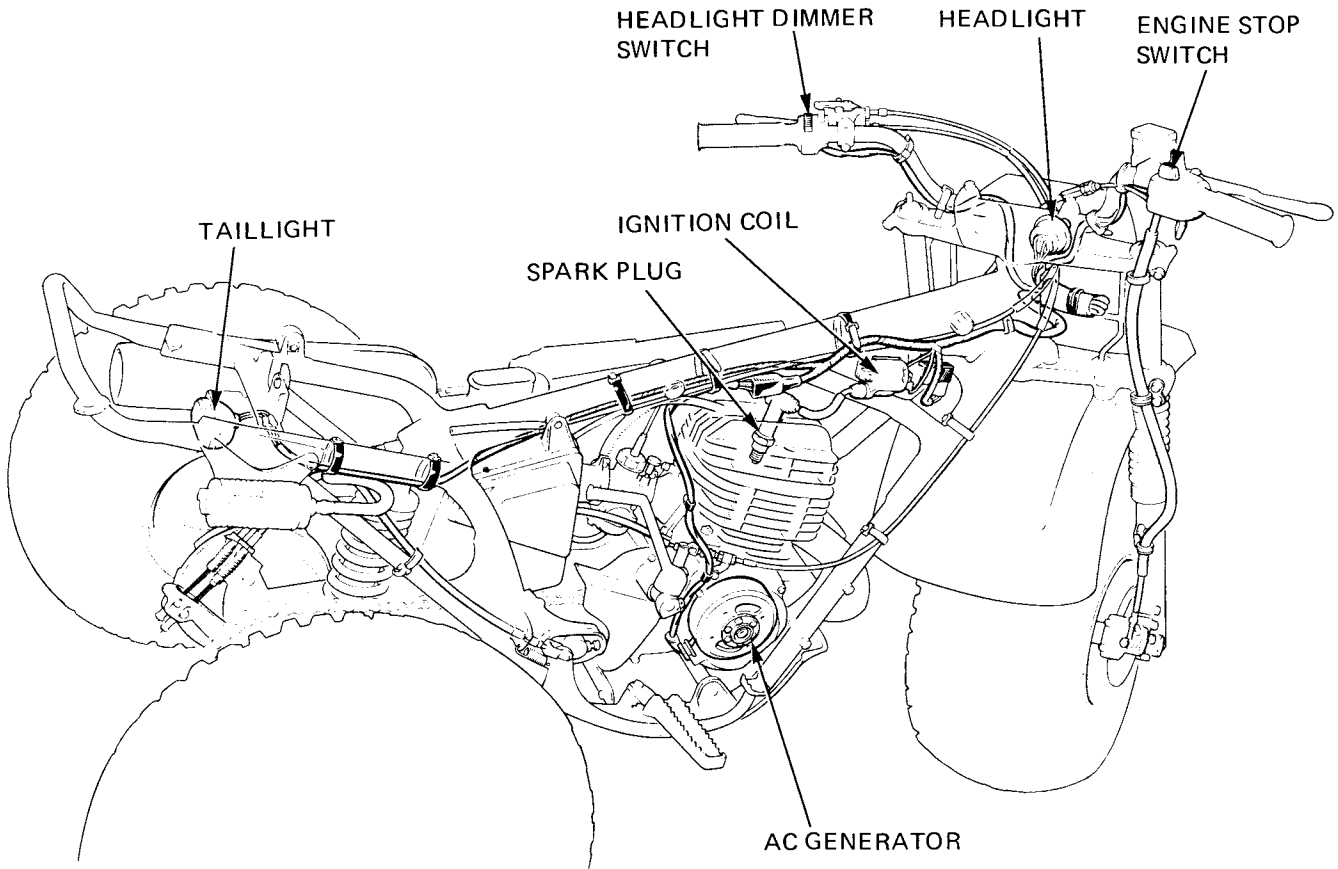
INSTALLATION

The installation sequence is essentially the reverse of removal.

NOTE

After installing, make sure that there are no exhaust leaks.





15

15. ELECTRICAL SYSTEM



HONDA
ATC 250R

SERVICE INFORMATION	15 - 1	IGNITION TIMING	15 - 5
TROUBLESHOOTING	15 - 2	HEADLIGHT	15 - 6
IGNITION COIL	15 - 3	TAILLIGHT	15 - 6
A C GENERATOR	15 - 3	HEAD LIGHT DIMMER SWITCH	15 - 7
CDI UNIT	15 - 4	ENGINE STOP SWITCH	15 - 7
PULSE GENERATOR	15 - 5		

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Ignition timing does not normally need to be adjusted since CDI (Capacitive Discharge Ignition) unit is factory pre-set.
- For spark plug inspection, refer to Page 2-5.
- A continuity check can usually be made without removing the part from the ATC by simply disconnecting the wires and connecting a continuity tester or voltmeter to the terminals.

SPECIFICATIONS

Spark plug:	USA Model B8ES (NGK) N-3 (CHAMPION)	Canada model BR8ES (NGK) QN-3 (CHAMPION)
Spark plug gap		0.7 - 0.8 mm (0.028 - 0.031 in)
Ignition timing:	Initial	17 ± 3° BTDC/2,000 rpm
	Advance start	13.5°/500 rpm
	Full advance	14 ± 3° BTDC/9,000 rpm
	AC generator	73 W/7,600 rpm
		10.5 V at 3,000 rpm
		15.0 V at 9,500 rpm
Headlight		12 V 60/60W
		12 V 3.4 W



TROUBLESHOOTING

Engine starts but stops

1. No spark at plug
2. Improper ignition timing
3. Faulty spark plug

No spark at plug

1. Engine stop switch "OFF"
2. Poorly connected, broken or shorted wires
 - Between AC generator and ignition coil
 - Between CDI unit and engine stop switch
 - Between CDI unit and ignition coil
 - Between ignition coil and spark plug
 - Between pulse generator and CDI unit
3. Faulty ignition coil
4. Faulty CDI unit
5. Faulty pulse generator
6. Faulty AC generator

Light dose not come on when light switch is turned on (Engine is running)

1. Bulb burned out
2. Faulty switch
3. Wiring to that component has open circuit
4. Faulty lighting coil (See page 15-3)

Headlight beams do not shift when hi-lo switch is operated

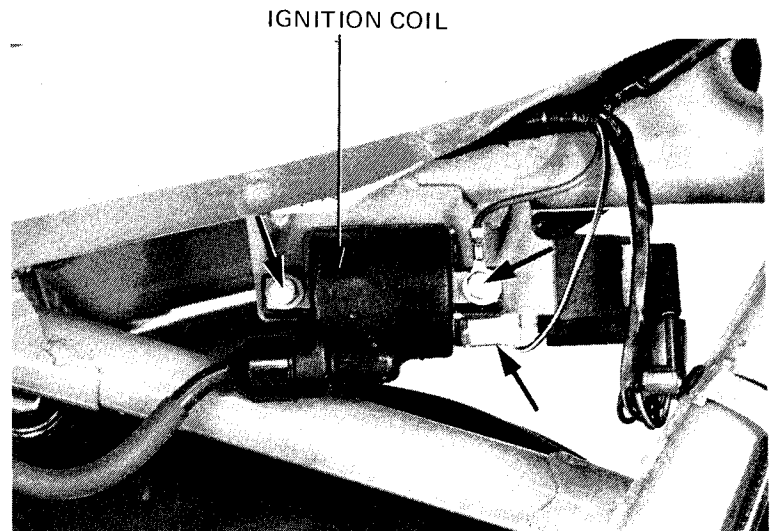
1. Faulty dimmer switch

Engine starts but runs poorly

1. Ignition primary circuit
 - Faulty ignition coil
 - Loose or bare wire
 - Faulty AC generator
2. Ignition secondary circuit
 - Faulty plug
 - Faulty CDI unit
 - Faulty pulse generator
 - Faulty high tension wire
3. Improper ignition timing
 - Faulty pulse generator
 - Faulty CDI unit

ELECTRICAL SYSTEM
IGNITION COIL
IGNITION COIL REMOVAL

Remove the spark plug cap from the spark plug.
 Disconnect the wires.
 Remove the ignition coil.


IGNITION COIL INSPECTION

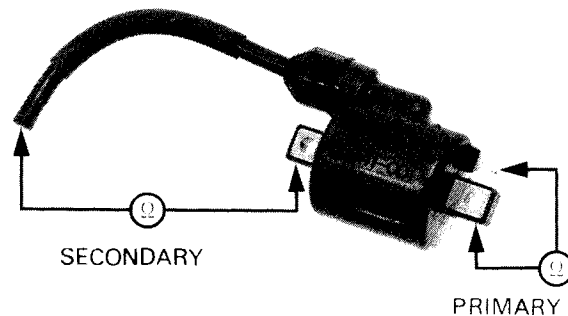
Check the resistance between the leads of the primary and secondary coils:

Primary coil: 0.2–0.8Ω

Secondary coil: 8–15 kΩ

IGNITION COIL INSTALLATION

Install the ignition coil in the reverse order of removal.


AC GENERATOR

Disconnect the A C generator coupler and test as follows:

NOTE

It is not necessary to remove the stator coil to make this test.

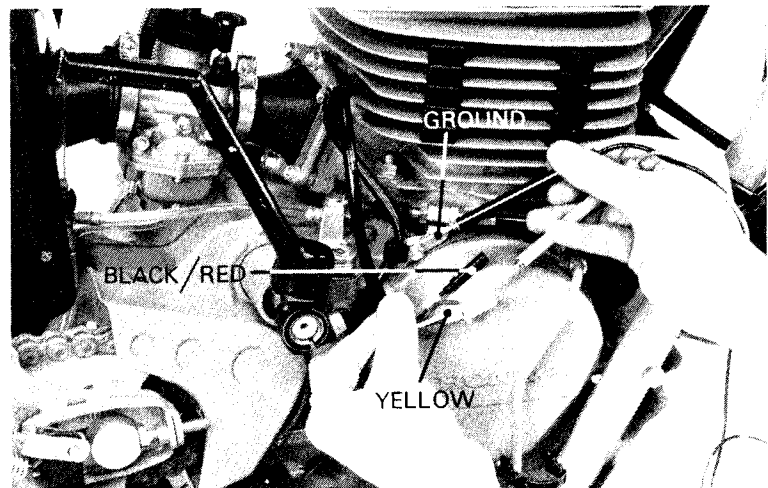
LIGHTING COIL

The lighting coil is correct if there is continuity between the yellow wire and ground.

EXCITER COIL

The exciter coil is normal if there is specified resistance between the black/red wire and ground.

SPECIFICATION: 245Ω





CDI UNIT

CDI UNIT REMOVAL

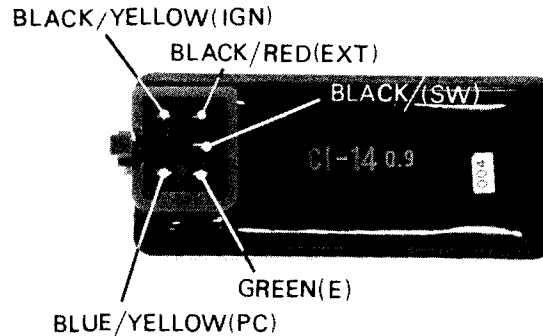
Disconnect the wire coupler.
Remove the CDI unit.

CDI UNIT INSPECTION

Replace the CDI unit if the readings are within the limits shown in the table.

NOTE

- The CDI unit is fully transistorized.
- For accurate electric testing, it is necessary to use a specified electric tester. Use of an improper tester may give a false reading.
- Use SANWA ELECTRIC TESTER (P/N 7308-0020000) or KOWA ELECTRIC TESTER (TH-5H).



Measuring ranges:

SANWA [SP-10D type] : x kΩ

KOWA [TH-5H type] : x 100Ω

Unit: KΩ

(-)	(+)	BLACK	BLACK/RED	BLUE/YELLOW	GREEN	BLACK/YELLOW
BLACK			∞	∞	∞	∞
BLACK/RED		0.1 ~ 20		∞	∞	∞
BLUE/YELLOW		20 ~ 1000	5 ~ 500		1 ~ 100	∞
GREEN		1 ~ 100	0.1 ~ 20	1 ~ 100		∞
BLACK/YELLOW		∞	∞	∞	∞	



PULSE GENERATOR

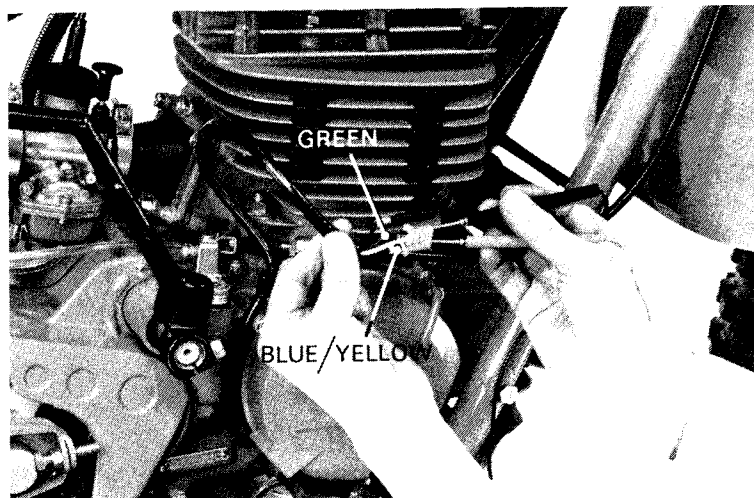
NOTE

This test can be made without removing the part.

Disconnect the generator couplers.

Measure the resistance between the Blue/Yellow and Green wires.

RESISTANCE: 20–60Ω



IGNITION TIMING

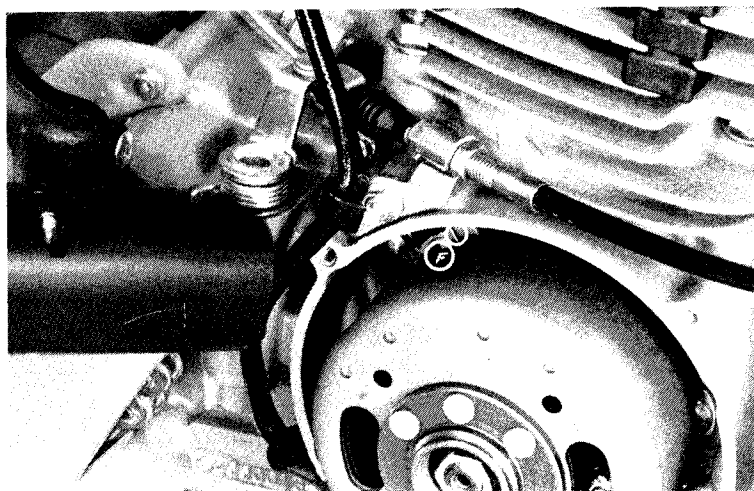
Remove the AC generator cover.

Connect a timing light.

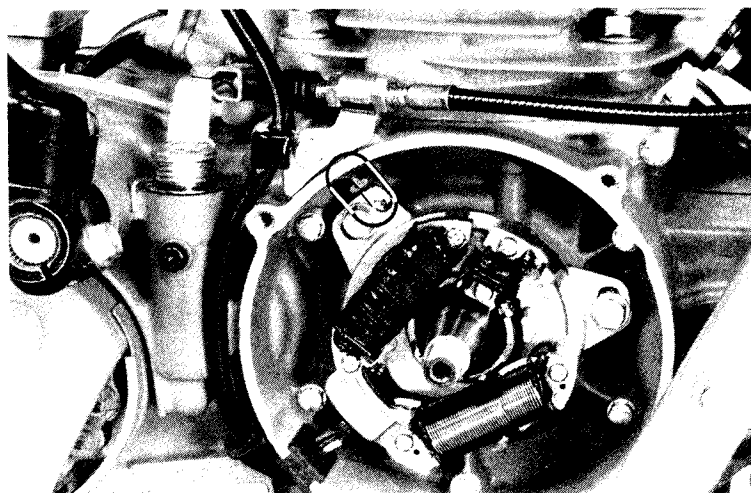
Start the engine and allow to idle.

IDLE (1,300 rpm): "F" mark should be aligned with index mark.

If ignition timing cannot be corrected, inspect the CDI unit and pulse generator.
Replace any faulty components.



To adjust, remove the flywheel (Page 6-2), loosen the base plate bolts and turn the plate as required.





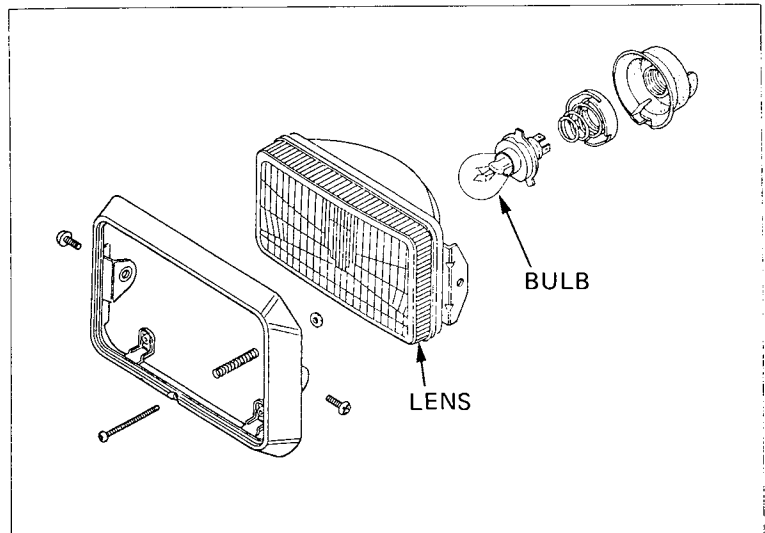
HEADLIGHT

HEADLIGHT DISASSEMBLY

Remove the headlight (Page 10-3).
Disassemble the headlight.

HEADLIGHT ASSEMBLY

Assemble the headlight in the reverse order of disassembly.



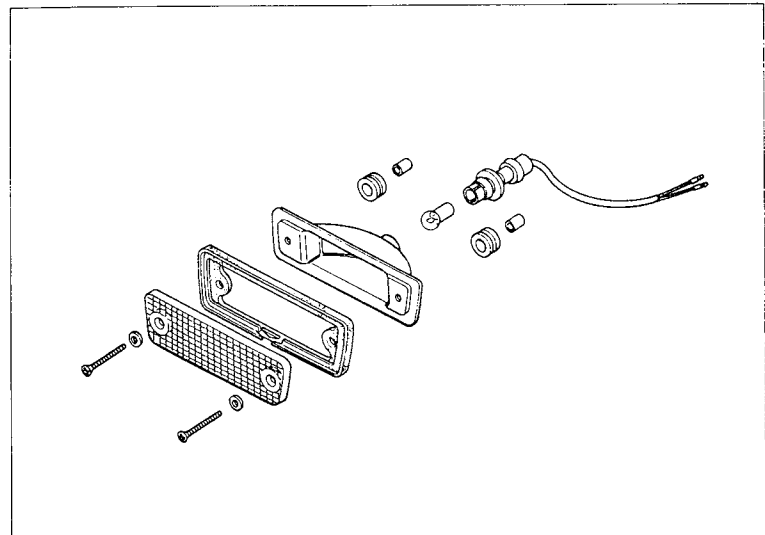
TAILLIGHT

TAILLIGHT DISASSEMBLY

Remove the lens screws.
Remove the bulb.

TAILLIGHT ASSEMBLY

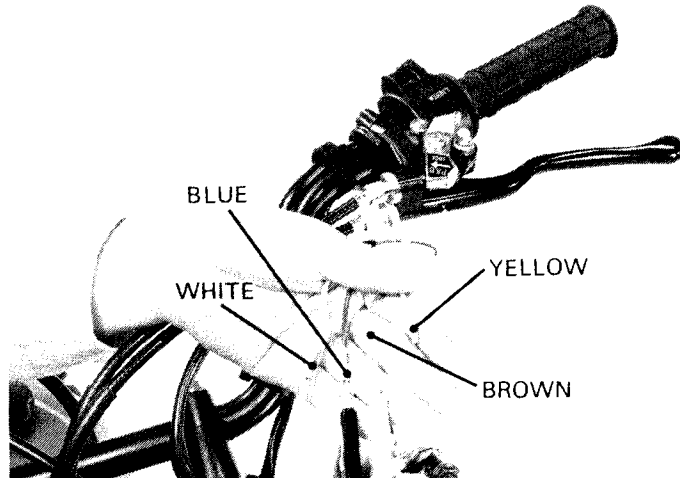
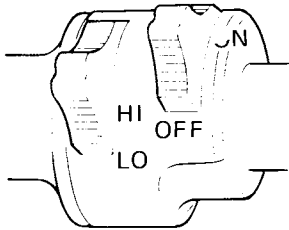
Assemble the taillight in the reverse order of disassembly.



ELECTRICAL SYSTEM
HEADLIGHT DIMMER SWITCH

Disconnect the switch terminals behind the right side of the headlight case.

Check the switch for continuity between the terminals shown in the table for each switch position.



LIGHT SWITCH	WHITE	YELLOW	BROWN	BLUE
OFF				
LOW	○	○	○	
(N)	○	○	○	○
HIGH		○	○	○

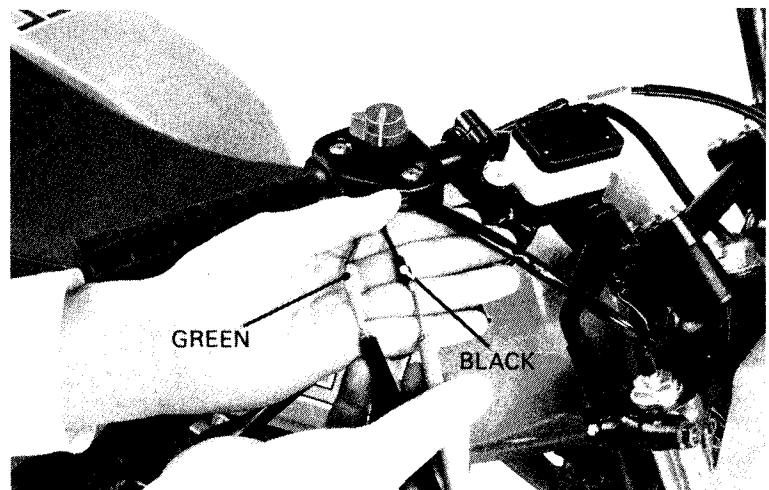
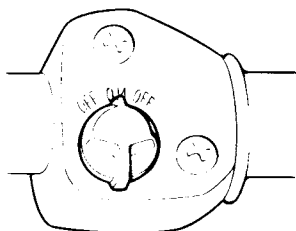
The switch is normal if there is continuity between the circuit marked "O-O".

ENGINE STOP SWITCH

Check the switch for continuity between the Black and Green terminals with the switch "OFF".

The switch is normal if there is continuity between the terminals.

	BLACK	GREEN
OFF		
ON	○	○





ENGINE DOES NOT START OR IS HARD TO START	16 - 1
ENGINE LACKS POWER	16 - 2
POOR PERFORMANCE AT LOW AND IDLE SPEEDS	16 - 3
POOR PERFORMANCE AT HIGH SPEEDS	16 - 4
POOR HANDLING	16 - 4

ENGINE DOES NOT START OR IS HARD TO START

CHECK	SYMPTOM	PROBABLE CAUSE
1. Check if fuel is reaching carburetor	FUEL NOT REACHING CARBURETOR	(1) No fuel in fuel tank (2) Clogged fuel line from tank to carburetor (3) Clogged carburetor float valve (4) Clogged fuel tank cap breather hole
FUEL REACHING CARBURETOR		
2. Remove spark plug	WET	(1) Carburetor flooded (2) Carburetor choke excessively closed (3) Throttle valve excessively opened
DRY		
3. Test spark	NO SPARK OR SPARK IS WEAK	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Broken or shorted high tension wire (5) Broken or shorted ignition coil (6) Faulty main switch (7) Faulty AC generator (8) Faulty pulse generator (9) Pulse generator rotor air gap incorrect
SPARK JUMPS		
4. Test cylinder compression by operating kick pedal	LOSS OF COMPRESSION	(1) Piston rings stuck in ring lands (2) Flaw in casting (3) Compression leak past crank-case (4) Faulty or clogged reed valve (5) Worn cylinder and piston rings (6) Blown cylinder head gasket
COMPRESSION IS NORMAL		
5. Start by following normal starting procedure	ENGINE FIRES BUT STOPS SOON	(1) Excessively open choke (2) Choke stuck closed (3) Air leaking past manifold (4) Improper Ignition timing (CDI unit or pulse generator faulty)
ENGINE DOES NOT FIRE		
6. Restart with choke applied		



ENGINE LACKS POWER

CHECK	SYMPTOM	PROBABLE CAUSE
<p>1. Raise wheels off ground and spin by hand</p> <p>↓</p> <p>WHEEL SPINS FREELY</p>	<p>WHEEL DOES NOT SPIN FREELY →</p>	<p>(1) Brake dragging (2) Worn or damaged wheel bearing (3) Wheel bearing not lubricated properly (4) Drive chain too tight (5) Rear axle nut excessively tightened</p>
<p>2. Check tire pressure with tire gauge</p> <p>↓</p> <p>PRESSURE NORMAL</p>	<p>TIRE PRESSURE IS TOO LOW →</p>	<p>(1) Punctured tire (2) Faulty tire valve</p>
<p>3. Try rapid acceleration from low to second</p> <p>↓</p> <p>ENGINE SPEED LOWERED WHEN CLUTCH IS RELEASED</p>	<p>ENGINE SPEED DOES NOT CHANGE WHEN CLUTCH IS RELEASED →</p>	<p>(1) Clutch slipping (2) Worn clutch disc/plate (3) Warped clutch disc/plate</p>
<p>4. Lightly accelerate engine</p> <p>↓</p> <p>ENGINE SPEED INCREASED</p>	<p>ENGINE SPEED DOES NOT INCREASE SUFFICIENTLY →</p>	<p>(1) Carburetor choke closed (2) Clogged air cleaner (3) Restricted fuel flow (4) Clogged fuel tank cap breather hole (5) Clogged muffler</p>
<p>5. Check ignition timing using timing light</p> <p>↓</p> <p>IGNITION TIMING IS CORRECT</p>	<p>IGNITION TIMING IS INCORRECT →</p>	<p>(1) Faulty CDI unit (2) Faulty pulse generator</p>
<p>6. Test cylinder compression by operating kick pedal using a compression gauge</p> <p>↓</p> <p>COMPRESSION IS NORMAL</p>	<p>COMPRESSION IS LOW →</p>	<p>(1) Worn cylinder and piston rings (2) Blown cylinder head gasket (3) Flaws in compression parts (4) Faulty or deteriorated reed valve</p>
<p>7. Check for clogged carburetor</p> <p>↓</p> <p>CARBURETOR IS NOT CLOGGED</p>	<p>CARBURETOR IS CLOGGED →</p>	<p>(1) Damaged fuel strainer (2) Carburetor not serviced frequently enough</p>
<p>8. Remove spark plug</p> <p>↓</p> <p>PLUG IS NOT FOULED OR DISCOLORED</p> <p>↓</p>	<p>PLUG IS FOULED OR DISCOLORED →</p>	<p>(1) Plug carbon or wet fouled (2) Improper spark plug heat range</p>



CHECK	SYMPTOM	PROBABLE CAUSE
<p>9. Check oil level. Also check oil for contamination</p> <p style="text-align: center;">↓</p> <p>TRANSMISSION IS FILLED TO PROPER LEVEL</p> <p style="text-align: center;">↓</p> <p>10. Check if engine overheats</p> <p style="text-align: center;">↓</p> <p>ENGINE IS NOT OVERHEATED</p> <p style="text-align: center;">↓</p> <p>11. Accelerate or run at high speed</p> <p style="text-align: center;">↓</p> <p>ENGINE DOES NOT KNOCK</p>	<p>OIL LEVEL INCORRECT →</p> <p>ENGINE OVERHEATS →</p> <p>ENGINE KNOCKS →</p>	<p>(1) Oil level too high (2) Oil level too low (3) Contaminated oil</p> <p>(1) Excessive carbon build-up in combustion chamber (2) Use of improper quality fuel (3) Mixture too lean (4) Clutch slipping</p> <p>(1) Worn piston and cylinder (2) Fuel-air mixture too lean (3) Excessive carbon build-up in combustion chamber (4) Ignition timing too advanced (Faulty CDI unit)</p>

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

CHECK	SYMPTOM	PROBABLE CAUSE
<p>1. Check ignition timing</p> <p style="text-align: center;">↓</p> <p>NORMAL</p> <p style="text-align: center;">↓</p> <p>2. Check carburetor air screw adjustment</p> <p style="text-align: center;">↓</p> <p>NORMAL</p> <p style="text-align: center;">↓</p> <p>3. Air is leaking past carburetor gasket</p> <p style="text-align: center;">↓</p> <p>NOT LEAKING</p> <p style="text-align: center;">↓</p> <p>4. Remove spark plug and try spark test</p> <p style="text-align: center;">↓</p> <p>GOOD SPARKS</p>	<p>INCORRECT →</p> <p>INCORRECT →</p> <p>LEAKING →</p> <p>WEAK OR INTERMITTENT SPARK →</p>	<p>(1) Faulty CDI unit (2) Faulty A C generator (3) Faulty pulse generator</p> <p>(1) Fuel-air mixture too lean (To correct, screw in) (2) Fuel-air mixture too rich (To correct, screw out)</p> <p>(1) Loose carburetor (2) Deteriorated carburetor gasket</p> <p>(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) A C generator faulty (4) Faulty ignition coil</p>



POOR PERFORMANCE AT HIGH SPEEDS

CHECK	SYMPTOM	PROBABLE CAUSE
1. Check ignition timing	INCORRECT	(1) Faulty CDI unit (2) Faulty pulse generator
PROPER ↓ 2. Disconnect fuel tube at carburetor	FUEL FLOW RESTRICTED	(1) Lack of fuel in tank (2) Clogged fuel line (3) Clogged fuel tank cap breather hole (4) Clogged fuel valve
FUEL FLOWS OUT FREELY ↓ 3. Remove carburetor and check for clogged jet	CLOGGED	(1) Damaged fuel strainer

POOR HANDLING

Check tire pressure

PROBABLE CAUSE

1. If steering is heavy	(1) Steering head adjuster too tight (2) Damaged steering cones or steel balls (3) Bent steering stem
2. If either wheel is wobbling	(1) Excessive wheel bearing play (2) Distorted rim (3) Improperly installed wheel hub (4) Swing arm pivot bushing excessively worn (5) Distorted frame (6) Improper drive chain adjustment
3. If the vehicle pulls to one side	(1) Rear tire pressure not equal (2) Bent front fork (3) Bent swing arm
4. If the front suspension too soft	(1) Weak springs (2) Insufficient front fork oil (3) Low air pressure in forks
5. If the front suspension is hard	(1) Incorrect front fork oil: (viscosity too high) (2) Excessive front fork fluid (3) Excessive fork air pressure
6. If the rear suspension too soft	(1) Weak spring (2) Improper rear suspension adjustment (3) Insufficient nitrogen gas pressure
7. If the rear suspension is hard	(1) Improper rear suspension adjustment (2) Bent shock absorber rod



INTRODUCTION

This addendum contains service information for the 1982 ATC250R. Refer to the base shop manual for all service information not included in this addendum.

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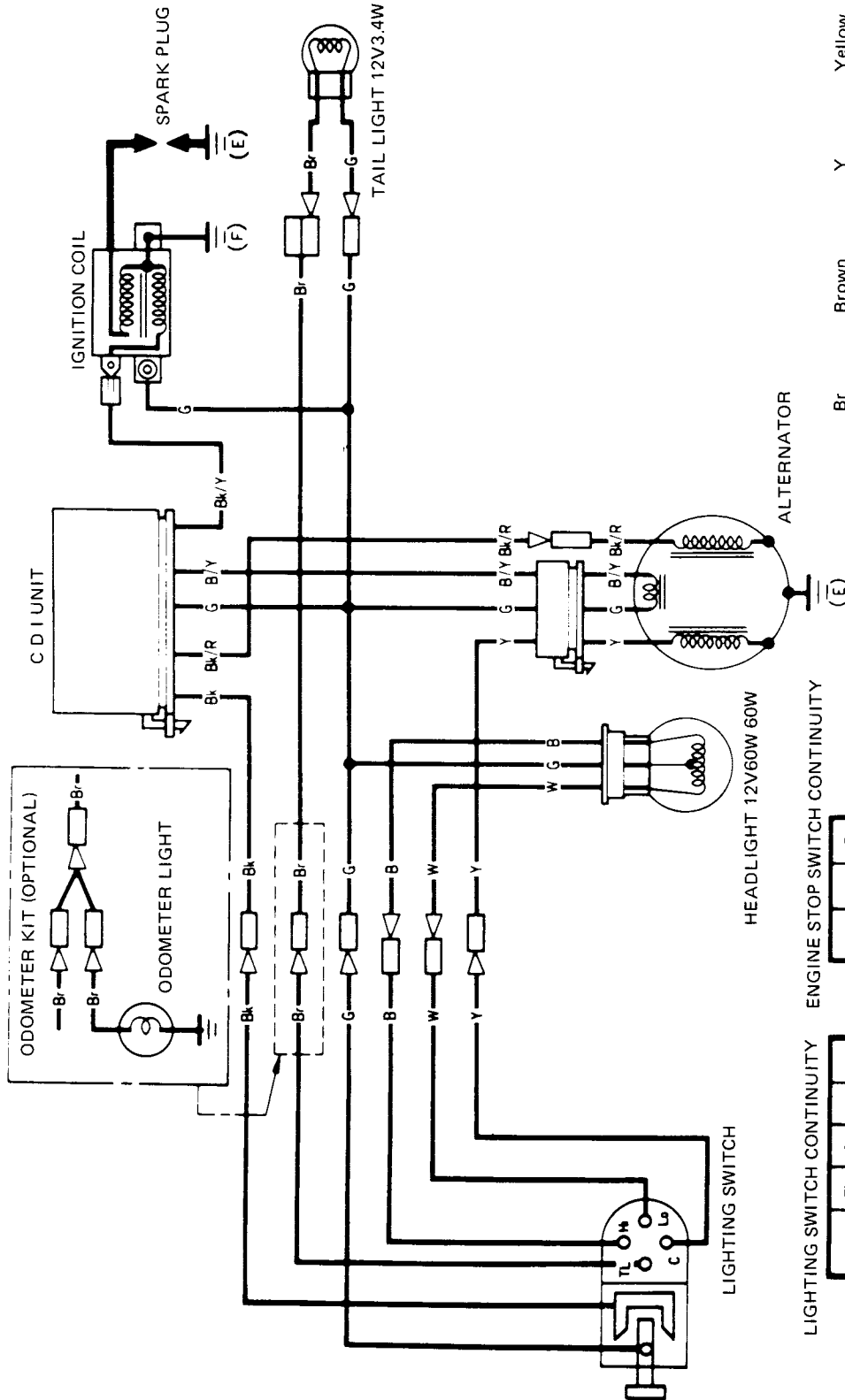
1. GENERAL INFORMATION

SPECIFICATIONS

Dimensions	Dry weight		135 Kg (298 lb)
	Weight distribution	Front	53 Kg (117 lb)
		Rear	82 Kg (181 lb)
Frame	Rear brake		Single disc
	Fuel capacity		8.4 lit (2.2 US gal , 1.9 Imp gal)
Engine	Compression ratio		6.7:1
Electrical	Spark plug	USA model	BR8ES (NGK), QN-3 (CHAMPION)



WIRING DIAGRAM



- Yellow
- Blue
- Green
- Y
- B
- G
- Brown
- Black
- White
- Red
- Br
- Bk
- W
- R

IG	E		
OFF	ON		
COLOR	Bk	G	

TL	C	L _o	H			
OFF						
L _o	(N)	H				
COLOR	B	Y	W	B		

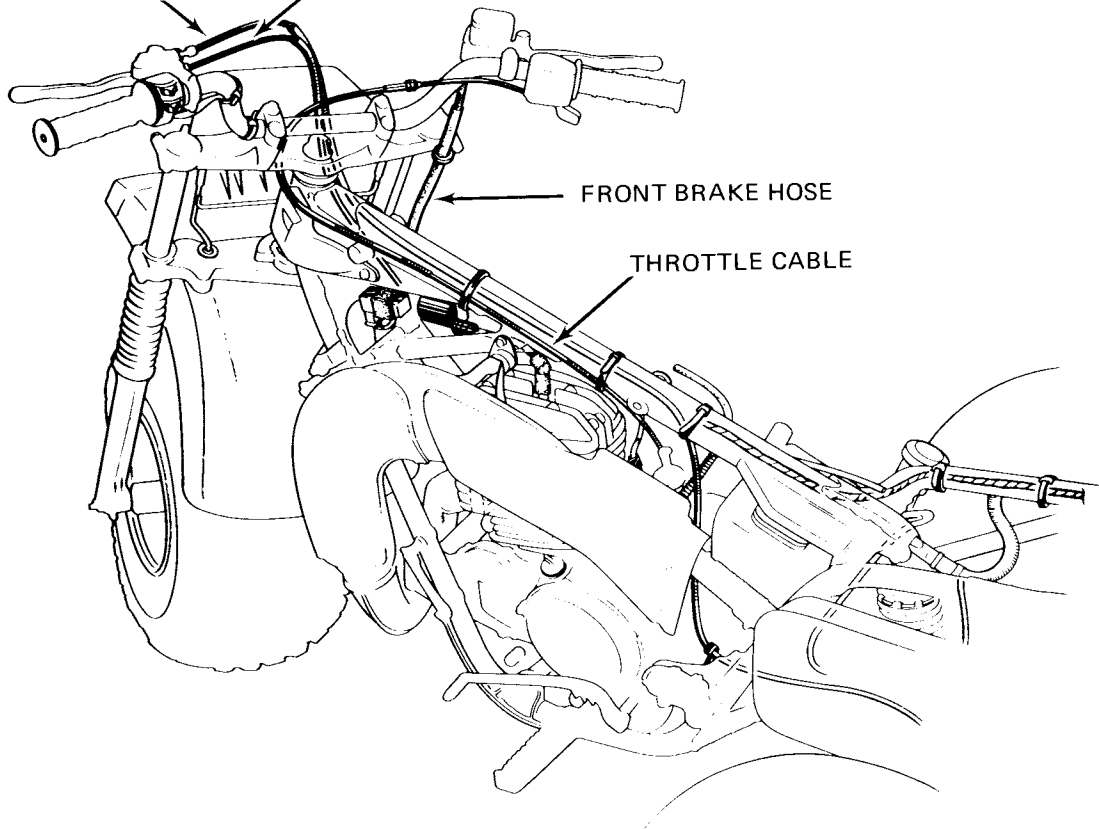
LIGHTING SWITCH CONTINUITY ENGINE STOP SWITCH CONTINUITY

