HONDA

SERVICE MANUAL

85-87

TRX 250

FOURTRAX 250

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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 method or tools selected.

HOW TO USE THIS MANUAL

Sections 1 through 3 apply to the whole Four Trax, while sections 4 through 18 describe parts of the Four Trax, 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, service information and troubleshooting for the section. The subsequent pages give detailed procedures.

If you don't know what the source of a problem is, refer to section 19, Troubleshooting.

CONTENTS

1. GENERAL INFORMATION

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

The battery generates hydrogen gas which can be highly explosive. Do not smoke or allow flames or sparks near the battery, especially while charging it.

WARNING

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

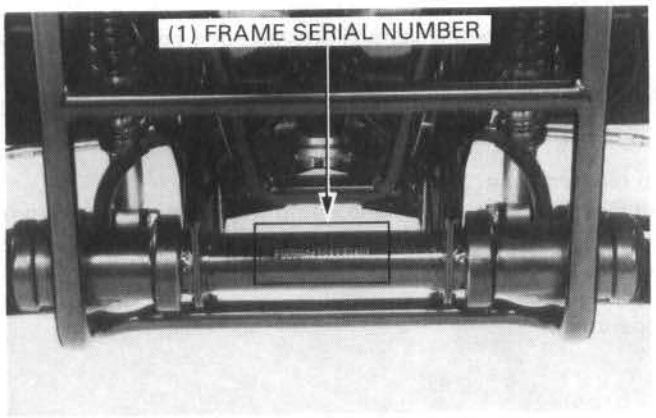
WARNING

The battery electrolyte contains sulfuric acid. Protect your eyes, skin and clothing. In case of contact, flush thoroughly with water and call a doctor if electrolyte gets in your eyes.

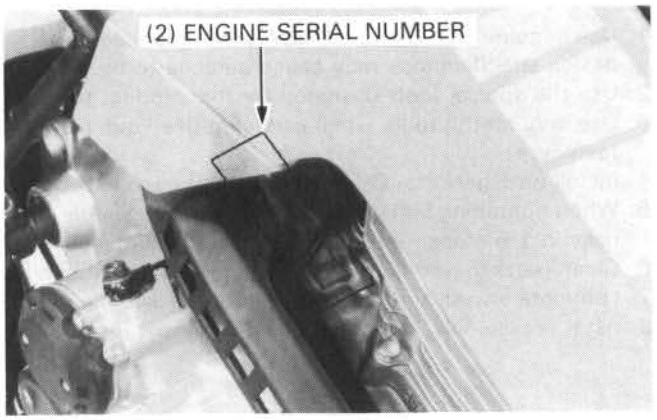
SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalents. Parts that don't meet HONDA's design specifications may cause damage to the Four Trax.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this Four Trax. Metric bolts, nuts and screws are not interchangeable with English 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 1-5 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.

MODEL IDENTIFICATION

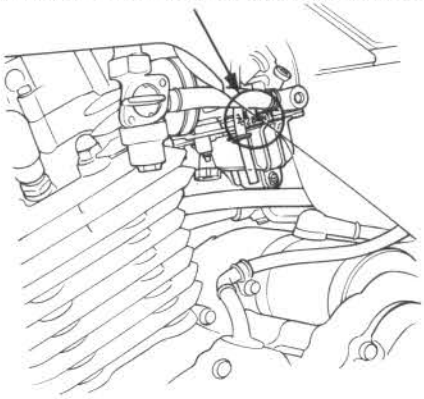


The frame serial number is stamped on the arm hinge.



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

(3) CARBURETOR IDENTIFICATION NUMBER



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

RIDE RED

SPECIFICATIONS

DIMENSIONS	Overall length		1,875 mm (73.8 in)
	Overall width		1,080 mm (42.5 in)
	Overall height		1,020 mm (40.2 in)
	Wheel base		1,235 mm (48.6 in)
	Seat height		765 mm (30.1 in)
	Foot peg height		290 mm (11.4 in)
	Ground clearance		160 mm (6.3 in)
	Dry weight	'85	212 kg (467 lb)
		AFTER '85	217 kg (478 lb)
FRAME	Type		Semi-double cradle
	Rim size	Front	5.5 x 10 DC
		Rear	9.25 x 9 DC
	Front tire size, pressure		21 x 7.00—10, 0.2 kg/cm² (2.9 psi)
	Rear tire size, pressure		25 x 12.00—9, 0.15 kg/cm² (2.2 psi)
	Front brake		Hydraulic operated leading trailing shoe
	Rear brake		Cable operated leading trailing shoe
	Fuel tank capacity		10.0 liter (2.6 US gal, 2.2 Imp gal)
	Fuel reserve capacity		2.0 liter (0.5 US gal, 0.4 Imp gal)
	Toe-in		0 ± 7.5 mm (0 ± 0.30 in)
	Caster angle		8°
	Camber angle		1°
	Trail length		42 mm (1.65 in)
	Tread	Front	800 mm (31.5 in)
		Rear	800 mm (31.5 in)
ENGINE	Type		Gasoline, air-cooled 4-stroke
	Cylinder arrangement		Single cylinder inclined 20°
	Bore x stroke		74 x 57.3 mm (2.9 x 2.3 in)
	Displacement		246 cc (15.0 cu-in)
	Compression ratio		9 : 1
	Valve train		Overhead camshaft, chain driven
	Maximum horsepower		19.3 HP/7,000 rpm (SAE)
	Maximum torque		2.03 kg-m (14.7 ft-lb)/6,000 rpm (SAE)
	Oil capacity		2.5 liter (2.6 US qt, 2.2 Imp qt)
			2.1 liter (2.2 US qt, 1.8 Imp qt) after draining
	Lubrication system		Forced pressure and wet sump
	Cylinder compression		12.5 ± 1.0 kg/cm² (178 ± 14 psi)
	Intake valve	Opens	8° BTDC } at 1 mm lift
		Closes	35° ABDC
	Exhaust valve	Opens	5° BBDC
		Closes	40° ATDC
	Valve clearance	Intake	0.08 mm (0.003 in)
	(Cold)	Exhaust	0.08 mm (0.003 in)
CARBURETOR	Type		Dual valve
	Venturi dia.		27 mm (1.06 in)
	Main jet		#128
	Pilot screw opening		2-3/8 turns out
	Jet needle		3rd groove
	Float level		18.5 mm (0.73 in)
	Idle speed		1,400 ± 100 rpm

DRIVE TRAIN	Clutch		Wet multi-plate, semi-automatic
	Transmission		5-speed constant mesh with reverse
	Primary reduction		2.407 (65/27)
	Gear ratio	S/L	4.083 (49/12)
		I	2.389 (43/18)
		II	1.609 (37/23)
		III	1.179 (33/28)
		IV	0.906 (29/32)
		Reverse	5.397
	Final reduction		5.684
	Gearshift pattern		Left foot operated return system, Forward: N—S/L—1—2—3—4 Reverse: N—R
ELECTRICAL	Ignition		CDI
	Ignition timing	Initial	13° BTDC at idle
		Full advance	31° BTDC at 3,500 rpm
	Alternator	Capacity	200W/5,000 rpm
	Battery		12V—12AH
	Spark plug		DR8ES-L (NGK) X24ESR-U (ND)
	Spark plug gap		0.6—0.7 mm (0.024—0.028 in)
	Headlight		12V 45W/45W
	Taillight		12V 3.4W x 2
	Neutral indicator		12V 3W
	Reverse indicator		12V 3W
	Oil temperature indicator		12V 3.4W

RIDE RED

TORQUE VALUES

ENGINE

Item	Q'ty	Thread Dia. (mm)	Torque		
			N·m	kg-m	ft-lb
Cylinder head socket bolt	3	8	22–28	2.2–2.8	16–20
Cylinder head cap nut	4	10	35–45	3.5–4.5	25–33
Cylinder stud bolt	4	10	8–12	0.8–1.2	6–9
Crankcase bolt	14	6	8–12	0.8–1.2	6–9
Gearshift return spring pin	1	8	18–25	1.8–2.5	13–18
Output drive gear bearing outer lock nut	1	64	90–110	9.0–11.0	65–80
Output gear case socket bolt	3	8	20–25	2.0–2.5	14–18
Output driven gear bearing holder socket bolt	3	8	20–25	2.0–2.5	14–18
Output driven gear bearing outer lock nut	1	60	90–110	9.0–11.0	65–80
Output driven gear bearing inner lock nut	1	28	70–80	7.0–8.0	51–58
Kick starter stopper plate socket bolt	2	6	10–14	1.0–1.4	7–10
Flywheel bolt	1	12	100–120	10.0–12.0	72–87
Pulse generator screw	2	5	5–7	0.5–0.7	3.6–5.1
Right crankcase cover bolt	12	6	8–12	0.8–1.2	6–9
Left crankcase cover bolt	11	6	8–12	0.8–1.2	6–9
Oil separator plate bolt	2	6	8–12	0.8–1.2	6–9
Clutch lock nut	1	18	100–120	10.0–12.0	72–87
Clutch lifter cap bolt	4	6	10–14	1.0–1.4	7–10
Centrifugal clutch lock nut	1	20	110–130	11.0–13.0	80–94
Cylinder base bolt	2	6	8–12	0.8–1.2	6–9
Cam sprocket bolt	2	7	17–23	1.7–2.3	12–17
Cylinder head cover bolt	7	6	8–12	0.8–1.2	6–9
Valve adjusting lock nut	2	6	15–18	1.5–1.8	11–13
Cam chain guide holder socket bolt	1	6	8–12	0.8–1.2	6–9
Oil pipe bolt	3	7	8–12	0.8–1.2	6–9
Spark plug	1	12	15–20	1.5–2.0	11–14
Intake pipe band screw	1	5	3–5	0.3–0.5	2–4
Oil filter cover bolt	3	6	8–12	0.8–1.2	6–9
Neutral/Reverse switch	2	10	11–15	1.1–1.5	8–11
Starter clutch socket bolt	6	8	18–25	1.8–2.5	13–18
Cam chain tensioner lifter bolt	2	6	8–12	0.8–1.2	6–9
Alternator stator bolt	3	6	8–12	0.8–1.2	6–9
Breather plate socket bolt	1	6	10–14	1.0–1.4	7–10
Clutch adjusting screw lock nut	1	8	19–25	1.9–2.5	14–18
Drain bolt	1	12	15–25	1.5–2.5	11–18
Cam chain tensioner lifter sealing bolt	1	6	8–12	0.8–1.2	6–9
Oil temperature sensor	1	12	15–20	1.5–2.0	11–14

FRAME

Item	Q'ty	Thread Dia. (mm)	Torque		
			N·m	kg-m	ft-lb
Handlebar upper holder bolt	4	8	18–30	1.8–3.0	13–22
Handlebar lower holder nut	2	10	40–48	4.0–4.8	29–35
Steering stem nut	1	16	80–140	8.0–14.0	58–101
Steering bearing adjustment nut (initial)	1	–	25–35	2.5–3.5	18–25
Steering bearing adjustment nut (See page 11-15)	1	–	1– 2	0.1–0.2	0.7–1.4
Wheel nut	16	10	50–60	5.0–6.0	36–43
Front axle nut	2	16	80–120	8.0–12.0	58–87
Rear axle nut	2	16	80–120	8.0–12.0	58–87
Rear brake panel nut	4	10	80–90	8.0–9.0	58–65
Front shock absorber mount bolt	2	10	40–50	4.0–5.0	29–36
Swing arm right pivot bolt	1	30	16–20	1.6–2.0	12–14
Swing arm pivot lock nut	1	30	100–130	10.0–13.0	72–94
Final gear case mount bolt	4	10	50–60	5.0–6.0	36–43
	4	8	30–36	3.0–3.6	22–26
Rear left bearing housing bolt	4	8	30–36	3.0–3.6	22–26
Front engine hanger bolt	3	10	60–70	6.0–7.0	43–51
Upper engine hanger bolt	6	10	65–75	6.5–7.5	47–54
Rear engine hanger bolt	3	10	65–75	6.5–7.5	47–54
Lower engine hanger bolt (Front)	1	10	65–75	6.5–7.5	47–54
Lower engine hanger bolt (Rear)	1	10	80–90	8.0–9.0	58–65
Gearshift pedal bolt	1	6	10–14	1.0–1.4	7–10
Foot peg bracket bolt	4	10	40–50	4.0–5.0	29–36
Intake pipe bolt	2	6	6–9	0.6–0.9	4–7
Muffler clamp bolt	2	8	18–28	1.8–2.8	13–20
Direct current receptacle bolt	2	5	1.5–2.5	0.15–0.25	1.1–1.8
Master cylinder reservoir cover screw	2	4	1–2	0.1–0.2	0.7–1.4
Brake hose bolt	5	10	25–35	2.5–3.5	18–25
Ball joint/Tie rod nut	8	10	35–43	3.5–4.3	25–31
Kingpin lock nut	2	8	20–25	2.0–2.5	14–18
Front arm hinge bolt	2	35	80–100	8.0–10.0	58–72
Rear shock absorber mount bolt	2	10	80–90	8.0–9.0	58–65
Final gear case cover bolt	2	10	45–50	4.5–5.0	33–36
	6	8	23–28	2.3–2.8	17–20
Pinion joint nut	1	16	100–120	10.0–12.0	72–87
Pinion bearing lock nut	1	60	90–110	9.0–11.0	65–80
Trailer hitch bolt	2	10	70–80	7.0–8.0	51–58
Grease fitting	6	–	3–5	0.3–0.5	2–4
Wheel cylinder hose bolt	4	8	25–35	2.5–3.5	18–25

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 N·m (kg-m, ft-lb)	Item	Torque N·m (kg-m, ft-lb)
5 mm bolt, nut	4.5–6 (0.45–0.6, 3–4)	5 mm screw	3.5–5 (0.35–0.5, 2–4)
6 mm bolt, nut	8–12 (0.8–1.2, 6–9)	6 mm screw, 6 mm flange bolt with 8 mm head	7–11 (0.7–1.1, 5–8)
8 mm bolt, nut	18–25 (1.8–2.5, 13–18)	6 mm flange bolt, nut	10–14 (1.0–1.4, 7–10)
10 mm bolt, nut	30–40 (3.0–4.0, 22–29)	8 mm flange bolt, nut	24–30 (2.4–3.0, 17–22)
12 mm bolt, nut	50–60 (5.0–6.0, 36–43)	10 mm flange bolt, nut	35–45 (3.5–4.5, 25–33)

RIDE RED

TOOLS

SPECIAL

* Newly designed for this model

DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. PAGE
Universal bearing puller	07631–0010000	Equivalent commercially		10-5, 13-18
Socket bit, 17 mm	07703–0020500	available in U.S.A.		13-13, 15
Pivot lock nut wrench	07908–4690001	Lock nut wrench	KS-HBA-08-469	13-13. 15
Steering stem socket	07916–3710100	(U.S.A. only)		11-14
Lock nut wrench, 30 x 64 mm	07916–MB00001	Lock nut wrench, 30 x 64 mm	07916–MB00000	10-18, 20
		Attachment (U.S.A. only)	07916–HA0020A	10-18, 20
Lock nut wrench, 34 x 44 mm	07916–ME50001	Lock nut wrench, 34 x 44 mm	07916–ME50000	10-15, 16, 20, 21, 13-18, 21
		Attachment (U.S.A. only)	07916–HA0010A	10-15, 16, 20, 21, 13-18, 21
Clutch center holder	07923–KE10001			8-8, 11
Pinion holder	07924–HA00000			13-18, 19, 25
Shaft holder	07924–ME50000			10-14, 15, 21
Crank assembly tool set	07931–KF00000			10-7
– crankshaft assembly collar	07931–KF00100			10-7
– threaded adapter	07931–KF00200			10-7
– shaft puller	07931–ME40000			10-7, 13-19
Bearing remover, 17 mm	07936–3710300			8-14, 10-6, 11
Bearing remover handle	07936–3710100			8-14, 10-6, 11, 17
Bearing remover weight	07741–0010201	Remover weight	07936–3710200	8-14, 10-6 11, 13, 14
Bearing remover set, 30 mm	07936–8890100	Not available in U.S.A.		13-14
– remover head	07936–8890200			13-14
– bearing remover, 30 mm	07936–8890300			13-14
Bearing remover, 15 mm	07936–KC10000			10-17
– remover weight	07741–0010201	Remover weight	07936–3710200	10-17
Bearing remover, 20 mm	07936–3710600			8-14
Pinion gear driver	07945–HA00000	Not available in U.S.A.		13-9, 10, 21
Attachment, 28 x 30 mm	07946–1870100			8-14, 10-12
Attachment	07946–HA00000			10-19
Compressor base	07959–MB10000			13-12
Kingpin driver	07965–VM50000			11-9
Spring compressor adapter	07967–VM50100			11-13
Collar	07967–GA70101			11-13, 13-17
Spring compressor adapter	07967–KC10000			13-12
Valve guide reamer	07984–2000000			6-8
Snap ring pliers	07914–3230001			12-10
* Inspection adapter (C1)	07508–0012500	Not available in U.S.A.		15-2, 4
* Clutch holder	07923–HA80000			8-4, 7
* Camber/caster gauge attachment	07910–MJ30100			3-12
Attachment	07965–SA50600			12-12
Digital multitester	07411–0020000	Digital multimeter (U.S.A. only)	KS-AHM32-003	15-1, 16-1
Circuit tester (SANWA)	07308–0020000	Circuit tester (KOWA)	TH-5H-1	15-1, 16-1

COMMON

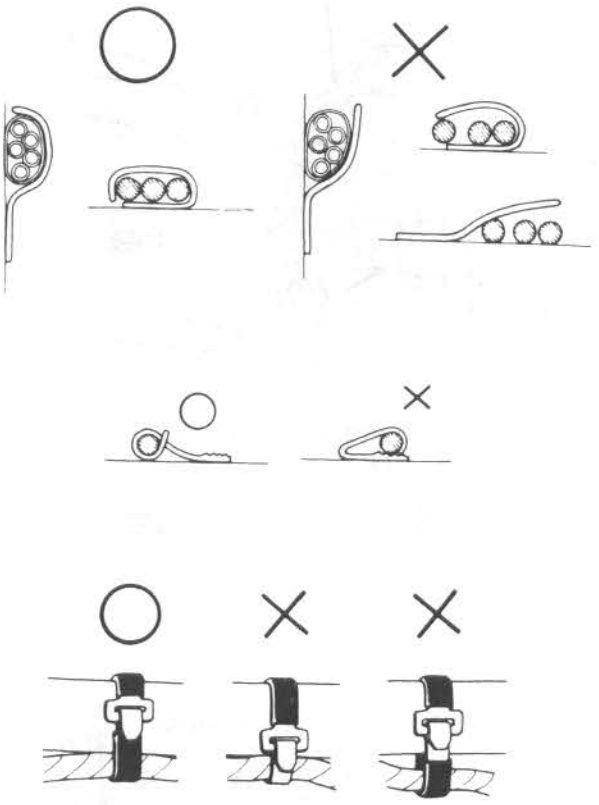
DESCRIPTION	TOOL NUMBER	ALTERNATE TOOL	TOOL NUMBER	REF. PAGE
Float level gauge	07401—0010000	Equivalent commecially available in U.S.A.		4-10
Valve adjusting wrench, 10 x 12 mm	07708—0030200			3-4
Valve adjusting wrench B	07708—0030400	Valve adjusting wrench	089201—200—000	3-4
Extension bar	07716—0020500	Equivalent commercially available in U.S.A.		11-14
Flywheel holder	07725—0040000			9-4, 5
Rotor puller	07733—0020001	Flywheel puller	07933-3950000	9-5
Valve guide remover, 5.5 mm	07742—0010100	Valve guide remover, 5.5 mm	07942—3290100	6-8
Attachment, 37 x 40 mm	07746—0010200			10-6, 13-14
Pilot, 17 mm	07746—0040400			8-14, 10-6
Pilot, 15 mm	07746—0040300			10-17
Attachment, 42 x 47 mm	07746—0010300			8-14 10-5, 11, 16, 17 11-15 12-6 13-18, 20
Pilot, 25 mm	07746—0040600			10-11
Pilot, 20 mm	07746—0040500			8-14, 10-11, 12-6
Pilot, 22 mm	07746—0041000			10-11
Attachment, 32 x 35 mm	07746—0010100			13-17, 19
Driver B	07746—0020100			13-21
Attachment, 52 x 55 mm	07746—0010400			10-12, 17, 11-11, 13-9, 10, 20
Pilot, 28 mm	07746—0041100			10-16, 17, 13-10
Attachment, 62 x 68 mm	07746—0010500			13-20, 22
Pilot, 35 mm	07746—0040800			10-6, 7, 13-20, 22
Attachment, 72 x 75 mm	07746—0010600			10-6, 7
Remover head, 20 mm	07746—0050600	Equivalent commercially available in U.S.A.		12-5
Bearing remover shaft	07746—0050100			12-5
Driver	07749—0010000			8-14, 10-5, 6, 7, 11, 12, 16, 17 11-12, 15, 12-6, 12, 13-9, 10, 14, 17, 18, 19, 20, 22
Driver C	07746—0030100			10-17, 19, 13-21
Attachment, 30 mm I.D.	07746—0030300			10-17
Atachment, 35 mm I.D.	07746—0030400			13-21
Valve spring compressor	07757—0010000	Valve spring compressor	07957—3290001	6-6, 11
Shock absorber compressor	07959—3290001			11-13, 13-12, 17
Tire breaker set	07772—0050000	Universal bead breaker (U.S.A. only)		13-5
— breaker arm compressor	07772—0050100		GN-AH-958-BB1	13-5
— breaker arm	07772—0050200			13-5

RIDE RED

CABLE & HARNESS ROUTING

Note the following when routing cables and wire harnesses:

- A loose wire, harness or cable can be a safety hazard. After clamping, check each wire to be sure it is secure.
- Do not squeeze a wire against a weld or end of its clamp when a weld-on clamp is used.
- Secure wires and wire harnesses to the frame with their respective wire bands at the designated locations. Tighten the bands so that only the insulated surfaces contact the wires or wire harnesses.
- Route harnesses so they are not pulled taut or have excessive slack.
- Protect wires and harnesses with electrical tape or tubes if they contact a sharp edge or corner.
  Clean the attaching surface thoroughly before applying tape.
- Do not use a wire or harness with a broken insulator. Repair by wrapping them with protective tape or replace them.
- Route wire harnesses to avoid sharp edges or corners. Also avoid the projected ends of bolts and screws.
- Keep wire harnesses away from the exhaust pipe and other parts that get hot.
- Be sure grommets are seated in their grooves properly.
- After clamping, check each harness to be certain that it is not interfering with any moving of sliding parts.
- Wire harnesses routed along the handlebars should not be pulled taut, have excessive slack, be pinched by, or interfere with adjacent or surrounding parts in all steering positions.
- After routing, check that the wire harnesses are not twisted or kinked.



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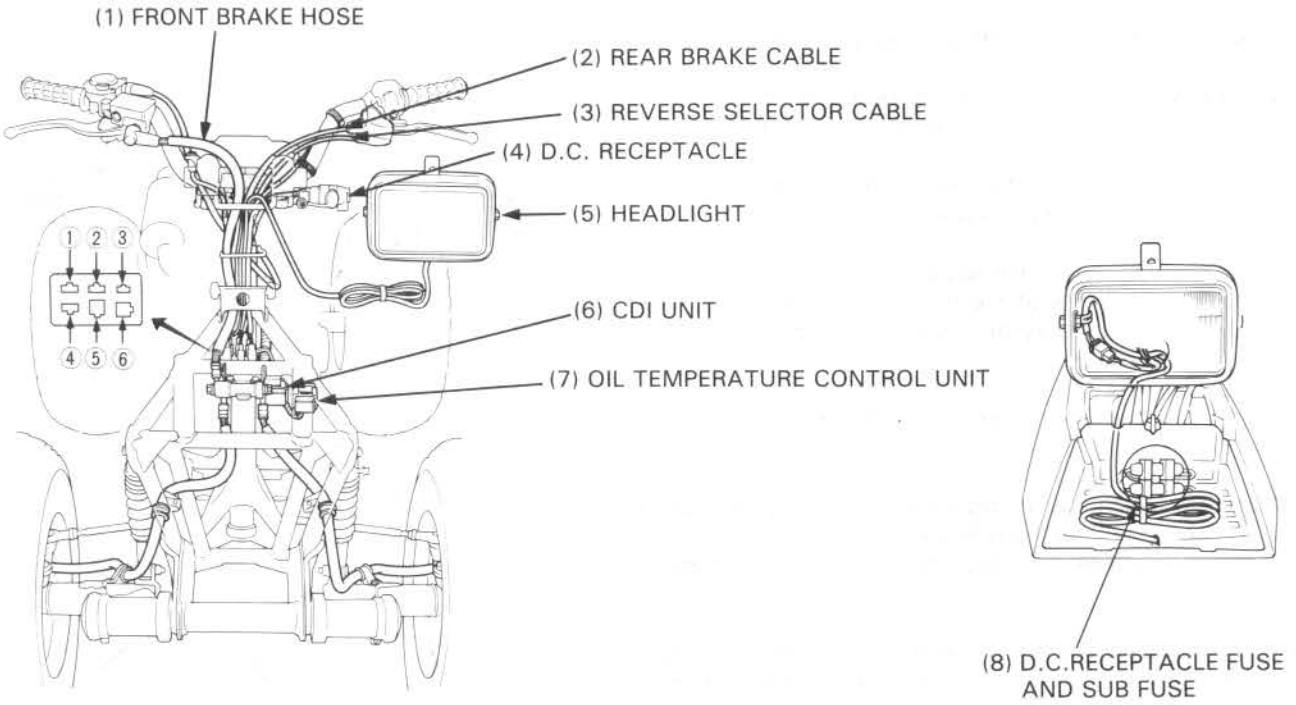

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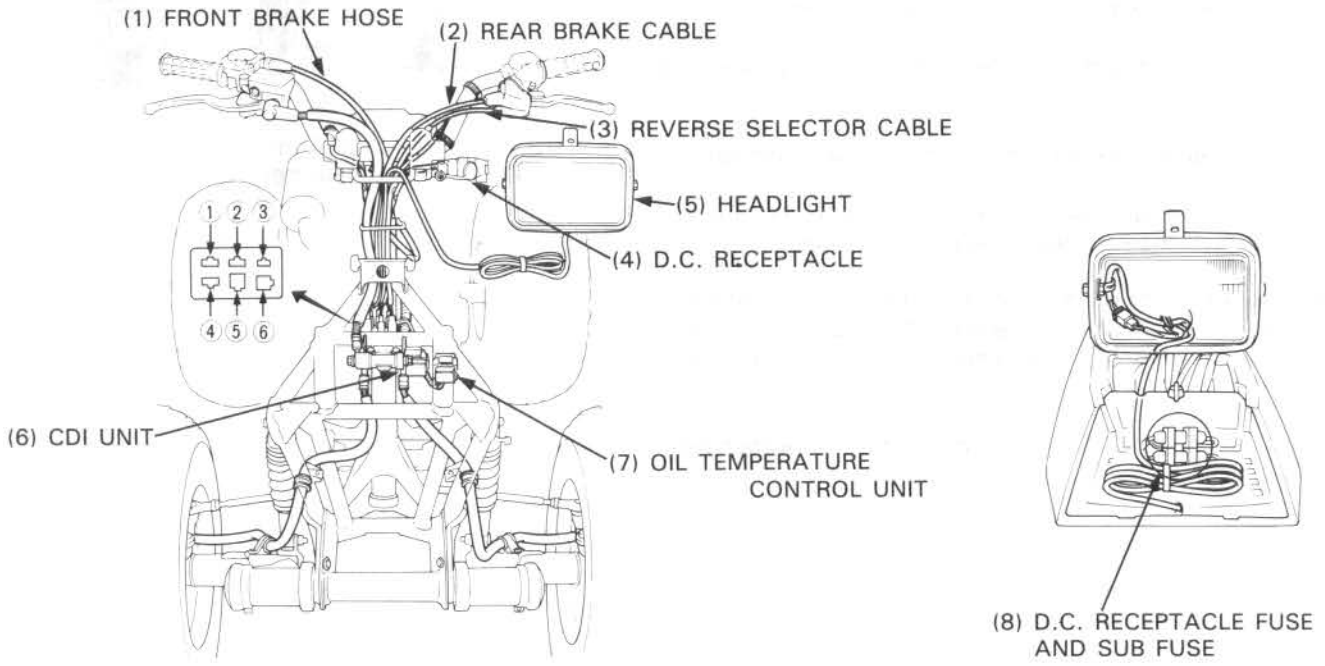
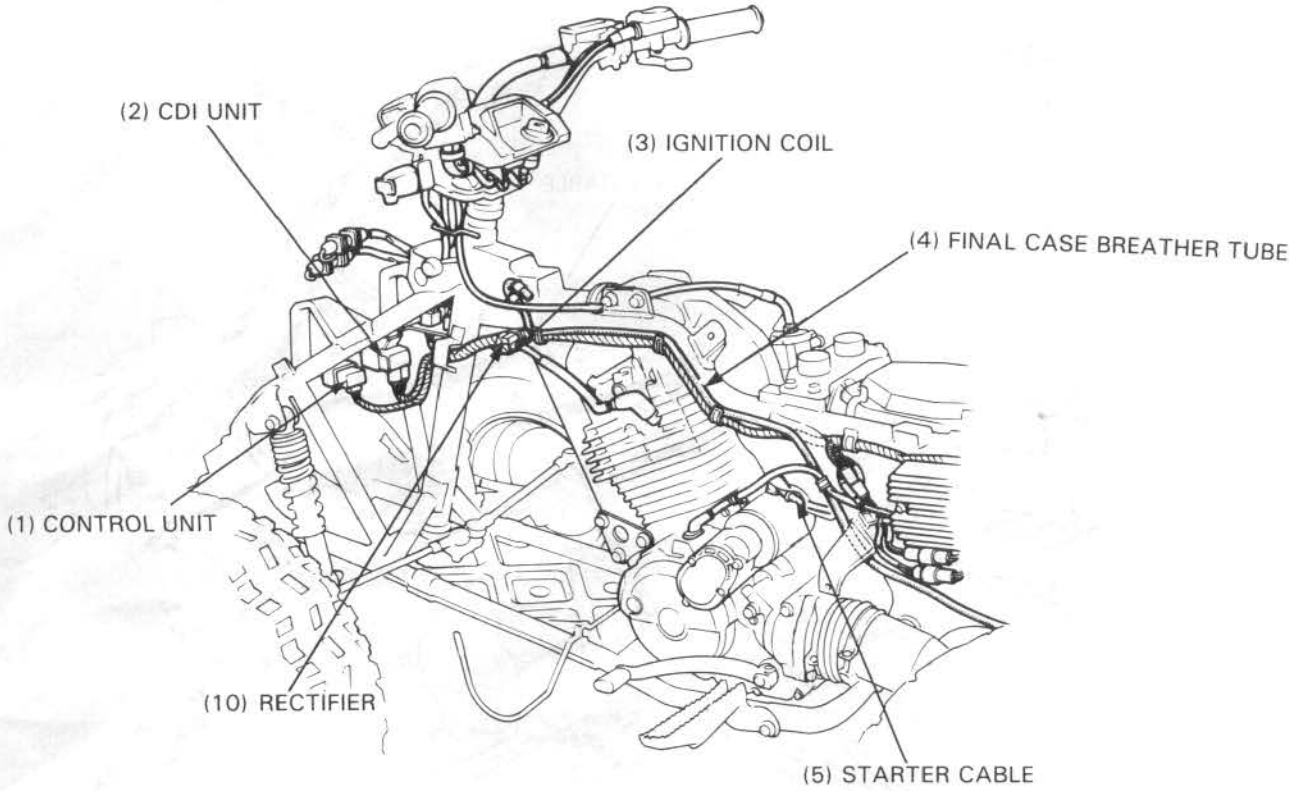
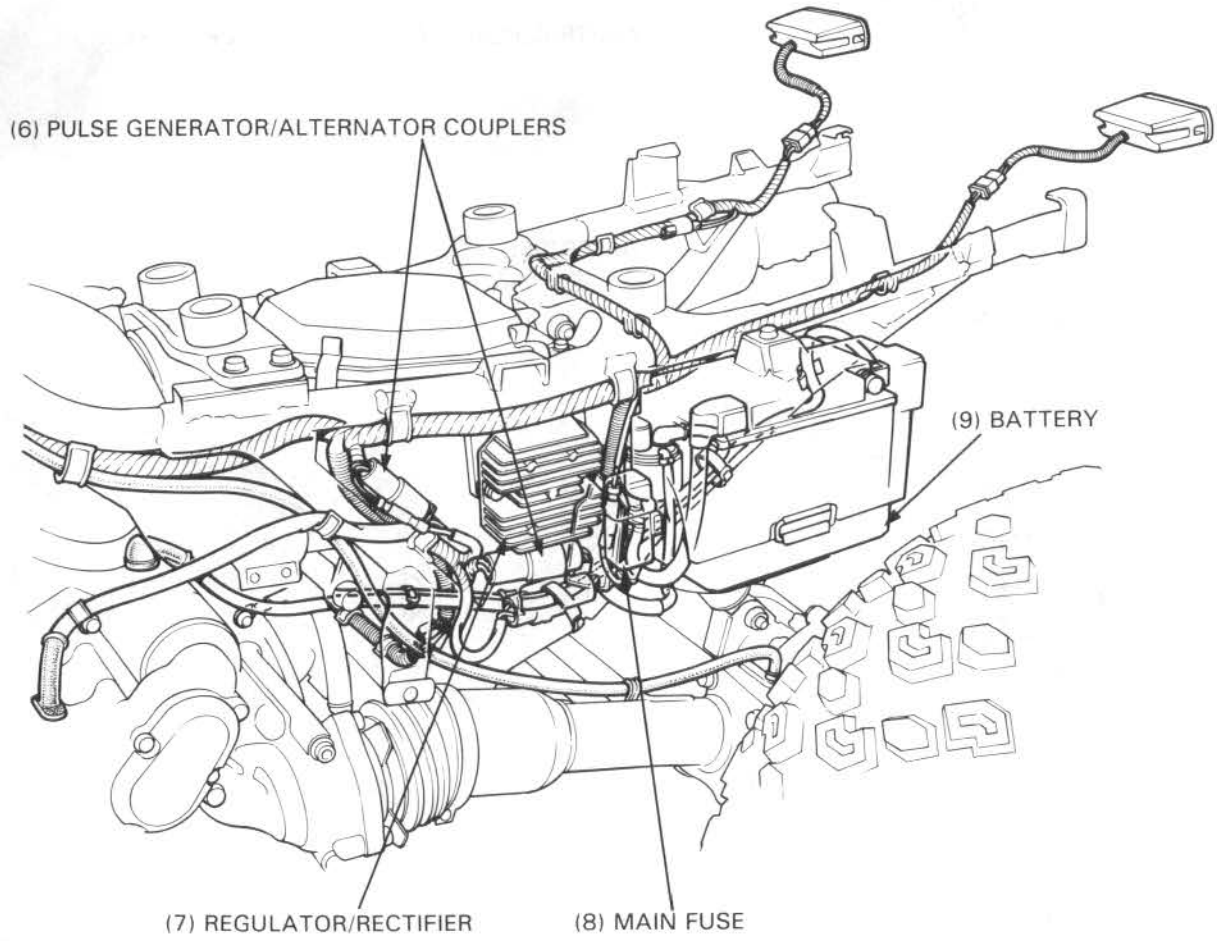
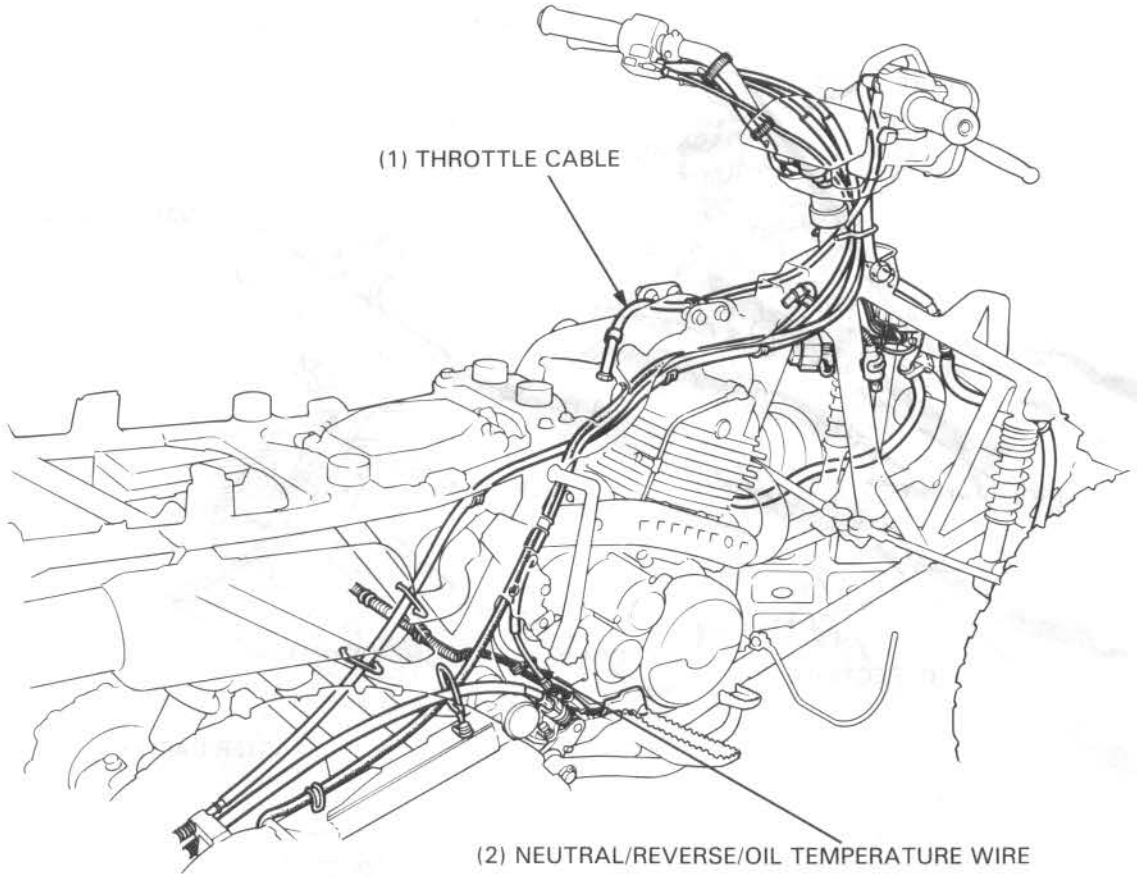


① TAILLIGHT/STARTER RELAY
② HEADLIGHT
③ CONTROL UNIT
④ NEUTRAL/REVERSE/OIL TEMPERATURE SENSOR
⑤ SUB FUSE
⑥ IGNITION SWITCH

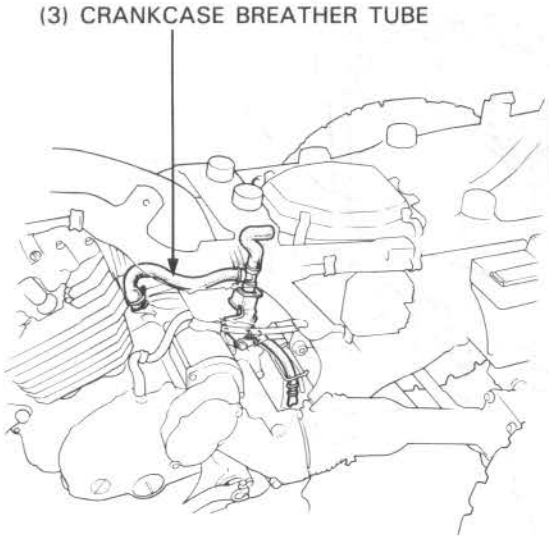
RIDE RED


(2) CDI UNIT
(3) IGNITION COIL
(4) FINAL CASE BREATHER TUBE
(1) CONTROL UNIT
(10) RECTIFIER
(5) STARTER CABLE

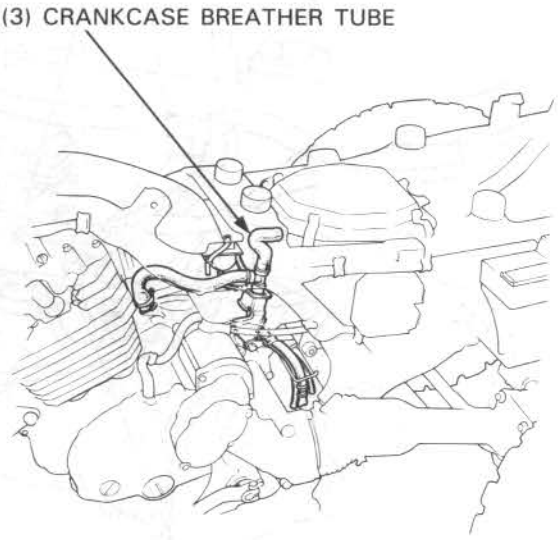

(6) PULSE GENERATOR/ALTERNATOR COUPLERS
(9) BATTERY
(7) REGULATOR/RECTIFIER
(8) MAIN FUSE



'85:



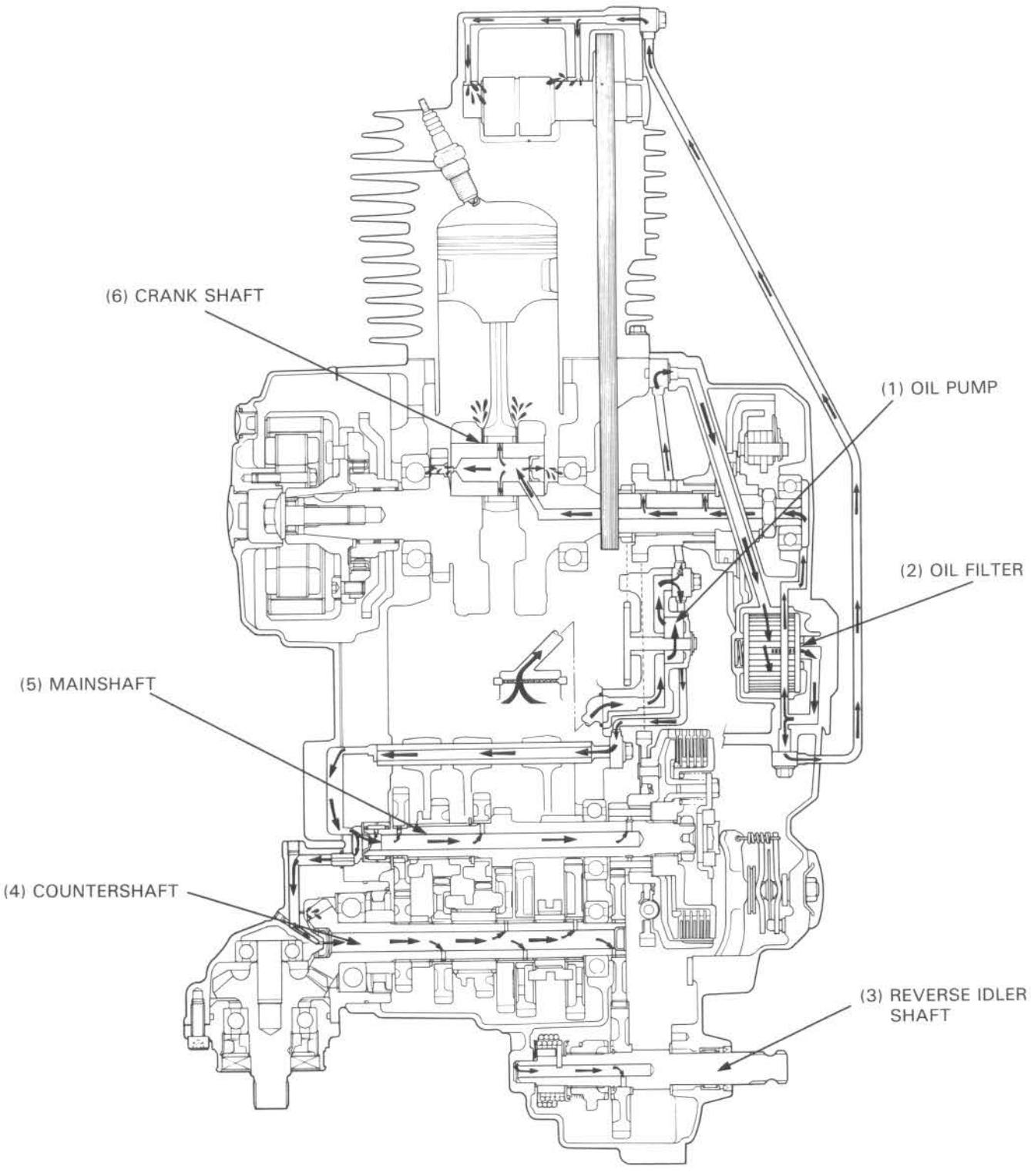
AFTER '85:



RIDE RED

MEMO

LUBRICATION DIAGRAM



RIDE RED

2. LUBRICATION

SERVICE INFORMATION

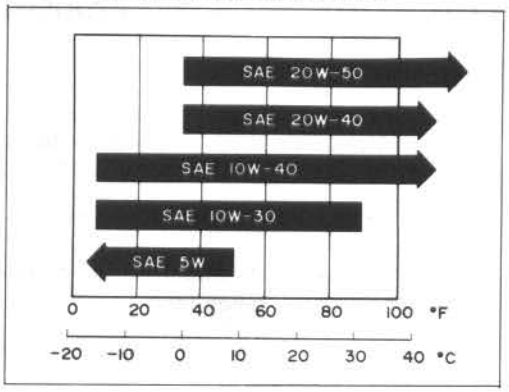
GENERAL

- Section 8 shows how to service the oil pump.

SPECIFICATIONS

Engine oil capacity	2.5 lit (2.6 US qt, 2.2 Imp qt) after disassembly 2.1 lit (2.2 US qt, 1.8 Imp qt) at draining
Engine oil recommendation	Use Honda 4-stroke oil or equivalent. API Service Classification: SE or SF Viscosity: SAE 10W—40 Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.
Final drive oil capacity	90 cc (3.0 oz)
Final drive oil recommendation	Hypoid gear oil SAE #80

ENGINE OIL VISCOSITIES



TORQUE VALUES

Engine oil drain bolt	15—25 N·m (1.5—2.5 kg-m, 11—18 ft-lb)
Final drive oil filler cap	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)

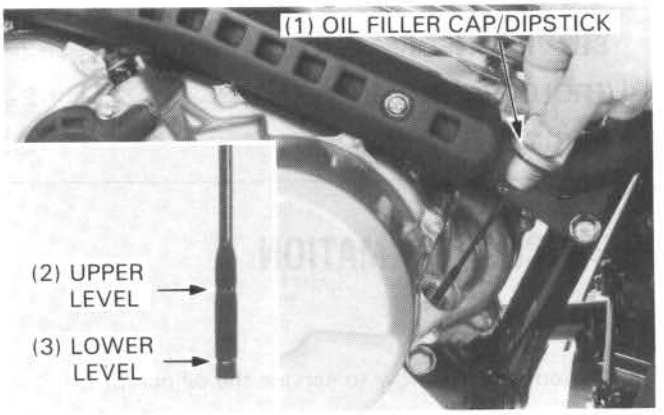
TROUBLESHOOTING

Oil level too low — high oil consumption
- Normal oil consumption
- External oil leaks
- Worn piston rings
- Oil not changed often enough
- Faulty head gasket

Oil contamination
- Oil or filter not changed often enough.
- Head gasket faulty.
- Worn piston rings.

ENGINE OIL LEVEL

Place the Four Trax on level ground.
Check the oil level with the oil filler cap/dipstick.
Do not screw it in when making this check.
If the oil level is below or near the lower level line on the dipstick, add the recommended oil (page 2-1) up to the upper level line.



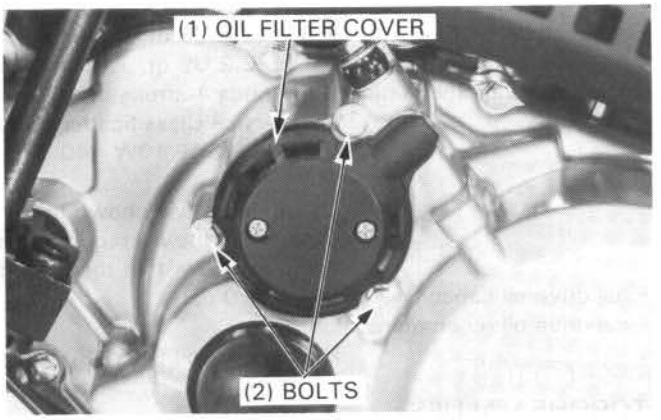
ENGINE OIL & FILTER CHANGE

NOTE

- Change engine oil with the engine warm and the Four Trax on level ground to assure complete draining.

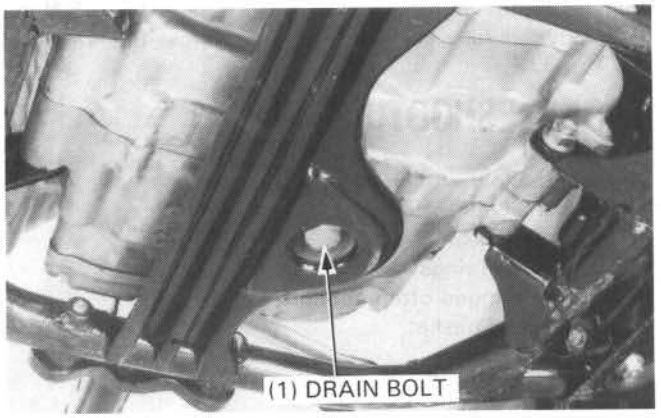
Remove the oil filler cap and drain bolt.

Remove the three bolts attaching the oil filter cover, oil filter and spring. Discard the oil filter.



Check that the sealing washer on the drain bolt is in good condition and install the drain bolt.

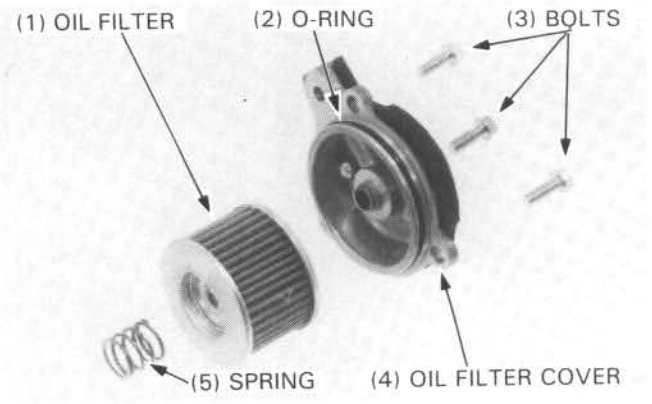
TORQUE: 15—25 N·m (1.5—2.5 kg-m, 11—18 ft-lb)



Make sure that the oil filter cover O-ring is in good condition. Install the oil filter spring, filter and cover using the three bolts.

Fill the crankcase with 2.1 liters (2.2 US qt, 1.8 Imp qt) of the recommended oil (page 2-1).
Install the oil filler cap/dipstick.
Start the engine and let it idle for 2 or 3 minutes.

Stop the engine and check that the oil level is at the upper level line on the dipstick. Make sure there are no oil leaks.



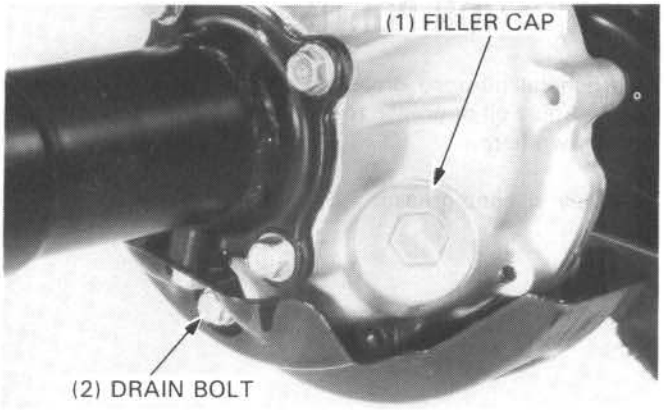
RIDE RED

FINAL DRIVE OIL

CHECK

Remove the oil filler cap.
Level the rear wheels with the front whees by placing a support block under the engine. (The front and rear axles should be in the same plane).

Check that the oil level reaches the lower edge of the oil filler cap hole.
If the level is low, pour fresh oil through the oil filler hole until it reaches the lower edge.
Check for leaks.



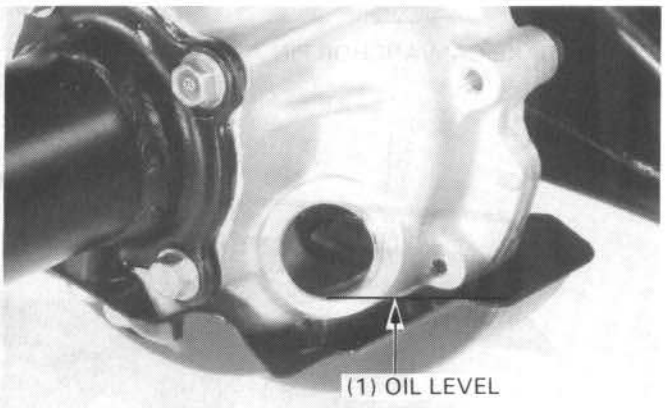
CHANGE

Remove the oil filler cap and the drain bolt to drain all oil from the final gear case.
Install the drain bolt securely.
Fill the gear case with the recommended oil up to the correct level.

OIL CAPACITY: 90 cc (3.0 oz)
RECOMMENDED OIL: Hypoid gear oil SAE #80

Install the oil filler cap.

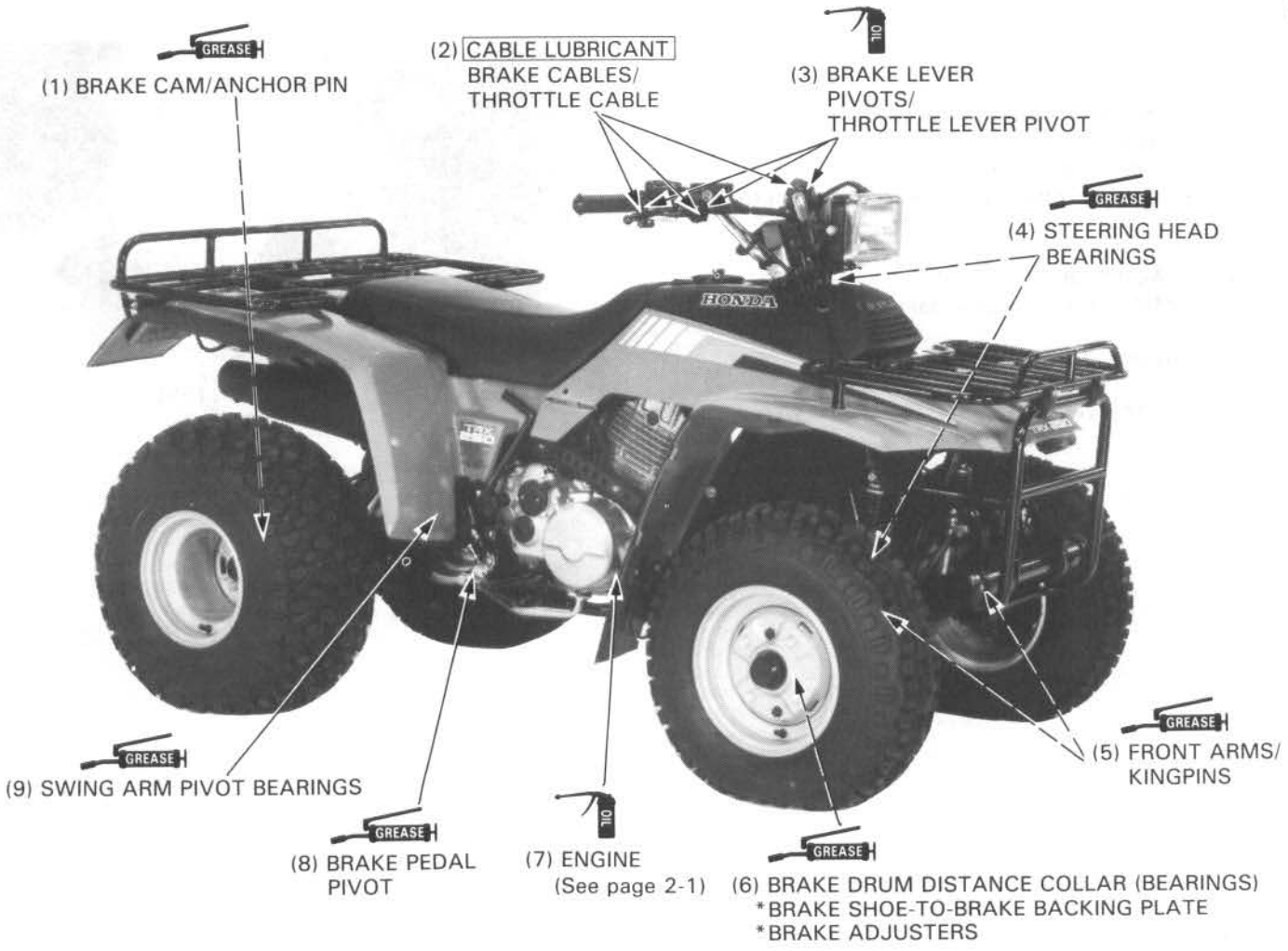
TORQUE: 10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)



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.

* Apply silicone grease.



RIDE RED

3. MAINTENANCE

SERVICE INFORMATION

SPECIFICATIONS

Spark plug gap:		0.6—0.7 mm (0.024—0.028 in)
Recommended spark plugs:		DR8ES-L (NGK)
		X24ESR-U (ND)
Valve clearance:	Intake:	0.08 mm (0.003 in)
	Exhaust:	0.08 mm (0.003 in)
Idle speed:		1,400 ± 100 rpm
Cylinder compression		12.5 ± 1.0 kg/cm² (178 ± 14 ps in)
Throttle lever free play:		3—8 mm (1/8—5/16 in)
Front brake lever free play:		25—30 mm (1—1-1/4 in)
Rear (parking) brake lever free play:		15—20 mm (5/8—3/4 in)
Rear brake pedal free play:		15—20 mm (5/8—3/4 in)
Reverse selector lever free play:		2—4 mm (1/16—1/8 in)
Front tire size:		21 x 7.00—10
Rear tire size:		25 x 12.00—9
Recommended tire pressure: '85	Front:	2.9 psi (20 kPa, 0.20 kg/cm²)
	Rear:	2.2 psi (15 kPa, 0.15 kg/cm²)
AFTER '85	Front:	3.0 psi (20 kPa, 0.2 kg/cm²)
	Rear:	2.2 psi (15 kPa, 0.15 kg/cm²)
Standard tire circumference: '85	Front:	1,745 mm (68.7 in)
	Rear:	1,940 mm (76.4 in)
AFTER '85	Front:	1,681 mm (66.2 in)
	Rear:	1,885 mm (74.2 in)
Front tire toe-in:		0 ± 7.5 mm (0 ± 0.30 in)
camber:		1°
caster:		8°

TORQUE VALUE

Clutch adjusting screw lock nut	19—25 N·m (1.9—2.5 kg-m, 14—18 ft-lb)

TOOL

Special

Camber/caster gauge attachment	07910—MJ30100, Not available in U.S.A.

Common

Valve adjusting wrench, 10 x 12 mm	07708—0030200 or equivalent available in U.S.A.
Valve adjusting wrench B	07708—0030400 or valve adjusting wrench 089201—200—000

MAINTENANCE SCHEDULE

The maintenance intervals shown in the following schedule are based upon average riding conditions. Four Traxs subjected to severe use, or ridden in unusually wet or dusty areas, require more frequent servicing. Items marked * should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner.
Perform the Pre-ride Inspection in the Owner's Manual at each scheduled maintenance period.

	I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust		INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
	ENGINE OIL	NOTE (1), (2)	R	R	2-2
*	ENGINE OIL FILTER		R	R	2-2
	AIR CLEANER ELEMENT	NOTE (2)		I	3-4
	SPARK PLUG			I	3-4
	BREATHER TUBE			I	3-5
*	VALVE CLEARANCE		I	I	3-5
*	CARBURETOR		I	I	3-6
	FUEL LINE		I : (EVERY YEAR)		3-6
*	FUEL FILTER		C: (EVERY YEAR)		3-6
	THROTTLE OPERATION		I	I	3-7
	FINAL DRIVE OIL		I : (EVERY YEAR) R: (EVERY 2 YEARS)		2-3
	BRAKE FLUID (FRONT)		I	I *R: (EVERY YEAR)	3-7
*	BRAKE SHOES		I : (EVERY YEAR)		3-8
	BRAKE SYSTEM		I	I	3-8
*	CLUTCH		A	A	3-10
*	SUSPENSION			I	3-10
*	SPARK ARRESTER			C	3-11
*	REVERSE LOCK MECHANISM		I	I	3-11
	NUTS, BOLTS, FASTENERS		I	I	3-11
	LIGHTING EQUIPMENT		I	I	3-12
	TIRES		I	I	3-12
*	STEERING HEAD BEARINGS		A: (EVERY YEAR)		3-12
*	STEERING SYSTEM		I : (EVERY YEAR)		3-13

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

AFTER '85

The maintenance intervals shown in the following schedule are based upon average riding conditions. Four Traxs subjected to severe use, or ridden in unusually wet or dusty areas, require more frequent servicing. Items marked * should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. Other maintenance items are simple to perform and may be serviced by the owner. ** In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.

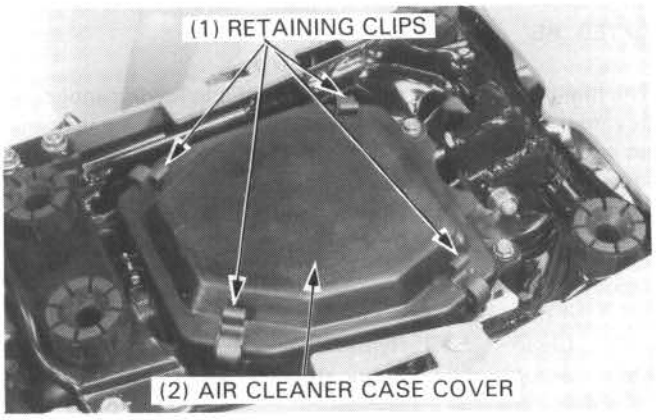
I: Inspect and Clean, Adjust, Lubricate or Replace, if necessary C: Clean R: Replace A: Adjust L: Lubricate			INITIAL SERVICE PERIOD (First week of operation)	REGULAR SERVICE PERIOD (Every 30 operating days)	Refer to page
	ENGINE OIL		R	R	2-2
	ENGINE OIL FILTER		R	R	2-2
	AIR CLEANER	NOTE (1)		I	3-4
	SPARK PLUG			I	3-4
	AIR CLEANER CASE BREATHER	NOTE (2)		I	3-5
*	VALVE CLEARANCE		I	I	3-5
*	CARBURETOR IDLE SPEED		I	I	3-6
*	FUEL LINE		I : (EVERY YEAR)		3-6
*	FUEL STRAINER		C: (EVERY YEAR)		3-6
*	THROTTLE OPERATION		I	I	3-7
*	CARBURETOR CHOKE			I	4-5
	FINAL DRIVE OIL		I : (EVERY YEAR) R: (EVERY 2 YEARS)		2-3
	BRAKE FLUID (FRONT)			I *R: (EVERY 2 YEARS)	3-7
*	BRAKE SHOES	NOTE (2)	I : (EVERY YEAR)		3-8
	BRAKE SYSTEM		I	I	3-8
*	CLUTCH SYSTEM		I	I	3-10
*	SUSPENSION			I	3-10
*	SPARK ARRESTER	NOTE (3)		C	3-11
*	REVERSE LOCK SYSTEM		I	I	3-11
*	NUTS, BOLTS, FASTENERS		I	I	3-11
**	WHEEL		I	I	3-12
**	STEERING HEAD BEARINGS		I : (EVERY YEAR)		3-12
**	STEERING SYSTEM		I : (EVERY YEAR)		3-13

NOTE: (1) Service more frequently when riding in dusty areas, sand or snow.
(2) Service more frequently after riding in very wet or muddy conditions.
(3) USA only.

AIR CLEANER ELEMENT

Remove the seat by pulling the seat latch lever.

Release the retaining clips holding the air cleaner case cover, and remove the air cleaner case cover.

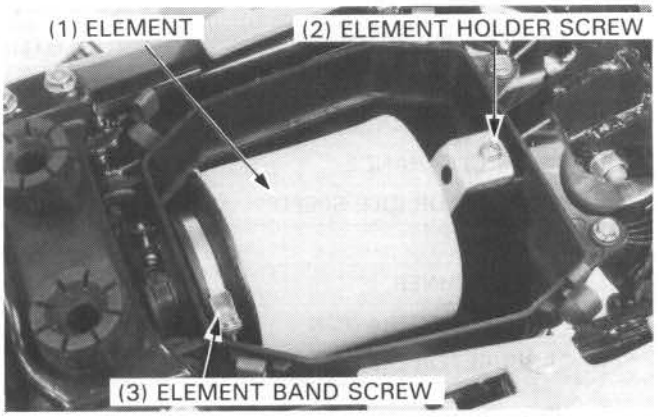


Loosen the air cleaner element band screw.
Remove the element holder attaching screw and remove the air cleaner element assembly from the case.

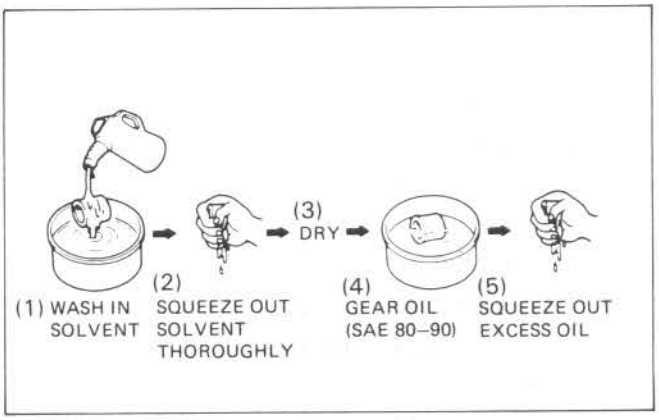
Remove the element holder by turning it counterclockwise.
Remove the element band and remove the element from the element core.

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 core and replace the element band and holder.



Install the element in the air cleaner case.
Install the air cleaner case cover and clips.
Install the seat.



SPARK PLUG

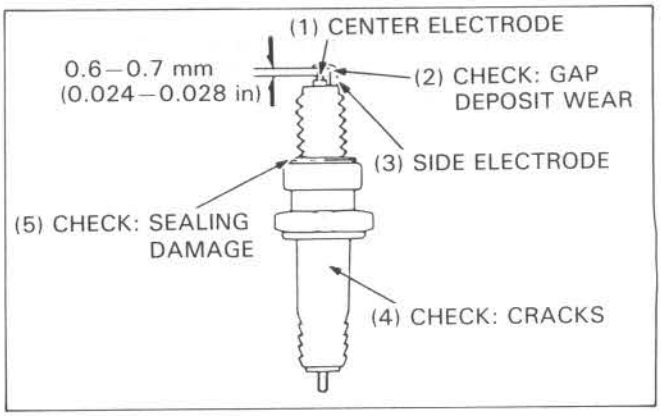
Disconnect the spark plug cap and remove the spark plug.

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 if necessary by carefully bending the side electrode.

SPARK PLUG GAP: 0.6–0.7 mm (0.024–0.028 in)
RECOMMENDED SPARK PLUG: DR8ES-L (NGK)
X24ESR-U (ND)

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 crossthreading. Tighten the spark plug another 1/2 turn with a spark plug wrench to compress the sealing washer.



RIDE RED

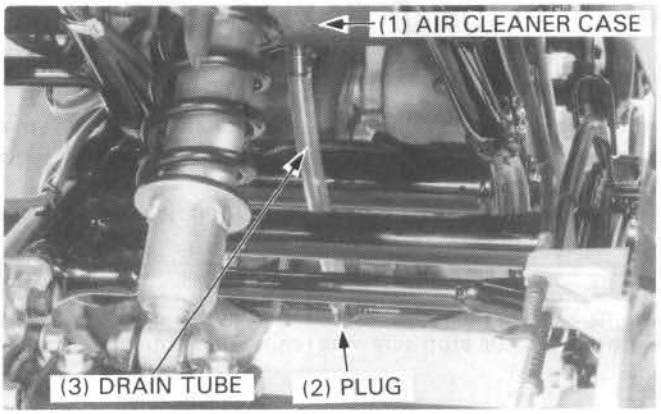
BREATHER TUBE

Remove the plug from the drain tube to empty any deposits.

Install the drain plug.

NOTE

- Service more frequently when riding in rain or at full throttle, or if the deposit level can be seen in the transparent section of the drain tube.



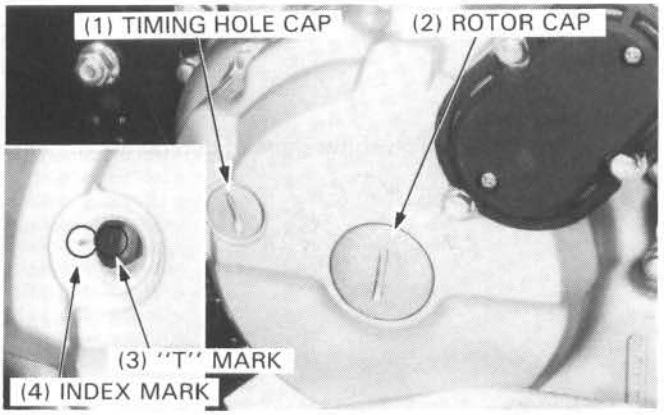
VALVE CLEARANCE

NOTE

- Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).

Remove the timing hole cap and rotor cap.

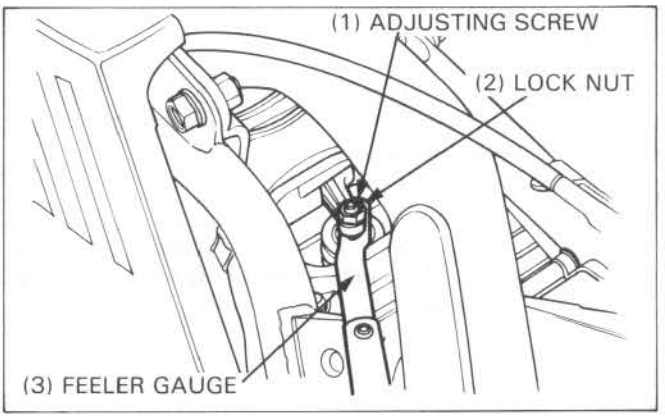
Remove the fuel tank (page 4-3).
Loosen the air cleaner case-to-frame connecting tube bands (page 4-4) and slide the connecting tube so that the rear valve adjusting hole cover can be removed.
Remove the valve adjusting hole covers.



Rotate the crankshaft clockwise and align the "T" mark on the rotor with the index mark. The piston must be at TDC on the compression stroke.

Inspect the intake and exhaust valve clearances by inserting the feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCES
Intake: 0.08 mm (0.003 in)
Exhaust: 0.08 mm (0.003 in)



Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge.

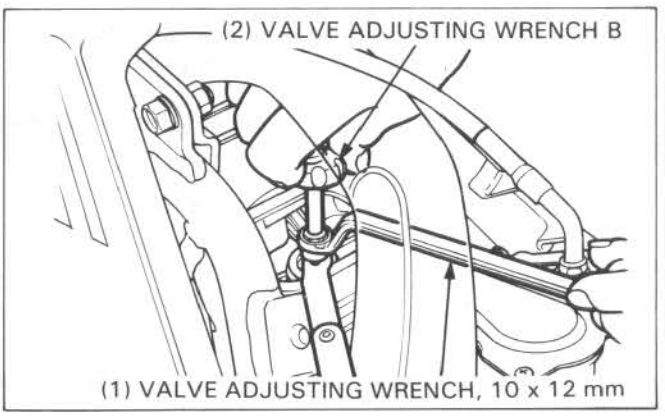
TOOLS
Valve adjusting wrench, 10 x 12 mm 07708–0030200
or equivalent commercially available in U.S.A.
Valve adjusting wrench B 07708–0030400
or valve adjusting wrench 089201–200–000

Hold the adjusting screw and tighten the lock nut.

Recheck the valve clearance and install the valve adjusting hole covers.

Install the rotor cap and timing hole cap.

Install the removed parts.



CARBURETOR IDLE SPEED

NOTE

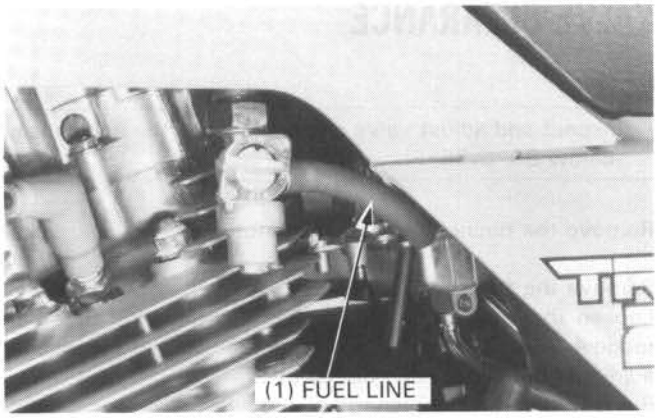
- Inspect and adjust the idle speed after all other engine maintenance items have been performed and are within specifications.
- The engine must be warm for accurate idle speed inspection and adjustment.

Warm up the engine for about ten minutes.
Turn the throttle stop screw as required to obtain the specified idle speed.

IDLE SPEED: 1,400 ± 100 rpm

FUEL LINE

Check the fuel line.
Replace any parts which show signs of deterioration, damage or leaks.

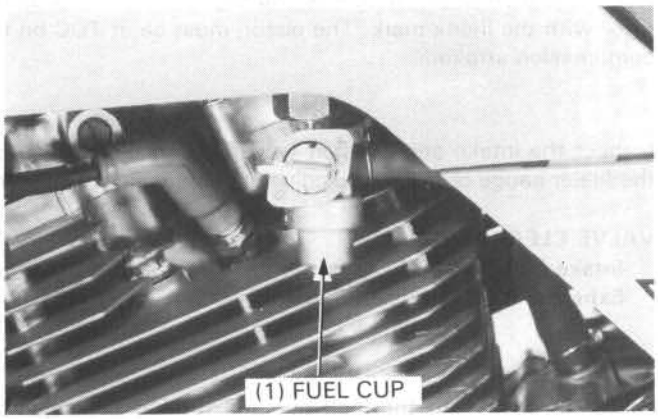


FUEL FILTER

Turn the fuel valve OFF.
Remove the fuel cup, O-ring and filter screen, and drain the gasoline into a suitable container.

WARNING

- ***Gasoline is flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks near the equipment while draining fuel.***

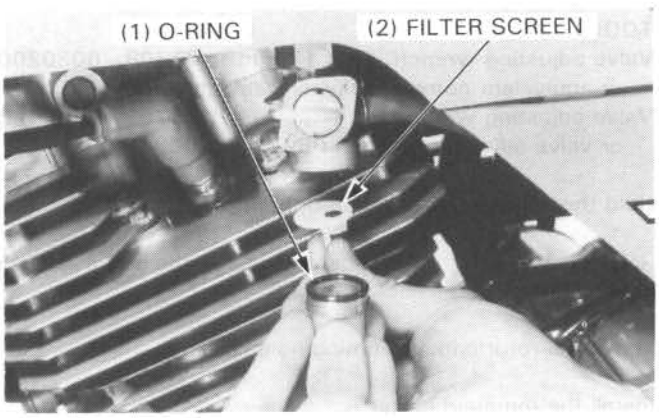


Wash the cup and filter screen in clean non-flammable or high flash point solvent.
Reinstall the screen, aligning the index marks on the fuel valve body and filter screen. Install a new O-ring into the fuel valve body.
Reinstall the fuel cup, making sure the new O-ring is in place. Hand tighten the fuel cup and then torque it to specification.

TORQUE: 3–5 N·m (0.3–0.5 kg-m, 2–4 ft-lb)

CAUTION

- *Do not overtighten the fuel cup.*



After installing, turn the fuel valve ON and check that there are no fuel leaks.

RIDE RED

CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the spark plug.
Install a compression gauge.
Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising.

NOTE

- The maximum reading is usually reached within 4—7 seconds.

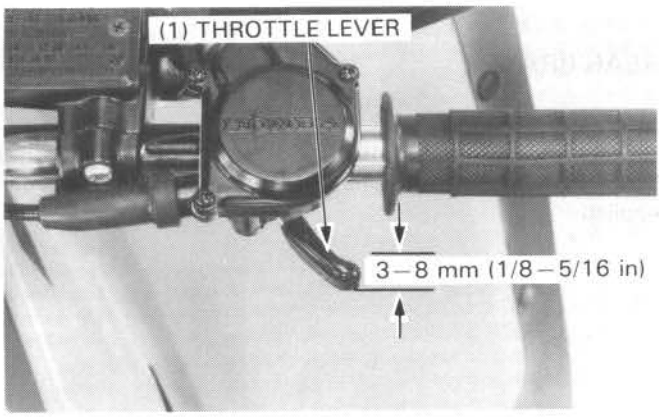
COMPRESSION PRESSURE:
12.5 ± 1.0 kg/cm² (178 ± 14 psi)

Low compression can be caused by:
— Blown cylinder head gasket
— Improper valve adjustment
— Valve leakage
— Worn piston ring or cylinder

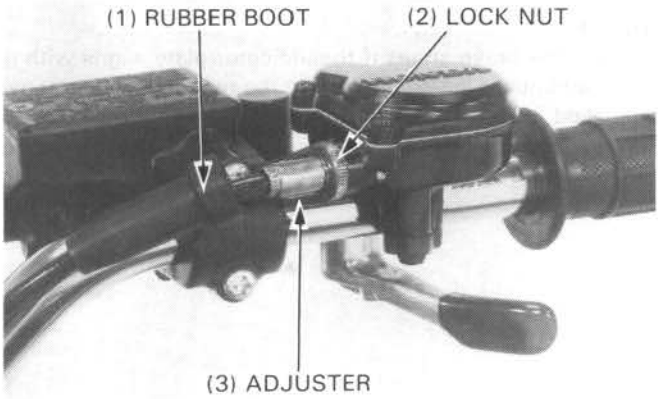
High compression can be caused by:
— Carbon deposits in combustion chamber or on piston head

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.



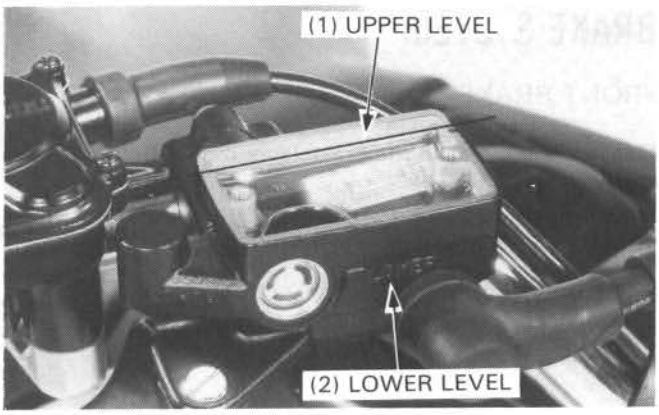
Disconnect the throttle cable at the upper end.
Thoroughly lubricate the cable and pivot point with a commercially available cable lubricant to prevent premature wear.
Install the throttle cable in the reverse order of removal.
Make sure the throttle lever free play is 3—8 mm (1/8—5/16 in) at the tip of the throttle lever.
Adjust as follows:
Slide the rubber boot off the cable adjuster.
Loosen the lock nut and adjust the throttle cable free play by turning the cable adjuster.
Tighten the lock nut and install the rubber boot securely.



BRAKE FLUID

Check that the brake fluid reservoir is filled to the upper level mark. If the level is near the lower level mark, fill the reservoir up to the upper level mark.

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



CAUTION

- *When adding brake fluid be sure the reservoir is horizontal before the cap is removed or brake fluid may spill out.*
- *Use only DOT 3 or 4 brake fluid from a sealed container.*
- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*
- *Never allow contaminants (dirt, water, etc.) to enter the brake fluid reservoir.*

BRAKE SHOES

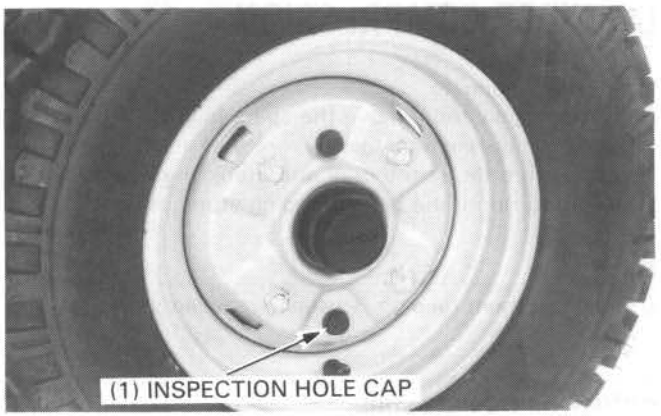
FRONT BRAKE

Remove the brake shoe lining inspection hole cap and inspect the lining thickness.

Lining thickness:
STANDARD: 4.0 mm (0.16 in)
SERVICE LIMIT: 2.0 mm (0.08 in)

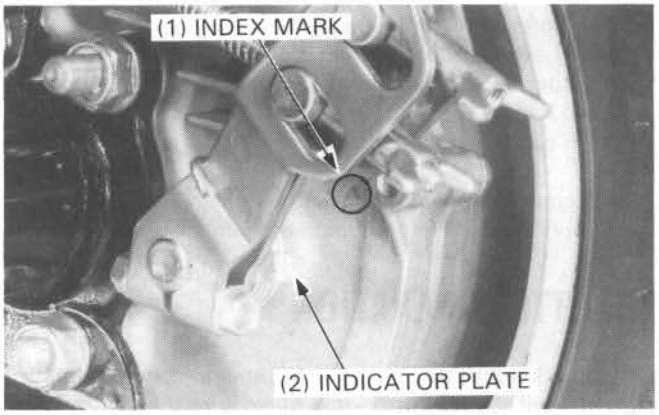
NOTE

- If either lining is worn beyond the limit, both brake shoes must be replaced.

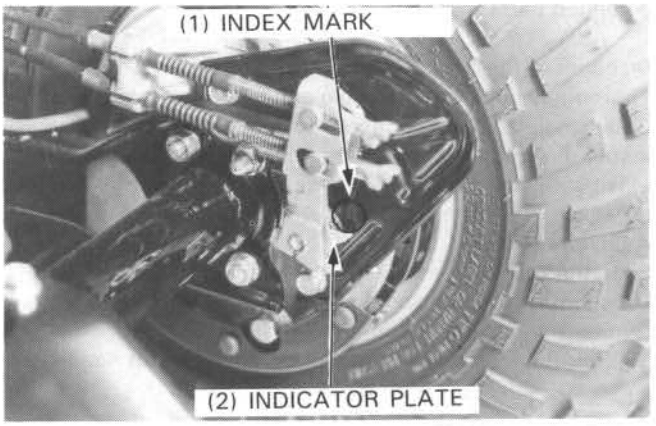


REAR BRAKE

'85:
Replace the brake shoes if the indicator plate aligns with the brake panel index mark when the rear brake lever or pedal is applied.



After '85:
Replace the brake shoes if the indicator plate aligns with rear brake arm guard index mark when the rear brake lever or pedal is applied.

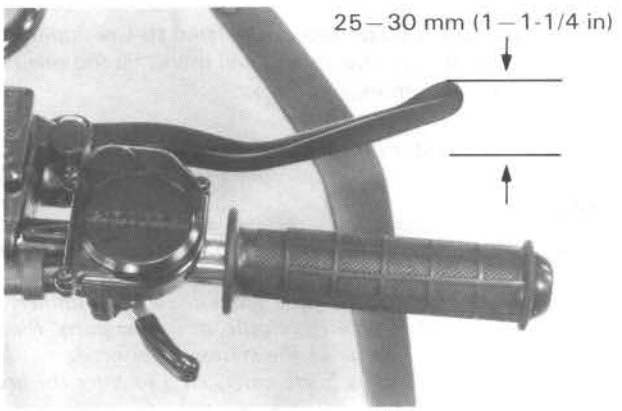


BRAKE SYSTEM

FRONT BRAKE

Measure the distance the brake lever moves before the brake starts to take hold.
Free play, measured at the tip of the front brake lever, should be within 25—30 mm (1—1-1/4 in).

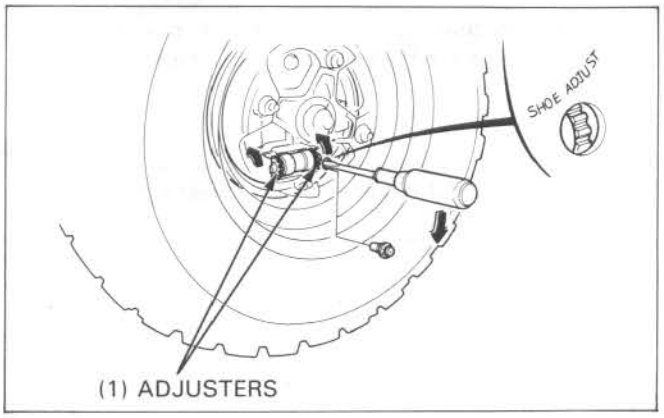
If the brake lever free play is excessive and the brake linings are not worn beyond the recommended limit adjust the brake shoe lining-to-drum clearance.



RIDE RED

Turn the two brake shoe adjusters up with a screwdriver until the shoes lock, then back off three stops.

Recheck the brake lever free play. If free play is still excessive after adjusting the brake lining clearance, there is probably air in the brake system and it must be bled out.



REAR BRAKE

Check the cable, brake lever and brake pedal for loose connections, excessive play, or other damage.

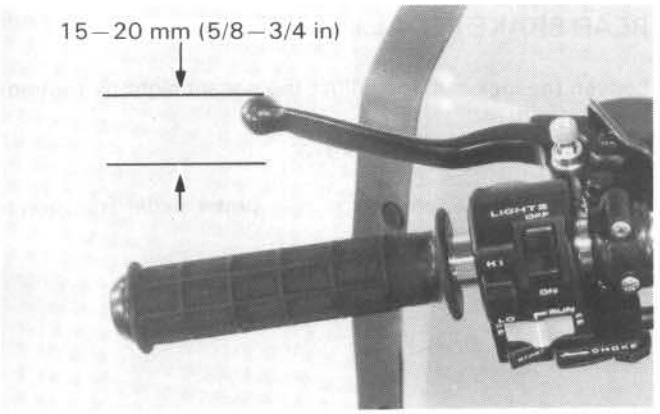
Replace or repair if necessary.
Disconnect the brake cables at the brake lever or pedal ends.

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

Install the cables.

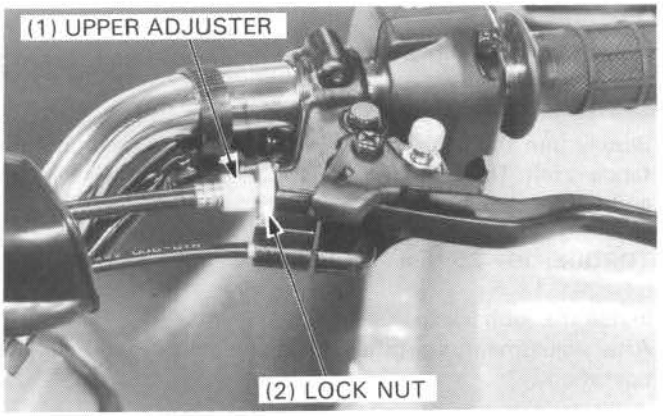
Measure the rear brake (parking brake) lever free play at the end of the brake lever.

REAR BRAKE LEVER FREE PLAY: 15—20 mm (5/8—3/4 in)



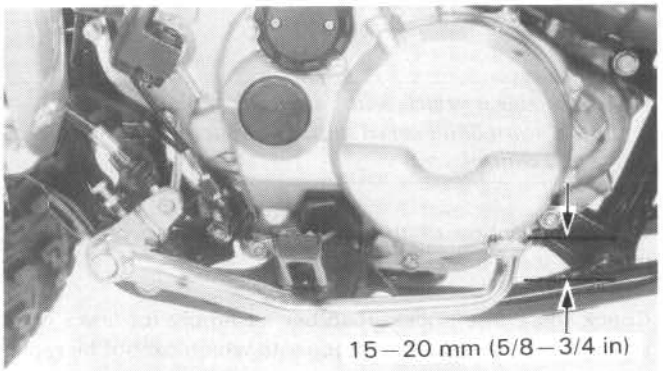
Minor adjustments can be made with the upper adjuster. Slide the rubber cover off the adjuster, loosen the lock nut and adjust.

Major adjustments should be made with the lower adjusting nut at the rear brake arm.



Measure the brake pedal free play at the end of the brake pedal and adjust as described below.

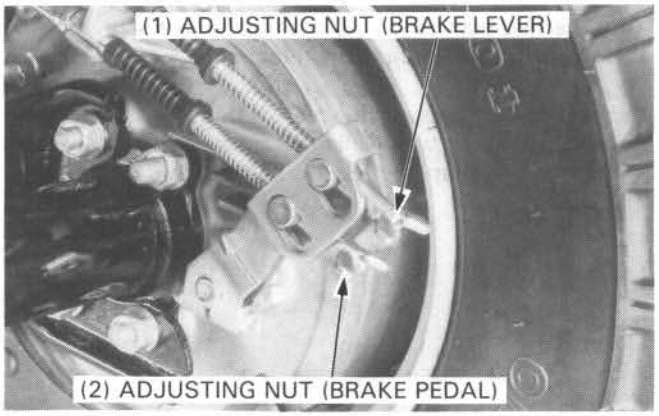
BRAKE PEDAL FREE PLAY: 15—20 mm (5/8—3/4 in)



Adjust the rear brake lever and pedal free play by turning the adjusting nuts at the lower end of the cables.

NOTE

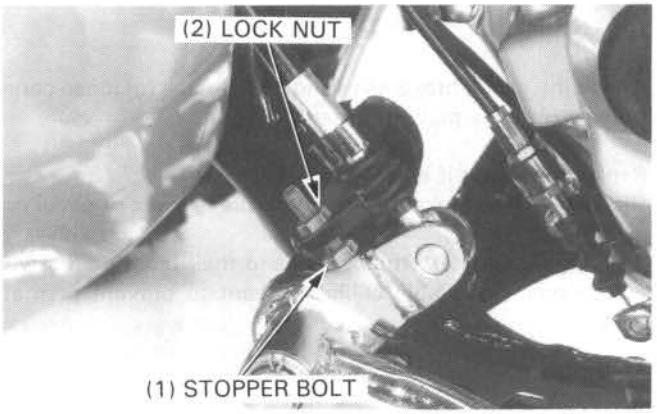
- Make sure the cut-out of each adjusting nut is seated on the brake arm pin.



REAR BRAKE PEDAL HEIGHT

Loosen the lock nut and adjust the pedal height by turning the stopper bolt.
Tighten the lock nut securely.

After adjustment, check the rear brake pedal free play and adjust if necessary.



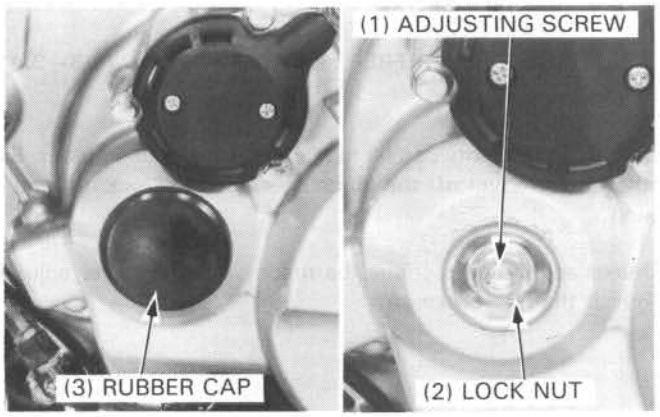
CLUTCH

With the engine off, remove the rubber cap and loosen the clutch adjusting screw lock nut.

Slowly turn the adjusting screw counterclockwise until resistance is felt. Then turn the adjusting screw clockwise 1/4 turn, and tighten the lock nut.

TORQUE: 19—25 N·m (1.9—2.5 kg-m, 14—18 ft-lb)

Install the rubber cap.
After adjustment, start the engine and check for proper clutch operation.



SUSPENSION

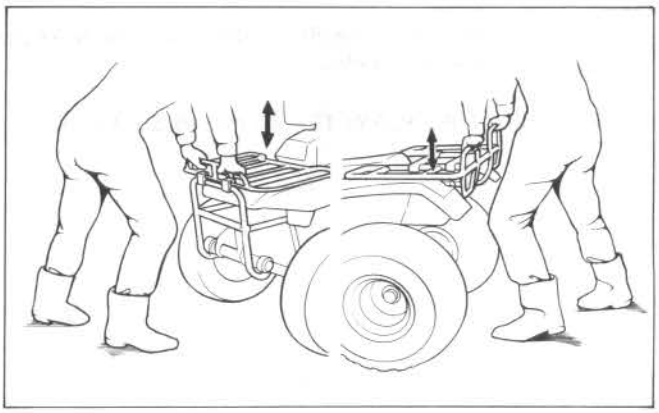
WARNING

- ***Do not ride a vehicle with faulty suspension.***
  Loose, worn or damaged suspension parts impair vehicle stability and control.

Check the action of the front/rear shock absorber by compressing them several times.

Check the entire shock absorber assembly for leaks or damage. Replace damaged components which cannot be repaired.

Tighten all nuts and bolts.



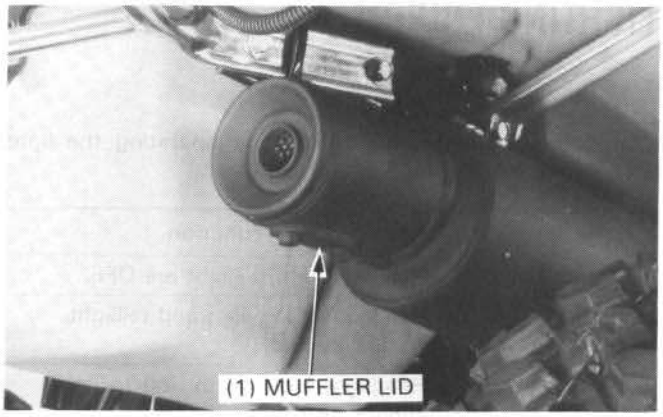
RIDE RED

SPARK ARRESTER CLEANING

WARNING

- *Do not touch the exhaust components while the exhaust system is hot.*
- *Perform this operation in a well-ventilated area, free from fire hazard.*
- *Use adequate eye protection.*

Remove the muffler lid.
Start the engine with the transmission in neutral, and purge accumulated carbon from the spark arrester system by momentarily revving up the engine several times.
Stop the engine and allow the exhaust system to cool. Install the muffler lid.

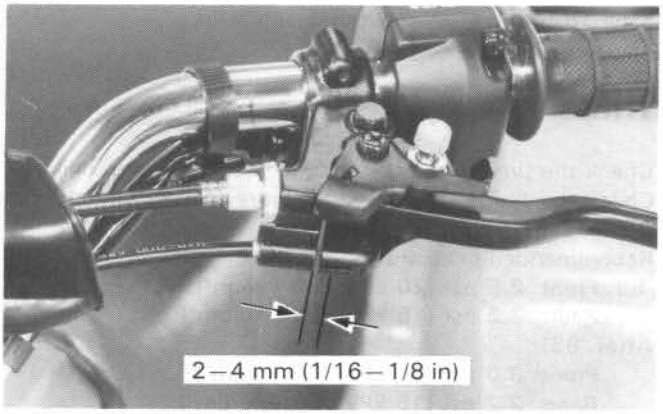


REVERSE LOCK MECHANISM

Check the reverse selector cable and lever for a loose connection, excessive play, or other damage.
Replace or repair if necessary.

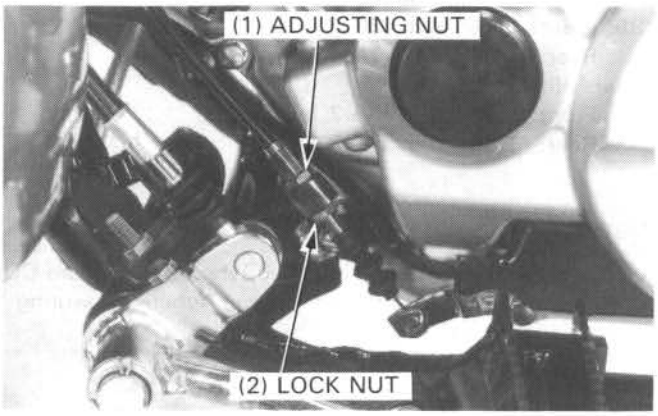
Measure the reverse selector lever free play at the lever end near the cable.

FREE PLAY: 2–4 mm (1/16–1/8 in)



Adjust by loosening the lock nut and turning the adjusting nut.

Tighten the lock nut securely.



NUTS, BOLTS, FASTENERS

Tighten bolts, nuts and fasteners at regular intervals shown in the Maintenance Schedule (section 3).

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-6). Check that all cotter pins and safety clips are in place.

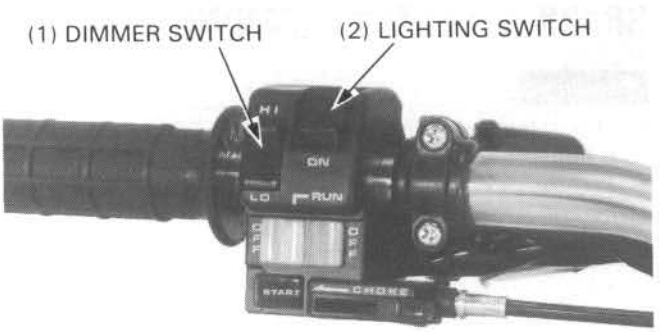
LIGHTING EQUIPMENT

Turn the ignition switch ON.

Check the headlight and taillight by operating the lighting switch and dimmer switch.

Position		Function
OFF		Headlight and taillight are OFF.
ON	LO	Headlight low beam and taillight should be ON.
	HI	Headlight high beam and taillight should be ON.

If the lights do not work properly, check the bulbs and refer to page 18-5 to test the switch if necessary.



TIRES

Check the tires for cuts, imbedded nails, or other damage.
Check the tire pressure and measure the tire circumference. Adjust accordingly.

Recommended pressure:
'85: Front: 2.9 psi (20 kPa, 0.2 kg/cm²)
Rear: 2.2 psi (15 kPa, 0.15 kg/cm²)
After '85:
Front: 3.0 psi (20 kPa, 0.2 kg/cm²)
Rear: 2.2 psi (15 kPa, 0.15 kg/cm²)

Standard tire circumference:
'85: Front: 1,745 mm (68.7 in)
Rear: 1,940 mm (76.4 in)
After '85:
Front: 1,681 mm (66.2 in)
Rear: 1,885 mm (74.2 in)

NOTE

- Tire pressure should be checked when the tires are COLD.
- Raise the wheels off the ground when measuring tire circumferences.

STEERING HEAD BEARINGS

NOTE

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

Raise the front wheels off the ground and make sure that the handlebar rotates freely.
If the handlebar moves unevenly, binds or has vertical movement, adjust the steering stem bearings by turning the steering bearing adjustment nut (page 11-15).

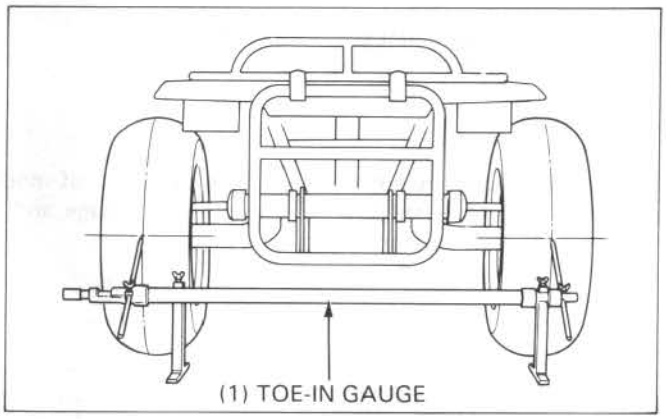
RIDE RED

STEERING SYSTEM

TOE-IN

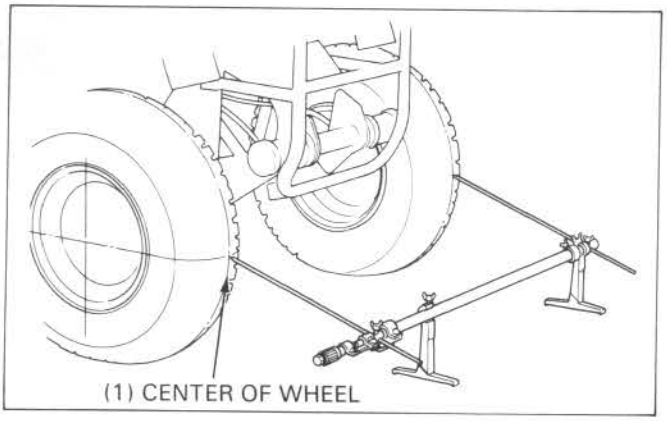
Place the vehicle on level ground with the front wheels facing straight ahead.

Mark the centers of the tires with chalk to indicate the axle center height.



Align the toe-in gauge with the marks on the tires as shown. Check the readings on the gauges scales.

