Official

HONDA

SHOP MANUAL

XR500R



HONDA M[illegible] CO., LTD. 1982

B~C

HONDA XR500R

HOW TO USE THIS MANUAL

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 16 describe parts of the motorcycle, grouped according to location.

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

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

If you don't know what the source of the trouble is, read section 18, TROUBLESHOOTING.

If you are not familiar with this motorcycle, read section 17 TECHNICAL FEATURES.

Refer to Section 19 for 1982 service information.

Refer to section 20 for European and General type information.

ALL INFORMATION, ILLUSTRATIONS, DIRECTIONS AND SPECIFICATIONS INCLUDED IN THIS PUBLICATION ARE BASED ON THE LATEST PRODUCT INFORMATION AVAILABLE AT THE TIME OF APPROVAL FOR PRINTING.
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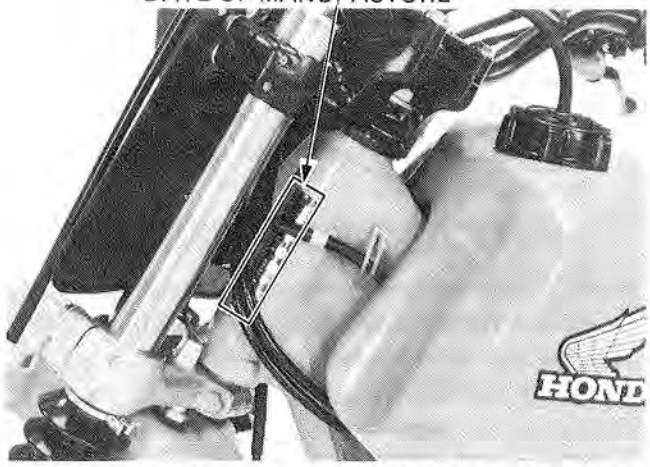
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MODEL IDENTIFICATION

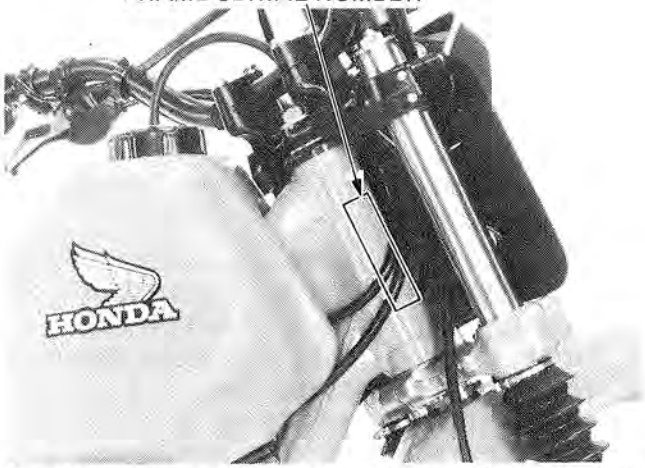


DATE OF MANUFACTURE



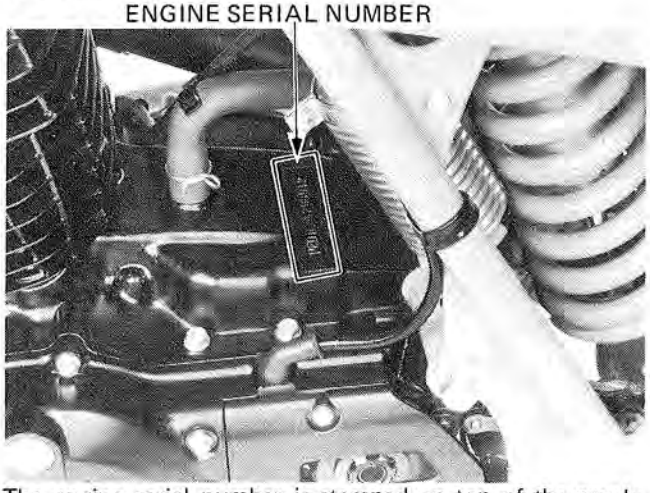
The vehicle identification number (VIN) is on the left side of the steering head.

FRAME SERIAL NUMBER



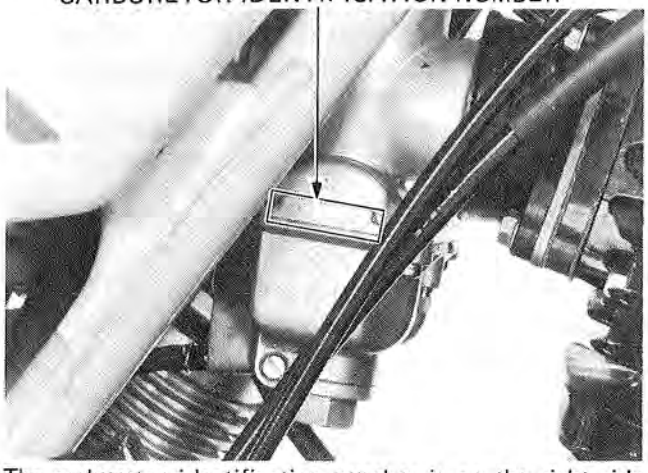
The frame serial number is stamped on the right side of the steering head.

ENGINE SERIAL NUMBER



The engine serial number is stamped on top of the crankcase.

CARBURETOR IDENTIFICATION NUMBER



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

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GENERAL SAFETY

WARNING

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

WARNING

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

SERVICE RULES

1. Use genuine HONDA or HONDA-recommended parts and lubricants or their equivalent. Parts that don't meet HONDA's design specifications may damage the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing this motorcycle. Metric bolts, nuts, and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, lock plates, etc. when reassembling.
5. When torquing bolts or nuts, begin with larger-diameter or inner bolts first, and tighten to the specified torque diagonally in 1-4 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.

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SPECIFICATIONS

DIMENSIONS	Overall length		2,160 mm (85.0 in)
	Overall width		850 mm (33.5 in)
	Overall height		1,235 mm (48.6 in)
	Ground clearance		320 mm (12.6 in)
	Wheel base		1,420 mm (55.9 in)
	Seat height/with 68 kg (150 lb)		875 mm (34.4 in)
	Foot peg height		420 mm (16.5 in)
	Dry weight		126 kg (277.8 lb)
FRAME	Type		Diamond
	Front suspension, travel		Telescopic 254 mm (10 in)
	Rear suspension, travel		Prolink 254 mm (10 in)
	Front tire size, pressure		3.00-21-6PR, 100 kPa (1.0 kg/cm^2, 14 psi)
	Rear tire size, pressure		5.10-17-6PR 80 kPa (0.8 kg/cm^2, 11 psi)
	Front brake, swept area		Internal expanding shoes 102 cm^2 (15.9 sq.in)
	Rear brake, swept area		Internal expanding shoes 122 cm^2 (19.0 sq.in)
	Fuel capacity		9 lit (2.4 U.S gal, 1.9 Imp.gal)
	Fuel reserve capacity		3 lit (0.8 U.S gal, 0.6 Imp.gal)
	Caster		62°
	Trail		112 mm (4.4 in)
	Front fork oil capacity		345 – 350 cc (11.6 – 11.7 ozs)
ENGINE	Type		Gasoline, air-cooled 4-stroke O H C
	Cylinder arrangement		Single cylinder inclined 15°
	Bore x Stroke		89.0 x 80.0 mm (3.50 x 3.15 in)
	Displacement		498 cc (30.4 cu in)
	Compression ratio		8.6 : 1
	Valve train		4-valve, chain driven overhead camshaft
	Maximum horsepower		35 BHP/6,500 rpm
	Maximum torque		4.3 kg-cm (31.1 ft-lb)/4,000 rpm
	Oil capacity		2.0 lit (2.1 US qt, 1.8 Imp qt)
	Lubrication system		Forced pressure and wet sump
	Air filtration system		Oiled polyurethane foam
	Cylinder compression		12.5 ± 1.5 kg/cm^2 (172 ± 21 psi)
	Intake valve	Opens	5° (B T D C)
		Closes	40° (A B D C)
	Exhaust valve	Opens	45° (B B D C)
		Closes	5° (A T D C)
	Valve clearance	Intake	0.05 mm (0.002 in)
		Exhaust	0.10 mm (0.004 in)

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CARBURETOR	Type	Piston valve, 34 mm
	I.D. number	PD11B
	Main jet	# 152
	Pilot screw	2-1/4
	Float level	14.5 mm (0.57 in)
	Idle speed	1,200 ± 100 rpm
DRIVE TRAIN	Clutch	Wet multi-plate
	Transmission	5-speed constant mesh
	Primary reduction	2.379 (69/29)
	Gear ratio I	2.462 (32/13)
	Gear ratio II	1.647 (28/17)
	Gear ratio III	1.250 (25/20)
	Gear ratio IV	1.000 (23/23)
	Gear ratio V	0.840 (21/25)
	Final reduction	3.429 (48/14)
	Gear shift pattern	Left foot operated return system (1–N–2–3–4–5)
	Drive chain	RK520KO 105 pins
ELECTRICAL	Ignition	CDI
	Ignition timing — Initial	10° B T D C at 2,250 ± 250 rpm (F mark)
	Ignition timing — Full advance	36± 2° B T D C at 3,500 rpm
	Alternator	AC generator 50W/5,000 rpm
	Spark plug — USA model	D8EA (NGK) or X24ES-U (ND)
	Spark plug — CANADIAN model	DR8ES-L (NGK) or X24ESR-U (ND)
	Spark plug gap	0.6–0.7 mm (0.024–0.028 in)
	Headlight	6V/25W
	Taillight	3W (2cp)

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TORQUE VALUES

ENGINE

ITEM	Q'TY	THREAD DIA	TORQUE N.m (kg-m, ft-lb)
Kick starter stopper plate	1	8	18 – 25 (1.8 – 2.5, 13 – 18)
Kick starter spring hook pin	1	8	22 – 30 (2.2 – 3.0, 16 – 22)
Gear shift drum bearing set plate	2	6	9 – 13 (0.9 – 1.3, 7 – 9)
Upper crankcase 6 mm bolt	8	6	10 – 14 (1 – 1.4, 7 – 10)
8 mm bolt	1	8	22 – 28 (2.2 – 2.8, 16 – 20)
Lower crankcase 6 mm bolt	5	6	10 – 14 (1 – 1.4, 7 – 10)
9 mm bolt	2	9	27 – 33 (2.7 – 3.3, 20 – 24)
10 mm bolt	2	10	32 – 38 (3.2 – 3.8, 23 – 27)
Balancer holder lock bolt	1	8	22 – 28 (2.2 – 2.8, 16 – 20)
Cam chain tensioner	1	6	10 – 14 (1 – 1.4, 7 – 10)
Spark advancer lock nut	1	18	45 – 60 (4.5 – 6.0, 33 – 43)
Clutch center	1	18	45 – 60 (4.5 – 6.0, 33 – 43)
Fly wheel	1	16	100 – 120 (10.0 – 12.0, 72 – 87)
Cylinder bolt	2	6	10 – 14 (1.0 – 1.4, 7 – 10)
nut	2	8	22 – 28 (2.2 – 2.8, 16 – 20)
Cylinder head nut	6	8	22 – 28 (2.2 – 2.8, 16 – 20)
Cam sprocket bolt	2	7	17 – 23 (1.7 – 2.3, 12 – 17)
Valve adjusting screw lock nut	4	6	15 – 18 (1.5 – 1.8, 11 – 13)
Cylinder head cover	12	6	10 – 14 (1.0 – 1.4, 7 – 10)
Valve cover	4	6	10 – 14 (1.0 – 1.4, 7 – 10)
Engine oil bolt	1	12	30 – 40 (3.0 – 4.0, 22 – 29)

FRAME

ITEM	Q'TY	THREAD DIA	TORQUE N.m (kg-m, ft-lb)
Fuel tank	2	8	15 – 24 (1.5 – 2.4, 11 – 17)
Exhaust pipe joint nut	4	6	8 – 12 (0.8 – 1.2, 6 – 9)
Exhaust pipe protector	2	6	8 – 12 (0.8 – 1.2, 6 – 9)
Steering stem nut	1	24	80 – 120 (8.0 – 12, 58 – 87)
Steering stem bolt	1	10	40 – 50 (4.0 – 5.0, 29 – 36)
Swing arm pivot bolt	1	14	70 – 100 (7.0 – 10.0, 51 – 72)
Handle holder	4	8	18 – 30 (1.8 – 3.0, 13 – 22)
Front top bridge pinch bolt	4	8	18 – 25 (1.8 – 2.5, 13 – 18)
Steering stem pinch bolt	4	8	18 – 30 (1.8 – 3.0, 13 – 22)
Front fork axle holder	4	6	10 – 14 (1.0 – 1.4, 7 – 10)
Front axle	1	12	50 – 80 (5.0 – 8.0, 36 – 58)
Rear axle nut	1	16	80 – 110 (8.0 – 11.0, 58 – 80)

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FRAME

ITEM		Q'TY	THREAD DIA	TORQUE N·m (kg-m, ft-lb)
Final driven sprocket		6	8	28 – 34 (2.8 – 3.4, 20 – 25)
Rear shock absorber	(upper)	1	10	60 – 75 (6.0 – 7.5, 43 – 54)
	(lower)	1	10	38 – 48 (3.8 – 4.8, 27 – 35)
Foot peg		2	12	70 – 100 (7.0 – 10.0, 51 – 72)
Change pedal		1	6	8 – 12 (0.8 – 1.2, 6 – 9)
Kick starter pedal		1	8	20 – 35 (2.0 – 3.5, 14 – 25)
Side stand		1	10	35 – 45 (3.5 – 4.5, 25 – 33)
Engine hanger	8 mm bolt	4	8	45 – 60 (4.5 – 6.0, 33 – 43)
	10 mm bolt	3	10	30 – 50 (3.0 – 5.0, 22 – 36)
	12 mm bolt	2	12	100 – 130 (10.0 – 13.0, 72 – 94)
Rear shock absorber shock arm		1	12	90 – 120 (9.0 – 12.0, 65 – 87)
Rear shock absorber shock link		1	10	60 – 75 (6.0 – 7.5, 43 – 54)
Muffler band		2	8	15 – 25 (1.5 – 2.5, 11 – 18)
Muffler stay		1	8	20 – 30 (2.0 – 3.0, 14 – 22)

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

STANDARD TORQUE VALUES

TYPE	TORQUE N·m (kg-m, ft-lb)	TYPE	TORQUE N·m (kg-m, ft-lb)
5 mm bolt, nut	4.5 – 6.0 (0.45 – 0.6, 3.3 – 4.3)	5 mm screw	3.5 – 5 (0.35 – 0.5, 2.5 – 3.6)
6 mm bolt, nut	8 – 12 (0.8 – 1.2, 6 – 9)	6 mm screw	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	30 – 40 (3.0 – 4.0, 22 – 29)

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TOOLS

SPECIAL

TOOL NO.	TOOL DESCRIPTION
07953–MA00000	Ball race remover
07946–4300200	Ball race driver
07914–3230001	Snap ring pliers
07917–3230000	6 mm hex wrench
07923–4280000	Clutch center holder (Not available in U.S.A.)
07936–3710000	Bearing remover set
(07936–3710600 07936–3710100 07936–3710200)	(Bearing remover Bearing remover handle Bearing remover weight)
07946–KA50000	Needle bearing driver
07947–3710101	Front fork seal driver
07984–6570100	Valve guide reamer
07916–3710100	Steering stem socket
07946–4300100	Steering stem driver

COMMON

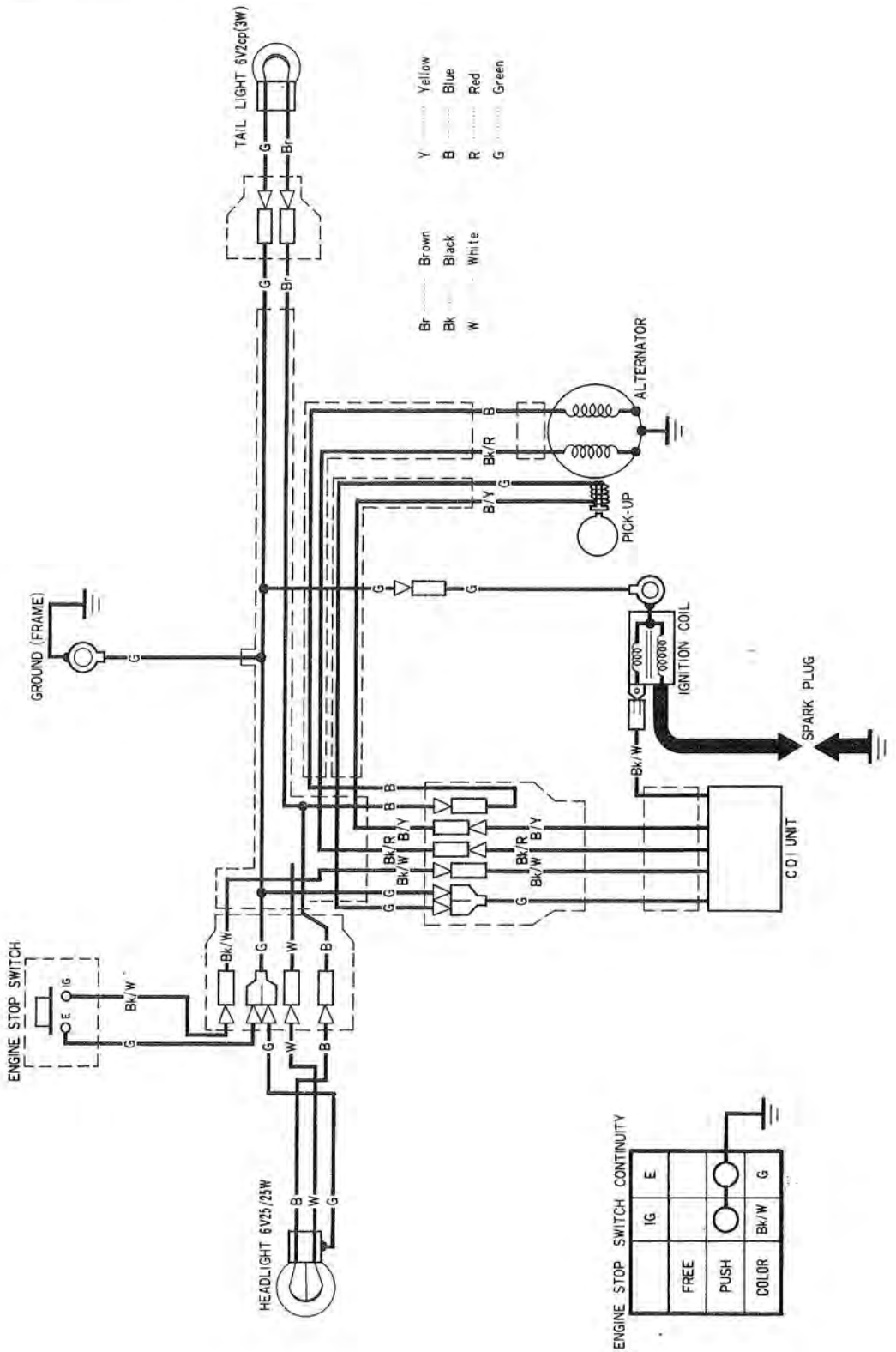
TOOL NO.	TOOL DESCRIPTION	APPLICATION (Common tool ⇐⇒ Special tool)	
07401–0010000	Float level gauge		
07701–0020300	Spoke wrench	Spoke wrench	07701–0010100
07708–0030200	Wrench, 10 x 12 mm	Valve adjusting wrench	07908–3230000
07708–0030300	Adjusting wrench A		
07710–0010100	Retainer wrench A	Retainer wrench	07910–3290000
07710–0010401	Retainer wrench body		
07716–0020400	Socket wrench, 30 x 32 mm	Commercially available in U.S.A.	
07716–0020500	Extension bar		
07725–0030000	Universal holder	07725–001010 (COMMON TOOL)	
07733–0020001	Rotor puller	Rotor puller	07933–3290001
07742–0010200	Valve guide remover, 6.6 mm	Valve guide remover	07942–3000000
07742–0020200	Valve guide driver B	Valve guide driver	07942–3290200
07746–0010100	Bearing driver outer, 32 x 35 mm	Bearing driver	07945–0450000
07746–0040300	Driver pilot 15 mm	Bearing driver attachment	07946–9180000
07746–0010200	Bearing driver outer, 37 x 40 mm	Bearing driver	07946–3000100
07746–0010300	Bearing driver outer, 42 x 47 mm	Bearing driver attachment	07945–3330100
07746–0040400	Driver pilot 17 mm	Ball race remove	07946–4300200
07746–0020100	Driver handle inner B	Bearing driver	07945–3230201
07746–0030100	Driver handle inner C	Bearing driver attachment	07945–3330200
07746–0030200	Bearing driver inner 25 mm	Bearing driver inner B	07945–3710200
07746–0030400	Bearing driver inner 35 mm	Oil seal driver	07947–7070500
07749–0010000	Bearing driver outer A	Bearing driver handle	07949–2860000 07949–3000000 07949–6110000
07757–0010000	Valve spring compressor	Valve spring compressor	07957–3290001

VALVE SEAT CUTTER (The following are commercially available in the U.S.A.)

TOOL NO.	TOOL NAME	TOOL NO.	TOOL NAME
07780–0010400	35 mm Seat cutter	00780–0014000	30 mm Interior cutter
07780–0010500	40 mm Seat cutter	00780–0014100	37.5 mm Interior cutter
00780–0012300	35 mm Flat cutter	00781–0010200	6.6 mm Cutter holder
00780–0012400	38.5 mm Flat cutter		

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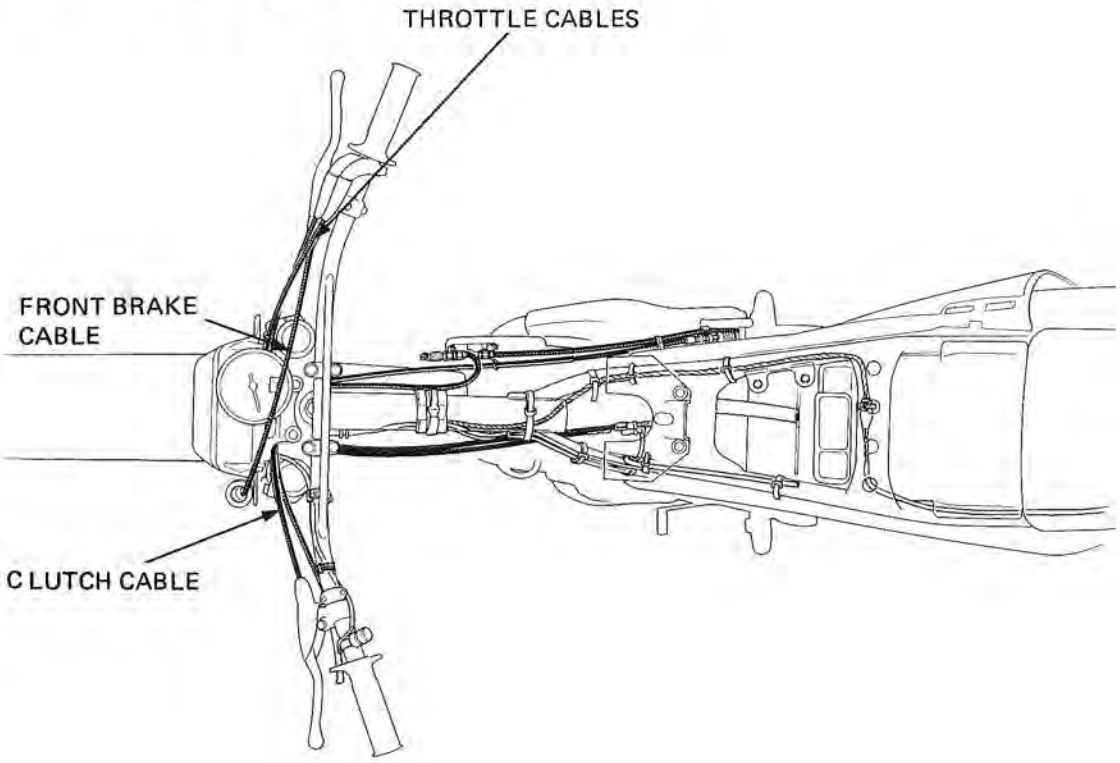
WIRING DIAGRAM

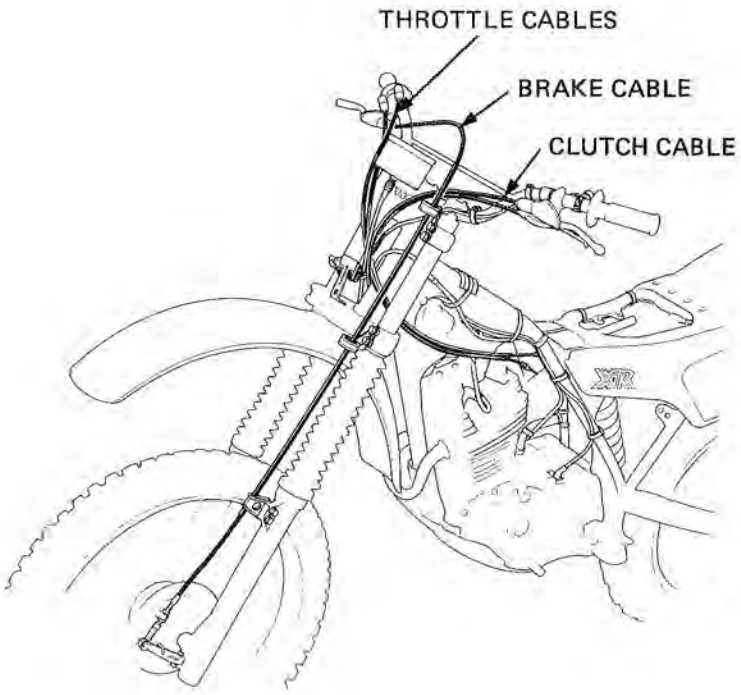


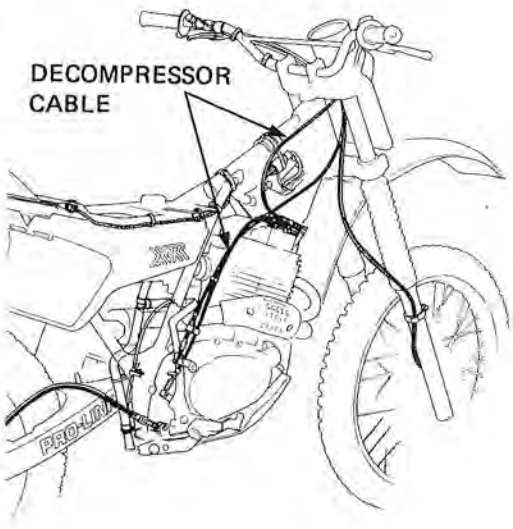
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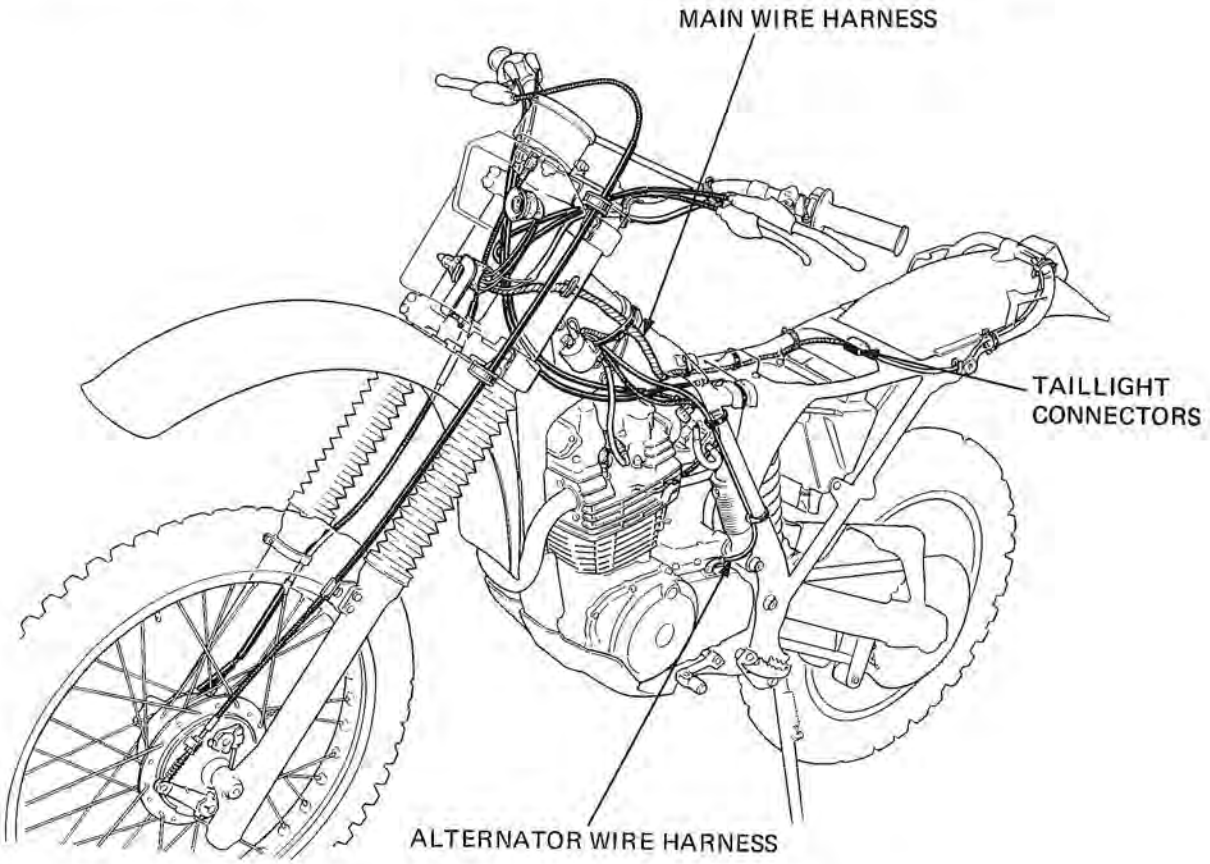
CABLE & HARNESS ROUTING

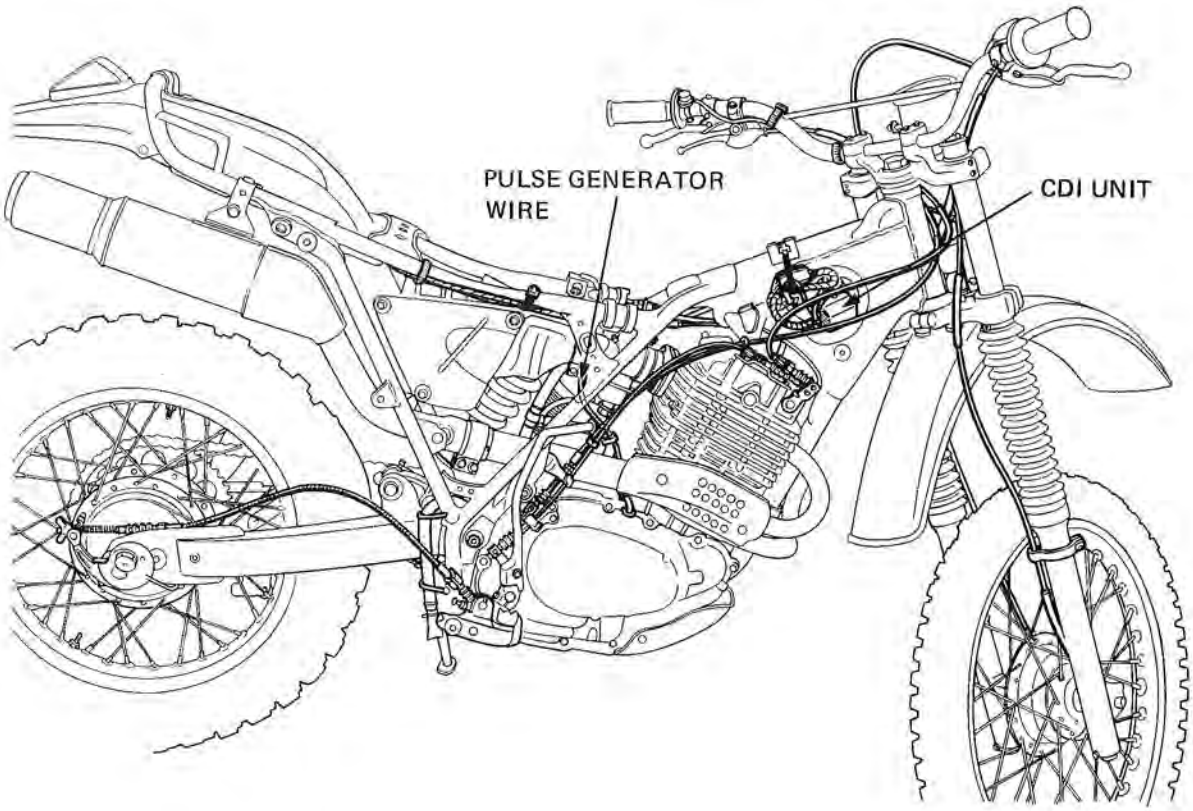






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ITEMS REQUIRING FREQUENT REPLACEMENT

ENGINE OIL

ITEM	NOTE
Engine oil	Change after first 1,000 km (600 mi); thereafter every 3,000 km (1,800 mi)

FAST WEARING COMPONENTS

ITEM	NOTE
Drive chain	Service limit: 105 pins 1,651 mm (65 in)
Drive and driven sprockets Chain guide rollers Chain slider Cables	Replace when damaged or worn

OTHER COMPONENTS TO BE REPLACED AS REQUIRED

ITEM	NOTE
Cylinder head gasket Gaskets, O-rings	Replace whenever the engine is disassembled
Clutch disc	Service limit: Thickness 2.3 mm (0.09 in)
Tires	Service Limit: Tread depth 8 mm (0.3 in)
Spark plug Fender Lights Handlebar Throttle housing Grip Gear shift pedal Rear brake pedal Air cleaner element	Replace when damaged or worn
Brake shoes	Align " △ " mark and index mark

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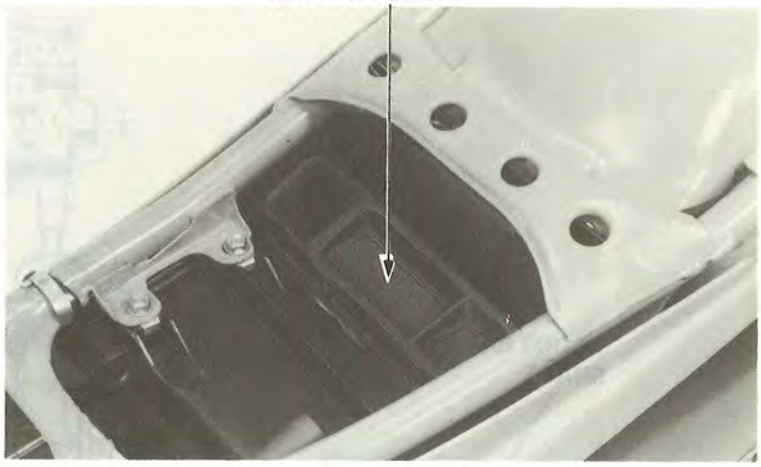
INLET DUCT CAP AND MUFFLER DIFFUSER PIPE

A muffler diffuser pipe and inlet duct cap installed will reduce the noise level to 86dB(A).
Some state noise level regulations prohibit operation of this vehicle without the inlet duct cap and muffler diffuser pipe installed.
Determine that operation of the vehicle complies with off-road laws and regulation.

INLET DUCT CAP

Remove the seat.
Insert the duct cap into the air cleaner inlet tube securely.
Install the seat.

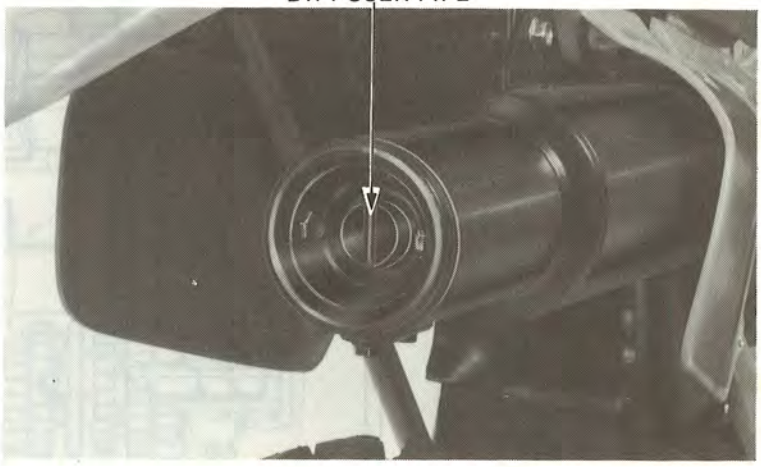
INLET DUCT CAP



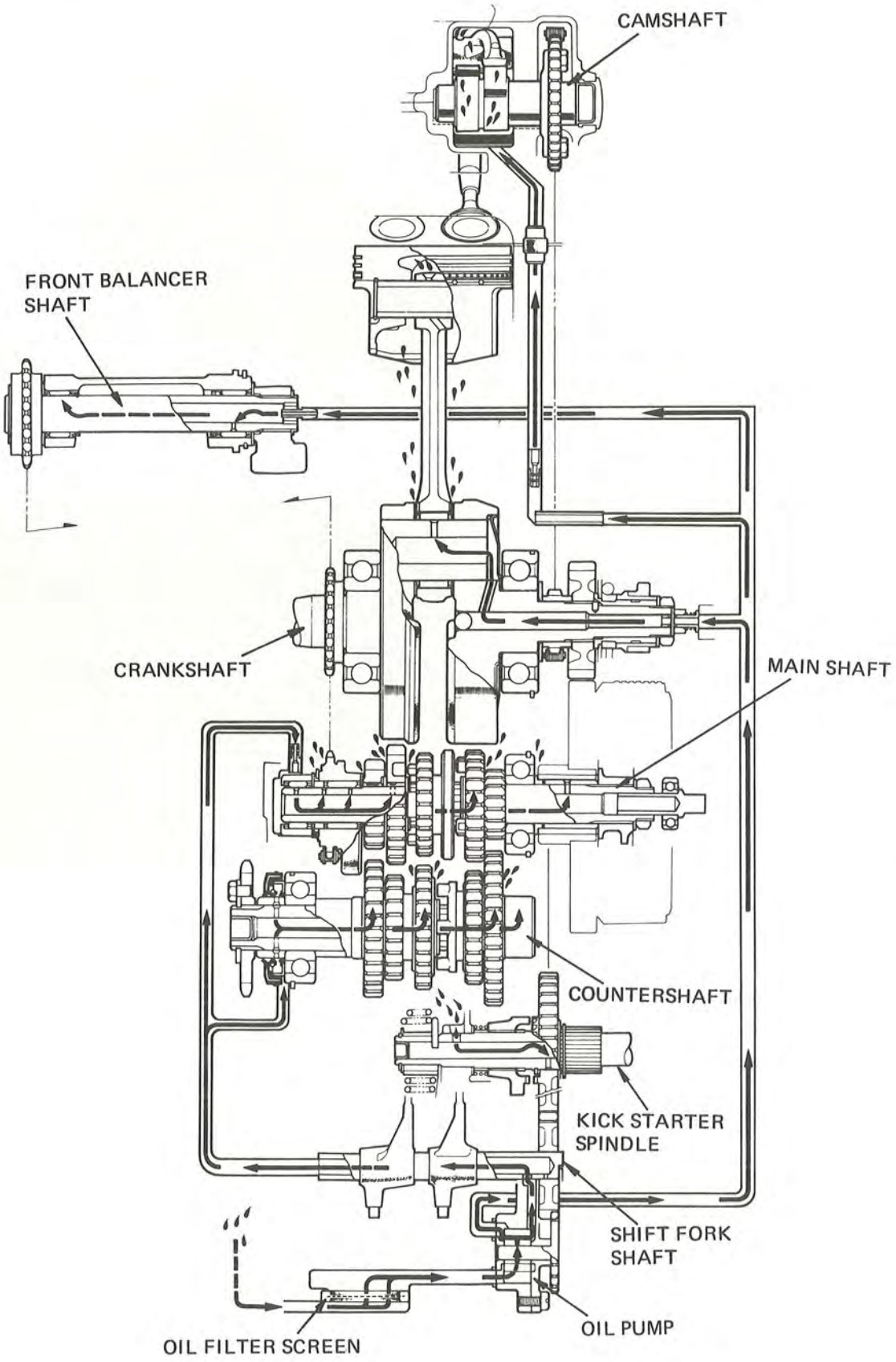
MUFFLER DIFFUSER PIPE

Remove the two screws from the end of the spark arrester. Attach the muffler diffuser pipe into the end of the spark arrester with the two screws and tighten securely.

DIFFUSER PIPE



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2. LUBRICATION

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SERVICE INFORMATION

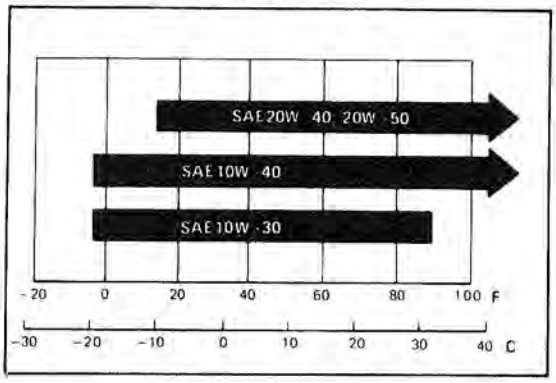
GENERAL INSTRUCTIONS

- This section describes inspection and replacement of engine oil and cleaning of the oil filter screen.
- Oil pump service is described in Section 8.

SPECIFICATIONS

Oil capacity	**2.0 liter (2.1 US qt, 1.8 Imp qt) at engine assembly** **1.7 liter (1.8 US qt, 1.5 Imp qt) at oil change**
Oil recommendation	Use HONDA 4-STROKE OIL or equivalent. API SERVICE CLASSIFICATION: SE VISCOSITY: SAE 10W–40 Other viscosities shown in the chart may be used when the average temperature in your riding area si within the indicated range.
Oil pump delivery	**4.9 lit (5.2 US qt)/min at 5,000 rpm**

OIL VISCOSITIES



TORQUE VALUE

Oil drain bolt	20–30 N·m (2.0–3.0 kg-m, 14–21 ft-lb)

TROUBLESHOOTING

Oil Level Tool Low

1. Normal oil consumption
2. External oil leaks
3. Worn piston rings

Oil Contamination

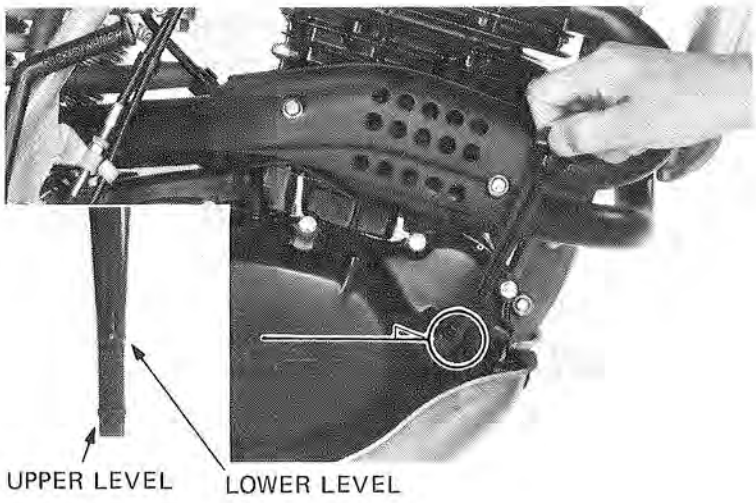
1. Oil not changed often enough
2. Faulty head gasket

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ENGINE OIL LEVEL CHECK

Support the motorcycle upright on level ground.
Check the oil level with the dipstick.
Do not screw in the cap when making this check.

If the oil level is below the lower level mark on the dipstick, fill to the upper level mark with the recommended oil.



ENGINE OIL CHANGE

NOTE

Change engine oil with the engine warm and the motorcycle on its side stand to assure complete and rapid draining.

Remove the oil filler cap and drain plug.
After the oil has drained, check that the drain plug sealing washer is in good condition, and install the plug.

TORQUE: 20–30 N·m (2.0–3.0 kg-m, 14–21 ft-lb)

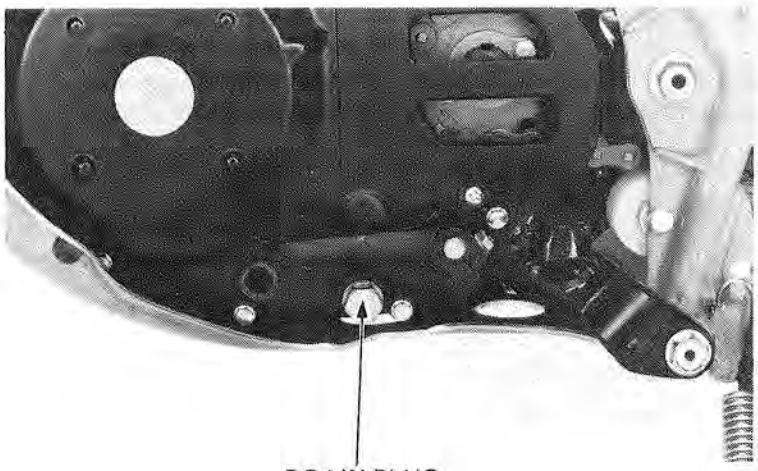
NOTE

Perform the oil filter screen and balancer chain maintenance if required, before filling the crankcase.

Fill the crankcase with 1.7 liters (1.8 US qt, Imp qt) of the recommended oil.

Install the oil filler cap/dipstick.
Start the engine and let it idle for 2–3 minutes.

Stop the engine and check that the oil level is at the upper level mark with the motorcycle upright. Check that there are no oil leaks.





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ENGINE OIL FILTER SCREEN

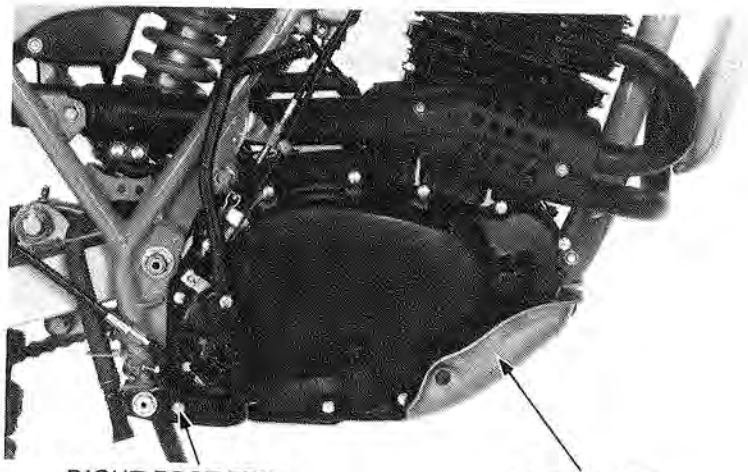
NOTE

Perform this maintenance before filling the engine with oil.

Remove the skid plate and kick starter pedal.
Loosen the adjusting nut and disconnect the clutch cable at the lower end.

Remove the right foot peg.
Remove the brake pedal.

Disconnect the brake cable from the pedal.
Remove the right crankcase cover.



Remove the oil filter screen and clean it.
Install the oil filter screen.

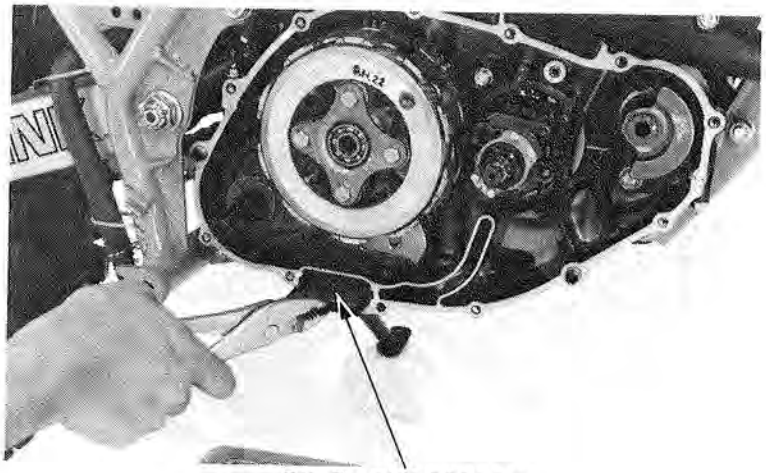
NOTE

Adjust the balancer chain while the right crankcase cover is off (Page 3-11).

Check that the right crankcase cover gasket is in good condition.
Install the removed parts in the reverse order of disassembly.

Adjust the brake pedal (Page 3-16), clutch lever (Page 3-18) and starter decompressor (Page 3-10).

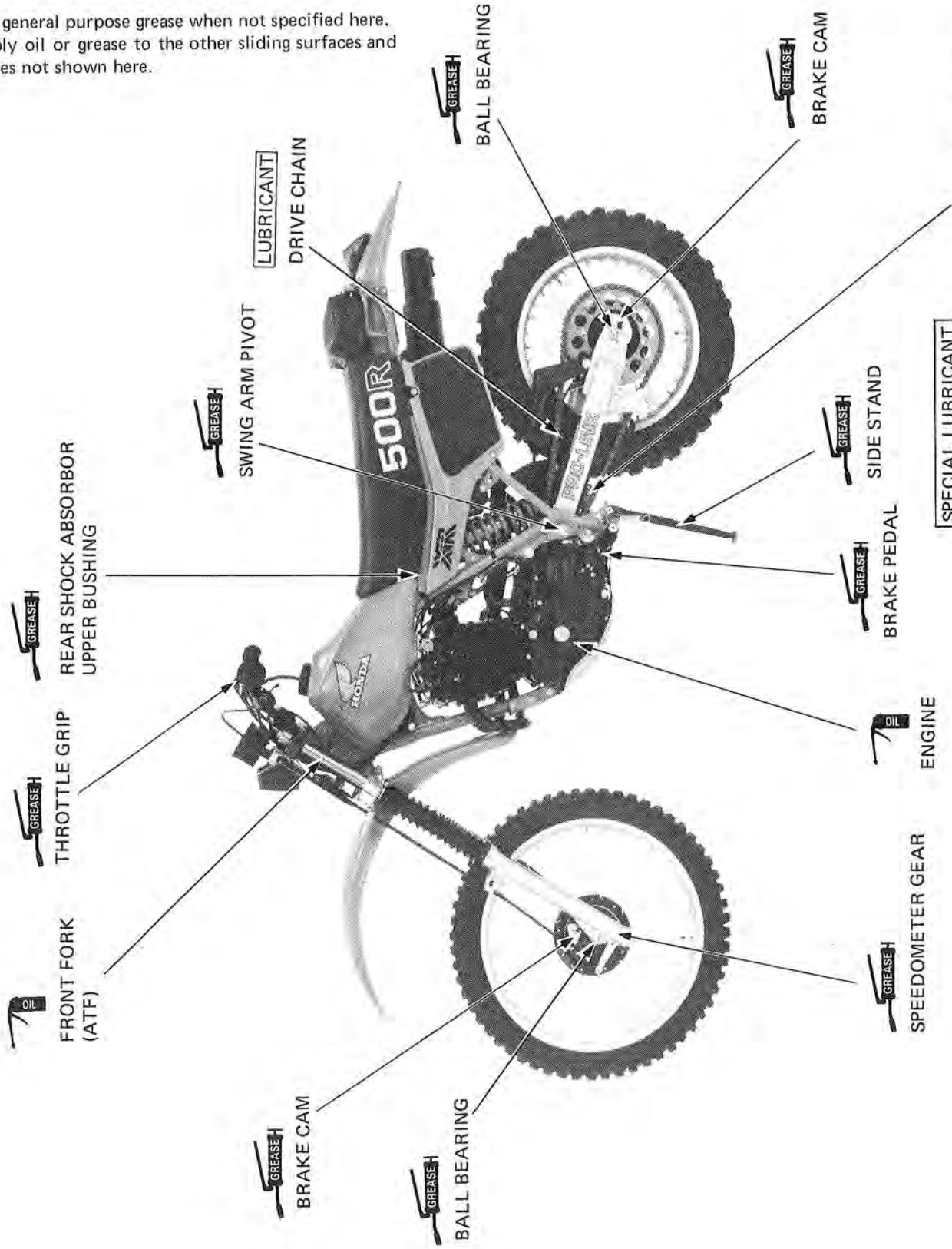
Fill the crankcase with the recommended oil (Page 3-18).



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LUBRICATION POINTS

Use general purpose grease when not specified here. Apply oil or grease to the other sliding surfaces and cables not shown here.



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3. MAINTENANCE

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SERVICE INFORMATION

SPECIFICATIONS

≪ENGINE≫

Ignition timing	Initial	10° BTDC at 2,250 ± 250 rpm (F mark)
	Full advance	36° ± 2° BTDC at 3,500 rpm

Spark plug

U.S.A. model	D8EA (NGK)
	X24ES-U (ND)
Canada model	DR8ES-L (NGK)
	X24ESR-U (ND)

Spark plug gap		0.6–0.7 mm (0.024–0.028 in)
Valve clearance	IN	0.05 mm (0.002 in)
	EX	0.10 mm (0.004 in)
Idle speed		1,200 ± 100 rpm
Cylinder compression		12.5 kg/cm² (175 psi)
Starter decompressor lever free play		1–2 mm (1/16–1/8 in)
Manual decompressor lever free play		5–8 mm (3/16–5/16 in)

≪FRAME≫

Throttle grip free play		2–6 mm (1/8–1/4 in)
Front brake lever free play		25–30 mm (1–1-1/4 in)
Rear brake pedal free play		15–20 mm (5/8–3/4 in)
Clutch lever free play		15–25 mm (5/8–1 in)
Tire pressure	Front	100 kPa (1.0 kg/cm², 14 psi)
	Rear	80 kPa (0.8 kg/cm², 11 psi)
Tire size	Front	3.00-21-6PR
	Rear	5.10-17-6PR

TORQUE VALUES

Balancer holder lock bolt	22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)
Rear axle nut	80–110 N·m (8.0–11.0 kg-m, 58–80 ft-lb)
Spoke nipple	2–4.5 N·m (0.2–0.45 kg-m, 1.4–3.2 ft-lb)
Rim lock	10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)
Valve adjusting screw lock nut	15–18 N·m (1.5–1.8 kg-m, 11–13 ft-lb)

TOOLS

Spoke wrench	07701–0020300 (Commercially available in U.S.A.)
Wrench, 10 x 12 mm	07708–0030200 (or 07908–3230000)
Adjusting wrench A	07708–0030300

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MAINTENACE SCHEDULE

REGULAR MAINTENANCE SCHEDULE

Perform the PRE-RIDE INSPECTION in the Owner's Manual at every maintenance period.
I : Inspect, Clean, Adjust, Lubricate or Replace if Necessary.
C : Clean
R : Replace
A : Adjust
L : Lubricate

	ITEM / FREQUENCY	BREAK-IN MAINTENANCE	REGULAR SERVICE INTERVAL
		350 km (200 mi)	1,600 km (1,000 mi)
	ENGINE OIL	R	R, every 3,000 km (1,800 mi)
*	ENGINE OIL FILTER SCREEN		C
	AIR CLEANER NOTE	C	C, every 800 km (500 mi)
*	FUEL FILTER AND FUEL LINE	I	I
	SPARK PLUG	I	I
*	VALVE CLEARANCE	I	I
*	STARTER DECOMPRESSOR	I	I
*	CAM CHAIN TENSION	A	A
*	THROTTLE OPERATION	I	I
*	CARBURETOR IDLE SPEED	I	I
*	CARBURETOR CHOKE	I	I
**	BALANCER CHAIN TENSION	I	A
	DRIVE CHAIN NOTE	I, L	I, L every 500 km (300 mi)
	DRIVE CHAIN ROLLERS	I	I
	DRIVE CHAIN SLIDER	I	I
*	BRAKE SHOE WEAR		I
	BRAKE SYSTEM	I	I
*	HEADLIGHT AIM	I	I
	CLUTCH FREE PLAY	I	I
*	SUSPENSION	I	I
	SWINGARM BEARINGS	I, L	I, L
	REAR SUSPENSION LINKAGE	I, L	I, L
*	REAR SHOCK ABSORBER UPPER BUSHING		I, L
**	SPARK ARRESTER		C
*	NUTS, BOLTS, FASTENERS	I	I
**	WHEELS/SPOKES	I	I
**	STEERING HEAD BEARING	I	I

* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS THE PROPER TOOLS AND IS MECHANICALLY QUALIFIED.

** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

NOTE : Service more frequently when ridden in wet or dusty conditions.

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COMPETITION MAINTENANCE SCHEDULE

Check all items before each race.
Refer to the REGULAR MAINTENANCE SCHEDULE (Page 3-3) for regular service intervals.

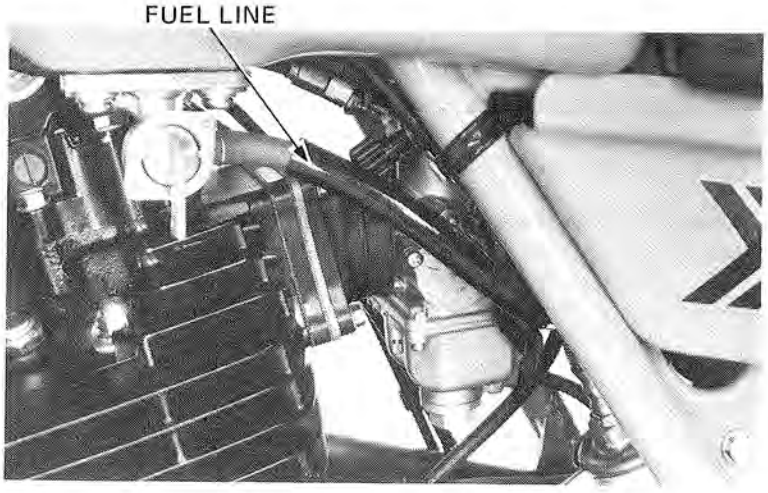
ITEMS	INSPECT FOR	ACTION AS REQUIRED	REFER TO PAGE
ALL PRE–RIDE INSPECTION ITEMS			NOTE 3
ENGINE OIL	Contamination, level	Change	2–2
FUEL LINE	Deterioration, damage or leakage	Replace	3–5
CARBURETOR CHOKE	Proper operation	Adjust	3–6
AIR CLEANER	Dirt or tears	Clean or replace	3–6
SPARK PLUG	Tightness, proper heat range, and the high tension connection	Tighten, replace or secure	3–7
VALVE CLEARANCE	Correct clearance	Adjust	3–8
BALANCER CHAIN	Proper tension NOTE 1	Adjust	3–11
STARTER DECOMPRESSOR	Proper free play	Adjust	3–9
CAM CHAIN	Abnormal noise	Adjust	3–10
CARBURETOR IDLE SPEED	Correct idle speed	Adjust	3–12
DRIVE CHAIN	Length: 1635 mm	Replace	3–13
SPROCKETS	Wear and looseness	Replace or tighten	3–13
BRAKE SHOES	Wear beyond service limit	Replace	3–15
HEADLIGHT	Proper beam aim	Adjust	3–18
FRONT SUSPENSION	Smooth operation, no oil leaks, good boot condition, air pressure and oil volume	Replace or adjust	3–19
REAR SUSPENSION	Smooth operation, oil leaks, spring height	Replace or adjust	3–19
STEERING HEAD	Free rotation of handlebar and steering stem nut tightness	Adjust or tighten	3–21
CLUTCH DISCS	Discoloration or wear beyond Service limit NOTE 2	Replace	3–18
SWINGARM BEARINGS	Smooth operation	Replace	———
REAR SUSPENSION LINKAGE	Wear	Replace	———
SEAT	Looseness	Tighten	15–1
CONTROL CABLES	Smooth operation, kinks and correct routing	Lubricate or replace	
ENGINE MOUNTING BOLTS	Looseness	Tighten	5–4

NOTE 1 : Perform the adjustment at the same time as clutch disc inspection.
NOTE 2 : Competition use necessitates more frequent service.
NOTE 3 : Refer to the Owner's Manual PRE-RIDE INSPECTION

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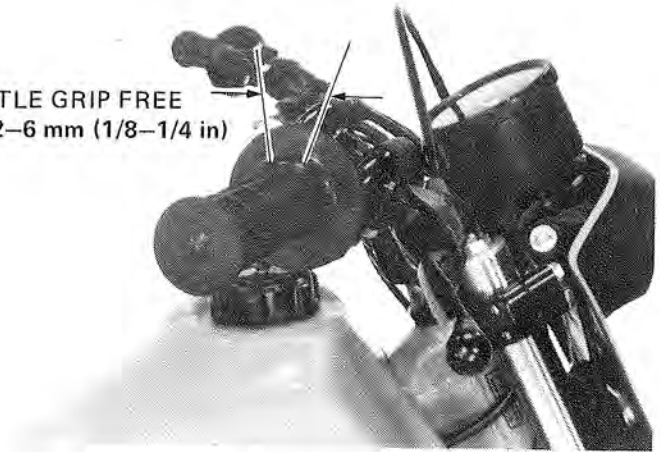
FUEL LINE

Replace any cracked, damaged or leaking parts.

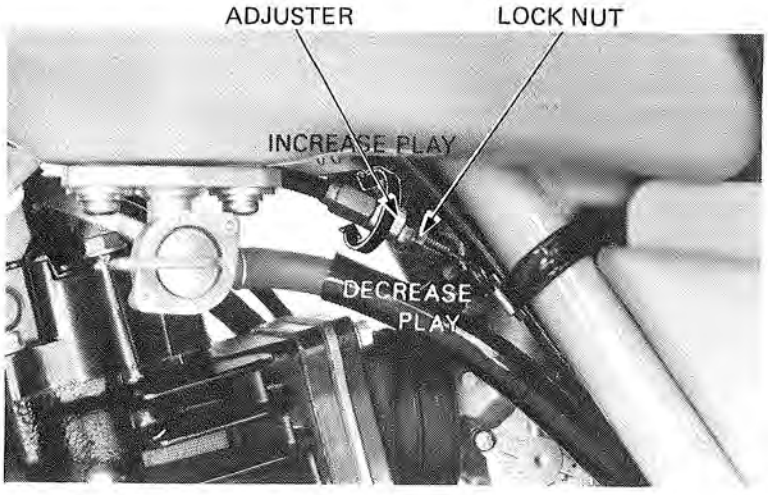


THROTTLE OPERATION

Check for smooth throttle full opening and automatic full closing in all steering positions.
Make sure there is no deterioration, damage, or kinking in the throttle cable, and that the throttle grip free play is **2–6 mm (1/8–1/4 in)** at the throttle grip flange.



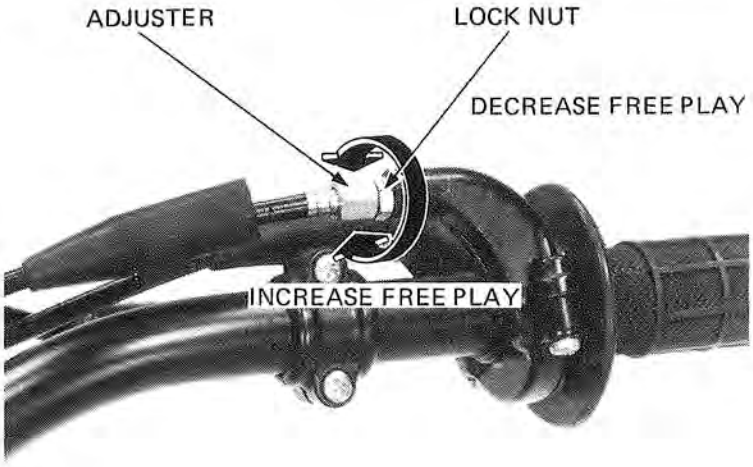
Throttle grip free play can be adjusted at either end of the throttle cable.
Major adjustments are made with the lower adjuster on the carburetor.



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Minor adjustments are made with the upper adjuster.
Adjust free play by loosening the lock nut and turning the adjuster.
Tighten the lock nut.

Recheck throttle operation. Replace any damaged parts.



CHOKE LEVER

Check choke lever operation.
If the choke lever moves stiffly, clean and labricate the pivot. After cleaning, recheck the lever's movement.



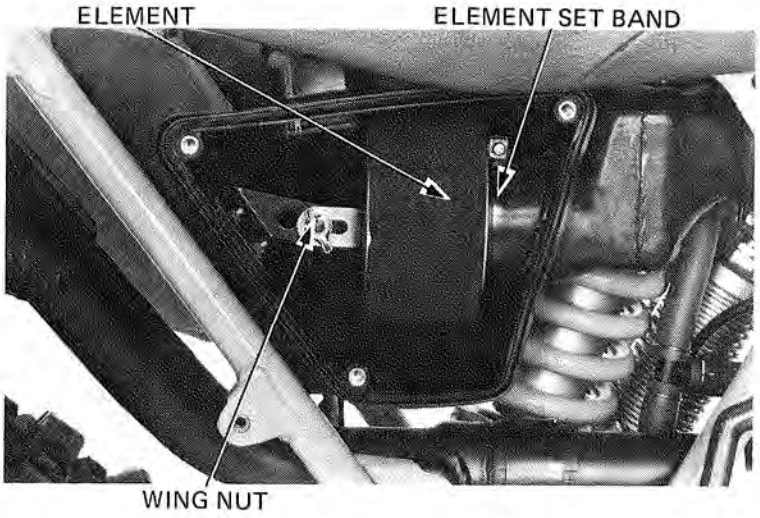
AIR CLEANER

Remove the right side cover.
Remove the air cleaner cover.



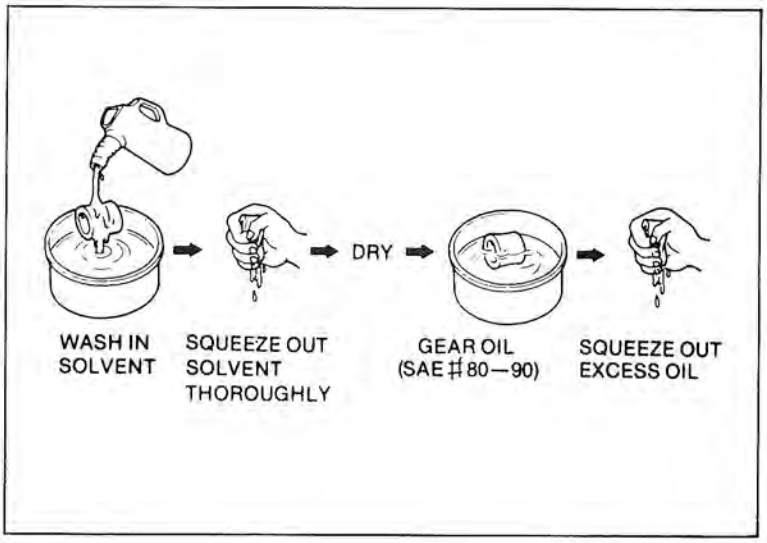
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Loosen the element set band and remove the wing nut.
Remove the element holder and remove the element from the holder.



Wash the element in non-flammable or high flash point solvent, and let it dry.
Soak the element in gear oil (SAE #80-90) and squeeze out excess.

Install the removed parts in the reverse order of disassembly.



SPARK PLUG

Disconnect the spark plug cap and remove the spark plug.

Visually inspect the spark plug. Discard it if the insulator is cracked or chipped.

Measure the spark plug gap with a wire-type feeler gauge.
Adjust the gap by bending the side electrode carefully.

SPARK PLUG GAP: 0.6—0.7 mm (0.024—0.028 in)

RECOMMENDED SPARK PLUG

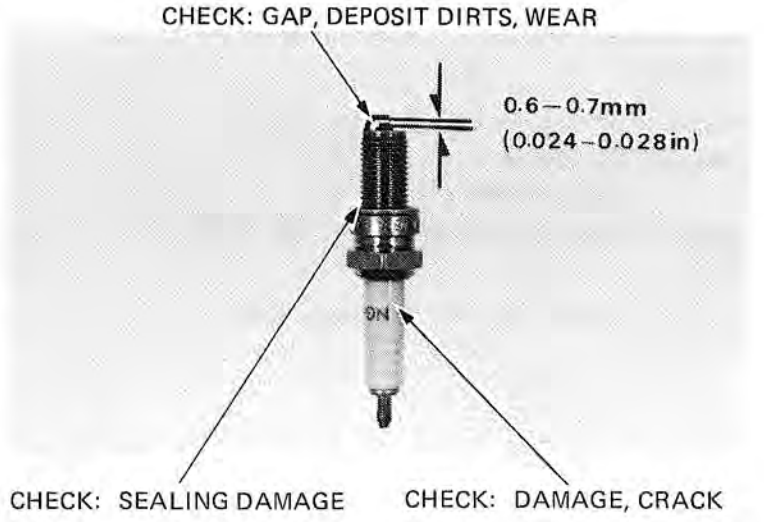
U.S.A. model	D8EA (NGK)
	X24ES-U(ND)
Canadian model	DR8ES-L (NGK)
	X24ESR-U (ND)

Make sure the sealing washer is in good condition.

Install the spark pug and connect the spark plug cap.

NOTE

Turn the spark plug finger tight, then tighten with a spark plug wrench.



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VALVE CLEARANCE

NOTE

Inspect and adjust valve clearance while the engine is cold (below 35°C/95°F).
Make sure the decompressor valve lifter has some free play during this maintenance.

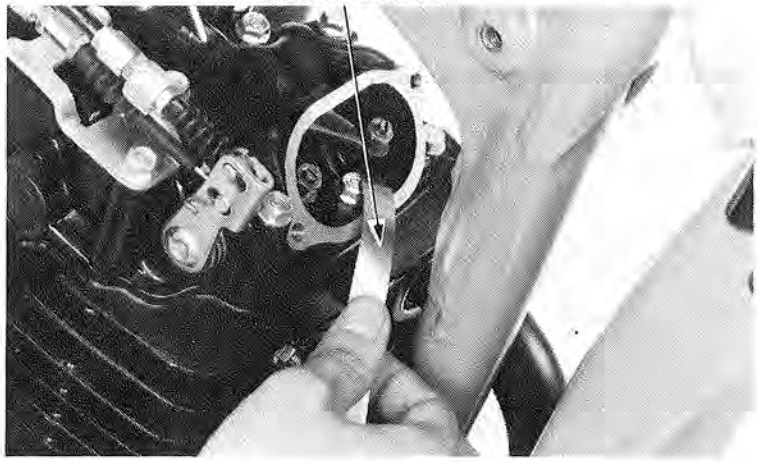
Remove the seat.

Turn the fuel valve OFF, disconnect the fuel line, and remove the tank.

Remove the crankshaft and timing mark hole caps.
Remove the valve adjuster covers.

Rotate the flywheel counterclockwise to align the "T" mark with the index mark on the left crankcase cover.

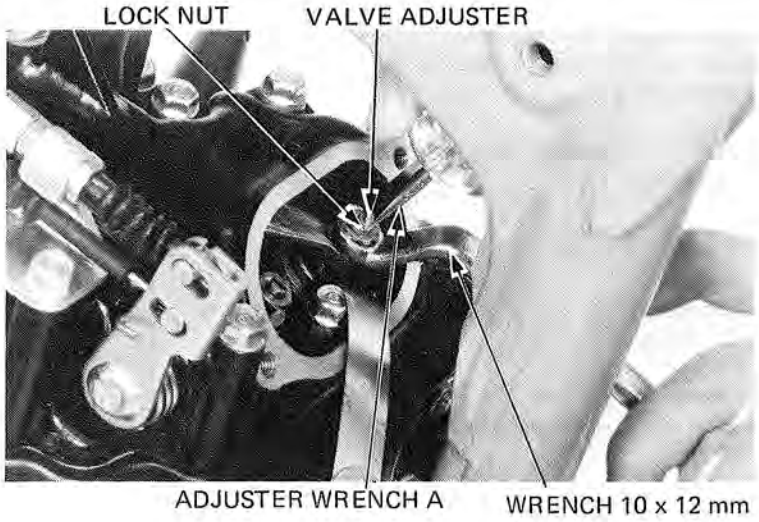
Make sure the piston is at TDC (Top Dead Center) on the compression stroke.



Check the clearance of both valves by inserting a feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCES:

Intake	**0.05 mm (0.002 in)**
Exhaust:	**0.10 mm (0.004 in)**



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

Hold the adjusting screw and tighten the lock nut.

TORQUE: 15–18 N.m
(1.5–1.8 kg-m, 11–13 ft-lb)

Adjust the starter decompressor free play (Page 3-9).

Install the removed parts in the reverse order of disassembly.

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STARTER DECOMPRESSOR

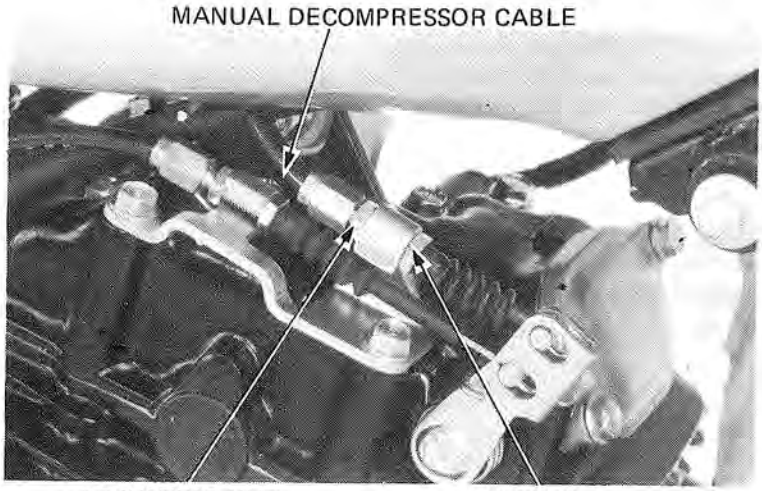
CAUTION:

The manual and kickstarter decompressor cables must be adjusted at the same time.