0030Z-961-0100



CABLE AND HARNESS ROUTING

PARKING BRAKE CABLE CLUTCH CABLE

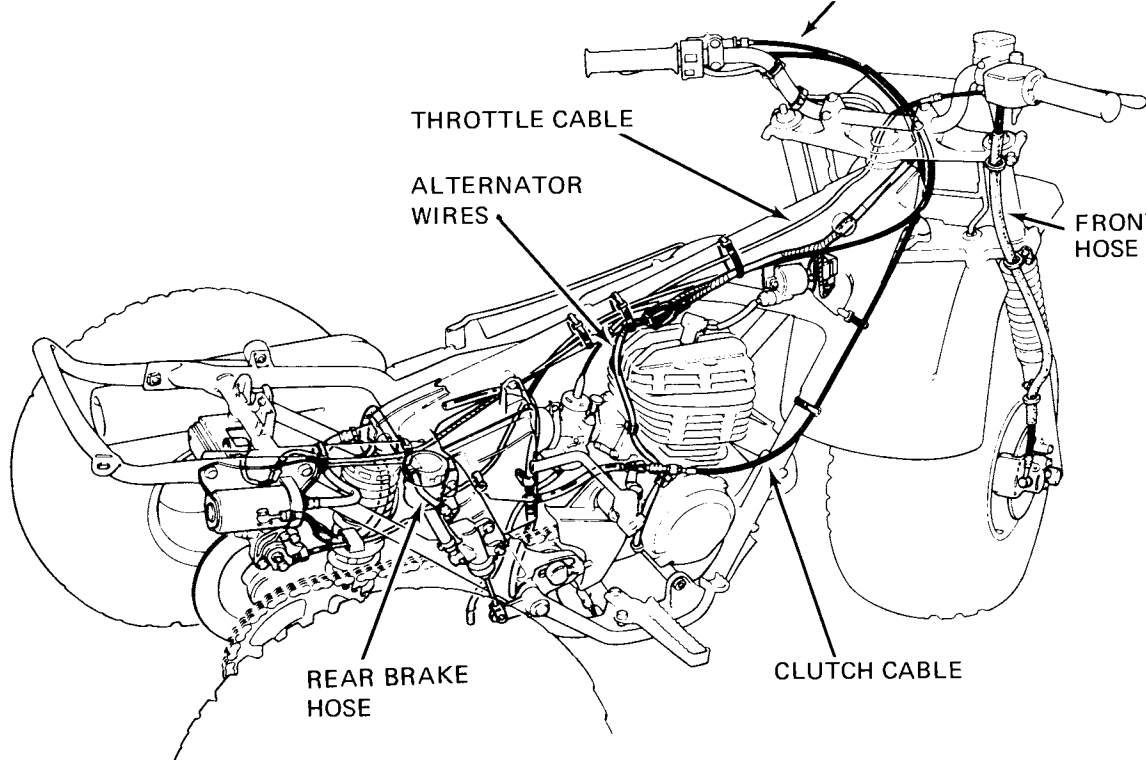


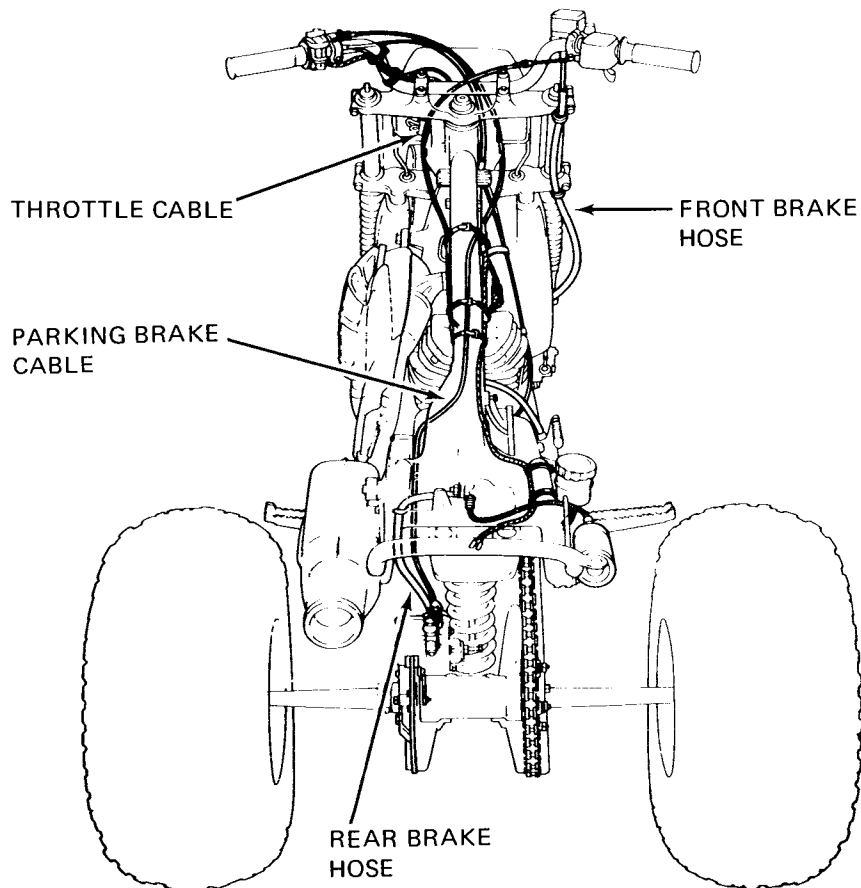
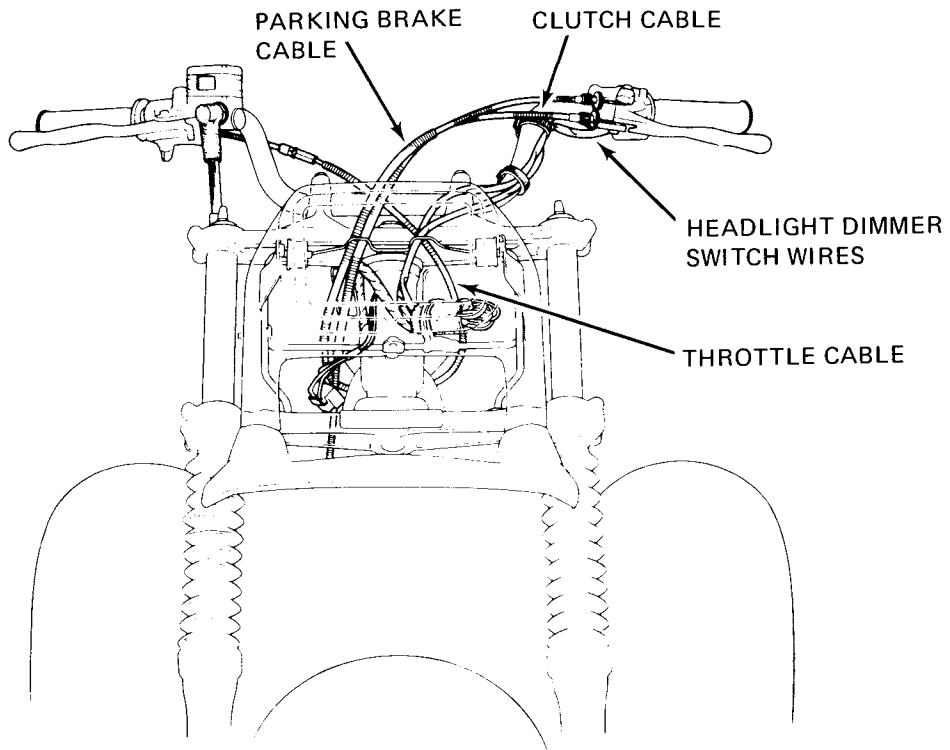
PARKING BRAKE CABLE

THROTTLE CABLE

ALTERNATOR WIRES

FRONT BRAKE HOSE





2. MAINTENANCE

SERVICE INFORMATION

This addendum lists only specifications which are different from 1981 Specifications. Refer to the base shop manual for information not covered here.

SPECIFICATIONS

Engine Spark plug type (USA model)	BR8ES (NGK) or QN-3 (Champion)
Chassis Brake lever free play Brake pedal free play	20-30 mm (3/4-1 1/2 in) 5-15 mm (3/16-5/8 in)

MAINTENANCE SCHEDULE

Only the air cleaner element maintenance has been changed for 1982. Refer to the base shop manual, page 2-2 for other maintenance schedule information.

		INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 oper- ation days)
Air Cleaner Element	NOTE	Clean	Clean

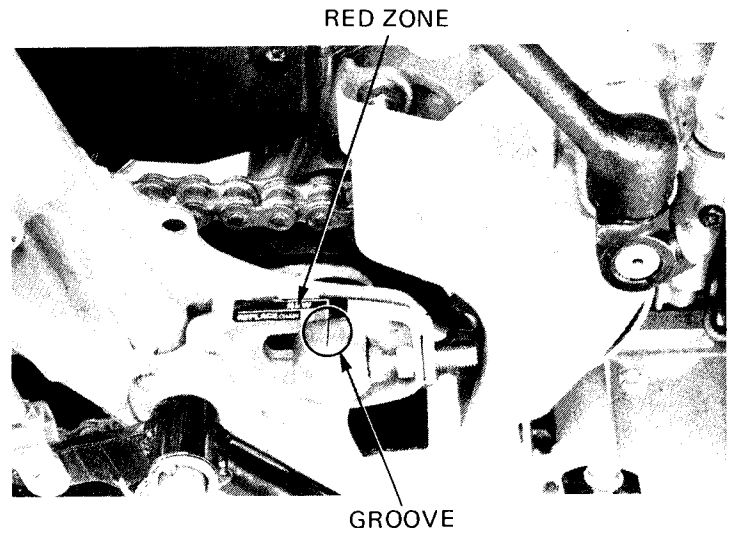
NOTE: Service more frequently when riding in dusty areas.



DRIVE CHAIN

INSPECTION

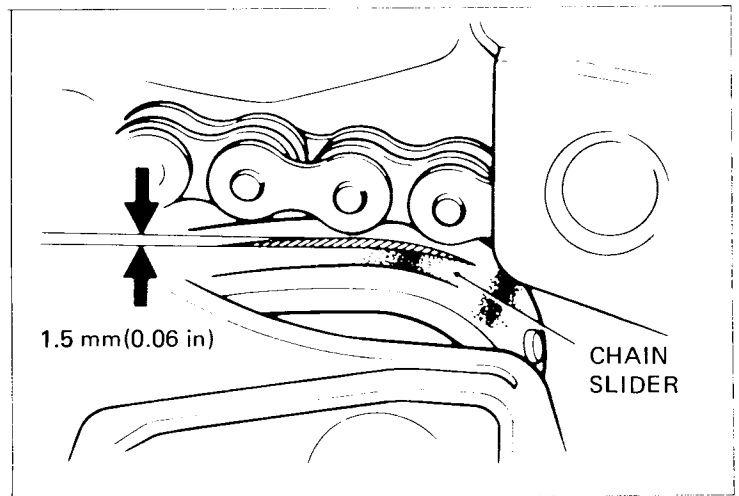
Replace the drive chain when the red zone on the label aligns with the rear of the swingarm with drive chain free play of more than 20 mm ($\frac{3}{4}$ in).



CHAIN SLIDER INSPECTION

Check the drive chain slider for wear at the intervals shown in the maintenance schedule, page 2-2.

Replace the slider if the depth of the groove is more than 1.5 mm (0.06 in).





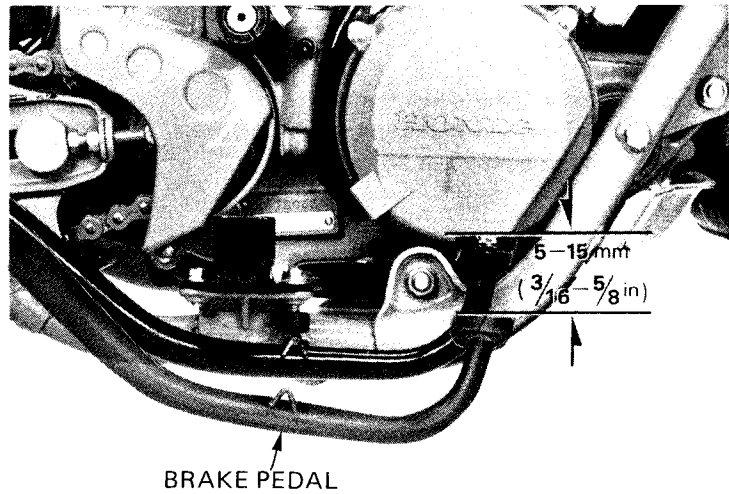
'82 ATC250R ADDENDUM

REAR BRAKE

BRAKE PEDAL FREE PLAY

Measure the brake pedal free play.

FREE PLAY: 5-15 mm (3/16-5/8 in)



BRAKE FLUID INSPECTION

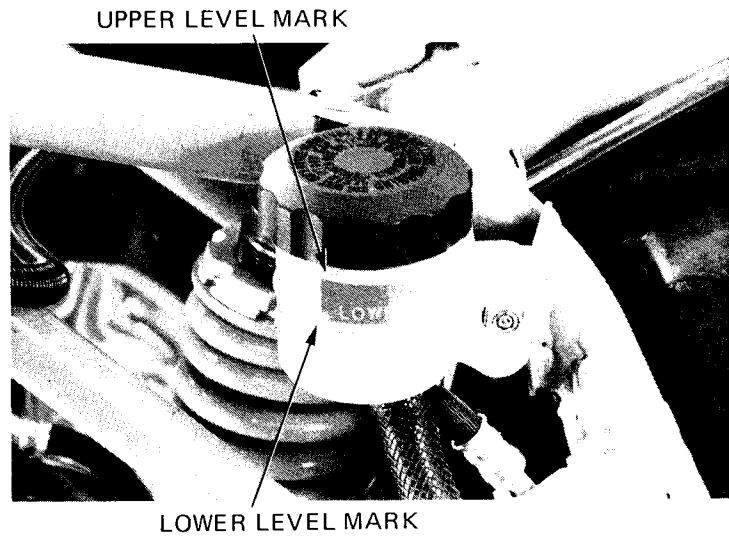
Check that the brake fluid reservoir is filled to the upper level mark.

If the level is lower than the upper level mark, fill the reservoir with DOT-3 BRAKE FLUID up to the level mark.

Check the entire system for leaks if the level is low.

CAUTION:

Do not mix different types of fluid in the reservoir. Mixing different types may not provide optimum braking performance.



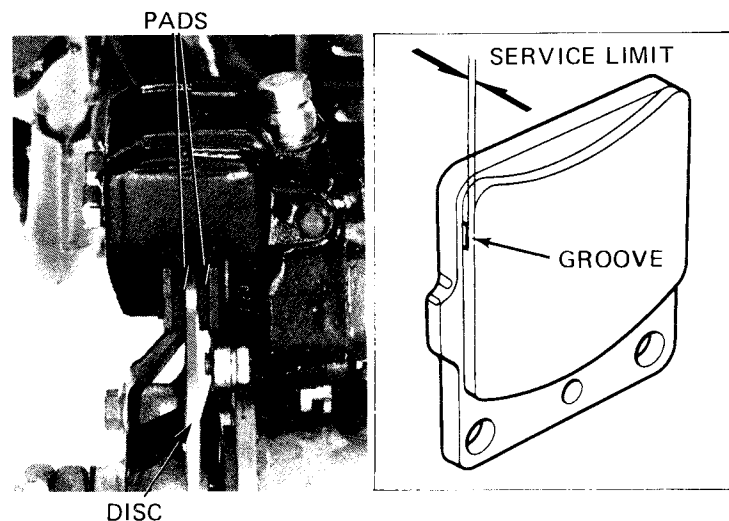
BRAKE PAD WEAR

Check each brake pad for wear.

SERVICE LIMIT: If either pad wears to the groove, both pads must be replaced.

NOTE

Always replace the brake pads in pairs to assure even disc pressure.



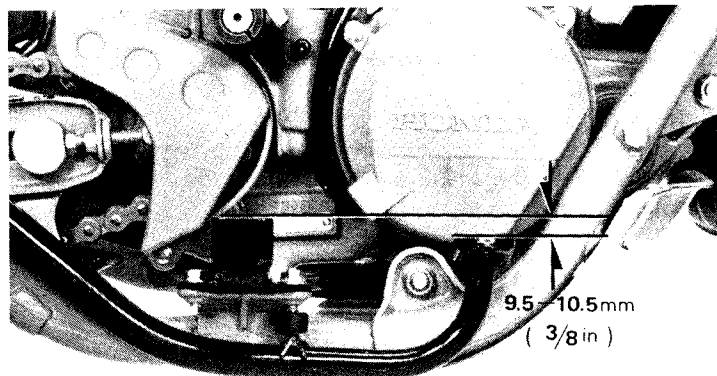


REAR BRAKE PEDAL HEIGHT

Check that the distance between the pedal and upper face of the footpeg is 9.5-10.5 mm ($\frac{3}{8}$ in).

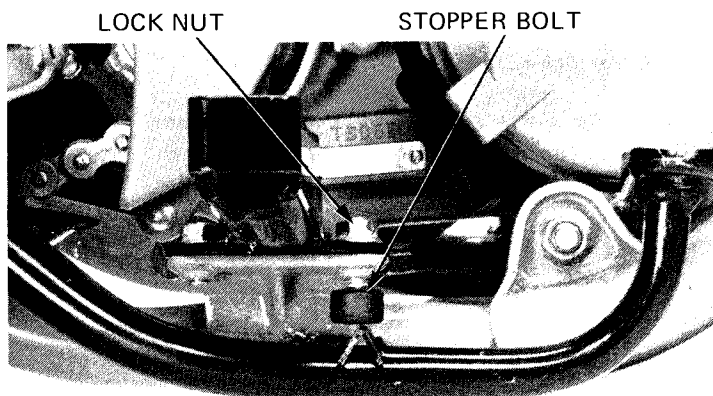
CAUTION:

Improper brake pedal height adjustment can cause brake drag.

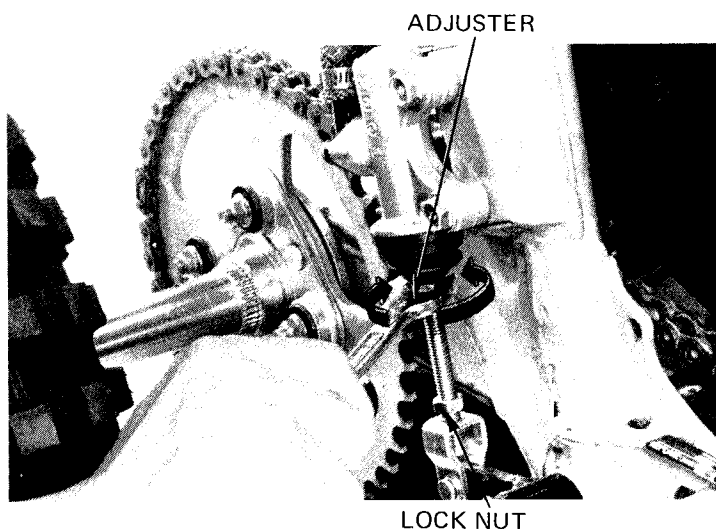


ADJUSTMENT

Loosen the lock nut and screw the stopper bolt all the way in.



Loosen the lock nut on the brake adjuster. Turn the adjuster until the correct pedal height is obtained. Tighten the lock nut.



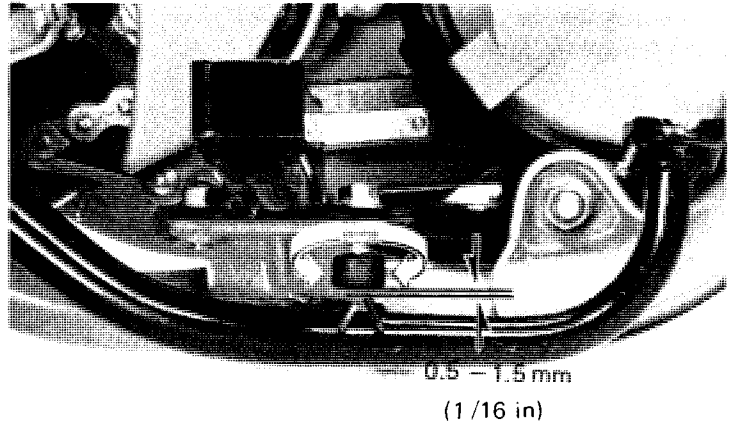


'82 ATC250R ADDENDUM

Turn the stopper bolt out until the distance between the brake pedal arm and stopper rubber is 0.5-1.5 mm (1/16 in).

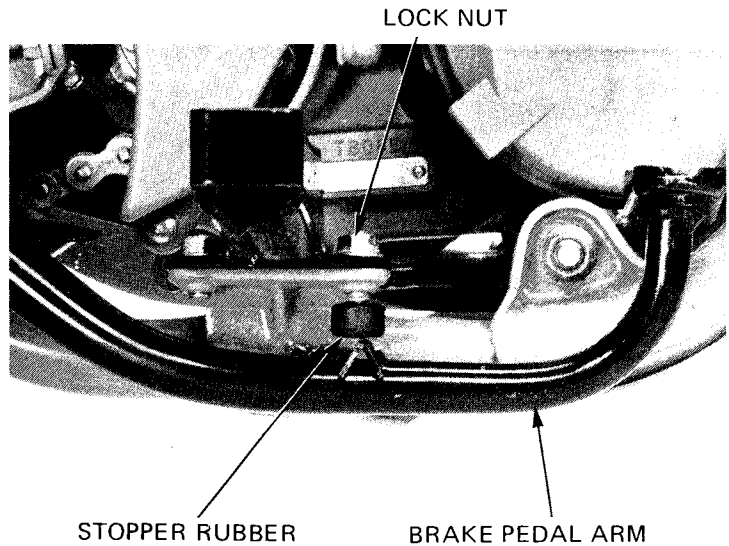
NOTE:

Do not allow the brake arm to contact the stopper rubber.



Tighten the lock nut.

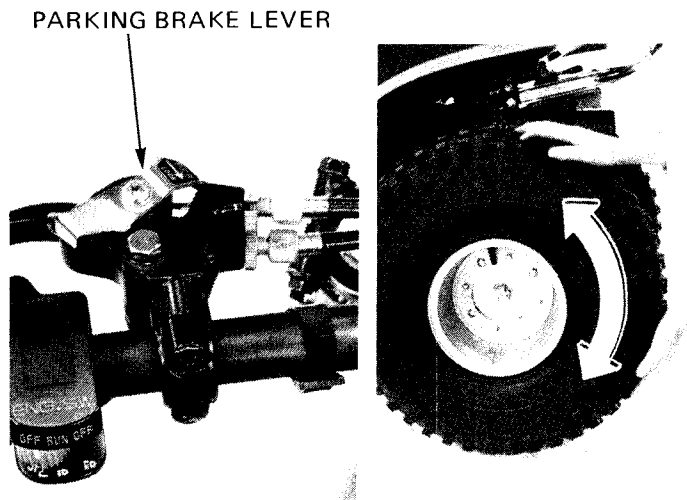
Recheck the brake pedal height and distance between the brake pedal arm and stopper rubber.



PARKING BRAKE

Apply the parking brake to lock the rear wheels.

Parking brake adjustment may be required if the parking brake does not hold properly.

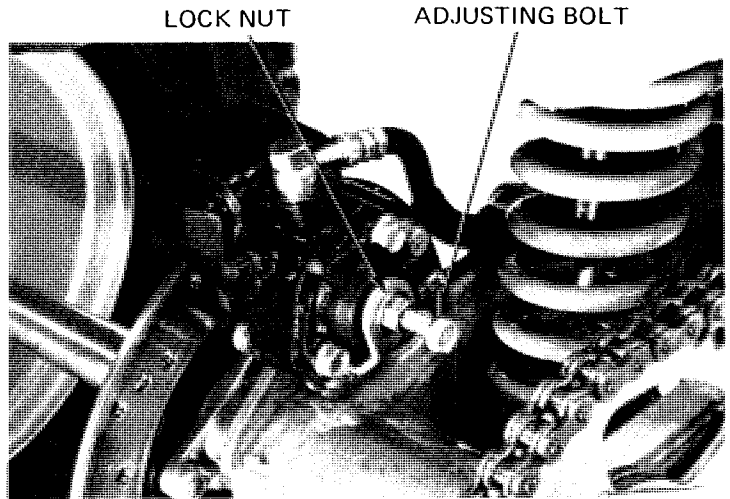




ADJUSTMENT

Loosen the lock nut on the rear caliper.

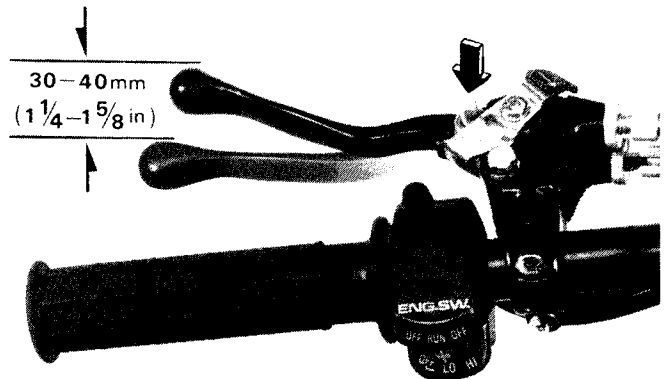
Screw in the adjusting bolt until you feel resistance without applying the clutch/parking brake lever, and tighten the lock nut.



Press the parking brake arm button and pull in the clutch/parking brake lever.

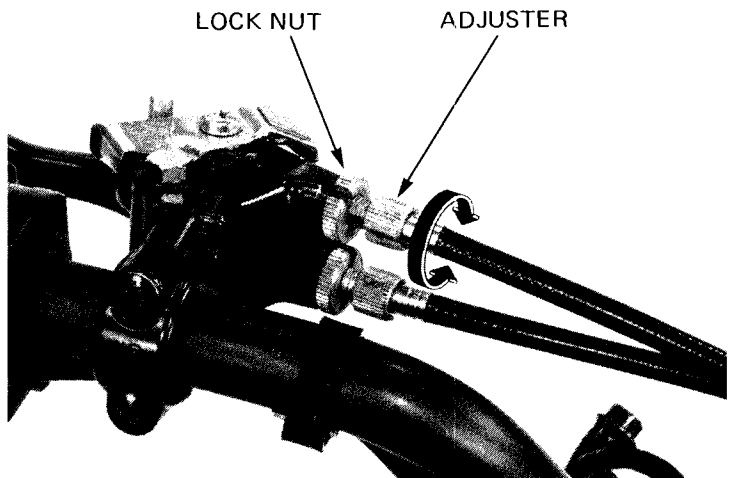
Measure the distance the clutch/parking brake lever is moved.

The distance should be 30-40 mm (1 1/4-1 5/8 in) at the tip of the clutch/parking brake lever.



To adjust the distance, loosen the lock nut and turn the adjuster.

Tighten the lock nut.





3. REAR BRAKE

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The rear brake pads can be replaced without disconnecting the brake hose. Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- The brake caliper should be disassembled before the master cylinder is disassembled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Avoid spilling brake fluid on painted surfaces or instrument lenses, as severe damage will result.

TOOL

Special

Snap Ring Pliers (Internal)

07914—3230001

SPECIFICATIONS

Item	Standard mm (in)		Service Limit mm (in)	
	mm	in	mm	in
Disc thickness	3.8-4.2	(0.15-0.17)	3.00	(0.118)
Disc runout	0-0.15	(0-0.006)	0.30	(0.012)
Master cylinder I.D.	14.000-14.043	(0.5512-0.5529)	14.055	(0.5533)
Master piston O.D.	13.957-13.984	(0.5495-0.5506)	13.945	(0.5490)
Caliper cylinder I.D.	33.960-34.010	(1.3370-1.3390)	34.020	(1.3394)
Caliper piston O.D.	33.878-33.928	(1.3338-1.3357)	33.870	(1.3335)

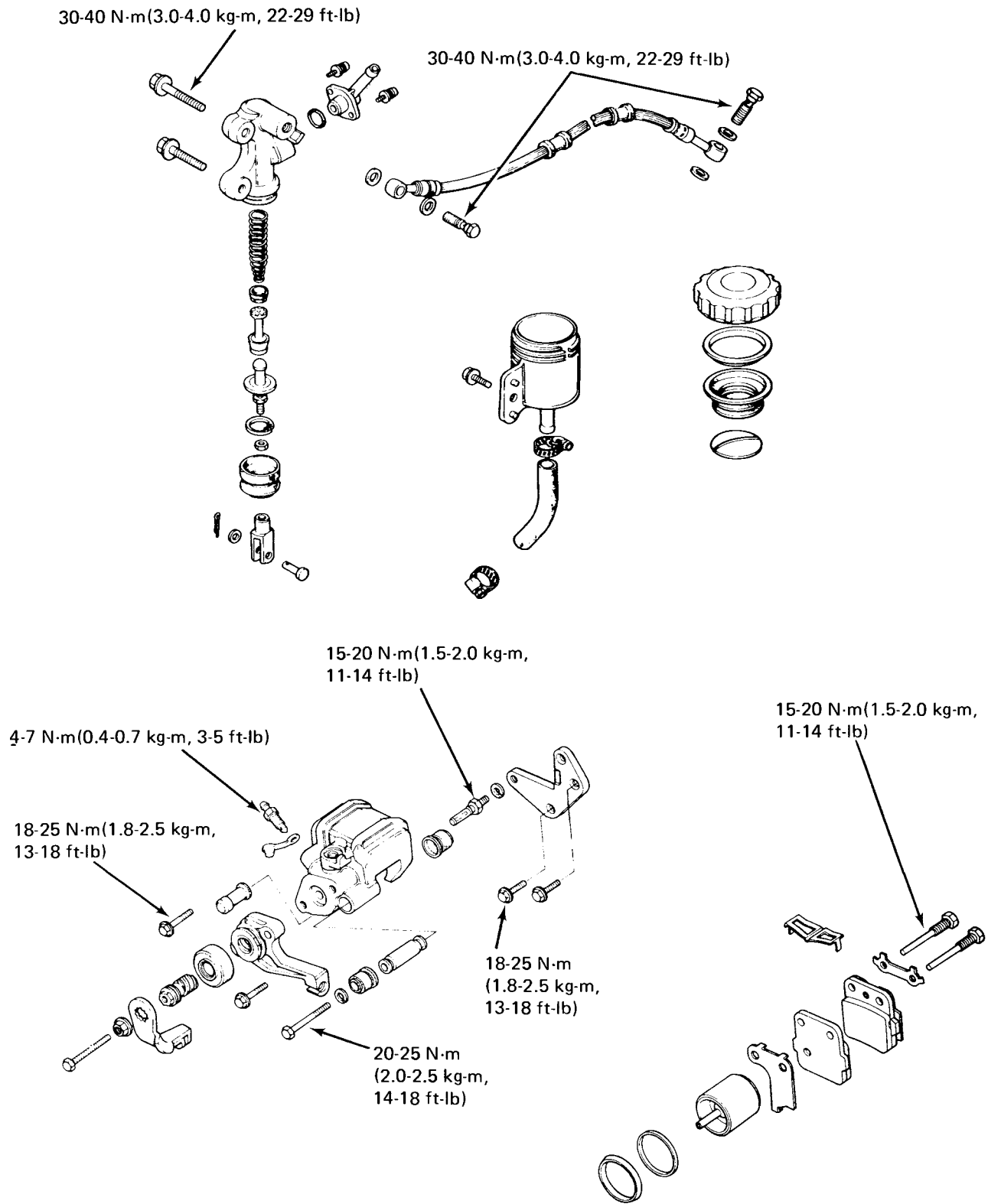
TROUBLESHOOTING

Poor brake performance

1. Air bubbles in hydraulic system
2. Worn brake pads
3. Pads fouled or glazed
4. Hydraulic system leaking



TORQUE VALUES



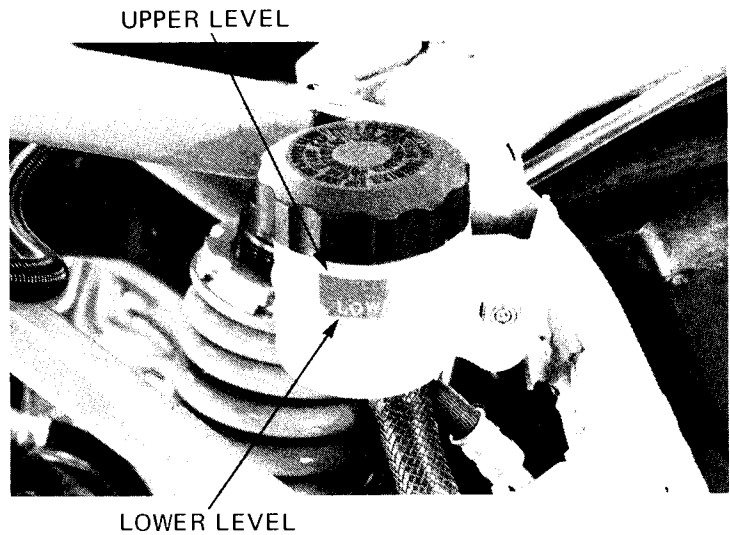


BRAKE FLUID/ AIR BLEEDING

Check the fluid level with the fluid reservoir parallel to the ground. Refer to page 17-9.

CAUTION:

- Install the diaphragm on the reservoir when operating the brake pedal. Failure to do so will allow brake fluid to squirt out of the reservoir during brake operation.
- Avoid spilling fluid on painted surfaces.
- Do not mix different types of fluid in the reservoir. Mixing different types may not provide optimum braking performance.



BRAKE FLUID DRAINING/FILLING

Connect a bleed hose to the bleeder valve.

Loosen the caliper bleeder valve and pump the brake pedal.

Stop operating the pedal when no fluid flows out of the bleeder valve.

WARNING

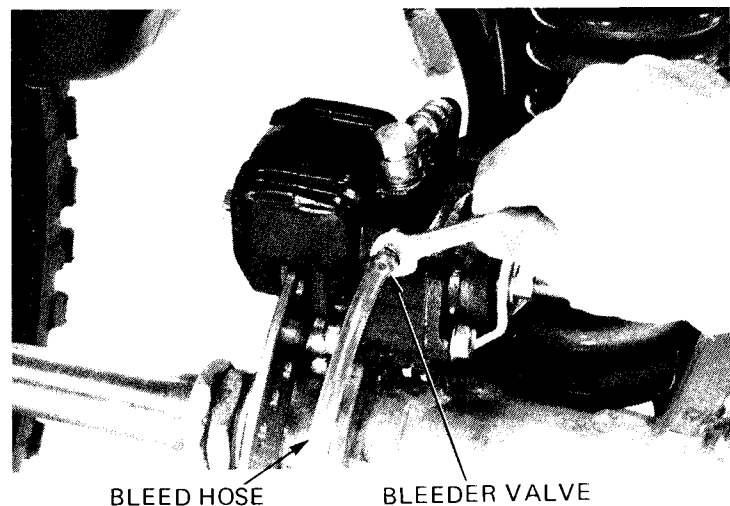
A contaminated brake disc or pad reduces stopping power. Discard contaminated pads and clean a contaminated disc with a high quality brake degreasing agent.

Close the bleeder valve, fill the reservoir, and install the diaphragm.

Pump up the system pressure with the pedal until there are no air bubbles in the fluid flowing out of the reservoir small hole and pedal resistance is felt.

Fill the reservoir up to the UPPER FLUID LEVEL.

Check the entire system for leaks by operating the pedal.