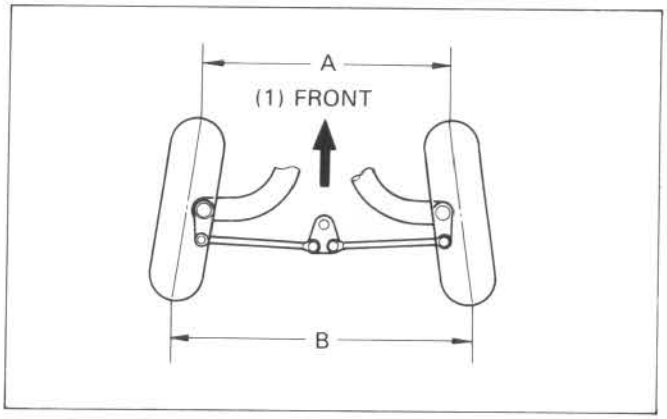
Slowly move the vehicle back until the wheels have turned 180° so the marks on the tires are aligned with the gauge height on the rear side.



Measure the toe-in on the rear part of the tires at the same points.

TOE-IN: 0 ± 7.5 mm (0 ± 0.30 in)

When the toe-in is out of specification, adjust it by changing the length of the tie-rods equally while measuring the toe-in.

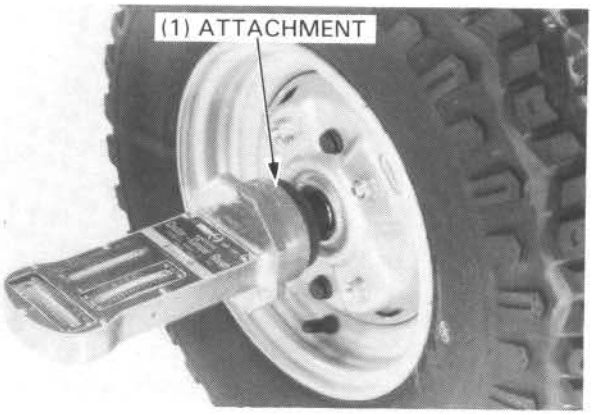


CAMBER/CASTER

Remove the wheel cap, cotter pin and front axle nut (page 12-5).
Install an attachment onto the front axle.
Set the camber and caster gauge to the attachment.
Measure the camber.

CAMBER: 1°

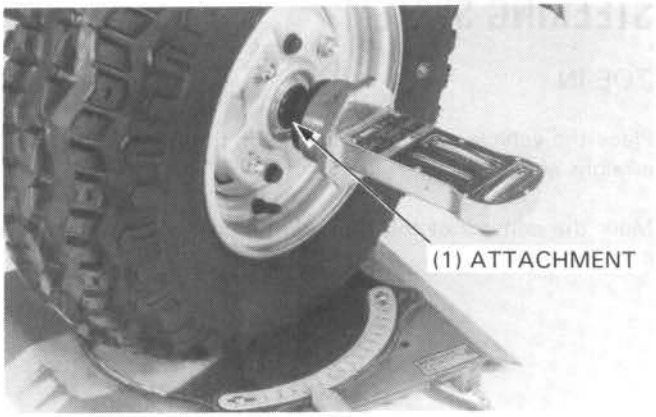
TOOL
Camber/caster gauge attachment 07910—MJ30100
(Not available in U.S.A.)



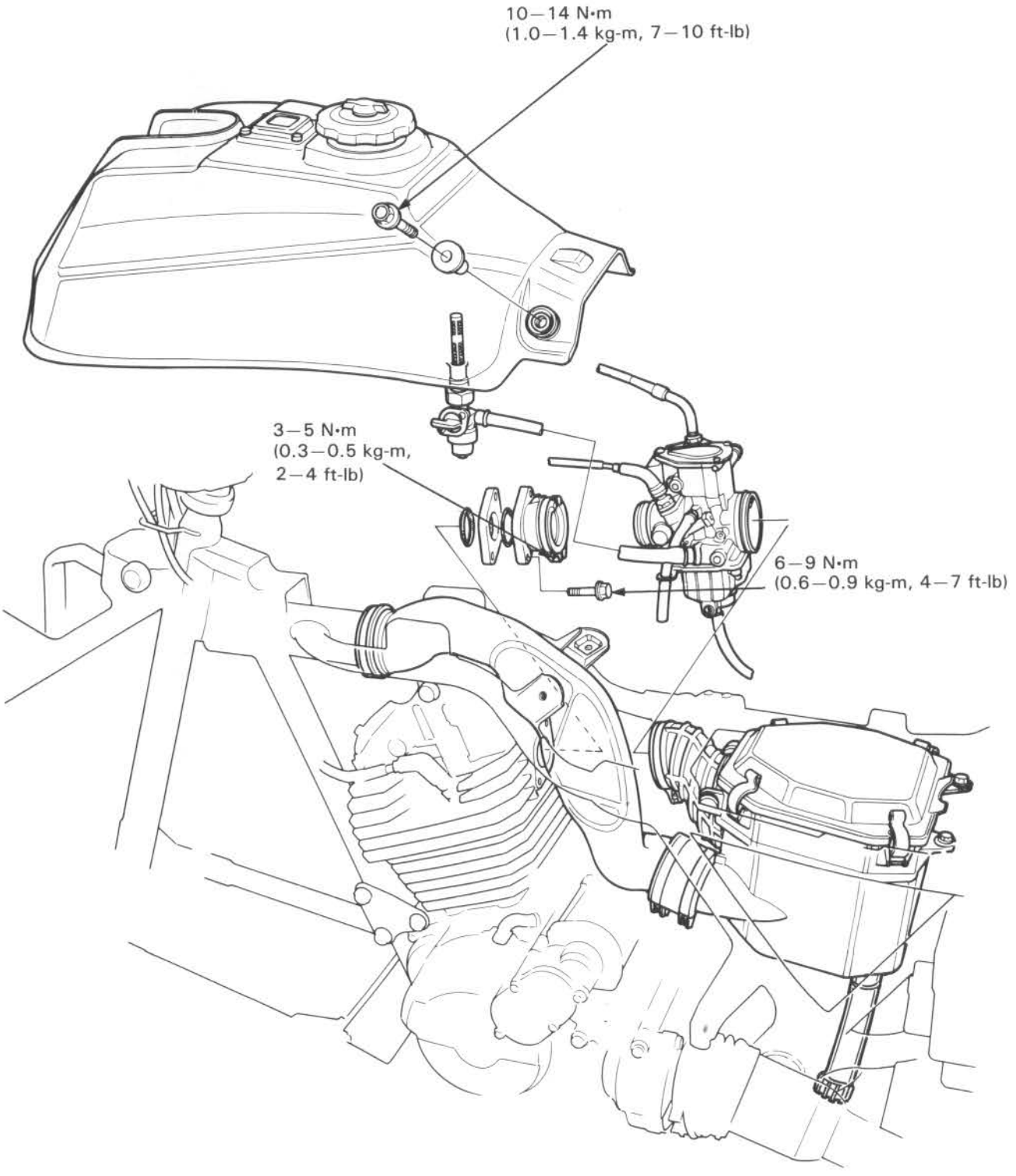
Set the turn gauge under the front wheels.
Measure the caster.

CASTER: 8°

Camber and caster are not adjustable. If they are out of specification, check the suspension and frame for damage and replace any parts necessary, then recheck alignment.



MEMO


10—14 N·m
(1.0—1.4 kg-m, 7—10 ft-lb)
3—5 N·m
(0.3—0.5 kg-m,
2—4 ft-lb)
6—9 N·m
(0.6—0.9 kg-m, 4—7 ft-lb)

RIDE RED

4. FUEL SYSTEM

SERVICE INFORMATION

GENERAL

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

SPECIFICATIONS

Fuel tank capacity	10.0 lit (2.6 US gal, 2.2 Imp. gal)
Fuel reserve capacity	2.0 lit (0.5 US gal, 0.4 Imp. gal)

Carburetor

Identification mark	QA04A
Type	Dual valve
Venturi diameter	27 mm (1.06 in)
Float level	18.5 mm (0.73 in)
Pilot screw opening	2-3/8 turns out
Idle speed	1,400 ± 100 rpm
Main jet	#128
Slow jet	#38
Throttle lever free play	3–8 mm (1/8–5/16 in)
Jet needle	3rd groove

TORQUE VALUES

Intake pipe bolt	6–9 N·m (0.6–0.9 kg-m, 4–7 ft-lb)
Intake pipe band screw	3–5 N·m (0.3–0.5 kg-m, 2–4 ft-lb)

TOOL

Common

Float level gauge	07401–0010000

TROUBLESHOOTING

Engine cranks but won't start
- No fuel in tank
- No fuel to carburetor
- Too much fuel getting to cylinder
- No spark at plug (ignition malfunction)
- Air cleaner clogged

Engine idles roughly, stalls, or runs poorly
- Idle speed incorrect
- Ignition malfunction
- Rich mixture
- Lean mixture
- Air cleaner dirty
- Insulator leaks

Lean mixture
- Carburetor fuel jet clogged
- Fuel filler cap vent hole blocked
- Fuel filter clogged
- Fuel line kinked or restricted
- Float valve faulty
- Float level too low
- Intake air leak

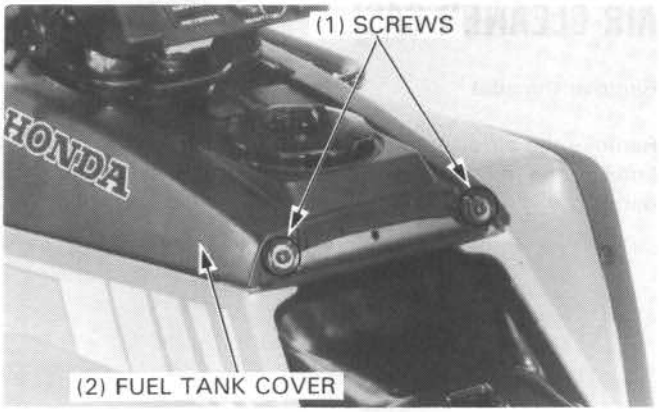
Rich mixture
- Starter valve stuck open or damage
- Float valve faulty
- Float level too high
- Carburetor air jet clogged
- Air cleaner dirty

RIDE RED

FUEL TANK

Remove the seat.

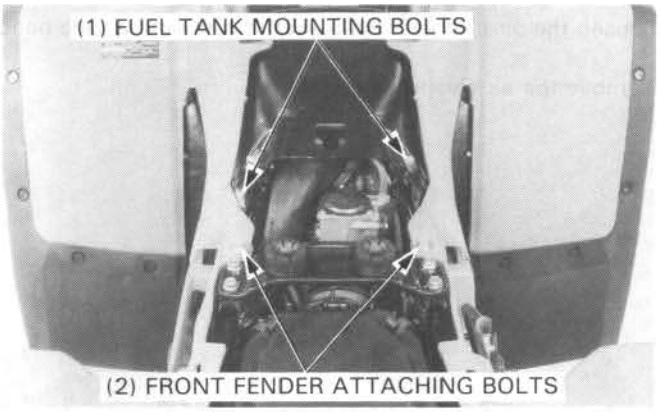
Remove the fuel tank cover by removing the two screws.
Turn the fuel valve OFF and disconnect the fuel line at the fuel valve.



Remove the two fuel tank mounting bolts and remove the two front fender attaching bolts.
Pull the fuel tank back and remove it from the frame.

WARNING

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



Use a drain pan and check that fuel flows freely out of the fuel valve by turning the fuel valve ON.

If flow is restricted, clean the fuel strainer and fuel filter screen (page 3-5).

Check the vent hole in the filler cap for blockage.

Installation is the reverse order of removal.
After installation, make sure there are no fuel leaks.

FUEL METER INSPECTION

WARNING

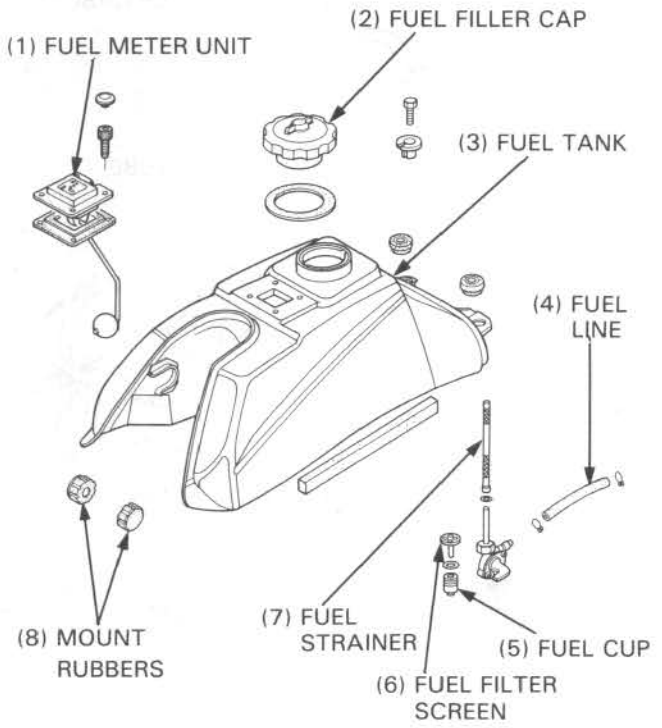
- ***Do not allow flames or sparks near the gasoline.***

Remove the plugs and fuel meter unit attaching bolts.
Remove the fuel meter unit and gasket being careful not to bend or damage the float rod.

Check the float for damage.
Check the operation of the fuel meter by moving the float up and down.
Replace the fuel meter unit if necessary.

Make sure that the fuel meter gasket is in good condition.

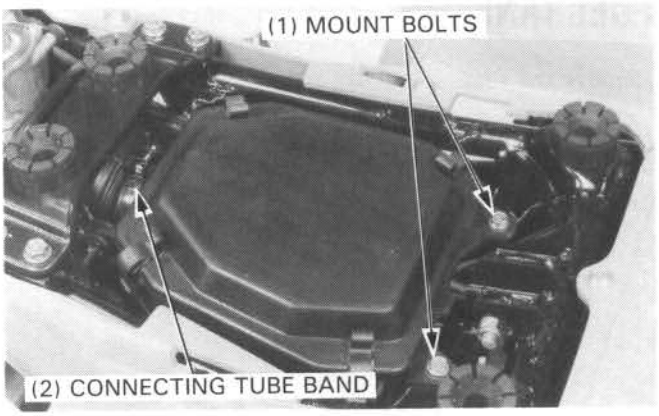
Install the fuel meter unit with the gasket.
After installation, make sure there are no fuel leaks.



AIR CLEANER CASE

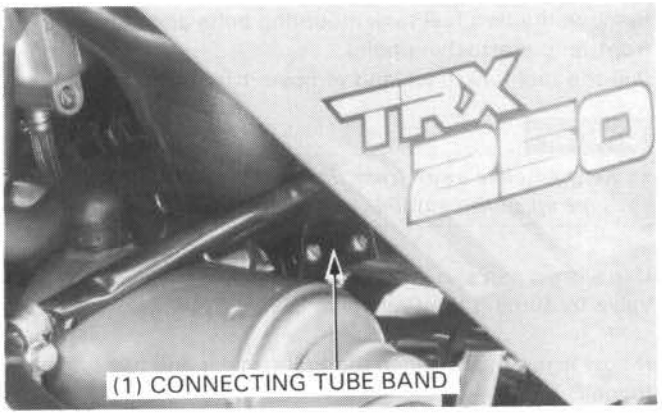
Remove the seat.

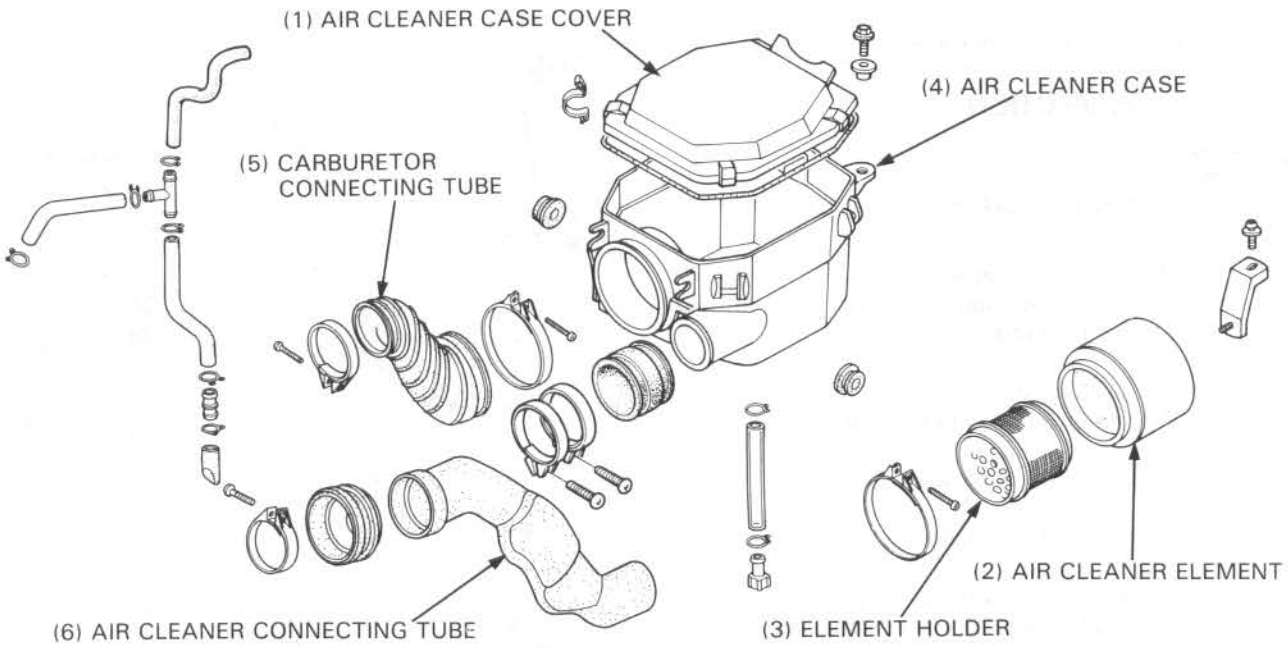
Remove the air cleaner case mounting bolts.
Loosen the air cleaner case-to-carburetor connecting tube band.



Loosen the air cleaner case-to-frame connecting tube band.

Remove the air cleaner case.





RIDE RED

CARBURETOR CHOKE

The choke system uses a fuel enrichment circuit controlled by a starter valve. The starter valve opens the enrichment circuit via a cable when the choke lever on the handlebar is moved to the left.

Check for smooth choke lever operation.
Lubricate the choke cable if the operation is not smooth.

(1) CHOKE LEVER

CARBURETOR REMOVAL

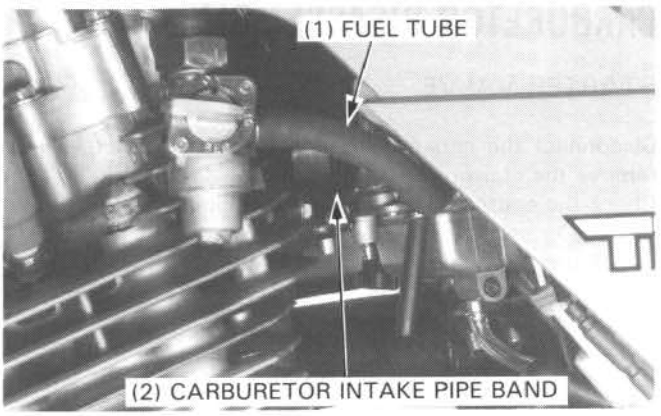
Remove the seat.

Remove the seat mounting stay by removing the two bolts.

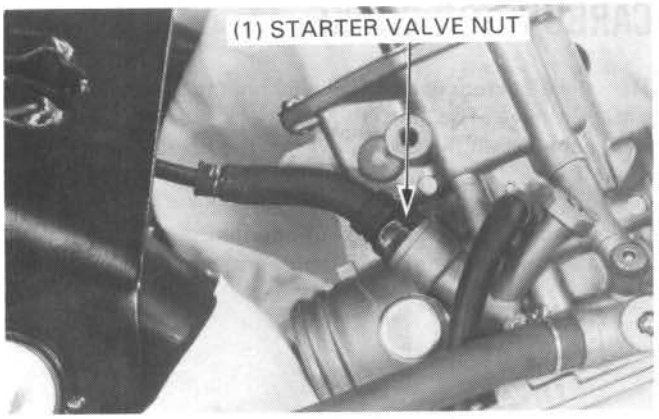
Loosen the air cleaner case connecting tube band.

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

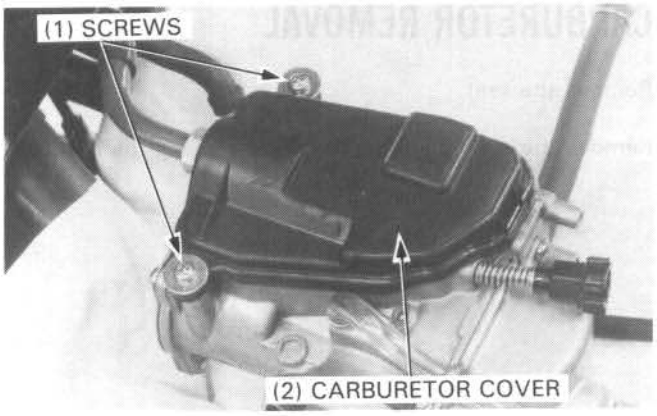
Loosen the carburetor intake pipe band screw.



Lift the carburetor out of the frame.
Loosen the starter valve nut and remove the valve from the carburetor.

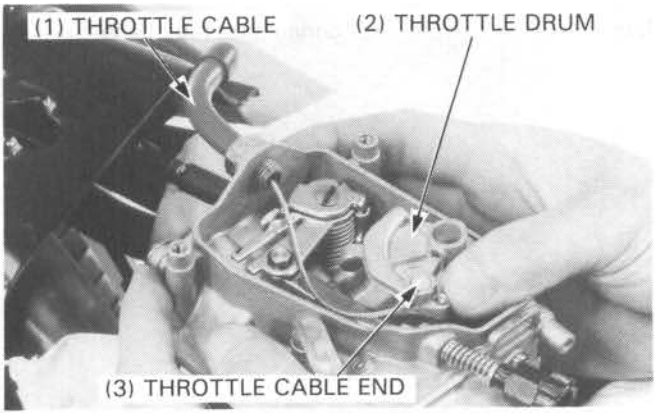


Remove the two carburetor cover screws and the cover.



Disconnect the throttle cable end from the throttle drum.

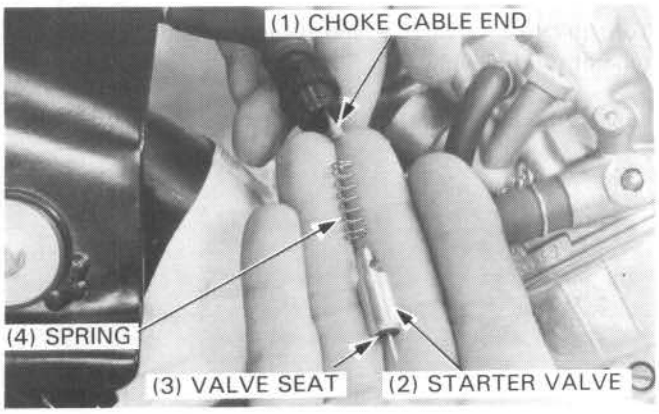
Remove the throttle cable from the carburetor body.



CARBURETOR DISASSEMBLY

STARTER VALVE

Disconnect the choke cable end from the starter valve and remove the starter valve and spring.
Check the starter valve and spring for nicks, grooves, or other damage.
Check the starter valve seat for wear.



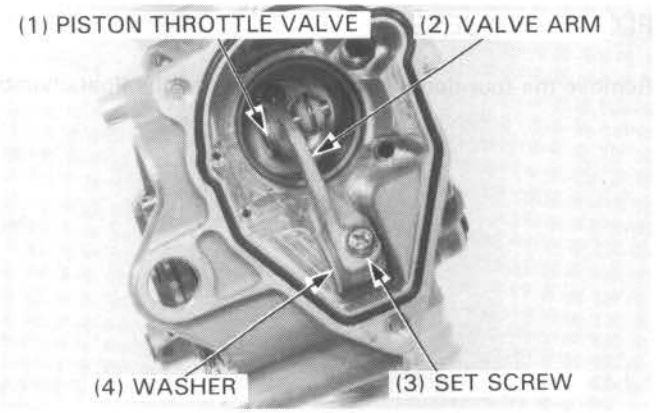
RIDE RED

PISTON THROTTLE VALVE

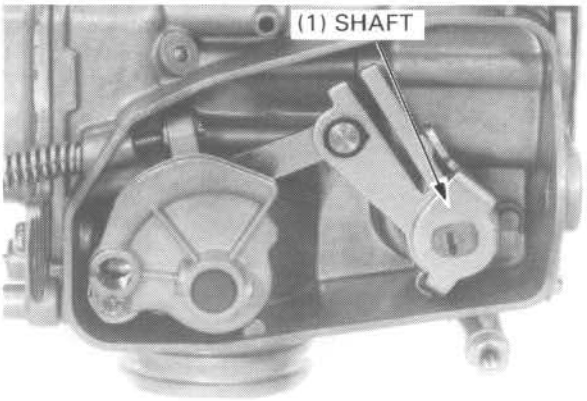
NOTE

- The butterfly throttle valve attaching screws are staked and the valve can not be removed.

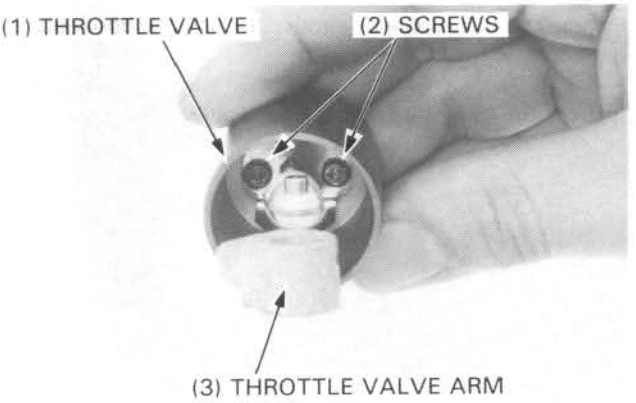
Remove the carburetor top cover by removing the three screws.
Remove the throttle valve arm set screw.



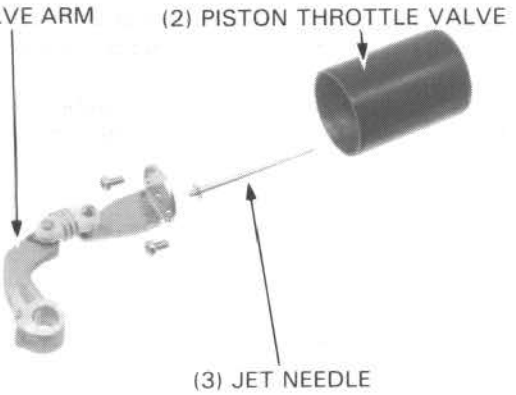
Pull the shaft out and remove the throttle valve and washer.



Remove the two screws attaching the valve arm to the valve and separate the valve and jet needle from the arm.

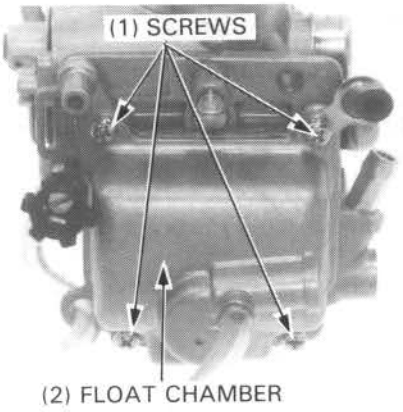


Check the throttle valve and jet needle for wear or damage.

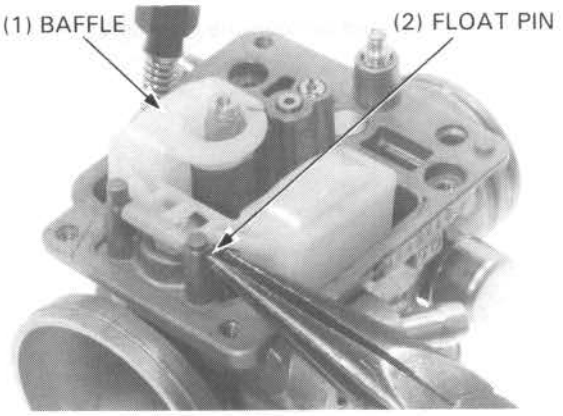


FLOAT AND JETS

Remove the four float chamber screws and the float chamber.

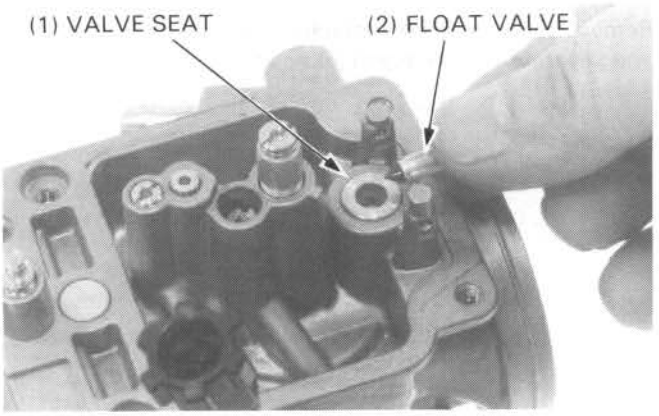


Remove the float pin, baffle, float and float valve.



Inspect the float valve for grooves and nicks, and replace as required.

Inspect the operation of the float valve.



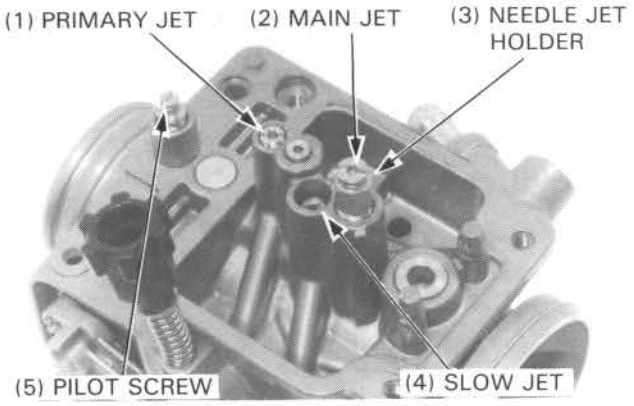
Remove the main jet, needle jet holder and needle jet.
Remove the slow jet, primary jet and primary nozzle.

Turn the pilot screw in and record the number of turns before it seats lightly. Use this as a reference for reinstallation.

CAUTION

- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

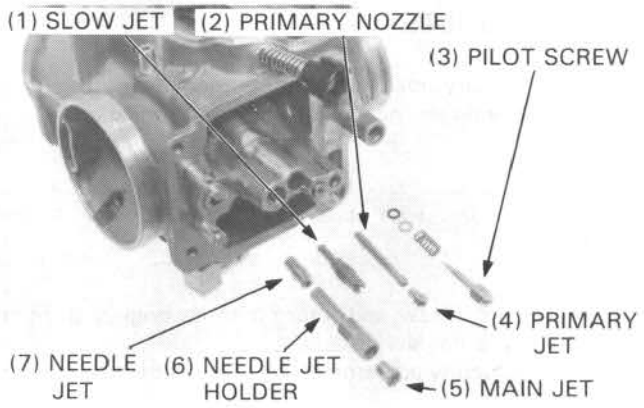
Remove the pilot screw.



RIDE RED

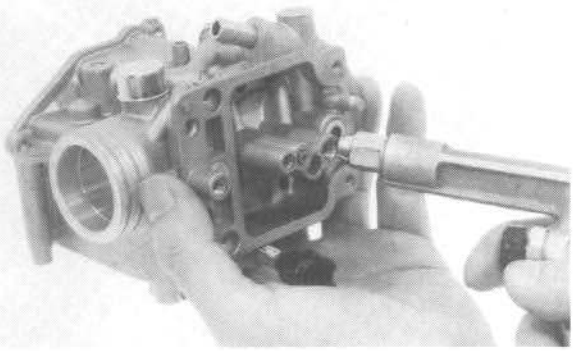
Inspect the pilot screw and each jet and replace them if they are worn or damaged.

Blow open all jets with compressed air.

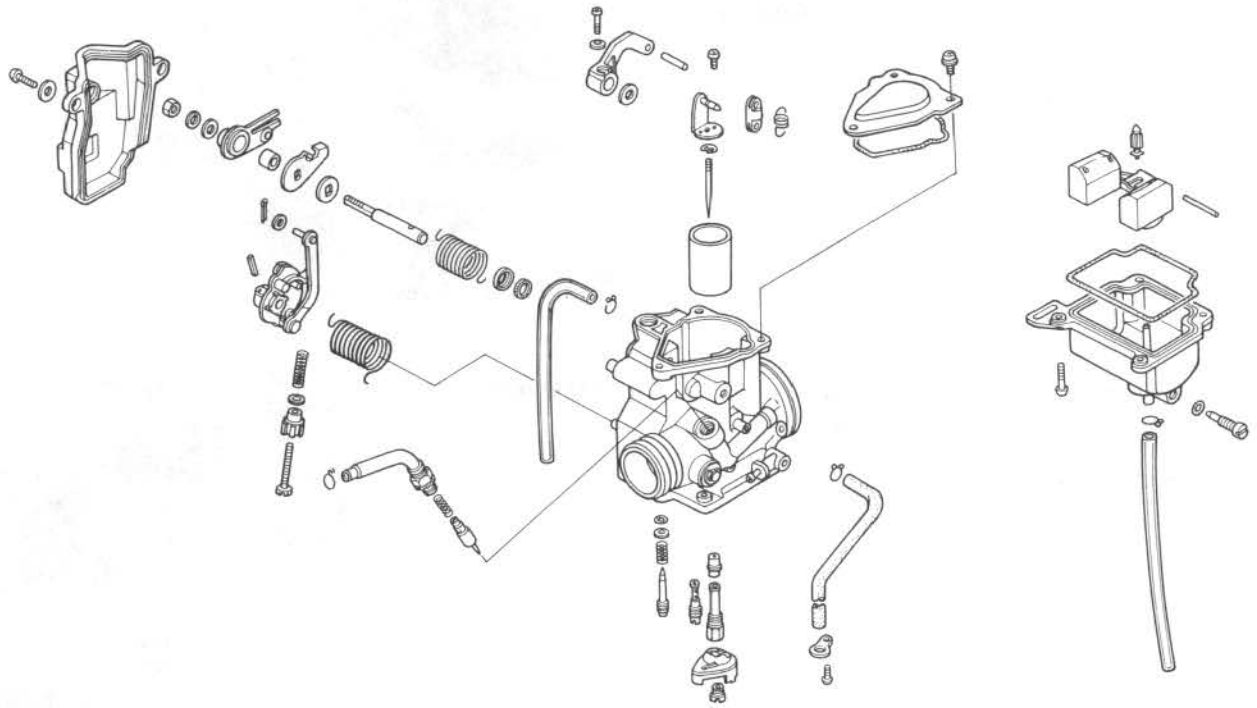


CARBURETOR BODY CLEANING

Remove the piston throttle valve (page 4-7).
Remove the all jets and pilot screw (page 4-8).
Blow open all carburetor body openings with compressed air.



CARBURETOR ASSEMBLY



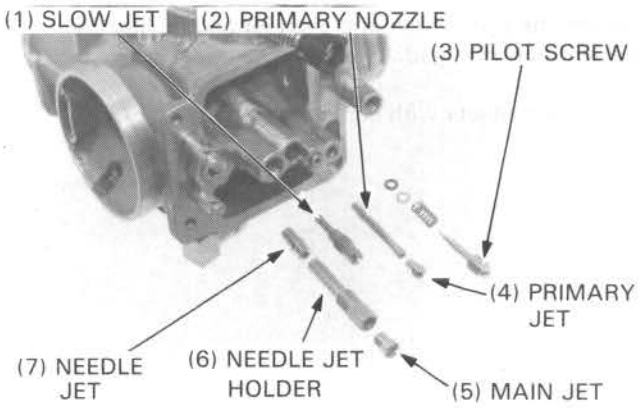
FLOAT AND JETS

Install the primary nozzle, primary jet and slow jet.
Install the needle jet, needle jet holder and main jet.

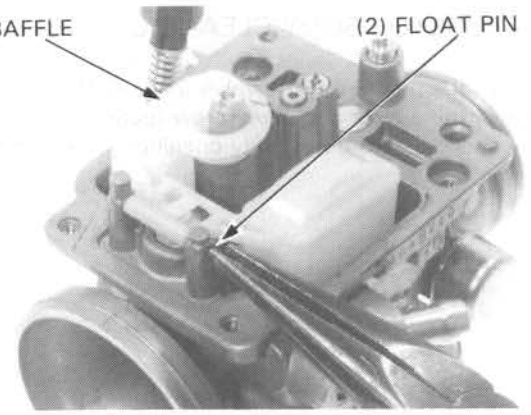
CAUTION

- *Handle all jets with care. They can easily be scored or scratched.*

Install the pilot screw and return it to its original position as noted during removal.
Perform pilot screw adjustment if a new pilot screw is installed (page 4-12).



Install the float valve, float, float pin and baffle plate.

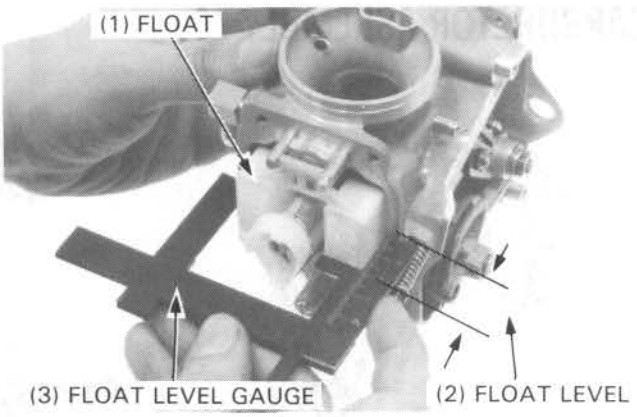


FLOAT LEVEL

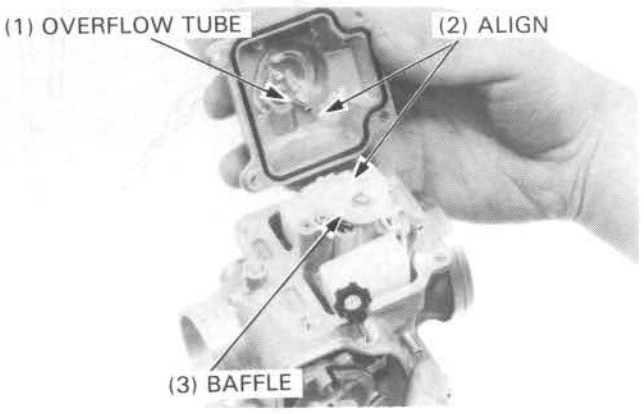
With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge as shown.

SPECIFICATIONS: 18.5 mm (0.73 in)

TOOL
Float level gauge 07401-0010000



Install the float chamber aligning the overflow tube on the chamber with the hole in the baffle as shown.
Install the four float chamber screws.



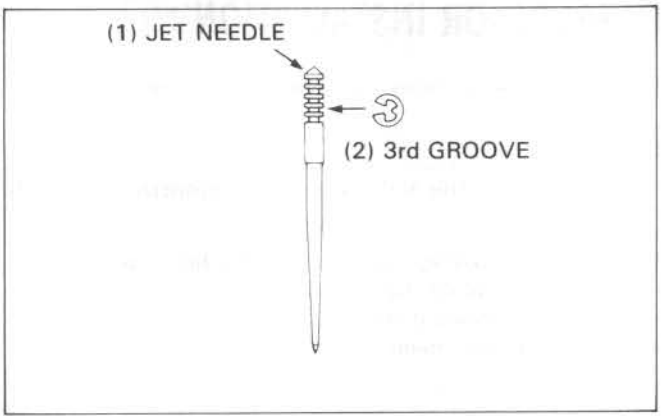
RIDE RED

PISTON THROTTLE VALVE

Install the needle clip on the jet needle.

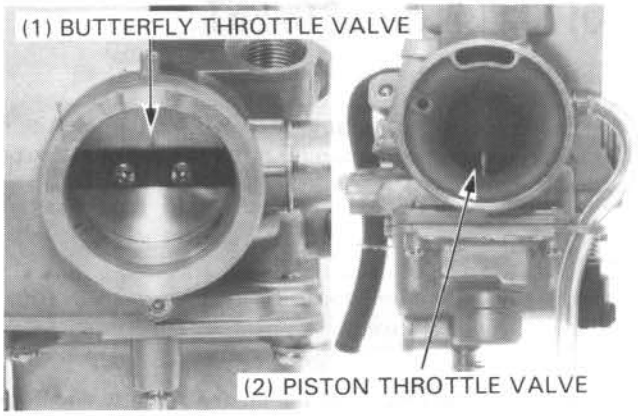
STANDARD SETTING: 3rd groove

Install the piston throttle valve in the reverse order of removal.



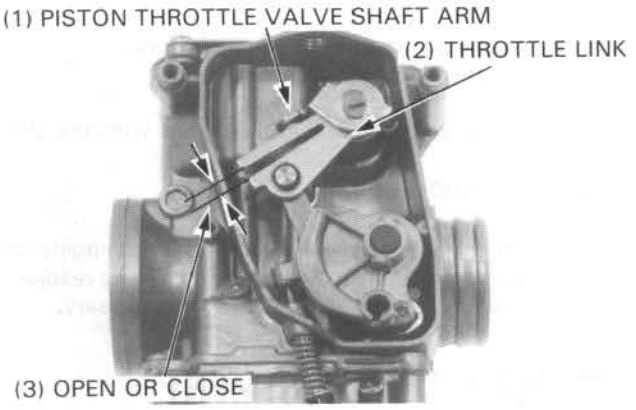
THROTTLE VALVE SYNCHRONIZATION

Close the butterfly throttle valve fully.



Make sure that the piston throttle valve is closed fully and there is no clearance between the throttle link and the piston throttle valve shaft arm.

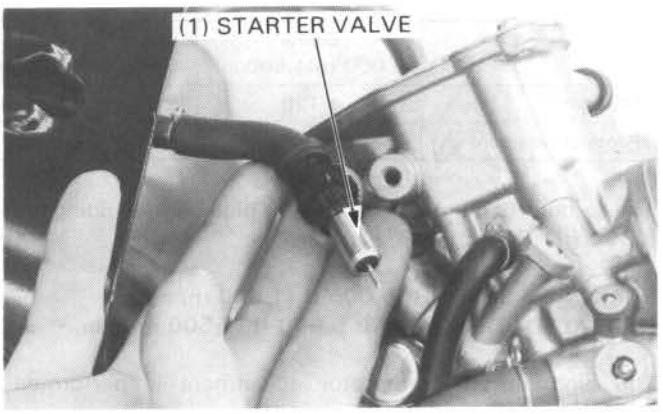
Adjust synchronization by opening or closing the slot in the throttle link.



STARTER VALVE

Install the starter valve spring over the choke cable and connect the cable end to the starter valve.

Move the choke lever all the way right to the left and make sure the starter valve operates properly.



CARBURETOR INSTALLATION

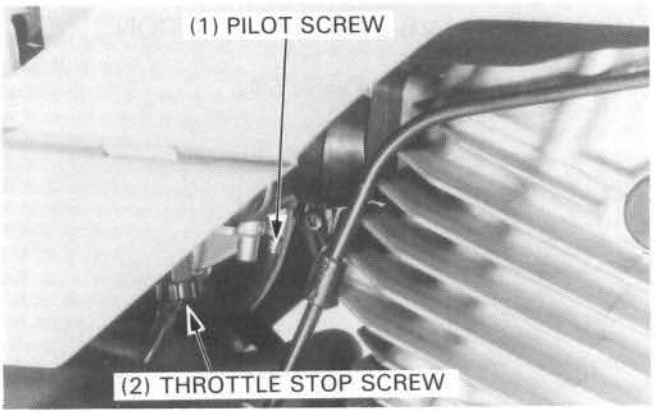
Installation is essentially the reverse of removal.

NOTE

- Route the throttle and choke cables properly (page 1-9).

Perform the following inspections and adjustments.
- Throttle operation (page 3-6).
- Carburetor choke (page 4-5).
- Carburetor idle speed (page 3-5).

PILOT SCREW ADJUSTMENT



NOTE

- The pilot screw is factory pre-set. Adjustment is not necessary unless the carburetor is overhauled or a new pilot screw is installed.

CAUTION

- *Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.*

Turn the pilot screw clockwise until it seats lightly and back it out 2-3/8 turns.
This is an initial setting prior to the final pilot screw adjustment.
Warm the engine up to operating temperature.
Stop the engine and connect a tachometer.

Start the engine and adjust the idle speed with the throttle stop screw.
IDLE SPEED: 1,400 ± 100 rpm

Turn the pilot screw clockwise slowly until the engine stops, and then back it out 2 turns. Start the engine and readjust the idle speed with the throttle stop screw, if necessary.

HIGH ALTITUDE ADJUSTMENT

SPECIFICATIONS

	Below 6,000 ft (1,800 m)	Above 5,000 ft (1,500 m)
Main jet	#128	#122
Pilot screw opening	Factory preset	1/4 screw in

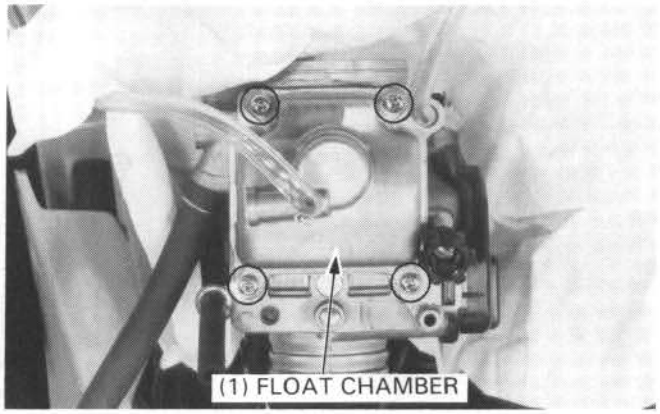
The carburetor must be adjusted for high altitude riding (above 6,000 ft/1,800 m).

STANDARD SETTING: 6,000 ft (1,800 m) max.
HIGH ALTITUDE SETTING: 5,000 ft (1,500 m) min.

The high altitude carburetor adjustment is performed as follows:

RIDE RED

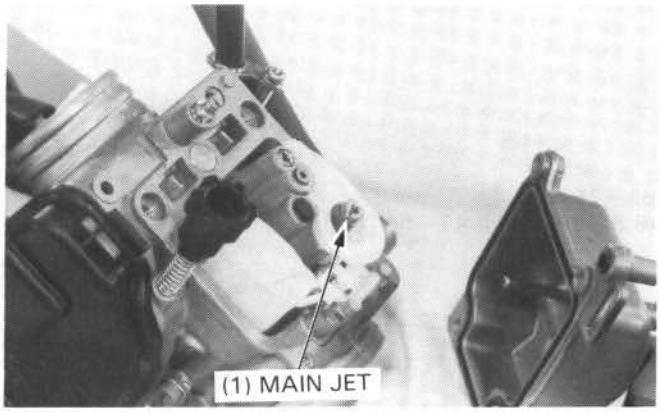
Remove the carburetor (page 4-5) and float chamber.

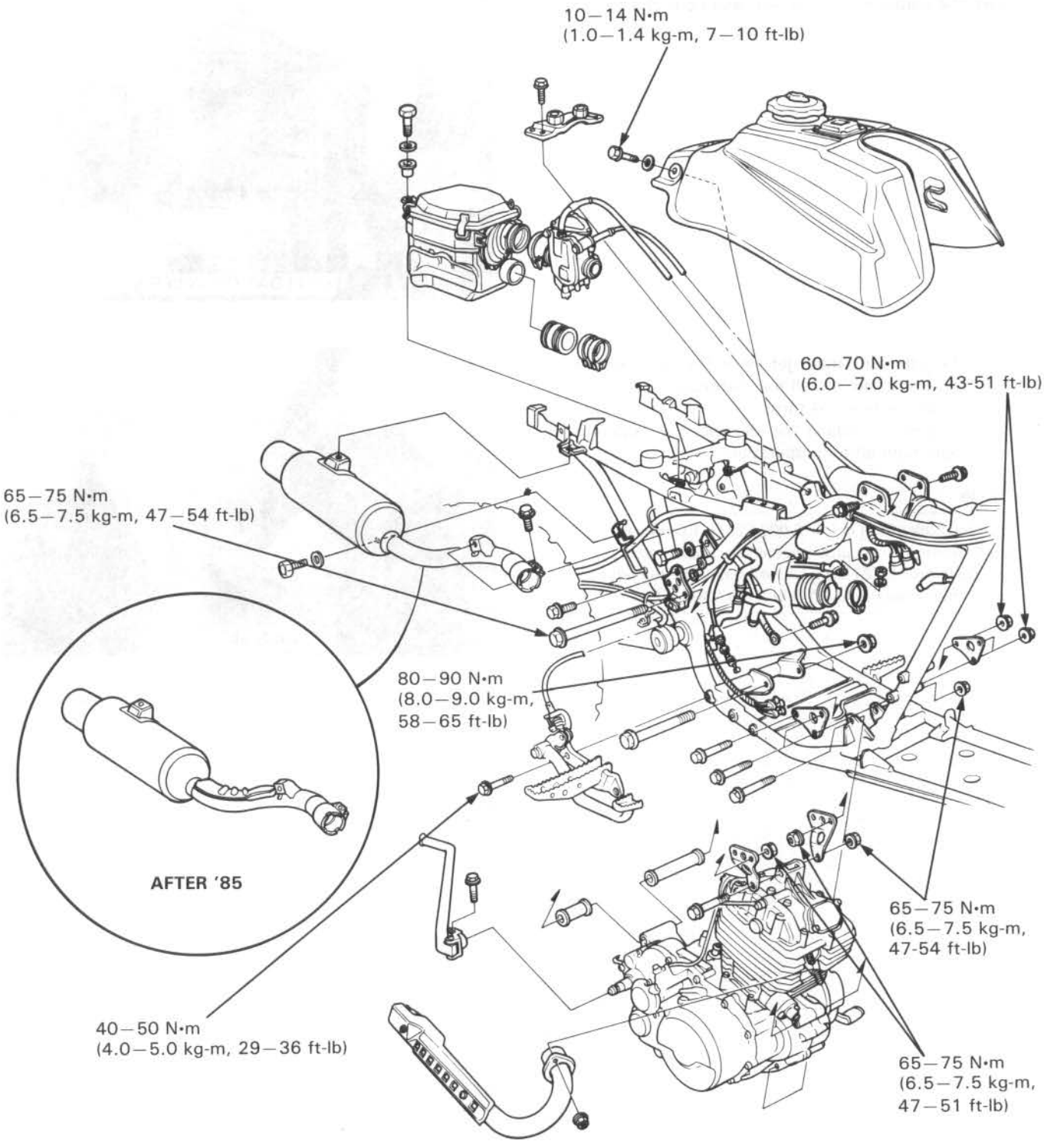


Replace the standard main jet with the high altitude type (#122). Assemble and install the carburetor.
Turn-in the pilot screw 1/4 turn.
Start the engine and adjust the idle speed at high altitude to ensure proper high altitude operation.

CAUTION

- *Sustained operation below 5,000 feet (1,500 m) with the high altitude settings may cause engine overheating and engine damage. Install the #128 main jet and screw out the pilot screw 1/4 turn, when riding below 5,000 feet (1,500 m).*




10–14 N·m
(1.0–1.4 kg-m, 7–10 ft-lb)
60–70 N·m
(6.0–7.0 kg-m, 43-51 ft-lb)
65–75 N·m
(6.5–7.5 kg-m, 47–54 ft-lb)
80–90 N·m
(8.0–9.0 kg-m,
58–65 ft-lb)
AFTER '85
65–75 N·m
(6.5–7.5 kg-m,
47-54 ft-lb)
40–50 N·m
(4.0–5.0 kg-m, 29–36 ft-lb)
65–75 N·m
(6.5–7.5 kg-m,
47–51 ft-lb)

RIDE RED

5. ENGINE REMOVAL/INSTALLATION

SERVICE INFORMATION

GENERAL

- A floor jack or other adjustable support is required to support and maneuver the engine.
- The following parts or components can be serviced with the engine installed in the frame:

- Carburetor
- Oil pump
- Alternator
- Starter motor
- Clutch
- Kick starter
- Gearshift linkage
- Cylinder head
- Cylinder and piston

SPECIFICATIONS

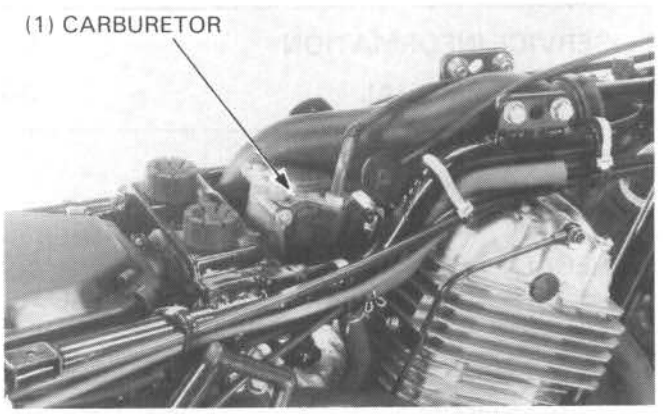
Engine dry weight	46.3 kg (102 lbs)
Engine oil capacity	2.5 lit. (2.6 US qt, 2.2 Imp qt) after disassembly 2.1 lit. (2.2 US qt, 1.8 Imp qt) after draining

TORQUE VALUES

Front engine hanger bolt		60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)
Upper engine hanger bolt		65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
Rear engine hanger bolt		65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
Lower engine hanger bolt	Front	65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
	Rear	80—90 N·m (8.0—9.0 kg-m, 58—65 ft-lb)

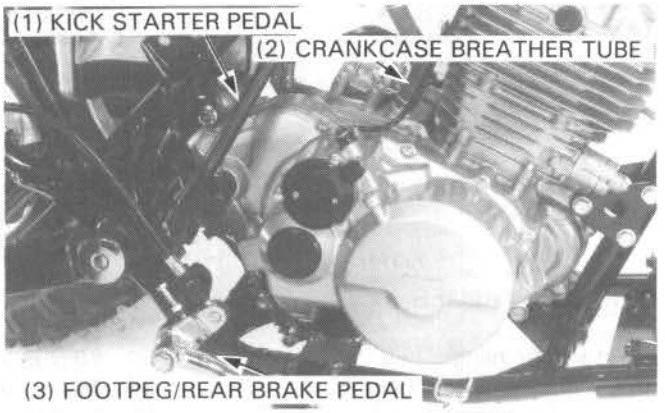
ENGINE REMOVAL

Remove the fuel tank (page 4-3).
Remove the front/rear fenders and carriers (page 14-1).
Disconnect the battery negative cable from the battery.
Shift the transmission into neutral.
Drain the engine oil (page 2-2).
Remove the carburetor (page 4-5).
Remove the exhaust pipe and muffler (page 14-4).



Remove the right footpeg/rear brake pedal from the frame by removing two bolts.

Remove the kick starter pedal and disconnect the crankcase breather tube.

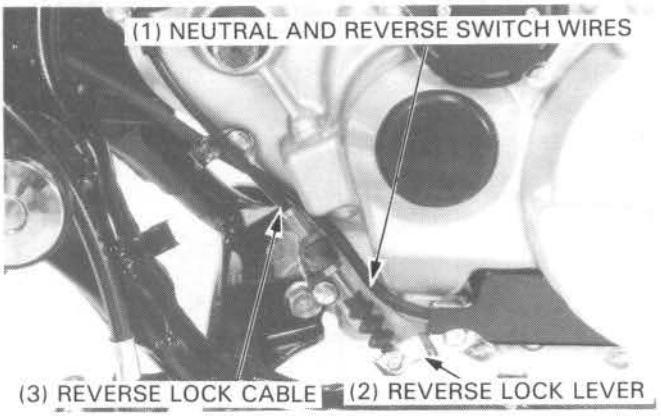


Remove the bolt attaching the reverse lock cable holder and disconnect the cable from the lock lever.

Remove the neutral and reverse switch wire cover.
Disconnect the neutral and reverse switch wires from the switches.

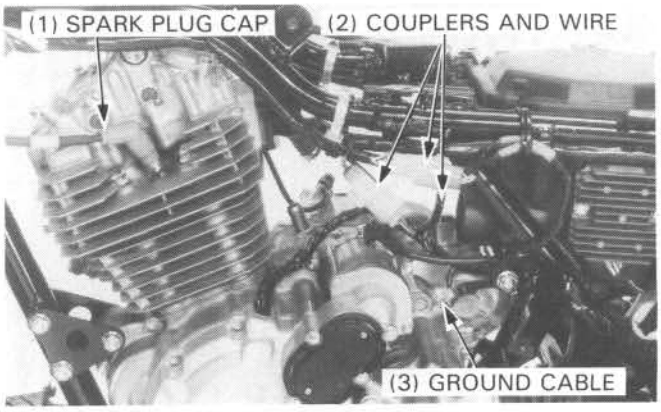
Disconnect the oil temperature sensor wire connectors.

Remove the reverse lock lever by removing the bolt.



Disconnect the spark plug cap, engine ground cable and starter motor cable.

Disconnect the alternator and pulse generator couplers and wire.



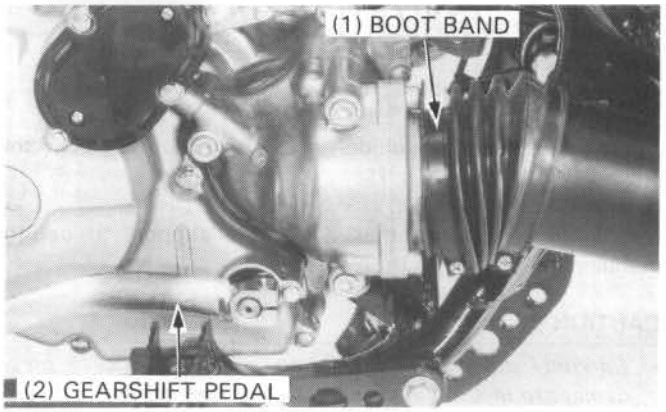
RIDE RED

Remove the gearshift pedal and loosen the drive shaft boot band.

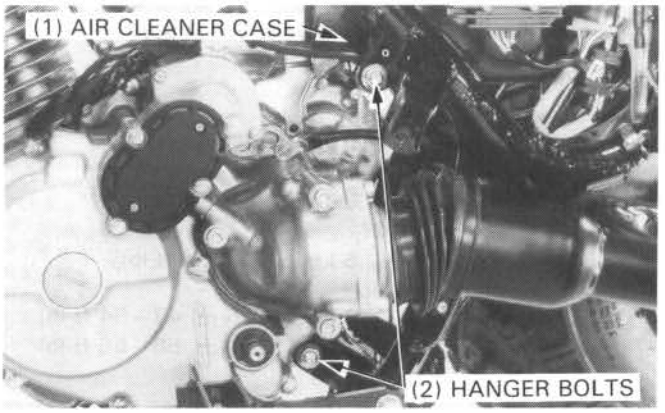
Place a floor jack or other adjustable support under the engine.

NOTE

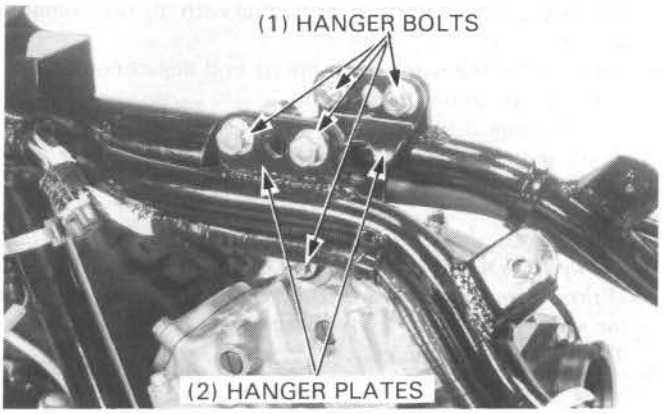
- The jack height must be continuously adjusted so that the mounting bolts can be removed, and so stress is relieved from other bolts until they are removed.



Remove the air cleaner case and connecting tubes (page 4-4). Remove the rear engine hanger bolts, plate, collars and rear lower hanger bolt.



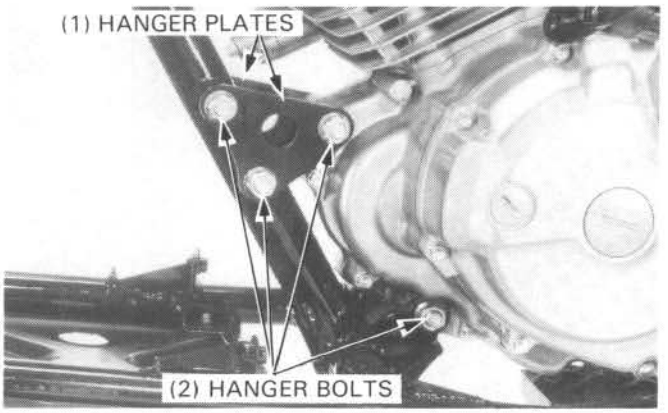
Remove the upper engine hanger plate bolts and plates.



Remove the front hanger plate bolts and plates.

Remove the front lower hanger bolt.

Remove the engine from the right side while disconnecting the drive shaft universal joint from the engine.



ENGINE INSTALLATION

Engine installation is essentially the reverse of removal.

Apply molybdenum disulfide grease to the output gear shaft splines.

Use a floor jack or other adjustable support to carefully manuever the engine into place.

CAUTION

- *Carefully align mounting points with the jack to prevent damage to mounting bolt threads and wire harness and cables.*
- *Be careful not to damage the oil temperature sensor.*

Tighten all the fasteners to the specified torque.

TORQUE:

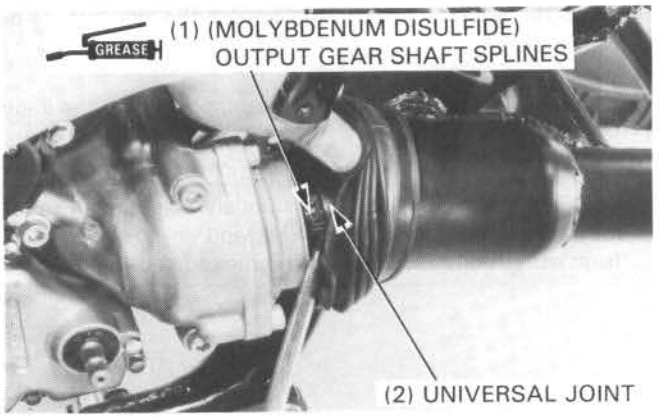
Front engine hanger bolt
60—70 N·m (6.0—7.0 kg-m, 43—51 ft-lb)
Upper engine hanger bolt
65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
Rear engine hanger bolt
65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
Lower engine hanger bolt
Front 65—75 N·m (6.5—7.5 kg-m, 47—54 ft-lb)
Rear 80—90 N·m (8.0—9.0 kg-m, 58—65 ft-lb)

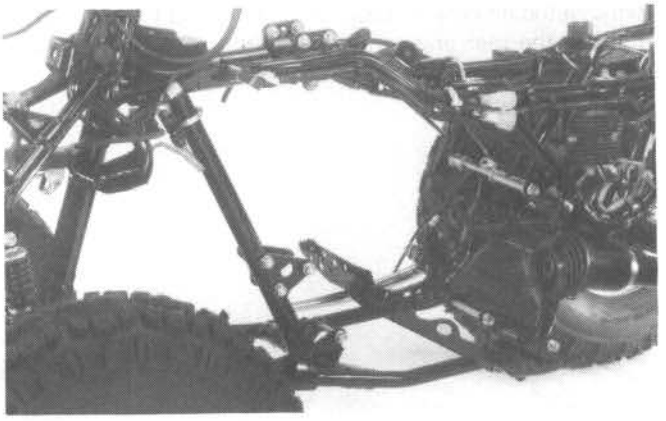
NOTE

- Route the wires and cables properly (page 1-9).
- Fill the crankcase to the proper level with the recommended oil (page 2-1).
- Perform the following inspections and adjustments:
  Throttle operation (page 3-6).
  Clutch (page 3-9).
  Reverse lock cable (page 3-10).

WARNING

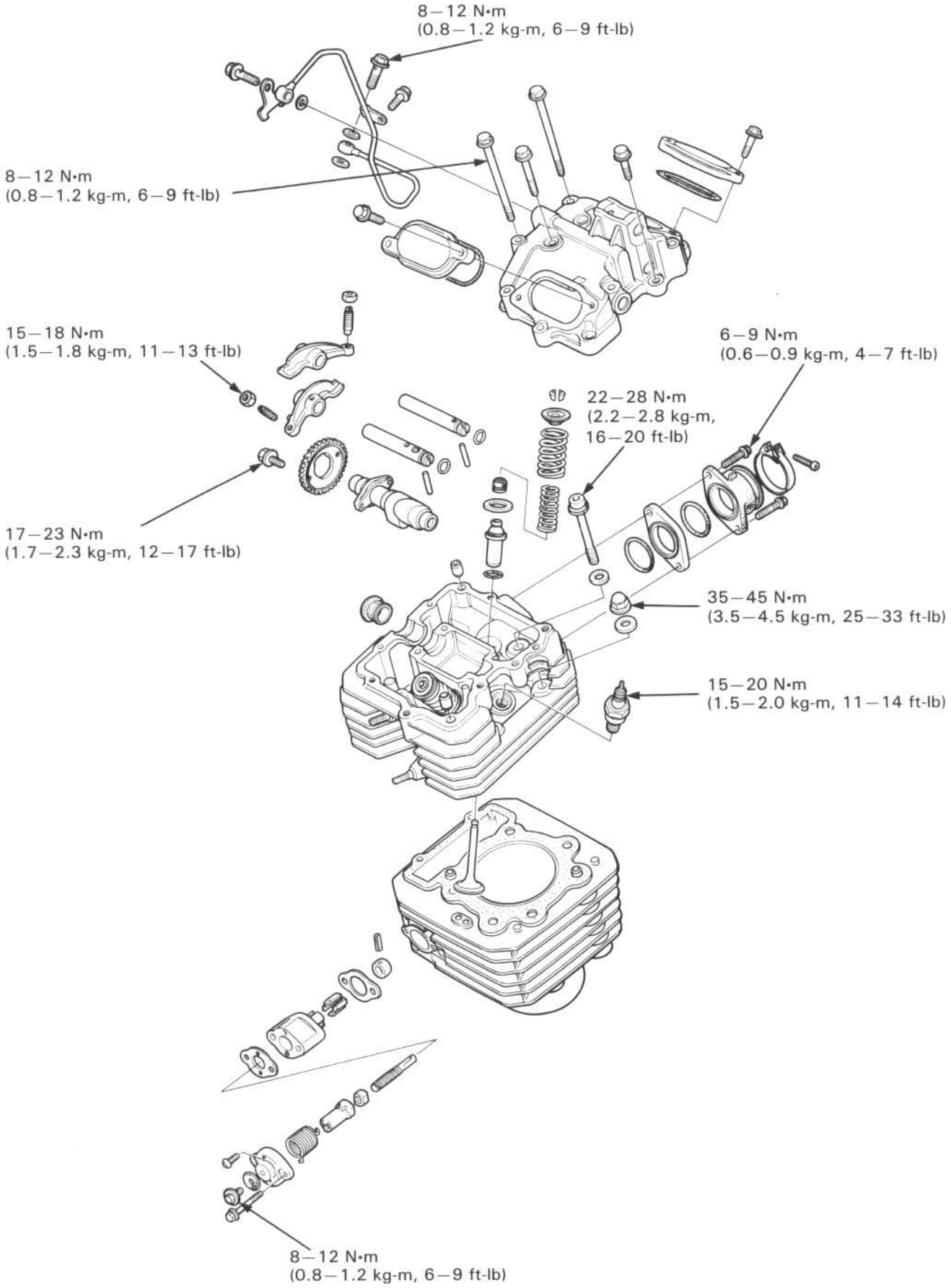
- ***Connect the neutral and reverse switch wires properly. If these wire connections are interchanged, the neutral indicator will come on with the transmission in reverse and the Four Trax will reverse suddenly.***





RIDE RED

MEMO


8—12 N•m
(0.8—1.2 kg-m, 6—9 ft-lb)
8—12 N•m
(0.8—1.2 kg-m, 6—9 ft-lb)
15—18 N•m
(1.5—1.8 kg-m, 11—13 ft-lb)
6—9 N•m
(0.6—0.9 kg-m, 4—7 ft-lb)
22—28 N•m
(2.2—2.8 kg-m,
16—20 ft-lb)
17—23 N•m
(1.7—2.3 kg-m, 12—17 ft-lb)
35—45 N•m
(3.5—4.5 kg-m, 25—33 ft-lb)
15—20 N•m
(1.5—2.0 kg-m, 11—14 ft-lb)
8—12 N•m
(0.8—1.2 kg-m, 6—9 ft-lb)

RIDE RED

6. CYLINDER HEAD/VALVES

SERVICE INFORMATION

GENERAL

- This section covers cylinder head, valves, camshaft, rocker arm and cam chain tensioner lifter services. These services can be performed with the engine installed in the frame.
- Camshaft lubrication oil is fed to the cylinder head through an oil pipe. Be sure this pipe is not clogged before installation.
- Before assembly, apply molybdenum disulfide grease to the camshaft bearings to provide initial lubrication.
- Pour clean engine oil into the oil pockets in the cylinder head during assembly to lubricate the camshaft lobes.

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder compression			12–13 kg/cm² (170–185 psi)	—
Camshaft	Cam lobe height	IN	36.206 mm (1.4254 in)	36.026 mm (1.4183 in)
		EX	36.077 (1.4204 in)	35.897 mm (1.4133 in)
	Journal O.D.	R,C	23.954–23.975 mm (0.9431–0.9439 in)	23.90 mm (0.941 in)
		L	19.954–19.975 mm (0.7856–0.7864 in)	19.90 mm (0.784 in)
	Bearing I.D.	R,C	24.000–24.021 mm (0.9449–0.9457 in)	24.05 mm (0.947 in)
		L	20.000–20.021 mm (0.7874–0.7882 in)	20.05 mm (0.789 in)
	Oil clearance		0.025–0.067 mm (0.0010–0.0026 in)	0.10 mm (0.004 in)
Cylinder head warpage			—	0.10 mm (0.004 in)
Rocker arm	I.D.		12.000–12.018 mm (0.4724–0.4730 in)	12.05 mm (0.474 in)
	Shaft O.D.		11.966–11.984 mm (0.4711–0.4718 in)	11.92 mm (0.469 in)
	Arm-to-shaft clearance		0.016–0.052 mm (0.0006–0.0020 in)	0.08 mm (0.003 in)
Valve spring	Free length	Inner	38.17 mm (1.503 in)	35.2 mm (1.39 in)
		Outer	41.04 mm (1.616 in)	38.0 mm (1.50 in)
	Preload	Inner	7.0±0.7 kg/31.6 mm (15.4±1.5 lb/1.24 in)	—
		Outer	17.0±1.7 kg/35.1 mm (37.5±3.7 lb/1.38 in)	—
Valve, valve guide	Stem O.D.	IN	5.475–5.490 mm (0.2156–0.2161 in)	5.45 mm (0.215 in)
		EX	5.455–5.470 mm (0.2148–0.2154 in)	5.43 mm (0.214 in)
	Guide I.D.	IN	5.500–5.512 mm (0.2165–0.2170 in)	5.525 mm (0.2175 in)
		EX	5.500–5.512 mm (0.2165–0.2170 in)	5.525 mm (0.2175 in)
	Stem-to-guide clearance	IN	0.010–0.037 mm (0.0004–0.0015 in)	0.12 mm (0.005 in)
		EX	0.030–0.057 mm (0.0012–0.0022 in)	0.14 mm (0.006 in)
Valve seat width			1.2 mm (0.05 in)	1.5 mm (0.06 in)

TORQUE VALUES

Cylinder head cap nut	35—45 N•m (3.5—4.5 kg-m, 25—33 ft-lb)
Cylinder head socket bolt	22—28 N•m (2.2—2.8 kg-m, 16—20 ft-lb)
Cam sprocket bolt	17—23 N•m (1.7—2.3 kg-m, 12—17 ft-lb)
Valve adjusting screw lock nut	15—18 N•m (1.5—1.8 kg-m, 11—13 ft-lb)
Oil pipe bolt	8—12 N•m (0.8—1.2 kg-m, 6—9 ft-lb)
Spark plug	15—20 N•m (1.5—2.0 kg-m, 11—14 ft-lb)
Cam chain tensioner lifter sealing bolt	8—12 N•m (0.8—1.2 kg-m, 6—9 ft-lb)
Cylinder head cover bolts	
6 mm small head bolt	8—12 N•m (0.8—1.2 kg-m, 6—9 ft-lb)

TOOLS

Special

Valve guide reamer, 5.5 mm	07984—2000000

TROUBLESHOOTING

Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test, or by tracing engine noises to the top-end with a sounding rod or stethoscope.

Low compression
- Valves:
  - Incorrect valve adjustment
  - Burned or bent valve
  - Incorrect valve timing
  - Weak valve spring
- Cylinder head:
  - Leaking or damaged head gasket
  - Warped or cracked cylinder head
- Cylinder and piston (Section 7)

High compression
- Excessive carbon build-up on piston crown or on combustion chamber

Excessive noise
- Incorrect valve adjustment
- Sticking valve or broken valve spring
- Damaged or worn rocker arm or camshaft
- Worn or damaged cam chain
- Worn or damaged cam chain tensioner
- Worn cam sprocket teeth

Poor idling
- Compression too low

RIDE RED

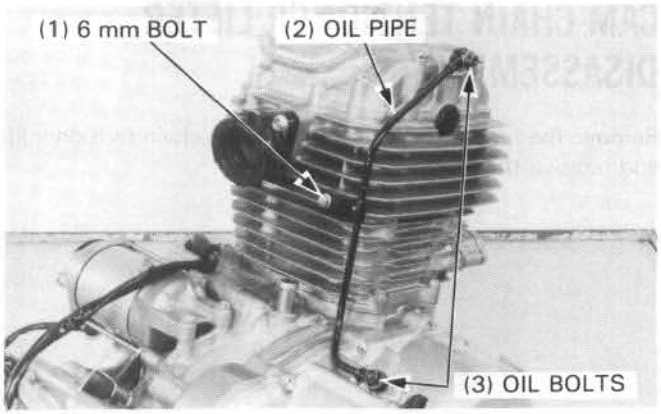
CYLINDER HEAD COVER REMOVAL/DISASSEMBLY

REMOVAL

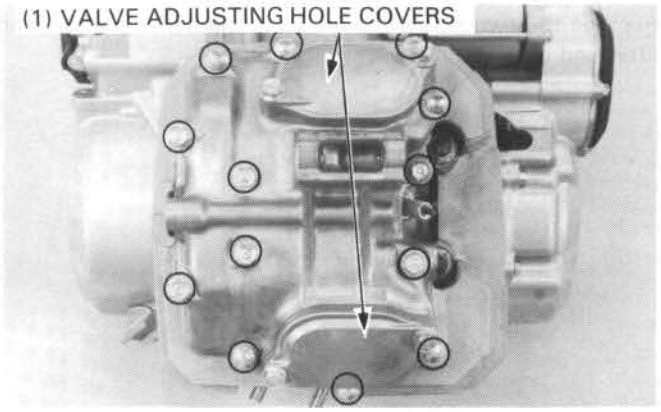
Remove the fuel tank and carburetor (section 4).

Remove the upper engine hanger plates (page 5-3).

Remove the 6 mm bolt, oil bolts and the oil pipe.



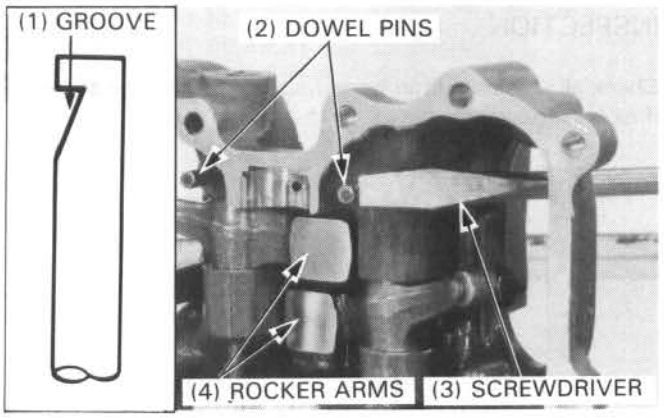
Remove the valve adjusting hole covers and loosen the valve adjusting screw lock nuts and screws.
Loosen the cylinder head cover bolts in 2 or 3 steps in a crisscross pattern, starting with the center bolt, and remove the bolts and cylinder head cover.
Remove the dowel pins.



DISASSEMBLY

Groove each rocker arm shaft dowel pin with a grinder and drive the dowel pins out using a screwdriver as shown.
Remove the rocker arm shafts and rocker arms from the cylinder head cover.

When reassembling the rocker arm, replace the dowel pins with new ones.



ROCKER ARM/SHAFT INSPECTION

Inspect the rocker arms and shafts for wear or damage.

NOTE

- If the rocker arms require servicing or replacement, inspect the cam lobes for scoring, chipping or flat spots.

Measure the I.D. of each rocker arm.

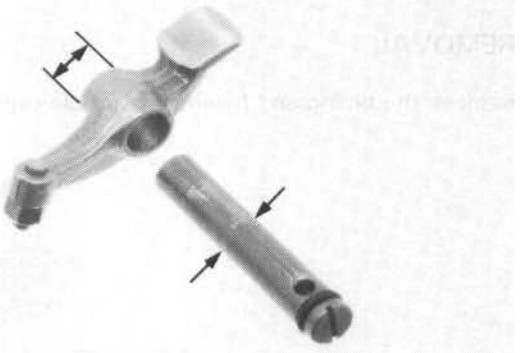
SERVICE LIMIT: 12.05 mm (0.474 in)

Measure the O.D. of each rocker arm shaft.

SERVICE LIMIT: 11.92 mm (0.469 in)

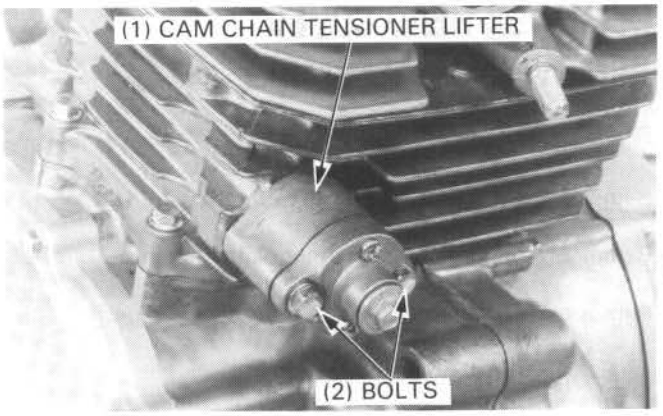
Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.08 mm (0.003 in)

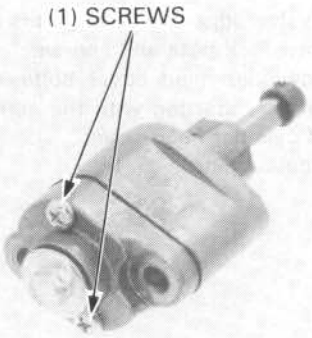


CAM CHAIN TENSIONER LIFTER DISASSEMBLY

Remove the two bolts attaching the cam chain tensioner lifter and remove the lifter.

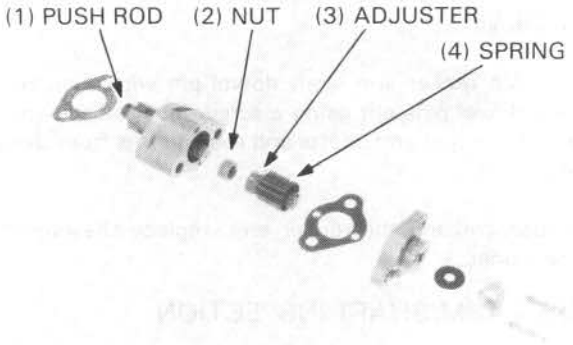


Remove the two screws assembling the cam chain tensioner lifter and disassemble.



INSPECTION

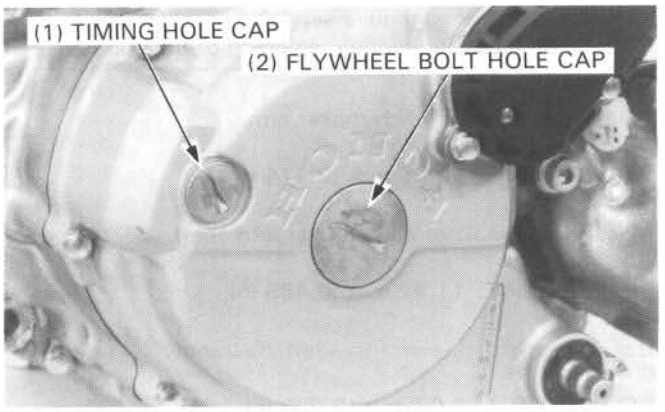
Check all tensioner lifter parts for wear or damage and replace if necessary.



CAMSHAFT

REMOVAL

Remove the timing and flywheel bolt hole caps.



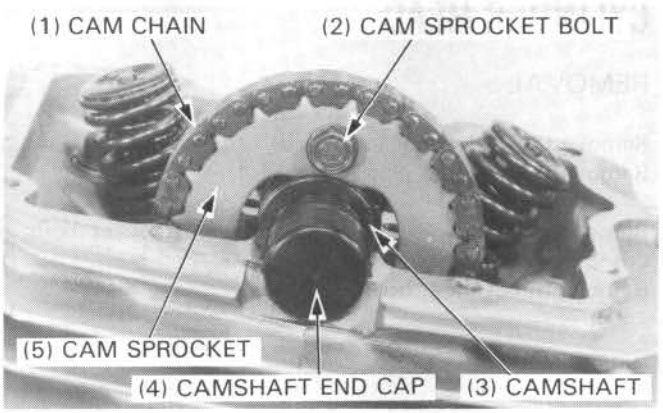
RIDE RED

Turn the flywheel clockwise and remove the cam sprocket bolts and cam sprocket.

Remove the camshaft.

Suspend the cam chain with a piece of wire to prevent it from falling into the crankcase.

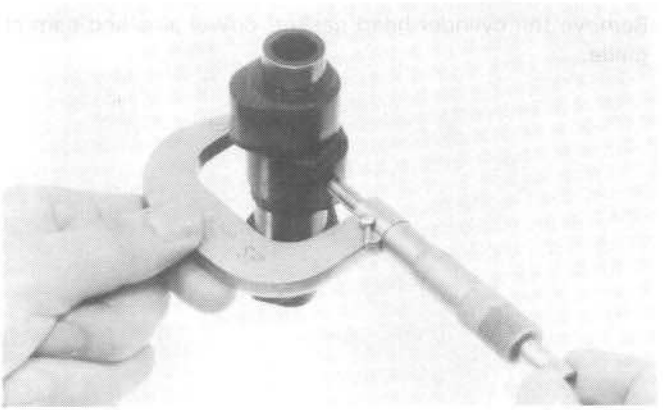
Remove the camshaft end cap.



INSPECTION

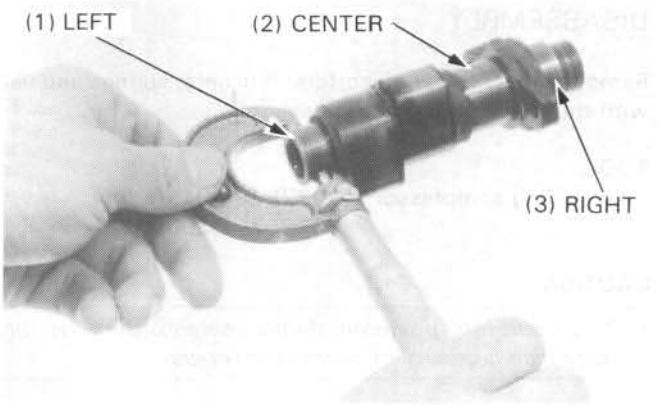
Using a micrometer, measure the height of each cam lobe and inspect it for wear or damage.

SERVICE LIMITS:
Intake: 36.026 mm (1.4183 in)
Exhaust: 35.897 mm (1.4133 in)



Measure the camshaft journal O.D.

SERVICE LIMITS:
Left: 19.90 mm (0.784 in)
Right and center: 23.90 mm (0.941 in)



Install the cylinder head cover and tighten the cover bolts in a crisscross pattern in 2 or 3 steps.

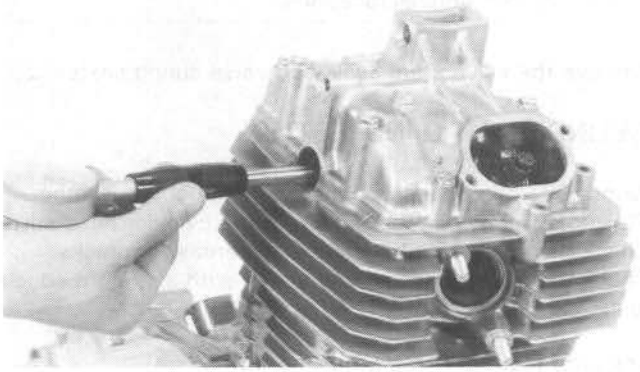
TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Measure the camshaft journal bearing I.D.

SERVICE LIMITS:
Left: 20.05 mm (0.789 in)
Right and center: 24.05 mm (0.947 in)

Calculate the camshaft-to-bearing clearance.

SERVICE LIMITS:
Left: 0.10 mm (0.004 in)
Right and center: 0.10 mm (0.004 in)

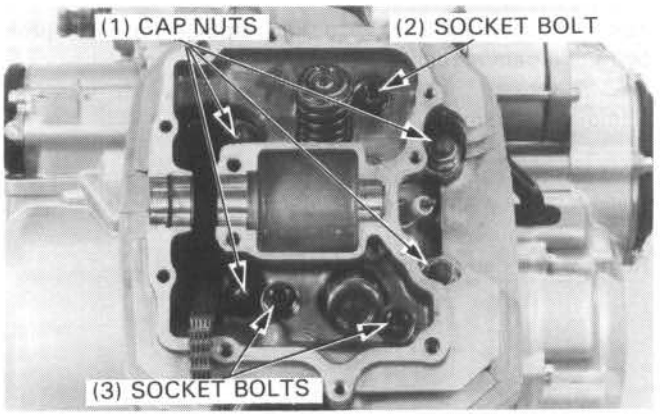


CYLINDER HEAD

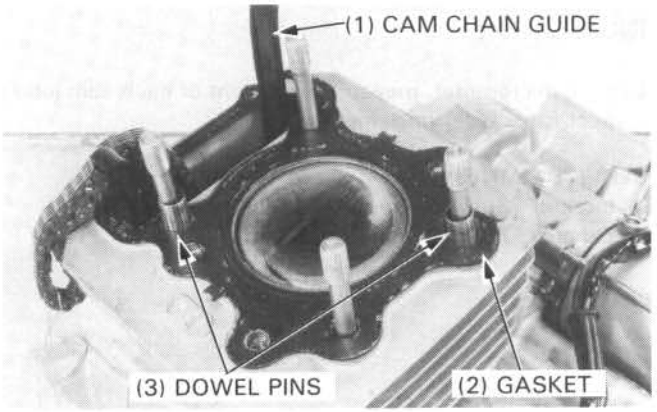
REMOVAL

Remove the carburetor (page 4-5).
Remove the exhaust pipe (page 14-4).

Remove the cylinder head cap nuts and socket bolts in a crisscross pattern in 2–3 steps.
Remove the cylinder head.



Remove the cylinder head gasket, dowel pins and cam chain guide.



DISASSEMBLY

Remove the valve spring cotters, retainers, springs and valves with the Valve Spring Compressor.

TOOL

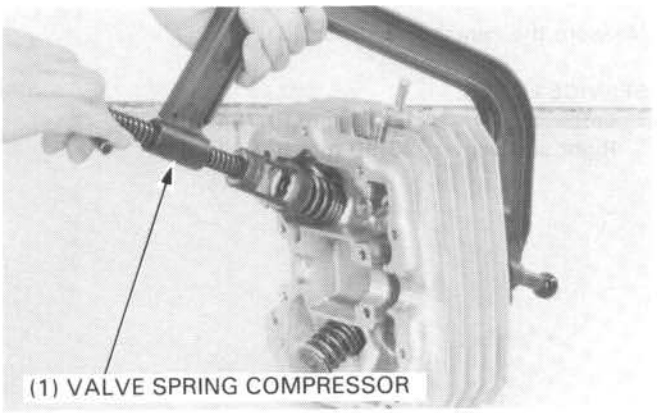
Valve spring compressor	**07757–0010000 or 07957–3290001**

CAUTION

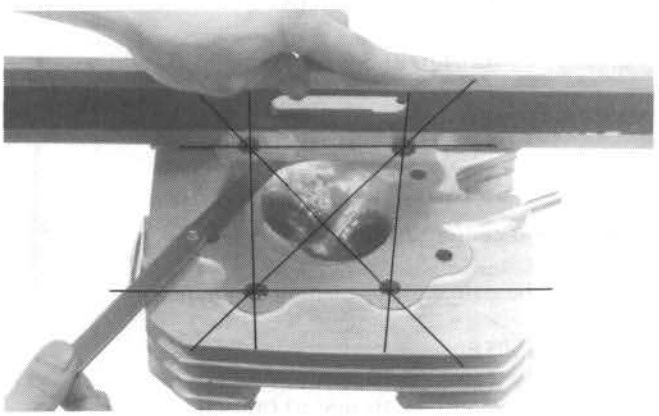
- *To prevent loss of tension, do not compress the valve springs more than necessary to remove the cotters.*

NOTE

- Mark all parts during disassembly so they can be placed back in their original locations.



Remove the valve stem seals and valve spring seats.



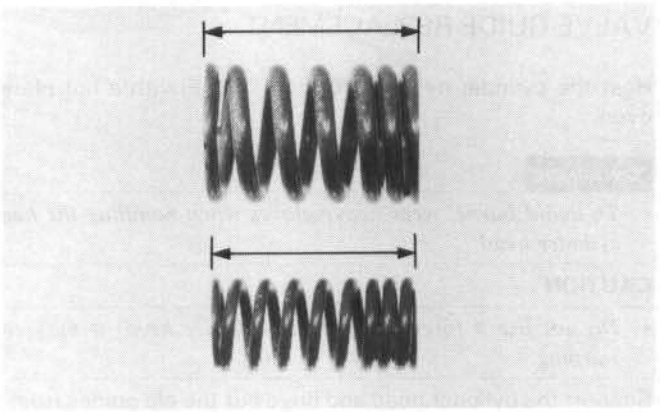
CYLINDER HEAD INSPECTION

Remove carbon deposits from the combustion chamber.
Clean off any gasket material from the cylinder head surface.
Check the spark plug hole and valve areas for cracks.
Check the cylinder head for warpage with a straight edge and feeler gauge.

SERVICE LIMIT: 0.10 mm (0.004 in)

RIDE RED

VALVE SPRING FREE LENGTH

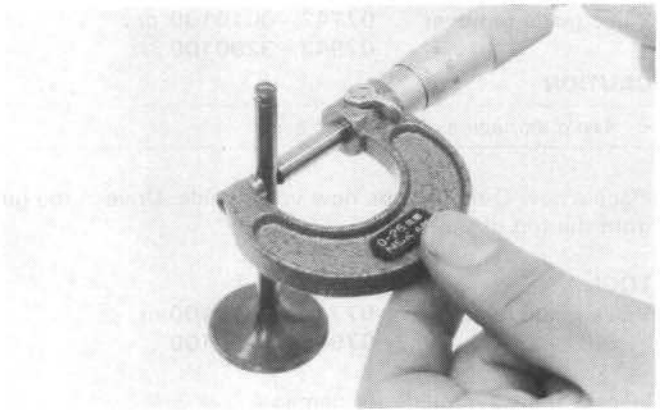


Measure the free length of the inner and outer valve springs.

SERVICE LIMITS:
Inner: 35.2 mm (1.39 in)
Outer: 38.0 mm (1.50 in)

Replace the springs if they are shorter than the service limits.

VALVE STEM-TO-GUIDE CLEARANCE

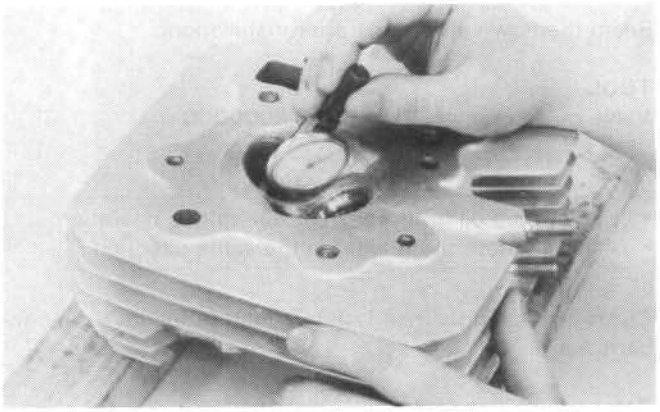


Inspect each valve for bending, burning or abnormal stem wear.
Check valve movement in the guide and measure and record each valve stem O.D.

SERVICE LIMITS: IN: 5.45 mm (0.215 in)
EX: 5.43 mm (0.214 in)

NOTE

- Ream the guides to remove any carbon deposits before checking clearances.



Measure and record each valve guide I.D.

SERVICE LIMITS: IN: 5.525 mm (0.2175 in)
EX: 5.525 mm (0.2175 in)

Subtract each valve stem O.D. from the corresponding guide I.D. to obtain the stem-to-guide clearance.

SERVICE LIMITS: IN: 0.12 mm (0.005 in)
EX: 0.14 mm (0.006 in)

If the stem-to-guide clearance exceeds the service limits, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so, replace any guides as necessary and ream to fit.
If the stem-to-guide clearance exceeds the service limits with new guides also, replace the valves.

NOTE

- Reface the valve seats whenever the valve guides are replaced.

VALVE GUIDE REPLACEMENT

Heat the cylinder head to 100°C (212°F)with a hot plate or oven.

WARNING

- *To avoid burns, wear heavy gloves when handling the heated cylinder head.*

CAUTION

- *Do not use a torch to heat the cylinder head; it may cause warping.*

Support the cylinder head and drive out the old guides from the combustion chamber side of the cylinder head.

TOOL

Valve guide remover **07742–0010100 or 07942–3290100**

CAUTION

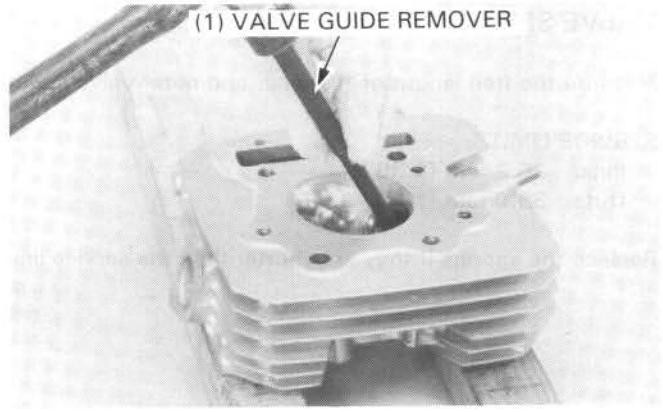
- *Avoid damaging the cylinder head.*

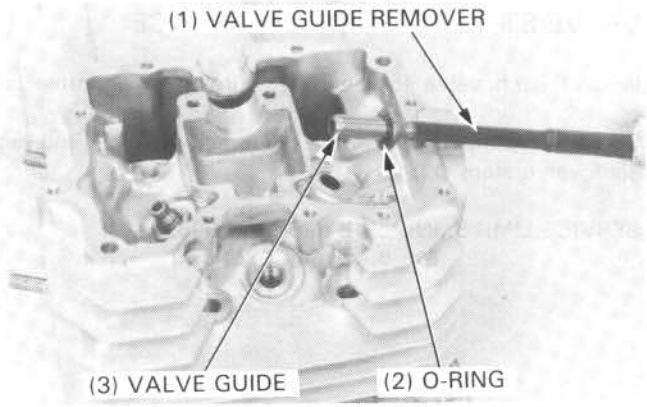
Place a new O-ring on the new valve guide. Drive in the guide from the top of the head.

TOOL

Valve guide remover **07742–0010100 or 07942–3290100**

Inspect the valve guide for damage.





Ream the new valve guide after installation.

TOOL

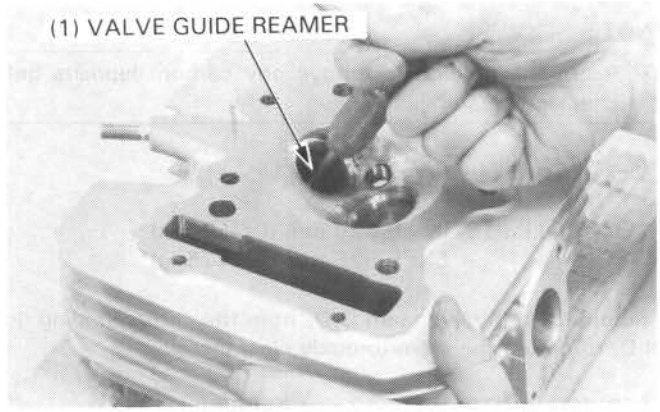
Valve guide reamer **07984–2000000**

NOTE

- Use cutting oil on the reamer during this operation.
- Always rotate the reamer in the same direction.

Clean the cylinder head thoroughly to remove any metal particles.

Reface the valve seat.



VALVE SEAT INSPECTION/REFACING

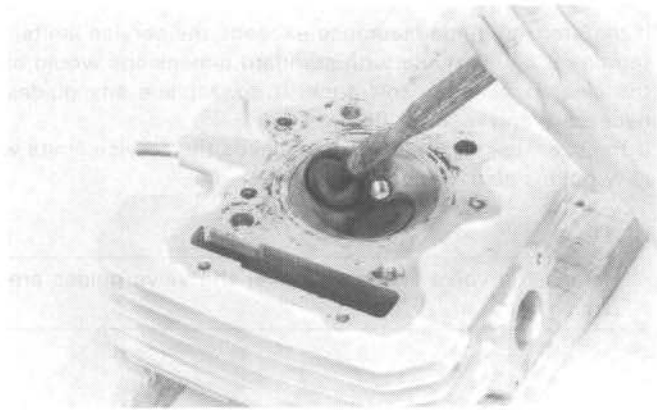
Clean the intake and exhaust valves thoroughly to remove carbon deposits.

Apply a light coating of Prussian Blue to the valve seats. Lap the valves and seats using a rubber hose or other hand-lapping tool.

Remove and inspect the valves.

CAUTION

- *The valves cannot be ground. If a valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.*

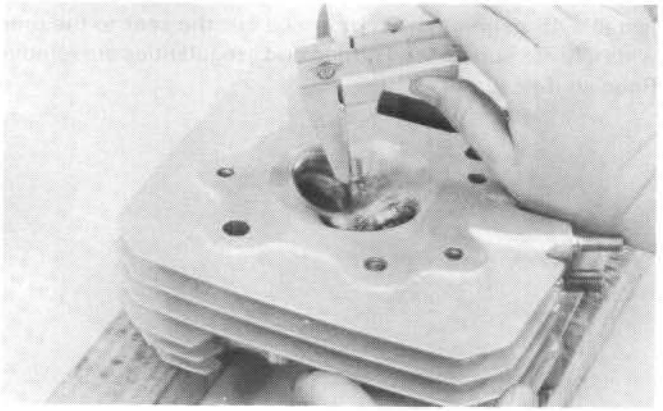


RIDE RED

Inspect the width of each valve seat.

STANDARD: 1.2 mm (0.05 in)
SERVICE LIMIT: 1.5 mm (0.06 in)

If the seat is too wide, too narrow or has low spots, the seat must be ground.

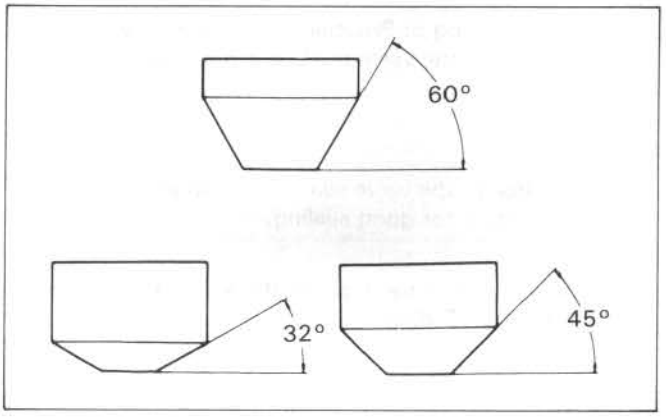


VALVE SEAT CUTTERS

Honda Valve Seat Cutters, a grinder or equivalent valve seat refacing equipment are recommended to correct a worn valve seat.

NOTE

- Follow the refacer manufacturer's operating instructions.