NOTE

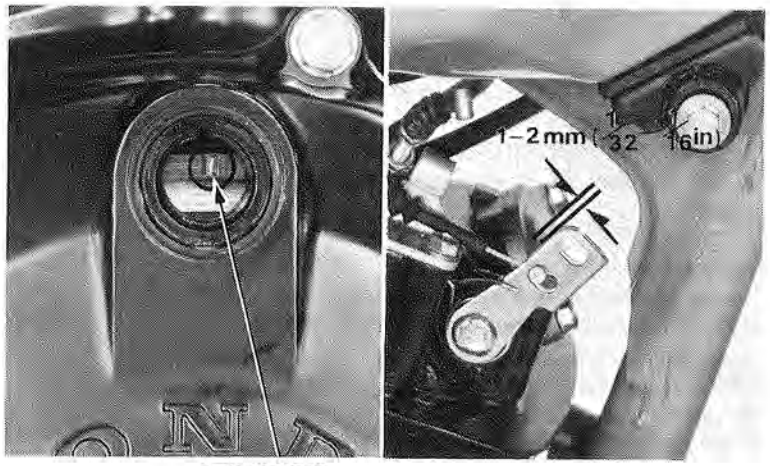
Adjust the decompressor linkage after adjusting the valve clearance (Page 3-8).

Loosen the manual decompressor cable lock nut and adjusting nuts.
Disconnect the cable at the decompressor valve lifter lever.



Remove the crankshaft and timing mark hole caps.
Rotate the flywheel counterclockwise and align the "T" mark with the index mark.
Measure kickstarter decompressor cable free play at the tip of the decompressor valve lifter lever.

FREE PLAY: 1–2 mm (1/32–1/16 in)

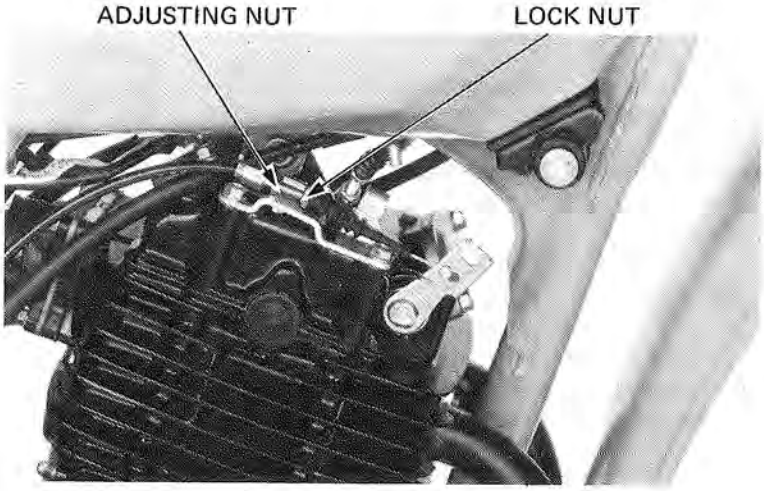


Adjust by loosening the lock nut and turning the adjusting nut.

CAUTION:

Excessive free play causes hard starting. Insufficient free play may cause erratic engine idling and valve damage.

Tighten the lock nut.
Operate the kickstarter and check the operation of the decompressor mechanism.
Recheck free play.

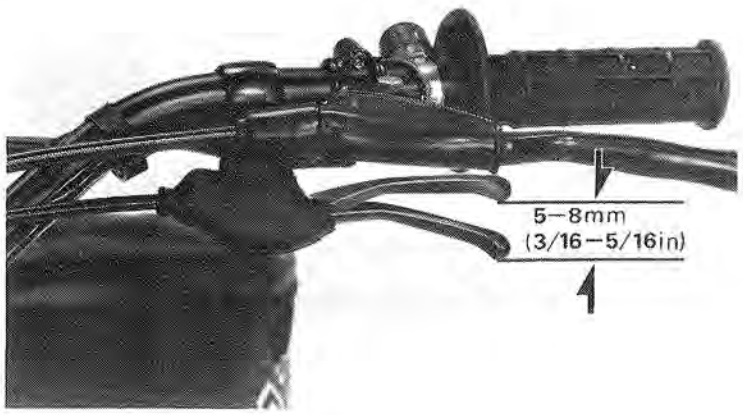


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Connect the manual decompressor cable to the decompressor valve lifter lever.
Measure the free play at the tip of the manual decompressor lever.

FREE PLAY: 5–8 mm (3/16–5/16 in)

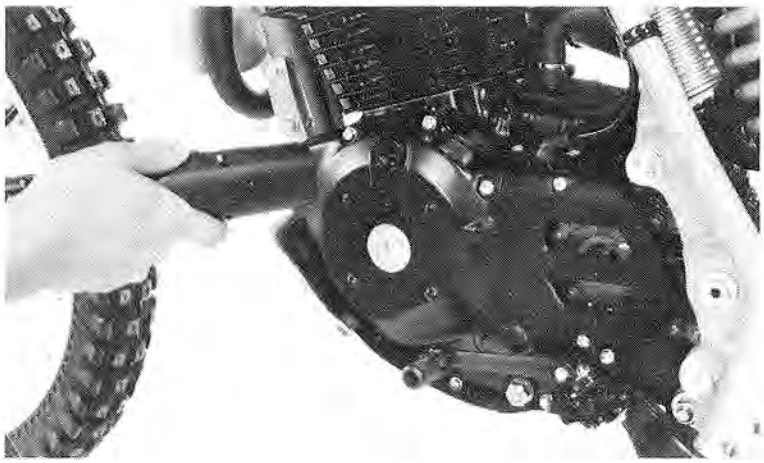
Adjust by turning the manual decompressor adjusting nut. After adjusting, tighten the lock nut.
Recheck free play.



IGNITION TIMING

NOTE

The Capacitive Discharge Ignition system is factory pre-set and cannot be adjusted. To inspect the function of the CDI components, ignition timing inspection procedures are given here.



Remove the timing hole cap.
Connect the tachometer and timing light.
Start the engine and allow to idle (1,200 rpm).
Check the ignition timing.
Timing is correct if the index mark aligns with the "F" mark at idle.
If the ignition timing is incorrect, check the CDI unit, pulse rotor and pulse generator, and replace faulty parts. Refer to Section 16, Ignition System.

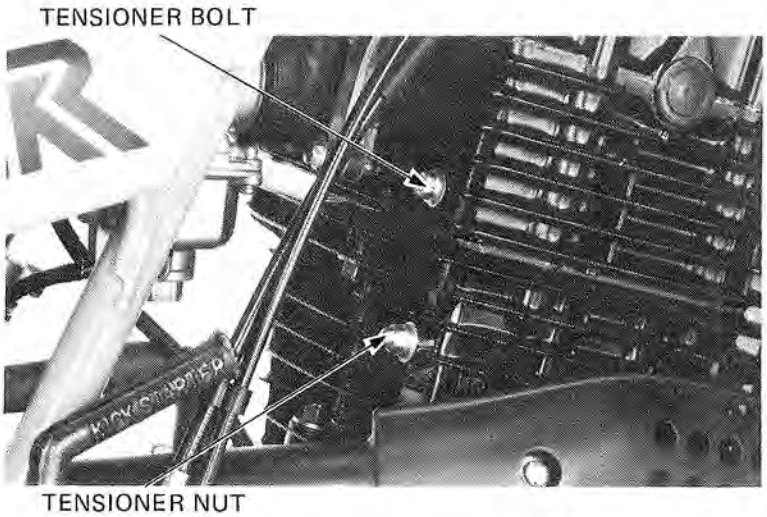
CAM CHAIN TENSIONER

Start the engine and allow it to idle.
Loosen the cam chain tensioner bolt and nut 1-1/2 to 2 turns.
When the bolt and nut are loosened, the tensioner will automatically position itself to provide the correct tension.

CAUTION:

If the tensioner bolt or nut are loosened excessively, the tensioner assembly will not be properly retained and may become disconnected and damaged while the engine is operating.

Tighten the cam chain tensioner bolt and nut.



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BALANCER CHAIN TENSION

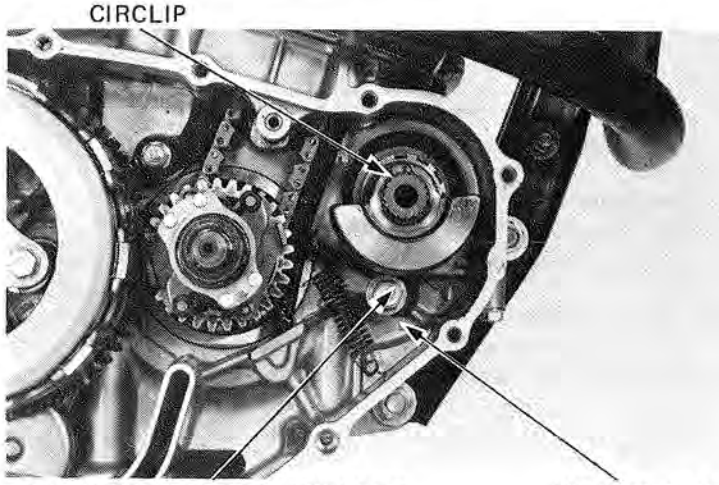
NOTE

Perform this adjustment while the right crankcase cover is off.

Loosen the balancer holder lock bolt. When the lock bolt is loosened, the spring will pull the balancer holder to the right.
Move the holder to the left one graduation from where it stops.

NOTE

Remove the lock bolt if it keeps the holder from moving. Move the holder clockwise to align the next graduation with the crankcase index mark.



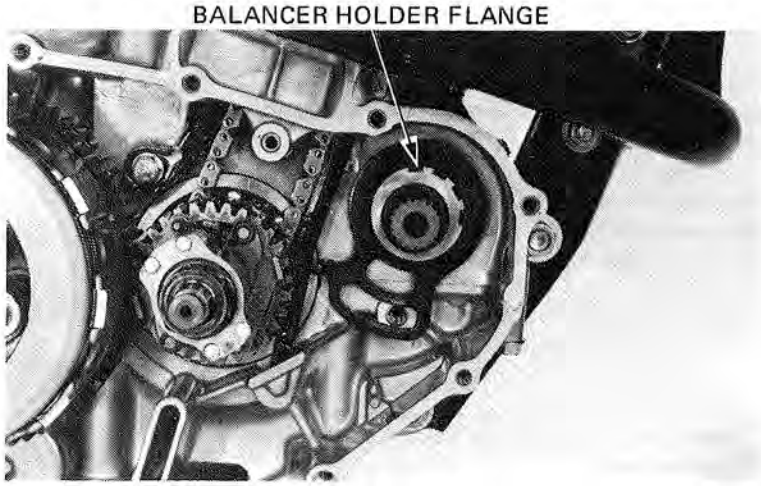
Tighten the lock bolt.

TORQUE: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

CAUTION:

If the balancer holder travel is limited by the bolt contacting the end of the slot, the balancer holder must be reset to provide required chain tension. See below.

Remove the balancer holder spring.
Remove the balancer weight circlip and weight.
Remove the washer and the holder flange circlip.
Remove the lock bolt and move the balancer holder counterclockwise one notch.



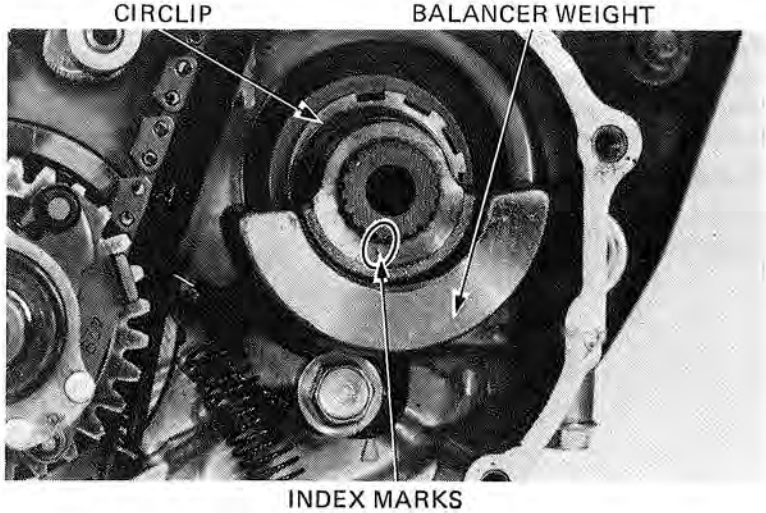
Install the removed parts in the reverse order of disassembly.

NOTE

Install the balancer weight on the shaft aligning the index marks.

Move the balancer holder clockwise to align the next graduation with the crankcase index mark.
Tighten the lock bolt.

TORQUE: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)



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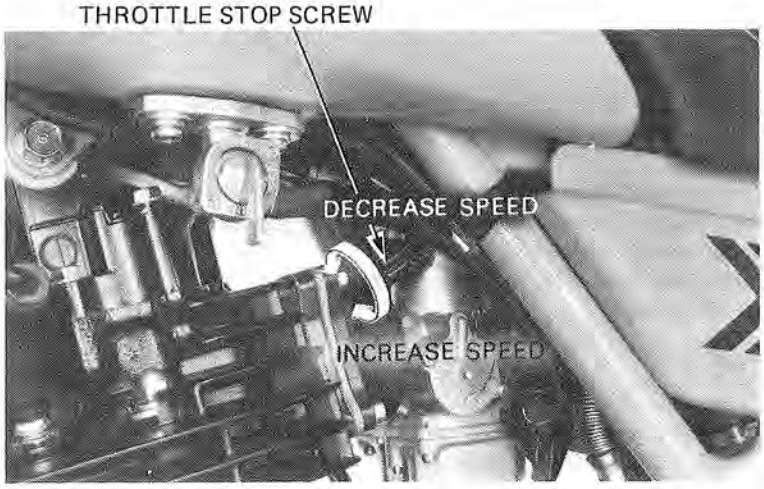
CARBURETOR IDLE SPEED

NOTE

- Inspect and adjust idle speed after all other engine adjustments are within specifications.
- The engine must be warm for accurate idle inspection and adjustment. Ten minutes of stop and go riding is sufficient.

Warm up the engine, shift to NEUTRAL, and hold the motorcycle upright. Connect a tachometer. Turn the throttle stop screw to obtain the specified idle speed.

IDLE SPEED: 1,200 ± 100 rpm



CYLINDER COMPRESSION

Warm up the engine.
Stop the engine and remove the fuel tank and spark plug.

Insert a compression gauge.
Pull the choke lever down.
Open the throttle grip all the way.

Operate the kick starter pedal several times and check the gauge reading.

NOTE

Check that there is no leakage at the gauge connection.

COMPRESSION: 12.5 kg/cm^2 (175 psi)

Low compression can be caused by:

Improper valve adjustment
Valve leakage
Leaking cylinder head gasket
Worn piston rings or cylinder
Improper decompressor adjustment

High compression can be caused by:

Carbon deposits in combustion chamber or on the piston crown.



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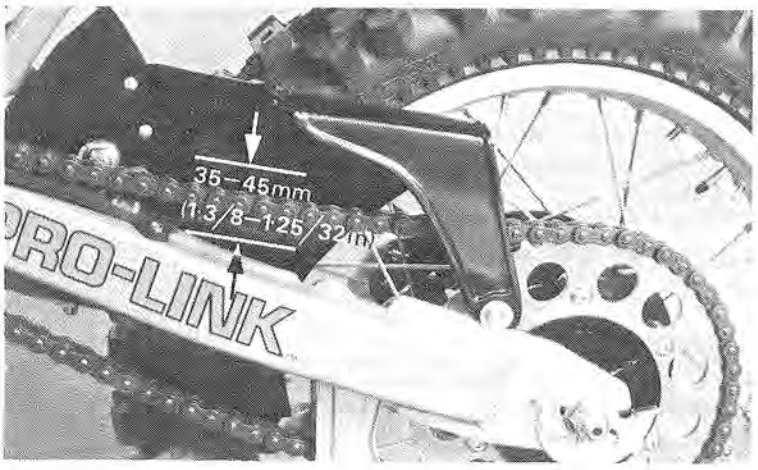
DRIVE CHAIN

REMOVAL

Turn the engine off. Raise the rear wheel off the ground by placing a support block under the engine.
Shift the transmission into neutral.
Inspect the chain guide rollers and chain slider for wear.

Measure the slack in the higher drive chain run midway between the sprockets.

STANDARD SLACK: 35–45 mm
(1-3/8–1-25/32 in)



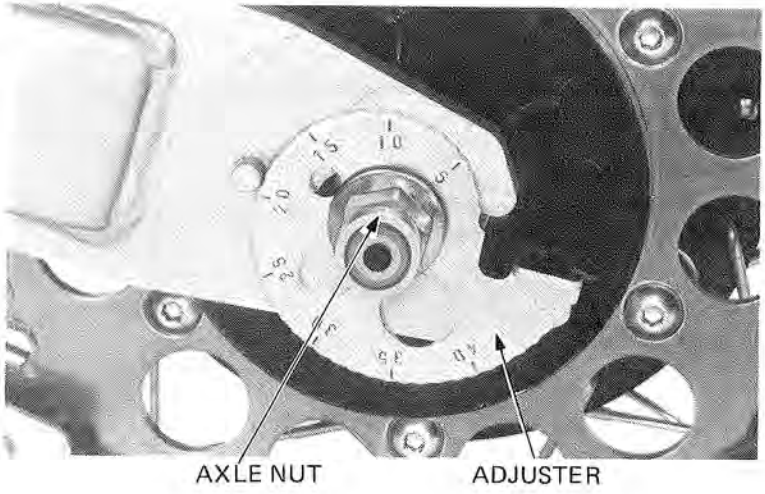
Adjust as follows:
Loosen the rear axle nut.
Adjust the chain slack by turning both adjusters equally.

CAUTION:

Be sure the same adjuster index marks align with the stopper pins on both sides of the swingarm.

Tighten the axle nut.

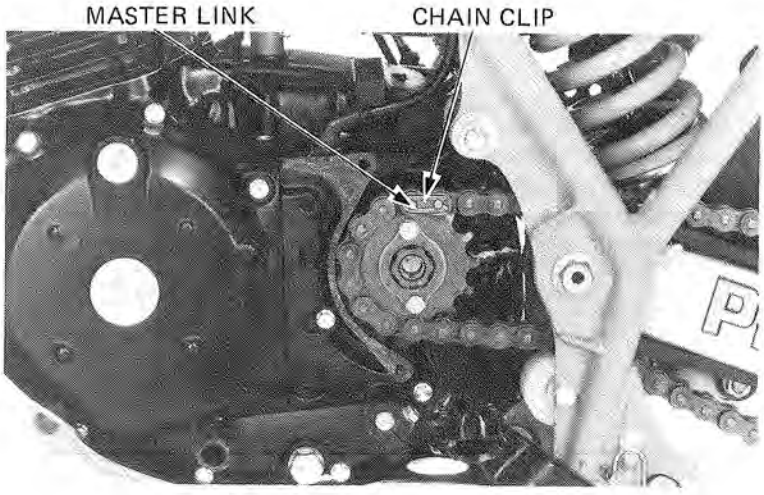
TORQUE: 80–110 N.m (8–11 kg-m, 58–80 ft-lb)



When the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.
Remove the drive sprocket cover.
Remove the chain retaining clip carefully.
Remove the master link and remove the drive chain.

NOTE

Be careful not to lose the O-rings when the clip and master link are removed.



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

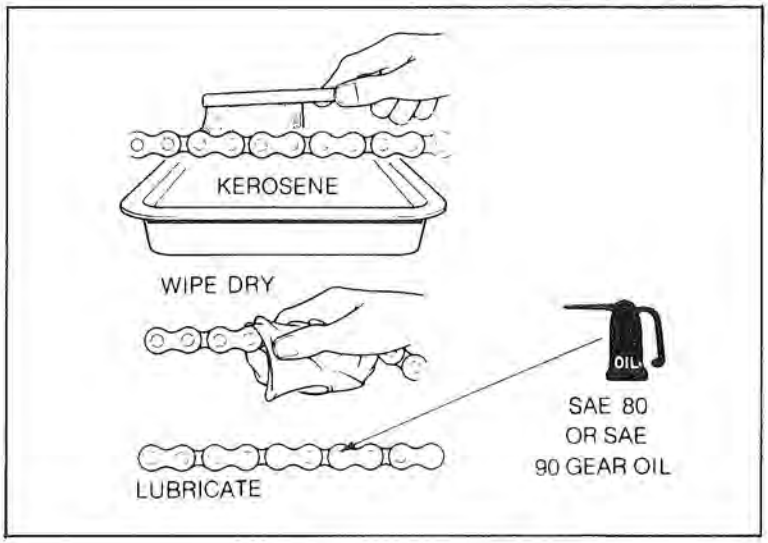
CAUTION:

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

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

CAUTION:

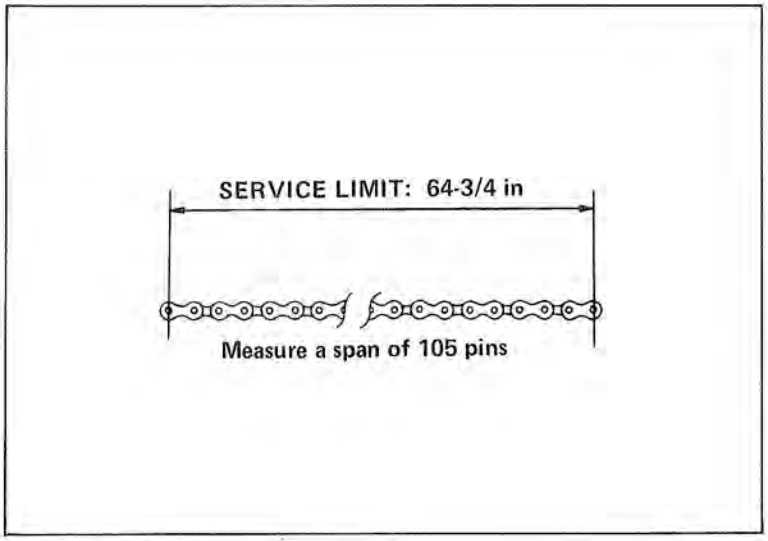
Do not use commercial aerosol chain lubricants. They contain solvents which could damage the O-rings.



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

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

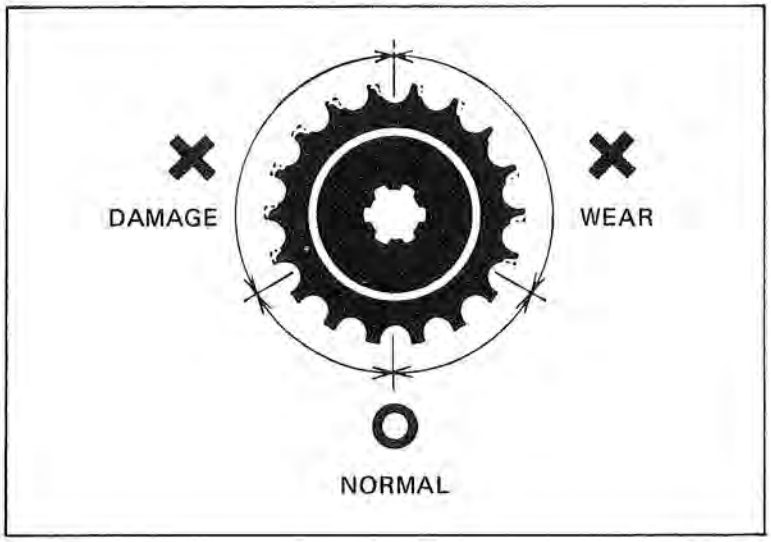
105 PINS LENGTH:
STANDARD: 1,635 mm (64-1/8 in)
SERVICE LIMIT: 1,651 mm (64-3/4 in)



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

NOTE

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



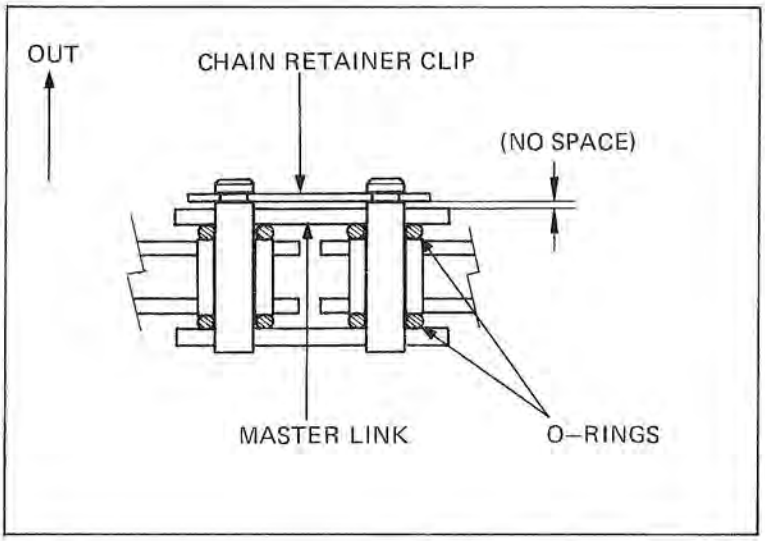
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INSTALLATION

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

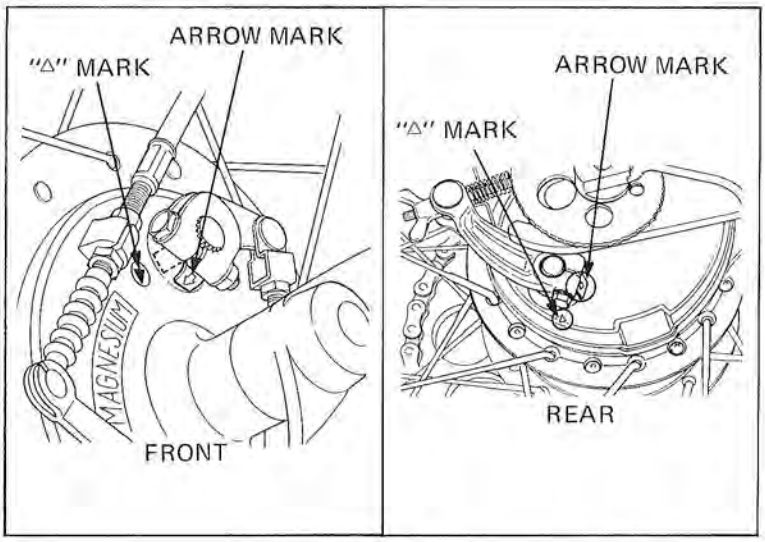
CAUTION:

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



BRAKE SHOE WEAR

Replace the brake shoes if the arrow on the indicator plate aligns with the " △ " mark on the brake panel when the brake is applied.



FRONT BRAKE

Measure the front brake lever free play at the tip of the brake lever.

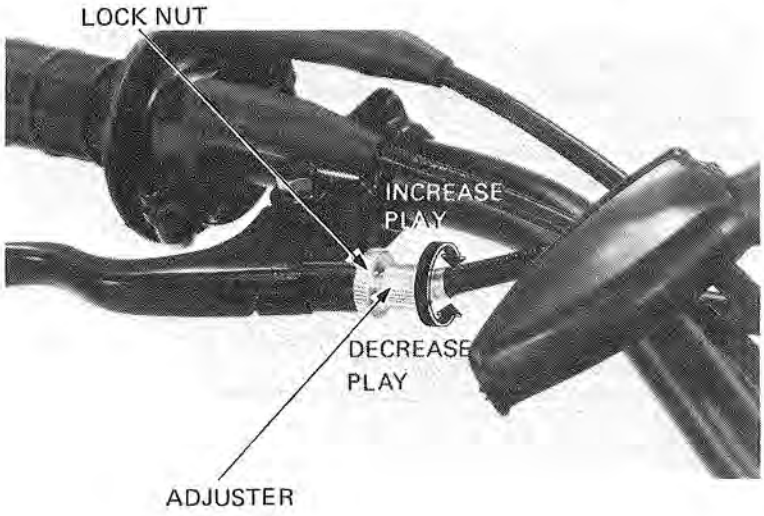
FREE PLAY: 25–30 mm (1–1-1/4 in)



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Adjust as follows:
Perform minor adjustments with the upper adjuster.

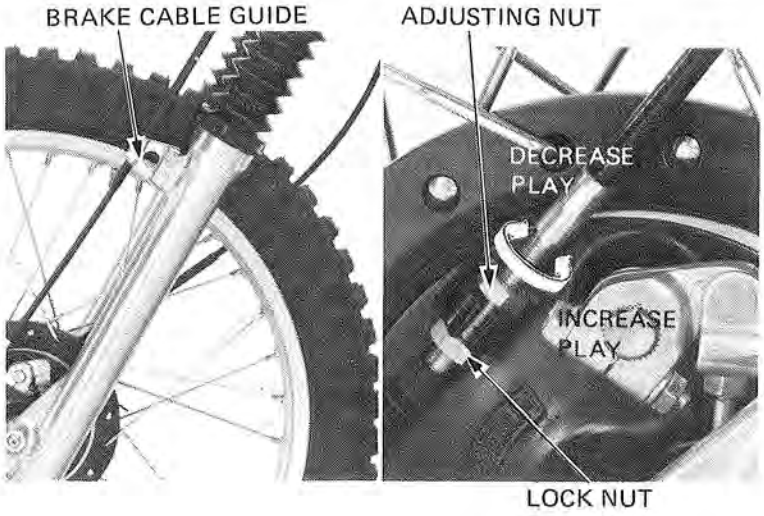
Pull the cover off.
Loosen the lock nut and turn the adjuster to obtain the specified free play.
Tighten the lock nut and install the cover.



Perform major adjustments with the lower adjuster.

Loosen the bolts attaching the front brake cable guide.
Loosen the lock nut and turn the adjuster to obtain the specified free play.

Tighten the lock nut.
Retighten the brake cable guide bolts.



REAR BRAKE

Measure the rear brake pedal height from the footpeg.

BRAKE PEDAL HEIGHT

To adjust:
Loosen the lock nut and adjust the pedal height by turning the stopper screw. Tighten the lock nut.
Adjust the brake pedal free play.



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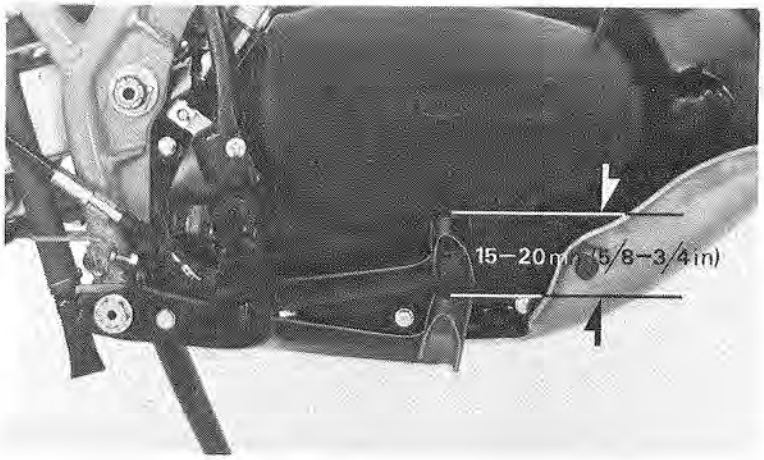
BRAKE PEDAL FREE PLAY

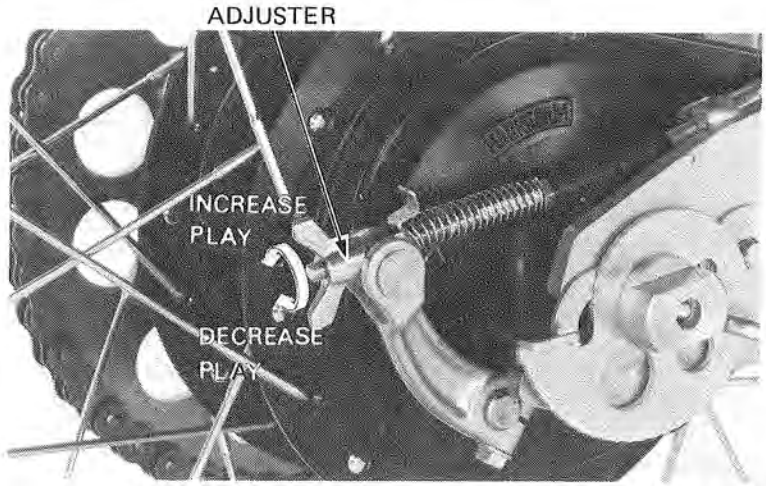
NOTE

Adjust the brake pedal free play after adjusting the brake pedal height.

Measure the free play and adjust as required by turning the adjuster.

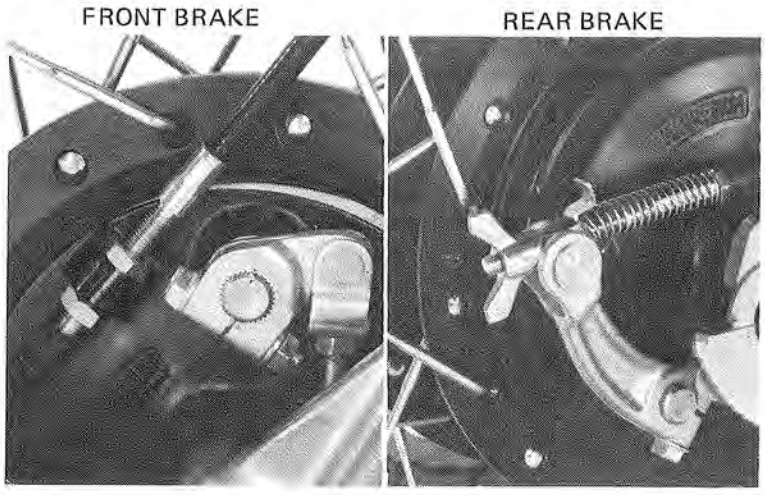
FREE PLAY: 15–20 mm (5/8 – 3/4 in)





BRAKE LINKAGE

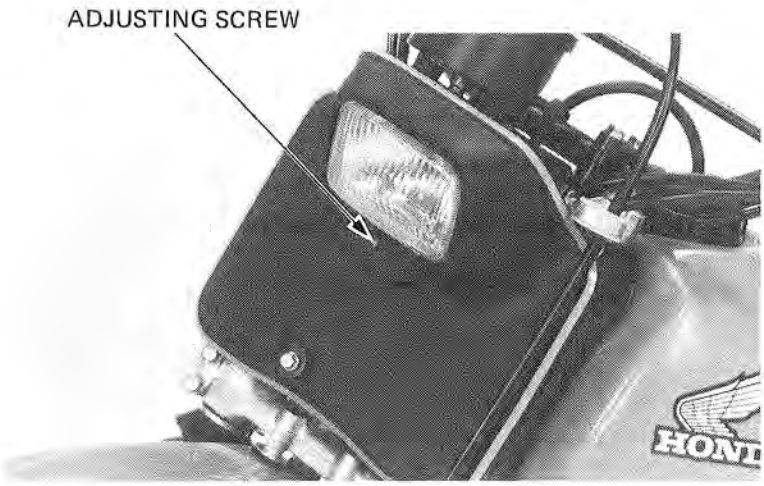
Check the brake cables and brake lever/pedal for loose connections, excessive play, or other damage. Replace or repair if necessary.



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HEADLIGHT AIM

Adjust the vertical beam by turning the adjusting screw on the headlight cover.



CLUTCH

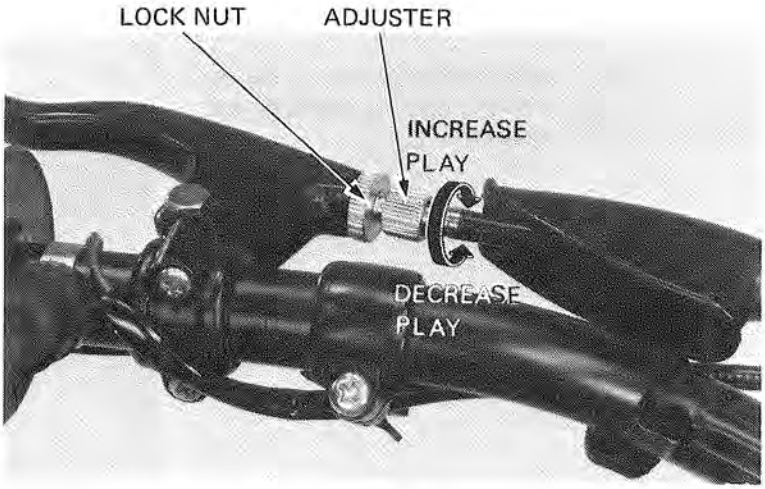
Measure the clutch free play at the lever end.

FREE PLAY: 15 – 25 mm (5/8 – 1 in)



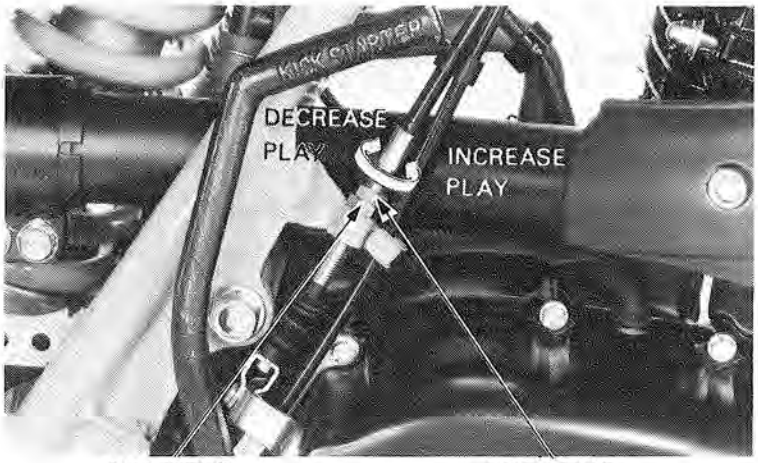
Adjust as follows:
Minor adjustments are made with the upper adjuster.

Pull the cover back.
Loosen the lock nut and turn the adjuster.
Tighten the lock nut and install the cover.



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Major adjustments are made with the lower adjuster.
Turn the upper adjuster all the way in and back out 1 turn.
Loosen the lower lock nut adjuster and turn the adjuster.
Tighten the lock nuts.
Check clutch operation.



SUSPENSION

FRONT

Check the action of the front forks by compressing them several times.
Check the entire fork assembly for signs of leaks, or damage.
Replace any components which are unrepairable.
Torque all nuts and bolts.

WARNING

Do not ride a vehicle with faulty suspension. Loose, worn, or damaged suspension parts may affect stability and rider control.



REAR

Place the vehicle on a support to raise the rear wheel.
Move the rear wheel sideways with force to see if the swing arm bearings are worn.
Replace if excessively worn.
Check the entire suspension assembly, being sure it is securely mounted and not damaged or distorted.
Torque all nuts and bolts.

Apply grease to the swingarm pivot bearings through the grease fitting on the swingarm.
Apply molybdenum disulfide (MoS2) paste to the linkage bushings through the grease fittings on the linkage pivots.

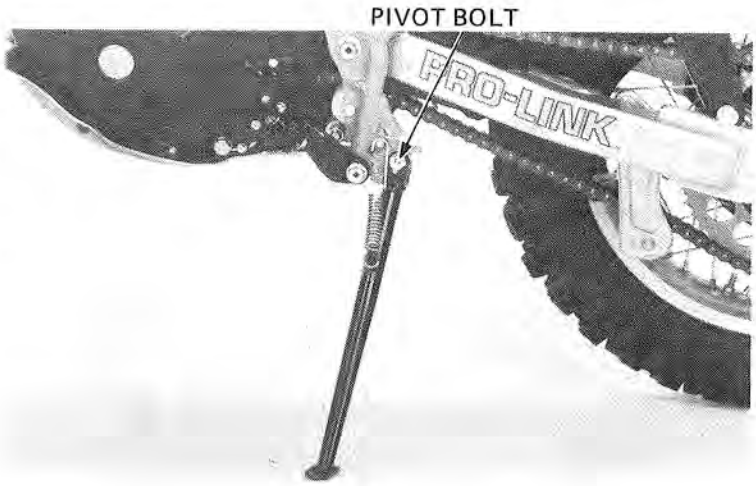
NOTE

Use MoS2 paste (containing more than 45% of MoS2) as follows:
- MOLYKOTE® G-n PASTE manufactured by Dow Corning U.S.A.
- ROCOL PASTE manufactured by Sumico Lubricant Co., LTD., Japan.
- Other lubricants of equivalent quality.



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SIDE STAND



Check the side stand spring for damage and loss of tension.
Check that the side stand assembly is not bent and moves freely.
Tighten the pivot bolt if necessary.

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

WHEEL/SPOKES

TIRE PRESSURE

NOTE

The pressure should be checked when the tires are COLD.

Tire pressure:
Front: 100 kPa (1.0 kg/cm², 14 psi)
Rear: 80 kPa (0.8 kg/cm², 11 psi)

Tire size:
Front: 3.00-21-6PR
Rear: 5.10-17-6PR

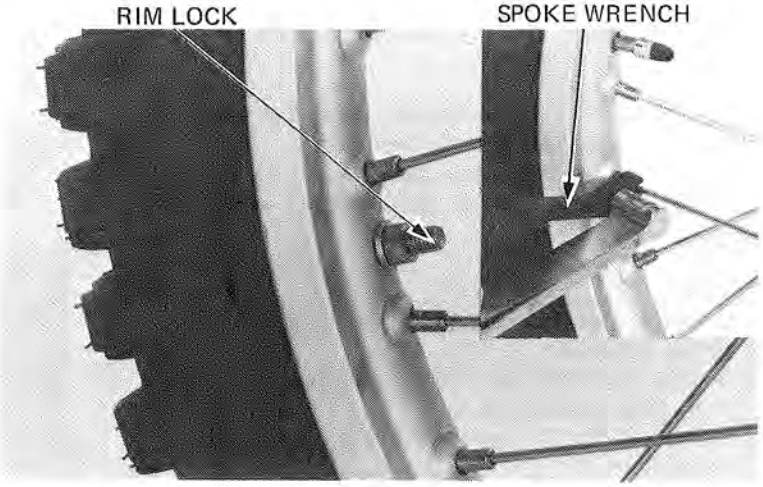


Check the tire for cuts, imbedded nails or other sharp objects.
Check the tread depth.

SERVICE LIMIT: 8 mm (0.3 in)

Tighten the wheel spokes and rim lock.

TORQUE VALUES:
SPOKE NIPPLE:
2–4.5 N·m (0.2–0.45 kg-m, 1.4–3.2 ft-lb)
RIM LOCK:
10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)



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STEERING HEAD BEARING

NOTE

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

Raise the front wheel off the ground.
Check that the handlebar rotates freely.
If the handlebar moves unevenly, binds or has vertical movement, adjust the steering head bearing by turning the steering head adjusting nut to the specified torque.

TORQUE: 5.5–6.5 N·m
(0.55–0.65 kg-m, 4–5 ft-lb)

Tighten the steering stem nut.

TORQUE: 80–120 N·m
(8–12 kg-m, 57–87 ft-lb)



STEERING HEAD ADJUSTING NUT

SPARK ARRESTOR CLEANING

Remove the front and rear muffler lids.
Start the engine and increase rpms to blow carbon out of the exhaust pipe while momentarily creating exhaust system back pressure by blocking the end of the muffler with a shop towel. Repeat until carbon stops coming out.

WARNING

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

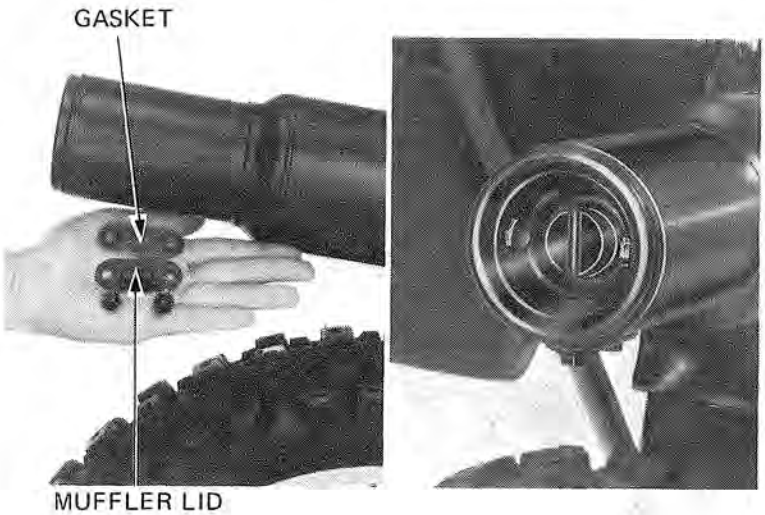
After cleaning the spark arrester, install the muffler lids and gaskets and tighten the bolts.

NOTE

Be sure that the muffler lid and gasket are in good condition and the bolts are tightened securely.

CAUTION:

Be sure that the spark arrester screws are securely in place.



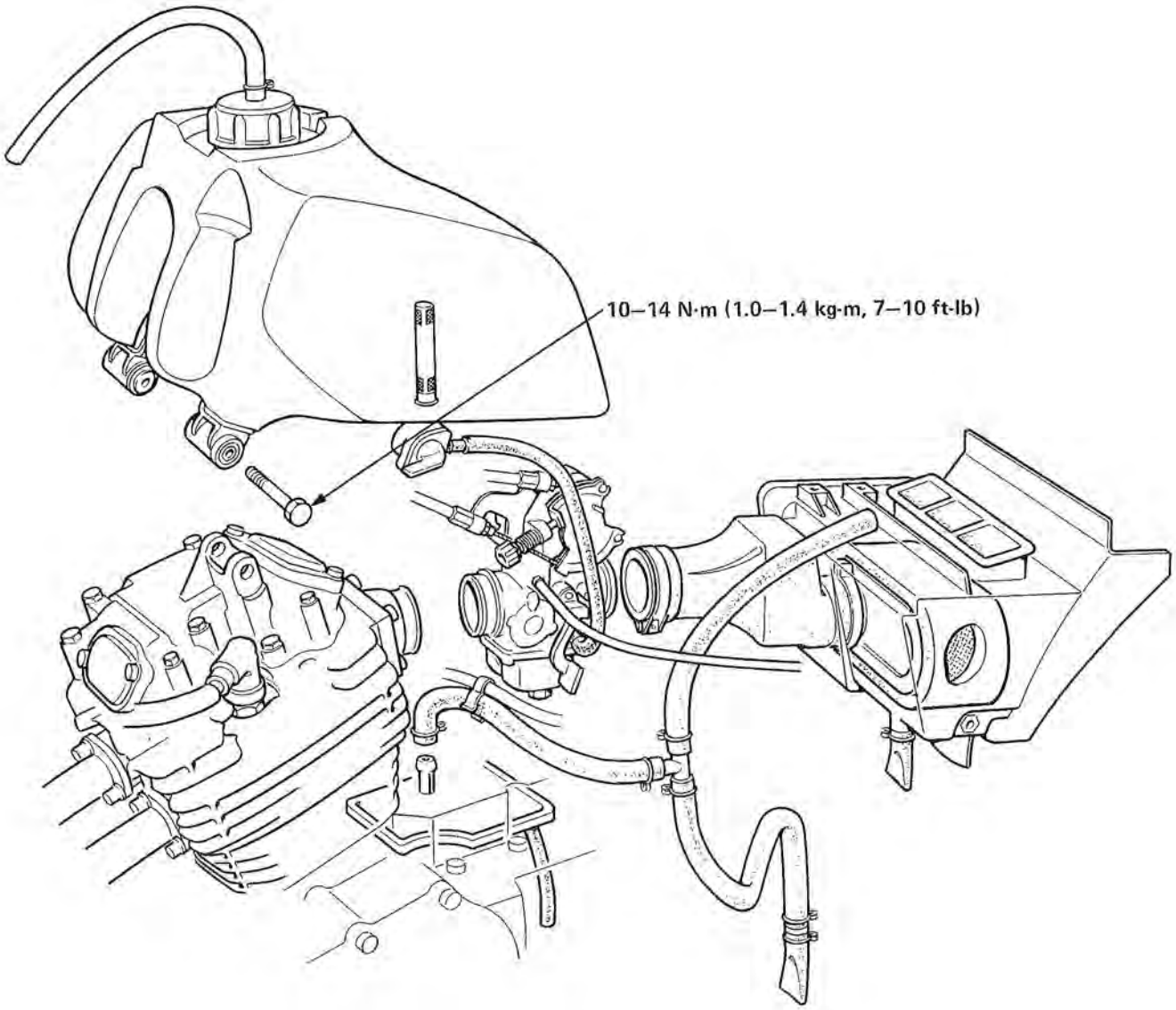
NUTS, BOLTS, FASTENERS

Tighten bolts, nuts and fasteners at regular intervals as shown in the Regular Maintenance Schedule (Page 3-3).

Check that all chassis nuts and bolts are tightened to their correct torque values (Page 1-4 and 1-5). Check that all cotter pins and safety clips are in place.



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4. FUEL SYSTEM

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SERVICE INFORMATION

GENERAL INSTRUCTIONS

- When disassembling fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
- The carburetor float bowl has a drain plug that can be loosened to drain residual gasoline.

SPECIFICATIONS

Fuel tank capacity	9 lit (2.4 US gal, 1.9 Imp gal)
Reserve capacity	3 lit (0.8 US gal, 0.6 Imp gal)
Carburetor	
Type	Piston valve
Identification number	PD11B
Jet needle setting	3rd groove
Float level	14.5 mm (0.57 in)
Pilot screw opening	2-1/4 turns out
Main jet	152
Slow jet	#55
Idle speed	1,200 ± 100 rpm
Air cut-off valve operating press.	390 mmHg (15.3 inHg)
Throttle grip free play	2–6 mm (1/8–1/4 in)

TOOL

Float level gauge	07401–0010000

TORQUE VALUE

Fuel tank mounting bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

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TROUBLESHOOTING

Engine Cranks But Won't Start
1. No fuel in tank
2. No fuel to cylinder
3. Too much fuel getting to cylinder
4. No spark at plug (ignition malfunction)
5. Air cleaner clogged

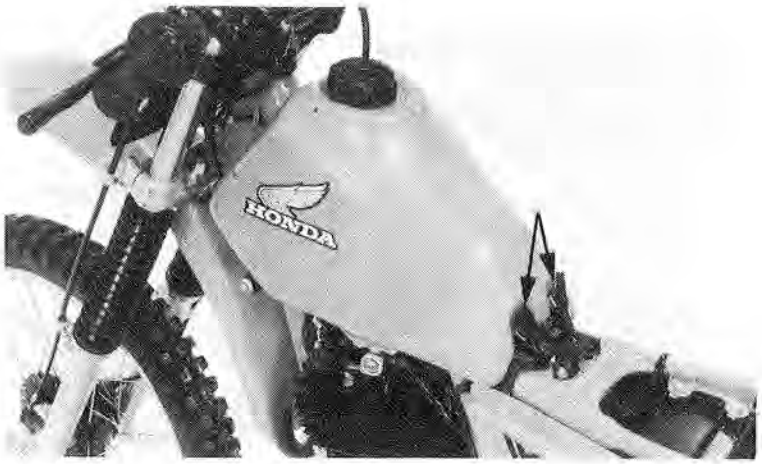
Engine Idles Roughly, Stalls, or Runs Poorly
1. Idle speed incorrect
2. Ignition malfunction
3. Low compression (Section 6)
4. Rich mixture
5. Lean mixture
6. Air cleaner clogged
7. Air leaking into manifold
8. Fuel contaminated

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

Rich Mixture
1. Choke stuck closed
2. Float valve faulty
3. Float level too high
4. Carburetor air jets clogged
5. Sticking float
6. Dirty air cleaner

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FUEL TANK



FUEL TANK REMOVAL

Remove the seat.
Turn the fuel valve OFF and disconnect the fuel tube.
Remove the mounting bolts and tank.

WARNING

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

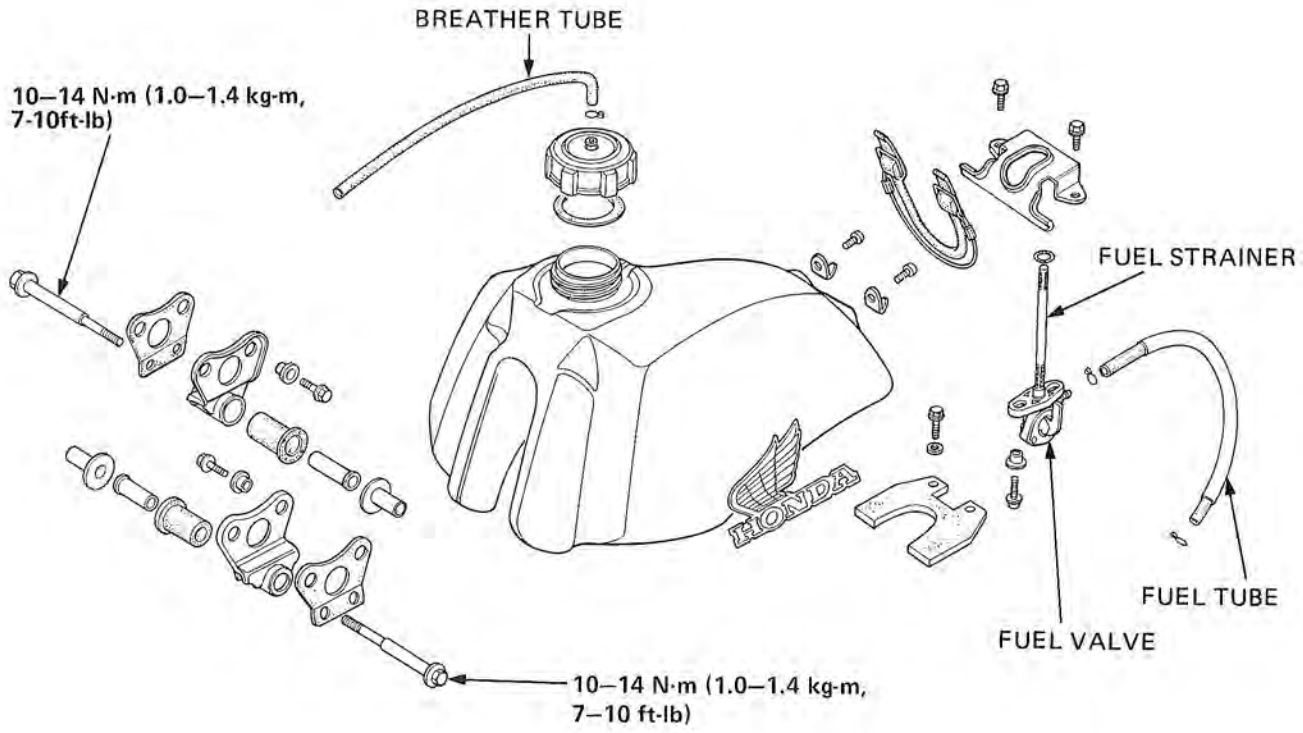
Check that fuel flows out of the fuel valve freely. If flow is restricted, clean the fuel strainer.

FUEL TANK INSTALLATION

Install the fuel tank with the two mounting bolts.
Connect the fuel tube.
Install the seat.

NOTE

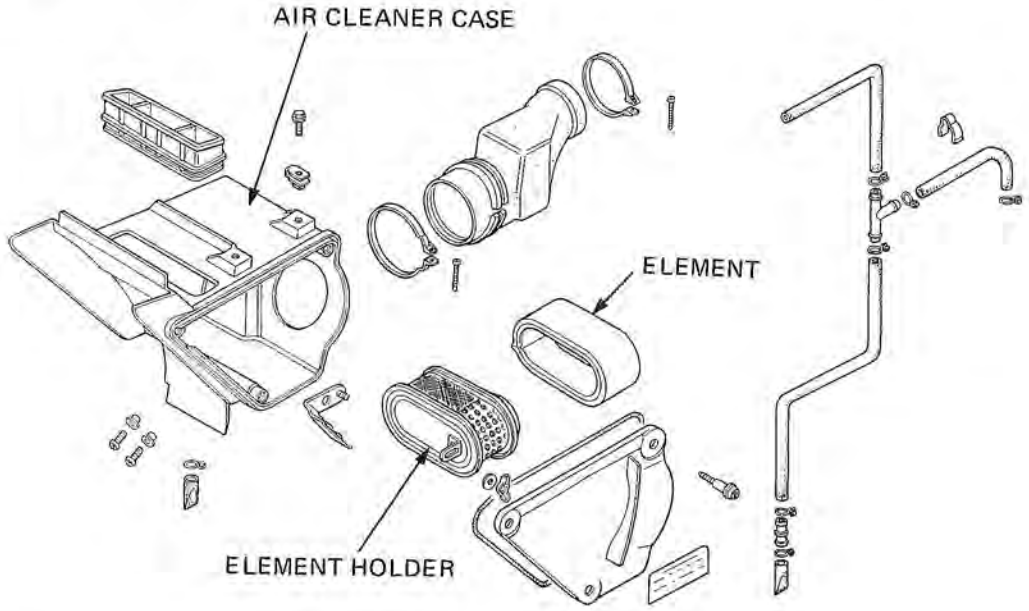
- After assembling, make sure there are no fuel leaks.
- Do not overtighten the fuel valve bolts.



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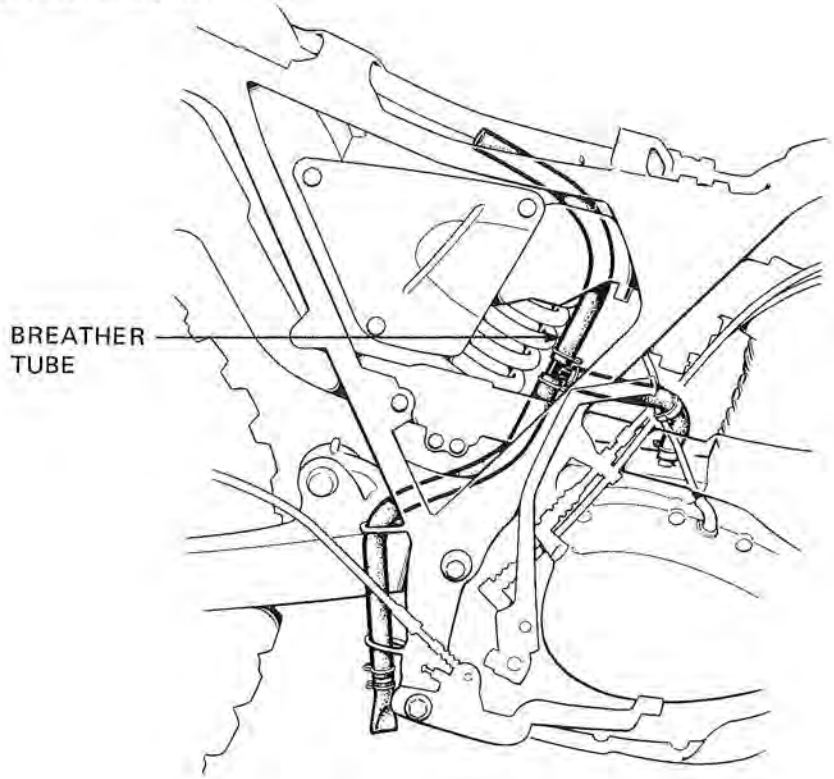
AIR CLEANER CASE REMOVAL

Remove the left and right side covers.
Remove the seat.
Remove the muffler and exhaust pipe.
Remove the air cleaner case.



CRANKCASE BREATHER

Route the crankcase breather tube as shown.



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CARBURETOR REMOVAL

Remove the seat and fuel tank.
Remove the left and right side covers.

Disconnect the throttle cables.
Loosen the drain screw and drain the fuel.

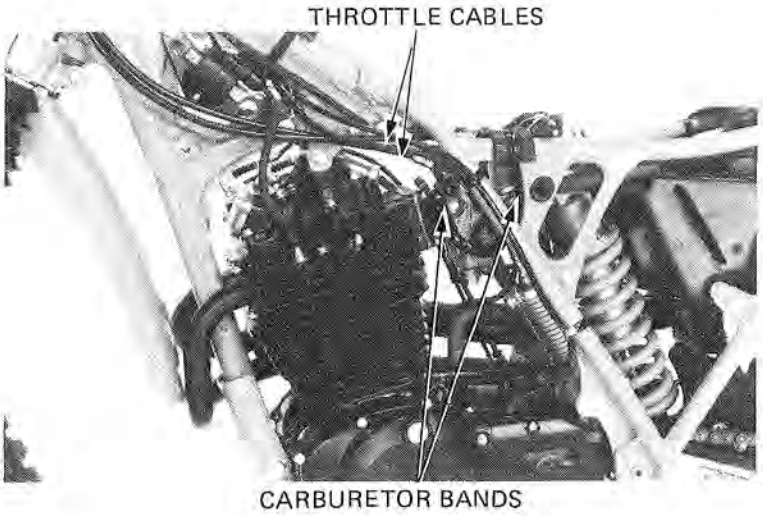
WARNING

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

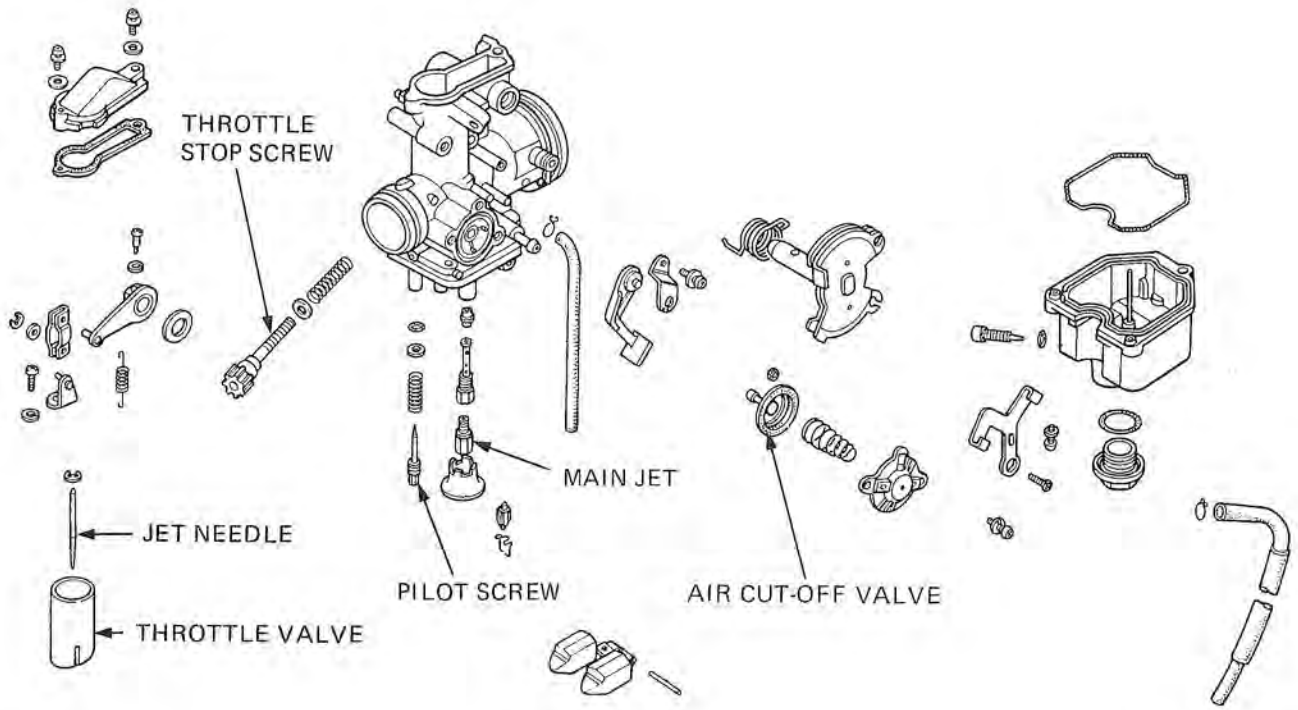
Loosen the screws securing the carburetor bands.
Remove the carburetor.

NOTE

Do not pry between the insulator and engine. Carefully pull it back, away from the engine.

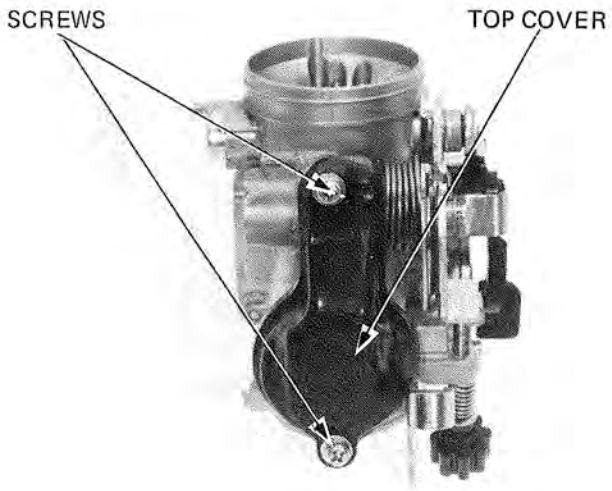


CARBURETOR DISASSEMBLY

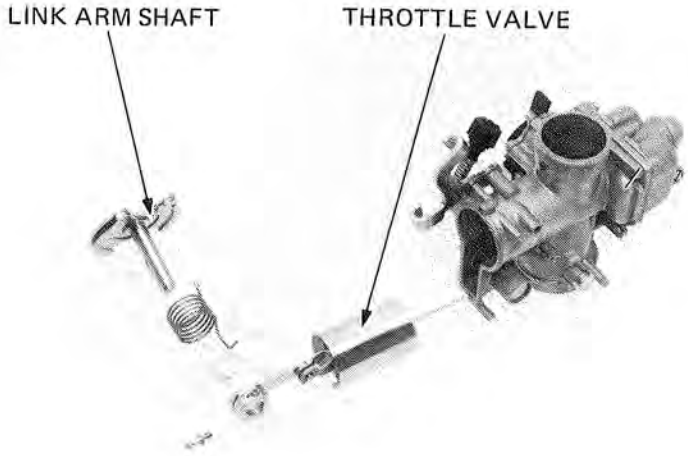


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Remove the carburetor top cover.

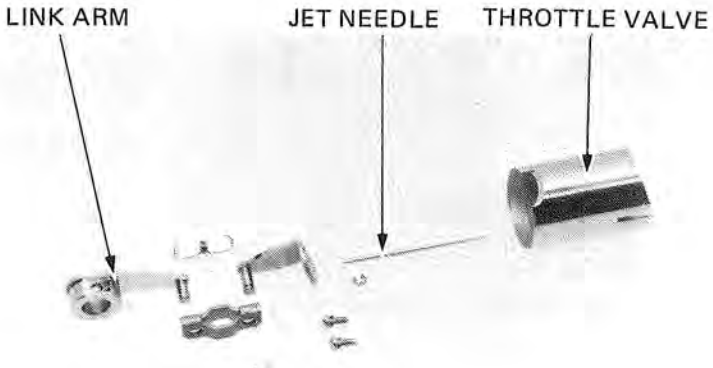


Remove the screw, and remove the link arm shaft, nut, spring and throttle valve.



THROTTLE VALVE DISASSEMBLY

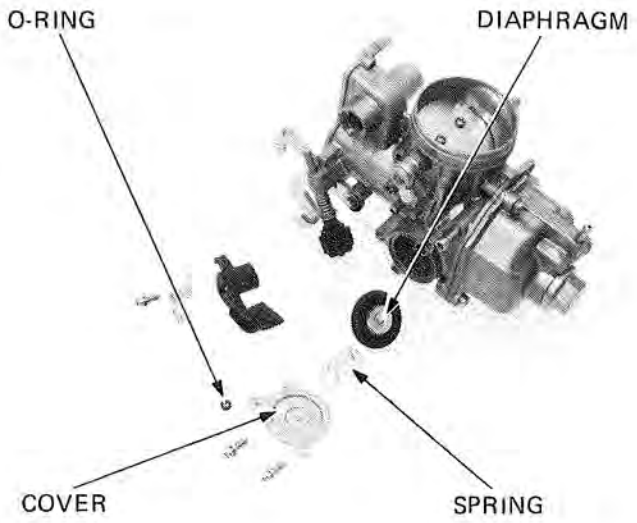
Remove the link arm.
Remove the jet needle and spring.
Check the throttle valve for wear or damage.



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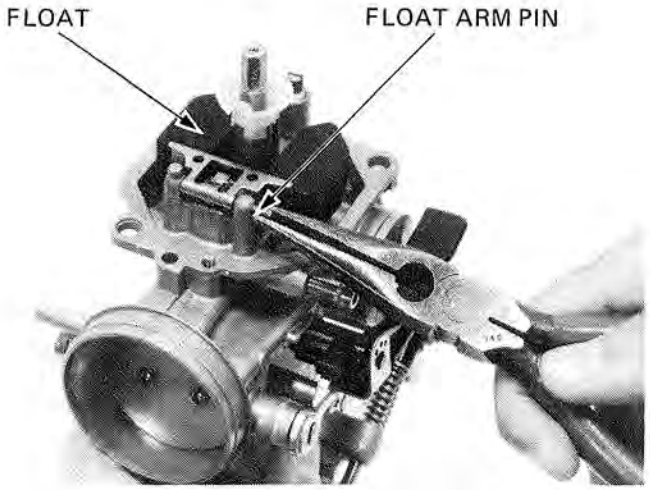
AIR CUT-OFF VALVE DISASSEMBLY

Remove the air cut-off valve cover and pull out the spring.
Remove the diaphragm and O-ring.
Check the diaphragm for tears or pin holes.



FLOAT, FLOAT VALVE, AND JETS

Remove the float chamber body.
Pull out the float pin and remove the float.



Remove the float valve, main jet and needle jet holder.
Remove the needle jet.

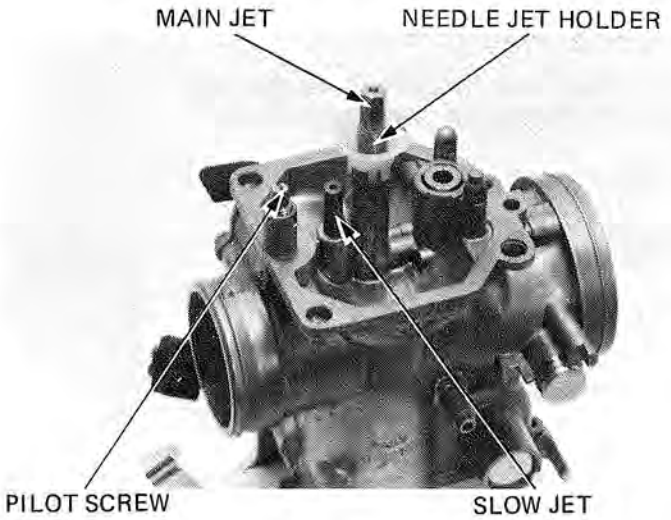
NOTE

The slow jet cannot be removed since it is a press fit.

Remove the pilot screw.

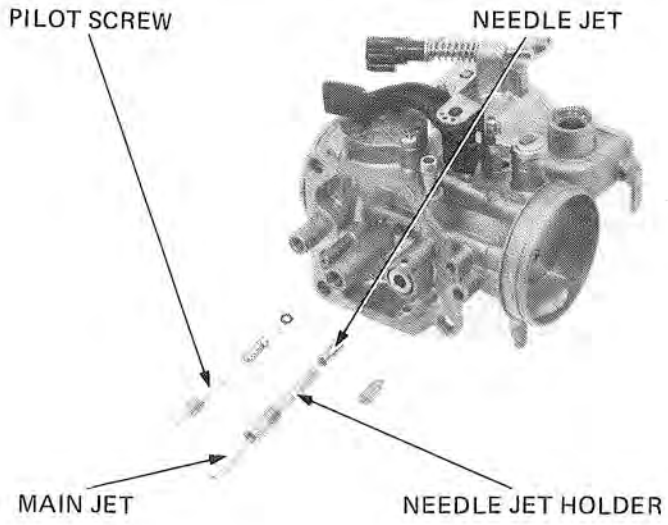
NOTE

Before removing the pilot screw, record the number of rotations until it seats lightly, so it can be returned to its original position.



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Check each part for wear or damage.
Blow open all jets and passages with compressed air.



CARBURETOR ASSEMBLY

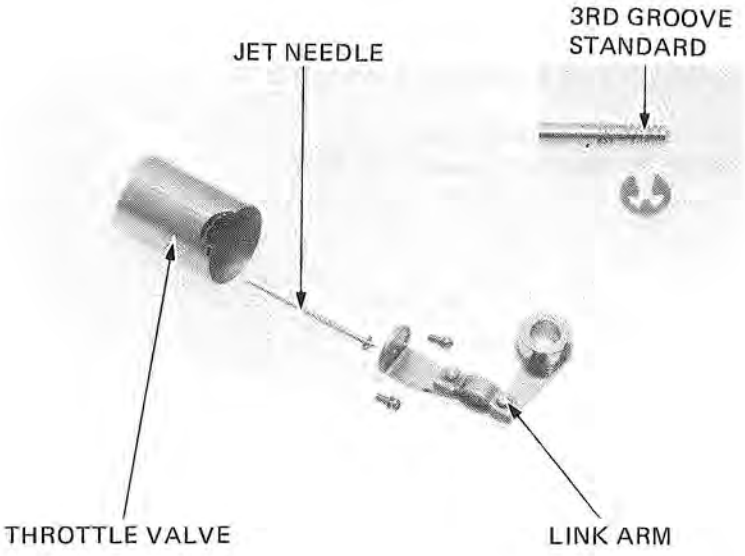
NOTE

- Use new O-rings whenever the carburetor is reassembled.
- Handle all jets and needles with care. They can easily be scored or scratched.
- Be sure to install the top cover screw washers during assembly.