BRAKE PADS/ DISC

BRAKE PAD REPLACEMENT

NOTE

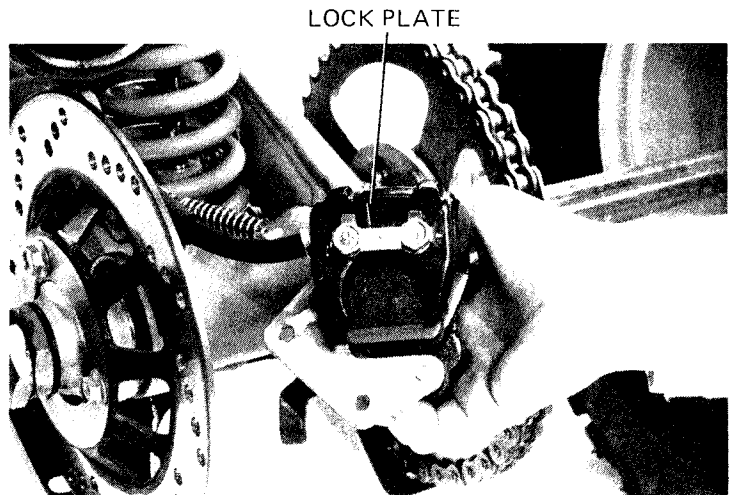
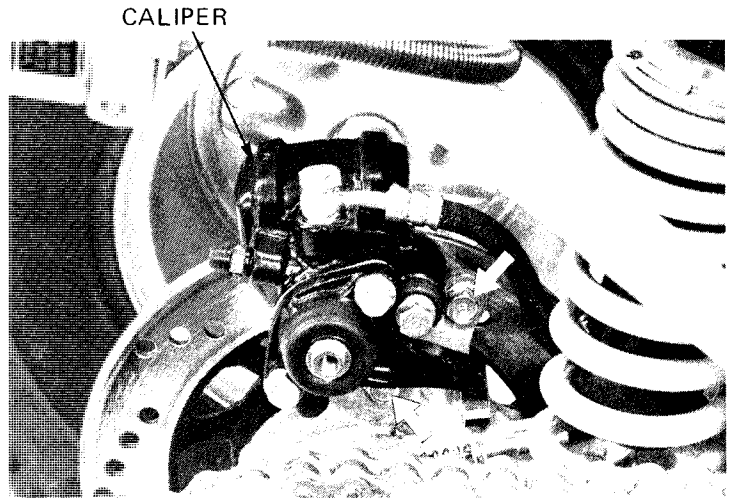
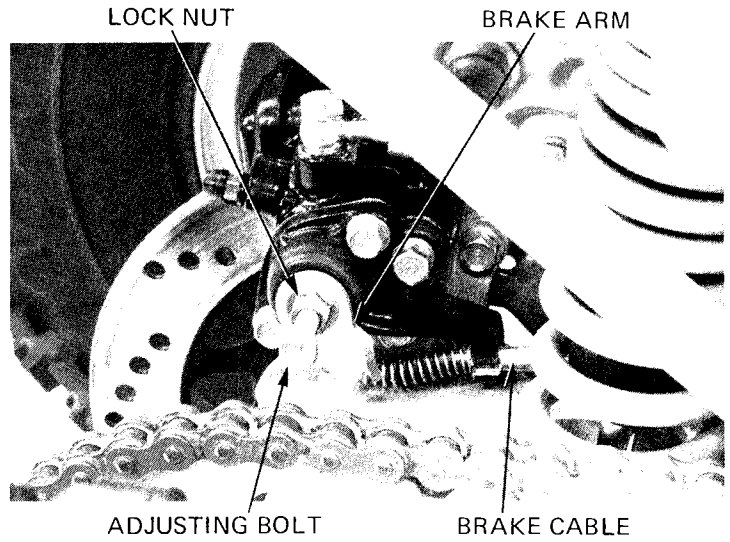
Do not disconnect the brake hose when replacing the brake pads.

Loosen the lock nut and remove the parking brake adjusting bolt.

Remove the parking brake arm and cable from the rear caliper.

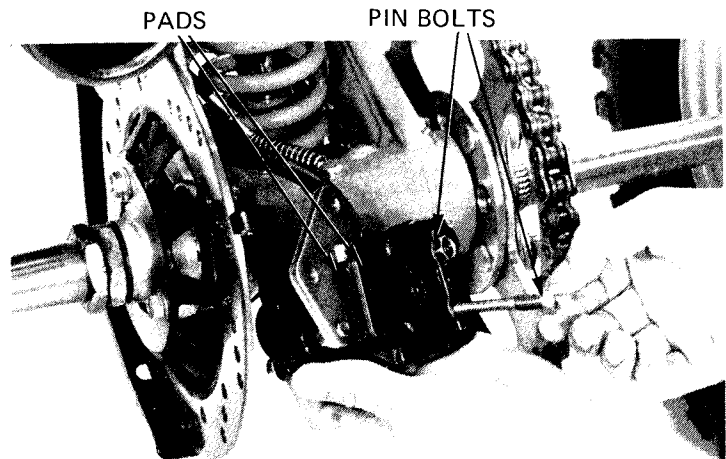
Remove the two caliper bolts and remove the caliper from the swingarm.

Straighten the tabs of the lock plate.





Remove the pin bolts and brake pads.



Clean the brake caliper.

Install the pad spring on the caliper.

Install new brake pads and shims on the caliper bracket.

Install the pin bolts loosely.

NOTE

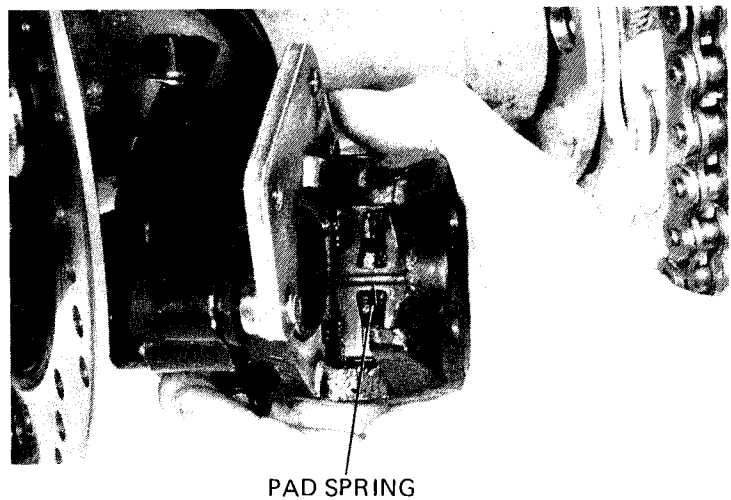
- Replace both pads as a set.
- Install the shim on the back of the pad.
- Place the caliper bracket between the tabs of the brake pad spring.

Tighten the pin bolts to the specified torque.

**TORQUE: 15-20 N·m (1.5-2.0 kg-m,
11-14 ft-lb)**

Install the caliper on the swingarm.

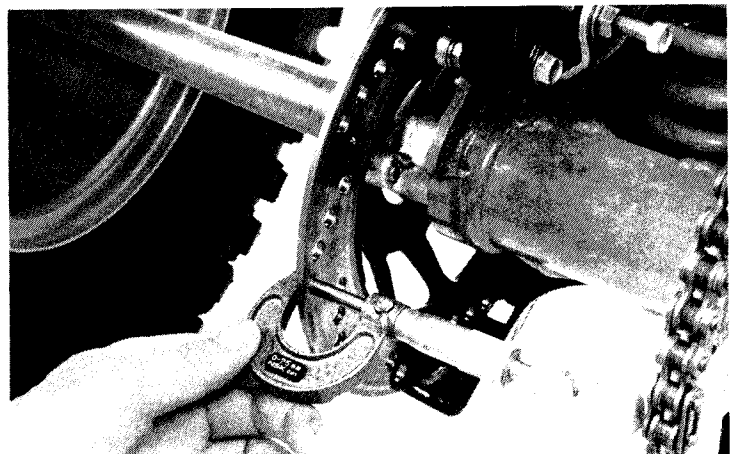
**TORQUE: 18-25 N·m (1.8-2.5 kg-m,
13-18 ft-lb)**



BRAKE DISC INSPECTION

Measure the brake disc thickness.

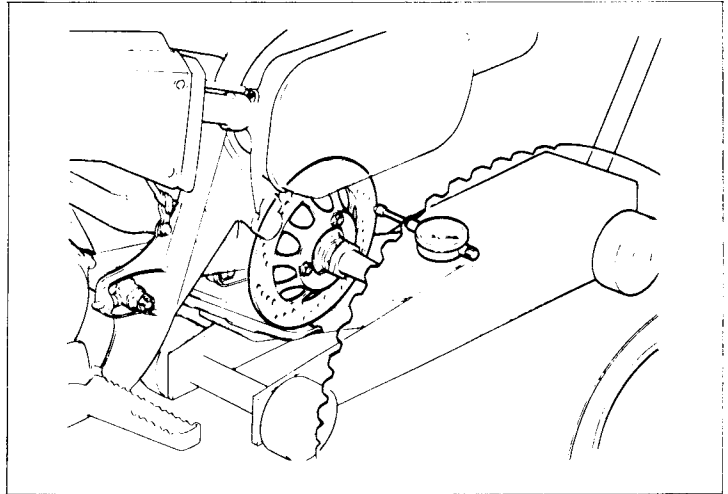
SERVICE LIMIT: 3.0 mm (0.12 in)





Measure the brake disc warpage.

SERVICE LIMIT: 0.30 mm (0.012 in)



BRAKE CALIPER

BRAKE CALIPER REMOVAL

Remove the brake caliper (page 17-15).

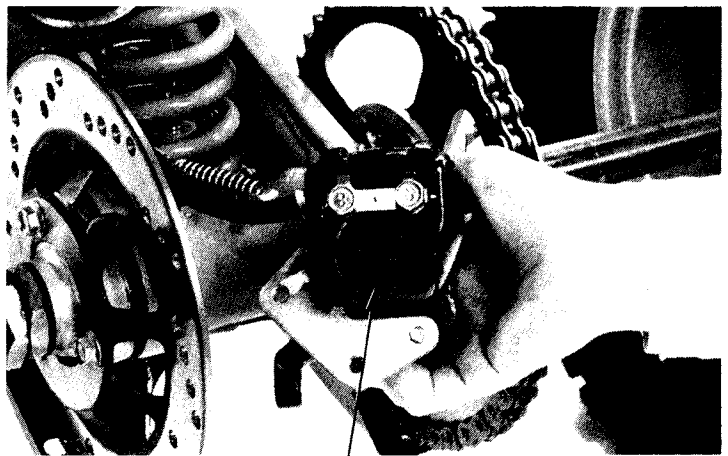
Remove the brake pads (page 17-15).

Operate the brake pedal to force the piston out from the cylinder.

NOTE

- Place an oil pan under the caliper to receive drained brake fluid.
- Avoid spilling brake fluid on painted surfaces or rubber parts.

Disconnect the brake hose from the caliper.



CALIPER PISTON

If the piston is stuck in the caliper, place a shop towel or rag over the piston to prevent the piston and brake fluid from coming out, and apply a small amount of air pressure to the fluid inlet.

WARNING

Do not use high pressure air or bring the nozzle too close to the inlet.



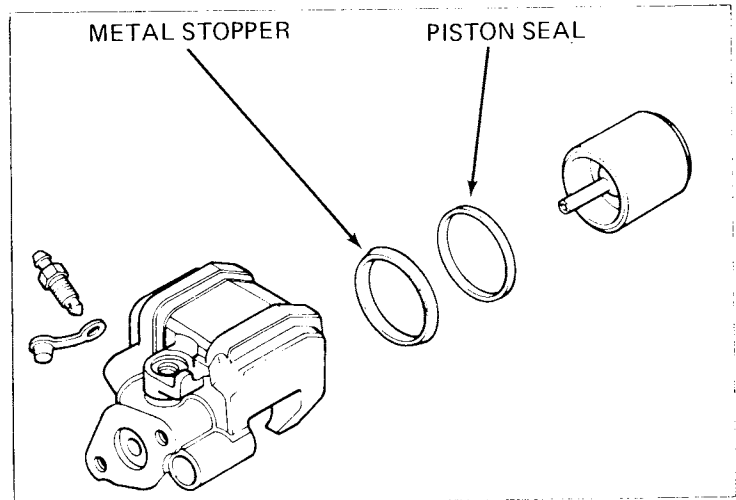
Remove the piston seal and metal stopper from the caliper cylinder.

Clean the caliper grooves with brake fluid.

Replace the piston seal and metal stopper with new parts.

CAUTION

Do not use solvent for cleaning. Solvent can cause deterioration of rubber parts.



CALIPER CYLINDER INSPECTION

Check the caliper cylinder for scoring, scratches or other faults.

Measure the caliper cylinder I.D.

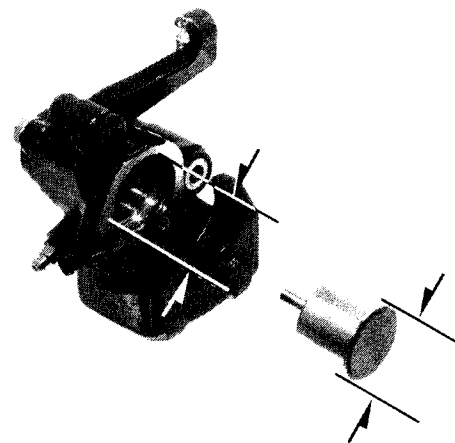
SERVICE LIMIT: 34.020 mm (1.3394 in)

CALIPER PISTON INSPECTION

Check the piston for scoring, scratches or other faults.

Measure the caliper piston O.D.

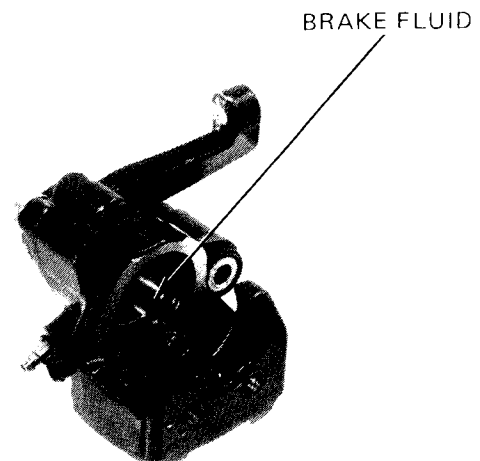
SERVICE LIMIT: 33.870 mm (1.3335 in)



BRAKE CALIPER ASSEMBLY

Lubricate the inside diameter of the caliper cylinder with brake fluid.

Install the piston seal and metal stopper.





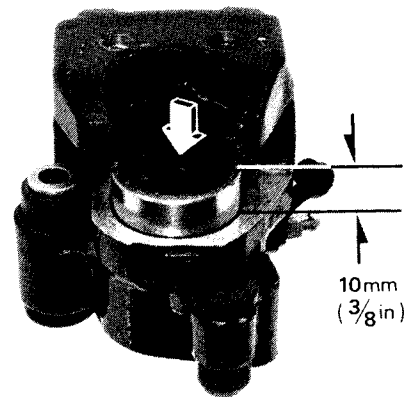
Install the piston with the concave end on the brake pad side.

Insert the piston into the caliper cylinder.

NOTE

Install the piston with the end projecting about 10 mm ($\frac{3}{8}$ in) above the caliper.

Wipe excess brake fluid off the caliper with a clean cloth.



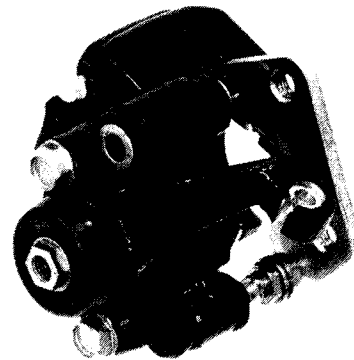
Install the pin boots and bushing in the caliper and lubricate the inside with silicon grease.

WARNING

Do not allow grease to touch the pads, or stopping power will be reduced.

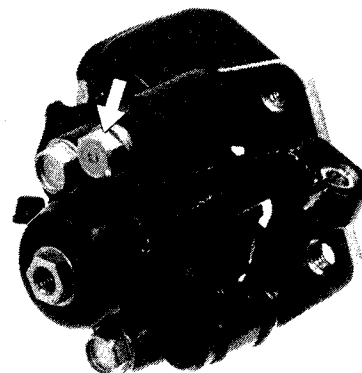
Install the sleeve in the boots.

Install the caliper bracket on the caliper.



Install the caliper flange bolt.

**TORQUE: 20-25 N·m (2.0-2.5 kg-m,
14-18 ft-lb)**

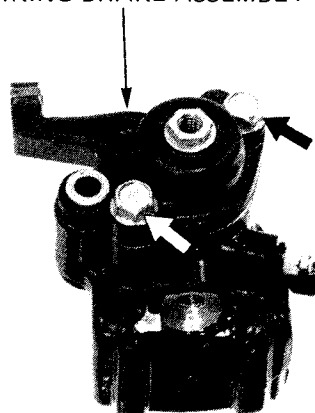




PARKING BRAKE REMOVAL

Remove the two bolts and parking brake assembly.

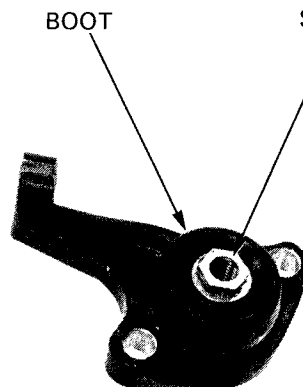
PARKING BRAKE ASSEMBLY



Remove the boot and parking brake shaft.

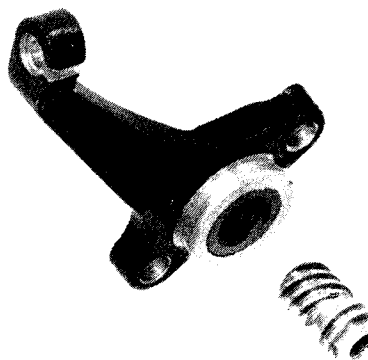
BOOT

SHAFT



INSPECTION

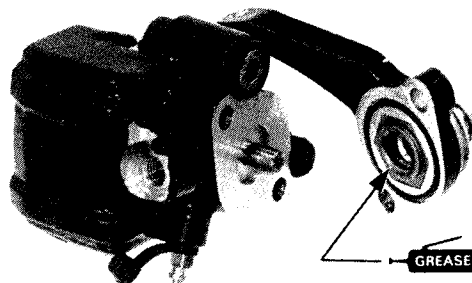
Check the parking brake shaft for wear or damage.





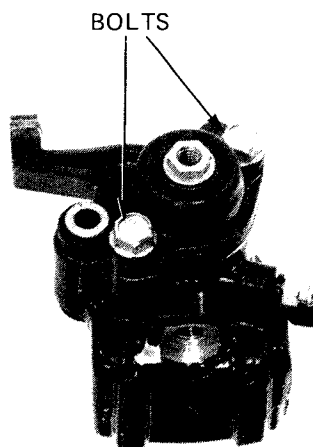
ASSEMBLY

Apply grease to the parking brake shaft and thread the shaft into the parking brake assembly.



Install the parking brake assembly on the brake caliper. Install the bolts and tighten to the specified torque.

**TORQUE: 18-25 N·m (1.8-2.5 kg-m,
13-18 ft-lb)**



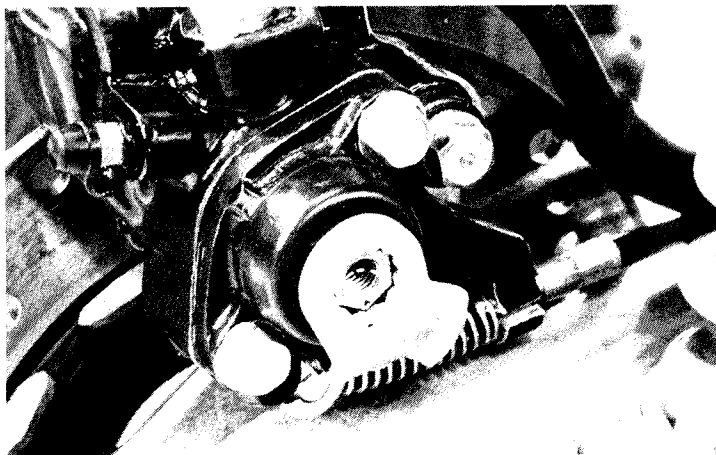
Install the brake caliper on the swingarm.

**TORQUE: 18-25 N·m (1.8-2.5 kg-m,
13-18 ft-lb)**

Route the end of the parking brake cable through the parking brake assembly.

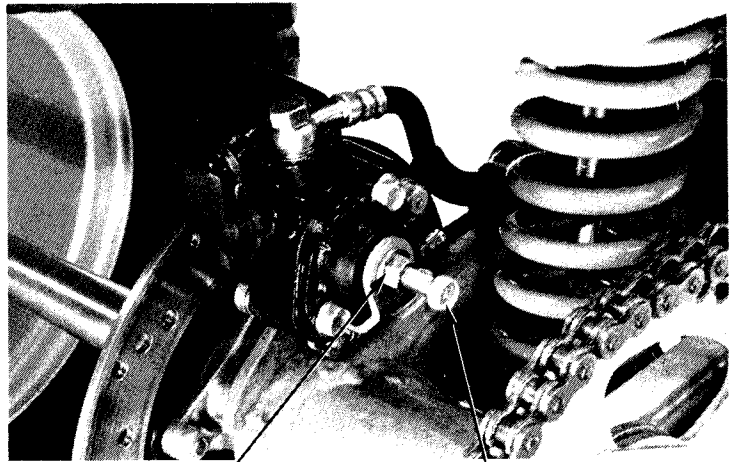
Connect the cable end to the parking brake cable arm on the parking brake assembly.

Align the punch marks on the arm and on the holder as shown.



Install the adjusting bolt and tighten the lock nut:

- Parking brake adjustment (page 17-11).
- Air bleeding (page 17-14).



LOCK NUT

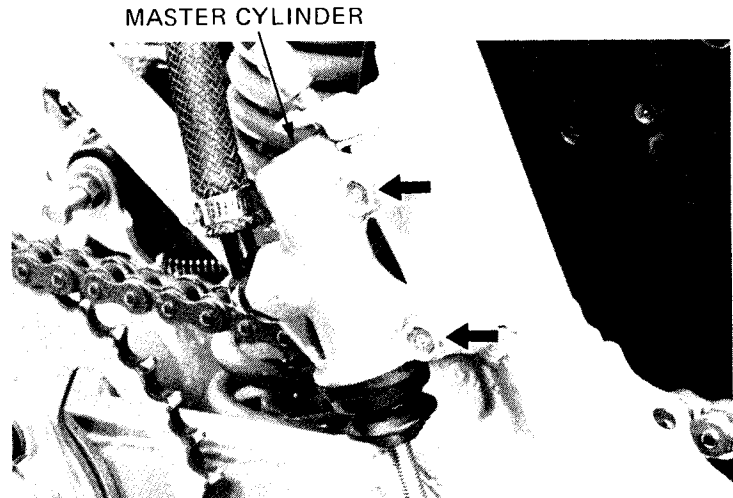
ADJUSTING BOLT

BRAKE MASTER CYLINDER

REMOVAL

Remove the rear fender.

Remove the two bolts attaching the master cylinder to the frame and remove the master cylinder.



MASTER CYLINDER

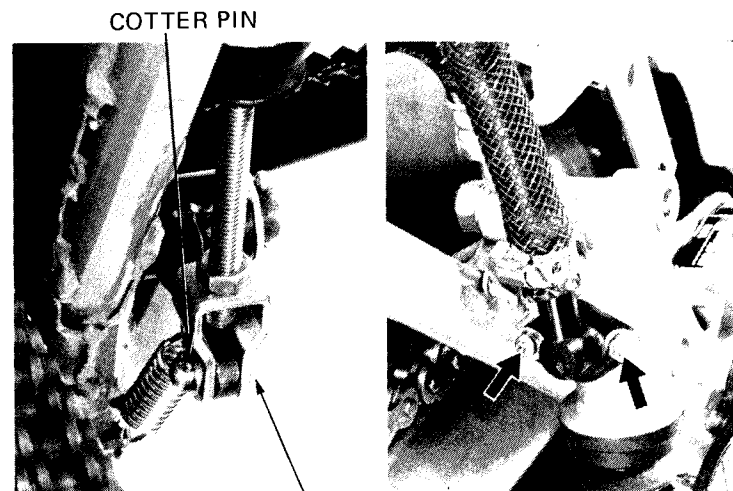
Remove the cotter pin and withdraw the joint pin from the brake rod.

Place a drip pan under the brake line.

Remove the two screws and disconnect the brake hose from the master cylinder.

CAUTION:

Avoid spilling brake fluid on painted surfaces.



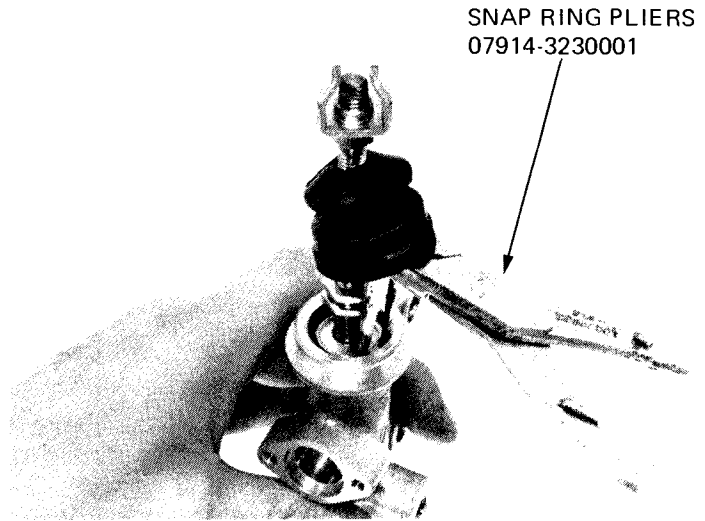
COTTER PIN

JOIN PIN



Remove the rubber cover.

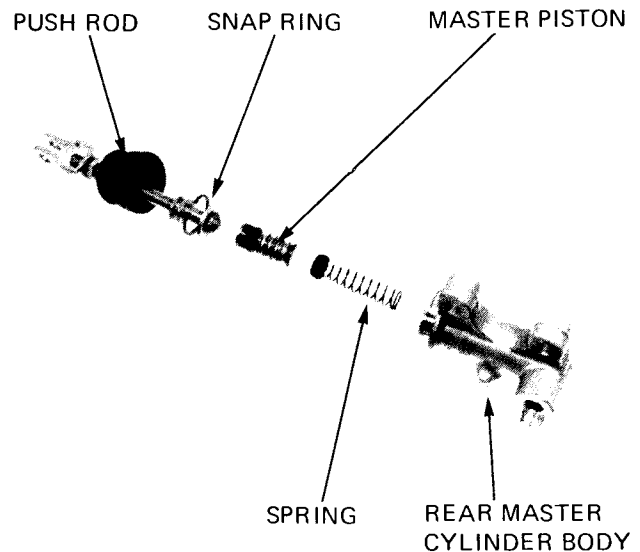
Remove the circlip and push rod from the master cylinder body.



Remove the master piston, primary cup and spring.

It may be necessary to apply a small amount of air pressure to the fluid outlet to remove the master piston and primary cup.

Clean all parts with brake fluid.



CYLINDER I.D. INSPECTION

Measure the inside diameter of the master cylinder bore.

SERVICE LIMIT: 14.055 mm (0.5533 in)

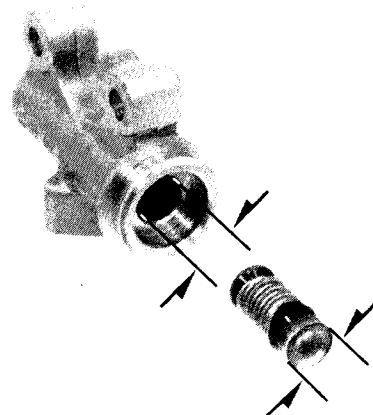
Check for scores, scratches or nicks.

PISTON O.D. INSPECTION

Measure the master piston O.D.

SERVICE LIMIT: 13.945 mm (0.5490 in)

Check the primary cup and secondary cup for damage.



ASSEMBLY

CAUTION:

Handle the master cylinder piston, cylinder and spring as a set.

Assemble the master cylinder.

Coat all parts with clean brake fluid.

Dip the piston cup in brake fluid before assembly.

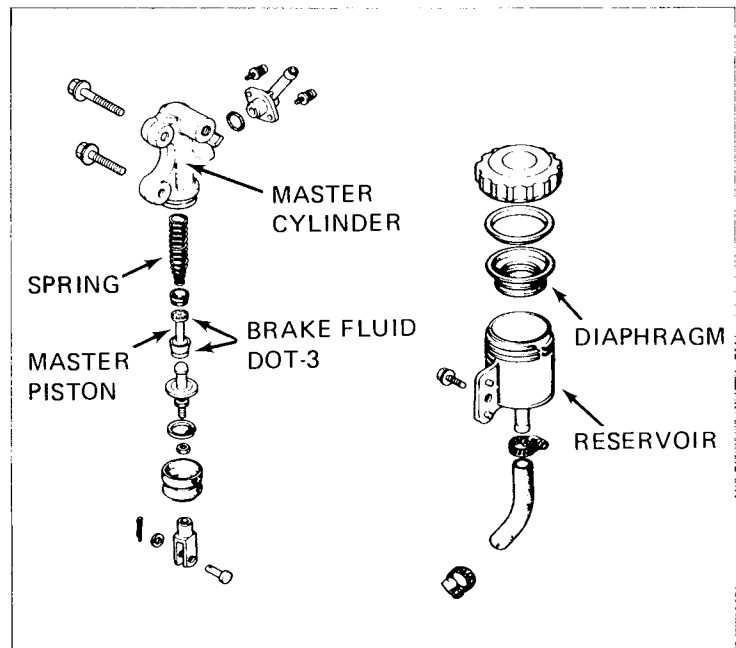
CAUTION:

When installing the cups, do not allow the lips to turn inside out. Be certain the snap ring is seated firmly in the groove.

Install the primary cup and piston.

Install the push rod and circlip.

Install the boot, nut and rod eye.

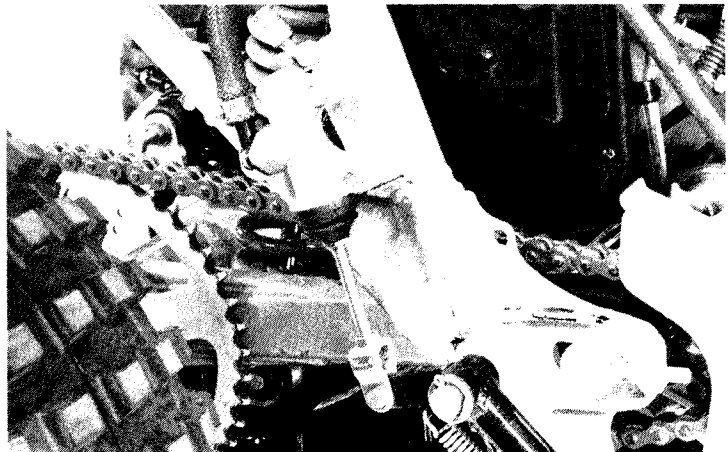


Connect the brake hose to the rear of the master cylinder.

Connect the brake rod to the brake pedal arm using a new cotter pin.

Install the master cylinder on the frame and tighten the bolts to the specified torque.

**TORQUE: 30-40 N·m (3.0-4.0 kg·m,
22-29 ft·lb)**





4. REAR AXLE

SERVICE INFORMATION

GENERAL INSTRUCTIONS

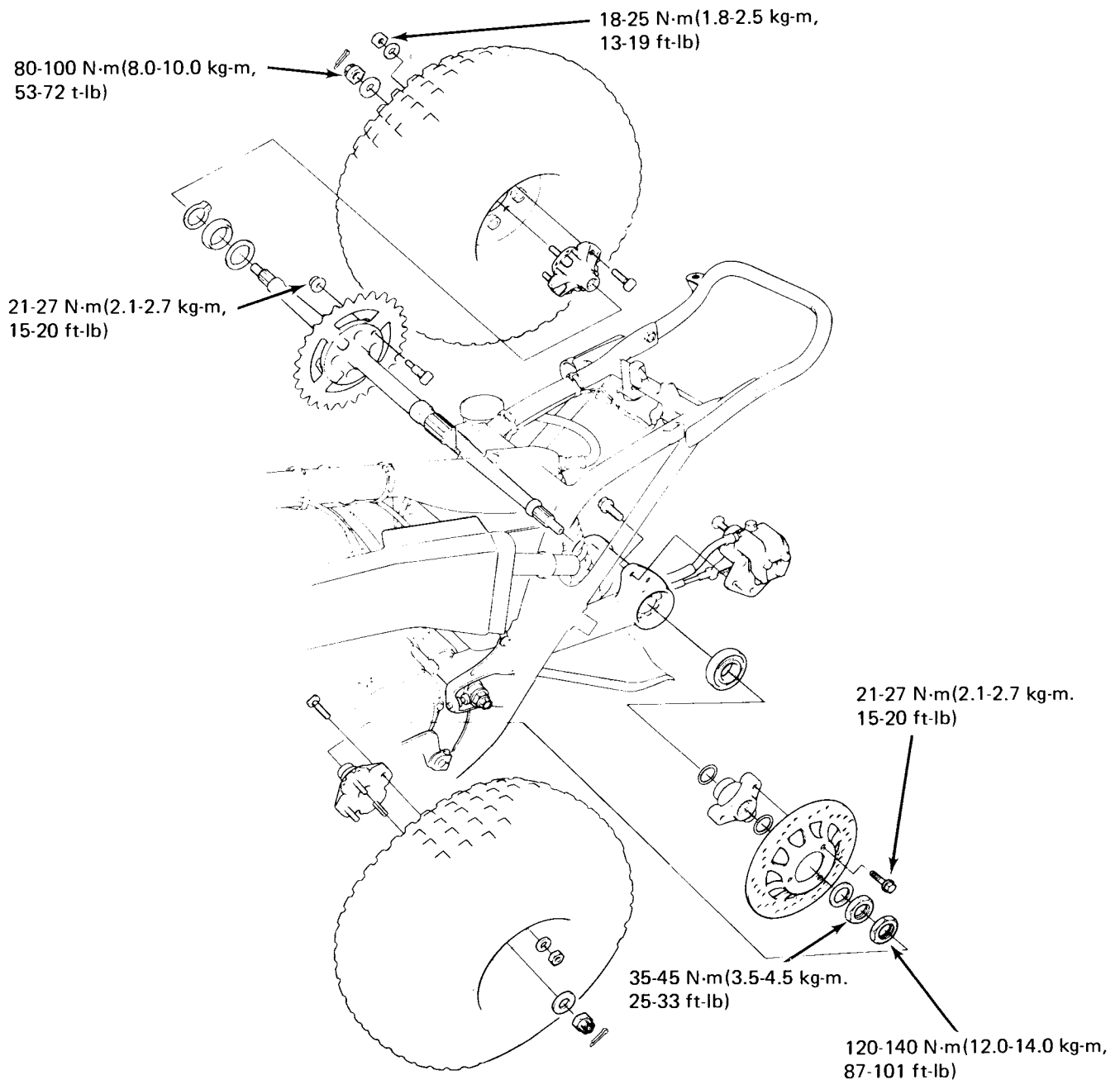
This section covers removal and installation of the rear axle.

A jack or block is required to support the ATC.

SPECIAL TOOL

Lock Nut Wrench 41 mm

07916-9180000 or commercially available 41 mm wrench



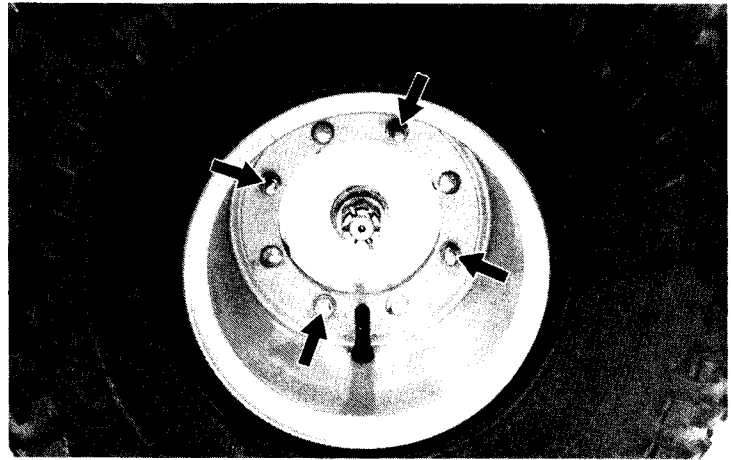
REAR AXLE

REMOVAL

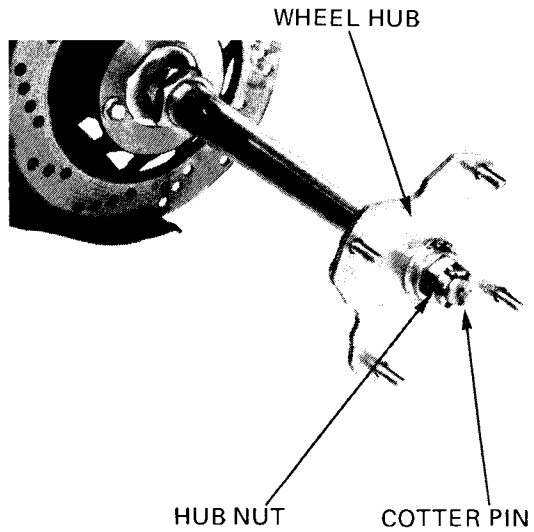
Raise the rear wheels off the ground with a jack or block under the engine.

Remove the rear wheel nuts.

Remove the rear wheels.

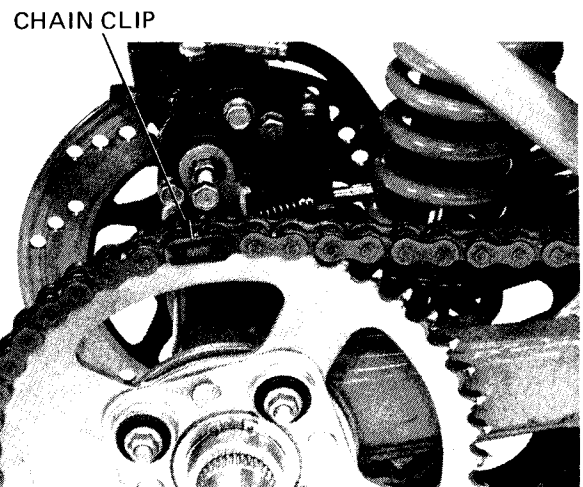


Remove the cotter pin and hub nut and remove the wheel hub.



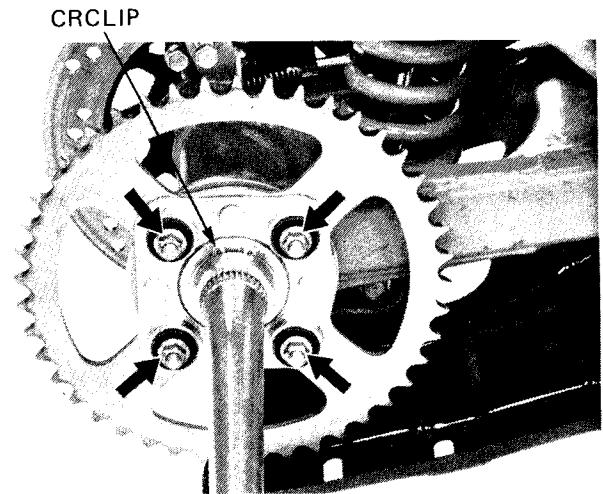
Remove the chain clip.