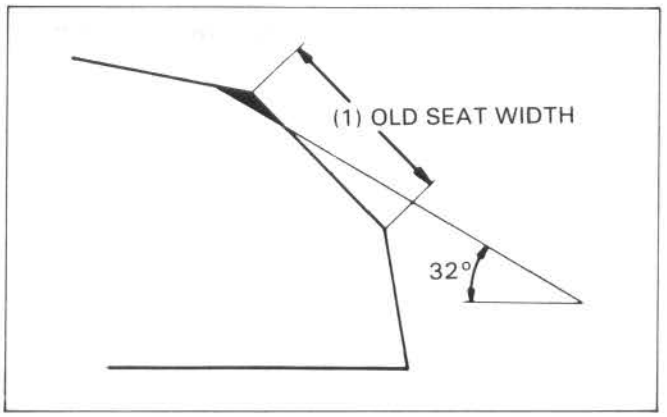
VALVE SEAT REFACING

Use a 45 degree cutter to remove any roughness or irregularities from the seat.

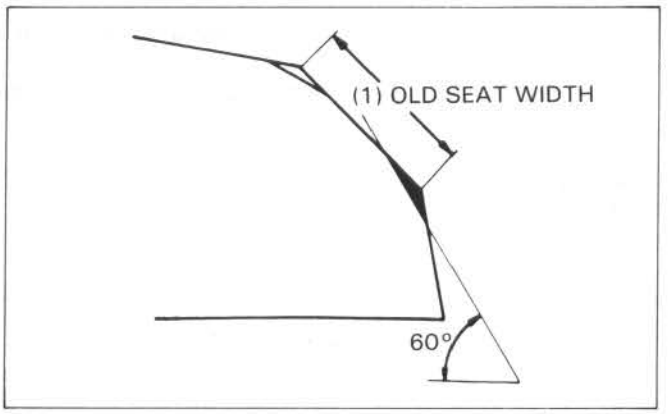
NOTE

- Reface the seat with a 45 degree cutter when a valve guide is replaced.

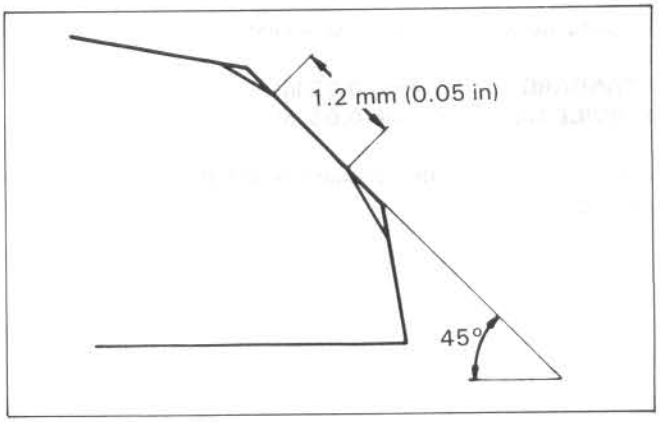
Use a 32 degree cutter to remove the top 1/4 of the existing valve seat material.



Use a 60 degree cutter to remove the bottom 1/4 of the old seat. Remove the cutter and inspect the area you have refaced.



Install a 45 degree finish cutter and cut the seat to the proper width. Make sure that all pitting and irregularities are removed. Refinish if necessary.

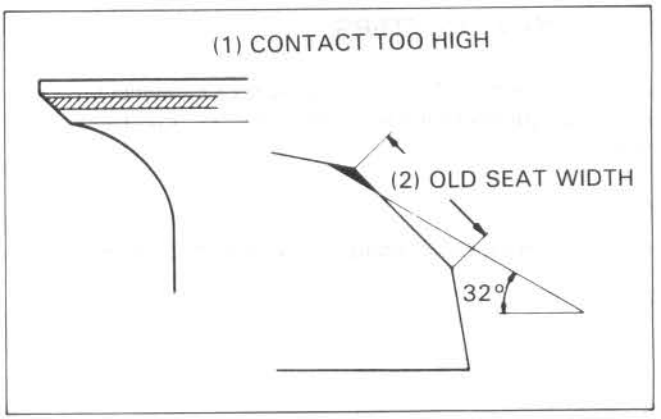


Apply a thin coating of Prussian Blue to the valve seat. Press the valve through the valve guide and onto the seat to make a clear pattern.

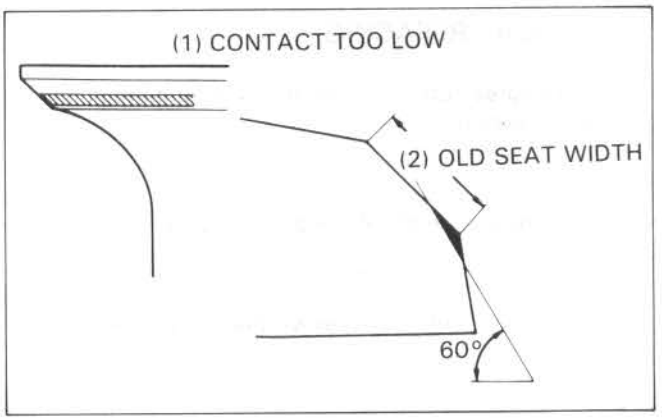
NOTE

- The location of the valve seat in relation to the valve face is very important for good sealing.

If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.



If the contact area is too low on the valve, the seat must be raised using a 60 degree inner cutter.

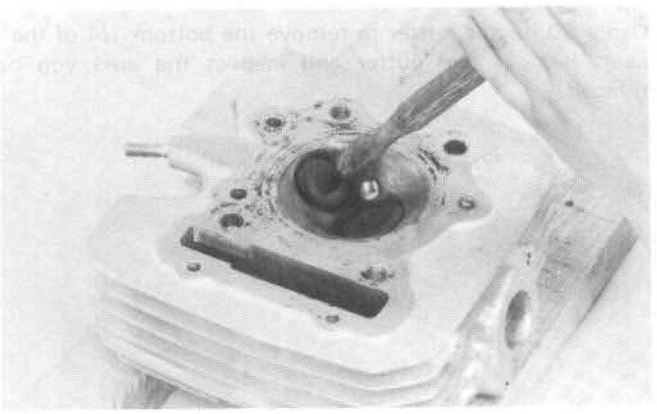


Refinish the seat to specifications, using a 45 degree finish cutter.
After cutting the seat, apply lapping compound to the valve face, and lap the valve using light pressure.

After lapping, wash all residual compound off the cylinder head and valve.

NOTE

- Do not allow lapping compound to enter the guides.



RIDE RED

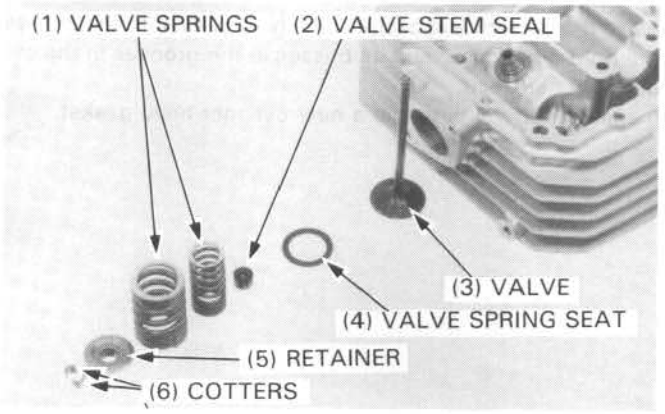
CYLINDER HEAD ASSEMBLY

Install the valve spring seat and a new stem seal.

Lubricate the valve stems with molybdenum disulfide grease and insert the valve into the valve guide.

To avoid damage to the stem seal, turn the valve slowly when inserting.

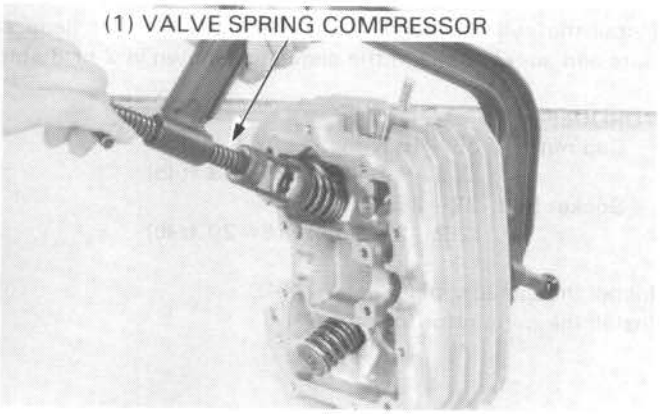
Install the valve springs with the tightly wound coils facing the cylinder head.



Install the valve spring retainers and install the valve cotters.

TOOL

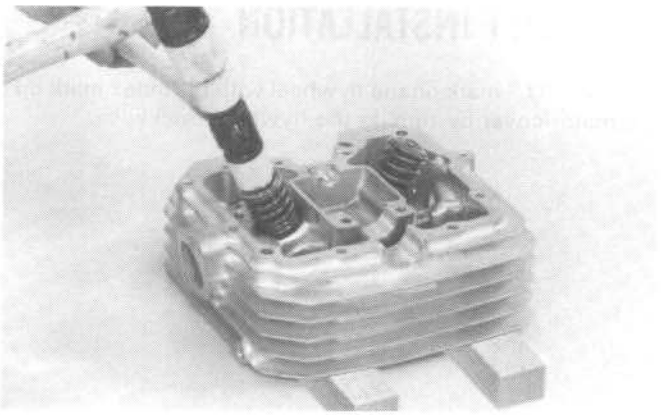
Valve spring compressor **07757–0010000 or 07957–3290001**



CAUTION

- *To prevent loss of tension, do not compress the valve spring more than necessary.*

Tap the valve stems gently with a plastic hammer to firmly seat the cotters.

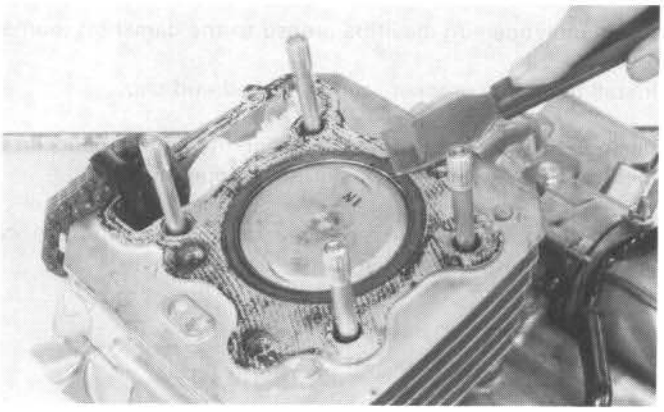


CAUTION

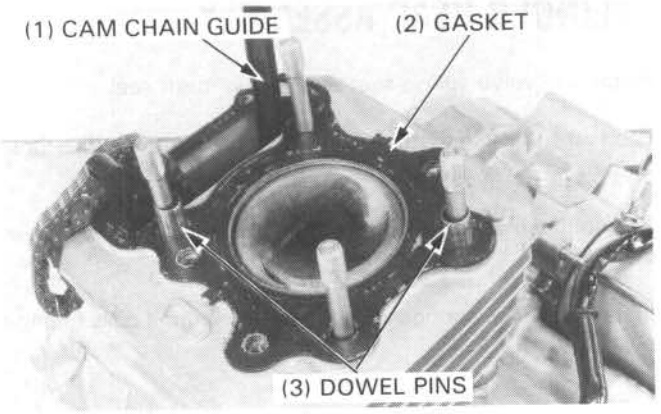
- *Support the cylinder head above the work bench surface to prevent possible valve damage.*

CYLINDER HEAD INSTALLATION

Clean off any gasket material from the cylinder surface being careful no to fall them into the crankcase.



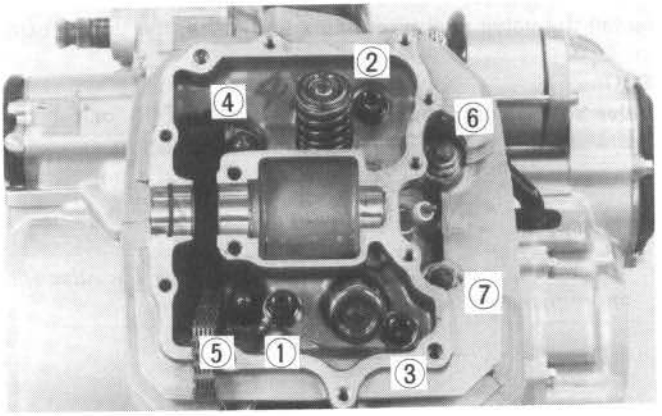
Place the bottom end of the cam chain guide into the groove in the right crankcase, and its bosses in the grooves in the cylinder upper surface.
Install the dowel pins and a new cylinder head gasket.



Install the cylinder head, and tighten the cylinder head cap nuts and socket bolts in the sequence shown in 2 or 3 steps.

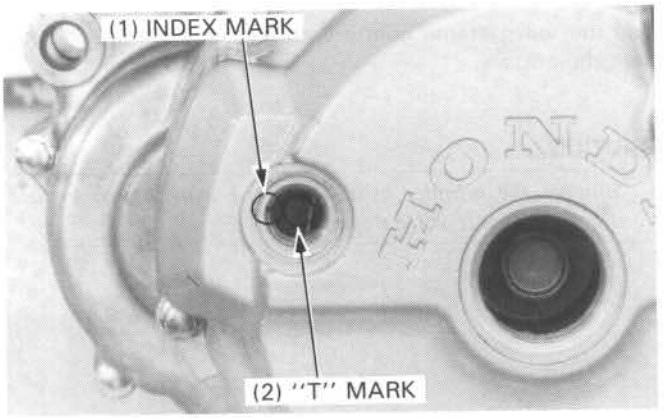
TORQUE:
Cap nut: 35–45 N·m (3.5–4.5 kg-m, 25–33 ft-lb)
Socket bolt: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

Install the exhaust pipe (page 14-4).
Install the carburetor (page 4-12).



CAMSHAFT INSTALLATION

Align the "T" mark on the flywheel with the index mark on the alternator cover by turning the flywheel clockwise.

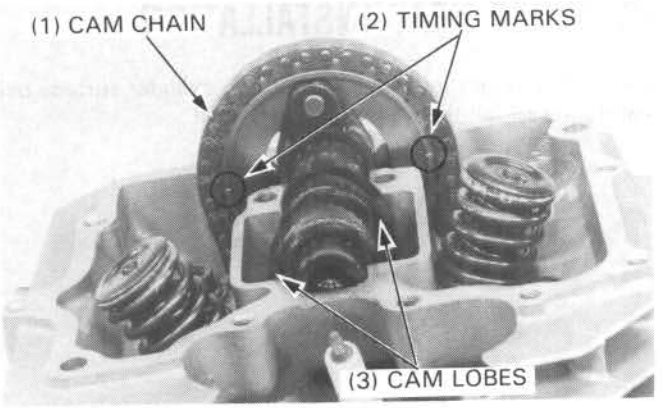


Apply molybdenum disulfide grease to the camshaft journals.

Install the cam sprocket, camshaft and end cap.

Position the cam lobes down and align the timing marks on the cam sprocket with the cylinder head upper surface.

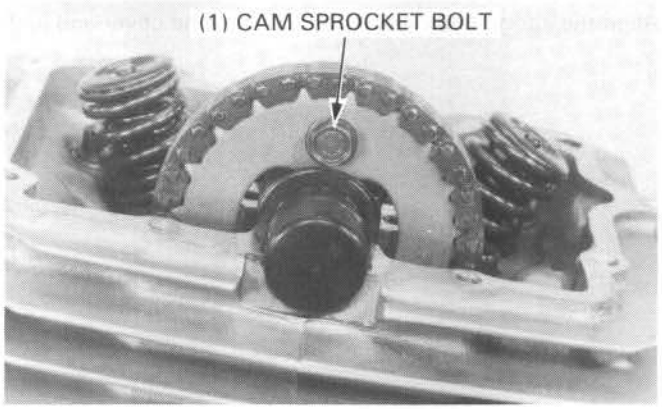
Install the cam chain over the cam sprocket and the cam sprocket onto the shoulder of the camshaft.



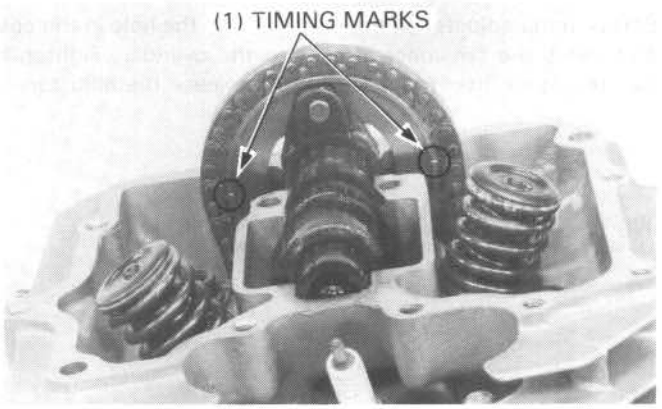
RIDE RED

Tighten the cam sprocket bolt on the punch mark side first, then turn the crankshaft clockwise one turn and tighten the remaining sprocket bolt to the same torque.

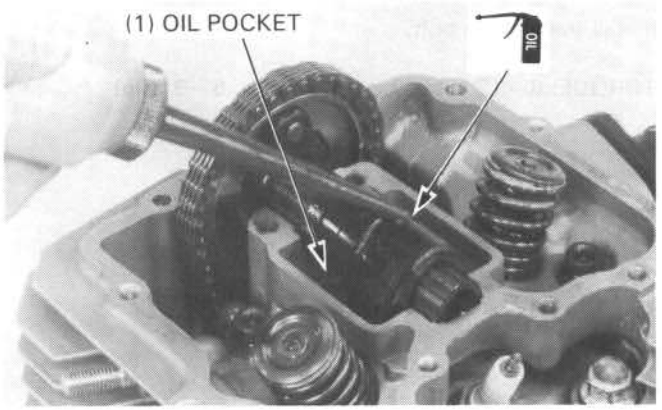
TORQUE: 17—23 N·m (1.7—2.3 kg-m, 12—17 ft-lb)



Realign the "T" mark with index mark and recheck the cam sprocket timing marks.



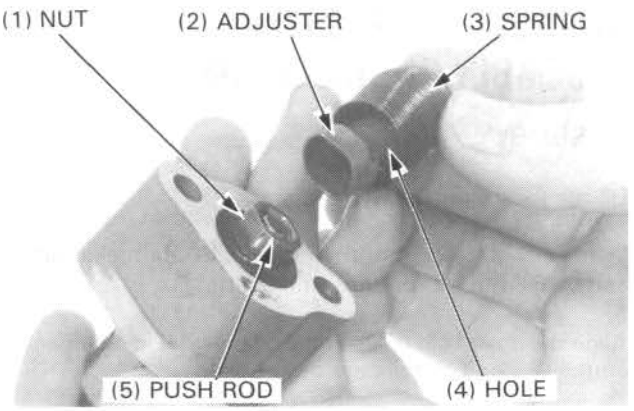
Fill the oil pocket in the cylinder head with fresh oil.



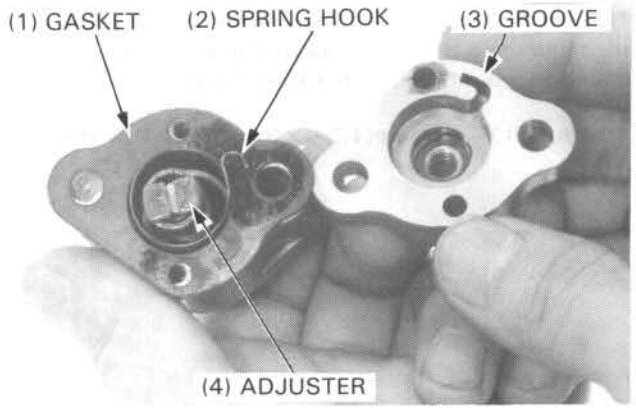
CAM CHAIN TENSIONER LIFTER ASSEMBLY

Thread the nut on the push rod so its outside face is flush with the end of the push rod.

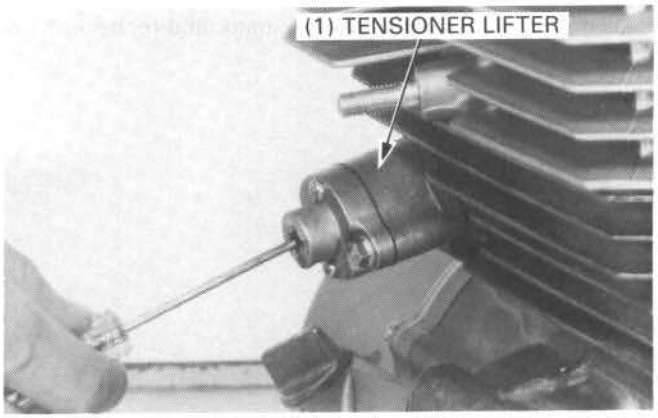
Hook one end of the spring into the hole in the adjuster and place the adjuster over the nut.



Align the spring hook with the groove in the cover and install.

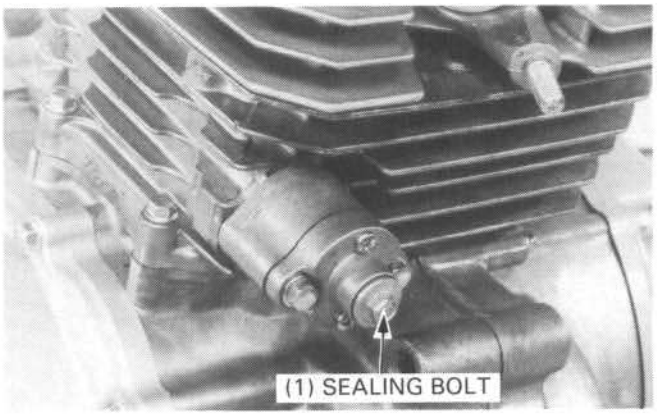


Screw in the adjuster all the way through the hole in the cover and install the tensioner lifter onto the cylinder. Tighten the two tensioner lifter mount bolts and release the adjuster.



Install the sealing bolt.

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



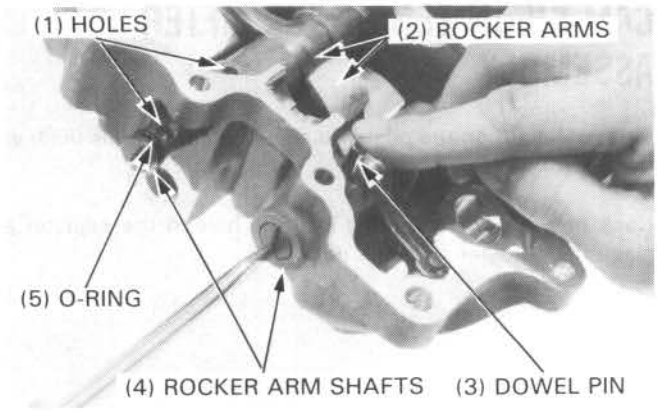
CYLINDER HEAD COVER ASSEMBLY/INSTALLATION

ASSEMBLY

Oil the rocker arm shafts and arms.

Install new O-rings into the grooves of the rocker arm shafts and install the rocker arms and shafts.

Align the dowel pin holes in the cylinder head cover and rocker arm shafts and install new dowel pins.



RIDE RED

INSTALLATION

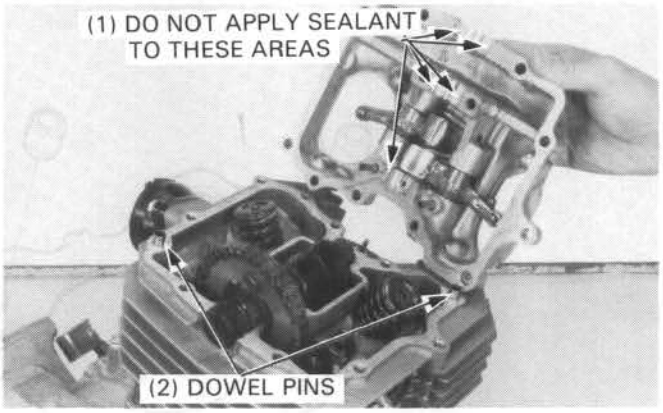
Position the camshaft so that both cam lubes face down by rotating the crankshaft.

Apply liquid sealant to the mating surfaces of the cylinder head cover.

NOTE

- Do not apply sealant to the camshaft bearing surfaces.

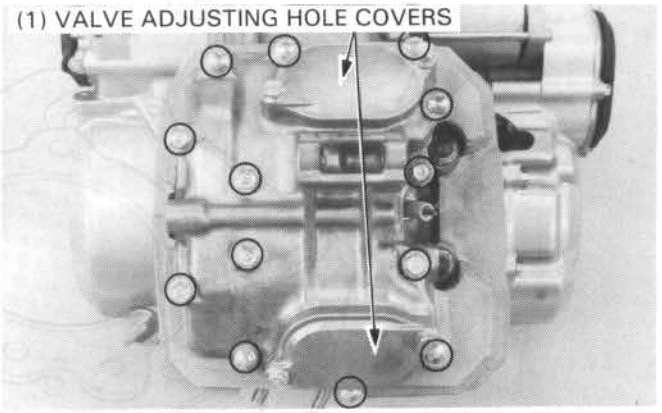
Install the two dowel pins onto the cylinder head and install the cylinder head cover.



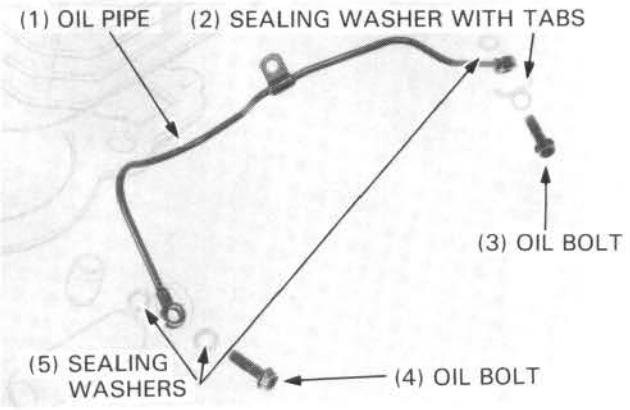
Tighten the cylinder head cover bolts in a crisscross pattern in 2 or 3 steps starting with the center bolt.

TORQUE:
6 mm small head bolts:
8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
6 mm flange bolts:
10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

Install the valve adjusting hole covers.



Make sure that the oil pipe and oil bolts are not clogged, and that the sealing washers are in good condition.

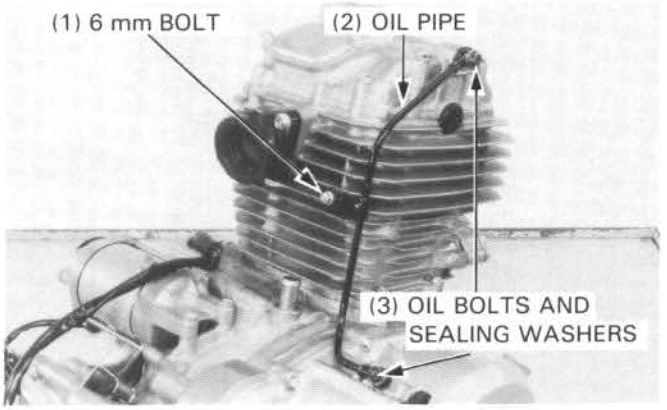


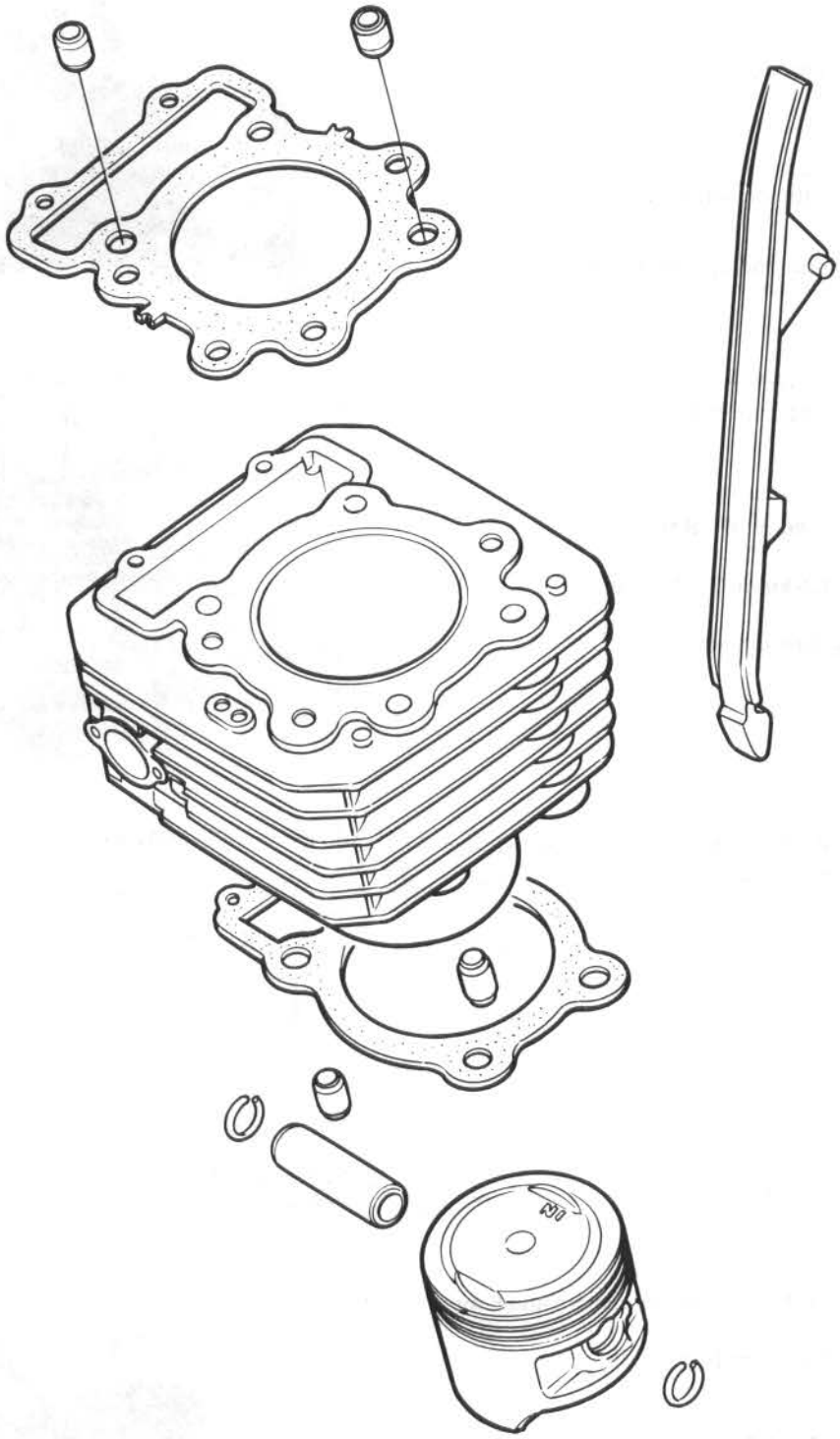
Install the oil pipe with the oil bolts, sealing washers and 6 mm bolt.
Tighten the oil bolts and the 6 mm bolt.

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

Adjust the valve clearance (page 3-4) and test the cylinder compression (page 3-6).

Install the carburetor and fuel tank (section 4).
Install the upper engine hanger plates (page 5-4).





RIDE RED

7. CYLINDER/PISTON

SERVICE INFORMATION

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Cylinder	I.D.		74.00–74.01 mm (2.913–2.914 in)	74.10 mm (2.917 in)
	Taper		———	0.10 mm (0.004 in)
	Out of round		———	0.10 mm (0.004 in)
	Warpage across top		———	0.10 mm (0.004 in)
Piston, piston pin, piston rings	Piston O.D.		73.965–73.985 mm (2.9120–2.9128 in)	73.90 mm (2.909 in)
	Piston pin bore		19.002–19.008 mm (0.7481–0.7483 in)	19.04 mm (0.750 in)
	Piston pin O.D.		18.994–19.000 mm (0.7478–0.7480 in)	18.96 mm (0.747 in)
	Piston-to-pin clearance		0.002–0.014 mm (0.0001–0.0006 in)	0.02 mm (0.001 in)
	Piston ring-to-ring groove clearance	TOP	0.015–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
		SECOND	0.015–0.045 mm (0.0006–0.0018 in)	0.09 mm (0.004 in)
	Piston ring end gap	TOP/SECOND	0.15–0.3 mm (0.006–0.012 in)	0.50 mm (0.020 in)
		OIL	0.20–0.70 mm (0.008–0.028 in)	———
Cylinder-to-piston clearance			0.015–0.045 mm (0.0006–0.0018 in)	0.10 mm (0.004 in)
Connecting rod small end I.D.			19.020–19.041 mm (0.7488–0.7496 in)	19.10 mm (0.752 in)

TROUBLESHOOTING

Low or unstable compression
- Worn cylinder or piston rings
- Cylinder head and valves (Section 6)

Excessive smoke
- Worn cylinder, piston, or piston rings
- Improper installation of piston rings
- Scored or scratched piston or cylinder wall

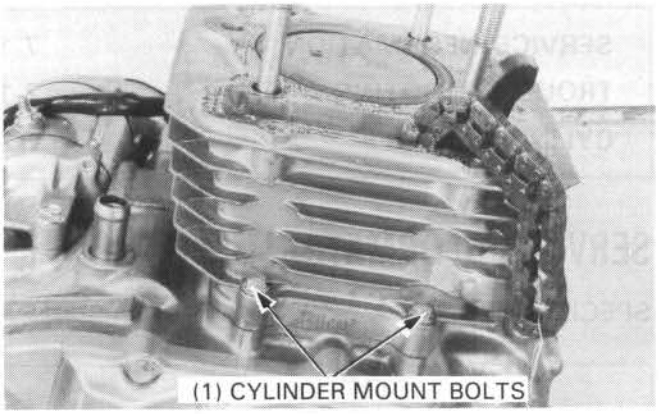
Overheating
- Excessive carbon build-up on piston or combustion chamber wall

Knocking or abnormal noise
- Worn piston and cylinder
- Excessive carbon build-up

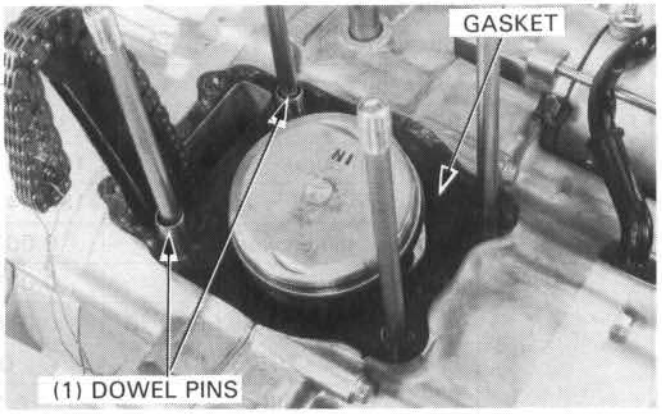
CYLINDER

REMOVAL

Remove the cylinder head (Section 6).
Remove the cylinder mount bolts and the cylinder.



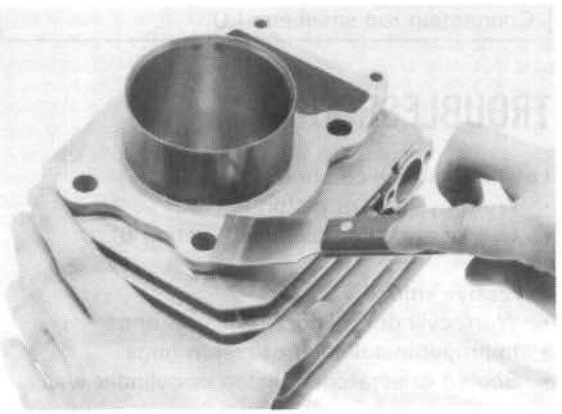
Remove the cylinder gasket and dowel pins.



Clean off any gasket material from the cylinder surface.

NOTE

- Be careful not to damage the gasket surface.



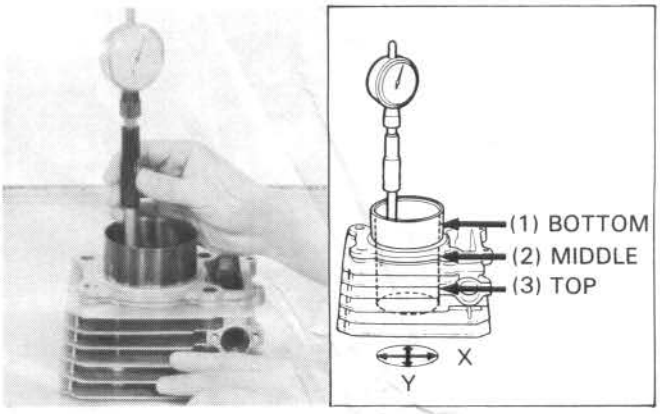
INSPECTION

Inspect the cylinder bore for wear or damage.
Measure the cylinder I.D. at X and Y axis at three locations.

SERVICE LIMIT: 74.10 mm (2.917 in)

Calculate the taper and out of round.

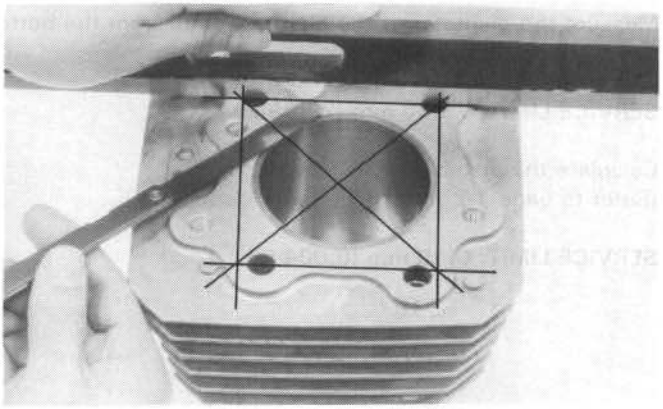
SERVICE LIMITS:
Taper: 0.10 mm (0.004 in)
Out of round: 0.10 mm (0.004 in)



RIDE RED

Inspect the top of the cylinder for warpage.

SERVICE LIMIT: 0.10 mm (0.004 in)



PISTON

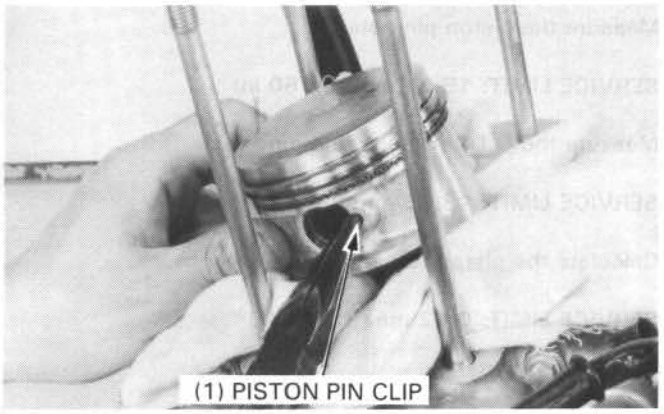
REMOVAL

Remove the piston pin clip with pliers.

NOTE

- Do not let the clips fall into the crankcase.

Press the piston pin out of the piston and remove the piston.



PISTON RING INSPECTION

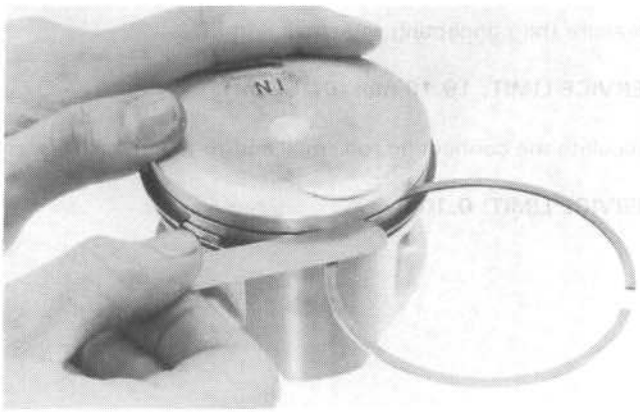
Remove the piston rings.

NOTE

- Do not damage the piston rings during removal.

Measure the piston ring-to-groove clearance.

SERVICE LIMITS:
Top: 0.09 mm (0.004 in)
Second: 0.09 mm (0.004 in)



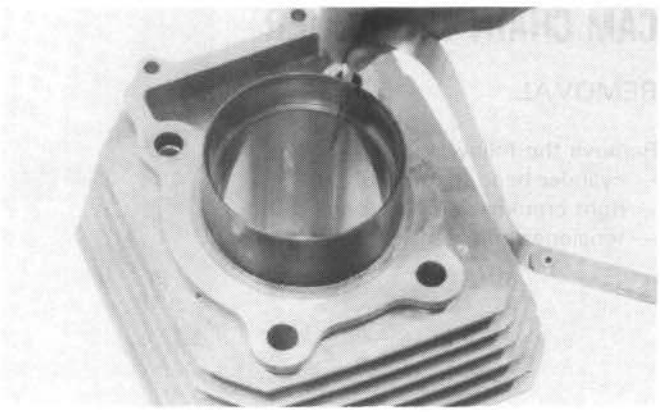
Inspect the piston for wear or damage.

Insert each piston ring squarely into the cylinder and measure the ring end gap.

NOTE

- Push the rings into the cylinder with the top of the piston to be sure they are squarely in the cylinder.

SERVICE LIMIT:
Top/Second: 0.50 mm (0.020 in)

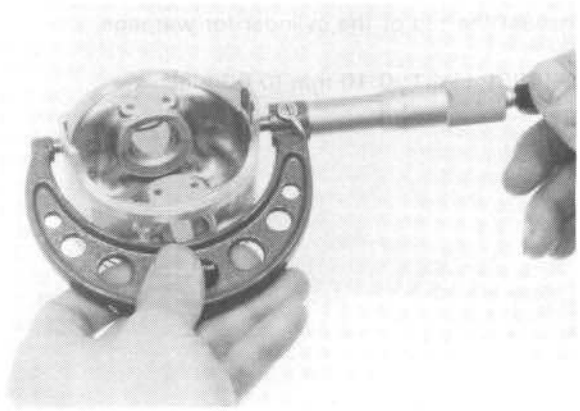


Measure the diameter of the piston 10 mm from the bottom and 90° to the piston pin hole.

SERVICE LIMIT: 73.90 mm (2.909 in)

Calculate the piston-to-cylinder clearance.
(Refer to page 7-2 for cylinder bore inspection.)

SERVICE LIMIT: 0.10 mm (0.004 in)



Measure the piston pin hole I.D.

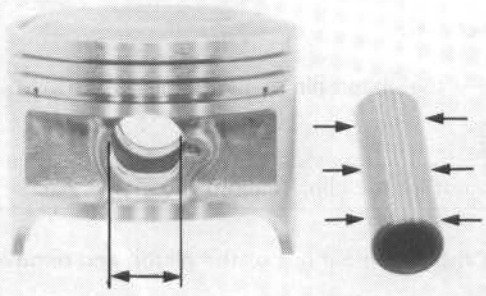
SERVICE LIMIT: 19.04 mm (0.750 in)

Measure the O.D. of the piston pin.

SERVICE LIMIT: 18.96 mm (0.747 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)

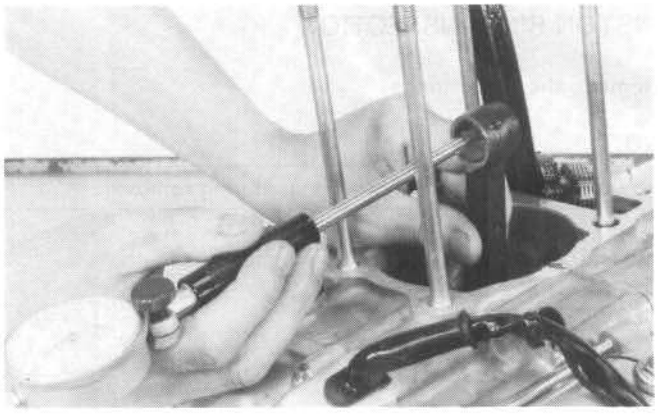


Measure the connecting rod small end I.D.

SERVICE LIMIT: 19.10 mm (0.752 in)

Calculate the connecting rod small end-to-piston pin clearance

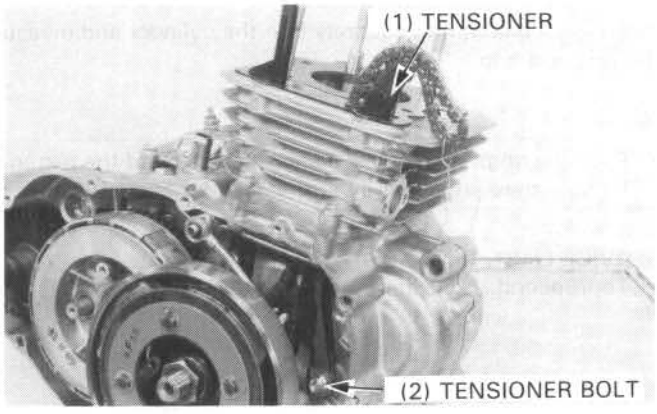
SERVICE LIMIT: 0.10 mm



CAM CHAIN TENSIONER

REMOVAL

Remove the following:
- cylinder head (page 6-6)
- right crankcase cover (page 8-3)
- tensioner bolt, tensioner and washer.

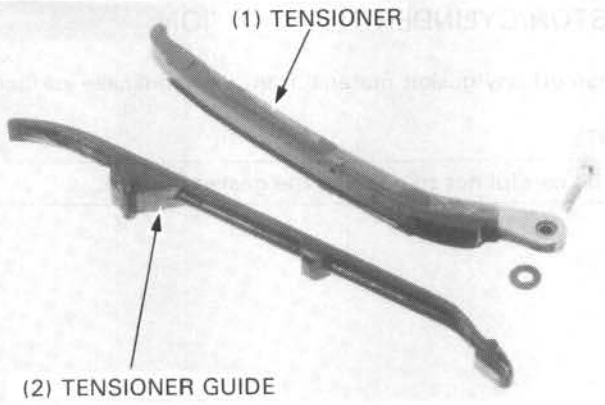


RIDE RED

INSPECTION

Inspect the tensioner guide and tensioner for wear or damage.

Inspect the tensioner lifter for good tension, replace if necessary (page 6-4).



PISTON/CYLINDER INSTALLATION

PISTON RING INSTALLATION

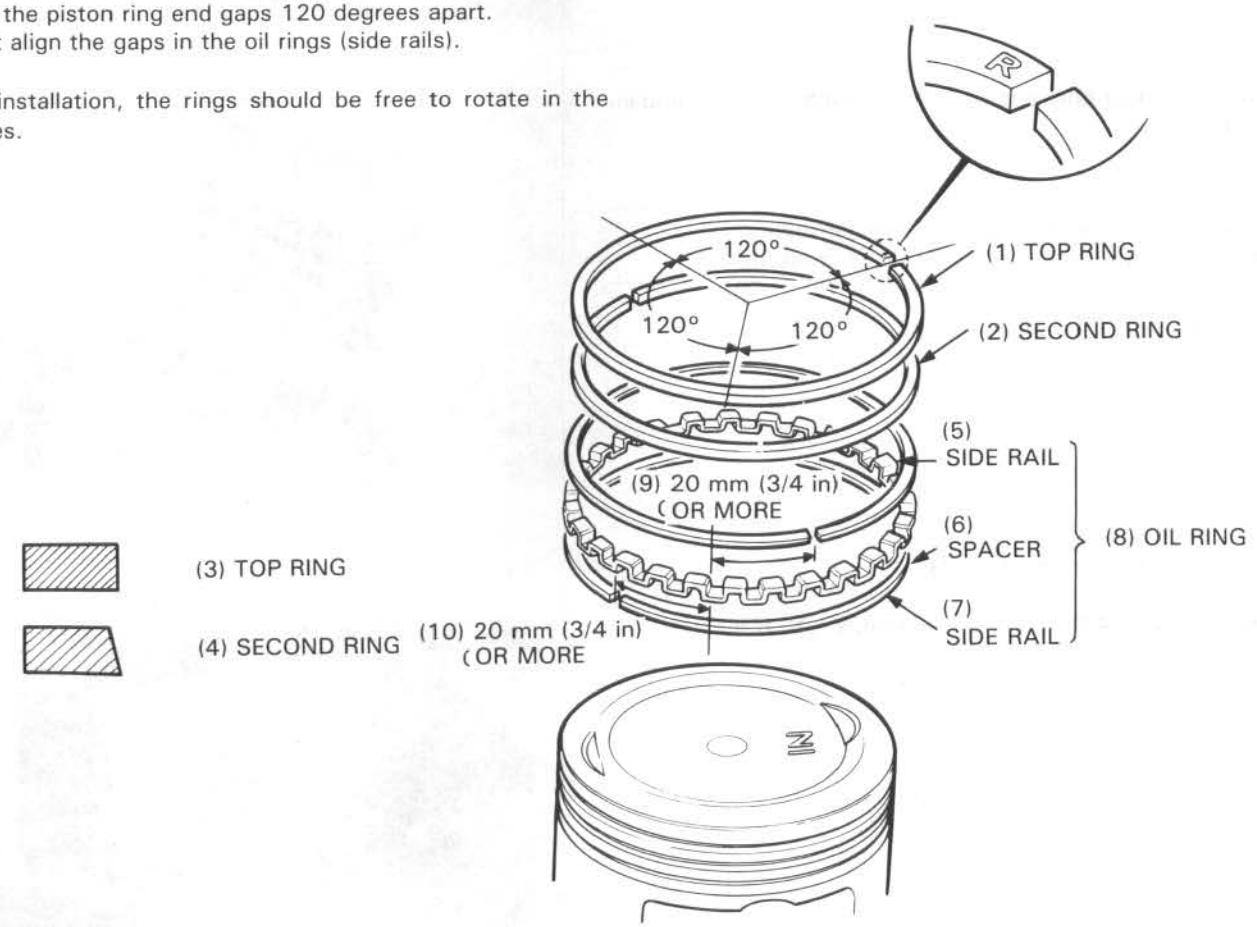
Clean the piston ring grooves thoroughly and install the piston rings.

NOTE

- Avoid piston and piston ring damage during installation.
- Install the piston rings with the marking facing up.
- Do not mix the top and second rings.

Space the piston ring end gaps 120 degrees apart. Do not align the gaps in the oil rings (side rails).

After installation, the rings should be free to rotate in the grooves.

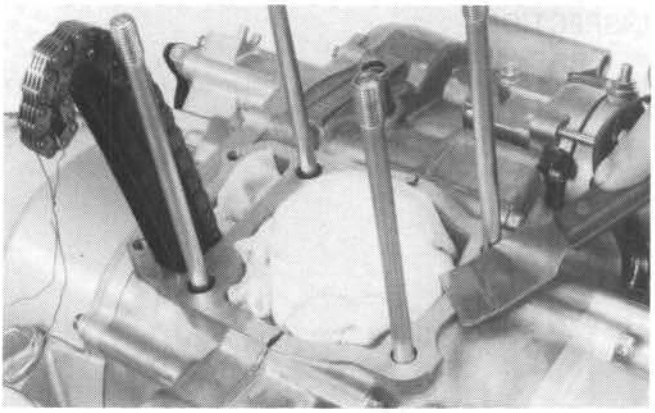


PISTON/CYLINDER INSTALLATION

Clean off any gasket material from the crankcase surface.

NOTE

- Be careful not to damage the gasket surface.

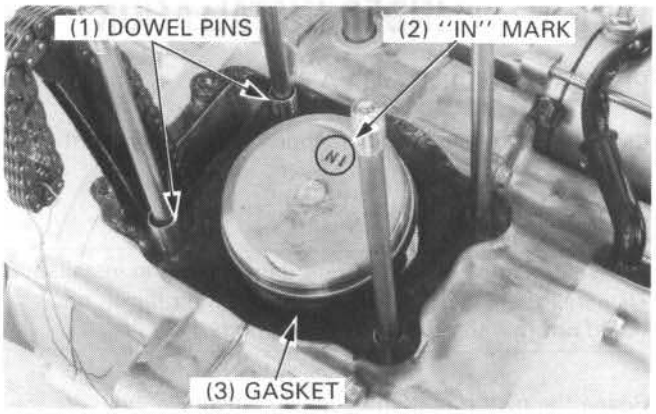


Install the piston and piston pin, using new piston pin clips.

NOTE

- Position the piston "IN" mark on the intake valve side.
- Do not align the piston pin clip end gap with the piston cut-out.
- Do not let the clip fall into the crankcase.

Install a new gasket and dowel pins.

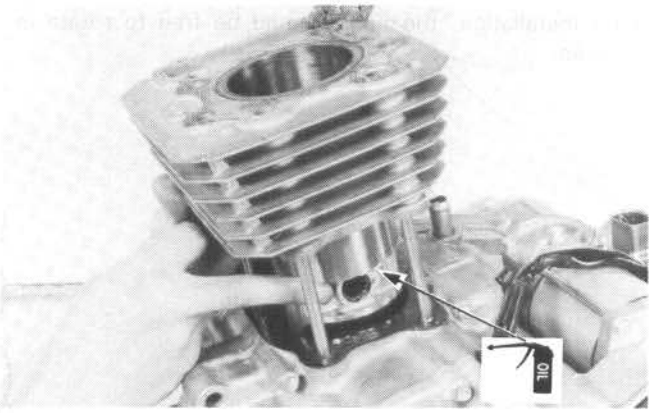


Coat the cylinder bore and piston rings with engine oil and install the cylinder.

NOTE

- Avoid piston ring damage during installation.
- Do not let the cam chain fall into the crankcase.

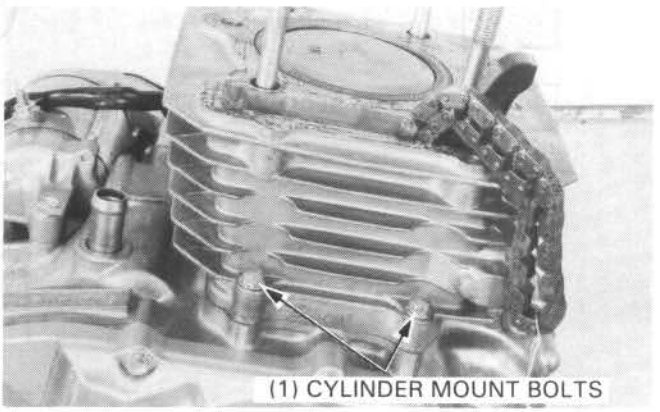
Install the cam chain guide.



Tighten the cylinder mount bolts.

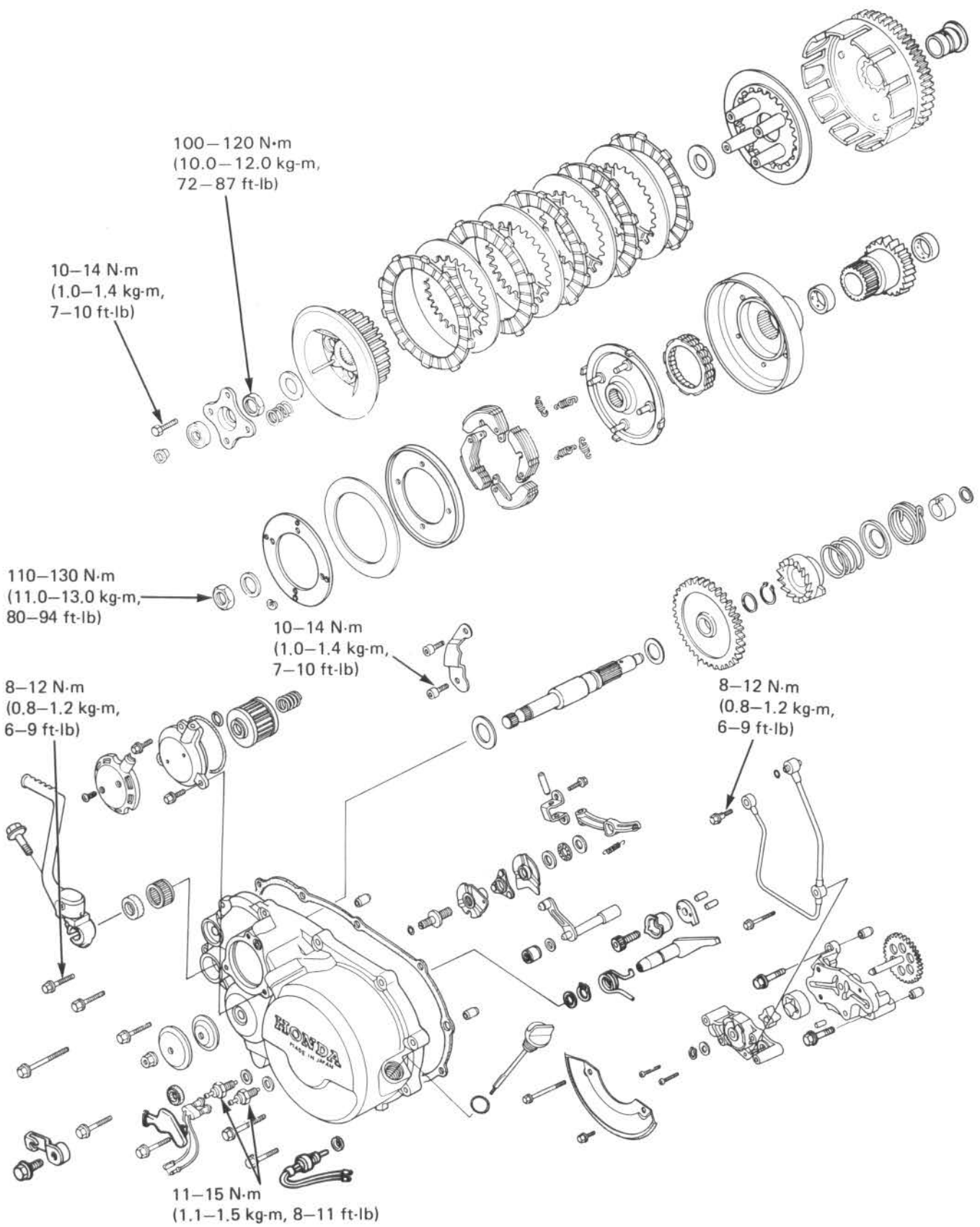
TORQUE: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

Install the cylinder head (page 6-11).



RIDE RED

MEMO


100–120 N·m
(10.0–12.0 kg-m,
72–87 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)
110–130 N·m
(11.0–13.0 kg-m,
80–94 ft-lb)
10–14 N·m
(1.0–1.4 kg-m,
7–10 ft-lb)
8–12 N·m
(0.8–1.2 kg-m,
6–9 ft-lb)
8–12 N·m
(0.8–1.2 kg-m,
6–9 ft-lb)
11–15 N·m
(1.1–1.5 kg-m, 8–11 ft-lb)
HONDA

RIDE RED

8. CLUTCH/OIL PUMP/KICK STARTER

SERVICE INFORMATION

GENERAL

This section covers removal and installation of the centrifugal clutch, manual clutch, oil pump and kick starter. These parts can be serviced with the engine installed in the frame.

SPECIFICATIONS

ITEM		STANDARD	SERVECE LIMIT
Manual clutch	Spring free length	34.98 mm (1.377 in)	34.0 mm (1.34 in)
	Spring preload	18 kg (30.68 lb)	—
	Disc thickness	2.62—2.78 mm (0.103—0.109 in)	2.3 mm (0.09 in)
	Disc warpage	—	0.20 mm (0.008 in)
	Plate warpage	—	0.20 mm (0.008 in)
	Clutch outer guide O.D.	27.959—27.980 mm (1.1007—1.1016 in)	27.92 mm (1.099 in)
Centrifugal clutch	Drum I.D.	140 mm (5.5 in)	140.2 mm (5.52 in)
	Weight lining thickness	4.0 mm (0.16 in)	3.9 mm (0.15 in)
	Clutch spring free height	3.7 mm (0.15 in)	3.55 mm (0.140 in)
Kick starter	Spindle O.D.	21.959—21.980 mm (0.8645—0.8654 in)	21.90 mm (0.862 in)
	Pinion gear I.D.	22.020—22.041 mm (0.8669—0.8678 in)	22.10 mm (0.870 in)
	Idler gear I.D.	23.020—23.041 mm (0.9063—0.9071 in)	23.07 mm (0.908 in)
	Idler gear bushing O.D.	22.959—22.980 mm (0.9039—0.9047 in)	22.93 mm (0.903 in)
	Countershaft O.D.	19.980—19.993 mm (0.7866—0.7871 in)	19.95 mm (0.785 in)
	Idler gear bushing I.D.	20.000—20.021 mm (0.7874—0.7882 in)	20.05 mm (0.789 in)
Primary drive gear	Crankshaft O.D.	23.959—23.980 mm (0.9433—0.9441 in)	23.93 mm (0.942 in)
	Gear I.D.	24.000—24.021 mm (0.9449—0.9457 in)	24.05 mm (0.947 in)
Oil pump	Pump end clearance	0.02—0.08 mm (0.0008—0.0031 in)	0.10 mm (0.004 in)
	Rotor tip clearance	0.15 mm (0.006 in)	0.20 mm (0.008 in)
	Rotor-to-cover clearance	0.15—0.21 mm (0.006—0.008 in)	0.25 mm (0.010 in)

TORQUE VALUES

Oil bolts	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)
Kick stopper plate	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Manual clutch lock nut	100—120 N·m (10.0—12.0 kg-m, 72—87 ft-lb)
Centrifugal clutch lock nut	110—130 N·m (11.0—13.0 kg-m, 80—94 ft-lb) Apply a thread locking agent
Neutral and reverse switches	11—15 N·m (1.1—1.5 kg-m, 8—11 ft-lb)
Clutch bolts	10—14 N·m (1.0—1.4 kg-m, 7—10 ft-lb)
Right crankcase cover bolts	8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)

TOOLS

Special	
Remover handle	07936—3710100
Remover weight	07741—0010201 or 07936—3710200
Bearing remover, 17 mm	07936—3710300
Attachment, 28 x 30 mm	07946—1870100
Clutch center holder	07923—KE10001
Bearing remover, 20 mm	07936—3710600
Clutch holder	07923—HA80000
Common	
Driver	07749—0010000
Attachment, 42 x 47 mm	07746—0010300
Pilot, 17 mm	07746—0040400
Pilot, 20 mm	07746—0040500

TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch.

Clutch slips when accelerating
- Faulty clutch lifter
- Discs worn
- Weak spring

Clutch will not disengage
- Faulty clutch lifter
- Plates warped

Four Trax creeps with clutch disengaged
- Faulty centrifugal clutch
- Plates warped

Clutch operation feels rough
- Outer drum slots rough

Hard to shift
- Incorrect clutch adjustment
- Faulty clutch lifter

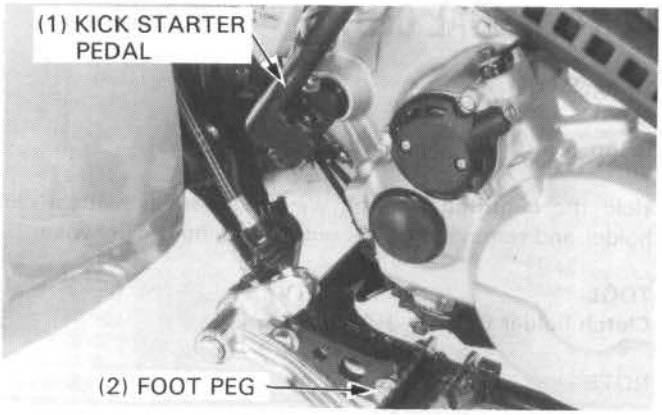
Low oil pressure
- Faulty oil pump
- Oil pump drive gear broken

RIDE RED

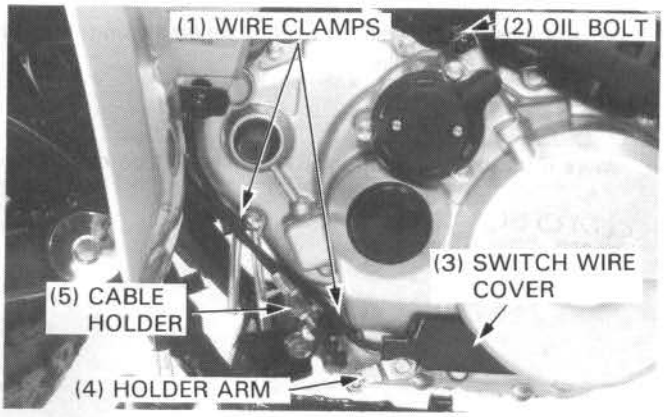
RIGHT CRANKCASE COVER REMOVAL

Shift the transmission into neutral and drain the oil from the engine.

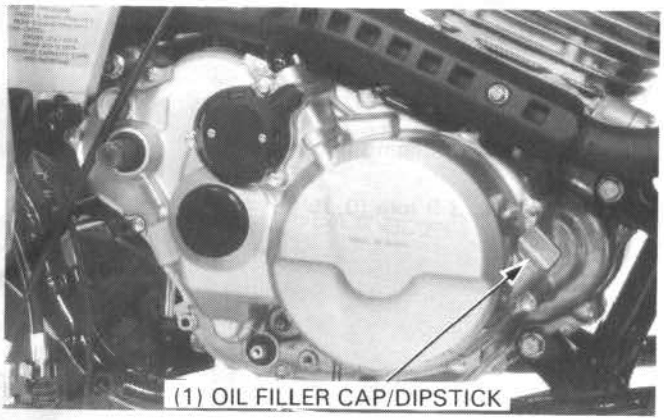
Remove the kick starter pedal and right foot peg.



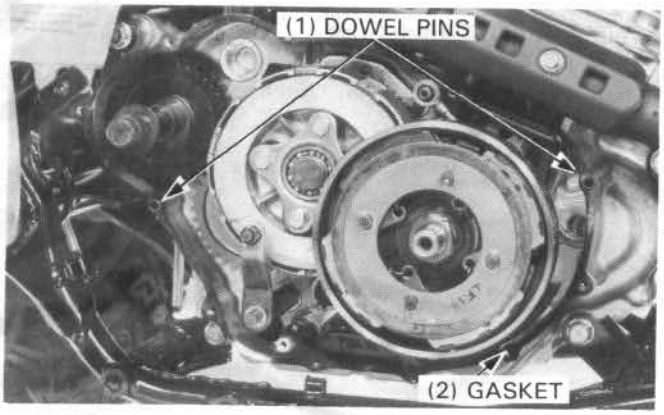
Remove the following:
- oil bolt and two sealing washers from the right crankcase cover
- switch wire cover, and disconnect the wires
- bolt from the reverse shift shaft, and the reverse cable holder arm
- reverse cable holder and neutral and reverse wire clamps.



Remove the oil filler cap/dipstick, right crankcase cover bolts and the cover.



Remove the gasket and dowel pins.



CENTRIFUGAL CLUTCH

REMOVAL

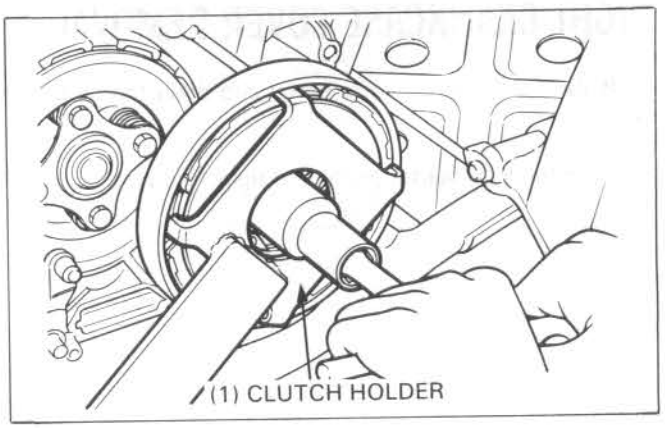
Remove the right crankcase cover (page 8-3).

Hold the centrifugal clutch weight assembly with a clutch holder and remove the lock nut by turning it clockwise,

TOOL
Clutch holder 07923—HA80000

NOTE

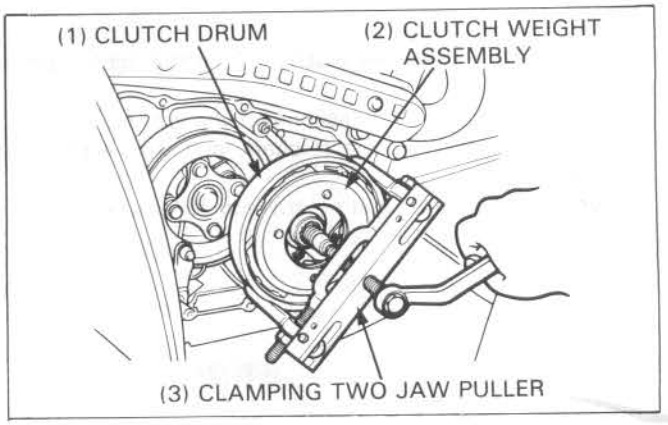
- The lock nut has left hand threads.



Remove the centrifugal clutch weight assembly and drum with a clamping two jaw puller.

NOTE

- Jaws must be clamping type to ensure fit on clutch drum.

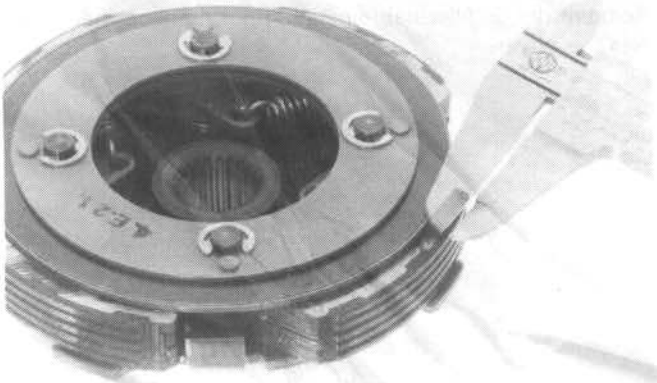


INSPECTION

Weight Lining

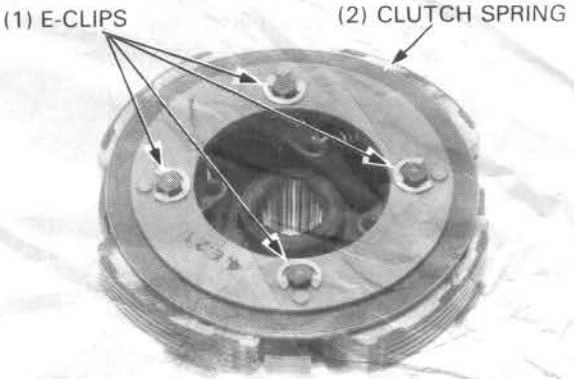
Measure the weight lining thickness.

SERVICE LIMIT: 3.9 mm (0.15 in)



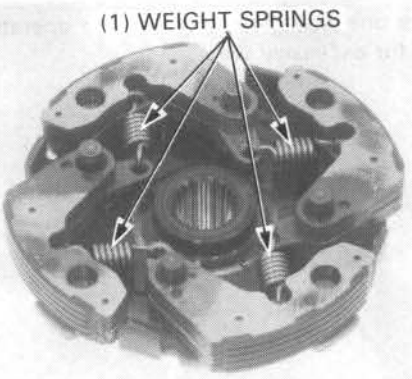
Weight Spring/Clutch Spring

Remove the E-clips, washer, clutch spring and washer.



RIDE RED

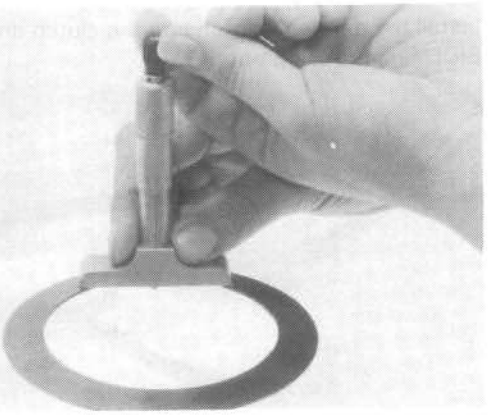
Check the weight springs for wear or damage, and replace if necessary.



Measure the height of the clutch spring.

SERVICE LIMIT: 3.55 mm (0.140 in)

Replace the spring if it is shorter than the service limit.



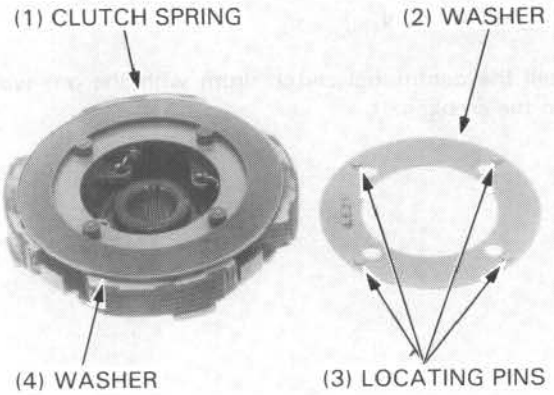
Install the washer and clutch spring.

NOTE

- Install the spring with the dished face towards the inside.

Install the outside washer with the locating pins facing out.

Install the E-clips aligning their gaps with the locating pins on the washer.

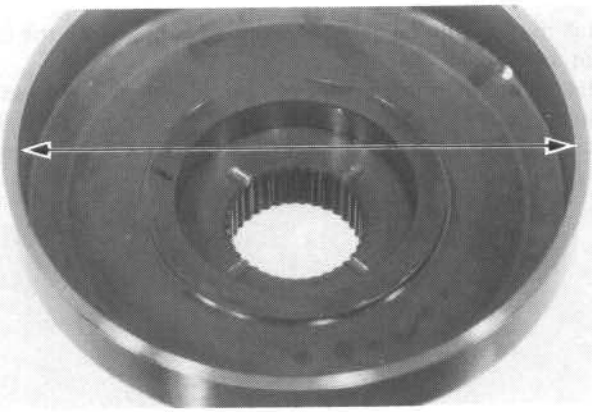


Clutch Drum/One-Way Clutch

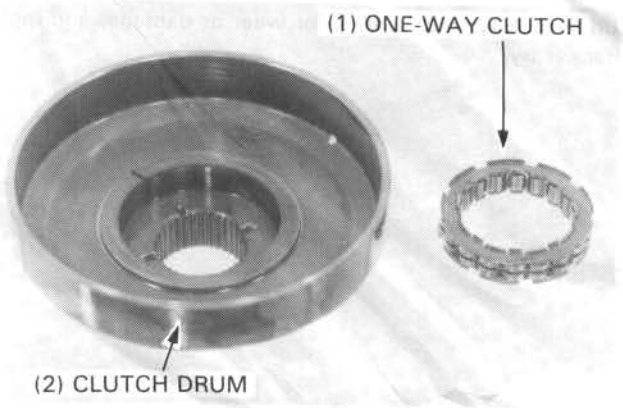
Check the inside of the centrifugal clutch drum for scratches or excessive wear. Replace if necessary.

Measure the I.D. of the clutch drum.

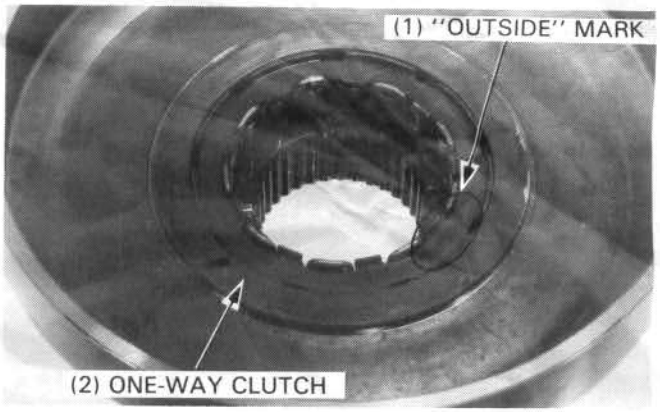
SERVICE LIMIT: 140.2 mm (5.52 in)



Inspect the one-way clutch for smooth operation and check the rollers for excessive wear.

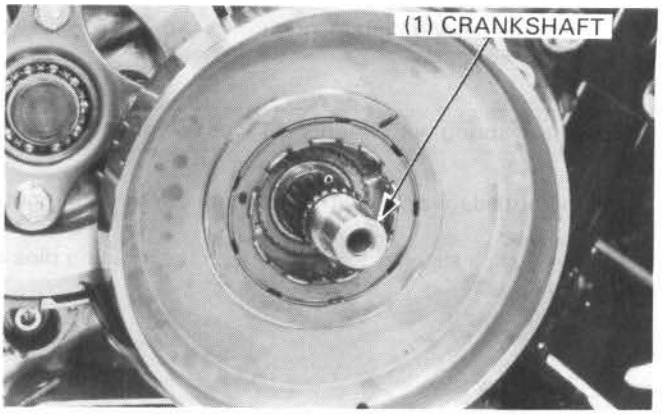


Install the one-way clutch into the clutch drum with its "OUTSIDE" mark facing out.

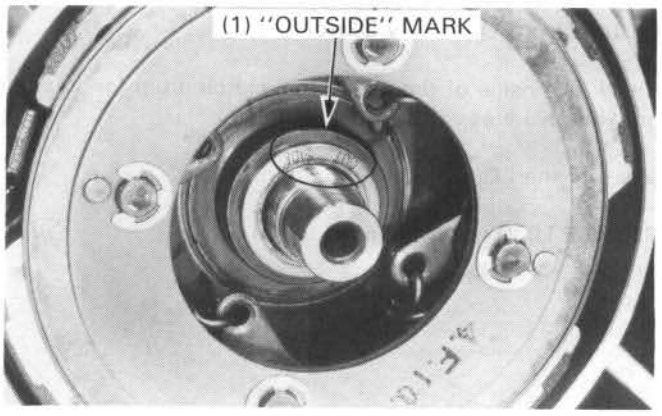


INSTALLATION

Install the centrifugal clutch drum with the one-way clutch onto the crankshaft.



Install the centrifugal clutch weight assembly onto the clutch drum and crankshaft.
Install and tighten the lock nut to press in the weight assembly, and remove the nut.
Install the lock washer with the word "OUTSIDE" facing out.



RIDE RED

Apply a thread lock agent to the lock nut and tighten it.
Hold the centrifugal clutch weight assembly with the clutch holder and tighten the lock nut by turning it counterclockwise.

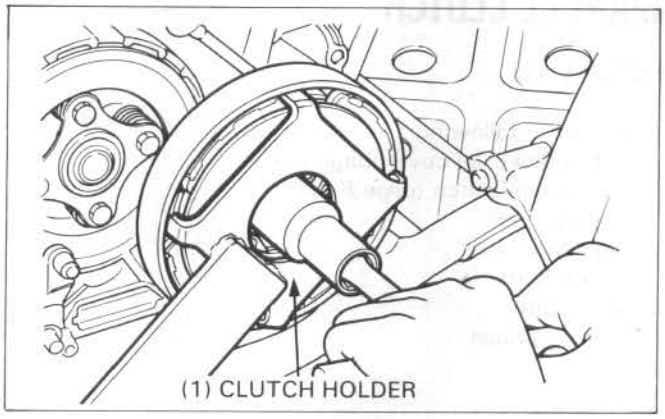
TORQUE: 110—130 N·m (11.0—13.0 kg-m, 80—94 ft-lb)

TOOL
Clutch holder 07923—HA80000

NOTE

- The lock nut has left hand threads.

Install the right crankcase cover (page 8-21).



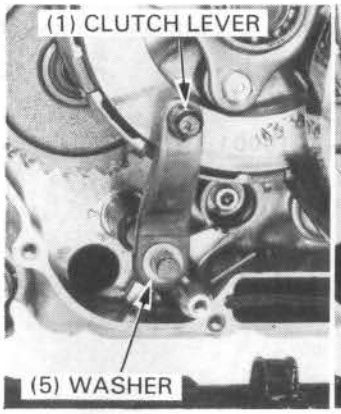
REVERSE LOCK MECHANISM

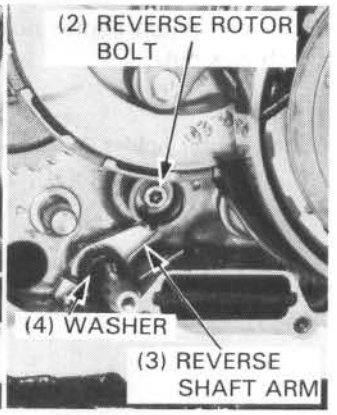
REMOVAL

Remove the following:
— washer and clutch lever
— reverse shaft arm
— rotor bolt, reverse lock plate and reverse rotor

Remove the washer and spring from the reverse shaft arm.

Check all aprts for excessive wear or damage, and replace as necessary.





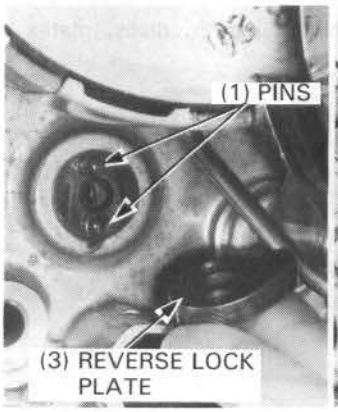
INSTALLATION

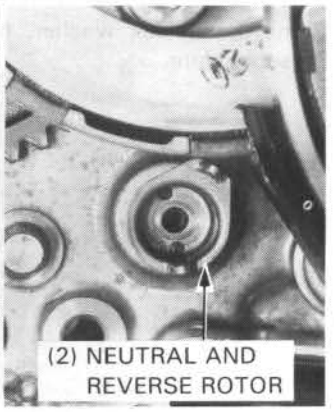
Align the reverse lock plate pins with the holes in the shift drum and install the reverse lock plate.

Align the neutral and reverse rotor holes with the reverse lock plate pins install the neutral and reverse rotor using the bolt.

Rotate the neutral and reverse rotor and check for smooth operation.

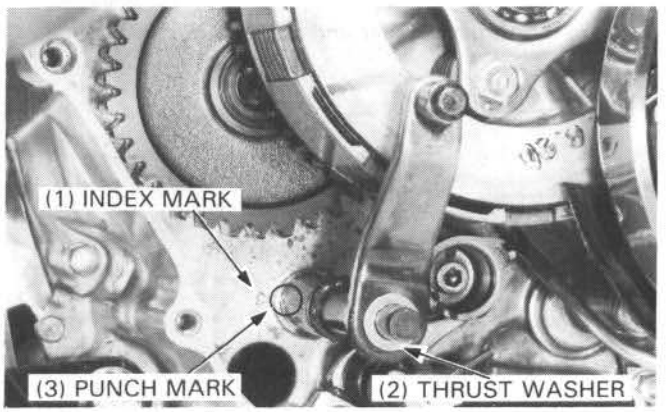
Install the reverse shaft arm with the washer and spring.





Align the index mark on the crankcase with the punch mark on the clutch lever and install the clutch lever.

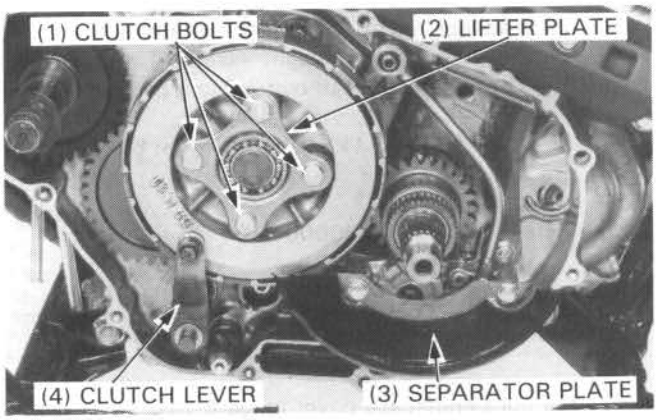
Install the thrust washer.



MANUAL CLUTCH

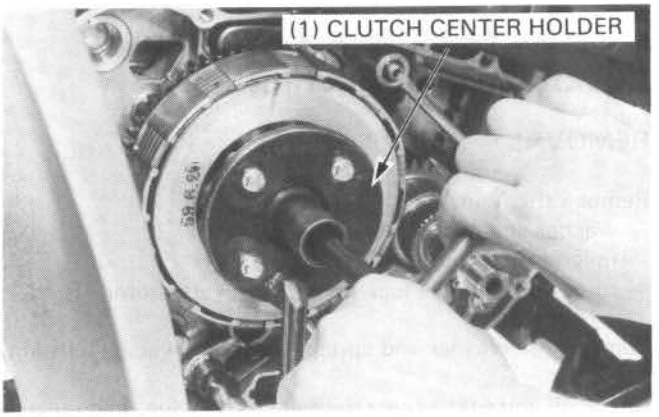
REMOVAL

Remove the following:
- right crankcase cover (page 8-3)
- centrifugal clutch (page 8-4)
- clutch lever
- separator plate
- clutch bolts
- lifter plate
- clutch springs.

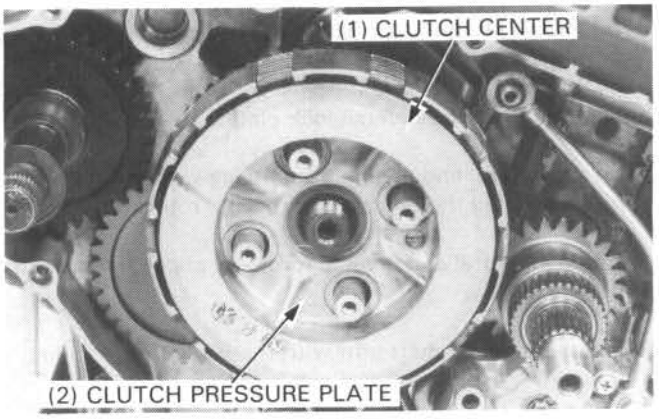


Install the clutch center holder as shown, and remove the clutch lock nut.

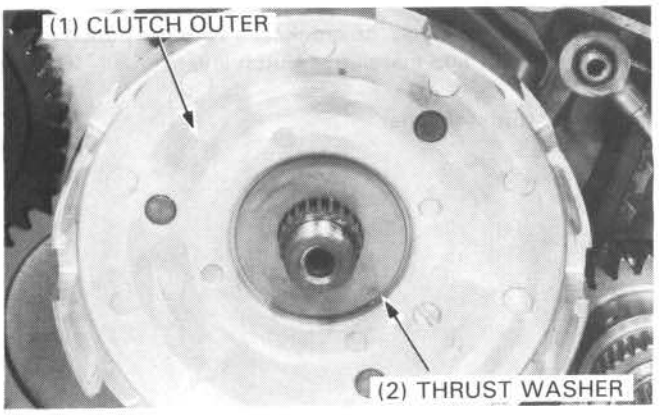
TOOL
Clutch center holder 07923—KE10001



Remove the lock washer, clutch center, discs, plates and pressure plate.

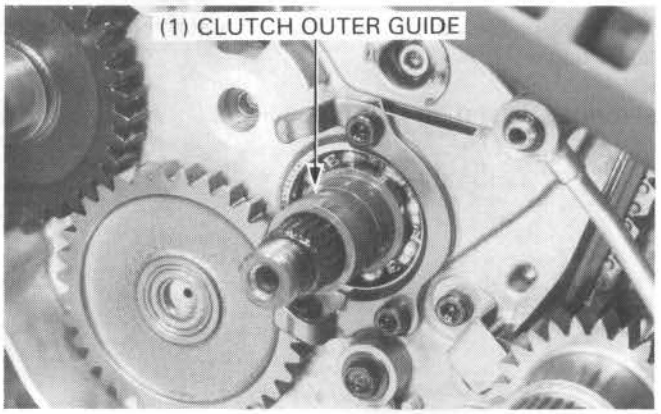


Remove the thrust washer and clutch outer.



RIDE RED

Remove the clutch outer guide from the mainshaft.

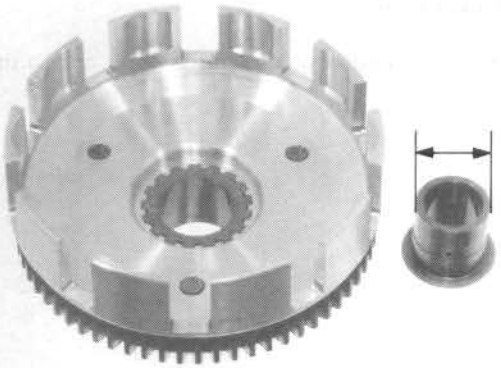


INSPECTION

Check the slots of the clutch outer for damage or wear caused by the clutch discs. Replace if necessary.

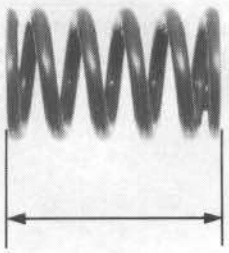
Measure the O.D. of the clutch outer guide.

SERVICE LIMIT: 27.92 mm (1.099 in)



Measure the spring free lingth.

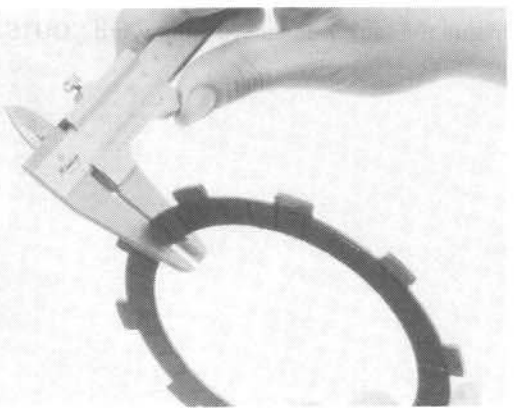
SERVICE LIMIT: 34.0 mm (1.34 in)



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

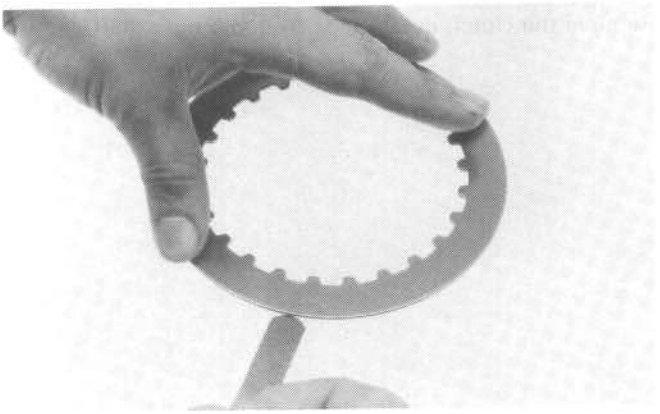
Measure the disc thickness.

SERVICE LIMIT: 2.3 mm (0.09 in)



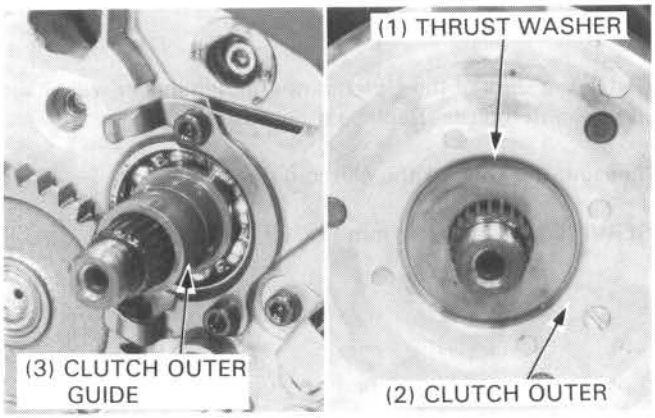
Check for plate and disc warpage on a surface plate using a feeler gauge.

SERVICE LIMIT: 0.20 mm (0.008 in)



INSTALLATION

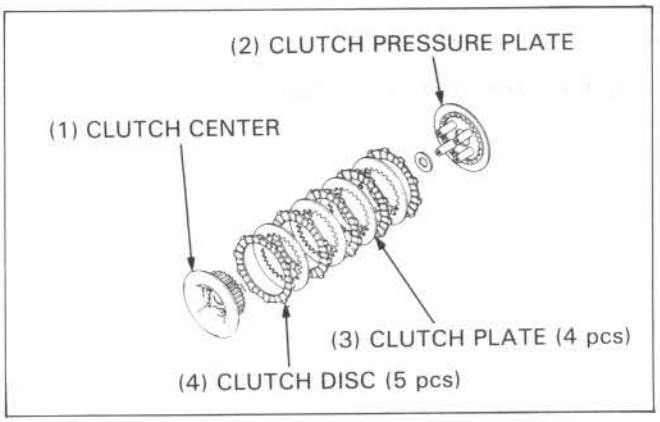
Install the clutch outer guide, clutch outer and thrust washer.



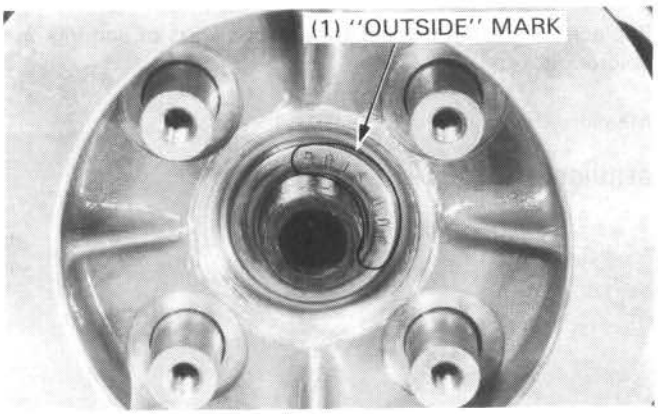
Assemble the clutch pressure plate, discs, plates and clutch center.

NOTE

- Stack the discs and plates alternately.
- Coat new clutch discs with engine oil.



Install the lock washer with the word "OUTSIDE" facing out.

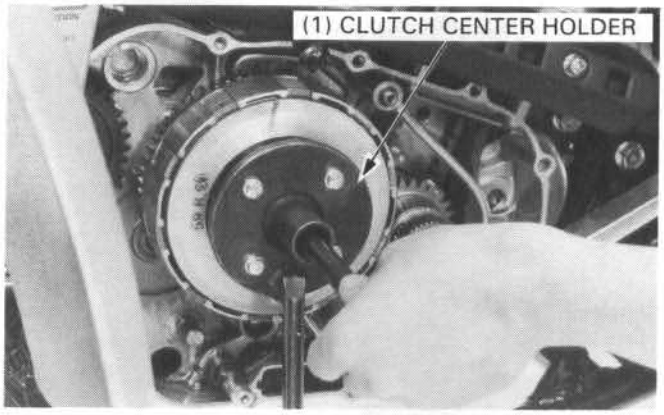


RIDE RED

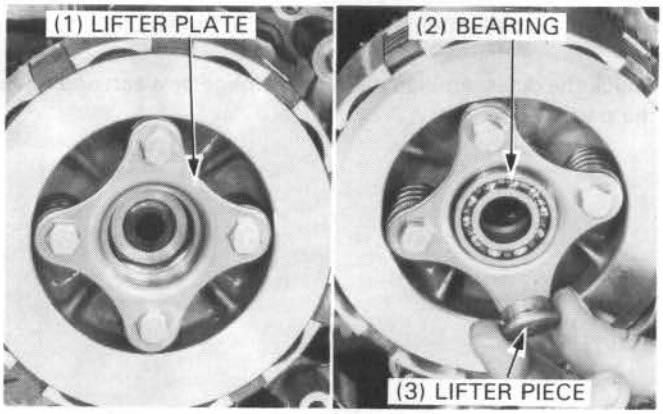
Tighten the lock nut.

TORQUE: 70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)

TOOL
Clutch center holder 07923–KE10001



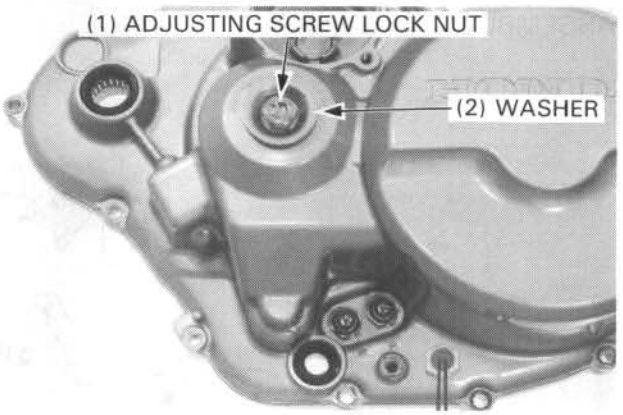
Install the following:
– clutch springs, lifter plate and clutch bolts
– bearing and lifter piece
– separator plate and clutch lever
– centrifugal clutch (page 8-4).



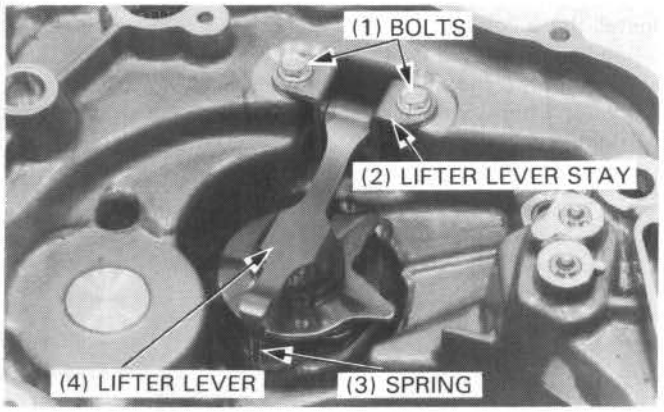
MANUAL CLUTCH LIFTER MECHANISM

DISASSEMBLY

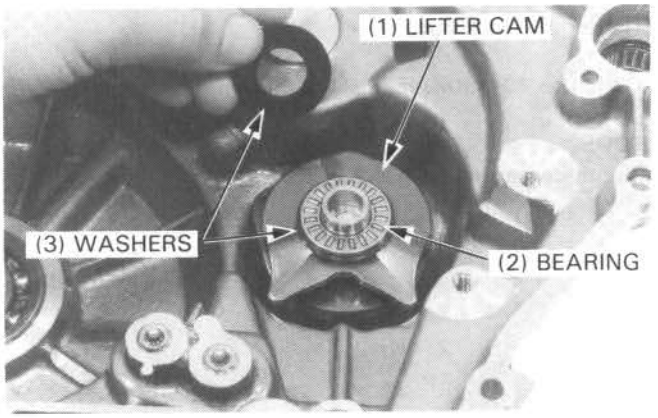
Remove the clutch adjuster rubber cap, and the adjusting screw lock nut and washer.



Remove the clutch lifter lever stay mount bolts, lifter lever and spring.

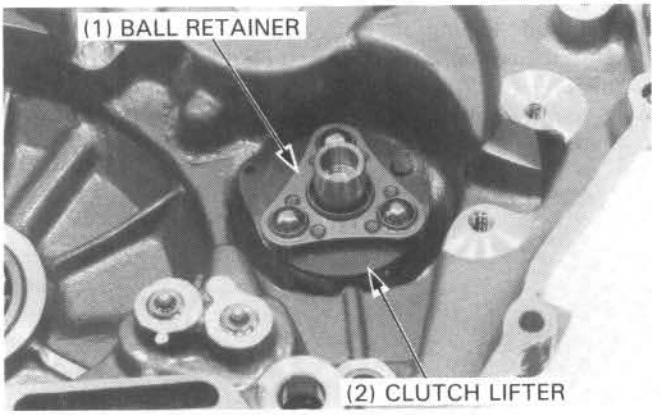


Remove the washers, bearing and clutch lifter cam.

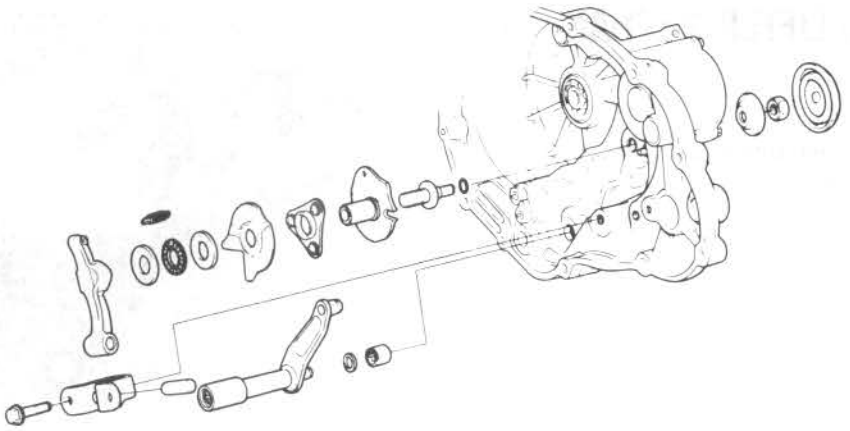


Remove the ball retainer and clutch lifter with adjusting screw.

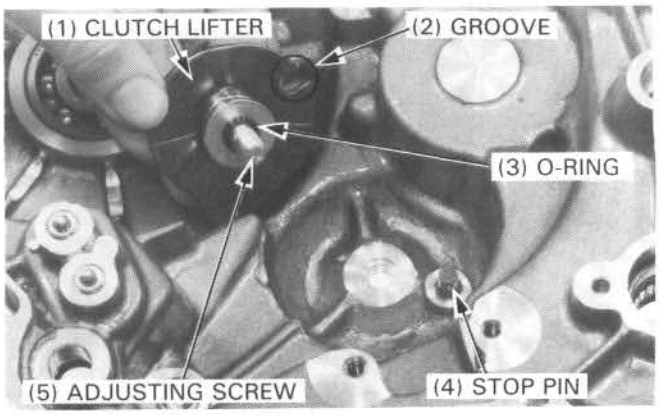
Check the disassembled parts for damage or wear, and replace the parts if necessary.