Assemble the carburetor in the reverse order of disassembly. Turn the pilot screw to the position recorded during disassembly.

Install the jet needle clip on the jet needle.

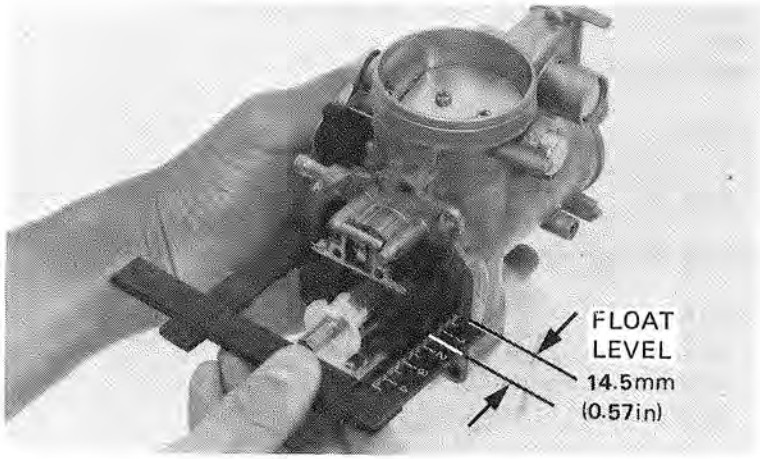
STANDARD: 3rd groove



FLOAT LEVEL ADJUSTMENT

Adjust the float level by carefully bending the float arm until the float tip just contacts the float valve.

FLOAT LEVEL: 14.5 mm (0.57 in)



CARBURETOR INSTALLATION

Install the carburetor in the reverse order of removal.

Adjust the throttle grip free play (Page 3–5).

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PILOT SCREW ADJUSTMENT

Turn the pilot screw clockwise until it seats lightly and then back it out 2-1/4 turns.

CAUTION:

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

Warm the engine up to operating temperature. Stop the engine and connect a tachometer.

Start the engine and adjust the idle speed to 1200 ± 100 rpm with the throttle stop screw.

Check that the engine speed increases smoothly by operating the throttle grip.
Turn the pilot screw until the highest idle speed is obtained.
Reset the idle speed to 1200 ± 100 rpm with the throttle stop screw.

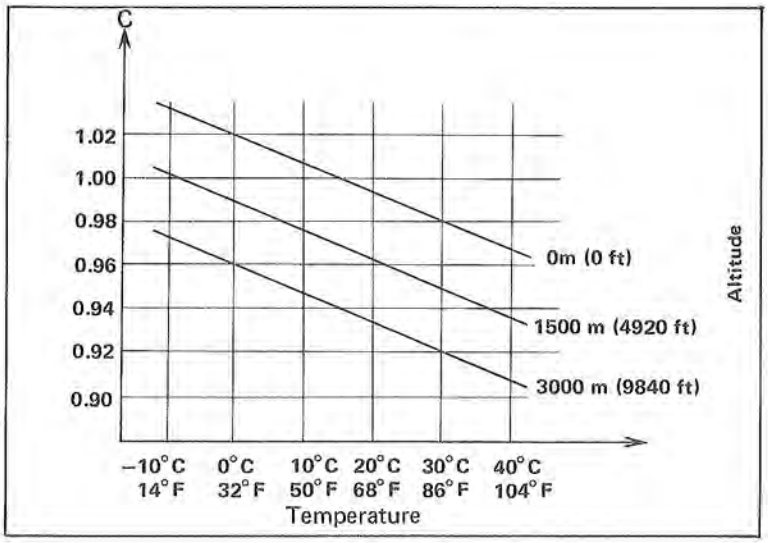


TEMPERATURE AND ALTITUDE

Use the chart at right to determine if carburetor adjustments are necessary because of changes in temperature and altitude. Decide where the approximate elevation and temperature factors interesect to get C, the correction factor.

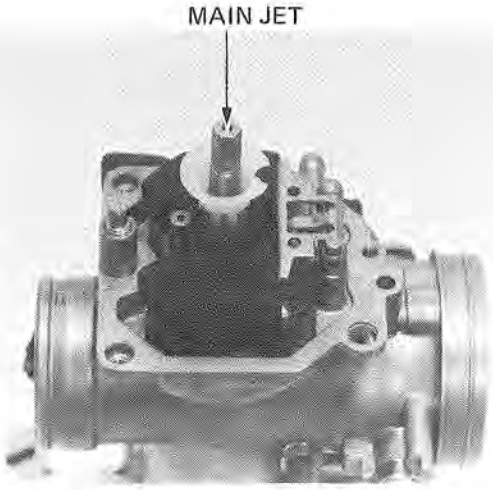
To determine jet needle and pilot screw adjustments:

If C is 0.95 or below, lower jet needle one groove and screw the pilot screw in 1/2 turn. Adjustments are not needed if C is over 0.95.



The determine main jet size:

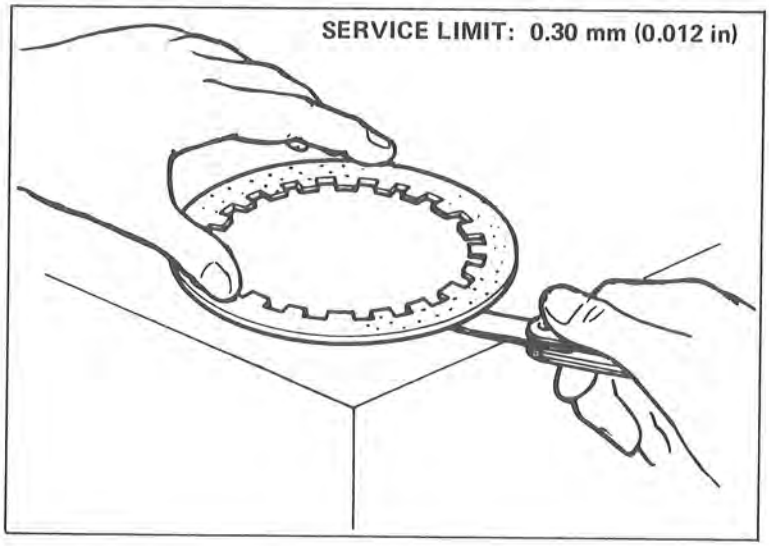
Multiply the standard main jet size times C.



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CLUTCH PLATE

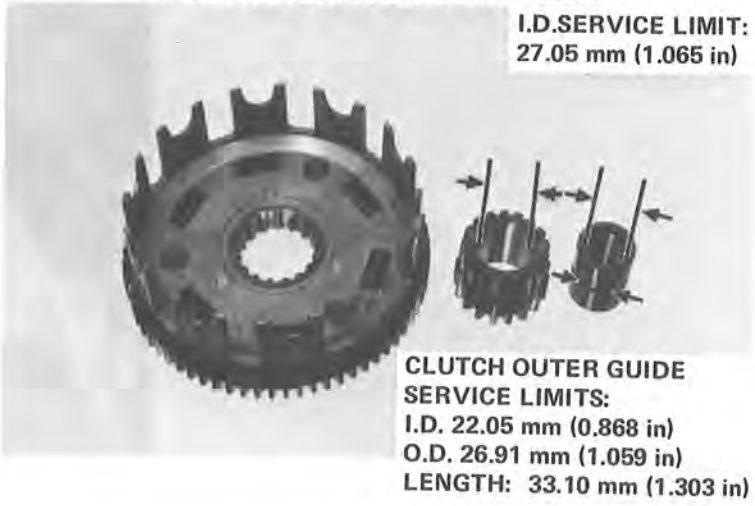
Check for plate warpage on a surface plate, using a feeler gauge.



CLUTCH OUTER AND OUTER GUIDE

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

Measure the I. D. of the primary drive gear and the O. D., I. D. and length of the outer guide.

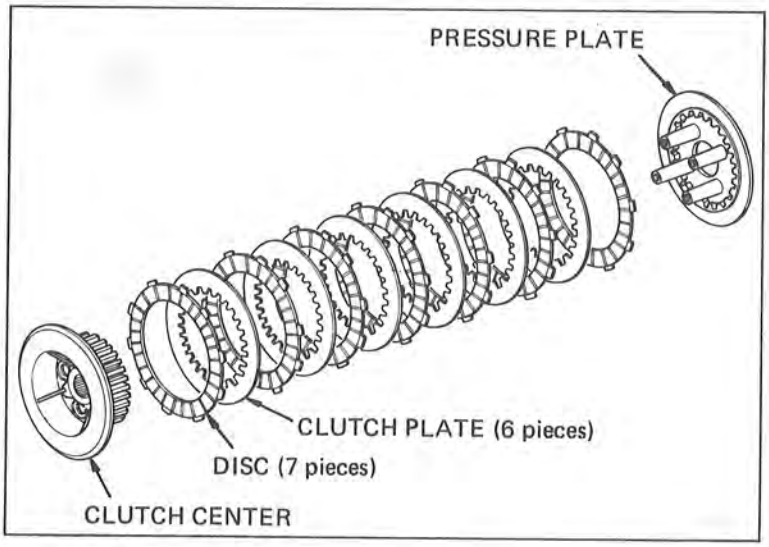


INSTALLATION

Install the clutch discs, plates and pressure plate on the center drum.

NOTE

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



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For example:
At a temperature of 30°C (86°F) and an altitude of 3.000 m (9840 ft), carburetor recommendations are as follows:

- Main jet
  152 x 0.92 = 139.8 (#140 is closest)
- Jet needle
  3 – 1 = 2 2nd groove
- Pilot screw opening
  2-1/4 – 1/2 = 1-3/4 1-3/4 turns out

Carburetor specifications (STD)

Identification No.	PD11B
Main jet	#152
Jet needle setting	3rd groove
Pilot screw opening	2-1/4

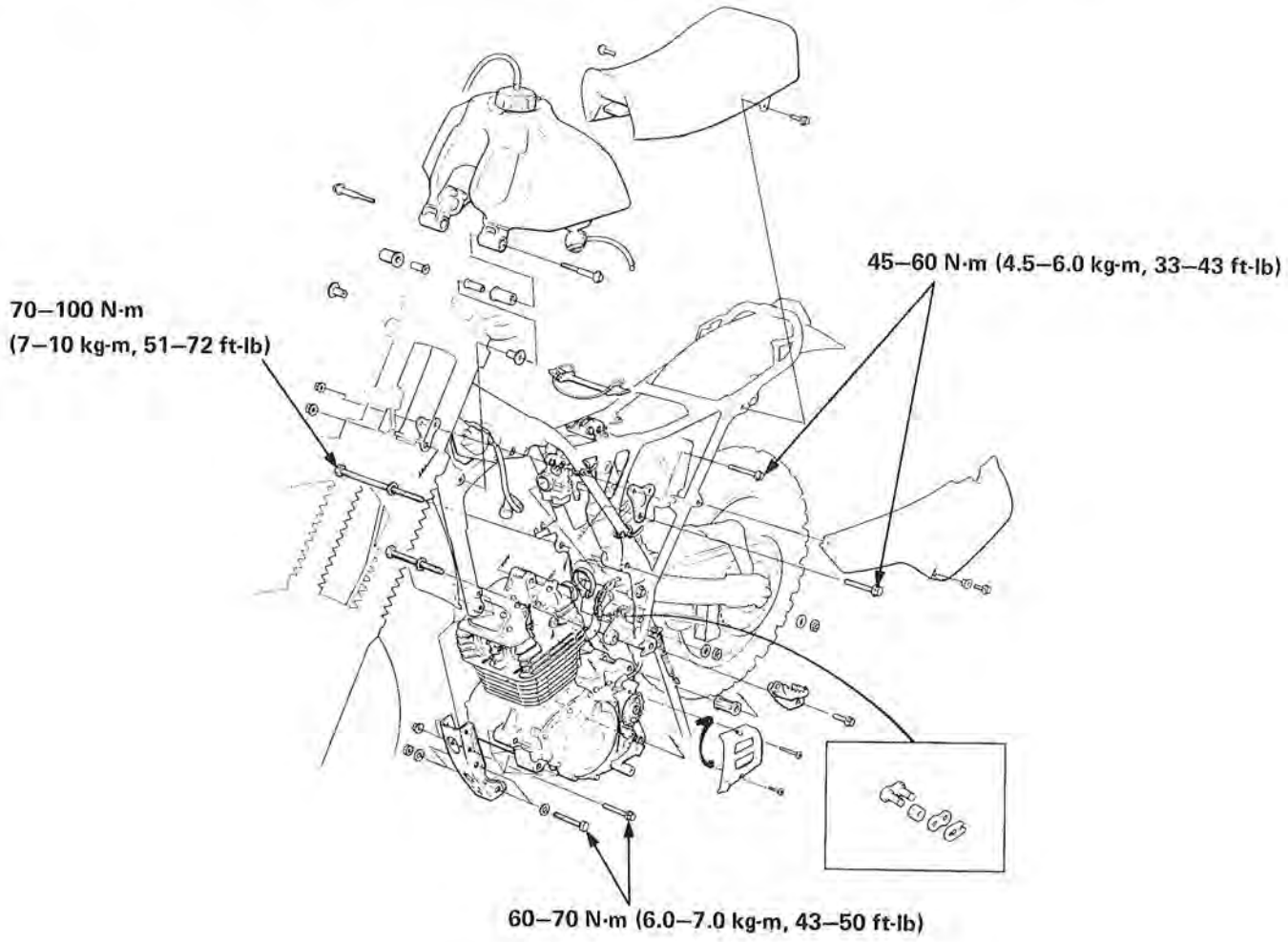
Optional main jets.
The following main jets are available for making carburetor adjustments:

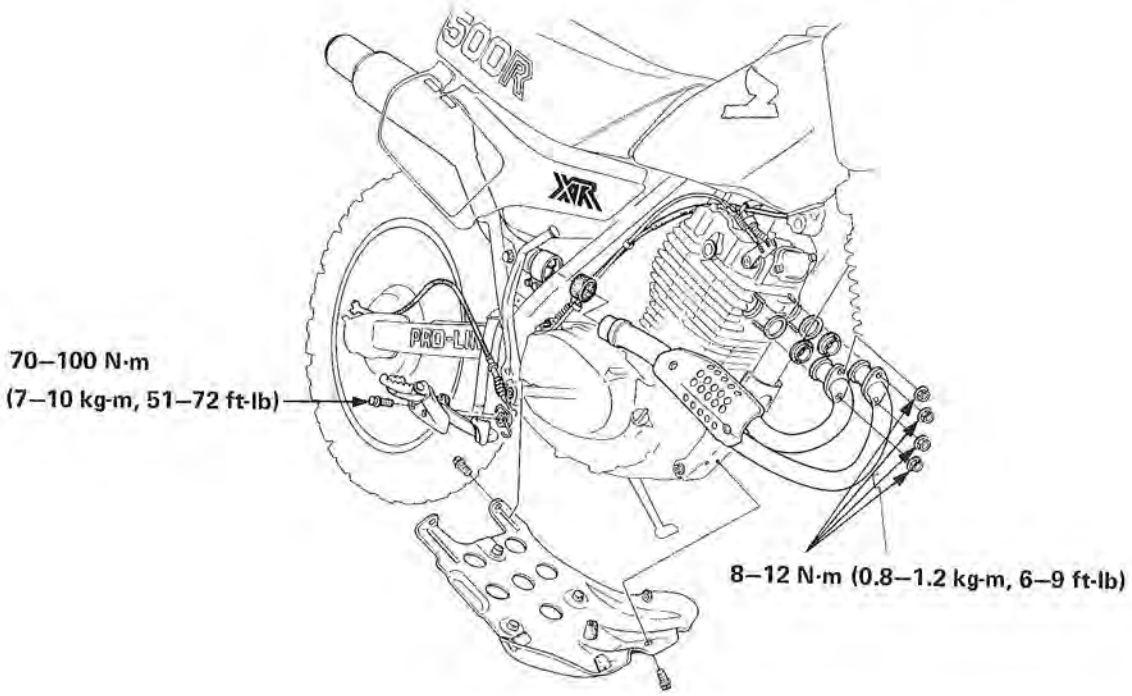
SIZE	PARTS NO.	SIZE	PARTS NO.
#138	99101-357-138	#148	99101-357-148
#140	99101-357-140	#150	99101-357-150
#142	99101-357-142	#155	99101-357-155
#145	99101-357-145	#158	99101-357-158

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SERVICE INFORMATION	5–1
ENGINE REMOVAL	5–2
ENGINE INSTALLATION	5–4

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- During removal and installation, support the vehicle with suitable blocks.
- A jack or adjustable support is required to maneuver the engine.

- Parts requiring engine removal for servicing:

Cylinder head	Section 6
Cylinder	Section 7
Crankshaft	Section 11
Balancer	Section 11
Transmission	Section 12

SPECIFICATIONS

Engine weight	40.5 kg (89.3 lb)
Oil capacity	2.0 lit (2.1 US qt, 1.8 Imp qt) after assembly 1.7 lit (1.8 US qt, 1.4 Imp qt) after draining

TORQUE VALUES

Engine hanger bolts:	
8 mm bolt	45 – 60 N·m (4.5 – 6.0 kg-m, 33 – 43 ft-lb)
10 mm bolt	60 – 70 N·m (6.0 – 7.0 kg-m, 43 – 50 ft-lb)
12 mm bolt	100 – 130 N·m (10.0 – 13.0 kg-m, 72 – 94 ft-lb)
Foot peg bolt	70 – 100 N·m (7.0 – 10.0 kg-m, 51 – 72 ft-lb)
Muffler band	15 – 25 N·m (1.5 – 2.5 kg-m, 11 – 18 ft-lb)
Exhaust manifold nut	8 – 12 N·m (0.8 – 1.2 kg-m, 6 – 9 ft-lb)
Rear axle nut	80 – 110 N·m (9.0 –11.0 kg-m, 65 – 80 ft-lb)

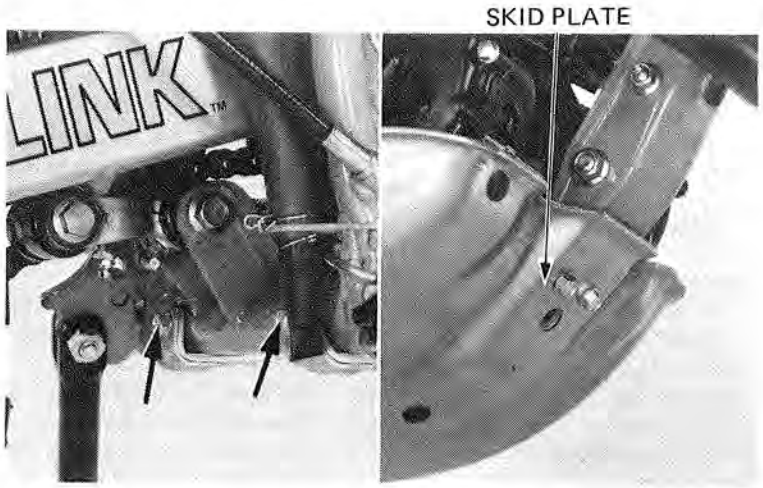
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ENGINE REMOVAL

Drain the oil from the engine.
Remove the seat and fuel tank.
Remove the left and right side covers.



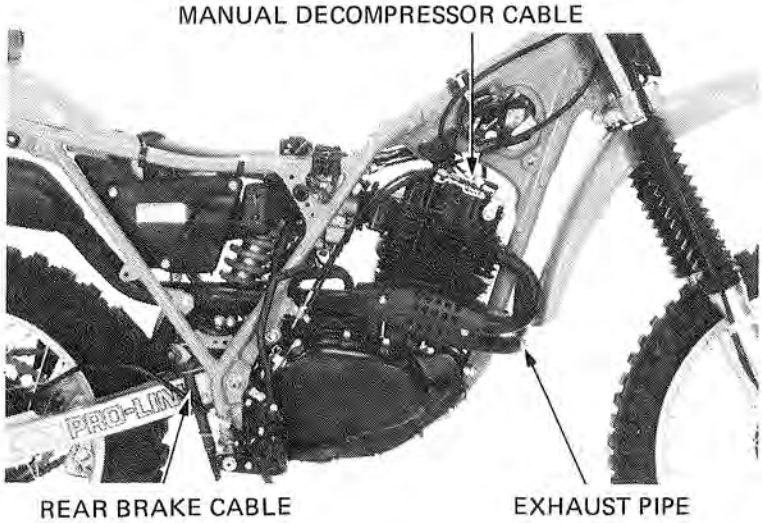
Remove the skid plate.



Disconnect the AC generator and pulse generator wire.

Disconnect the clutch cable.
Disconnect the manual starter decompressor cable.
Remove the exhaust pipe.

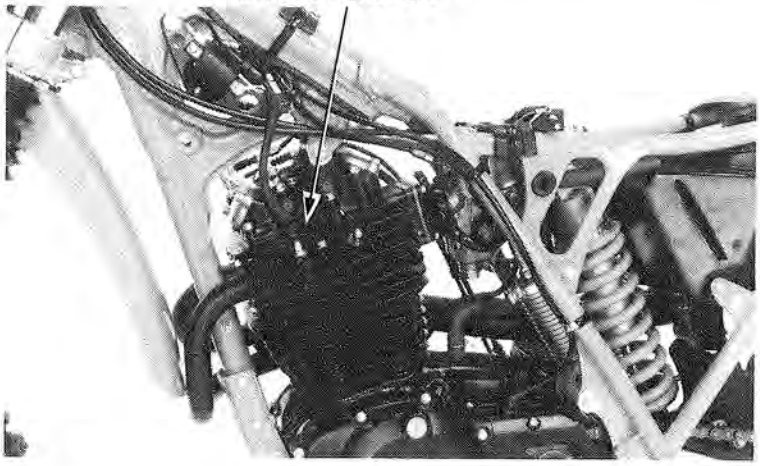
Disconnect the rear brake cable.
Remove the right foot peg and the brake pedal.



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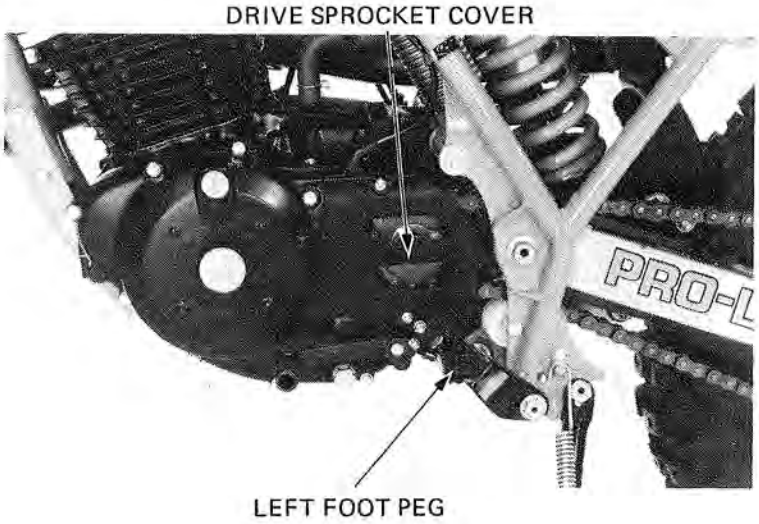
Remove the spark plug cap.
Remove the wire harness bands.

Disconnect the crankcase breather tube from the engine.
Remove the carburetor.



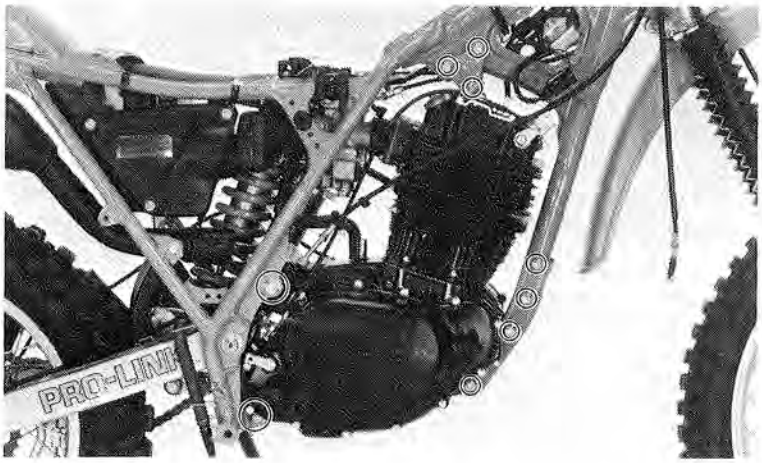
Remove the left foot peg.
Loosen the rear axle nut.
Turn the chain adjuster to loosen the chain.
Remove the drive sprocket cover.

Remove the chain clip and the master link.



Place a jack or padded block under the engine.
Remove the upper engine hanger bolts.

Remove the front engine hanger bracket.
Remove the rear engine hanger bolts.
Lower the jack and remove the engine.



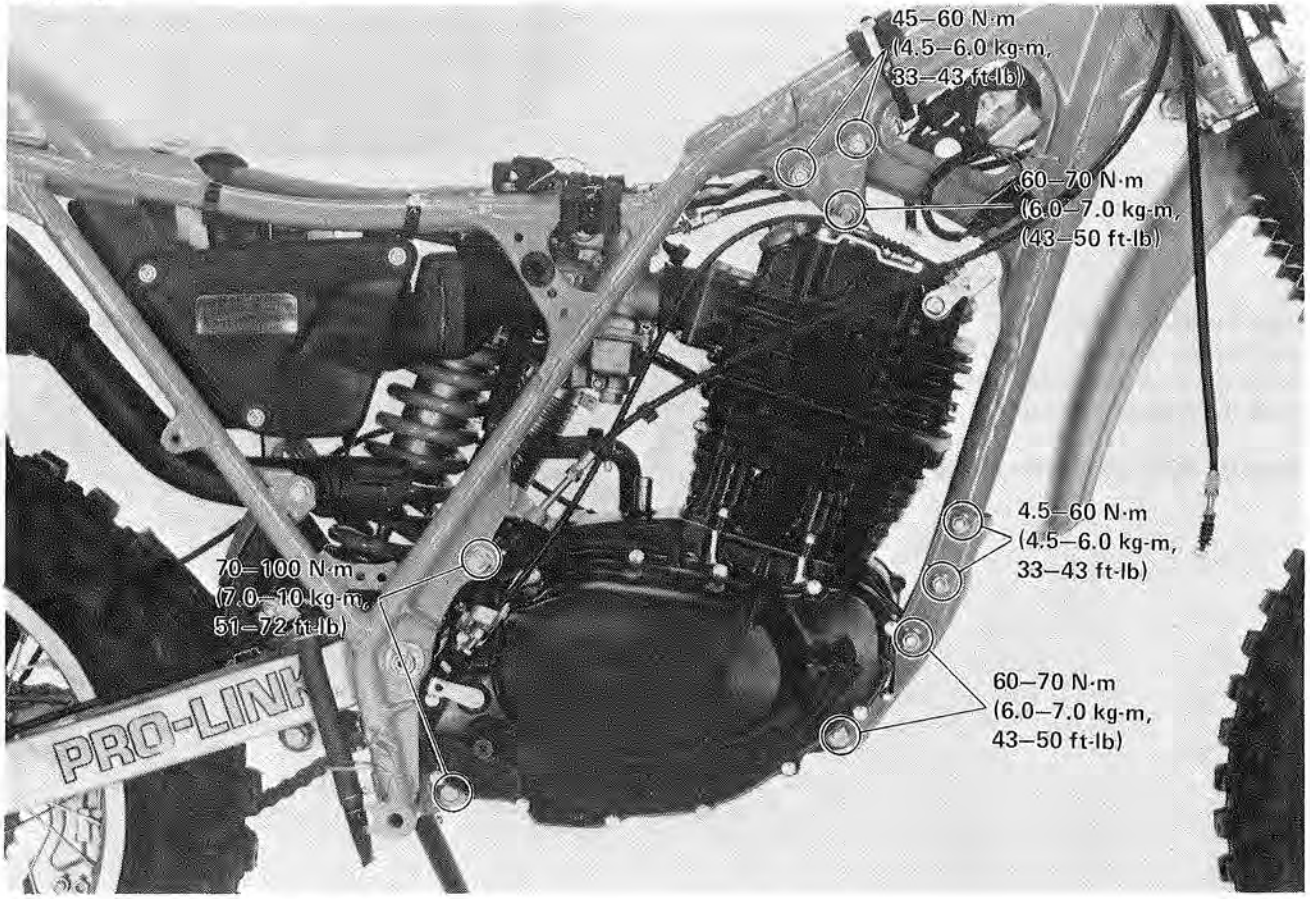
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ENGINE INSTALLATION

Install the engine in the reverse order of removal, noting the following:
Replace any damaged or leaking exhaust pipe gaskets.

Tighten all bolts to the proper torque specifications.

Route all wire harnesses and cables properly (Page 1–8 and –9).



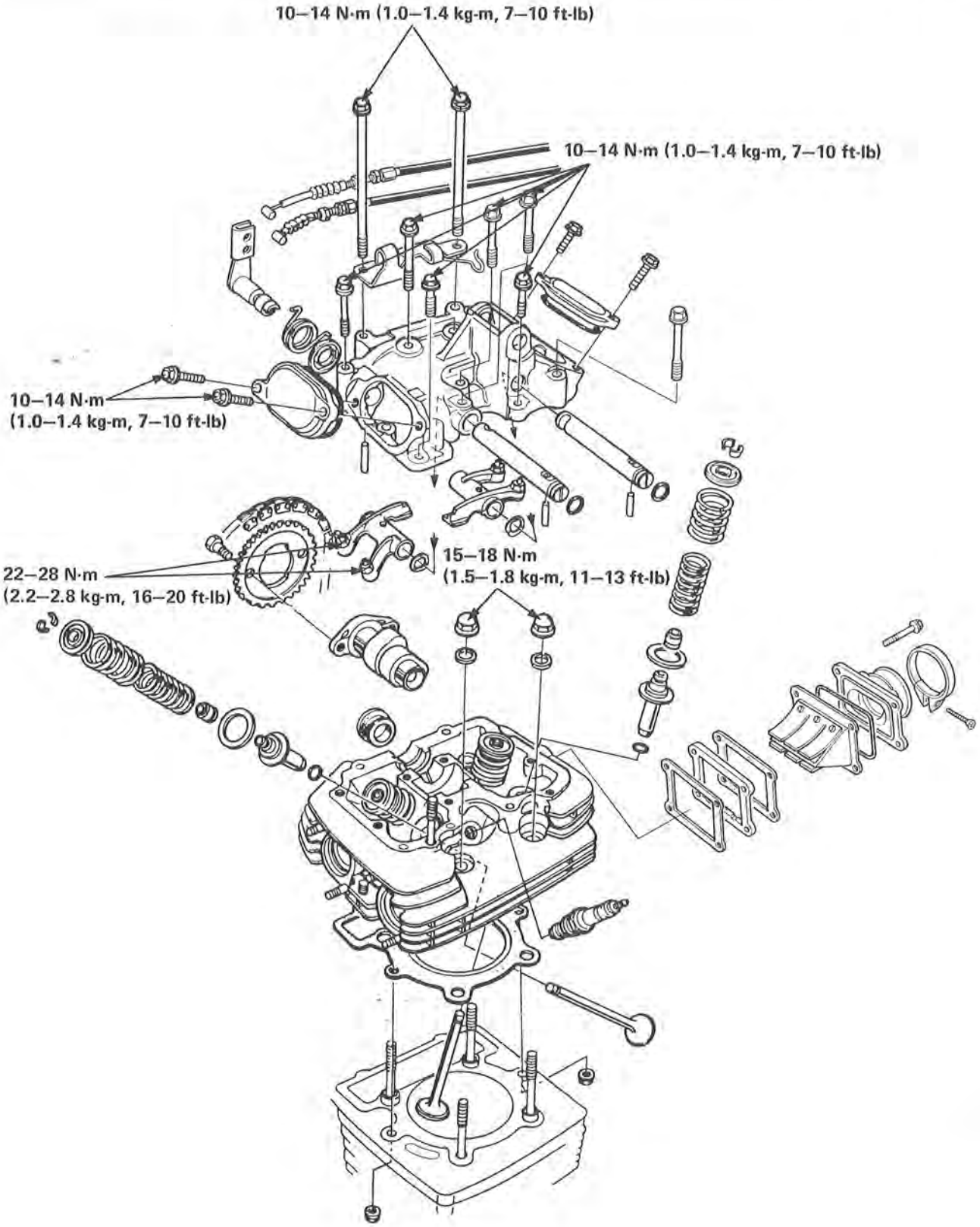
Perform the following inspections and adjustments:

Engine oil	(Page 2–2)
Throttle grip free play	(Page 3–5)
Drive chain	(Page 3–13)
Rear brake pedal free play	(Page 3–17)
Clutch lever free play	(Page 3–18)
Check all electrical equipment.	

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CYLINDER HEAD COVER INSTALLATION	6–20

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section covers maintenance of the cylinder head, valves, camshaft and rocker arms.
- The engine must be removed from the frame for top-end service.
- Camshaft lubricating oil is fed to the cylinder head through an oil control orifice in the engine case. Be sure these orifices are not clogged and that the O-rings and dowel pins are in place before installing the cylinder head.
- 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 to lubricate the cam.

TOOLS

SPECIAL

Valve guide reamer	07984-6570100

COMMON

Valve guide remover 6.6 mm	07742–0010200
Valve spring compressor	07757–0010000 (or 07957–3290001)
Valve guide driver B	07742–0020200 (or 07942–3290200)

TORQUE VALUES

Cylinder head nut	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 adjuster cover	10 – 14 N·m (1.0 – 1.4 kg-m, 7 – 10 ft-lb)
Cylinder head cover	10 – 14 N·m (1.0 – 1.4 kg-m, 7 – 10 ft-lb)
Valve adjuster lock nut	15 – 18 N·m (1.5 – 1.8 kg-m, 11 – 13 ft-lb)

VALVE SEAT CUTTER (The following are commercially available in the U.S.A.)

Valve seat cutter	35 mm	07780–0010400
Valve seat cutter	40 mm	07780–0010500
Valve flat cutter	35 mm	07780–0012300
Valve flat cutter	38.5 mm	00780–0012400
Valve interior cutter	30 mm	00780–0014000
Valve interior cutter	37.5 mm	00780–0014100
Cutter holder	6.6 mm	00781–0010200

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SPECIFICATIONS

ITEM			STANDARD	SERVICE LIMIT
Compression			12.5 ± 1.5 kg/cm² (172 ± 21 psi)	———
Camshaft	Cam lift	IN	36.431 mm (1.4343 in)	36.23 mm (1.426 in)
		EX	36.466 mm (1.4357 in)	36.27 mm (1.428 in)
	Journal O.D.	Right	23.954–23.975 mm (0.9431–0.9439 in)	23.9 mm (0.94 in)
		Left	19.954–19.975 mm (0.7856–0.7864 in)	19.9 mm (0.78 in)
	Run out		———	0.04 mm (0.002 in)
	Side clearance		0.05–0.25 mm (0.002–0.010 in)	0.4 mm (0.02 in)
Rocker arm	I.D.		12.000–12.018 mm (0.4724–0.4731 in)	12.05 mm (0.474 in)
Rocker arm shaft	O.D.		11.966–11.984 mm (0.4711–0.4718 in)	11.91 mm (0.469 in)
Rocker arm shaft-to-arm clearance			0.016–0.052 mm (0.0006–0.0020 in)	0.14 mm (0.006 in)
Valve spring	Free length	Inner	38.1 mm (1.50 in)	37.0 mm (1.46 in)
		Outer	36.24 mm (1.427 in)	35.3 mm (1.39 in)
	Preload/length	Inner	7.49 ± 0.5 kg/26 mm (16.5 ± 1.1 lb/1.02 in)	———
		Outer	13.19 ± 0.8 kg/29.0 mm (29.1 ± 1.7 lb/1.14 in)	———
Valve	Stem O.D.	IN	6.575–6.590 mm (0.2589–0.2594 in)	6.565 mm (0.2585 in)
		EX	6.560–6.570 mm (0.2583–0.2587 in)	6.550 mm (0.2579 in)
	Guide I.D.	IN	6.600–6.615 mm (0.2598–0.2421 in)	6.63 mm (0.261 in)
		EX	6.600–6.615 mm (0.2598–0.2421 in)	6.63 mm (0.261 in)
	Stem-to-guide Clearance	IN	0.010–0.040 mm (0.0004–0.0016 in)	0.065 mm (0.0026 in)
		EX	0.030–0.055 mm (0.0012–0.0022 in)	0.080 mm (0.0031 in)
	Valve face width	IN/EX	1.2–1.4 mm (0.05–0.06 in)	2.0 mm (0.08 in)
Cylinder head	Warpage		———	0.10 mm (0.004 in)
	Valve seat width	IN/EX	1.2–1.4 mm (0.05–0.06 in)	2.0 mm (0.08 in)
Camshaft bearing	I.D.	Left	20.000–20.021 mm (0.7874–0.7882 in)	20.07 mm (0.790 in)
		Right	24.000–24.021 mm (0.9449–0.9457 in)	24.07 mm (0.948 in)

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TROUBLESHOOTING

Engine top-end problems are usually performance-related and can usually be diagnosed by a compression test. Engine noises can usually be traced to the top-end with a sounding rod or stethoscope.

Uneven or Low Compression

1. Valve
   - Incorrect valve adjustment
   - Burned or bent valves
   - Incorrect valve timing
   - Broken valve spring
2. Cylinder head
   - Leaking or damaged head gasket
   - Warped or cracked cylinder head
3. Cylinder and piston (Refer to Section 7)
4. Decompressor out of adjustment

High Compression

1. Excessive carbon build-up on piston crown or combustion chamber

Excessive Noise

1. Incorrect valve adjustment
2. Sticking valve or broken valve spring
3. Damaged or worn rocker arm or camshaft
4. Loose or worn cam chain
5. Worn or damaged cam chain tensioner
6. Loose balancer chain
7. Worn cam sprocket teeth

Poor Idling

1. Compression too low
2. Decompressor out of adjustment

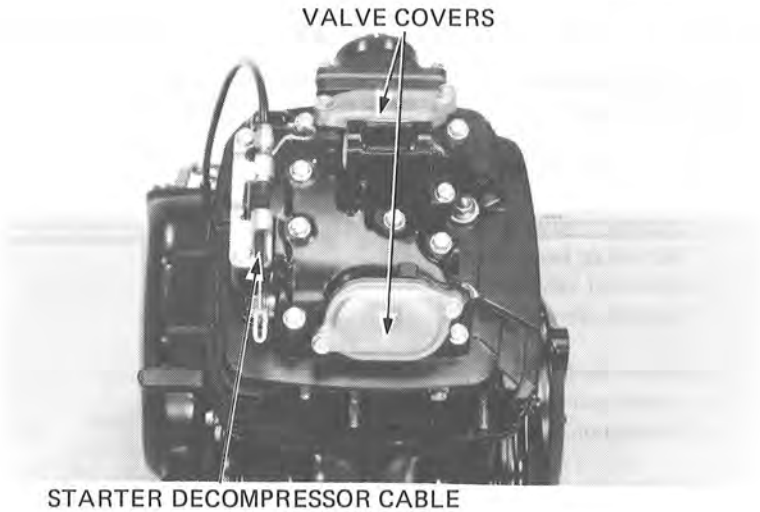
Hard Kick Starting

1. Decompressor out of adjustment

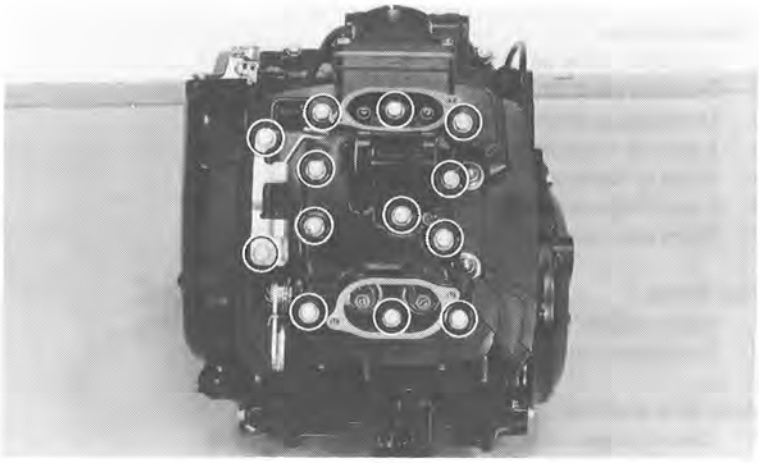
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CYLINDER HEAD COVER REMOVAL

Remove the engine from the frame (See Section 5).
Loosen the decompressor cable lock nut and remove the cable from the holder.
Disconnect the cable from the valve lifter lever.
Remove the valve cover.



Remove the cylinder head cover bolts and nut.
Remove the cylinder head cover.

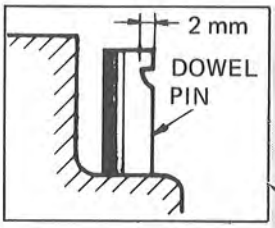


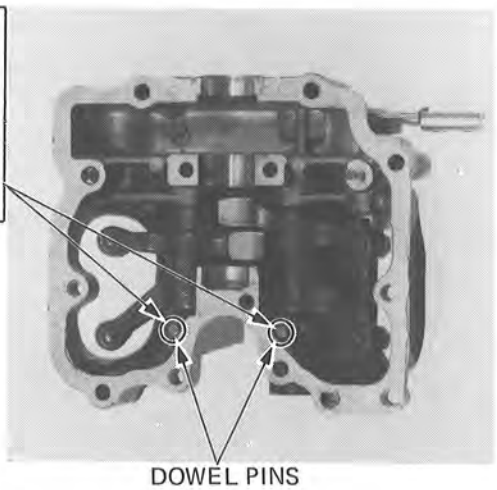
CYLINDER HEAD COVER DISASSEMBLY

Notch the dowel pins as shown using a rotary grinder.

CAUTION:

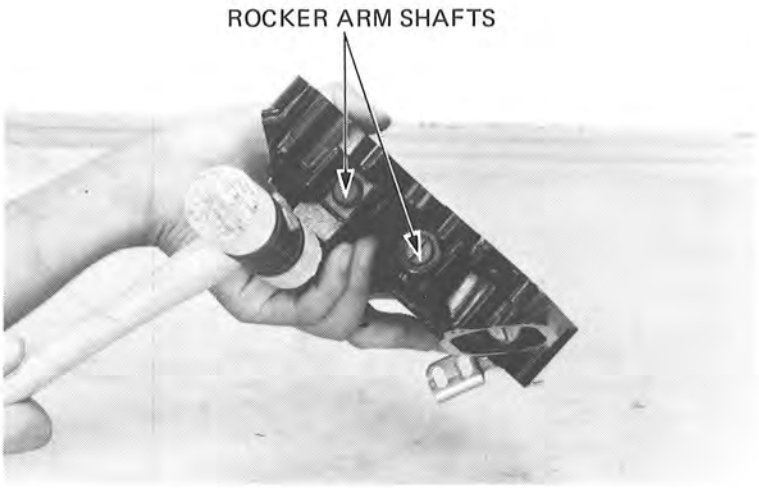
Be careful not to damage the cylinder head cover.



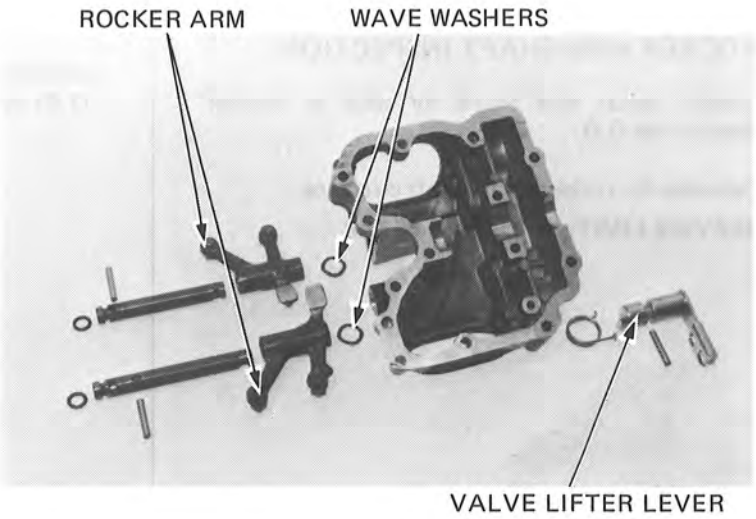


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Remove the rocker arm shafts by tapping them with a plastic hammer.



Remove the rocker arms and wave washers from the shafts.
Remove the valve lifter lever and spring.



ROCKER ARM INSPECTION

Inspect the rocker arms for damage, wear or clogged oil holes.

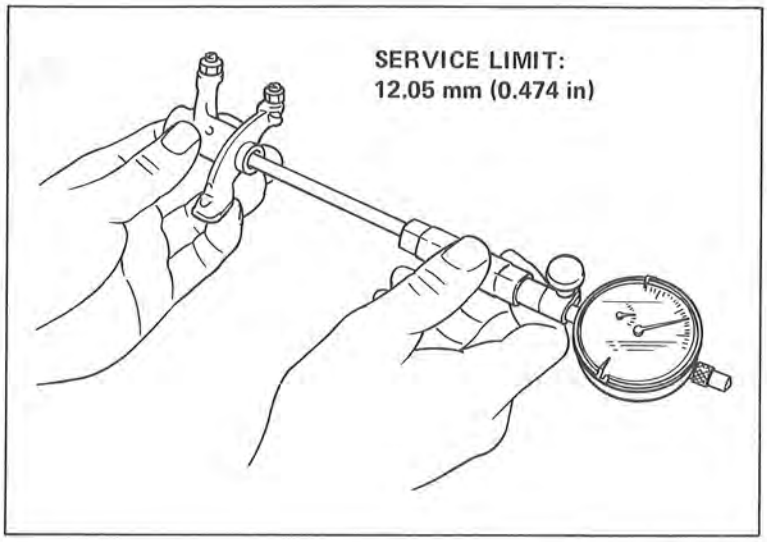
NOTE

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



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Measure the I.D. of each rocker arm.

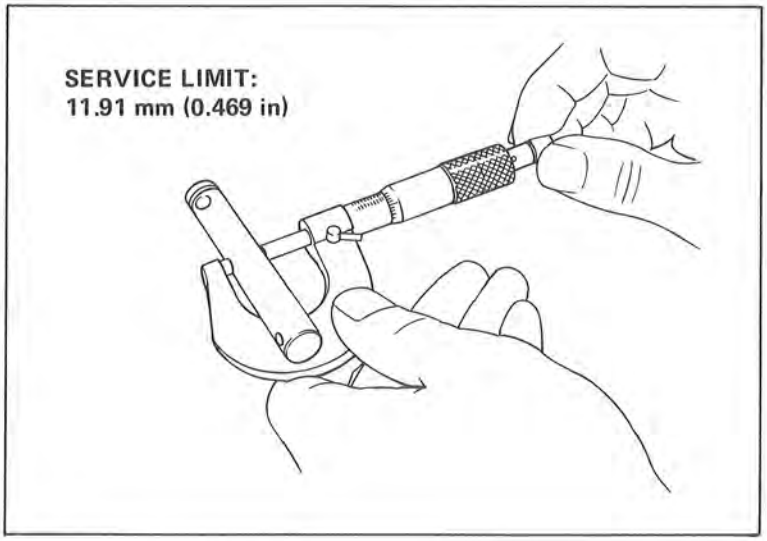


ROCKER ARM SHAFT INSPECTION

Inspect rocker arm shafts for wear or damage. Measure the O.D.

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.14 mm (0.006 in)



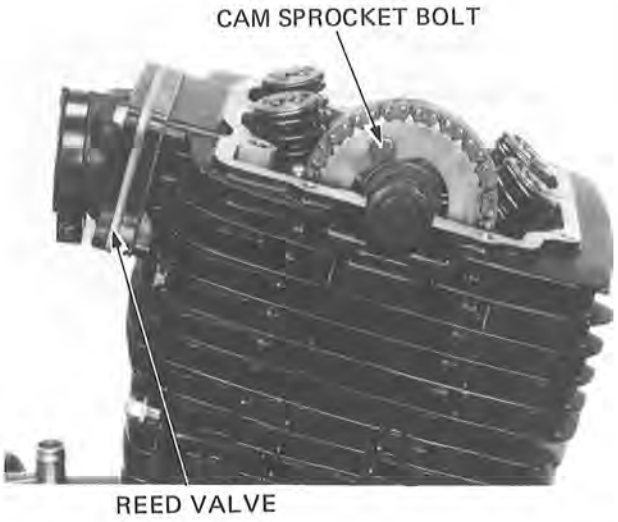
CAMSHAFT REMOVAL

Remove the crankshaft hole cap and timing hole cap.
Remove the reed valve.

Remove the camshaft plug.
Remove the cam sprocket bolts.

NOTE

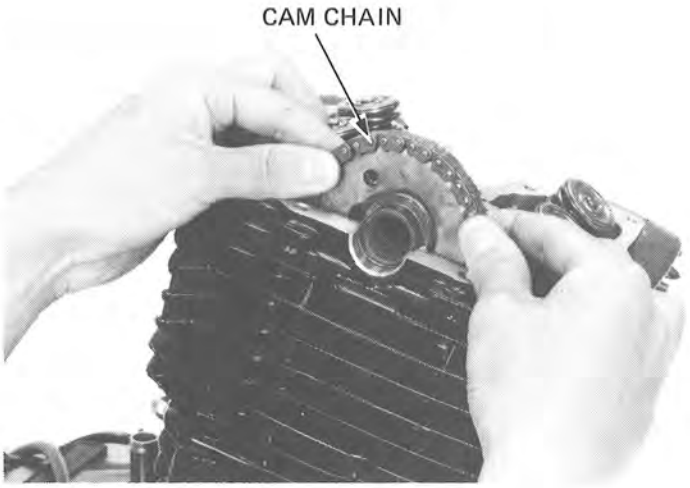
Do not drop the bolts into the crankcase.



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Turn the crankshaft counterclockwise until the cam sprocket cut-outs are even with the end of the cylinder head as shown.
Pull the cam sprocket off the camshaft and remove the cam chain from the cam sprocket.

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



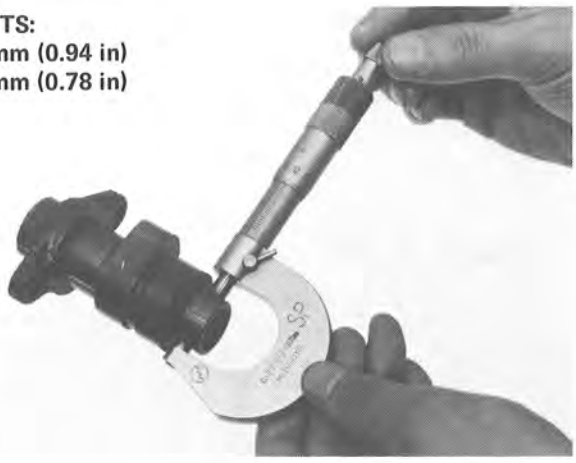
Pull the camshaft up as shown and remove the sprocket and camshaft.



CAMSHAFT INSPECTION

Check the camshaft journals for wear or damage. Measure the O.D. of each journal.

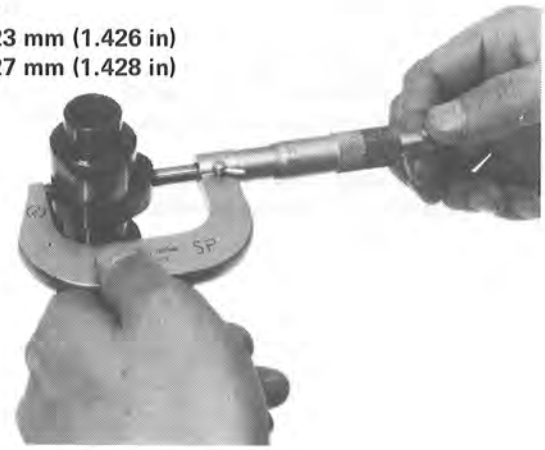
SERVICE LIMITS:
RIGHT: 23.9 mm (0.94 in)
LEFT : 19.9 mm (0.78 in)



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Check each cam lobe for wear or damage.
Measure the cam lobe height.

SERVICE LIMITS:
INTAKE : 36.23 mm (1.426 in)
EXHAUST : 36.27 mm (1.428 in)



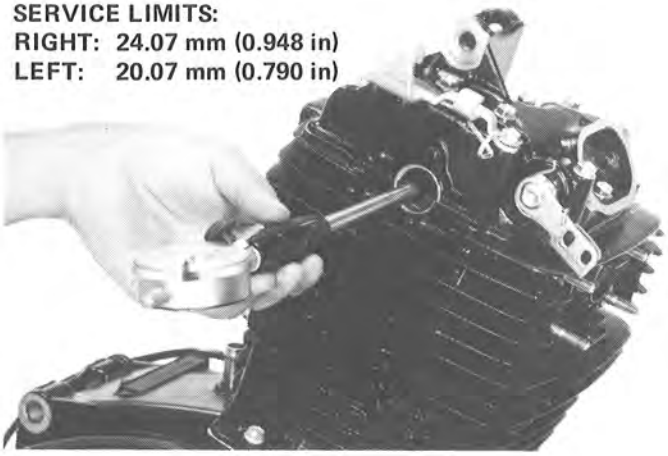
CAMSHAFT BEARING INSPECTION

Check each camshaft bearing for wear or damage.
Install the cylinder head cover.

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

Measure the camshaft bearing I.D.

SERVICE LIMITS:
RIGHT: 24.07 mm (0.948 in)
LEFT: 20.07 mm (0.790 in)



REED VALVE INSPECTION

Check the reed valve for wear or damage.
Check the operation of reed valve.

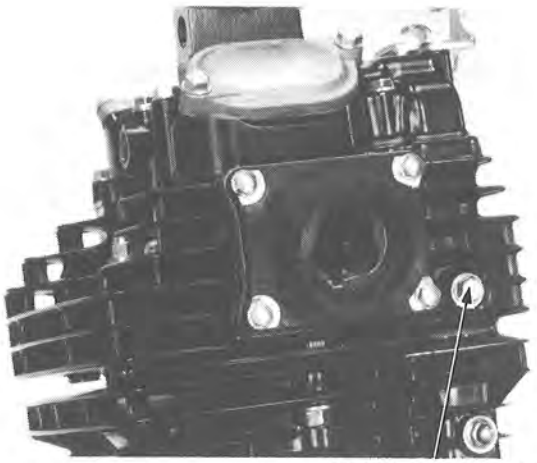


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CYLINDER HEAD REMOVAL

Remove the cylinder head cover.
Remove the camshaft (Page 6–6).

Remove the cylinder head nuts.
Remove the tensioner bolt and washer.


TENSIONER BOLT

Remove the cap nuts and washer.

NOTE

Loosen the nuts in a crisscross pattern in two or more steps.

Remove the cylinder head.

NOTE

Avoid damaging the cylinder head mating surfaces.



CYLINDER HEAD DISASSEMBLY

Remove the valve spring cotters, retainers, springs, and valves with a valve spring compressor.

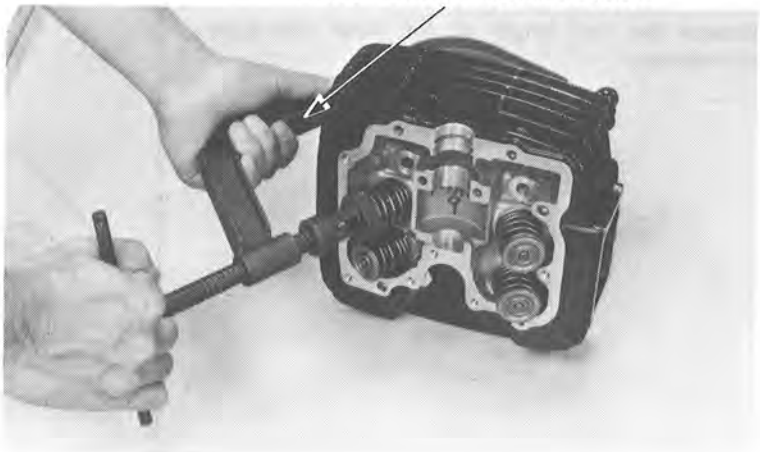
CAUTION:

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

NOTE

Mark all parts to ensure correct assembly.

VALVE SPRING COMPRESSOR



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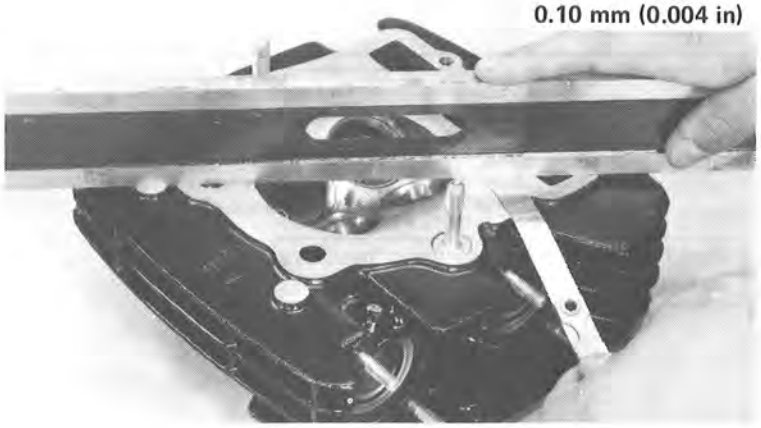
Remove the carbon deposits from the combustion chambers.
Clean any gasket material from the cylinder head.



CYLINDER HEAD INSPECTION

Check the spark plug hole and valve areas for cracks.
Check the cylinder head diagonally two ways for warpage with a straight edge and a feeler gauge.

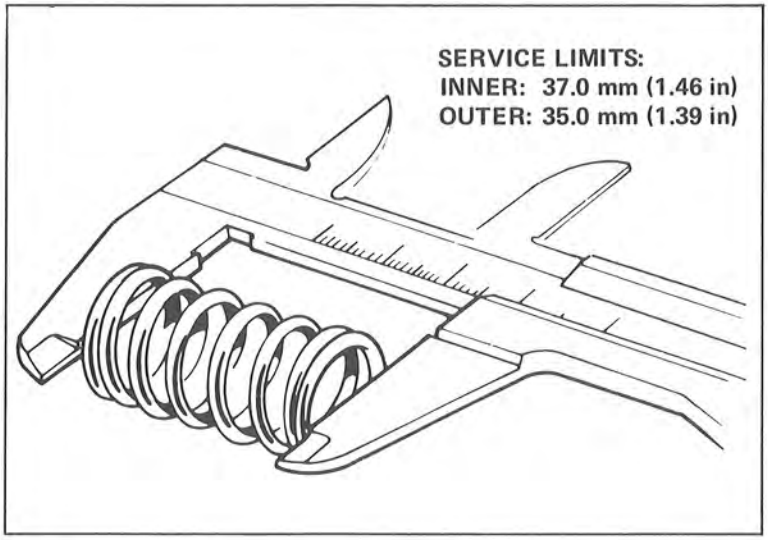
SERVICE LIMIT:
0.10 mm (0.004 in)



VALVE SPRING INSPECTION

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

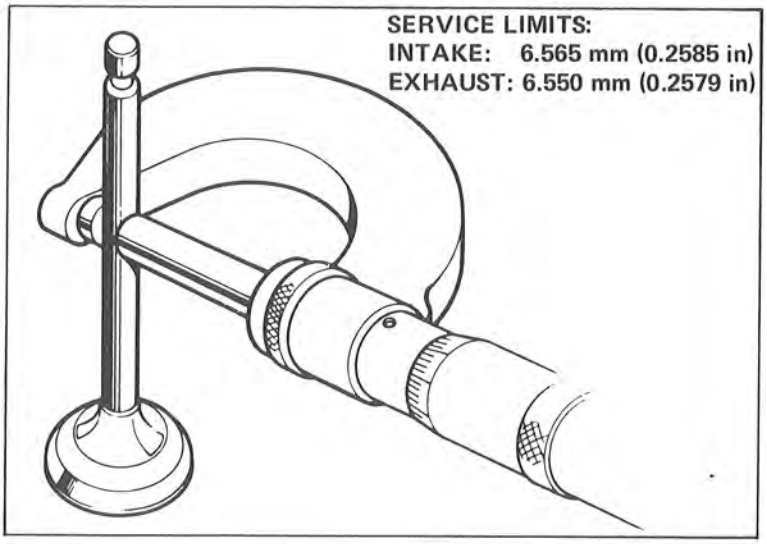
SERVICE LIMITS:
INNER: 37.0 mm (1.46 in)
OUTER: 35.0 mm (1.39 in)



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VALVE/VALVE GUIDE INSPECTION

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



Measure and record each valve guide I.D. using a ball gauge or inside micrometer.

NOTE

Ream the guides to remove the carbon build-up before checking the valve guide I.D.

Calculate the stem-to-guide clearance.

VALVE STEM-TO-GUIDE CLEARANCE
SERVICE LIMITS:
INTAKE: 0.065 mm (0.0026 in)
EXHAUST: 0.080 mm (0.0031 in)

NOTE

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



If stem-to-guide clearance still exceeds the service limit when new guides are installed, replace the valves.

NOTE

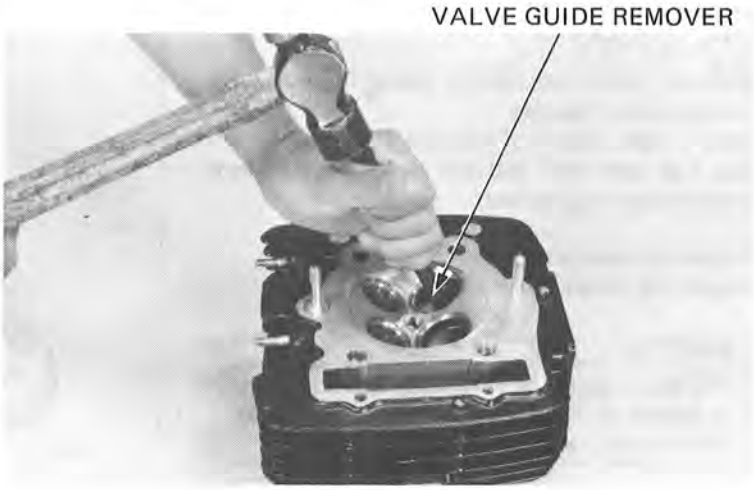
Reface valve seats whenever new valve guides are installed.

VALVE GUIDE REPLACEMENT

Support the cylinder head and drive out the guide from the valve port.

NOTE

When driving out the valve guide, do not damage the head.



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Install a new valve guide from the top of the head.

NOTE

Inspect the valve guide for damage.



Ream the new valve guides after installation.

NOTE

Use cutting oil on the reamer during this operation.
Rotate the reamer while inserting and removing it.



Reface the valve seat (Page 6–13).
Clean the cylinder head thoroughly to remove any metal particles.

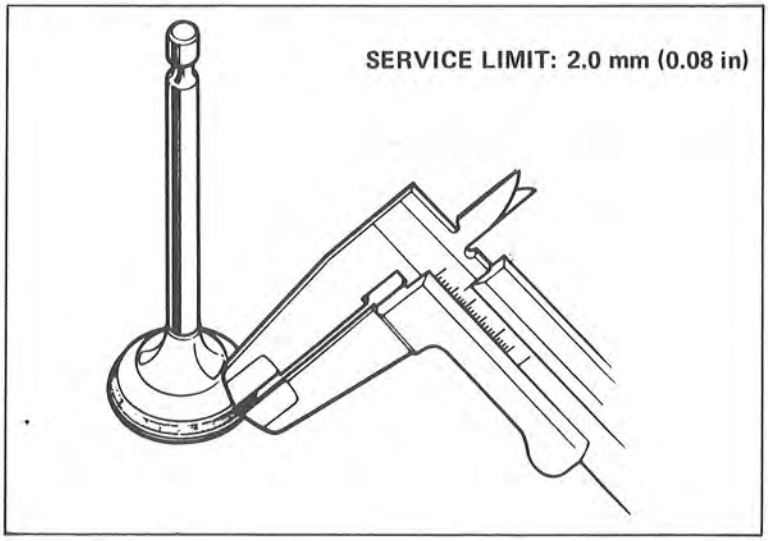
VALVE SEAT INSPECTION AND REFACING

Clean all intake and exhaust valves thoroughly to remove carbon deposits.
Apply a light coating of Prussian Blue to each valve face. Lap each valve and seat using a rubber hose or other hand-lapping tool.

Remove the valve and inspect the face.
Measure the valve seat.

CAUTION:

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



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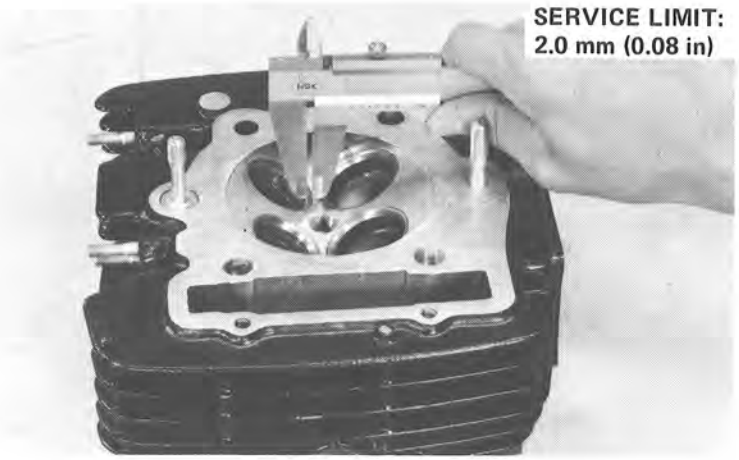
Inspect each valve seat.

STANDARD: 1.2–1.4 mm (0.05–0.06 in)

If the seat is too wide, too narrow, or has low spots, the seat must be refinished for good sealing.

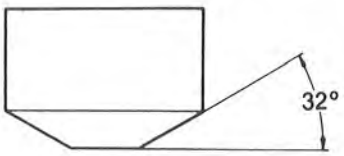
NOTE

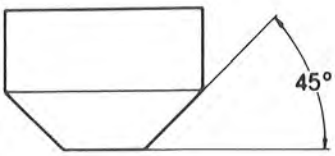
Follow the refacer manufacturer's operating instructions.

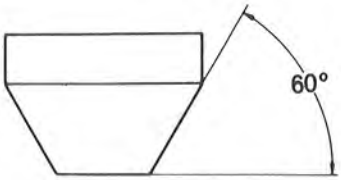


SERVICE LIMIT: 2.0 mm (0.08 in)

VALVE SEAT CUTTERS





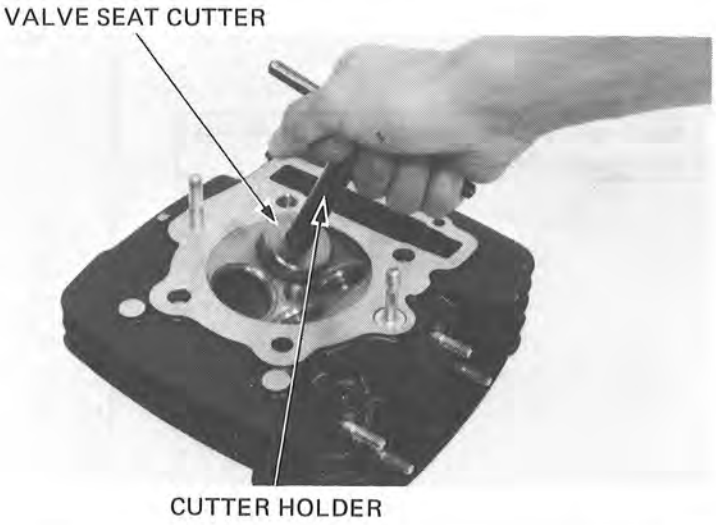


VALVE SEAT GRINDING

Using a 45 degree cutter, remove any roughness or irregularities from the seat.

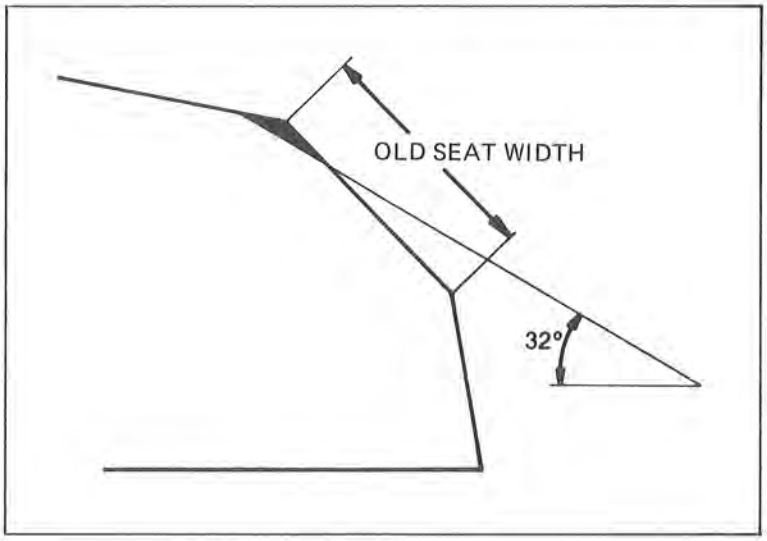
NOTE

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

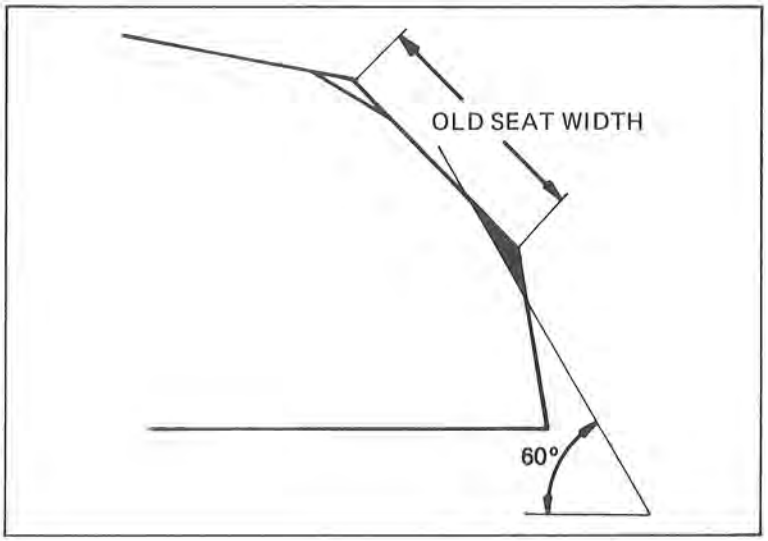


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Using a 32 degree cutter, remove 1/4 of the existing valve seat material.



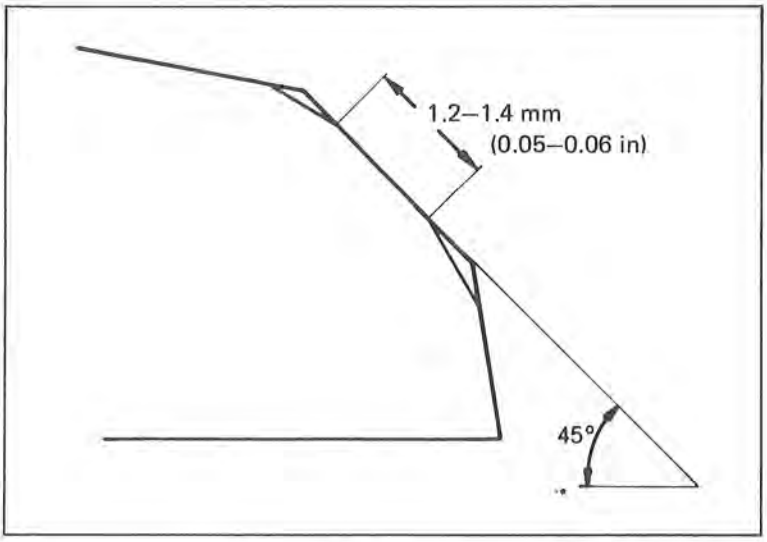
Use a 60 degree cutter and remove the bottom 1/4 of the old seat.



Use a 45 degree finish cutter and cut the seat to the proper width.

NOTE

Make sure that all pitting and irregularities are removed. Refinish if necessary.