Remove the master link and drive chain.

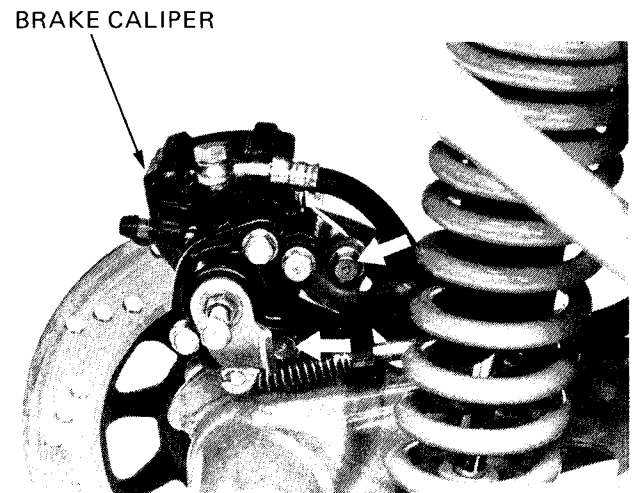




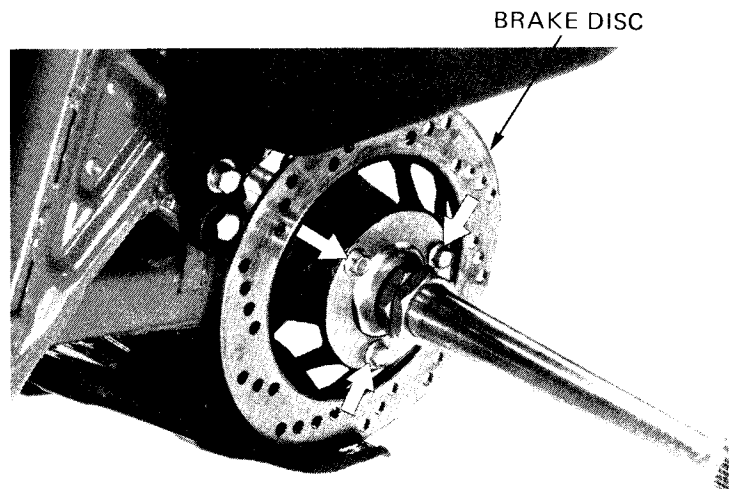
Remove the circlip and four nuts and remove the final driven sprocket from the axle.



Remove the two bolts and brake caliper from the swingarm.



Remove the three bolts and rear brake disc from the axle.

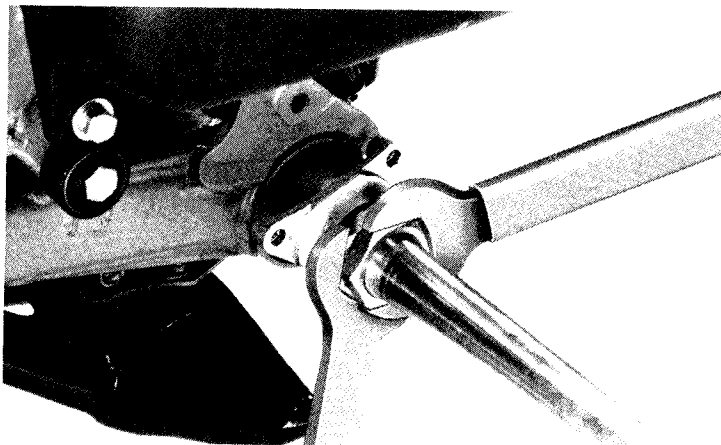


Remove the rear axle nuts.

Remove the tongued washer and rear brake disc holder.

Withdraw the axle shaft towards the right.

LOCK NUT WRENCH 41mm
07916-9180000 OR COMMERCIALY AVAILABLE

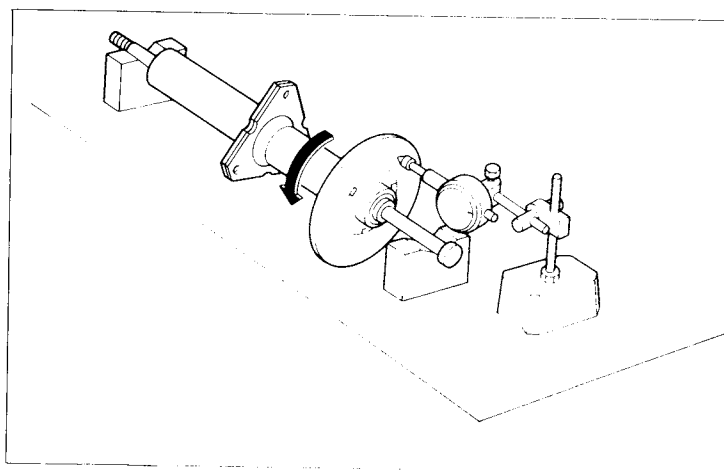


INSPECTION

Place the rear axle in V-blocks and measure the runout.

The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.30 mm (0.012 in)



INSTALLATION

Slide the axle through the swingarm.

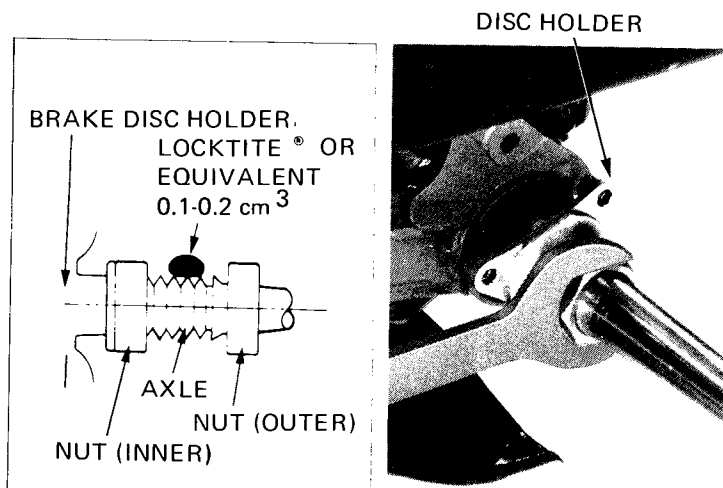
Install the rear brake disc holder and tongued washer.

Install the axle inner nut and tighten to the specified torque.

**TORQUE: 35-45 N·m (3.5-4.5 kg-m,
25-33 ft-lb)**

Clean any grease or dirt off the axle threads and apply LOCKTITE® or equivalent to the threads.

Hold the inner nut with a 41 mm wrench and tighten the outer nut, also with a 41 mm wrench.

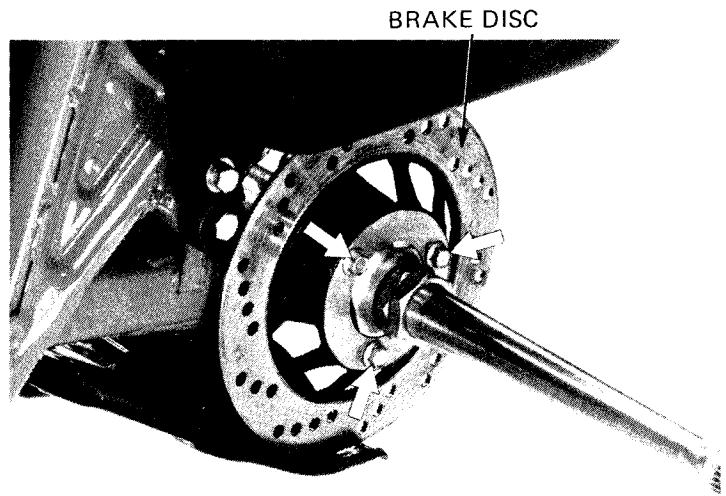


LOCK NUT WRENCH 41 mm
07916-9180000 OR COMMERCIALY AVAILABLE



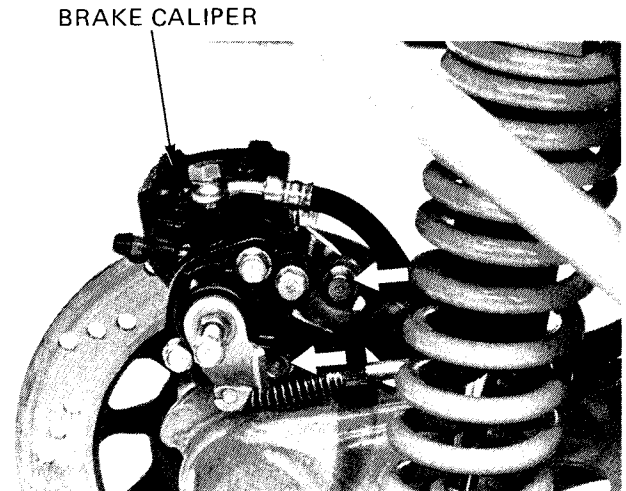
Install the brake disc and tighten the bolts to the specified torque.

**TORQUE: 21-27 N·m (2.1-2.7 kg-m,
15-20 ft-lb)**



Install the brake caliper on the swingarm and tighten the bolts to the specified torque.

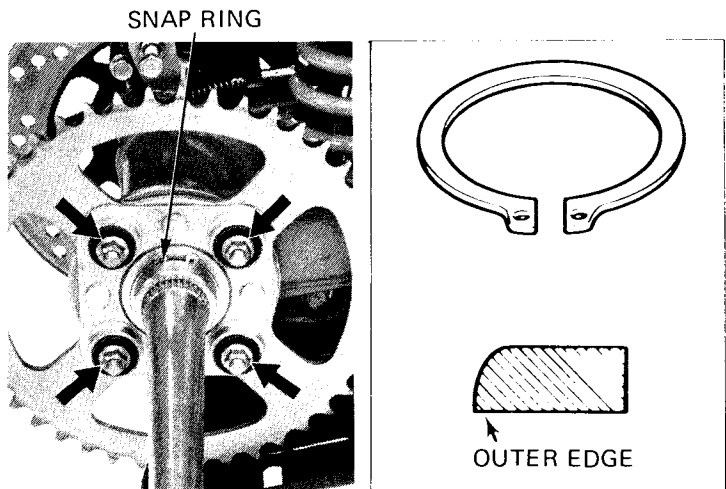
**TORQUE: 18-25 N·m (1.8-2.5 kg-m,
13-18 ft-lb)**



Install the final driven sprocket.

**TORQUE: 21-27 N·m (2.1-2.7 kg-m,
15-20 ft-lb)**

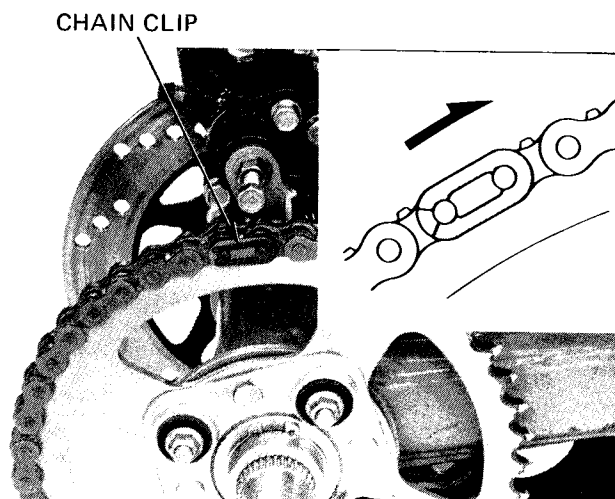
Install the snap ring with the chamfered end toward the sprocket with snap ring pliers.





Install the drive chain.

Be sure to install the master link with the open end facing opposite the normal direction of wheel rotation.



Install the rear wheel hub and wheel.

Torque the hub and wheel nuts.

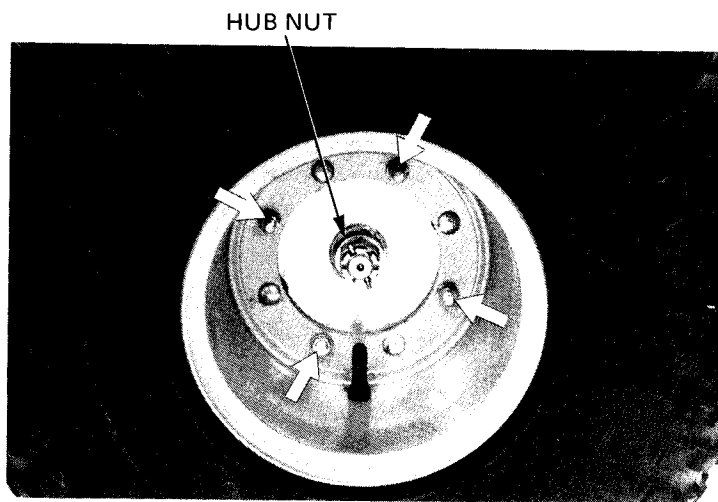
TORQUE VALUES:

Hub nut: 80-100 N·m (8.0-10.0 kg-m,
58-72 ft-lb)

Wheel nut: 18-25 N·m (1.8-2.5 kg-m,
13-18 ft-lb)

Install a new cotter pin.

Adjust the drive chain slack (page 2-9).





INTRODUCTION

This addendum contains service information for the 1983 ATC250R. Refer to the base shop manual for all service information not included in this addendum.

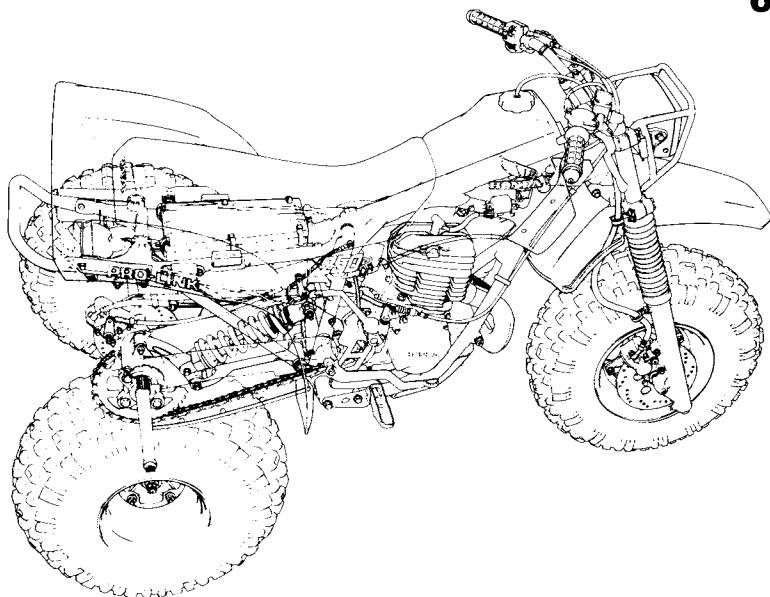
All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing.

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Service Publications Office

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1. GENERAL INFORMATION SPECIFICATIONS

Dimensions	Overall length Overall width Overall height Wheelbase Seat height Foot peg height Ground clearance Dry weight Weight distribution Front Rear	1,840 mm (72.4 in) 1,075 mm (42.3 in) 1,075 mm (42.3 in) 1,260 mm (49.6 in) 735 mm (28.9 in) 310 mm (12.2 in) 120 mm (4.7 in) 133 kg (293 lb) 53 kg (117 lb) 80 kg (176 lb)
Frame	Type Front suspension and travel Rear suspension and travel Front tire size Front tire pressure Rear tire size Rear tire pressure Front brake Rear brake Fuel capacity Fuel reserve capacity Caster angle Trail length Front fork oil	Double cradle Telescopic fork, 220 mm (8.7 in) Swing arm, Pro-link, 206 mm (8.1 in) 23.5 x 8.0-11 3.3 psi (23 kPa, 0.23 kg/cm ²) 22 x 11.0-8 2.4 psi (17 kPa, 0.17 kg/cm ²) Single disc Single disc 10.5 lit (2.77 U.S. gal, 2.31 Imp gal) 1.8 lit (0.48 U.S. gal, 0.40 Imp gal) 69.5° 33 mm (1.3 in) 281 cc (9.5 U.S. ozs, 7.9 Imp ozs)
Engine	Type Cylinder arrangement Bore x stroke Displacement Compression ratio Transmission oil capacity Lubrication system Fuel required Air filtration	Air cooled 2-stroke Single cylinder inclined 3° from vertical 70 x 64.4 mm (2.756 x 2.353 in) 247 cm ³ (15.07 cu in) 6.7: 1 1.1 lit (1.2 U.S. qt, 1.0 Imp qt) Gasoline/oil mixture 20:1, gas: oil pre-mix (gas RON 92-100) Oiled polyurethane foam



<p>Carburetor</p>	<p>Type Venturi dia Setting mark Float level Air screw opening Idle speed Jet needle Throttle lever free play</p>	<p>Piston valve 30 mm (1.18 in) PE 30A 20 mm (0.79 in) 1½ turns out 1,300 ± 150 rpm 3rd groove from top 3–8 mm (1/8–1/4 in)</p>
<p>Drive train</p>	<p>Clutch Transmission Primary reduction ratio Gear ratio I II III IV V Final reduction ratio Gear shift pattern</p>	<p>Wet multi-plate type 5-Speed, constant mesh 3.250 1.900 1.591 1.240 1.000 0.839 3.231 Left foot operated return system, 1-N-2-3-4-5</p>
<p>Electrical</p>	<p>Ignition system Ignition timing "F" mark Full retard Starting system Alternator Spark plug Spark plug gap Headlight Taillight</p>	<p>CDI 17° BTDC/2,000 rpm 14° BTDC/9,000 rpm Primary kickstarter 12V 73 W/7,600 rpm NGK BR8ES Champion RN-3-C 0.7–0.8 mm (0.028–0.031 in) 12V 60W/60W 12V 5W</p>

TORQUE VALUES

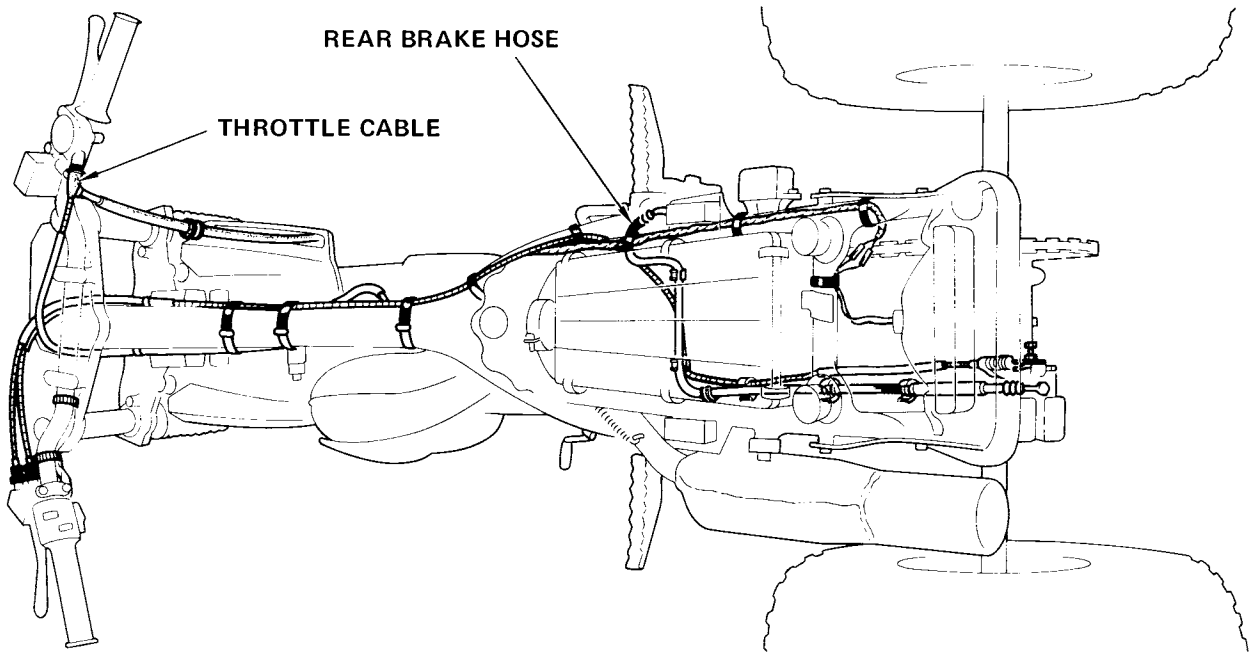
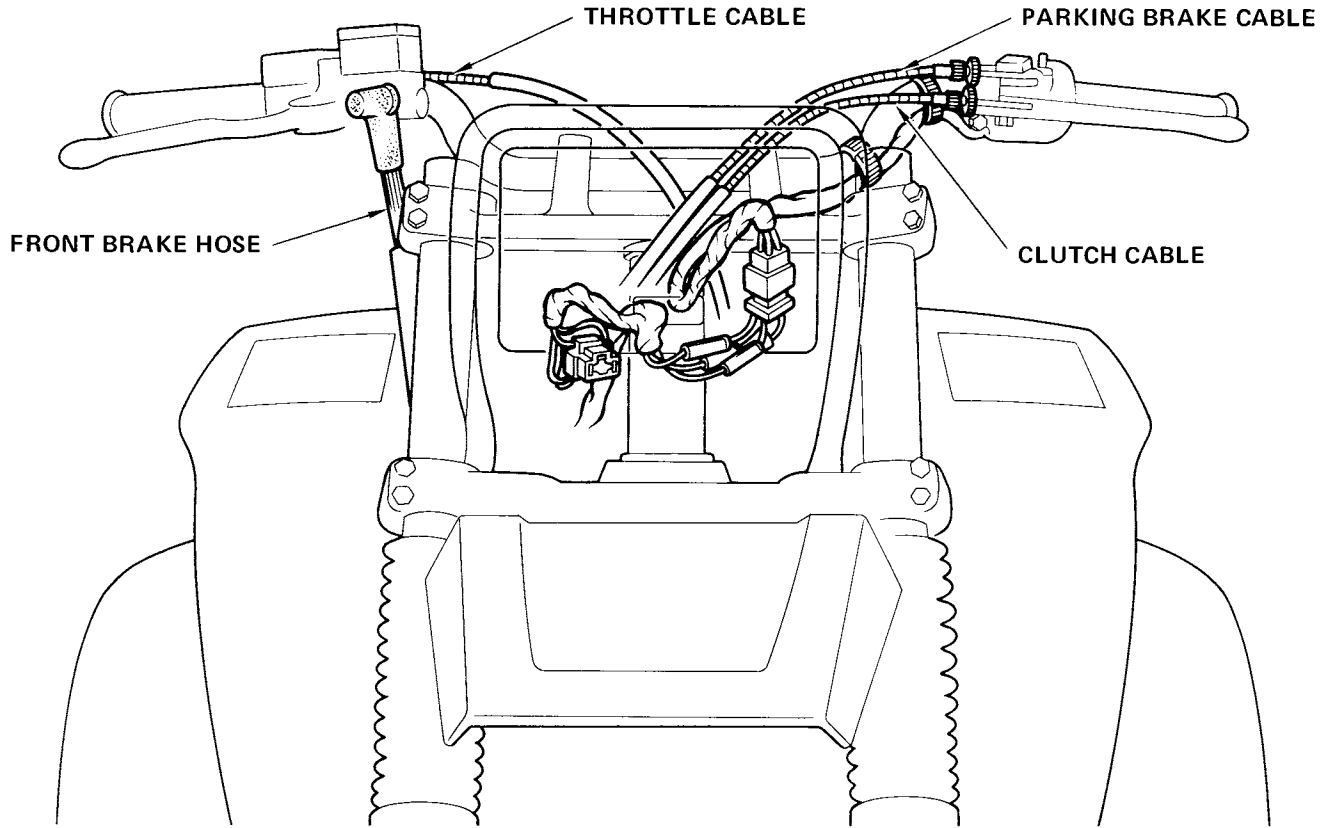
The torque values for the engine are the same as the 1981 and 1982 ATC250R's. Refer to page 1-4 for the engine torque values.

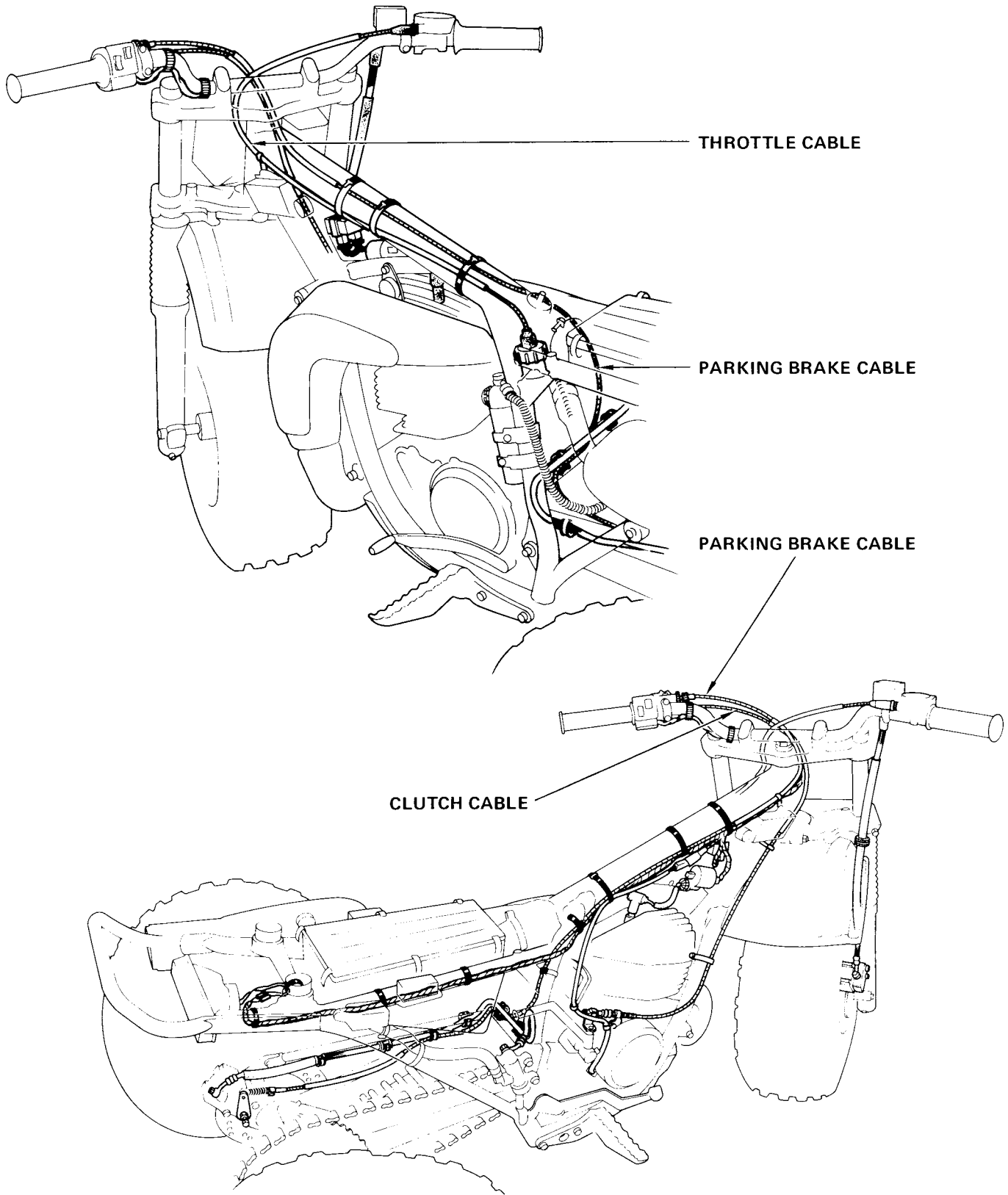
FRAME

ITEM	THREAD DIA. (mm)	TORQUE VALUES		
		N·m	kg·m	ft·lb
Sprocket bolts	12	55-60	5.5-6.0	40-43
Sprocket lock nuts	12	40-45	4.0-4.5	29-33
Rear axle nut (outer)	32	120-140	12.0-14.0	87-101
Rear axle nut (inner)	32	35-45	3.5- 4.5	25-33
Rear axle nut	18	80-100	8.0-10.0	58-72
Front axle	14	70-110	7.0-11.0	51-80
Front axle holder nut	6	10-14	1.0- 1.4	7-10
Front fork bottom pinch bolts	8	18-25	1.8- 2.5	13-18
Front fork upper pinch bolts	8	18-25	1.8- 2.5	13-18
Handlebar holders	8	18-25	1.8- 2.5	13-18
Steering stem adjuster nut	26	See page 18-29.		
Steering stem nut	24	80-120	8.0-12.0	58-87
Front hub nut	10	25-30	2.5- 3.0	18-22
Rear engine hanger bolt	10	35-45	3.5- 4.5	25-33
Gear shift pedal bolt	6	8-12	0.8- 1.2	6-9
Swing arm pivot bolt	14	70-110	7.0-11.0	51-80
Swing arm bearing holder bolts	8	13-18	1.3- 1.8	9-13
Frame connecting rod	12	70-80	7.0- 8.0	51-58
Shock arm	10	45-55	4.5- 5.5	33-40
Shock link	10	45-55	4.5- 5.5	33-40
Rear shock mounting bolts	10	45-55	4.5- 5.5	33-40
Kick starter bolt	8	18-25	1.8- 2.5	13-18
Fuel valve mounting nut	18	20-25	2.0-2.5	14- 18



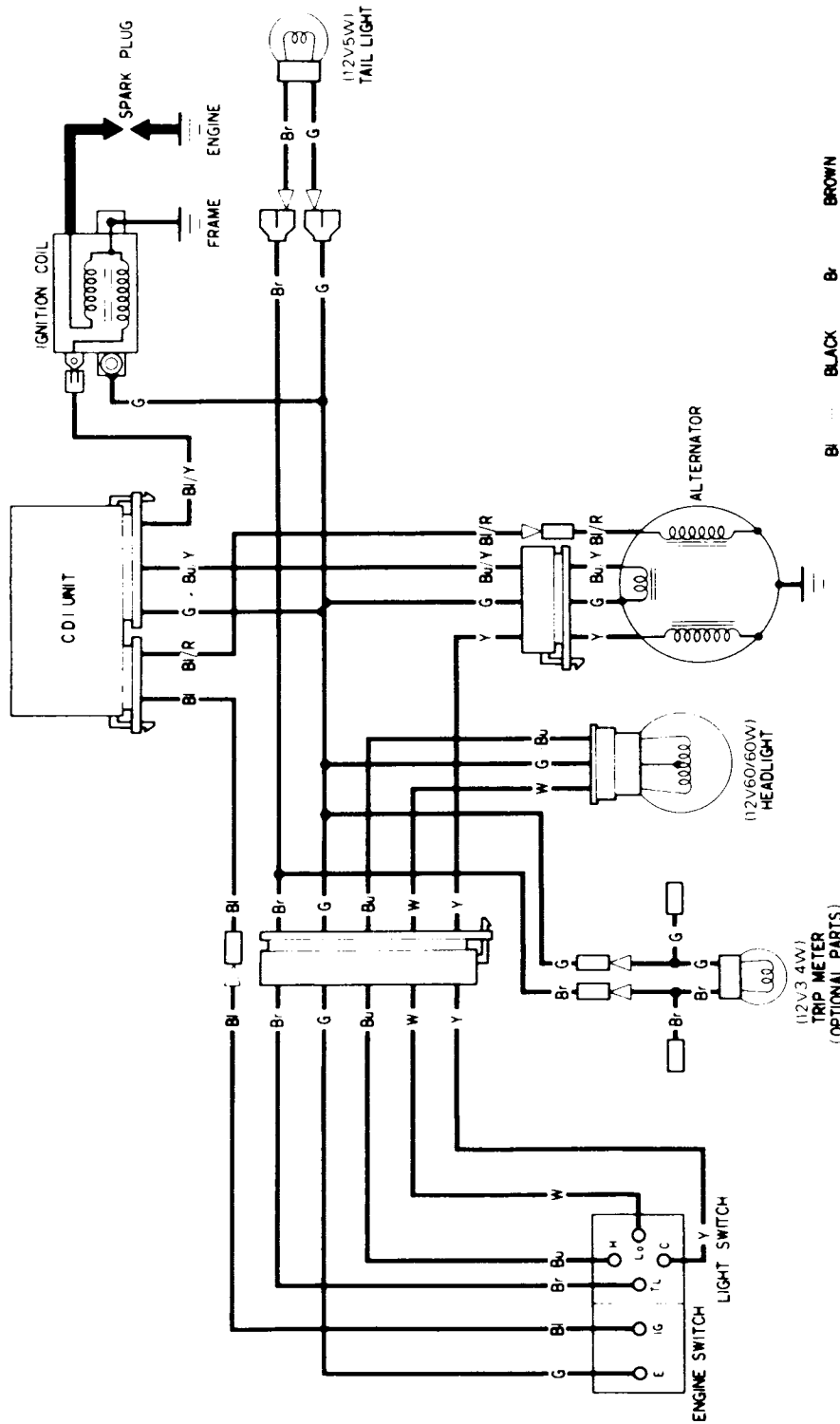
CABLE AND HARNESS ROUTING





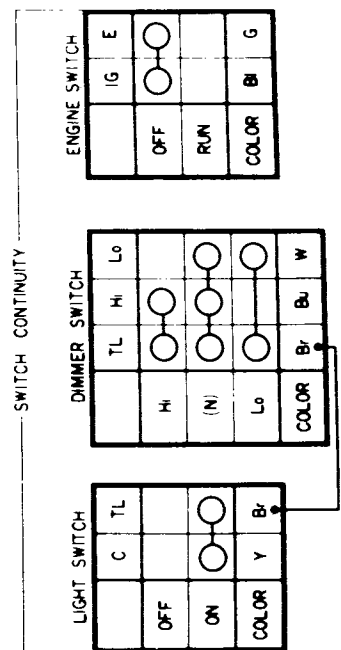


WIRING DIAGRAM



- | | | | |
|----|--------|----|-------------|
| Bl | BLACK | Br | BROWN |
| Y | YELLOW | O | ORANGE |
| Bu | BLUE | Lb | LIGHT BLUE |
| G | GREEN | Lg | LIGHT GREEN |
| R | RED | P | PINK |
| W | WHITE | Gr | GRAY |

0030Z-964-0000

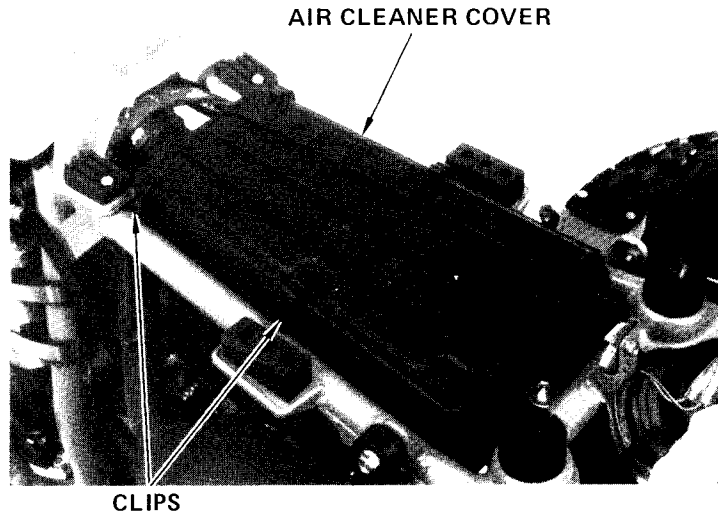


2. MAINTENANCE

AIR CLEANER

Remove the seat.

Remove the clips attaching the air cleaner cover and remove the cover.



Loosen the connecting tube band screw. Remove the element holding bracket screw and element.

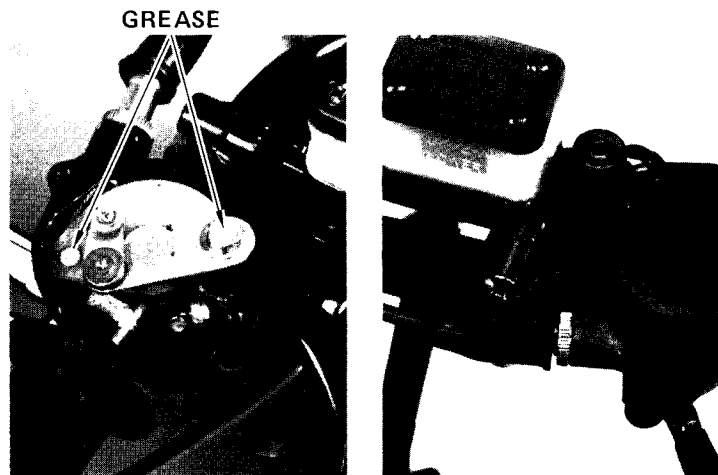
Remove the element from the holder. Refer to page 2-5 for cleaning and reoiling instructions.



THROTTLE OPERATION

Check for smooth throttle lever full opening and automatic full closing in all steering positions. Make sure there is no deterioration, damage or kinking in the throttle cable. Replace any damaged parts.

Disconnect the throttle cable at the upper end. Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.





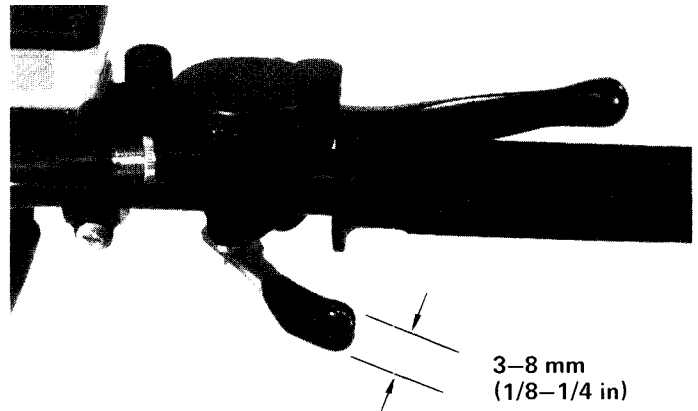
Install the throttle cable in the reverse order of removal.