ASSEMBLY

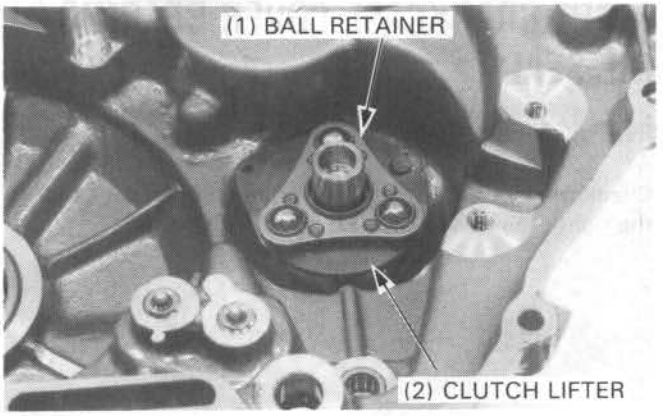


Install the following:
- adjusting screw into the clutch lifter
- O-ring onto the adjusting screw
- clutch lifter, by aligning its groove with the stop pin on the right crankcase cover.

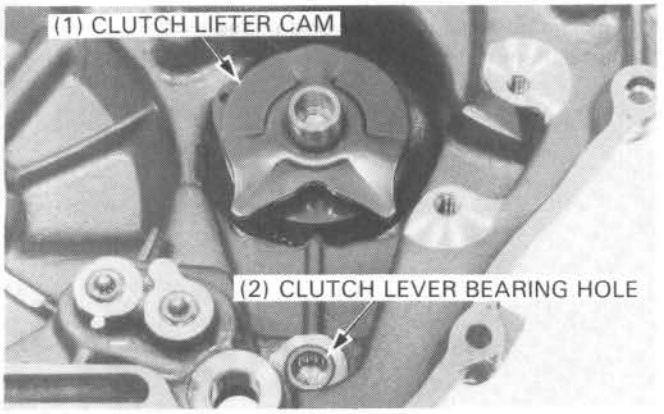


RIDE RED

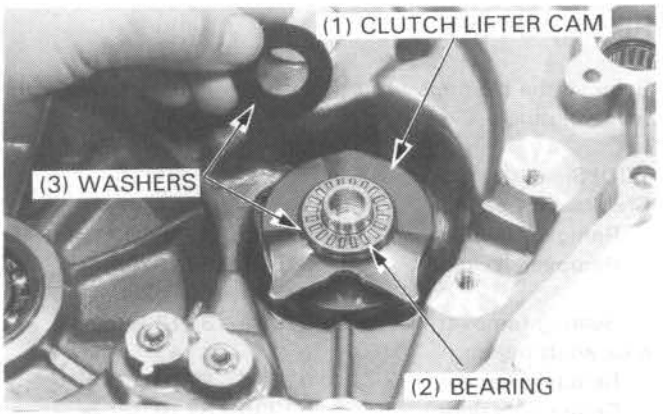
Install the ball retainer onto the clutch lifter.



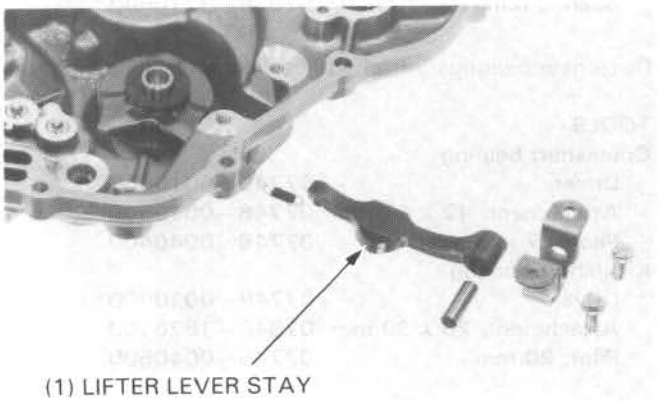
Install the clutch lifter cam by aligning its groove with the clutch lever bearing hole on the right crankcase cover.



Install the washer, bearing and thrust washer onto the clutch lifter cam.



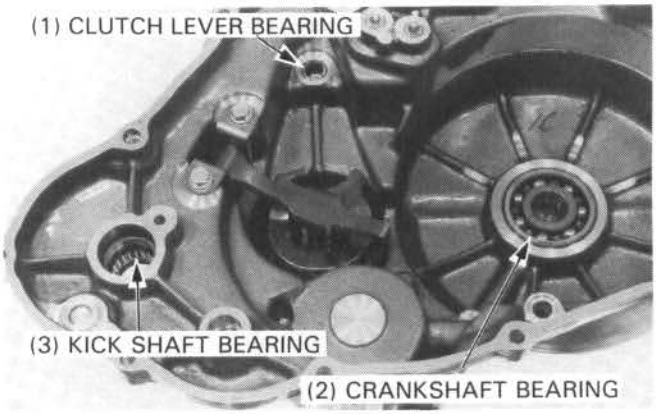
Install the lifter lever stay in the reverse order of removal.



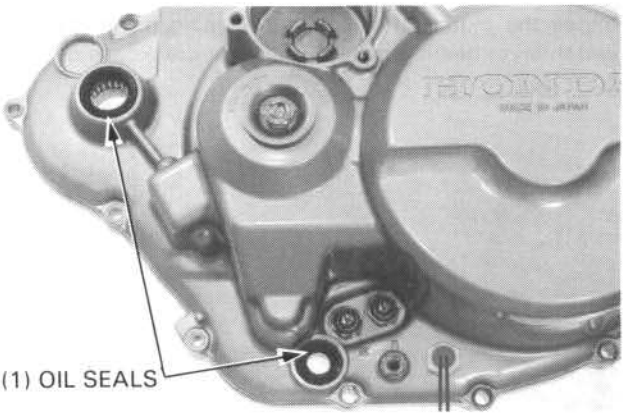
RIGHT CRANKCASE COVER BEARING/ OIL SEAL

INSPECTION

Check the kick shaft, clutch lever and crankshaft bearings on the right crankcase cover for wear or damage.



Check the oil seals for wear or damage.
Replace them if necessary.

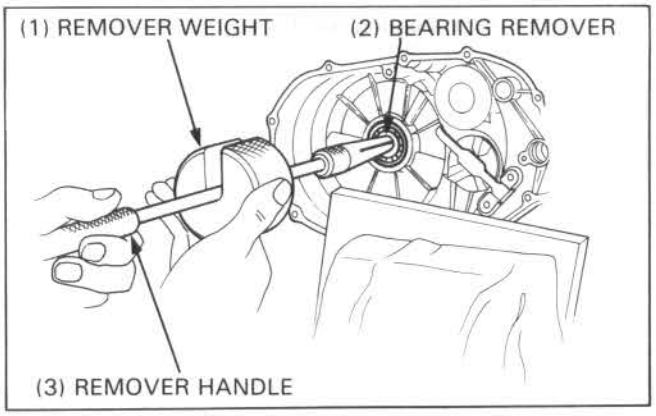


REPLACEMENT

Remove the bearings from the right crankcase cover with the following tools.

TOOLS

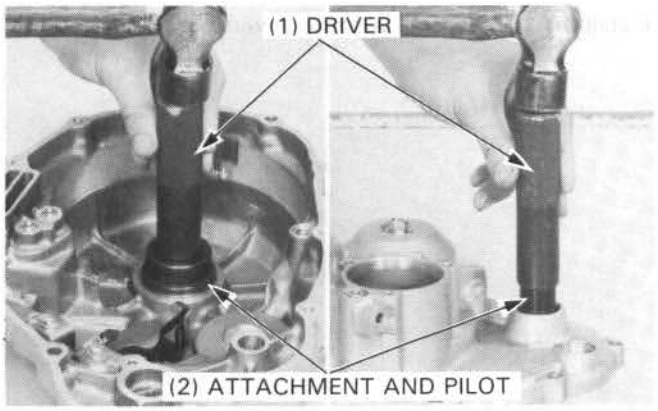
Crankshaft bearing	
Remover handle	**07936–3710100**
Remover weight	**07936–3710200 or 07741–0010201**
Bearing remover, 17 mm	**07936–3710300**
Kick shaft bearing	
Remover handle	**07936–3710100**
Remover weight	**07936–3710200 or 07741–0010201**
Bearing remover, 20 mm	**07936–3710600**



Drive new bearings into the cover using the following tools.

TOOLS

Crankshaft bearing	
Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**
Pilot, 17 mm	**07746–0040400**
Kick shaft bearing	
Driver	**07749–0010000**
Attachment, 28 x 30 mm	**07946–1870100**
Pilot, 20 mm	**07746–0040500**

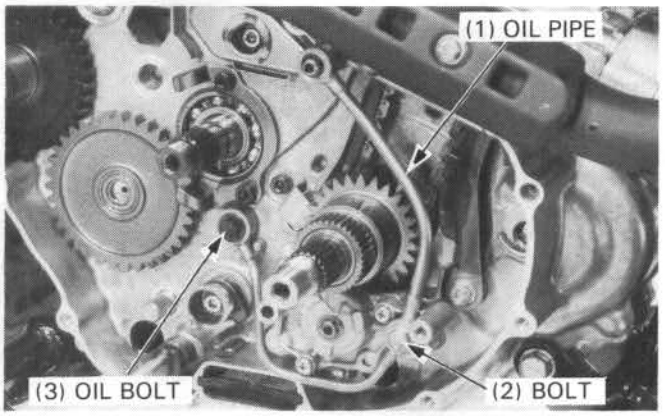


RIDE RED

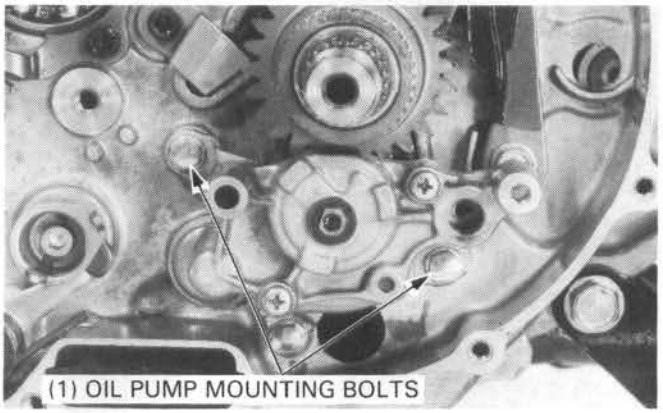
OIL PUMP/PRIMARY DRIVE GEAR

REMOVAL

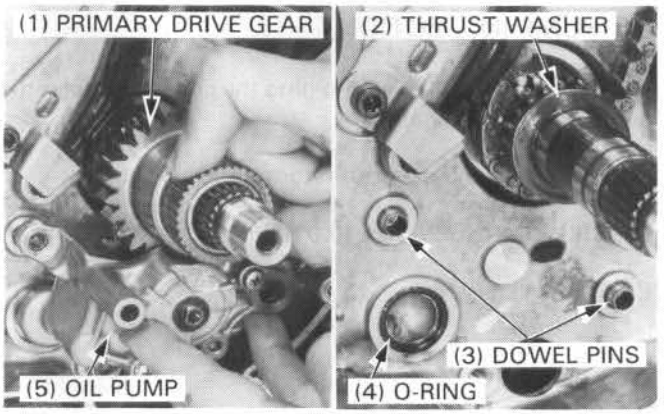
Remove the following:
- centrifugal clutch (page 8-4)
- manual clutch (page 8-8)
- bolt and oil pipe.



Remove the oil pump mounting bolts.



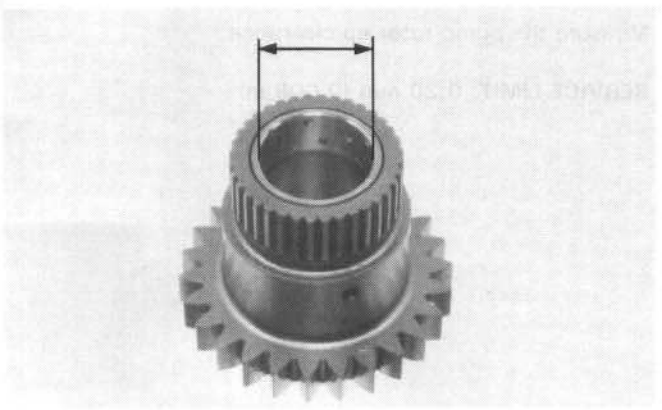
Remove the oil pump, primary drive gear and thrust washer.
Remove the O-ring and two dowel pins.



PRIMARY DRIVE GEAR INSPECTION

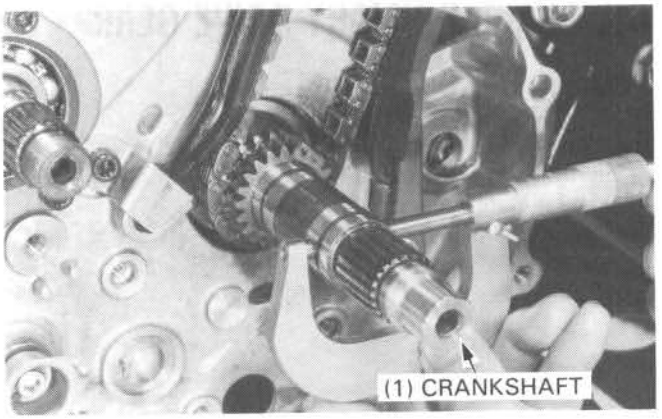
Inspect the primary drive gear for damage or excessive wear.
Measure the primary drive gear I.D.

SERVICE LIMIT: 24.05 mm (0.947 in)



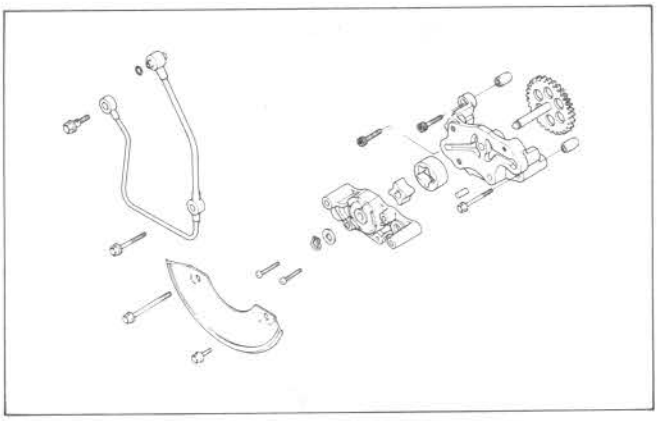
Measure the crankshaft O.D.

SERVICE LIMIT: 23.93 mm (0.942 in)



OIL PUMP DISASSEMBLY

Remove the E-clip from the oil pump driven gear.
Remove the oil pump cover mounting screws.



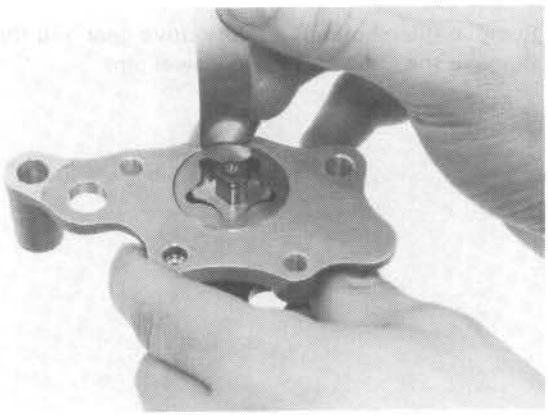
OIL PUMP INSPECTION

Install the outer and inner rotor into the cover and insert the oil pump driven gear shaft.

Measure the pump cover-to-rotor clearance.

SERVICE LIMIT: 0.25 mm (0.010 in)

Clean the oil pass pipe.



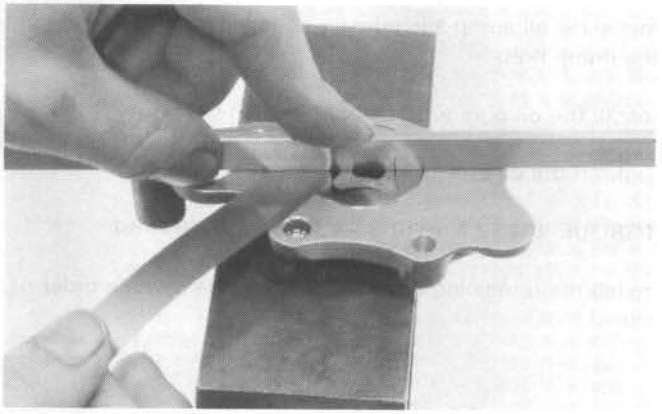
Measure the pump rotor tip clearance.

SERVICE LIMIT: 0.20 mm (0.008 in)

RIDE RED

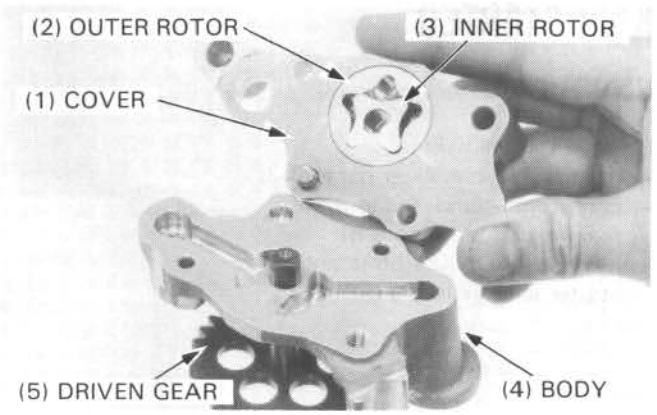
Remove the oil pump driven gear shaft from the oil pump cover and measure the pump end clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

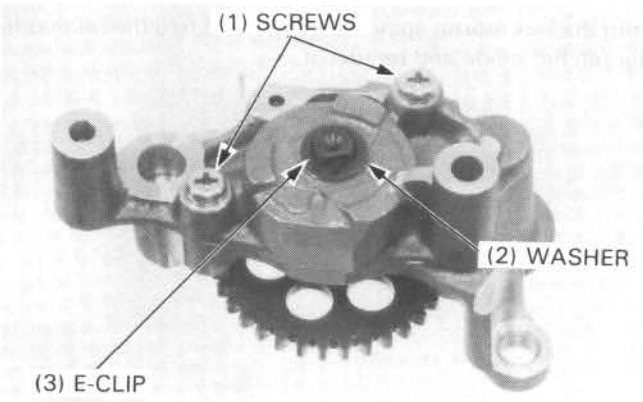


OIL PUMP ASSEMBLY/INSTALLATION

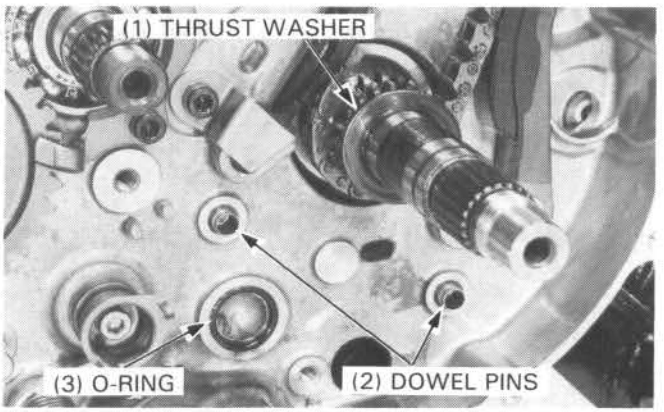
Assemble the oil pump cover with outer and inner rotors onto the oil pump body with the driven gear.



Install the washer, E-clip and oil pump cover screws as shown.



Install the thrust washer on the crankshaft, and the O-ring and dowel pins into the right crankcase.



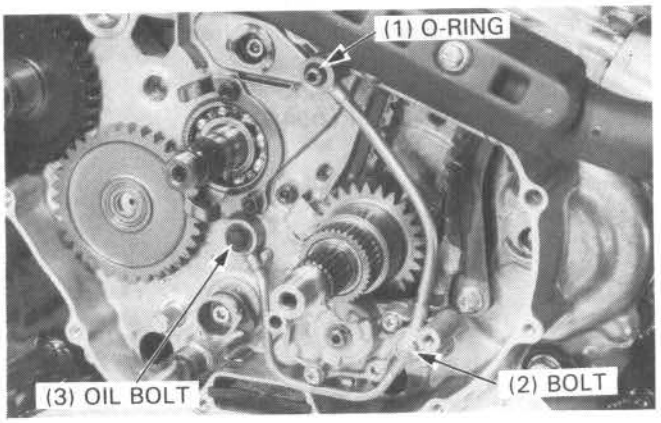
Install the oil pump and primary drive gear together and tighten the pump bolts.

Install the oil pipe with oil bolt, bolt and O-ring.

Tighten the oil bolt.

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

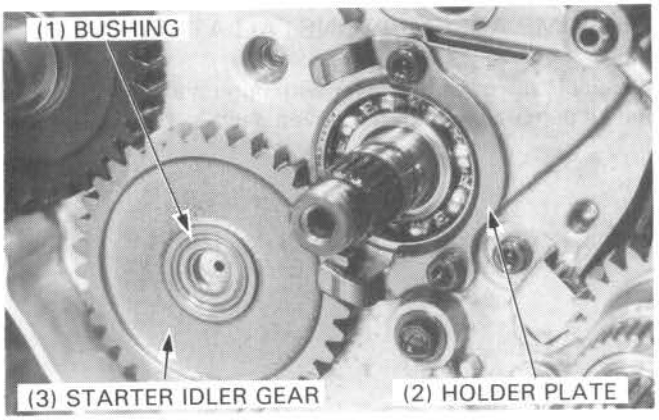
Install the remaining removed parts in the reverse order of removal.



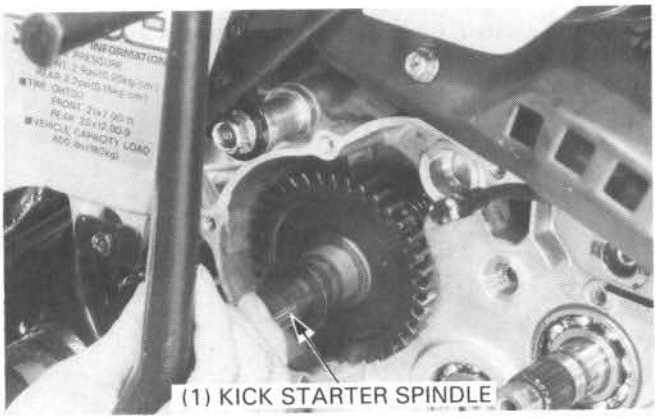
KICK STARTER

REMOVAL

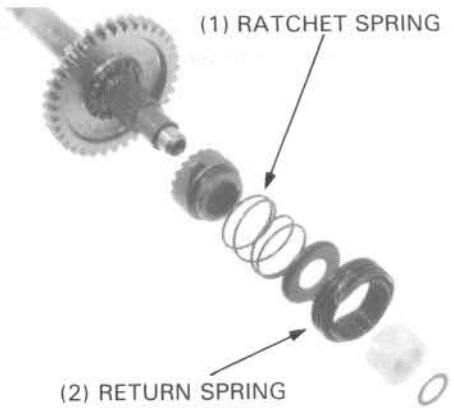
Remove the following:
- right crankcase cover (page 8-3)
- centrifugal clutch (page 8-4)
- manual clutch (page 8-8)
- holder plate mount bolts and plate
- starter idler gear and bushing.



Turn the kick starter spindle clockwise to free the ratchet from the ratchet guide and remove it.

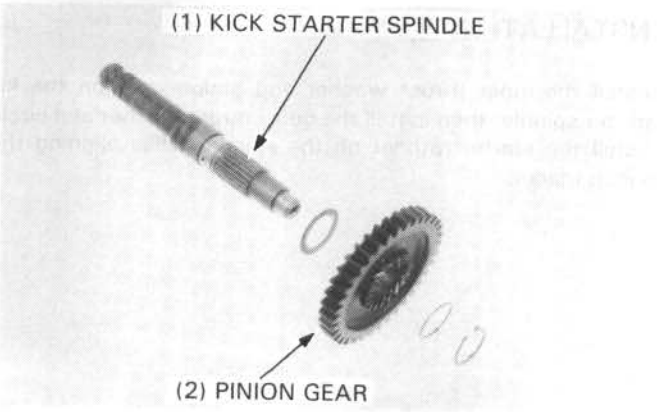


Remove the washer, collar, return spring, spring retainer, ratchet and ratchet spring.



RIDE RED

Remove the circlip and disassemble the pinion gear and washers.



INSPECTION

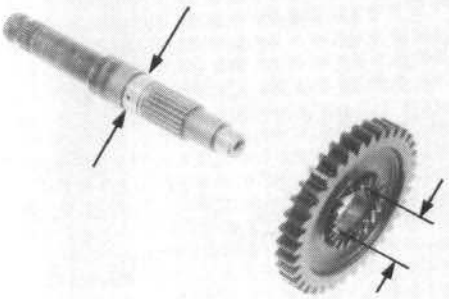
Measure the kick starter spindle O.D.

SERVICE LIMIT: 21.90 mm (0.862 in)

Inspect the pinion for damaged ratchet teeth.

Measure the kick starter pinion I.D.

SERVICE LIMIT: 22.10 mm (0.870 in)



Measure the kick starter idler gear I.D.

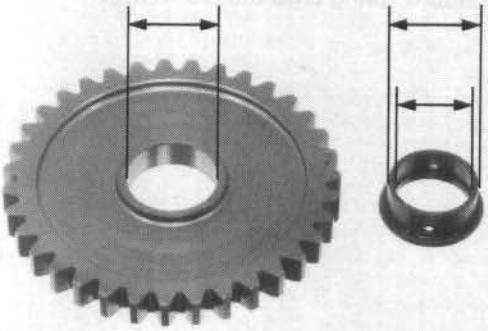
SERVICE LIMIT: 23.07 mm (0.908 in)

Measure the kick starter idler gear bushing I.D.

SERVICE LIMIT: 20.05 mm (0.789 in)

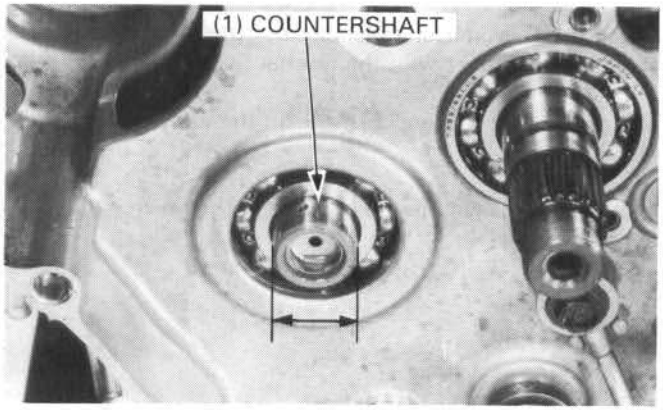
Measure the kick starter idler gear bushing O.D.

SERVICE LIMIT: 22.93 mm (0.903 in)



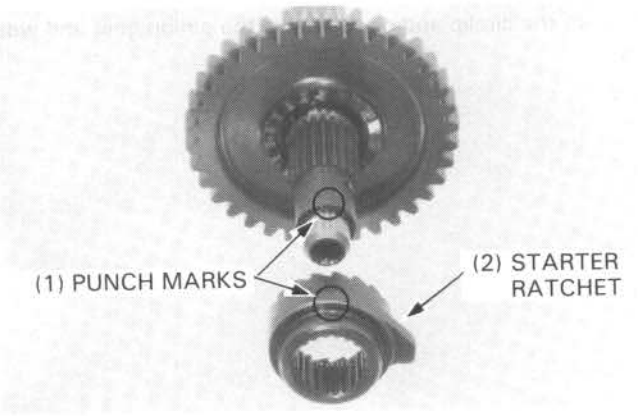
Measure the countershaft O.D.

SERVICE LIMIT: 19.95 mm (0.785 in)

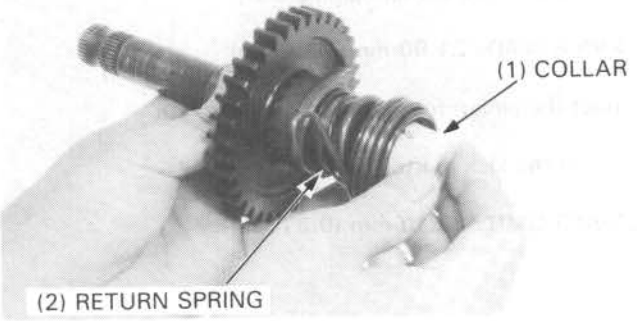


INSTALLATION

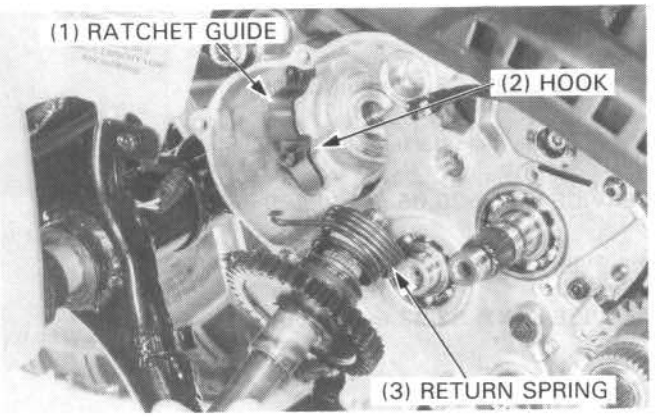
Install the inner thrust washer and pinion gear on the kick starter spindle, then install the outer thrust washer and circlip. Install the starter ratchet on the spindle while aligning their punch marks.



Assemble the ratchet spring, spring retainer, return spring, collar and washer.



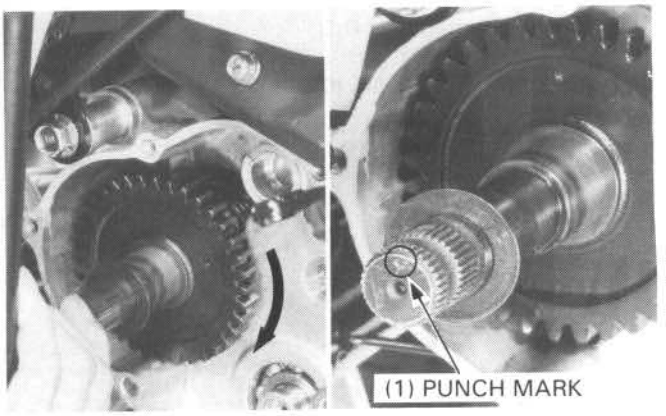
Hook the return spring onto the crankcase.



Install the kick starter assembly by turning it clockwise and aligning the ratchet with the ratchet guide.

Make sure that the punch mark on the end of the spindle is facing up.

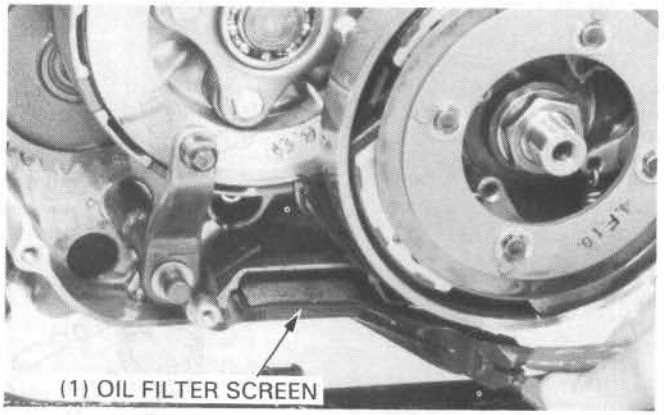
Install the remaining removed parts in the reverse order of removal.



RIDE RED

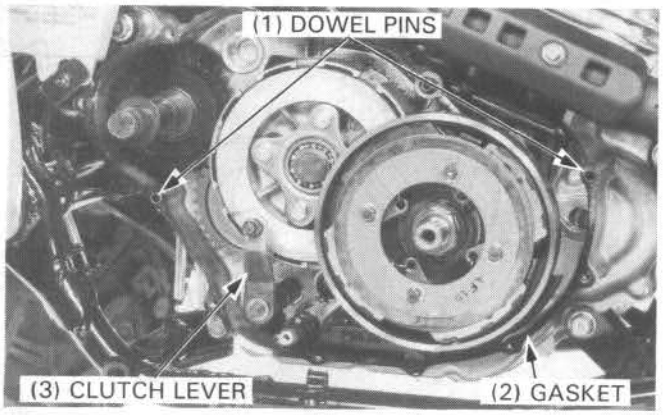
OIL FILTER SCREEN

Drain the engine oil.
Remove the right crankcase cover, gasket and dowel pins (page 8-3).
Remove and clean the oil filter screen.
Inspect the screen for damage and replace it if necessary.
Install the oil filter screen and right crankcase cover in the reverse order of removal.



RIGHT CRANKCASE COVER INSTALLATION

Install the dowel pins and a new gasket.
Make sure that the clutch lever is positioned as shown.
Install the right crankcase cover and bolts and tighten the bolts.

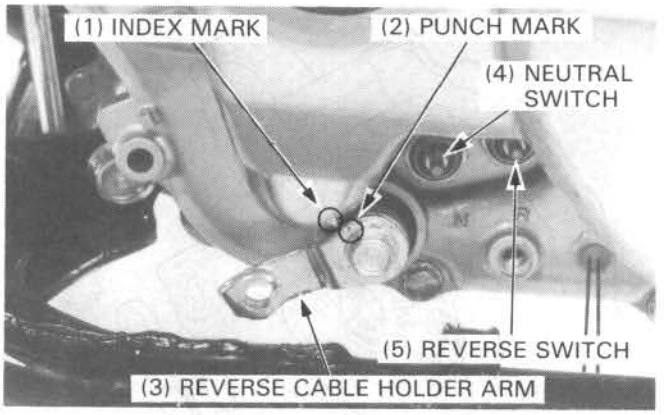


Install the reverse cable holder arm onto the reverse shaft.
Be sure the punch mark aligns with the index mark.
Install the oil bolt with two sealing washers.
Connect the neutral and reverse wires to the switches.

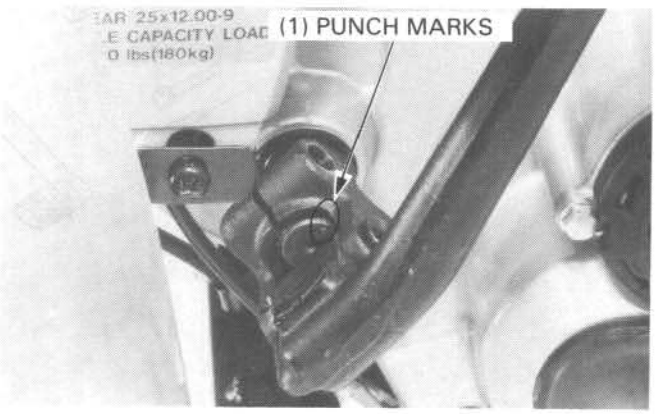
WARNING

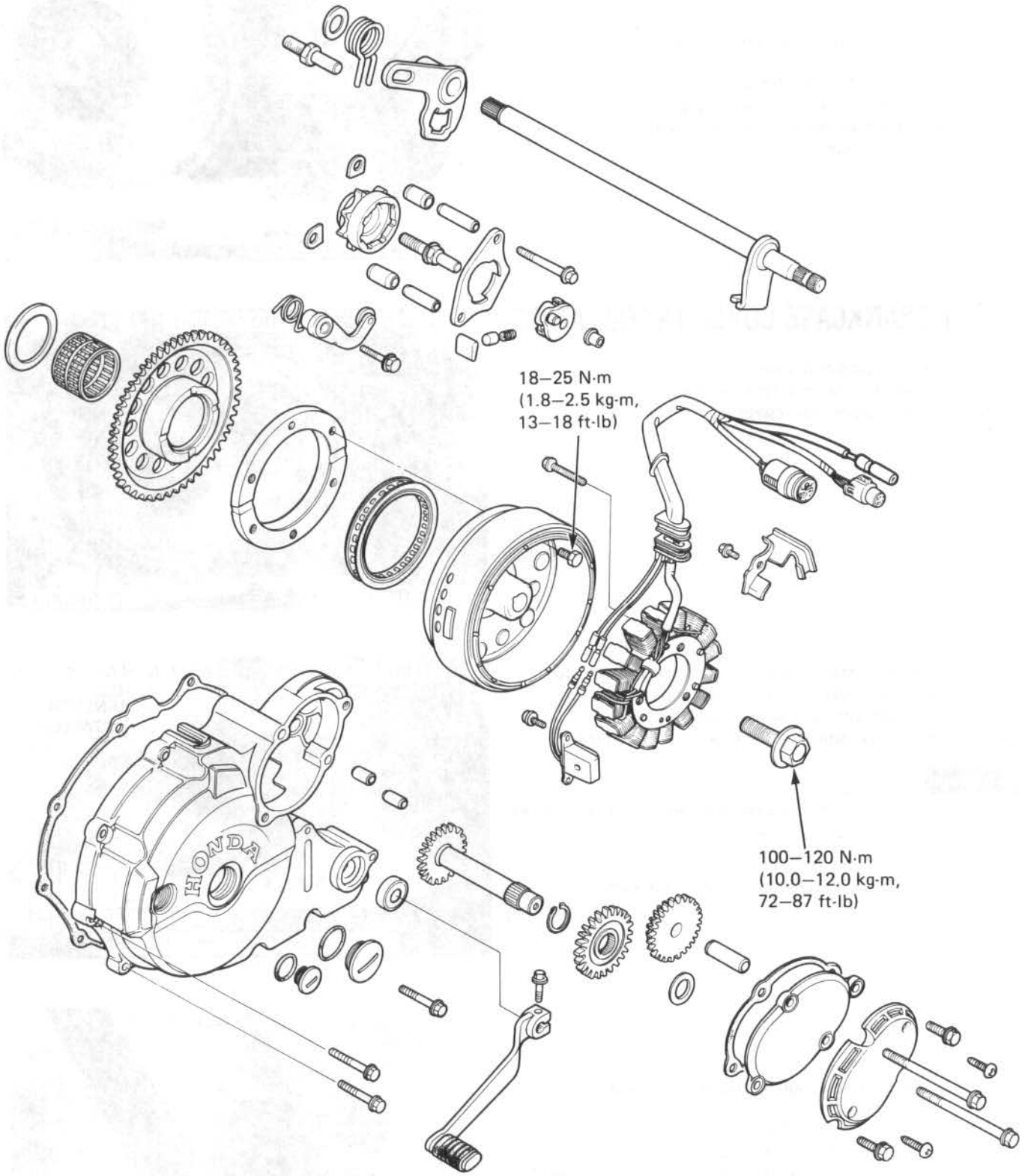
- *Connect the light green/red wire to the neutral switch and the grey wire to the reverse switch*

Connect the oil temperature sensor wire connectors.



Install the following:
— reverse cable
— switch cover
— kick starter pedal, by aligning the punch marks
— foot peg with bolts
— right frame side cover
Adjust the clutch and the reverse cable (pages 3-9, 10).
Fill the engine with oil. Check the clutch and reverse gear for smooth operation.
Check for oil leaks.




18–25 N·m
(1.8–2.5 kg·m,
13–18 ft·lb)
100–120 N·m
(10.0–12.0 kg·m,
72–87 ft·lb)
HONDA

RIDE RED

9. ALTERNATOR/STARTER CLUTCH/GEARSHIFT LINKAGE

SERVICE INFORMATION

GENERAL

- This section covers the removal and installation of the starter reduction gear, alternator, starter clutch and gearshift linkage.
- Refer to Section 16 for alternator inspection.

TORQUE VALUES

Flywheel bolt	100—120 N·m (10.0—12.0 kg-m, 72—87 ft-lb)
Starter clutch torx bolt	18—25 N·m (1.8—2.5 kg-m, 13—18 ft-lb)

TOOLS

Common

Flywheel holder	07725—0040000 or strap wrench, commercially available in U.S.A.
Rotor puller	07733—0020001 or 07933—3950000

TROUBLESHOOTING

Engine does not turn
- Faulty one-way starter clutch
- Starter reduction gear broken

Transmission jumps out of gear
- Shift drum stopper broken

Hard to shift
- Shift drum cam plate damage

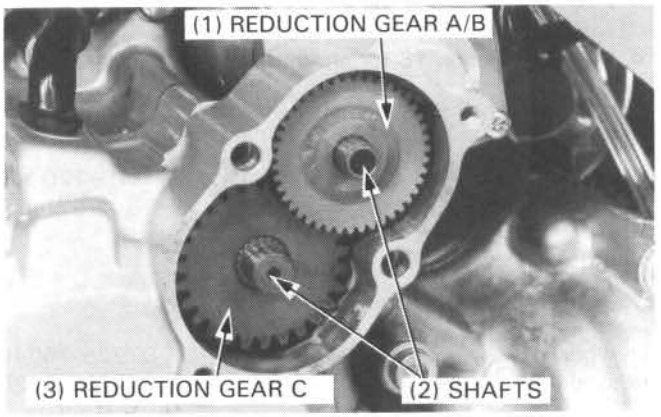
Gearshift pedal will not return
- Weak or broken shift return spring
- Shift spindle binding with case

STARTER REDUCTION GEAR

REMOVAL

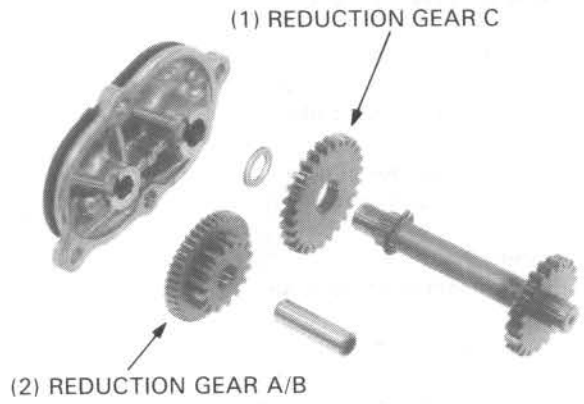
Remove the starter reduction gear cover bolts, cover, gasket and dowel pins.

Remove the reduction gears, A/B and C, and the shafts.



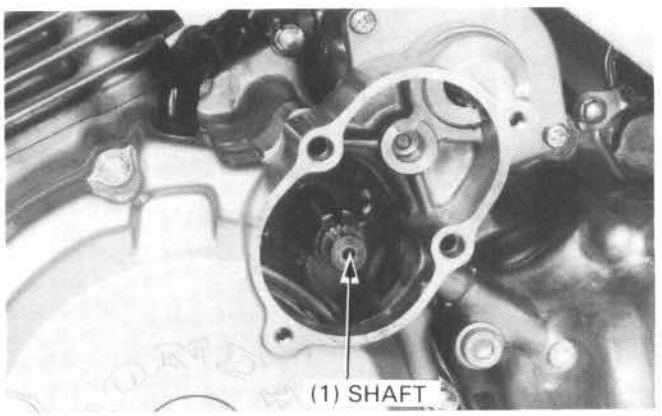
INSPECTION

Inspect the starter reduction gear teeth for wear or damage.



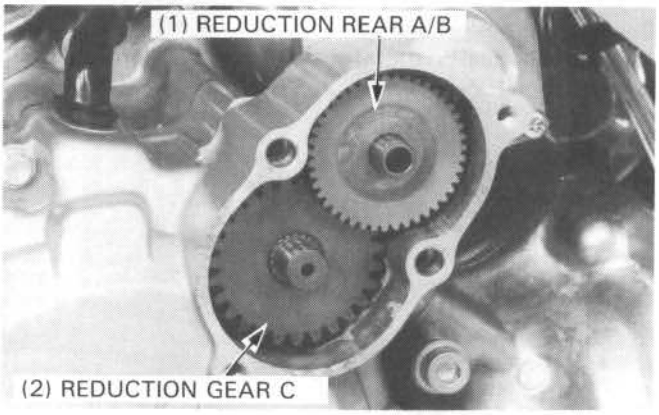
INSTALLATION

Install the starter reduction C shaft into the left crankcase.

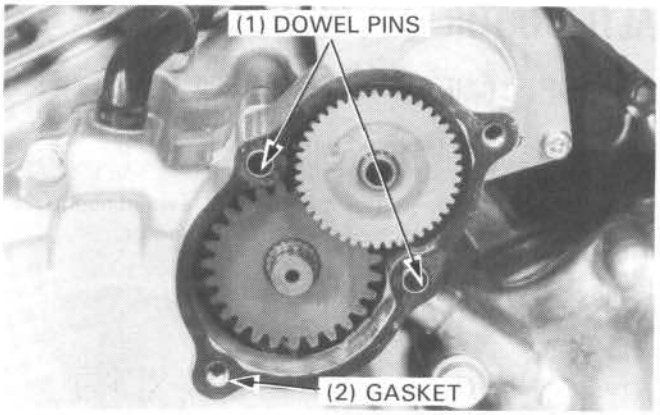


RIDE RED

Install gear C, then install the gear A/B shaft and gear.

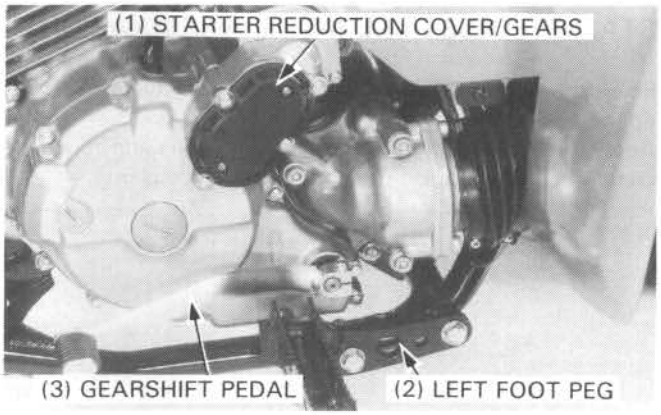


Install the gasket, dowel pins, and starter reduction gear cover with four bolts.

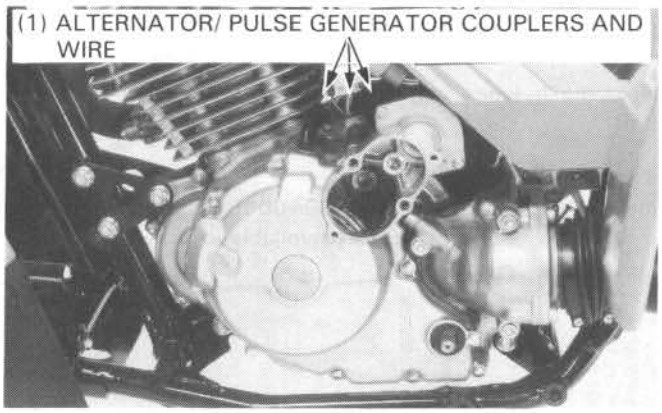


LEFT CRANKCASE COVER REMOVAL

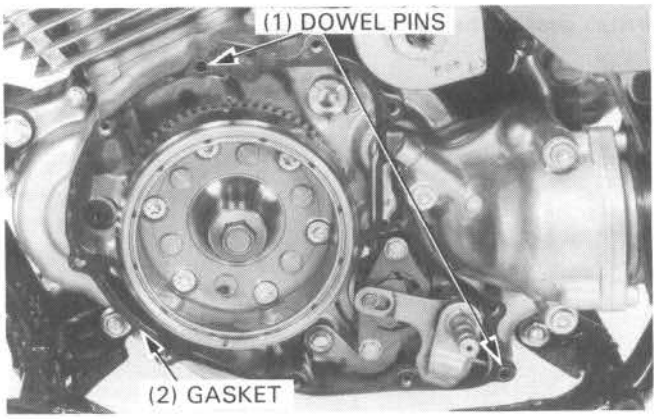
Remove the following:
- starter reduction cover and gears (page 9-2)
- gearshift pedal
- left foot peg.



Disconnect the alternator/pulse generator couplers and exciter wire.
Remove the left crankcase cover mounting bolts and cover.



Remove the gasket and dowel pins.
Check the oil seal on the left crankcase cover for wear or damage. Replace if necessary.



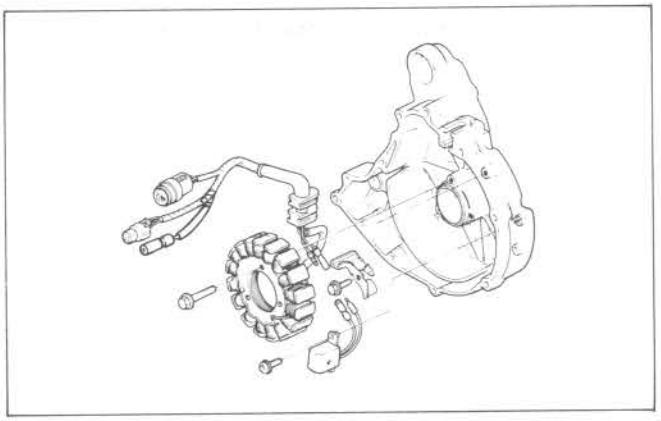
ALTERNATOR

STATOR/PULSE GENERATOR REMOVAL

Remove the wire clamp by removing the bolt.

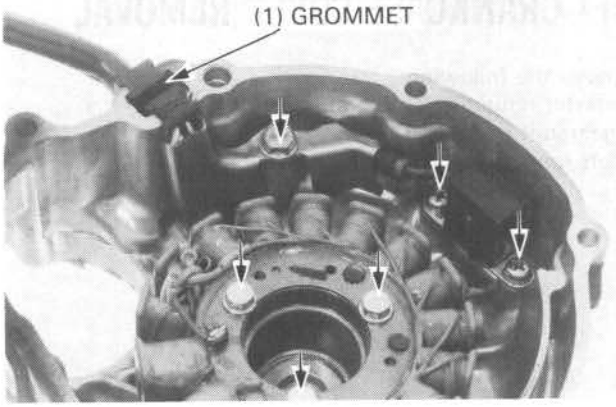
Remove the pulse generator mounting screws, disconnect the wire connector and remove the pulse generator.

Remove the three stator bolts and stator.



STATOR/PULSE GENERATOR INSTALLATION

Insert the wire grommet into the groove in the left crankcase cover.
Apply thread lock agent to the attaching bolts and screws, and install the stator, pulse genearator and wire clamp.

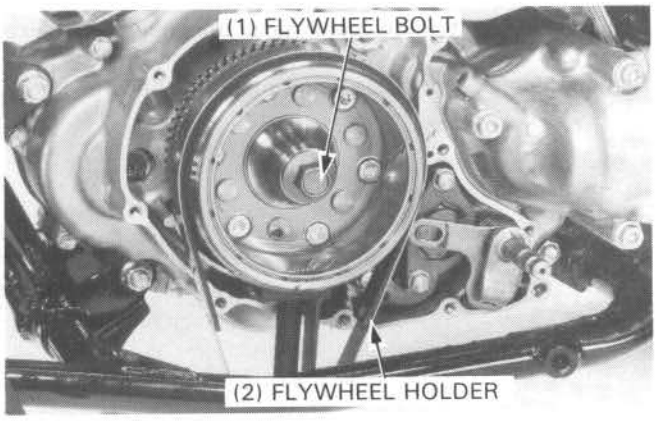


FLYWHEEL REMOVAL

Hold the flywheel with the flywheel holder and remove the bolt.

TOOL

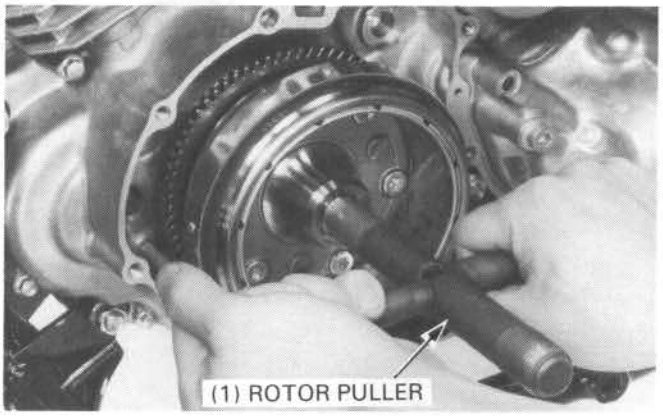
Flywheel holder	**07725—0040000 or strap wrench commercially available in U.S.A.**



RIDE RED

Remove the flywheel with the rotor puller.

TOOL
Rotor puller **07733—0020001 or 07933—3950000**

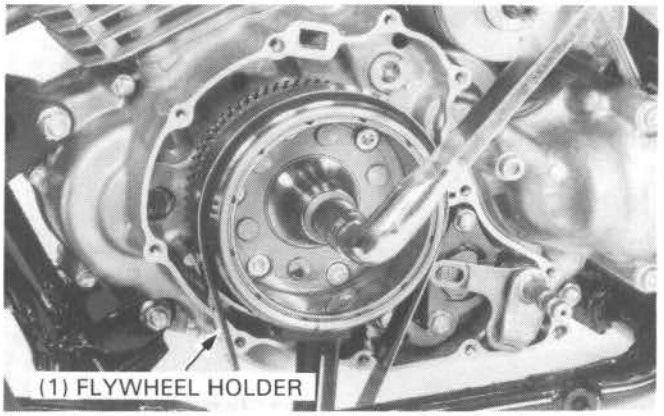


FLYWHEEL INSTALLATION

Align the key way in the flywheel with the key on the crankshaft.
Hold the flywheel with the flywheel holder and tighten the bolt.

TORQUE: 100—120 N·m (10.0—12.0 kg-m, 72—87 ft-lb)

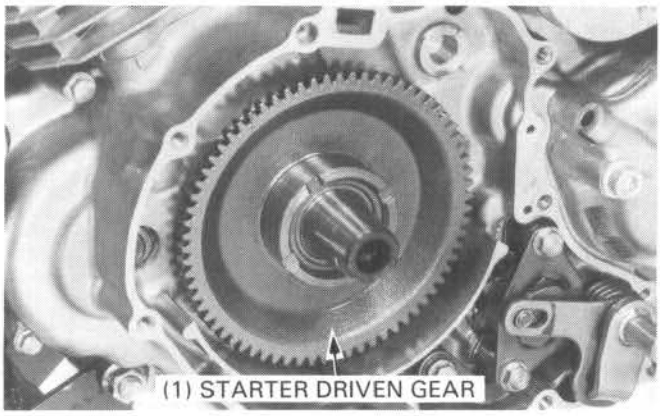
TOOL
Flywheel holder **07725—0040000 or strap wrench commercially available in U.S.A.**



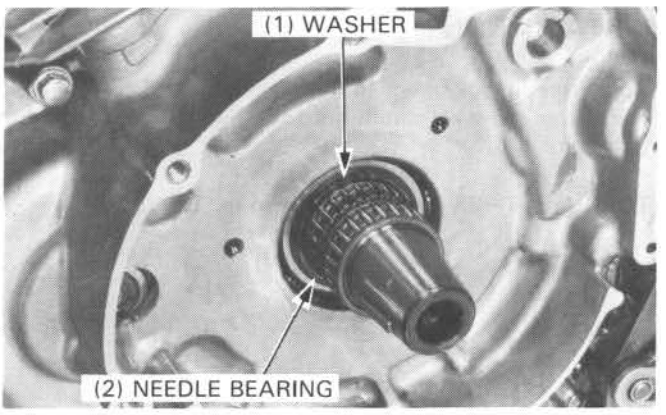
STARTER CLUTCH

REMOVAL

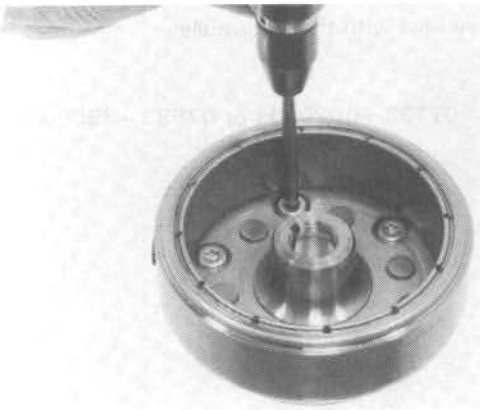
Remove the left crankcase cover and the flywheel (pages 9-3, 4).
Remove the starter driven gear.



Remove the needle bearing and washer.

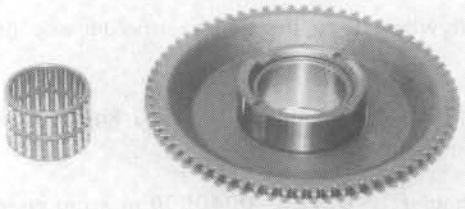


Remove the one-way clutch from the flywheel using a shock driver and torx bit.

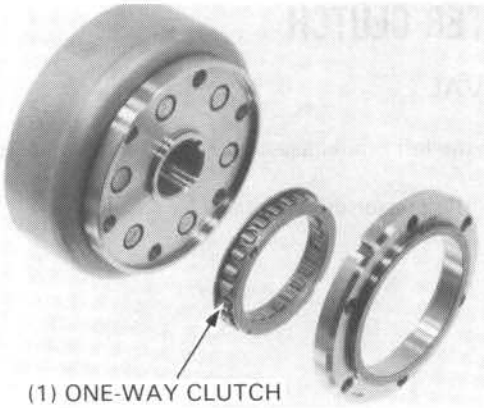


INSPECTION

Inspect the starter driven gear teeth for damage or abnormal wear.
Check the needle bearing for damage.



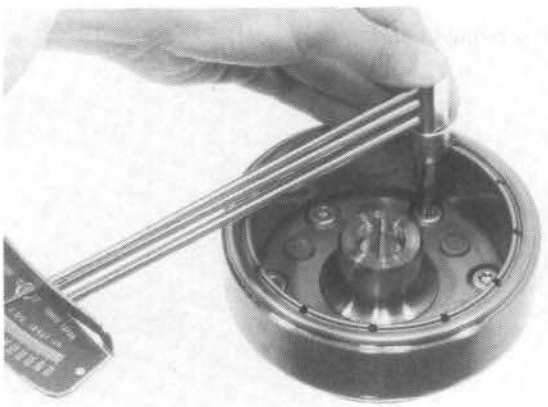
Check the rollers of the one-way starter clutch for wear or damage.



INSTALLATION

Apply thread lock agent to the torx bolts.
Install the one-way clutch onto the flywheel and tighten the torx bolts.

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

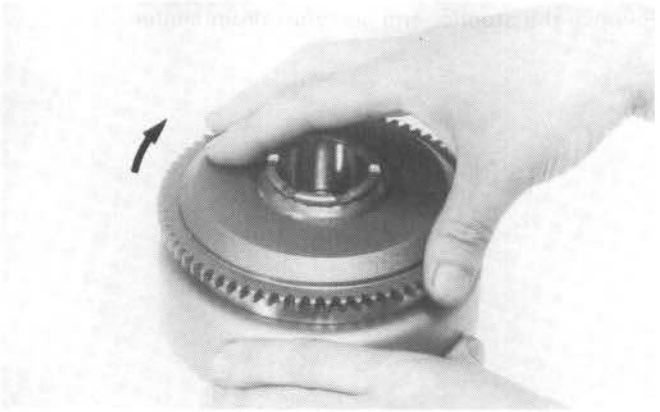


RIDE RED

Install the starter driven gear into the one-way clutch by turning it clockwise.

Check the operation of the one-way clutch by turning the driven gear. You should be able to turn the driven gear clockwise smoothly, but not be able to turn it counterclockwise.

Refer to flywheel installation (page 9-5).

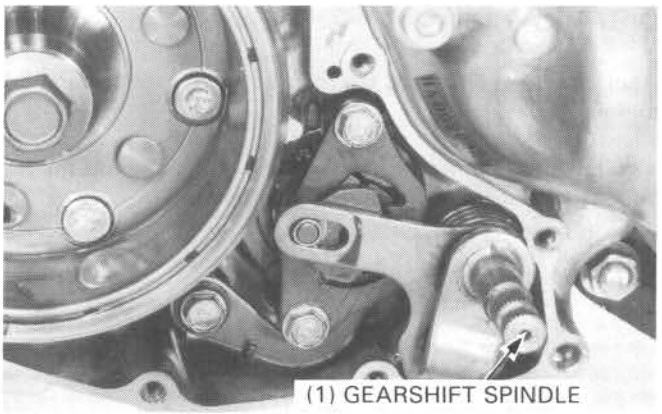


GEARSHIFT LINKAGE

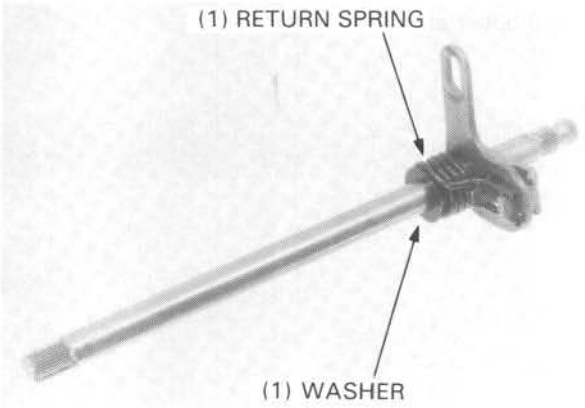
REMOVAL

Remove the following:
- left crankcase cover (page 9-3)
- right crankcase cover (page 8-3)
- clutch lever.

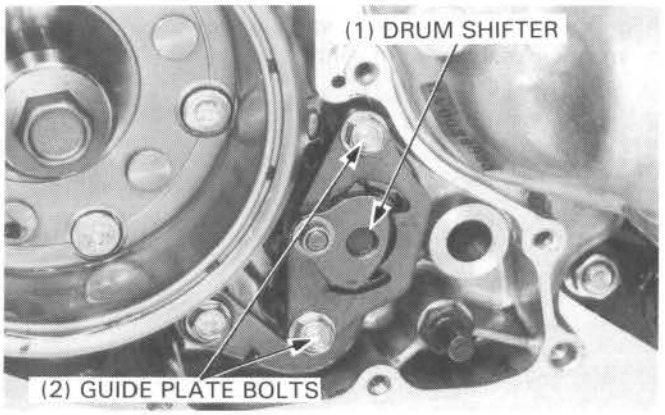
Pull the gearshift spindle out of the crankcase.



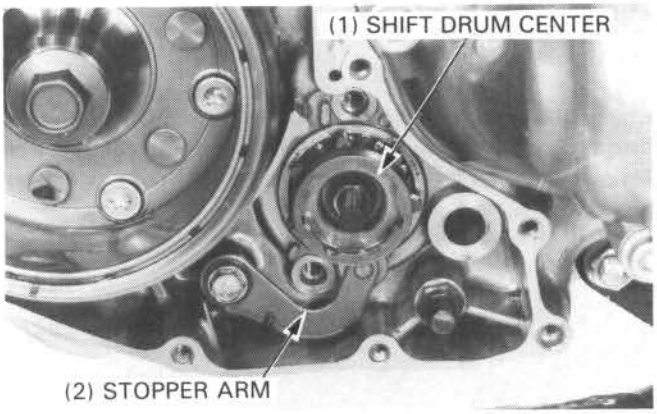
Remove the washer and return spring.
Check the gearshift spindle for bend.



Remove the guide plate bolts, drum shifter with guide plate, dowel pins, bearing stopper plates and collars.



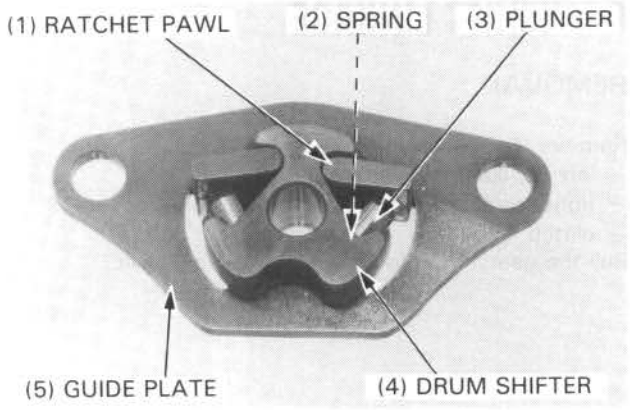
Remove the stopper arm and shift drum center.



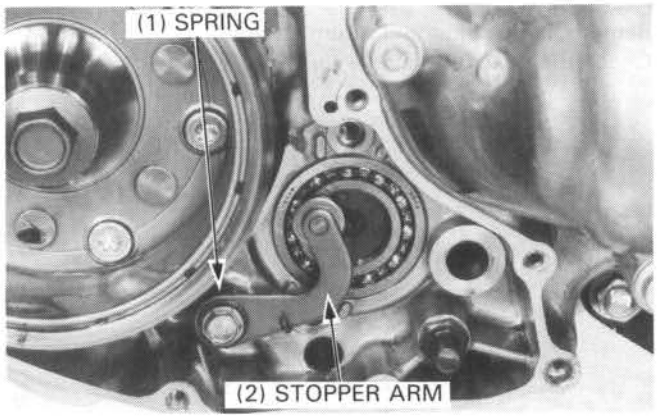
INSTALLATION

Apply clean engine oil to the ratchet pawls, springs and drum shifter.

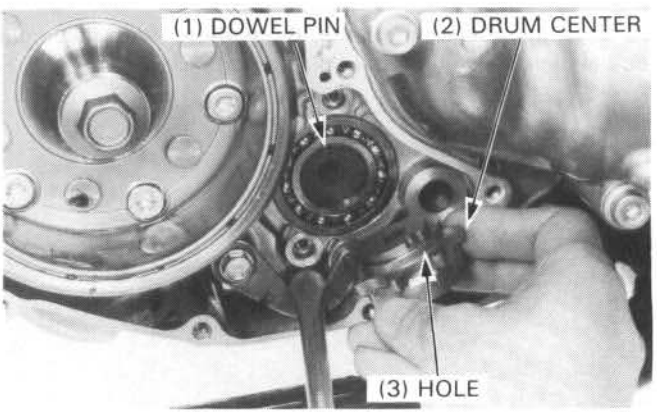
Assemble ratchet pawls, springs and plungers onto the drum shifter, then install them in the guide plate.



Install the stopper arm and spring.

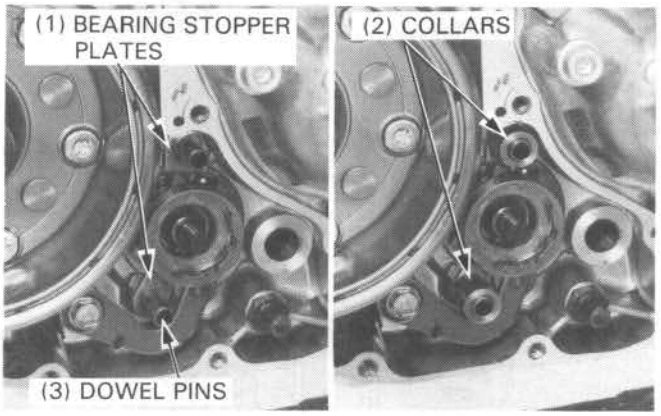


Align the drum center hole with the dowel pin on the shift drum and install the drum center.



RIDE RED

Tighten the drum center pin.
Install the bearing stopper plates, dowel pins and collars onto the crankcase.

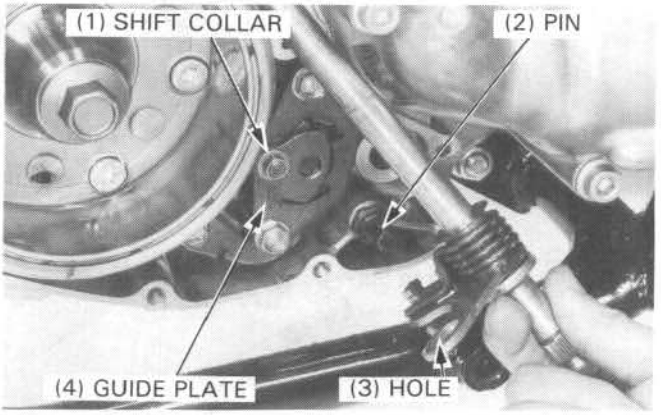


Install the guide plate and drum shifter assembly.

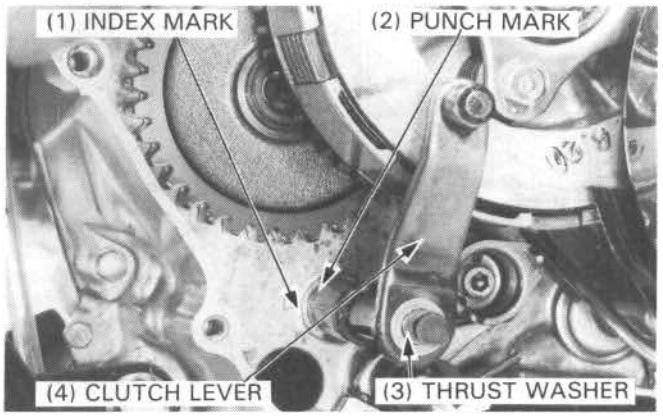
Assemble the gearshift spindle, gearshift arm and shift return spring.

Install the shift collar onto the drum shifter pin.

Align the end of the return spring with the shift return spring pin, and the hole of the gearshift spindle with the shift collar and install the gearshift spindle.



Align the index mark on the crankcase with the punch mark on the clutch lever and install the clutch lever.
Install the thrust washer.
Install the right crankcase cover (page 8-21).
Install the left crankcase cover.



LEFT CRANKCASE COVER INSTALLATION

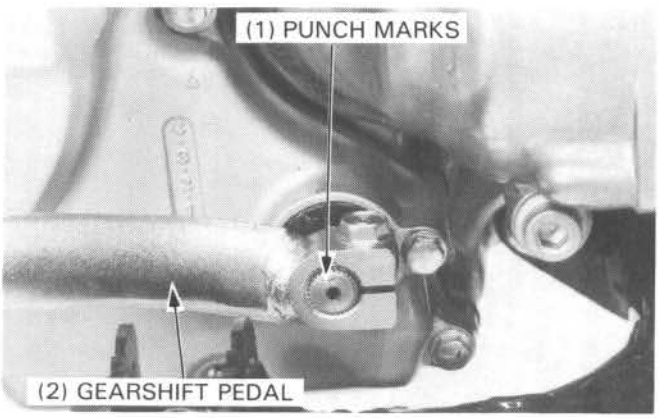
Install a new gasket, the dowel pins, the left crankcase cover and cover bolts.

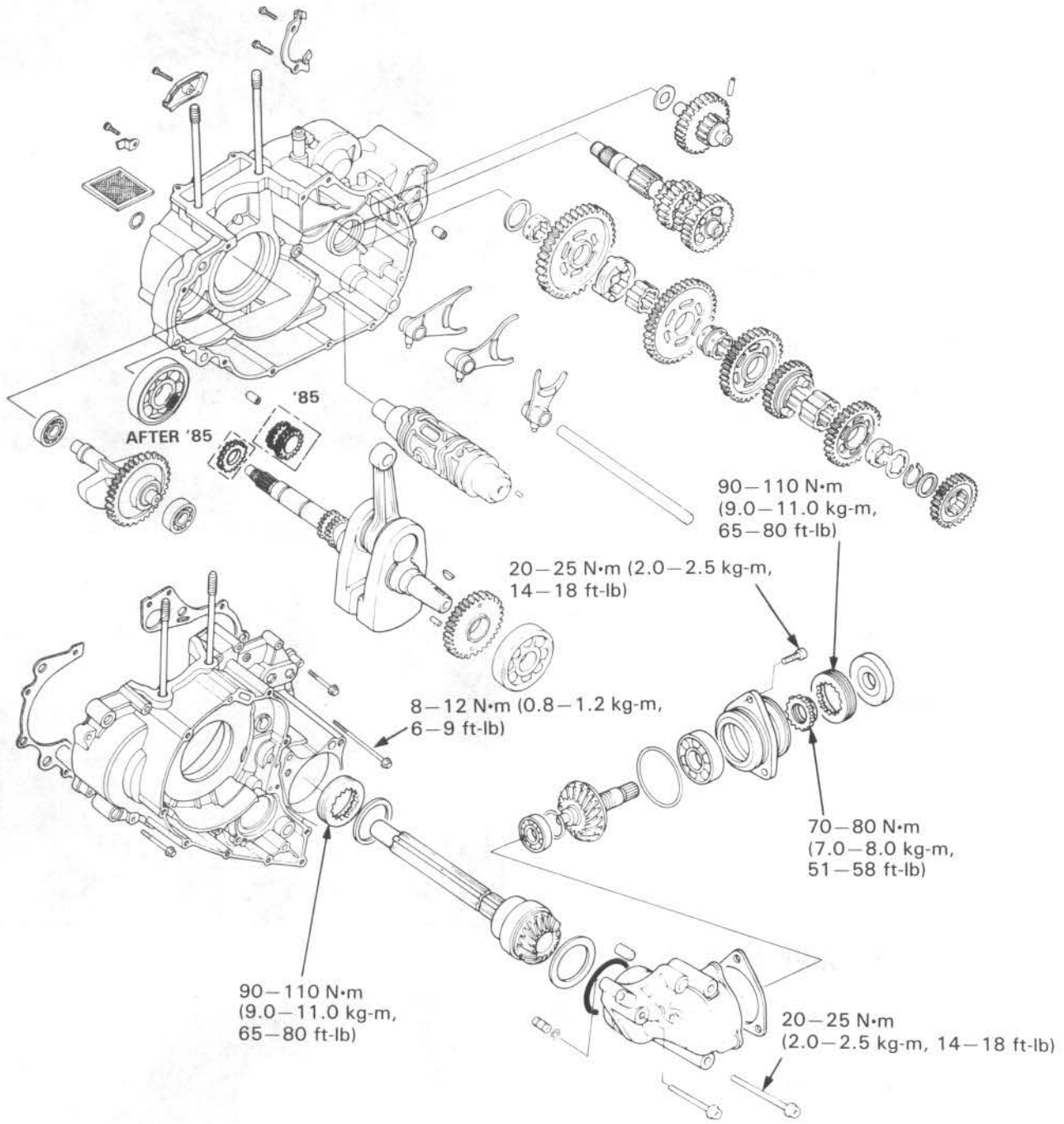
Install the starter reduction gears and cover (page 9-2).
Connect the alternator/pulse generator couplers.

Align the punch marks on the gearshift pedal and gearshift spindle and install the pedal.

Install the left footpeg.
Check the operation of the gearshift mechanism.

Check the ignition timing (page 15-4).




'85
AFTER '85
90–110 N·m
(9.0–11.0 kg-m,
65–80 ft-lb)
20–25 N·m (2.0–2.5 kg-m,
14–18 ft-lb)
8–12 N·m (0.8–1.2 kg-m,
6–9 ft-lb)
70–80 N·m
(7.0–8.0 kg-m,
51–58 ft-lb)
90–110 N·m
(9.0–11.0 kg-m,
65–80 ft-lb)
20–25 N·m
(2.0–2.5 kg-m, 14–18 ft-lb)

RIDE RED

10. CRANKCASE/CRANKSHAFT/TRANSMISSION

SERVICE INFORMATION

GENERAL

- For crankshaft and transmission repair, the crankcase must be separated.
- Remove the following parts before separating the crankcase.
  - Cylinder head (section 6)
  - Clutch, oil pump and kick starter (section 8)
  - Alternator and gearshift linkage (section 9)
  - Cylinder and piston (section 7)
  - Starter motor (section 17)
- Use soft jaws to prevent damage to the output gear case when placing the case in a vise.
- When replacing the following output gear components, a new adjustment shim must be selected.
  - Output gear case
  - Output gear assembly
  - Output gear bearing
  - Output gear bearing holder
- Replace the output drive and driven gear as a set.
- When using the lock nut wrench, use a deflecting beam type torque wrench 20 inches long. The lock nut wrench increases the torque wrench's leverage, so the torque wrench reading will be less than the torque actually applied to the lock nut. The specification given is the actual torque applied to the lock nut, not the reading on the torque wrench when used with the lock nut wrench. The torque scale reading is given with the actual torque specifications.

SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod small end I.D.		19.020–19.041 mm (0.7488–0.7496 in)	19.07 mm (0.751 in)
	Connecting rod big end axial clearance		0.05–0.65 mm (0.002–0.026 in)	0.80 mm (0.031 in)
	Connecting rod big end radial clearance		0.006–0.018 mm (0.0002–0.0007 in)	0.05 mm (0.002 in)
	Runout		—	0.05 mm (0.002 in)
Shift fork, shaft	Fork	I.D.	13.000–13.021 mm (0.5118–0.5126 in)	13.04 mm (0.513 in)
		Claw thickness	4.93–5.00 mm (0.194–0.197 in)	4.50 mm (0.177 in)
	Shaft O.D.		12.966–12.984 mm (0.5105–0.5112 in)	12.96 mm (0.510 in)
Trans-mission	Gear I.D.	M4	25.000–25.021 mm (0.9843–0.9851 in)	25.05 mm (0.986 in)
		M5	20.020–20.041 mm (0.7882–0.7890 in)	20.07 mm (0.790 in)
		C1, C2, C3, CR	28.020–28.041 mm (1.1031–1.1040 in)	28.07 mm (1.105 in)
		R idler	18.000–18.021 mm (0.7087–0.7095 in)	18.05 mm (0.711 in)
	Shaft O.D.	M4	21.959–21.980 mm (0.8645–0.8654 in)	21.93 mm (0.863 in)
		M5	16.983–16.994 mm (0.6686–0.6691 in)	16.95 mm (0.667 in)
		R idler	13.966–13.984 mm (0.5498–0.5506 in)	13.93 mm (0.548 in)

ITEM			STANDARD	SERVICE LIMIT
Trans-mission	Gear bushing	C1 O.D.	27.984–28.005 mm (1.1017–1.1026 in)	27.93 mm (1.100 in)
		C2, CR O.D.	27.979–28.000 mm (1.1015–1.1024 in)	27.93 mm (1.100 in)
		C3 O.D.	27.959–27.980 mm (1.1017–1.1026 in)	27.93 mm (1.100 in)
		M4 O.D.	24.959–24.980 mm (0.9826–0.9835 in)	24.93 mm (0.981 in)
		M4 I.D.	22.000–22.021 mm (0.8661–0.8670 in)	22.05 mm (0.868 in)
		M5 O.D.	19.959–19.980 mm (0.7858–0.7866 in)	19.93 mm (0.785 in)
		M5 I.D.	17.016–17.034 mm (0.6699–0.6706 in)	17.06 mm (0.672 in)
		R O.D.	17.966–17.984 mm (0.7073–0.7080 in)	17.93 mm (0.706 in)
		R I.D.	14.000–14.025 mm (0.5512–0.5522 in)	14.05 mm (0.553 in)
	Gear-to-bushing clearance	M4	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		M5	0.040–0.082 mm (0.0016–0.0032 in)	0.10 mm (0.004 in)
		C1	0.015–0.057 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)
		C2, CR	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		C3	0.040–0.082 mm (0.0016–0.0032 in)	0.10 mm (0.004 in)
		R	0.016–0.055 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)
	Bushing-to-shaft clearance	M4	0.020–0.062 mm (0.0008–0.0024 in)	0.10 mm (0.004 in)
		M5	0.022–0.051 mm (0.0009–0.0020 in)	0.10 mm (0.004 in)
		R	0.016–0.059 mm (0.0006–0.0023 in)	0.10 mm (0.004 in)
Output gear backlash			0.080–0.180 mm (0.0031–0.0071 in)	0.25 mm (0.010 in)

TORQUE VALUES

Crankcase bolts	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Output gear case socket bolt	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
Output gear bearing lock nut (Outer)	90–110 N·m (9.0–11.0 kg-m, 65–80 ft-lb)
(Inner)	70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)
Output gear bearing holder socket blot	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)

RIDE RED

TOOLS

Special

Bearing remover, 17 mm	07936—3710300
Remover weight	07741—0010201 or 07936—3710200
Remover handle	07936—3710100
Shaft holder	07924—ME50000
Lock nut wrench, 30 x 64 mm	07916—MB00001 or 07916—MB00000 and Attachment 07916—HA0020A (U.S.A. only)
Bearing remover, 15 mm	07936—KC10000
Lock nut wrench, 34 x 44 mm	07916—ME50001 or 07916—ME50000 and Attachment 07916—HA0010A (U.S.A. only)
Universal bearing puller	07631—0010000 or equivalent commercially available in U.S.A.
Crank assembly tool set	07931—KF00000
—Crankshaft assembly collar	07931—KF00100
—Shaft puller	07931—ME40000
—Threaded adaptor	07931—KF00200
Attachment, 28 x 30 mm	07946—1870100
Attachment	07946—HA00000

Common

Driver	07749—0010000
Attachment, 72 x 75 mm	07746—0010600
Attachment, 37 x 40 mm	07746—0010200
Pilot, 35 mm	07746—0040800
Pilot, 17 mm	07746—0040400
Attachment, 52 x 55 mm	07746—0010400
Pilot, 22 mm	07746—0041000
Pilot, 28 mm	07746—0041100
Attachment, 42 x 47 mm	07746—0010300
Pilot, 20 mm	07746—0040500
Pilot, 25 mm	07746—0040600
Driver C	07746—0030100
Attachment, 30 mm I.D.	07746—0030300
Pilot, 15 mm	07746—0040300

TROUBLESHOOTING

Crankshaft noisy
- Worn connecting rod big end bearing
- Bent connecting rod
- Worn crankshaft main journal bearing

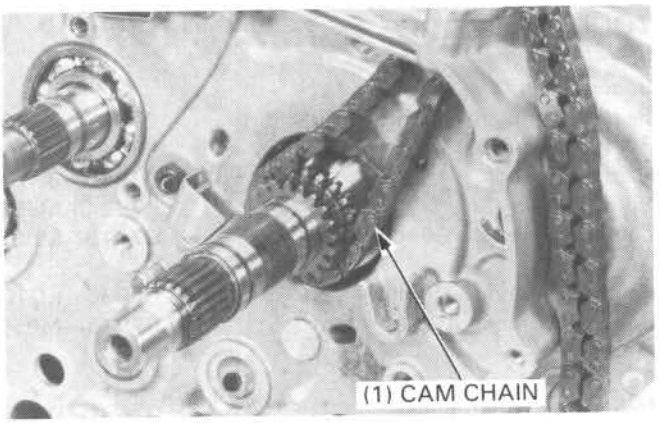
Jumps out of gear
- Shift fork bent or damaged
- Shift fork shaft bent
- Shift claw bent
- Gear engagement dogs or slots worn
- Shift drum cam grooves damaged

Hard to shift
- Incorrect clutch adjustment
- Shift fork bent or damaged
- Shift fork shaft bent

Excessive output gear noise
- Output drive and driven gears worn or damaged
- Bearing worn or damaged
- Excessive backlash between output drive and driven gears
- Improper shim thickness

CRANKCASE SEPARATION

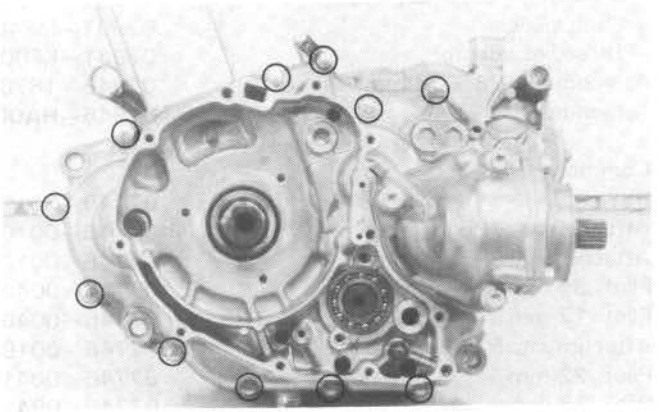
Remove the cam chain.



Remove the left crankcase bolts.

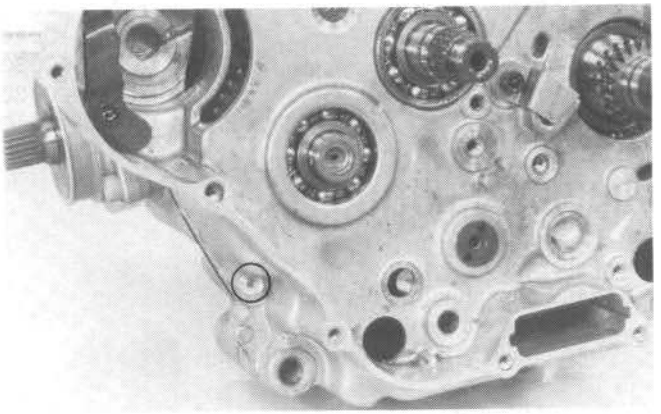
NOTE

- Loosen the bolts in a crisscross pattern in 2 or 3 steps to prevent crankcase distortion.



Remove the right crankcase cover bolt. Place the engine with the left crankcase down and remove the right crankcase.

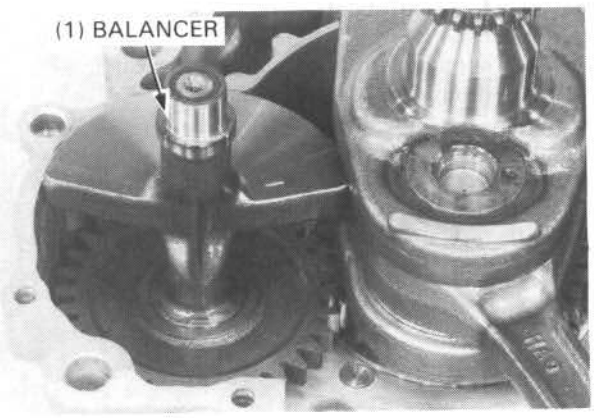
Remove the dowel pins and gasket.



CRANKSHAFT

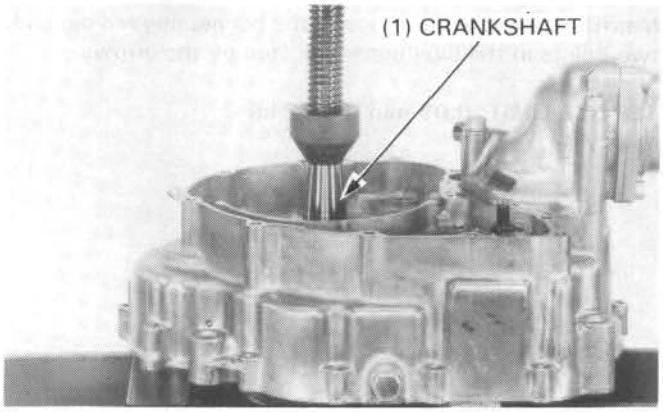
REMOVAL

Remove the balancer from the left crankcase.



RIDE RED

Disassemble the transmission (page 10-7).
Remove the crankshaft from the left crankcase using a hydraulic press.



If the left crankshaft bearing remains on the crankshaft, remove it with bearing puller.

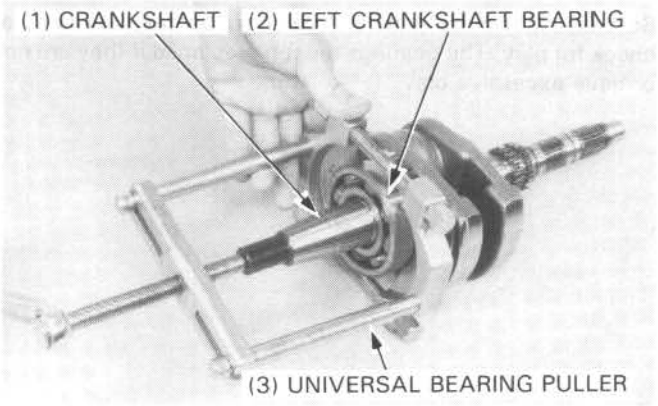
TOOL

Universal bearing puller	**07631—0010000 or equivalent commercially available in U.S.A.**

If the bearing remains in the left crankcase, remove it with the driver and attachment.

TOOLS

Driver	**07749—0010000**
Attachment, 42 x 47 mm	**07746—0010300**



Discard the left crankshaft bearing.

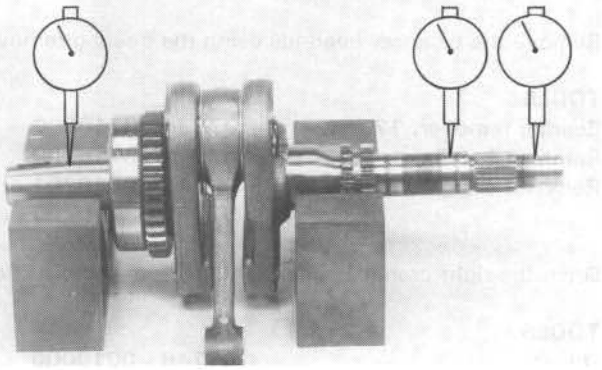
NOTE

- Always replace the left bearing with a new one whenever the crankshaft is removed from the left crankcase.

INSPECTION

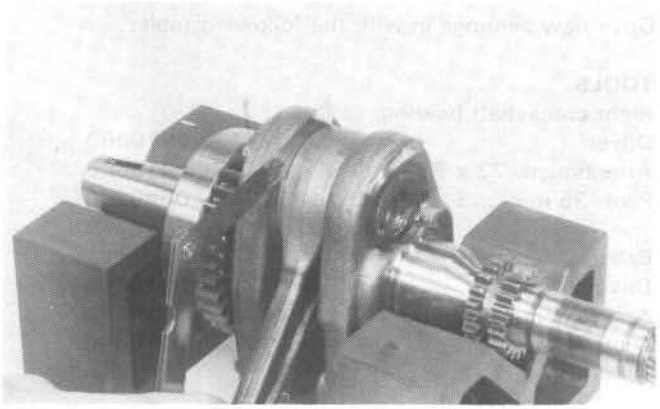
Set the crankshaft on a stand or V-blocks and read the runout using dial indicators.

SERVICE LIMIT: 0.05 mm (0.002 in)



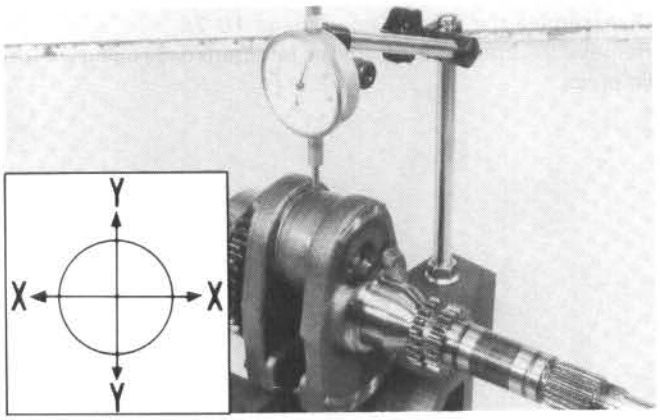
Measure the side clearance between the connecting rod big end and the crankshaft flyweight with a feeler gauge.

SERVICE LIMIT: 0.80 mm (0.031 in)

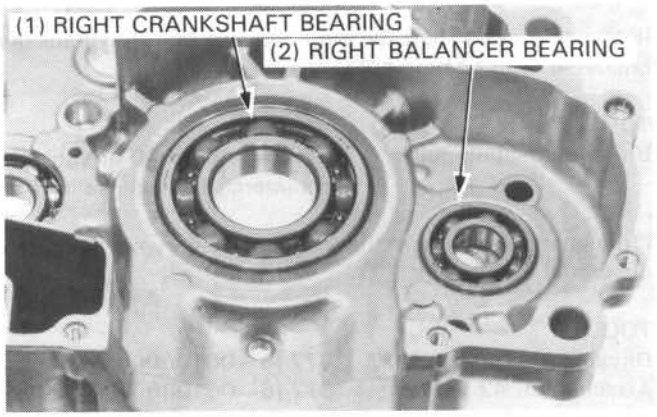


Measure the radial clearance at the connecting rod big end, at two points in the directions indicated by the arrows.

SERVICE LIMIT: 0.05 mm (0.002 in)



Spin the right crankshaft and balancer bearings by hand and check for play. The bearings must be replaced if they are noisy or have excessive play.

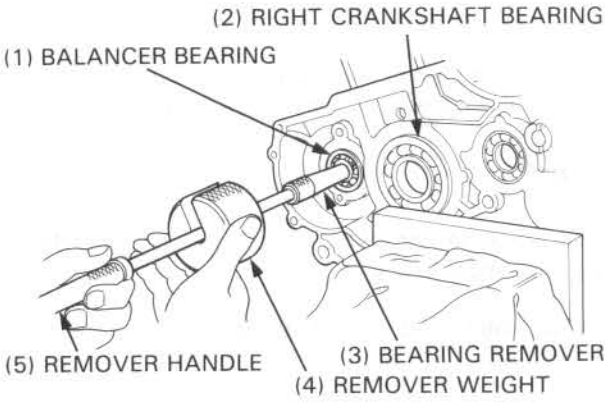


BEARING REPLACEMENT

Remove the balancer bearings using the bearing remover tool.

TOOLS

Bearing remover, 17 mm	**07936–3710300**
Remover handle	**07936–3710100**
Remover weight	**07741–0010201 or 07936–3710200**



Drive the right crankcase bearing out from the outside.

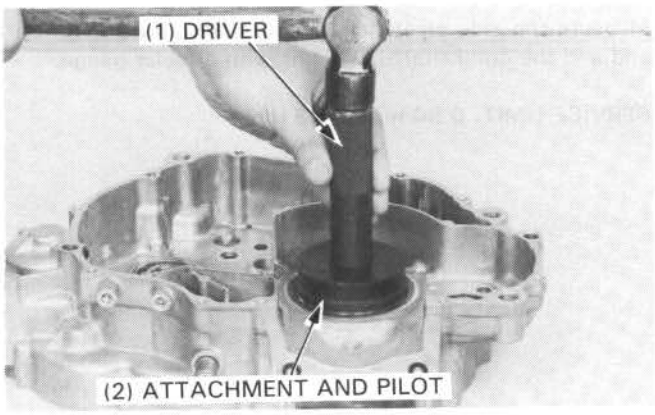
TOOLS

Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**

Drive new bearings in with the following tools.

TOOLS

Right crankshaft bearing:	
Driver	**07749–0010000**
Attachment, 72 x 75 mm	**07746–0010600**
Pilot, 35 mm	**07746–0040800**
Balancer bearings:	
Driver	**07749–0010000**
Attachment, 37 x 40 mm	**07746–0010200**
Pilot, 17 mm	**07746–0040400**



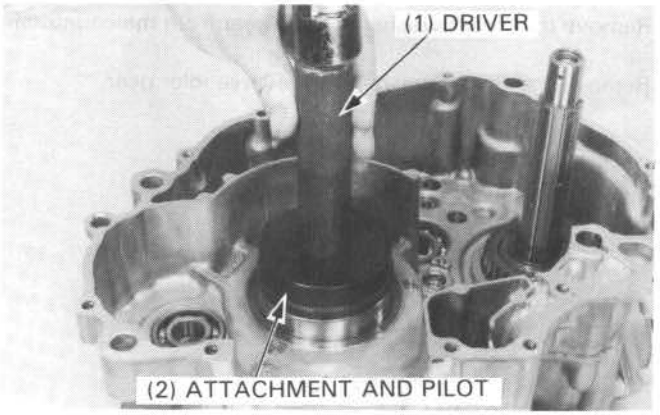
RIDE RED

INSTALLATION

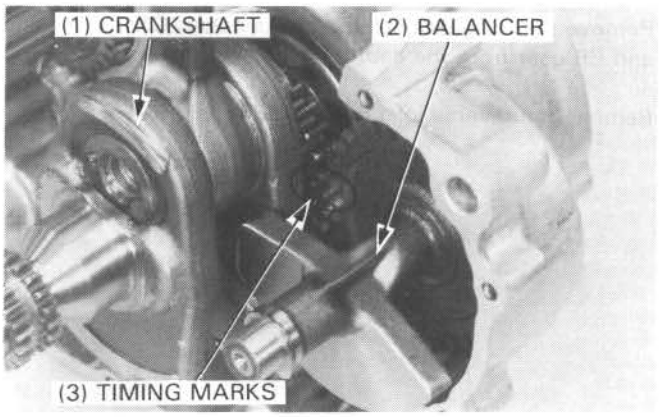
Drive a new crankshaft bearing into the left crankcase.

TOOLS

Driver	**07749—0010000**
Attachment, 72 x 75 mm	**07746—0010600**
Pilot, 35 mm	**07746—0040800**



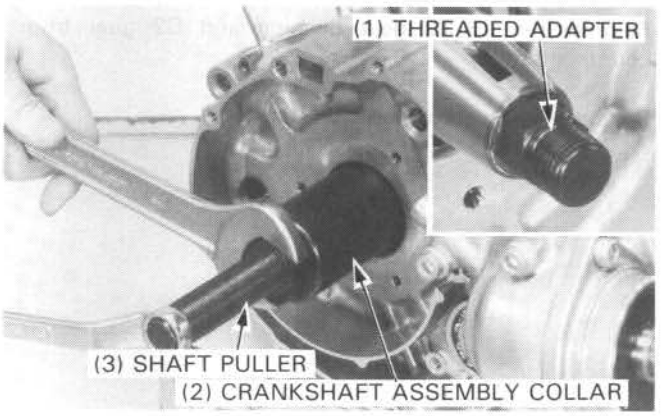
Align the timing marks on the balancer gear and crankshaft gear, and install the balancer and crankshaft into the left crankcase.



Draw the crankshaft into the left crankcase using the special tools.

TOOLS

Crank assembly tool set	**07931—KF00000**
—Threaded adapter	**07931—KF00200**
—Shaft puller	**07931—ME40000**
—Crankshaft assembly collar	**07931—KF00100**

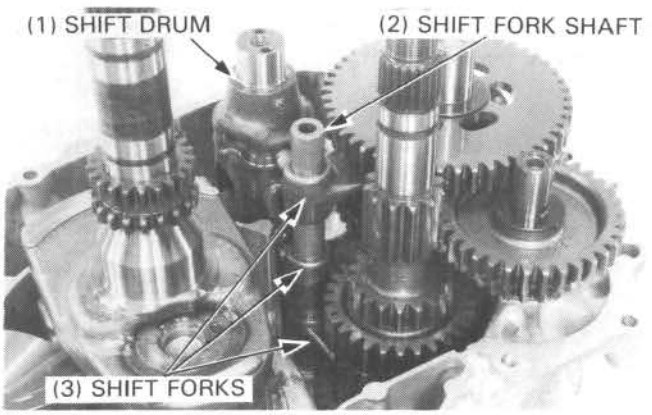


TRANSMISSION

DISASSEMBLY

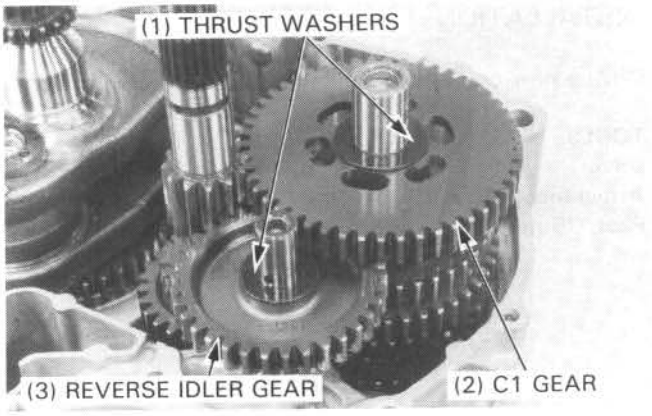
Temporarily install the gearshift drum bearing stopper plates, dowel pins, collars and shifter plate (page 9-9) to prevent the bearing from falling out while disassmbling and assembling the transmission.

Pull the gearshift fork shaft out and remove the shift forks and shift drum.



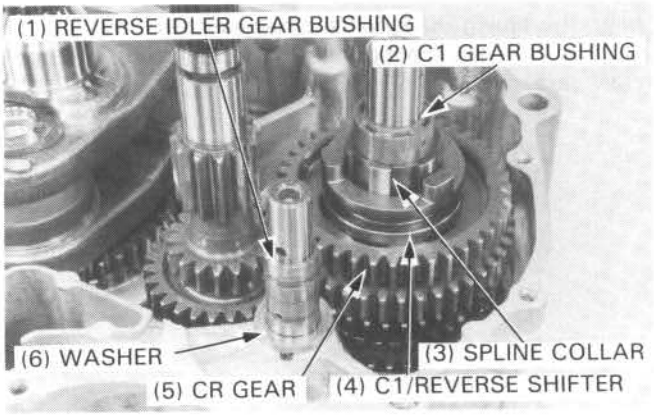
Remove the thrust washer and C1 gear from the countershaft.

Remove the thrust washer and reverse idler gear.



Remove the C1 gear bushing, spline collar, C1/reverse shifter and CR gear from the countershaft.

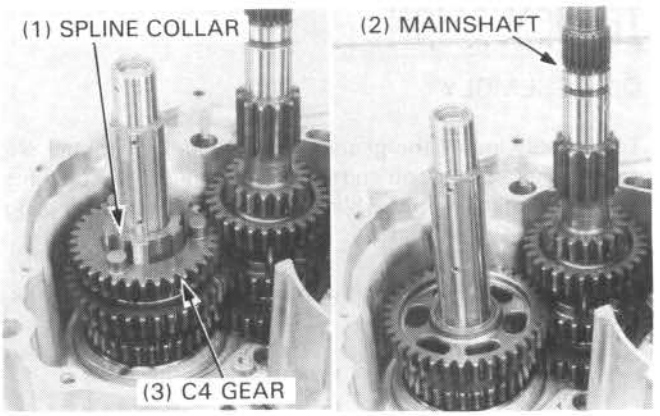
Remove the reverse idler gear bushing and washer.



Remove the CR/C2 gear bushing and C2 gear from the countershaft.

Remove the reverse idler gear shaft.

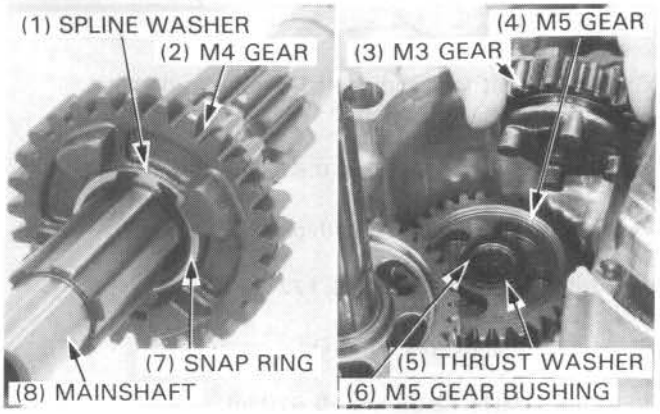
Remove the spline collar and C4 gear from the countershaft and remove the mainshaft.