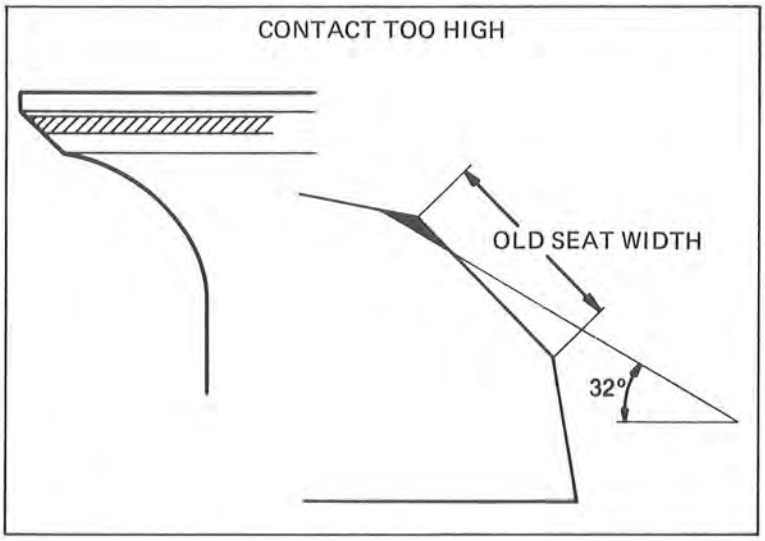


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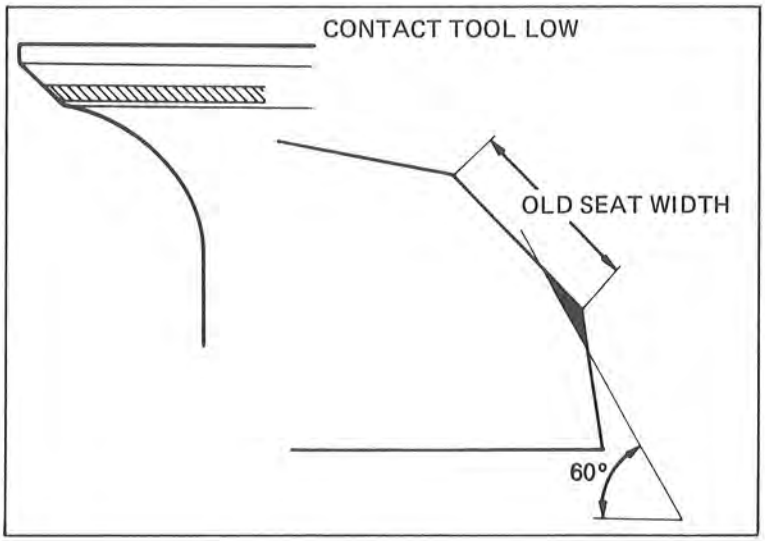
NOTE

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

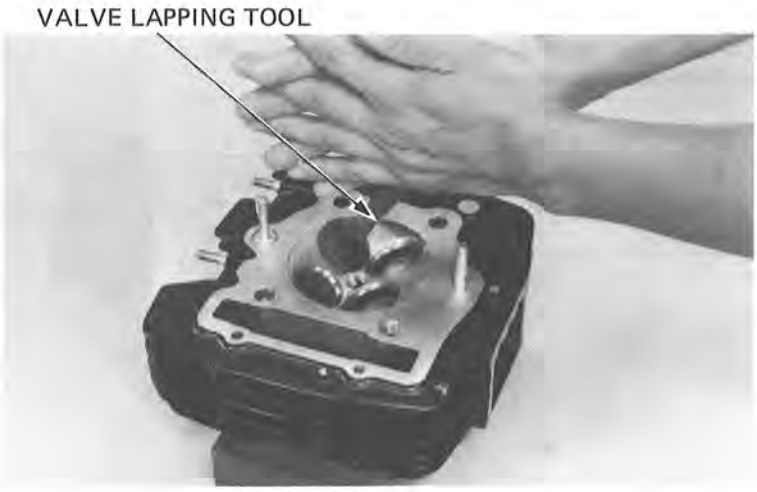
Apply a thin coating of Prussian Blue to the valve seat.
Press the valve through the valve guide and onto the seat to make a clear pattern.
Remove to inspect the valve.
If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.



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.



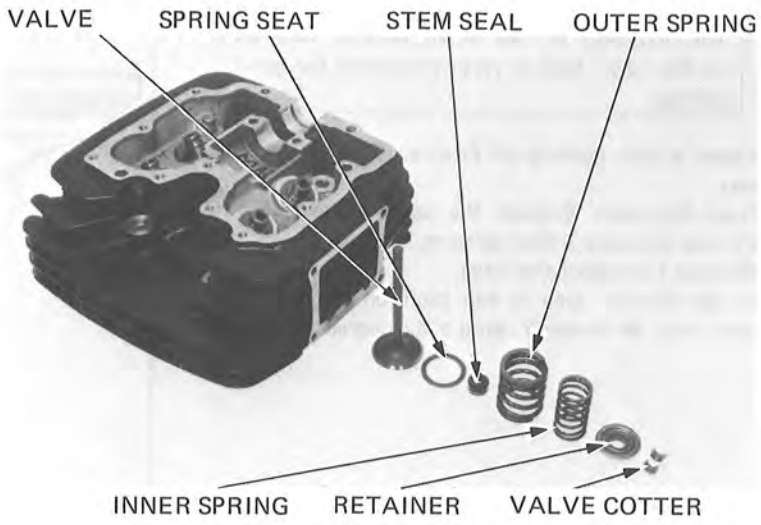
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CYLINDER HEAD ASSEMBLY

NOTE

Install new valve stem seals when assembling.

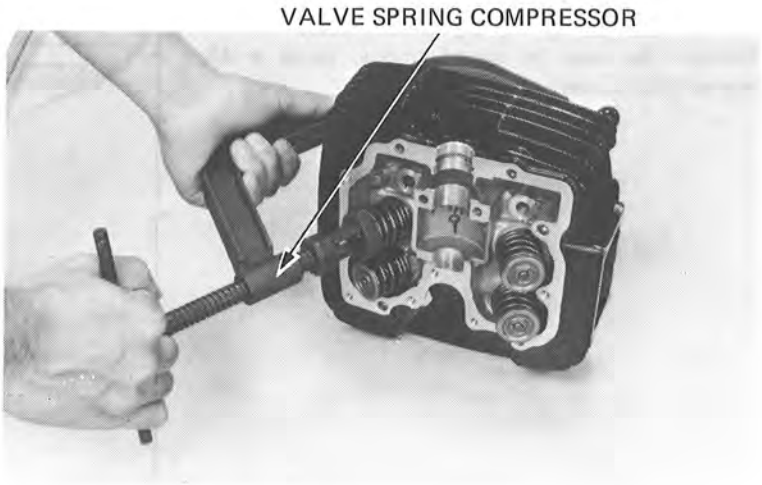
Lubricate each valve stem with oil.
Insert the valves into the valve guides.
Install the valve springs and retainers.



Install the valve cotters.

CAUTION:

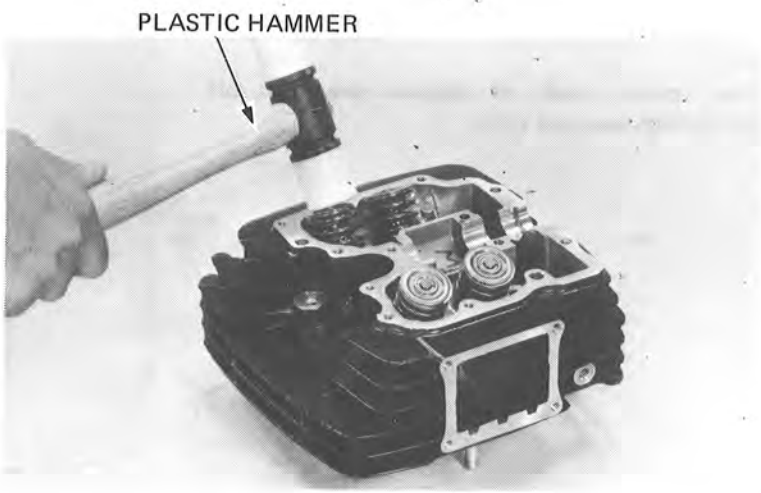
To prevent loss of tension, do not compress the valve spring more than necessary.



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

CAUTION:

Support the cylinder head above the working bench surface to prevent possible valve damage.



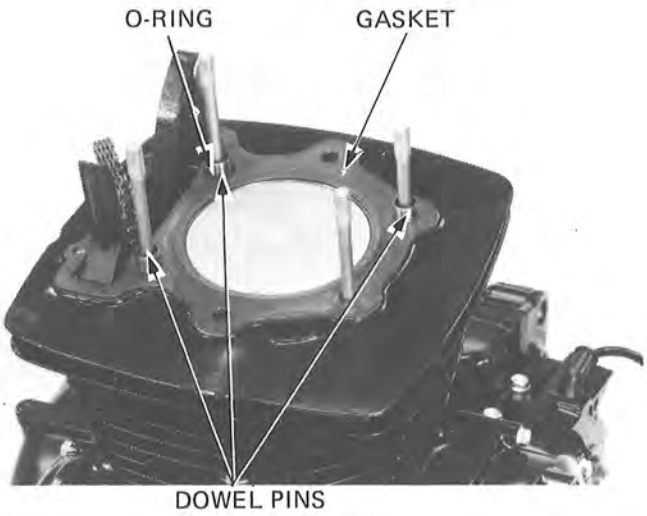
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CYLINDER HEAD INSTALLATION

Loosen the cam chain tensioner lock nut and pull the tensioner all the way up.
Tighten the lock nut.



Clean any gasket material from the cylinder surface.
Install the new O-rings, dowel pins and a new gasket.



Install the cylinder head.
Tighten the cylinder head nuts in a crisscross pattern in two or more steps.

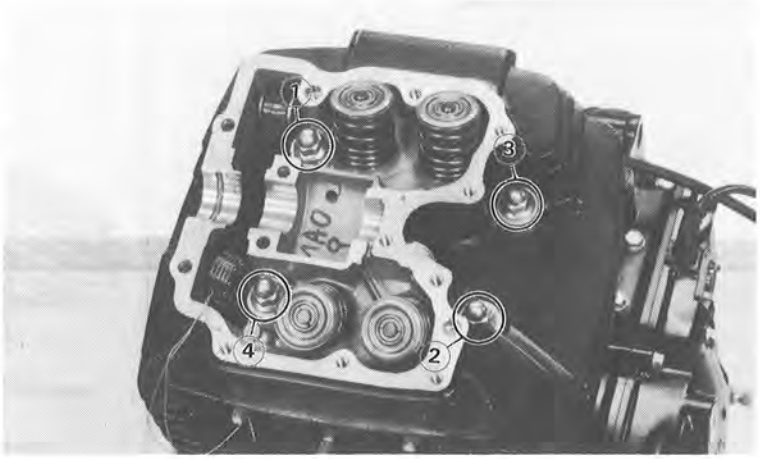
TORQUE: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

Install the carburetor insulator and reed valve.

NOTE

Install the insulator with the groove facing up.

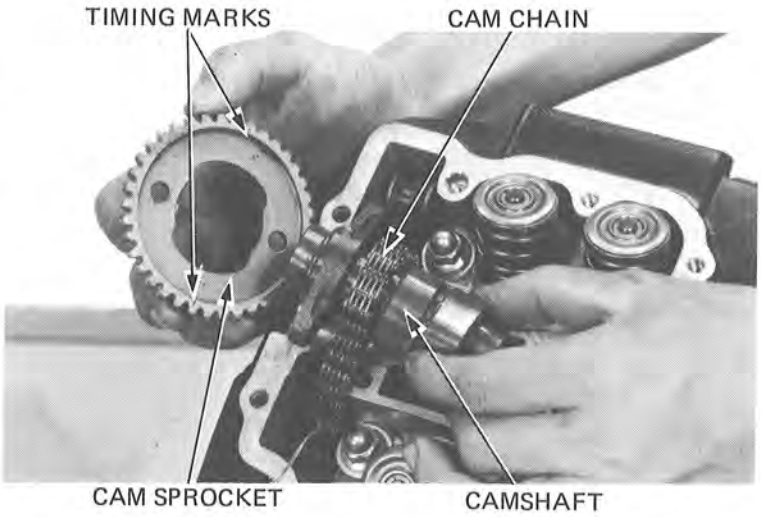
Install the tensioner bolt.



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CAMSHAFT INSTALLATION

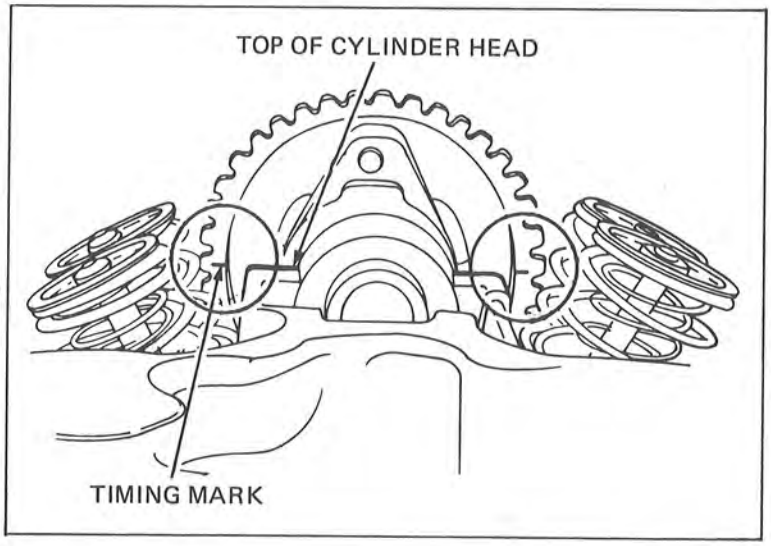
Coat the camshaft journals with molybdenum disulfide grease.
Route the camshaft through the cam chain.
Install the cam sprocket on the camshaft with the timing marks facing inside.



Turn the crankshaft and align the T mark on the generator rotor with the index mark on the left crankcase cover.



Align the timing marks on the cam sprocket with the top of the cylinder head.

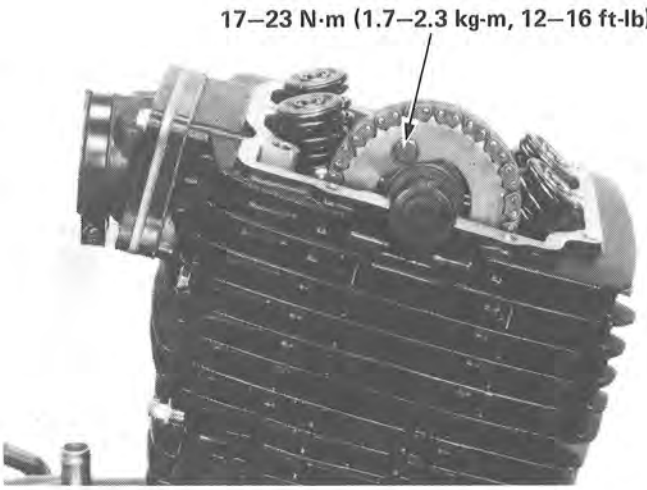


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Slide the chain over the cam sprocket without rotating the sprocket.

Tighten the cam sprocket bolts.

TORQUE: 17–23 N·m (1.7–2.3 kg-m, 12–16 ft-lb)

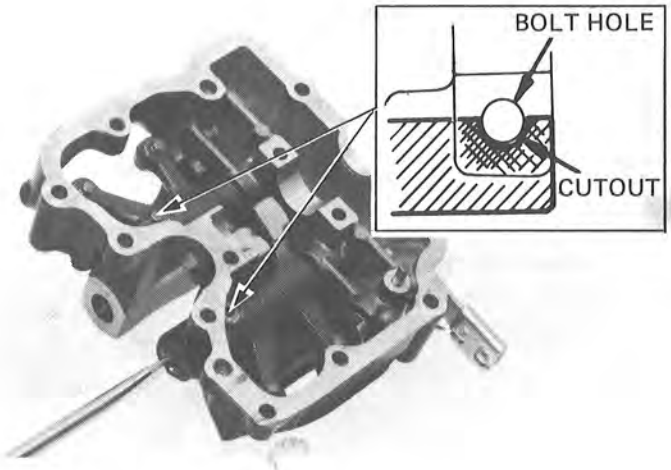


CYLINDER HEAD COVER ASSEMBLY

Install the rocker arms, rocker arm shafts, O-rings and wave washers.

Install the valve lifter lever, spring, and dowel pins.

Align the cut-out in the rocker arm shaft with the bolt hole in the head.
Install the new rocker arm shaft dowel pins.

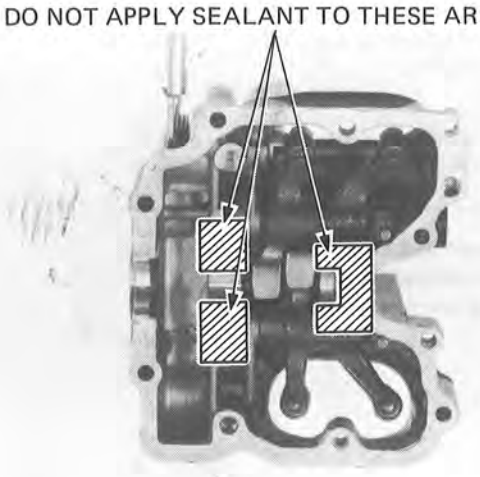


CYLINDER HEAD COVER INSTALLATION

Apply liquid sealer to the cylinder mating surfaces of the cylinder head.

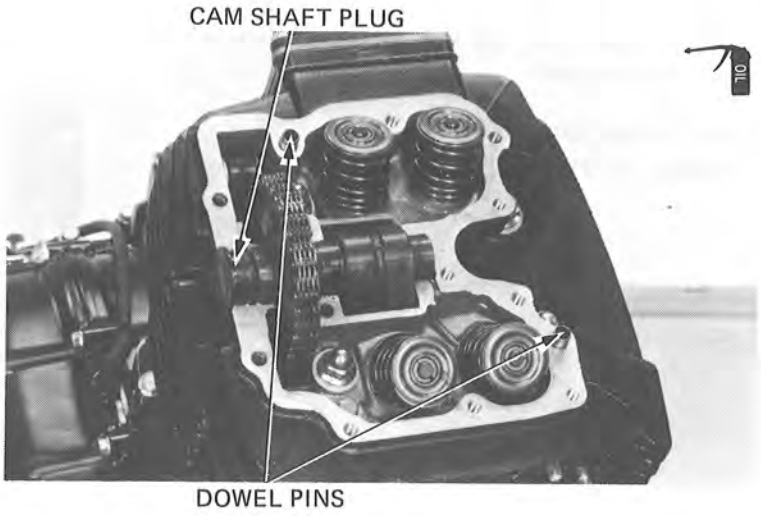
CAUTION:

Keep sealant away from the camshaft bearing surfaces.



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Install the camshaft plug and dowel pins. Pour clean engine oil into the oil pockets in the head so that the cam lobes are completely submerged.



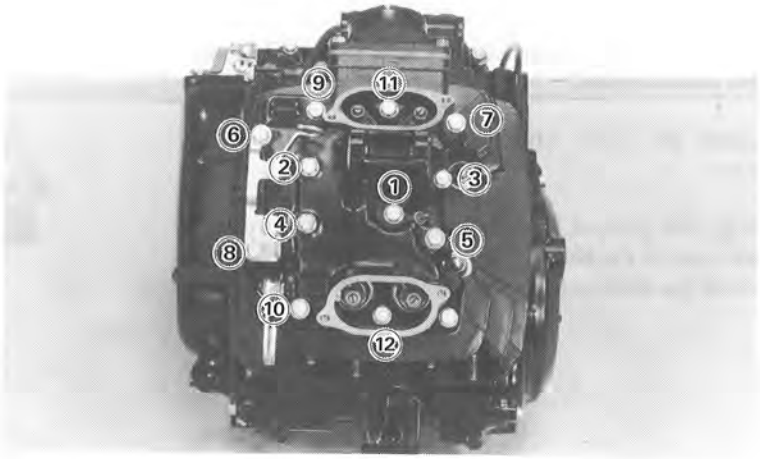
Loosen the valve adjusting screws and then install the cylinder head.

Tighten the cylinder head bolts to the specified torque.

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

NOTE

- Tighten the head bolts in a crisscross pattern in two or more steps.
- Clean excessive sealant from the head.

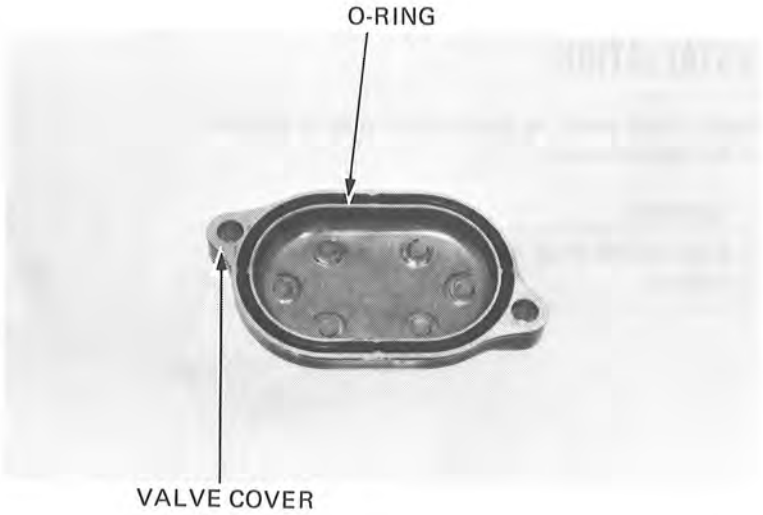


Adjust the valve clearance (Page 3-8).
Install the valve covers.

NOTE

Make sure the O-ring is properly seated in the groove.

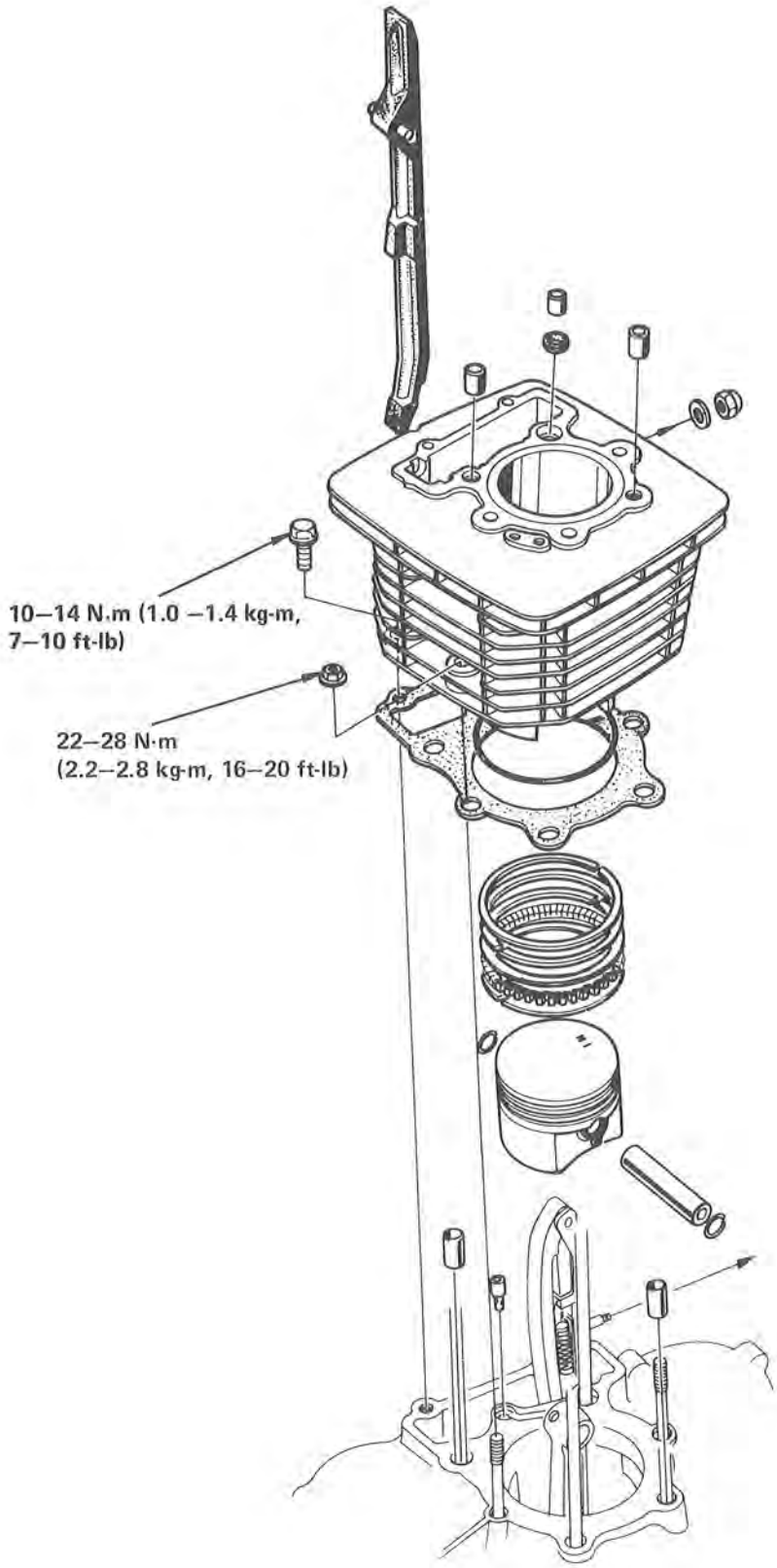
Connect the decompression cable.
Adjust the starter decompressor (Page 3-9).
Adjust the cam chain tension (Page 3-10).



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7. CYLINDER/PISTON

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TROUBLESHOOTING	7–2
CYLINDER REMOVAL	7–3
PISTON REMOVAL	7–5
PISTON INSTALLATION	7–9
CYLINDER INSTALLATION	7–9

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- Camshaft lubricating oil is fed to the cylinder head through an orifice in the engine case. Be sure this orifice is not clogged and that the O-ring and dowel pins are in place before installing the cylinder head.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Cylinder	I.D.	89.00–89.01 mm (3.5039–3.5041 in)	89.11 mm (3.508 in)
	Taper	–	0.05 mm (0.002 in)
	Out of round	–	0.05 mm (0.002 in)
	Warpage across top	–	0.10 mm (0.004 in)
Piston, piston rings and piston pin			
	O.D. at skirt	88.97–88.99 mm (3.5027–3.5035 in)	88.88 mm (3.499 in)
	Piston pin bore	21.002–21.008 mm (0.8268–0.8271 in)	21.08 mm (0.830 in)
	Piston pin-to-piston clearance	0.002–0.014 mm (0.0001–0.0006 in)	0.12 mm (0.005 in)
Piston ring end gap			
	Top/second	0.30–0.50 mm (0.0118–0.0197 in)	0.65 mm (0.0256 in)
	Oil (Side Rail)	0.2–0.9 mm (0.007–0.035 in)	–
Piston ring-to-groove clearance			
	Top	0.030–0.065 mm (0.0012–0.0026 in)	0.12 mm (0.006 in)
	Second	0.015–0.045 mm (0.0006–0.0018 in)	0.12 mm (0.006 in)
Cylinder-to-piston	Clearance	0.01–0.04 mm (0.0004–0.0016 in)	0.10 mm (0.004 in)
Piston pin O.D.		20.994–21.000 mm (0.8265–0.8268 in)	20.96 mm (0.825 in)

TORQUE VALUES

Cylinder bolt: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Cylinder nut: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

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TROUBLESHOOTING

Low or Unstable Compression
1. Worn cylinder or piston rings.

Excessive Smoke
1. Worn cylinder, piston, or piston rings
2. Improper installation of piston rings
3. Scored or scratched piston or cylinder wall

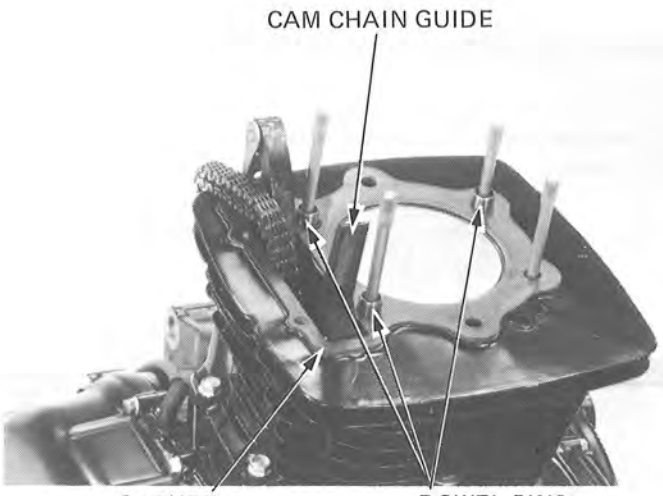
Overheating
1. Excessive carbon build-up on piston crown or combustion chamber

Knocking or Abnormal Noise
1. Worn piston and cylinder
2. Excessive carbon build-up on piston crown or combustion chamber

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CYLINDER REMOVAL

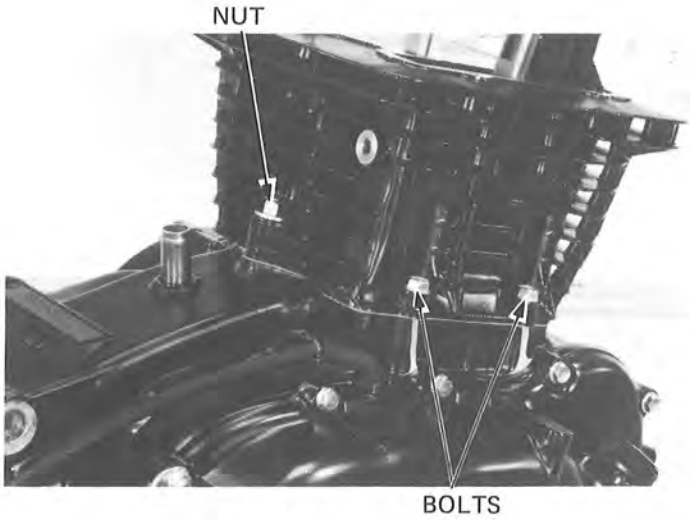
Remove the cylinder head (Section 6).
Remove the cylinder gasket, dowel pins and O-ring.
Remove the cam chain guide.



Remove the crown head nut.
Push the tensioner forward to clear the tensioner stud.



Remove the cylinder nuts and bolts.
Remove the cylinder.

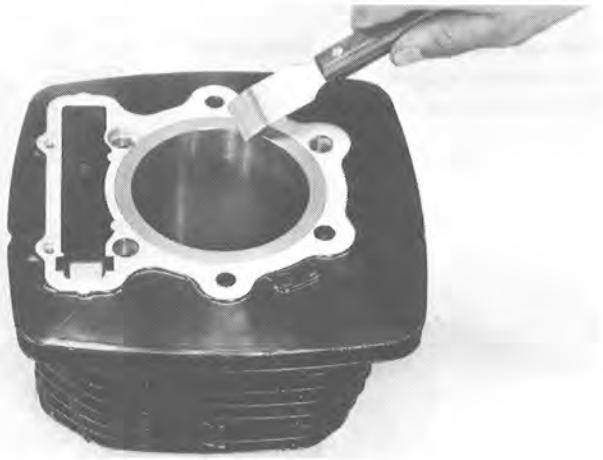


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Clean any gasket material from the cylinder surface.

NOTE

Gasket material will come off easier if it is soaked in solvent.



CYLINDER INSPECTION

Inspect the cylinder bore for wear or damage. Measure the cylinder I.D.

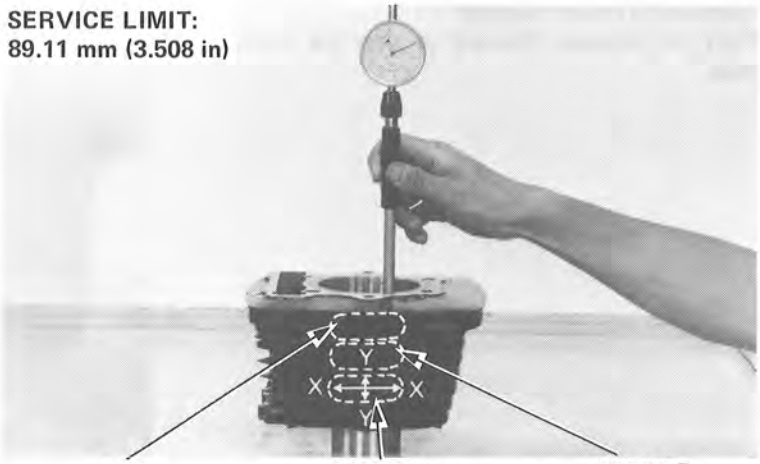
NOTE

Check for out of round on the X and Y axis at three locations.

Calculate the taper and out of round.

SERVICE LIMITS:
OUT OF ROUND: 0.05 mm (0.002 in)
TAPER: 0.05 mm (0.002 in)

SERVICE LIMIT:
89.11 mm (3.508 in)

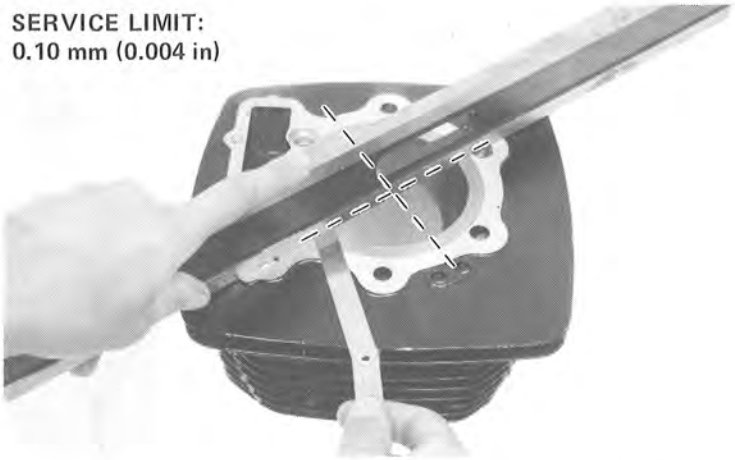


Inspect the top of the cylinder for warpage.

NOTE

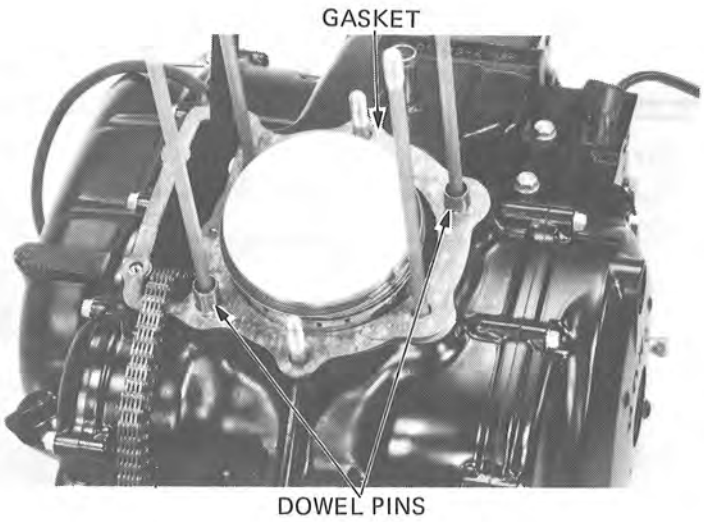
Check in an X pattern as shown.

SERVICE LIMIT:
0.10 mm (0.004 in)



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Remove the base gasket, dowel pins and oil control orifice.



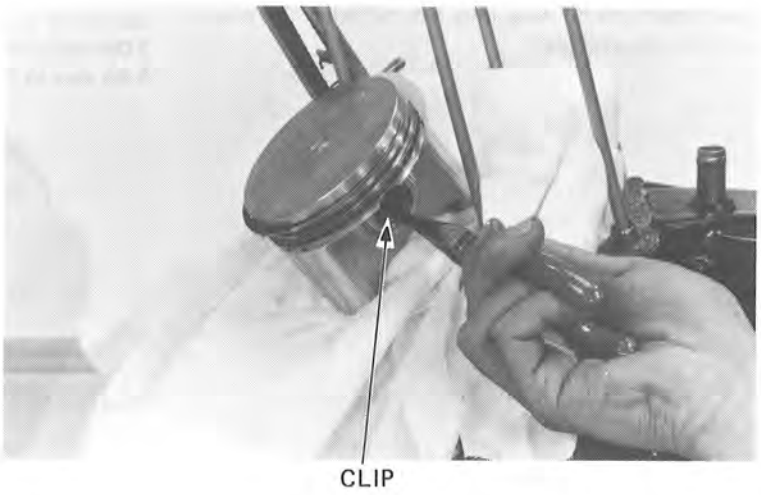
PISTON REMOVAL

Remove the piston pin clip with pliers.

NOTE

Place a shop towel in the crankcase to prevent clips and other objects from falling in.

Press the piston pin out of the piston.



PISTON/PISTON RING INSPECTION

Measure the piston ring-to-groove clearance.



SERVICE LIMIT:
TOP/SECOND:
0.12 mm (0.006 in)

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Remove the piston rings.
Inspect the pistons for damage and the ring grooves for wear.

NOTE

Do not damage the piston rings during removal.



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

SERVICE LIMIT:
TOP/SECOND:
0.65 mm (0.025in)

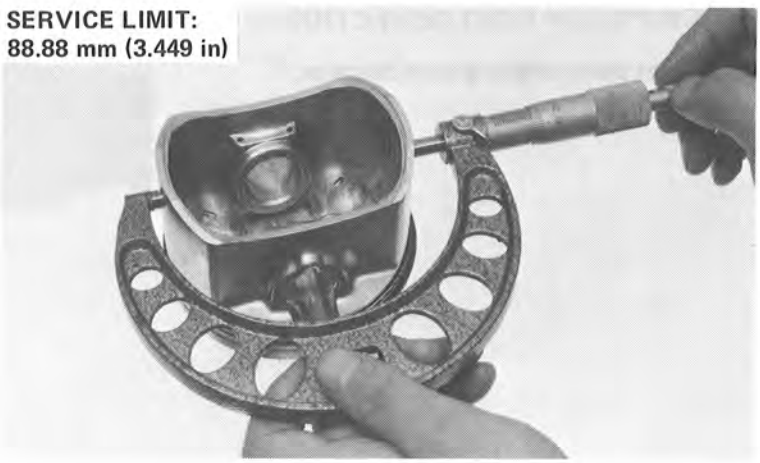


Measure the piston diameter 10 mm from the bottom.

Calculate the piston-to-cylinder clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)

SERVICE LIMIT:
88.88 mm (3.449 in)



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Measure the piston pin hole I.D.

SERVICE LIMIT:
21.08 mm (0.830 in)



Measure the piston pin O.D.

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.12 mm (0.005 in)

SERVICE LIMIT
20.96 mm (0.825 in)



PISTON RING INSTALLATION

Clean the piston ring grooves thoroughly.
Check for cleanliness by holding a ring in the grooves while turning the piston.



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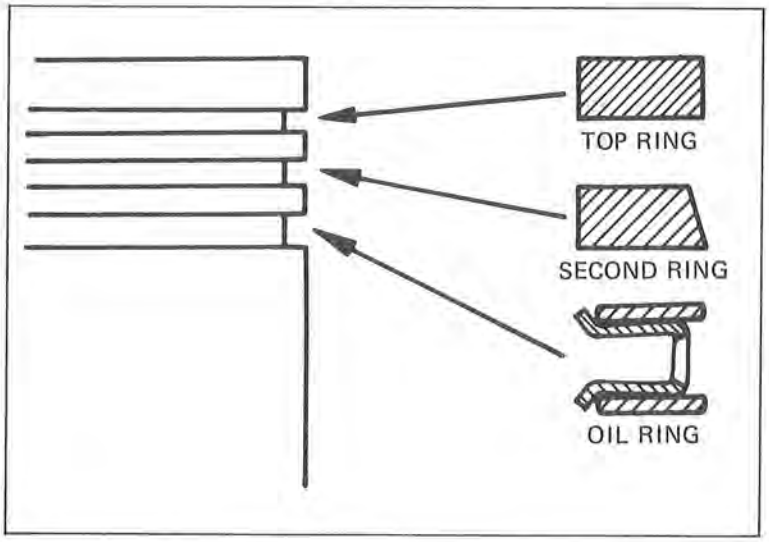
Install the piston rings with the marks facing up.

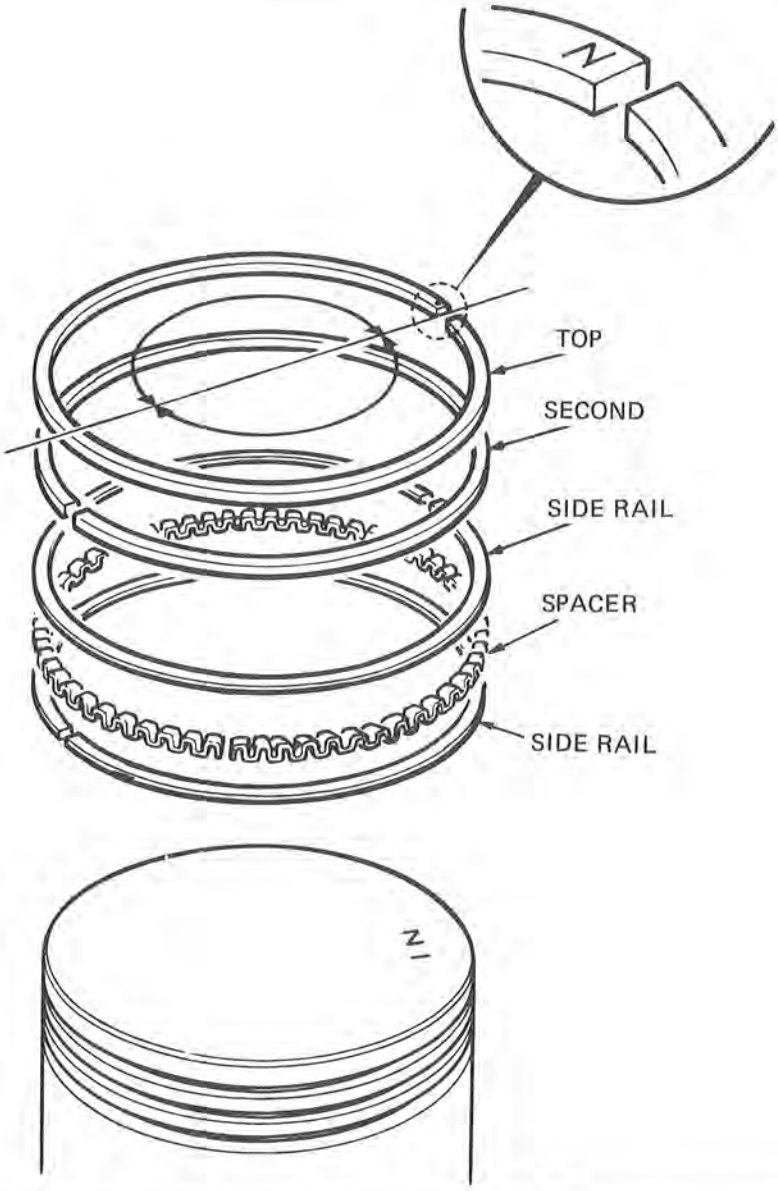
NOTE

Avoid piston and piston ring damage during installation.
Install the oil ring spacer first, then install the side rails.

Space the piston ring end gaps 180 degrees apart as shown.
Do not align the oil ring (side rails) gaps.

After installation, the rings should rotate freely in the ring lands.





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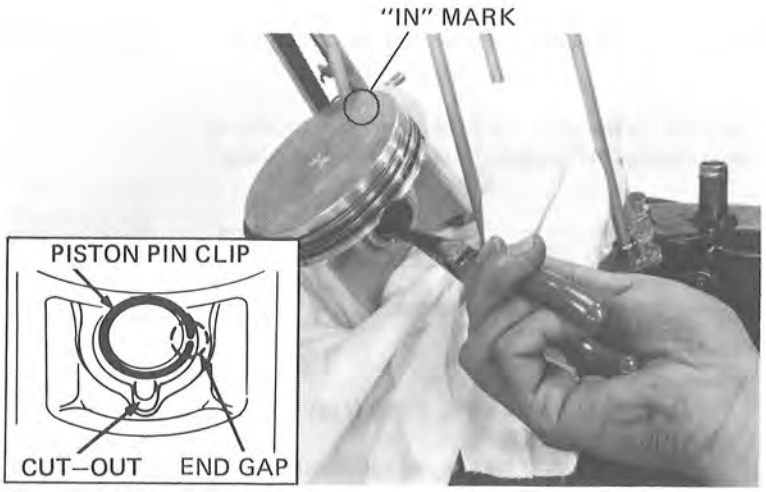
PISTON INSTALLATION

Install the piston and piston pin. Position the piston "IN" mark on the intake valve side.

Install new piston pin clips.

NOTE

Do not align the piston pin clip end gap with the piston cut-out.



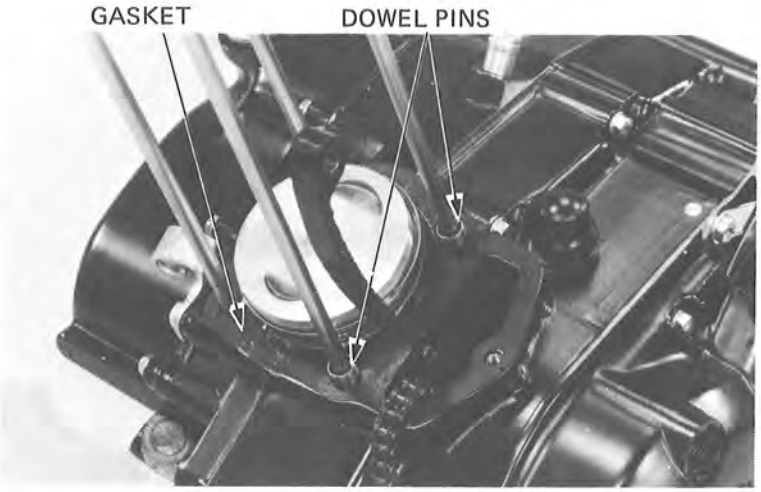
CYLINDER INSTALLATION

Install the cylinder gasket, dowel pins and oil control orifice.

NOTE

Check that the oil control orifice is not clogged.

Remove the shop towel from the crankcase.



Check that the O-ring is in place on the cylinder.



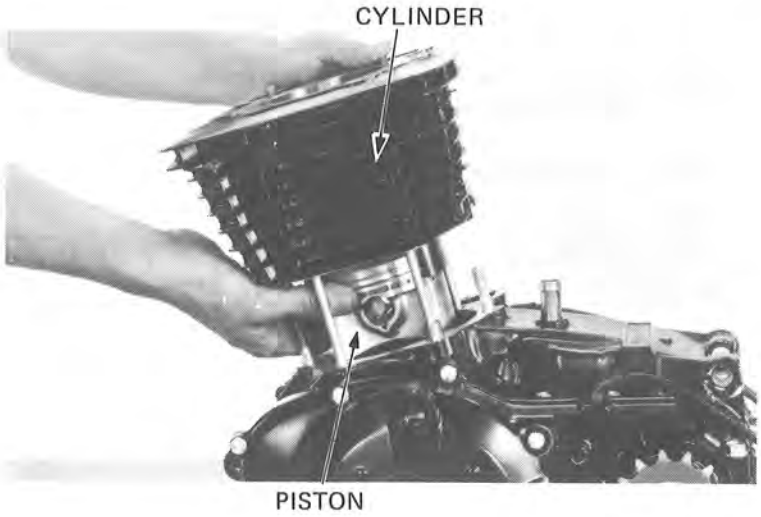
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Coat the cylinder bore, piston and piston rings with engine oil.

Carefully lower the cylinder over the piston by compressing the piston rings by hand as shown.

NOTE

Avoid piston ring damage during installation.



Tighten the cylinder bolts and nut.

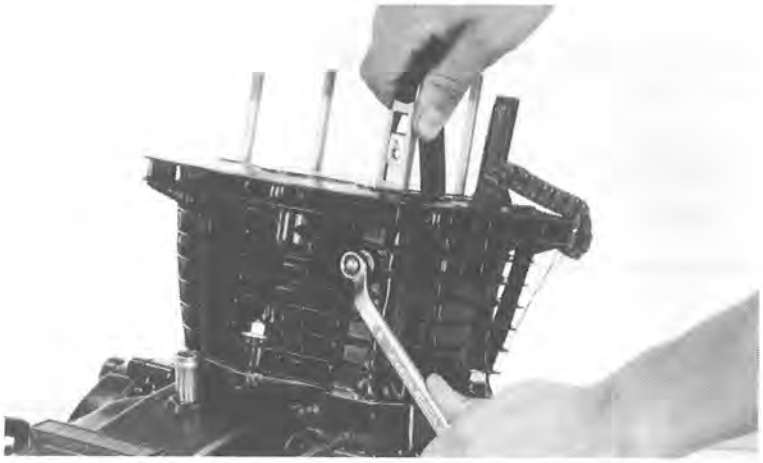
TORQUES:

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

Cylinder nut: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

Hold the tensioner up and insert the tensioner adjusting bolt into the cylinder hole.

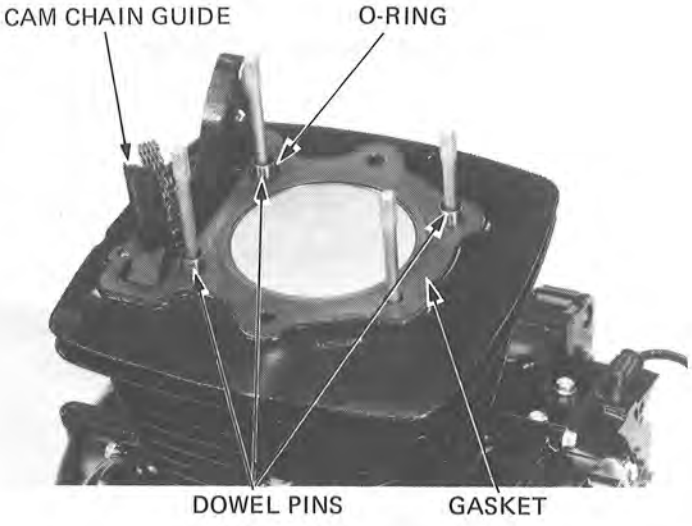
Install the washer and nut.
Pull the tensioner all the way up and tighten the lock nut.



Install the cam chain guide.

NOTE

- Fit the cam chain guide tab in the cylinder cutout as shown.
- Push the guide in until it bottoms in the crankcase guide hole.

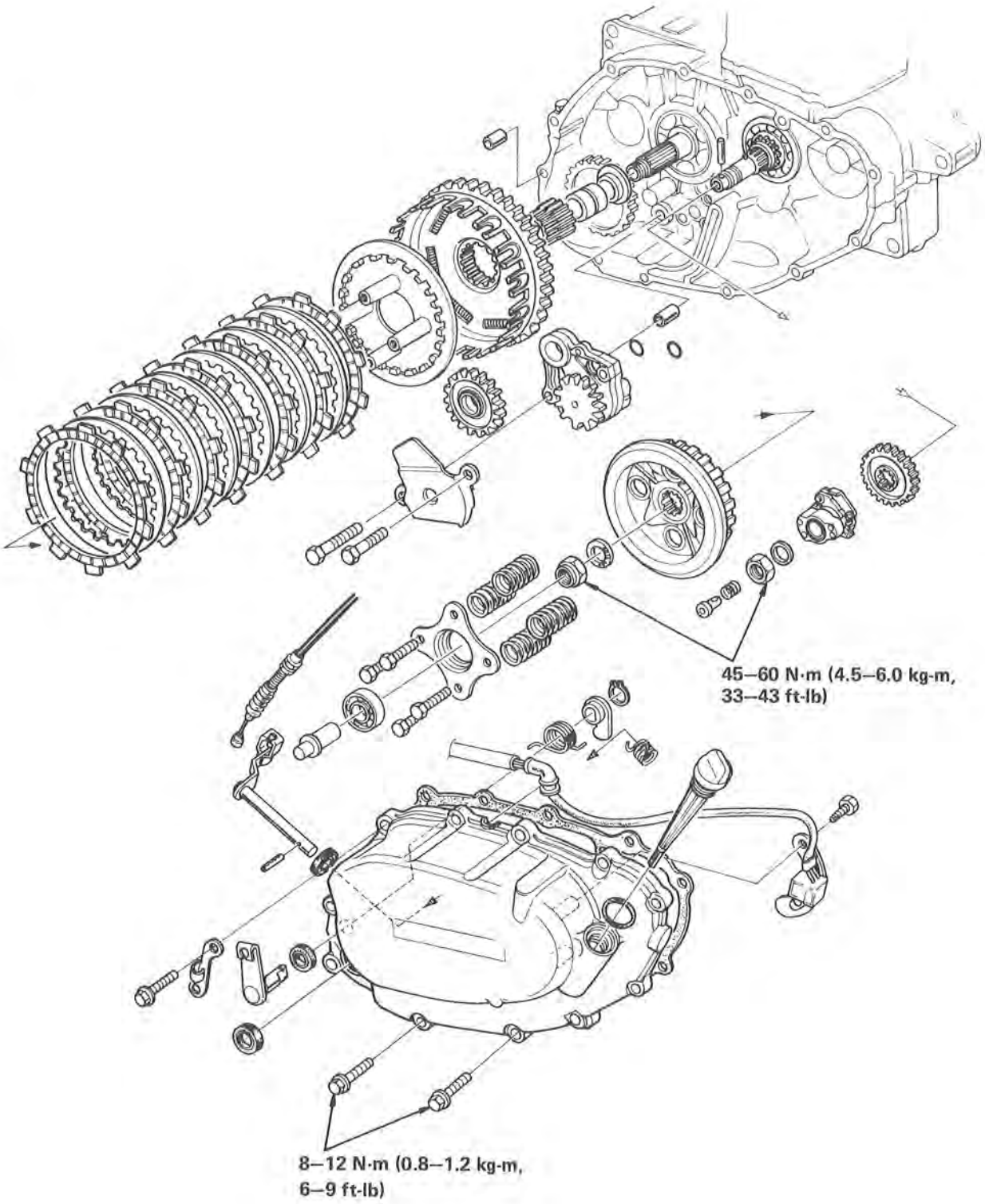


Install the O-ring and dowel pins in the top of the cylinder.
Install a new cylinder head gasket.
Clean carbon deposits from the cylinder head.
Install the cylinder head (Page 6–17).

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MEMO

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8. CLUTCH/OIL PUMP

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DRIVE GEAR INSTALLATION	8–13
RIGHT CRANKCASE COVER INSTALLATION	8–14

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section covers removal and installation of the clutch and oil pump, starting with the right crankcase cover. All these operations can be accomplished with the engine installed.
- When the existing clutch discs are replaced, coat new discs with engine oil prior to assembly.

SPECIAL TOOL

Clutch center holder	07923–4280000 (Not available in U.S.A)

TORQUE VALUES

Clutch lock nut	45–60 N·m (4.5–6.0 kg-m, 33–43 ft-lb)
Drive gear	45–60 N·m (4.5–6.0 kg-m, 33–43 ft-lb)
Right crankcase cover	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Clutch	Lever free play (at lever end)	15–25 mm (5/8 – 1 in)	———
	Spring free length	41 mm (1.61 in)	39.5 mm (1.56 in)
	Spring preload/length	23.75–26.25 kg/28.5 mm (52.4–57.8 lb/1.12 in)	———
	Disc thickness	2.62–2.78 mm (0.102–0.109 in)	2.3 mm (0.09 in)
	Plate warpage	———	0.3 mm (0.01 in)
	Primary drive gear I.D.	27.000–27.021 mm (1.0630–1.0638 in)	27.05 mm (1.065 in)
	Outer guide O.D.	26.959–26.980 mm (1.0614–1.0622 in)	26.91 mm (1.059 in)
	I.D.	22.000–22.035 mm (0.8661–0.8675 in)	22.05 mm (0.868 in)
	Length	33.20–33.30 mm (1.307–1.311 in)	33.10 mm (1.303 in)
Oil pump			
	Inner rotor-to-outer rotor clearance	0.15 mm (0.006 in) max.	0.20 mm (0.008 in)
	Outer rotor-to-body clearance	0.15–0.21 mm (0.006–0.008 in)	0.25 mm (0.01 in)
	Rotor-to-cover clearance	0.02–0.08 mm (0.001–0.003 in)	0.12 mm (0.005 in)
Starter idler gear	I.D.	15.016–15.034 mm (0.5912–0.5919 in)	15.10 mm (0.595 in)
Mainshaft-to-clutch outer guide clearance		0.020–0.068 mm (0.0008–0.0027 in)	0.12 mm (0.0047 in)

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TROUBLESHOOTING

Faulty clutch operation can usually be corrected by adjusting the clutch lever free play.

Clutch Slips When Accelerating
1. No free play
2. Discs worn
3. Spring weak

Clutch Will Not Disengage
1. Too much free play
2. Plates warped

Motorcycle Creeps With Clutch Disengaged
1. Too much free play
2. Plates warped.

Excessive Lever Pressure
1. Clutch cable kinked, damaged or dirty
2. Lifter mechanism damaged

Clutch Operation Feels Rough
1. Outer drum slots rough

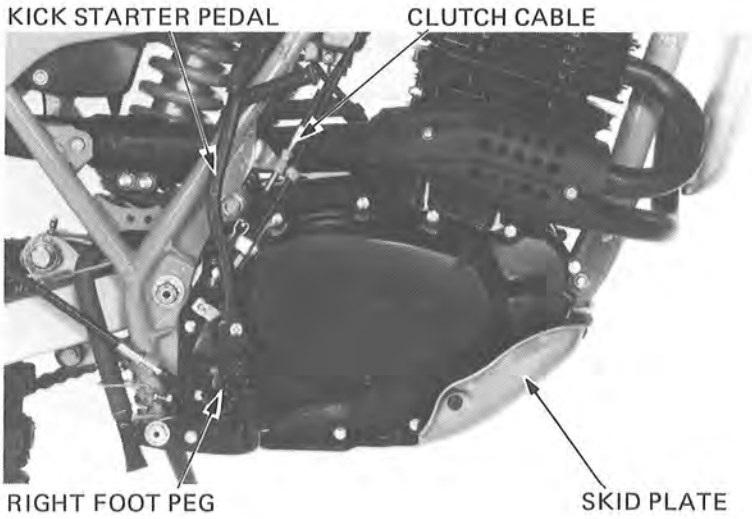
Low Oil Pressure
1. Faulty oil pump
2. Oil pump drive gear broken

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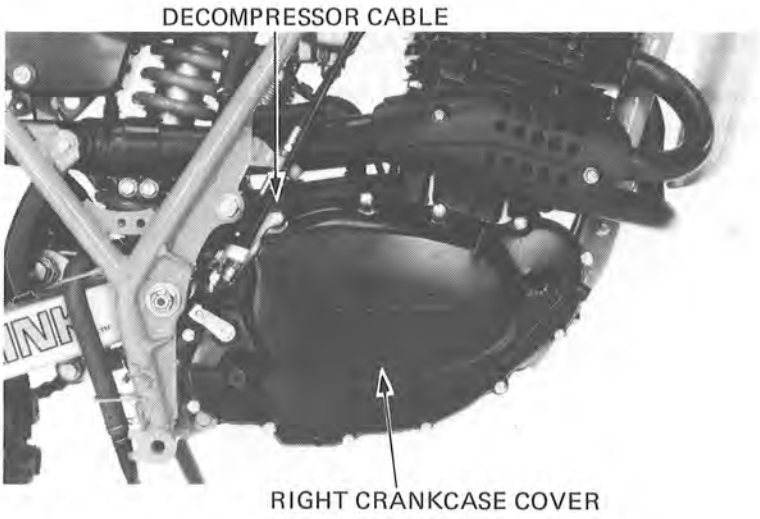
RIGHT CRANKCASE COVER REMOVAL

Remove the seat and fuel tank.
Drain oil from the engine.
Remove the skid plate.

Remove the kick starter pedal.
Remove the right foot peg bolt and foot peg.
Remove the rear brake pedal.
Disconnect the clutch cable and the pulse generator wires.

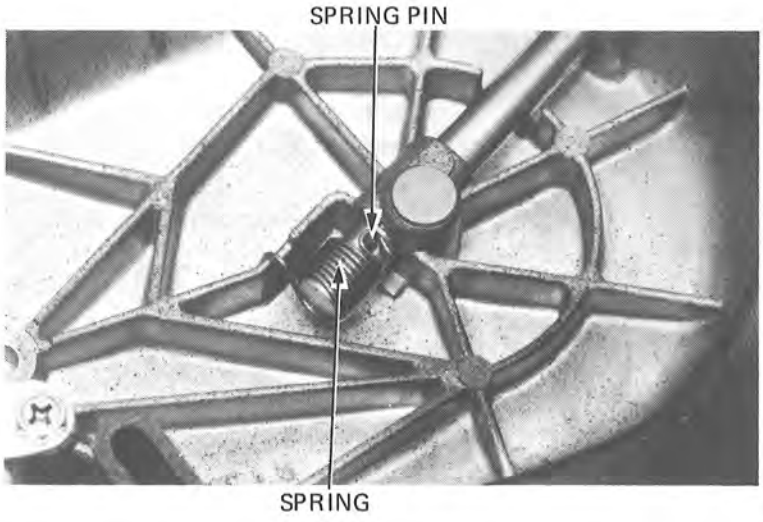


Disconnect the decompressor cable.
Remove the bolts holding the right crankcase cover, and remove the cover.



CLUTCH LIFTER ARM DISASSEMBLY

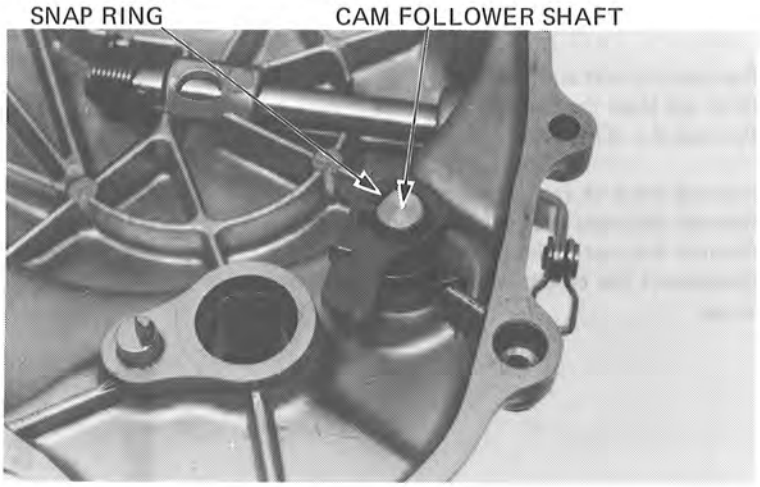
Remove the spring pin.
Remove the lifter arm and return spring.



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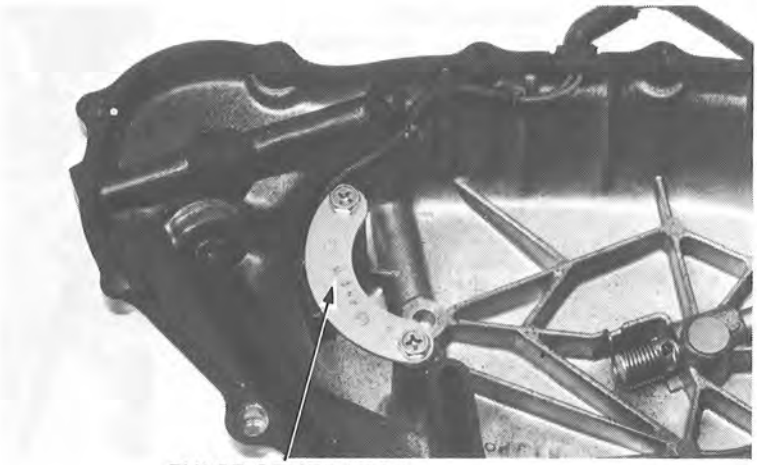
CAM FOLLOWER SHAFT DISASSEMBLY

Remove the snap ring, cam, return spring and camshaft.



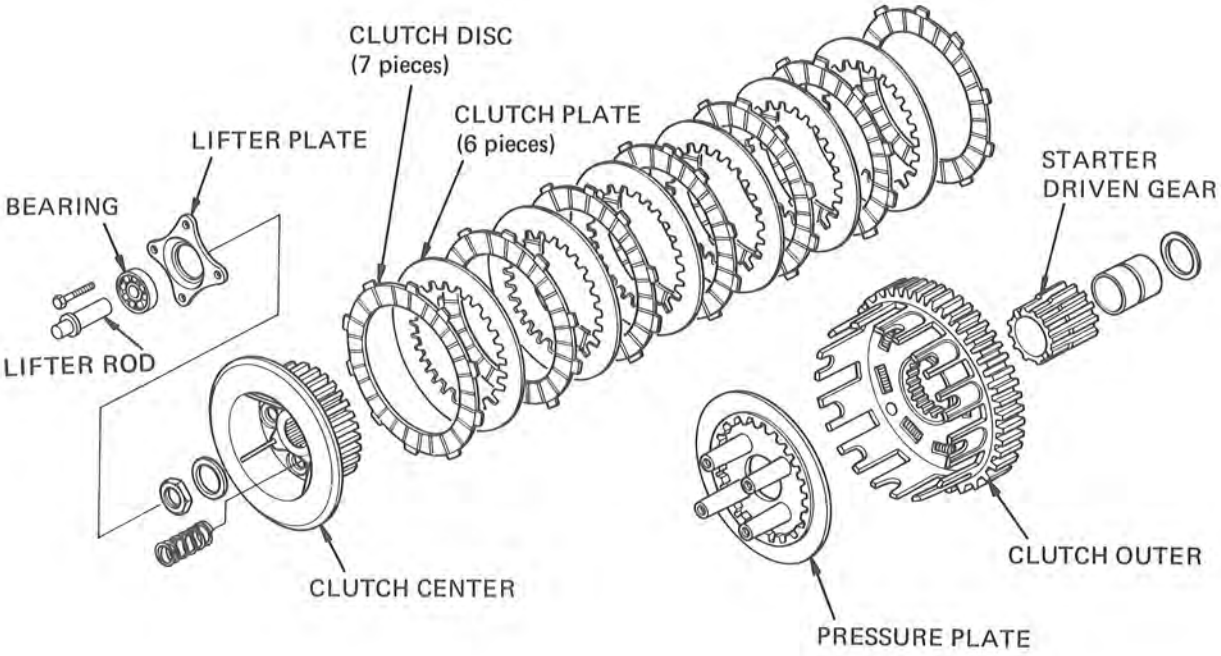
PULSE GENERATOR REPLACEMENT

Install the pulse generator wire in the crankcase cover cutout as shown.



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CLUTCH

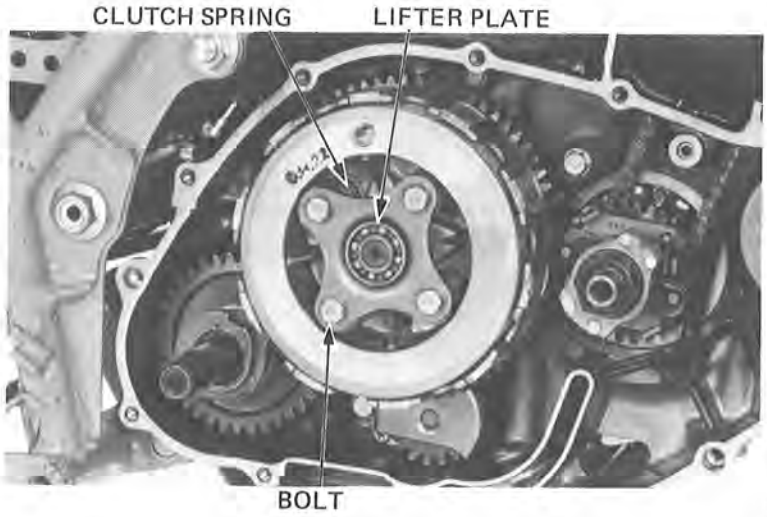


REMOVAL

Remove the lifter rod and bearing.
Remove the four bolts.
Remove the clutch lifter plate and springs.

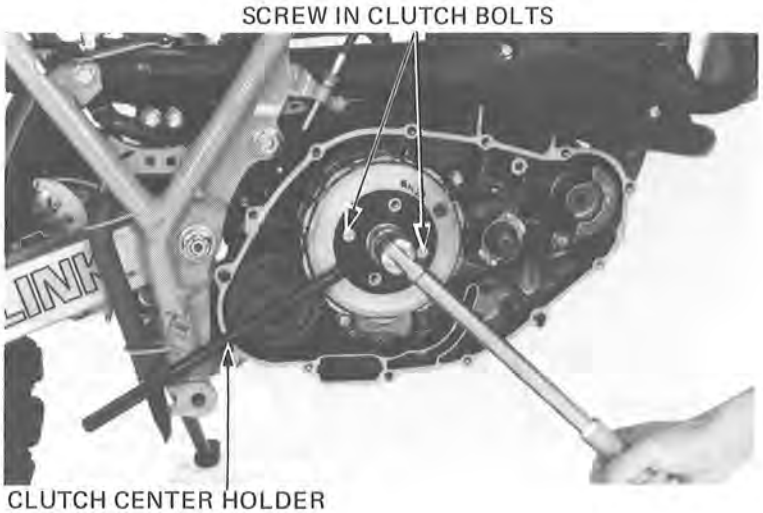
NOTE

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



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Attach the clutch center holder to the pressure plate with two clutch bolts.
Remove the clutch nut and lock washer.
Remove the clutch center holder, clutch center, discs, plate, pressure plate, cover, guide, and thrust washer.



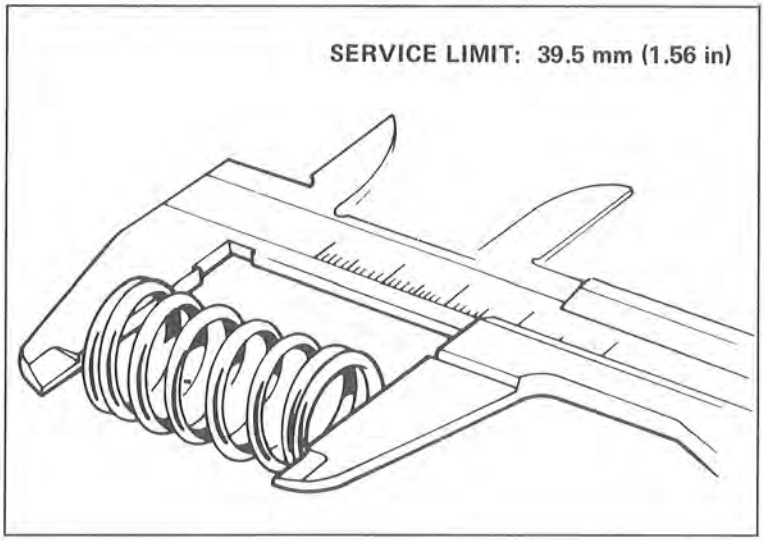
INSPECTION

SPRINGS

Measure the free length of each spring.
Replace if shorter than the service limit.

NOTE

Clutch spring should be replaced as a set if one or more is beyond the service limit.

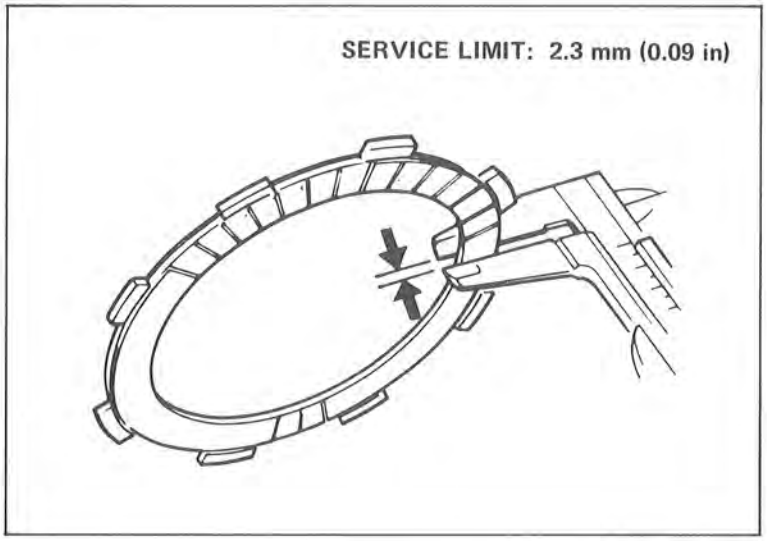


CLUTCH DISC

Replace the discs if they show signs of scoring or discoloration.
Measure the disc thickness.

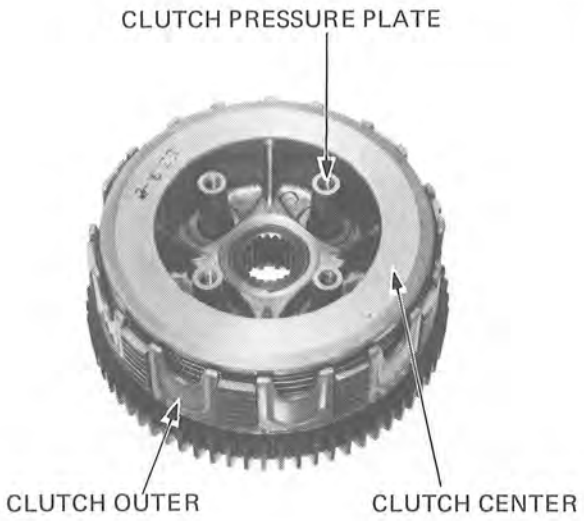
NOTE

Clutch discs and plates should be replaced as a set if any one is beyond the service limit.

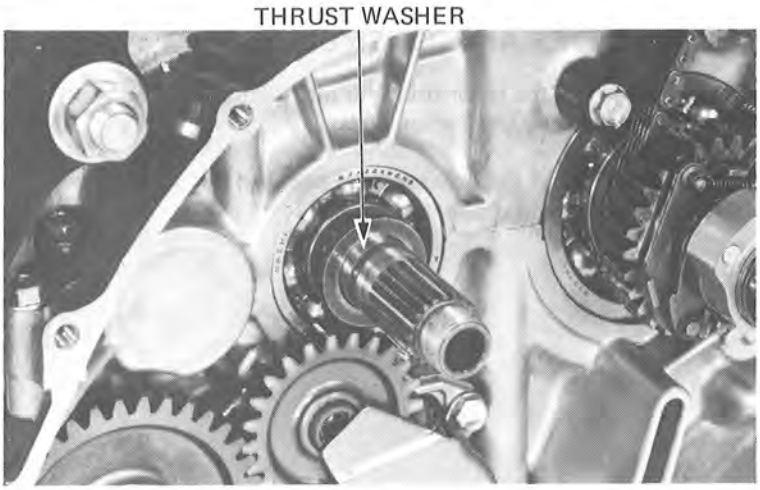


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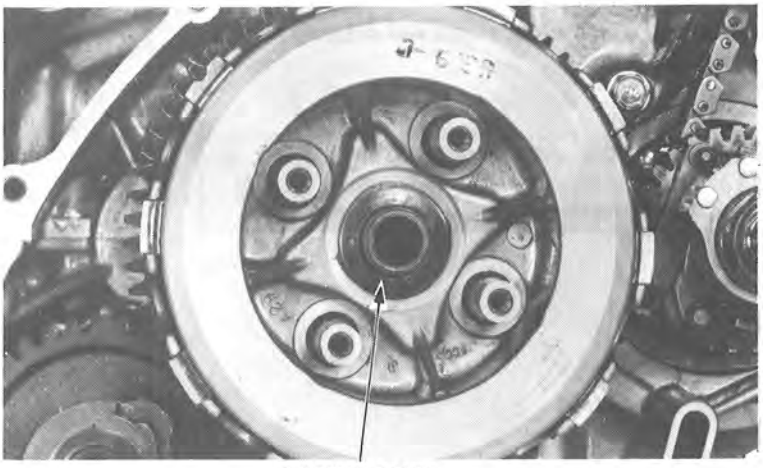
Install the clutch center by rotating it to align the splines.