Make sure the throttle lever free play is 3–8 mm (1/8–1/4 in) at the tip of the throttle lever.

Adjust as follows:

Adjust the throttle lever free play by loosening the lock nut and turning the adjuster.

Tighten the lock nut after adjusting.



DRIVE CHAIN

Check the chain slack midway between the sprockets.

Standard: 25–35 mm (1–1½ in)

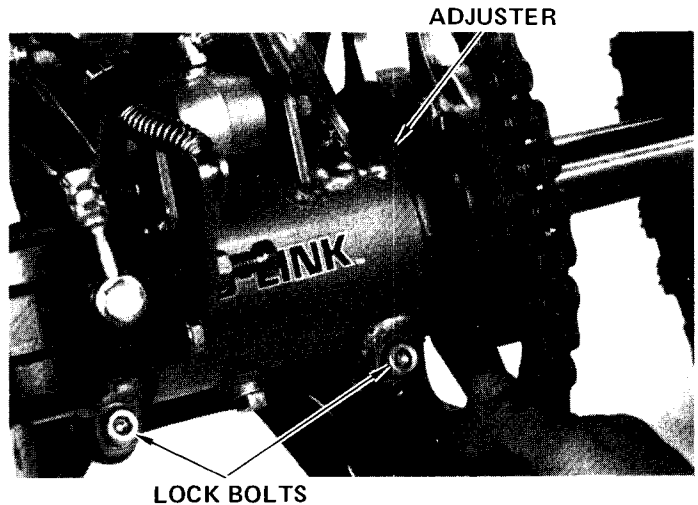
Adjustment:

Loosen the two lock bolts.

Turn the adjuster to decrease or increase chain slack using the tool provided in the tool kit. Then tighten the lock nuts.

NOTE:

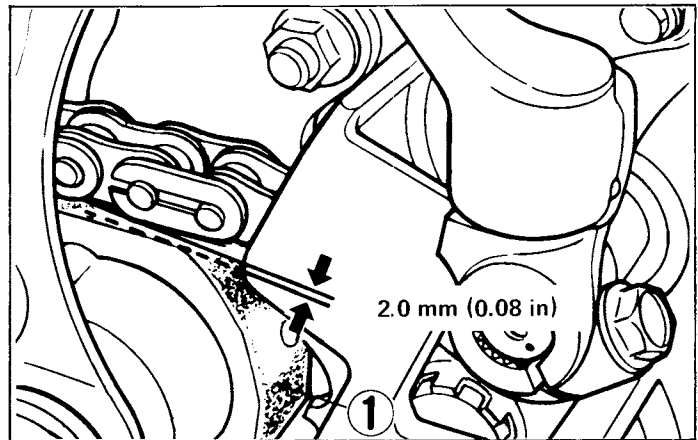
If drive chain slack is excessive when the adjuster is moved to the limit of adjustment, the drive chain is worn and must be replaced.



DRIVE CHAIN SLIDER

Check the drive chain slider for wear or damage.

Replace the slider if the depth of the groove exceeds 2.0 mm (0.8 in).



REAR SUSPENSION

Push the rear of the motorcycle up and down to check for proper operation.

Check that the shock rod is not bent and that oil is not leaking from the seal or hose fittings.

Check that the shock link and shock arm are not damaged.

Move the rear wheels sideways to check for play in the swing arm that would indicate worn bearings.



3. FUEL SYSTEM

FUEL TANK

Remove the seat/rear fender.

Turn the fuel valve OFF, and disconnect the fuel tube.

Remove the fuel tank bracket mounting bolts and fuel tank.

WARNING

Gasoline is extremely flammable. Keep gasoline away from flames or sparks. Wipe up spilled gasoline at once.

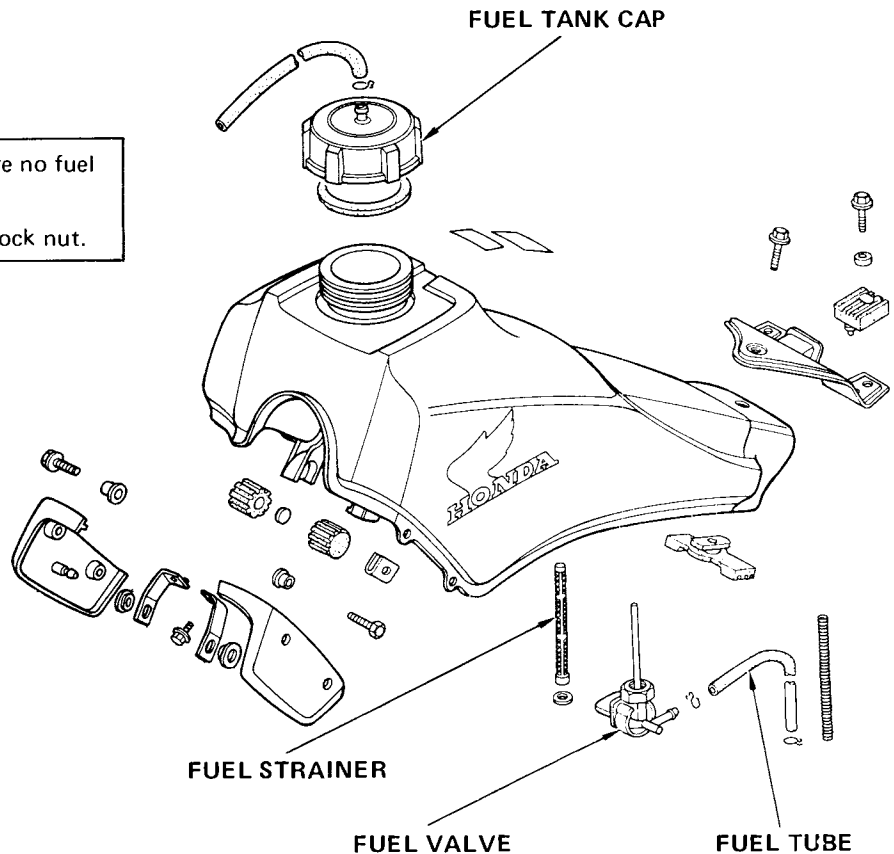
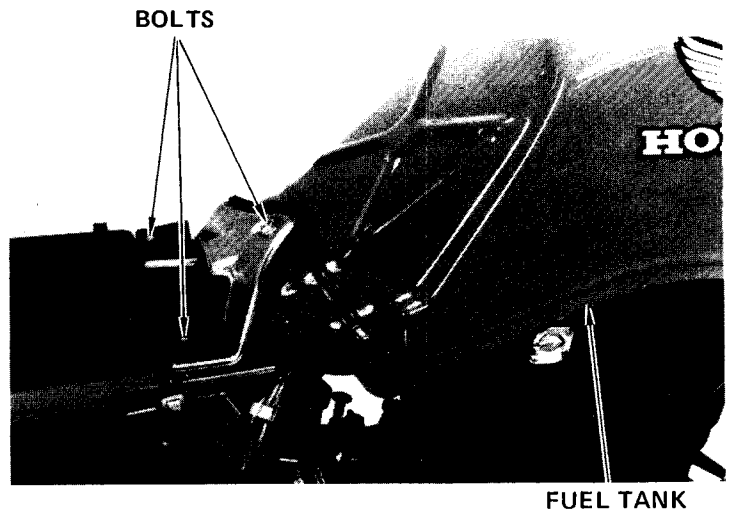
Check that fuel flows freely out of the fuel valve. If the flow is restricted, clean the fuel strainer.

Install the fuel tank and bracket and connect the fuel tube.

Install the seat/rear fender.

NOTE:

- After assembly, make sure there are no fuel leaks.
- Do not overtighten the fuel valve lock nut.

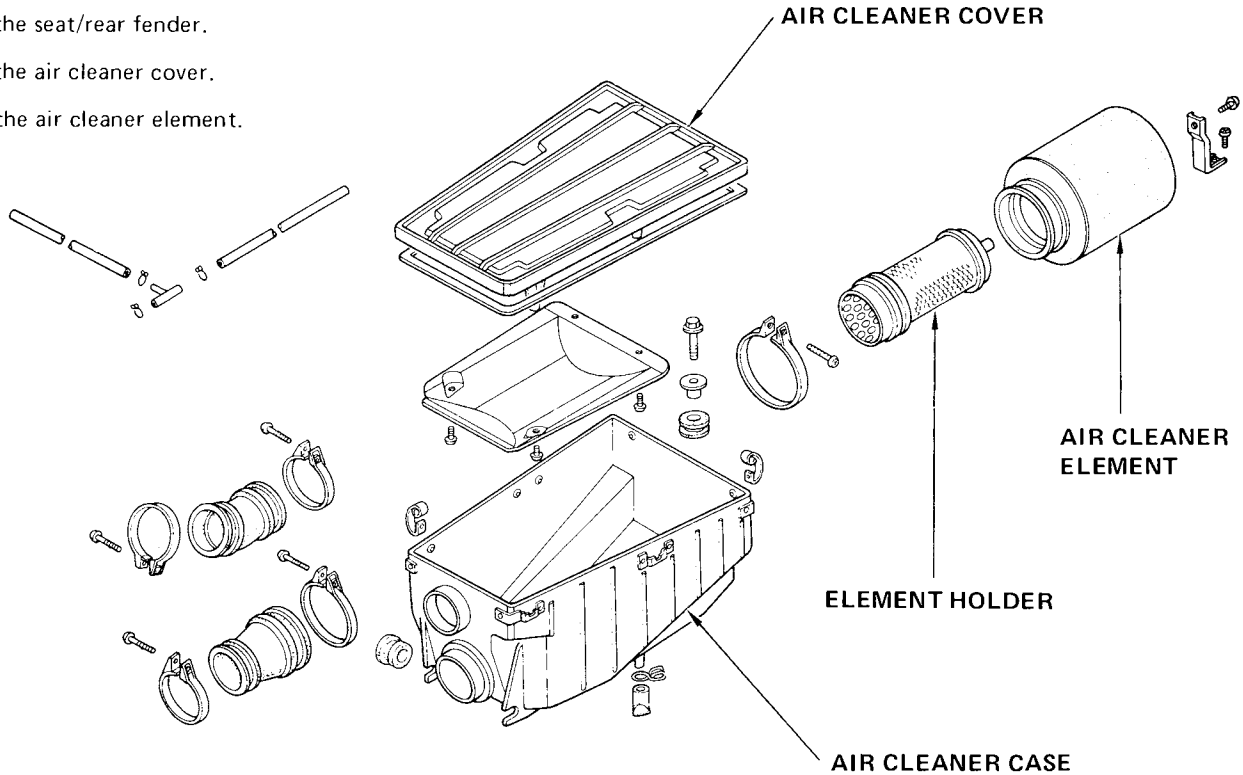


AIR CLEANER CASE

Remove the seat/rear fender.

Remove the air cleaner cover.

Remove the air cleaner element.



HIGH ALTITUDE ADJUSTMENT

The carburetor must be adjusted for high altitude riding (above 5,000 feet; 11,500 m).

High altitude carburetor adjustment is performed as follows:

Turn the fuel valve OFF.

Loosen the carburetor drain screw to drain the carburetor.

Remove the carburetor.

Remove the float chamber.

Remove the standard main jet and install the applicable high altitude main jet. Also adjust the air screw, according to the chart.

Reinstall the float chamber and tighten the drain screw.

Turn the fuel valve ON and start the engine.

Adjust the idle speed with the throttle stop screw.

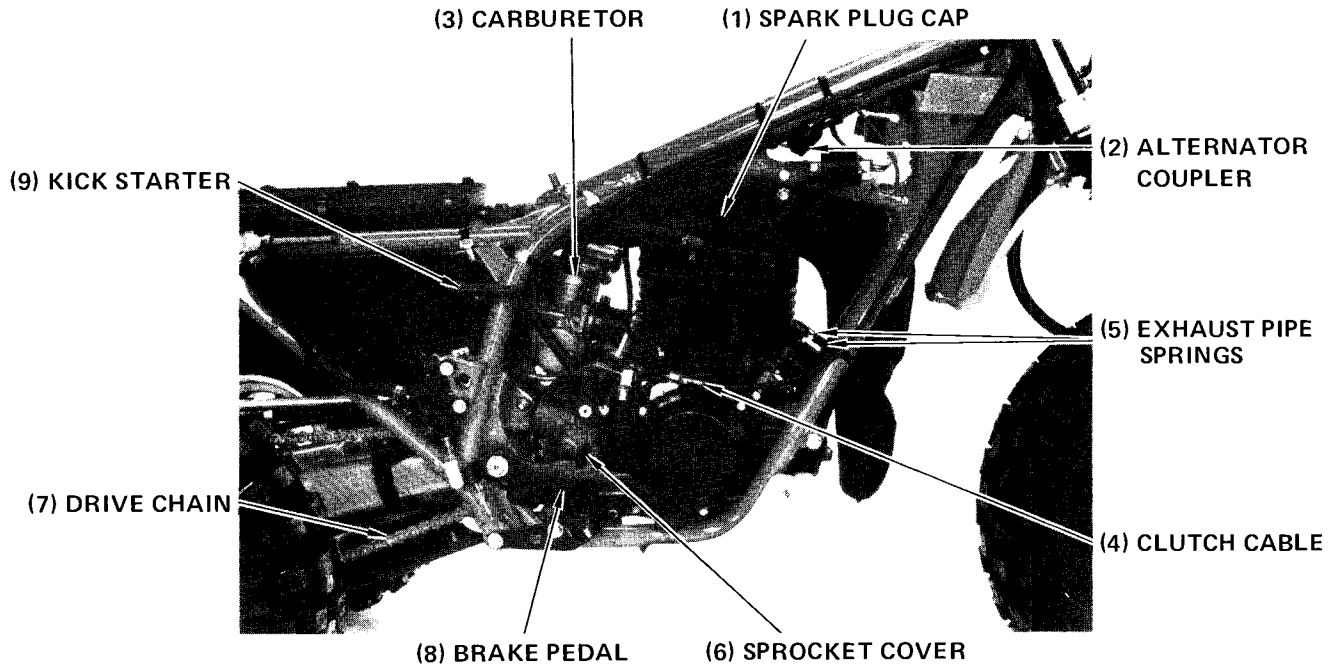
Altitude	Main Jet	Air Screw
0- 5,000 feet	No. 130	1½ turns out
4,500- 6,500 feet	No. 128	1½ turns out
6,000- 10,000 feet	No. 125	2 turns out



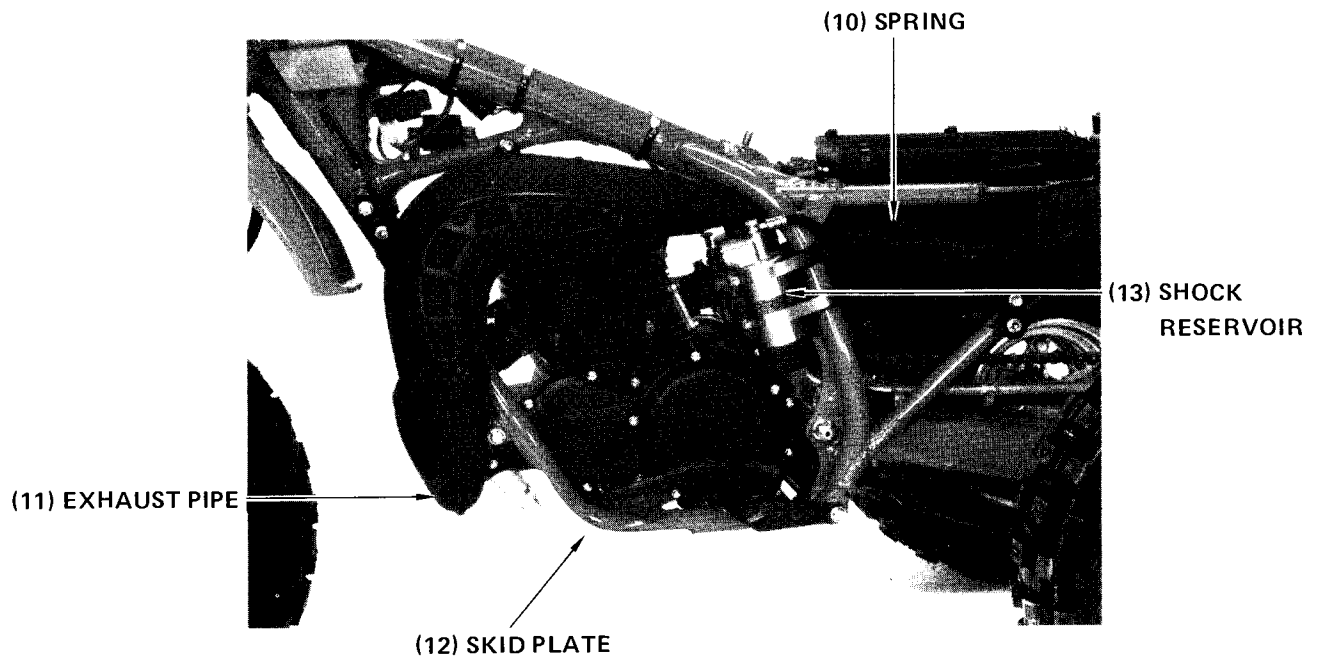
4. ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

Remove the components shown in this photo of the right side.

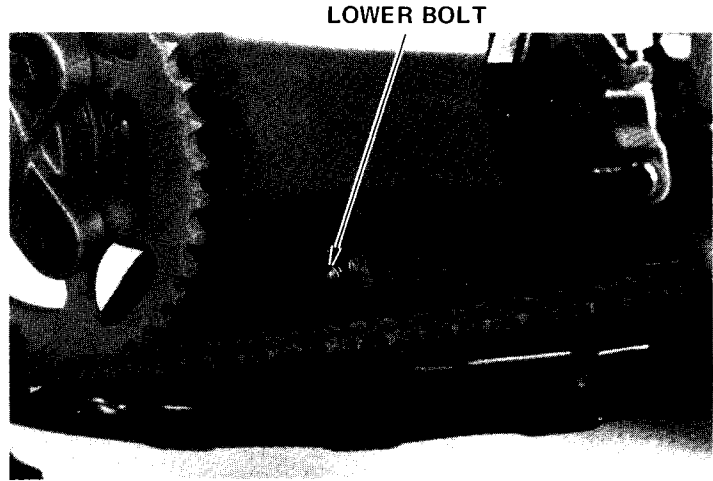


Remove the parts shown in this photo of the left side.



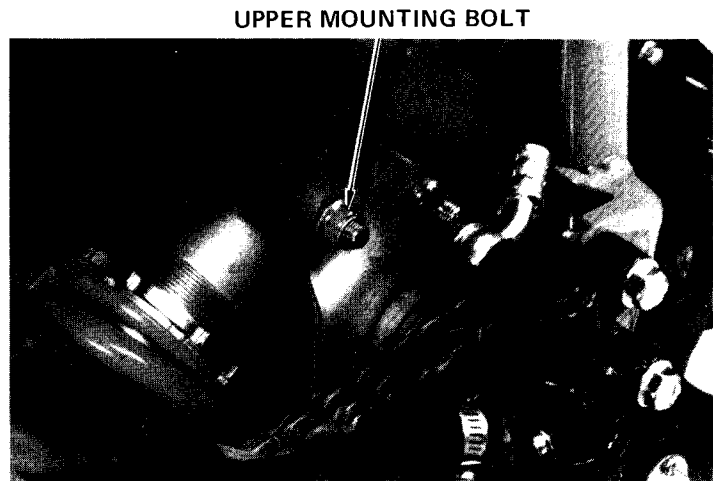
Remove the lower shock arm bolt mounting bolt.

Remove the lower shock arm bolt.

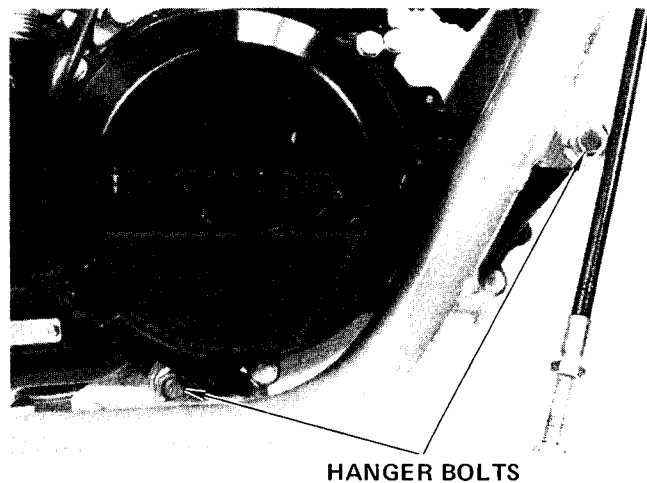


Remove the upper shock absorber mounting bolt.

Remove the swing arm pivot bolt, and pull the swing arm back away from the engine.



Remove the engine hanger bolts and the engine.





ENGINE INSTALLATION

Place the engine in the frame; Insert the upper engine hanger bolt through the left frame bracket, spacer, engine case, spacer and right frame bracket.

Insert the lower engine hanger bolt through the left frame, engine case and the right frame bracket.

Insert the swing arm pivot bolt through the engine rear hanger and swing arm.

Install the nuts and tighten the two engine hanger bolts and swing arm pivot bolt to the specified torque values.

TORQUE: Hanger bolts: 35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
Pivot bolt: 70–110 N·m (7.0–11.0 kg-m, 51–80 ft-lb)

Reinstall all the remaining parts that were removed.

5. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

SPECIFICATIONS

	SERVICE LIMIT
Front fork spring A	122.6 mm (4.8 in)
B	452.9 mm (17.8 in)
Front fork oil capacity	281 cc (9.5 oz)
Front fork oil level	177 mm (7.0 in)

TORQUE VALUES

Front axle	70–110 N·m (7.0–11.0 kg-m, 51–80 ft-lb)
Axle holder nut	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Front hub nut	30–40 N·m (3.0–4.0 kg-m, 22–29 ft-lb)
Steering stem adjuster nut	See page 18-29
Steering stem nut	80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
Front fork upper pinch bolts	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)
Front fork lower pinch bolts	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)

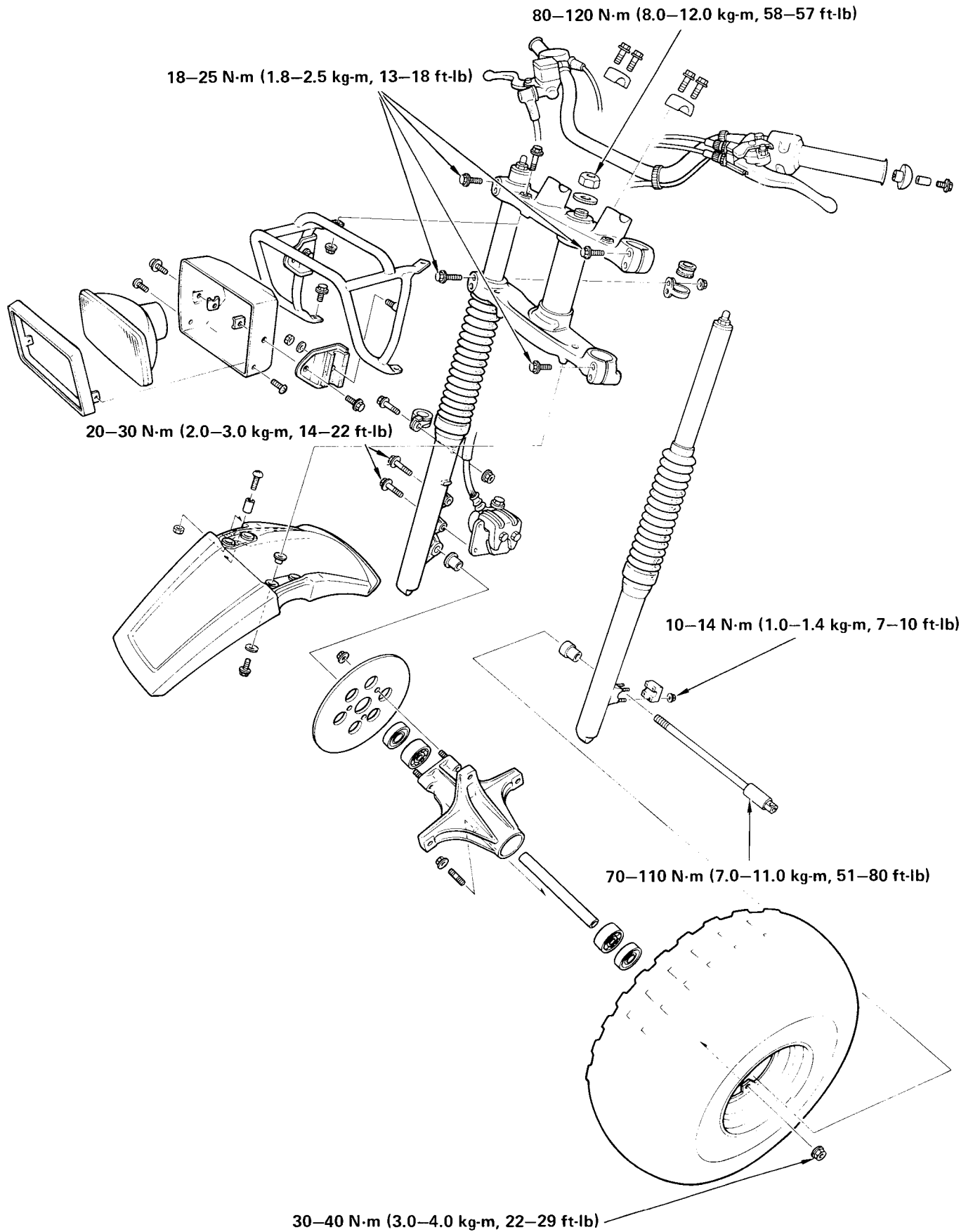
TOOLS

SPECIAL

DESCRIPTION	TOOL NUMBER	REMARKS
Universal bead breaker	GN-AH-958-BB1	U.S.A. only
Fork seal driver	07947-3290000	
Steering race remover	07953-4250002	
Steering stem socket	07916-3710100	
Steering stem driver	07946-3710600 or 07946-3710601	
Attachment	GN-HT-54	U.S.A. only
Driver	07945-3710300	

COMMON

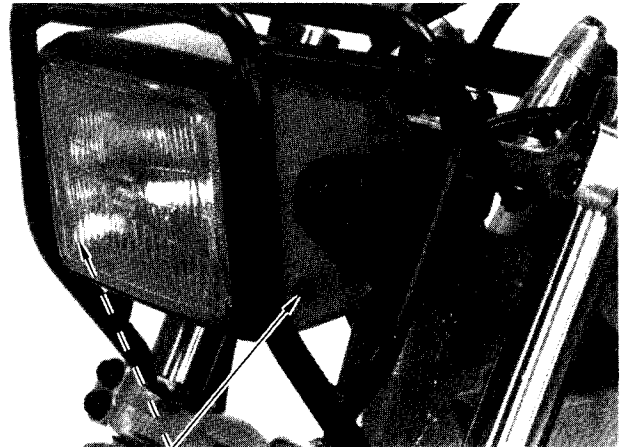
DESCRIPTION	TOOL NUMBER	REMARKS
Attachment, 42 x 47 mm	07746-0010300	
Pilot, 15 mm	07746-0040300	
Driver	07749-0010000	



HEADLIGHT

HEADLIGHT CASE REMOVAL

Remove the two headlight mounting screws and headlight. Disconnect the headlight coupler.

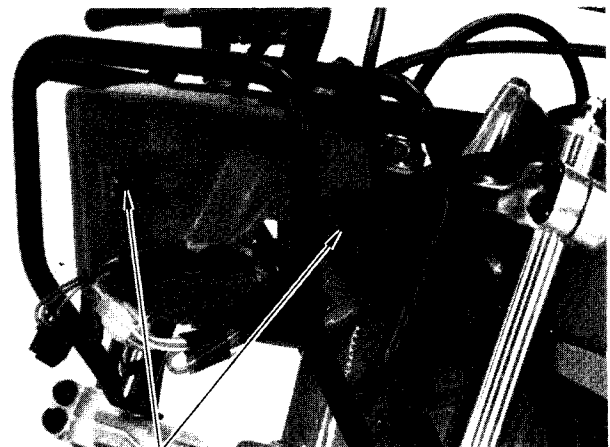


SCREWS

Remove the wire bands.

Remove the headlight case mounting bolts and headlight case.

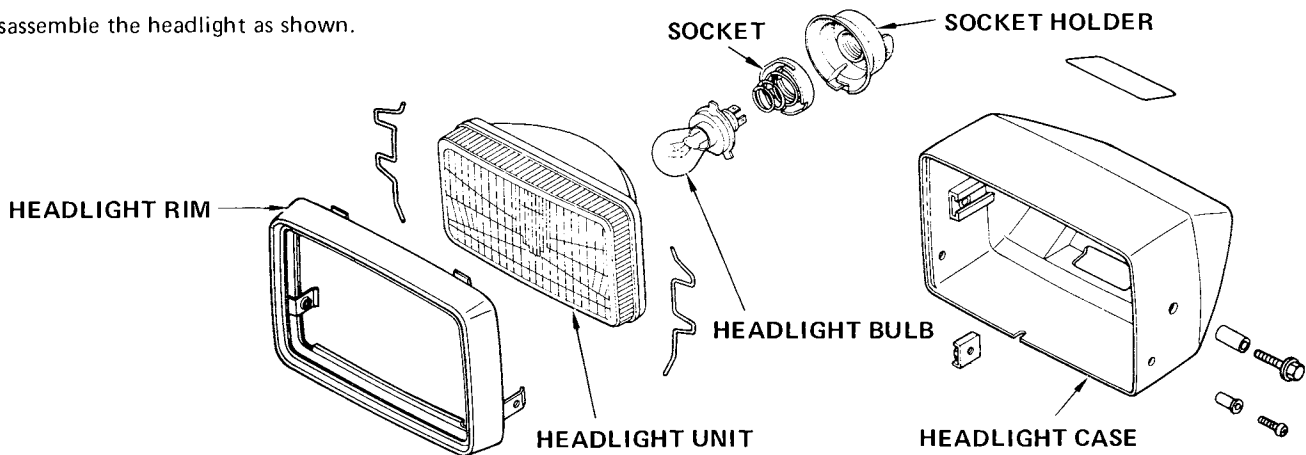
Install the headlight case in the reverse order of removal.



MOUNTING BOLTS

HEADLIGHT DISASSEMBLY/ASSEMBLY

Disassemble the headlight as shown.



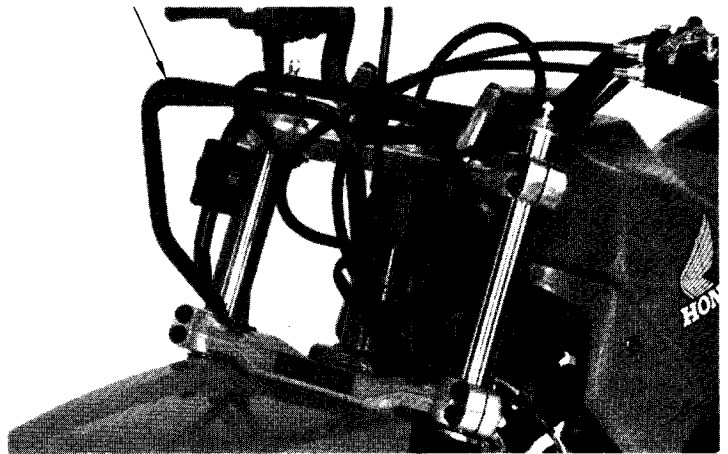


HEADLIGHT BRACKET REMOVAL/ INSTALLATION

Remove the four bolts attaching the headlight bracket mount holders to the fork bridge and remove the bracket.

Install the bracket in the reverse order of removal.

BRACKET



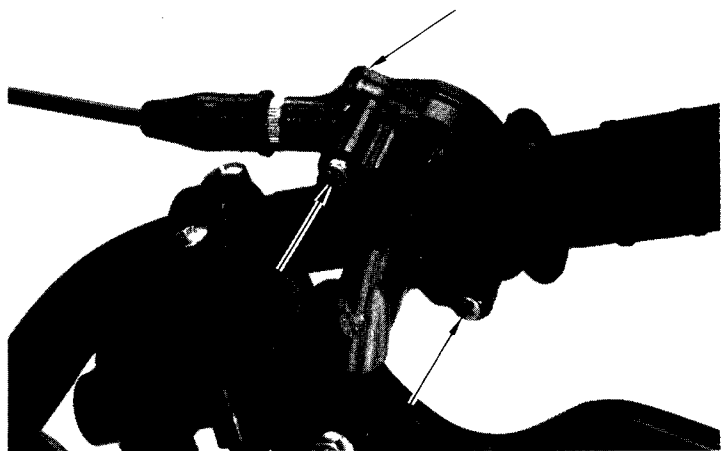
HANDLEBAR REMOVAL

Remove the two screws attaching the throttle lever housing and the housing.

INSTALLATION

Position the throttle lever housing on the handlebar and install it using the throttle lever housing holder and two screws.

THROTTLE HOUSING



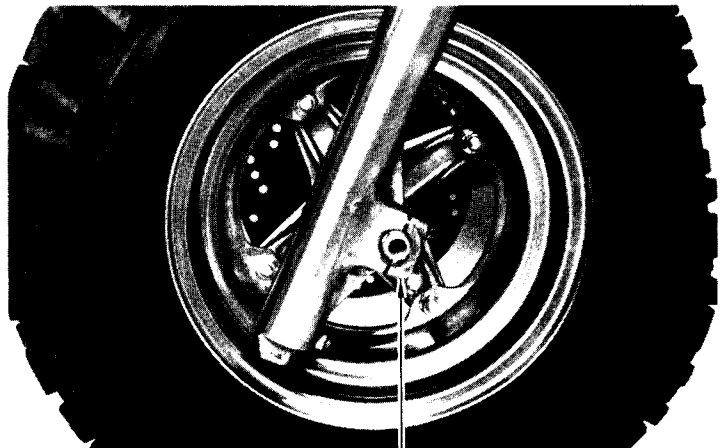
FRONT WHEEL

FRONT WHEEL REMOVAL

Raise the front wheel off the ground by placing a block or safety stand under the engine.

Remove the axle shaft holder nuts and holder.

Remove the four wheel hub nuts.



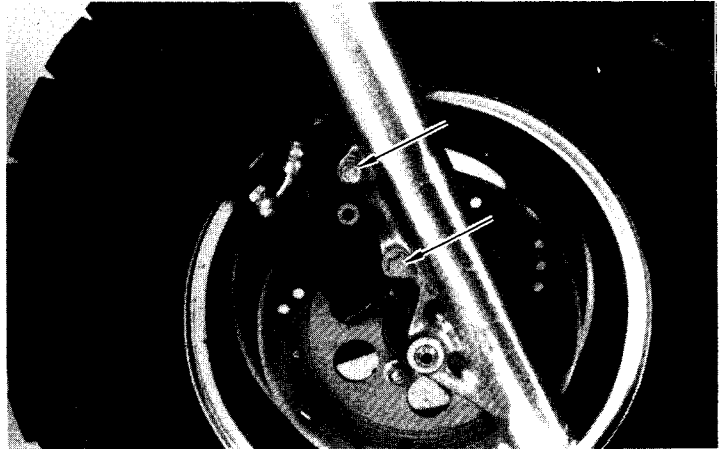
AXLE SHAFT HOLDER

Remove the brake caliper bracket bolts. Push the wheel toward the left side and remove the caliper.

NOTE:

Place a small wooden wedge between the brake pads to keep them from being forced out of the caliper.

Remove the axle shaft and front wheel.



TIRE REMOVAL

NOTE:

This service requires the Universal Bead Breaker (GN-AH-958-BB1) available in U.S.A. only.

Remove the core from the valve stem.

CAUTION:

- *Use of the Bead Breaker tool is required for tire removal.*
- *Do not damage the bead seating area of the rim.*
- *Use a Coats 220 Tire Changer or equivalent to remove the tire from the rim. If a tire changer is not available, rim protectors and tire irons may be used.*

Install the proper size blade onto the breaker arm assembly.

Short blade — 7"/8" rims.

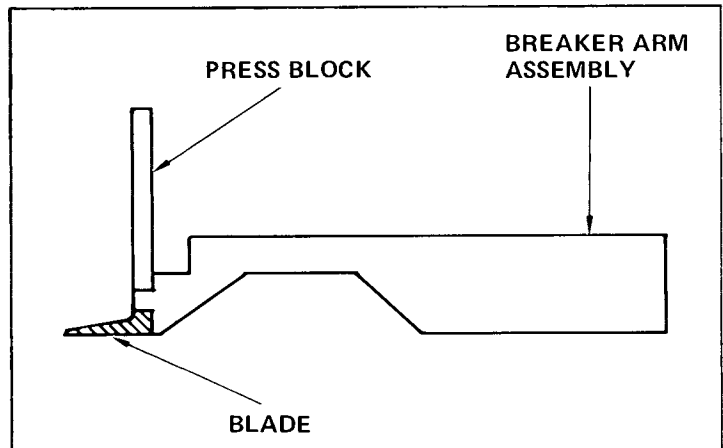
Long blade — 9"/11" rims.

CAUTION:

Use of an improper size blade may result in damage to the rim, tire or blade.

Place the proper size adapter onto the threaded shaft and then put the wheel over the threaded shaft and adapter.