RIDE RED

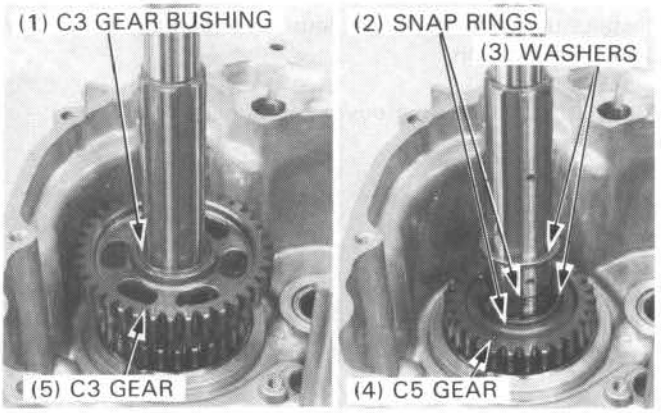
Remove the snap ring, spline washer, M4 gear and bushing from the mainshaft.

Remove the M3 gear, M5 gear bushing, M5 gear and thrust washer from the left crankcase.

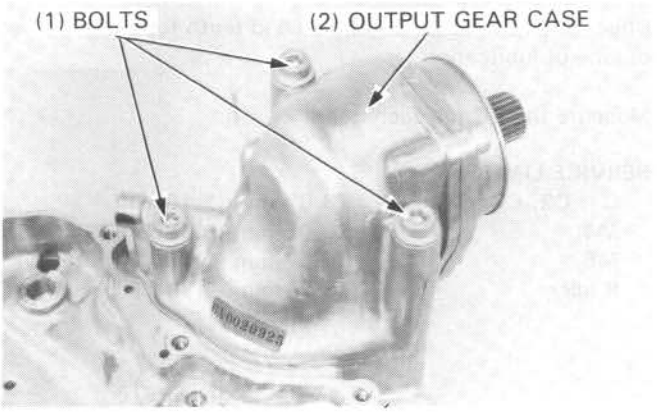


Remove the C3 gear and bushing from the countershaft.

Remove the snap rings, washers and the C5 gear.

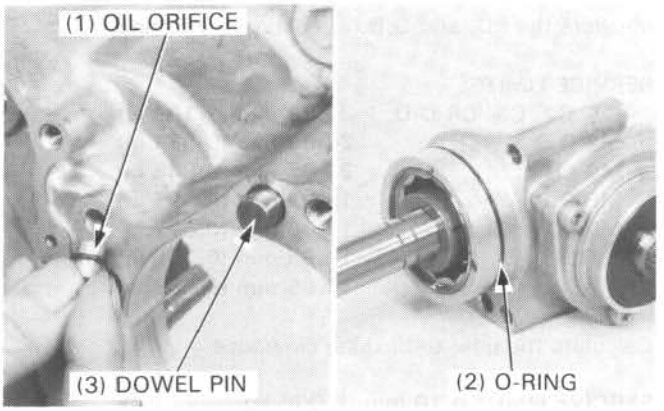


Remove the three output gear case mounting bolts and remove the output gear case.

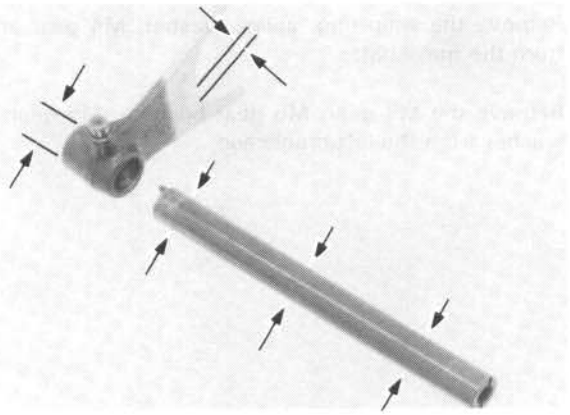


Remove the oil orifice and dowel pin from the left crankcase.

Remove the O-ring from the output gear case.



INSPECTION



Check the shift fork and shaft for wear or damage.
Measure the I.D. of the shaft hole.

SERVICE LIMIT: 13.04 mm (0.513 in)

Measure the shift fork claw thickness.

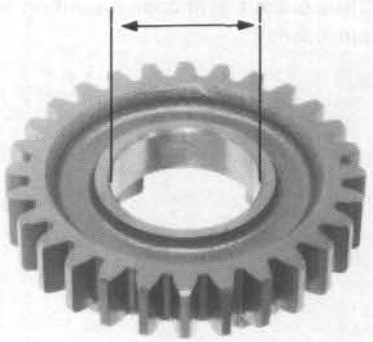
SERVICE LIMIT: 4.50 mm (0.177 in)

Measure the shift fork shaft O.D.

SERVICE LIMIT: 12.96 mm (0.510 in)

Inspect the shift drum right journal for scoring, scratches, or lack of lubrication.

Check the shift drum grooves for damage.

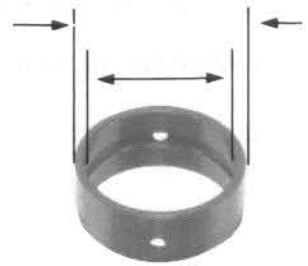


Check the gear dogs, dog holes and teeth for abnormal wear, or lack of lubrication.

Measure the I.D. of each gear.

SERVICE LIMITS:

C1, C2, C3, CR	28.07 mm (1.105 in)
M4	25.05 mm (0.986 in)
M5	20.07 mm (0.790 in)
R idler	18.05 mm (0.711 in)



Measure the I.D. and O.D. of each gear bushing.

SERVICE LIMITS:

C1, C2, C3, CR O.D.	27.93 mm (1.100 in)
M4 O.D.	24.93 mm (0.981 in)
M4 I.D.	22.05 mm (0.868 in)
M5 O.D.	19.93 mm (0.785 in)
M5 I.D.	17.06 mm (0.672 in)
R O.D.	17.93 mm (0.706 in)
R I.D.	14.05 mm (0.553 in)

Calculate the gear-to-bushing clearance.

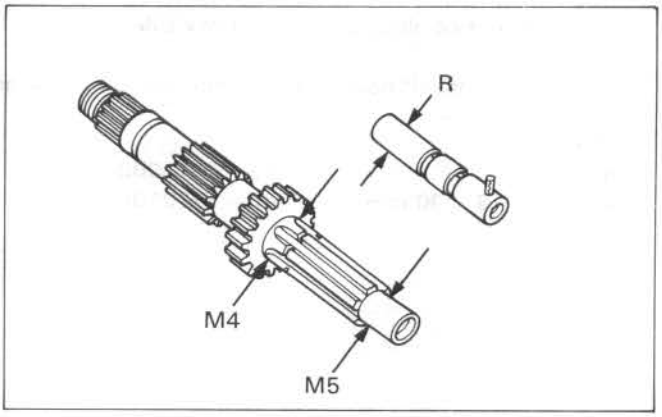
SERCIVE LIMIT: 0.10 mm (0.004 in)

RIDE RED

Measure the O.D. of the countershaft and reverse idler shaft.

SERVICE LIMITS:

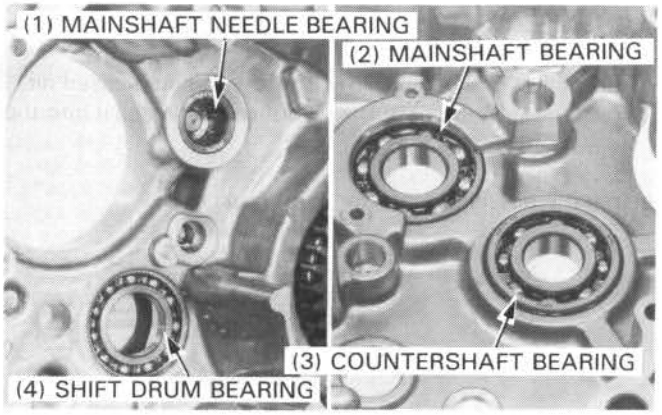
M4	**21.93 mm (0.863 in)**
M5	**16.95 mm (0.667 in)**
R	**13.93 mm (0.548 in)**



Calculate the gear bushing-to-shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

Check the transmission bearings for excessive play or damage and replace if necessary.



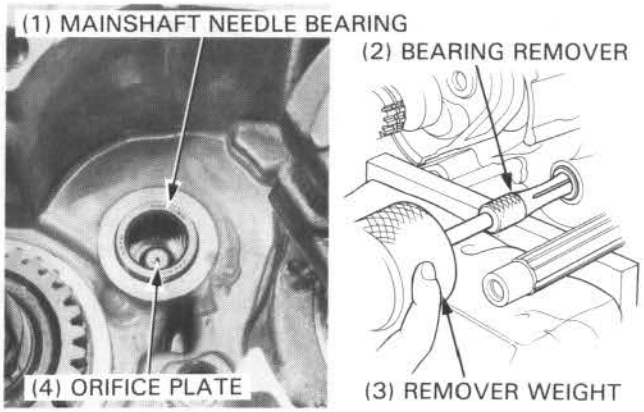
BEARING REPLACEMENT

Crush the convex portion of the orifice plate in the mainshaft bearing hole to set the bearing remover expander properly.

Remove the mainshaft bearing from the left crankcase.

TOOLS

Bearing remover, 17 mm	**07936–3710300**
Remover handle	**07936–3710100**
Remover weight	**07936–3710200 or 07741–0010201**



Remove the mainshaft and countershaft bearings from the right crankcase.
Remove the gearshift drum bearings from the left crankcase.

Drive new bearings in with the following tools.

TOOLS

LEFT CRANKCASE

Gearshift drum bearing:

Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**
Pilot, 25 mm	**07746–0040600**

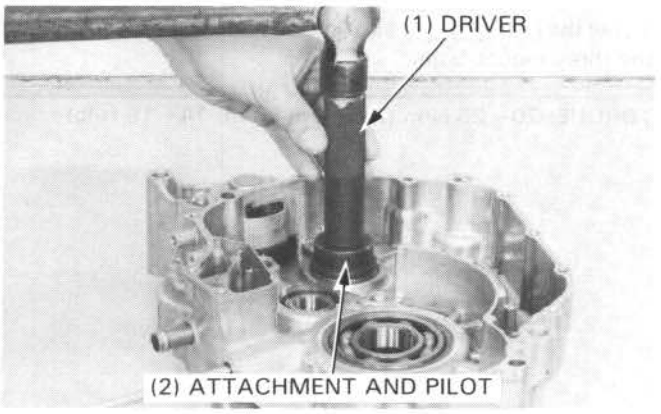
RIGHT CRANKCASE

Mainshaft bearing:

Driver	**07749–0010000**
Attachment, 52 x 55 mm	**07746–0010400**
Pilot, 22 mm	**07746–0041000**

Countershaft bearing:

Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**
Pilot, 20 mm	**07746–0040500**

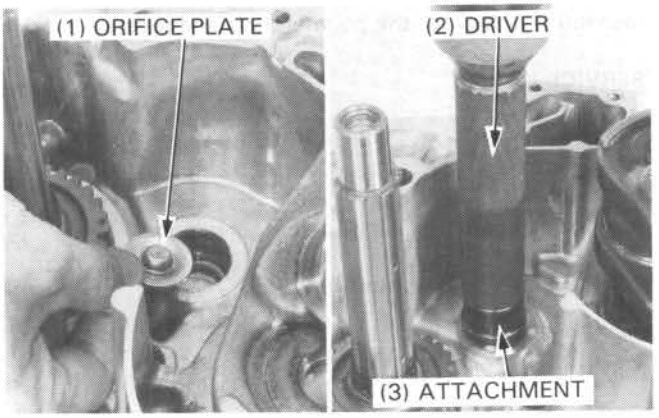


Install a new orifice plate with the convex side facing out.

Press a new mainshaft needle bearing into the left crankcase.

TOOLS

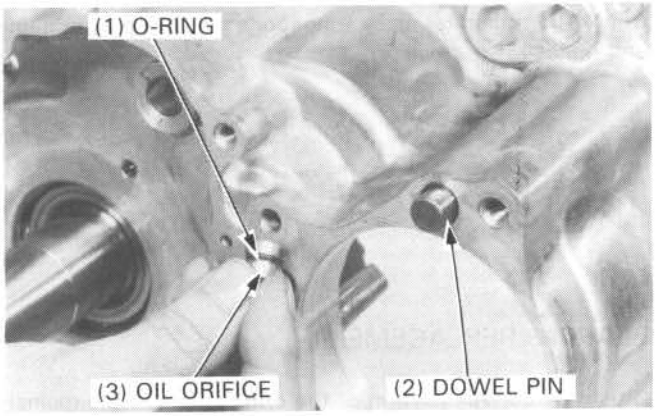
Driver	**07749—0010000**
Attachment, 28 x 30 mm	**07946—1870100**



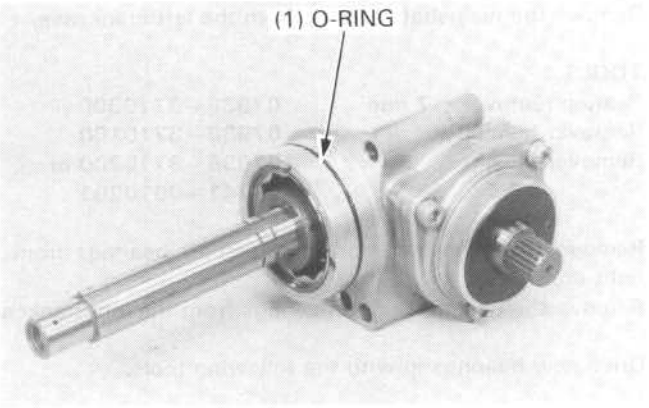
ASSEMBLY

Clean the oil orifice and blow it out with compressed air. Install a new O-ring onto the oil orifice and install it into the oil hole.

Install the dowel pin into the left crankcase.

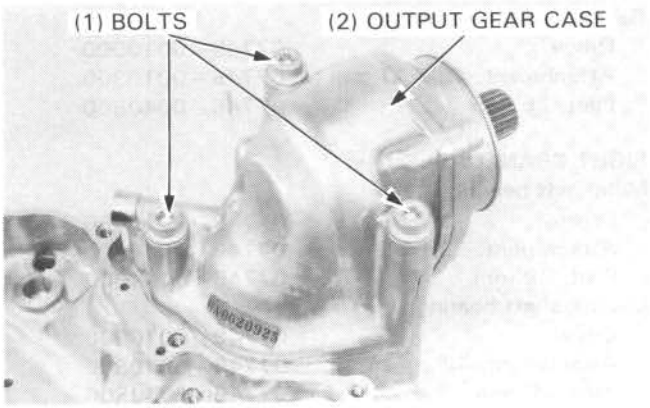


Install a new O-ring onto the output gear case.



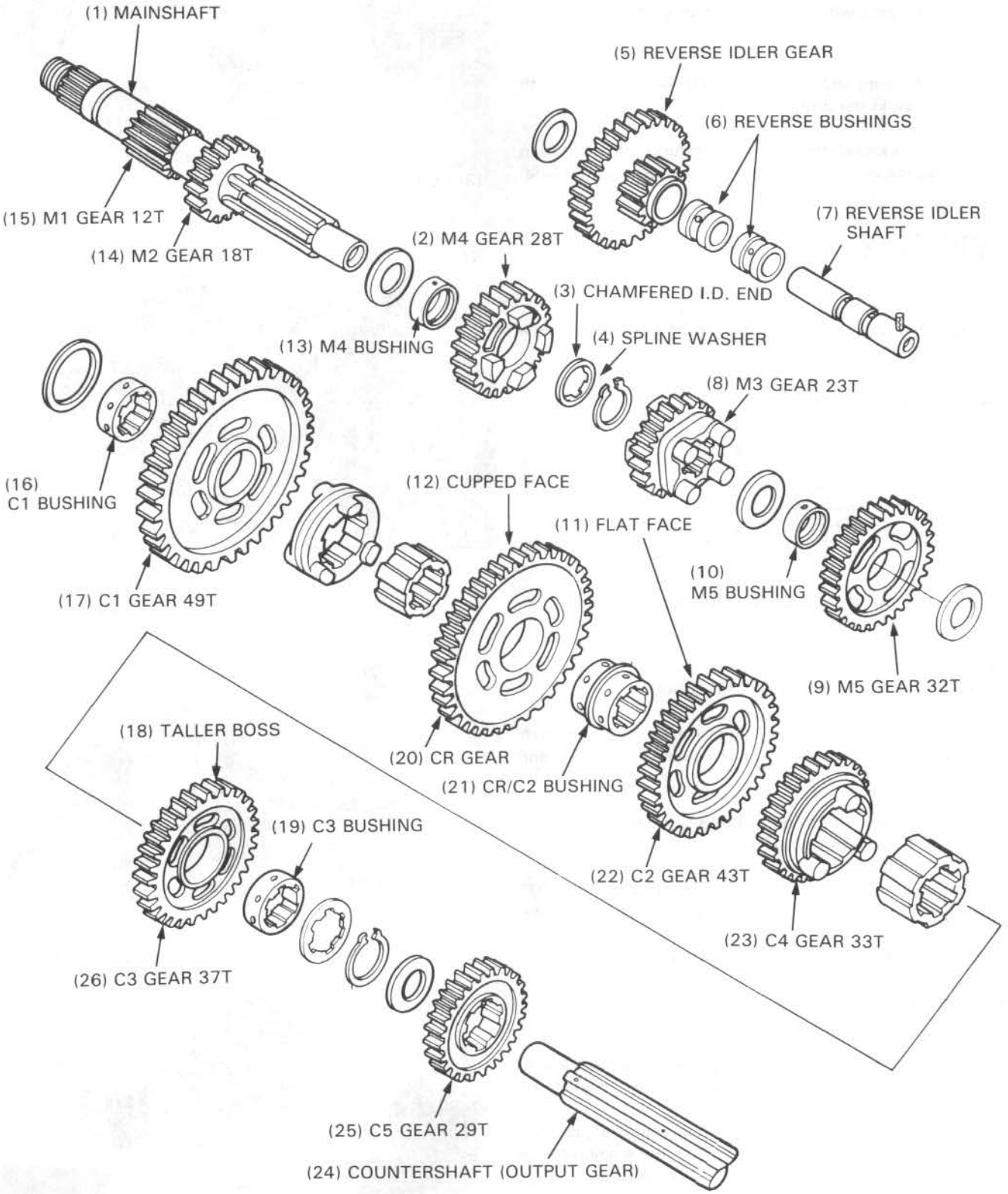
Install the output gear case onto the left crankcase and tighten the three mount bolts.

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



RIDE RED

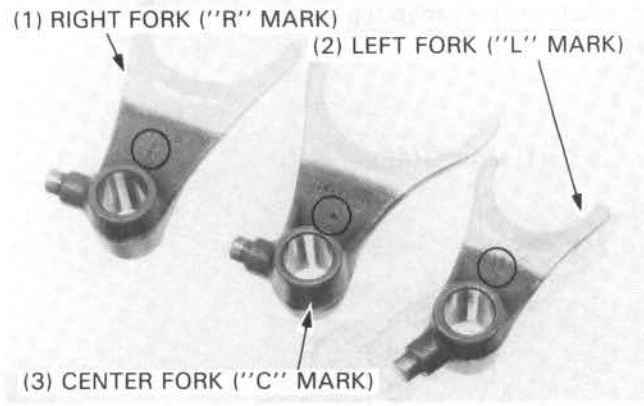
Assemble the mainshaft, countershaft and reverse idler in the reverse order of disassembly.



NOTE

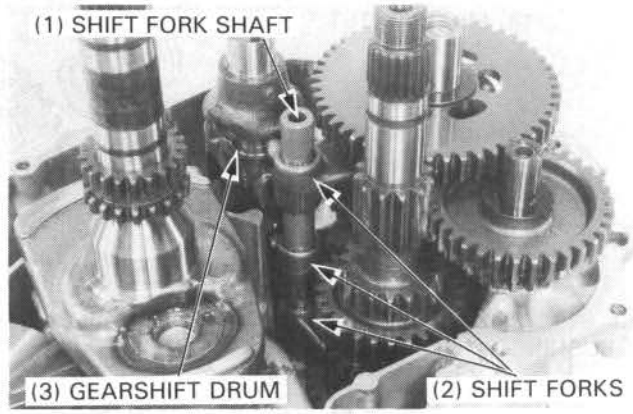
- The shift fork marks are: L for left, C for center and R for right.

Install the shift forks with their marks facing up.



Install the shift drum and align each shift fork guide pin with the guide groove in the drum.

Insert the shift fork shaft through the shift forks into the hole in the left crankcase with the threaded I.D. toward the right side.



OUTPUT GEAR

NOTE

- The output drive and driven gears must be replaced as a set.

BACKLASH INSPECTION

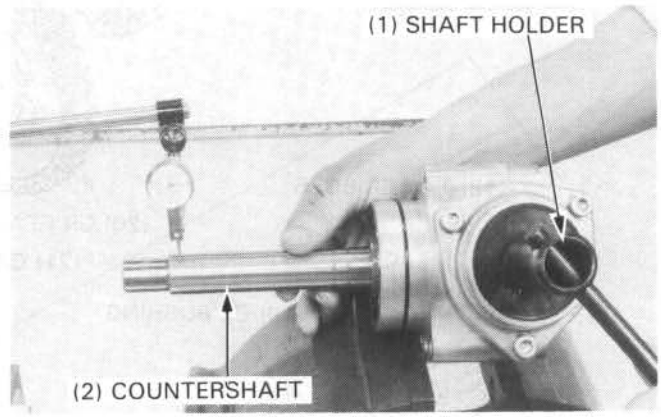
Place the output gear case in a vise.

CAUTION

- *Use soft jaws to prevent damage to the gear case.*

Set a horizontal type dial indicator on the output drive shaft as shown.

TOOL
Shaft holder **07924—ME50000**



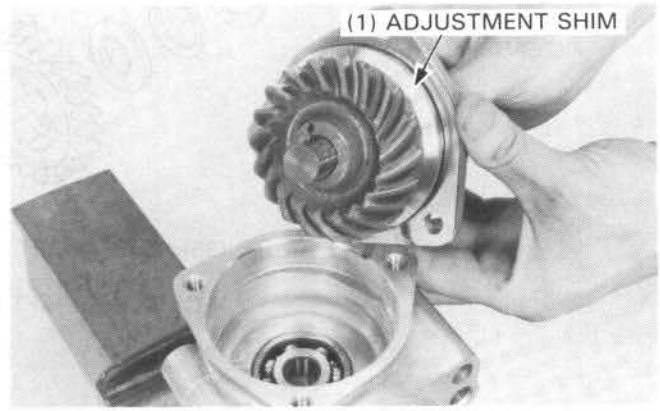
Hold the output driven gear shaft and rotate the drive shaft until the gear slack is taken up. Turn the countershaft back and forth to read the backlash.

STANDARD: 0.080—0.180 mm (0.0031—0.0071 in)
SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the dial indicator. Turn the output drive shaft 120° and measure the backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

DIFFERENCE OF MEASUREMENT
SERVICE LIMIT: 0.10 mm (0.004 in)



If the difference in the measurements exceeds the limit, it indicates that the bearing is not installed squarely. Inspect the bearings and replace if necessary.
If backlash is excessive, replace the driven shaft adjustment shim with a thinner one. If the backlash is too small, replace the driven shaft adjustment shim with a thicker one.

RIDE RED

Backlash is changed by about 0.06 mm (0.002 in) when the thickness of the shim is changed by 0.10 mm (0.004 in).

OUTPUT DRIVEN GEAR SHAFT ADJUSTMENT SHIMS:

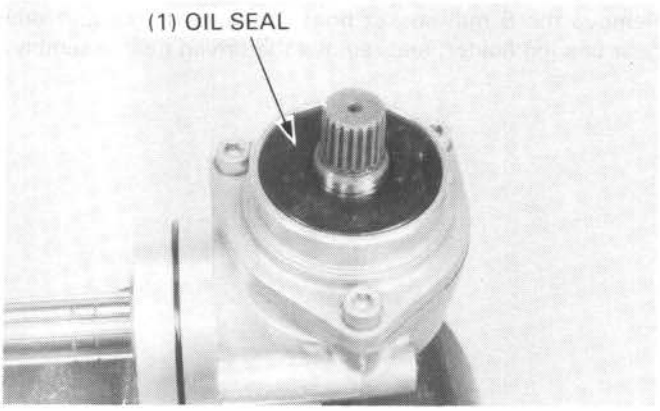
A: 0.40 mm (0.016 in)
B: 0.45 mm (0.018 in)
C: 0.50 mm (0.020 in) Standard
D: 0.55 mm (0.022 in)
E: 0.60 mm (0.024 in)
F: 0.30 mm (0.012 in)
G: 0.35 mm (0.014 in)

OUTPUT DRIVEN GEAR DISASSEMBLY

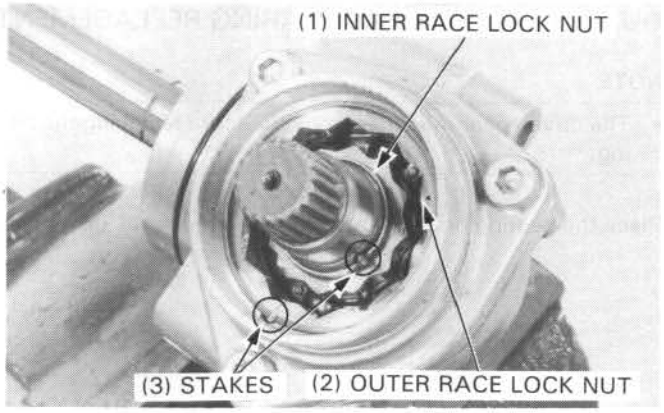
Place the output gear case in a vise, being careful not to distort it, and remove the oil seal.

CAUTION

- *Use soft jaws to prevent damage to the gear case.*



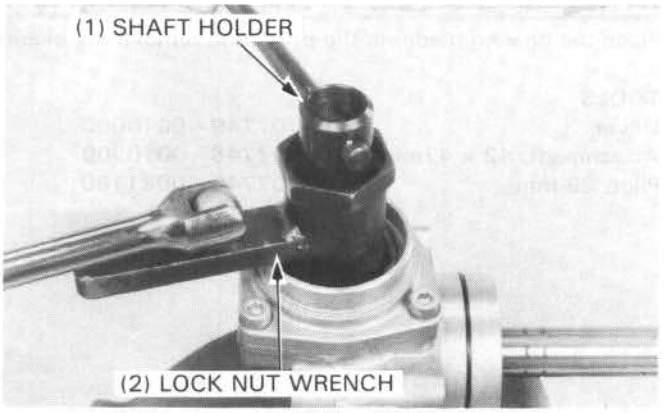
Unstake the driven gear bearing race lock nuts with a drill or grinder. Be careful that metal particles do not enter the bearing, and that the threads on the shaft are not damaged.



Remove the inner race lock nut and discard it.

TOOLS

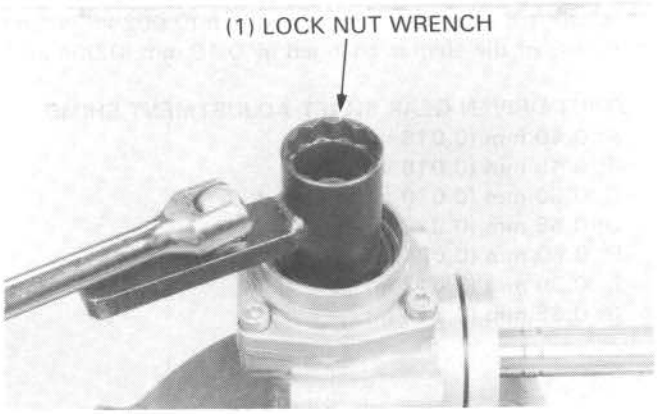
Shaft holder	**07924—ME50000**
Lock nut wrench, 34 x 44 mm	**07916—ME50001 or**
Lock nut wrench, 34 x 44 mm	**07916—ME50000**



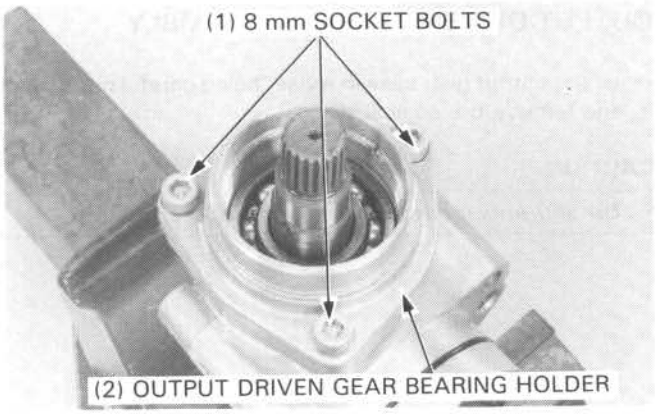
Remove the outer race lock nut and lock washer. Discard the outer race lock nut.

TOOL

Lock nut wrench, 34 x 44 mm	**07916—ME50001 or**
Lock nut wrench, 34 x 44 mm	**07916—ME50000**



Remove the 8 mm socket bolts attaching the output driven gear bearing holder, and remove the driven gear assembly.

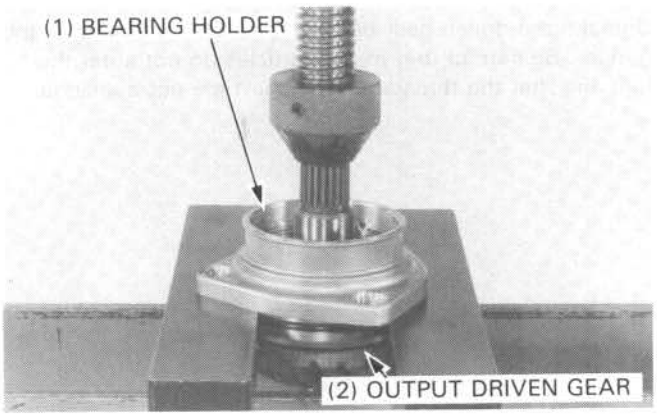


OUTPUT DRIVEN GEAR BEARING REPLACEMENT

NOTE

- The driven gear must be removed before replacing the bearing.

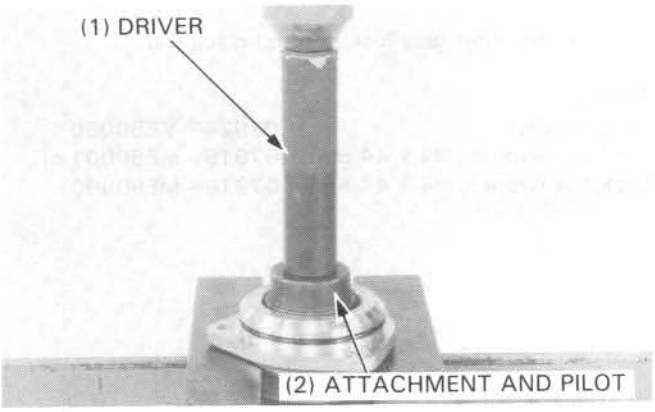
Place the bearing holder in a press and remove the driven gear.



Place the bearing holder in the press and remove the bearing.

TOOLS

Driver	**07749—0010000**
Attachment, 42 x 47mm	**07746—0010300**
Pilot, 28 mm	**07746—0041100**

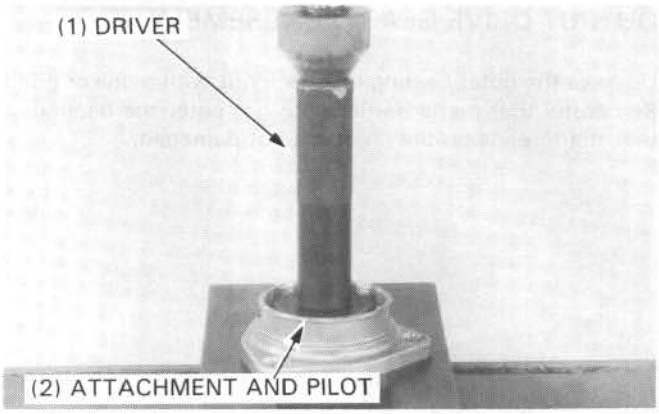


RIDE RED

Press in a new bearing.

TOOLS

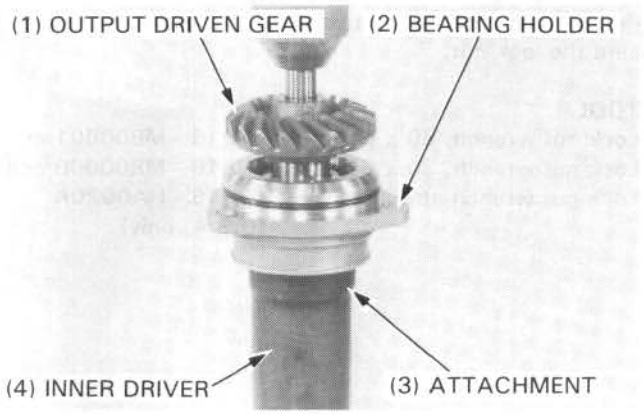
Driver	**07749–0010000**
Attachment, 52 x 55 mm	**07746–0010400**
Pilot, 28 mm	**07746–0041100**



Press the output driven gear into the bearing.

TOOLS

Driver	**07746–0030100**
Attachment, 30 mm I.D.	**07746–0030300**



OUTPUT DRIVEN GEAR CASE BEARING REPLACEMENT

Heat the output gear case around the driven shaft bearing to 80°C (176°F).

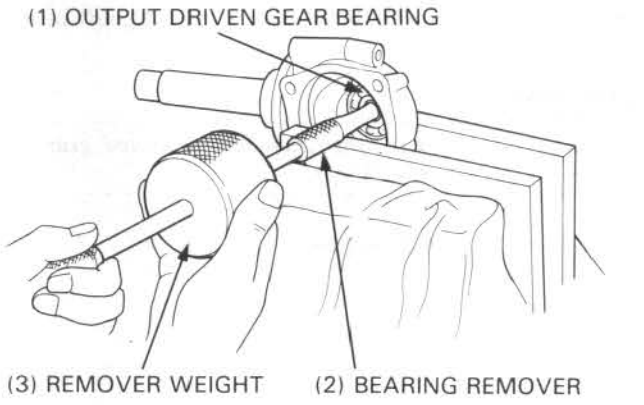
WARNING

- ***Always wear gloves when handling a heated gear case to prevent burning your hands.***

Remove the bearing with the bearing remover.

TOOLS

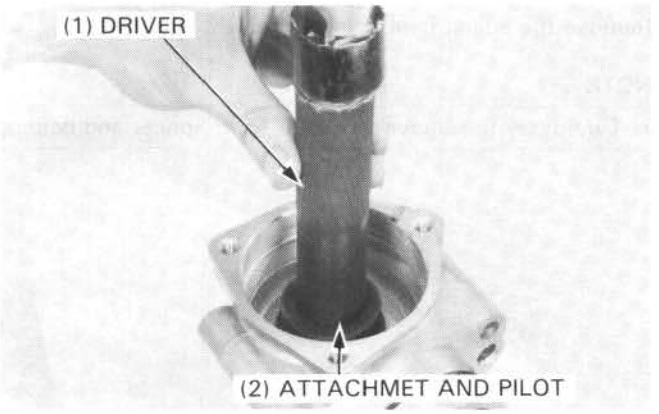
Bearing remover, 15 mm	**07936–KC10000**
Remover weight	**07936–3710200 or 07741–0010201**
Remover handle	**07936–3710100**



Drive a new bearing into the output gear case.

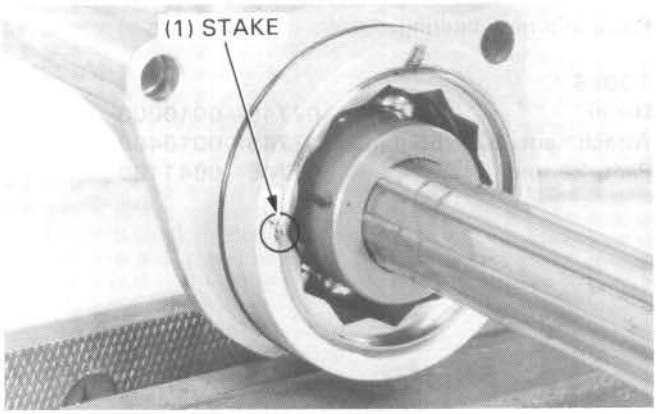
TOOLS

Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300**
Pilot, 15 mm	**07746–0040300**



OUTPUT DRIVE GEAR DISASSEMBLY

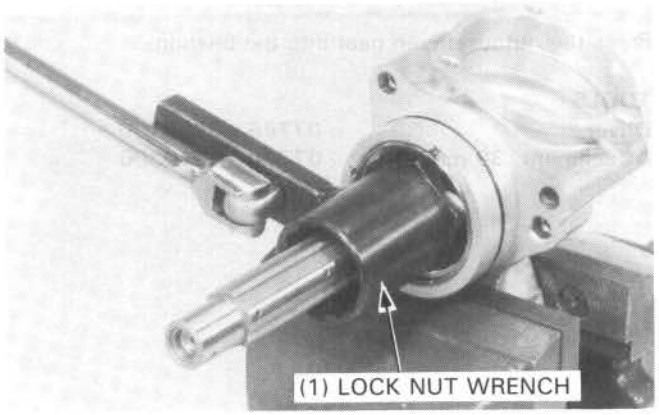
Unstake the outer bearing race lock nut with a drill or grinder. Be careful that metal particles do not enter the bearing, and that the threads on the shaft are not damaged.



Remove the outer bearing race lock nut and lock washer. Discard the lock nut.

TOOL

Lock nut wrench, 30 x 64 mm	**07916—MB00001 or**
Lock nut wrench, 30 x 64 mm	**07916—MB00000 and**
Lock nut wrench attachment	**07916—HA0020A (U.S.A. only)**



Heat the output gear case around the drive shaft bearing to 80°C (176°F).

WARNING

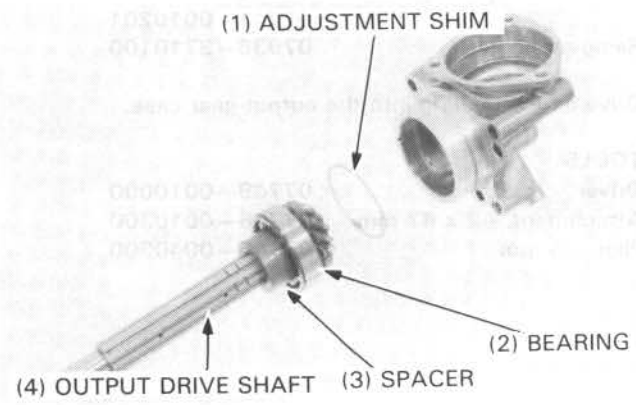
- ***Always wear gloves when handling a heated gear case to prevent burning your hands.***

Remove the output drive gear.

Remove the adjustment shim.

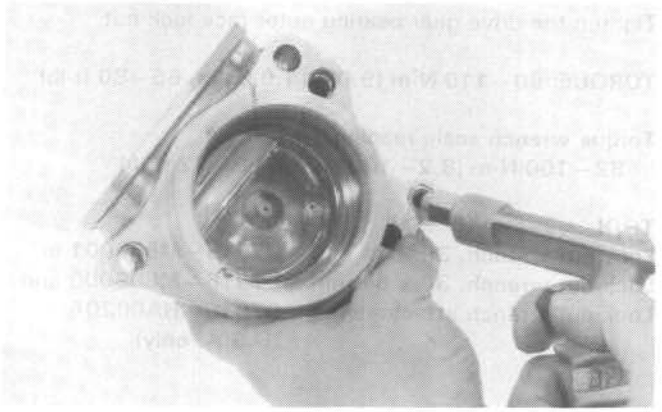
NOTE

- Do not try to remove the drive shaft spacer and bearing.



RIDE RED

Clean the output gear case in solvent and blow open the oil passage with compressed air.

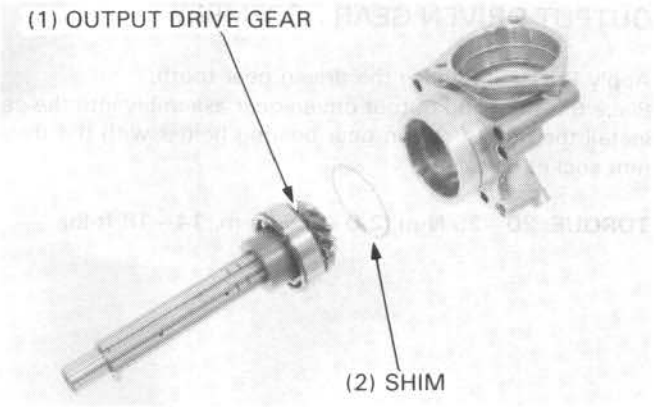


OUTPUT DRIVE GEAR ASSEMBLY

Place the shim and output drive gear into the case.

NOTE

- When the gear set, driven gear bearing holder, driven gear bearing and/or gear case has been replaced, use a shim of 1.00 mm (0.039 in) thickness for initial reference.

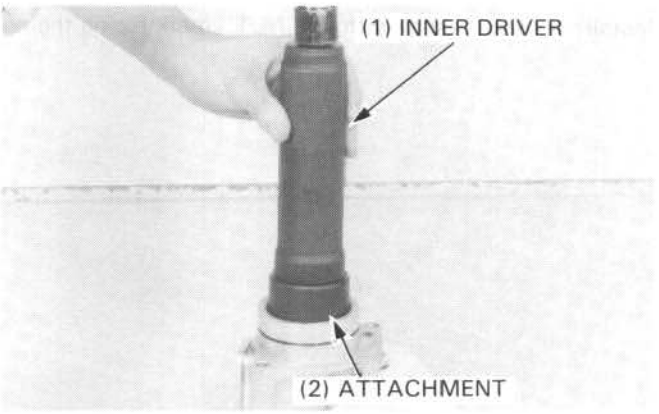


Heat the output gear case around the drive shaft bearing to 80°C (176°F).

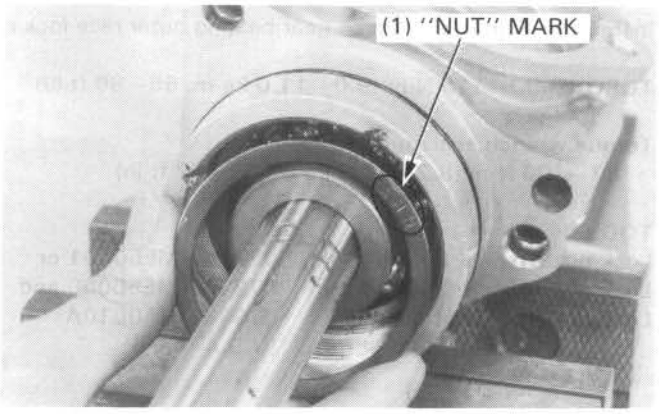
WARNING

- ***Always wear gloves when handling a heated gear case to prevent burning your hands.***

Install the output drive gear.



Install the lock washer with its "NUT" mark facing the nut.



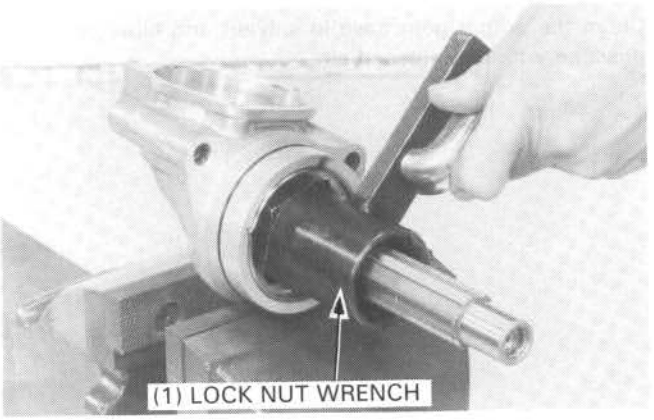
Tighten the drive gear bearing outer race lock nut.

TORQUE: 90—110 N·m (9.0—11.0 kg-m, 65—80 ft-lb)

Torque wrench scale reading:
82—100 N·m (8.2—10.0 kg-m, 59—72 ft-lb)

TOOL

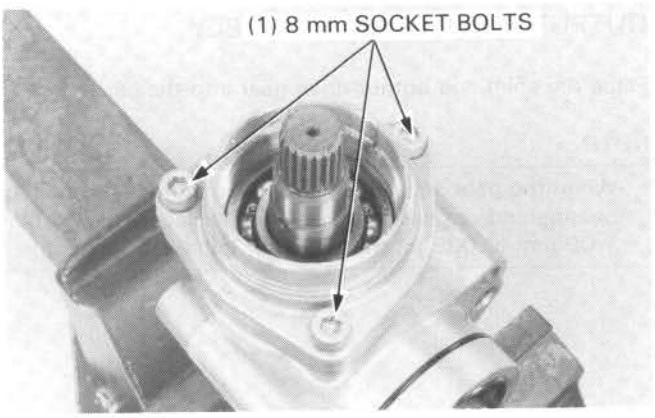
Lock nut wrench, 30 x 64 mm	**07916—MB00001 or**
Lock nut wrench, 30 x 64 mm	**07916—MB00000 and**
Lock nut wrench attachment	**07916—HA0020A (U.S.A. only)**



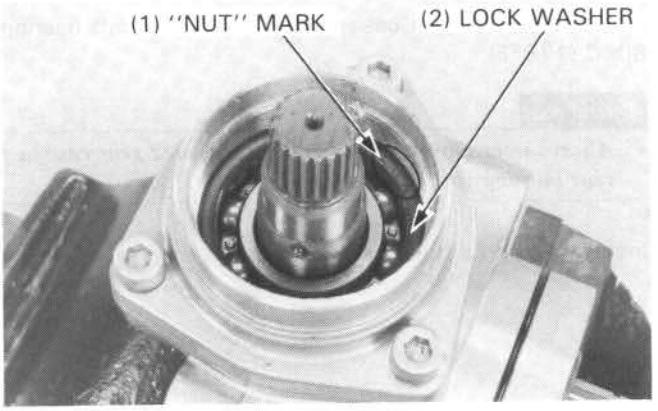
OUTPUT DRIVEN GEAR ASSEMBLY

Apply Prussian Blue to the driven gear tooth.
Place the shim and output driven gear assembly into the case.
Install the output driven gear bearing holder with the three 8 mm socket bolts.

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



Install the lock washer with its "NUT" mark facing the nut.



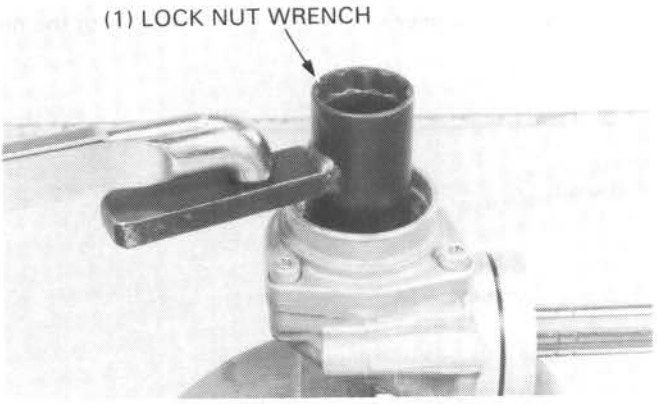
Install and tighten the driven gear bearing outer race lock nut.

TORQUE: 90—110 N·m (9.0—11.0 kg-m, 65—80 ft-lb)

Torque wrench scale reading:
82—100 N·m (8.2—10.0 kg-m, 59—72 ft-lb)

TOOL

Lock nut wrench, 34 x 44 mm	**07916—ME50001 or**
Lock nut wrench, 34 x 44 mm	**07916—ME50000 and**
Lock nut wrench attachment	**07916—HA0010A (U.S.A. only)**



RIDE RED

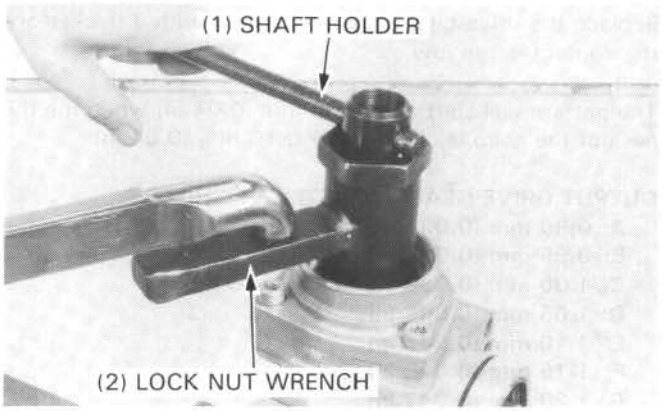
Hold the drive shaft with the shaft holder and tighten the inner race lock nut.

TORQUE: 70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)

Torque wrench scale reading:
64–73 N·m (6.4–7.3 kg-m, 46–53 ft-lb)

TOOLS

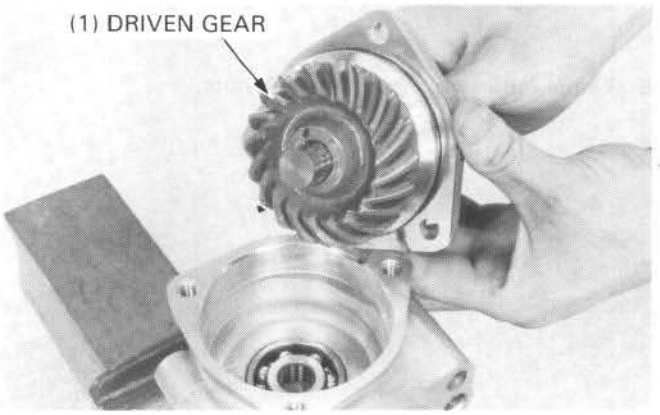
Shaft holder	**07924–ME50000**
Lock nut wrench, 34 x 44 mm	**07916–ME50001**
Look nut wrench, 34 x 44 mm	**07916–ME50000**



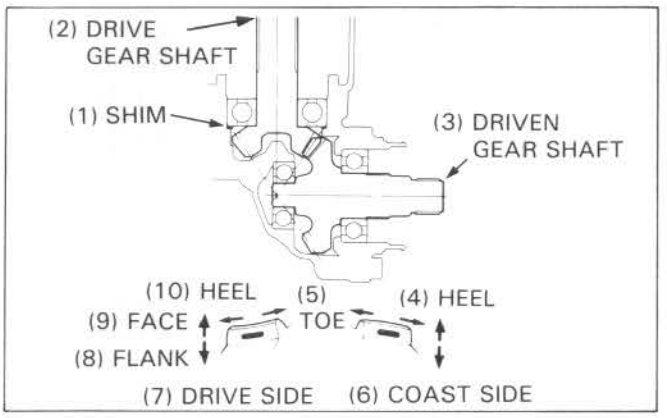
GEAR TOOTH CONTACT PATTERN CHECK

Rotate the drive gear several times in both directions of rotation.
Remove the three 8 mm socket bolts attaching the driven gear holder and the driven gear assembly.

Check the gear tooth contact pattern after removing the driven gear.

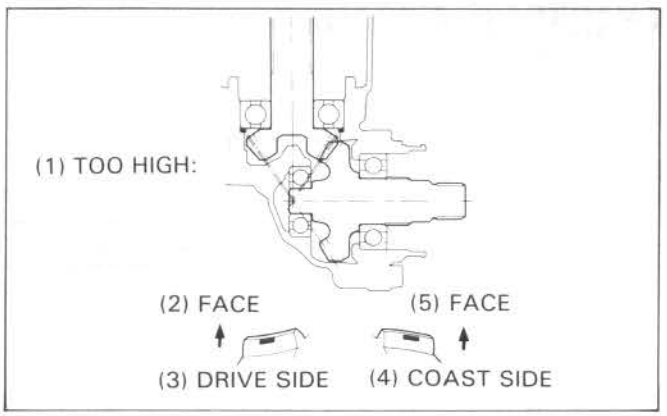


Contact is normal if Prussian Blue is transfered to the approximate center of each tooth and slightly to the side.



If the pattern is not correct, remove and replace the drive gear adjustment shim.

Replace the shim with a thinner one if the contact pattern is too high.

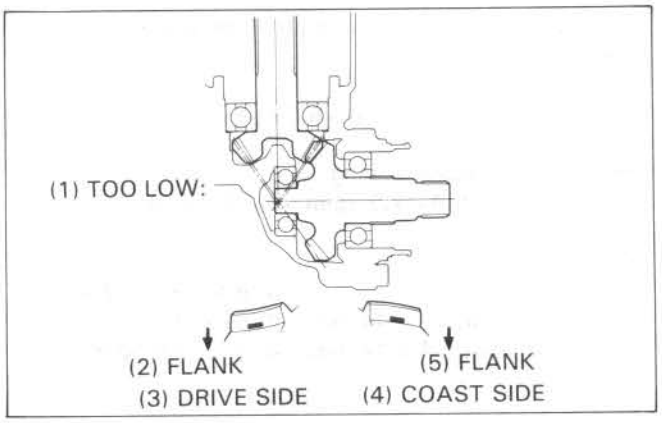


Replace the drive gear adjustment shim with a thicker one if the contact is too low.

The pattern will shift about 1.0 mm (0.04 in) when the thickness of the shim is changed by 0.10 mm (0.04 in).

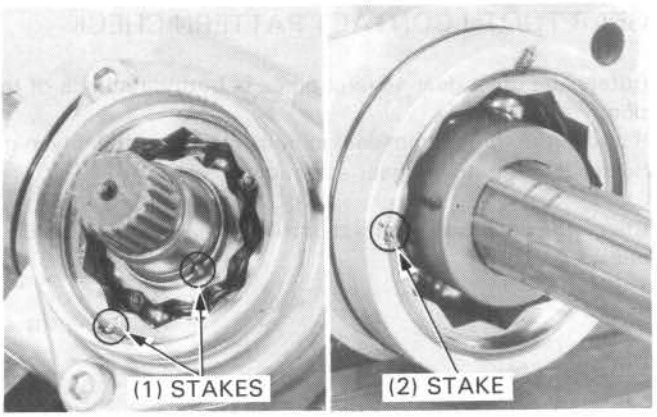
OUTPUT DRIVE GEAR ADJUSTMENT SHIM:

- **A: 0.90 mm (0.035 in)**
- **B: 0.95 mm (0.037 in)**
- **C: 1.00 mm (0.039 in) STANDARD**
- **D: 1.05 mm (0.041 in)**
- **E: 1.10 mm (0.043 in)**
- **F: 1.15 mm (0.045 in)**
- **G: 1.20 mm (0.047 in)**

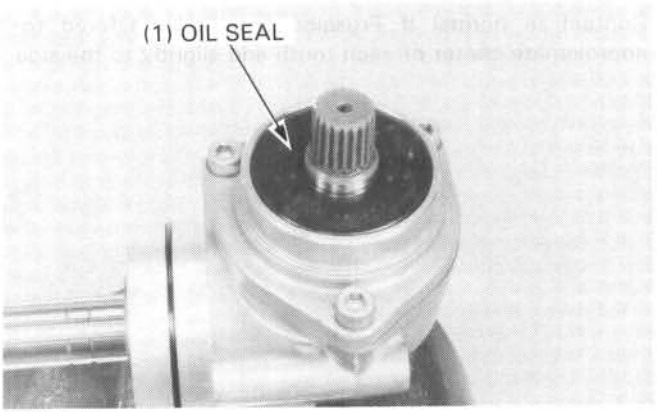


Check the backlash (See page 10-14).

Stake the outer and inner race lock nuts.



Install a new oil seal.



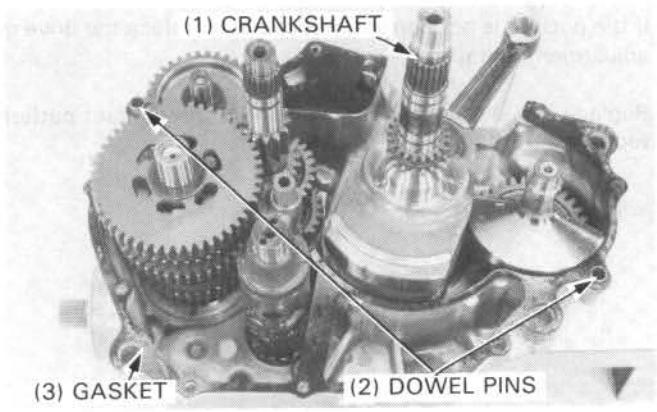
CRANKCASE ASSEMBLY

Install the dowel pins and new gasket.

Install the right crankcase onto the left crankcase.

NOTE

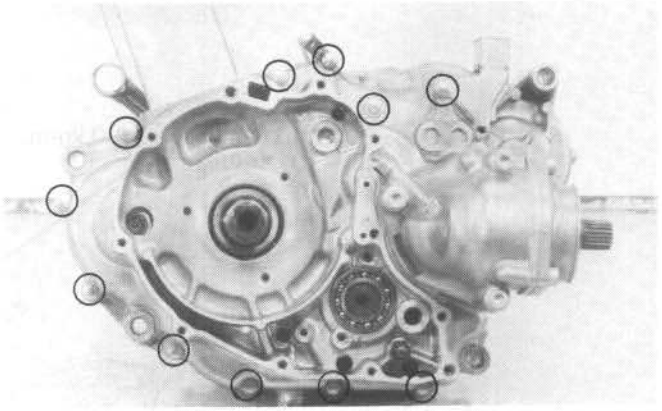
- Make sure that the gasket stays in place.



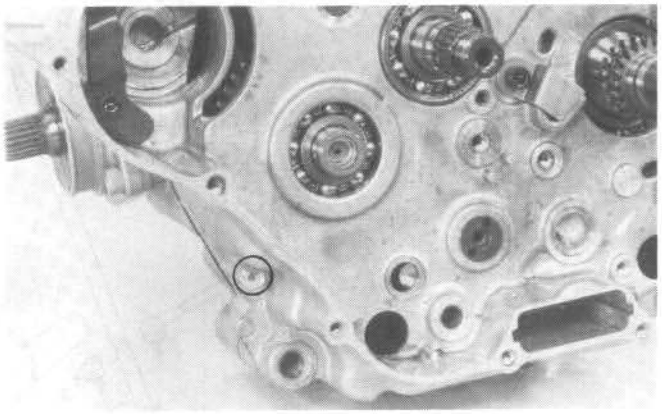
RIDE RED

Tighten the left crankcase 6 mm bolts in a criss-cross pattern.

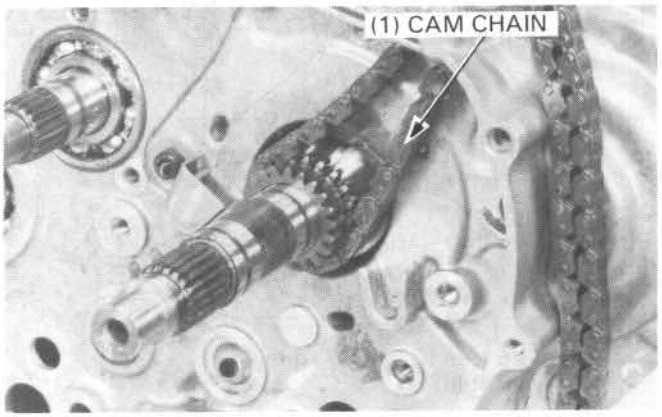
TORQUE: 8—12 N·m (0.8—1.2 kg-m, 6—9 ft-lb)

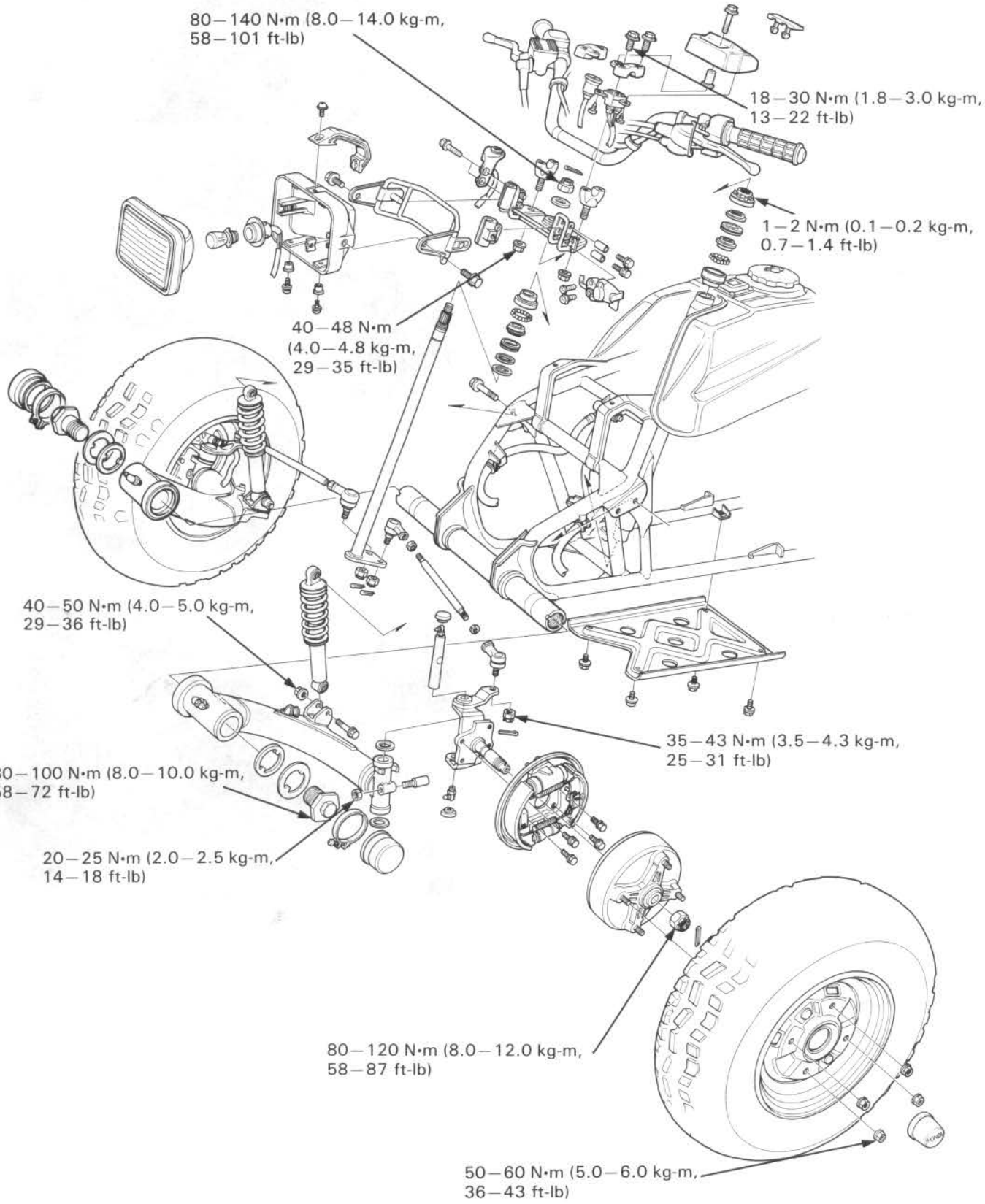


Tighten the right crankcase bolt to the same torque.



Install the cam chain.




80–140 N·m (8.0–14.0 kg-m, 58–101 ft-lb)
18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)
40–48 N·m (4.0–4.8 kg-m, 29–35 ft-lb)
40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
35–43 N·m (3.5–4.3 kg-m, 25–31 ft-lb)
80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)

RIDE RED

11. FRONT WHEEL/SUSPENSION/STEERING

SERVICE INFORMATION

GENERAL

WARNING

- ***Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.***

- This section covers maintenance of the front wheel, front shock absorber, steering stem and suspension.
- A jack or other support is required to support the Four Trax.
- Refer to section 13 for tire removal and repair.

SPECIFICATIONS

mm (in)

ITEM	STANDARD	SERVICE LIMIT
Kingpin O.D.	13.966–13.984 (0.5498–0.5505)	13.9 (0.55)
Knuckle bushing I.D.	14.025–14.055 (0.552–0.553)	14.15 (0.557)
Front arm bushing I.D.	42.58–42.62 (1.676–1.678)	42.8 (1.69)
Arm hinge O.D.	42.475–42.500 (1.672–1.673)	42.3 (1.67)
Shock absorber spring free length	153 (6.02)	149.5 (5.89)

TORQUE VALUES

Handlebar upper holder bolt	18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
Handlebar lower holder nut	40–48 N·m (4.0–4.8 kg-m, 29–35 ft-lb)
Steering bearing adjustment nut (initial)	25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)
Steering bearing adjustment nut	1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)
Steering stem nut	80–140 N·m (8.0–14.0 kg-m, 58–101 ft-lb)
Front wheel axle nut	80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
Front wheel nut	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Front arm hinge bolt	80–100 N·m (8.0–10.0 kg-m, 58–72 ft-lb)
Kingpin lock nut	20–25 N·m (2.0–2.5 kg-m, 14–18 ft-lb)
Shock absorber mount bolts	40–50 N·m (4.0–5.0 kg-m, 29–36 ft-lb)
Tie-rod ball joint nut	35–43 N·m (3.5–4.3 kg-m, 25–31 ft-lb)
Tie-rod lock nut	35–43 N·m (3.5–4.3 kg-m, 25–31 ft-lb)
Grease nipple	3–5 N·m (0.3–0.5 kg-m, 2–4 ft-lb)

TOOLS

Special	
Steering stem socket	07916—3710100
Spring compressor adaptor	07967—VM50100
King pin driver	07965—VM50000
Collar	07967—GA70101
Common	
Shock absorber compressor	07959—3290001
Driver	07749—0010000
Attachment, 52 x 55 mm	07746—0010400
Attachment, 42 x 47 mm	07746—0010300

TROUBLESHOOTING

Hard steering
- Steering bearing adjustment nut too tight
- Faulty steering stem steel balls
- Damaged steering stem ball race or cone race
- Insufficient tire pressure

Steers to one side or does not track straight
- Bent tie-rod.
- Bent front frame or wheel installed incorrectly

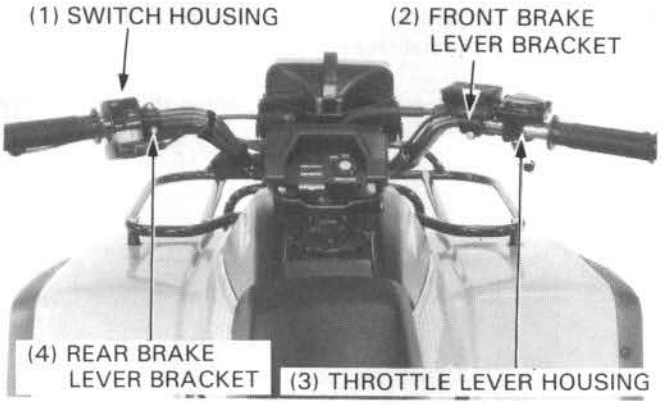
Front wheel wobbling
- Bent rim
- Worn front drum bearing
- Faulty tire
- Axle nut not tightened properly

RIDE RED

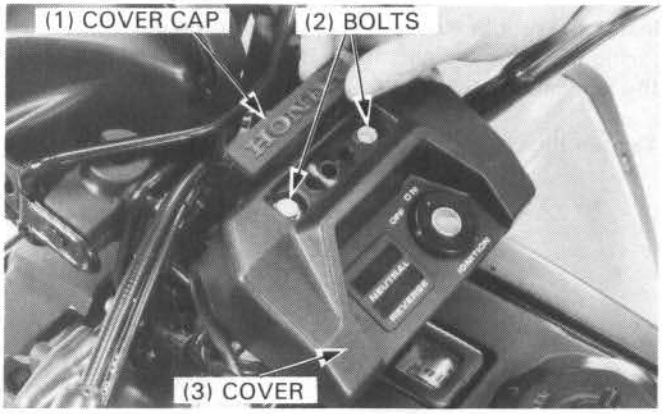
HANDLEBAR

REMOVAL

Remove the following:
- the wire bands from the handlebar
- the switch housing
- the throttle housing
- the front and rear brake lever brackets.

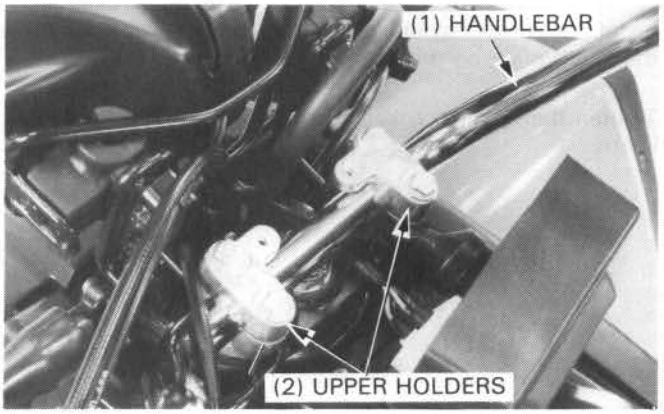


Remove the handlebar upper holder cover cap and cover by removing the bolts.
Remove the handlevar upper holder cover cap, then remove the bolts and the cover.



Remove the handlebar upper holder bolts and holders.

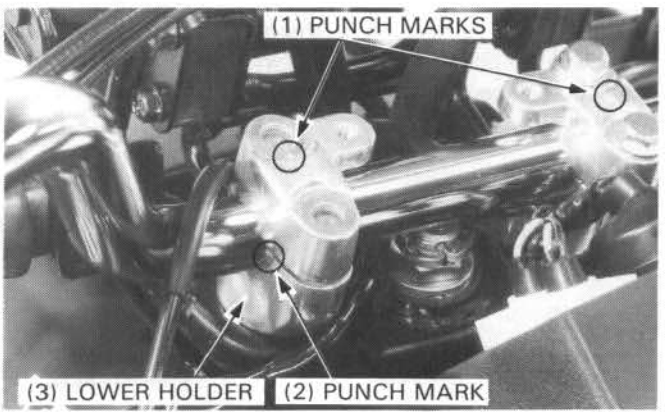
Remove the handlebar.



INSTALLATION

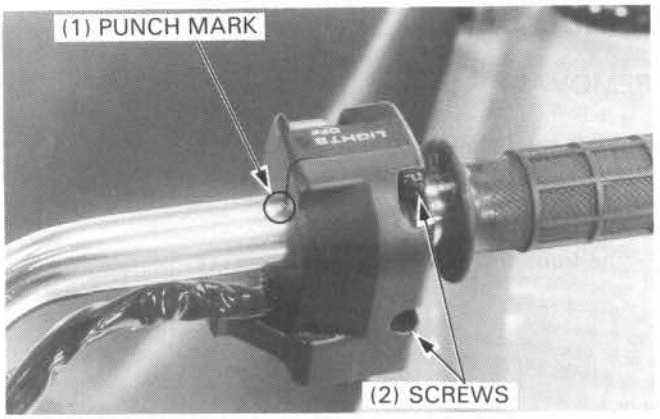
Place the handlebar on the lower holders.
Align the punch mark on the handlebar with the top of the lower holders.
Install the upper holders on the handlebar with their punch marks forward.
Tighten the forward bolts first, then tighten the rear bolts.

TORUQUE: 18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)



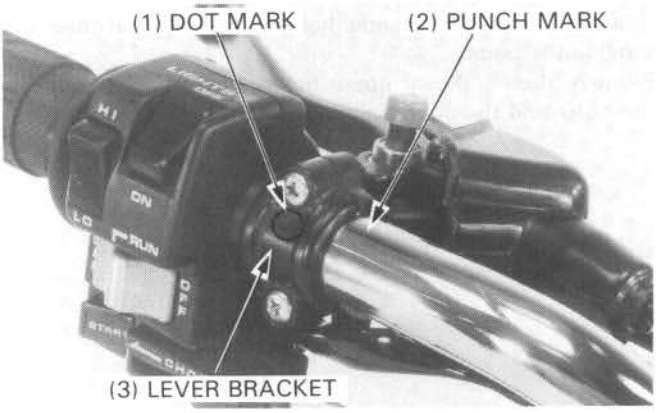
Install the switch housing aligning its mating surfaces with the punch mark on the handlebar.

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



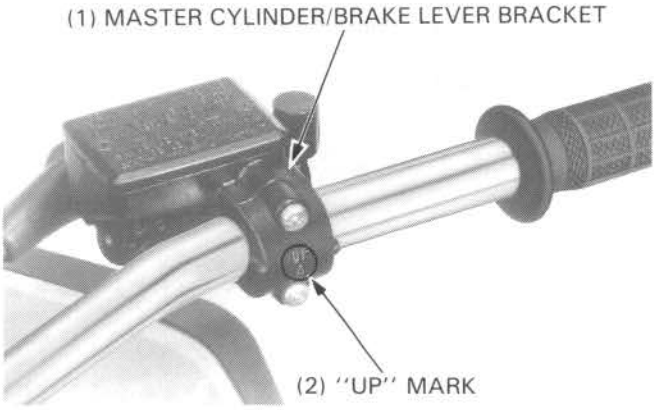
Install the rear brake lever bracket with the dot on the holder facing up. Align the end of the holder with the punch mark on the handlebar.

Tighten the upper screw first, then the lower screw.



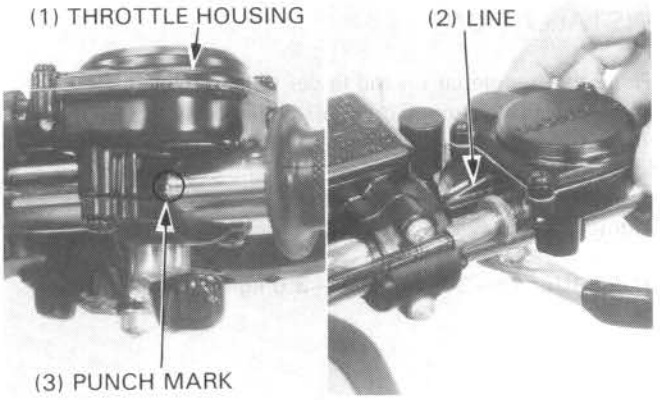
Install the master cylinder and front brake lever bracket with the "UP" mark on the holder facing up.

Tighten the upper bracket screw first, then the lower screw lightly.



Install the throttle housing on the handlebar.
First align the end of the housing with the punch mark on the handlebar. Then align the line on the housing with the end of the brake lever bracket.

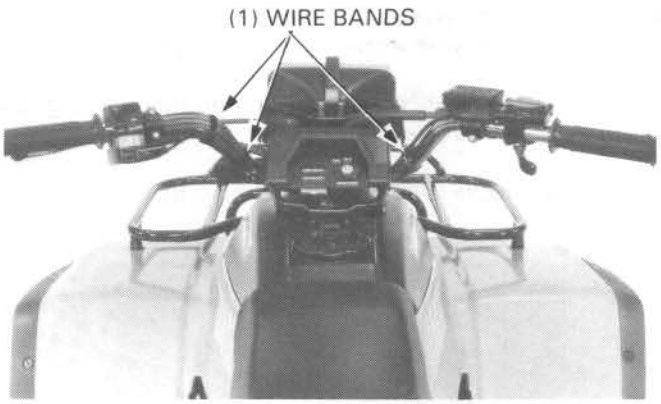
Tighten the screws securely.



RIDE RED

Install the handlebar upper holder cover and tighten it with the two bolts.
Install the upper holder cover cap.

Install the wire bands.



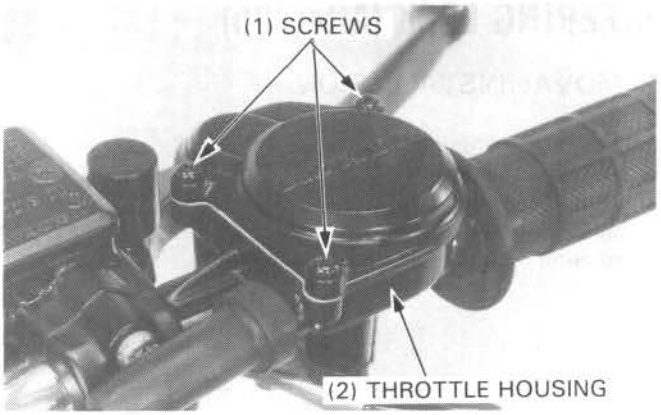
THROTTLE HOUSING

NOTE

- Take care of the throttle arm spring not to bind and check for it.

DISASSEMBLY

Remove the three throttle housing cover screws and the cover. Remove the gasket.

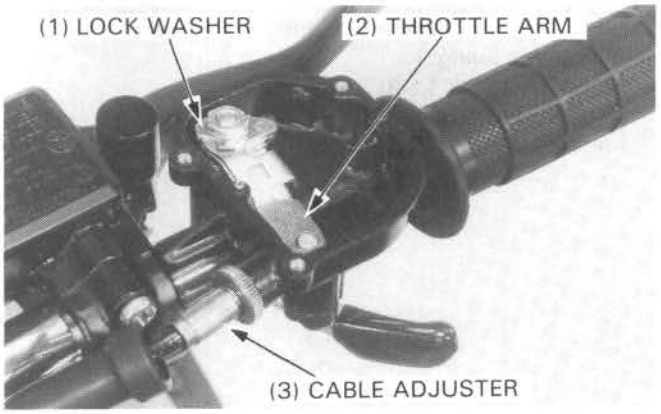


Loosen the throttle cable adjuster.

Bend down the lock washer tab and remove the nut and lock washer.

Disconnect the throttle cable from the throttle arm.

Remove the throttle arm, spring and throttle lever from the throttle housing.



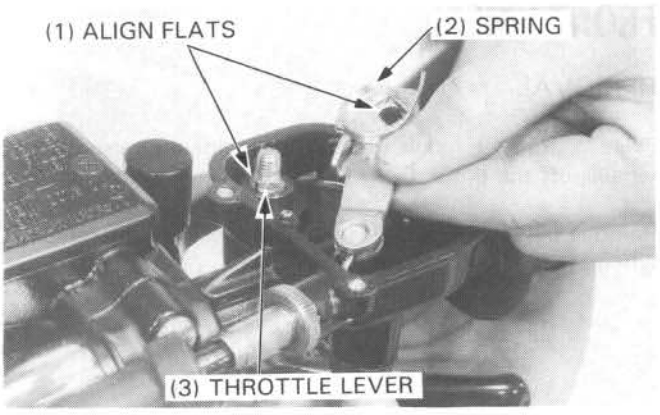
ASSEMBLY

Connect the throttle cable to the throttle arm.

Install the throttle arm spring and arm onto the throttle lever aligning their flats.

NOTE

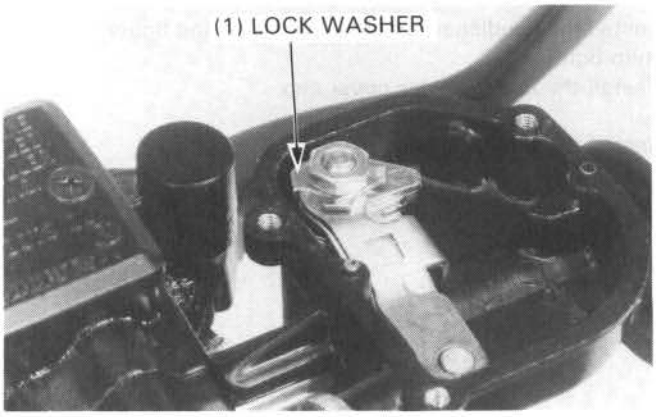
- Do not dis/connect the throttle cable using a tool such as a pair of radio pliers without removing the throttle arm. Damage to the wire occurs if it is bent.



Install a new lock washer and nut.
Bend up the lock washer tab against the nut.

Install a new gasket, then install the throttle housing cover using the three screws.

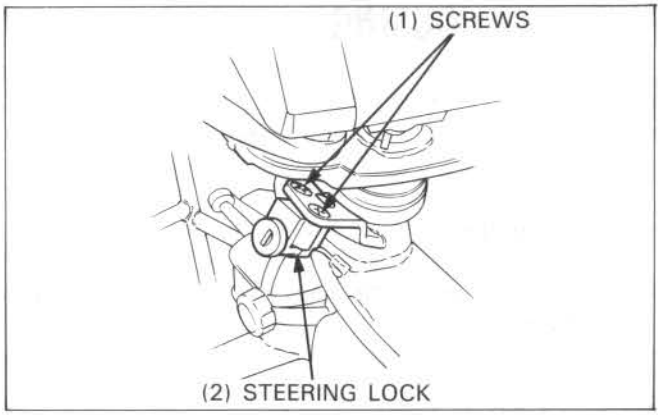
Adjust the throttle lever free play (page 3-6).



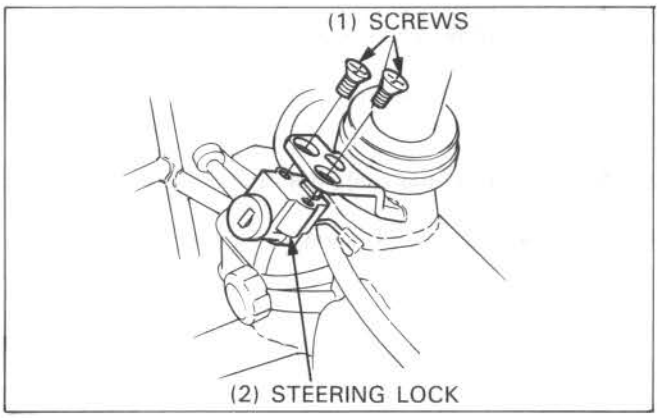
STEERING LOCK (After '85)

REMOVAL/INSTALLATION

Remove the following parts:
- fuel tank (page 4-3).
- front fender (page 14-1).
- handlebar (page 11-3).
- steering lock screws and steering lock.



Install the steering lock and tighten the screws.
Install the following:
- handlebar (page 11-3).
- front fender (page 14-1).
- fuel tank (page 4-3).



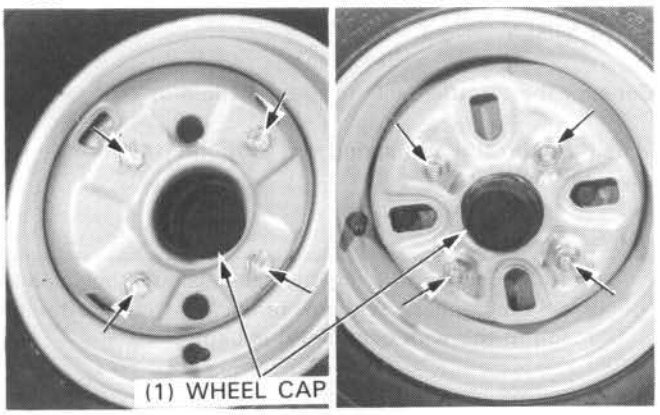
FRONT WHEEL

REMOVAL

Place a support block under the engine to raise the front wheels off the ground.

Remove the wheel cap, loosen the wheel nuts and remove the wheel.

'85: AFTER '85:



RIDE RED

INSTALLATION

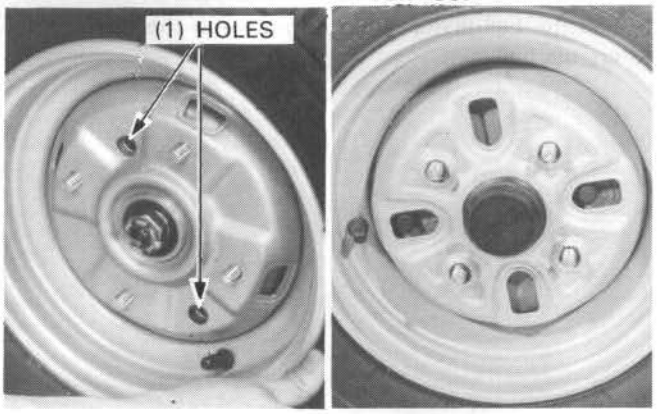
Install the front wheel onto the brake drum by aligning the brake drum holes with the front wheel holes.

Install the front wheel nuts and tighten them to the specified torque.

TORQUE: 50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)

Install the hole plugs and wheel cap.

'85: AFTER '85:



FRONT TIRE

DISASSEMBLY/REPAIR/ASSEMBLY

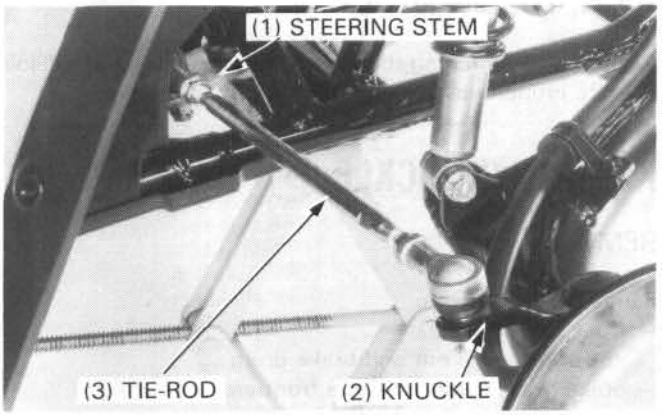
For tire removal, repair and assembly, refer to pages 13-3 thru 13-7.

TIE-ROD

REMOVAL

Remove the front wheels (page 11-6).
Remove the cotter pins and castle nuts from both ends of the tie-rod.

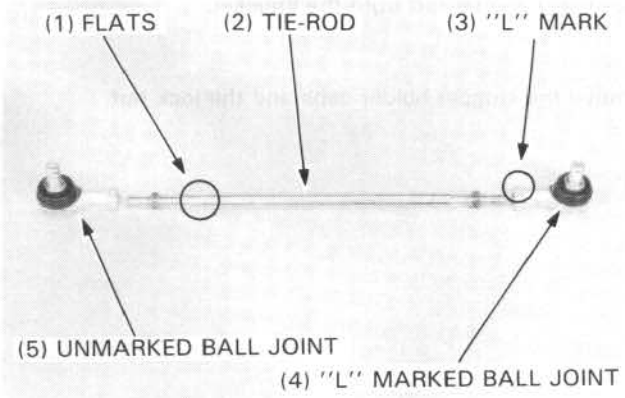
Remove the tie-rod from the steering stem and the knuckle.



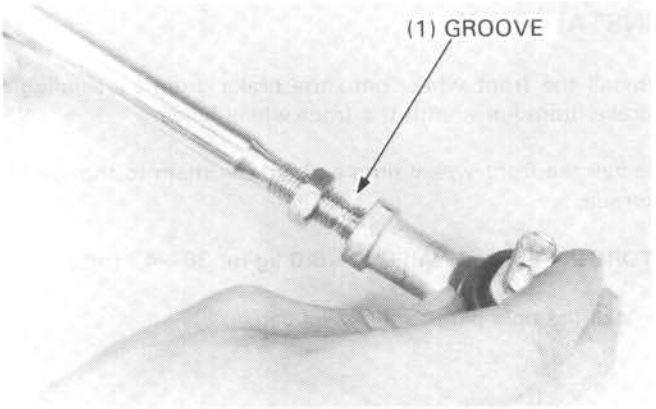
INSPECTION/ASSEMBLY

Check the tie rod and ball joint rubber for damage.
Replace if necessary.

Install the tie-rod into the ball joints with the flats on the tie-rod toward the unmarked ball joint.



Thread the ball joints until the groove in the tie-rod threads enters the ball joint.



INSTALLATION/ADJUSTMENT

Install the tie-rod with the L-marked ball joint toward the steering stem, and the unmarked ball joint toward the wheel. Install and tighten the castle nuts.

TORQUE: 35—43 N·m (3.5—4.3 kg-m, 25—31 ft-lb)

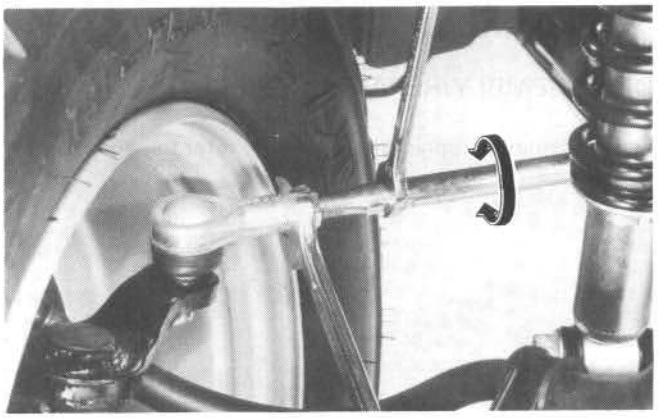
Secure the castle nuts with new cotter pins.
Tighten the tie-rod lock nuts.

TORQUE: 35—43 N·m (3.5—4.3 kg-m, 25—31 ft-lb)

Measure the toe-in and adjust as necessary (page 3-11).

TOE-IN: 0±7.5 mm (0 ± 0.30 in)

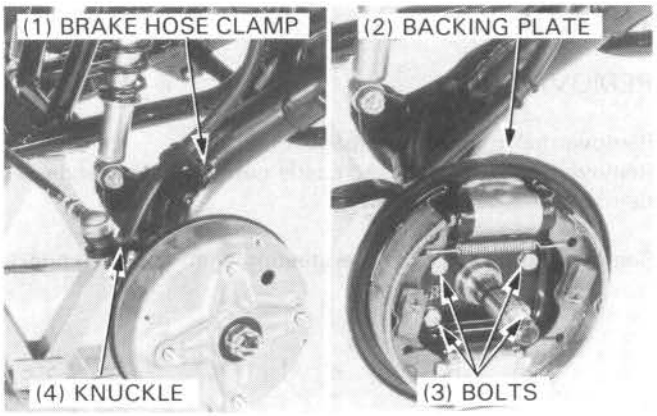
After finally tightening the lock nuts, make sure the ball joints operate properly by rotating the tie-rods.



KINGPIN/KNUCKLE

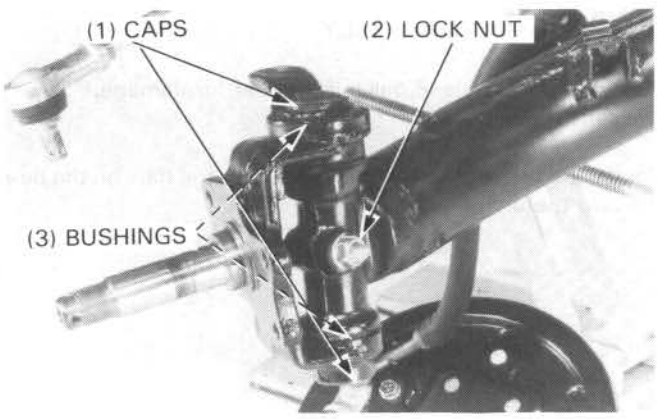
REMOVAL

Remove the following:
- front wheel
- cotter pin, axle nut and brake drum
- brake hose clamp from the front arm
- brake backing plate bolts and plate.



Disconnect the tie-rod from the knuckle.

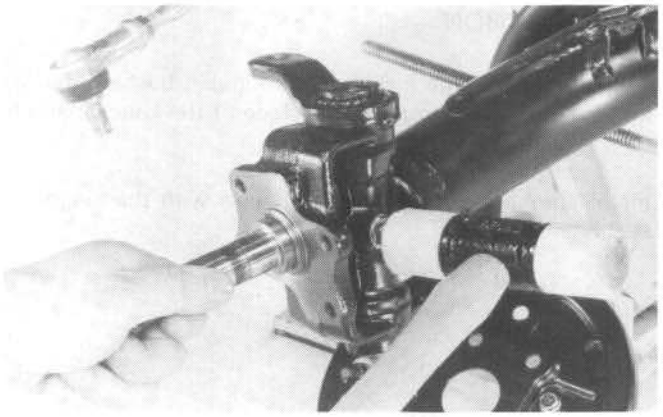
Remove the kingpin holder caps and the lock nut.



RIDE RED

Remove the lower grease nipple from the kingpin.

Remove the lock bolt and the kingpin with the bushing and dust seals.

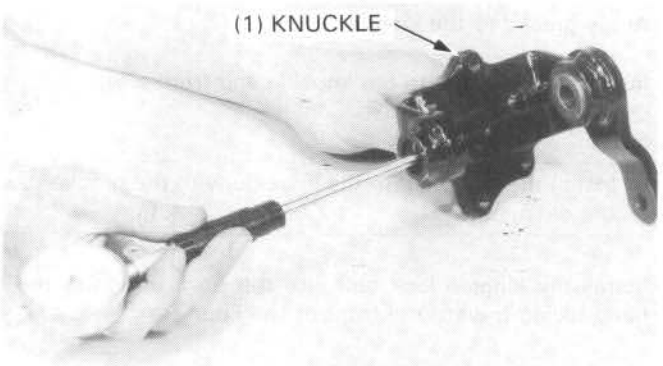


INSPECTION

Measure the I.D. of the knuckle bushing.

SERVICE LIMIT: 14.15 mm (0.557 in)

Replace the knuckle and kingpin bushings as a set, if necessary.



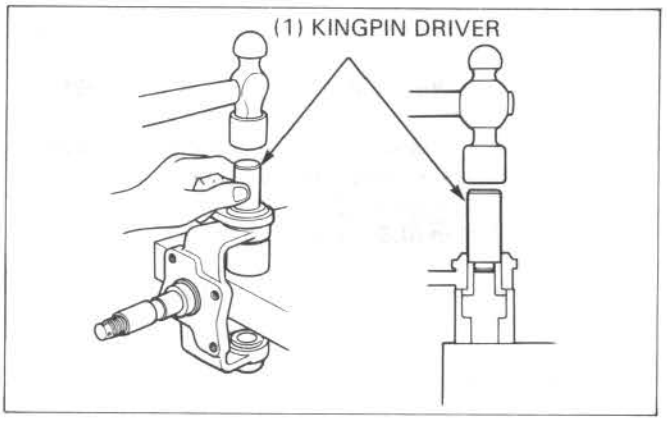
KNUCKLE BUSHINGS REPLACEMENT

Place a suitable supporting tool, which has a larger I.D. than the bushing flange O.D., under the knuckle leg, and drive the bushings out of the knuckle leg with the special tool.

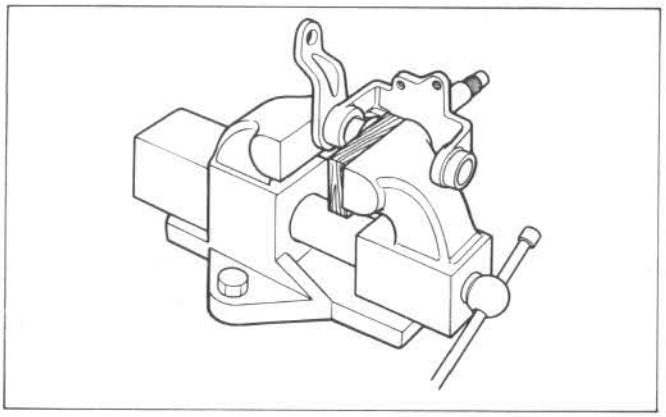
NOTE

- Be careful not to damage the knuckle bore surface when removing the bushings.

TOOL
Kingpin driver **07965-VM50000**



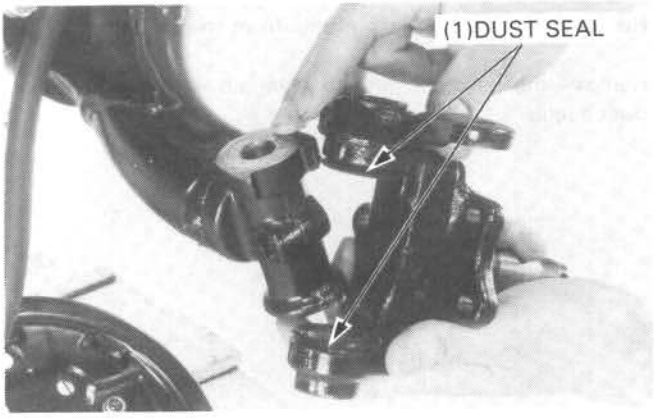
Set the knuckle leg, a new bushing and suitable block, such as a wooden piece, in a vise as shown, and install the bushing in the knuckle leg by tightening the vise.



INSTALLATION

Apply grease to the inside of the kingpin bushing, lip of the kingpin dust seal and mating surface of the knuckle and front arm.

Install the knuckle onto the front arm with the kingpin dust seals and bushings.



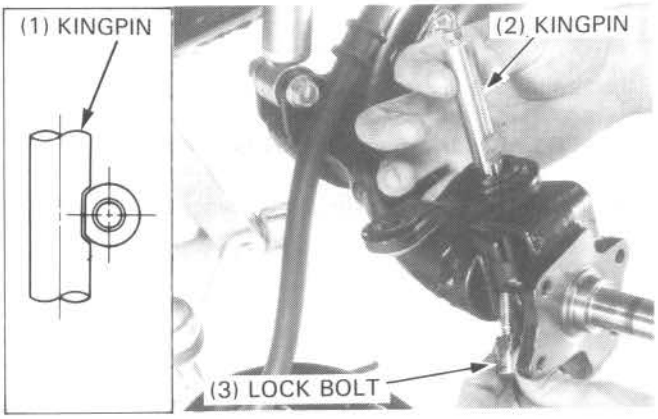
Apply grease to the kingpin.

Insert the kingpin into the knuckle and front arm.

NOTE

- Install the kingpin into the knuckle with the groove toward the outside.

Install the kingpin lock bolt into the front arm with the bolt head facing toward the front of the Four Trax.



Tighten the kingpin lock nut to the specified torque value.

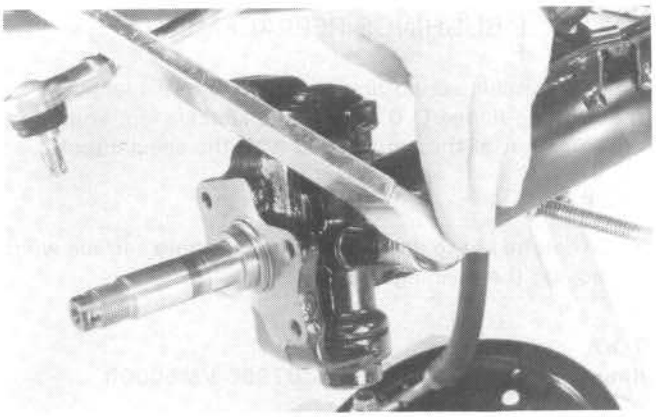
TORQUE: 20—25 N·m (2.0—2.5 kg-m, 14—18 ft-lb)

Install the lower grease nipple to the kingpin so it points to same direction as the upper grease nipple.

TORQUE: 3—5 N·m (0.3—0.5 kg-m, 2—4 ft-lb)

Install the brake backing plate with the four bolts.
Install the brake hose with the clamp.

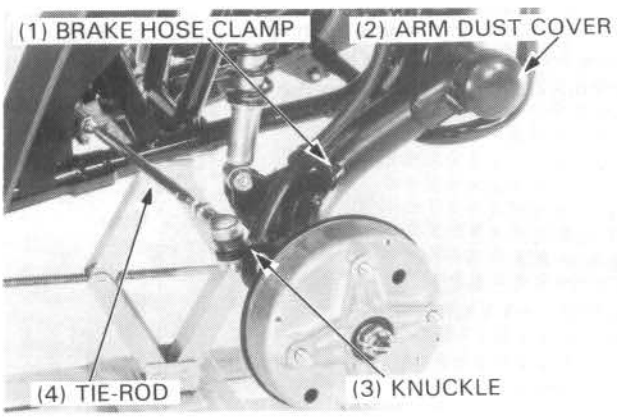
Install the remaining parts in the reverse order of removal.



FRONT ARM

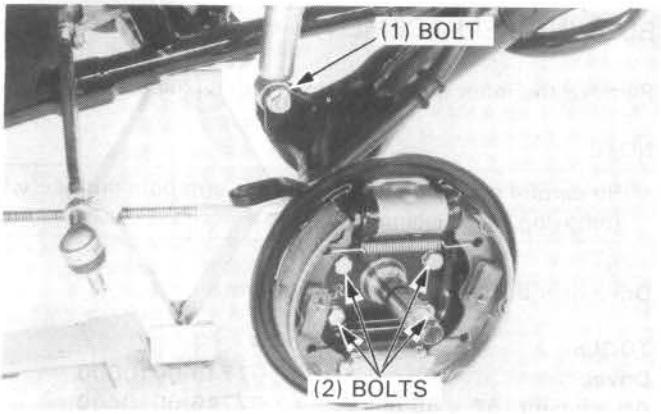
REMOVAL

Remove the following:
— front wheel and front brake drum (page 11-6)
— front arm dust cover
— brake hose clamp.
Disconnect the tie-rod from the knuckle.



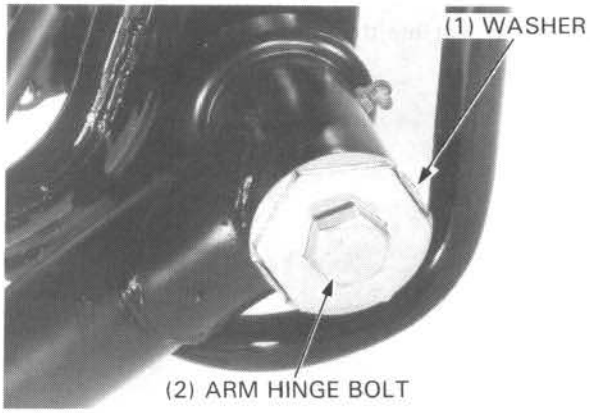
RIDE RED

Remove the four brake backing plate bolts and the front shock absorber lower mounting bolt.