Slide the thrust washer and clutch outer guide over the main shaft.
Install the clutch.



Install the lock washer with the mark "out side" facing out.
Install the clutch center holder with two clutch bolts.



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Install a new lock nut.
Tighten the lock nut to the specified torque.

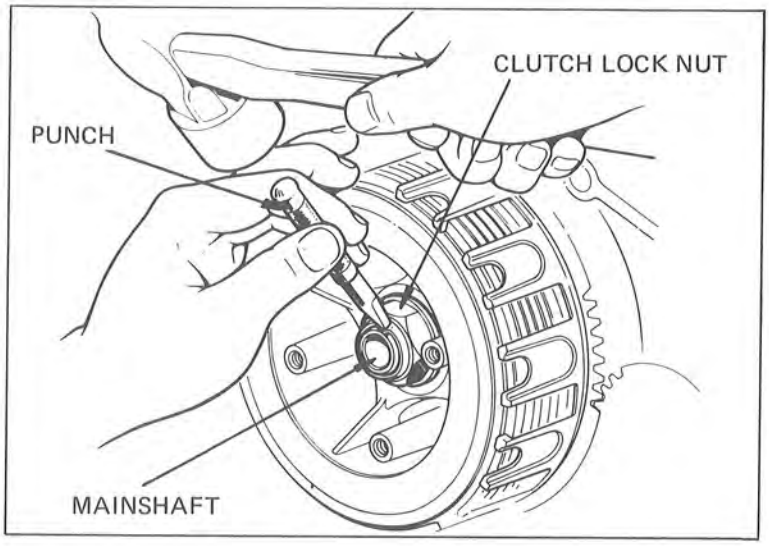
TORQUE: 45–60 N·m (4.5–6.0 kg-m, 33–43 ft-lb)

Remove the clutch center holder and lock the nut with a punch.
Stake the end of the lock nut into the groove of the mainshaft with a punch.
Install the clutch springs, lifter plate and lifter plate bolt.

NOTE

Tighten the bolts in a crisscross pattern in two or more steps.

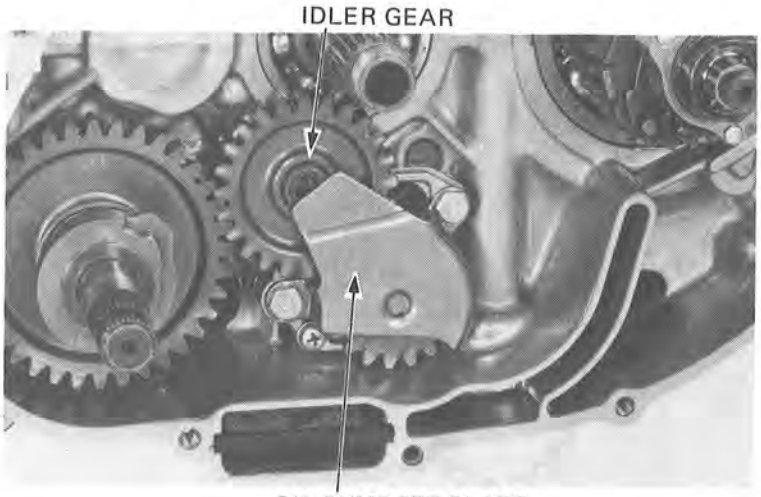
Install the lifter rod and bearing.



OIL PUMP

OIL PUMP REMOVAL

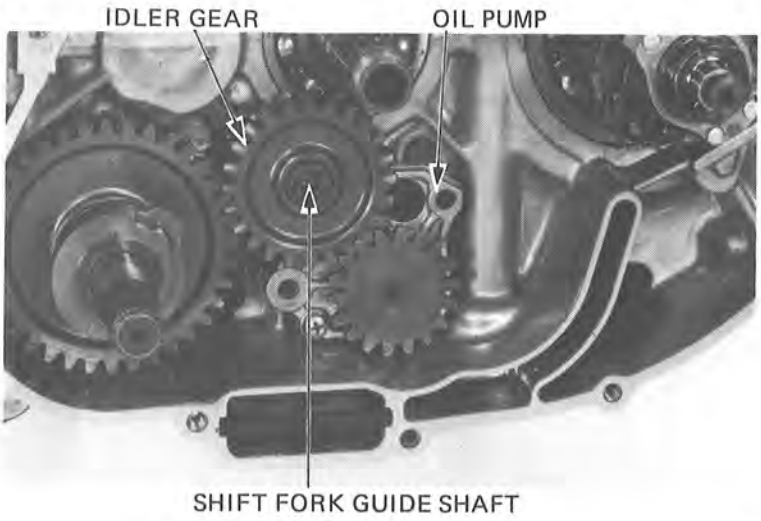
Remove the clutch (Page 8–5).
Remove the oil pump set plate.



Remove the starter idler gear.
Remove the oil pump.

NOTE

Do not remove the fork guide shaft from the engine case.

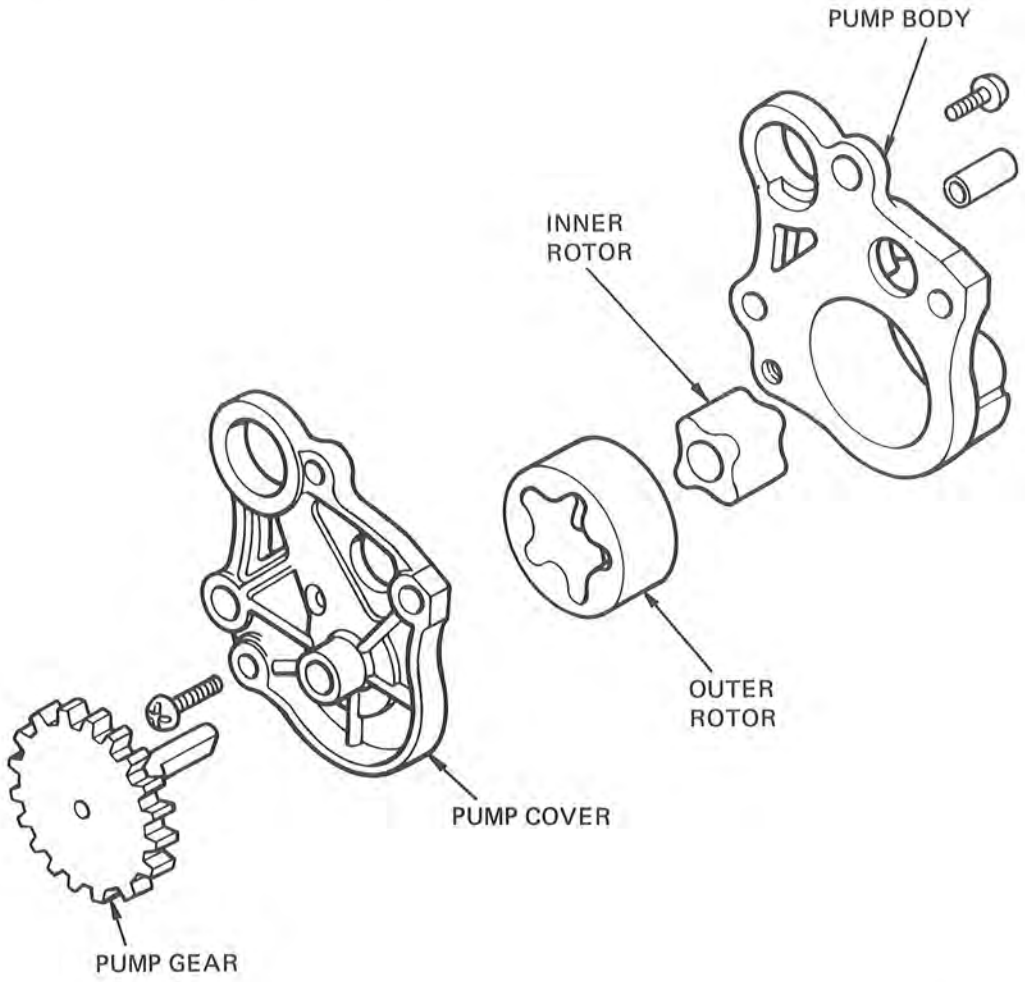


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OIL PUMP DISASSEMBLY

Remove the oil pump body screws, and the pump gear and cover.

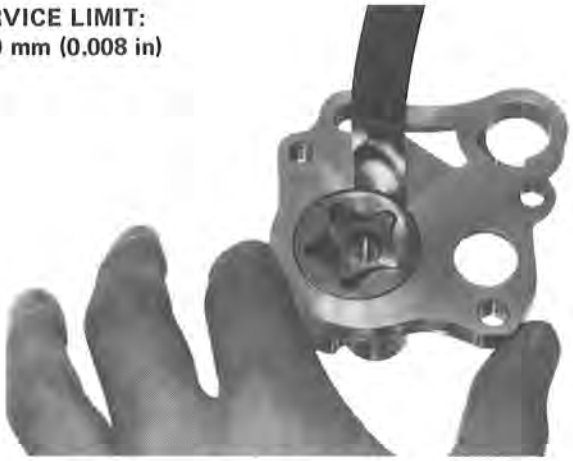
Remove the inner and outer rotors from the pump body.



OIL PUMP INSPECTION

Measure the outer rotor-to-body clearance.

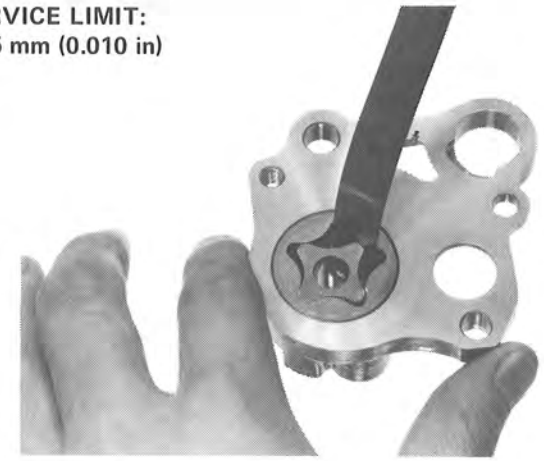
SERVICE LIMIT:
0.20 mm (0.008 in)



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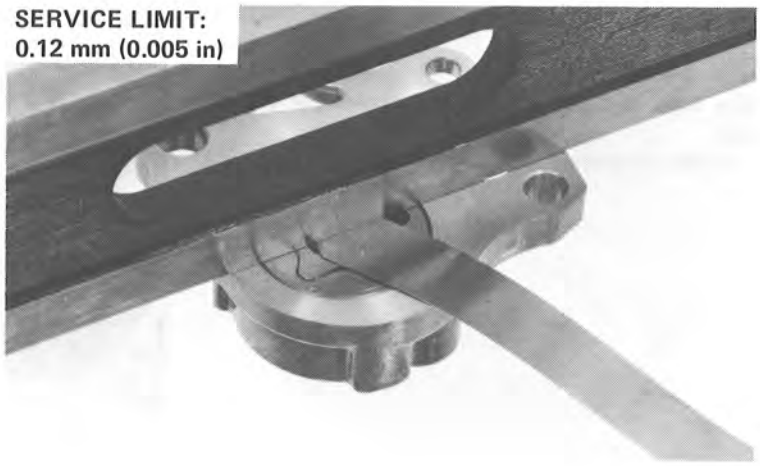
Measure the inner rotor clearance.

SERVICE LIMIT:
0.25 mm (0.010 in)



Measure the pump end clearance

SERVICE LIMIT:
0.12 mm (0.005 in)



STARTER IDLER GEAR INSPECTION

Inspect the idler gear for wear and measure the I.D.

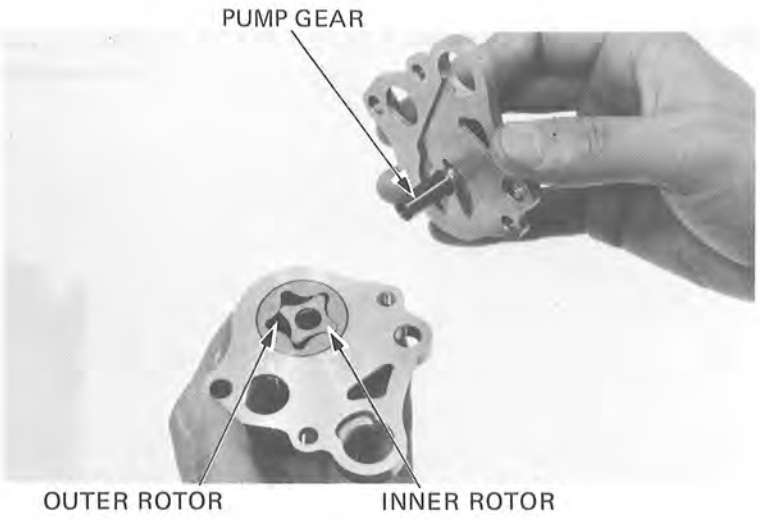
SERVICE LIMIT:
15.10 mm (0.595 in)



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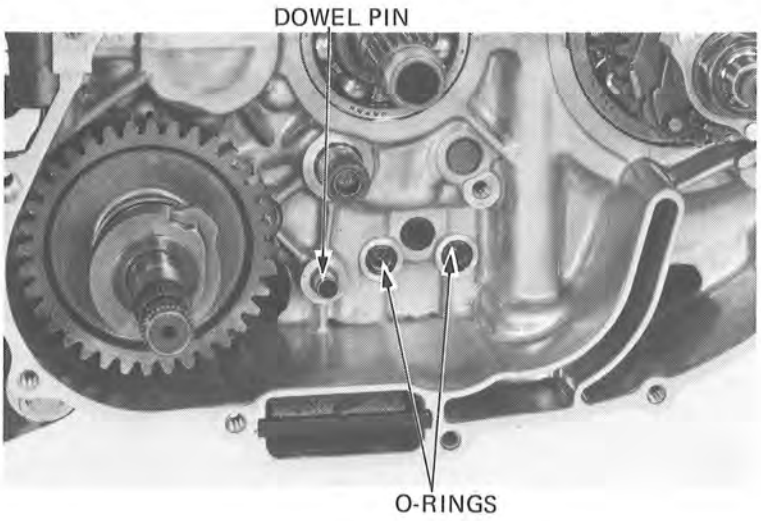
OIL PUMP ASSEMBLY

Install the inner and outer rotors in the pump body.
Slide the pump drive gear shaft through the pump cover and install the cover on the body.
Tighten the cover screws.



OIL PUMP INSTALLATION

Install the idle gear.
Make sure that the O-rings and dowel pin are in place.
Install the oil pump.

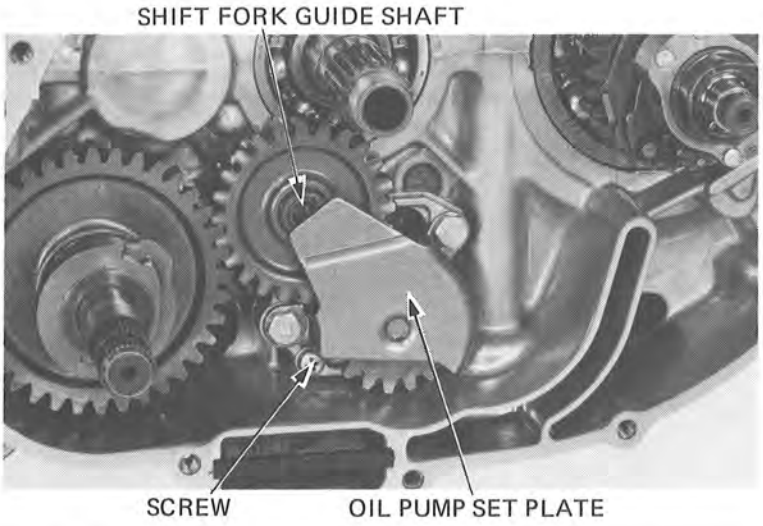


Install the oil pump set plate.

CAUTION:

Align the oil pump set plate with the shift fork cut-out, seat it flush against the shift end so there is no clearance. If the shaft rotates, the lubrication passage will be blocked causing transmission damage.

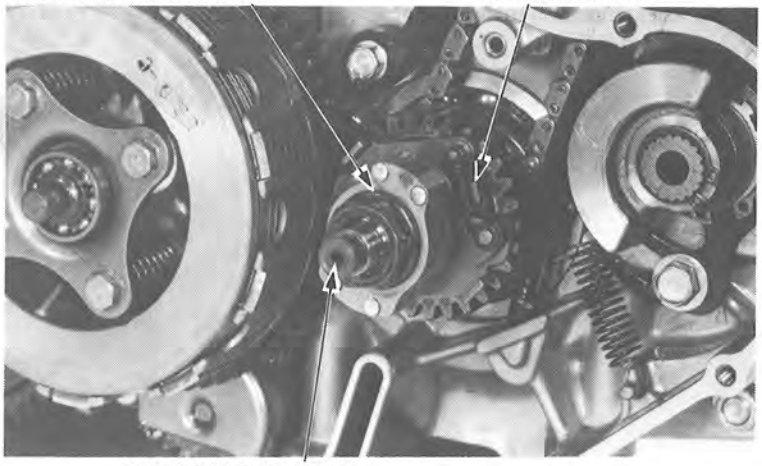
Tighten the set plate bolts and the oil pump screw.



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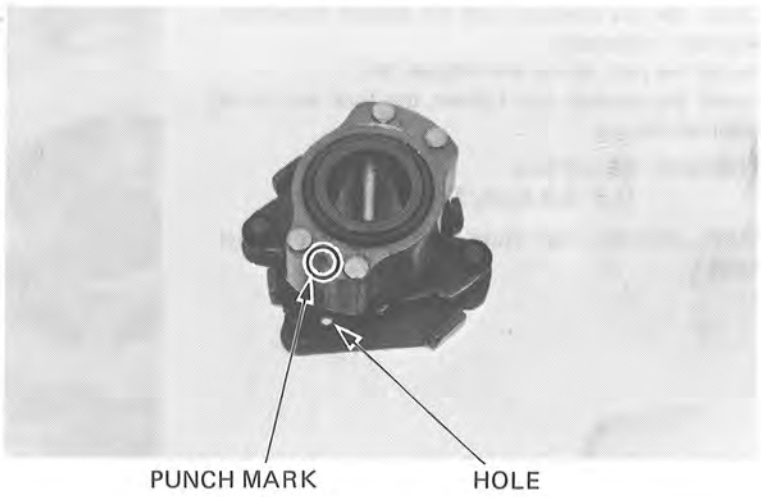
DRIVE GEAR REMOVAL

Remove the 14 mm lock nut.
Remove the washer, advancer rotor and drive gear.
Remove the oil pressure pad stopper pin, pad and spring.



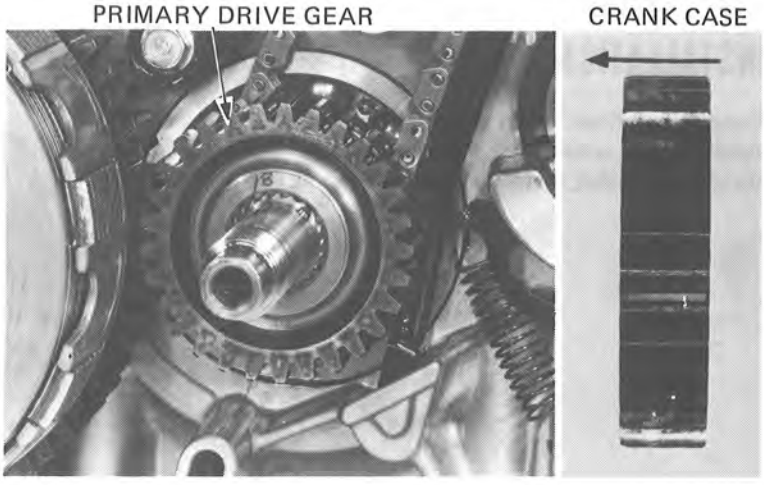
ADANCER ROTOR INSPECTION

Align the rotor punch mark with the advancer hole and assemble.
Check the rotor for wear and free operation.



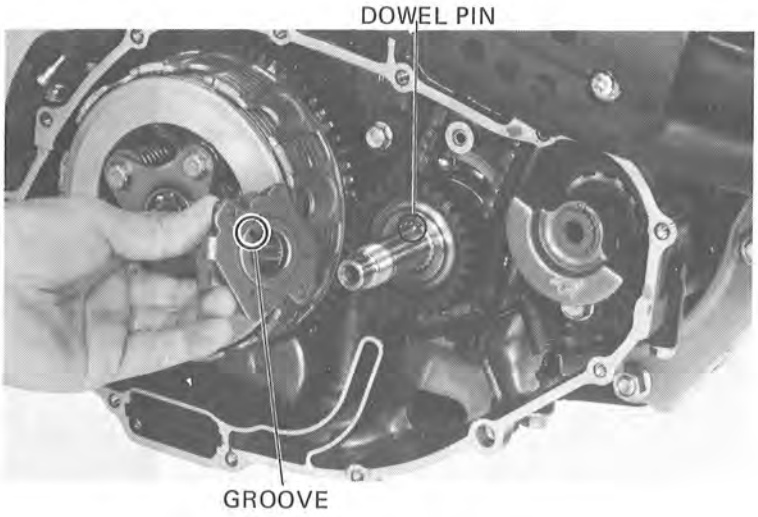
DRIVE GEAR INSTALLATION

Install the drive gear with the heavily chamfered teeth facing the crankcase.
Align the dowel pin with the groove in the gear.



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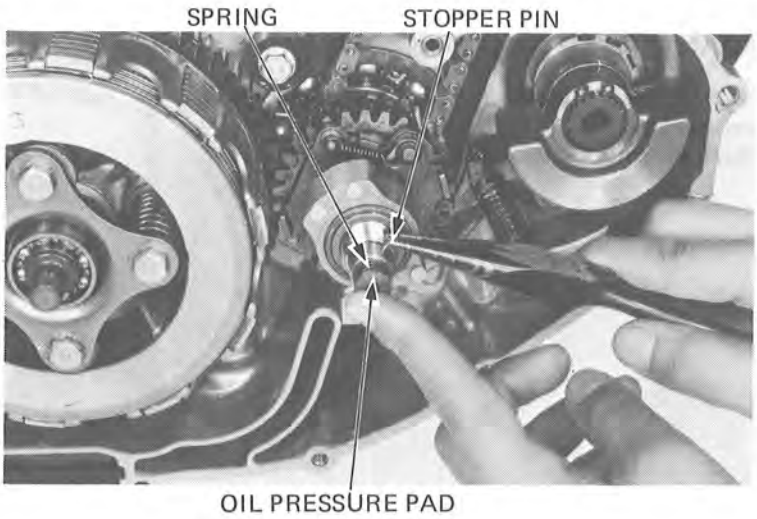
Install the advancer rotor, aligning the dowel pin and rotor cut-out.



Check the oil pressure pad for smooth movement. Replace if necessary.
Install the pad, spring and stopper pin.
Install the washer and tighten the lock nut to the specified torque.

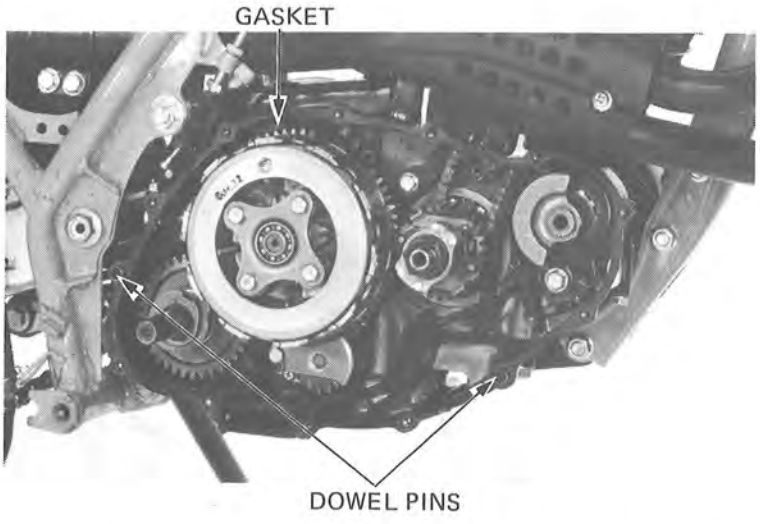
TORQUE: 45–60 N·m
(4.5–6.0 kg-m, 32–43 ft-lb)

Check advancer operation for freedom of movement.



RIGHT CRANKCASE COVER INSTALLATION

Clean the oil filter screen and install it.
Apply liquid sealer to the crankcase cover mating surface and install the dowel pins and gasket.



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Assemble the right crankcase cover compenents in the cover. (page 8-3, 8-4)
Install the right crankcase cover while holding the cam follower lever up.

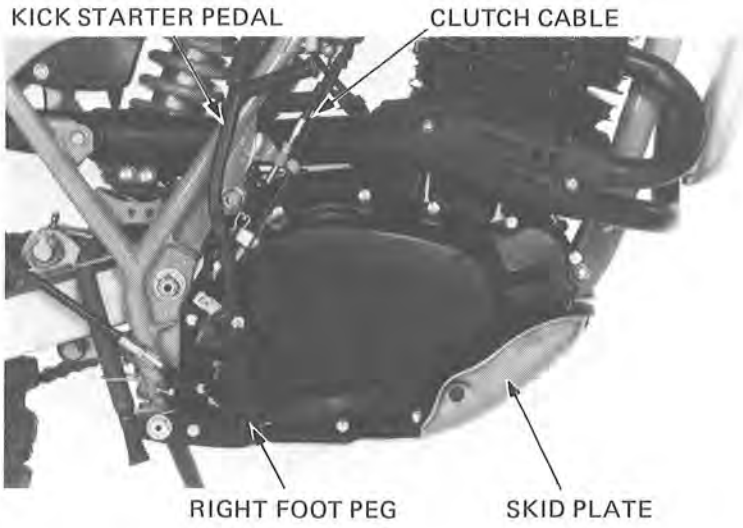
NOTE

Check operation of the decompressor and clutch levers after installing the cover.

Tighten the right crankcase cover bolts.

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

Connect the decompressor cable.
Install the kick starter pedal.



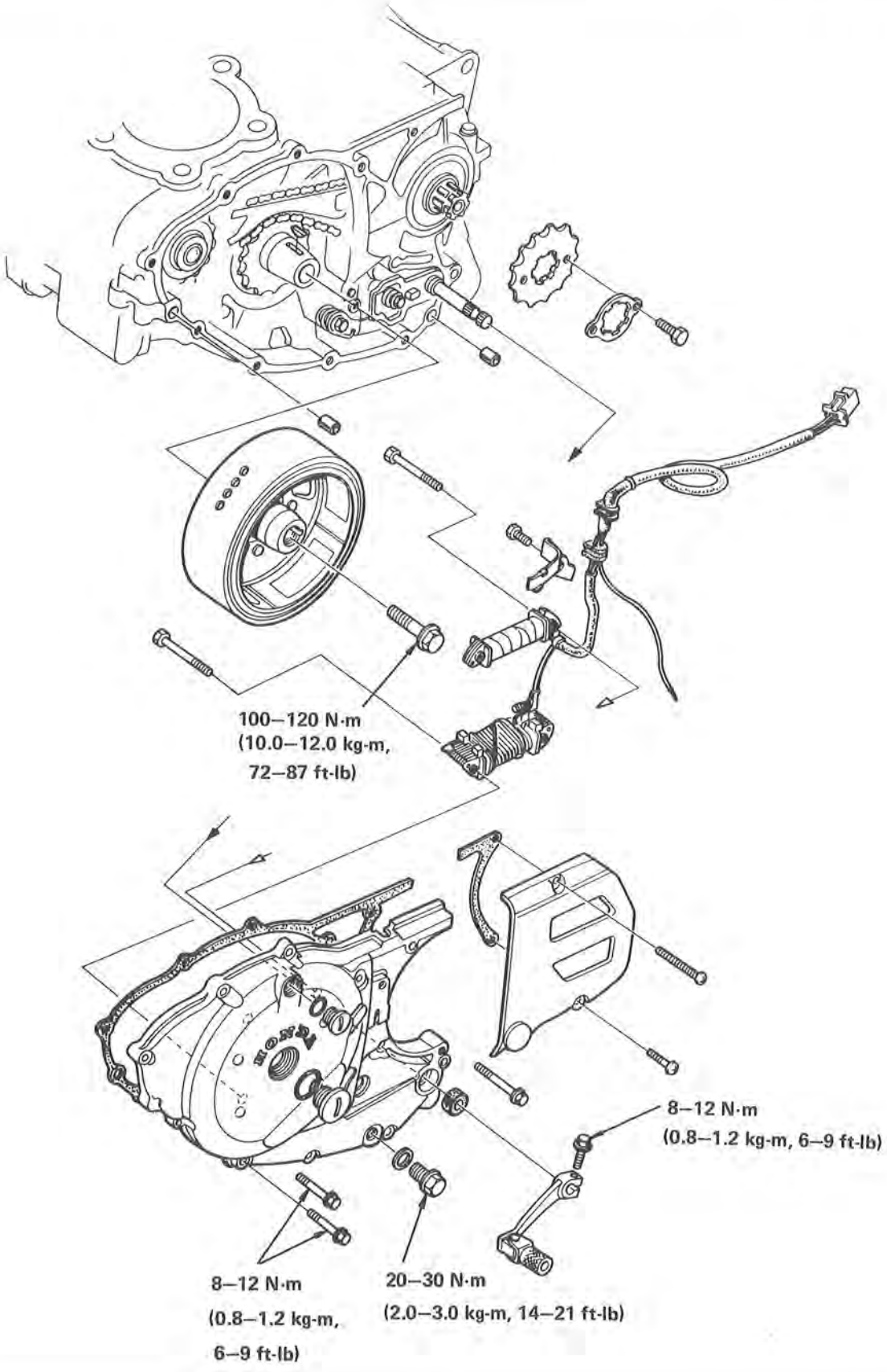
Connect the cluth cable and the rear brake cable.
Install the right foot peg and the skid plate.

Connect the pulse generator wire.
Install the fuel tank and seat.

Fill the crankcase with recommended oil up to the proper level.

Adjust the starter decompressor (Page 3-9).
Adjust the clutch free play (Page 3-18).

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9. AC GENERATOR

SERVICE INFORMATION	9–1
LEFT CRANKCASE COVER REMOVAL	9–2
AC GENERATOR ROTOR REMOVAL	9–2
AC GENERATOR ROTOR INSTALLATION	9–3
LEFT CRANKCASE COVER INSTALLATION	9–3

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- This section pertains to removal and installation of the AC generator. These operations can be accomplished with the engine in the frame after removing the left crankcase cover.
- For AC generator inspection, refer to section 16.

TOOLS

COMMON

Universal Holder	07725–0030000	(commercially available) or Band Strap wrench (commercially available in U.S.A.)
Rotor Puller	07733–0020001	(or 07933–3290001)

TORQUE VALUES

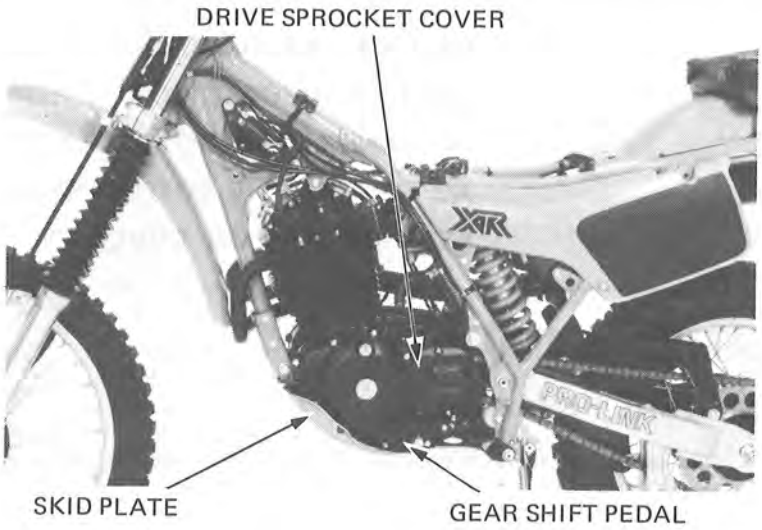
AC generator	100–120 N·m (10.0–12.0 kg-m, 72–87 ft-lb)
Left crankcase cover	8– 12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Gearshift pedal	8– 12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)
Drain plug	20– 30 N·m (2.0–3.0 kg-m, 14–21 ft-lb)

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LEFT CRANKCASE COVER REMOVAL

Remove the seat and fuel tank.
Remove the AC generator wire bands and disconnect the wire.
Remove the wire harness bands.

Remove the skid plate, drive sprocket cover and gearshift pedal.

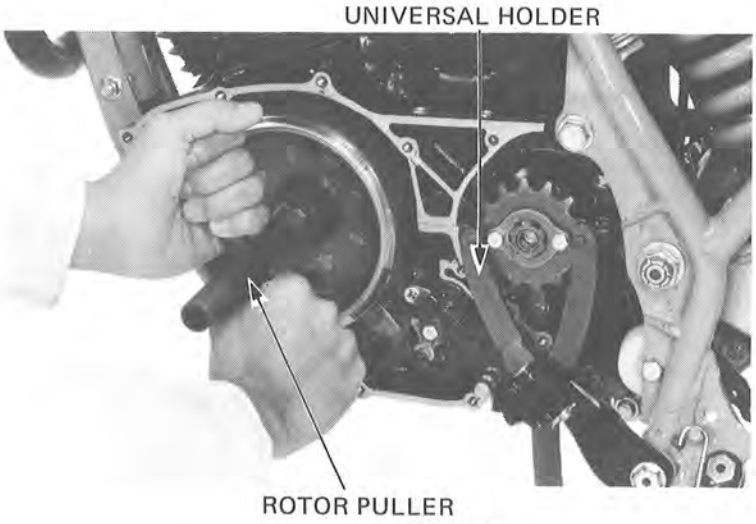


Drain the engine oil.
Remove the chain.
Remove the left crankcase cover.



AC GENERATOR ROTOR REMOVAL

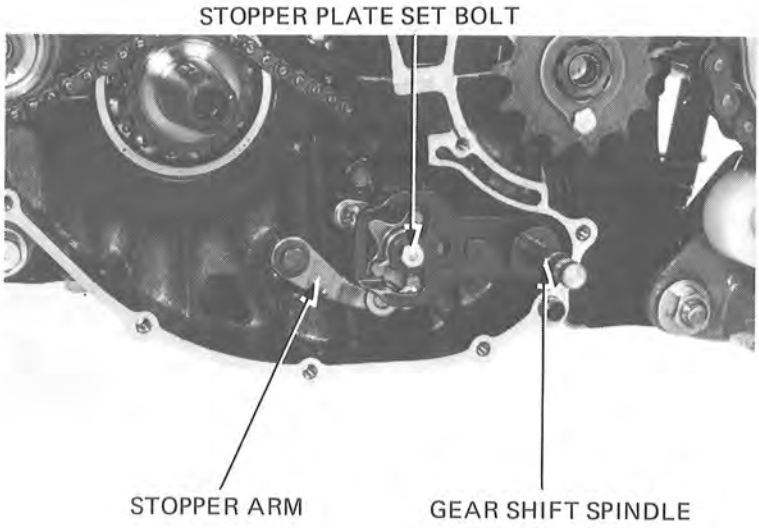
Shift the transmission into top gear.
Hold the drive sprocket with a universal holder, or hold the flywheel with a band strap wrench.
Remove the rotor bolt and remove the rotor using the puller.



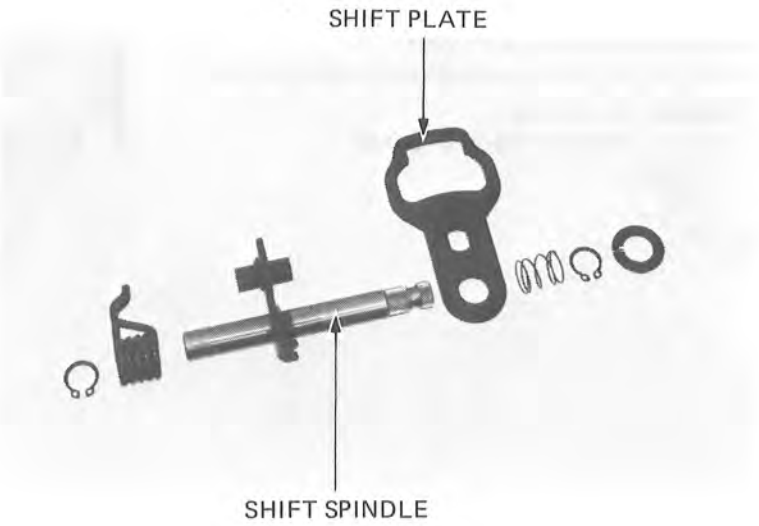
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GEARSHIFT LINKAGE DISASSEMBLY

Loosen the stopper plate set bolt.
Remove the gearshift spindle.
Remove the shift stopper arm and spring.



Remove the circlip, spring and shift plate.
Remove the thrust washer, circlip and return spring.



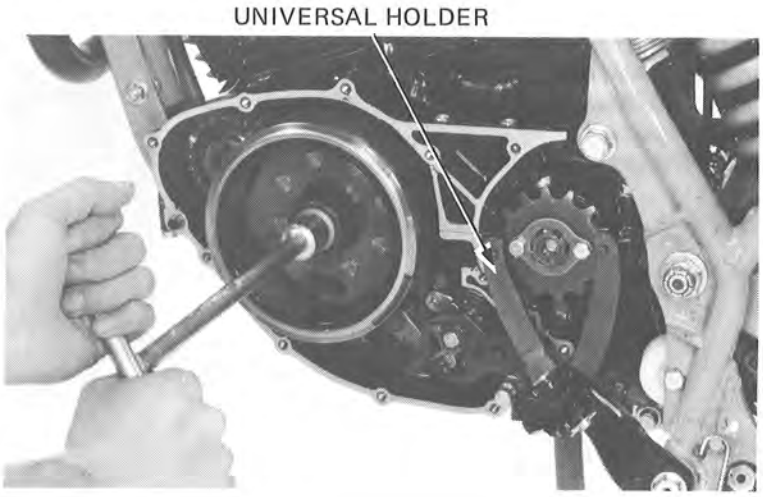
AC GENERATOR ROTOR INSTALLATION

Install the gearshift linkage.

Install the rotor by aligning the woodruff key with the rotor keyway.

Shift the transmission into top gear.
Hold the drive sprocket with a universal holder, or hold the flywheel with a band strap wrench.
Tighten the rotor bolt.

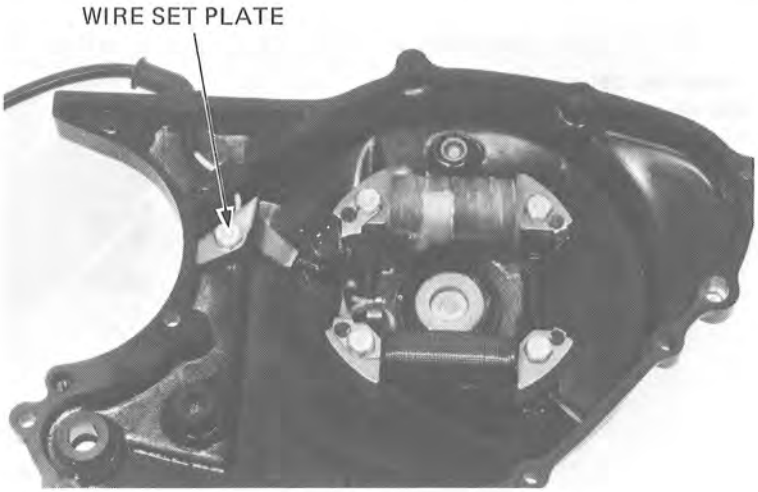
TORQUE: 100–120 N·m
(10.0–12.0 kg-m, 72–87 ft-lb)



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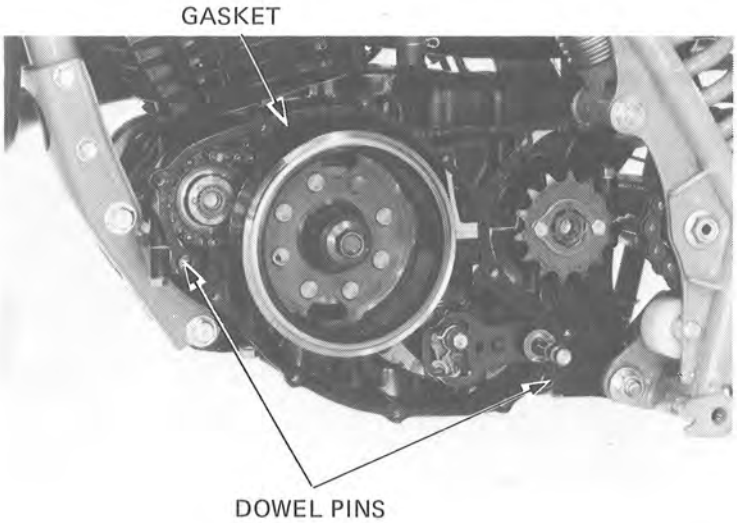
LEFT CRANKCACE COVER INSTALLATION

Install the stator coils into the left crankcase cover. Place the AC generator wire in the groove and install the wire clamp with the bolt.

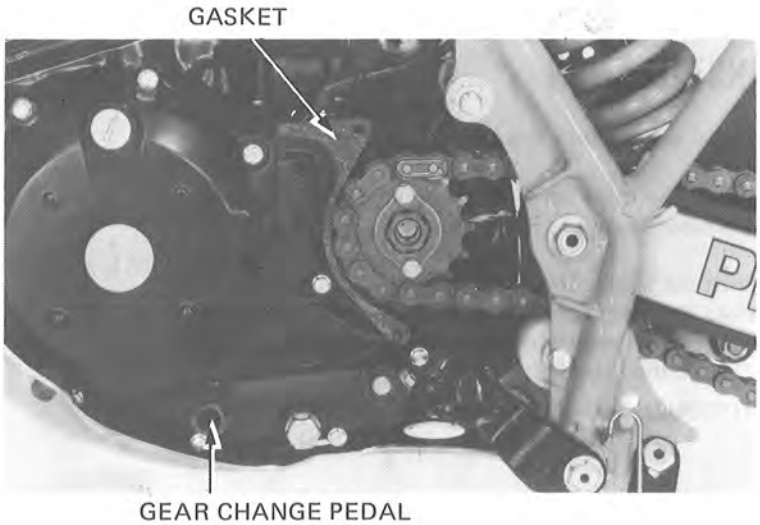


Install the dowel pins and gasket.
Install the left crankcase cover and tighten the bolts.

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



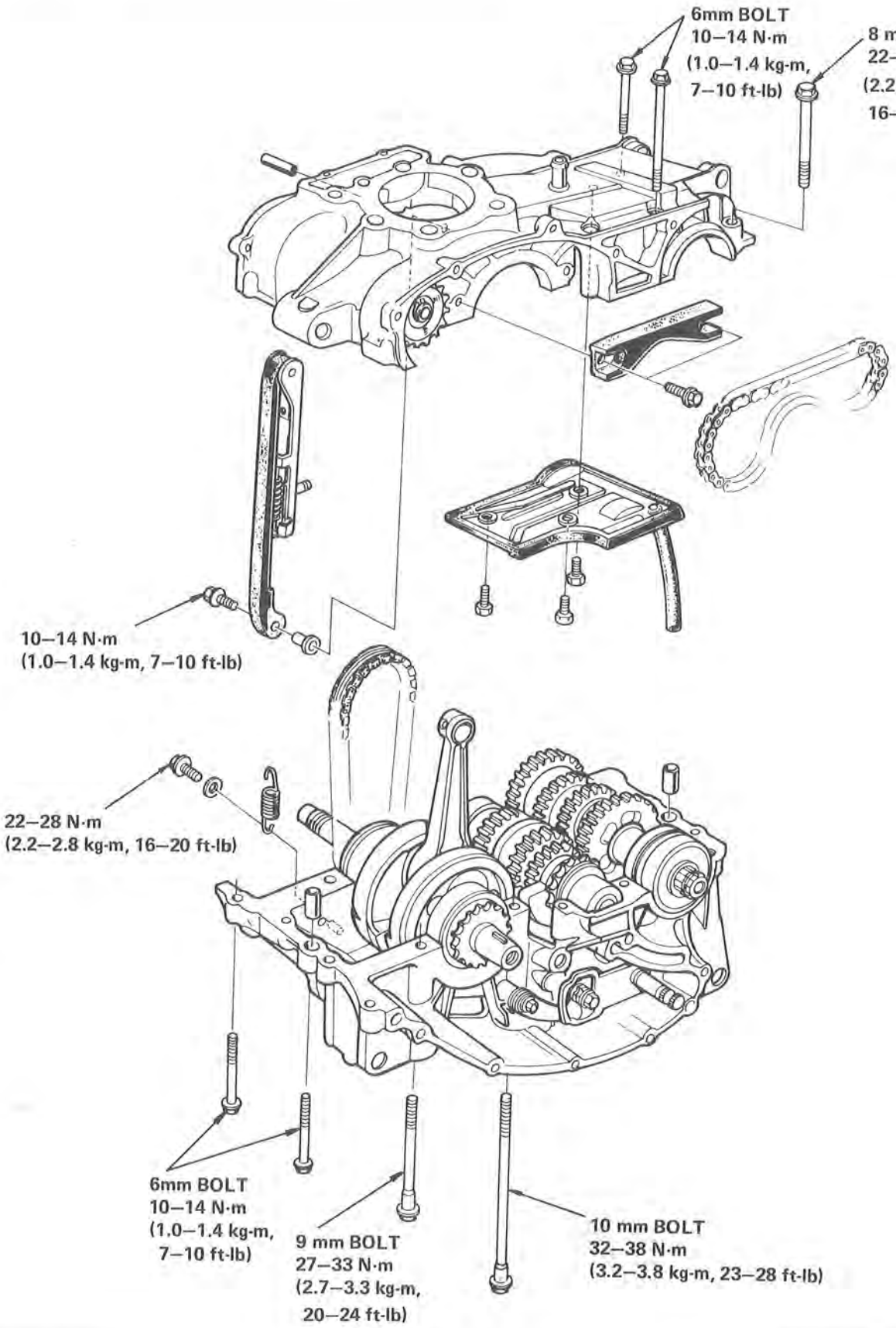
Connect and route the wires.
Install the wire harness band.
Install the drive chain (Page 3-15), skid plate and gearshift pedal.
Install the gasket and cover.



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10. CRANKCASE

SERVICE INFORMATION	10–1
CRANKCASE SEPARATION	10–2
CRANKCASE ASSEMBLY	10–4

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The crankcase must be separated to repair the crankshaft, connecting rod, kick starter, spindle and spring, transmission and balancer.
- Remove the following parts before separating the crankcase.

ENGINE REMOVAL . . . . . Section 5
CYLINDER HEAD . . . . . Section 6
CYLINDER/PISTON . . . . . Section 7
CLUTCH/OIL PUMP . . . . . Section 8
AC GENERATOR . . . . . Section 9

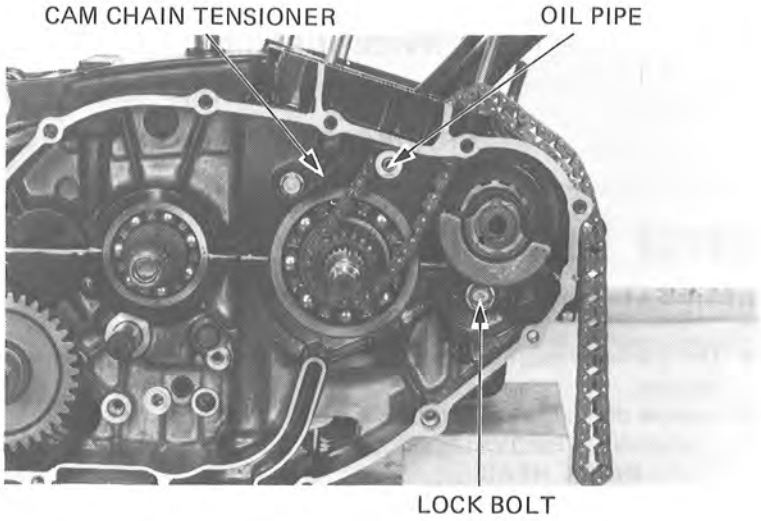
TORQUE VALUES

Upper crankcase	6 mm bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
	8 mm bolt	22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)
Lower crankcase	6 mm bolt	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
	9 mm bolt	27–33 N·m (2.7–3.3 kg-m, 20–24 ft-lb)
	10 mm bolt	32–38 N·m (3.2–3.8 kg-m, 23–28 ft-lb)
Balancer lock bolt		22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)
Cam chain tensioner		10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)

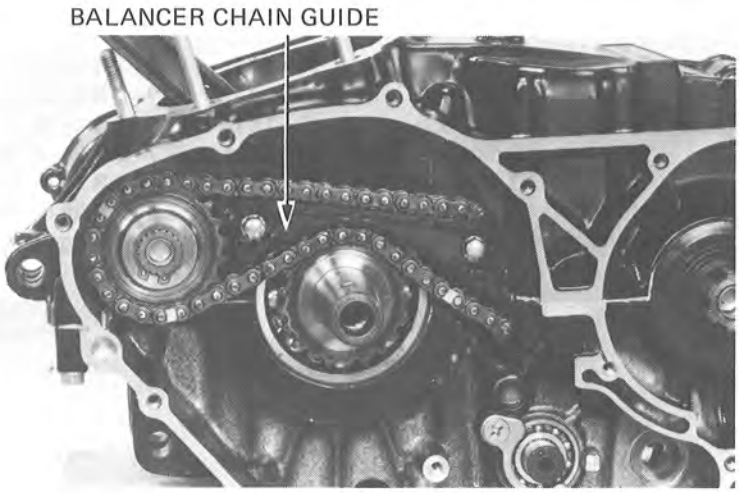
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CRANKCASE SEPARATION

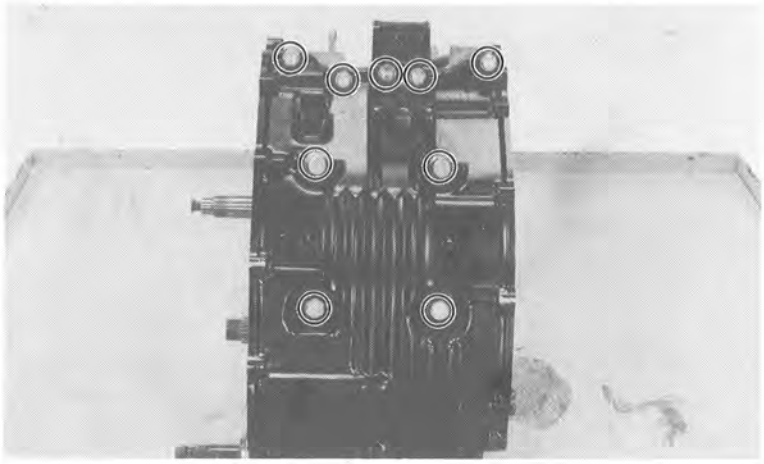
Remove the balancer holder lock bolt and spring.
Remove the cam chain tensioner.
Remove the oil pipe.
Remove the cam chain.



Remove the chain guide.

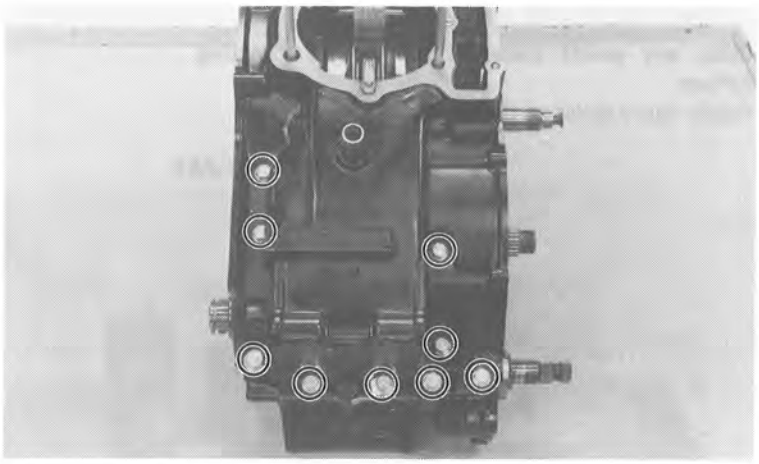


Turn the engine upside down and remove the bottom crankcase bolts.



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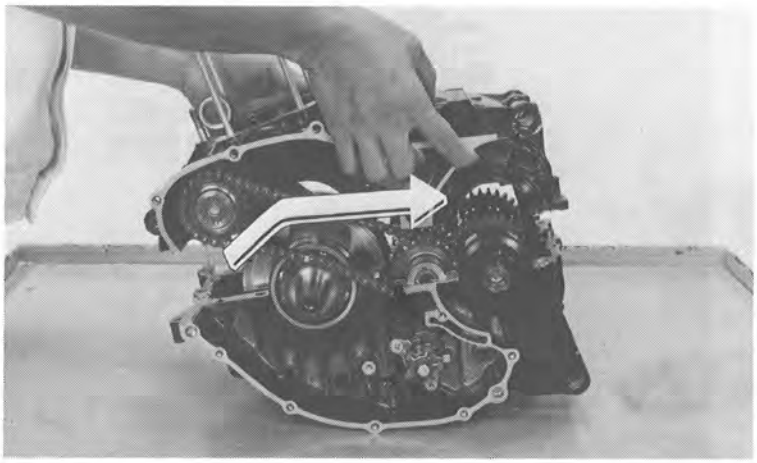
Turn the engine right side up and remove the upper crankcase bolts.



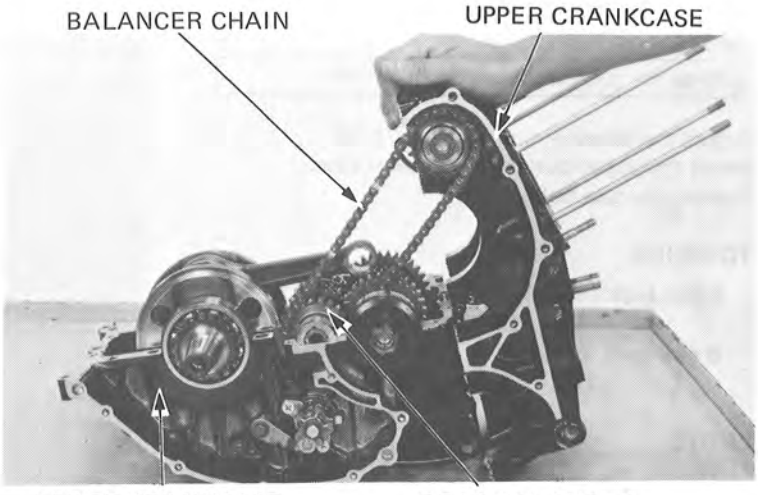
Separate the crankcase.

CAUTION:

Do not pry between the upper and lower cases. Lift the upper case away and back from the lower case.



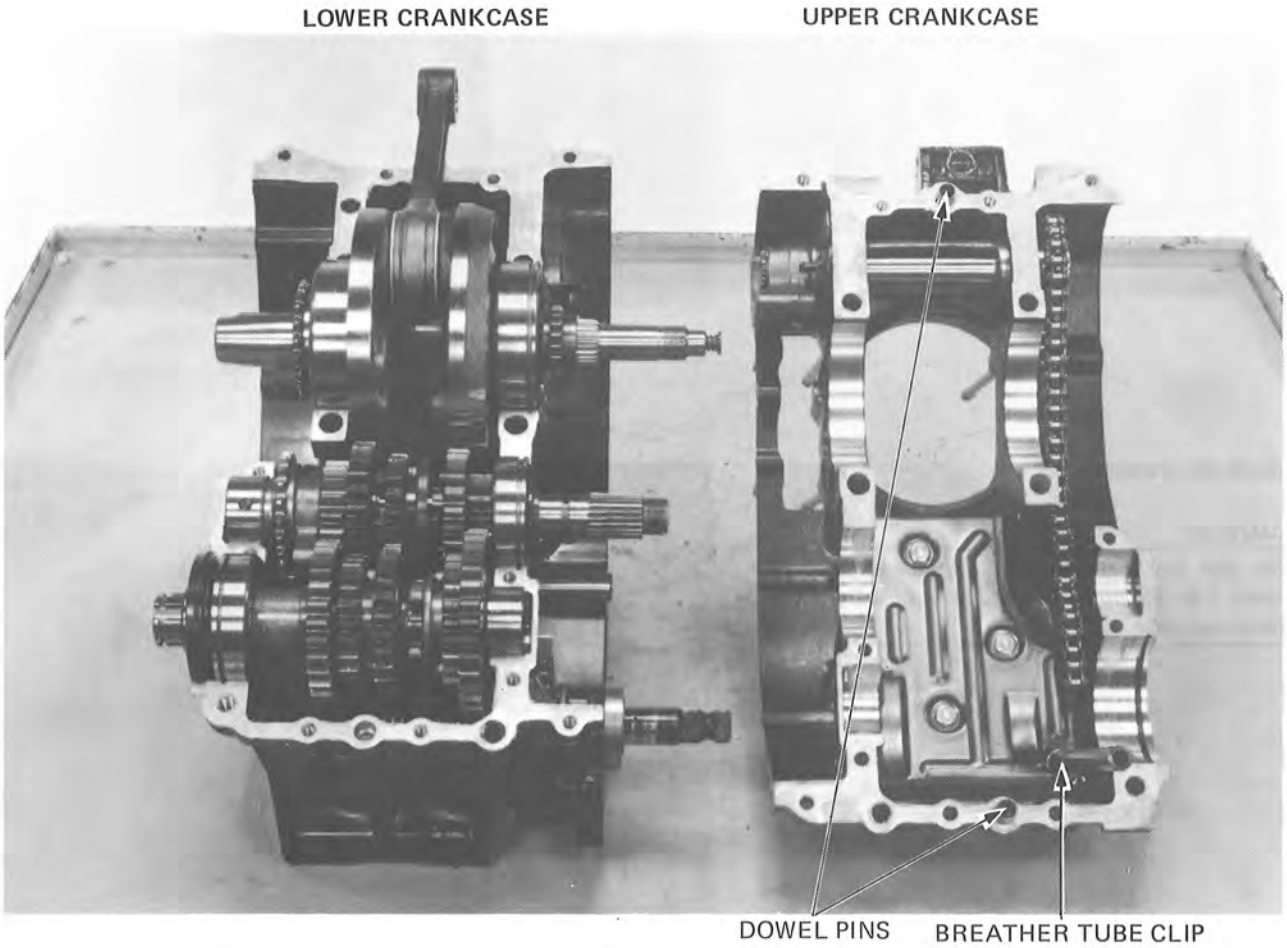
Remove the balancer chain from the rear balancer.



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CRANKCASE ASSEMBLY

Clean any gasket material from the case mating surface.
Apply liquid sealer to the surfaces.



NOTE

Note the breather tube clip direction.

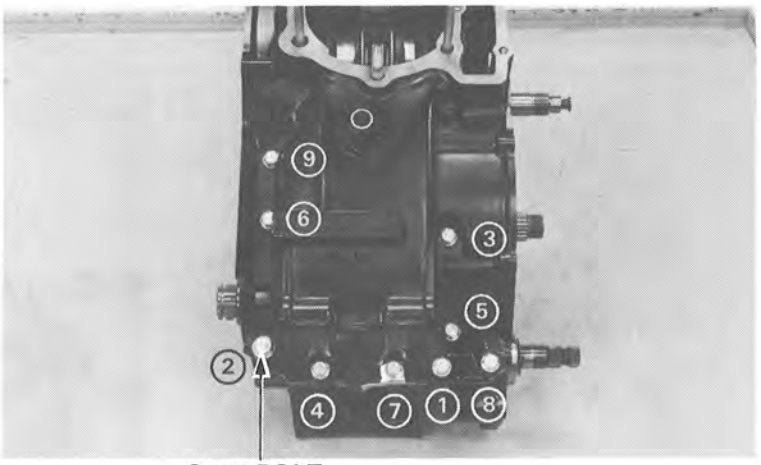
Adjust the balancer timing (Page 11-10)
Install the upper case onto the lower case.
Tighten the case bolts.

TORQUES:

6 mm bolt: 10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
8 mm bolt: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)

NOTE

Tighten the bolts in two or more steps in the sequence shown.



8 mm BOLT

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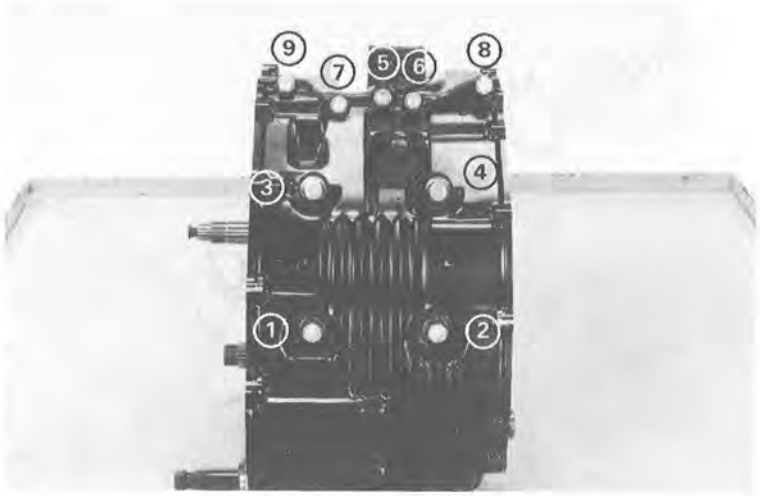
Turn the crankcase upside down and tighten the remaining case bolts.

TORQUES:

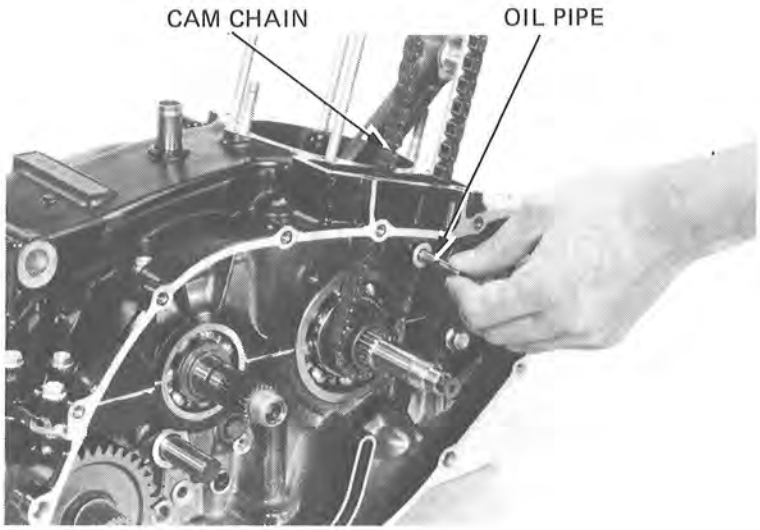
6 mm bolt: 10–14 N·m
(1.0–1.4 kg-m, 7–10 ft-lb)
9 mm bolt: 27–32 N·m
(2.7–3.2 kg-m, 20–23 ft-lb)
10 mm bolt: 33–37 N·m
(3.3–3.7 kg-m, 24–27 ft-lb)

NOTE

Tighten the bolts in two or more steps in the sequence shown.



Install the cam chain and oil pipe.

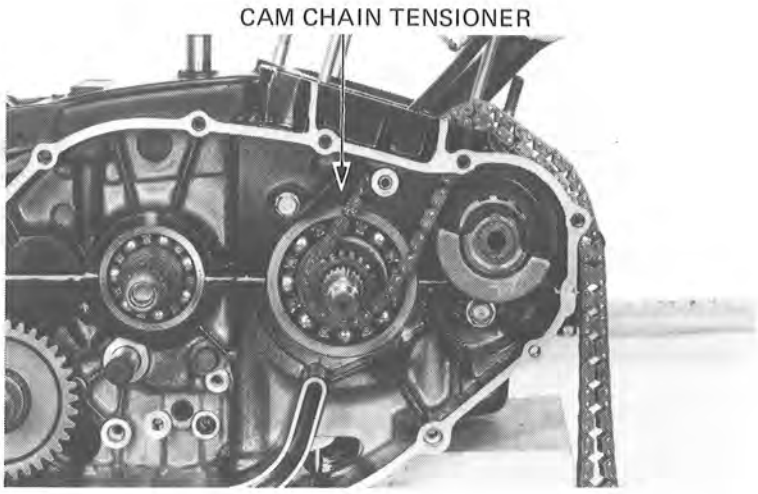


Install the chain tensioner and tighten the bolt.

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

NOTE

Note the direction of the collar.



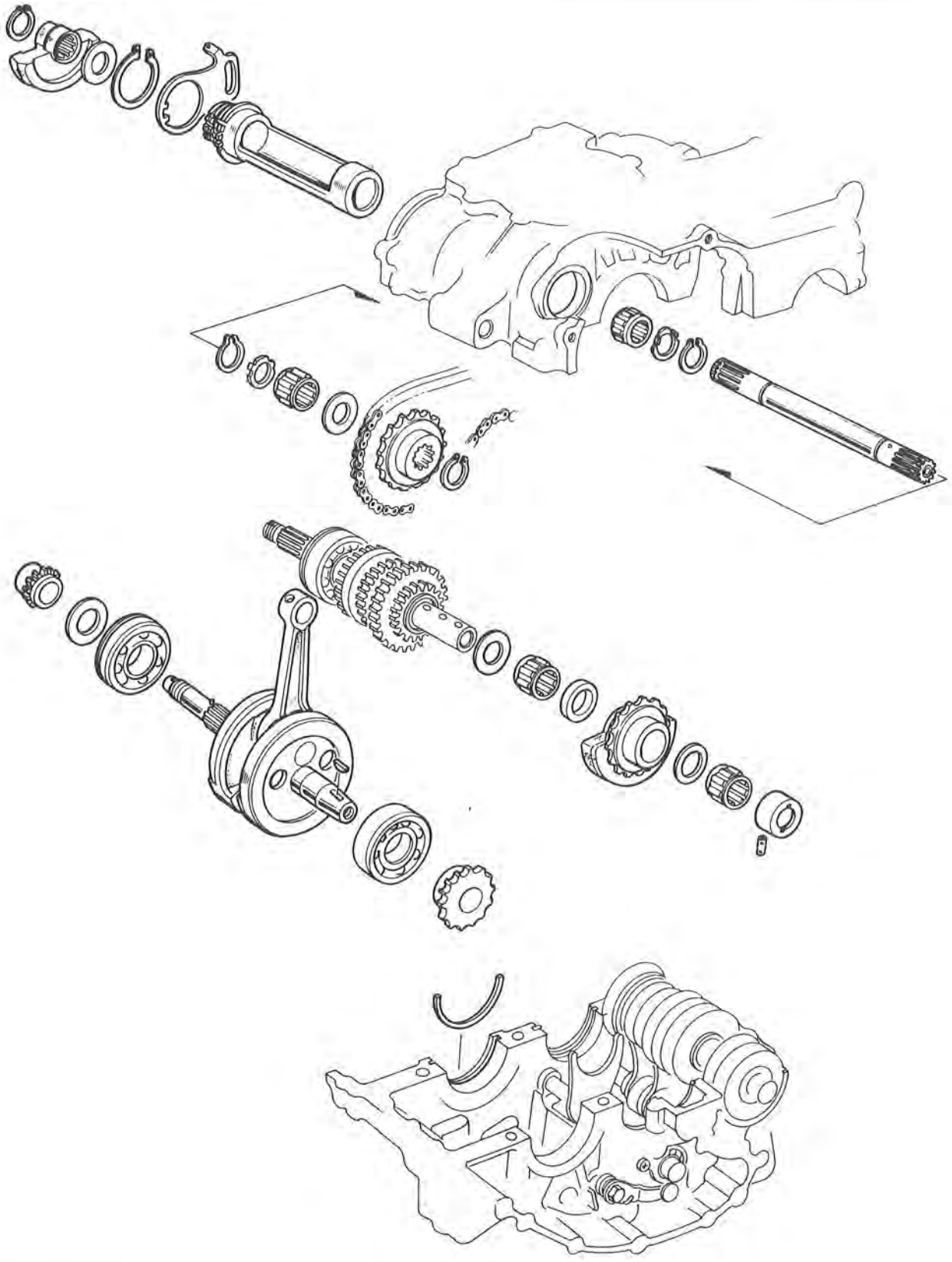
Install the balance spring and tighten the balancer holder lock bolt.

TORQUE: 22–28 N·m
(2.2–2.8 kg-m, 16–20 ft-lb)

Install the AC generator (Section 9).
Install the clutch/oil pump (Section 8).

Install the cylinder/piston (Section 7).
Install the cylinder head (Section 6).
Install the engine into the frame.

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SERVICE INFORMATION	11–1
TROUBLESHOOTING	11–1
FRONT BALANCER REMOVAL	11–2
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CAMSHAFT TIMING SPROCKET REPLACEMENT	11–5
BALANCER TIMING SPROCKET REPLACEMENT	11–6
CRANKSHAFT INSTALLATION	11–6
REAR BALANCER INSTALLATION	11–6
FRONT BALANCER INSTALLATION	11–7
BALANCER TIMING	11–8
BALANCER TIMING INSPECTION	11–10

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- To service the crankshaft and rear balancer, it is necessary to separate the crankcase. The front balancer can be serviced without crankcase separation.
- After installing the balancer, check balancer timing and adjust chain tension.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Crankshaft	Connecting rod big end side clearance	0.050–0.650 mm (0.0020–0.0256 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)
	Connecting rod small end I.D.	21.020–21.041 mm (0.8276–0.8284 in)	21.07 mm (0.830 in)
	Crankshaft runout	———	0.1 mm (0.004 in)
Balancer	Shaft holder O.D.	39.964–39.980 mm (1.5734–1.5740 in)	39.91 mm (1.571 in)
	Shaft holder I.D.	26.007–26.020 mm (1.0239–1.0244 in)	26.05 mm (1.026 in)
	Rear balancer I.D.	26.007–26.020 mm (1.0239–1.0244 in)	26.05 mm (1.026 in)
Crankshaft bearing play	Radial	———	0.10 mm (0.004 in)
	Axial	———	0.05 mm (0.002 in)

TROUBLESHOOTING

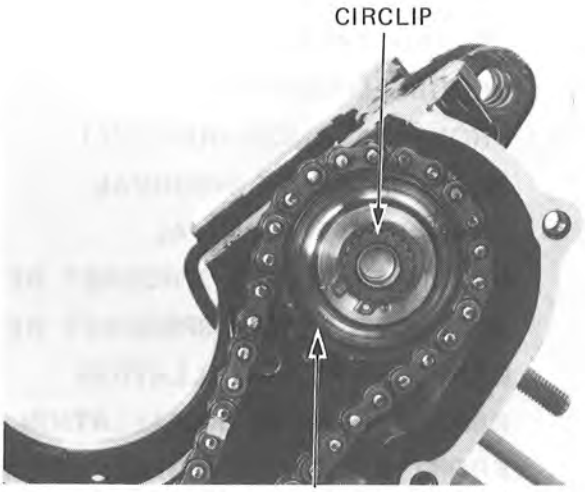
Excessive Noise

1. Crankshaft
   - Worn connecting rod small and big end bearings.
   - Bent connecting rod.
   - Worn crankshaft bearing.
2. Balancer
   - Improper timing adjustment.
   - Improper chain adjustment.
   - Damaged chain.

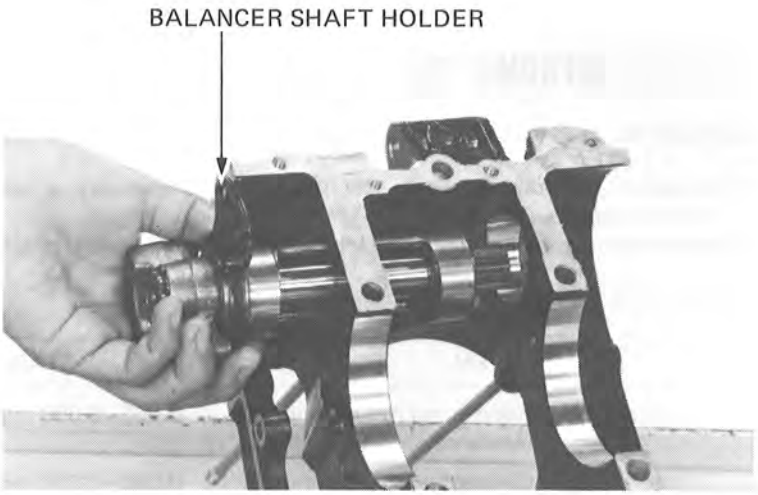
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FRONT BALANCER REMOVAL

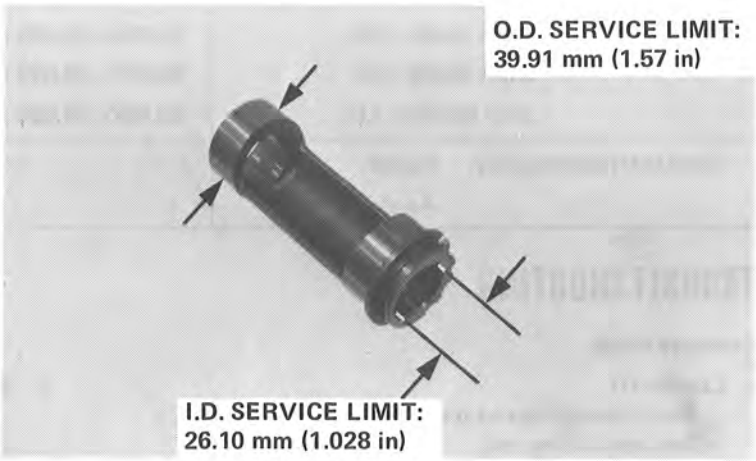
Separate the crankcase (Page 10-2).
Remove the balance chain from the rear balancer.
Remove the 20 mm circlip and the balancer sprocket.