Lube the bead area with rubber lubricant, pressing down on the tire sidewall/bead area in several places, to allow the lubricant to run into and around the bead. Also lube the area where the breaker arm will contact the sidewall of the tire.

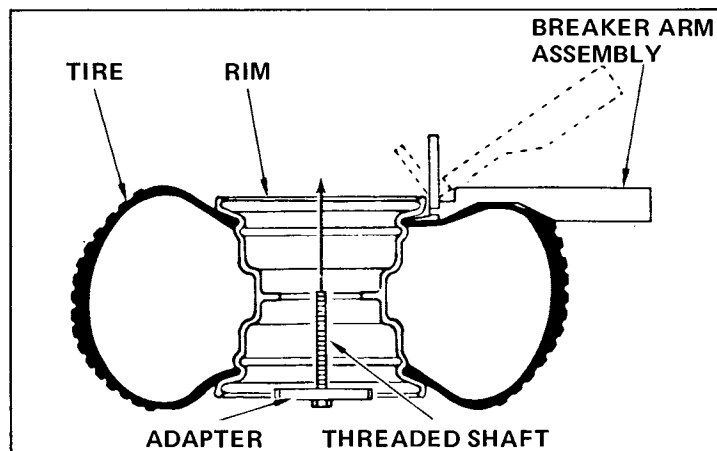




While holding the breaker arm assembly at an approximate 45° position, insert the blade of the breaker arm between the tire and rim. Push the breaker arm inward and downward until it is in the horizontal position with its press block in contact with the rim.

NOTE:

It may be necessary to tap the breaker arm with a brass hammer to install it the last 3 mm. While doing so, be sure to hold the arm down in the horizontal position.

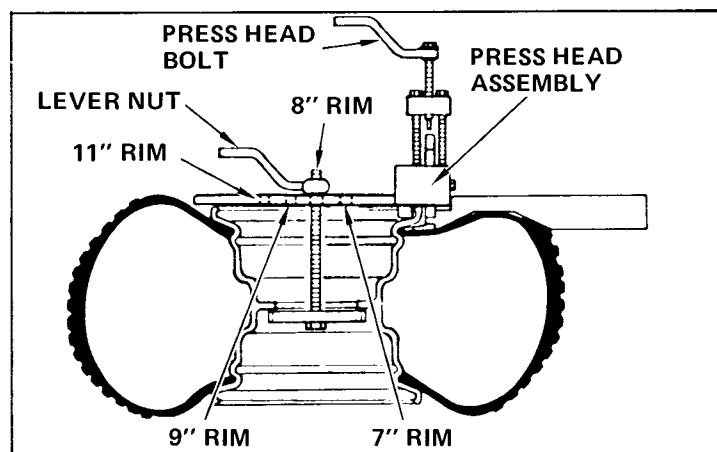


With the breaker arm in the horizontal position, place the breaker press head assembly over the breaker arm press block. Make sure the press head bolt is backed out all the way and then position the nylon buttons on the press head against the inside edge of the rim.

Insert the threaded shaft through the appropriate hole in the breaker press head assembly and then tighten the lever nut until both ends of the breaker press head assembly are in firm contact with the rim.

NOTE:

Insert bolts through the holes in the rim hub mounting tabs and the adapter to position the adapter properly.



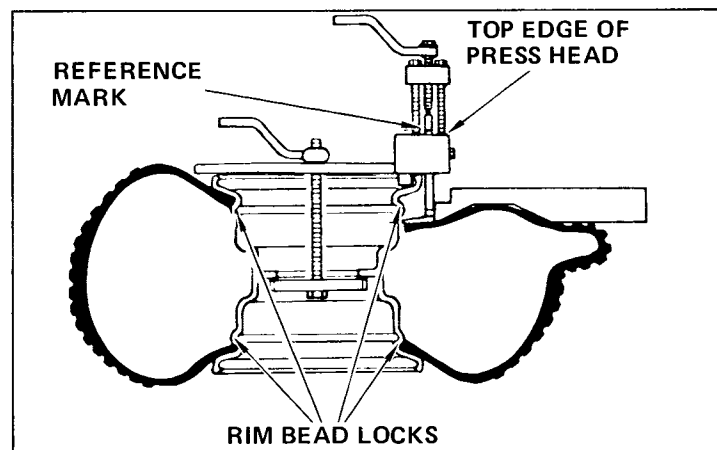
Tighten the press head bolt until the reference mark on the press block is aligned with the top edge of the press head.

If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly 1/8 to 1/4 the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described. Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.

Assemble the Universal Bead Breaker on the other side of the wheel and break the bead following the same procedures.

Remove the tire from the rim using a tire changer machine or tire irons and rim protectors.

Refer to pages 10-13 and 10-14 for tire repair.



TIRE ASSEMBLY

Clean the rim bead seat and flanges.

Install the tire on the rim from the opposite side of the valve stem.

Coat the rim flanges and tire bead with a tire mounting lubricant.

CAUTION:

Do not use silicone lubricant.

Inflate the tire to seat the tire bead.

CAUTION:

Be careful not to inflate the tire with more than 1.2 kg/cm² (17 psi) of air.

If the tire does not seat on the rim with 1.2 kg/cm² (17 psi) of air pressure, release the air from the tire and apply tire lubricant to the tire bead and bead seating surface of the rim.

Then, inflate the tire with air again.

Deflate the tire. Wait 1 hour and inflate the tire to the specified pressure.

	Recom- mended pressure	Min. pressure	Max. pressure	Standard tire circum- ference
Front	3.3 psi (23 kPa, 0.23kg/cm ²)	2.8 psi (20 kPa, 0.2kg/cm ²)	3.7 psi (26 kPa, 0.26kg/cm ²)	1,900 mm (74.8 in)
Rear	2.4 psi (17 kPa, 0.17kg/cm ²)	2.0 psi (14 kPa, 0.14kg/cm ²)	2.8 psi (20 kPa, 0.2kg/cm ²)	1,745 mm (68.7 in)

NOTE:

The rear tires must have the same circumfer-
ence for proper handling.

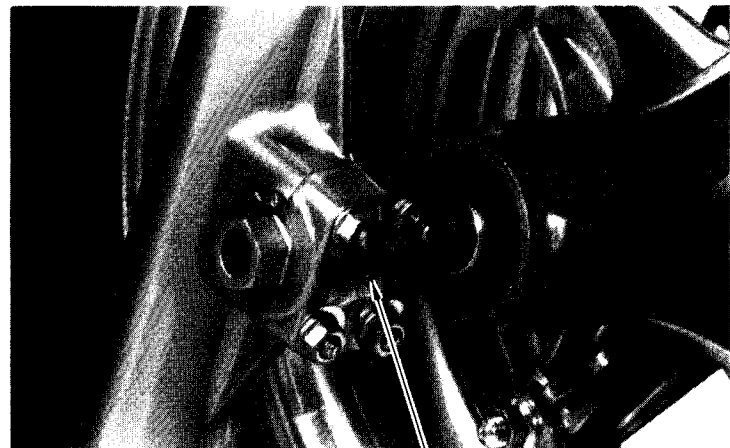
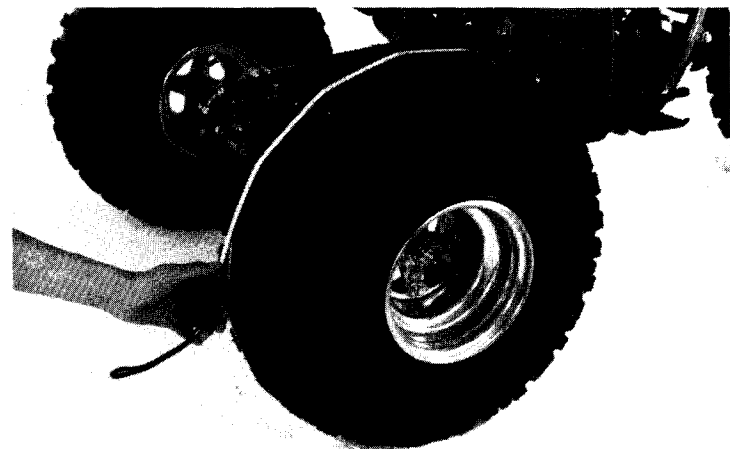
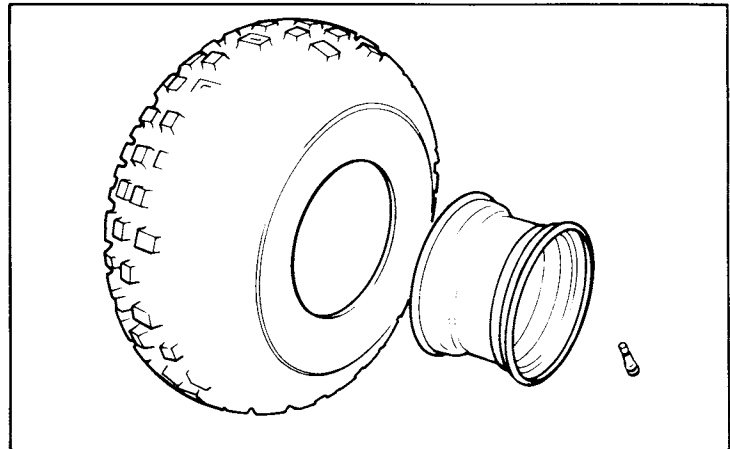
Check for air leaks and install the valve cap.

FRONT WHEEL INSTALLATION

Clean the axle shaft and holder.

Install the holder with the "UP" mark facing upward.

Install the axle holder nuts but do not tighten at this time.

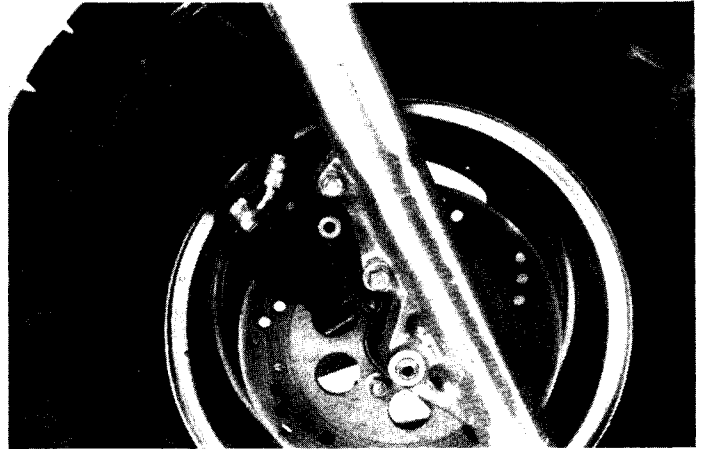


**AXLE HOLDER
"UP" MARK**



Install the front wheel, wheel hub and axle shaft. Position the caliper on the right fork leg and install the caliper using the two bolts.

TORQUE: 20–30 N·m (2.0–3.0 kg·m, 14–22 ft·lb)



Tighten the wheel hub nuts.

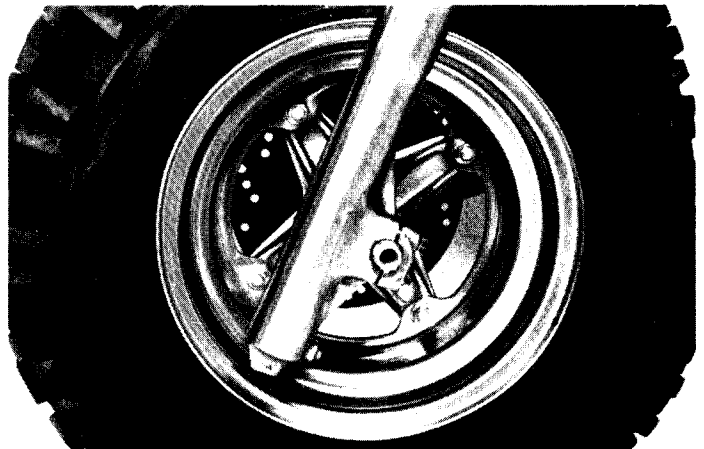
TORQUE: 30–40 N·m (3.0–4.0 kg·m 22–29 ft·lb)

Tighten the axle shaft.

**TORQUE: 70–110 N·m, (7.0–11.0 kg·m,
51–80 ft·lb)**

Tighten the axle holder nuts; the upper nuts first, then the lower nuts.

**TORQUE: 10–14 N·m (1.0–1.4 kg·m,
7.2–10.7 ft·lb)**



FRONT FORK

REMOVAL

Remove the front wheel (page 18-19).

Loosen the fork tube pinch bolts.

Remove the fork tubes from the fork bridge and steering stem.

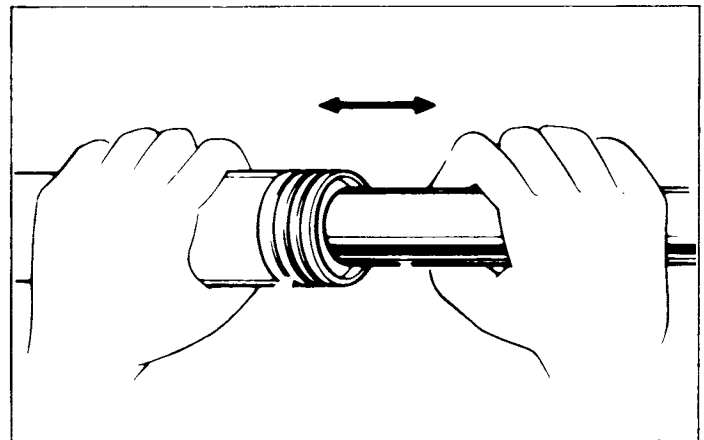
Release air pressure by depressing the air valve.

DISASSEMBLY

Remove the fork cap bolt and drain the oil.

Remove the hex bolt, the dust seal, circlip and back-up plate. Refer to pages 10-19 to 10-21.

Remove the fork tube from the slider with several quick strokes, back and forth. The slider bushing causes resistance and the fork tube bushing must force it out.



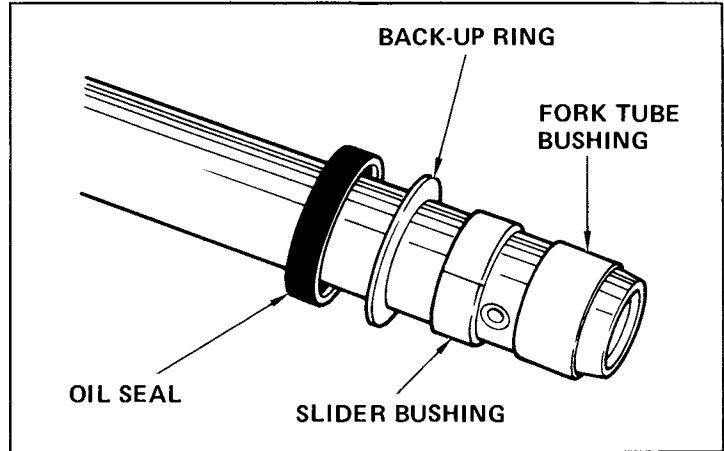
'83 ATC250R ADDENDUM

Remove the oil seal, back-up ring and slider bushing from the fork tube.

NOTE:

Do not remove the fork tube bushing unless it is necessary to replace it with a new one. See inspection.

Remove the oil lock piece from the slider and the piston from the fork tube.



INSPECTION

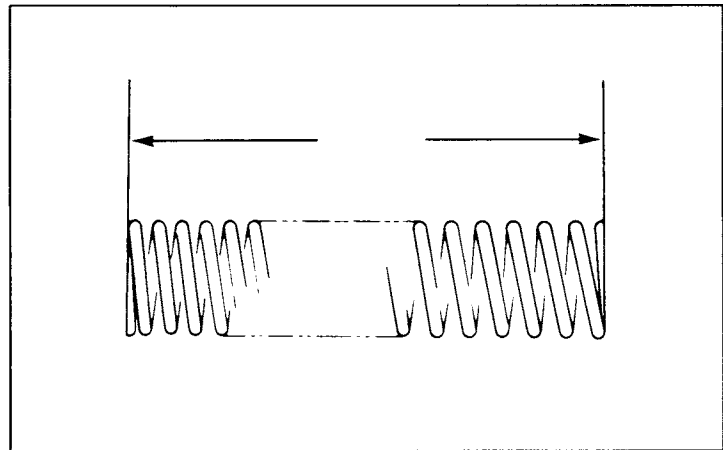
FORK SPRING

Measure the free length of the fork springs.

Replace the springs if they are shorter than the service limit.

SERVICE LIMIT:

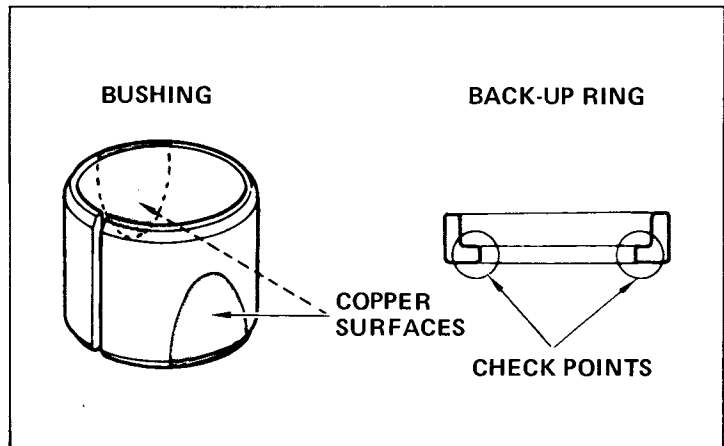
- Spring A: 122.6 mm (4.8 in)
- Spring B: 452.9 mm (17.8 in)



BUSHING/BACK-UP RING

Visually inspect the slider and fork tube bushing. Replace the bushing if there is excessive scoring or scratching, or if the teflon is worn so that the copper surface appears on more than 3/4 of the entire surface.

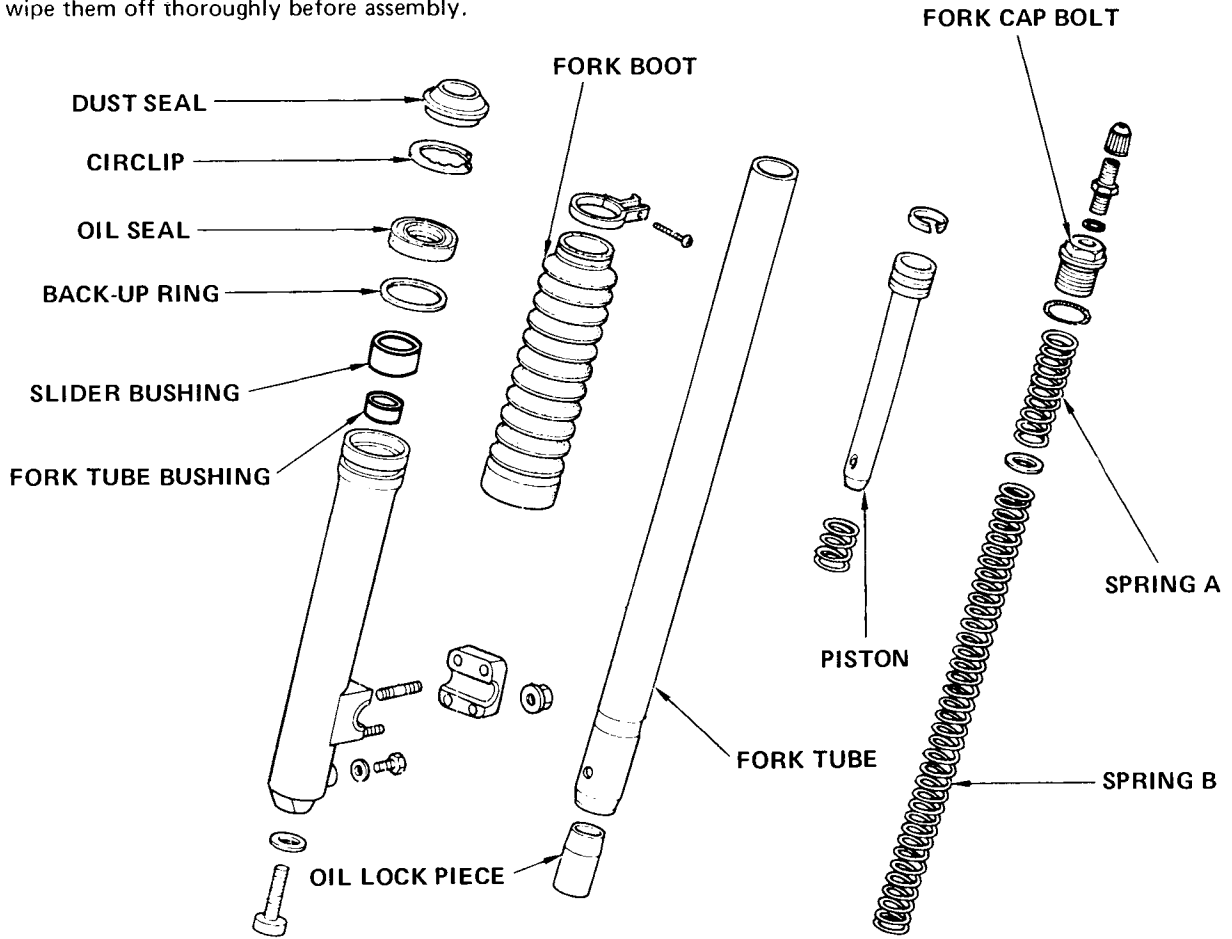
Check the back-up ring at the points shown. Replace it if there is distortion at any of the points shown.





ASSEMBLY

Wash all removed parts in non-flammable solvent and wipe them off thoroughly before assembly.



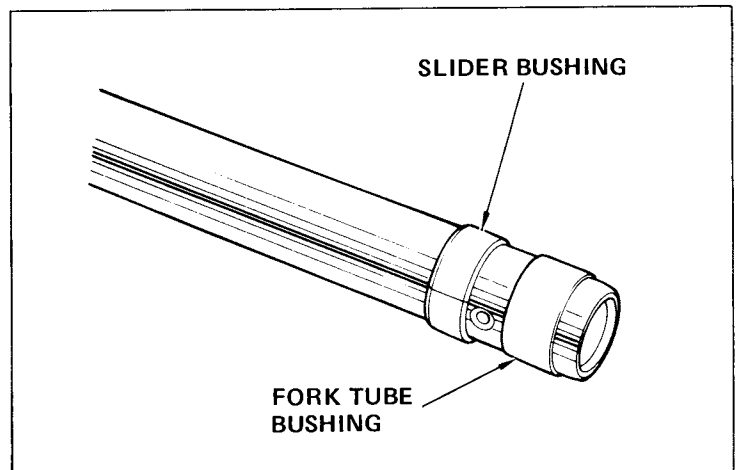
Install the piston ring on the piston, if it was removed.

Install the fork tube bushing if a new one is being installed.

NOTE:

Make sure the oil seal and back-up ring are correctly positioned before installation.

Place the rebound spring and piston into the fork tube. Place the oil lock piece on the end of the piston and insert the fork tube into the slider.



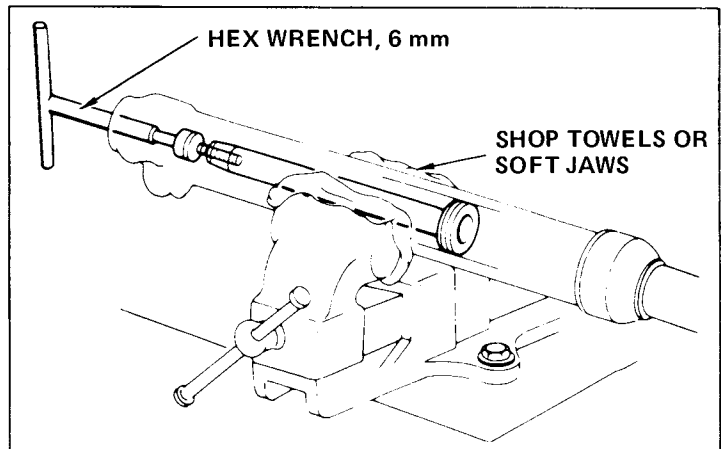
'83 ATC250R ADDENDUM

Clean the hex bolt threads and apply a locking agent to the threads.

NOTE:

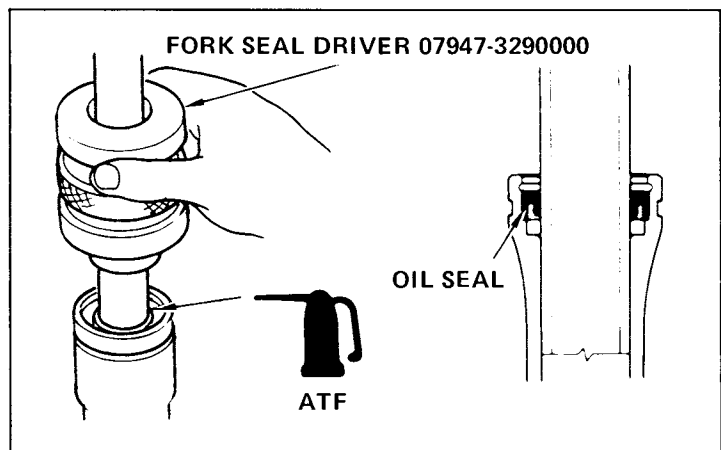
- To tighten the hex bolt, it may be necessary to install the fork springs and tighten the fork cap temporarily.
- Take care not to distort the slider in the vise.

TORQUE: 15–25 N.m (1.5–2.5 kg-m, 11–18 ft-lb)



Install the new oil seal into the top of the slider.
Place the old seal on top of the new seal.
Apply ATF to the new oil seal and drive it in with the fork seal driver.

The fork seal is seated when the groove in the slider is seen above the top of the new seal.
Install the snap ring and dust seal.



Fill the forks with the specified amount of ATF.

STANDARD CAPACITY: 280 cc (2.5 oz)

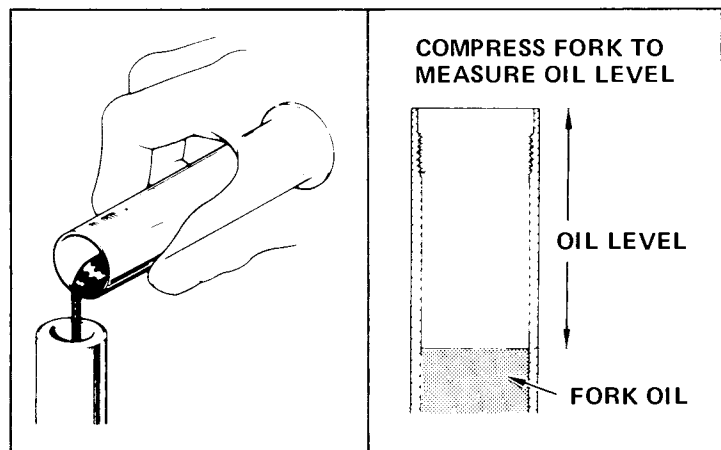
NOTE:

- Do not overfill. Overfilling causes harsh suspension performance.
- Fill both forks with equal amounts of ATF.

Compress the front fork and measure the oil level from the top of the tube.

OIL LEVEL: 177 mm (7.0 in.)

Install the fork springs.



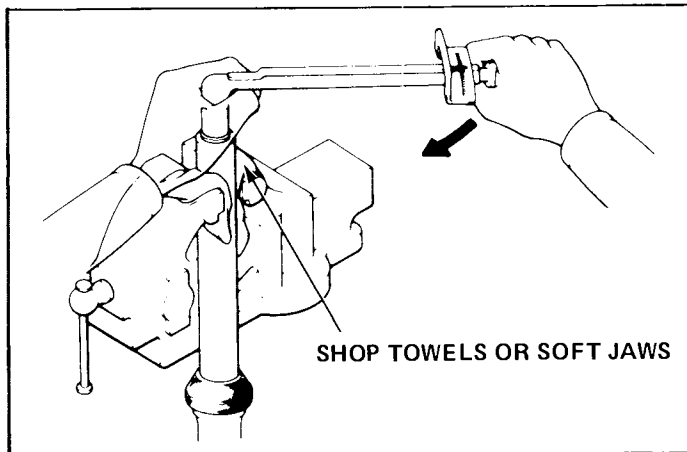


Tighten the fork caps:

TORQUE: 15–35 N·m (1.5–3.5 kg-m, 11–25 ft-lb)

CAUTION:

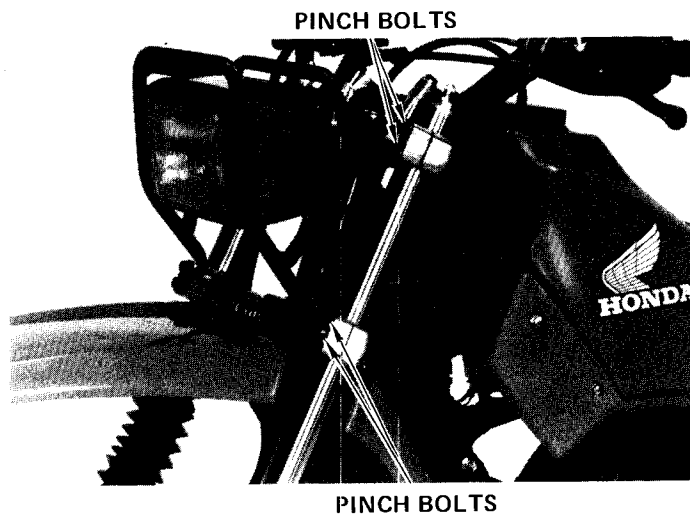
Use shop towels or soft jaws to avoid damaging the fork tube.



INSTALLATION

Tighten the fork tube pinch bolts.

TORQUE: 18–25 N·m (1.8–2.5 kg-m, 13–18 ft lb)



STEERING STEM

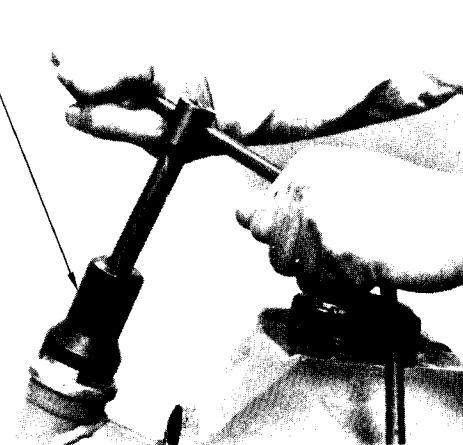
REMOVAL

Remove the following:

- headlight, headlight case and bracket.
- front wheel (page 18-19) and front fender.
- handlebars.
- fork bridge (pages 10-27).
- fork tubes (page 18-23).

Remove the steering head adjustment nut and the steering stem.

STEERING STEM SOCKET 07916-3710100





'83 ATC250R ADDENDUM

Check the steering stem bearing for damage or wear.

Remove the bearing from the steering stem if it is damaged or worn.

NOTE:

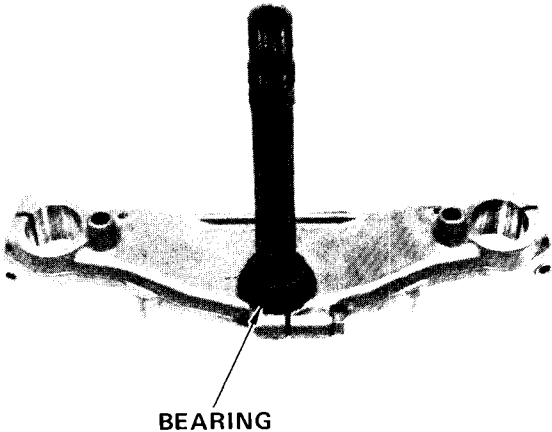
Replace the bearings and bearing races as a set.

Remove the bearing from the frame head pipe with the race remover 07953-4250002.

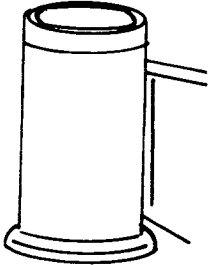
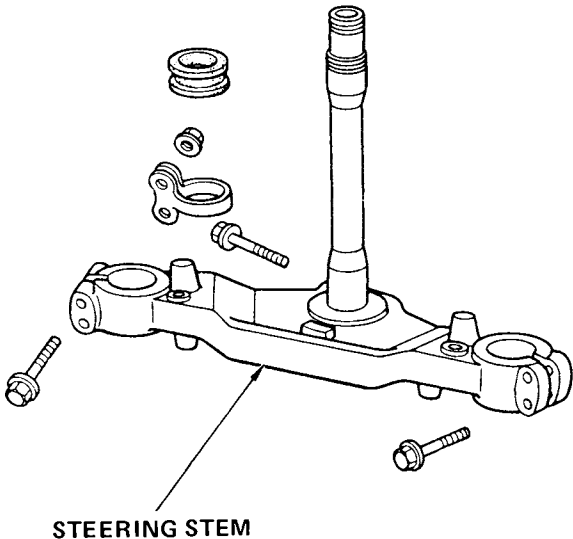
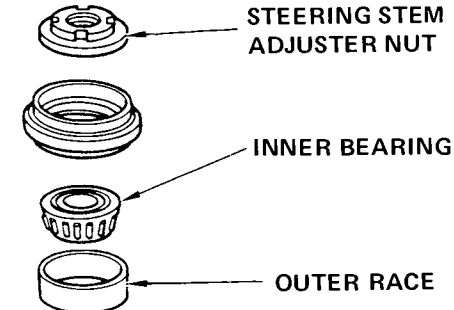
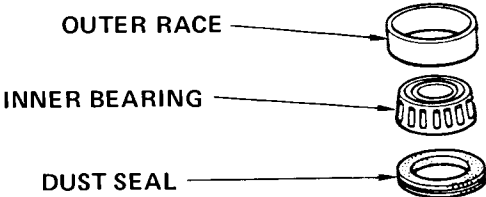
Install new bearing races into the head pipe with these tools:

Driver, 07749-0010000

Attachment, 42 x 47 mm, 07746-0010300

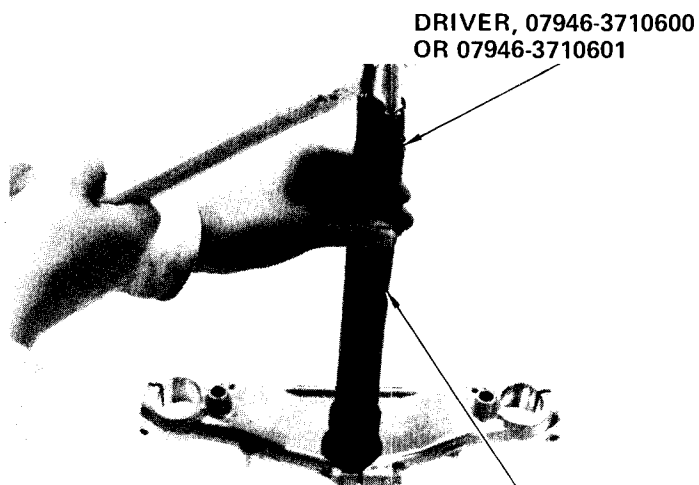


INSTALLATION





Install a dust seal onto the steering stem and press the lower bearing inner race over the stem with the special tool.



DRIVER, 07946-3710600
OR 07946-3710601

ATTACHMENT
GN-HT-54

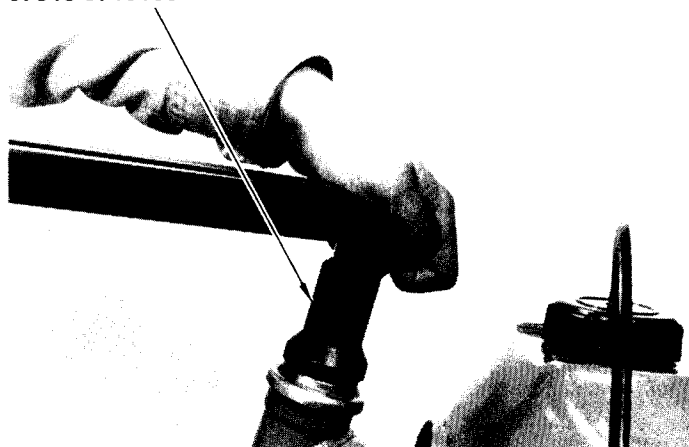
Install and tighten the adjustment nut.

TORQUE: 25–35 N·m (2.5–3.5 kg·m, 18–25 ft·lb)

Turn the steering stem lock-to-lock 2–3 times to seat the bearing. Then loosen and retighten the adjusting nut.