Bend up the tabs of the washer and remove the arm hinge bolt.

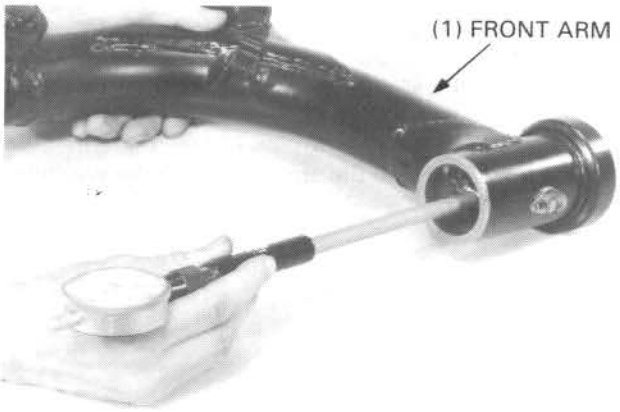
Remove the front arm from the hinge.



INSPECTION

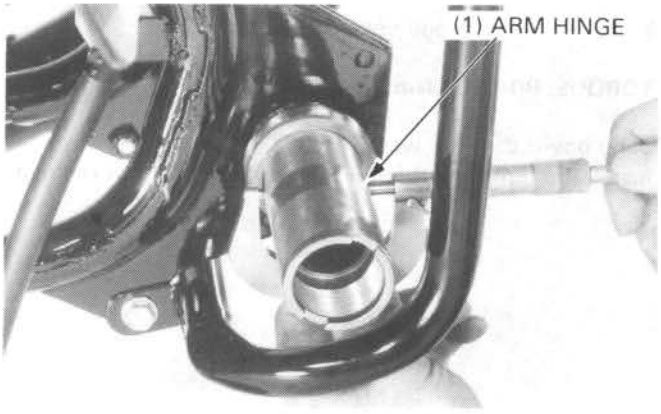
Measure the I.D. of the front arm bushings.

SERVICE LIMIT: 42.8 mm (1.69 in)



Measure the O.D. of the arm hinge.

SERVICE LIMIT: 42.3 mm (1.67 in)



BUSHING REPLACEMENT

Remove the inner and outer front arm bushings.

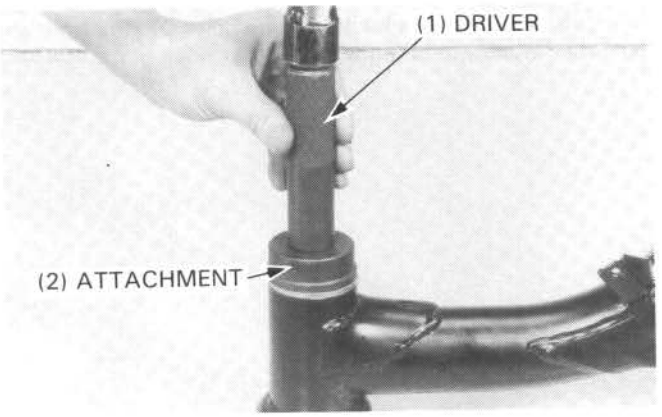
NOTE

- Be careful not to damage the front arm bore surface when removing the bushings.

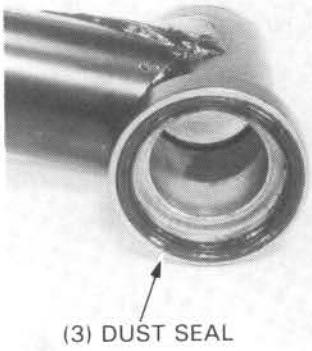
Drive new bushings into the front arm.

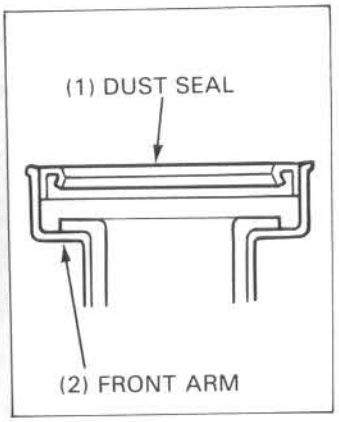
TOOLS

Driver	**07749-0010000**
Attachment, 52 x 55 mm	**07746-0010400**



Install the dust seal into the front arm.

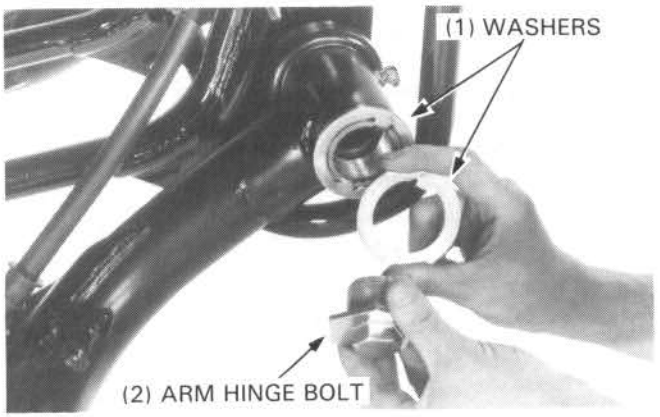




INSTALLATION

Apply grease to the sliding surfaces of the front arm and arm hinge.

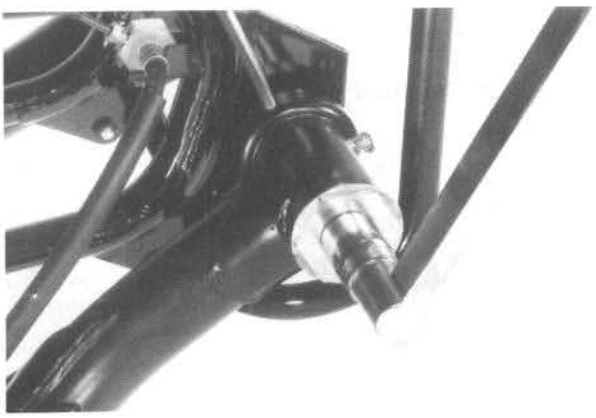
Install the front arm onto the arm hinge with the washers and the arm hinge bolt.



Tighten the arm hinge bolt.

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

Bend down the lock washer tabs.
Install the remaining parts in the reverse order of removal.

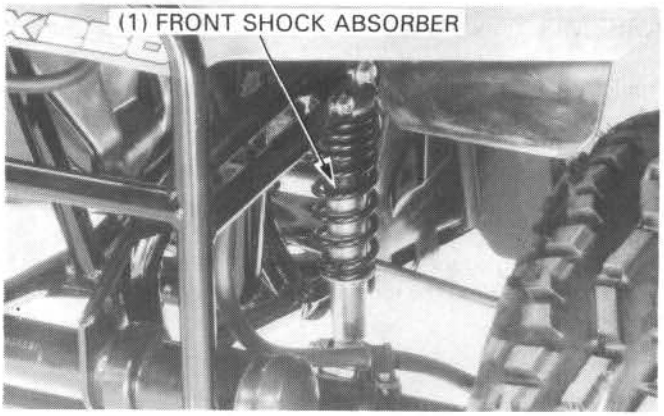


RIDE RED

FRONT SHOCK ABSORBER

REMOVAL/DISASSEMBLY

Raise the front wheels off the ground with a jack or block under the front frame.
Remove the shock upper and lower mounting bolts and nuts.



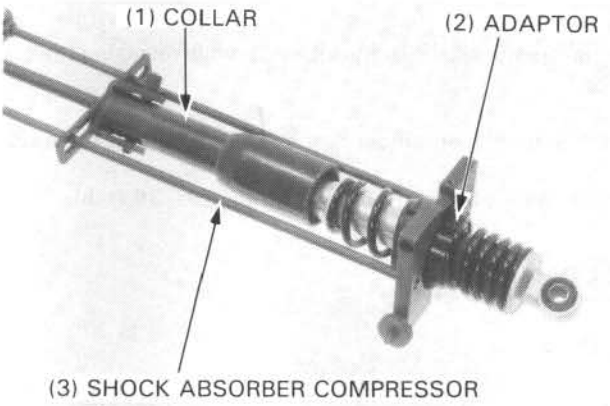
Compress the front shock absorber with the shock compressor, adaptor and atachment.

CAUTION

- *Be careful that the upper end of the damper does not slip out of the compressor.*

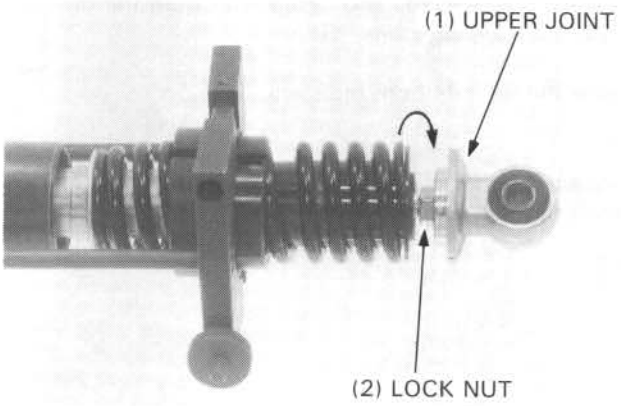
TOOLS

Shock absorber compressor	**07959-3290001**
Collar	**07967-GA70101**
Spring compressor adaptor	**07967-VM50100**



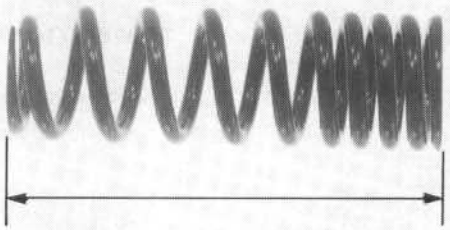
Slip the rubber down and pull the shock rod out.

Separate the upper joint by loosening the lock nut and remove the shock compressor.



Inspect the spring for damage and measure its free length.

SERVICE LIMIT: 149.5 mm (5.89 in)



ASSEMBLY/INSTALLATION

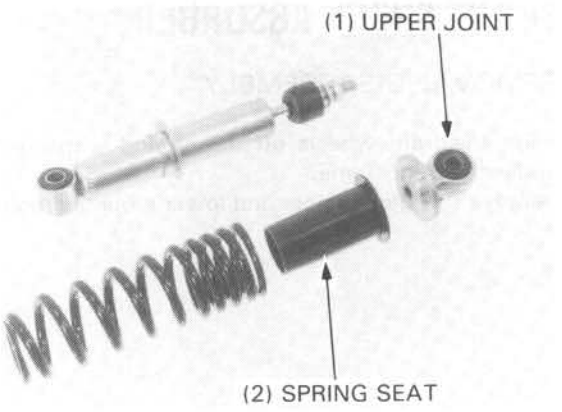
Apply a locking agent to the rod threads and install the lock nut.

Attach the shock absorber compressor, screwing in the compressor's base adjuster nut.

Apply a locking agent to the damper rod threads and screw the upper joint on. Hold the lock nut in a vise and tighten the upper joint securely.

NOTE

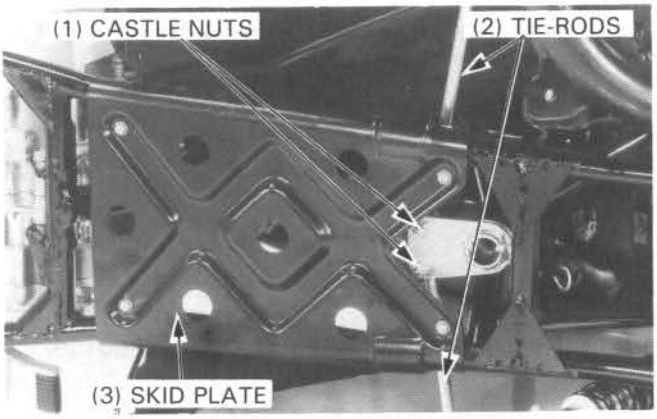
- Check that the lock nut is seated against the rod's bottom thread.



Align the spring seat with the lock nut while releasing the compressor.

Install the shocks and mounting bolts and tighten the nuts.

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



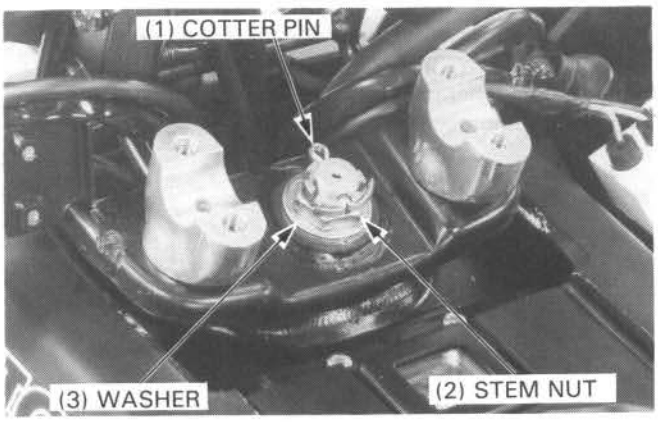
STEERING STEM

REMOVAL

Remove the handlebar (page 11-3) and the skid plate.

Remove the cotter pins and castle nuts from the tie-rod ball joints at the steering stem.

Remove the tie-rods from the stem.



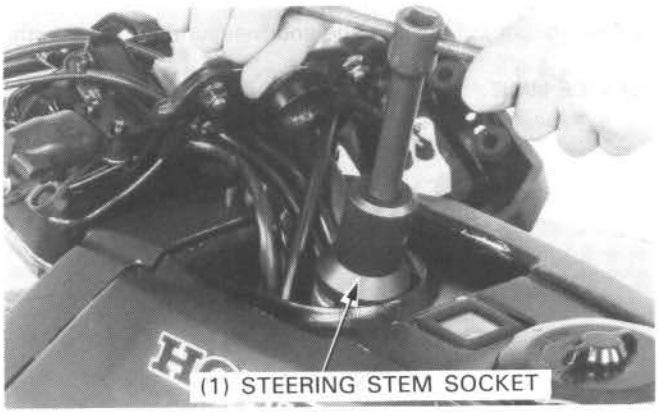
Remove the cotter pin, steering stem nut and washer.
Remove the fork bridge.

Remove the steering adjustment nut, top seal washer, dust seal, upper cone race and 28 upper steel balls.

TOOLS

Steering stem socket	**07916-3710100**

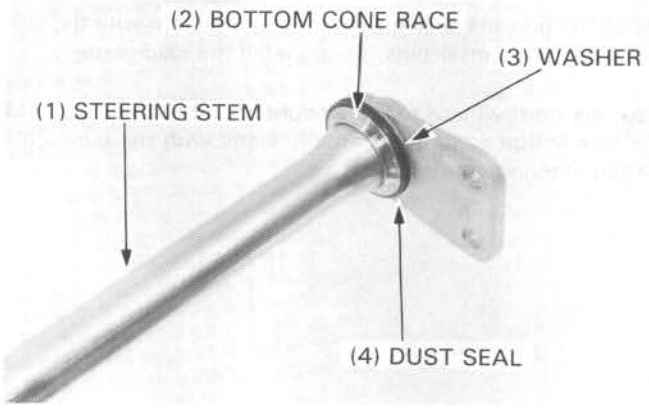
Remove the steering stem and the 32 lower steel balls.



RIDE RED

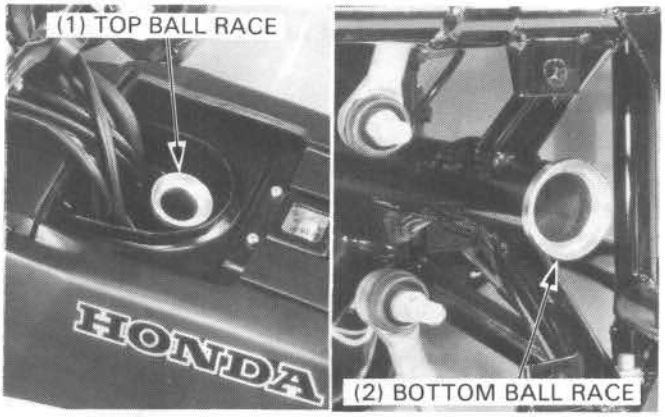
CONE RACE REPLACEMENT

Inspect the bottom cone race for wear or damage and replace if necessary.
Remove the cone race, dust seal and seal washer with a hammer and a drift.
Install a new seal washer, dust seal and bottom cone race using the old bottom cone race, and fork seal driver, 07947–1180001.



BALL RACE REPLACEMENT

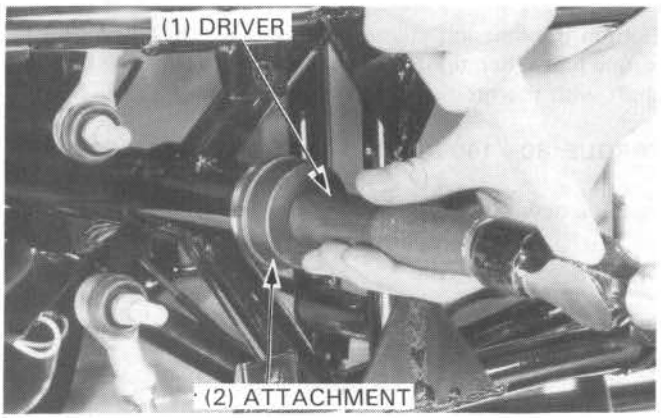
Remove the fuel tank (page 4-3).
Inspect the top and bottom ball races and replace if necessary.
Remove the ball races with a hammer.



Drive in the new top and bottom ball races and reinstall the fuel tank.

TOOLS

Driver	**07749-0010000**
Attachment, 42 x 47 mm	**07746-0010300**



INSTALLATION

Apply grease to the top and bottom ball races.

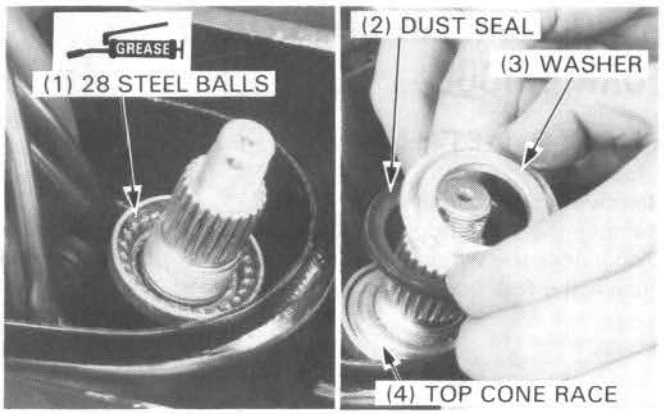
Install the 28 steel balls into the top race and 32 steel balls into the bottom race.
Apply grease to the cone races.
Insert the steering stem into the steering head and install the top cone race, dust seal and washer.
Install the adjustment nut and tighten it to the initial torque with steering stem socket, 07916–3710100.

TORQUE: 25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

Turn the steering stem lock-to-lock several times to seat the bearings, then loosen the adjustment nut and retighten it to the specified torque.
Then, back it off 1/24 turn.

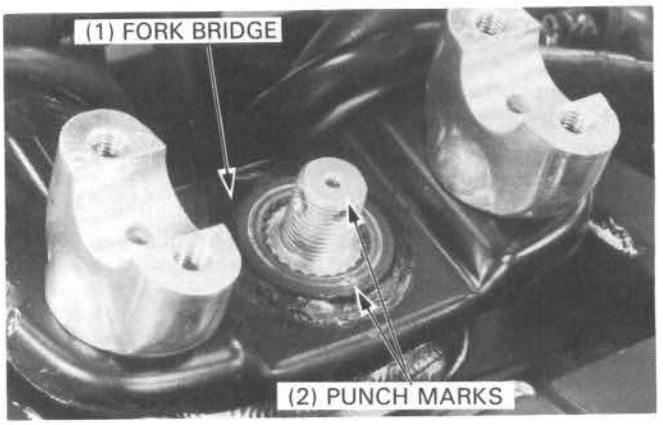
TORQUE: 1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)

Make sure that there is no vertical movement and that the stem rotates freely.

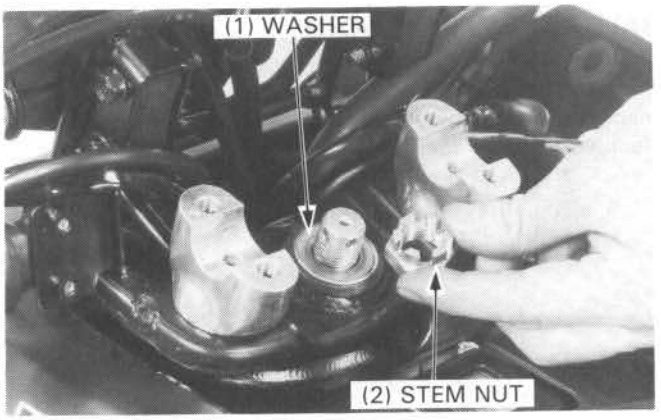


Install the tie-rod ball joints in the steering stem with the castle nuts and new cotter pins. Then install the skid plate.

Turn the front wheels to the straight ahead position and install the fork bridge so its punch mark aligns with the punch mark on the steering stem.



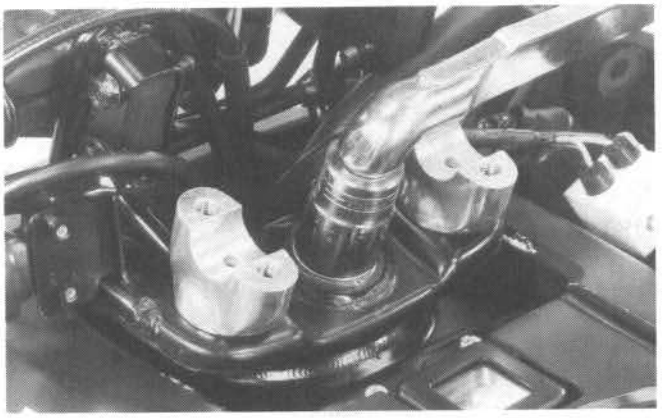
Install the washer and steering stem nut.



Tighten the steering stem nut to 80 N·m (8.0 kg-m, 58 ft-lb) torque first. Then tighten the nut further to align the hole of the shaft with the groove of the nut.

TORQUE: 80–140 N·m (8.0–14.0 kg-m, 58–101 ft-lb)

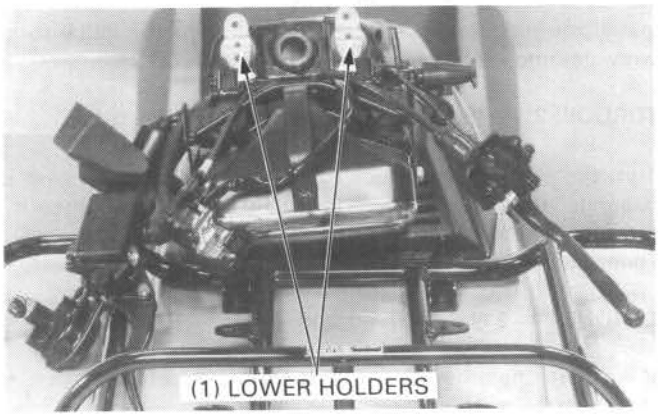
Install a new cotter pin and the handlebar (page 11-3).



HANDLEBAR LOWER HOLDER/ FORK BRIDGE

REMOVAL/INSTALLATION

Remove the handlebar (page 11-3).
Remove the fork bridge and the lower holder nuts.
Disconnect the wires, wire harnesses, brake cable and brake hose if the fork bridge needs to be replaced.

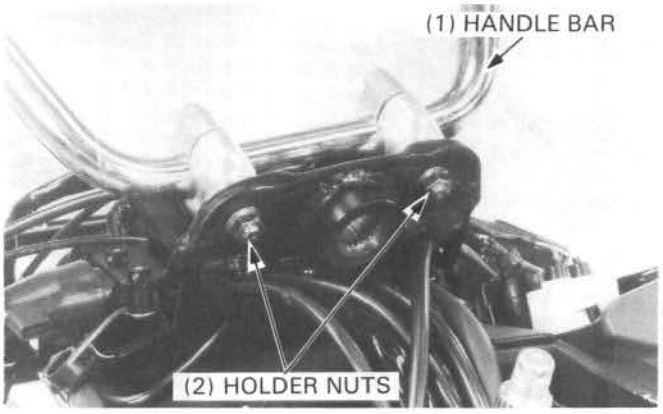


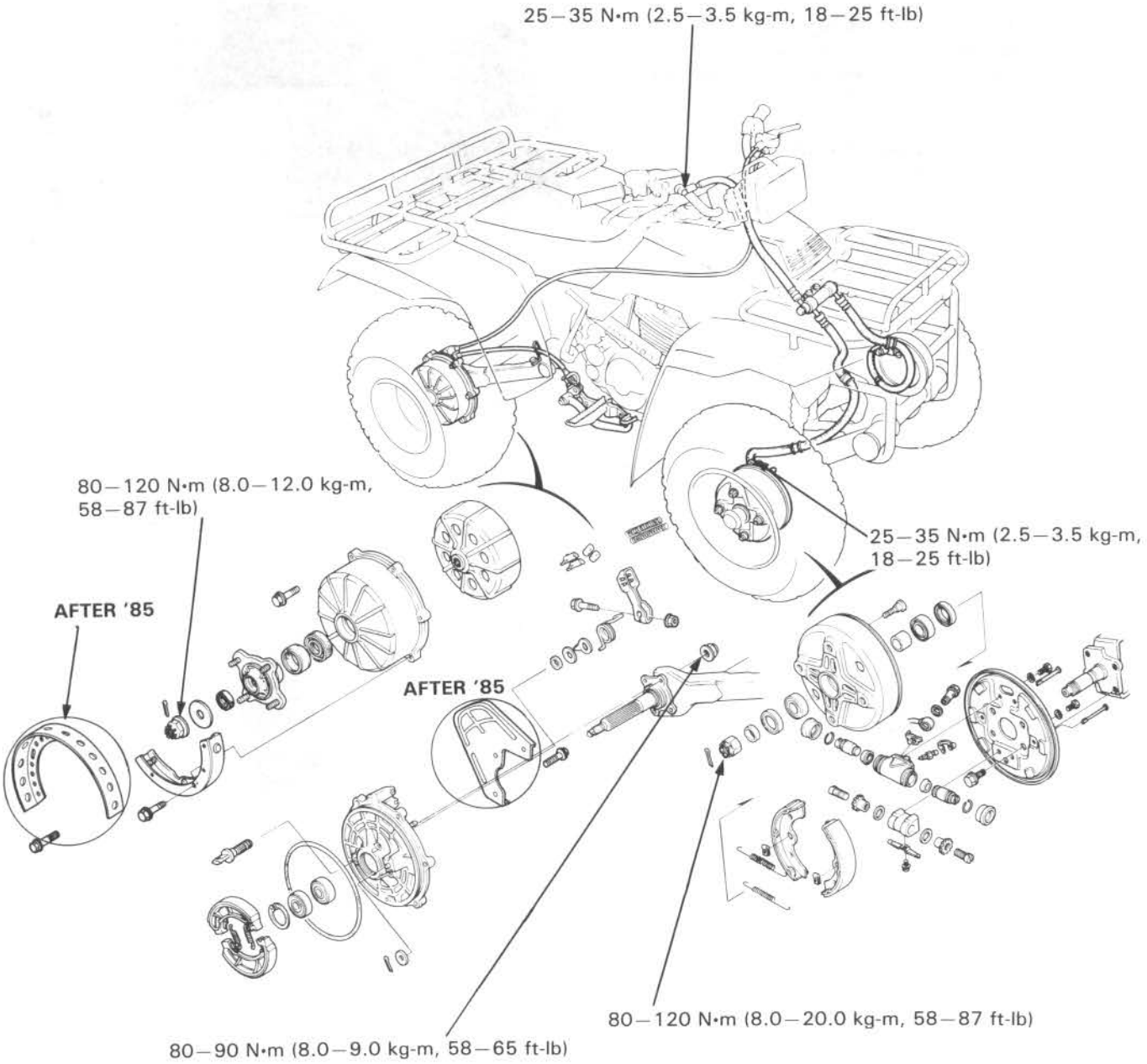
RIDE RED

Install the lower holders onto the fork bridge and tighten the holder nuts.

TORQUE: 40—48 N·m (4.0—4.8 kg-m, 29—35 ft-lb)

Install the fork bridge and the handlebar.
Perform the following inspections and adjustments.
Check the locations of the cables, wire and brake hose.
Bleed the brake system (page 12-3), if the hose was disconnected.
Operation of the electrical components.
Adjust the brake lever free play.




25—35 N•m (2.5—3.5 kg-m, 18—25 ft-lb)
80—120 N•m (8.0—12.0 kg-m, 58—87 ft-lb)
AFTER '85
AFTER '85
25—35 N•m (2.5—3.5 kg-m, 18—25 ft-lb)
80—120 N•m (8.0—20.0 kg-m, 58—87 ft-lb)
80—90 N•m (8.0—9.0 kg-m, 58—65 ft-lb)

RIDE RED

12. BRAKES

SERVICE INFORMATION

GENERAL

WARNING

- *Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.*

- This section covers maintenance of the front drum hydraulic brake and rear drum brake systems.
- A jack or other support is required to support the Four Trax.
- Once the hydraulic system has been opened, or if the brake feels spongy, the system must be bled.
- Do not allow foreign material to enter the system when filling the reservoir.
- Brake fluid will damage painted, plastic, and rubber parts. Whenever handling brake fluid, protect the painted, plastic, and rubber parts by covering them with a rag. If fluid does get on these parts, wipe it off with a clean cloth.
- Always check brake operation before riding the Four Trax.

SPECIFICATIONS

ITEM	STANDARD	SERVICE LIMIT
Front brake drum I.D.	160 mm (6.2 in)	161 mm (6.3 in)
Front brake lining thickness	4.0 mm (0.2 in)	2.0 mm (0.1 in)
Wheel cylinder piston O.D.	17.417—17.444 mm (0.6857—0.6868 in)	17.405 mm (0.6852 in)
Wheel cylinder I.D.	17.460—17.503 mm (0.6874—0.6890 in)	17.515 mm (0.6895 in)
Front master cylinder I.D.	12.700—12.743 mm (0.5000—0.5017 in)	12.755 mm (0.5022 in)
Front master cylinder piston O.D.	12.657—12.684 mm (0.4983—0.4994 in)	12.645 mm (0.4978 in)
Rear brake lining thickness	4.0 mm (0.2 in)	2.0 mm (0.1 in)
Rear brake drum I.D.	160 mm (6.2 in)	161 mm (6.3 in)

TORQUE VALUES

Front wheel nut	50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)
Front axle nut	80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)
Rear wheel nut	50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)
Rear axle nut	80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)
Master cylinder hose bolt	25—35 N·m (2.5—3.5 kg-m, 18—25 ft-lb)
Wheel cylinder hose bolt	25—35 N·m (2.5—3.5 kg-m, 18—25 ft-lb)
Rear brake panel nut	80—90 N·m (8.0—9.0 kg-m, 58—65 ft-lb)
Reservoir cover screw	1—2 N·m (0.1—0.2 kg-m, 0.7—1.4 ft-lb)

TOOLS

Special	
Snap ring pliers	07914—3230001
Attachment	07965—SA50600
Common	
Driver	07749—0010000
Attachment, 42 x 47 mm	07746—0010300
Bearing remover shaft	07746—0050100 ┐
Bearing remover head, 20 mm	07746—0050600 ┘ or equivalent commercially available in U.S.A.
Pilot, 20 mm	07746—0040500

TROUBLESHOOTING

Front wheel wobbling and noise
- Worn front brake drum bearings
- Worn brake shoes

Poor brake performance
- Brake not adjusted properly
- Worn brake shoes
- Brake fluid leak
- Incorrectly installed rear brake arm
- Contaminated brake shoes
- Worn rear brake cam
- Worn rear brake drum

RIDE RED

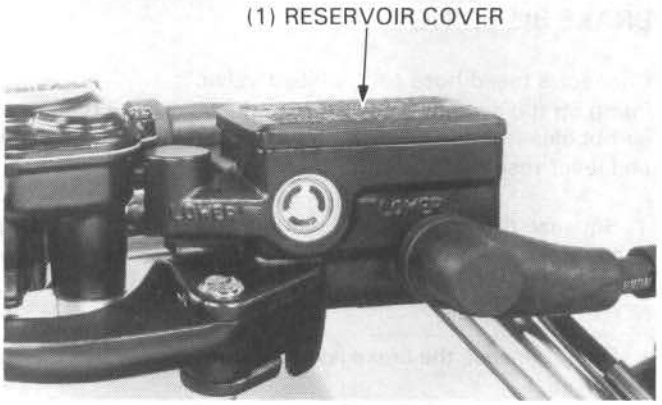
FRONT BRAKE

BRAKE FLUID DRAINING

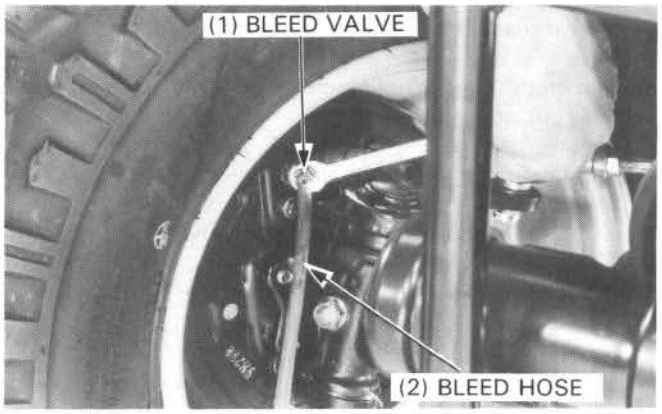
CAUTION

- *Do not allow foreign material to enter the system when filling the reservoir.*
- *Avoid spilling fluid on painted, plastic, or rubber parts. Place a rag over these parts whenever the system is serviced.*

With the fluid reservoir parallel to the ground, remove the reservoir cover and diaphragm.



Connect a bleed hose to the bleed valve.
Loosen the bleed valve and pump the brake lever.
Stop pumping the lever when no more fluid flows out of the bleed valve.



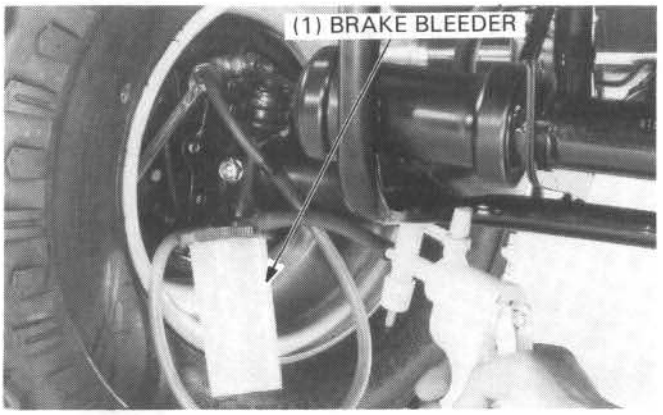
BRAKE FLUID FILLING

Fill the reservoir with DOT-3 or 4 brake fluid from a sealed container.

CAUTION

- *Do not mix different types of fluid. They are not compatible.*

Connect the commercially available brake bleeder to the bleed valve.



Pump the brake bleeder and loosen the bleed valve.
Add fluid when the fluid level in the master cylinder reservoir is low.

NOTE

- Check the fluid level often while bleeding the brakes to prevent air from being pumped into the system.
- When using a brake bleeding tool, follow the manufacturer's operating instructions.

Repeat the above procedures until air bubbles do not appear in the plastic hose.

NOTE

- If air is entering the bleeder from around the bleed valve threads, seal the threads with teflon tape.
- If a brake bleeder is not availavle, fill the master cylinder and operate the brake lever to fill the system.

Close the bleed valve and operate the brake lever. If it feels spongy, bleed the system by performing the available BLEEDING procedure.

BRAKE BLEEDING

Connect a bleed hose to the bleed valve.
Pump up the system pressure with the lever until there are no air bubbles in the fluid flowing out of the reservoir small hole and lever resistance is felt.

1. Squeeze the brake lever, open the bleed valve 1/2 turn and then close the valve.

NOTE

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

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

Repeat steps 1 and 2 until bubbles cease to appear in the fluid coming out of the bleeder valve.

Fill the fluid reservoir to the upper level mark.

Reinstall the diaphragm and reservoir cover.

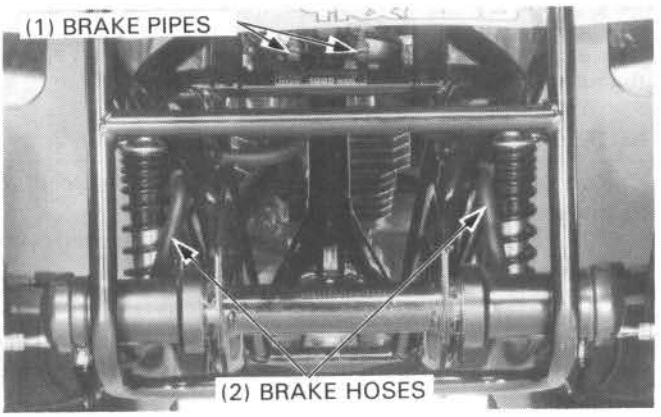
TORQUE: 1–2 N·m (0.1–0.2 kg-m, 0.7–1.4 ft-lb)

BRAKE HOSE/PIPE INSPECTION

Remove the fuel tank cover (page 4-3).

Check the upper brake hose for damage and brake fluid leaks.

Check the three-way joint and lower hoses for damage and brake fluid leaks.

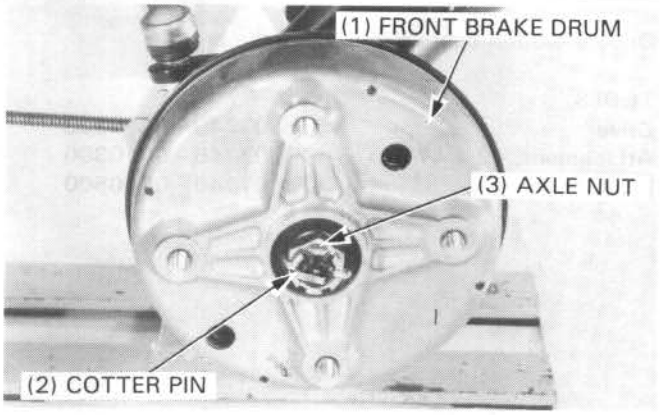


RIDE RED

FRONT BRAKE DRUM REMOVAL

Place a support block under the engine to raise the front wheels off the ground and remove the wheels.

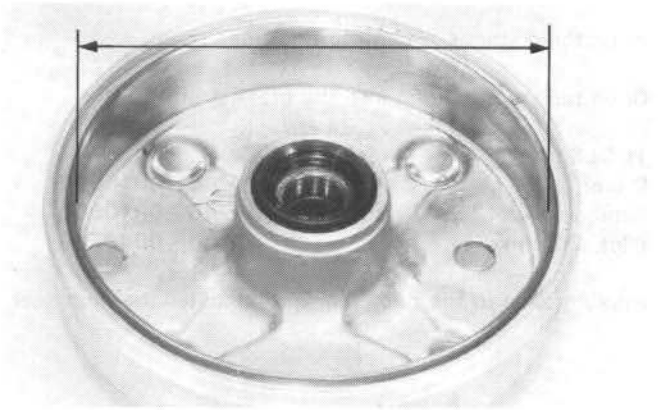
Remove the cotter pin from the axle nut, then remove the axle nut and brake drum.



BRAKE DRUM INSPECTION

Inspect the brake drum for scoring, cracks and concentricity.

Measure the I.D. of the drum.
SERVICE LIMIT: 161 mm (6.3 in)



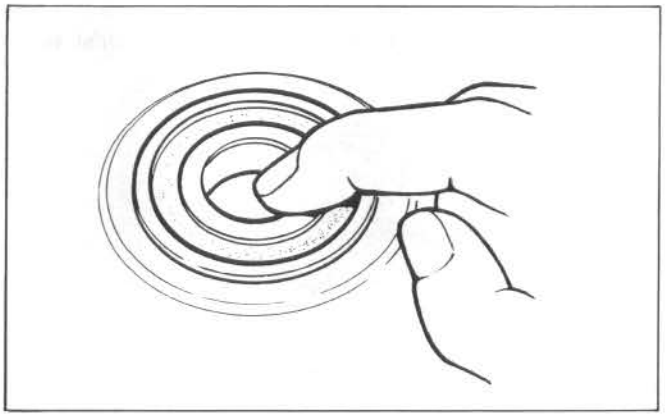
BEARING INSPECTION

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the brake drum.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the brake drum.

NOTE

- Replace hub bearings in pairs.



For replacement of bearings, see page 12-5 and 12-6.

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

BRAKE DRUM BEARING REPLACEMENT

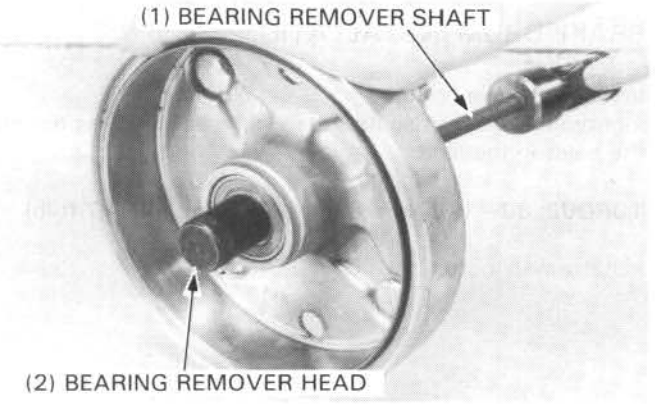
Remove the dust seals.

Remove the brake drum bearings.

TOOLS

Bearing remover shaft	**07746—0050100**
Bearing remover head, 20 mm	**07746—0050600**

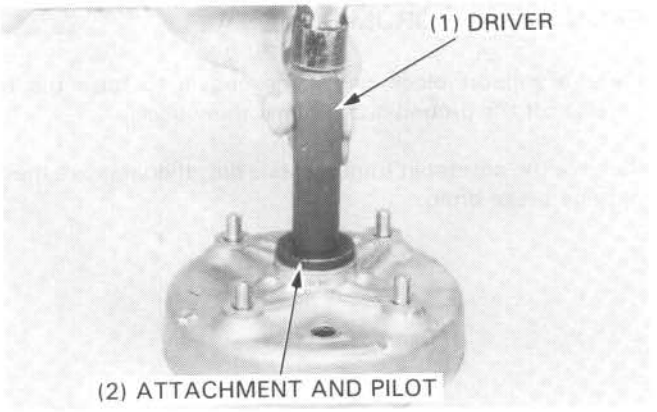
or equivalent commercially available in U.S.A.



Drive the outer bearing into the brake drum.

TOOLS

Driver	**07749—0010000**
Attachment, 42 x 47 mm	**07746—0010300**
Pilot, 20 mm	**07746—0040500**



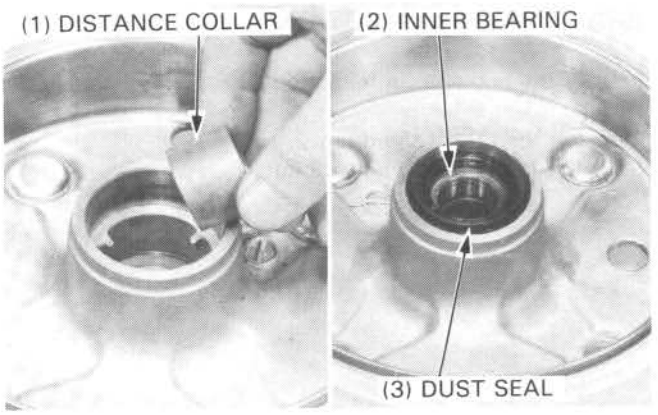
Place the distance collar into the brake drum.

Drive the inner bearing into the brake drum.

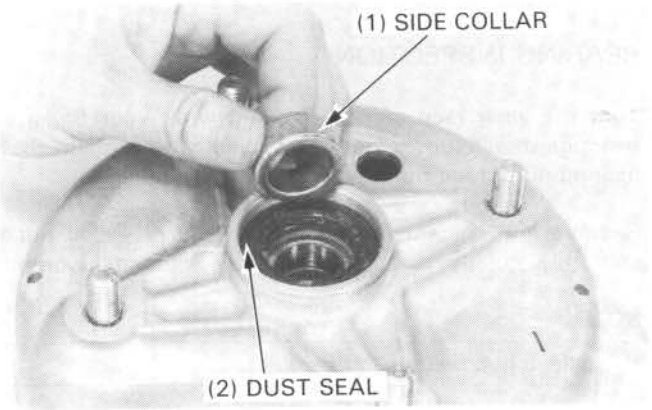
TOOLS

Driver	**07749—0010000**
Attachment, 42 x 47 mm	**07746—0010300**
Pilot, 20 mm	**07746—0040500**

Apply grease to the dust seal lip and install the dust seal.



Apply grease to the dust seal lip and install the dust seal and side collar.

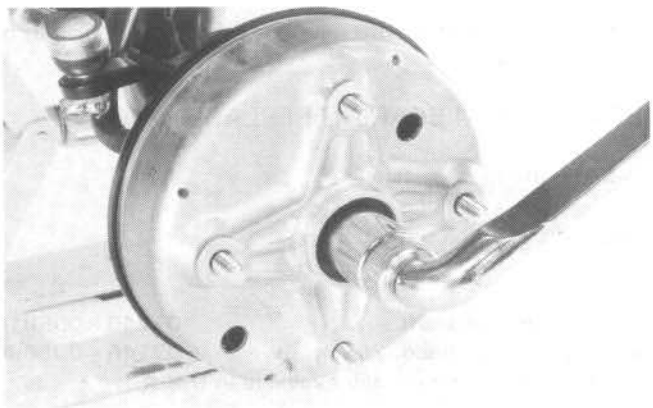


BRAKE DRUM INSTALLATION

Install the brake drum.
Tighten the axle nut so its slots will be as close as possible to the holes in the axle.

TORQUE: 80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)

Install a new cotter pin.



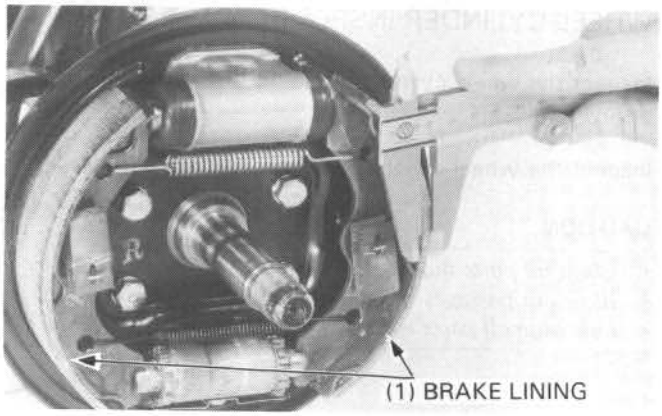
RIDE RED

BRAKE SHOES/WHEEL CYLINDER/ ADJUSTER ASSEMBLY REMOVAL

Remove the front brake drum (page 12-5).
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.1 in)

Replace the brake shoes if the lining thickness is less than the service limit.
Inspect the brake linings for cracking, glazing, wear or contamination.
Check the springs for damage.

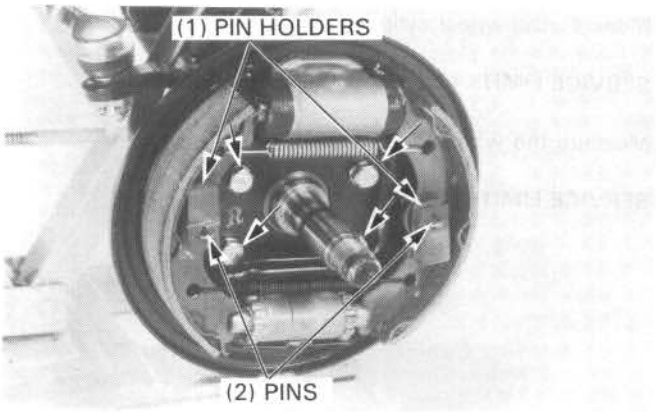


Remove the pins, pin holders, brake shoes and springs.

NOTE

- To remove the pins, push on the pin holders and turn them.

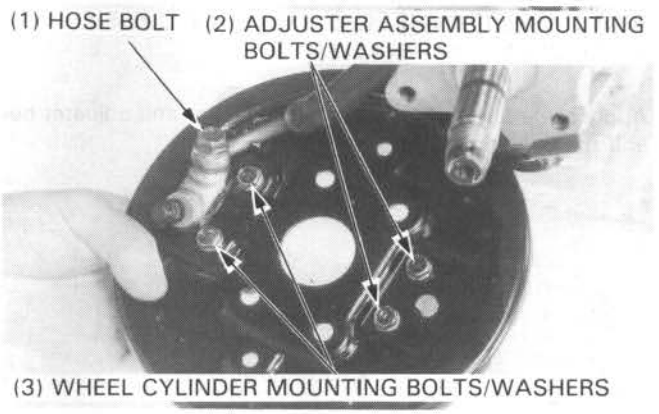
Remove the four brake backing plate bolts and remove the plate.



Disconnect the brake hose from the wheel cylinder by removing brake hose bolt.

Remove the adjuster assembly mounting bolts and washers.

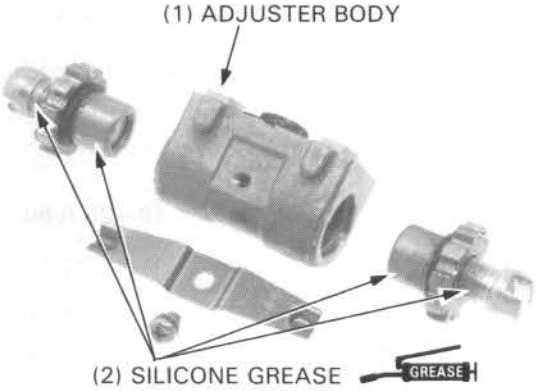
Remove the wheel cylinder mounting bolts and washers.



ADJUSTER ASSEMBLY/INSPECTION

Check the adjuster and adjuster body for damage, rotating them by hand.

Apply the silicone grease to the adjusters.



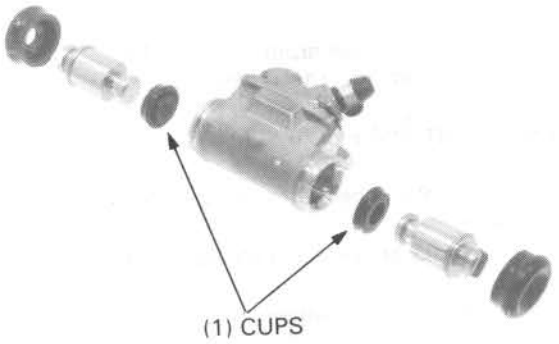
WHEEL CYLINDER INSPECTION

Inspect the wheel cylinder bore and the pistons for scoring or grooving.

Inspect the wheel cylinder cups for wear or damage.

CAUTION

- *Clean all parts thoroughly with BRAKE FLUID only.*
- *Blow out passages with compressed air.*
- *Lubricate all parts with brake fluid during reassembly.*

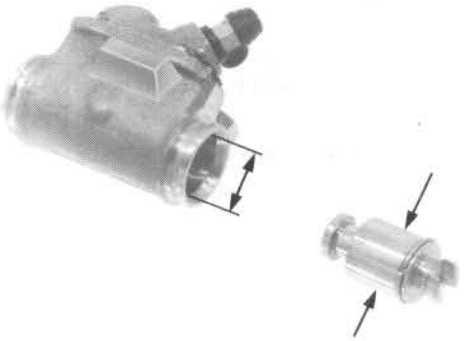


Measure the wheel cylinder I.D.

SERVICE LIMIT: 17.515 mm (0.6895 in)

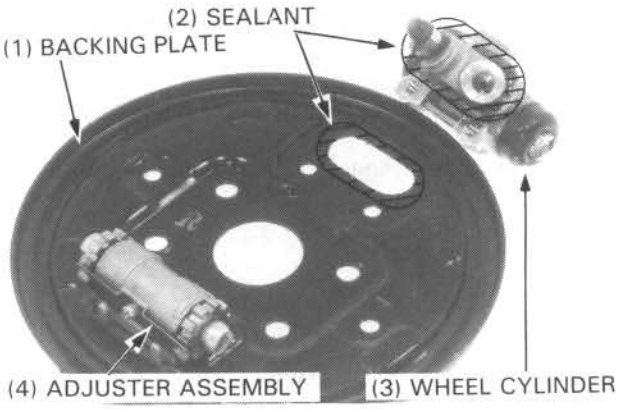
Measure the wheel cylinder piston O.D.

SERVICE LIMIT: 17.405 mm (0.6852 in)



BRAKE SHOE/WHEEL CYLINDER/ADJUSTER ASSEMBLY INSTALLATION

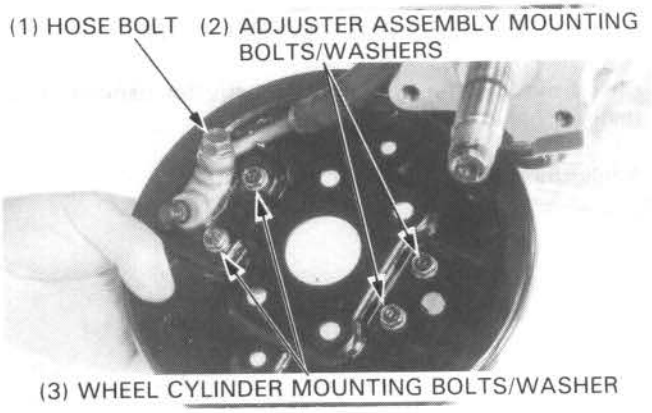
Apply sealant between the wheel cylinder and adjuster bodies and the backing plate.



Install the wheel cylinder and adjuster assemblies onto the brake backing plate.
Connect the brake hose to the cylinder with the hose bolt and sealing washers.

Tighten the hose bolt.

TORQUE: 25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)



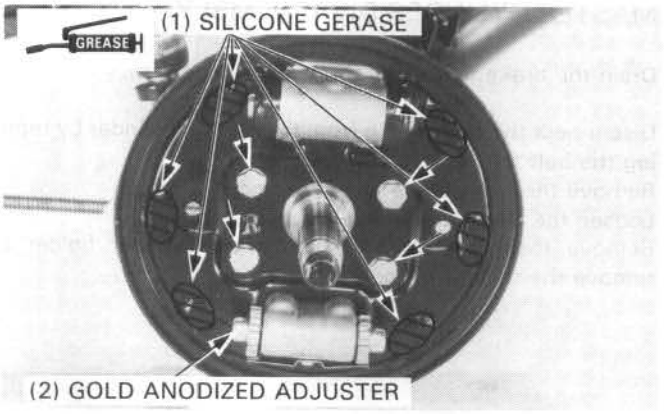
RIDE RED

Install the brake backing plate with four bolts.

NOTE

- Make sure the GOLD anodized adjuster is on your left.

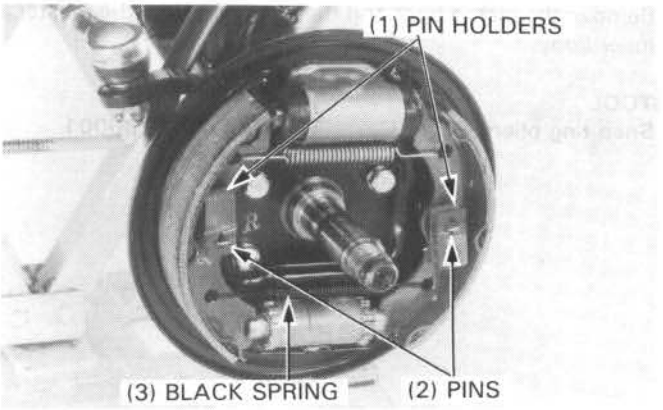
Apply silicone grease on the metal contact areas indicated.



Install the brake shoes, springs, pins and pin holders.

NOTE

- Do not get grease or oil on the brake lining surface.
- Install the black spring below the spindle.



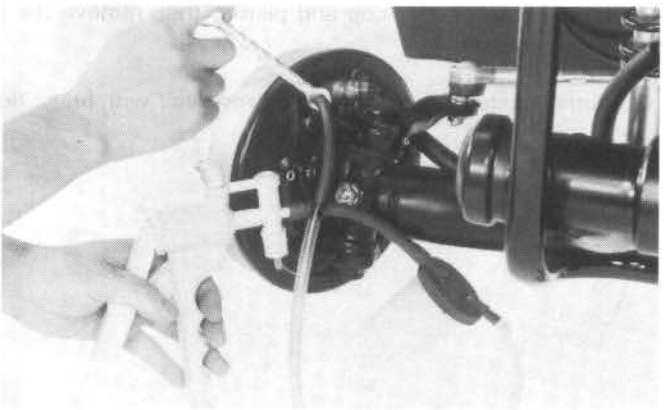
Install the brake drum, axle nut and cotter pin (page 12-5).

Fill the brake fluid reservoir and bleed the brake system (page 12-3).

NOTE

- The master cylinder reservoir must be full at the start of bleeding and checked afterwards.

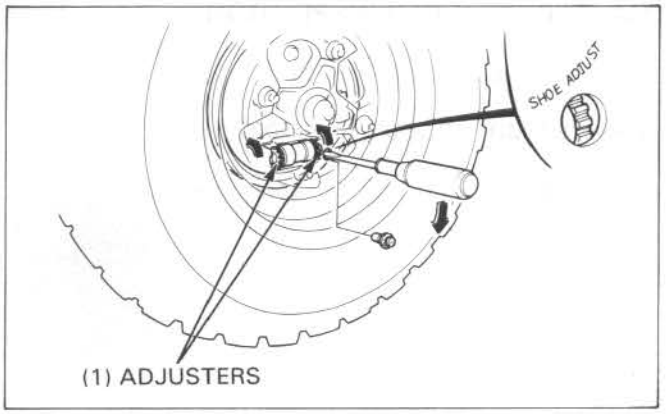
Install the wheel (page 11-6) and adjust the brake shoe lining-to-drum clearance.



BRAKE ADJUSTMENT

Turn the two brake shoe adjusters up with a screw driver until the brake shoes lock, then back off three stops.

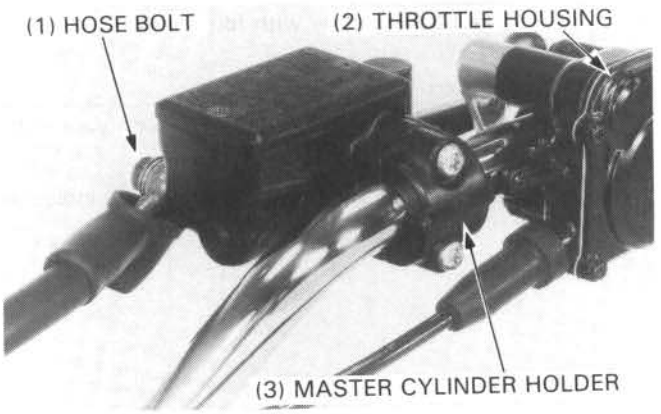
Install the rubber caps.



MASTER CYLINDER DISASSEMBLY

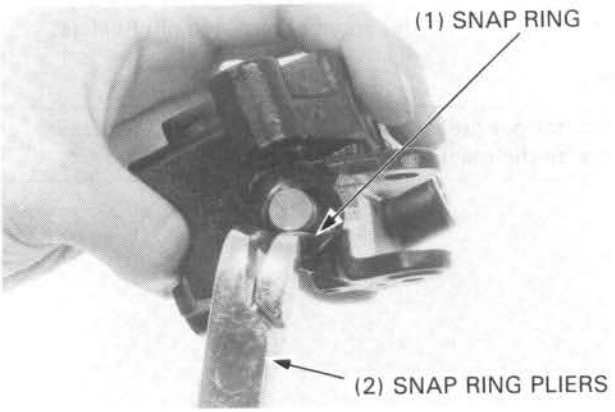
Drain the brake fluid from the hydraulic system.

Disconnect the brake hose from the master cylinder by removing the bolt two sealing washers.
Remove the front brake lever nut and pivot bolt.
Loosen the throttle housing bracket screws.
Remove the screws from the master cylinder holder and remove the master cylinder.



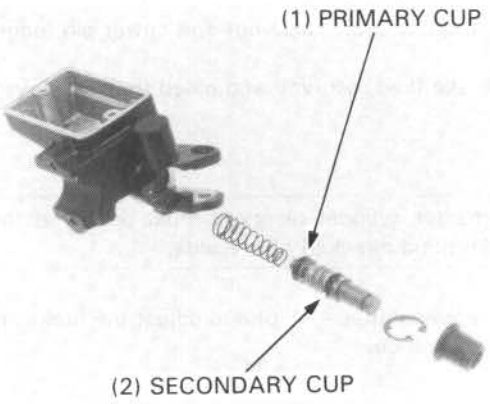
Remove the piston boot and the snap ring from the master cylinder body.

TOOL
Snap ring pliers **07914–3230001**



Remove the secondary cup and piston, then remove the primary cup and spring.

Clean the inside of the cylinder and reservoir with brake fluid.

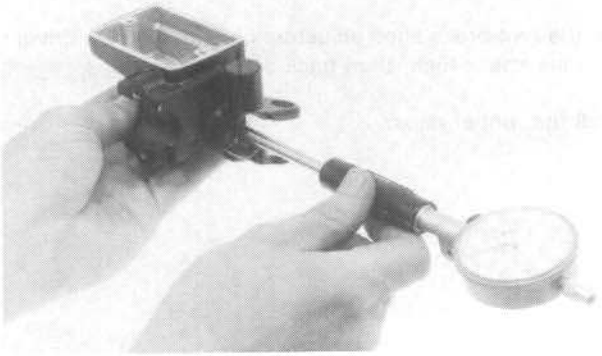


MASTER CYLINDER INSPECTION

Measure the master cylinder I.D.

SERVICE LIMIT: 12.755 mm (0.5022 in)

Check the master cylinder for scores, scratches or nicks.

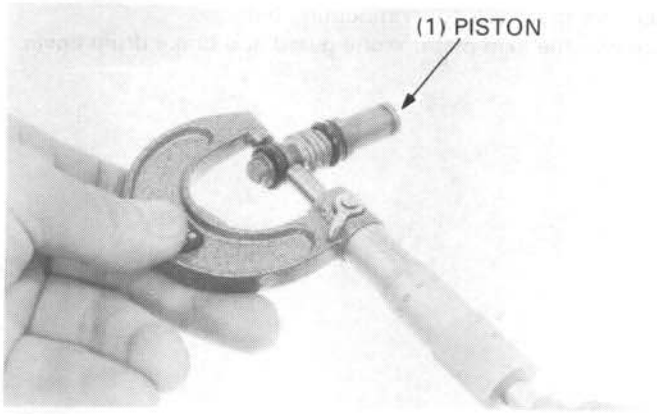


RIDE RED

Measure the master cylinder piston O.D.

SERVICE LIMIT: 12.645 mm (0.4978 in)

Check the primary and secondary cups for damage before assembly.



MASTER CYLINDER ASSEMBLY

CAUTION

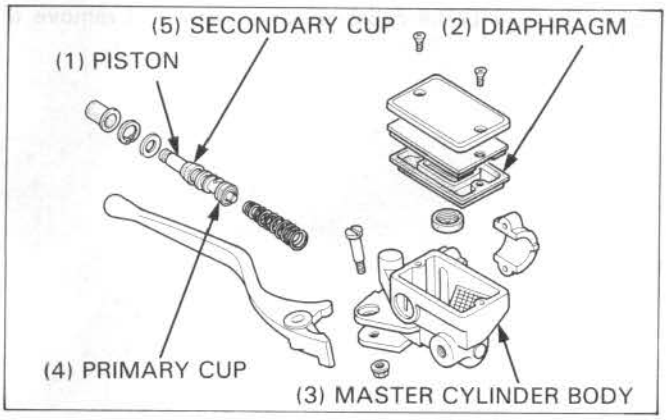
- *Replace the master cylinder piston, cylinder and spring as a set; don't substitute individual parts.*

Assemble the master cylinder. Coat all parts with clean brake fluid before assembly. Install the spring and primary cup together.

Dip the secondary cup in brake fluid before assembly.
Install the piston, snap ring and boot.

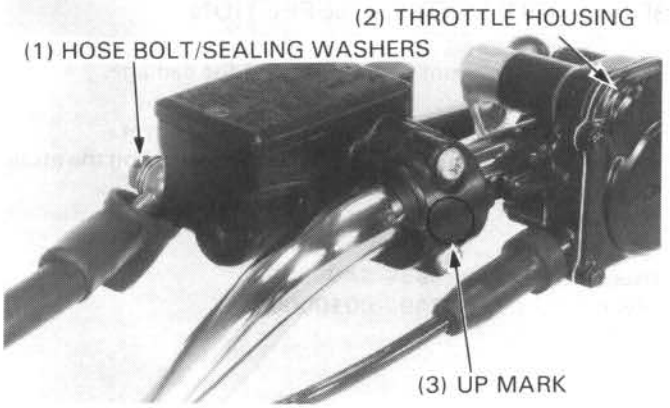
CAUTION

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



Place the master cylinder on the handlebar.

Install the master cylinder holder with the UP mark facing up.
Tighten the upper screw first, then tighten the lower screw loosely.
Align the end of the throttle housing with the punch mark on the handlebar.
Align the end of the master cylinder holder with the line of the throttle housing.
Tighten the screws.



Install the brake hose with the bolt and two sealing washers.

TORQUE: 25–35 N·m (2.5–3.5 kg-m, 18–25 ft-lb)

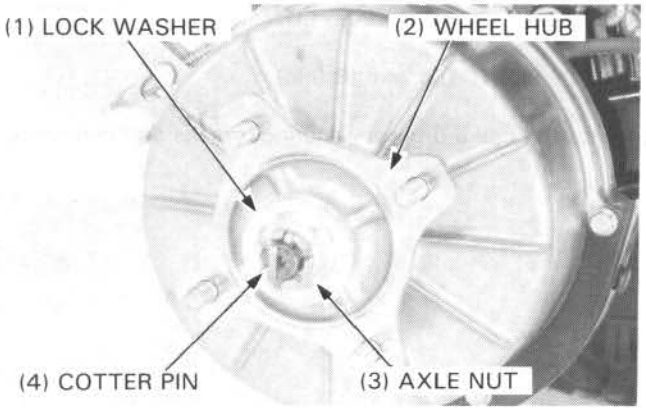
Install the brake lever.
Fill the reservoir to the upper level and bleed the brake system according to page 12-4.

REAR BRAKE

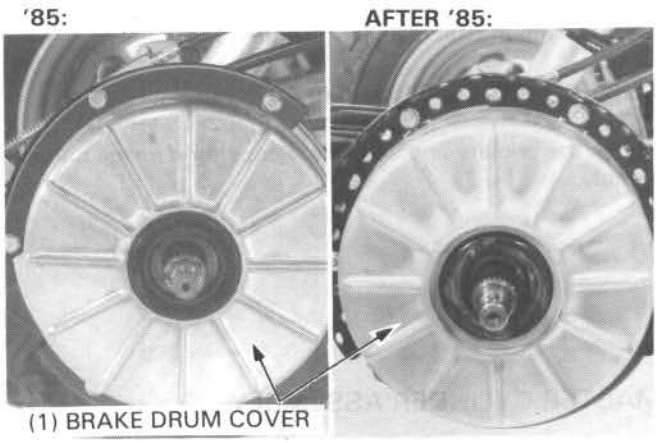
REMOVAL

Place a support block under the rear frame to raise the rear wheels off the ground.

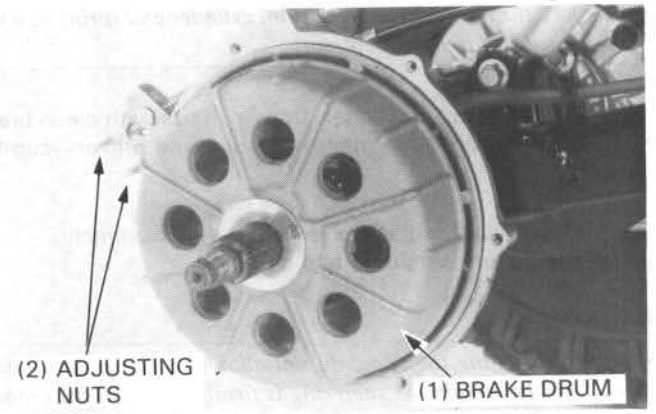
Remove the right rear wheel, then remove the cotter pin, axle nut, lock washer and wheel hub from the axle.



Remove the drum cover mounting bolts.
Remove the skid plate, stone guard and brake drum cover.



Loosen the rear brake cable adjusting nuts and remove the brake drum.

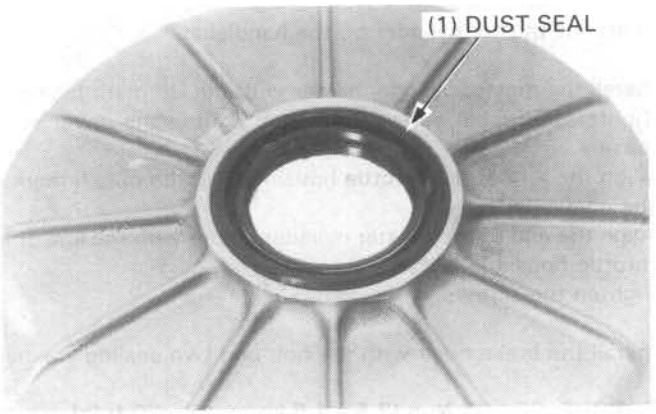


BRAKE DRUM/COVER INSPECTION

Check the brake drum cover dust seal for damage.
Replace, if necessary.
Remove the dust seal from the brake drum cover.
Install the dust seal into the brake drum cover using the attachment and driver.

TOOLS

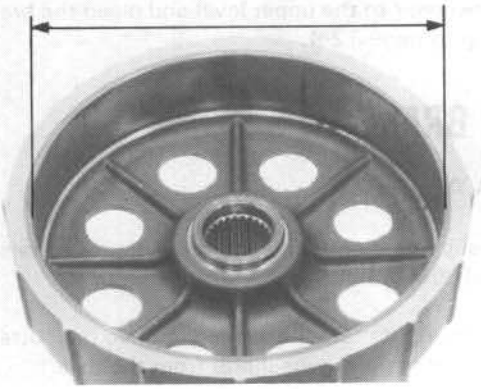
Attachment	**07965—SA00600**
Driver	**07749—0010000**



Measure the rear brake drum I.D.

SERVICE LIMIT: 161 mm (6.3 in)

Inspect the brake drum for scoring, cracks and concentricity.

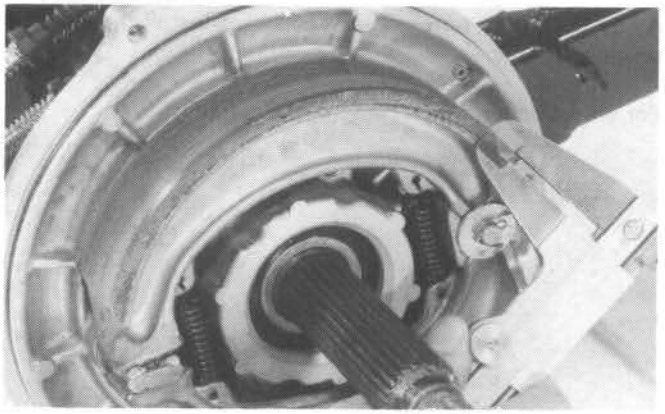


RIDE RED

REAR BRAKE LINING INSPECTION

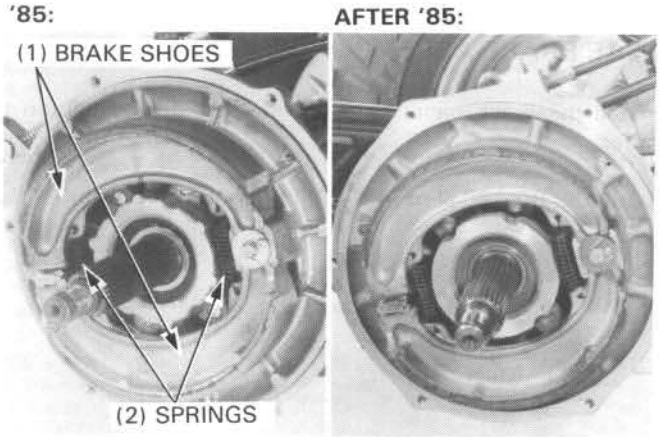
Measure the brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.1 in)



REAR BRAKE DISASSEMBLY

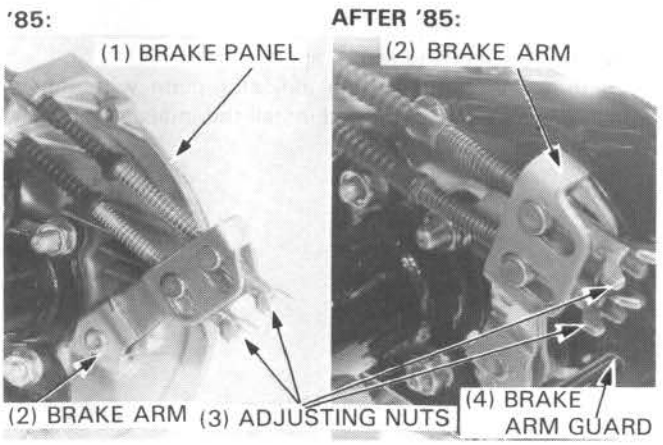
Remove the brake shoes and springs.



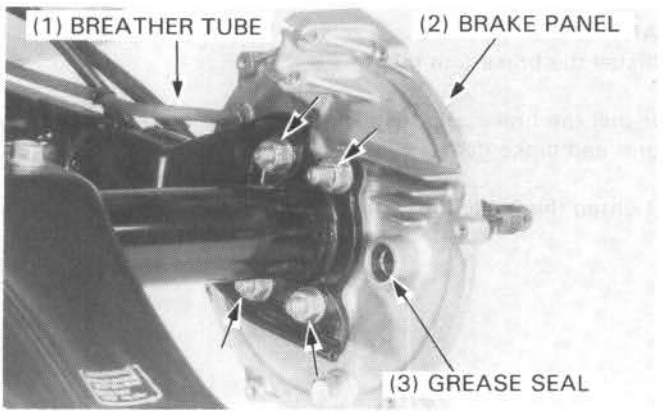
Remove the brake adjusting nuts and disconnect the brake cables from the brake panel.

Remove the brake arm by removing the bolt and nut.
Remove the indicator plate, brake cam, felt seal and return spring.

After '85
Remove the brake arm guard.

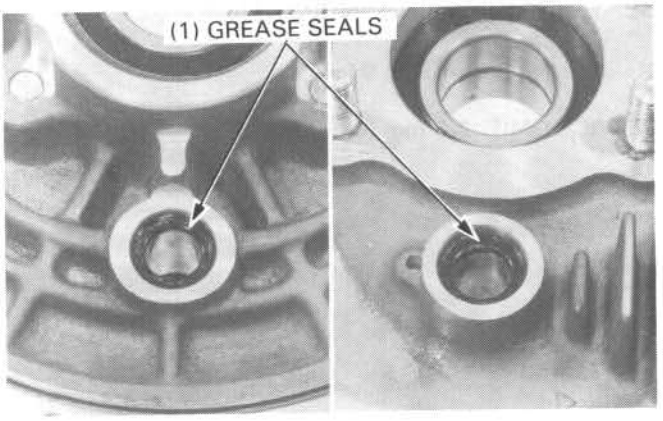


Inspect the grease seals for damage and replace if necessary.
Disconnect the breather tube.
Remove the brake panel nuts and the panel.



Apply grease to new grease seals and install them into the brake cam hole.

For wheel bearing replacement, see page 13-9.

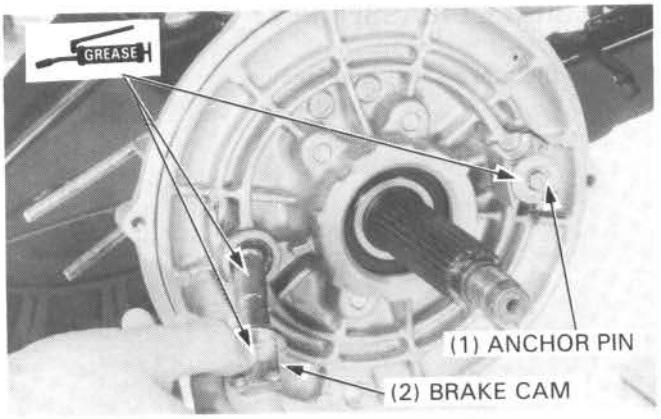


REAR BRAKE ASSEMBLY

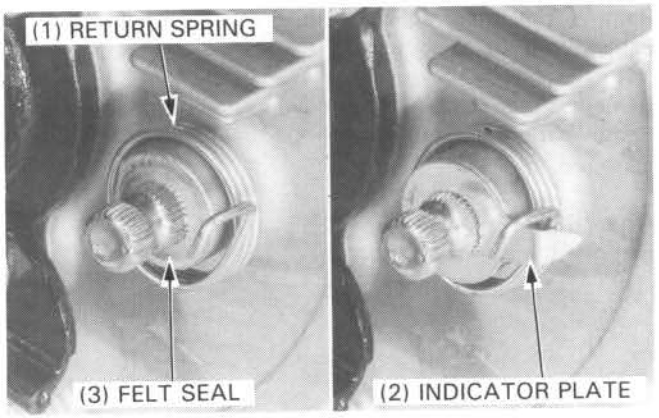
Install the brake panel onto the swing arm and tighten the nuts.

TORQUE: 80–90 N·m (8.0–9.0 kg-m, 58–65 ft-lb)

Apply grease to the anchor pin and brake cam.



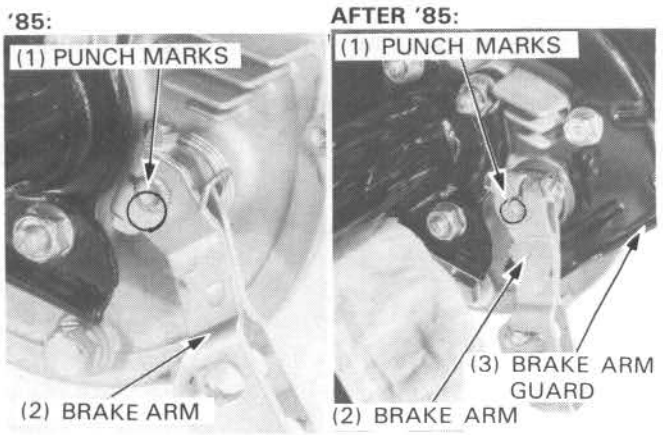
Install the felt seal and return spring.
Align the wide tooth on the indicator plate with the wide groove on the brake cam, and install the indicator plate.



After '85:
Install the brake arm guard.

Install the brake arm, aligning the punch marks on the brake arm and brake cam.

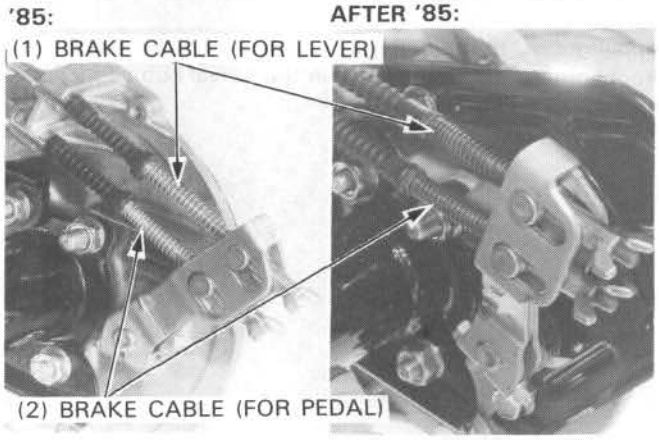
Tighten the brake arm bolt securely.



RIDE RED

Connect the brake cables to the brake arm and install the adjusting nuts.

'85: AFTER '85:

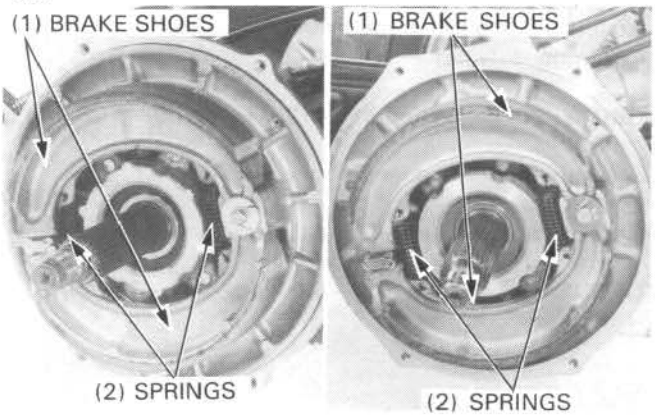


Install the brake shoes and springs.

WARNING

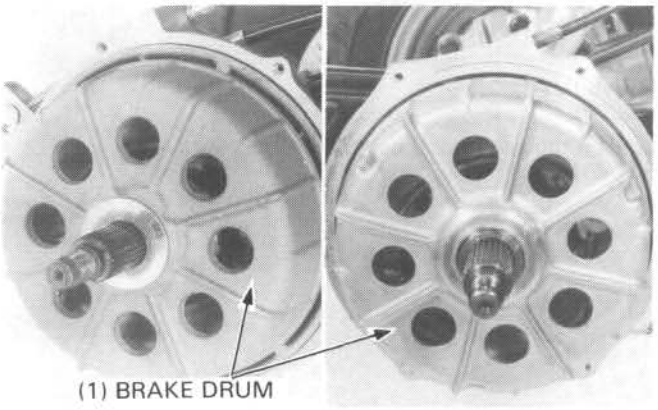
- *Contaminated brake linings reduce stopping power. Keep grease off the linings. Wipe excess grease off the cam.*

'85: AFTER '85:



Install the brake drum.

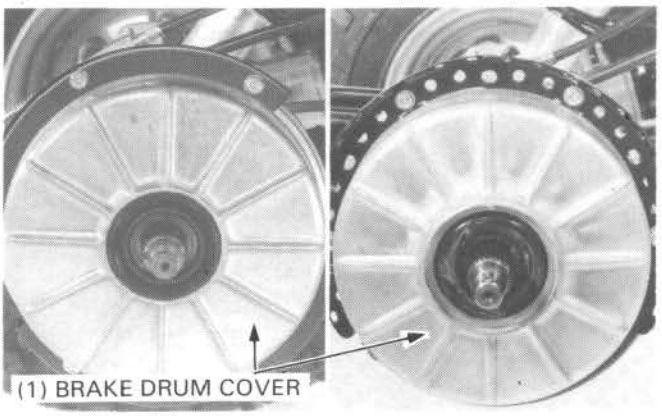
'85: AFTER '85:



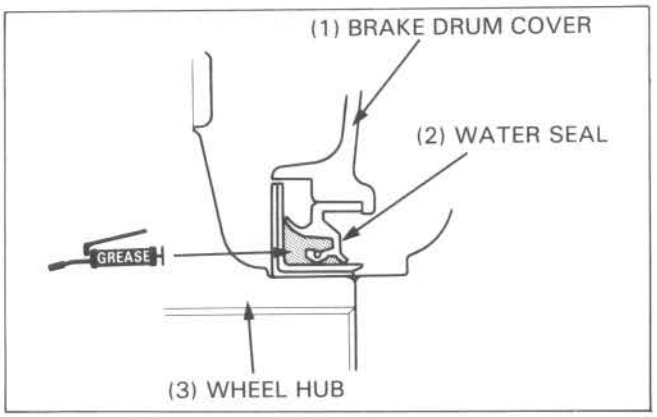
'85: AFTER '85:

Check the water seal in the brake drum cover for wear or damage, and replace if necessary.

Install the brake drum cover, stone guard and skid plate, and tighten the cover mounting bolts.



Apply grease to the water seal as shown.
Apply grease to the dust seal in the wheel hub and install the hub.



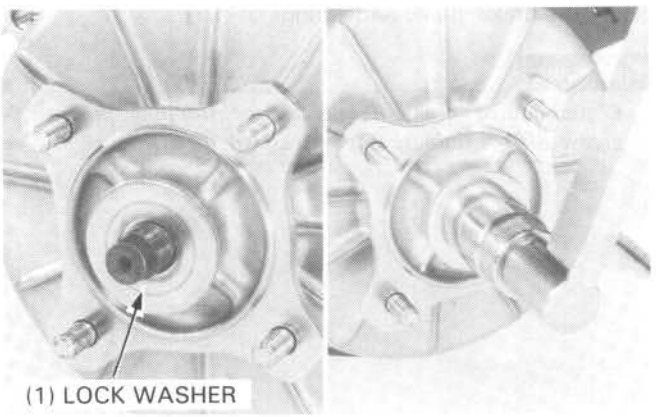
Install the lock washer and axle nut.
Tighten the axle nut.

TORQUE: 80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)

Secure the nut with a new cotter pin.

Install the right rear wheel and tighten the wheel nuts.

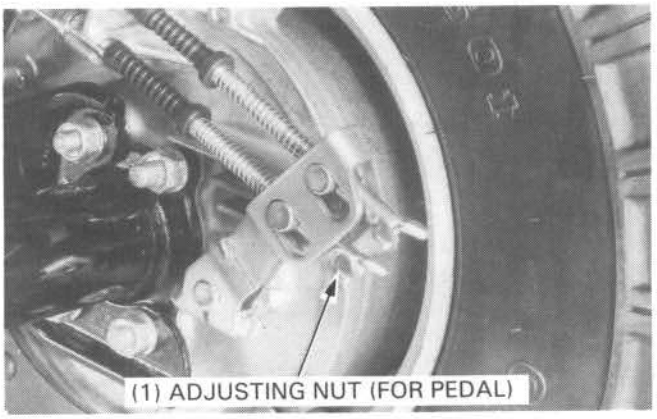
TORQUE: 50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)



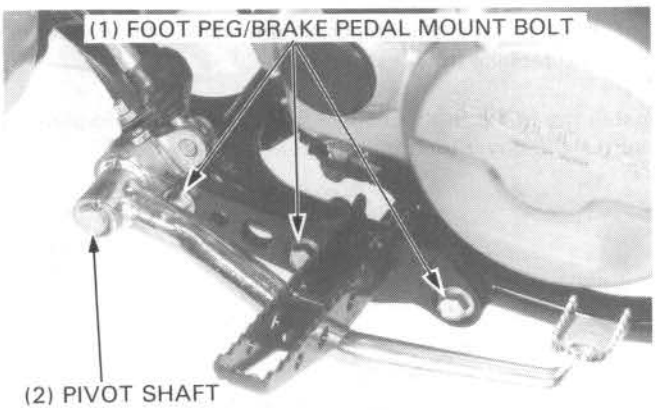
REAR BRAKE PEDAL

REMOVAL

Loosen the rear brake pedal adjusting nut.



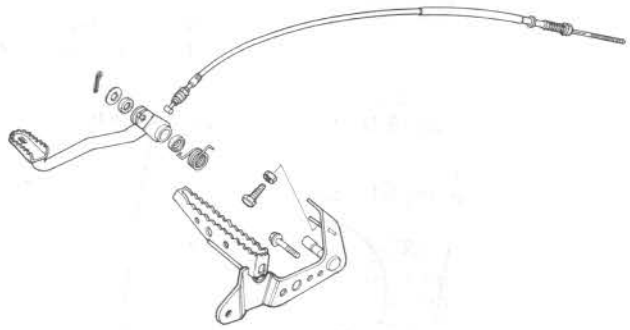
Remove the foot peg/brake pedal mount bolts, cotter pin and washer from the pedal pivot shaft.
Disconnect the brake cable and return spring from the pedal.



RIDE RED

INSTALLATION

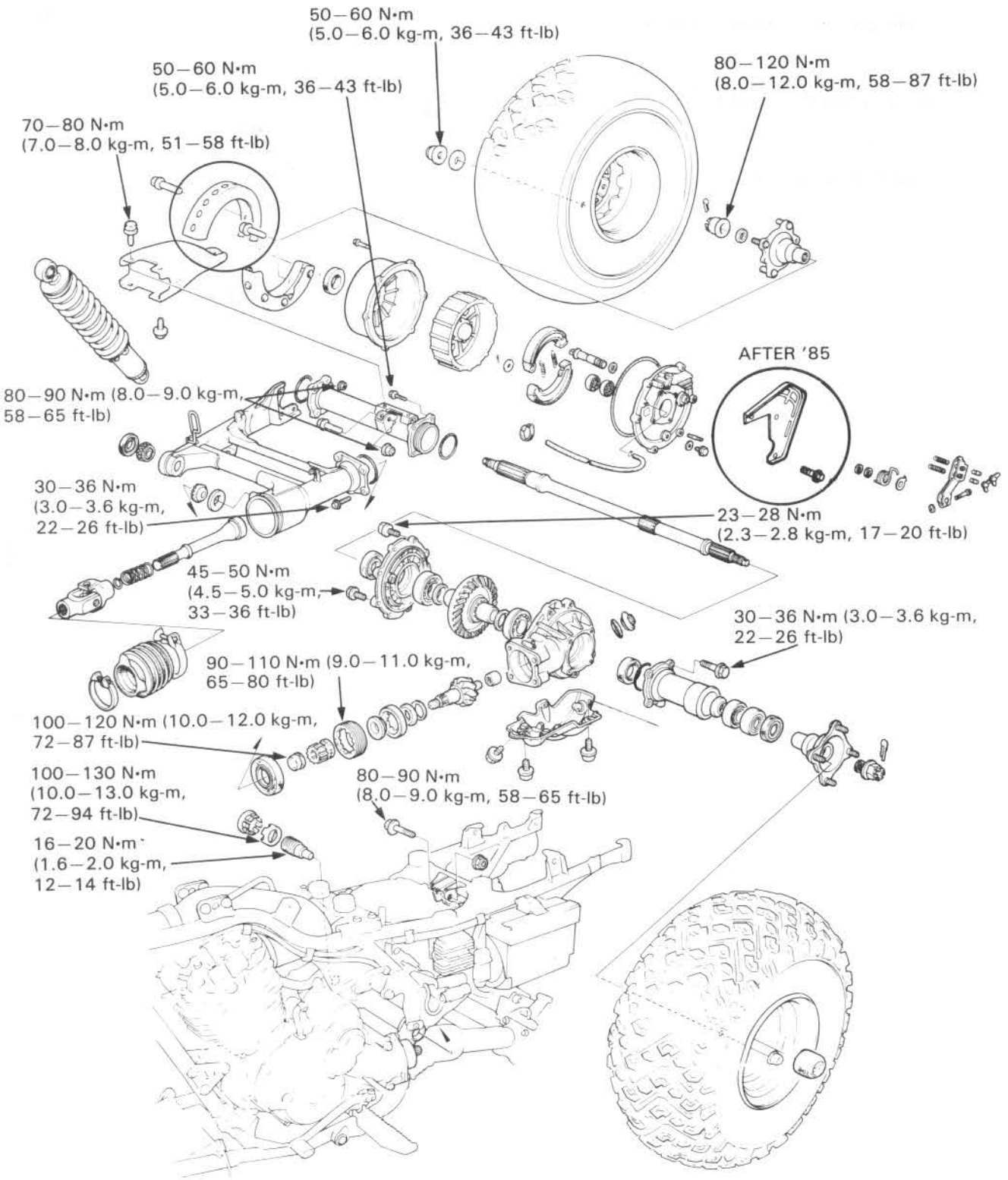
Install the brake pedal in the reverse order of removal.



NOTE

- Apply grease to the brake pedal pivot shaft and brake cable end.

Adjust the rear brake (page 3-9).


50–60 N·m
(5.0–6.0 kg-m, 36–43 ft-lb)
50–60 N·m
(5.0–6.0 kg-m, 36–43 ft-lb)
80–120 N·m
(8.0–12.0 kg-m, 58–87 ft-lb)
70–80 N·m
(7.0–8.0 kg-m, 51–58 ft-lb)
AFTER '85
80–90 N·m (8.0–9.0 kg-m,
58–65 ft-lb)
30–36 N·m
(3.0–3.6 kg-m,
22–26 ft-lb)
23–28 N·m
(2.3–2.8 kg-m, 17–20 ft-lb)
45–50 N·m
(4.5–5.0 kg-m,
33–36 ft-lb)
30–36 N·m (3.0–3.6 kg-m,
22–26 ft-lb)
90–110 N·m (9.0–11.0 kg-m,
65–80 ft-lb)
100–120 N·m (10.0–12.0 kg-m,
72–87 ft-lb)
100–130 N·m
(10.0–13.0 kg-m,
72–94 ft-lb)
80–90 N·m
(8.0–9.0 kg-m, 58–65 ft-lb)
16–20 N·m
(1.6–2.0 kg-m,
12–14 ft-lb)

RIDE RED

13. REAR WHEEL/SUSPENSION/FINAL DRIVE

SERVICE INFORMATION

GENERAL

WARNING

- *Brake dust may contain asbestos which can be harmful to your health. Do not use compressed air to clean brake drums or brake panels. Use a vacuum with a sealed dust collector. Wear a protective face mask and thoroughly wash your hands when finished.*

- This section covers maintenance of the rear wheels, tires, suspension and drive mechanism.
- A jack or block is required to support the Four Trax.
- Replace all oil seals and O-rings whenever the final drive gear assembly is disassembled.
- Check tooth contact pattern and gear backlash when the bearing, gear set and/or gear case has been replaced.
- The right ring gear bearing may be either a loose or an interference fit; in the case or in the ring gear.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear axle runout		—	3.0 mm (0.12 in)
Rear shock absorber spring free length		263 mm (10.4 in)	257.7 mm (10.15 in)
Final gear oil	Capacity	90 cc (3.0 US oz)	—
	Recommended oil	Hypoid-gear oil SAE #80	—
Gear backlash		0.08–0.18 mm (0.003–0.007 in)	0.25 mm (0.010 in)
Gear assembly preload		0.2–0.4 N·m (2–4 kg-cm, 1.7–3.5 in-lb)	

TORQUE VALUES

Rear wheel nut		50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
Rear axle nut		80–120 N·m (8.0–12.0 kg-m, 58–87 ft-lb)
Rear brake panel nut		80–90 N·m (8.0–9.0 kg-m, 58–65 ft-lb)
Rear shock absorber mount bolt		80–90 N·m (8.0–9.0 kg-m, 58–65 ft-lb)
Swing arm right pivot bolt		16–20 N·m (1.6–2.0 kg-m, 12–14 ft-lb)
Swing arm pivot lock nut		100–130 N·m (10.0–13.0 kg-m, 72–94 ft-lb)
Final gear case mount bolt	(10 mm)	50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
	(8 mm)	30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
Left bearing housing bolt		30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)
Final gear case cover	(10 mm)	45–50 N·m (4.5–5.0 kg-m, 33–36 ft-lb)
	(8 mm)	23–28 N·m (2.3–2.8 kg-m, 17–20 ft-lb)
Pinion joint nut		100–120 N·m (10.0–12.0 kg-m, 72–87 ft-lb)
Pinion bearing lock nut		90–110 N·m (9.0–11.0 kg-m, 65–80 ft-lb)
Trailer hitch		70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)

TOOLS

Special

Universal bearing puller	07631—0010000 or Equivalent commercially available in U.S.A.
Shock absorber compressor base	07959—MB10000
Spring compressor adaptor	07967—KC10000
Pivot lock nut wrench	07908—4690001 or KS-HBA-08-469 (U.S.A. only)
Socket bit, 17 mm	07703—0020500 or Equivalent commercially available in U.S.A.
Bearing remover set, 30 mm	07936—8890100
Bearing remover, 30 mm	07936—8890300
Remover weight	07741—0010201 or 07936—3710200
Pinion holder	07924—HA00000
Shaft puller	07931—ME40000
Lock nut wrench, 34 x 44 mm	07916—ME50001 or 07916—ME50000 and Attachment 07916—HA0010A (U.S.A. only)
Pinion gear driver	07945—HA00000
Collar	07967—GA70101
Remover handle	07936—3710100
Driver	07949—3710001 or 07949—3710000

Common

Driver	07749—0010000
Attachment, 62 x 68 mm	07746—0010500
Shock absorber compressor	07959—3290001 (must be used with 07959—MB10000)
Attachment, 32 x 35 mm	07746—0010100
Pilot, 35 mm	07746—0040800
Driver C	07746—0030100
Attachment, 35 mm I.D.	07746—0030400
Driver B	07746—0020100
Attachment, 52 x 55 mm	07746—0010400
Attachment, 42 x 47 mm	07746—0010300
Attachment, 37 x 40 mm	07746—0010200
Tire bead breaker set	07772—0050000
Breaker arm	07772—0050200 or Universal bead breaker GN-AH-958-BB1 (U.S.A. only)
Breaker arm compressor	07772—0050100
Pilot, 28 mm	07746—0041100

TROUBLESHOOTING

Wobble or vibration in Four Trax
- Bent rim
- Loose wheel bearing
- Faulty rear axle bearing holder
- Faulty tire
- Axle not tightened properly
- Swing arm bearings worn

Poor brake performance
- Improper brake adjustment
- Worn brake shoes
- Brake linings oily, greasy or dirty
- Worn brake cam
- Worn brake drum
- Brake arm serrations improperly engaged
- Brake shoes worn at cam contact area

Excessive final drive noise
- Worn or scored drive pinion and splines
- Worn pinion and ring gears
- Excessive backlash between pinion and ring gear
- Oil level too low

Final drive oil leak
- Clogged breather
- Oil level too high
- Seals damaged

Soft suspension
- Weak spring

Hard suspension
- Bent shock absorber
- Improperly adjusted swing arm pivot
- Faulty pivot bearing

Suspension noise
- Shock case binding
- Loose fasteners

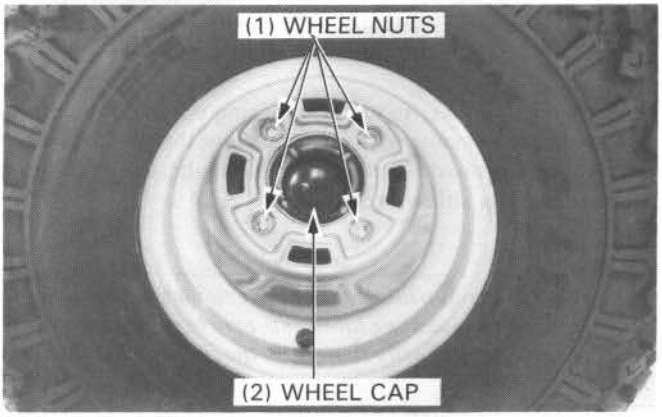
RIDE RED

REAR WHEEL

REMOVAL

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

Remove the wheel caps, nuts and wheels.



INSTALLATION

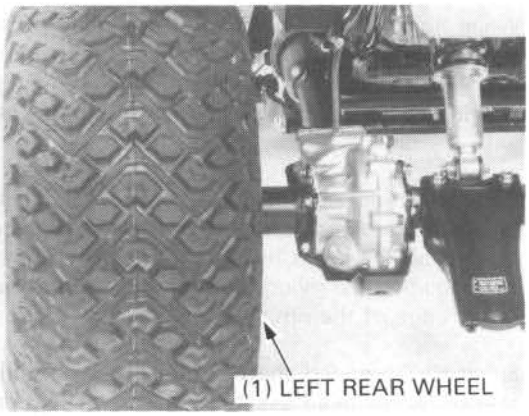
Install the rear wheel with the tire valve facing out.

NOTE

- Do not interchange the right and left tires. The tires show a "W" pattern when viewed from the rear.

Install the wheel cap and nuts, and tighten the wheel nuts.

TORQUE: 50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)



TIRES

REMOVAL (U.S.A. ONLY)

NOTE

- This service requires the Universal Bead Breaker (GN-AH-958-BB1) available in U.S.A. only.
- Remove and install tires from the rim side opposite the valve stem.

Remove the core from the valve stem.

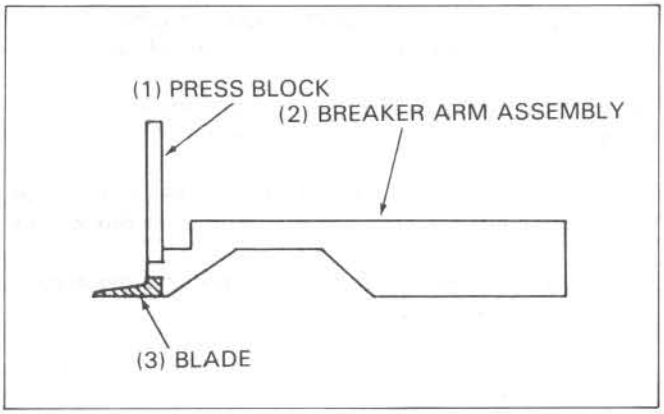
CAUTION

- *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 blade for 9"/11" rims onto the breaker arm assembly.

CAUTION

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

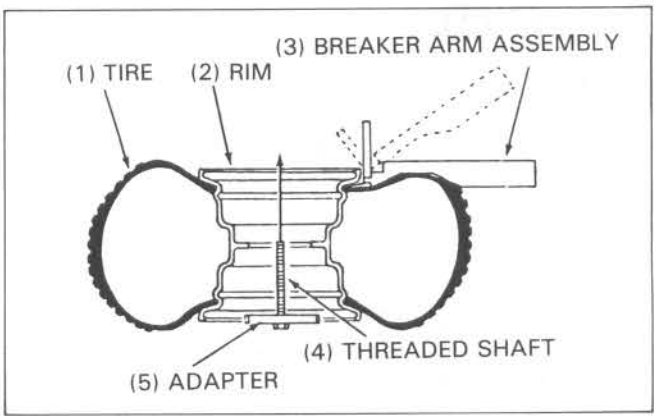


Place the proper size adapter onto the threaded shaft and then put the wheel over the threaded shaft and adapter.