Remove the balancer shaft and shaft holder.
Remove the shaft holder circlip and remove the shaft holder from the shaft.



Measure the shaft hole I.D. and O.D



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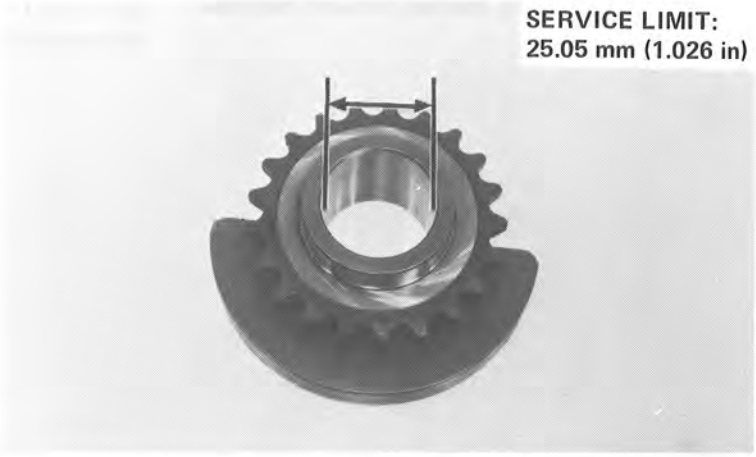
REAR BALANCER REMOVAL

Remove the needle bearing and thrust washer from the mainshaft.
Remove the rear balancer, thrust washer and needle roller bearing.



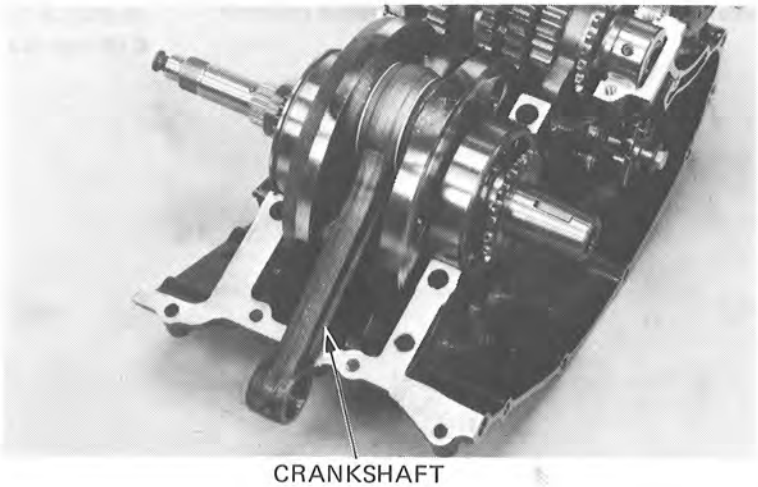
Measure the balancer I.D.

SERVICE LIMIT:
25.05 mm (1.026 in)



CRANKSHAFT REMOVAL

Separate the crankcase (Page 10-2).
Remove the crankshaft.

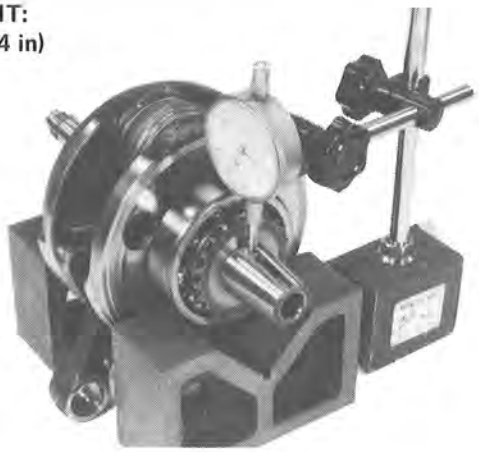


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CRANKSHAFT INSPECTION

Set the crankshft on a truing stand or V blocks and measure the runout using a dial indicator.

SERVICE LIMIT:
0.10 mm (0.004 in)



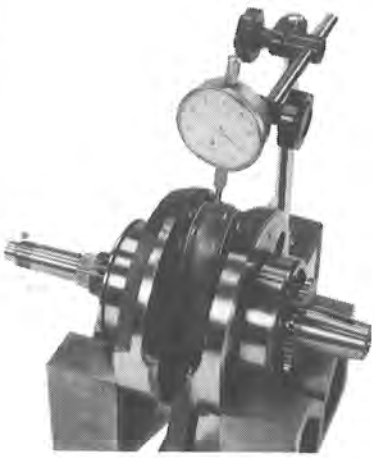
Measure the connecting rod big end side clearance with a feeler gauge.

SERVICE LIMIT:
0.8 mm (0.03 in)



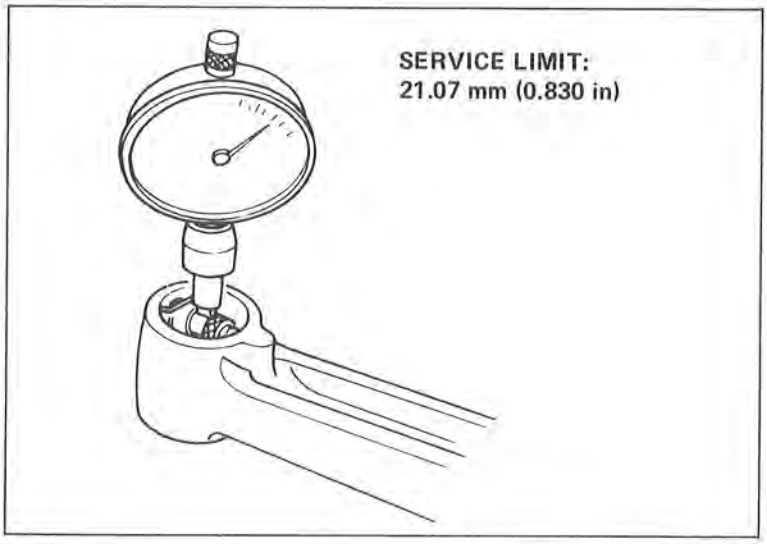
Measure the connecting rod big end radial clearance.

SERVICE LIMIT:
0.05 mm (0.002 in)

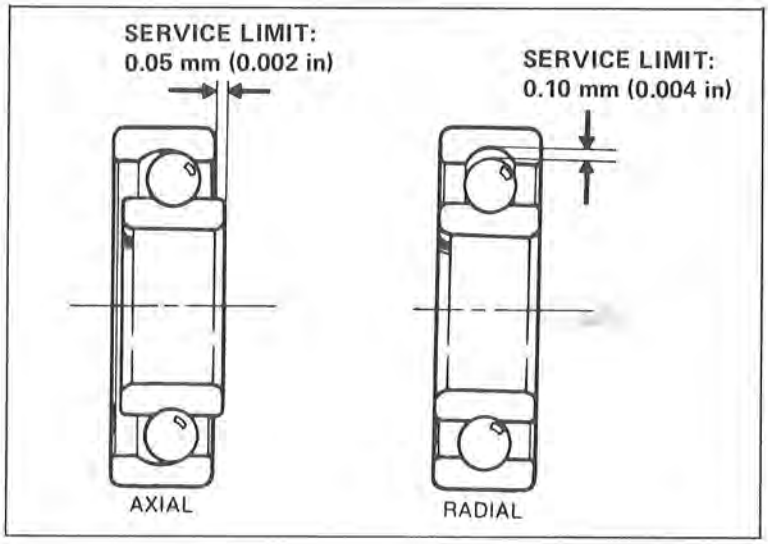


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Measure the connecting rod small end I.D.

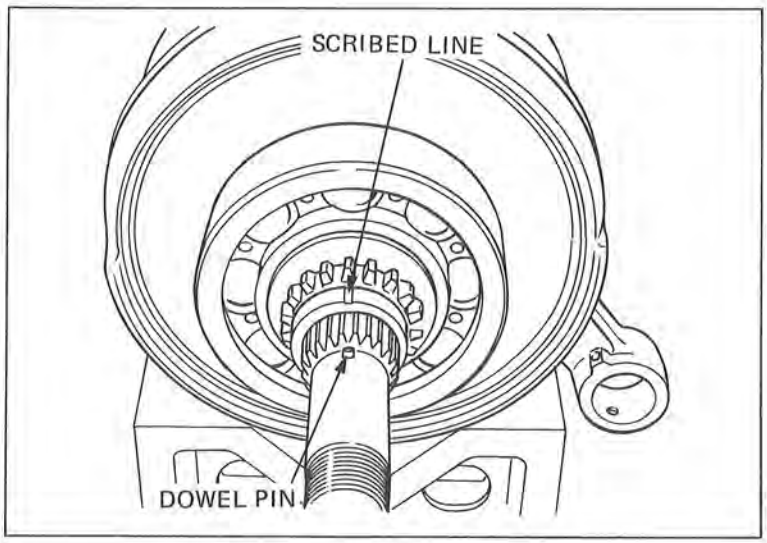


Spin the crankshaft bearing by hand and check for play.
The bearing must be replaced if it is noisy or has excessive play.



CAMSHAFT TIMING SPROCKET REPLACEMENT

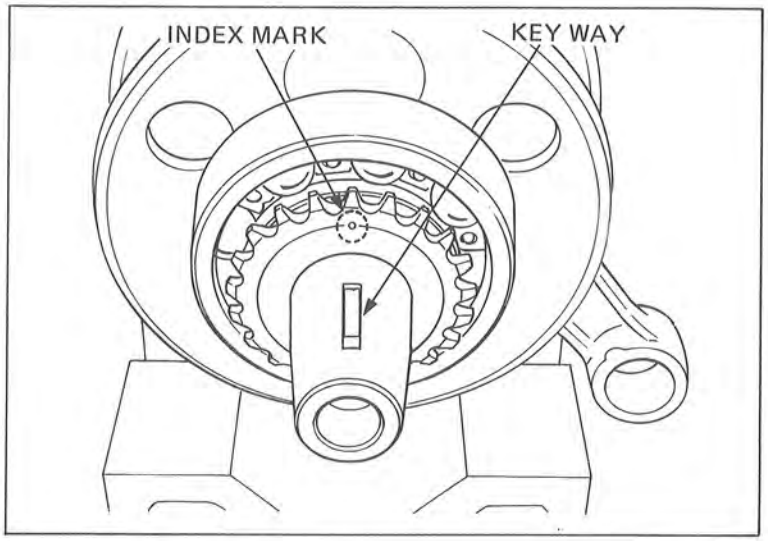
Before installing a new sprocket, scribe a line from a tooth center over the gear boss in the axial direction.
Install the sprocket, aligning the scribed line with the dowel pin hole in the sprocket shaft.



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BALANCER TIMING SPROKET REPLACEMENT

Remove the balancer timing sprocket from the crankshaft.
Install a new sprocket on the shaft with the punch mark aligned with the shaft keyway.



CRANKSHAFT INSTALLATION

Place the set ring in the lower crankcase.
Install the crankshaft and rod assembly in the lower crankcase.

NOTE

Be sure the set ring fits in the main bearing outer race.



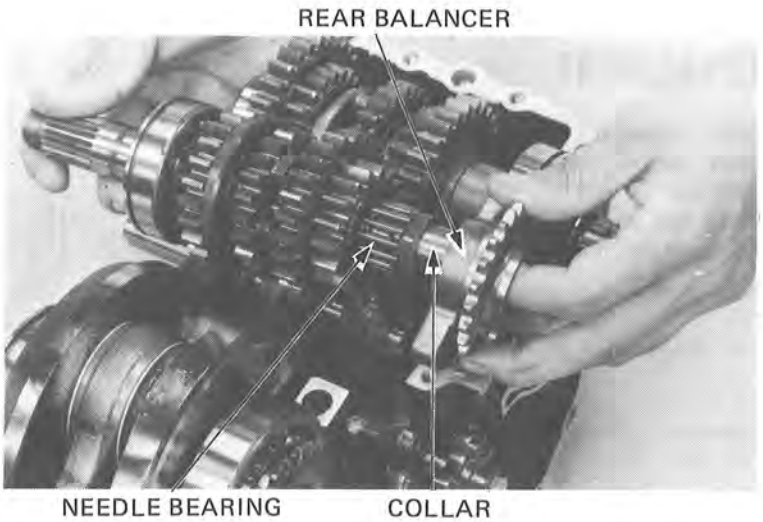
REAR BALANCER INSTALLATION

Install the rear balancer, thrust washer, spacer and needle bearing.

NOTE

Note the needle bearing location.

Install the thrust washer and needle bearing.



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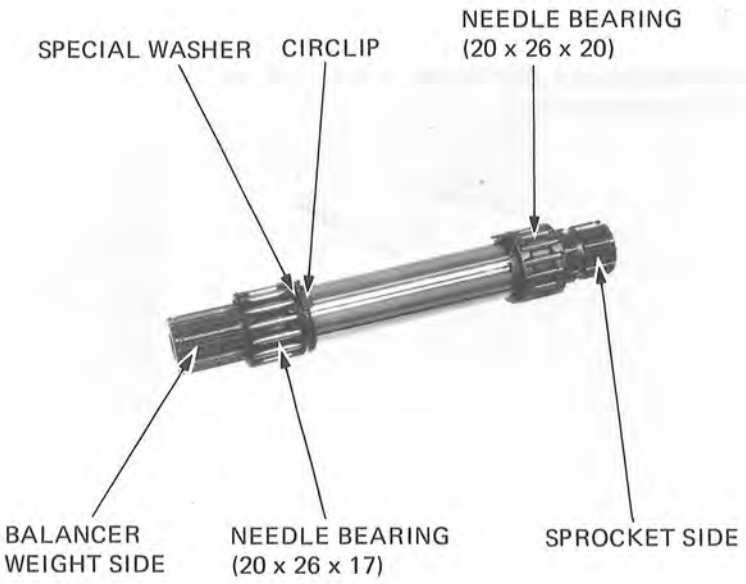
FRONT BALANCER INSTALLATION

Set the circlips in the balancer shaft with the sharp edges toward the outside.

Install the special washers and needle bearings.

NOTE

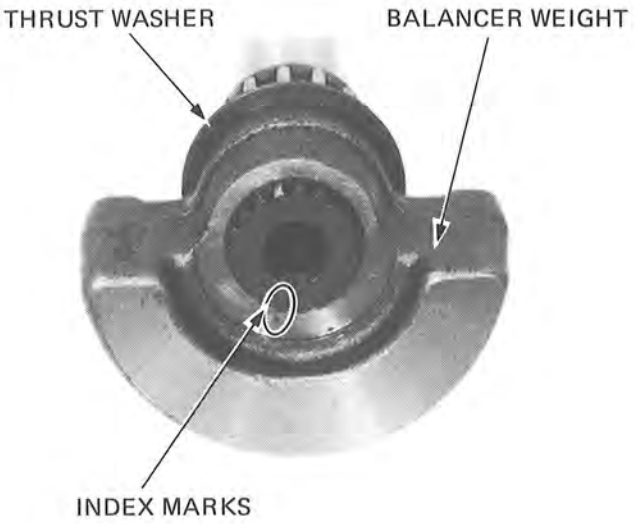
- Align the washer tabs with the circlips.
- Apply grease to the inner side of the washer to hold it in place during installation.



Install the thrust washer and balancer weight.

NOTE

Align the index mark on the balancer shaft with the index mark on the balancer weight.

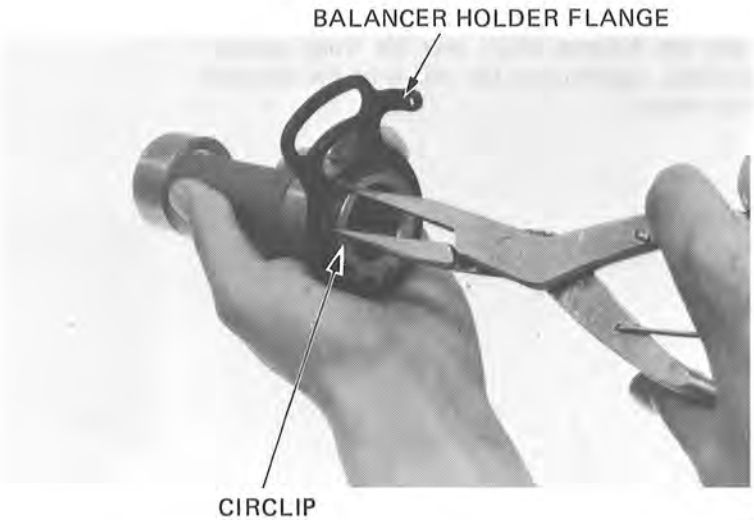


Install the circlip with the sharp edge on the outside.

Install the flange on the balancer holder and secure with the circlip.

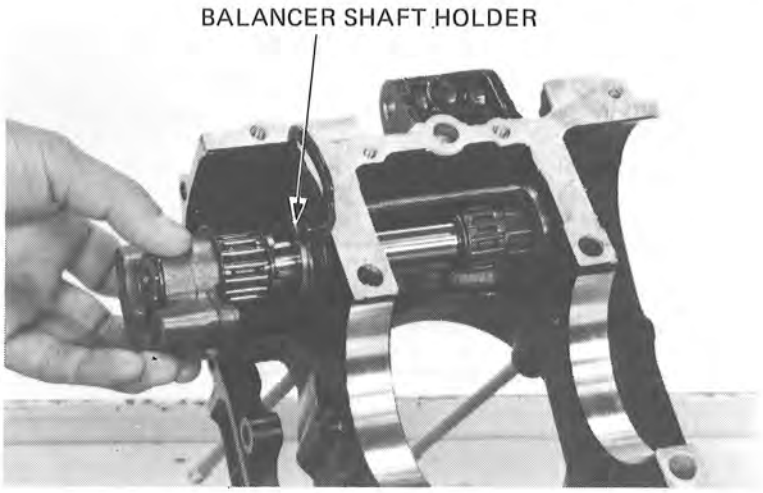
NOTE

- Note the direction of the flange.
- Install the circlip with the sharp edge towards the outside.



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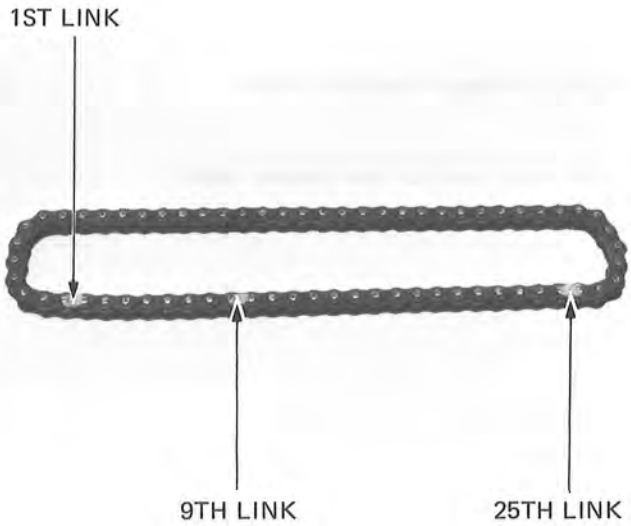
Install the balancer shaft holder in the crankcase. Install the balancer shaft.



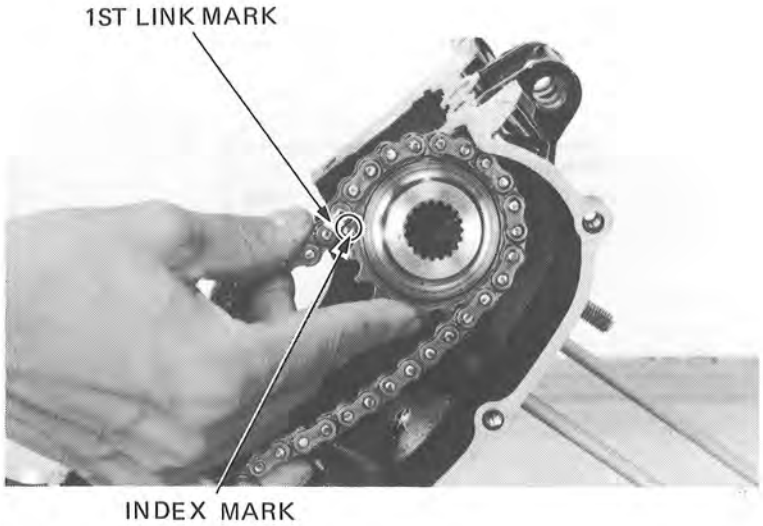
BALANCER TIMING

Mark the balancer chain at three points, 1st, 9th and 25th links, starting at any link toward the right along the lower length of the chain as shown.

The 1st link is for the front balancer, the 9th link is for the crankshaft and the 25th link is for the rear balancer.

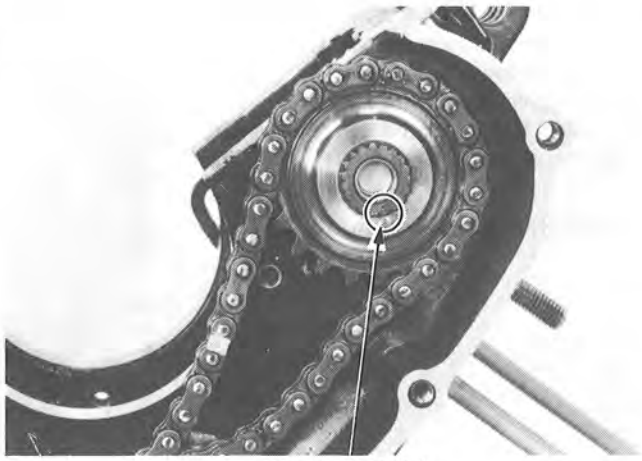


Place the balancer chain over the front balancer sprocket, aligning the 1st link with the sprocket index mark.



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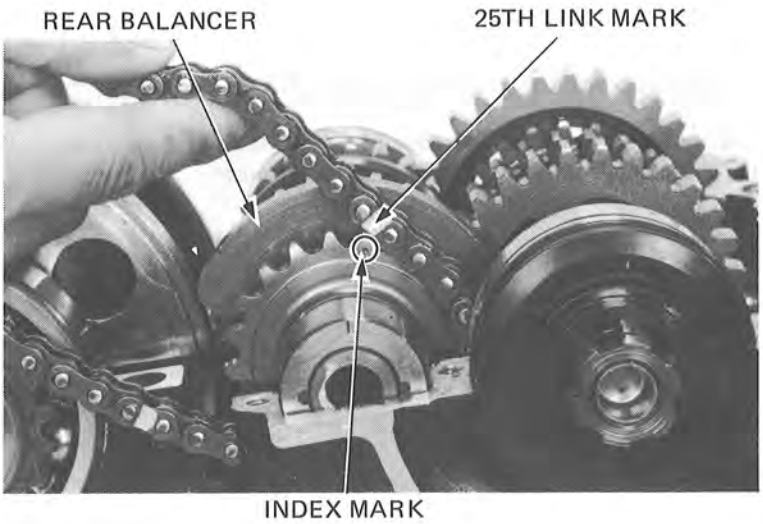
Install the thrust washer. Align the sprocket and balancer shaft index marks and install the sprocket on the shaft.
Secure with the circlip.



Place the balancer chain on the rear balancer sprocket, aligning the 25th link with the index mark.

NOTE

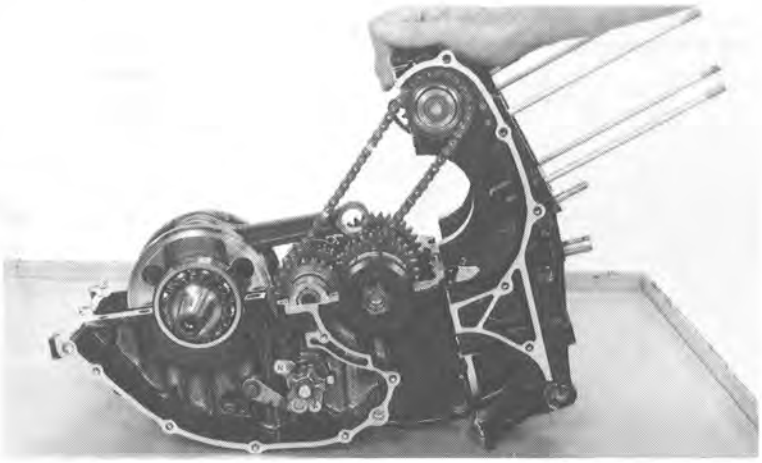
Check that the 1st link is aligned with the index mark on the front balancer sprocket.



Install the upper crankcase onto the lower crankcase.

NOTE

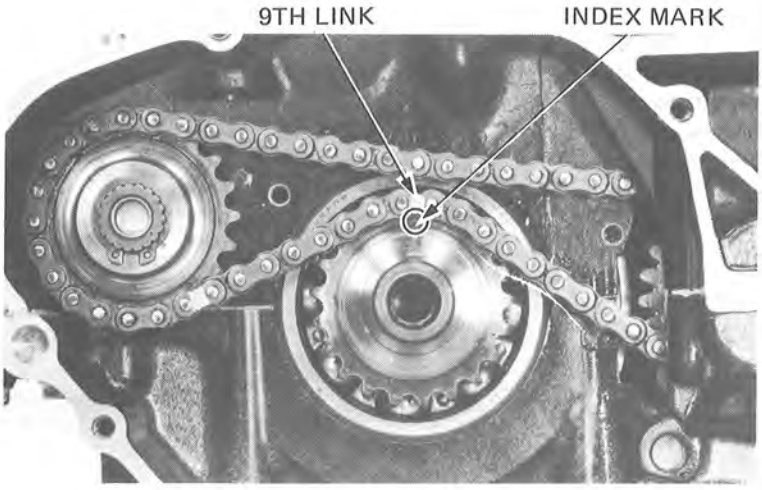
Keep the balancer chain engaged with the sprocket mark.



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Ensure that the 9th link is in line with the punch mark on the crankshaft balancer sprocket.
Tighten the upper and lower case bolts.
Install the balancer chain guide and spring.
Move the balancer flange to the left one graduation from where it rests, and tighten the lock nut.

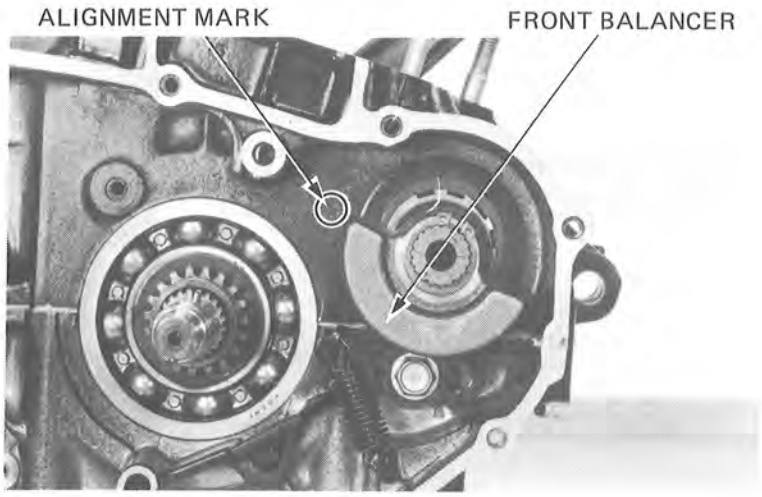
TORQUE: 18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)



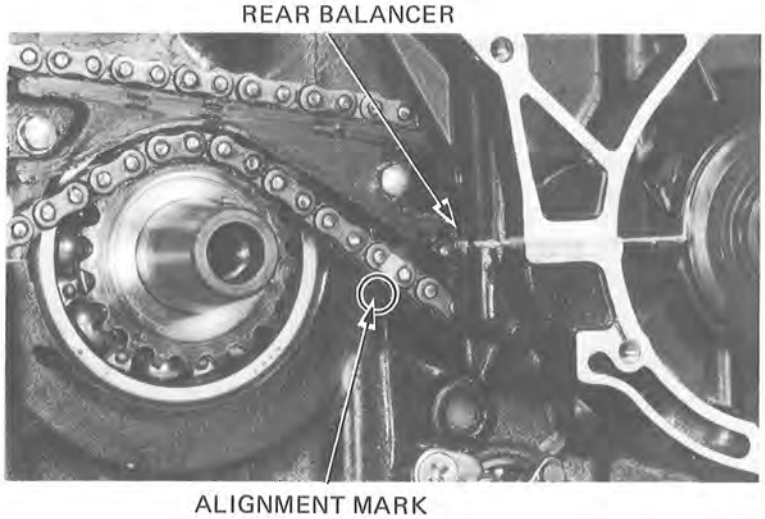
BALANCER TIMING INSPECTION

Rotate the crankshaft until the piston is at TDC.

The timing is correct if the edge of the front balancer is aligned with the alignment mark as shown.



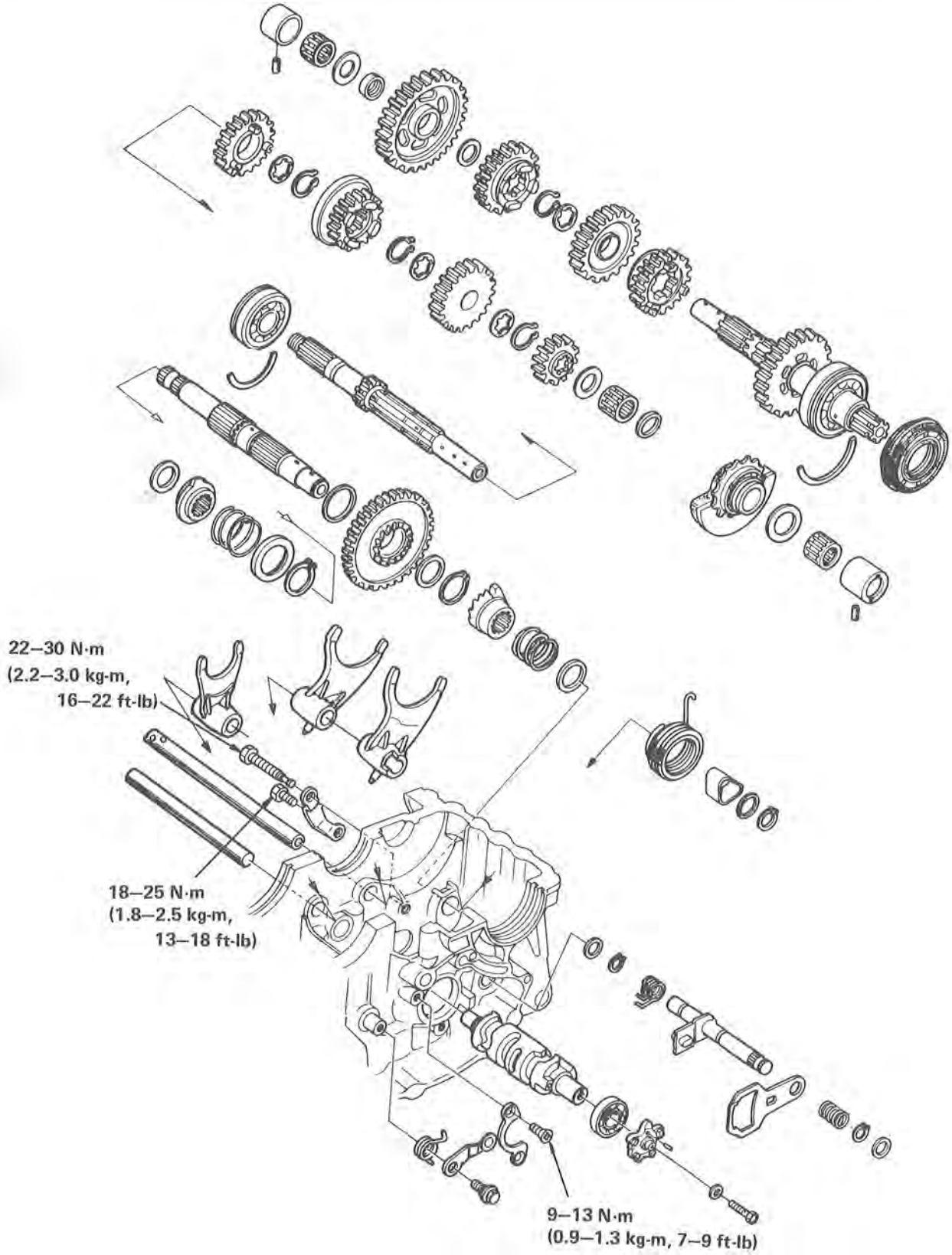
Ensure that the edge of the rear balancer is aligned with the crankcase alignment mark.



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MEMO

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12. TRANSMISSION

SERVICE INFORMATION	12–1
TROUBLESHOOTING	12–2
TRANSMISSION DISASSEMBLY	12–3
KICK STARTER DISASSEMBLY	12–8
KICK STARTER ASSEMBLY	12–9
TRANSMISSION ASSEMBLY	12–11

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- The crankcase must be separated to service the transmission and kick starter.

SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Gear backlash	Low, 2nd	0.044–0.133 mm (0.0017–0.0052 in)	0.2 mm (0.01 in)
	3rd, 4th, top	0.046–0.140 mm (0.0018–0.0055 in)	0.2 mm (0.01 in)
Gear side clearance	M 4th	0.06–0.41 mm (0.002–0.016 in)	0.50 mm (0.020 in)
	M Top	0.05–0.58 mm (0.002–0.023 in)	0.65 mm (0.026 in)
	C Low	0.05–0.22 mm (0.002–0.009 in)	0.30 mm (0.012 in)
	C 3rd	0.06–0.41 mm (0.002–0.016 in)	0.50 mm (0.020 in)
Gear dog clearance (neutral)		———	0.3 mm (0.01 in)
Shaft-to-gear clearance	M 4, M top	0.040–0.082 mm (0.0016–0.0032 in)	0.15 mm (0.006 in)
	C 2nd, C 3rd	0.040–0.082 mm (0.0016–0.0032 in)	0.15 mm (0.006 in)
Shaft-to-C Low gear bushing clearance		0.020–0.054 mm (0.0008–0.0021 in)	0.10 mm (0.004 in)
Bushing-to-C Low gear clearance		0.015–0.057 mm (0.0006–0.0022 in)	0.10 mm (0.004 in)
Gear I.D.	C 3rd, C Top	25.020–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
	M 4th, M Top	25.020–25.041 mm (0.9850–0.9859 in)	25.10 mm (0.988 in)
C Low gear bushing	I.D.	20.020–20.041 mm (0.7882–0.7890 in)	20.10 mm (0.791 in)
	O.D.	25.005–25.016 mm (0.9844–0.9849 in)	24.95 mm (0.982 in)
Mainshaft	O.D.	24.959–24.980 mm (0.9826–0.9835 in)	24.91 mm (0.981 in)
		19.987–20.000 mm (0.7869–0.7874 in)	19.95 mm (0.785 in)
Countershaft	O.D.	19.987–20.000 mm (0.7869–0.7874 in)	19.95 mm (0.785 in)
		24.959–24.980 mm (0.9826–0.9835 in)	24.91 mm (0.981 in)
		26.959–26.980 mm (1.0614–1.0622 in)	26.91 mm (1.059 in)
Shift fork	Shift fork I.D. Center fork	12.000–12.021 mm (0.4724–0.4733 in)	12.05 mm (0.474 in)
	R/L forks	15.000–15.021 mm (0.5906–0.5914 in)	15.05 mm (0.593 in)
	Fork claw thickness	4.93–5.00 mm (0.194–0.197 in)	4.5 mm (0.18 in)
	Guide shaft O.D. Center shaft	11.966–11.984 mm (0.4711–0.4718 in)	11.91 mm (0.469 in)
	R/L shafts	14.966–14.984 mm (0.5892–0.5899 in)	14.91 mm (0.587 in)
Shift drum	Drum O.D.	11.966–11.984 mm (0.4711–0.4718 in)	11.91 mm (0.469 in)
Lower case	Case I.D.	12.000–12.027 mm (0.4724–0.4735 in)	12.10 mm (0.476 in)
Kick starter	Starter pinion I.D.	22.000–22.021 mm (0.8661–0.8670 in)	22.10 mm (0.870 in)
	Starter spindle O.D.	21.959–21.980 mm (0.8645–0.8654 in)	21.91 mm (0.863 in)

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TORQUE VALUES

Gearshift drum bearing set plate	9–13 N·m (0.9–1.3 kg-m, 7– 9 ft-lb)
Spring hook pin bolt	22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)
Kick starter stopper plate	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)

TROUBLESHOOTING

Hard to Shift

1. Improper clutch adjustment; too much free play
2. Shift forks bent
3. Shift shaft bent
4. Shift fork claw bent
5. Shift drum cam groove damaged

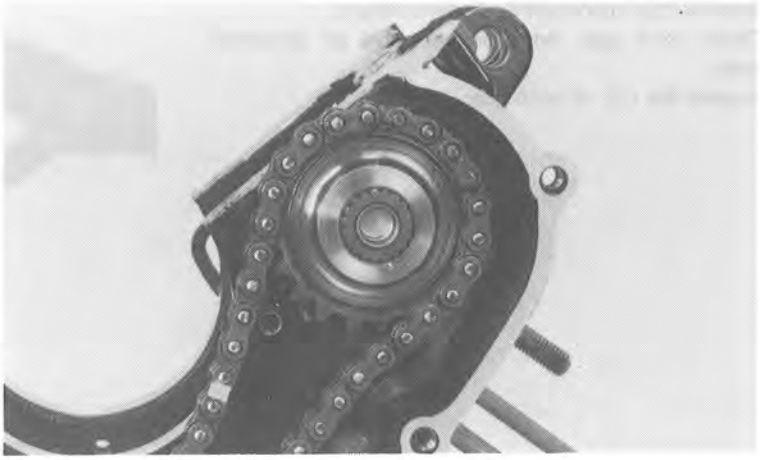
Transmission Jumps Out Of Gear

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

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TRANSMISSION DISASSEMBLY

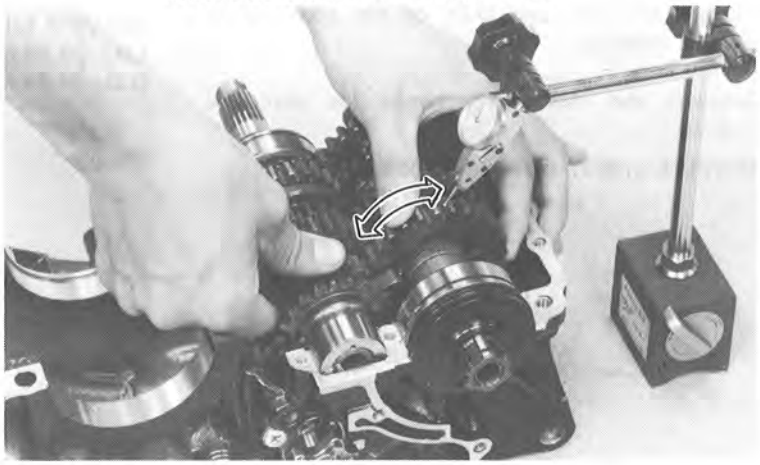
Separate the crankcase (Section 10).
Remove the balancer chain from the rear balancer.



TRANSMISSION GEAR INSPECTION

Inspect each gear for backlash.

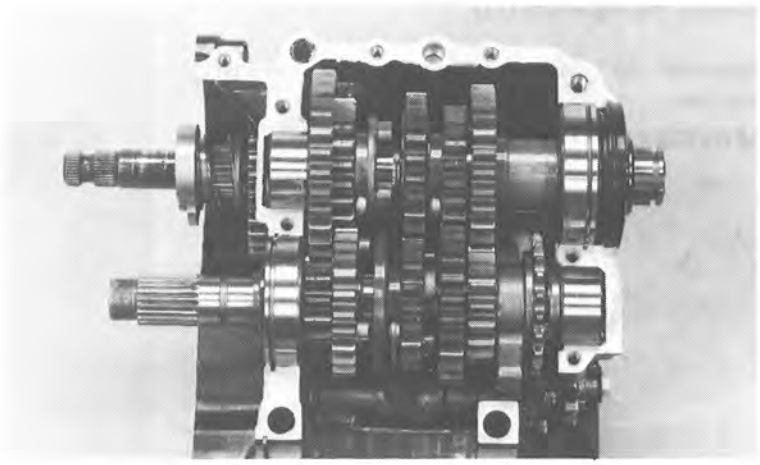
SERVICE LIMIT: 0.2 mm (0.01 in)



Place the gears in neutral, and check each gear dog for minimum end clearance.

SERVICE LIMIT: 0.30 mm (0.012 in)

If the clearance exceeds the service limit, inspect the thrust washers, gears, shift forks and shift drum, replacing the parts which show excessive wear.



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Remove the mainshaft and countershaft.
Check each gear dog for excessive or abnormal wear.
Inspect the I.D. of each gear.

SERVICE LIMITS:
C3RD, C TOP : 25.10 mm (0.988 in)
C4TH, M TOP : 25.10 mm (0.988 in)

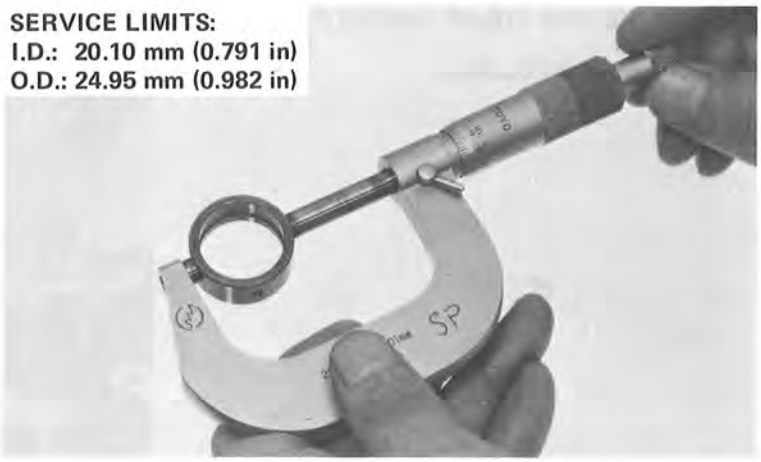


Measure the I.D. and O.D. of the countershaft low gear bushing.

Calculate the clearance between the gear and bushing.

SERVICE LIMIT: 0.10 mm (0.004 in)

SERVICE LIMITS:
I.D.: 20.10 mm (0.791 in)
O.D.: 24.95 mm (0.982 in)

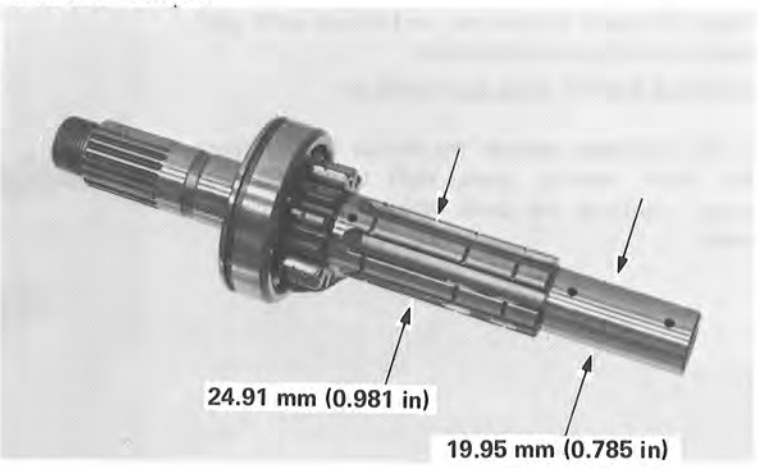


Measure the mainshaft O.D.

Calculate the clearance between the mainshaft and gear.

SERVICE LIMIT: 0.15 mm (0.006 in)

SERVICE LIMITS:



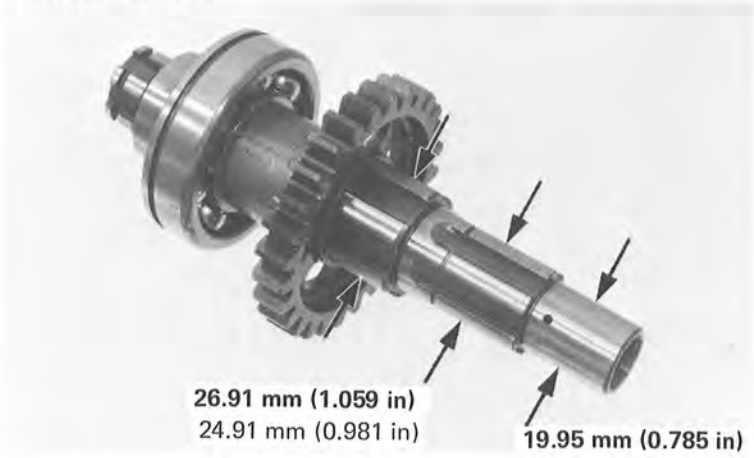
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Measure the countershaft O.D.

Calculate the clearance between the gear and countershaft.

SERVICE LIMIT: 0.15 mm (0.006 in)

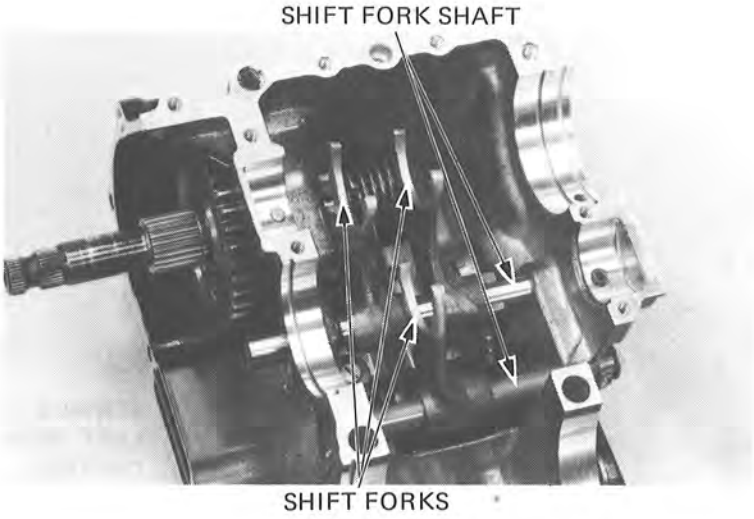
SERVICE LIMITS:



Remove the shift fork shafts and shift forks.
Mark the fork to ensure correct assembly.

NOTE

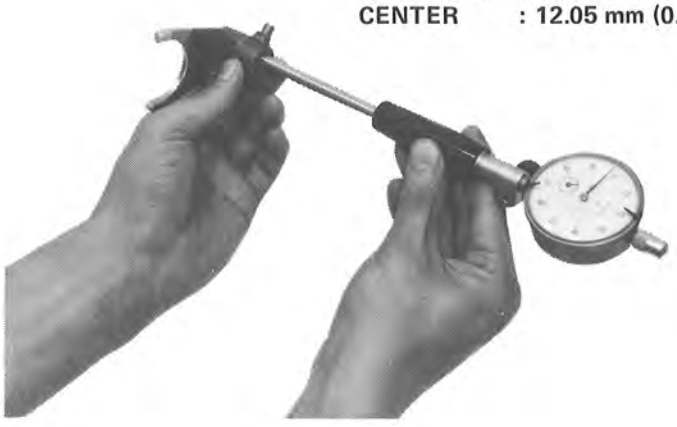
See page 12-12 for shift fork identification marks.



SHIFT FORK/GUIDE SHAFT INSPECTION

Measure the shift fork I.D.

SERVICE LIMITS:
LEFT, RIGHT: 15.05 mm (0.593 in)
CENTER : 12.05 mm (0.474 in)



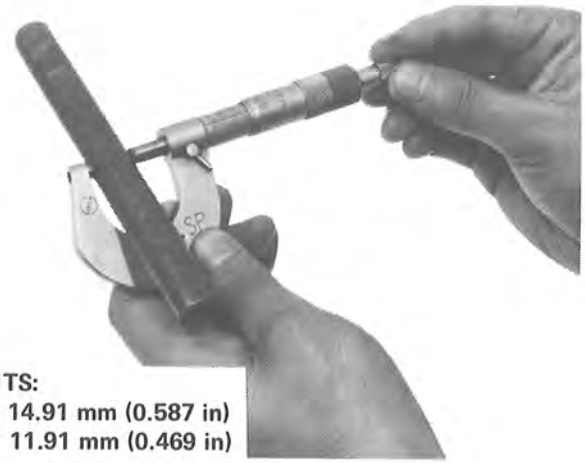
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Measure the shift fork claw thickness.

SERVICE LIMIT: 4.5 mm (0.18 in)



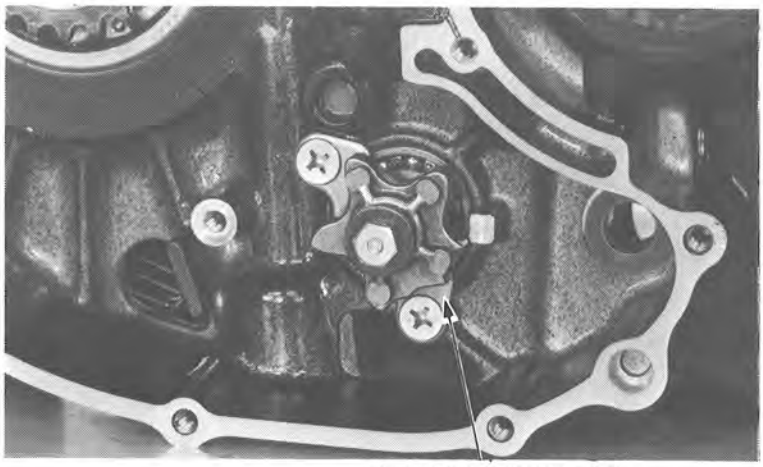
Measure the guide shaft O.D.



SERVICE LIMITS:
LEFT, RIGHT: 14.91 mm (0.587 in)
CENTER: 11.91 mm (0.469 in)

SHIFT DRUM DISASSEMBLY

Remove the stopper arm and bearing set plate.
Remove the shift drum.



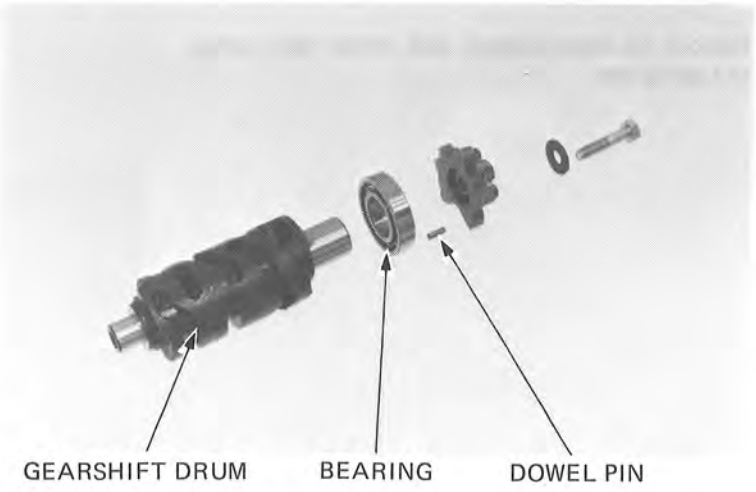
BEARING SET PLATE

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Remove the stopper plate, dowel pin and bearing from the shift drum.

Check each part for wear or damage. Replace if necessary.

The bearing should be replaced with a new one if it is noisy or has excessive play.



GEARSHIFT DRUM INSPECTION

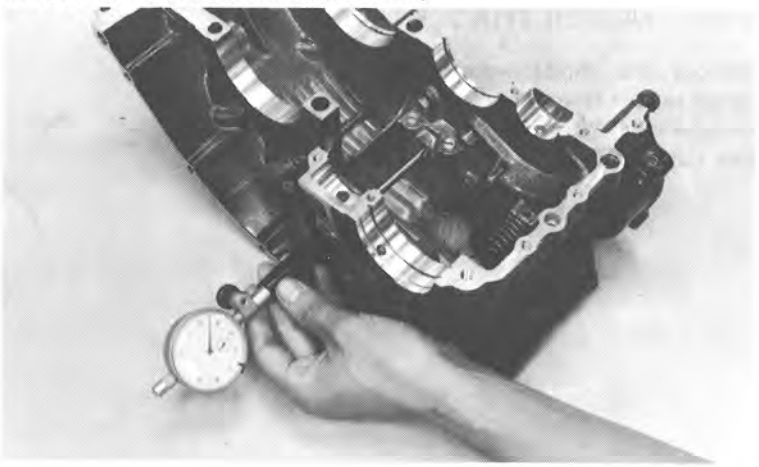
Measure the shift drum O.D.
Inspect the drum grooves and replace the drum if it is damaged or shows excessive wear.

SERVICE LIMIT: 11.91 mm (0.469 in)



Measure the lower crankcase I.D.

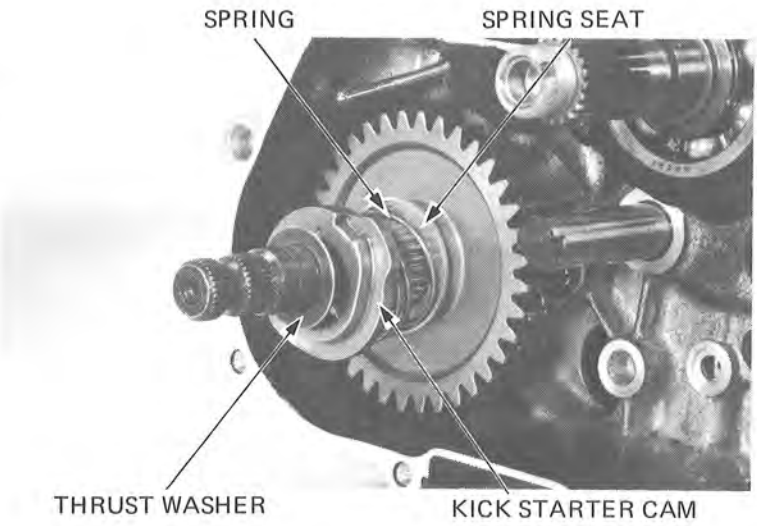
SERVICE LIMIT: 12.10 mm (0.476 in)



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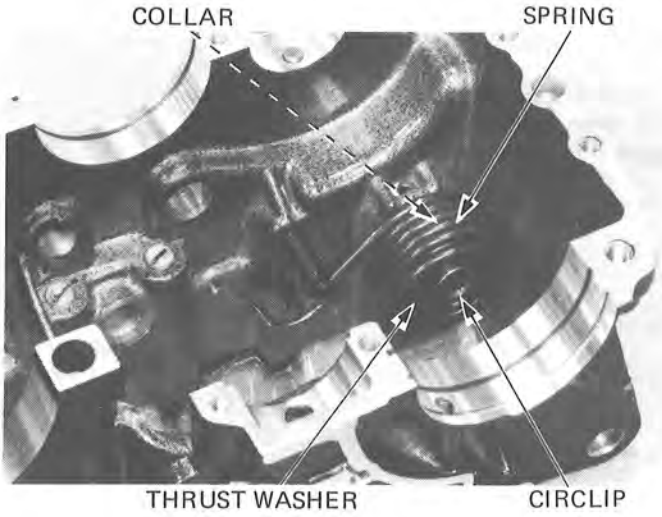
KICK STARTER DISASSMBLY

Remove the thrust washer, kick starter cam, spring and spring seat.



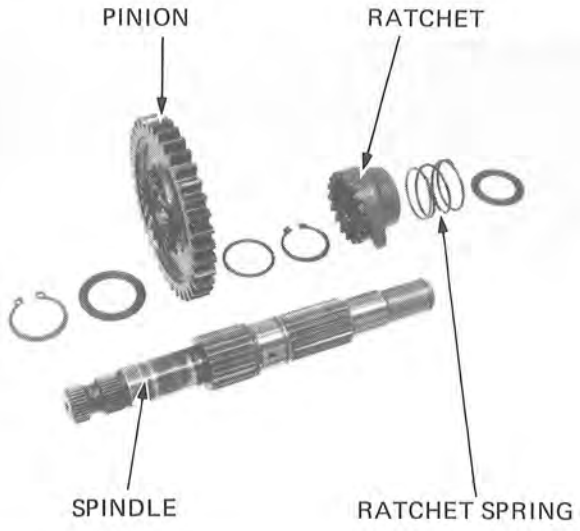
Remove the 16 mm circlip, thrust washer and collar.
Remove the kick starter spring and spindle.

Remove the kick starter stopper plate and spring hook pin.



KICK STARTER SPINDLE DISASSEMBLY

Remove the thrust washer, ratchet spring and starter ratchet from the spindle.
Remove the 22 mm circlip, thrust washer and kick starter pinion from the other end.



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KICK STARTER INSPECTION

Measure the kick starter pinion I.D. and spindle O.D.



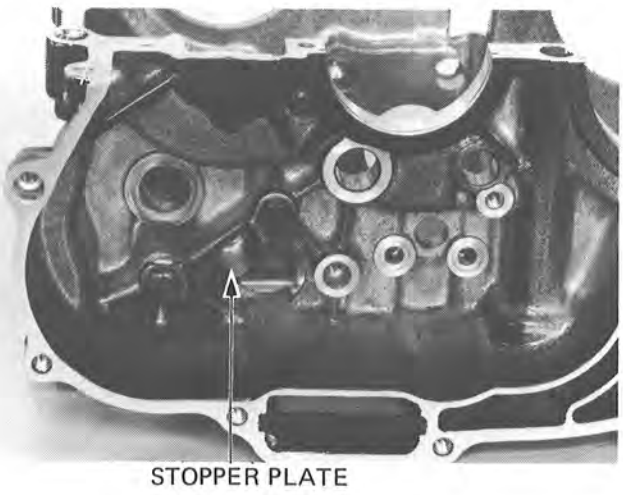
KICK STARTER ASSEMBLY

Install the kick starter stopper plate and tighten the bolt.
Upper bolt

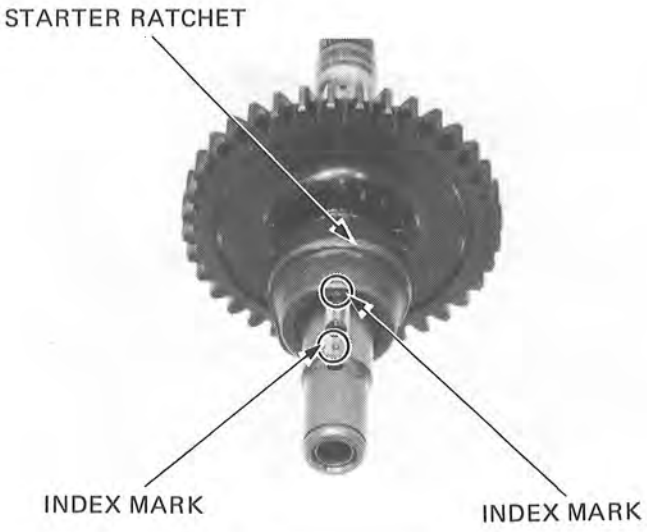
TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Lower bolt

TORQUE: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)



Install the 24 mm circlip, thrust washer, starter pinion, thrust washer and 22 mm circlip.
Align the ratchet and shaft index marks and install the starter ratchet, ratchet spring and thrust washer.



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KICK STARTER INSPECTION

Measure the kick starter pinion I.D. and spindle O.D.



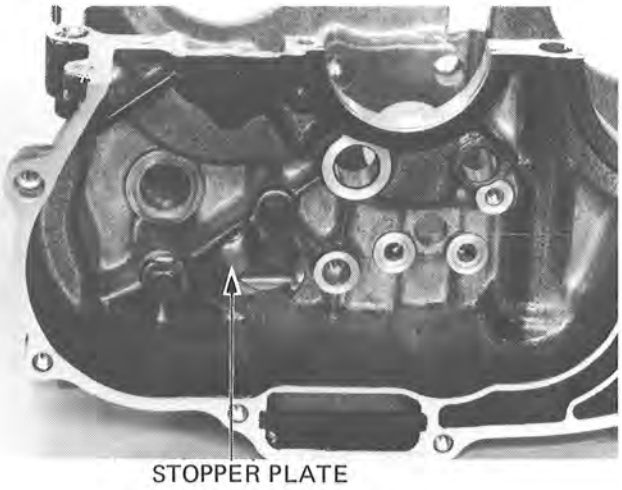
KICK STARTER ASSEMBLY

Install the kick starter stopper plate and tighten the bolt.
Upper bolt

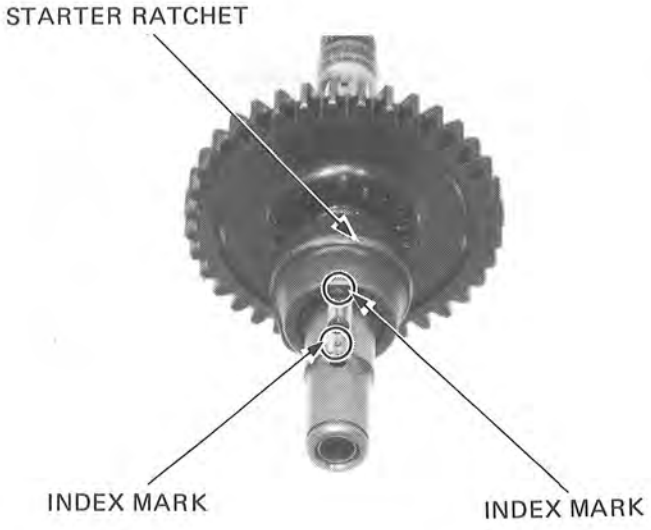
TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

Lower bolt

TORQUE: 22–28 N·m (2.2–2.8 kg-m, 16–20 ft-lb)



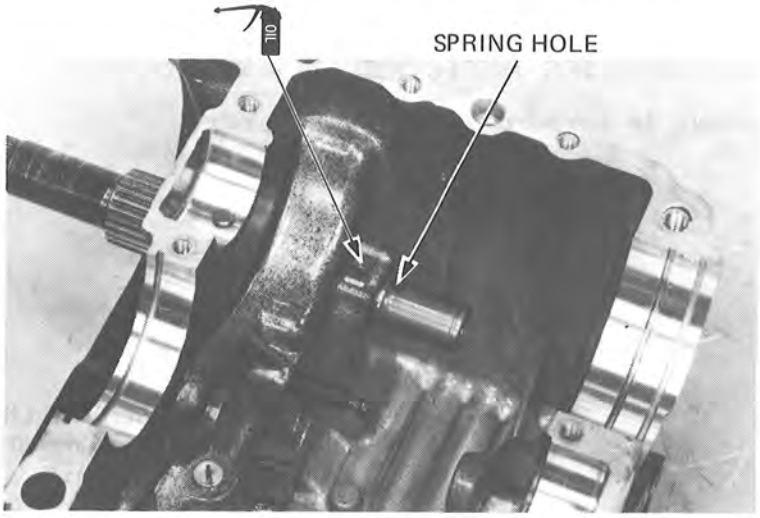
Install the 24 mm circlip, thrust washer, starter pinion, thrust washer and 22 mm circlip.
Align the ratchet and shaft index marks and install the starter ratchet, ratchet spring and thrust washer.



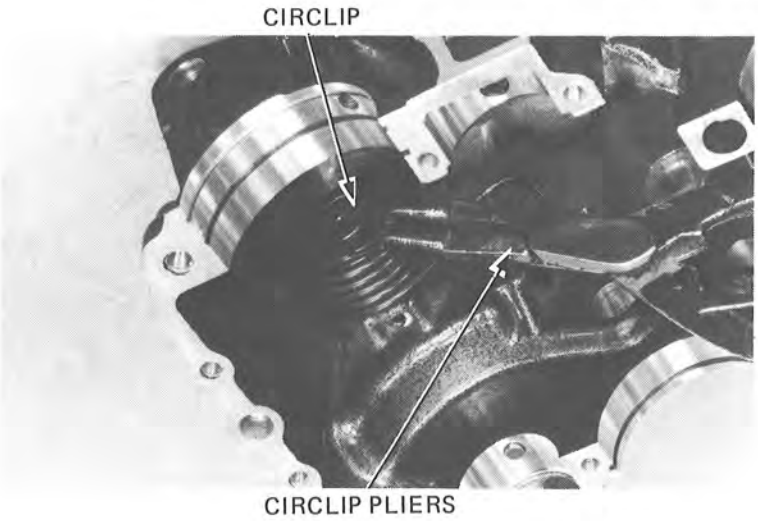
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Install the spindle in the crankcase with the spring hole facing up.

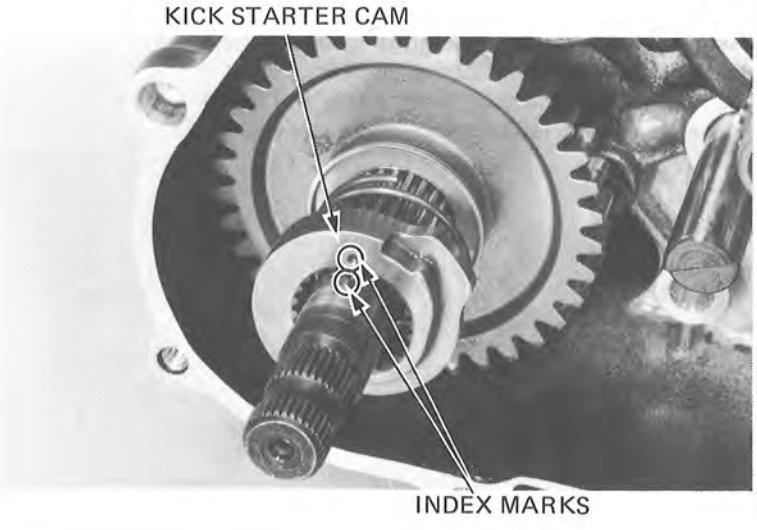
Pour engine oil into the oil hole.
Install the starter spring and collar.



Place the spring on the spring hook pin.
Install the plain washer.
Install the 14 mm circlip with the chamfered edge facing outward.
Make sure it fits properly in the shaft groove.



Install the spring seat and spring, align the cam and shaft index marks and install the kick starter cam and thrust washer.



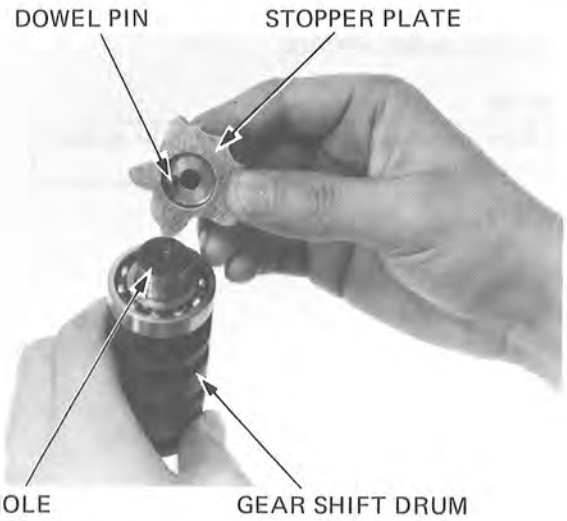
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TRANSMISSION ASSEMBLY

SHIFT DRUM INSTALLATION

Install the bearing, stopper plate, dowel pin, and collar.

Install the washer and bolt loosely.

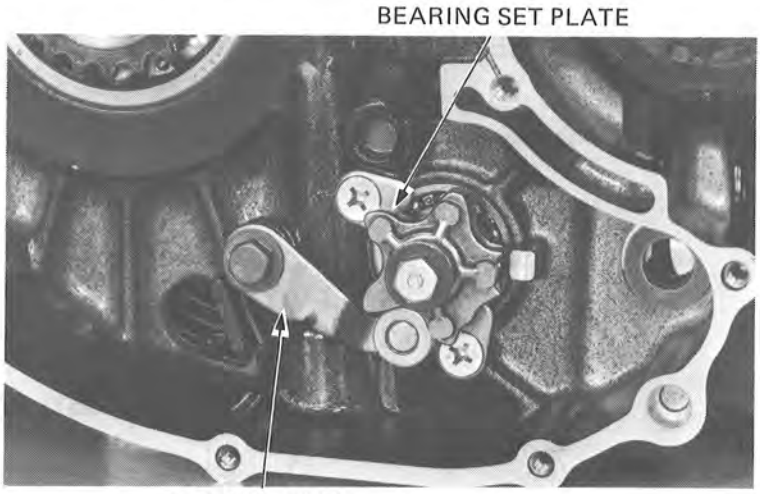


Install the shift drum and set plate.

NOTE

- Note the direction of the set plate.
- Check that the shift drum operates smoothly.

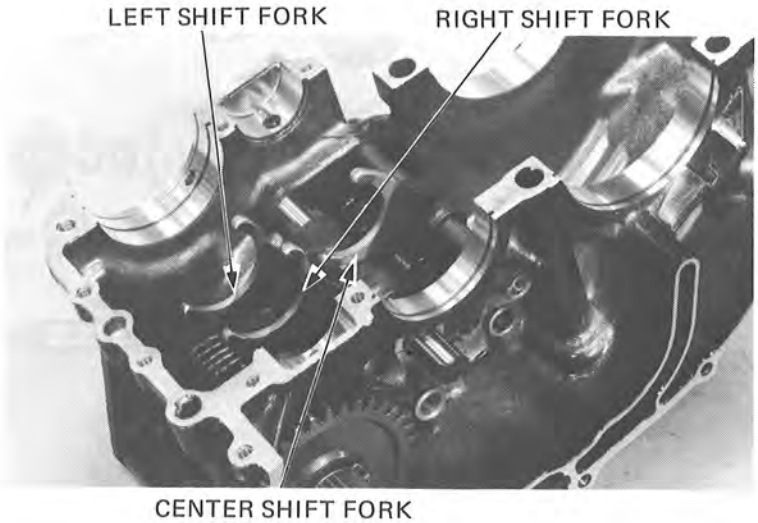
Install the drum stopper arm and spring.
Install the gearshift spindle.
Tighten the stopper plate set bolt.



Install the right and left shift forks.

NOTE

Do not interchange the right and left shift forks.

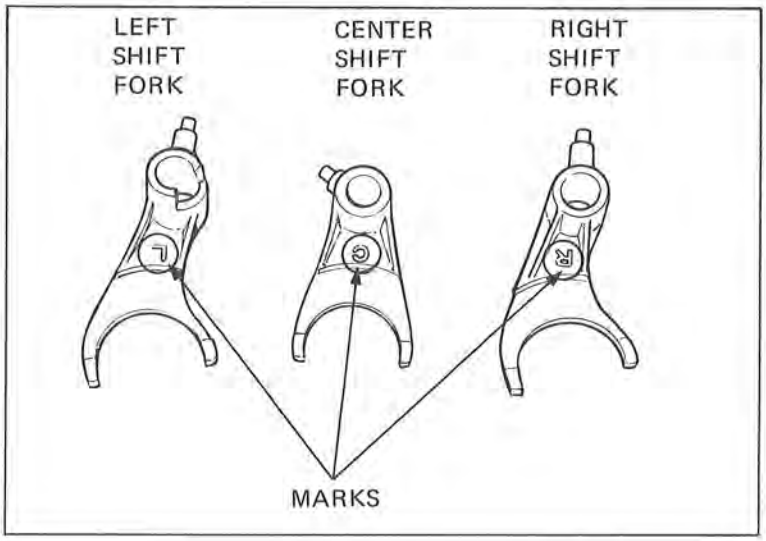


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Install the center shift fork.

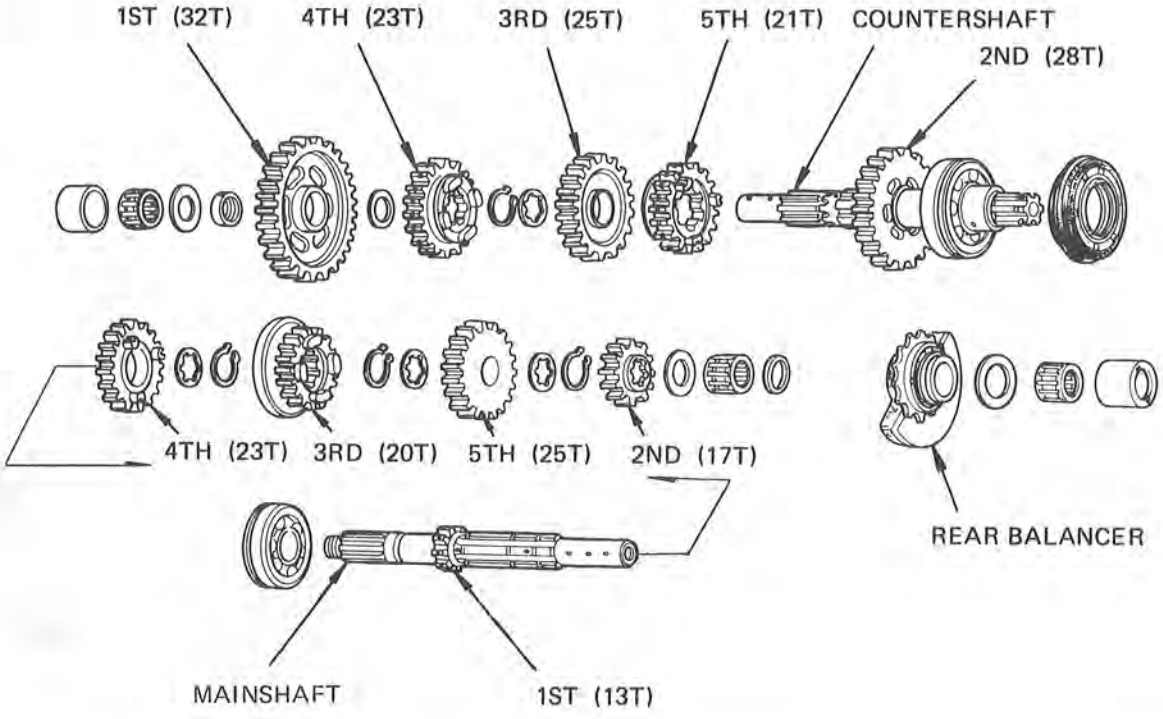
NOTE

After installing, check that the forks operate smoothly.