**TORQUE: 5.5–6.5 N·m (0.55–0.65 kg·m,
4–5 ft·lb)**

STEERING STEM SOCKET
07916-3710100



6. REAR SUSPENSION SERVICE INFORMATION

SPECIFICATIONS

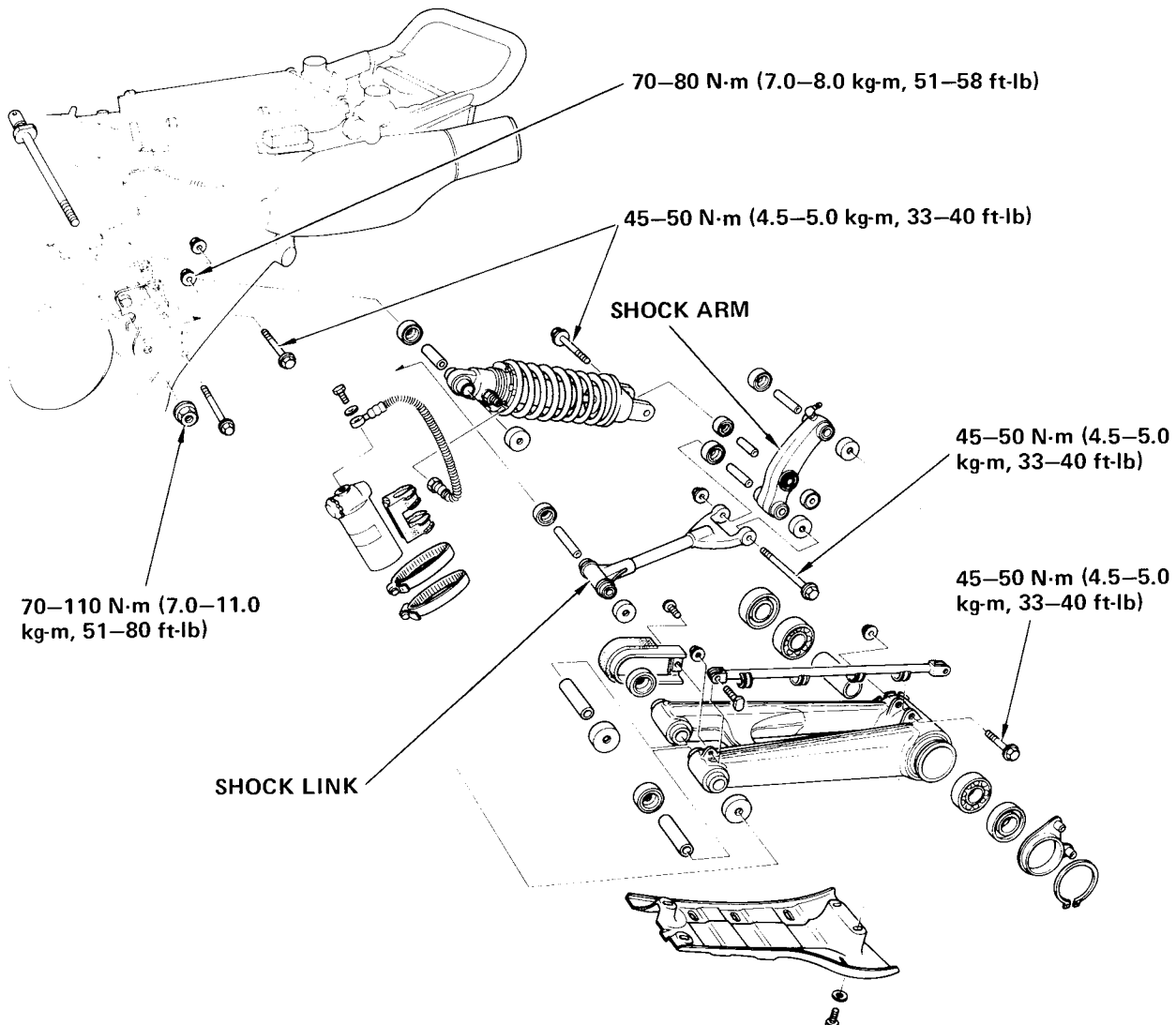
Rear shock absorber spring free length
Reservoir nitrogen gas pressure

SERVICE LIMIT

209 mm (8.2 in)
200 kPa (20 kg/m², 284.4 psi)

TORQUE VALUES

Swing arm pivot nut	70–110 N·m (7.0–11.0 kg·m, 51–80 ft·lb)
Shock link (frame)	70–80 N·m (7.0–8.0 kg·m, 50–58 ft·lb)
Lower shock absorber arm bolt	45–50 N·m (4.5–5.0 kg·m, 33–40 ft·lb)
Upper shock absorber arm bolt	45–50 N·m (4.5–5.0 kg·m, 33–40 ft·lb)
Shock absorber mounting bolts	45–50 N·m (4.5–5.0 kg·m, 33–40 ft·lb)

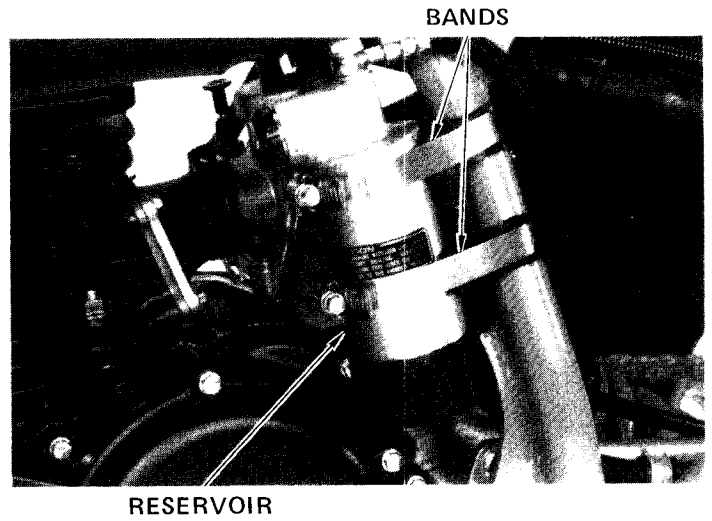




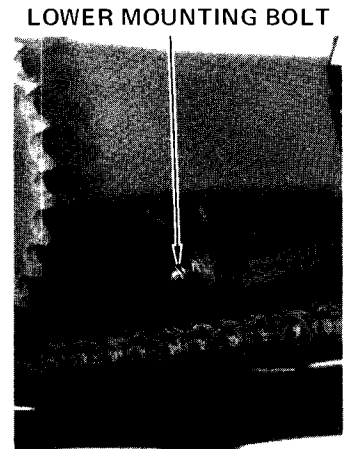
SHOCK ABSORBER

REMOVAL

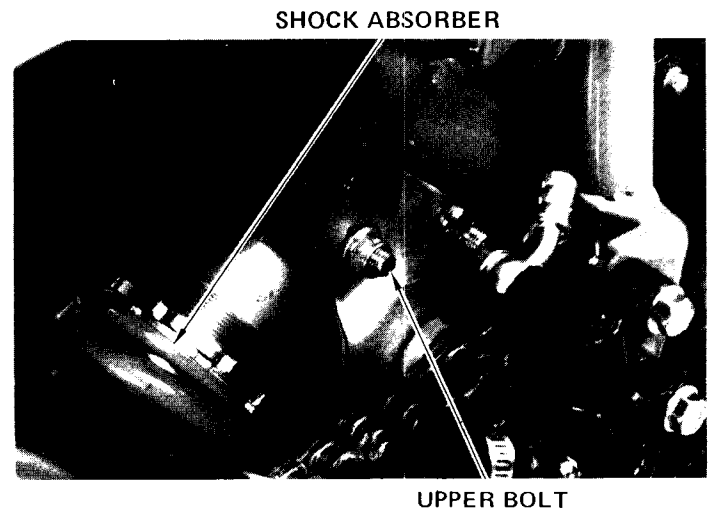
Remove the reservoir bands and remove the reservoir from the frame.



Remove the upper and lower shock arm mounting bolts.



Remove the shock absorber upper bolt and pull the shock backward with its arm.



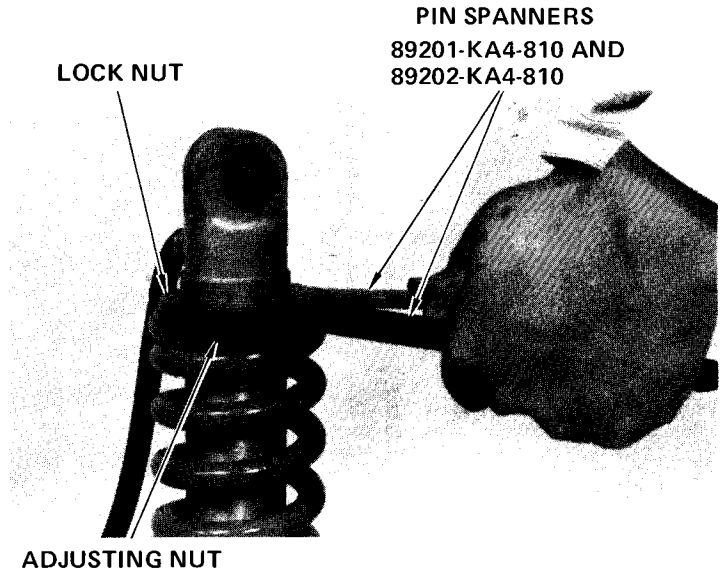


DISASSEMBLY

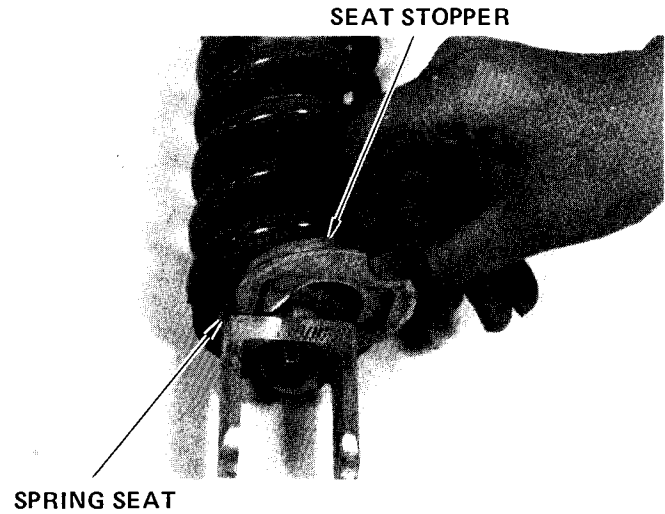
Hold the shock mount in a vise with soft jaws or a shop towel. Loosen the lock and adjusting nuts.

NOTE:

The pin spanners are optional tools.

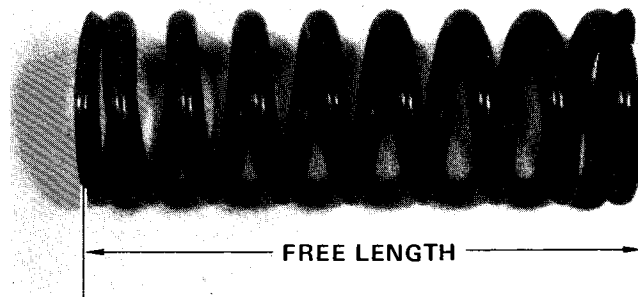


Remove the seat stopper, spring seat and spring.



Measure the spring free length.

SERVICE LIMIT: 209 mm (8.2 in)

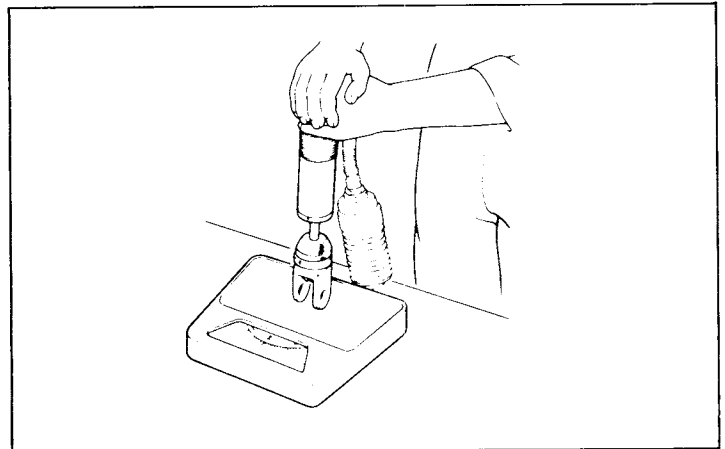




Visually inspect the damper unit for dents, oil leaks or other damage. Replace the damper unit if necessary. Place the damper rod on a scale and measure the force required to compress the damper unit 10 mm (0.14 in).

SPECIFIED FORCE: 26–36 kg (57–79 lbs)

If the force required is less than 26 kg (57 lbs) gas is leaking. Examine the damper rod and replace the damper if the rod is bent or scored.



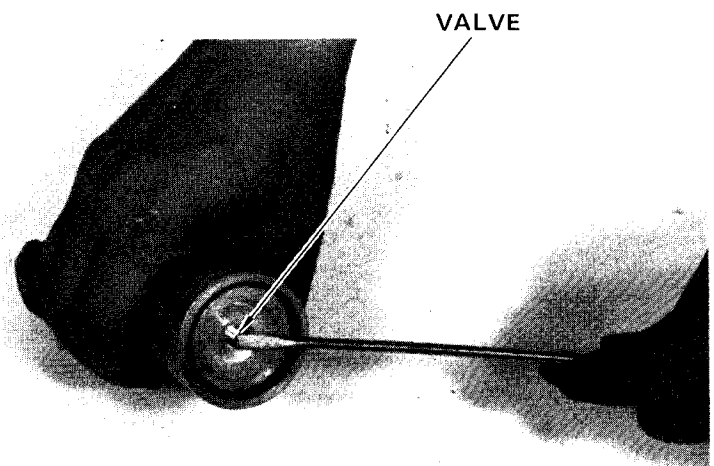
Remove the cap from the reservoir.

With the valve pointing away from you depress the valve core to release nitrogen from the reservoir.

CAUTION:

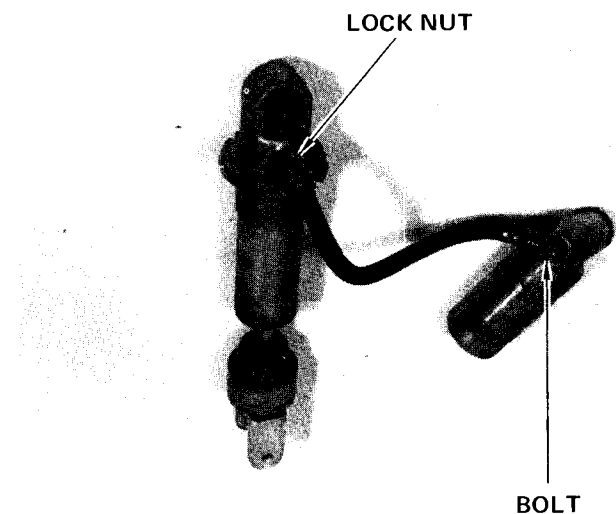
Be sure to release nitrogen gas pressure before disassembly.

Point the valve away from you.

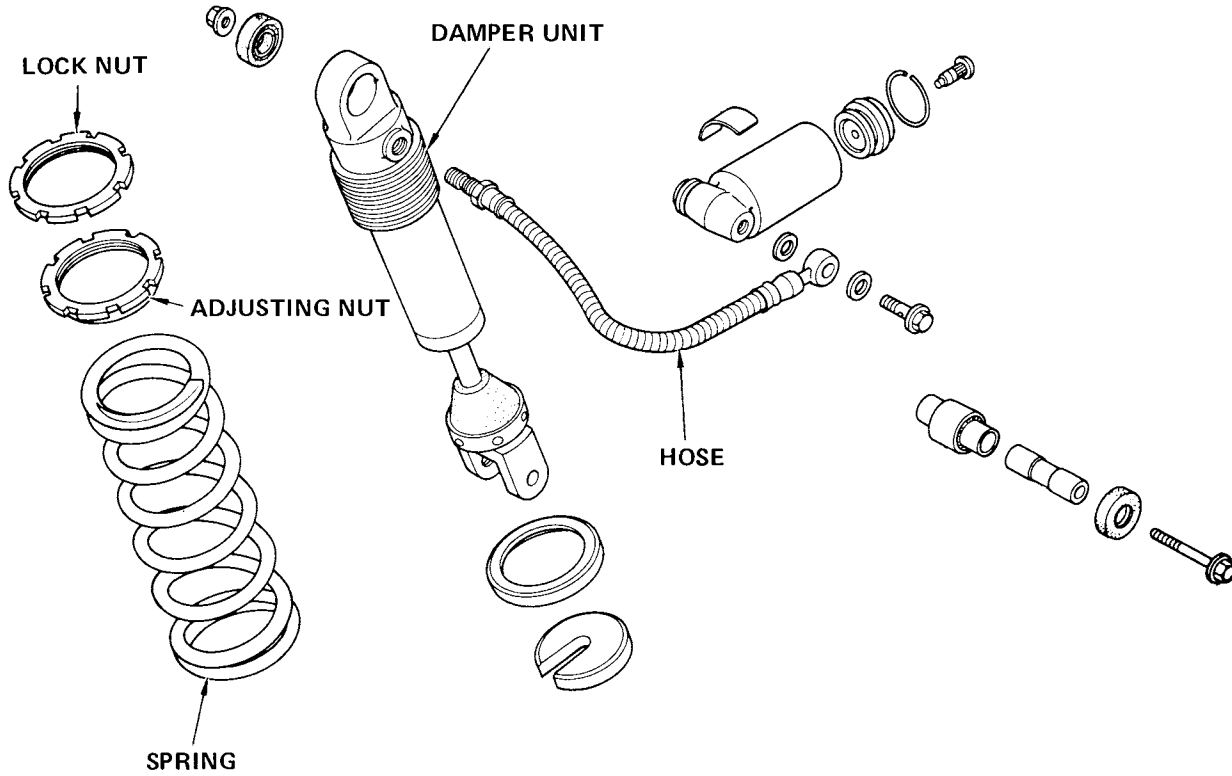


Remove the oil hose and lock nut. Separate the reservoir, hose and damper.

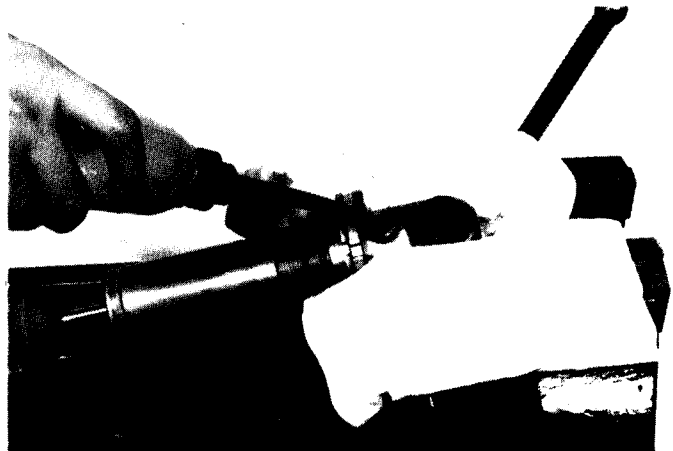
Drain the oil from the reservoir, hose and damper.



ASSEMBLY



Hold the upper shock mount in a vise with soft jaws or a shop towel. Point the hole straight up. Pull out the damper rod out all the way. Fill the damper with ATF.

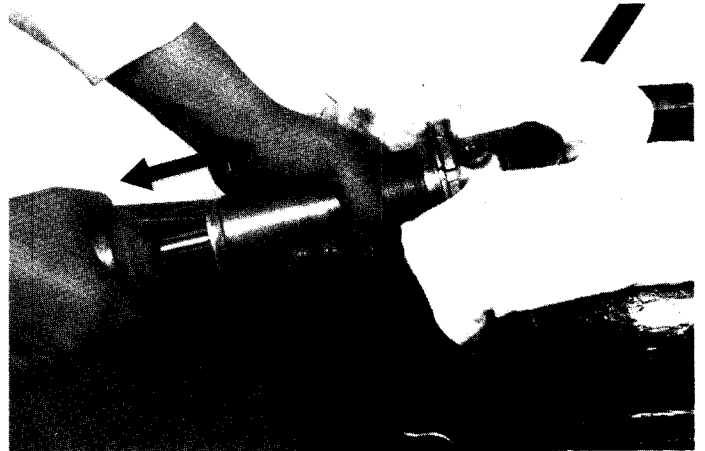




Bleed air from the damper by moving the damper rod in and out several times slowly.
Fill the damper with ATF as required.

NOTE:

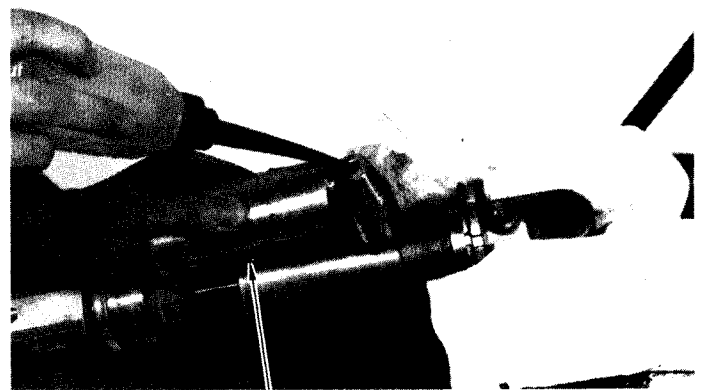
The damper should be as free of air as possible.



Fill the reservoir with ATF.

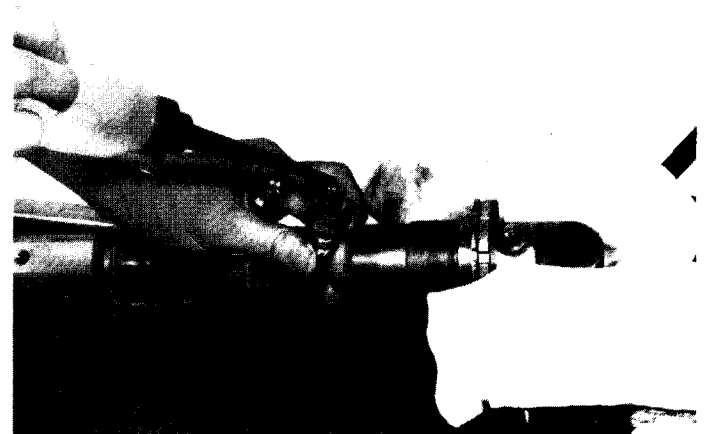
NOTE:

Make sure that there is no gas pressure in the reservoir.



RESERVOIR

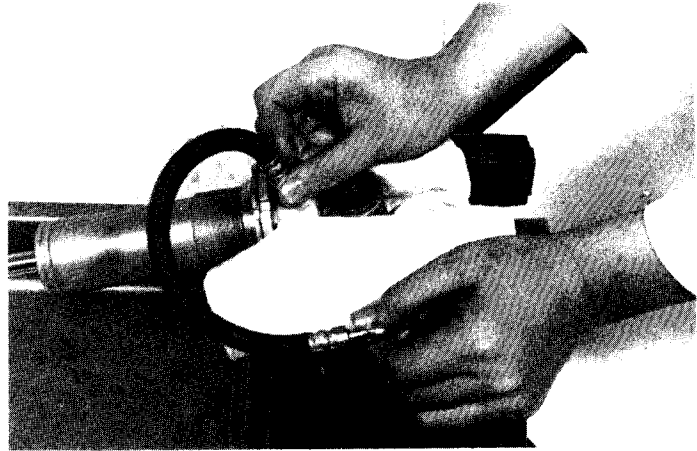
Fill the hose with oil.



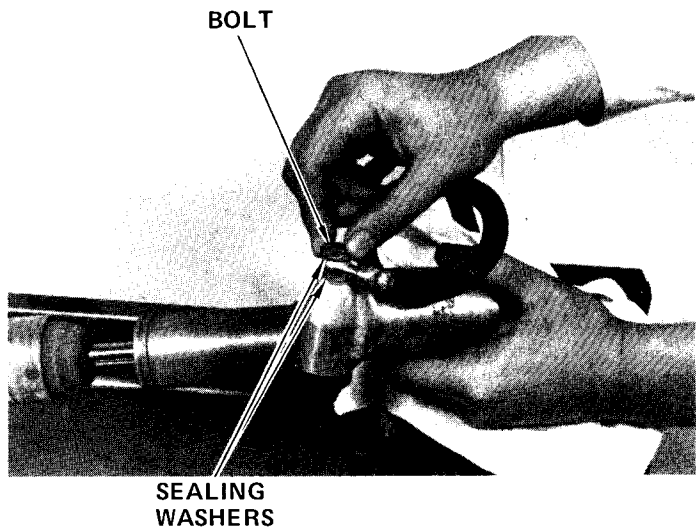
'83 ATC250R ADDENDUM

Connect the hose to the damper unit but do not tighten yet.

Very slowly push the damper rod in until ATF begins to overflow from the reservoir hose.



Connect the reservoir to the hose with two sealing washers and the oil hose bolt without losing oil. Do not tighten the bolt yet. Again, slowly compress the shock until a small amount of ATF overflows from the hose joint to ensure that both the reservoir and hose are filled with ATF.

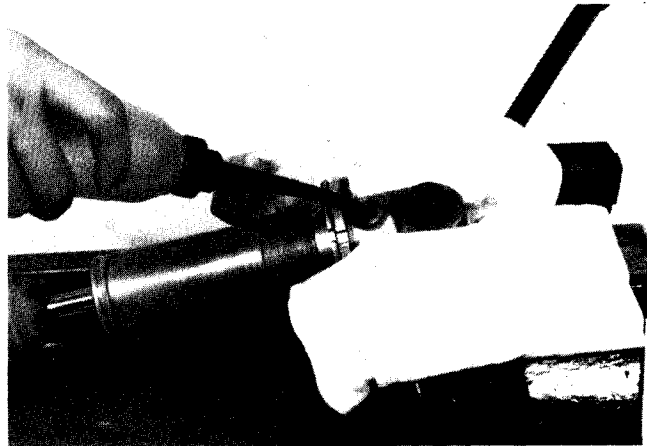


Disconnect the reservoir hose from the shock, keeping the reservoir and hose upright to ensure that they remain filled with ATF and free of air.

Pull the damper rod out all the way and fill the reservoir with ATF.

NOTE:

Fill to the very top of the reservoir hose threads.



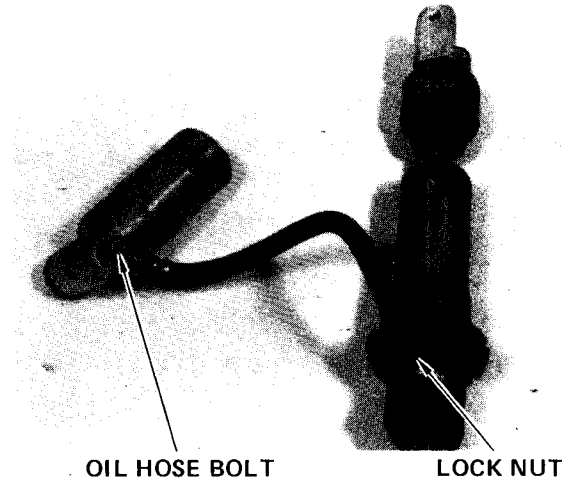


Carefully reconnect the reservoir hose to the shock and tighten the hose joint lock nut.

TORQUE: 27 N-m (2.7 kg-m, 20 ft-lb)

Tighten the oil hose bolt.

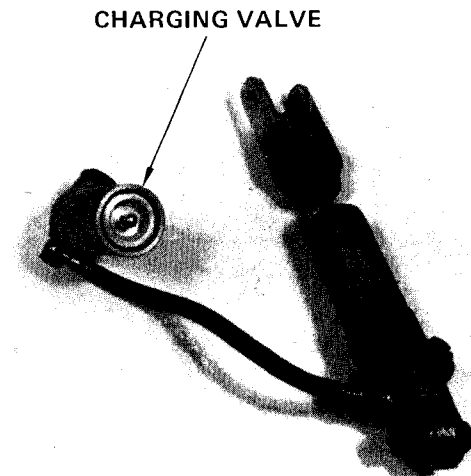
TORQUE: 27 N-m (2.7 kg-m, 20 ft-lb)



Fill the reservoir with nitrogen gas to 20 kg-cm (284 psi).

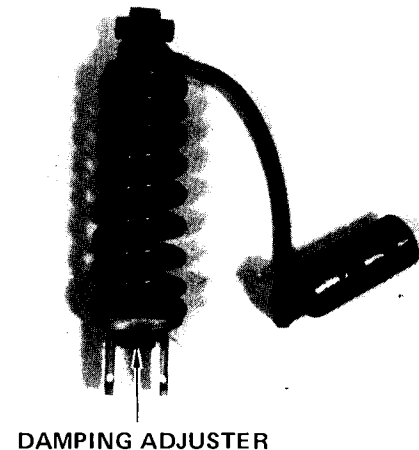
WARNING

Use only nitrogen to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion.



Install the valve cap.

Install the spring, spring seat and seat stopper. Align the shock mounts, and check that the damping adjuster's numbers face the correct direction; so they can be read from the rear.





'83 ATC250R ADDENDUM

Measure the spring length.

Turn the adjusting nut to obtain the correct spring length.

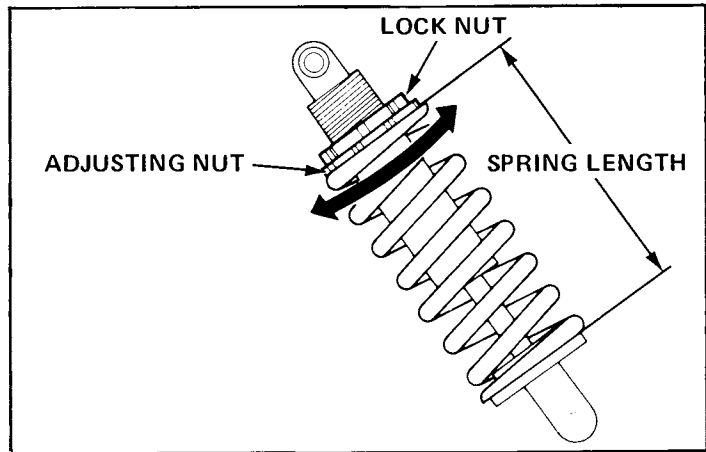
STANDARD SPRING LENGTH: 208 mm (8.2 in)

NOTE:

One turn equals 1.5 mm (0.06 in)

MAXIMUM SPRING LENGTH: 213 mm (8.4 in)

MINIMUM SPRING LENGTH: 193 mm (8.0 in)



**A: SHORTEN THE SPRING LENGTH
B: INCREASE THE SPRING LENGTH**

CAUTION:

Do not exceed the minimum or maximum spring length figures; it could cause a loss of rider control or damage the spring.

NOTE:

The damping adjustment and spring preload must be in compatible positions.

INSTALLATION

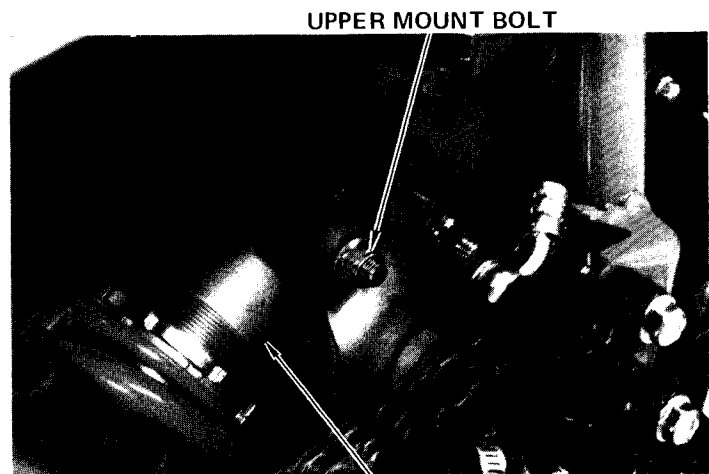
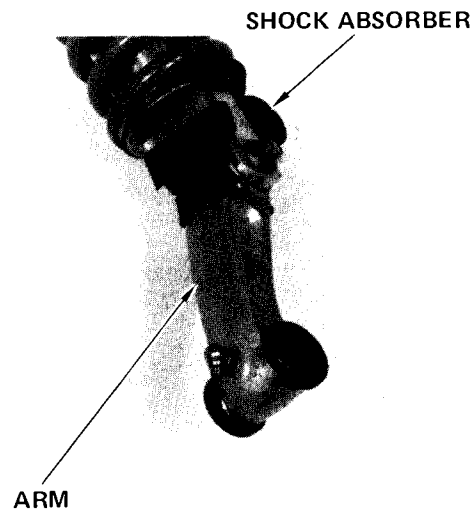
Grease all the pivot points.

Position the shock absorber on the shock arm and tighten the bolt to the specified torque.

TORQUE: 45–55 N·m (4.5–5.5 kg·m, 33–40 ft·lb)

Install and torque the shock absorber upper mount bolt.

TORQUE: 45–55 N·m (4.5–5.5 kg·m, 33–40 ft·lb)





Connect the shock link to the arm and torque the bolt.

TORQUE: 45–55 N·m (4.5–5.5 kg·m, 33–40 ft·lb)

Install the shock link onto the swing arm and torque the bolt.

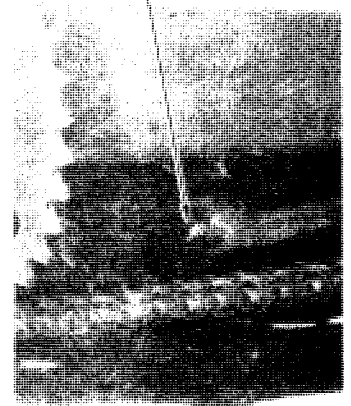
TORQUE: 45–55 N·m (4.5–5.5 kg·m, 33–40 ft·lb)

Install the reservoir, checking that the reservoir hose is routed correctly.

SHOCK LINK MOUNT BOLT



SHOCK ARM MOUNT BOLT



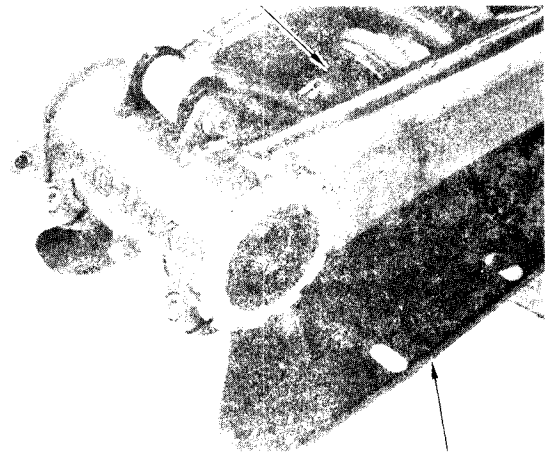
SWING ARM

REMOVAL

Remove the rear axle.

Remove the shock absorber (page 18-31) and skid plate.

SHOCK ABSORBER

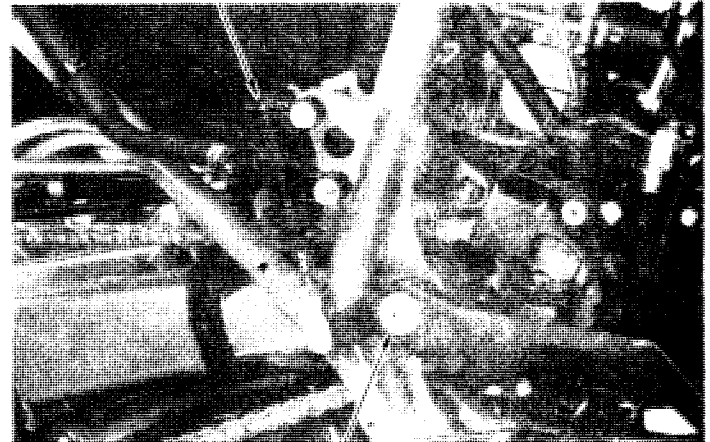


SKID PLATE

Remove the two bolts attaching the rear brake master cylinder to the frame and remove the master cylinder.

Remove the brake pedal mounting bolt and brake pedal.

MASTER CYLINDER



BRAKE PEDAL MOUNTING BOLT



SWING ARM

Remove the swing arm pivot nut and withdraw the pivot bolt.

Remove the swing arm.

INSPECTION

Check the swing arm for damage and replace if necessary.

Inspect the swing arm bearings and bushings and replace them if they are worn.

Ball Bearing Replacement—

NOTE:

The drive chain adjuster does not have to be removed from the swing arm for bearing replacement. If the adjuster is removed the sealing rings will be damaged and will require replacement.

Drive out the ball bearings with a drift and remove the center collar.

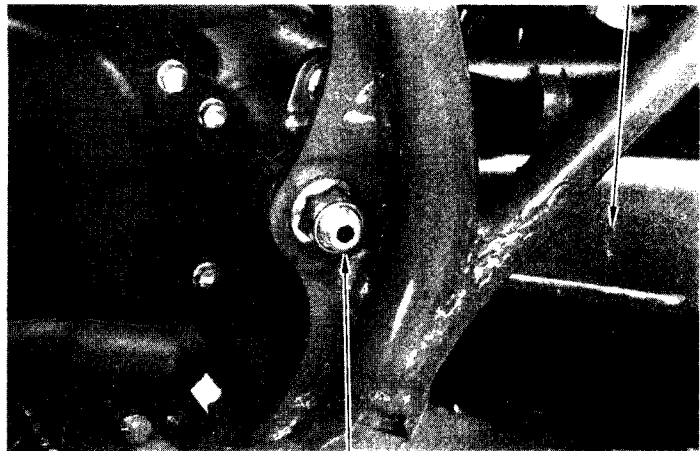
Press the right ball bearing in until it seats fully using the tools shown.

Install the center collar into the swing arm.

Install the left ball bearing using the same tools used to install the right bearing. When the attachment bottoms against the swing arm, remove the attachment and driver. Then finish pressing the bearing in until it seats (about 1½ mm) with driver 07947-1310000.

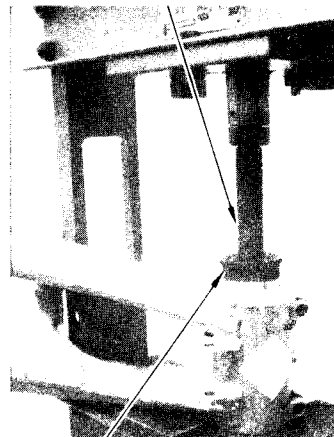
CAUTION:

Use driver 07947-1310000 only to finish pressing in the bearing. If it is used for the entire pressing in procedure the bearing will be damaged.



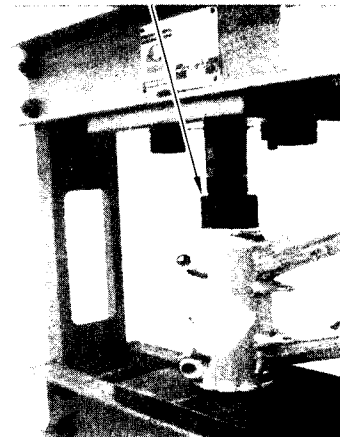
PIVOT NUT

DRIVER, 07749-0010000



**ATTACHMENT, 62 x 68 mm
07746-0010500**

DRIVER, 07947-1310000



Pivot Bushing Replacement—

NOTE:

New outer bushings come with needle bearings installed.