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

WARNING

- ***Use only water as a lubricant when removing or mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.***

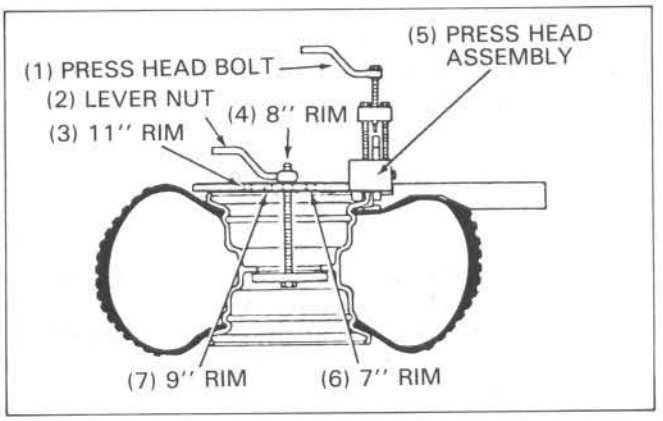


While holding the breaker arm assembly at an approximate 45° position, insert the blade of the breaker arm between the tire and rim. Push the breaker arm inward and downward until it is in the horizontal position with its press block in contact with the rim.

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.

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



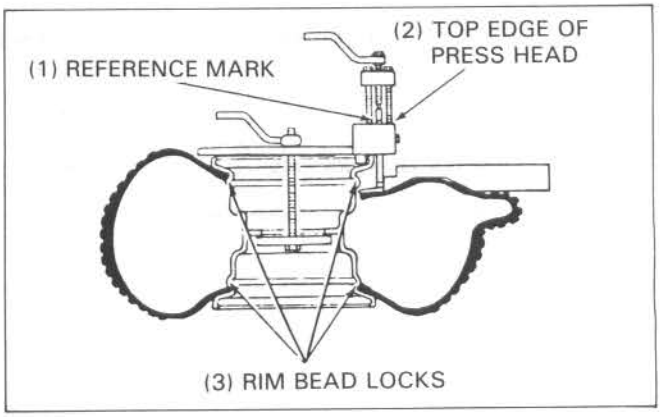
If the rest of the bead cannot be pushed down into the center of the rim by hand, loosen the press head bolt and the lever nut. Rotate the breaker arm assembly and breaker press head assembly 1/8 to 1/4 the circumference of the rim. Tighten the lever nut and then tighten the press head bolt as described.

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.

Remove tire from rim that has the smallest shoulder area to simplify removal.



RIDE RED

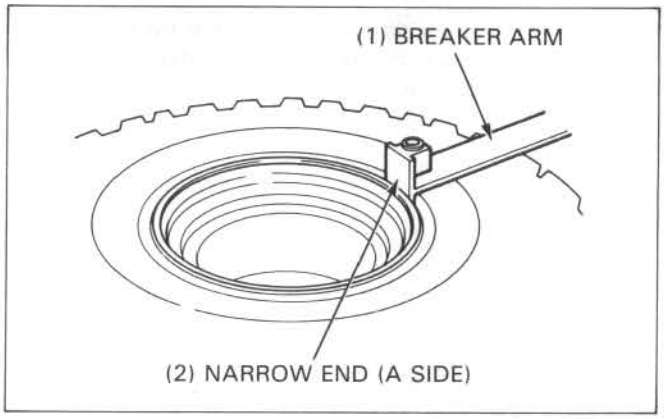
REMOVAL (EXCEPT U.S.A.)

NOTE

- This service requires the Tire Bead Breaker Set (07772–0050000) not available in U.S.A.

CAUTION

- *Do not apply water, soapy water, oil etc. to the tire, rim and tool when removing the tire. The tool breaker arm may slip off the tire and the bead can not be broken off the tire.*
- *Do not damage the bead seating area of the rim.*
- *Follow the breaker manufacturer's instruction.*

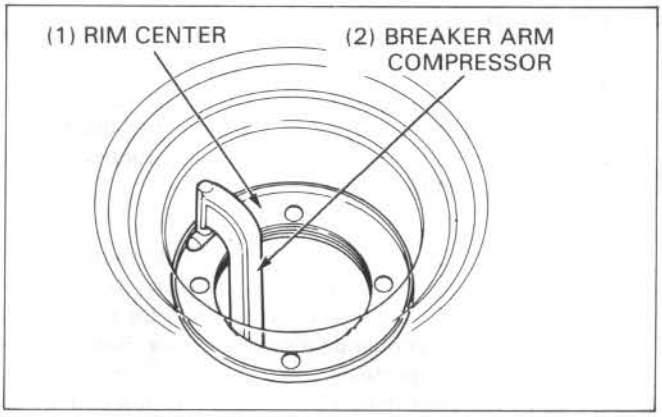


Insert the narrow end (A side) of the breaker arm between the tire and the rim.

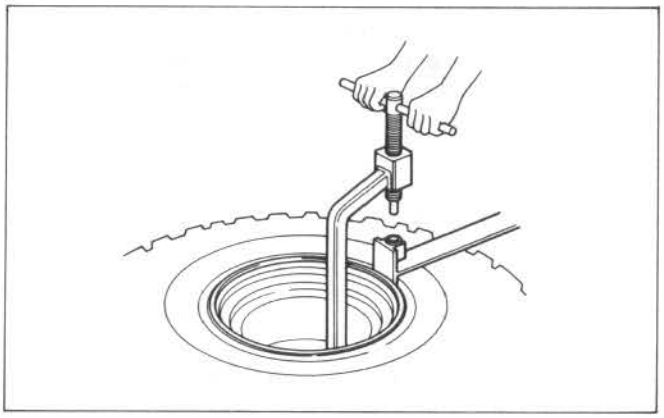
TOOL
Breaker arm **07772–0050200**

Position the breaker arm compressor onto the rim center as shown.

TOOL
Breaker arm compressor **07772–0050100**

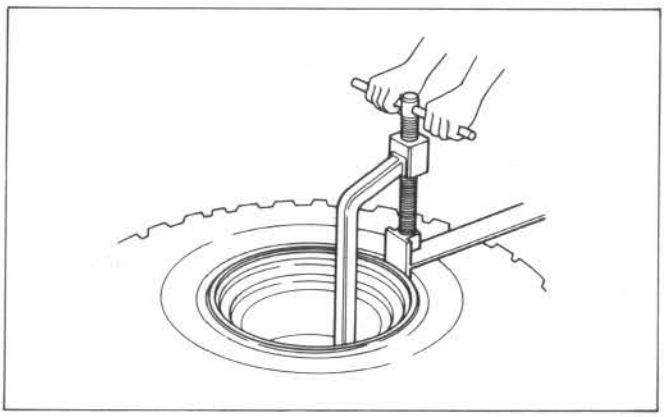


Keep the breaker arm horizontal and align the end of the compressor bolt with the arm hole.

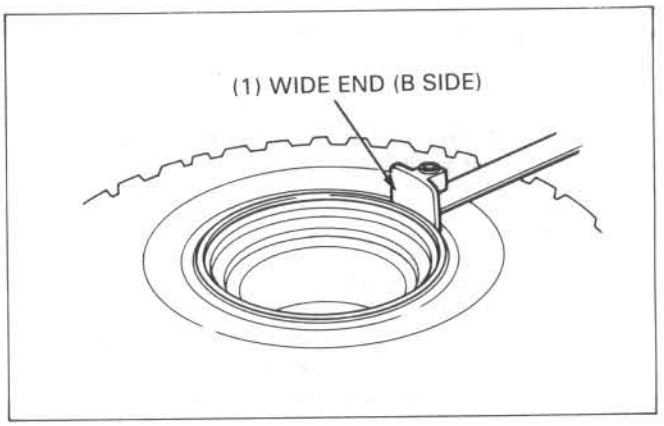


Screw in the breaker arm compressor bolt to break the bead from the tire.

If the rest of the bead cannot be pushed down into the center of the rim, remove and reposition the compressor and arm 1/8 to 1/4 the circumference of the rim. Tighten the compressor bolt to break the bead. Repeat this procedure as necessary until the remainder of the bead can be pushed down into the center of the rim.



If the bead breaking is difficult with the narrow end (A side) of the breaker arm, use the wide end (B side) of the arm and repeat the procedure above.

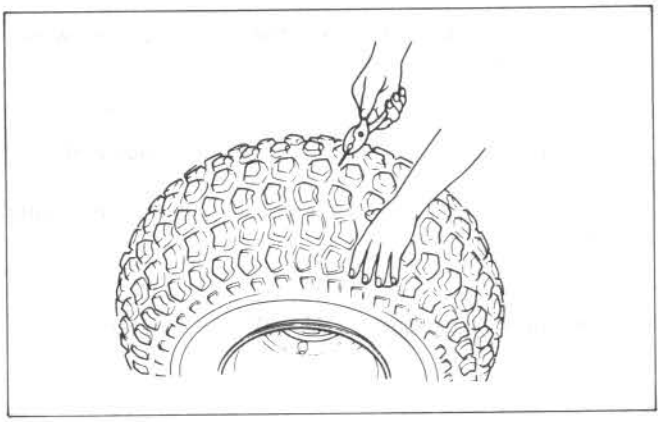


TIRE REPAIR

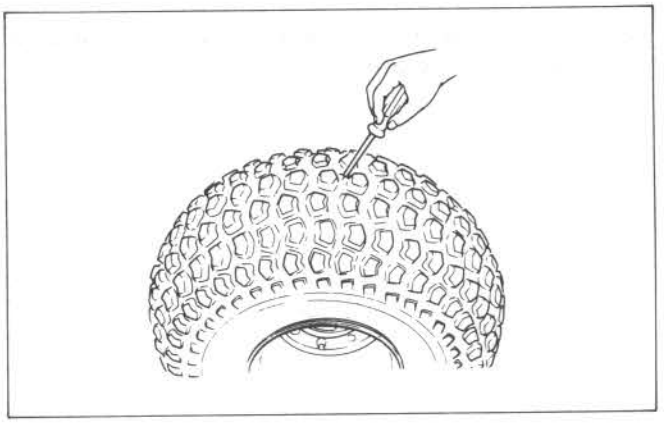
NOTE

- Use the manufacturer's instructions for the tire repair kit you are using. If your kit does not have instructions, use the procedures provided here.

Check the tire for puncturing objects. Chalk mark the punctured area and remove the puncturing object.
Inspect and measure the injury. Tire repairs for injuries larger than 15 mm (5/8 in) should be a section repair. Section repairs should be done by a professional tire repair shop.
If the injury is smaller than 15 mm (5/8 in), proceed with the repair as described here.



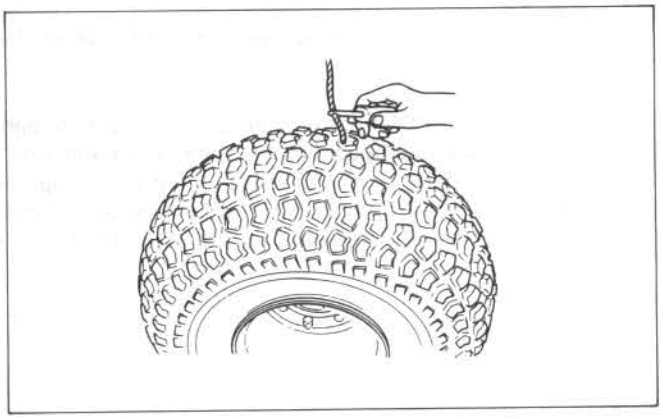
Install a rubber plug into the injury as follows:
Apply cement to a plug inserting needle and work the needle into the injury to clean and lubricate it. Do this three times. Do not let the cement dry.



Insert and center a rubber plug through the eye of the inserting needle.
Apply cement to the rubber plug.
Push the inserting needle with plug into the injury until the plug is slightly above the tire. Twist the needle and remove it from the tire, the plug will stay in the tire.

NOTE

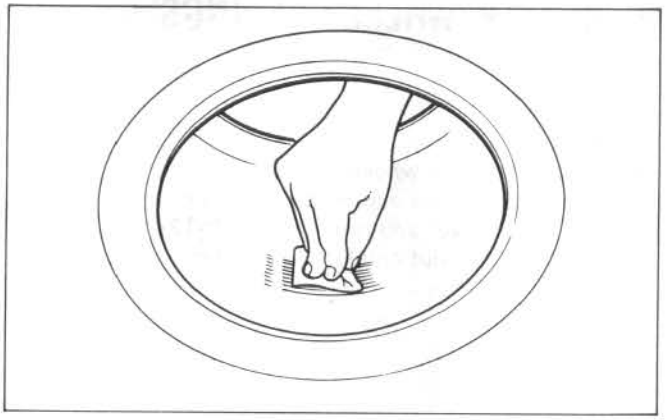
- Be careful not to push the plug all the way into the tire to prevent it from falling inside.



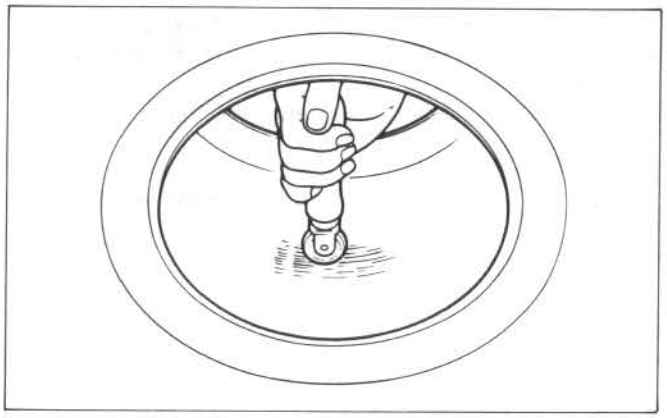
Trim the plug 6 mm (1/4 in) above the tire surface.
Repeat the above procedure if the puncture is large.
Do not use more than two plugs per injury.
Allow the repair to dry. Drying time will vary with air temperature. Refer to the tire repair kit manufacturer's recommendations.

RIDE RED

Inflate the tire and test the seal by dabbing a small amount of cement around the plug. Escaping air will cause a bubble in the cement. If there is leakage, remove the tire (page 13-3) and apply a cold patch to the inside of the tire as described.
If a plug has been inserted, trim it even with the inner tire surface.
Temporarily place a rubber patch that is at least twice the size of the puncture over the injury. Make a mark around the patch, slightly larger than the patch itself.
Remove the patch.
Roughen the area marked inside the tire with a tire buffer or a wire brush. Clean the rubber dust from the buffed area.



Apply cement over the area marked and allow it to dry.
Remove the lining from the patch and center it over the injury.
Press the patch against the injury using a special roller.



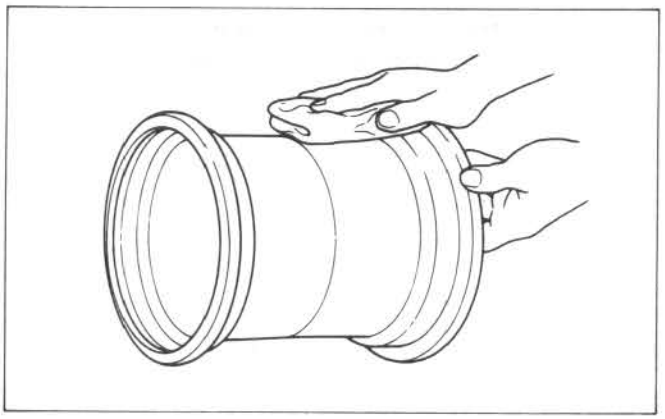
NOTE

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

ASSEMBLY

Install the tire onto the rim, where the rim shoulder width is the narrowest, to simplify installation.

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



WARNING

- ***Use only water as a lubricant when removing or mounting tires. Soap or some mounting lubricants may leave a slippery residue which can cause the tire to shift on the rim and lose air pressure during riding.***

Install the tire and inflate it to seat the tire bead.
Install the valve core in the valve stem.

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

TIRE PRESSURE:
'85 Front: 2.9 psi (20 kPa, 0.2 kg/cm²)
Rear: 2.2 psi (15 kPa, 0.15 kg/cm²)

AFTER '85 Front: 3.0 psi (20kPa, 0.2 kg/cm²)
Rear: 2.2 psi (15 kPa, 0.15 kg/cm²)

Measure the tire circumference.

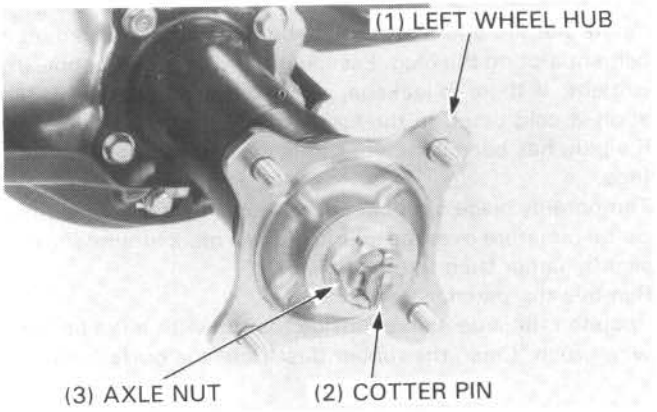
STANDARD TIRE CIRCUMFERENCE:
'85 Front: 1,745 mm (68.7 in)
Rear: 1,940 mm (76.4 in)
AFTER '85 Front: 1681 mm (66.2 in)
Rear: 1885 mm (74.2 in)

Check for air leaks and install the valve cap.

REAR AXLE/WHEEL BEARINGS

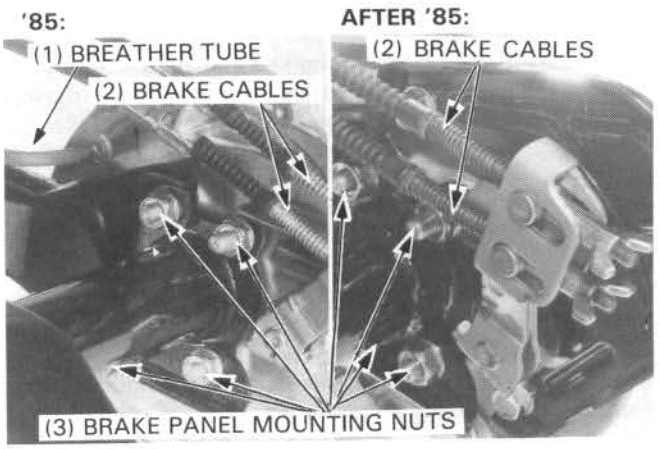
REMOVAL

Remove the following:
- right and left rear wheels.
- cotter pin, axle nut and right wheel hub (page 12-11).
- brake drum cover and drum (page 12-12).
- cotter pin, axle nut and left wheel hub.

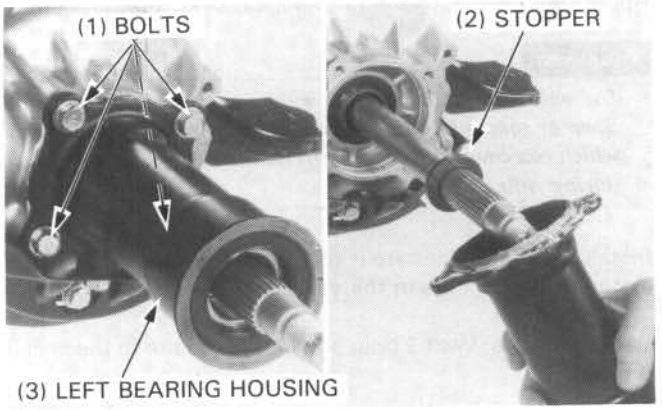


Disconnect the breather tube from the brake panel.
Remove the rear brake adjuster nuts and brake cables from the brake panel.
Remove the brake panel mounting nuts and the panel.

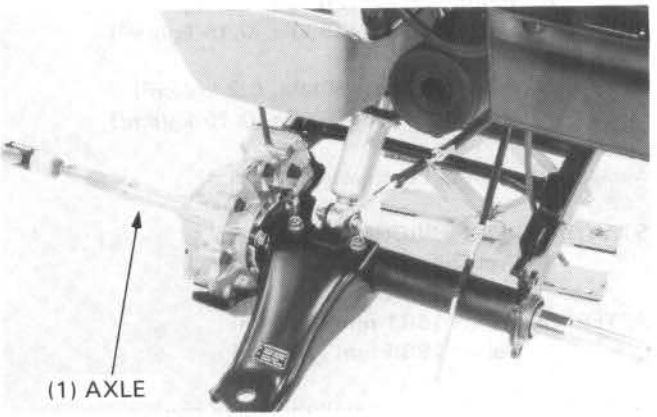
After '85:
Remove the brake arm guard from the brake panel.



Remove the left bearing housing mounting bolts, then remove the housing and bearing stopper from the axle.



Drive the axle out using a plastic hammer from the left side.



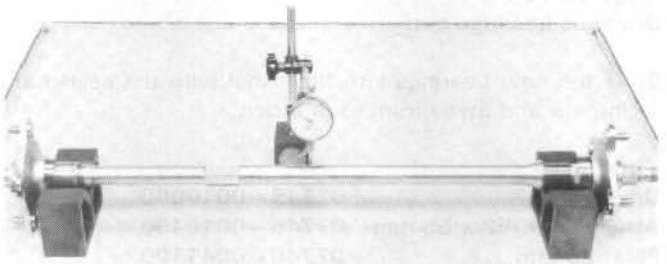
RIDE RED

REAR AXLE INSPECTION

Install the wheel hubs onto both ends of the axle.

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

SERVICE LIMIT: 3.0 mm (0.12 in)



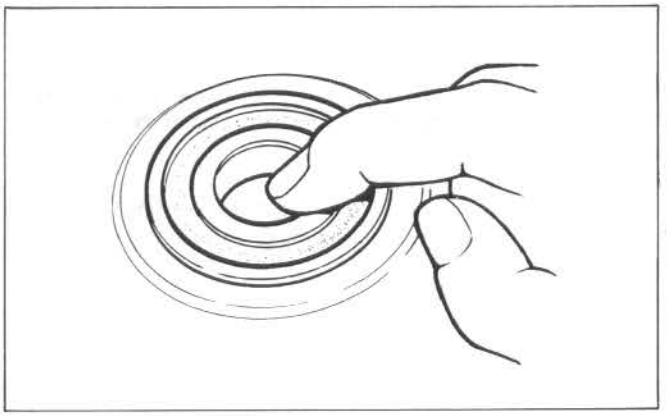
BEARING INSPECTION

Turn the inner race of each bearing with your finger. The bearings should turn smoothly and quietly. Also check that the bearing outer race fits tightly in the bearing housing and brake panel.

Remove and discard the bearings if the races do not turn smoothly, quietly, or if they fit loosely in the bearing housing and brake panel.

NOTE

- Replace hub bearings in pairs.



For replacement of bearings, see page 13-9 and 13-10.

REAR WHEEL BEARING REPLACEMENT

Remove the dust seal and drive the bearings out of the left housing using attachment (07746—0010100) and driver (07949—3710001 or 07949—3710000).

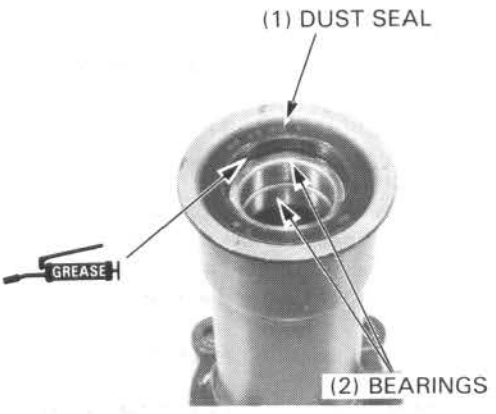
Drive the new bearings into the housing.

TOOLS

Driver	**07749—0010000**
Attachment, 52 x 55 mm	**07746—0010400 or**
Pinion gear driver	**07945—HA00000**
	(Nat availavle in U.S.A.)

Apply grease to a new dust seal lip.

Install the dust seal until it is flush with the left bearing housing flange.

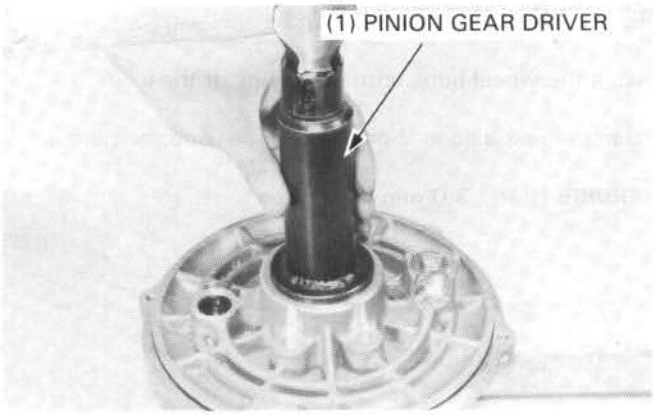


Remove the brake shoes, arm and cam from the brake panel (page 12-13).
Drive the bearings out.

Drive the new bearings into the panel with the sealed sides facing out and away from each other.

TOOLS

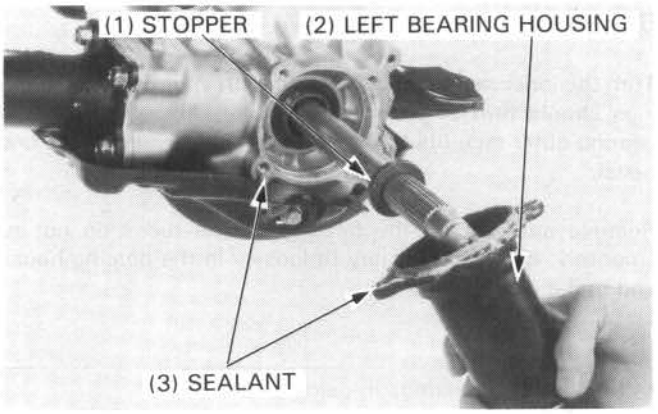
Driver	**07749—0010000**
Attachment, 52 x 55 mm	**07746—0010400**
Pilot, 28 mm	**07746—0041100 or**
Pinion gear driver	**07945—HA00000**
	(Nat available in U.S.A.)



INSTALLATION

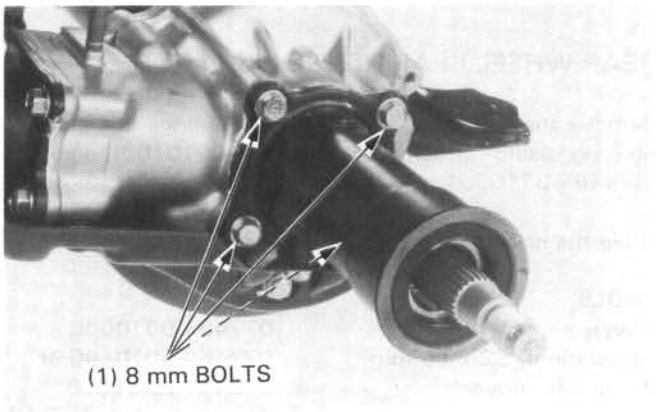
Insert the rear axle into the final gear through the swing arm. Install the bearing stopper onto the left end of the axle with the chamfered face out.

Clean the mating surfaces of the left bearing housing and final gear case and apply liquid sealant to them.



Install the left bearing housing and tighten the bolts.

TORQUE: 30—36 N·m (3.0—3.6 kg-m, 22—26 ft-lb)



Install the following:
— brake panel onto the swing arm and tighten the nuts.

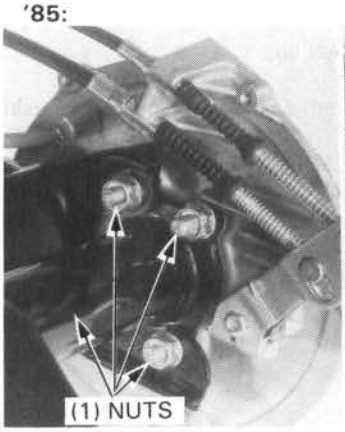
TORQUE: 80—90 N·m (8.0—9.0 kg-m, 58—65 ft-lb)

— After '85: brake arm guard.
— brake shoes, cam and arm on the panel (page 12-14).
— brake cables and connect the breather tube.
— brake drum and cover (page 12-14).
— right wheel hub, lock washer and axle nut.

Tighten the axle nut and install a new cotter pin.

TORQUE: 80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)

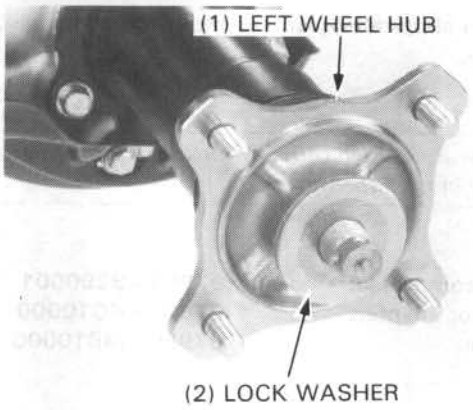
'85:



AFTER '85:

RIDE RED

Install the left wheel hub onto the axle.
Install the lock washer.

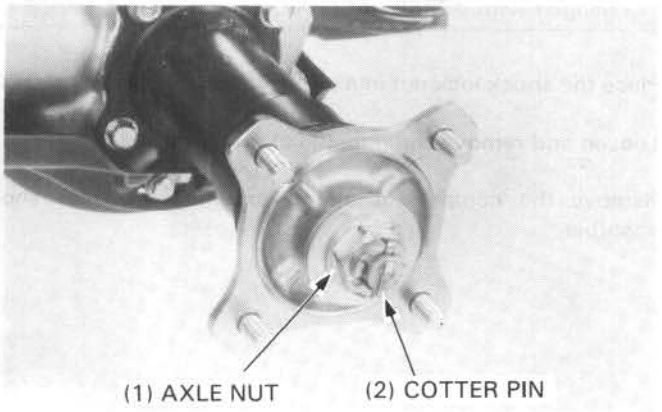


Install the axle nut and tighten to the specified torque.

TORQUE: 80—120 N·m (8.0—12.0 kg-m, 58—87 ft-lb)

Install a new cotter pin.
Install the right and left rear wheels and tighten the wheel nuts.

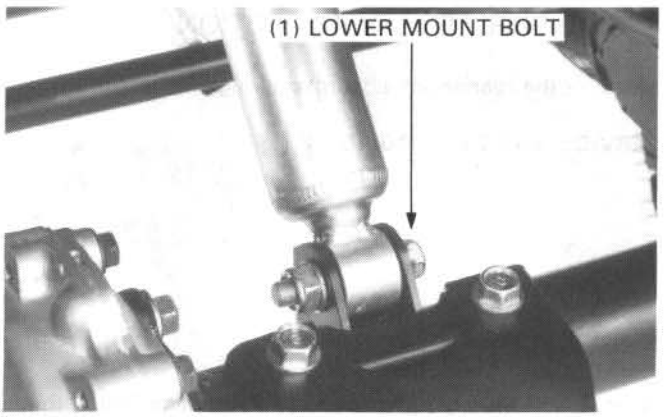
TORQUE: 50—60 N·m (5.0—6.0 kg-m, 36—43 ft-lb)



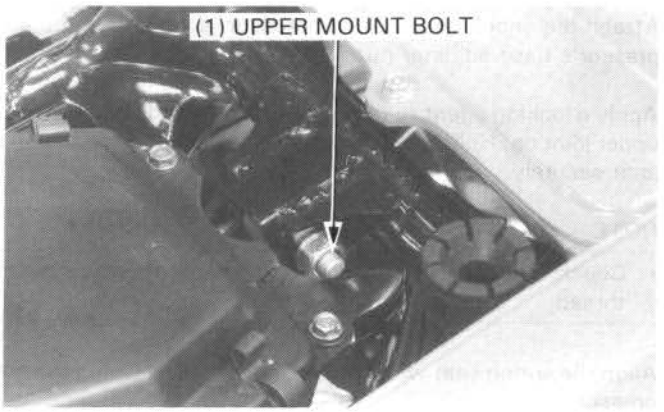
REAR SHOCK ABSORBER

REMOVAL

Raise the rear wheels off the ground by placing a jack or block under the engine.
Remove the rear shock absorber lower mount nut and bolt.



Remove the seat.
Remove the rear shock absorber upper mount nut and bolt and remove the shock absorber.



Compress the rear shock absorber with the shock compressor, adaptor and base.

CAUTION

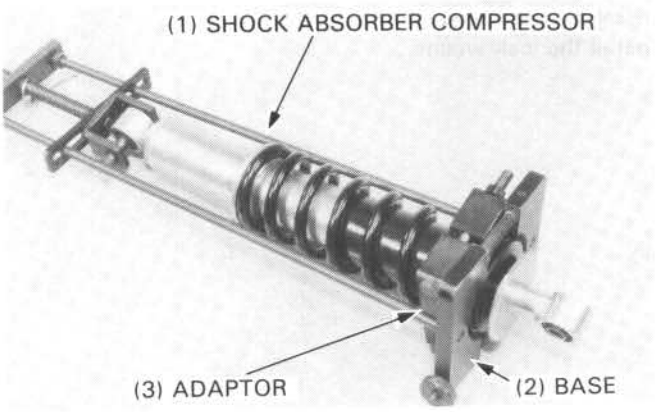
- *Be sure the base is adjusted correctly for the shock spring seat and the clevis pin is all the way in.*

TOOLS

Shock absorber compressor	**07959—3290001**
Spring compressor adapter	**07967—KC10000**
Compressor base	**07959—MB10000**

NOTE

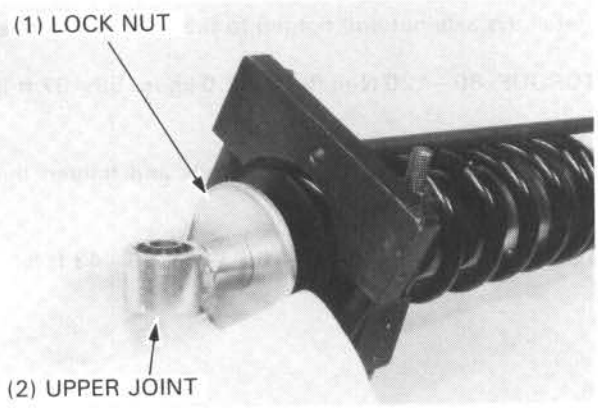
- The base of the shock absorber compressor must be exchanged with 07959—MB10000.



Place the shock lock nut in a vise and pull the damper rod out.

Loosen and remove the upper joint and lock nut.

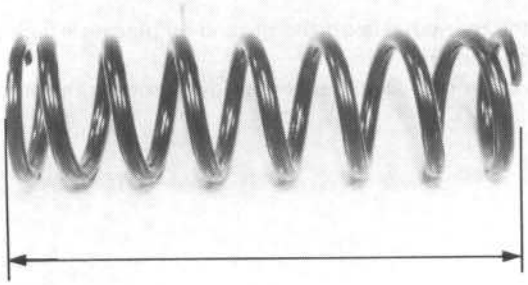
Remove the compressor and disassemble the rear shock absorber.



SPRING FREE LENGTH INSPECTION

Measure the rear shock absorber spring free length.

SERVICE: 257.7 mm (10.15 in)



ASSEMBLY

Apply a locking agent to the rod threads and install the lock nut.

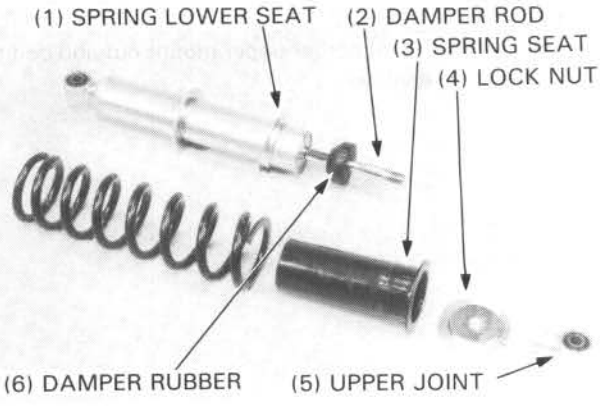
Attach the shock absorber compressor, screwing in the compressor's base adjuster nut.

Apply a locking agent to the damper rod threads and screw the upper joint on. Hold the lock nut in a vise and tighten the upper joint securely.

NOTE

- Check that the lock nut is seated against the rod's bottom thread.

Align the spring seat with the lock nut while releasing the compressor.

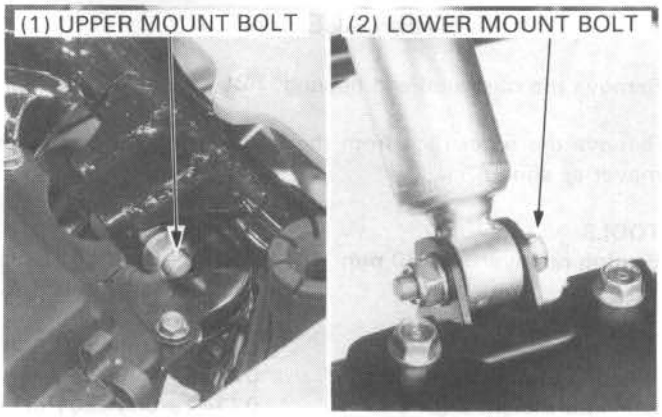


RIDE RED

INSTALLATION

Install the shock absorber onto the frame and swing arm and tighten the upper and lower mount bolts.

TORQUE: 80–90 N·m (8.0–9.0 kg-m, 58–65 ft-lb)

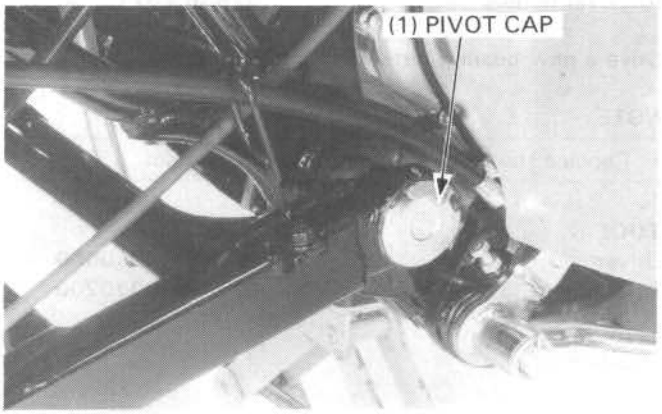


SWING ARM

REMOVAL

Remove the following:
- rear wheels (page 13-3)
- rear brake assembly (page 12-14)
- rear axle (page 13-8).
- final gear case (page 13-15)

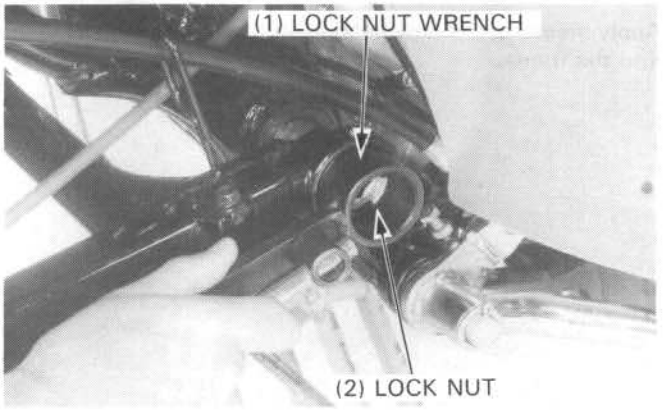
Loosen the swing arm boot band and remove the pivot cap.



Remove the pivot lock nut.

TOOL

Pivot lock nut wrench	**07908–4690001 or KS-HBA-08-469 (U.S.A. only)**

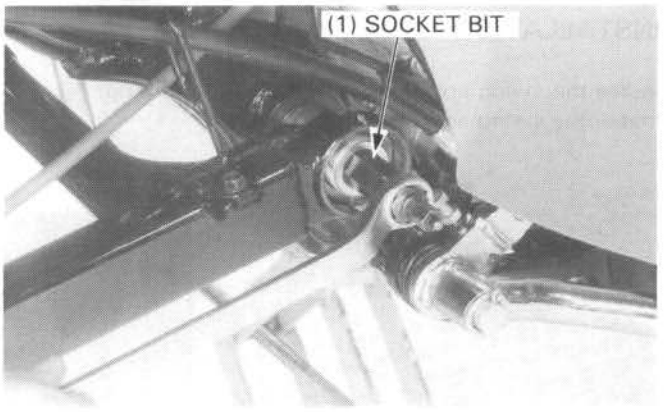


Remove the pivot bolt.
Disconnect the drive shaft universal joint from the engine.

Remove the swing arm from the frame, then remove the universal joint from the swing arm.

TOOL

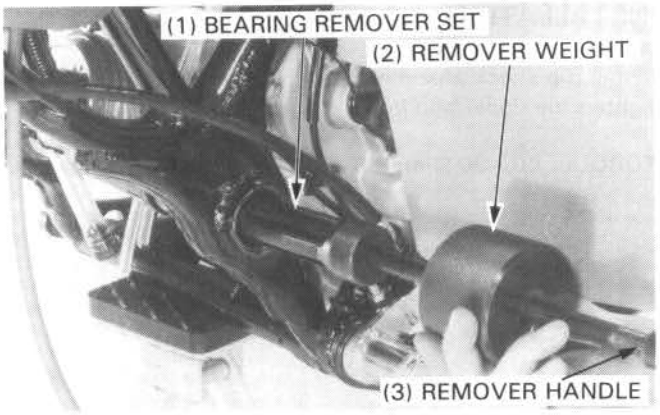
Socket bit, 17 mm	**07703–0020500 or equivalent commercially available in U.S.A.**



PIVOT BEARING REPLACEMENT

Remove the dust seal and bearing.

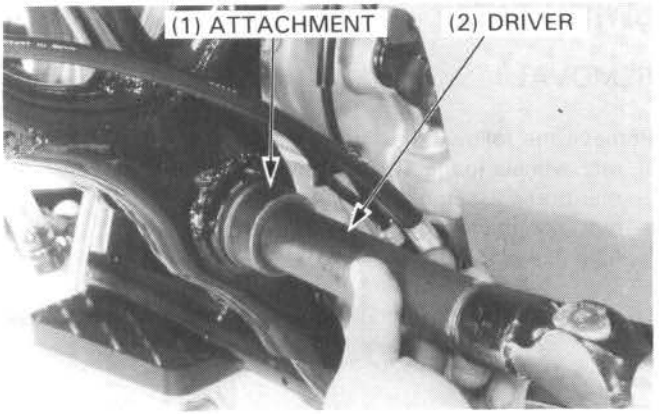
Remove the outer race from the frame using the bearing remover as shown.



TOOLS

Bearing remover set, 30 mm	**07936—8890100 (Not available in U.S.A.)**
—Remover head	**07936—8890200 (Not available in U.S.A.)**
—Bearing remover 30 mm	**07936—8890300**
Remover weight	**07741—0010201 or 07936—3710200**
Remover handle	**07936—3710100**

Drive a new bearing outer race into the frame.



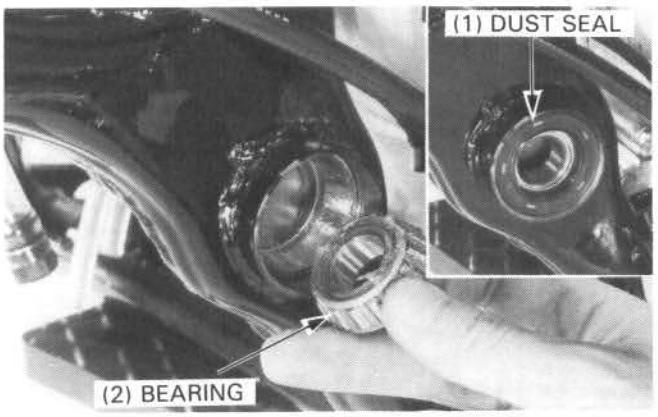
NOTE

- Replace the bearing and outer race as a set.

TOOL

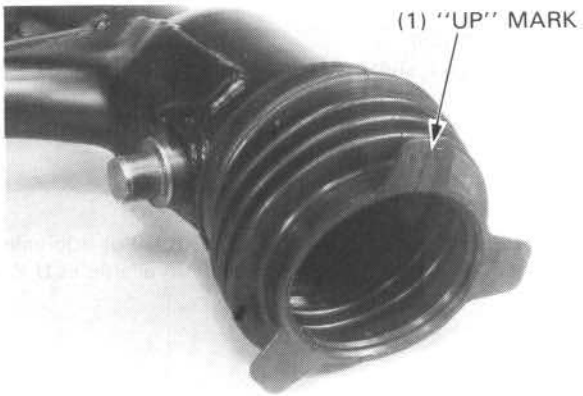
Driver	**07749—0010000**
Attachment, 37 x 40 mm	**07746—0010200**

Apply grease to the new bearing and dust seal and install them into the frame.



INSTALLATION

Install the swing arm boot with its "UP" mark up.
Install the swing arm onto the frame.



RIDE RED

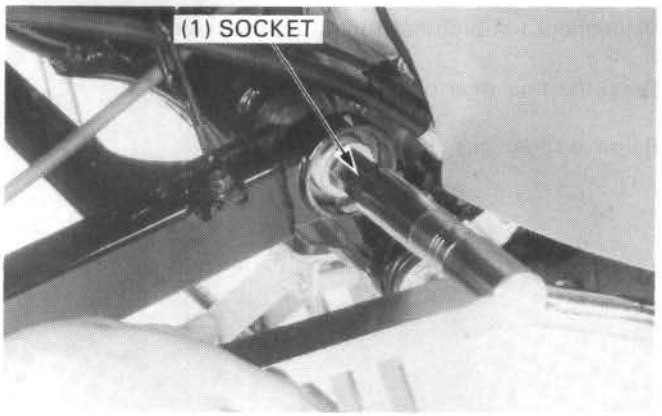
Tighten the right pivot bolt to the specified torque.

TORQUE: 16–20 N·m (1.6–2.0 kg-m, 12–14 ft-lb)

TOOL

Socket bit, 17 mm	**07703–0020500 or equivalent commercially available in U.S.A.**

Move the swing arm up and down several times.



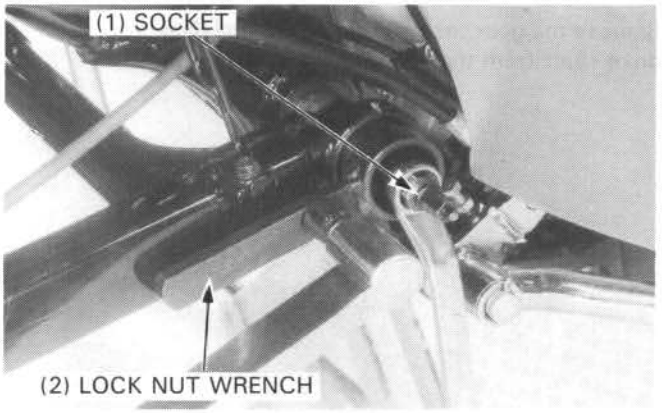
Tighten the lock nut while holding the right pivot bolt.

TORQUE: 100–130 N·m (10.0–13.0 kg-m, 72–94 ft-lb)

Torque wrench scale reading:
91–118 N·m (9.1–11.8 kg-m, 66–85 ft-lb)

TOOLS

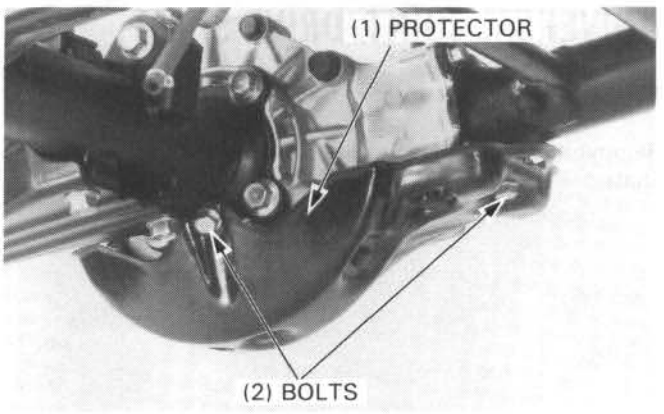
Socket bit, 17 mm	**07703–0020500 or equivalent commercially available in U.S.A.**
Pivot Lock nut wrench	**07908–4690001 or KS-HBA-08-469 (U.S.A. only)**



Install the following components:
- pivot cap
- universal joint/drive shaft assembly (page 13-26)
- final gear case (page 13-26)
- rear axle (page 13-8)
- rear brake panel, brake drum and cover (page 12-12)
- wheel hubs and rear wheels.

FINAL DRIVE REMOVAL

Remove the following:
- rear wheels (page 13-3)
- rear brake panel (page 13-8)
- rear axle (page 13-8)
- two bolts mounting the gear case protector.

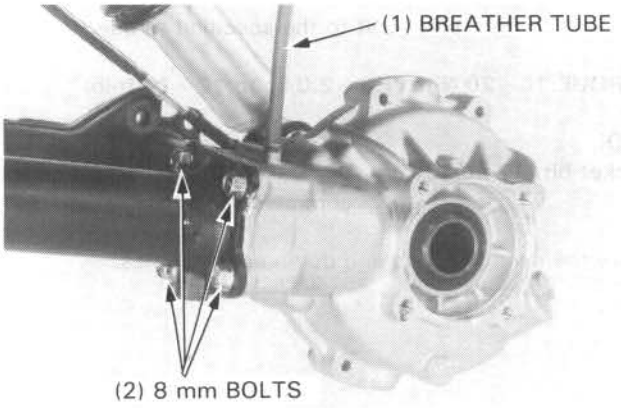


Remove the trailer hitch mounting bolts and hitch.

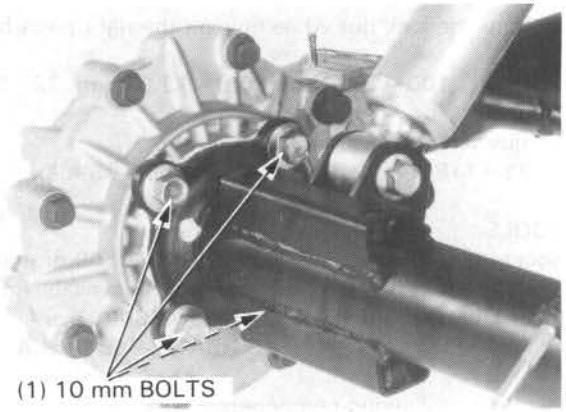
Disconnect the breather tube from the gear case.

Drain the final gear oil (page 2-3).

Remove the gear case 8 mm bolts.



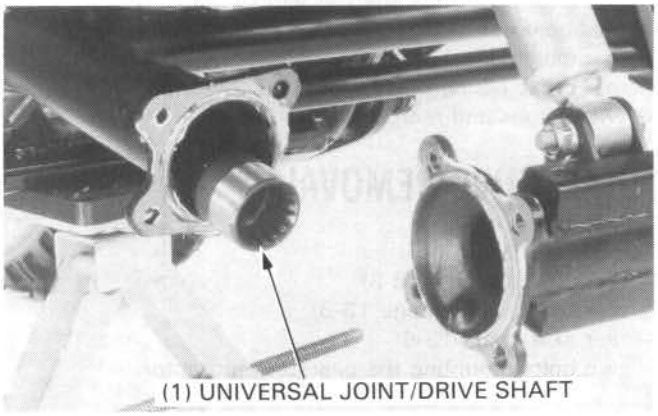
Remove the gear case 10 mm bolts, final gear case, spring and drive shaft from the swing arm.



UNIVERSAL JOINT/DRIVE SHAFT

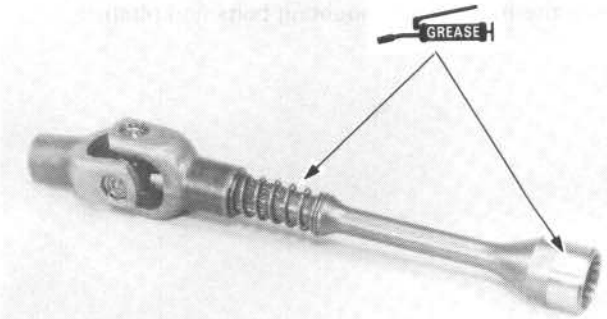
Remove the swing arm (page 13-13).

Remove the universal joint/drive shaft from the engine output shaft.



Inspect the universal joint bearings for excessive play or damage.

Apply molybdenum disulfide grease to the splines.

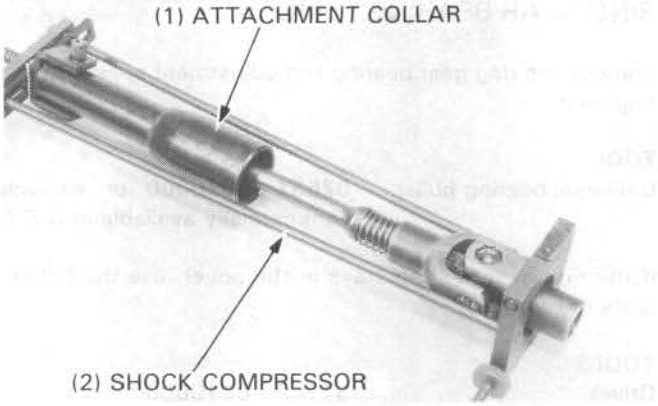


RIDE RED

Set the universal joint in the compressor as shown and compress the spring.
Remove the stopper ring from the drive shaft.

TOOLS

Shock absorber compressor	**07959—3290001**
Collar	**07967—GA70101**

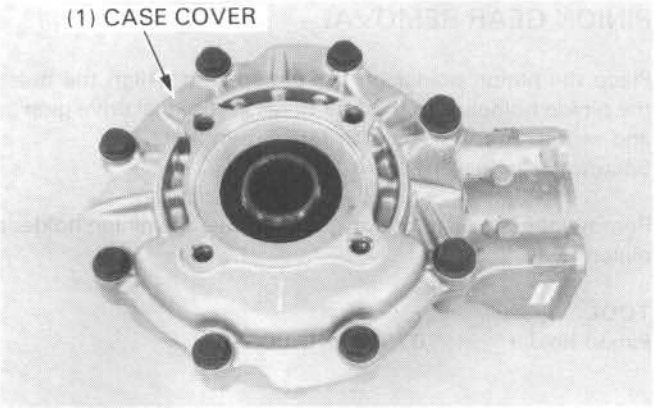


FINAL DRIVE GEAR

RING GEAR REMOVAL

Remove the eight case cover bolts and the cover.

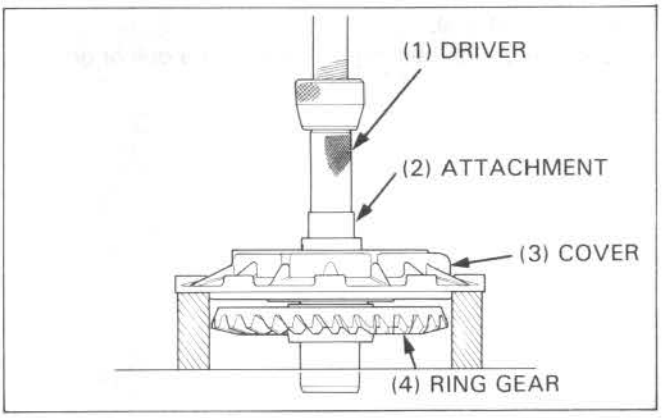
If the ring gear stays in the cover, do the following:



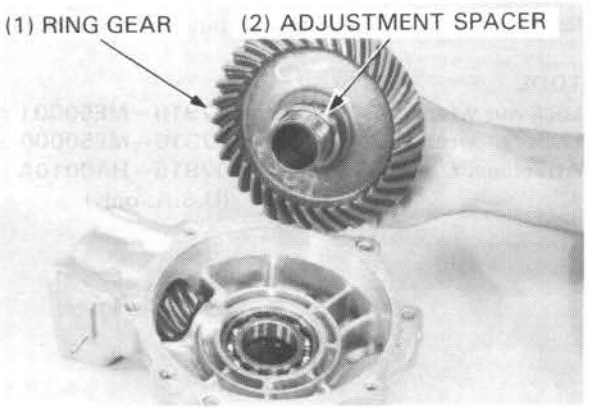
Place the cover in a press with the ring gear down.
Make sure the cover is securely supported.
Press the ring gear out of the cover.

TOOLS

Driver	**07749—0010000**
Attachment, 32 x 35 mm	**07746—0010100**



Remove the ring gear and adjustment spacer.



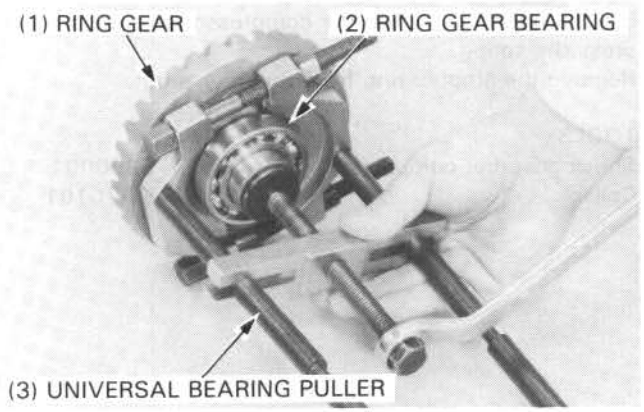
RING GEAR BEARING REMOVAL

Remove the ring gear bearing and adjustment spacer from the ring gear.

TOOL
Universal bearing puller **07631—0010000 or equivalent commercially available in U.S.A.**

If the ring gear bearing stays in the cover, use the following tools to remove it.

TOOLS
Driver **07749—0010000**
Attachment, 42 x 47 mm **07746—0010300**

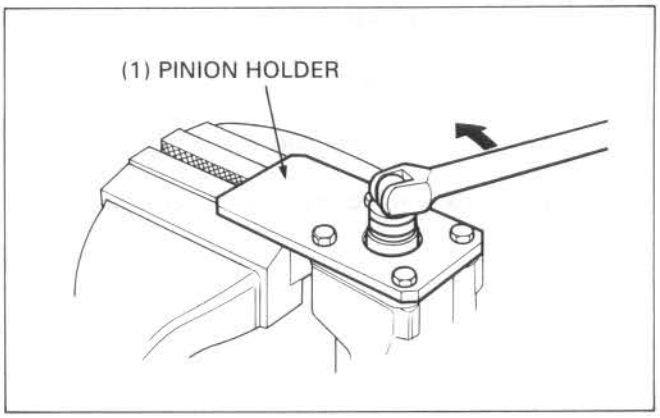


PINION GEAR REMOVAL

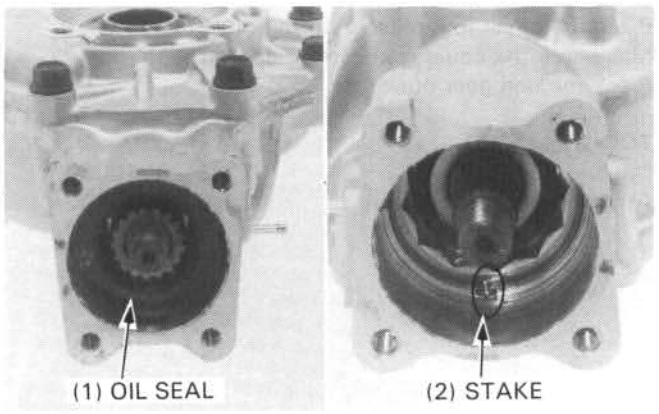
Place the pinion holder on the pinion joint. Align the holes in the pinion holder with the four holes in the final drive gear case and secure to the case with four 8 mm bolts.
Secure the holder in a vise.

Remove the pinion joint nut, then remove the pinion holder and pinion joint.

TOOL
Pinion holder **07924—HA00000**

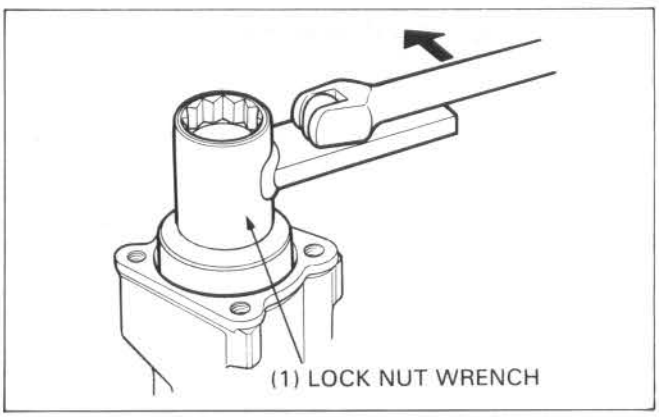


Remove the oil seal.
Unstake the pinion bearing lock nut with a drill or grinder.



Remove the pinion bearing lock nut with the lock nut wrench.

TOOL
Lock nut wrench, 34 x 44 mm **07916—ME50001 or**
Lock nut wrench, 34 x 44 mm **07916—ME50000 and**
Attachment **07916—HA0010A (U.S.A. only)**



RIDE RED

Position the pinion holder on the final gear case.
Screw the shaft puller onto the end of the pinion gear shaft.

NOTE

- Be sure that the 27 mm special nut is backed off far enough to allow full thread engagement between the puller and the pinion gear shaft.

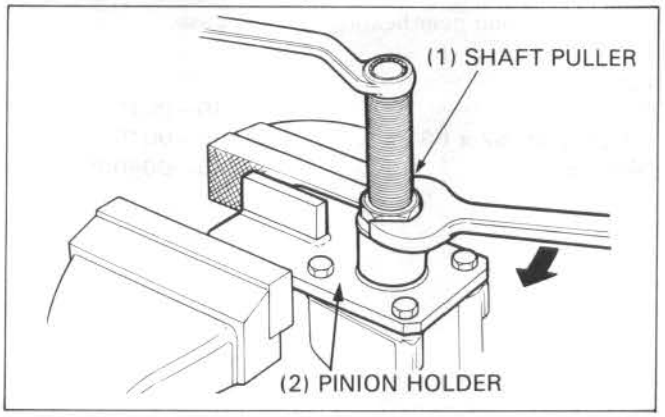
Screw the 27 mm special nut down until it contacts the pinion holder, and hold it with a 27 mm wrench.

Turn the puller shaft clockwise with a 17 mm wrench to remove the pinion gear from its housing.

Pull the pinion assembly off with the pinion puller.

TOOL

Shaft puller	**07931–ME40000**
Pinion holder	**07924–HA00000**

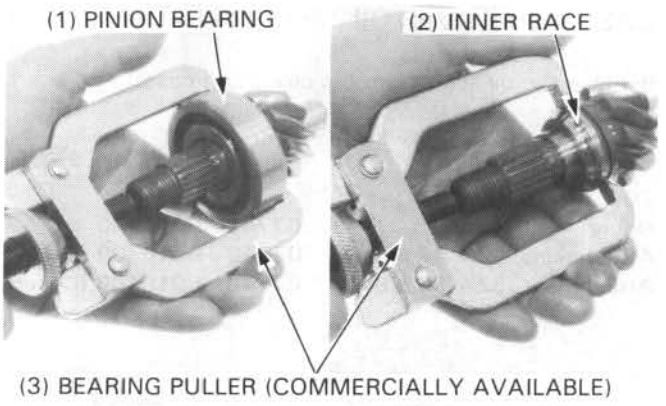


PINION BEARING REMOVAL

Pull the bearing outer and inner races off the shaft with the bearing puller.

Pull the other inner race off with the same tool.

Remove the pinion adjustment spacer.

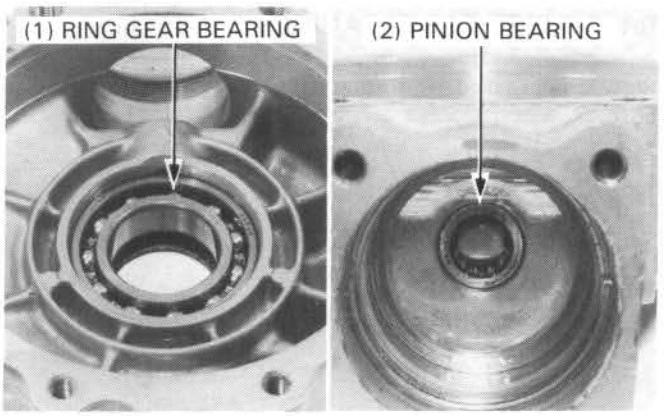


CASE BEARING AND OIL SEAL REPLACEMENT

Heat the gear case 80°C (176°F). Tap the gear case with a plastic hammer to remove the ring gear and pinion bearing.

WARNING

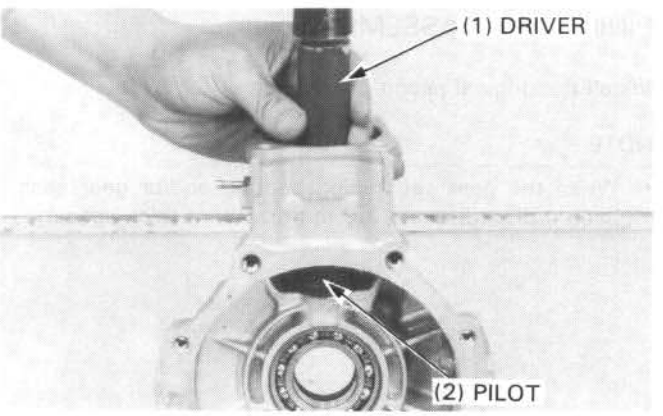
- ***Always wear gloves when handling the gear case after it has been heated.***



Drive a new pinion bearing into the case.

TOOLS

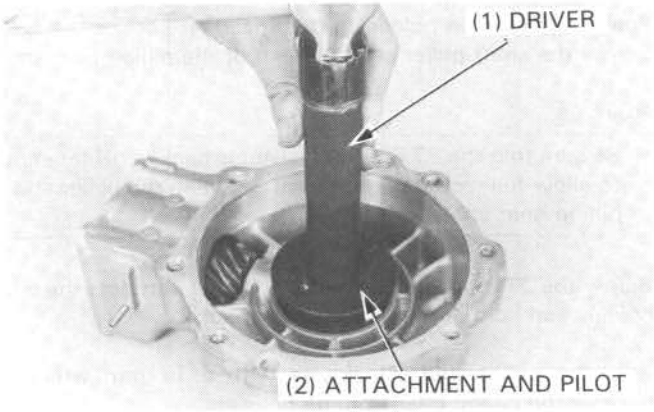
Driver	**07749–0010000**
Pilot, 22 mm	**07746–1041000**



Drive a new ring gear bearing into the case.

TOOLS

Driver	**07749–0010000**
Attachment, 62 x 68 mm	**07746–0010500**
Pilot, 35 mm	**07746–0040800**



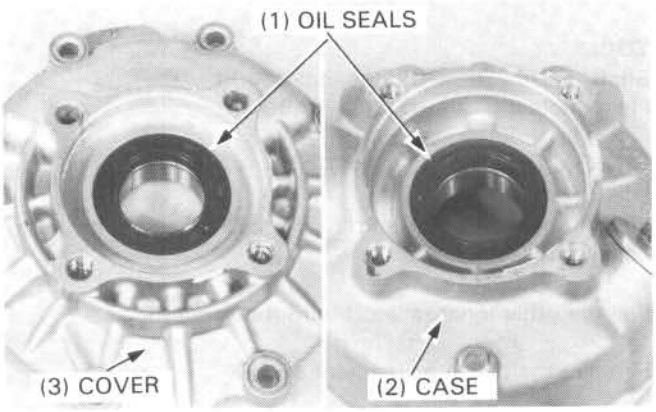
CASE AND COVER OIL SEAL REPLACEMENT

Remove the oil seals from the cover and case.

Drive in new oil seals with these tools:

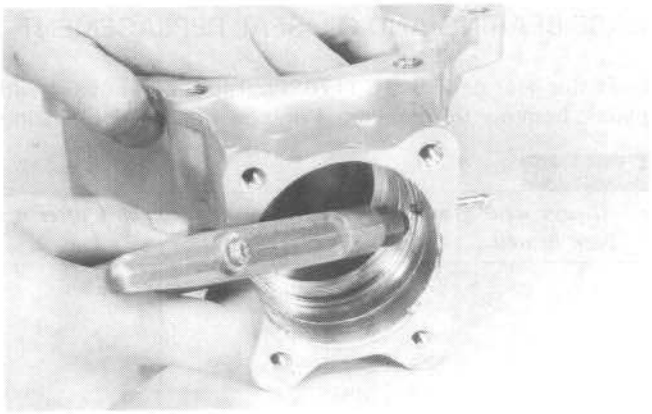
TOOLS

Driver	**07749–0010000**
Attachment, 42 x 47 mm	**07746–0010300 (Case)**
Attachment, 52 x 55 mm	**07746–0010400 (Cover)**



BREATHER HOLE CLEANING

Blow compressed air through the breather hole in the gear case.

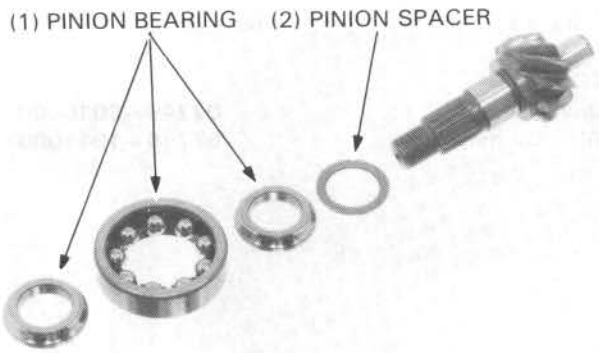


PINION GEAR ASSEMBLY

Install the original pinion gear spacer.

NOTE

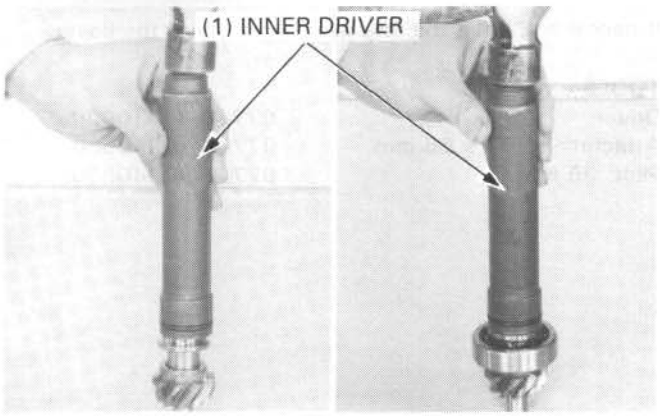
- When the gear set, pinion bearing and/or gear case has been replaced, use a 2.0 mm (0.08 in) thick spacer.



RIDE RED

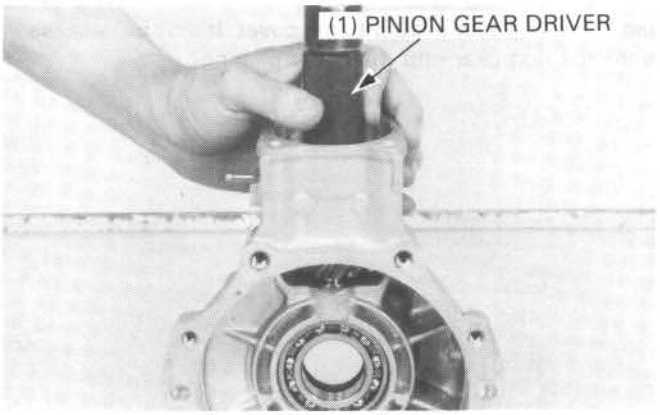
Press the bearing onto the pinion gear shaft with the special tools shown.

TOOL
Driver B **07746—0020100**



Place the pinion assembly into the gear housing and drive it into the gear case.

TOOL
Pinion gear driver **07945—HA00000**
(Not available in U.S.A.)
or
07746—0030100



NOTE

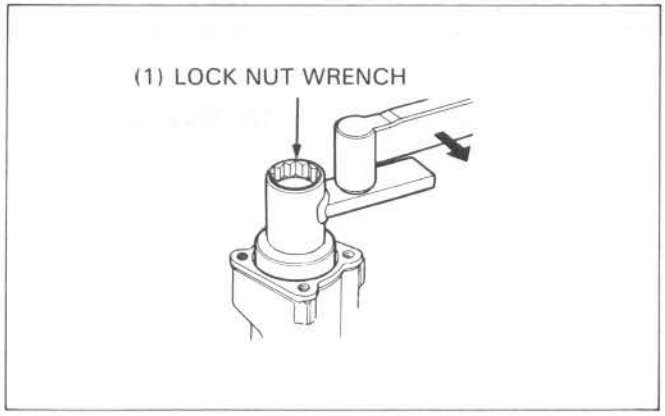
- Keep the driver centered with the bearing outer race during installation.

Install and tighten the pinion bearing lock nut.

TORQUE: 90—110 N·m (9.0—11.0 kg-m, 65—80 ft-lb)

Torque wrench scale reading:
82—100 N·m (8.2—10.0 kg-m, 59—72 ft-lb)

TOOL
Lock nut wrench, 34 x 44 mm **07916—ME50001 or**
Lock nut wrench, 34 x 44 mm **07916—ME50000 and**
Lock nut wrench attachment **07916—HA0010A**
(U.S.A. only)



RING GEAR ASSEMBLY

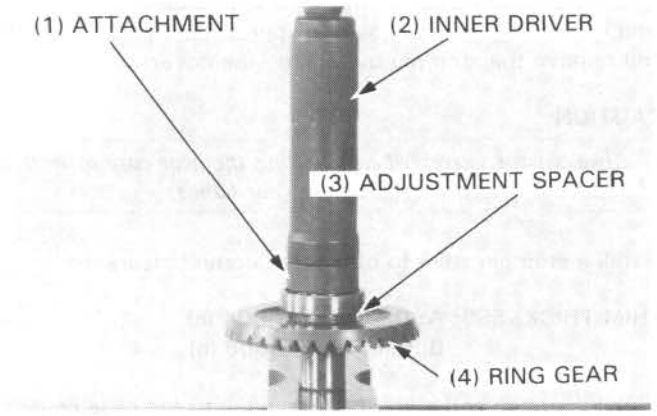
Install the original spacer onto the ring gear.

NOTE

- If the gear set, pinion bearing, ring gear bearing and/or gear case is replaced, install a 2.0 mm thick spacer.

Press the ring gear bearing onto the ring gear shaft.

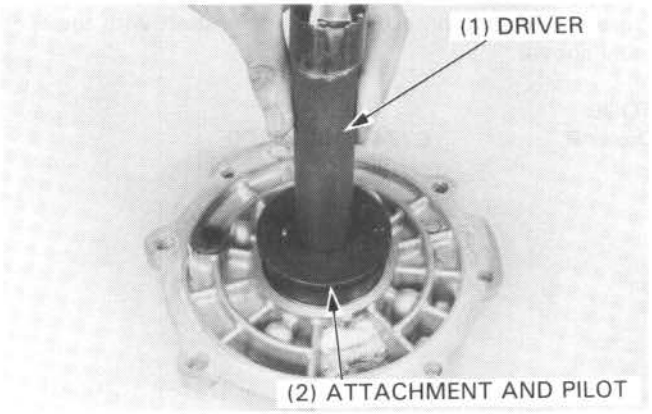
TOOLS
Drave C **07746—0030100**
Attachment, 35 mm I.D. **07746—0030400**



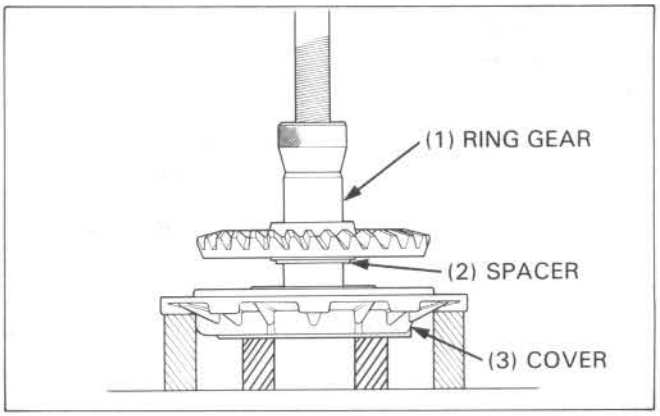
If necessary, drive the ring gear bearing into the cover.

TOOLS

Driver	**07749–0010000**
Attachment, 62 x 68 mm	**07746–0010500**
Pilot, 35 mm	**07746–0040800**

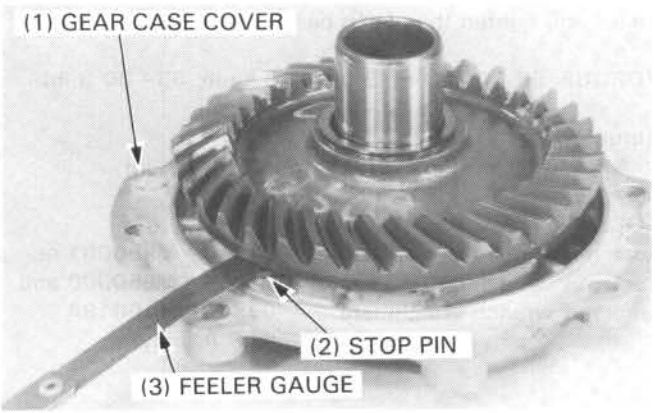


Install the ring gear shaft into the cover. It may be necessary to press the ring gear into the cover bearing.



Measure the clearance between the ring gear and the ring gear stop pin with a feeler gauge.

CLEARANCE: 0.30–0.60 mm (0.012–0.024 in)



Remove the ring gear. If the clearance exceeds the service limit, heat the gear case cover to approximately 80°C (176°F) and remove the stop pin by tapping the cover.

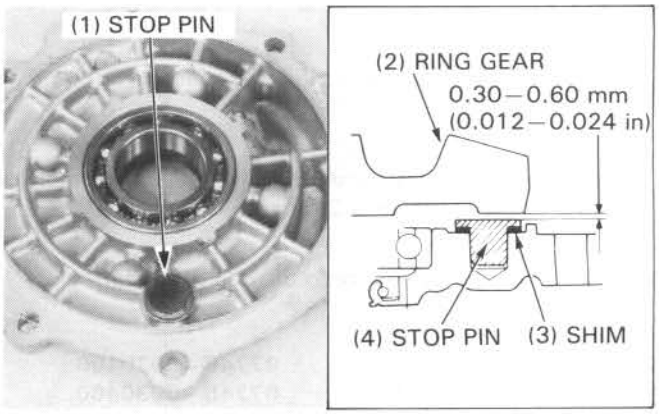
CAUTION

- *Always wear gloves when handling the gear case after it has been heated to prevent burning your hands.*

Install a stop pin shim to obtain the correct clearance.

SHIM THICKNESS: A: 0.10 mm (0.004 in)
B: 0.15 mm (0.006 in)

Install the shim and drive the stop pin into the case cover.



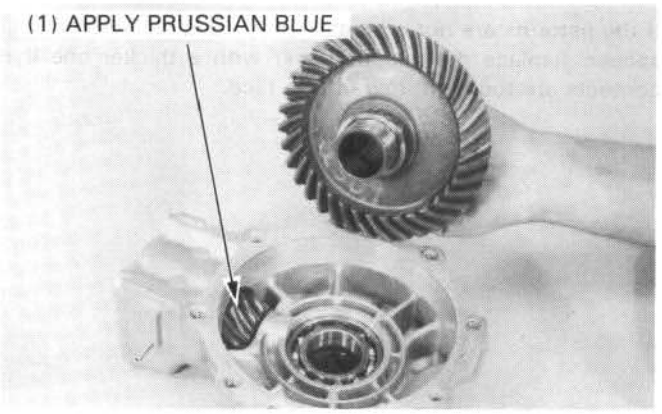
RIDE RED

GEAR TOOTH CONTACT PATTERN CHECK

Apply a thin coat of Prussian Blue to the pinion gear teeth for a gear tooth contact pattern check.

Place the ring gear spacer and ring gear into the gear case.

Apply gear oil to the lip of the oil seal on the gear case cover and install the gear case cover.

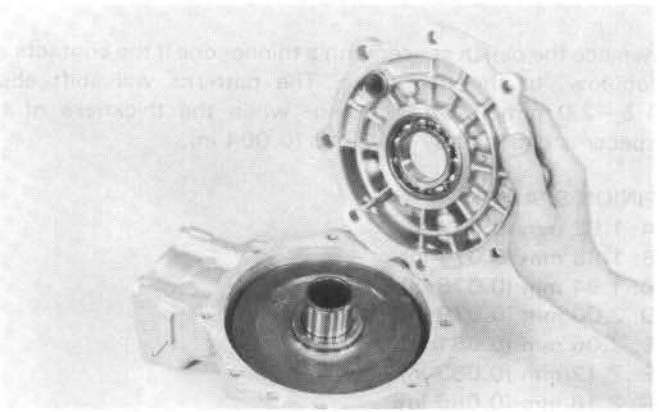


Clean all sealing material off the mating surfaces of the gear case and cover.

NOTE

- Keep dust and dirt out of the gear case.
- Be careful not to damage the mating surfaces.

Apply liquid sealant to the mating surface of the gear case cover.

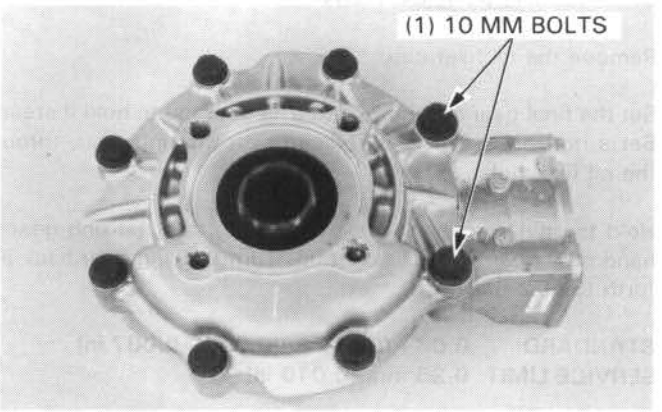


Apply thread locking agent to the 10 mm cover bolts.

Tighten the cover bolts in 2 or 3 steps until the cover evenly touches the gear case, then tighten the bolts to the specified torque in a crisscross pattern in two or more steps.

TORQUE VALUES:

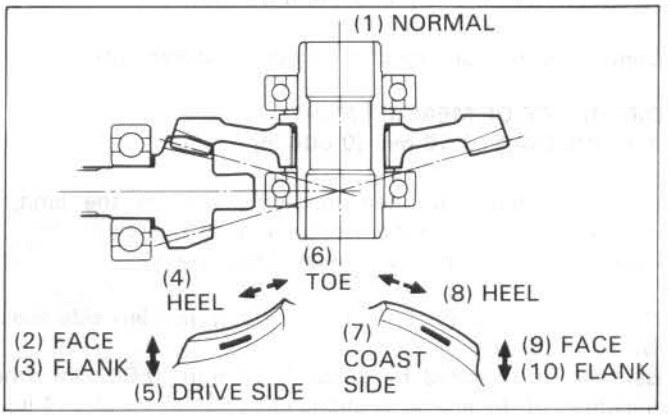
10 mm bolt 45–50 N·m (4.5–5.0 kg-m, 33–36 ft-lb)
8 mm bolt 23–28 N·m (2.3–2.8 kg-m, 17–20 ft-lb)



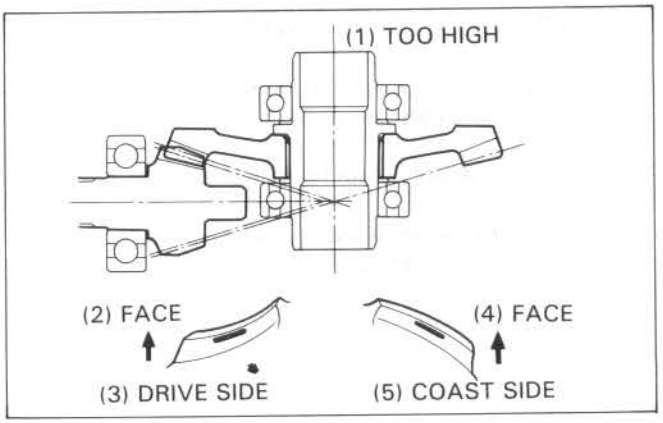
Remove the oil filler cap from the final gear case.

Rotate the ring gear several times in both directions of rotation. Check the gear tooth contact pattern through the oil filler hole. The pattern is indicated by the Prussian Blue applied to the pinion before assembly.

Contact is normal if the Prussian Blue is transfered to the approximate center of each tooth and slightly to the flank side.



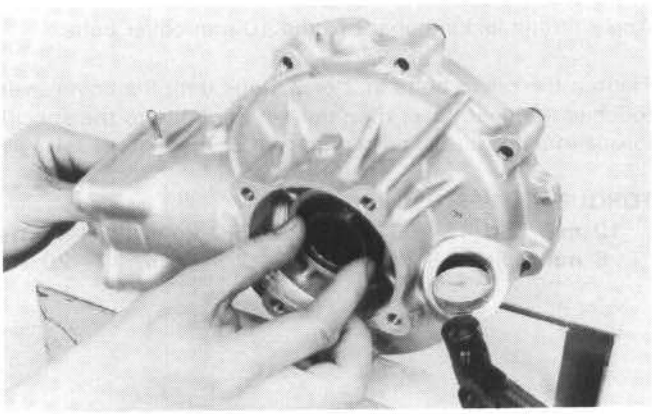
If the patterns are not correct, remove and replace the pinion spacer. Replace the pinion spacer with a thicker one if the contacts are too high, toward the face.



Replace the pinion spacer with a thinner one if the contacts are too low, to the flank side. The patterns will shift about 1.5–2.0 mm (0.06–0.08 in) when the thickness of the spacer is changed by 0.10 mm (0.004 in).

PINION SPACER:
A: 1.82 mm (0.072 in)
B: 1.88 mm (0.074 in)
C: 1.94 mm (0.076 in)
D: 2.00 mm (0.079 in) Standard
E: 2.06 mm (0.081 in)
F: 2.12 mm (0.083 in)
G: 2.18 mm (0.086 in)

BACKLASH INSPECTION



Remove the oil filler cap.

Set the final gear assembly into a jig or stand to hold it steady. Set a horizontal type dial indicator on the ring gear, through the oil filler hole.

Hold the pinion gear spline by hand. Rotate the ring gear by hand until gear slack is taken up. Turn the ring gear back and forth to read backlash.

STANDARD: 0.08–0.18 mm (0.003–0.007 in)
SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the dial indicator. Turn the ring gear and measure backlash. Repeat this procedure once more.

Compare the difference of the three measurements.

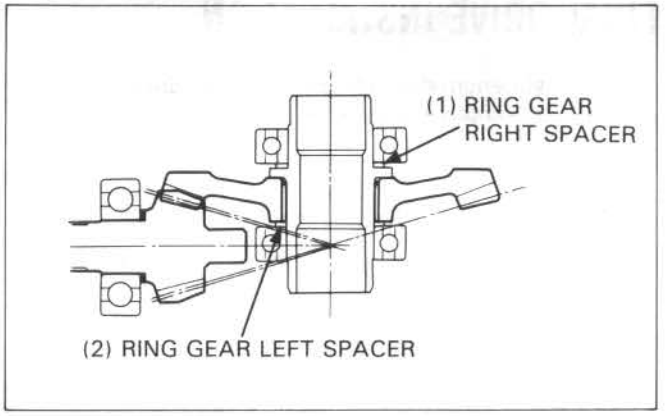
DIFFERENCE OF MEASUREMENT
SERVICE LIMIT: 0.10 mm (0.004 in)

If the difference in measurements exceeds the limit, it indicates that the bearing is not installed squarely.
Inspect the bearings and reinstall if necessary.

If backlash is too small, replace the ring gear left side spacer with a thicker one.
Backlash is changed by about 0.06 mm (0.002 in) when thickness of the spacer is changed by 0.10 mm (0.004 in).

RIDE RED

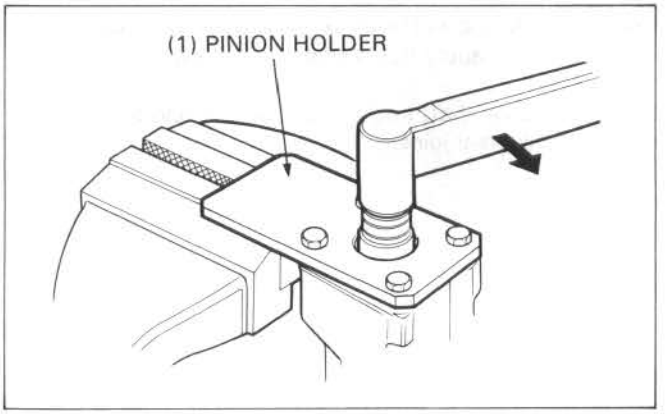
RING GEAR SPACERS:
A: 1.82 mm (0.072 in)
B: 1.88 mm (0.074 in)
C: 1.94 mm (0.076 in)
D: 2.00 mm (0.079 in)
E: 2.06 mm (0.081 in)
F: 2.12 mm (0.083 in)
G: 2.18 mm (0.086 in)
H: 2.24 mm (0.088 in)
I: 2.30 mm (0.091 in)



Change the right side spacer thickness an opposite amount to what the left side spacer was changed; if the left spacer was replaced with a 0.10 mm (0.004 in) thicker spacer, replace the right spacer with one that is 0.10 mm (0.004 in) thinner.

Install the pinion joint onto the pinion.
Apply thread looking agent to the pinion threads.

Place the pinion holder onto the pinion joint. Align the holes in the pinion holder with the four (4) holes in the final drive gear case and secure to the case with four (4) 8 mm bolts.
Place the holder into a vise.

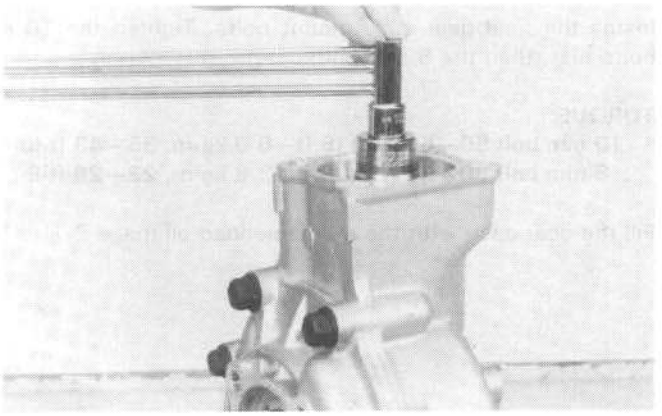


Tighten the pinion joint nut.

TORQUE:
100–120 N·m (10.0–12.0 kg-m, 72–87 ft-lb)

TOOL
Pinion holder **07924–HA00000**

Remove the pinion joint holder.

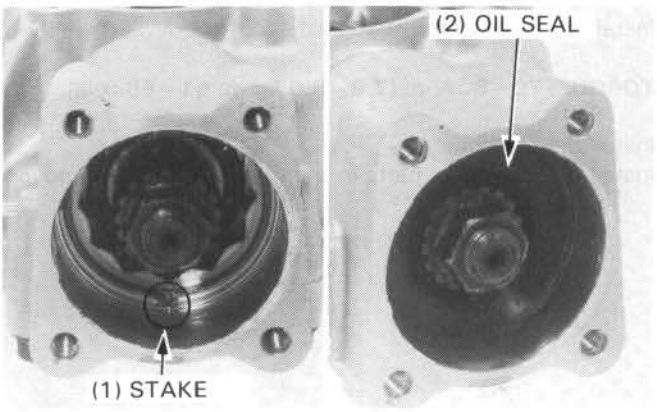


Make sure the gear assembly rotates smoothly without binding by turning the pinion joint.

Measure the final gear assembly preload.

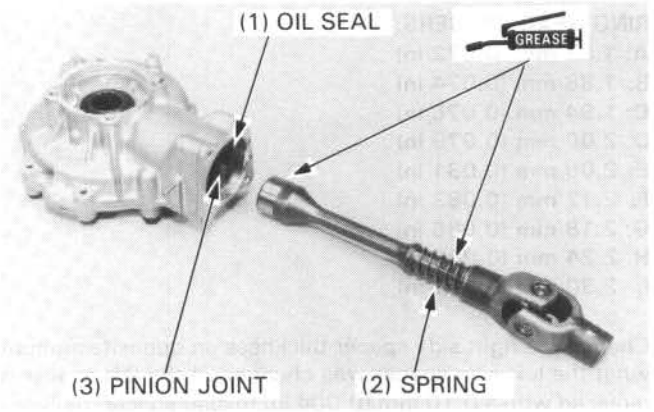
PRELOAD:
0.2–0.4 N·m (2–4 kg-cm, 1.7–3.5 in-lb) max.

Stake the pinion bearing lock nut and install a new drive shaft bearing oil seal.



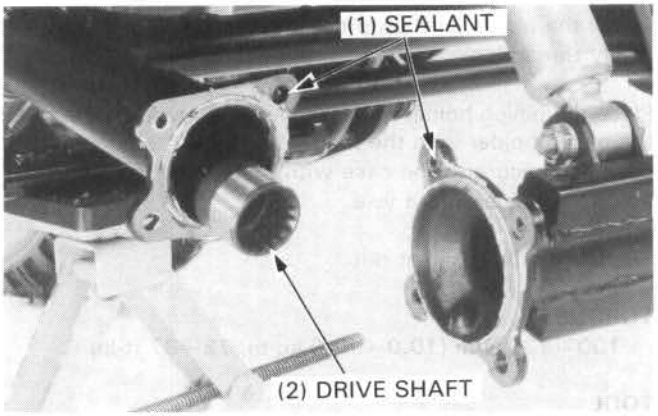
FINAL DRIVE INSTALLATION

Apply molybdenum disulfide grease to the drive shaft oil seal, pinion joint and drive shaft splines.



Clean the mating surfaces between the gear case and the swing arm and apply liquid sealant to them.

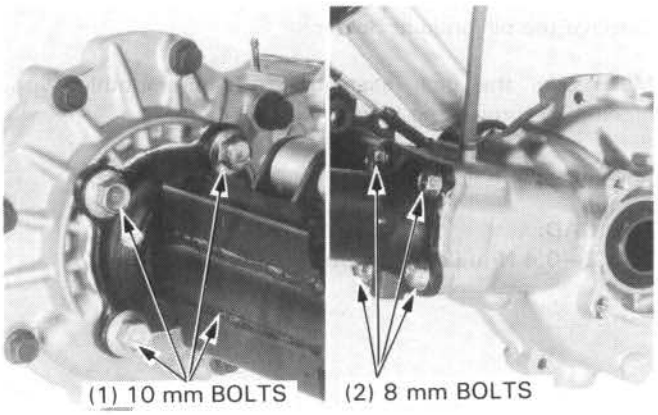
Insert the drive shaft into the swing arm and align its splines with the universal joint.



Install the final gear case mount bolts. Tighten the 10 mm bolts first, then the 8 mm bolts.

TORQUE:
10 mm bolt 50–60 N·m (5.0–6.0 kg-m, 36–43 ft-lb)
8 mm bolt 30–36 N·m (3.0–3.6 kg-m, 22–26 ft-lb)

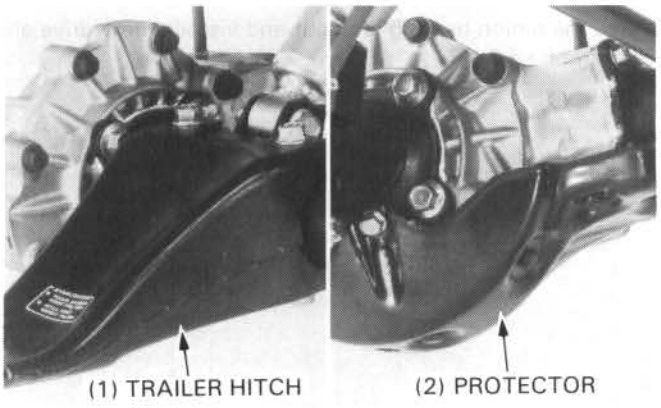
Fill the gear case with the recommended oil (page 2-1).



Install the trailer hitch.

TORQUE: 70–80 N·m (7.0–8.0 kg-m, 51–58 ft-lb)

Install the protector.
Install the remaining parts in the reverse order of removal.



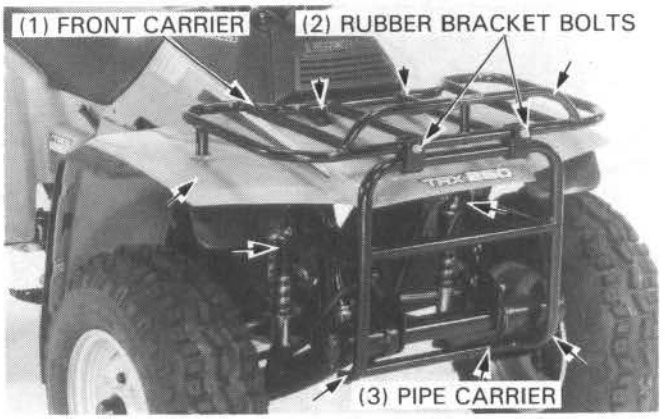
RIDE RED

14. CARRIERS/FENDERS/EXHAUST MUFFLER

FRONT CARRIER/FRONT PIPE CARRIER/ FRONT FENDER

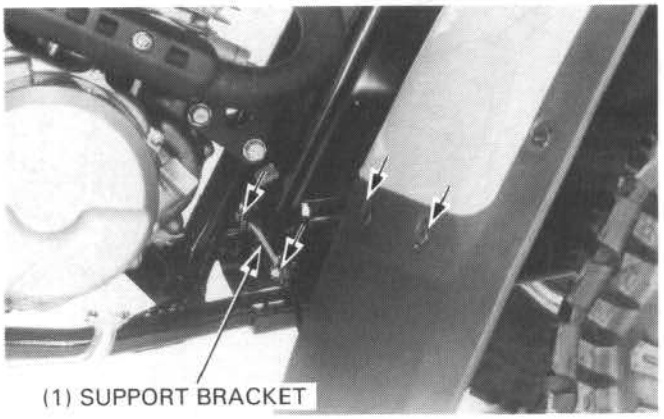
REMOVAL

Remove the following;
- two rubber bracket bolts.
- front pipe carrier.
- front carrier.

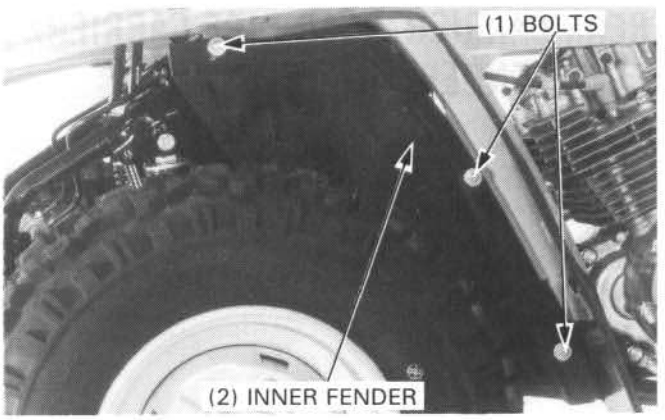


Remove the fuel tank (page 4-3).

Remove the front fender support bracket.

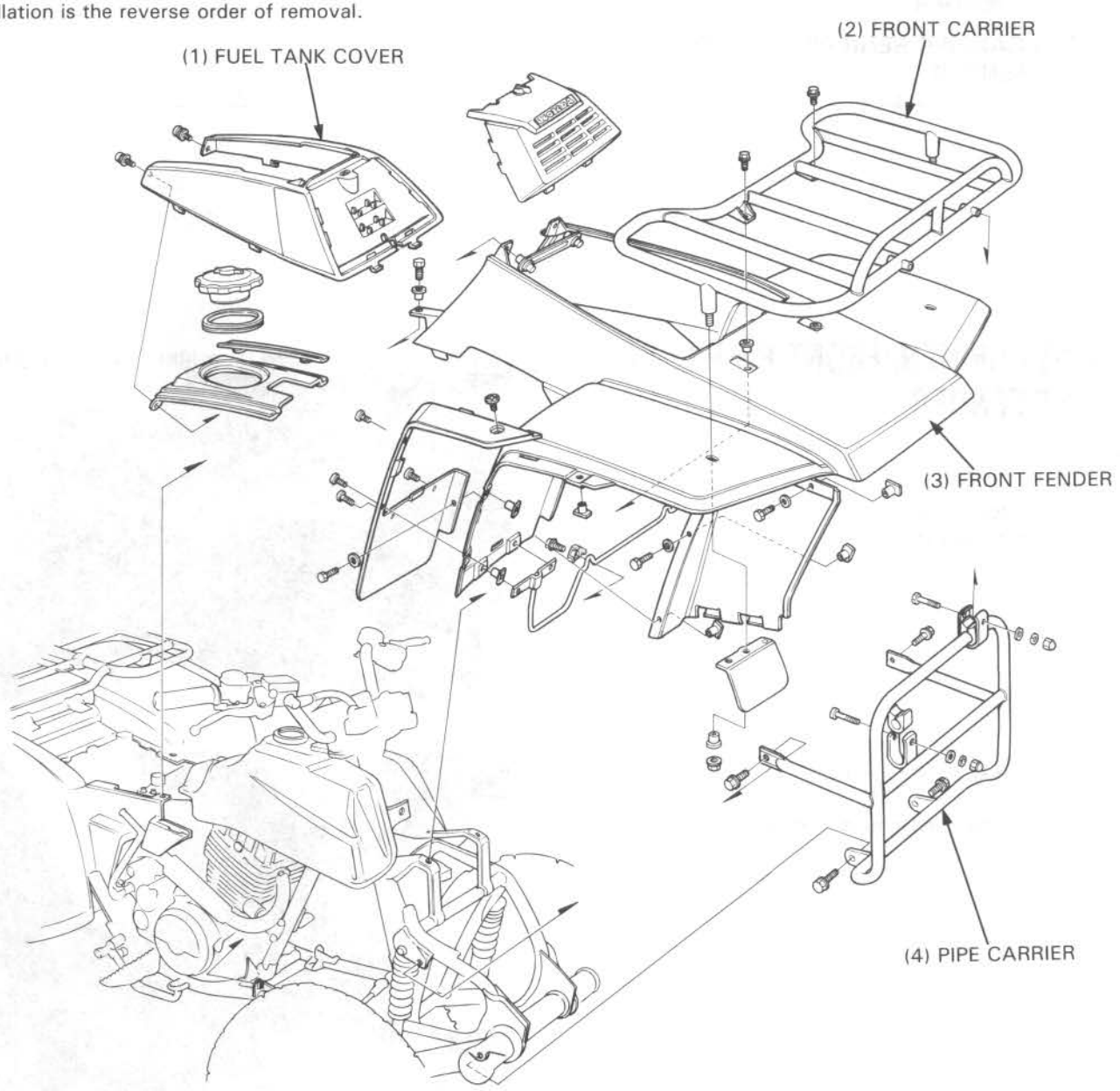


Remove the inner fenders and front fender.