TRANSMISSION GEAR ASSEMBLY

Coat each gear with engine oil and install them as shown.



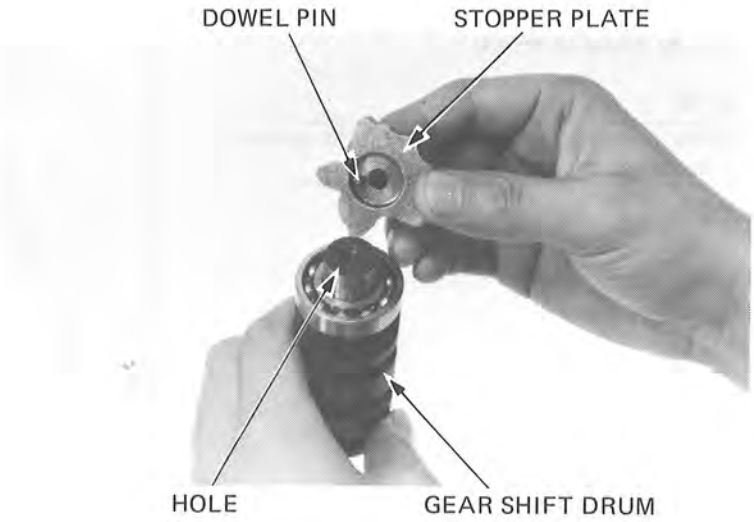
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TRANSMISSION ASSEMBLY

SHIFT DRUM INSTALLATION

Install the bearing, stopper plate, dowel pin, and collar.

Install the washer and bolt loosely.

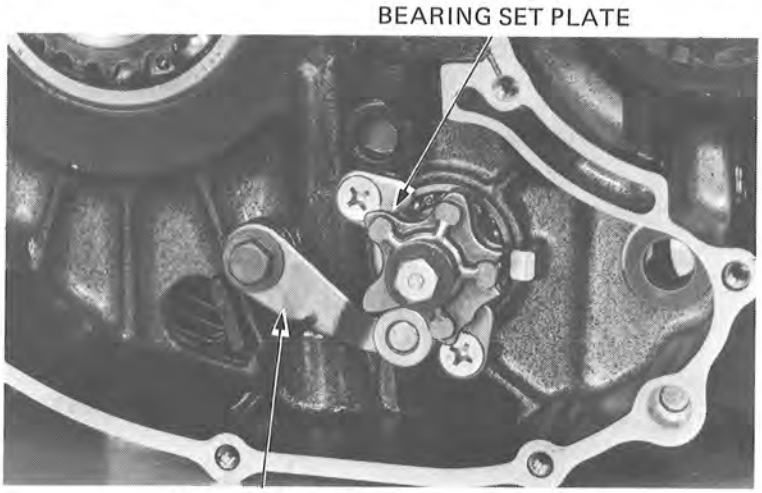


Install the shift drum and set plate.

NOTE

- Note the direction of the set plate.
- Check that the shift drum operates smoothly.

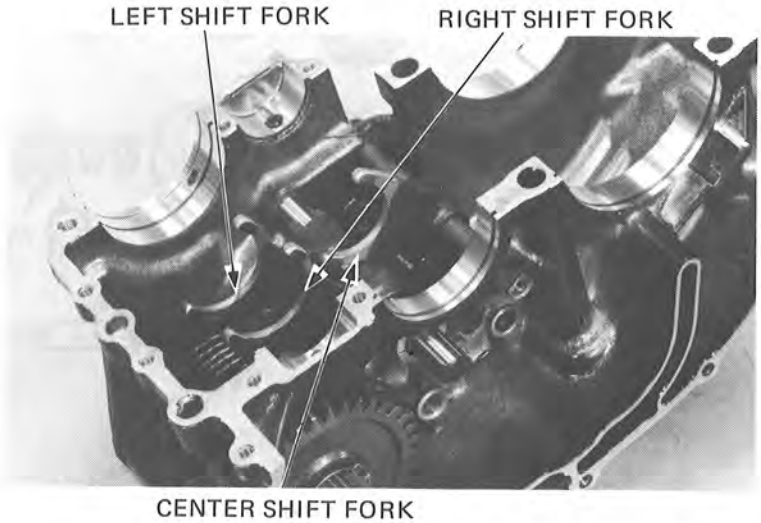
Install the drum stopper arm and spring.
Install the gearshift spindle.
Tighten the stopper plate set bolt.



Install the right and left shift forks.

NOTE

Do not interchange the right and left shift forks.

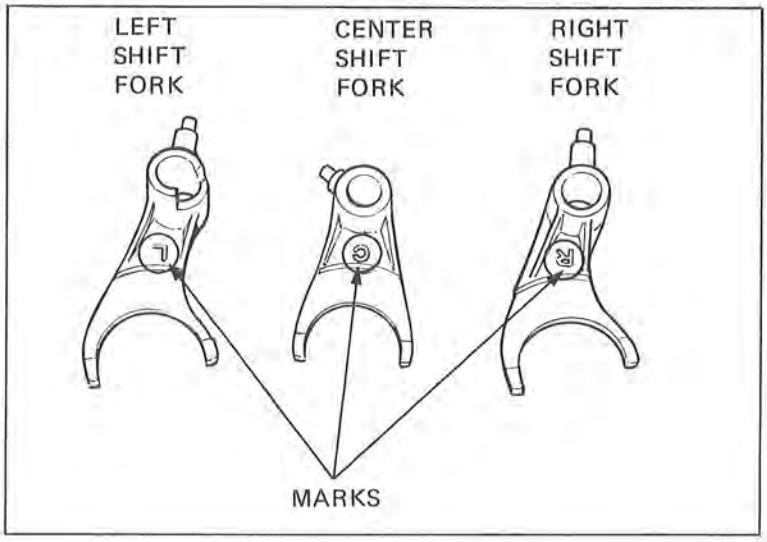


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Install the center shift fork.

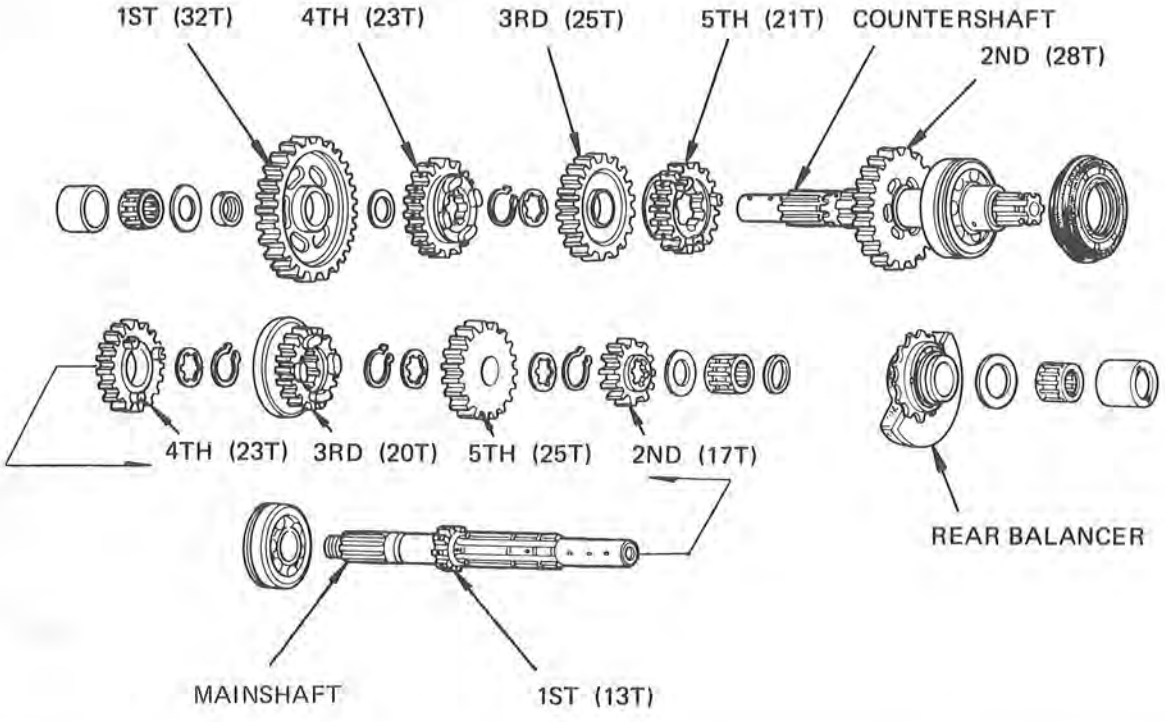
NOTE

After installing, check that the forks operate smoothly.



TRANSMISSION GEAR ASSEMBLY

Coat each gear with engine oil and install them as shown.



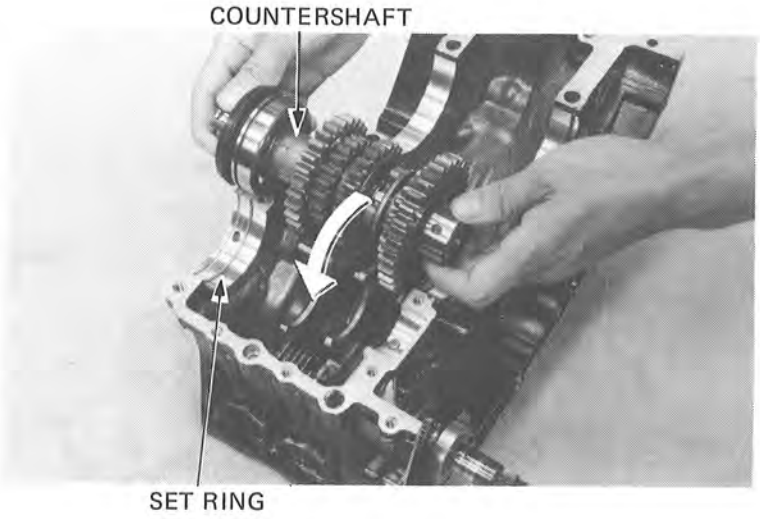
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Install the bearing set pin and set rings in the lower case.

Place the countershaft assembly into the lower case.

NOTE

- Align the dowel pin with the roller bearing outer race.
- Fit the set ring in the ball bearing outer race groove.
- Make sure the oil seal is seated in the crankcase correctly.

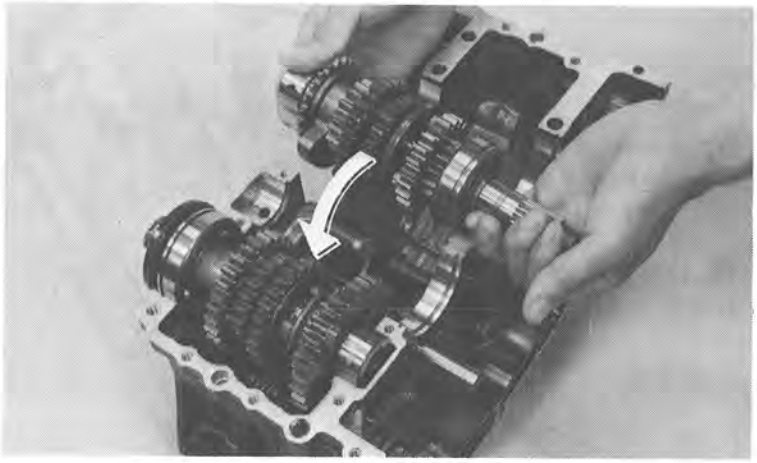


Install the mainshaft.

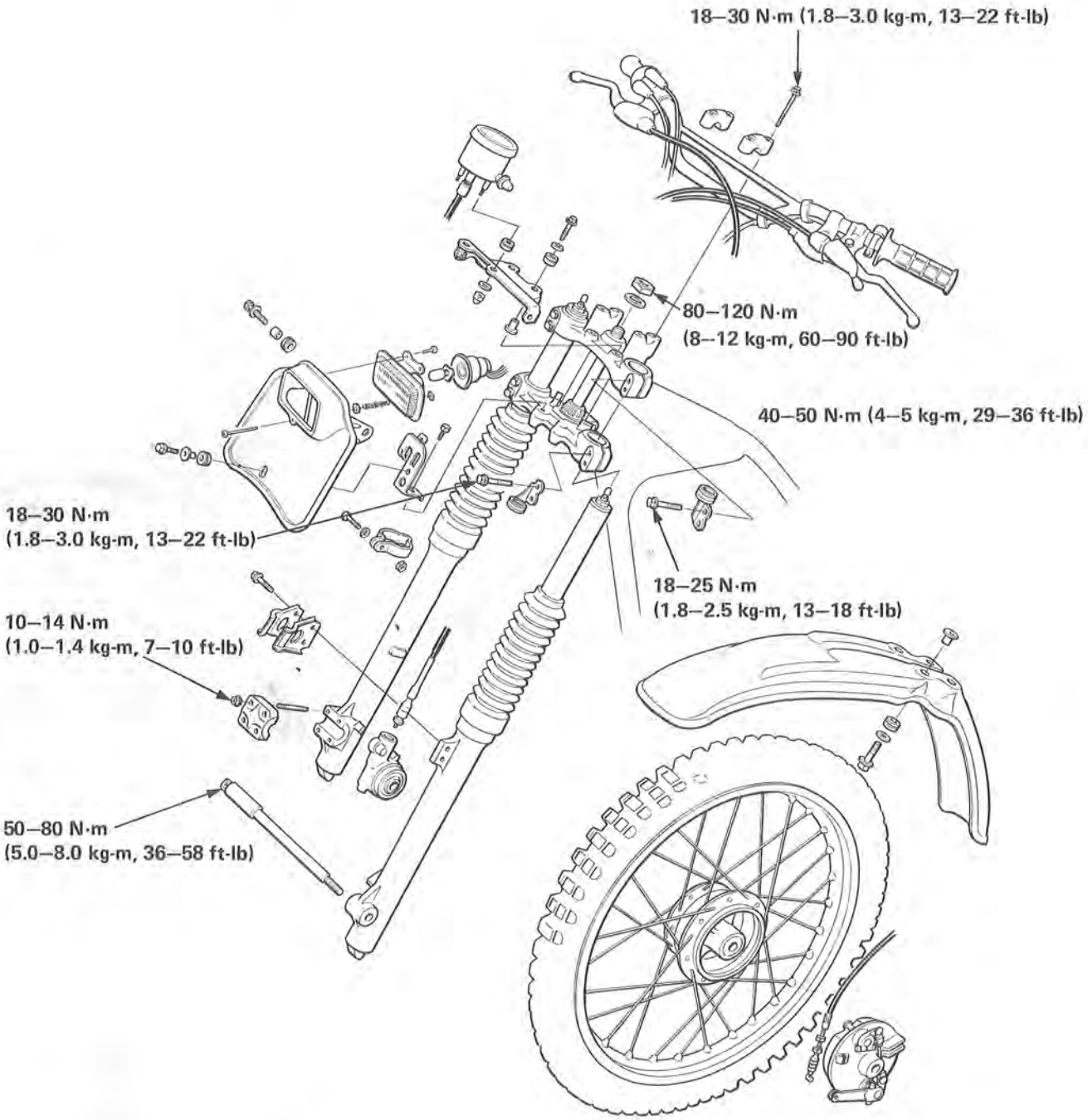
NOTE

- Align the dowel pin with the needle roller bearing outer race.
- Be sure the set ring fits in the bearing outer race correctly.

Assemble the crankcase (Pages 10—4 and 5).



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HANDLEBAR	13–4
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FRONT FORK	13–13
STEERING STEM	13–19

SERVICE INFORMATION

GENERAL INSTRUCTION

- A jack or other support is required to support the motorcycle.

TOOL
SPECIAL

6 mm Hex wrench	07917–3230000	Commercially available in U.S.A.
Snapping pliers	07914–3230001	
Ball race remover	07946–4300200	
Ball race driver	07953–MA00000	
Steering stem driver	07946–4300100	
Steering stem socket	07916–3710100	
Fork seal driver	07947–3710101	

COMMON

Bearing driver outer 32 x 35 mm	07746–0010100	
Bearing driver handle outer A	07749–0010000	
Driver pilot 15 mm	07746–0040300	
Socket wrench 30 x 32 mm	07716–0020400	Commercially available in U.S.A.
Extension bar	07716–0020500	
Bearing driver outer, 42 x 47 mm	07746–0010300	

ITEMS		STANDARD	SERVICE LIMIT
Axle shaft runout		———	0.2 mm (0.01 in)
Front wheel rim runout	Radial	———	2.0 mm (0.08 in)
	Axial	———	2.0 mm (0.08 in)
Brake drum I.D.		130 mm (5.12 in)	131 mm (5.16 in)
Brake shoe thickness		4.0 mm (0.16 in)	2.0 mm (0.1 in)
Front fork spring free length		617.5 mm (24.31 in)	605.1 mm (24 in)
Front fork tube runout		———	0.2 mm (0.008 in)
Front fork oil level		181 mm (7.1 in)	———
Front fork air pressure		30 kPa (0.3 kg-m^2, 4.3 psi)	———
Wheel bearing	Radial	———	0.10 mm (0.004 in)
	Axial	———	0.05 mm (0.002 in)

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TORQUE VALUES

Steering stem nut	80–120 N·m (8–12 kg-m, 58–87 ft-lb)
Fork top bridge pinch bolt	18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)
Handlebar holder	18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
Steering stem pinch bolt	18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)
Front axle	50–80 N·m (5.0–8.0 kg-m, 36–58 ft-lb)
Front axle shaft holder	10–14 N·m (1.0–1.4 kg-m, 7–10 ft-lb)
Headlight cover	3– 6 N·m (0.3–0.6 kg-m, 2– 4 ft-lb)
Fork cap bolt	15–30 N·m (1.5–3.0 kg-m, 11–22 ft-lb)
Spokes	2.5–5 N·m (0.25–0.5 kg-m, 1.7–3.6 ft-lb)
Rim lock	10–15 N·m (1.0–1.5 kg-m, 7–11 ft-lb)
Brake arm	8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)

TROUBLESHOOTING

Hard Steering
1. Steering stem nut too tight
2. Faulty steering stem bearings
3. Damaged steering stem bearing
4. Insufficient tire pressure

Steers to One Side or Does Not Track Straight
1. Bent front forks
2. Bent front axle, wheel installed incorrectly
3. Unequal air pressure in each fork tube.
4. Unequal oil quantity in each fork tube.

Front Wheel Wobbling
1. Distorted rim
2. Worn front wheel bearing
3. Distorted spokes
4. Faulty tire
5. Axle not tightened properly

Soft Suspension
1. Weak fork springs
2. Insufficient fluid in front forks
3. Incorrect fork air pressure

Hard Suspension
1. Incorrect fluid weight in front forks
2. Incorrect fork air pressure
3. Fork tube bent

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

Improper Brake Performance
1. Incorrect adjustment of lever
2. Brake shoes contaminated
3. Brake shoes worn
4. Brake cam worn
5. Brake drum worn
6. Brake arm serrations improperly engaged

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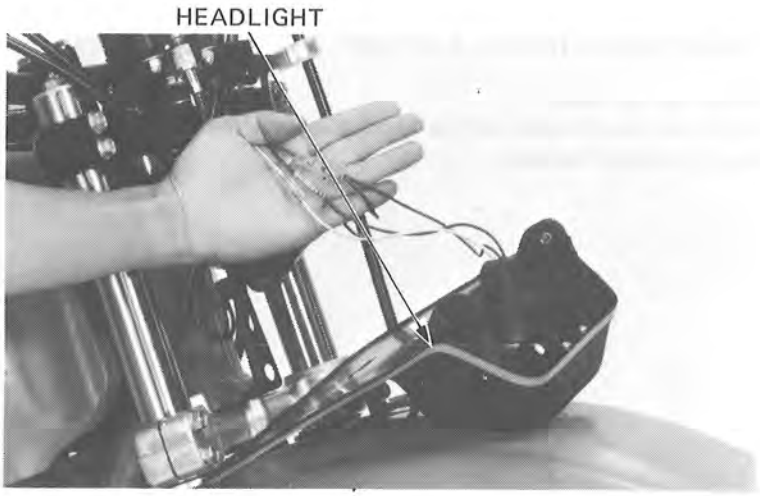
HEADLIGHT

HEADLIGHT REMOVAL

Unscrew the headlight case mounting bolts and remove the headlight case.



Disconnect the headlight wire connectors.
Remove the headlight mounting and adjusting screws.
Remove the headlight.



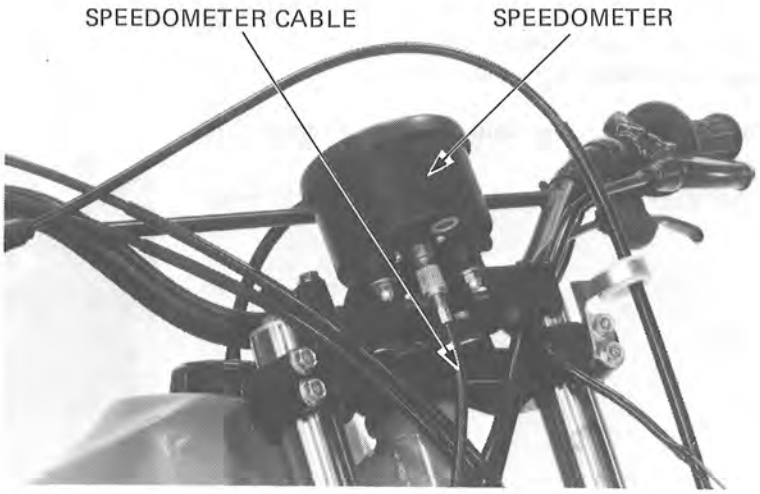
HEADLIGHT INSTALLATION

Install the headlight in the reverse order of removal.
Adjust the headlight vertical beam.

SPEEDOMETER

SPEEDOMETER REMOVAL

Remove the headlight.
Disconnect the speedometer cable.
Remove the speedometer mounting nuts and speedometer.



SPEEDOMETER INSTALLATION

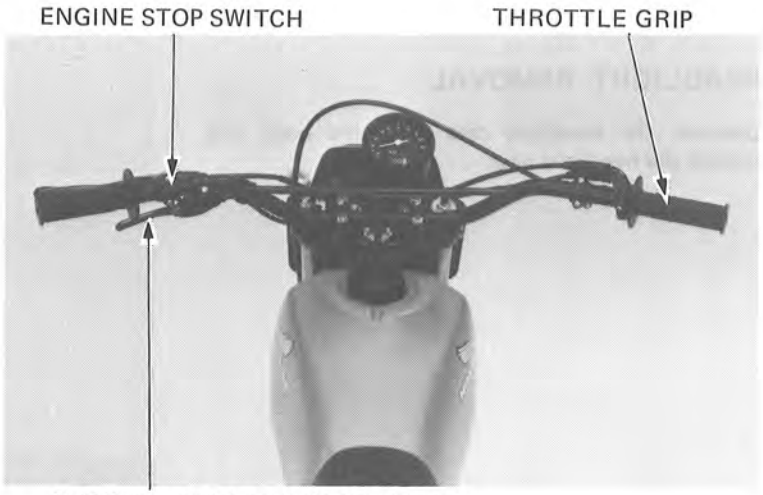
Install the speedometer in the reverse order of removal.

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HANDLEBAR

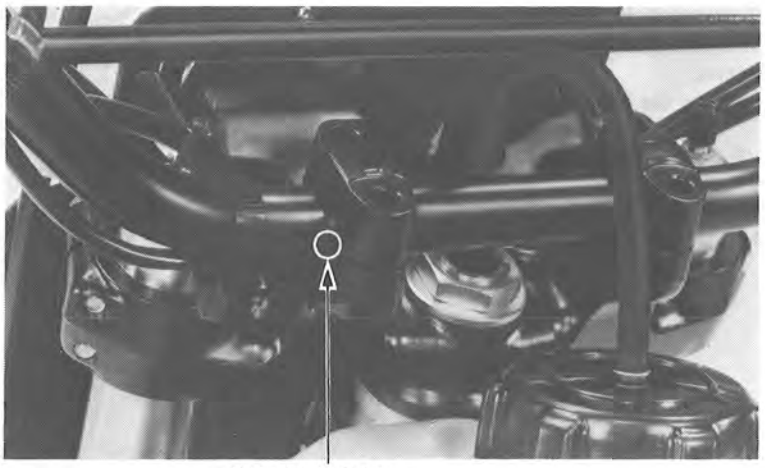
HANDLEBAR REMOVAL

Remove the wire harness bands and the throttle grip.
Remove the front brake and manual decompressor lever.
Remove the clutch lever and the engine stop switch.
Remove the handlebar holder bolts and the handlebar.



HANDLEBAR INSTALLATION

Install the handlebar.
Align the punch mark on the handlebar with the top of the lower holders.



Place the upper holders on the handlebar with the punch marks facing the front.

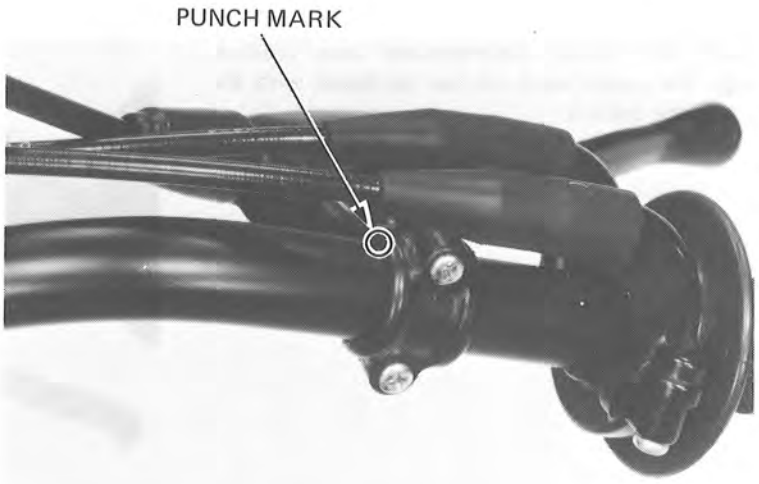
Tighten the forward bolts first, then tighten the rear bolts.

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

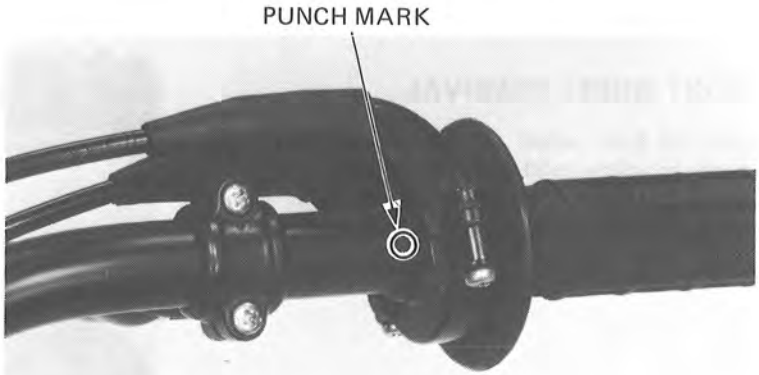


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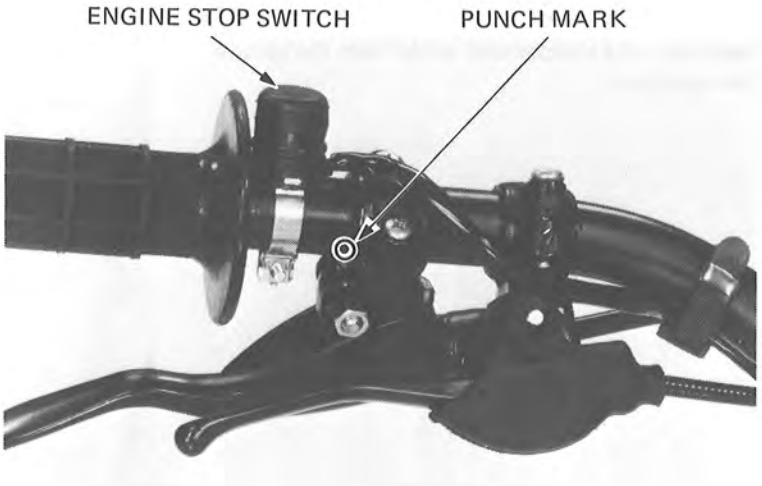
Install the front brake lever bracket, aligning the handlebar punch mark with the brake lever bracket split.
Tighten the pinch screw.



Apply grease to the throttle grip area of the handlebar and install the throttle grip.
Align the punch mark on the handlebar with the split of the throttle grip housing.
Tighten the screws.

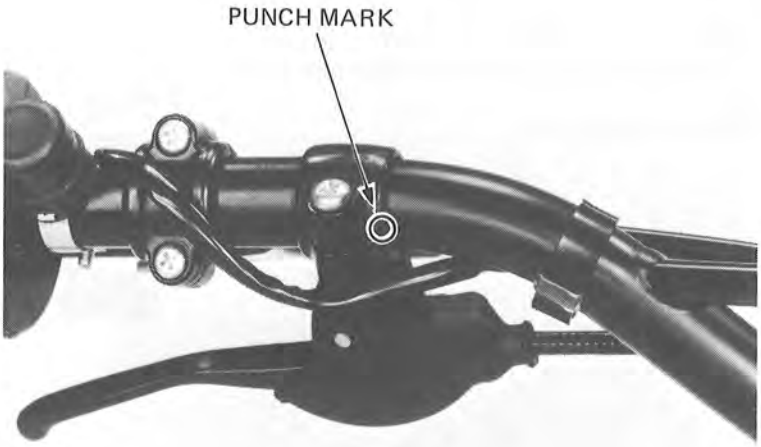


Install the clutch lever bracket.
Align the punch mark on the handlebar with the split in the clutch lever bracket.
Install the engine stop switch.



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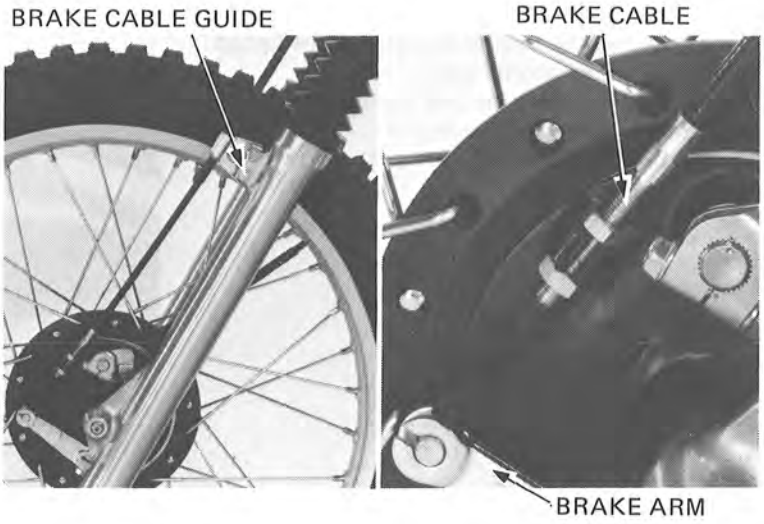
Install the manual decompressor lever bracket. Align the punch mark on the handlebar with the split in the bracket.



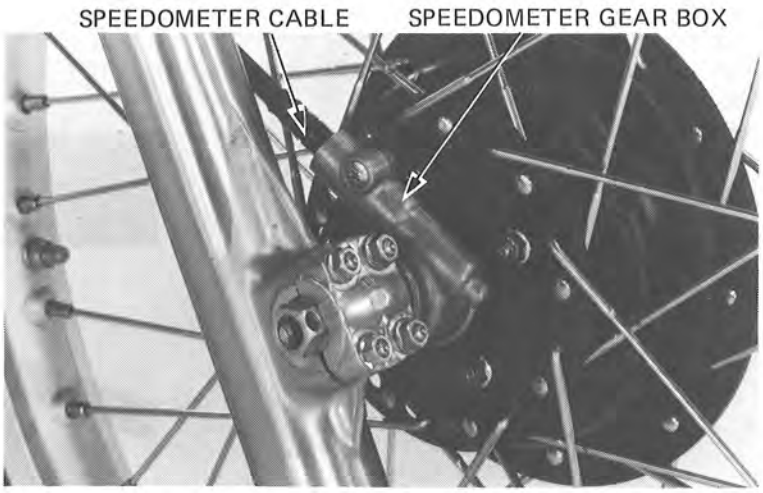
FRONT WHEEL

FRONT WHEEL REMOVAL

Raise the front wheel off the ground by placing a block or safety stand under the engine.
Loosen the two bolts attaching the cable guide. Disconnect the front brake cable from the brake arm.

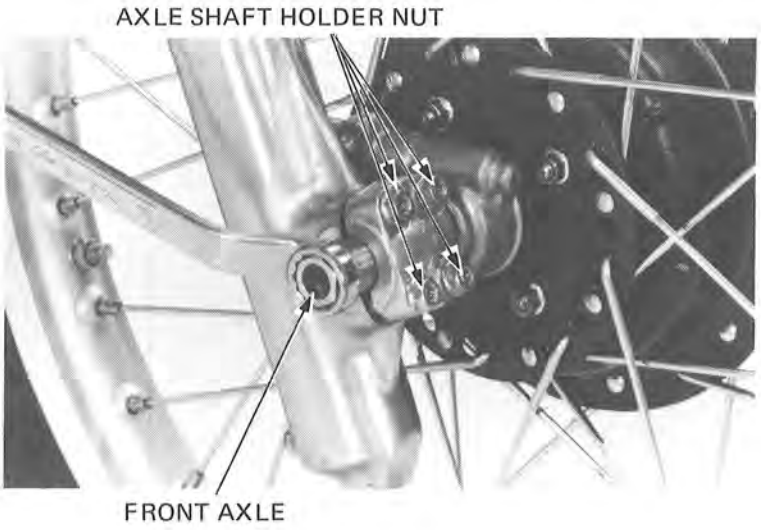


Disconnect the speedometer cable from the speedometer gearbox.



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Loosen the axle shaft holder nuts and remove the front axle.
Remove the front wheel.



AXLE INSPECTION

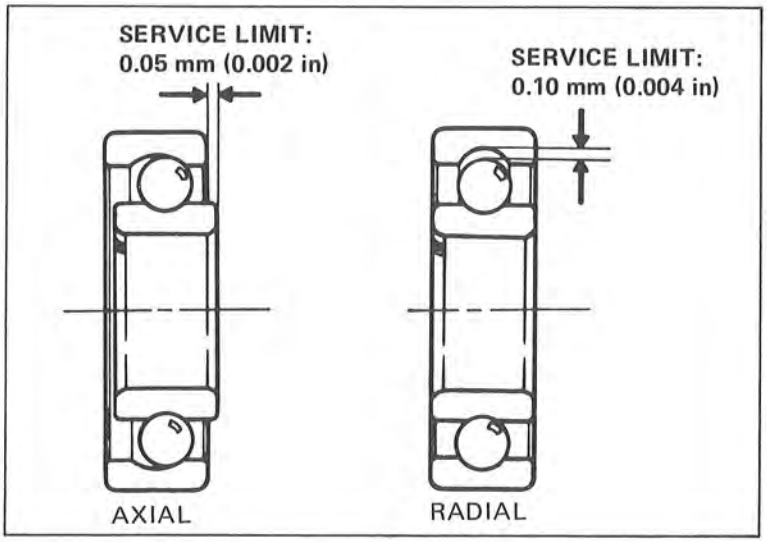
Set the axle in V blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



WHEEL BEARING

Check the wheel bearing play by placing the wheel on a truing stand and spinning the wheel by hand. Replace the bearings with new ones if they are noisy or have excessive play.



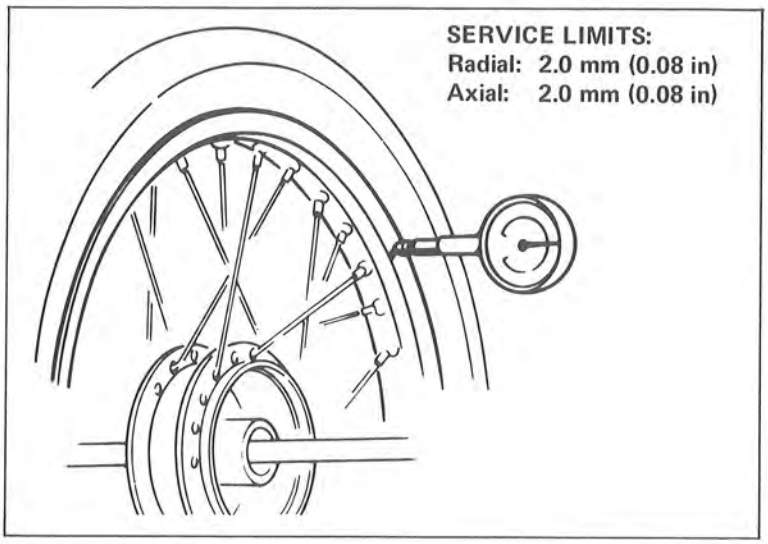
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WHEEL

Check the rim runout by placing the wheel on a truing stand. Then spin the wheel by hand, and read the runout using a dial indicator.

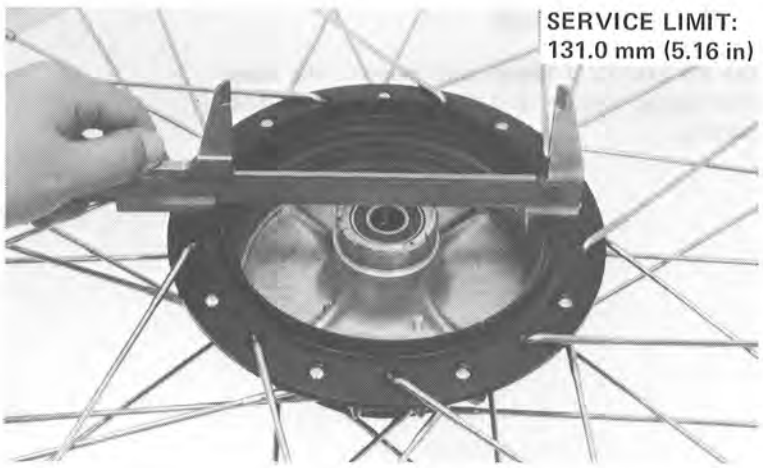
Check the spokes and tighten any that are loose.

TORQUE: 2.5 – 0.5 N·m (0.25–0.5 kg-m, 2.8 – 3.6 ft-lb)



BRAKE DRUM

Remove the brake panel.
Measure the drum I.D.



BRAKE LINING

Measure the brake lining thickness.



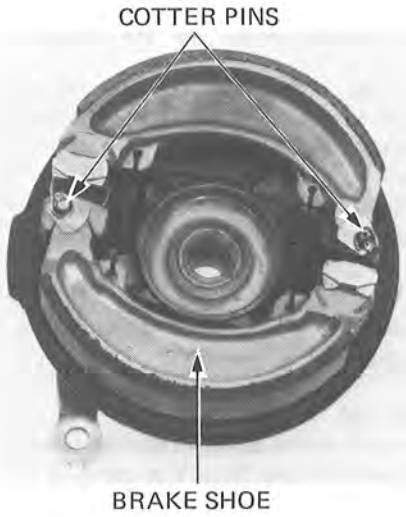
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BRAKE SHOE REPLACEMENT

Remove the cotter pin and plain washer.
Remove the brake shoes.
Apply grease to the brake cams and install new brake shoes.
Install the plain washer and cotter pin.

WARNING

Grease on the brake linings reduces stopping power.
Keep grease off the brake linings. Wipe excess grease off the cam.
Do not remove the brake arm rod when the brake shoes are replaced.



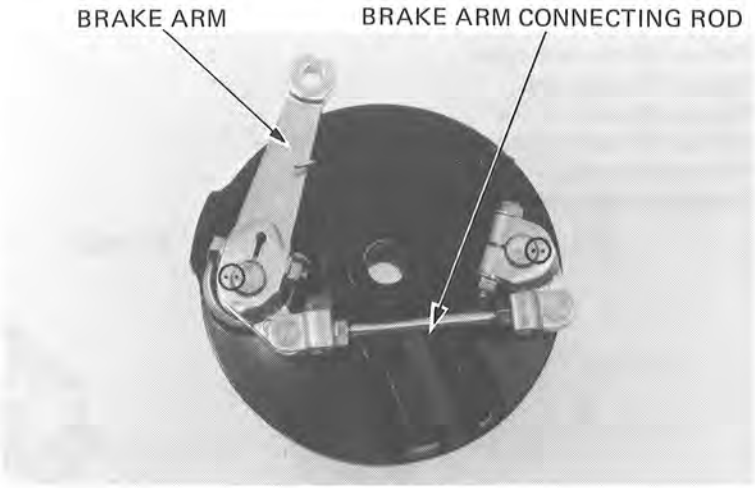
BRAKE ARM, BRAKE CAM AND BRAKE ARM CONNECTING ROD REPLACEMENT

Remove the shoes.
Remove the bolts attaching the brake cam to the brake arm.
Remove the brake arm with brake rod.

Install a new brake arm, brake cam and brake cam connecting rod.

CAUTION:

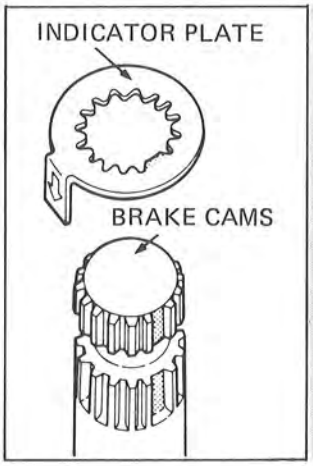
Adjust the brake arm connecting rod whenever the brake cam, brake arm or connecting rod are replaced.



BRAKE CAMS

Install the brake arms aligning the punch marks with the cam punch marks.
Tighten the brake arm bolts.

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





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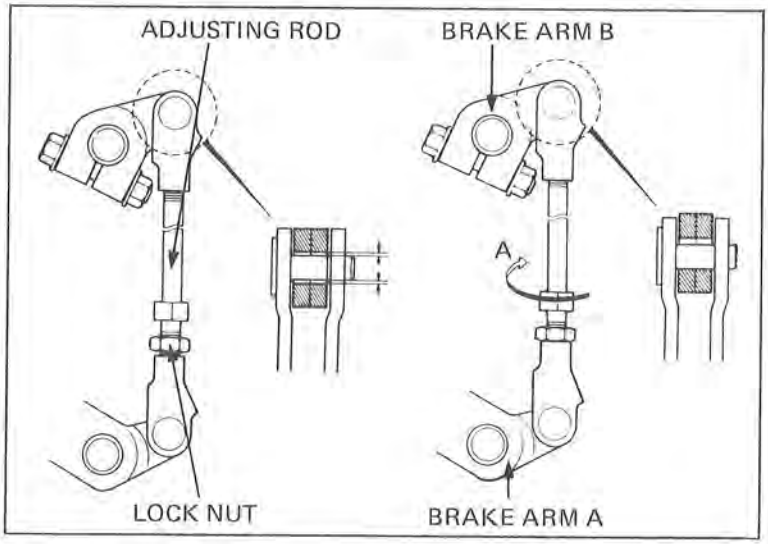
Adjust the brake arm connecting rod whenever the cam, arm or connecting rod are replaced.

While pushing the brake shoes in toward one another by hand to remove any clearance between the shoes and brake cams, loosen the brake arm connecting rod lock nut, turn the rod until it shows free play, and then turn the rod in direction A just enough to remove that free play.

NOTE

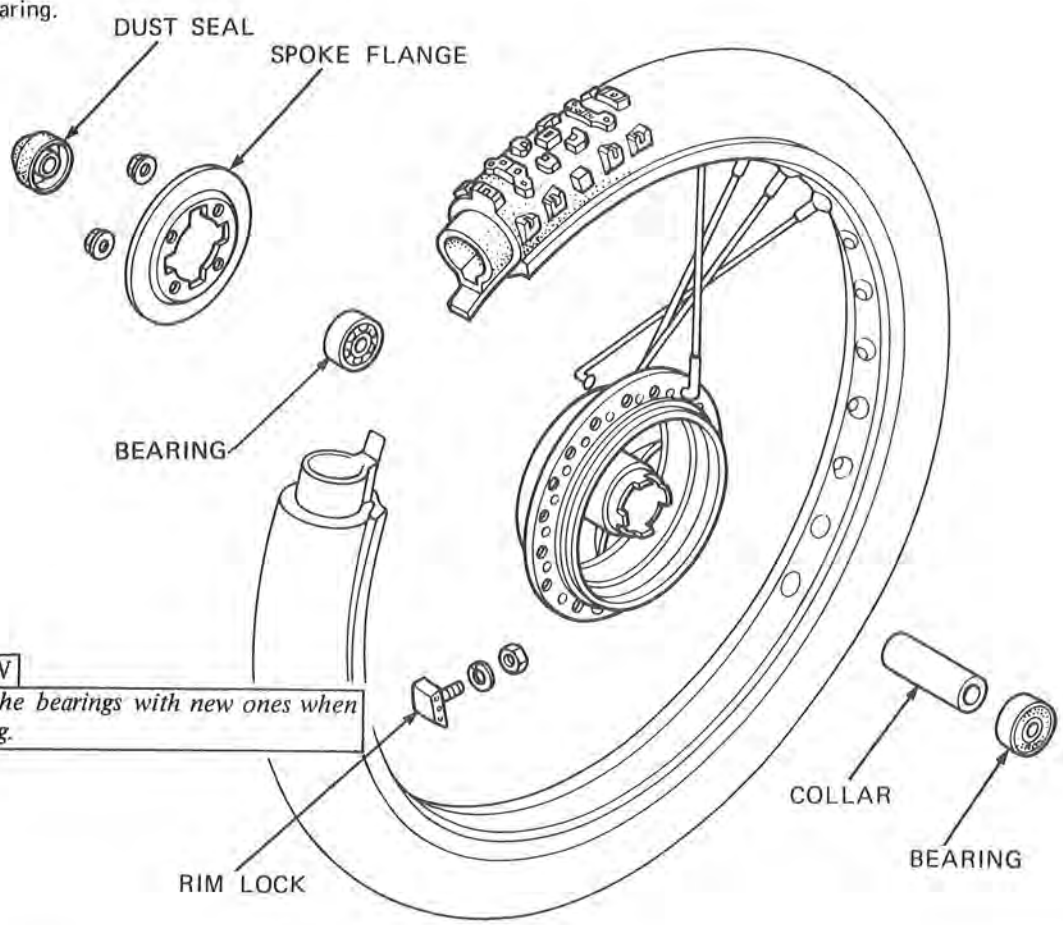
You are looking for the point that free play is just removed.

Tighten the lock nut.
Make sure that both brake cams are parallel to each other and that arms A and B start to move at the same time when the brake is applied.



FRONT WHEEL DISASSEMBLY

Remove the tire and tube.
Remove the dust seal.
Remove the left bearing.
Remove the spoke flange nuts and spoke flange.
Remove the collar.
Remove the right bearing.



CAUTION

Replace the bearings with new ones when assembling.

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FRONT WHEEL ASSEMBLY

Pack the bearing cavities with grease.
Drive in the left bearing.
Install the distance collar.
Drive in the right bearing.

NOTE

Install the bearings with the sealed end toward the outside. Be sure to drive the bearing in squarely.

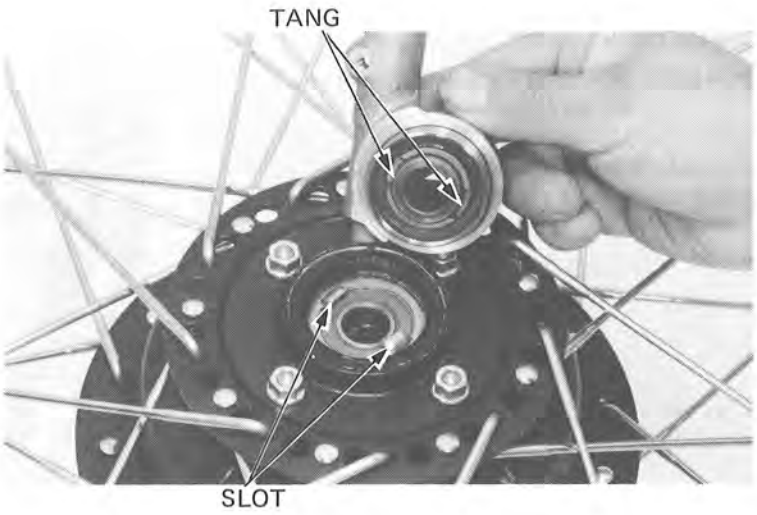
WARNING

Grease on the brake linings reduces stopping power. Keep grease off the brake linings. Wipe excess grease off the cam.



TOOLS
BEARING DRIVER OUTR 32x35 mm
BEARING DRIVER HANDLE OUTER A
DRIVER PIVOT 15 mm

Insert the tang on the gear box in the slot in the front wheel and install the gear box on the wheel.

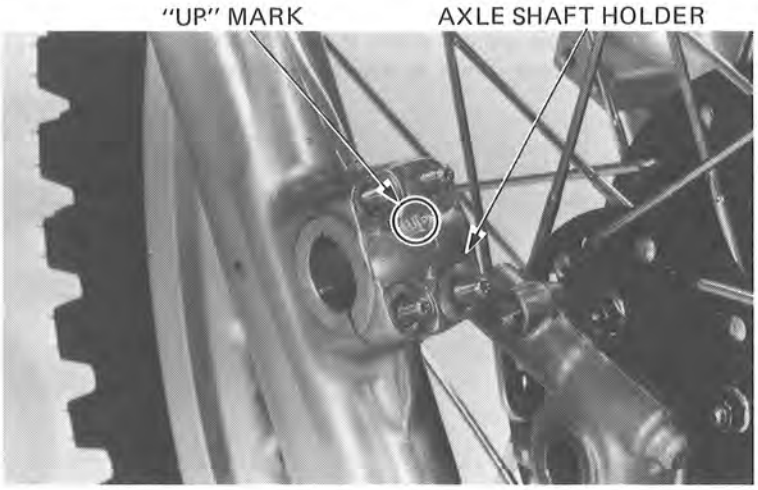


FRONT WHEEL INSTALLATION

Clean the axle shaft and holder.
Install the holder with the "UP" mark facing upwards.
Install the axle shaft nuts but do not tighten at this time.

NOTE

Set the tang on the gear box under the tab on the fork tube.



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Insert the axle shaft through the wheel hub from the right side.

NOTE

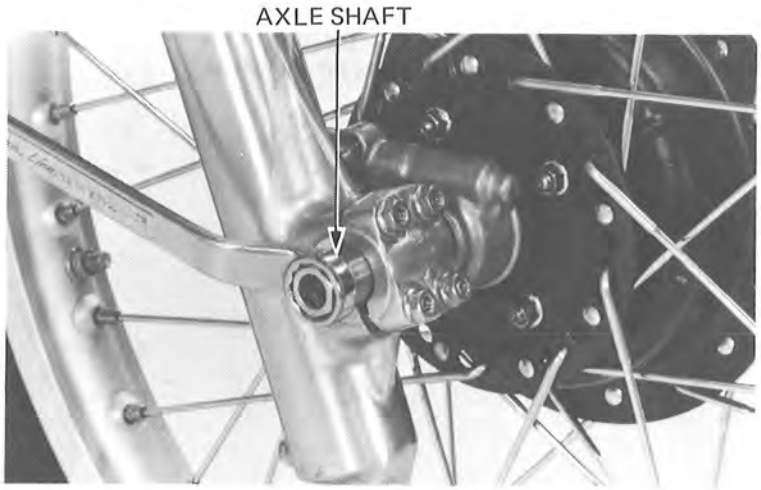
The tang on the fork leg should be located in the slot in the brake pannel.



Tighten the axle shaft.

TORQUE: 50 – 80 N·m (5.0–8.0 kg-m, 36–58 ft-lbs)

Connect the front brake cable.
Adjust the front brake free play (Page 3-15).



With the front brake applied, pump the front forks up and down several times to check for proper operation.

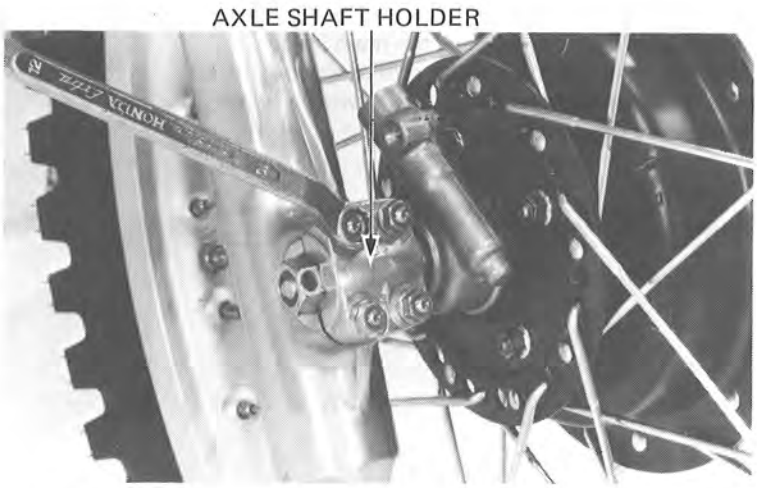


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Tighten the axle shaft holder nuts; the upper nuts first, then the lower nuts.

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

Connect the speedometer cable to the speedometer gear box.



FRONT FORKS

REMOVAL

Remove the front wheel.
Loosen the top bridge and steering stem bolts.
Remove the front forks.

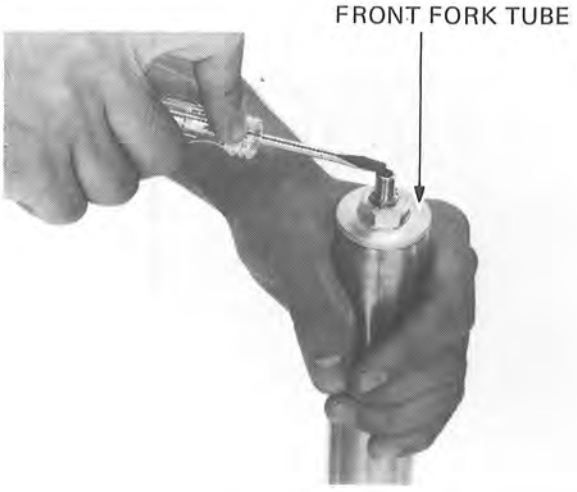


DISASSEMBLY

Remove the rubber cap.
Release the air from each fork tube.

WARNING

Be sure to release front fork air pressure before disassembling to prevent parts from becoming projectiles.



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Drain the fork oil by removing the drain plug.
Hold the fork slider in a vise with soft jaws or a shop towel and hold the fork piston with a holder.
Remove the hex bolt.

CAUTION:

Do not distort the fork slider in a vise.

6 mm HEX WRENCH (07917–3230000)



Hold the tube in a vise with soft jaws or a shop towel, avoiding the sliding surface.
Remove the fork cap bolt.

WARNING

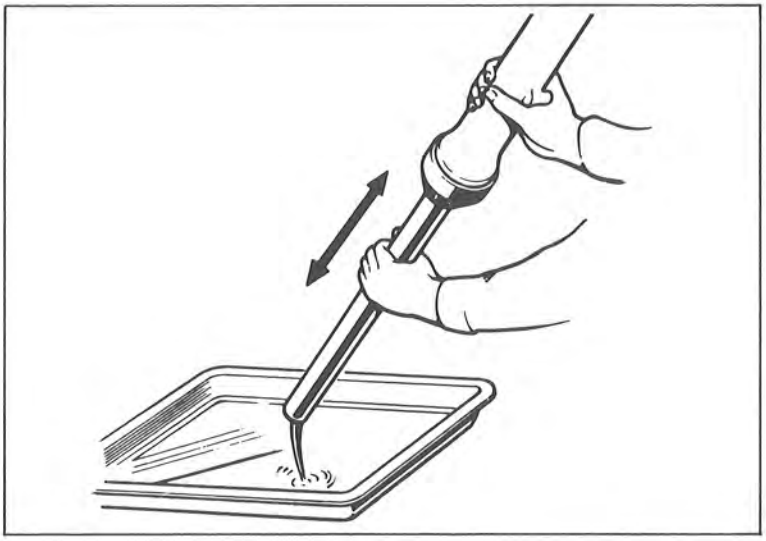
The cap bolts are under spring pressure. Use care when removing and wear eye and face protection.

FORK BOLT



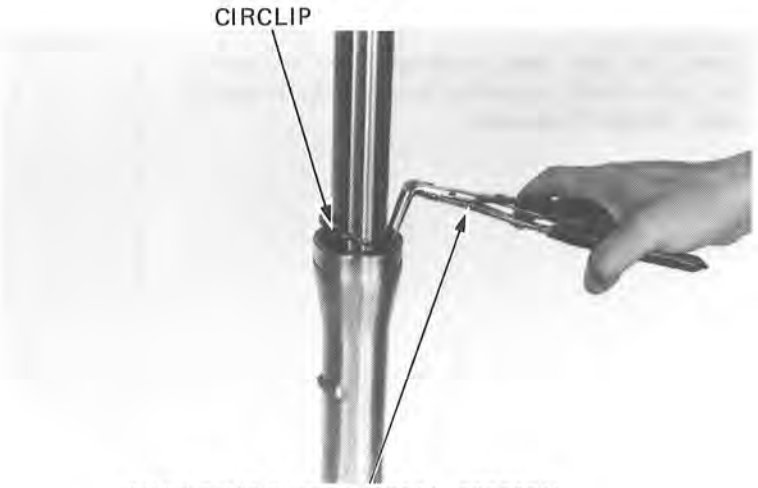
Removing the fork spring, fork piston and rebound spring.

Pour out any remaining fork fluid.



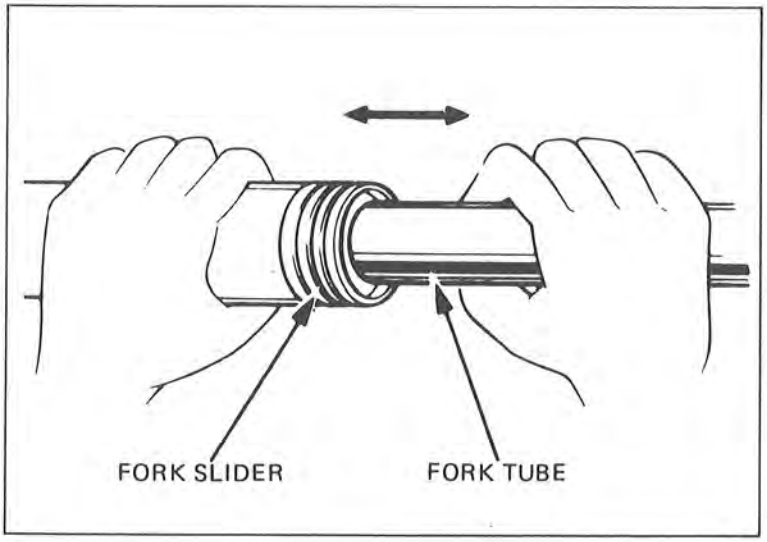
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Remove the dust seal.
Remove the circlip with snap-ring pliers, then remove the back-up plate.



SNAP-RING PLIERS (07914–3230001)

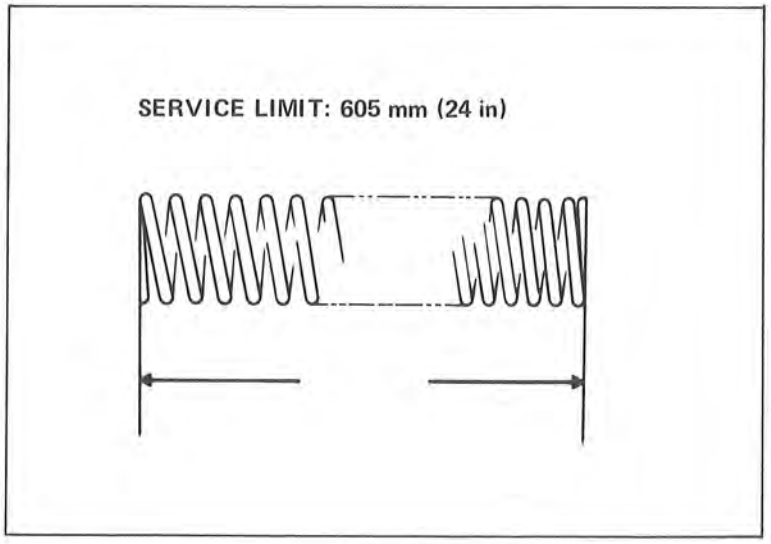
In quick successive back and forth strokes, pull the fork tube out from the slider.
The slider bushing gives resistance and the fork tube bushing must force it out.
Remove the oil seal, back-up ring and slider bushing from the fork tube.



INSPECTION

SPRING

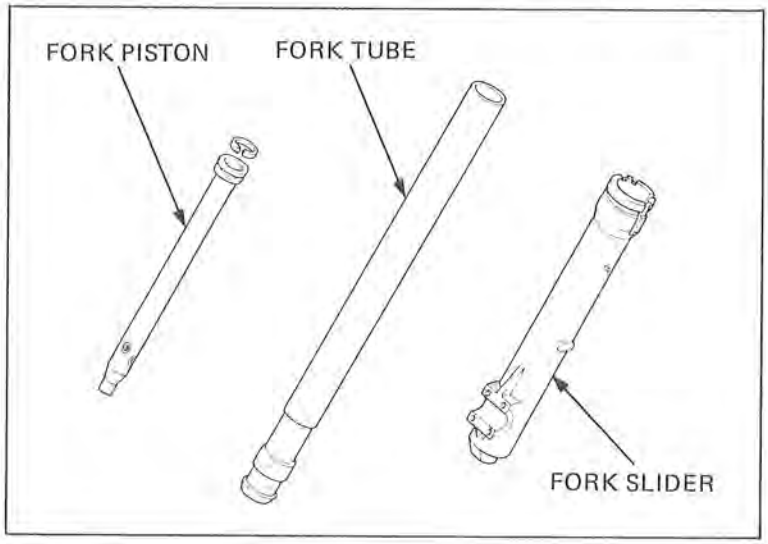
Measure the fork spring free length.



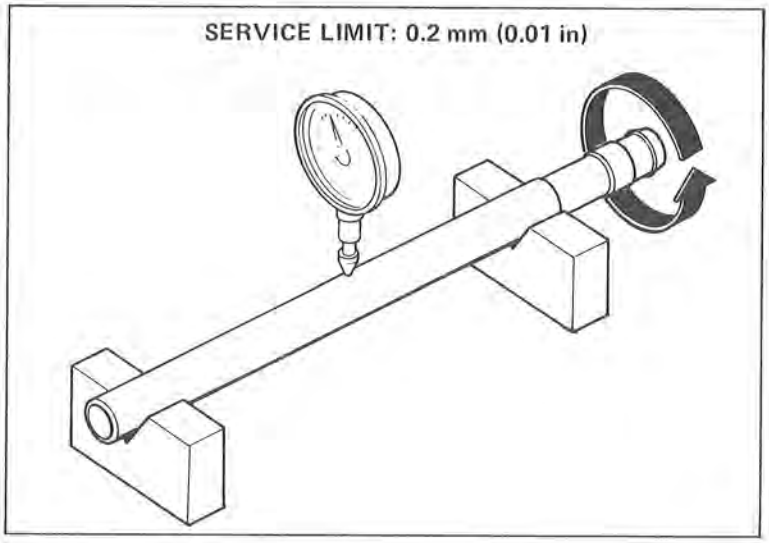
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FORK TUBE/FORK PISTON/SLIDER

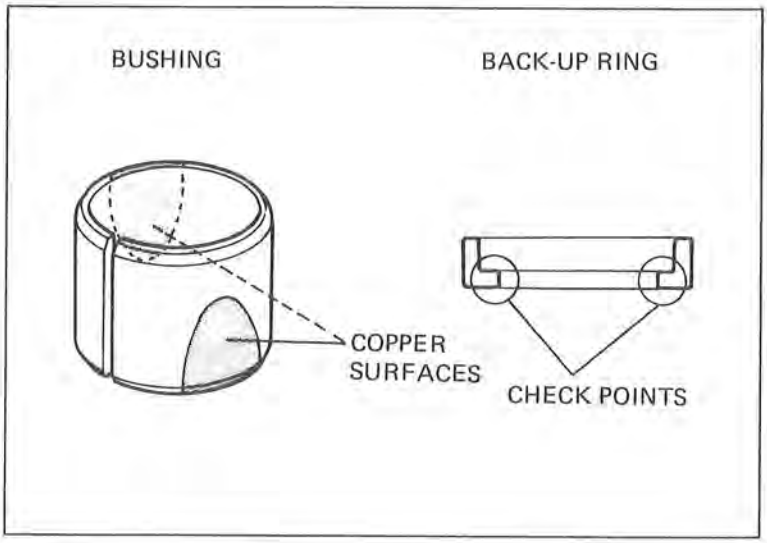
Check the fork tubes, bushings, slider and piston for score marks, scratches, excessive or abnormal wear. Replace if necessary.



Set the fork tube on V blocks and measure the runout.
Take 1/2 of total indicator reading to determine the actual runout.



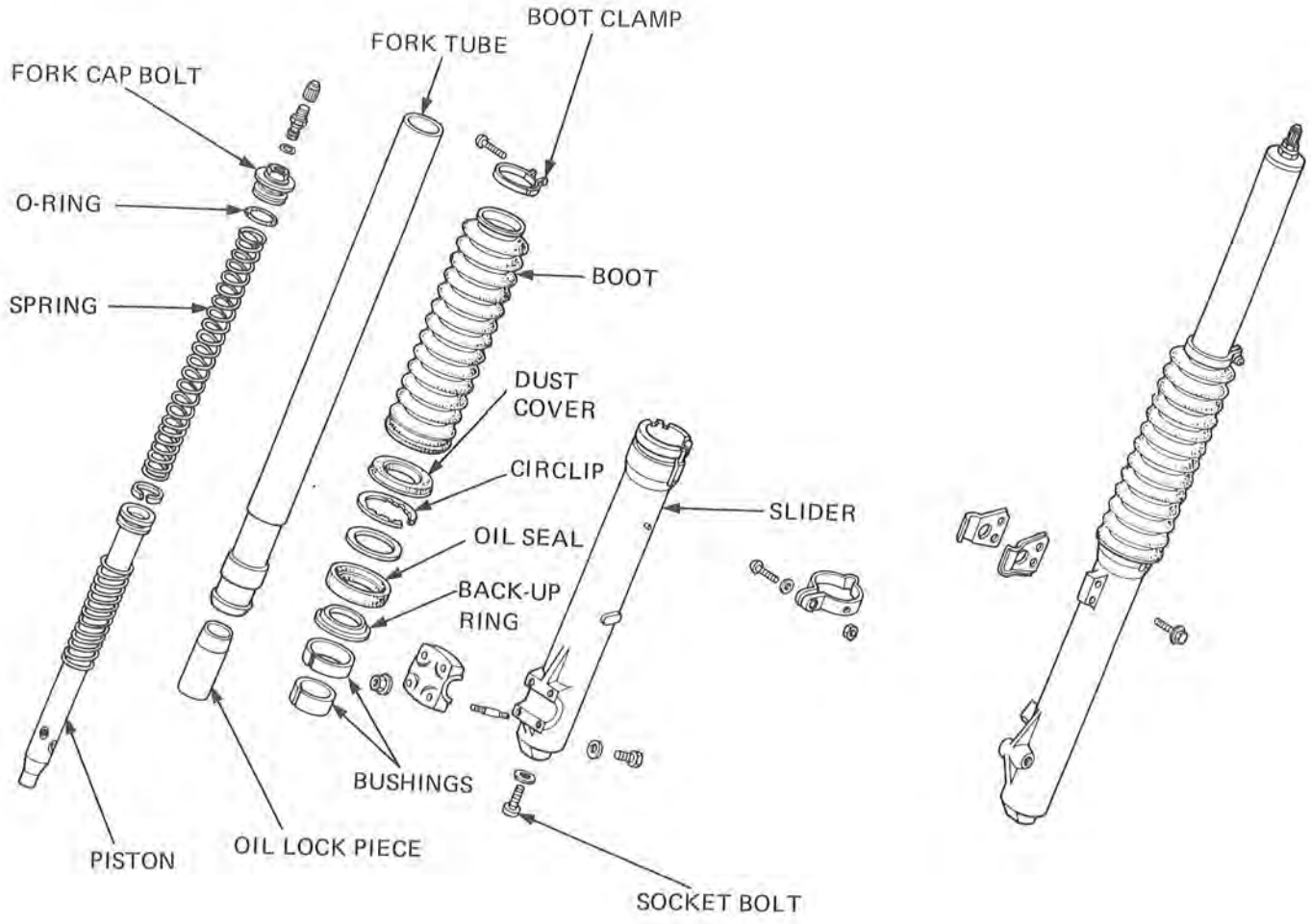
Check the bushings for excessive wear or scratches. If copper appears on more than 3/4 of the entire surface, replace the bushings.
Replace the back-up ring if there is distortion at the points shown.
Check the fork piston ring for wear or damage.
Check the rebound spring for fatique or damage.



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ASSEMBLY

Clean all parts with non-flammble or high flash point solvent.



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Place the slider bushing over the fork tube and rest it on the slider. Put the back-up ring and an old bushing or equivalent tool on top.
Drive the bushing into place with the seal driver. Remove the old bushing.
Install the back-up ring.
Coat a new oil seal with ATF and install it with the seal markings facing up. Drive the seal with the seal driver.

NOTE

If additional seal depth is needed, install the back-up plate and repeat driving the seal in.

Install the back-up plate, circlip and dust cover.
Install the rebound spring and piston into the fork tube.
Place the oil lock piece over the piston end and insert the fork tube into the slider.
Apply a locking agent to the socket bolt and torque it.

NOTE

Temporarily install the fork spring and fork bolt to tighten the hex bolt.

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

Pour in the specified amount of ATF.

SPECIFIED FLUID: ATF
CAPACITY: 345–350 cc (11.7–11.8 oz)

Compress the front fork and measure the oil level from the top of the tube.

NOTE

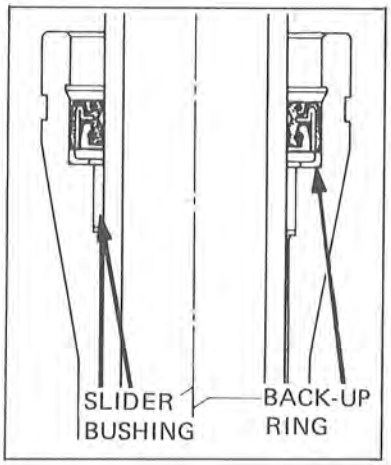
- Be sure the oil level is the same in both fork tubes.

STANDARD OIL LEVEL: 181 mm (7.1 in)

Maximum level	161 mm (6.3 in)	Slightly stiffer fork spring effect when fork is charged with standard air pressure.
Minimum oil level	201 mm (8.0 in)	Slightly softer fork spring effect when fork is charged with standard air pressure.

Install the fork spring into the fork tube after wiping oil off of it.
Install and torque the fork cap bolt.

TORQUE: 15–30 N·m (1.5–3.0 kg-m, 11–22 ft-lb)

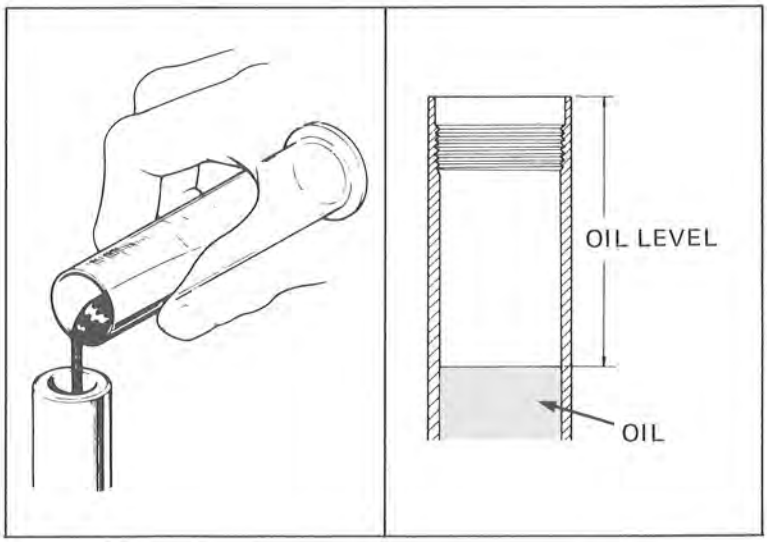




FORK SEAL DRIVER
(07947–3710100)

6 mm HEX WRENCH (Commercially available)





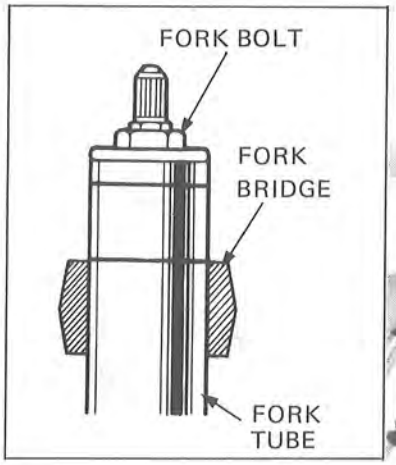
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INSTALLATION

Install the fork tubes in the bridge and steering stem while rotating them by hand.