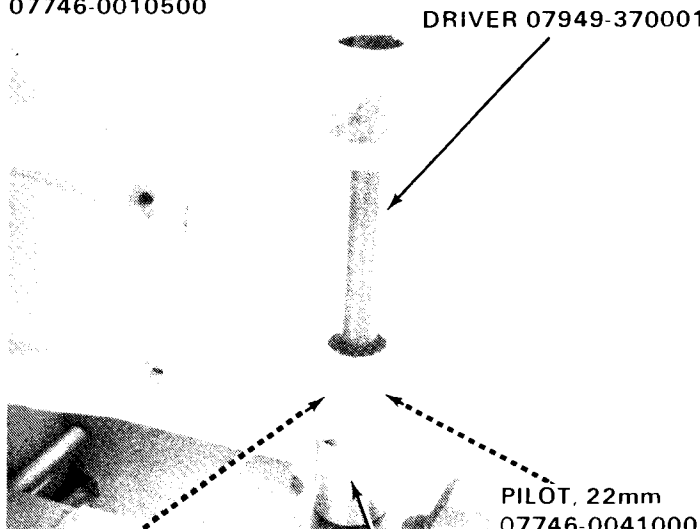
Drive the inner bushings out of the swing arm with a drift or bearing remover 07946-9640100 and driver 07949-3710001.

Support the swing arm in a press with the special collar tool 07965-964000A (U.S.A. only).

NOTE:

Align the cut-away on the special collar with the weld on the swing arm and that it is centered with the bushing.

Press the outer bushings out of the swing arm with the driver, attachment, and pilot shown.



**ATTACHMENT,
32 x 35 mm
07746-0010100**

**SPECIAL COLLAR
07965-964000A
(U.S.A. ONLY)**

**PILOT, 22mm
07746-0041000**

DRIVER 07949-370001

NEW

NEW



NEW

Press in new inner bushings so their collars seat against the swing arm.

NOTE:

The inner bushings must be installed before the outer bushings.

Support the inside of the swing arm with the special collar before installing the outer bushings. Turn the special collar over so the hollow side faces down.

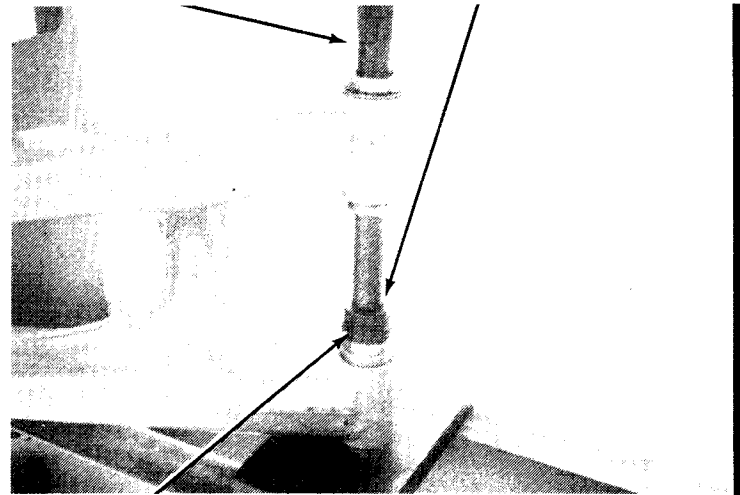
Press in the outer bushings so their collars seat against the swing arm.

INSTALLATION

Place the swing arm into the frame and install the pivot bolt. Install the nut and torque it.

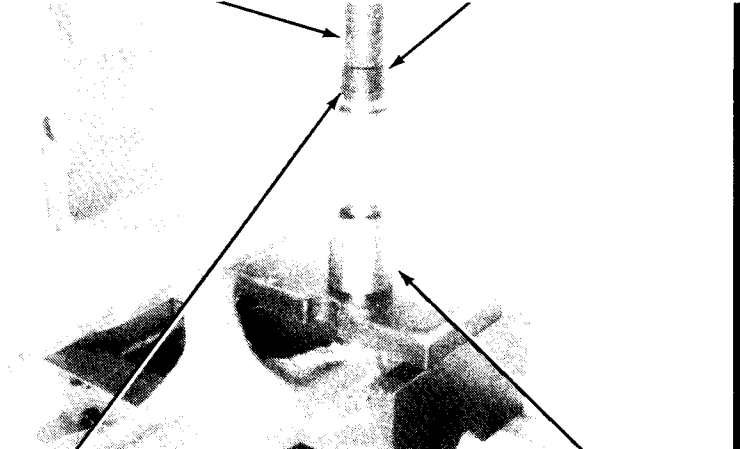
**TORQUE: 70-110 N·m (7.0-11.0 kg·m,
51-80 ft·lb)**

DRIVER, 07949-0010000
ATTACHMENT, 32 x 35 mm
07746-0010100



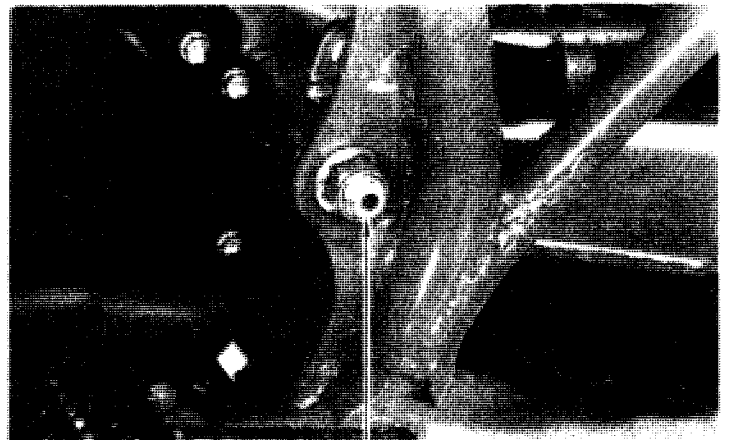
PILOT, 22 mm 07746-0041000

DRIVER 07749-0010000
ATTACHMENT, 32 x 35 mm
07746-0010100



PILOT, 22 mm
07746-0041000

SPECIAL COLLAR
07965-964000A
(U.S.A. ONLY)



NUT

NEW

NEW

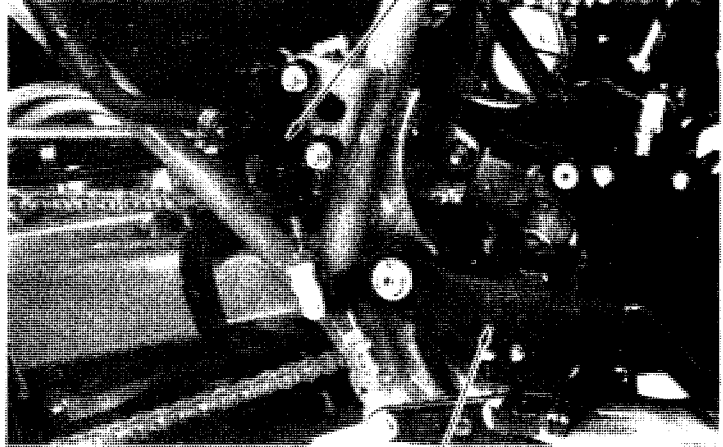
Install the brake pedal.

Install the master cylinder on the frame and tighten the bolts to the specified torque.

TORQUE: 30-40 N·m (3.0-4.0 kg-m, 22-29 ft-lb)

Install the skid plate, rear shock absorber and rear axle.

MASTER CYLINDER



BRAKE PEDAL



INTRODUCTION

This addendum contains service information for the 1983 and 1984 ATC250R. Any differences between the two are noted.

Only those pages that were changed in August 1983, are titled '83-84 ATC250R Addendum. The other pages are titled '83 ATC250R Addendum.

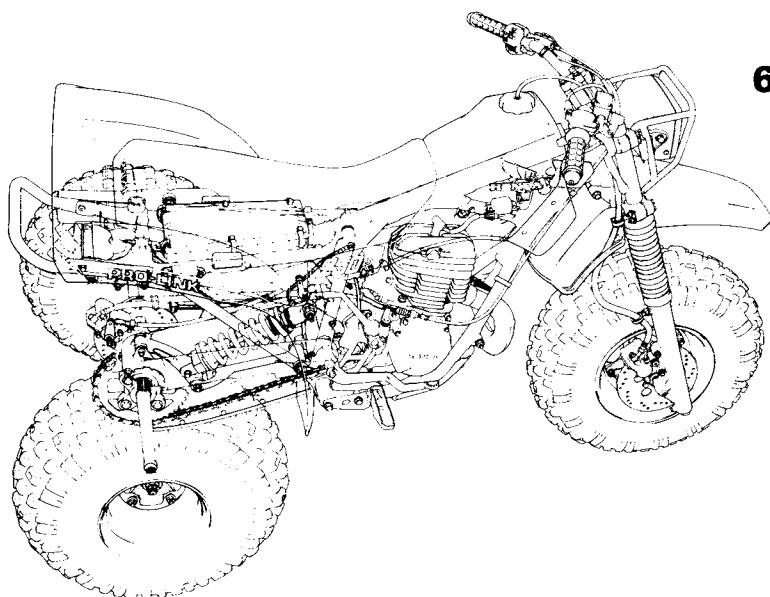
All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing.

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Service Publications Office

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1. GENERAL INFORMATION

SPECIFICATIONS

		1983	1984
Dimensions	Overall length	1,840 mm (72.4 in)	1,855 mm (73.0 in)
	Overall width	1,075 mm (42.3 in)	1,095 mm (43.1 in)
	Overall height	1,075 mm (42.3 in)	1,090 mm (42.9 in)
	Wheelbase	1,260 mm (49.6 in)	1,275 mm (50.2 in)
	Seat height	735 mm (28.9 in)	740 mm (29.1)
	Foot peg height	310 mm (12.2 in)	320 mm (12.6 in)
	Ground clearance	120 mm (4.7 in)	←←←←←
	Dry weight	133 kg (293 lb)	←←←←←
	Weight distribution	Front Rear	53 kg (117 lb) 80 kg (176 lb)
Frame	Type	Semi-double cradle	
	Front suspension and travel	Telescopic fork, 220 mm (8.7 in)	
	Rear suspension and travel	Swing arm, Pro-link, 206 mm (8.1 in)	
	Front tire size	23.5 x 8.0-11	
	Front tire pressure	3.3 psi (23 kPa, 0.23 kg/cm ²)	
	Rear tire size	22 x 11.0-8	
	Rear tire pressure	2.4 psi (17 kPa, 0.17 kg/cm ²)	
	Front brake	Single disc	
	Rear brake	Single disc	
	Fuel capacity	10.5 lit (2.77 U.S. gal, 2.31 Imp gal)	
	Fuel reserve capacity	1.8 lit (0.48 U.S. gal, 0.40 Imp gal)	
	Caster angle	69.5°	
	Trail length	33 mm (1.3 in)	
Front fork oil	281 cc (9.5 U.S. ozs, 7.9 Imp ozs)		
Engine	Type	Air cooled 2-stroke	
	Cylinder arrangement	Single cylinder inclined 3° from vertical	
	Bore x stroke	70 x 64.4 mm (2.756 x 2.353 in)	
	Displacement	247 cm ³ (15.07 cu in)	
	Compression ratio, '83	6.7:1	
	'84	7.3:1	
	Transmission oil capacity	1.1 lit (1.2 U.S. qt, 1.0 Imp qt)	
	Lubrication system	Gasoline/oil mixture	
	Fuel required	20:1, gas: oil pre-mix (gas RON 92-100)	
Air filtration	Oiled polyurethane foam		



Carburetor	Type Venturi dia Setting mark Float level Air screw opening Idle speed Jet needle Throttle lever free play	Piston valve 30 mm (1.18 in) PE 30A 20 mm (0.79 in) 1½ turns out 1,300 ± 150 rpm 3rd groove from top 3–8 mm (1/8–1/4 in)
Drive train	Clutch Transmission Primary reduction ratio Gear ratio I II III IV V Final reduction ratio Gear shift pattern	Wet multi-plate type 5-Speed, constant mesh 3.250 1.900 1.591 1.240 1.000 0.839 3.231 Left foot operated return system, 1-N-2-3-4-5
Electrical	Ignition system Ignition timing "F" mark Full retard Starting system Alternator Spark plug, '83 '84 Spark plug gap Headlight Taillight	CDI 17° BTDC/2,000 rpm 14° BTDC/9,000 rpm Primary kickstarter 12V 73 W/7,600 rpm NGK BR8ES, Champion RN-3C Champion QN-2C 0.7–0.8 mm (0.028–0.031 in) 12V 60W/60W 12V 5W

TORQUE VALUES

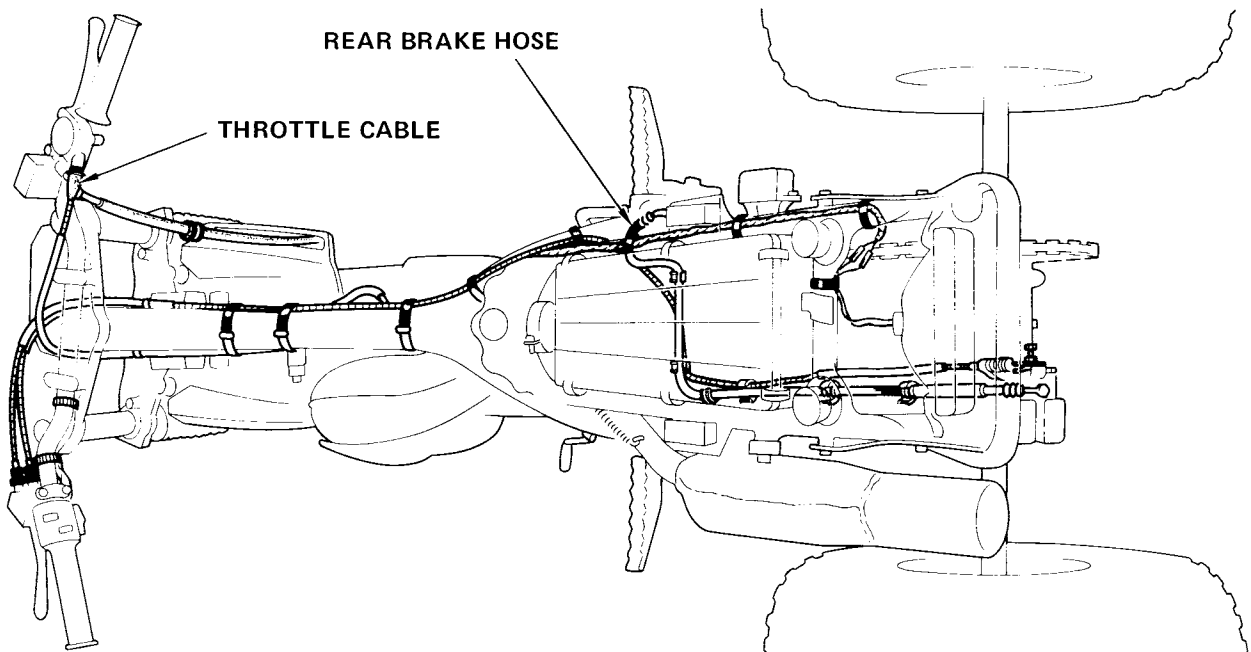
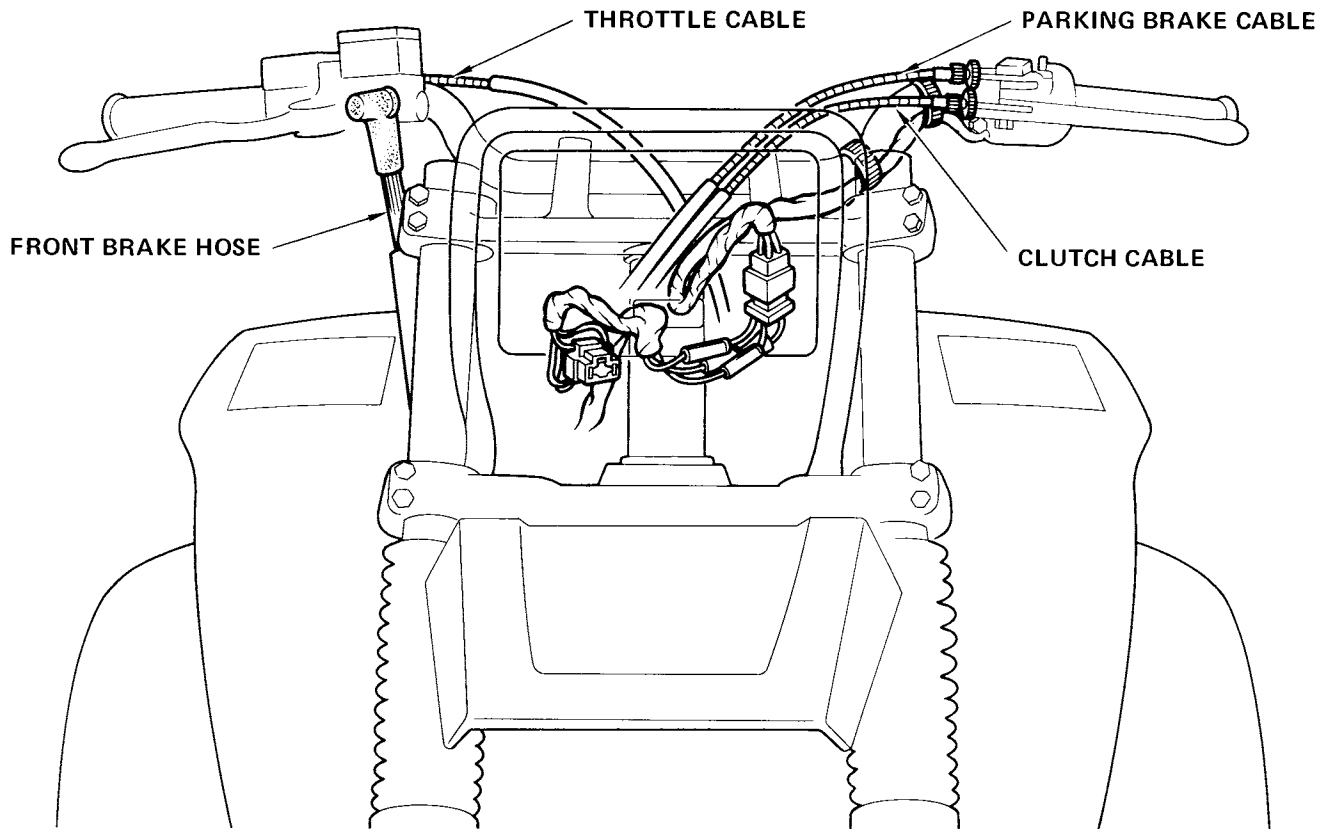
The torque values for the engine are the same as the 1981 and 1982 ATC250R's. Refer to page 1-4 for the engine torque values.

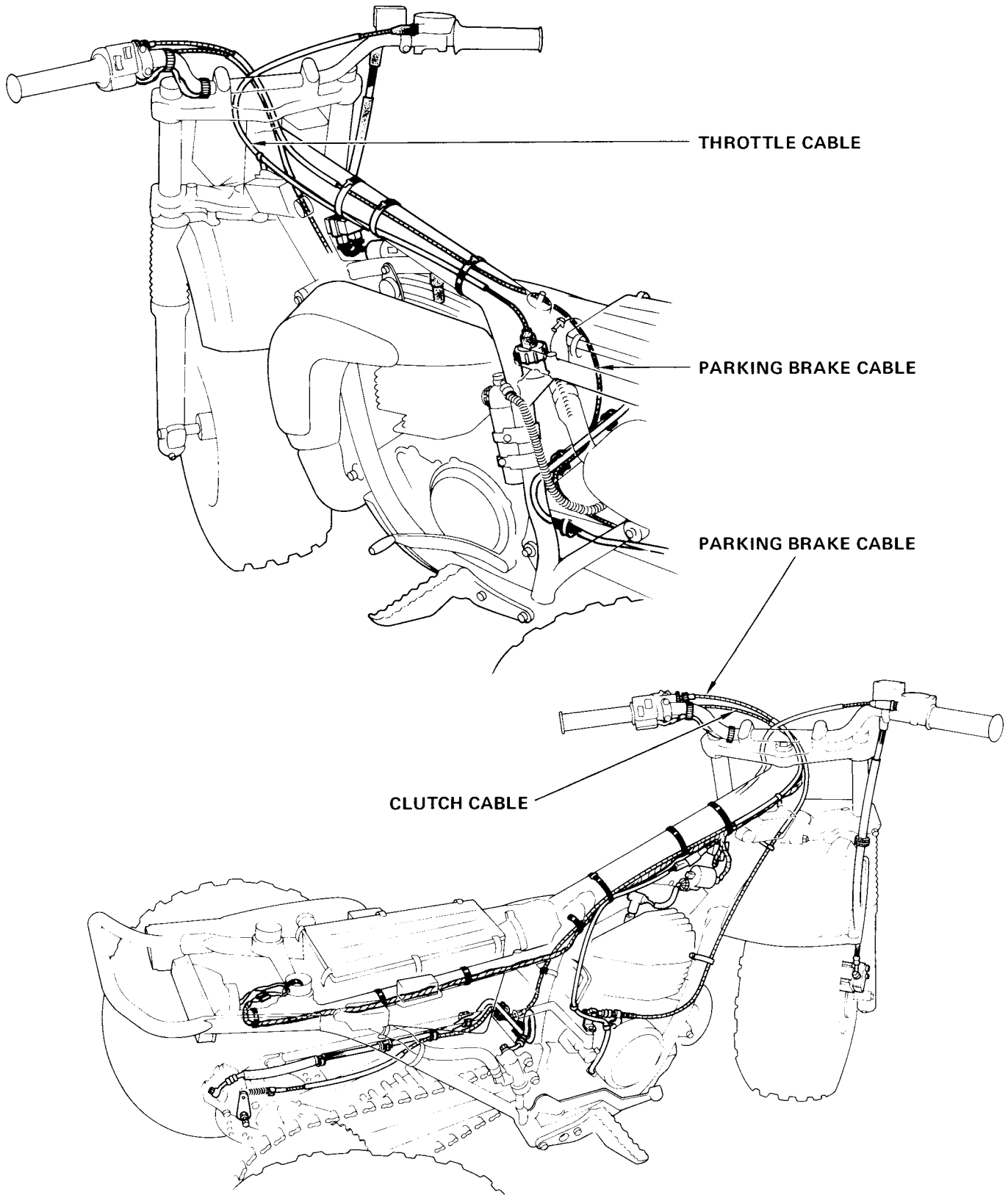
FRAME

ITEM	THREAD DIA. (mm)	TORQUE VALUES		
		N-m	kg-m	ft-lb
Sprocket bolts	12	55-60	5.5-6.0	40-43
Sprocket lock nuts	12	40-45	4.0-4.5	29-33
Rear axle nut (outer)	32	120-140	12.0-14.0	87-101
Rear axle nut (inner)	32	35-45	3.5- 4.5	25-33
Rear axle nut	18	80-100	8.0-10.0	58-72
Front axle	14	70-110	7.0-11.0	51-80
Front axle holder nut	6	10-14	1.0- 1.4	7-10
Front fork bottom pinch bolts	8	18-25	1.8- 2.5	13-18
Front fork upper pinch bolts	8	18-25	1.8- 2.5	13-18
Handlebar holders	8	18-25	1.8- 2.5	13-18
Steering stem adjuster nut	26	See page 18-29.		
Steering stem nut	24	80-120	8.0-12.0	58-87
Front hub nut	10	25-30	2.5- 3.0	18-22
Rear engine hanger bolt	10	35-45	3.5- 4.5	25-33
Gear shift pedal bolt	6	8-12	0.8- 1.2	6-9
Swing arm pivot bolt	14	70-110	7.0-11.0	51-80
Swing arm bearing holder bolts	8	13-18	1.3- 1.8	9-13
Frame connecting rod	12	70-80	7.0- 8.0	51-58
Shock arm	10	45-55	4.5- 5.5	33-40
Shock link	10	45-55	4.5- 5.5	33-40
Rear shock mounting bolts	10	45-55	4.5- 5.5	33-40
Kick starter bolt	8	18-25	1.8- 2.5	13-18
Fuel valve mounting nut	18	20-25	2.0-2.5	14-18



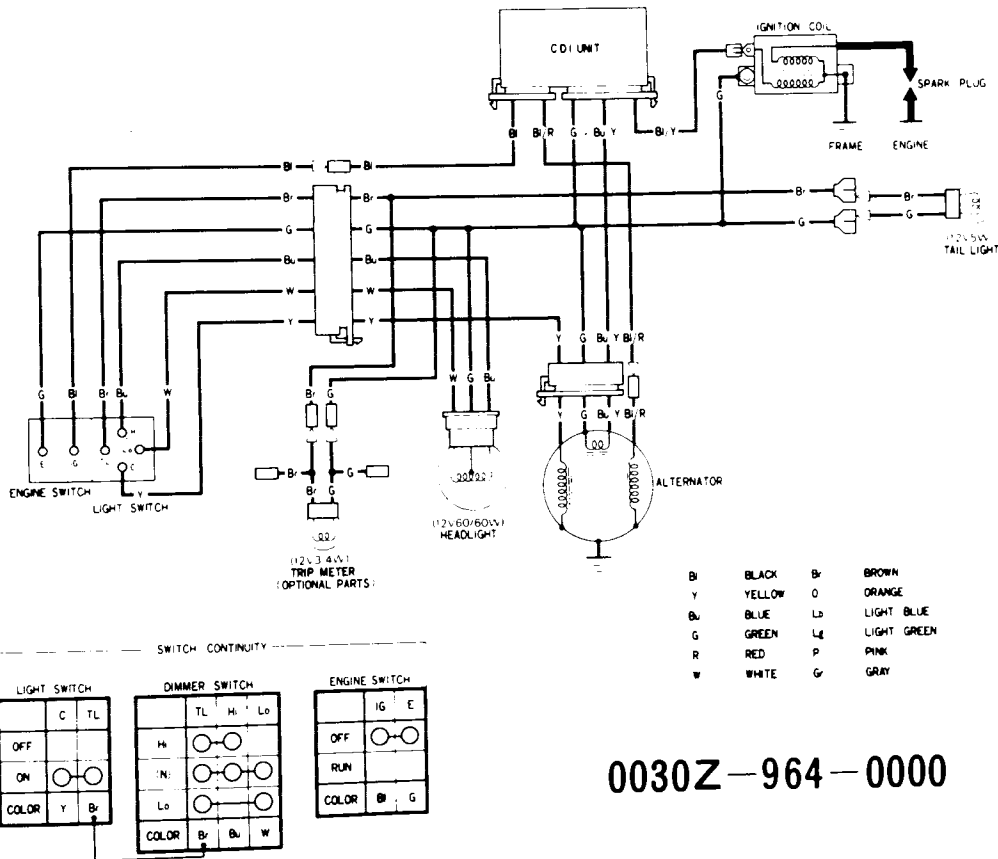
CABLE AND HARNESS ROUTING







WIRING DIAGRAM



0030Z-964-0000

NOISE EMISSION CONTROL SYSTEM

• The U.S. Environmental Protection Agency requires manufacturers to certify that vehicles built after January 1, 1983 will comply with applicable noise emission standards for one year or 3,000 km (1,865 miles) after the time of sale to the ultimate purchaser, when operated and maintained according to the instructions provided. Compliance with the terms of the Distributor's Warranty for the Honda Vehicle Noise Emission Control System is necessary in order to keep the noise emission control system in effect. (USA only)

TAMPERING WITH THE NOISE CONTROL SYSTEM IS PROHIBITED: Federal law prohibits the following acts or the causing thereof: (1) The removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use; or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

AMONG THOSE ACTS PRESUMED TO CONSTITUTE TAMPERING ARE THE ACTS LISTED BELOW:

1. Removal of, or puncturing the muffler, bafflers, header pipes or any other component which conducts exhaust gases.
2. Removal of, or puncturing of any part of the intake system.
3. Lack of proper maintenance.
4. Replacing any moving parts of the vehicle, or parts of the exhaust or intake system, with parts other than those specified by the manufacturer.

2. MAINTENANCE

MAINTENANCE SCHEDULE

- The maintenance intervals shown in the following schedule are based upon average riding conditions. Machines subjected to severe use, or ridden in unusually dusty areas, require more frequent servicing.

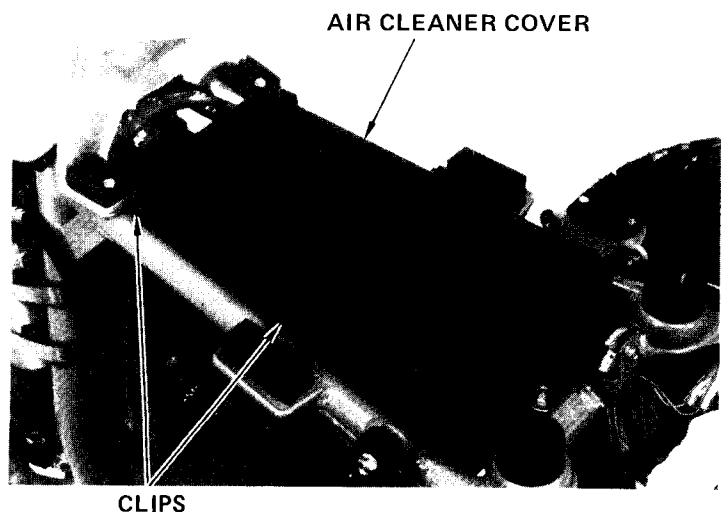
I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate		INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page	
	TRANSMISSION OIL	NOTE(1),(2)	R	R	2-3
	AIR CLEANER ELEMENT	NOTE(2)		C	18-8
	SPARK PLUG			I	2-5
*	CARBURETOR		I	I	2-8
	FUEL LINE		I: (EVERY YEAR)		2-8
*	FUEL STRAINER		C: (EVERY YEAR)		2-8
	THROTTLE OPERATION		I	I	2-7
	DRIVE CHAIN	NOTE(2)	I,L	I,L	18-9
*	BRAKE PADS	NOTE(3)	I: (EVERY YEAR)		2-12, 17-15
	CHAIN SLIDER		I	I	18-10
	FRONT FORK OIL/AIR		R: (EVERY YEAR)		2-15, 18-26
	FRONT/REAR BRAKE FLUID		I	I,R: (EVERY YEAR)	2-12, 17-14
*	SUSPENSION			I	2-15
	SWINGARM BEARINGS		I,L	I,L	18-40
	BRAKE SYSTEM		I	I	2-12, 17-8
*	CLUTCH		A	A	2-6
*	SPARK ARRESTER			C	14-2
	ALL NUTS, BOLTS, FASTENERS		I	I	---
	LIGHTING EQUIPMENT		I	I	2-16
	TIRES		I	I	2-14
*	STEERING HEAD BEARINGS		A: (EVERY YEAR)		18-29

NOTE: (1) Replace every 30 operating days or every 3 months, whichever comes first.
 (2) Service more frequently when riding in dusty areas, sand or snow.
 (3) Service more frequently after riding in very wet or muddy conditions.

AIR CLEANER

Remove the seat.

Remove the clips attaching the air cleaner cover and remove the cover.

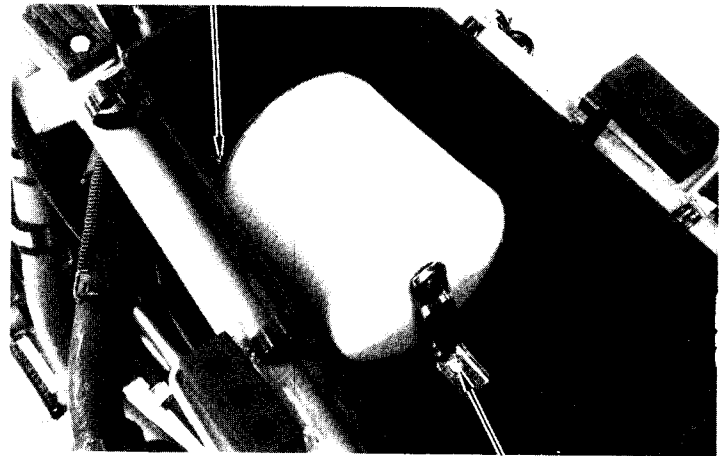




Loosen the connecting tube band screw. Remove the element holding bracket screw and element.

Remove the element from the holder. Refer to page 2-5 for cleaning and reoiling instructions.

BAND SCREW



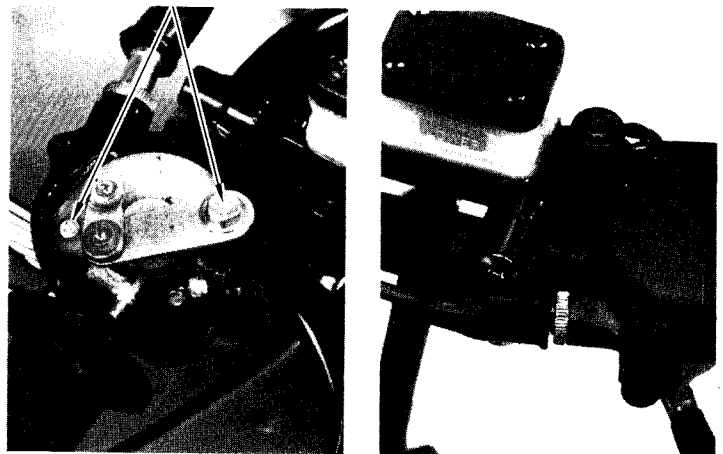
BRACKET SCREW

THROTTLE OPERATION

Check for smooth throttle lever full opening and automatic full closing in all steering positions. Make sure there is no deterioration, damage or kinking in the throttle cable. Replace any damaged parts.

Disconnect the throttle cable at the upper end. Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.

GREASE



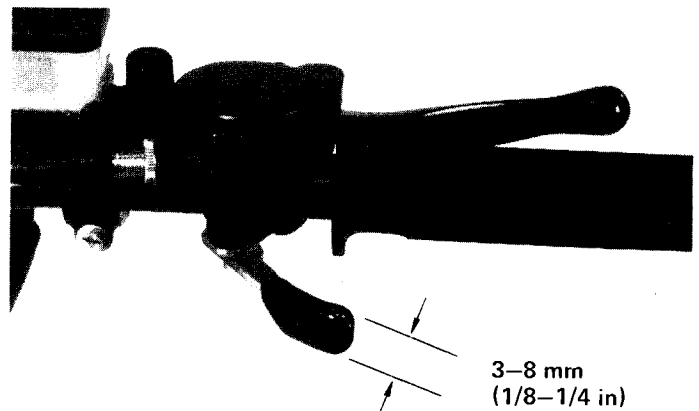
Install the throttle cable in the reverse order of removal.

Make sure the throttle lever free play is 3–8 mm (1/8–1/4 in) at the tip of the throttle lever.

Adjust as follows:

Adjust the throttle lever free play by loosening the lock nut and turning the adjuster.

Tighten the lock nut after adjusting.



DRIVE CHAIN

Check the chain slack midway between the sprockets.

Standard: 25–35 mm (1–1½ in)

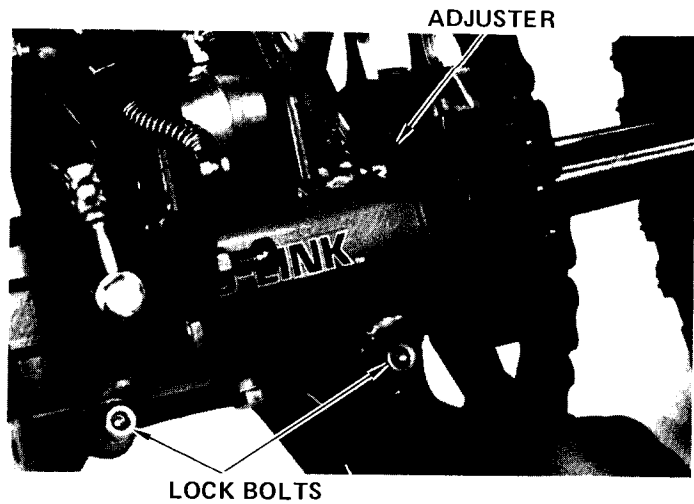
Adjustment:

Loosen the two lock bolts.

Turn the adjuster to decrease or increase chain slack using the tool provided in the tool kit. Then tighten the lock nuts.

NOTE:

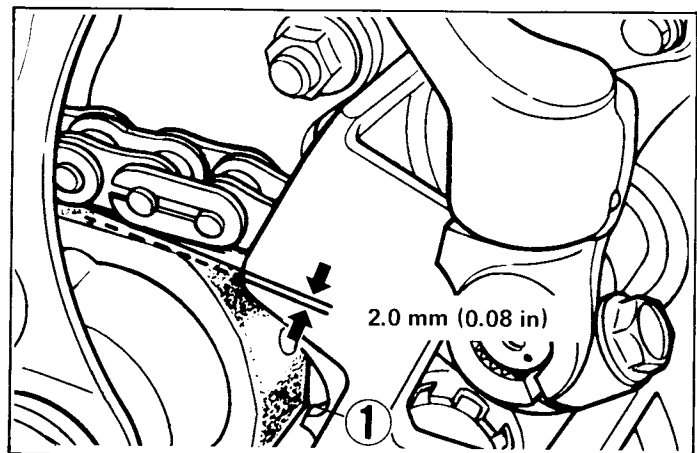
If drive chain slack is excessive when the adjuster is moved to the limit of adjustment, the drive chain is worn and must be replaced.



DRIVE CHAIN SLIDER

Check the drive chain slider for wear or damage.

Replace the slider if the depth of the groove exceeds 2.0 mm (0.8 in).



REAR SUSPENSION

Push the rear of the motorcycle up and down to check for proper operation.

Check that the shock rod is not bent and that oil is not leaking from the seal or hose fittings.

Check that the shock link and shock arm are not damaged.

Move the rear wheels sideways to check for play in the swing arm that would indicate worn bearings.