INSTALLATION

Installation is the reverse order of removal.

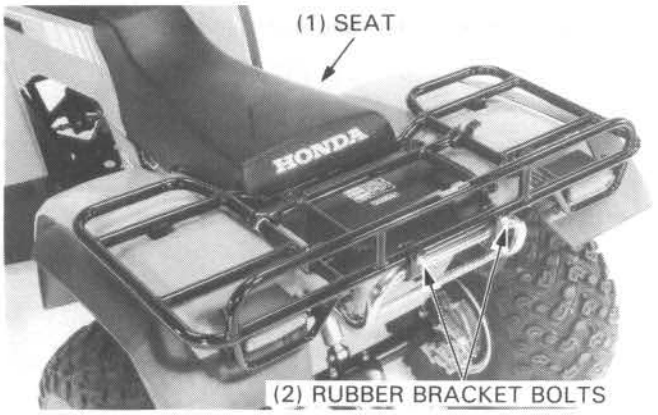


REAR CARRIER/REAR PIPE CARRIER/ REAR FENDER

Remove the seat.

Loosen the rear pipe carrier rubber bracket bolts.

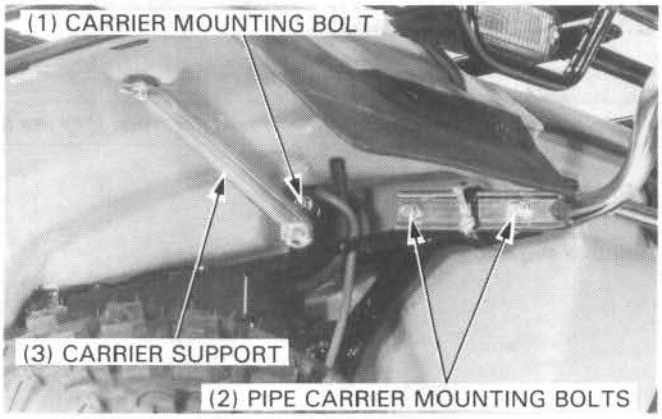
Disconnect the taillight wire connecters.



RIDE RED

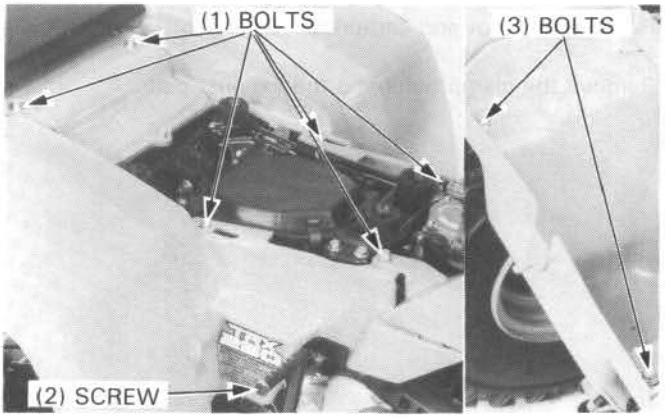
Remove the two carrier supports, two carrier mounting bolts and four pipe carrier mounting bolts.

Remove the rear carrier and rear pipe carrier.



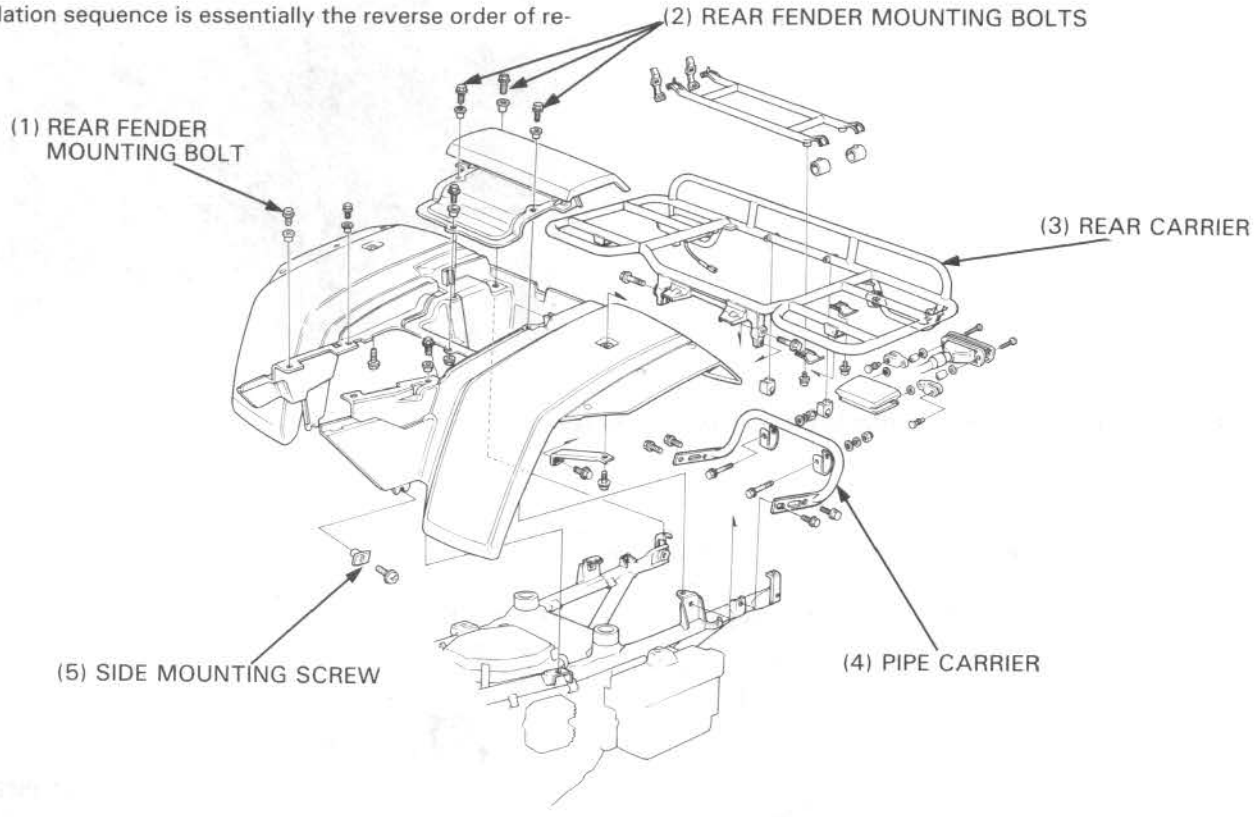
Remove the eight rear fender mounting bolts and two side mounting screws.

Remove the rear fender.



INSTALLATION

The installation sequence is essentially the reverse order of removal.



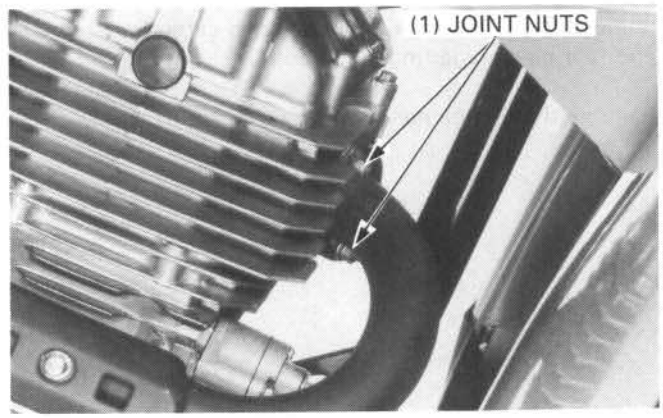
EXHAUST PIPE/MUFFLER

WARNING

- *Do not service the exhaust pipe or muffler when they are hot.*

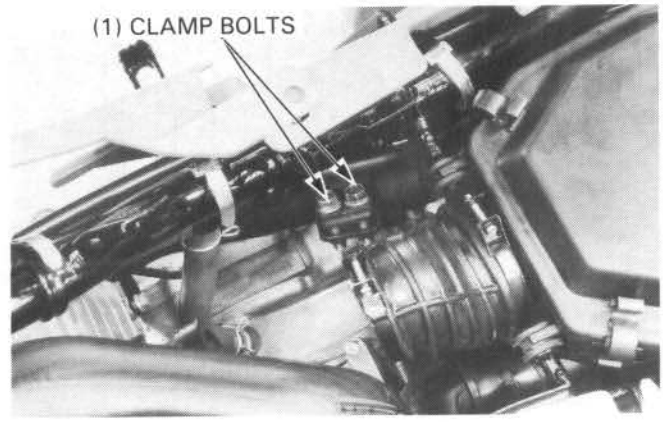
REMOVAL/INSTALLATION

Remove the exhaust pipe joint nuts.

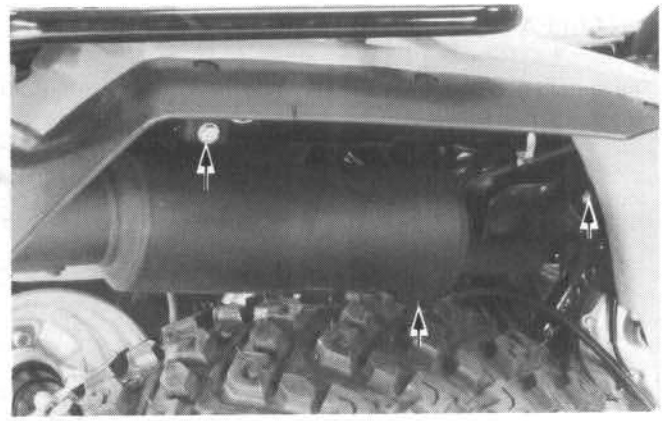


Remove the seat and carburetor (page 4-5).

Remove the clamp bolts and the exhaust pipe.



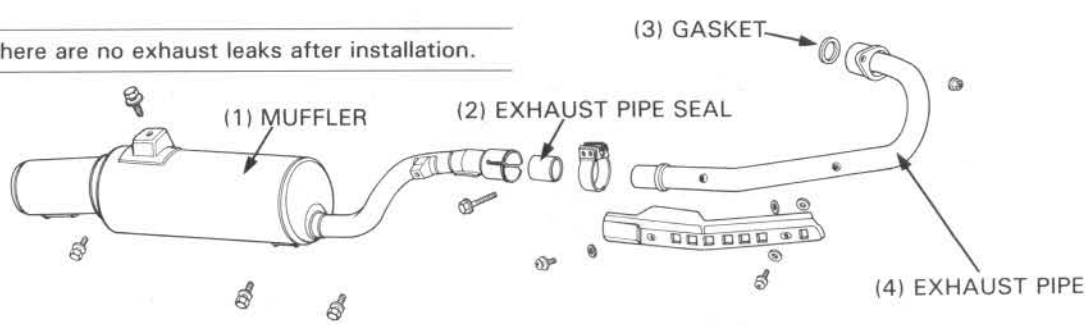
Remove the three muffler mounting bolts and muffler.
Check the gasket and pipe seal for wear.
Replace them with new ones, if necessary.



Install the exhaust pipe and muffler in the reverse order of removal.

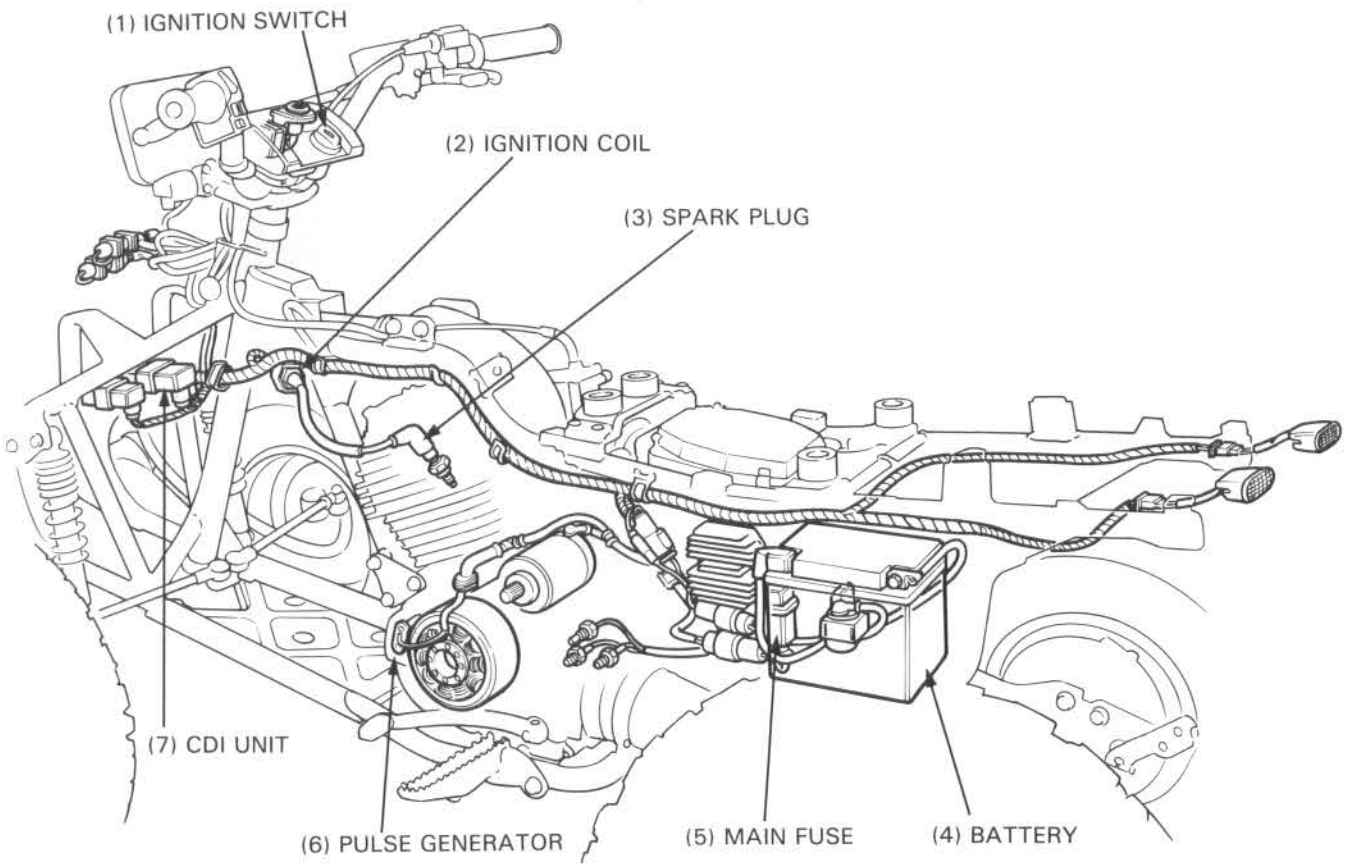
NOTE

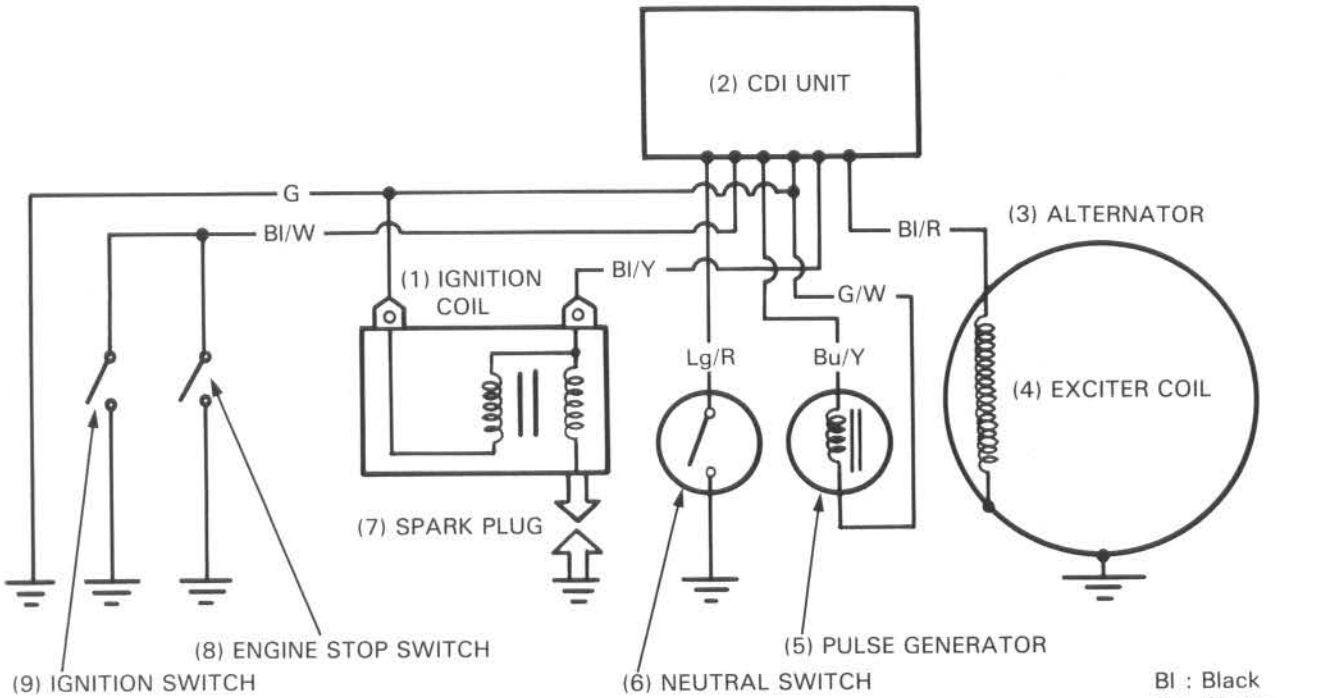
- Make sure there are no exhaust leaks after installation.



RIDE RED

MEMO





Bl : Black
G : Green
W : White
Y : Yellow
R Red
Lg: Light green

RIDE RED

15. IGNITION SYSTEM

SERVICE INFORMATION

GENERAL

- Ignition timing does not normally need to be adjusted since the CDI (Capacitive Discharge Ignition) unit is factory preset.
- For spark plug inspection, refer to page 3-3.
- For pulse generator and stator coil removal, refer to section 9.

SPECIFICATIONS

Spark plug		DR8ES-L (NGK), X24ESR-U (ND)
Spark plug gap		0.6 – 0.7 mm (0.024 – 0.028 in)
Ignition timing	At idle	13° ± 2° BTDC at 1,400 rpm
	Full advance	31° ± 2° BTDC at 3,500 rpm
Ignition coil	Primary coil resistance	0.16 – 0.2 Ω
	Secondary coil resistance (Without spark plug cap)	3.6 – 4.5 kΩ
Exciter coil resistance		50 – 200 Ω (ND) 250 – 400 Ω (MITSUBA)
Pulse generator resistance		300 – 360 Ω

TOOL

Inspection adaptor (CI)	07508-0012500 (Not available in U.S.A.)
Digital multitester or	07411-0020000 or KS-AHM-32-003 (U.S.A. only)
Circuit tester (SANWA) or	07308-0020000 (Nat available in U.S.A.)
Circuit tester (KOWA)	TH-5H-1

TROUBLESHOOTING

Engine starts but stops

- No spark at plug
- Improper ignition timing
- Faulty spark plug

No spark at plug

- Engine stop switch "OFF"
- Poorly connected, broken or shorted wires
  - Between alternator and CDI unit
  - 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
- Faulty ignition coil
- Faulty CDI unit
- Faulty pulse generator
- Faulty alternator exciter coil

Engine starts but runs poorly

- Ignition primary circuit
  - Faulty ignition coil
  - Loose or poorly contacted terminals
  - Faulty alternator exciter coil
  - Faulty CDI unit
  - Faulty pulse generator
- Ignition secondary circuit
  - Faulty plug
  - Faulty spark plug wire
  - Loose or poorly contacted high tension wire
- Improper ignition timing
  - Faulty pulse generator
  - Faulty CDI unit

IGNITION COIL

REMOVAL

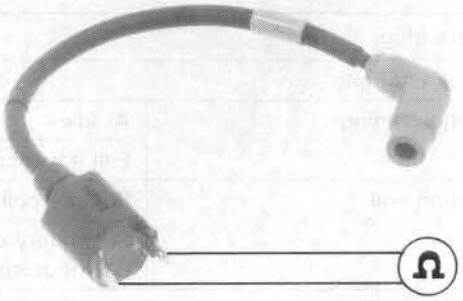
Remove the spark plug cap from the spark plug.
Disconnect the ignition coil primary wire and remove the ignition coil.

INSPECTION

CONTINUITY TEST

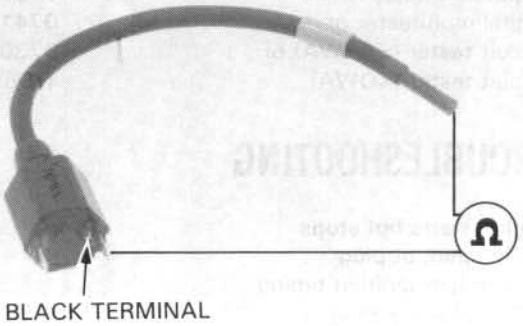
Measure the primary coil resistance.

RESISTANCE: 0.16–0.2 Ω



Remove the spark plug cap from the wire and measure the secondary coil resistance.

RESISTANCE: 3.6–4.5 kΩ



PERFORMANCE TEST (Except U.S.A.)

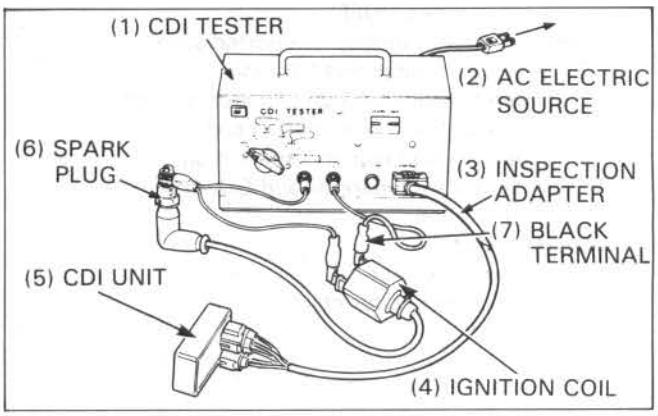
Check the ignition coil with CDI tester.

NOTE

- Follow the CDI tester manufacturer's instruction.

TOOL
Inspection adaptor (CI) 07508–0012500

Replace the ignition coil with a new one if sparks do not jump at spark plug.



INSTALLATION

Install the ignition coil and connect the black/yellow wire connector to the black terminal of the ignition coil and the green wire connector to the green terminal.
Install the spark plug cap to the plug.

RIDE RED

ALTERNATOR EXCITER COIL

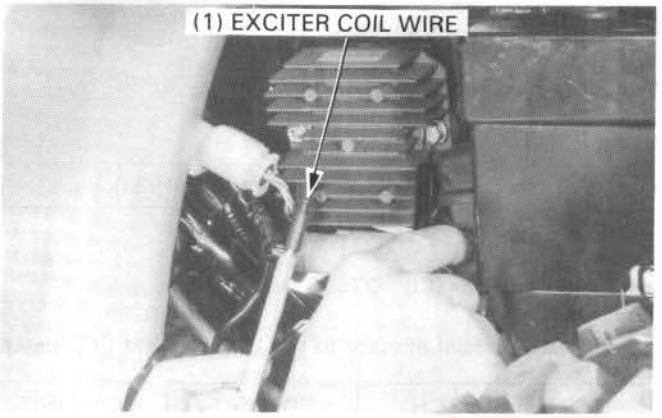
NOTE

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

Remove the seat and loosen the wire bands.
Disconnect the exciter coil wire.

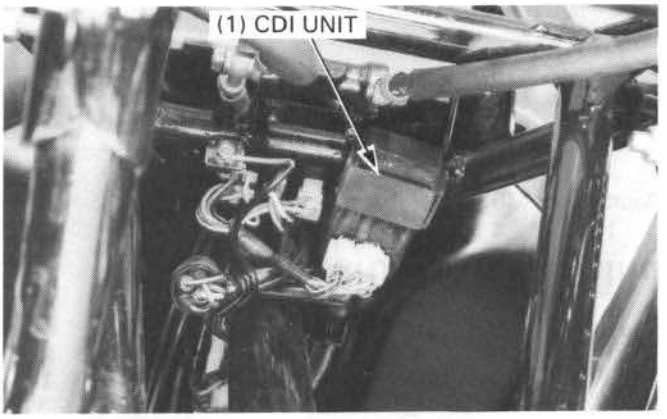
The exciter coil is in good condition if there is continuity between the black/red wire terminal and ground.

RESISTANCE: 50—200 Ω (ND)
250—400 Ω (MITSUBA)



CDI UNIT

Disconnect the CDI unit coupler and remove the CDI unit.

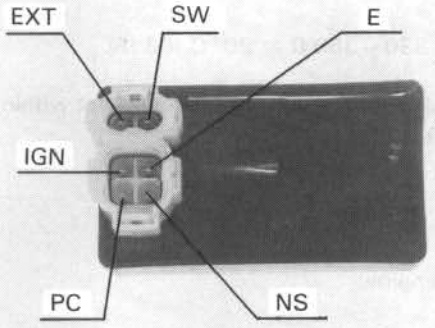


INSPECTION
CONTINUITY TEST

Replace the CDI unit if the readings are not within the limits shown in the table.

NOTE

- The CDI unit is fully transistorized. For accurate testing, it is necessary to use a specified electrical tester. Use of an improper tester may give false readings.
- Use Sanwa Electric Tester (07308-0020000), Kowa Tester (TH-5H-1) or Kowa Digital Multitester (07411-0020000 or KS-AHM-32-003: U.S.A. only).



Set the tester on the R x kΩ

Unit: kΩ

(+) / (−)	SW (Black/White)	EXT (Black/Red)	PC (Blue/Yellow)	E (Green)	IGN (Black/Yellow)	NS (Light green/Red)
SW (Black/White)		∞	∞	∞	∞	∞
EXT (Black/Red)	0.5—50		100—∞	50—500	∞	20—200
PC (Blue/Yellow)	50—500	∞		10—100	∞	50—500
E (Green)	0.5 — 50	∞	0.5—50		∞	0.5—50
IGN (Black/Yellow)	∞	∞	∞	∞		∞
NS (Light green/Red)	∞	∞	∞	∞	∞	

PERFORMANCE TEST (Except U.S.A.)

Inspect the CDI unit with CDI tester.

NOTE

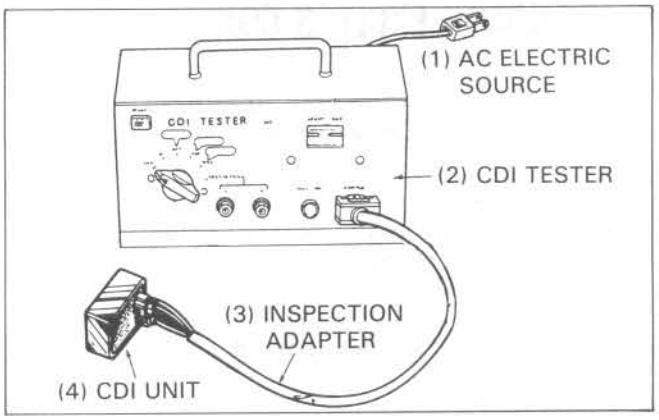
- Follow the CDI tester manufacturer's instructions.

TOOL
Inspection adaptor (CI) 07508-0012500

Connect the special adapter to the CDI unit and CDI tester.

TESTER SWITCH POSITION	CDI UNIT GOOD	CDI UNIT FAULTY
1. OFF	No spark	——
2. P		——
3. EXT		Sparks jump
4. ON1	Sparks jump	No Spark
5. ON2		

Replace the CDI unit with a new one if necessary.



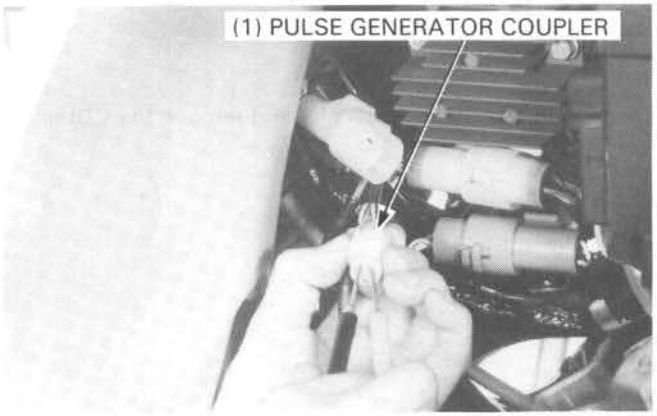
PULSE GENERATOR

INSPECTION

Remove the seat and disconnect the pulse generator couplers and wire.
Measure the resistance between the green/white and blue/yellow wires.

RESISTANCE: 330—360 Ω at 20°C (68°F)

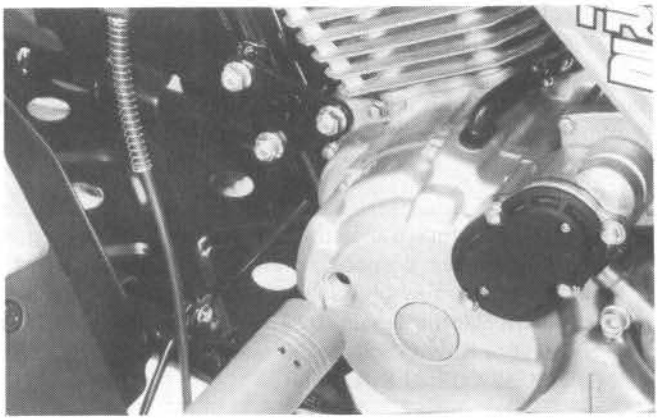
Replace the pulse generator if the reading is not within the limit (see section 9).



IGNITION TIMING

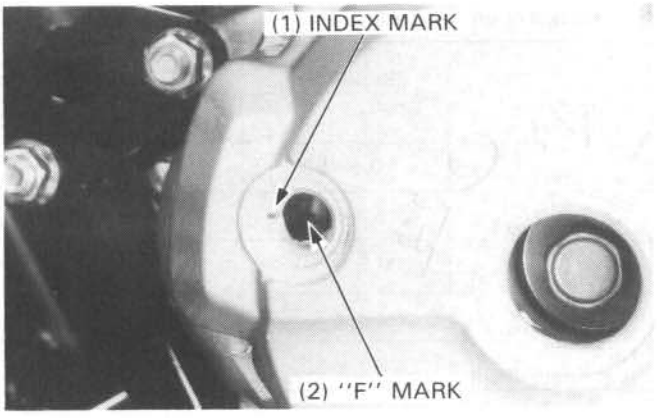
Warm up the engine.

Remove the timing hole cap and connect a timing light and tachometer.



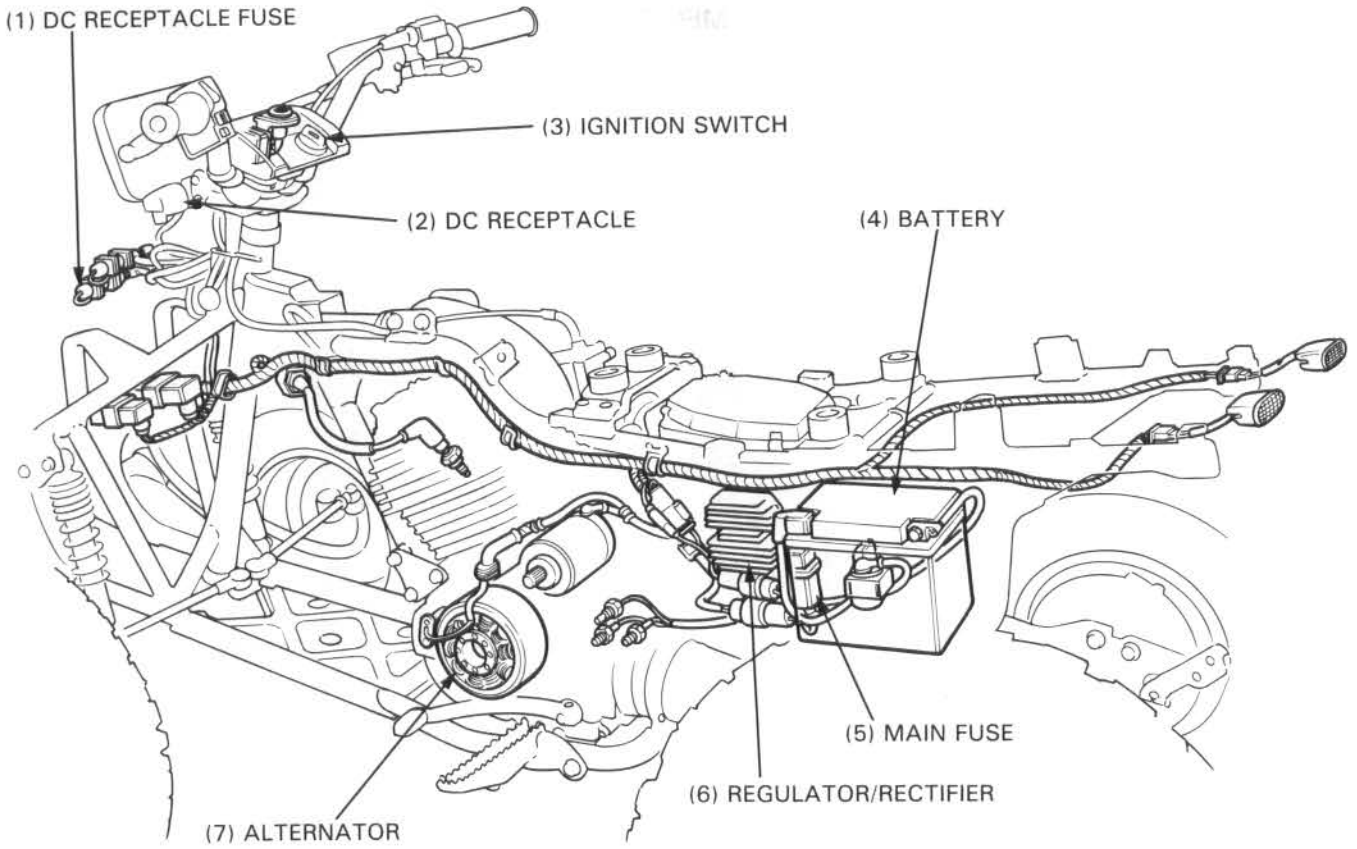
The timing is correct if the "F" mark on the flywheel aligns with the index mark on the left crankcase cover at 1,400 rpm.

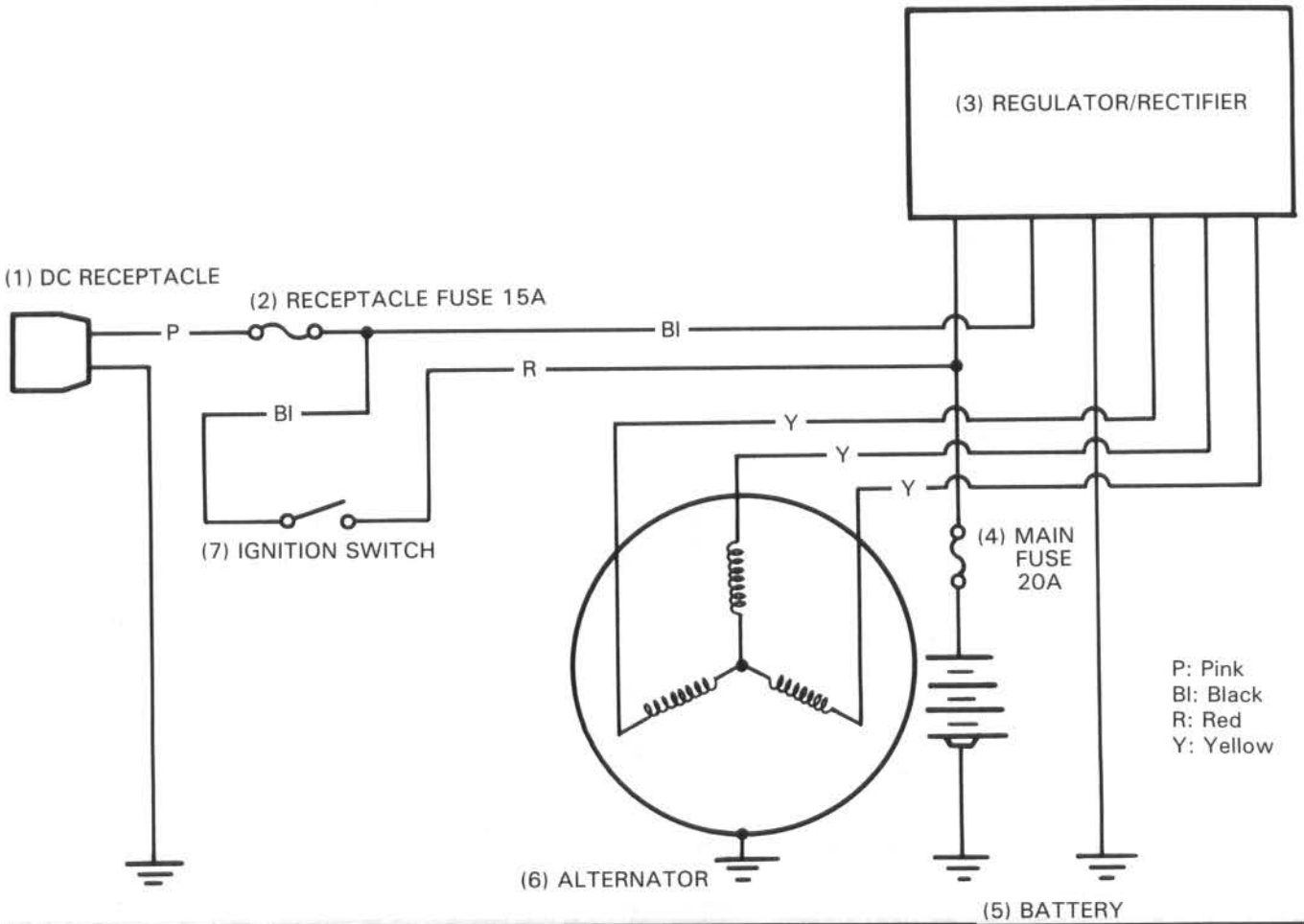
If the ignition timing is not correct, inspect the CDI unit and pulse generator.



RIDE RED

MEMO


(1) DC RECEPTACLE FUSE
(3) IGNITION SWITCH
(2) DC RECEPTACLE
(4) BATTERY
(5) MAIN FUSE
(6) REGULATOR/RECTIFIER
(7) ALTERNATOR


(3) REGULATOR/RECTIFIER
(1) DC RECEPTACLE
(2) RECEPTACLE FUSE 15A
P
Bl
R
Bl
Y
Y
Y
(7) IGNITION SWITCH
(4) MAIN FUSE 20A
P: Pink
Bl: Black
R: Red
Y: Yellow
(6) ALTERNATOR
(5) BATTERY

RIDE RED

16. BATTERY/CHARGING SYSTEM

SERVICE INFORMATION

GENERAL

- Quick charge a battery only in an emergency. Slow-charging is preferred.
- Remove the battery from the vehicle for charging. If the battery must be charged on the Four Trax, disconnectthe battery cables.
- The battery on this vehicle is a sealed type. Never remove the filling hole caps even when the battery is being charged.
- Be sure to charge the battery with the amount of current and for the time indicated on the battery label and as given below. Charging with excessive current and/or too fast may cause battery failure.

WARNING

- ***Do not smoke around a charging battery, and keep sparks away from it. The gas produced by a battery will explode if a flame or spark is brought near.***

- Use only a sealed-type battery on this vehicle.
- All charging system components can be tested on the vehicle.

SPECIFICATIONS

Battery	Capacity	12V–12AH
	Charging current	Standard: 1.0 A Maximum: 5.0 A
	Charging time	At standard: 5.0 hours, At maximum: 1.0 hour
Alternator capacity		200 W/5,000 rpm
Voltage regulator		Transistorized non-adjustable regulator

TOOL

Digital multitester	07411-0020000 or KS-AHM-32-003 (U.S.A. only)
Circuit tester (SANWA)	07308-0020000
or	
Circuit tester (KOWA)	TH-5H-1

TROUBLESHOOTING

No power—key turned on:
- Dead battery
- Disconnected battery cable
- Main fuse burned out
- Faulty ignition switch

Low power—key turned on:
- Weak battery
- Loose battery connection

Low power—engine running:
- Battery undercharged
- Charging system failure
- Loose connection or short circuit in lighting system

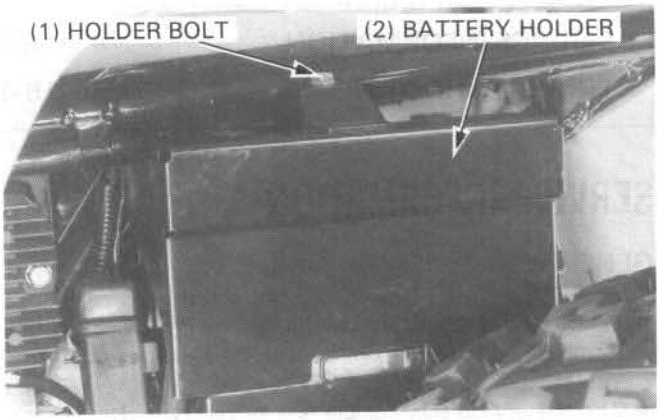
Intermittent power:
- Loose battery connection
- Loose charging system connection
- Loose starting system connection

Charging system failure:
- Loose, broken, or shorted wire or connection
- Faulty voltage regulator
- Faulty alternator

BATTERY

REMOVAL/INSPECTION

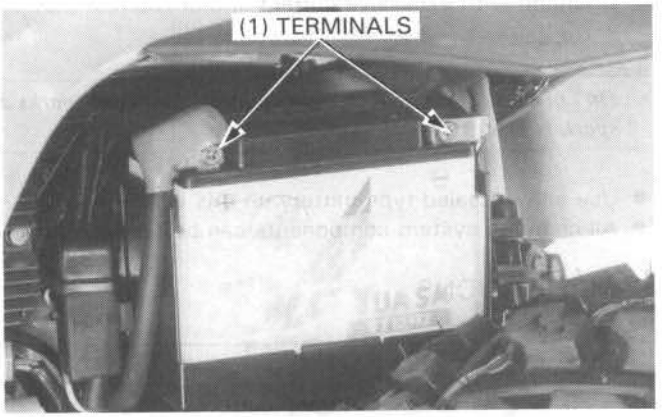
Remove the battery holder bolt.



Disconnect the negative cable and then the positive cable and remove the battery.

Measure the battery voltage using a digital voltmeter.

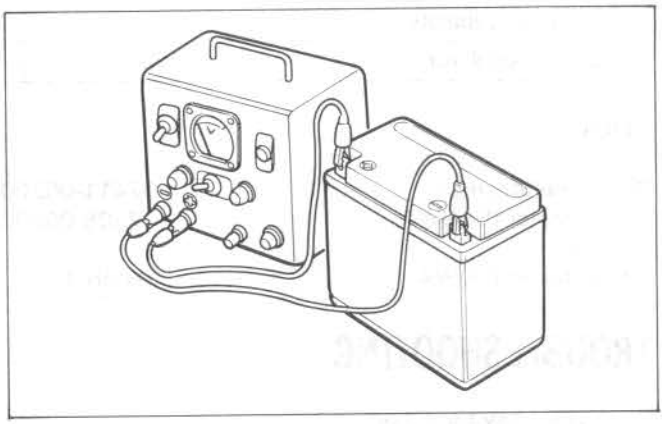
VOLTAGE: Fully charged: 13.1 V
Under charged: Below 12.8 V



CHARGING

Connect the charger positive (+) cable to the battery positive (+) terminal.

Connect the charger negative (−) cable to the battery negative (−) terminal.



	Standard	Maximum
Charging current	1.0A	5.0A
Charging time	5 hours	1 hour

WARNING

- ***Keep flames and sparks away from a charging battery.***
- ***Turn power ON/OFF at the charger, not at the battery terminals.***

CAUTION

- *Quick-charging should only be done in an emergency; slow-charging is preferred.*
- *For battery charging, do not exceed the charging current and time specified on the battery cover. Using excessive current or extending the charging time may damage the battery.*

INSTALLATION

Install the battery in the reverse order of removal.

After installing the battery, coat the terminals with clean grease.

RIDE RED

CHARGING SYSTEM

LEAKING TEST

Turn the ignition switch off and disconnect the negative cable from the battery.
Measure the voltage between the battery negative terminal and negative (ground) cable.
There should be no voltage with the ignition switch off.

CHARGING OUTPUT TEST

NOTE

- The battery voltage must be above 12.8 V when performing this test.

Warm up the engine.

Remove the main fuse and connect a ammeter between the main fuse terminals.
Connect a voltmeter between the battery terminals.

CAUTION

- *Be careful not to contact the battery positive cable to the frame while testing.*
- *Be sure to use the ammeter which can be measured bothe the (+) and (−) currents.*

Start the engine, turn the headlight on and read the ammeter and voltmeter.
Gradually increase the engine speed and check that the amperage and voltage are regulated.

REGULATE CURRENT: (+) 0−(+) 8A
REGULATE VOLTAGE: 13−15V

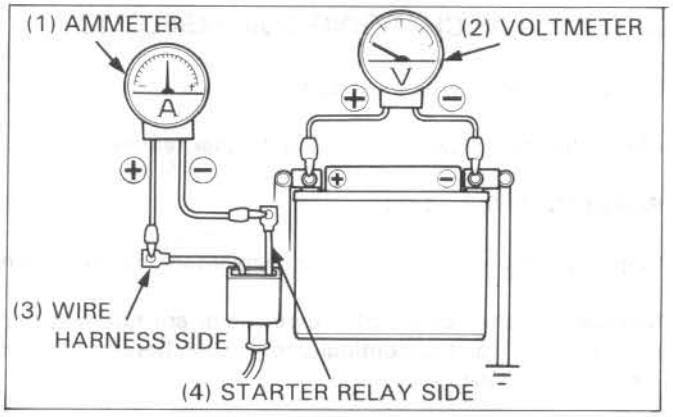
If they are not regulated, replace the regulator/rectifier.
If the battery is discharging though the engine speed rises, stop the engine and check the following:
- Check the regulator/rectifier coupler for looseness or disconnection.
- Check the continuity between the battery positive cable and the red wire terminal of the regulator/rectifier coupler.
- Check the charging coil of the alternator (page 16-4).

If there is no problem, check the wiring.
If OK, replace the regulator/rectifier and re-test.

REGULATOR/RECTIFIER INSPECTION

Check the resistance between the leads with an ohmmeter.

Replace the regulator/rectifier if the readings are not within the limits shown in the table.



Range: Sanwa: kΩ
Kowa: 100Ω

(+) Probe / (−) Probe	Yellow	Yellow	Yellow	Red	Green	Black
Yellow		∞	∞	1−20 (100−5K)	∞	∞
Yellow	∞		∞	1−20 (100−5K)	∞	∞
Yellow	∞	∞		1−20 (100−5K)	∞	∞
Red	∞	∞	∞		∞	∞
Green	1−20 (100−5K)	1−20 (100−5K)	1−20 (100−5K)	5−30 (500−8K)		1−20 (1K−5K)
Black	10−80 (10K−80K)	10−80 (10K−80K)	10−80 (10K−80K)	20−100 (50K−∞)	10−50 (10K−50K)	

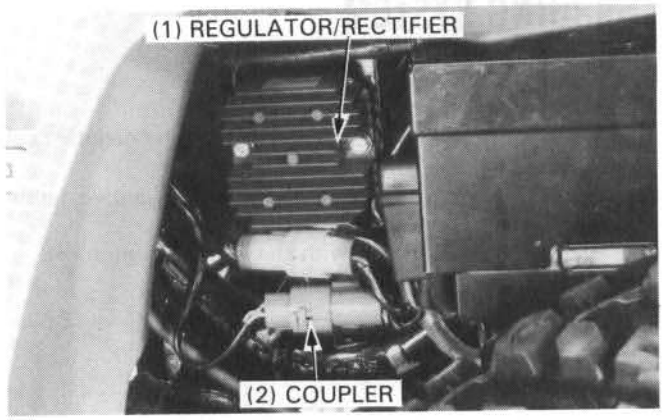
REGULATOR/RECTIFIER REPLACEMENT

Remove the seat and air cleaner case (page 4-4).

Disconnect the regulator/rectifier wire coupler.
Remove the two bolts and nuts, and remove the old part.

Install the new regulator/rectifier and connect the coupler.

Reinstall the air cleaner case and the seat.



ALTERNATOR CHARGING COIL INSPECTION

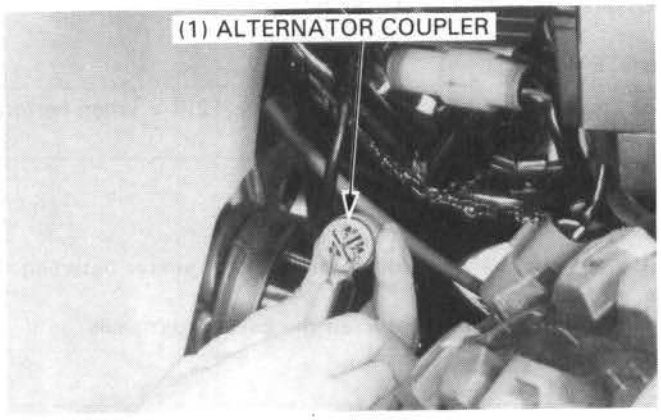
Disconnect the alternator coupler.

Check the resistance between the coupler terminals.

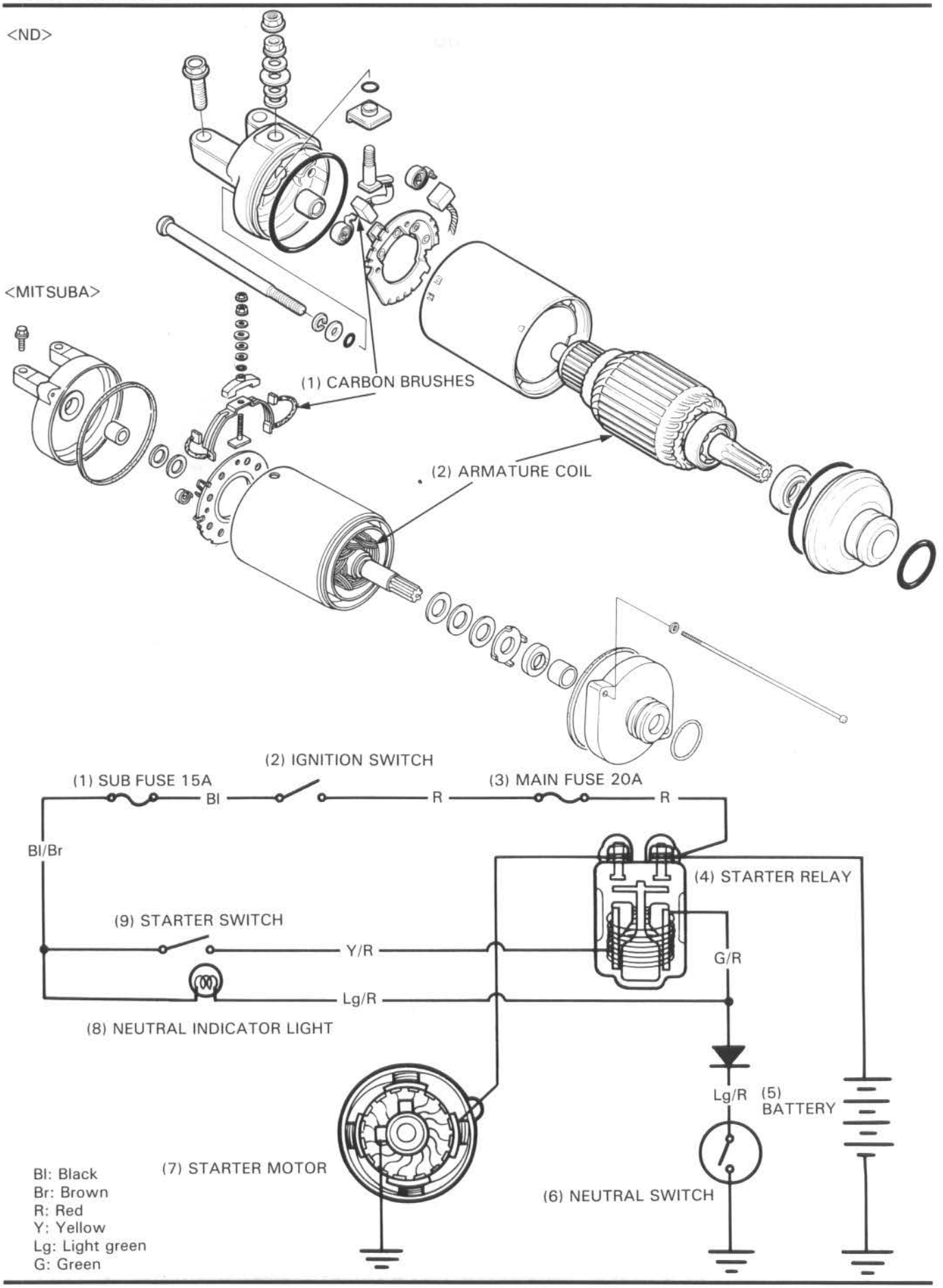
RESISTANCE: 0.2—1.0 Ω

Check for continuity between the coupler terminal and ground.

Replace the alternator stator if readings are not within the limit, or if any lead has continuity to ground. Refer to section 9 for stator removal.



MEMO


<ND>
<MITSUBA>
(1) CARBON BRUSHES
(2) ARMATURE COIL
(2) IGNITION SWITCH
(1) SUB FUSE 15A
Bl
R
(3) MAIN FUSE 20A
R
Bl/Br
(4) STARTER RELAY
(9) STARTER SWITCH
Y/R
G/R
Lg/R
(8) NEUTRAL INDICATOR LIGHT
Lg/R
(5) BATTERY
(7) STARTER MOTOR
(6) NEUTRAL SWITCH
Bl: Black
Br: Brown
R: Red
Y: Yellow
Lg: Light green
G: Green

RIDE RED

17. STARTER SYSTEM

SERVICE INFORMATION

GENERAL

- The starter motor can be removed with the engine in the frame.
- This section covers maintenance of the MITSUBA starter motor.

SPECIFICATIONS

			STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	Mitsuba	800±120 g (28.2±4.2 oz)	740 g (26 oz)
		ND	970±120 g (34.2±4.2 oz)	
	Brush length	Mitsuba	12—12.5 mm (0.47—0.49 in)	5.5 mm (0.22 in)
		ND	11.7—12.3 mm (0.46—0.48 in)	8.5 mm (0.33 in)

TROUBLESHOOTING

Starter motor will not turn
- Dead battery
- Faulty ignition switch
- Faulty starter switch
- Faulty neutral switch
- Faulty starter relay switch
- Loose or disconnected wire or cable

Starter motor turns engine slowly
- Low battery
- Excessive resistance in circuit
- Binding in starter motor
- Loose or poorly contacted battery or starter motor cable terminals

Starter motor turns, but engine does not turn
- Faulty starter clutch
- Faulty starter motor gears
- Faulty starter motor or idle gear

Starter motor and engine turn, but engine does not start
- Faulty ignition system
- Engine problems
- Faulty engine stop switch

STARTER MOTOR

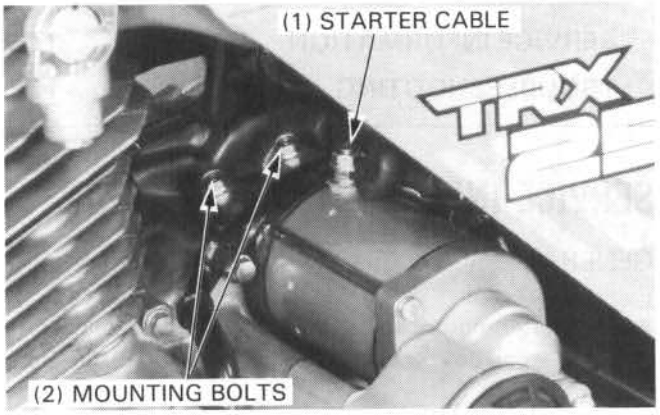
REMOVAL

WARNING

- ***With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.***

Disconnect the starter cable from the starter motor.

Remove the two mounting bolts and the starter motor.



BRUSH INSPECTION

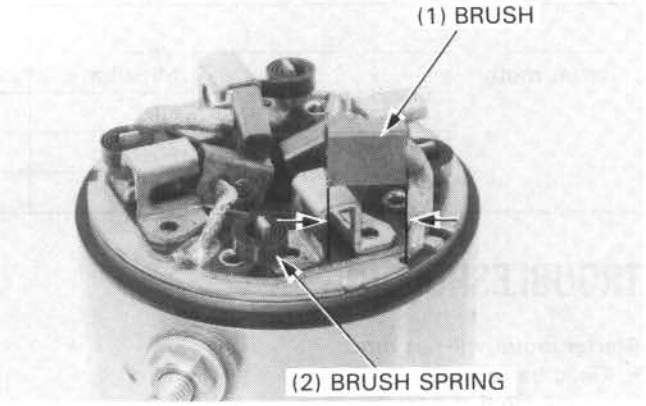
Remove the two starter motor case screws and the front and rear covers.
Remove the armature and the brushes.

Inspect the brushes and measure the brush length.

SERVICE LIMITS: Mitsuba 5.5 mm (0.22 in)
ND 8.5 mm (0.33 in)

Measure brush spring tension with a spring scale.

SERVICE LIMIT: 740 g (26 oz)



COMMUTATOR INSPECTION

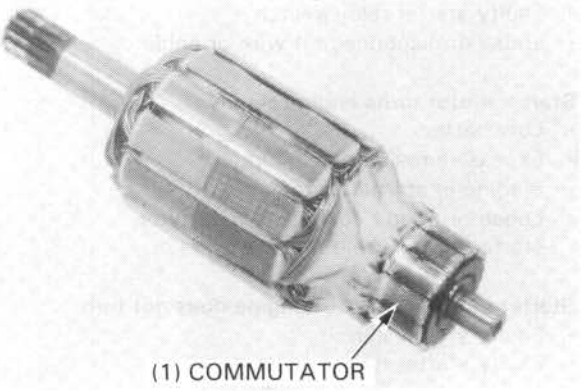
NOTE

- Record the location and number of thrust washers for correct assembly.

Inspect the commutator bars for discoloration. Bars discolored in pairs indicate grounded armature coils, in which case the starter motor must be replaced.

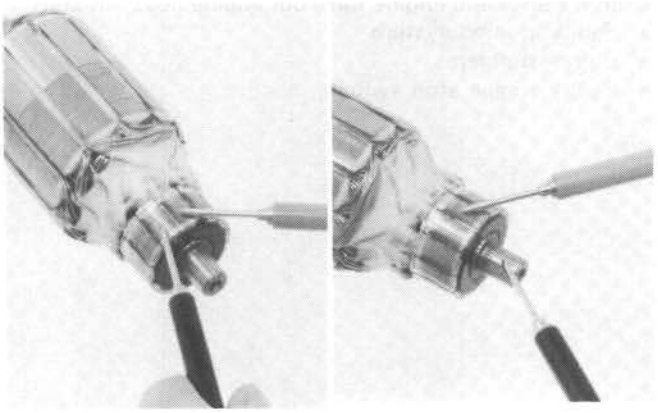
NOTE

- Do not use emery or sand paper on the commutator.



Check for continuity between pairs of commutator bars; there should be continuity.

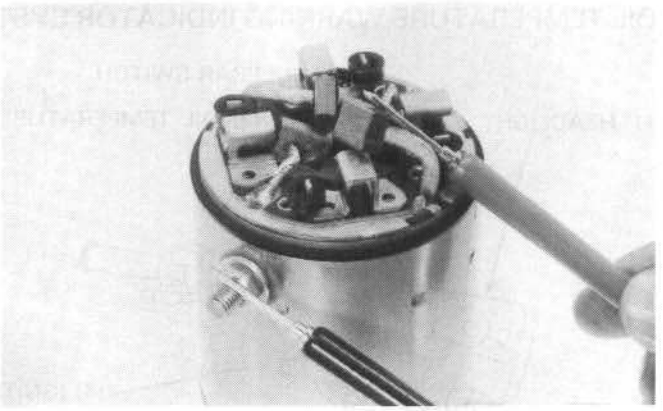
Also, check for continuity between individual commutator bars and the armature shaft; there should be no continuity.



RIDE RED

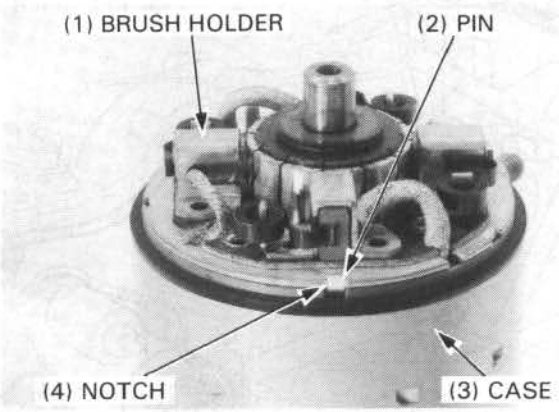
FIELD COIL INSPECTION

Check for continuity from the cable terminal to the motor case and from the cable terminal to the brush wire. Replace the starter motor if the field coil is not continuous or if it is shorted to the motor case.



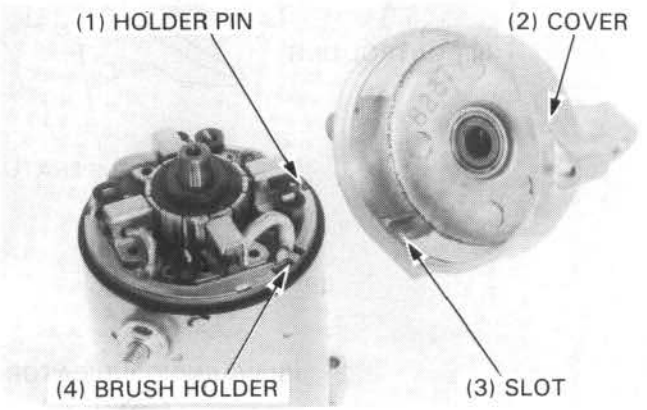
ASSEMBLY/INSTALLATION

Assemble the starter motor. Align the case notch with the brush holder pin.



Install the rear cover aligning its slot with the brush holder pin.

Install the starter motor in the reverse order of removal.



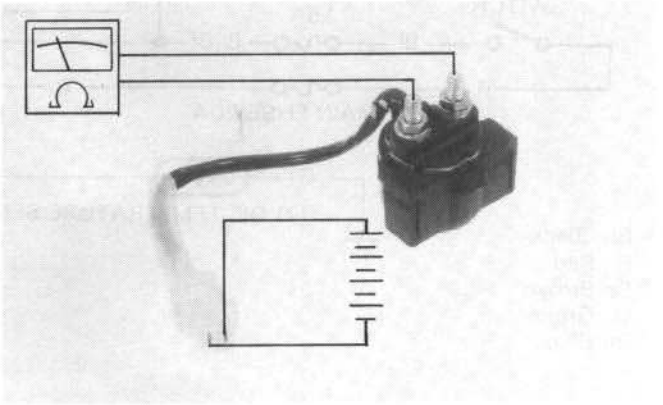
STARTER RELAY

INSPECTION

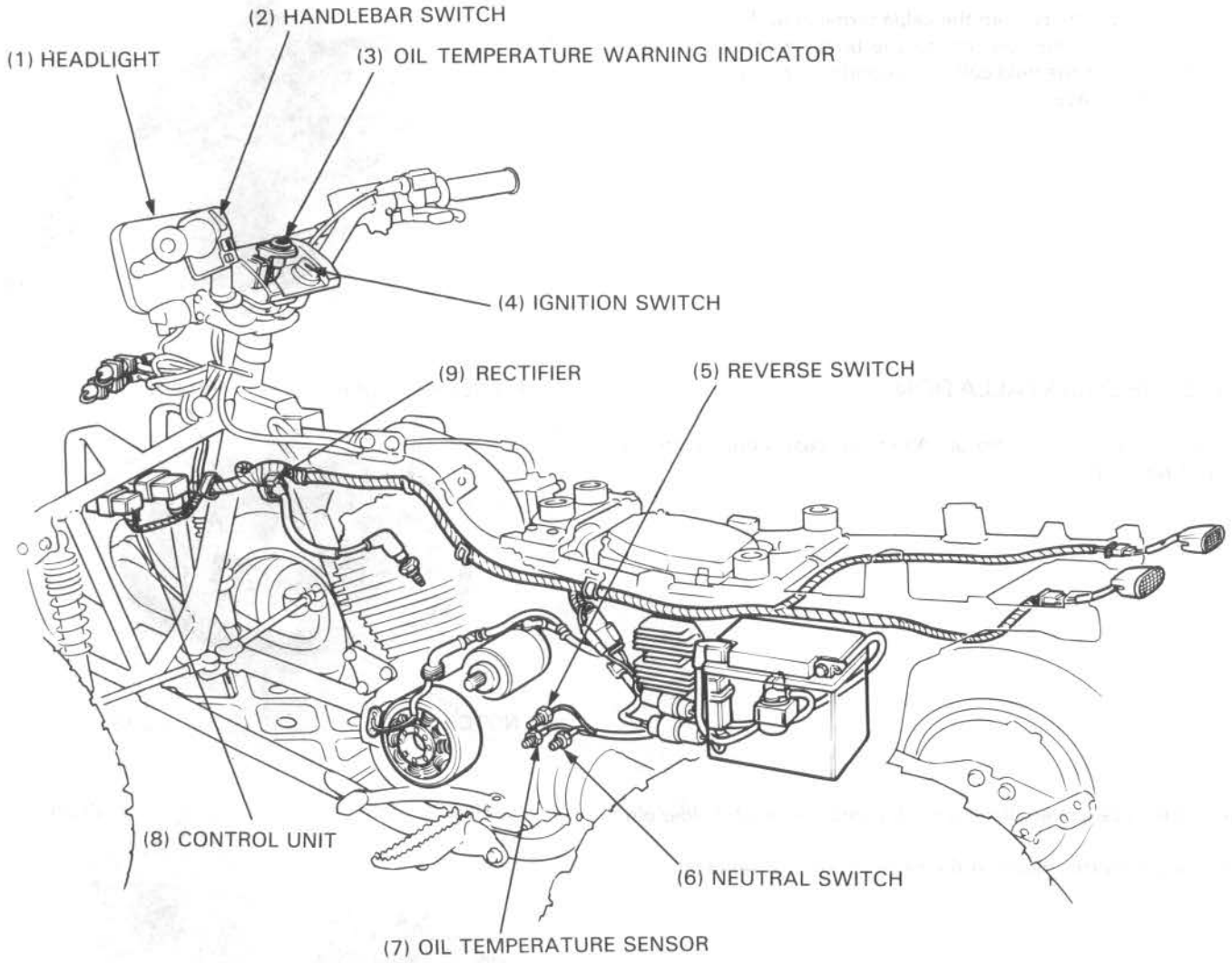
Depress the starter switch button with the ignition ON. The coil is normal if the starter relay clicks.

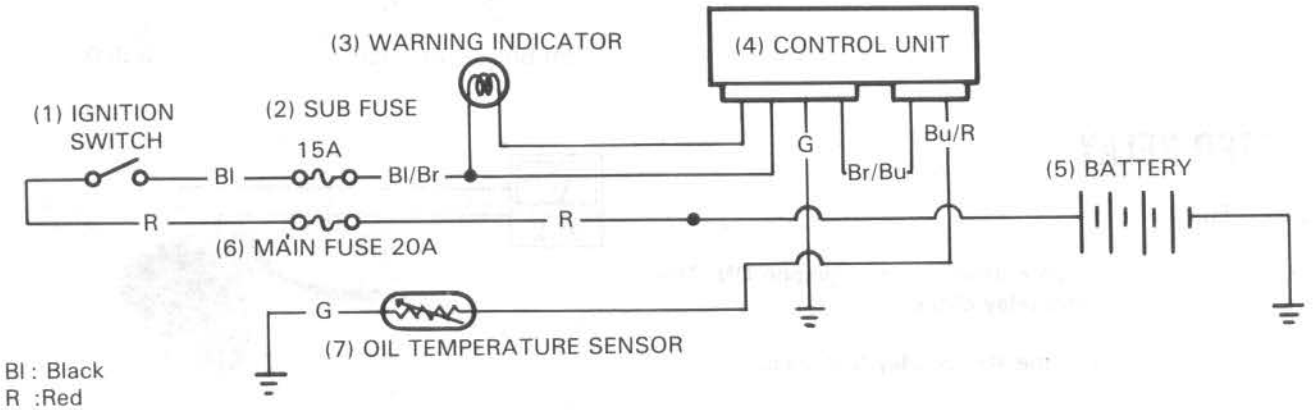
Connect an ohmmeter to the starter relay terminals.

Connect a 12 V battery to the relay cable terminals.
The relay is normal if there is continuity.



OIL TEMPERATURE WARNING INDICATOR SYSTEM





Bl : Black
R :Red
Br :Brown
G :Green
Bu:Blue

RIDE RED

18. LIGHTS/SWITCHES

SERVICE INFORMATION

GENERAL

- A continuity check can usually be made without removing the part from the Four Trax by simply disconnecting the wires and connecting a continuity tester or voltmeter to the terminal.

Headlight	12V 45W/45W	Reverse indicator	12V 3W
Taillight	12V 3.4W	Oil warning indicator	12V 3.4W
Neutral indicator	12V 3W		

TROUBLESHOOTING

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

- Bulb burned out
- Faulty switch
- Wiring to that component has open circuit

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

- Faulty dimmer switch
- Bulb burned out
- Wiring to that component has open circuit

OIL TEMPERATURE WARNING INDICATOR SYSTEM

NOTE: The oil temperature warning indicator should come on for few seconds then turn off when the ignition switch is turned on.

OIL TEMPERATURE WARNING INDICATOR DOES NOT GO OFF

Disconnect the Blue/Red wire from the oil temperature sensor with the ignition switch on. Indicator should go off.
→ ABNORMAL → Check oil temperature sensor

↓ NORMAL

Reconnect the Blue/Red wire to the sensor. Disconnect the 2P coupler from the control unit and check for resistance between Blue/Red wire terminal and ground. Resistance should be about 10 kΩ with the engine cold (25°C/77°F).
NOTE: Resistance will be lower at higher engine temperatures.
→ ABNORMAL → Short circuit to ground

↓ NORMAL

Disconnect the 4P coupler of the control unit and check the continuity between the Brown/Red and Green terminals of the coupler with the ignition switch turned off.
→ CONTINUITY → Short circuit to ground

↓ NO CONTINUITY → Faulty control unit

OIL TEMPERATURE WARNING INDICATOR DOES NOT COME ON

Disconnect the 4P coupler from the control unit and check the continuity between Green wire terminal and ground.
→ NO CONTINUITY → Open circuit in Green wire

↓ CONTINUITY

Short the Brown/Red and Green wire terminals of the 4P coupler. The indicator should come on when the ignition switch is turned on.
→ INDICATOR DOES NOT COME ON → (1) Burnt bulb (2) Open circuit in wire harness

↓ INDICATOR COMES ON

Check for voltage between the Black/Brown and Green wire terminals of the 4P coupler with the ignition switch on.
→ NO VOLTAGE → Open circuit in wire harness

↓ BATTERY VOLTAGE → Faulty control unit

RIDE RED

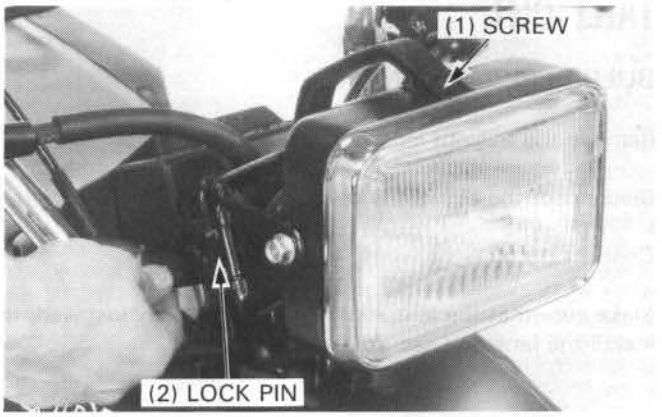
HEADLIGHT

BULB REPLACEMENT

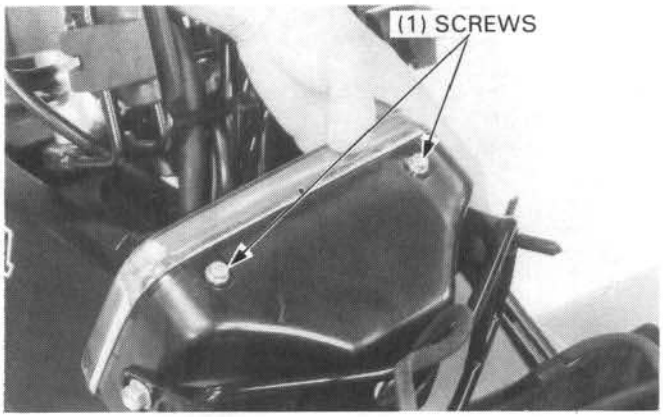
Pull the right and left lock pins off.

Grasp the headlight case bracket and pull the headlight down to remove it from the rubber mounts.

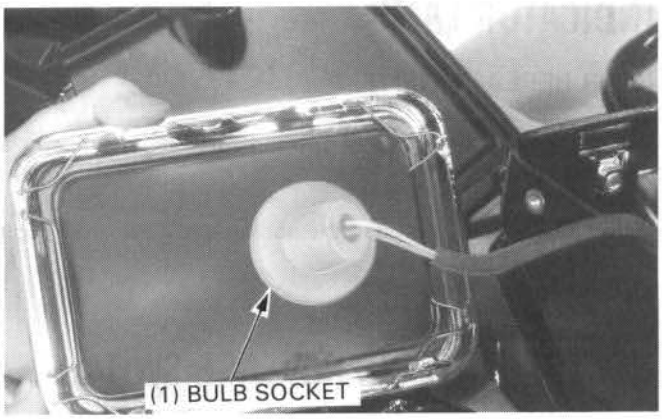
Remove the headlight upper mounting screw.



Remove the headlight lower mounting screws and remove the headlight from the headlight case.



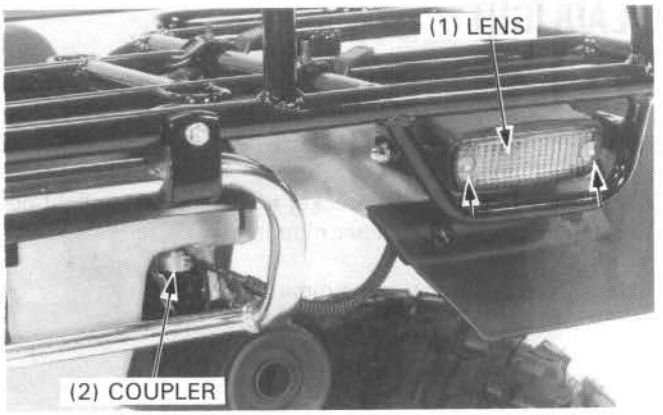
Remove the bulb socket by turning it counterclockwise and remove the headlight bulb from the headlight.



Install a new bulb and the socket.

Install the headlight case onto the bracket, align the marks on the case and bracket.

TAILLIGHT



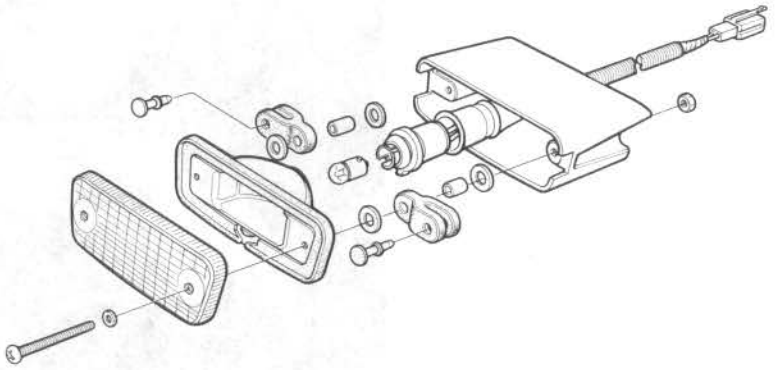
BULB REPLACEMENT

Remove the taillight lens screws.

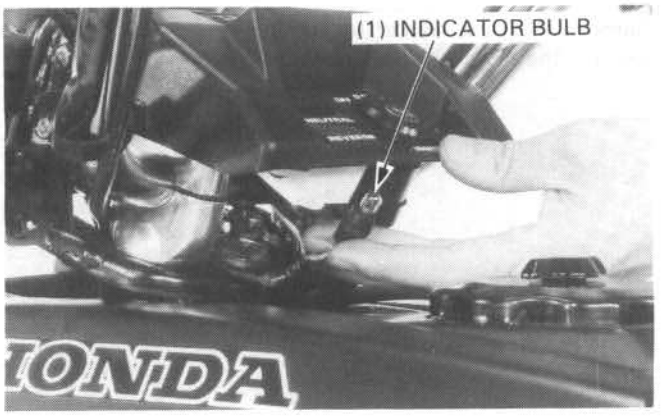
Disconnect the taillight wire coupler and replace the bulb

Connect the taillight wires.

Make sure that the lens seal rubber is correctly installed, then install the lens and secure it with screws.



INDICATOR LAMP



BULB REPLACEMENT

Pull the bulb socket out of the indicator lamp housing and remove the bulb.

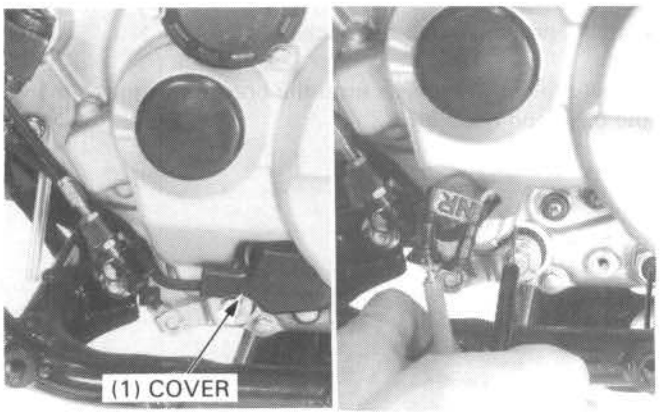
Install a new bulb and push the socket back into the housing.

NEUTRAL SWITCH/REVERSE SWITCH

Remove the switch cover and connectors. Check the continuity between the switch terminal and ground.

The neutral switch is functional if continuity exists with the transmission in neutral.

The reverse switch is functional if continuity exists with the transmission in reverse.



WARNING

- ***Connect the neutral (Light green/Red) and reverse (Gray) switch wires properly. If the switch wire connections are interchanged, the neutral indicator comes on in the transmission in reverse and the Four Trax will reverse suddenly.***

RIDE RED

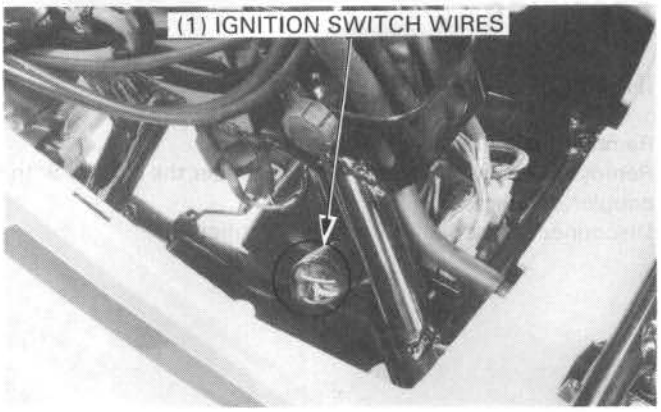
IGNITION SWITCH

Disconnect the ignition switch wire connectors.

Check the switch for continuity between the black/white and green wires with the switch "OFF", and the red and black with the switch "ON",

	IG	E	BAT	Ho
OFF	O——O			
ON			O——O	
COLOR	Bl/W	G	R	Bl

The switch is normal if there is continuity between the circuits marked "O—O".

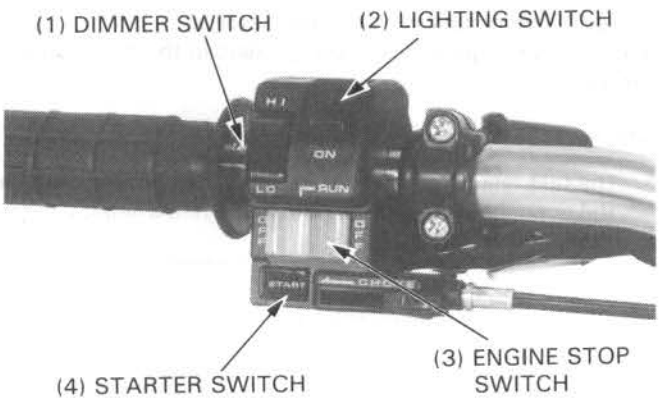


HANDLEBAR SWITCH

The handlebar switch (lighting/dimmer switches, engine stop switch, starter switch) must be replaced as an assembly.

Disconnect the handlebar switch wire couplers.

Check continuity between the terminals. Continuity should exist between the color coded wire terminals in each chart.



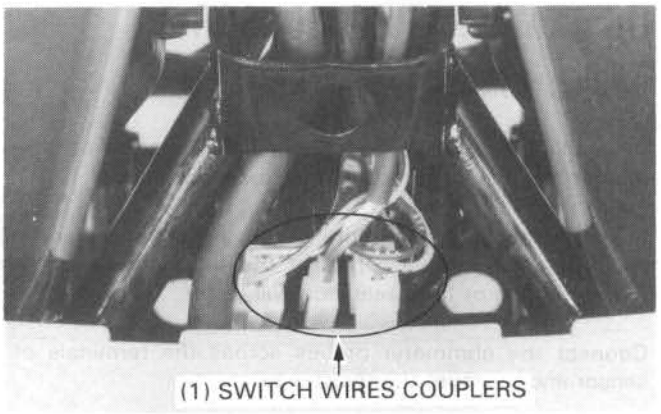
ENGINE STOP SWITCH

'85

	E	IG
OFF	O——O	
RUN		
COLOR	G	Bl/W

AFTER '85

	E	IG
OFF	O——O	
RUN		
OFF	O——O	
COLOR	G	Bl/W



LIGHTING/DIMMER SWITCHES

SWITCH	LIGHTING			DIMMER			
	C	TL	(HL)		HI	(HL)	LO
OFF				Hi	O——O		
ON	O——O——O			(N)	O——O——O		
COLOR	Bl/Br	Br	●	Lo		O——O	
	●			COLOR	Bu	●	W

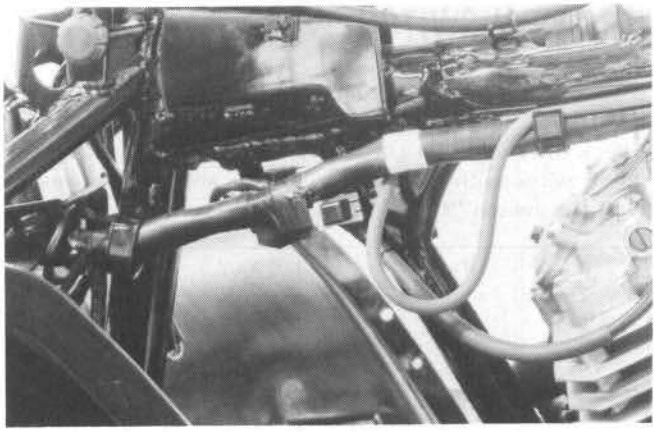
STARTER SWITCH

	BAT	ST
RELEASED		
PUSHED	O——O	
COLOR	Bl/Br	Y/R
	●	

RECTIFIER

INSPECTION

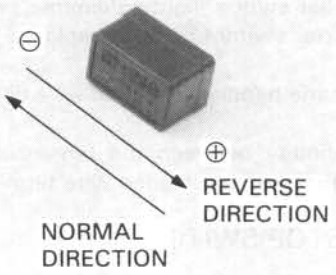
Remove the frame left side cover.
Remove the rectifier from the holder under the battery with the coupler connected.
Disconnect the coupler from the rectifier.



Check for continuity with an ohmmeter.
The rectifier is good if continuity exists in the direction of the arrow.

NOTE

- The test results shown are for a positive ground ohmmeter and opposit results will be obtained when a negative ground ohmmeter is used.



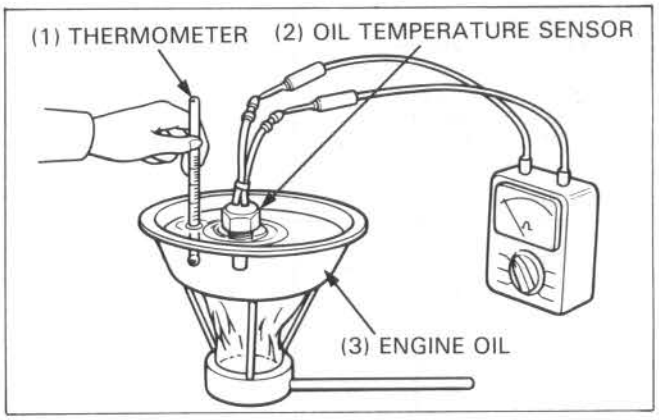
OIL TEMPERATURE SENSOR

INSPECTION

Disconnect the wires from the oil temperature sensor and remove the sensor from the right crankcase cover.

Suspend the oil temperature sensor in heated engine oil to check its operation. Do not let the thermometer or sensor touch the pan or false readings will result.

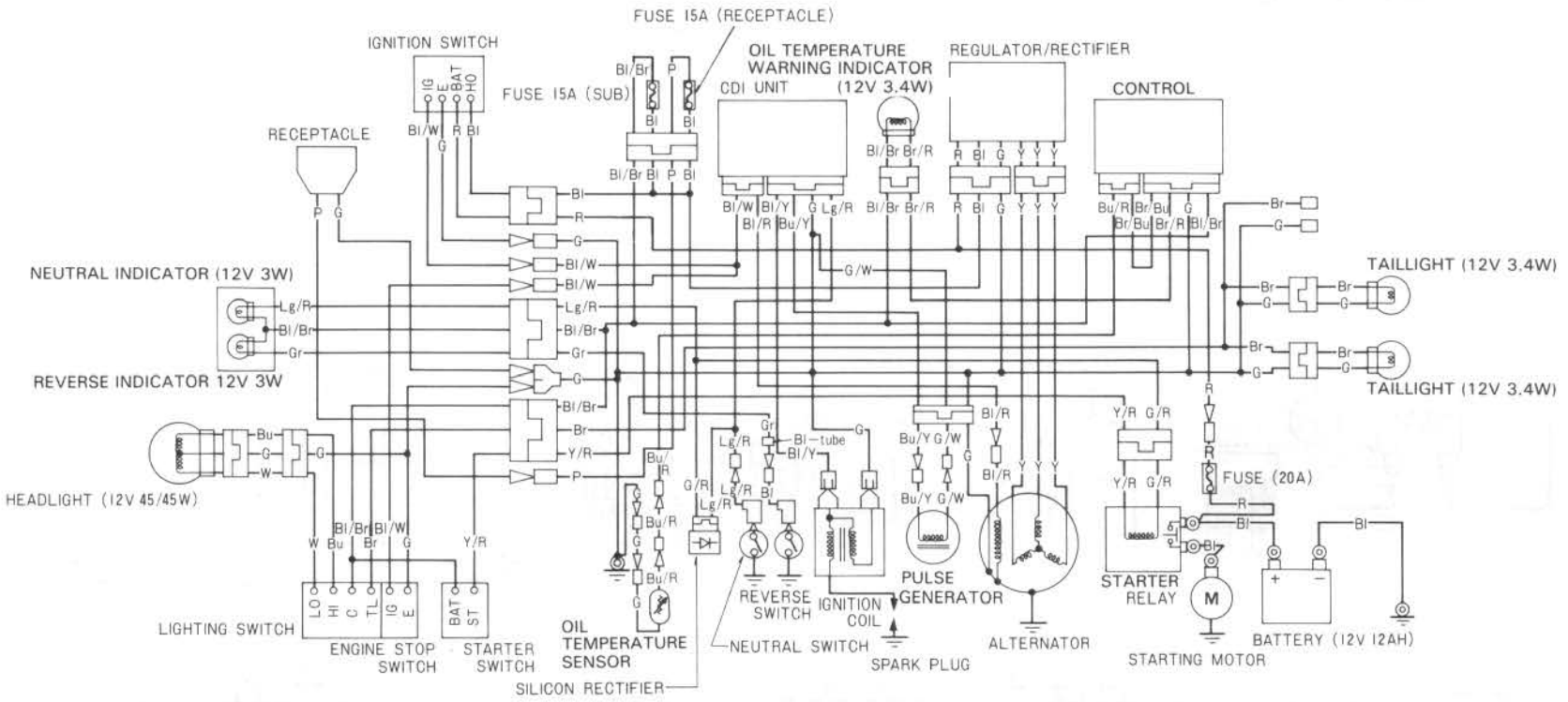
Connect the ohmmeter probes across the terminals of the sensor and measure the resistance.



TECHNICAL DATA

Temperature	25°C (77°F)	100°C (212°F)	170°C (338°F)
Resistance	9.5–10.5 kΩ	0.95–1.05 kΩ	209–231 Ω

RIDE RED



SWITCH CONTINUITY

IGNITION SWITCH

	IG	E	BAT	HO
OFF	○	○		
ON			○	○
COLOR	Bl/W	G	R	Bl

LIGHTING SWITCH

	C	TL	(HL)
OFF			
ON	○	○	○
COLOR	Bl/Br	Br	

DIMMER SWITCH

	HI	(HL)	LO
HI	○	○	
↕	○	○	○
LO			○
COLOR	Bu		W

ENGINE STOP SWITCH

	E	IG
OFF	○	○
RUN		
OFF	○	○
COLOR	G	Bl/W

STARTER SWITCH

	BAT	ST
FREE		
PUSH	○	○
COLOR	Bl/Br	Y/R

Bl ·····Black
Y ·····Yellow
Bu·····Blue
G ·····Green
R ·····Red
W ·····White
Br·····Brown
O ·····Orange
Lb·····Light Blue
Lg·····Light Green
P ·····Pink
Gr·····Grey

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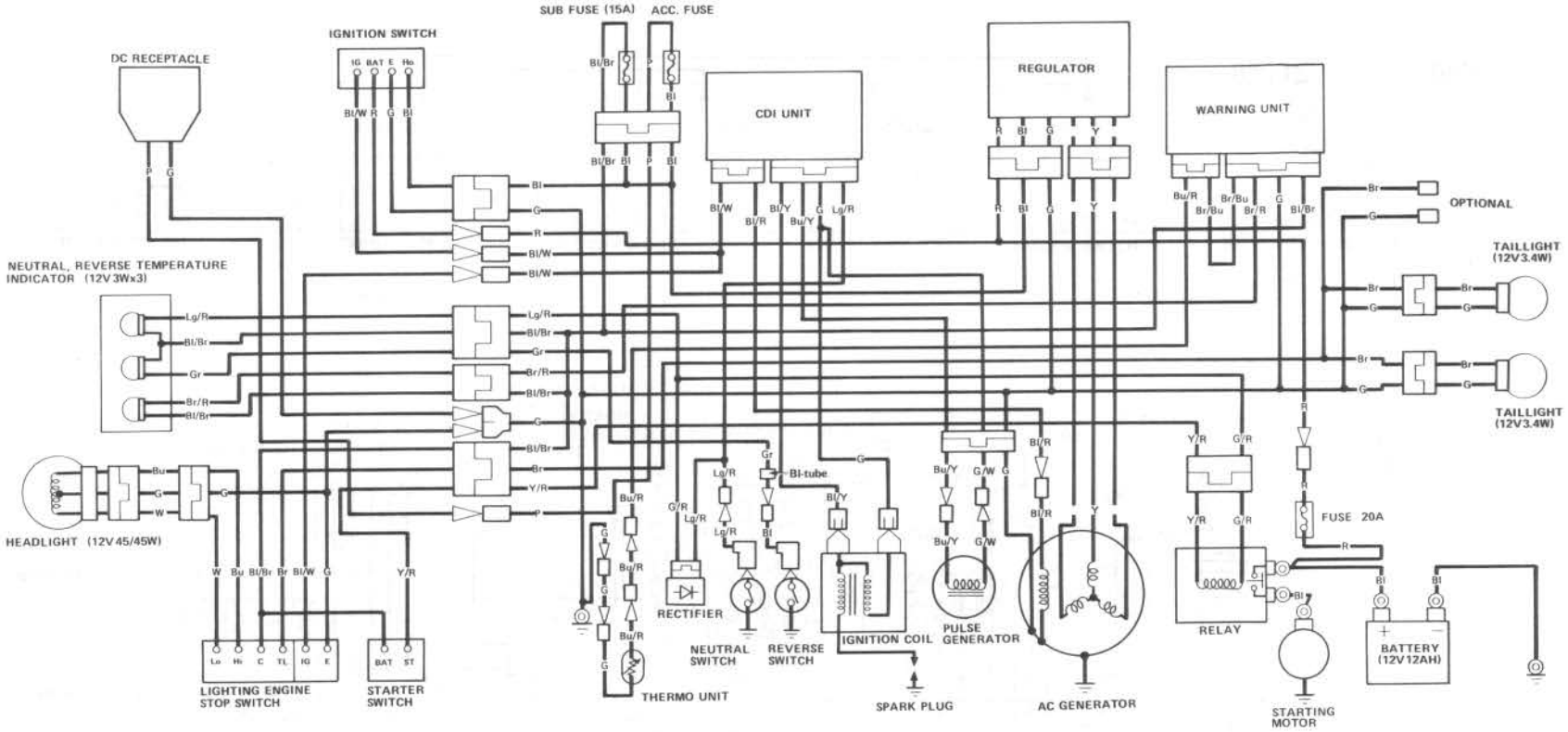
RIDE RED



IGNITION SWITCH CONTINUITY

	IG	BAT	E	Ho
OFF	○	——	○	
ON		○	——	○
Color	Bl/W	R	G	Bl

SWITCH CONTINUITY

LIGHTING SWITCH				DIMMER SWITCH				ENGINE SWITCH			STARTER SWITCH		
	C	TL	(HL)		Hi	(HL)	Lo		E	IG		BAT	ST
OFF				Hi	○	○		OFF	○	○	FREE		
ON	○	○	○		↕	○	○	RUN			PUSH	○	○
Color	Bl/Br	Br		Lo		○	○	OFF	○	○	Color	Bl/Br	Y/R
	●				Bu	●	W	Color	G	Bl/W			

INTERNAL CONNECTION

INTERNAL CONNECTION

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-HA8-6800

RIDE RED

19. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START

		Probable Cause
1. Check if fuel is getting to carburetor GETTING TO CARBURETOR ↓	NO FUEL TO CARBURETOR →	(1) No fuel in fuel tank (2) Clogged fuel tube or fuel filter (3) Clogged float valve (4) Clogged fuel tank cap breather hole
2. Try spark test GOOD SPARK ↓	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Broken or shorted spark plug wire (5) Faulty alternator (6) Broken or shorted ignition coil (7) Faulty pulse generator (8) Poorly connected, broken or shorted wires (9) Pulse generator rotor gap incorrect (10) Faulty ignition switch
3. Test cylinder compression COMPRESSION NORMAL ↓	LOW COMPRESSION →	(1) Low battery charge (2) Valve clearance too small (3) Valve stuck open (4) Worn cylinder and pistion rings (5) Damaged cylinder head gasket (6) Seized valve (7) Improper valve timing
4. Start by following normal starting procedure ENGINE DOES NOT START ↓	ENGINE STARTS BUT SOON STOPS →	(1) Starter valve stuck close or damaged (2) Incorrect choke cable free play (3) Improperly adjusted pilot screw (4) Air leaking past carburetor insulator (5) Improper ignition timing (CDI unit or pulse generator faulty) (6) Fuel/air mixture too lean
5. Remove spark plug DRY ↓	WET PLUG →	(1) Carburetor flooded (2) Starter valve stuck open or damaged (3) Fuel/air mixture too rich (4) Air cleaner dirty (5) Improperly adjusted pilot screw
6. Start with choke applied		

ENGINE LACKS POWER

		Probable Cause
1. Raise wheels off ground and spin by hand		
WHEEL SPINS FREELY	WHEEL DOES NOT SPIN FREELY →	(1) Brake dragging (2) Worn or damaged wheel bearing (3) Wheel bearing needs lubrication (4) Faulty final gear
2. Check tire pressure with the gauge	PRESSURE TOO LOW →	(1) Punctured tire (2) Faulty tire valve
PRESSURE NORMAL		
3. Check clutch slipping	CLUTCH SLIPS →	(1) Weak clutch spring (2) Worn clutch disc/plate (3) Warped clutch disc/plate
NORMAL		
4. Lightly accelerate engine	ENGINE SPEED NOT INCREASED SUFFICIENTLY →	(1) Fuel/air mixture too rich or lean (2) Clogged air cleaner (3) Restricted fuel flow vent (4) Clogged fuel tank cap breather hole (5) Clogged muffler
ENGINE SPEED INCREASED		
5. Check ignition timing	INCORRECT →	(1) Faulty CDI unit (2) Faulty pulse generator (3) Improper flywheel installation
CORRECT		
6. Test cylinder compression using a compression gauge	TOO LOW →	(1) Valve stuck open (2) Worn cylinder and piston rings (3) Leaking head gasket (4) Improper valve timing (5) Incorrect valve seat contact
NORMAL		
7. Check valve clearance	INCORRECT →	(1) Improper valve adjustment (2) Worn valve seat
CORRECT		
8. Check carburetor for clogging	CLOGGED →	Carburetor not serviced frequently enough
NOT CLOGGED		
9. Remove spark plug	FOULED OR DISCOLORED →	(1) Plug not serviced frequently enough (2) Use of plug with improper heat range
NOT FOULED OR DISCOLORED		

RIDE RED

10. Remove oil level gauge and check oil level CORRECT ↓	OIL LEVEL INCORRECT →	(1) Oil level too high (2) Oil level too low (3) Contaminated oil
11. Remove cylinder head cover and inspect lubrication VALVE TRAIN LUBRICATED PROPERLY ↓	VALVE TRAIN NOT LUBRICATED PROPERLY →	(1) Clogged oil passage (2) Clogged oil strainer
12. Check if engine overheats NOT OVERHEATED ↓	OVERHEATED →	(1) Excessive carbon build-up in combustion chamber (2) Use of improper quality of fuel (3) Clutch slipping (4) Fuel-air mixture too lean
13. Accelerate or run at high speed ENGINE DOES NOT KNOCK	ENGINE KNOCKS →	(1) Worn piston and cylinder (2) Fuel-air mixture too lean (3) Use of improper grade of fuel (4) Excessive carbon build-up in combustion chamber (5) Ignition timing too advanced (Faulty CDI unit or pulse generator)

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

		Probable Cause
1. Check ignition timing and valve clearance CORRECT ↓	INCORRECT →	(1) Improper valve clearance (2) Improper ignition timing (Faulty CDI unit or pulse generator)
2. Check carburetor pilot screw adjustment CORRECT ↓	INCORRECT →	Improperly adjusted pilot screw
3. Check if air is leaking past carburetor insulator NOT LEAKING ↓	LEAKING →	(1) Deteriorated insulator O-ring (2) Loose carburetor
4. Try spark test GOOD SPARK	WEAK OR INTERMITTENT SPARK →	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) Alternator faulty (4) Faulty ignition coil (5) Faulty pulse generator

POOR PERFORMANCE AT HIGH SPEEDS

		Probable Cause
1. Check ignition timing and valve clearance	INCORRECT →	(1) Improper valve clearance (2) Faulty CDI unit (3) Faulty pulse generator (4) Improper flywheel installation
CORRECT ↓		
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 FREELY ↓		
3. Remove carburetor and check for clogged jet	CLOGGED →	Clean
NOT CLOGGED ↓		
4. Check valve timing	INCORRECT →	Cam sprocket not installed properly
CORRECT ↓		
5. Check valve spring tension	WEAK →	Faulty spring
NOT WEAKENED		

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
2. If either wheel is wobbling →	(1) Excessive wheel bearing play (2) Bent rim (3) Improperly installed wheel hub (4) Bent frame (5) Bent swing arm
3. If the Four Trax pulls to one side →	(1) Tire air pressure (circumference) incorrect (2) Bent tie-rod (3) Incorrect tie-rod adjustment (4) Improper wheel alignment (5) Improperly installed top bridge (6) Bent frame

RIDE RED