NOTE

Ensure that the lower groove of each tube aligns with the top of the fork bridge.



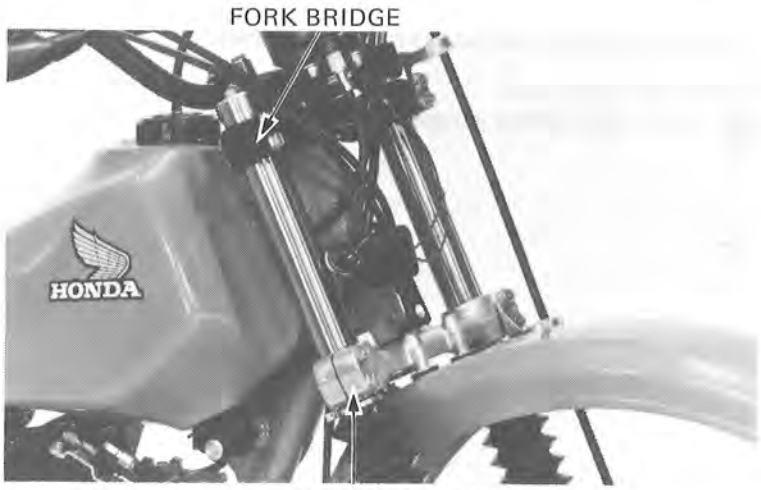


Tighten the fork top bridge pinch bolt and steering stem pinch bolts.

TORQUE

Fork top bridge: Pinch bolt	**18–25 N·m (1.8–2.5 kg-m, 13–18 ft-lb)**
Steering stem: Pinch bolt	**18–30 N·m (1.8–3.0 kg-m, 13–22 ft-lb)**

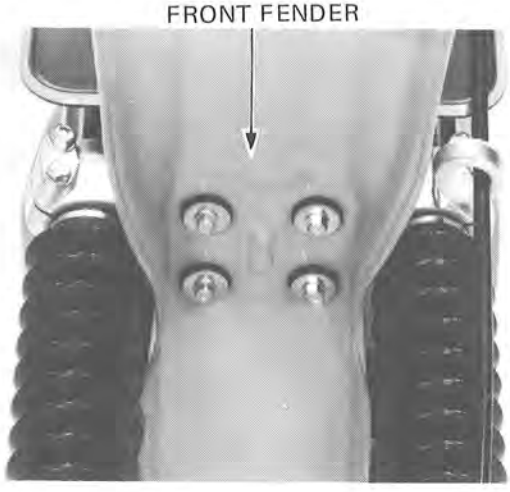
Bring the top of each boot into contact with the steering stem and tighten the clamp.
Install the front wheel (Page 13-11).



STEERING STEM

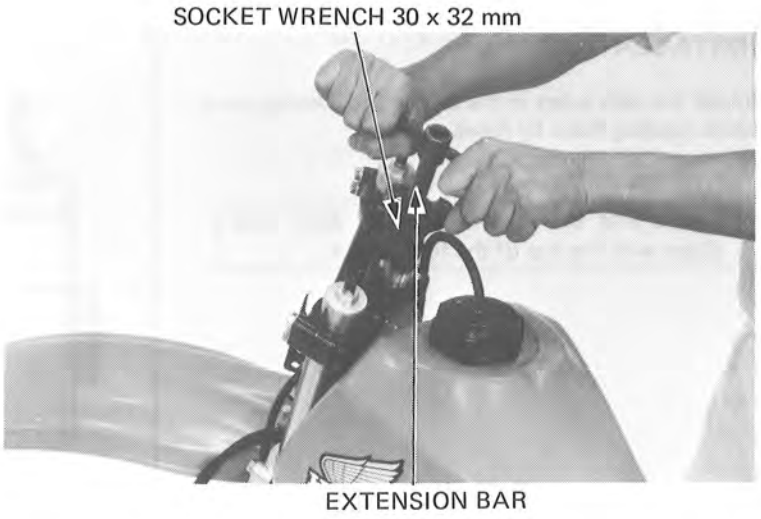
FORK TOP BRIDGE REMOVAL

Remove the headlight (Page 13-3).
Disconnect the wires at the connectors.
Remove the following parts:
Speedometer (Page 13-3).
Handlebar (Page 13-4).
Front wheel (Page 13-6).
Front fender.
Front fork.
Front brake.



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Remove the steering stem nut.
Loosen the fork bridge bolts and remove the bridge.
Remove the front fork tube assemblies.

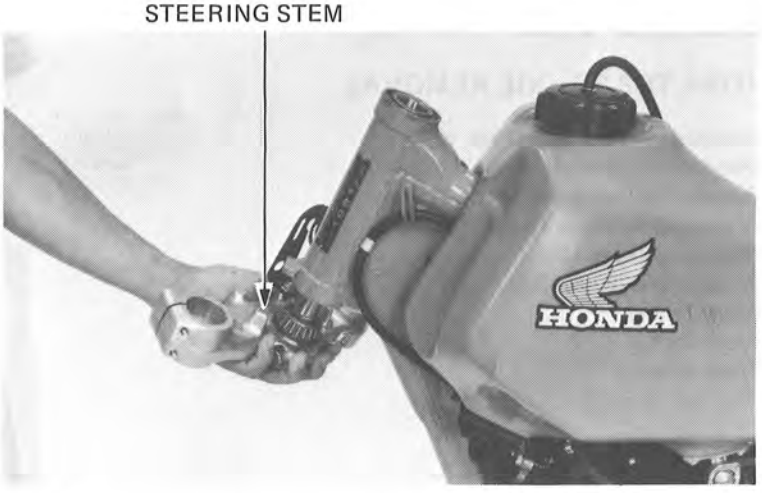


STEERING HEAD ADJUSTER REMOVAL

Remove the rubber cover.
Remove the steering head adjuster.



Remove the steering stem.

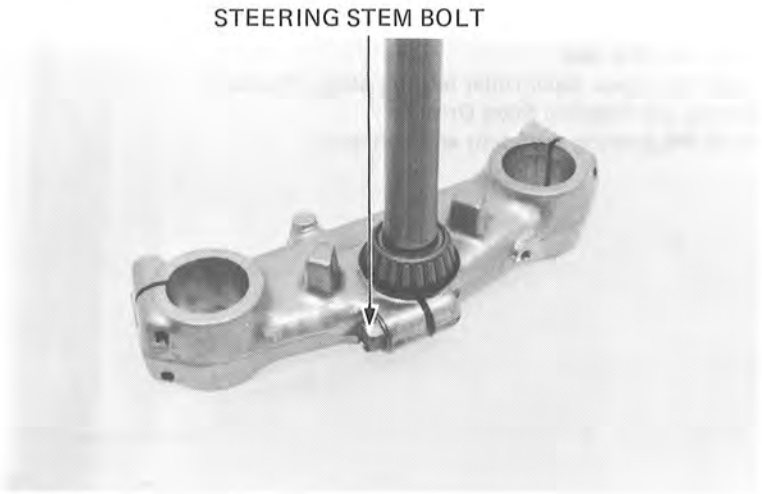


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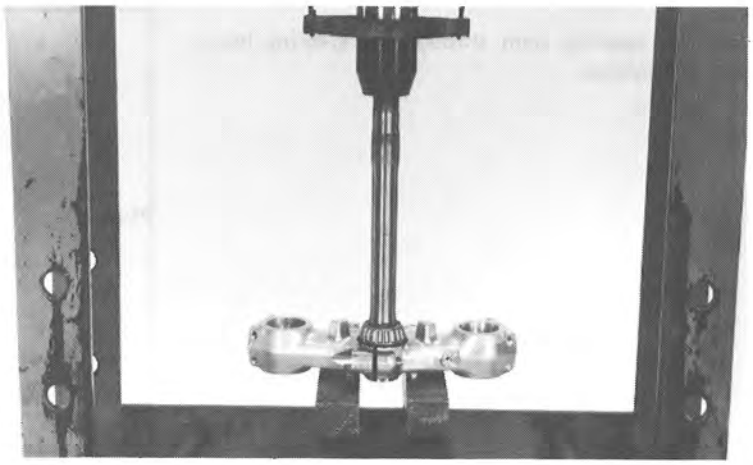
Remove the ball race with the Ball Race Remover.



Remove the steering stem bolt.



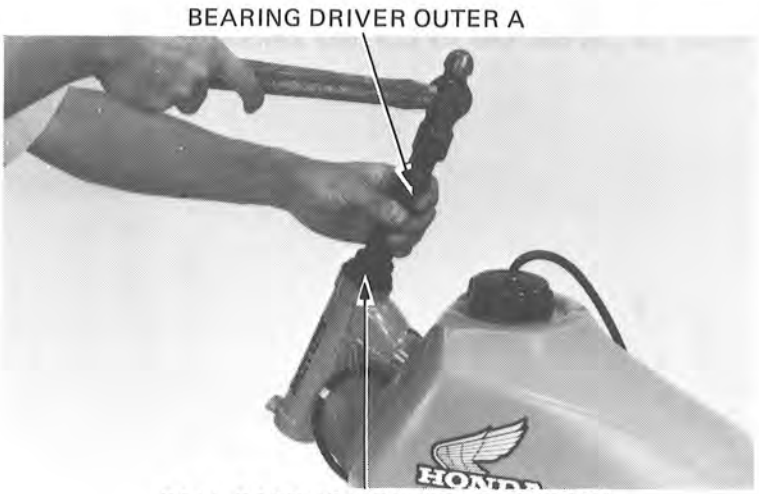
Support the steering stem on blocks in a hydraulic press as shown.
Press out the lower taper roller bearing.



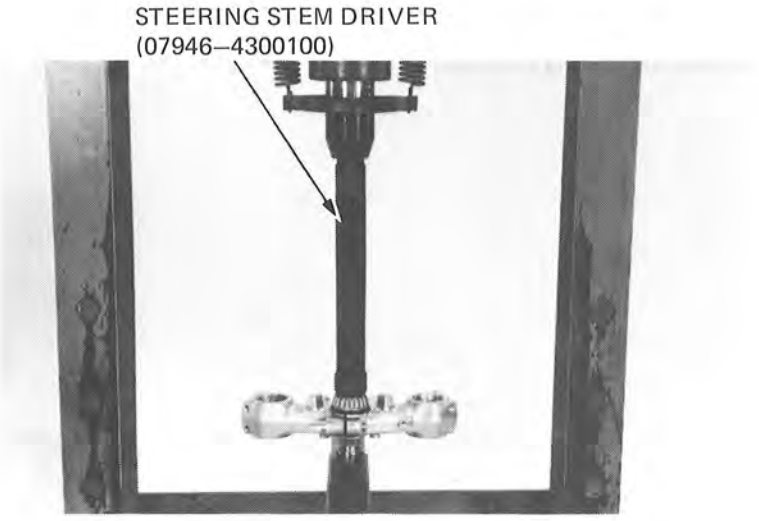
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STEERING STEM INSTALLATION

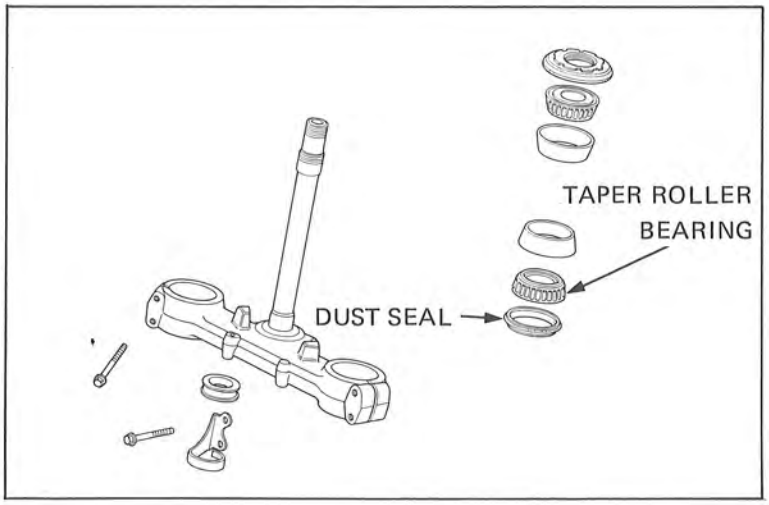
Drive in the races.



Install the dust seal.
Install the lower taper roller bearing using a hydraulic press and Steering Stem Driver.
Install the steering stem bolt and tighten it.



Install the upper taper roller bearing in the steering head.
Slide the steering stem through the steering head from the bottom.



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Install the steering head adjusting nut and torque with the steering stem socket.

TORQUE: 5.5 – 6.5 N·m (0.55–0.65 kg-m, 4 – 5 ft-lb)



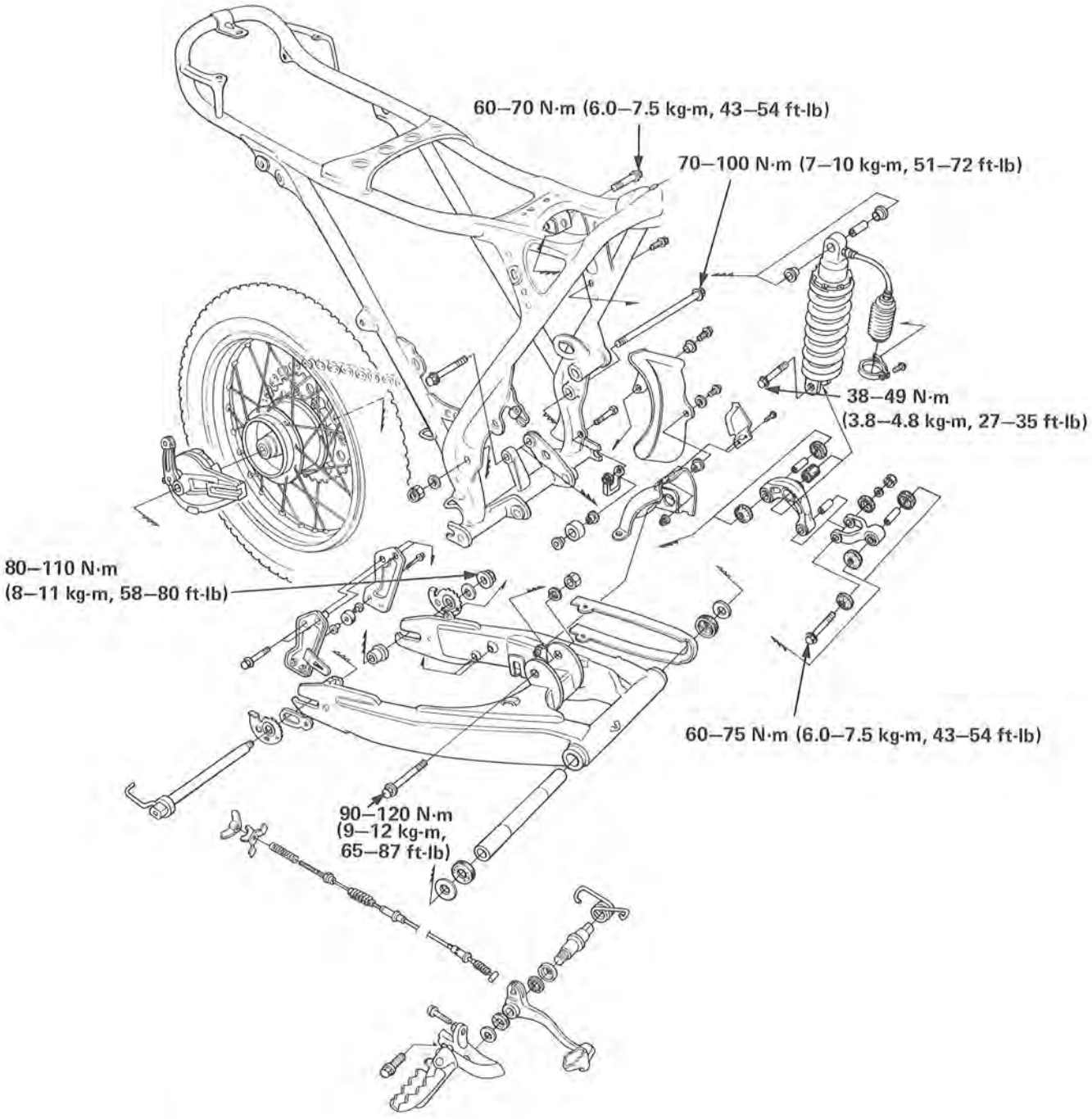
Install the fork bridge.
Tighten the steering stem nut.

TORQUE: 80–120 N·m (8–12 kg-m, 60–90 ft-lb)

Install the:
- front forks (page 13-19)
- front fender
- front wheel (page 13-11)
- handle bar. (page 13-4)

Install the speedometer and headlight (page 13-3).
Connect the wiring.

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14. REAR WHEEL/BRAKE/ SUSPENSION

SERVICE INFORMATION	14–1
TROUBLESHOOTING	14–2
REAR WHEEL	14–3
SHOCK ABSORBERS	14–10
SWING ARM	14–12
BRAKE PEDAL	14–14

SERVICE INFORMATION

GENERAL INSTRUCTIONS

- A jack block is required to support the motorcycle.
- Use genuine rear suspension linkage and shock absorber pivot/mount bolts.
- Note installation direction of the bolts.

WARNING

- *The shock absorber is fitted with a gas-filled reservoir. Do not filled the reservoir with air.*
- *The rear shock absorber contains nitrogen under high pressure. Do not allow fire or heat near the shock absorber.*
- *Be sure to release nitrogen gas pressure before disposal.*
- *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.

TOOLS

SPECIAL

Swingarm bearing remover	M967-0390-XXXXX (U.S.A. only)
Bearing remover set	07936–3710000
Bearing remover	07936–3710600
Bearing remover handle	07936–3710100
Bearing remover weight	07936–3710200
Needle bearing driver	07946–KA50000

COMMON

Bearing driver outer, 37 x 40 mm	07746–0010200
Bearing driver outer, 42 x 47 mm	07746–0010300
Bearing driver handle outer A	07749–0010000
Driver pilot, 17 mm	07746–0040400
Retainer wrench body	07710–0010400
Retainer wrench A	07710–0010100

OPTIONAL

Pin spanner A	89201–KA4–810
Pin spanner B	89202–KA4–810

TORQUE VALUES

Rear shock absorber (upper)	60 – 75 N·m (6 – 8 kg-m, 43 –54 ft-lb)
(lower)	38 – 48 N·m (4 – 5 kg-m, 28 – 35 ft-lb)
Rear suspension linkage	
Tension arm	90 – 120 N·m (9 – 12 kg-m, 65 – 87 ft-lb)
Tension rod (Front)	60 – 75 N·m (6 – 8 kg-m, 43 – 54 ft-lb)
(Rear)	60 – 75 N·m (6 – 8 kg-m, 43 – 54 ft-lb)
Spokes	2.5 – 5.0 N·m (0.25 – 0.5 kg-m, 1.8 – 3.6 ft-lb)
Final driven sprocket	28 – 34 N·m (2.8 – 3.4 kg-m, 20 – 25 ft-lb)
Rear axle nut	80 – 110 N·m (8 – 11 kg-m, 58 – 80 ft-lb)
Swingarm pivot bolt	70 – 100 N·m (7 – 10 kg-m, 51 – 72 ft-lb)
Left foot peg bolt	70 – 100 N·m (7 – 10 kg-m, 51 – 72 ft-lb)
Brake pedal pivot bolt	70 – 100 N·m (7 – 10 kg-m, 51 – 72 ft-lb)
Rim lock	10 – 15 N·m (1.0 – 1.5 kg-m, 7 – 11 ft-lb)

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SPECIFICATIONS

ITEM		STANDARD	SERVICE LIMIT
Rear shock absorber spring free length		222.6 mm (8.76 in)	219 mm (8.6 in)
Rear wheel runout	Radial	———	2.0 mm (0.10 in)
	Axial	———	2.0 mm (0.10 in)
Rear axle runout		———	0.2 mm (0.01 in)
Rear brake drum I.D.		130 mm (5.21 in)	131.0 mm (5.20 in)
Rear brake		4.0 mm (0.16 in)	2.0 mm (0.10 in)
Rear brake shoe thickness		4.0 mm (0.16 in)	2.0 mm (0.10 in)
Rear suspension damper compression		28 – 38 kg (62 – 84 lbs)	23 kg (51 lbs)

TROUBLESHOOTING

Wobble or vibration in motorcycle
1. Bent rim
2. Loose wheel bearing
3. Loose or bent spokes
4. Damaged tire
5. Axle not tightened properly
6. Swingarm pivot bearing worn
7. Chain adjusters not adjusted equally

Soft suspension
1. Weak spring
2. Improper rear suspension damping or spring preload adjusting

Hard suspension
1. Improper rear suspension damping or spring preload adjusting
2. Spring thrust joint binding
3. Bent shock absorber rod
4. Swingarm pivot bearings damaged

Suspension noise
1. Faulty rear damper
2. Loose fasteners
3. Worn suspension linkage pivot bushings

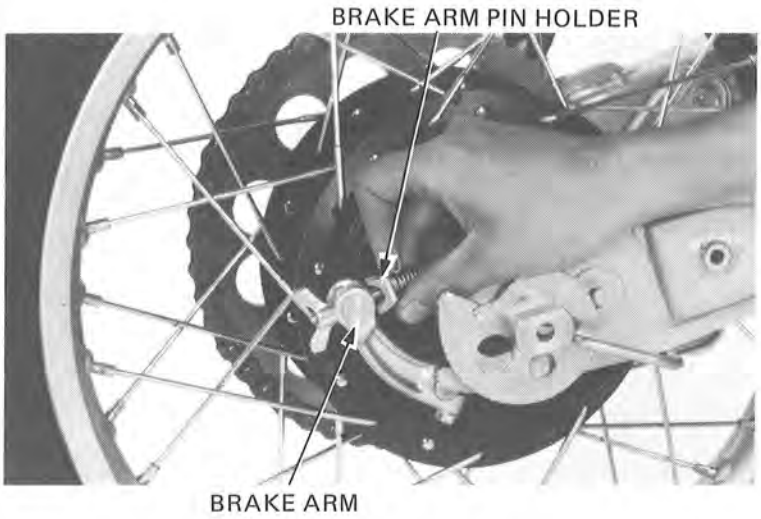
Poor brake performance
1. Improper brake adjustment
2. Worn brake shoes
3. Brake linings oily, greasy or dirty
4. Worn brake cam
5. Worn brake drum
6. Brake arm serrations improperly engaged
7. Brake shoes worn at cam contact area

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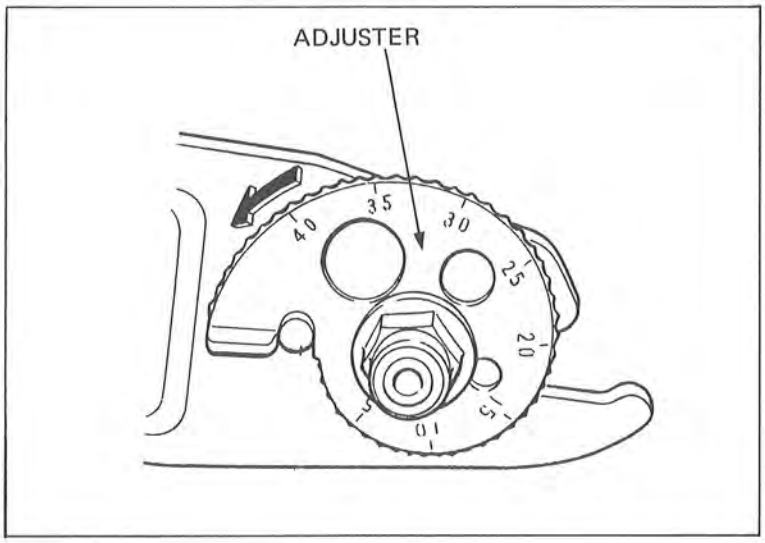
REAR WHEEL

REAR WHEEL REMOVAL

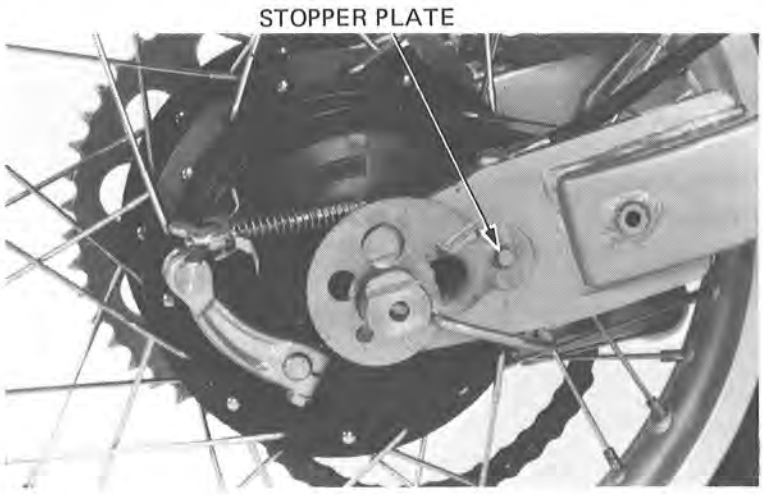
Raise the rear wheel off the ground by placing a jack or block under the engine.
Pull the brake arm pin holder foward and disconnect the brake cable from the brake arm.



Loosen the rear axle nut.
Turn both adjusters so the rear wheel can be moved all the way forward for maximum drive chain slock.
Move the rear wheel forward and "hook" the adjusters over the stopper pins on the swingarm.



Derail the drive chain from the drive sprocket.
Remove the stopper plate from the pin on the swingarm's right side.
Remove the rear wheel with the rear axle.



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INSPECTION
AXLE SHAFT

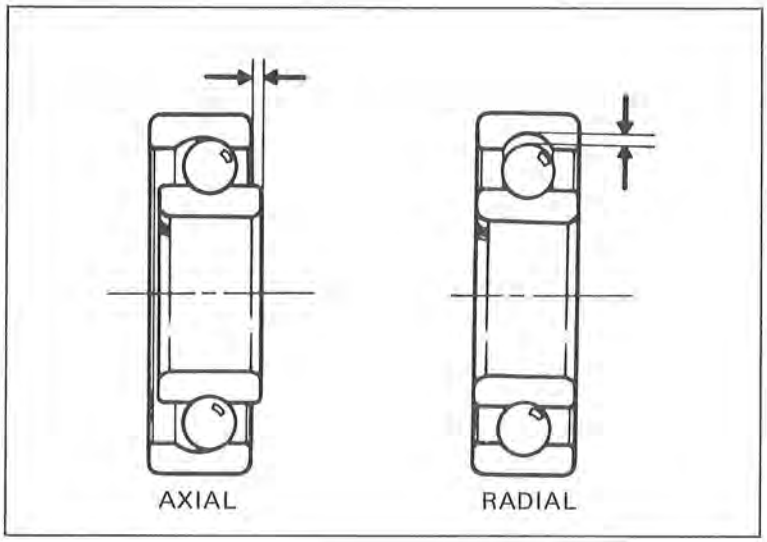
Set the axle on V blocks and measure the runout. The actual runout is 1/2 of the total indicator reading.

SERVICE LIMIT: 0.2 mm (0.01 in)



REAR WHEEL BEARING PLAY

Check the wheel bearing play by placing the wheel in a truing stand and spinning the wheel by hand. Replace the bearings with new ones if they are noisy or have excessive play.

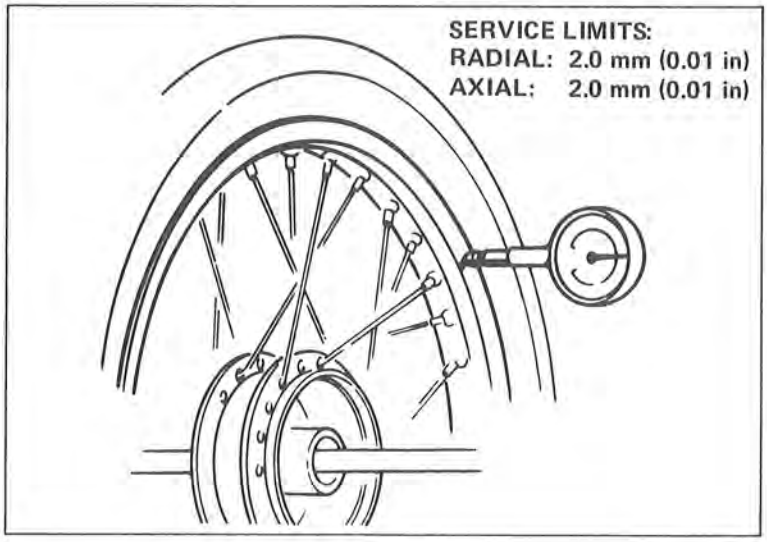


REAR WHEEL RIM RUNOUT

Check the rim runout by placing the wheel on a truing stand. Turn the wheel by hand and measure the runout using a dial indicator.

Tighten any loose spokes.

TORQUE: 2,5 – 5 N·m (0.25–0.5 kg-m, 1.8–3.5 ft-lb)

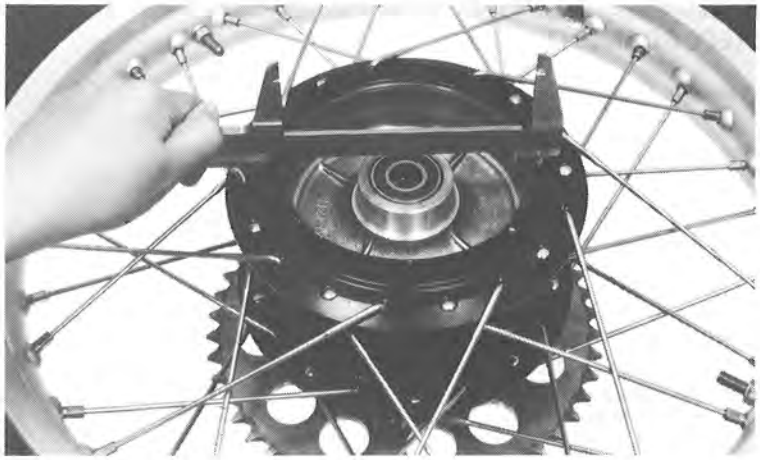


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REAR BRAKE DRUM I.D.

Measure the rear brake drum I.D.

SERVICE LIMIT: 131.0 mm (5.16 in)

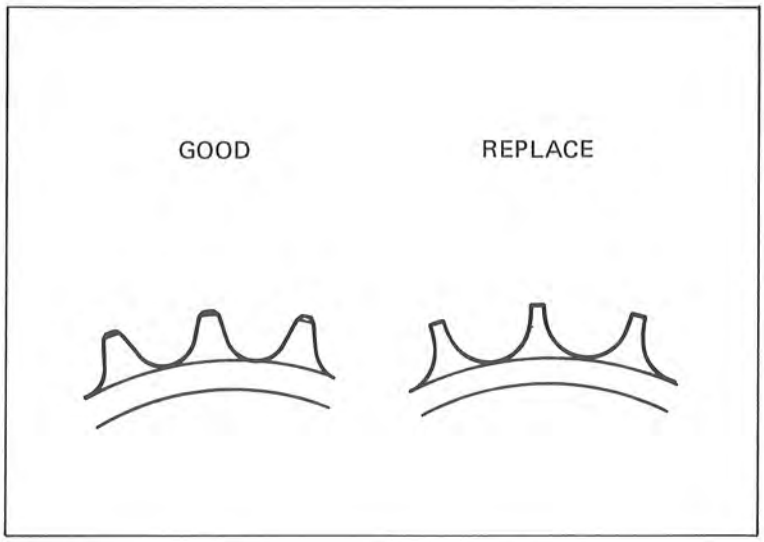


FINAL DRIVEN SPROCKET

Check the condition of the final driven sprocket teeth.
Replace the sprocket if worn or damaged.

NOTE

The drive chain and drive sprocket must also be inspected if the driven sprocket is worn or damaged.



BRAKE LINING

Measure the rear brake lining thickness.

SERVICE LIMIT: 2.0 mm (0.10 in)



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REAR BRAKE SHOE REPLACEMENT

Remove the brake arm and the brake shoes.

Apply grease to the face of the brake cam and anchor pin.
Install the brake cam and new brake shoes.
Install the springs.

WARNING

Grease on the brake linings reduces stopping power. Keep grease off the linings. Wipe excess grease off the cam.



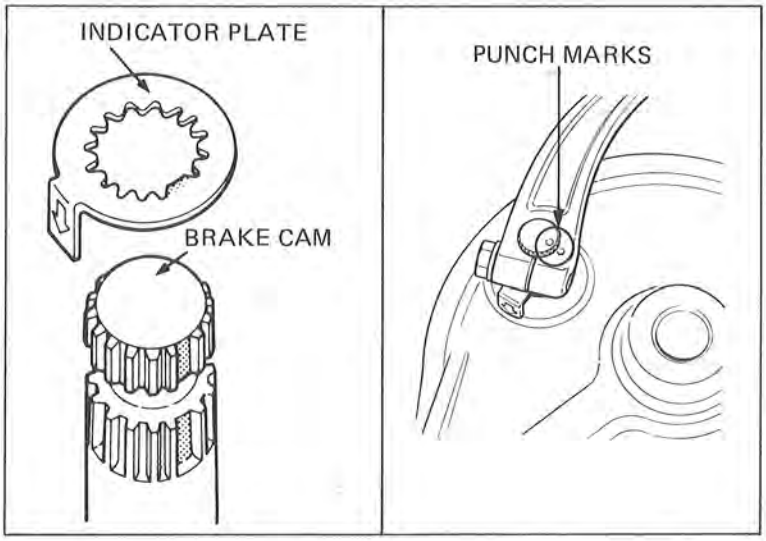
Install the wear indicator plate onto the brake cam.

NOTE

Align the indicator tab with the cutout in the brake camshaft.

Install the brake arm aligning the punch mark with the cam punch mark.
Tighten the brake arm bolt.

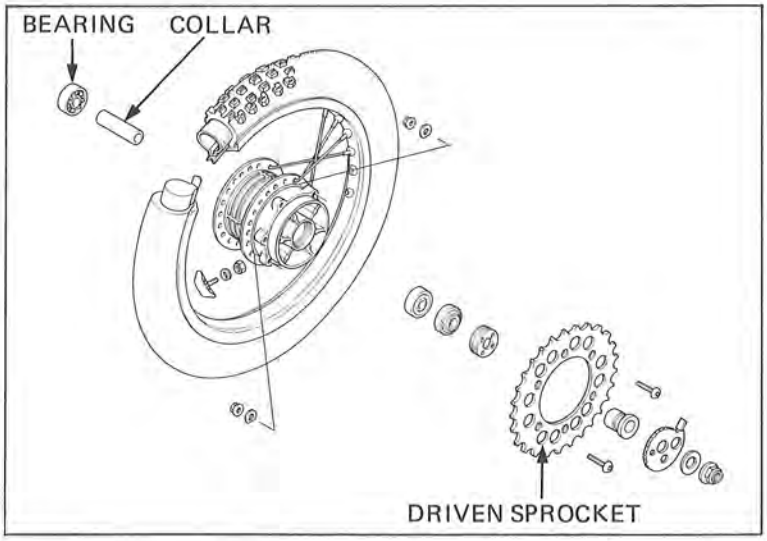
TORQUE: 8–12 N·m (0.8–1.2 kg-m, 6–9 ft-lb)



REAR WHEEL DISASSEMBLY

Remove the bearing retainer with a retainer wrench.

Remove the driven sprocket.
Remove the bearings, collar and O-ring.



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REAR WHEEL ASSEMBLY

Install the final driven sprocket and tighten the sprocket bolts.

TORQUE VALUE: 27–33 N·m (2.7–3.3 kg-m, 20–24 ft-lb)

Pack the bearing cavities with grease.
Install the right and left wheel bearings in the wheel hub.

Install the bearings with the sealed end facing out.

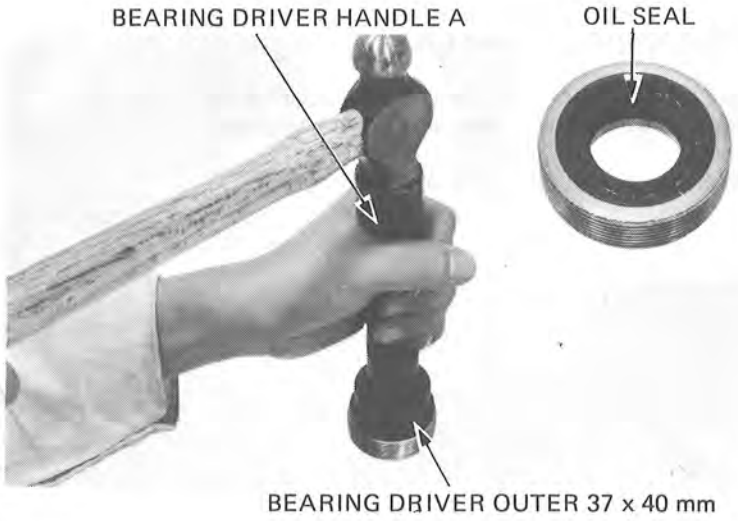
WARNING

Grease on the brake linings reduces stopping power. Keep grease off the linings.

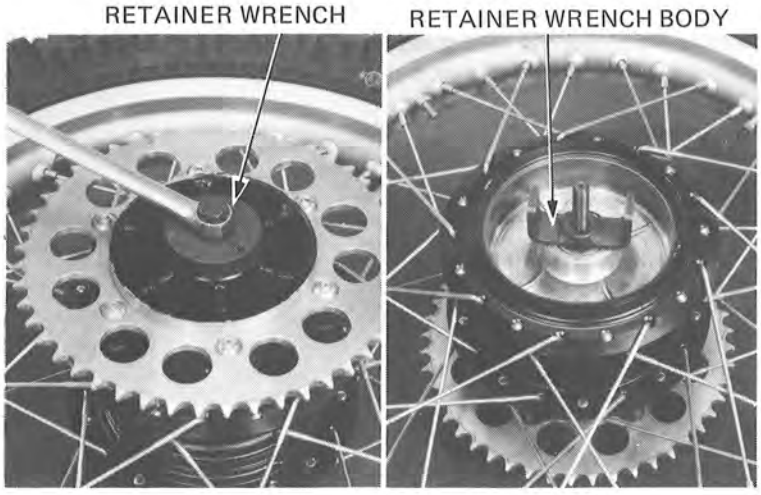


Drive the oil seal into position in the bearing retainer.

Apply grease to the oil seal.

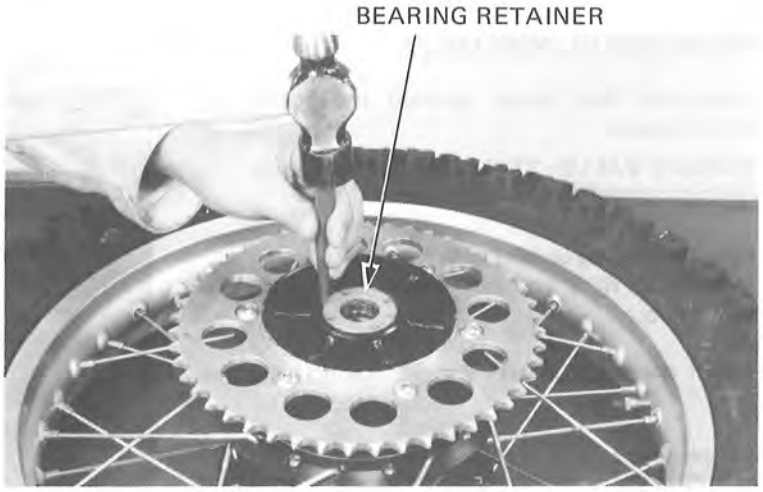


Grease and install the bearing retainer with the retainer wrench and body.



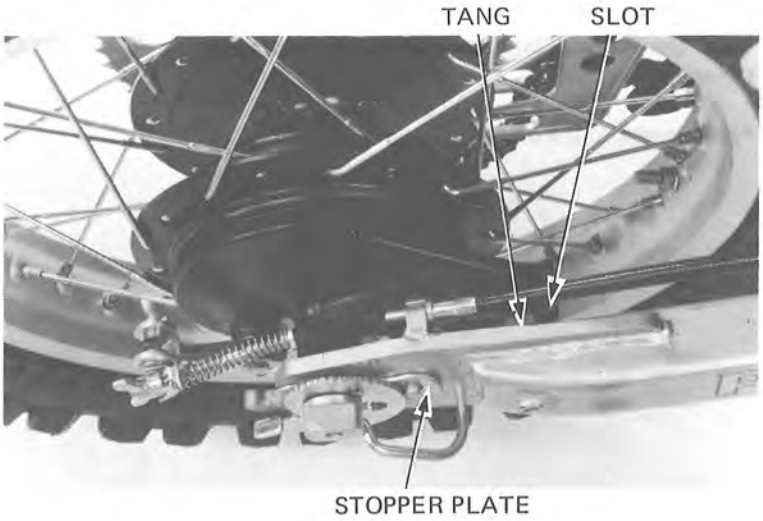
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Stake the bearing retainer as shown.



REAR WHEEL INSTALLATION

Place the rear wheel into the swing arm locating the tang on the swingarm into the slot on the brake panel.
Set the stopper pin to the pin on the swingarm.

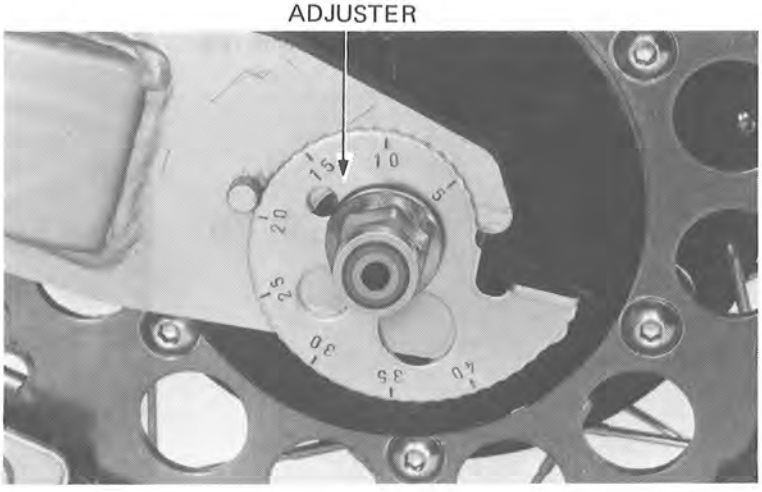


Run the chain over the final sprocket.
Turn the right and left adjuster plates.

CAUTION:

The same index mark on both sides should align with the pins on the swingarm.

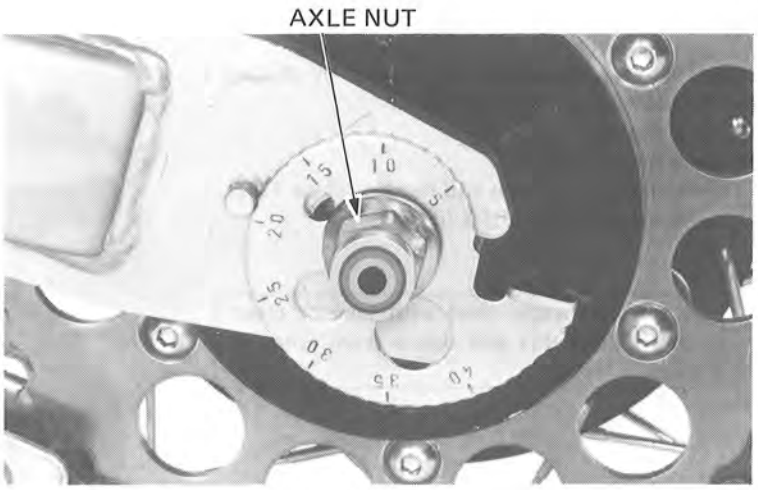
Adjust the drive chain (Page 3-13).



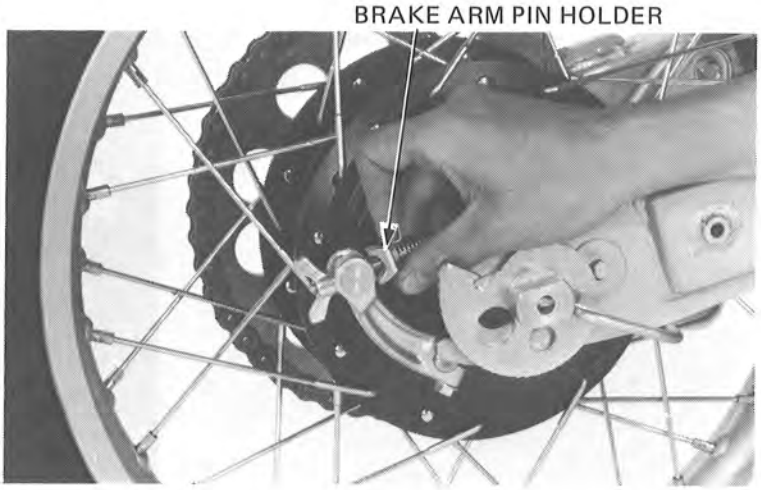
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Tighten the axle nut.

TORQUE: 80–110 N·m
(8–11 kg-m, 58–80 ft-lb)



Pull the brake arm pin holder and brake arm forward and insert the brake cable into the pin.
Adjust the brake pedal free play. (Page 3-16)



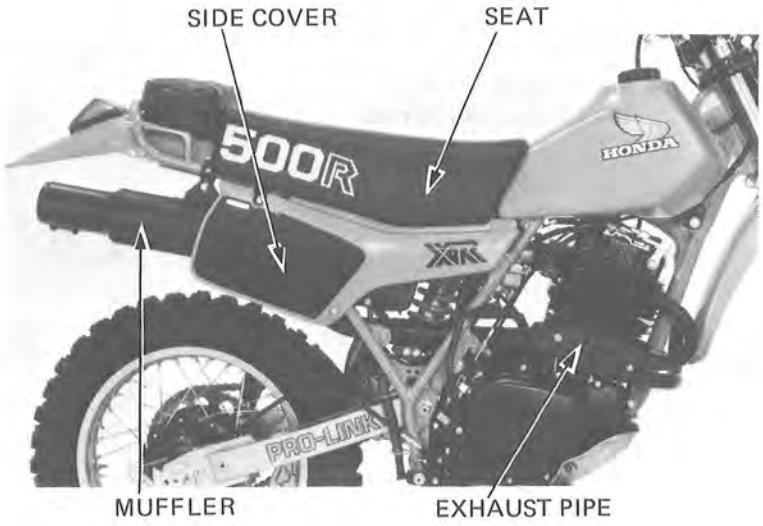
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SHOCK ABSORBER

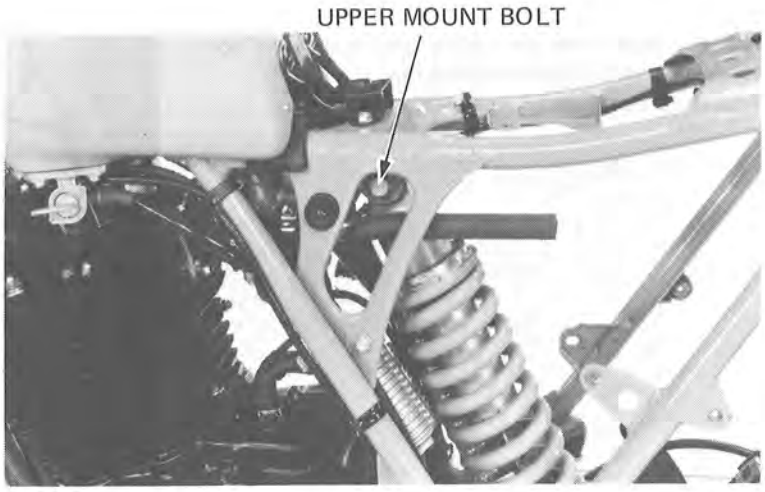
Raise the rear wheel off the ground by placing a jack or block under the engine.
Remove the seat.
Remove the side covers.
Remove the exhaust pipe and muffler (Page 15-1).
Remove the air cleaner case (Page 4-4).

NOTE

Seal the carburetor inlet with tape or clean cloth to keep dirt and debris from entering the intake tract.



Remove the shock absorber upper mount bolt.



Remove the bolt attaching the shock link to the frame.

CAUTION:

Do not remove the bolt connecting the shock arm to the shock link.



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Loosen the shock absorber lower bolt.
Move the rear shock absorber back as shown. Lift up the rear wheel with a jack or block under the wheel until the lower mount bolt is clear of the swingarm.

NOTE

Do not let the shock absorber touch the frame brackets when lifting up the rear wheel. This may cause damage to the shock absorber thread.

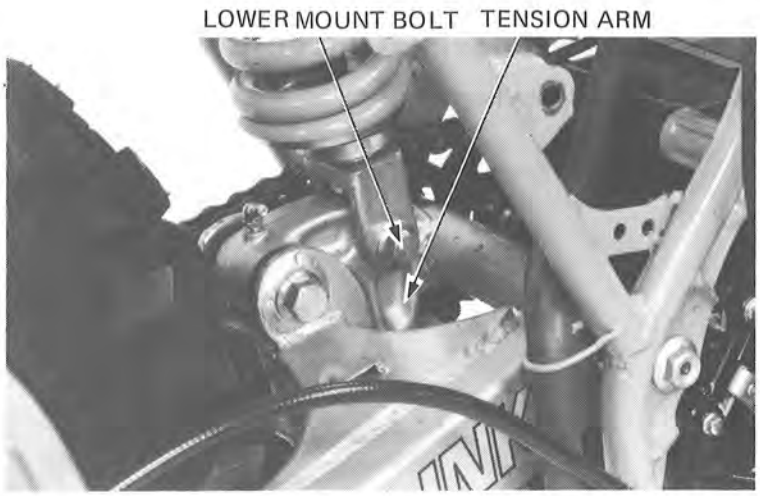


LOWER MOUNT BOLT

Remove the rear shock absorber lower bolt and remove the shock absorber.

NOTE

Do not let the rear wheel fall.



DISASSEMBLY

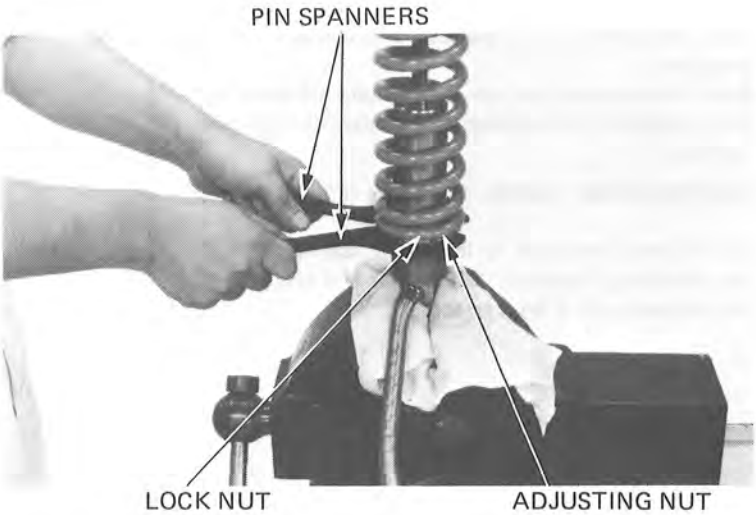
Hold the upper part of the shock in a vise with soft jaws or a shop towel.
Loosen the lock nut and adjusting nut.

CAUTION:

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

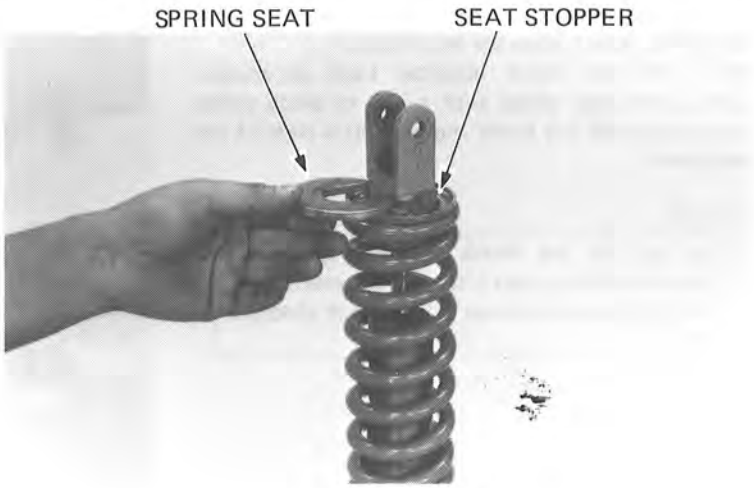
NOTE

The pin spanners are optional tools.



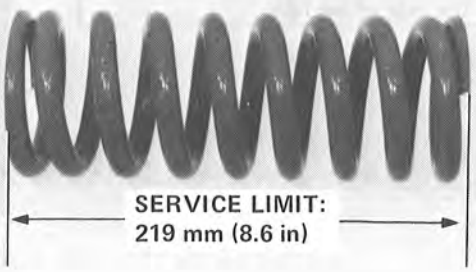
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Remove the spring seat, seat stopper and spring.



SHOCK ABSORBER SPRING INSPECTION

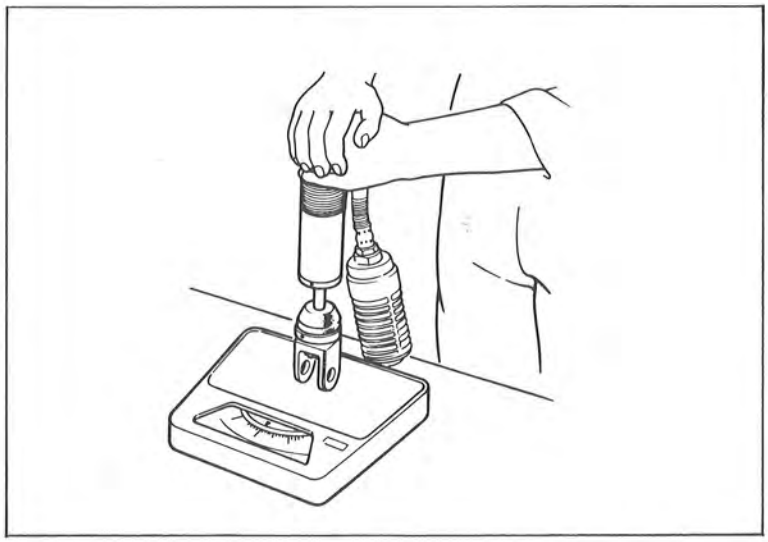
Measure the spring free length.



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

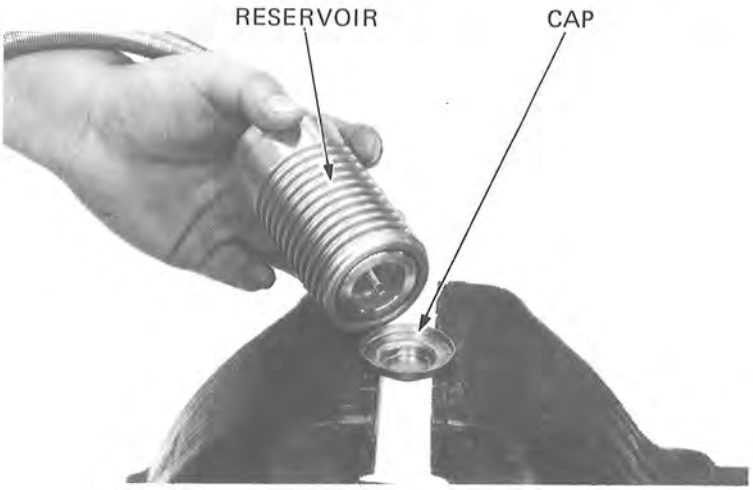
COMPRESSION FORCE: 28–38 kg (62–84 lbs)

If the force required is less than 23 kg (51 lbs), gas is leaking. Examine the damper rod and replace the damper until if bent or scored.



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Remove the cap from the reservoir.



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

CAUTION:

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

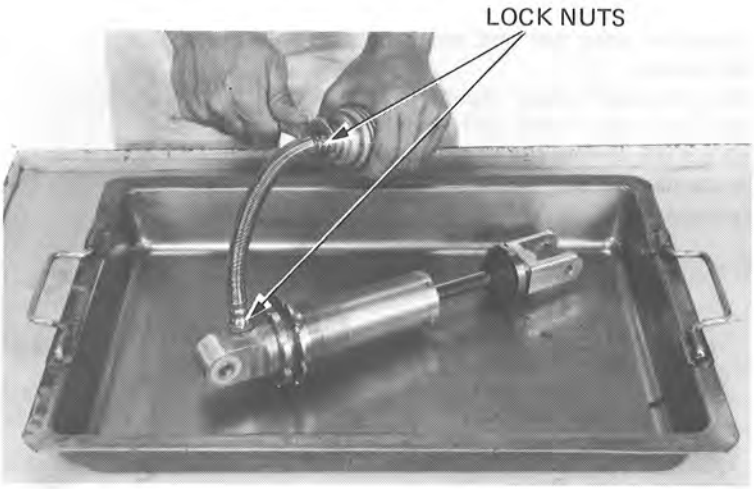


Remove the lock nuts.
Separate the reservoir, hose and damper complete.
Remove the spring lock nut and adjusting nut.

CAUTION:

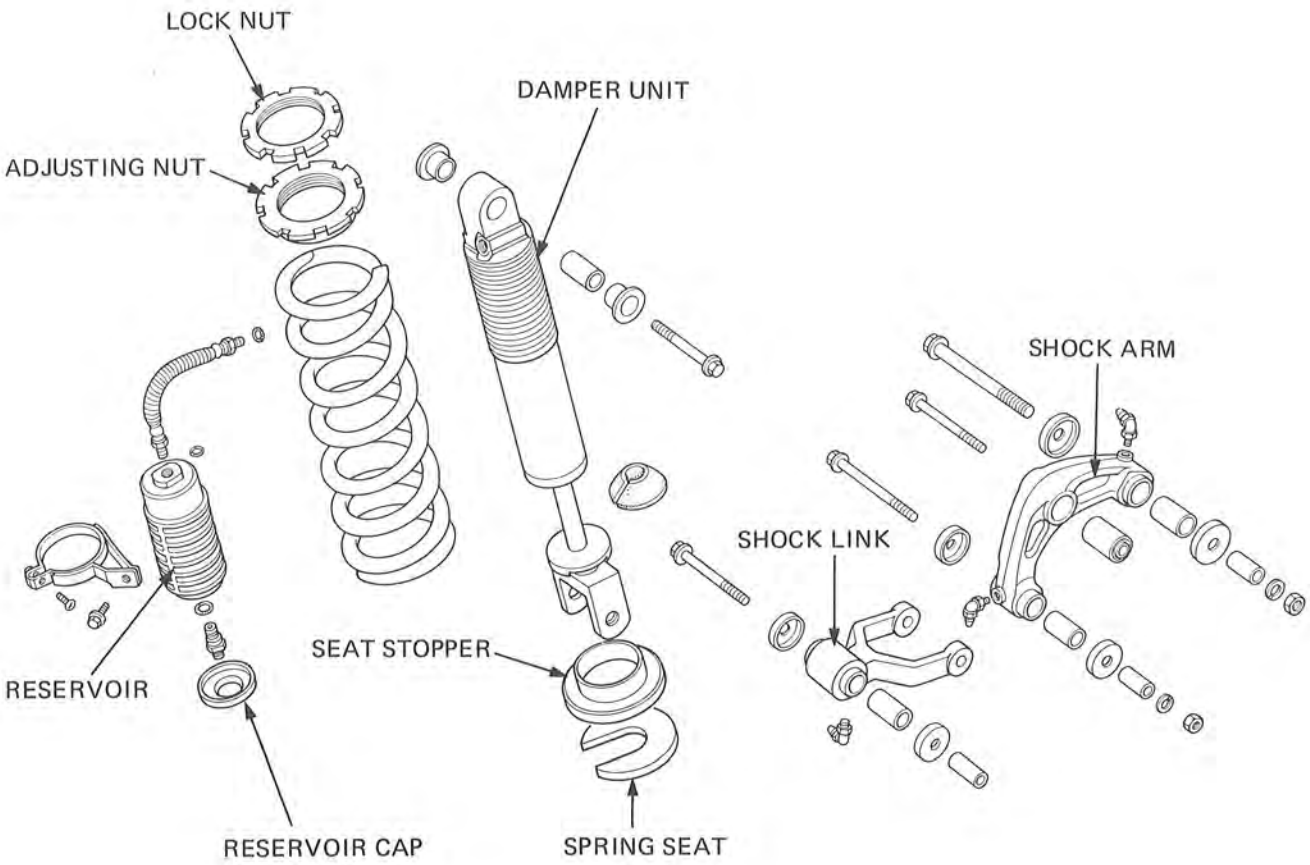
Do not disassemble the damper unit.

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



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SHOCK ABSORBER ASSEMBLY



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



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

NOTE

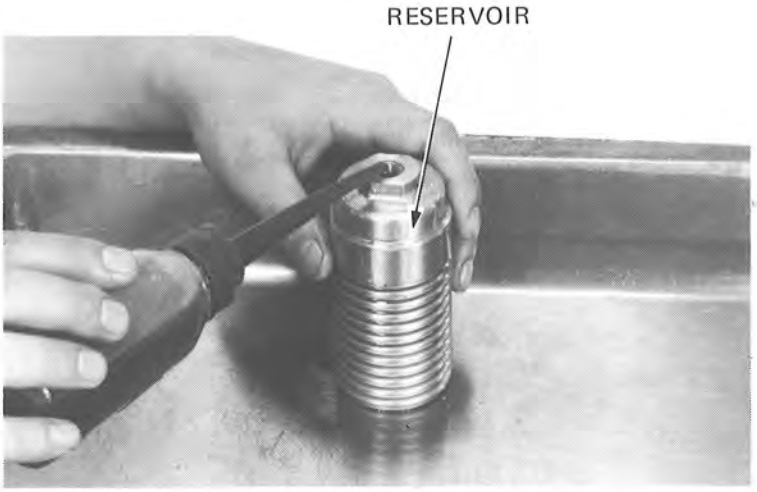
The damper should be as free of air as possible.



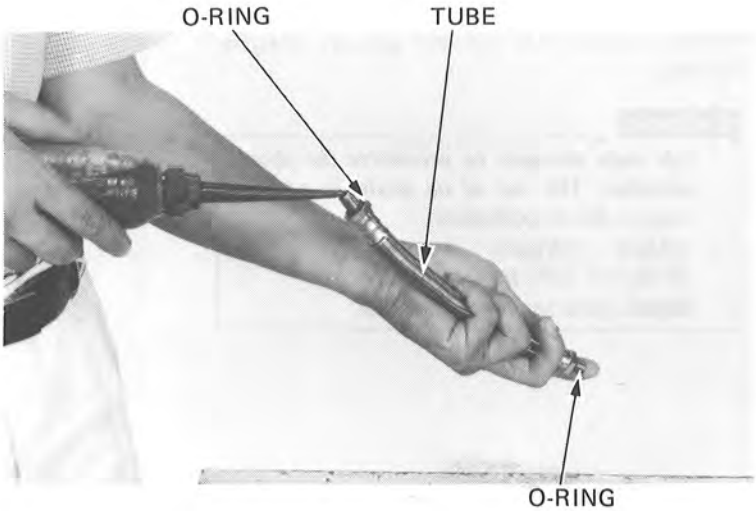
Fill the reservoir with ATF.

NOTE

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



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

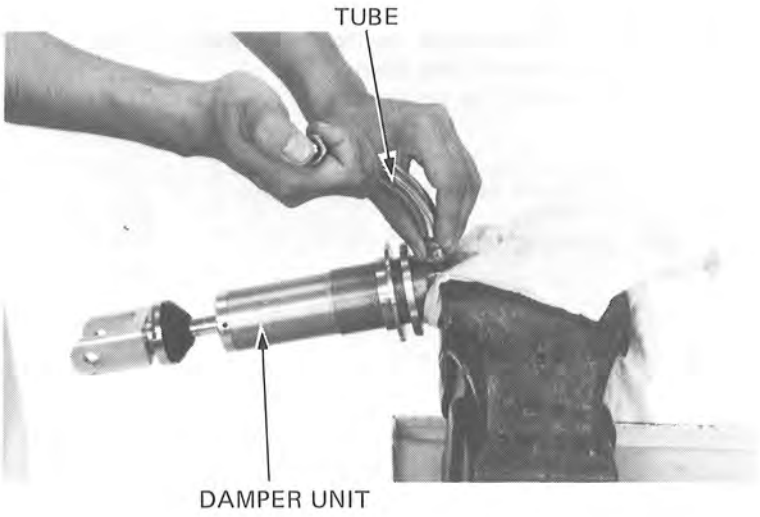


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Connect the hose to the damper unit.
Tighten the hose joint.

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

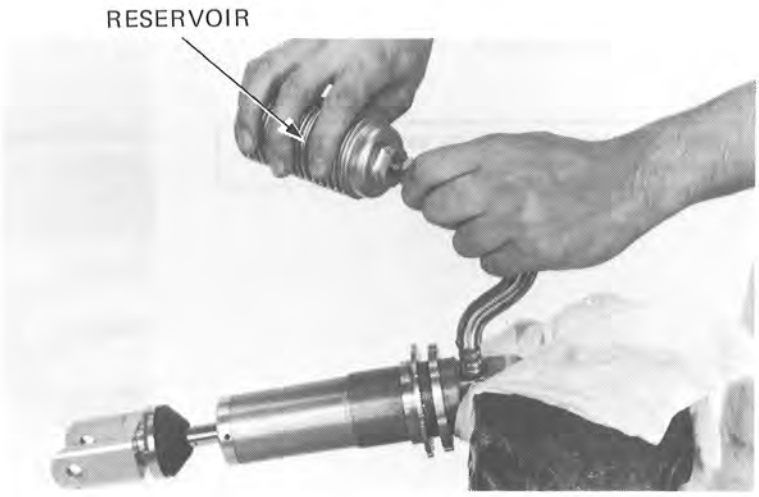
Fill the hose with ATF again. Make sure that the damper rod is pulled out fully when filling the hose.



Connect the reservoir to the hose without losing oil.

NOTE

Do not allow air to enter the damper oil.



Fill the reservoir with nitrogen gas just 20 kg/cm^2 (285 psi).

WARNING

- ***Use only nitrogen to pressurize the shock absorber. The use of an unstable gas can cause a fire or explosion.***
- ***Adjust nitrogen pressure to only 20 kg/cm^2 (285 psi).***
- ***Install a new reservoir valve cap.***



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Install the spring, spring seat and seat stopper.
Position the upper and lower shock absorber mounts so as to allow holes in the mounts to face in the same direction.
Be sure the adjusting mark should face opposite to the reservoir hose.



Measure the spring's length.
Turn the adjusting nut to obtain the standard spring length.

STANDARD SPRING LENGTH: 212.6 mm (8.4 in)

NOTE

One turn equals 1.5 mm (0.06 in)

To increase spring preload; tighten the adjusting nut to shorten the spring length up to 5 mm (1/4 in) and tighten the lock nut.

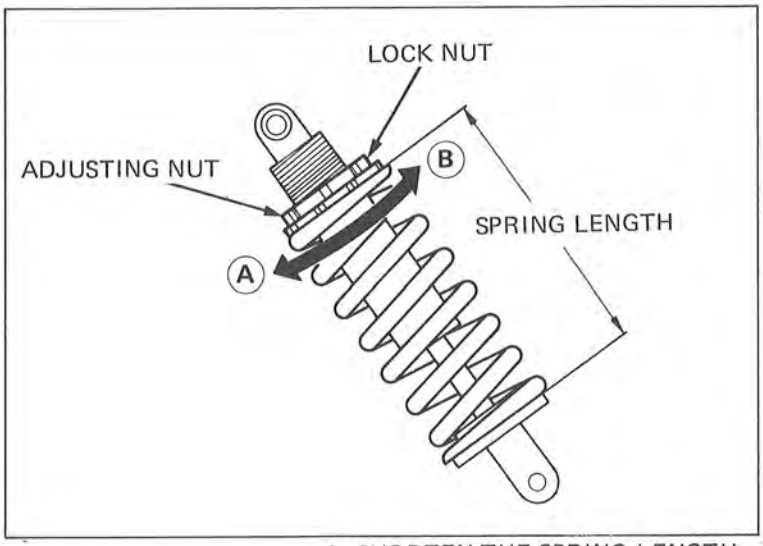
CAUTION:

Do not shorten the spring more than 5 mm (1/4 in), or damage to the spring could result.

To reduce spring preload; loosen the adjusting nut to increase spring length 5 mm (1/4 in) and tighten the lock nut.

CAUTION:

Do not ride the motorcycle without the spring having preload. Loss of rider control could result.

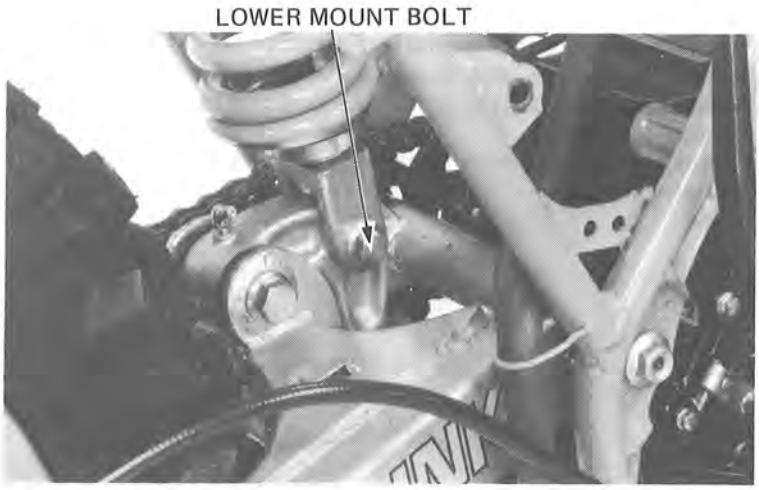


A: SHORTEN THE SPRING LENGTH
B: INCREASE THE SPRING LENGTH

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INSTALLATION

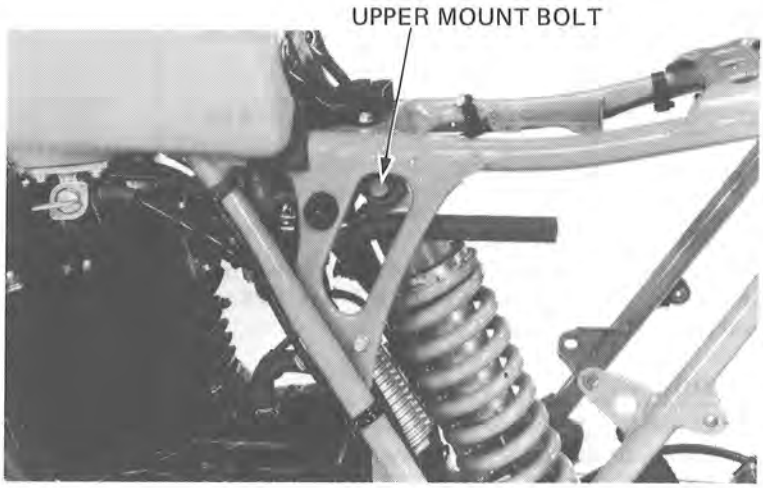
Raise the rear wheel off the ground by placing a jack or block under the engine.
Install the rear shock absorber to the shock arm.
Torque the lower bolt.
TORQUE: 90–120 N·m (9–12 kg-m, 65–87 ft-lb)



Apply molybdenum disulfied (MoS_2) paste (containing more than 45% of MoS_2) to the upper mount bushings.

NOTE

Use MoS_2 paste (containing more than 45% of MoS_2) as follows:
- Molykote® G-n Paste manufactured by Dow Corning U.S.A.
- Rocol Paste manufactured by Sumico Lubricant Co., LTD., Japan.
- Other lubricants of equivalent quality.



Attach the shock absorber to the frame and torque the upper bolt.
TORQUE: 60–75 N·m (6.0–7.5 kg-m, 43–54 ft-lb)

WARNING

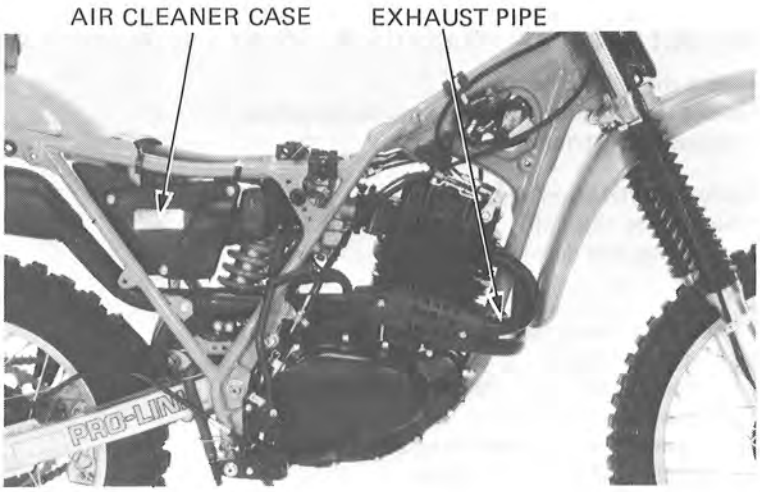
Use only the correct bolts. Do not substitute other fasteners. Since they may not have adequate strength and may fail during operation.

Attach the shock link to the frame and torque the bolt.
TORQUE: 60–75 N·m (6.0–7.5 kg-m, 43–54 ft-lb)



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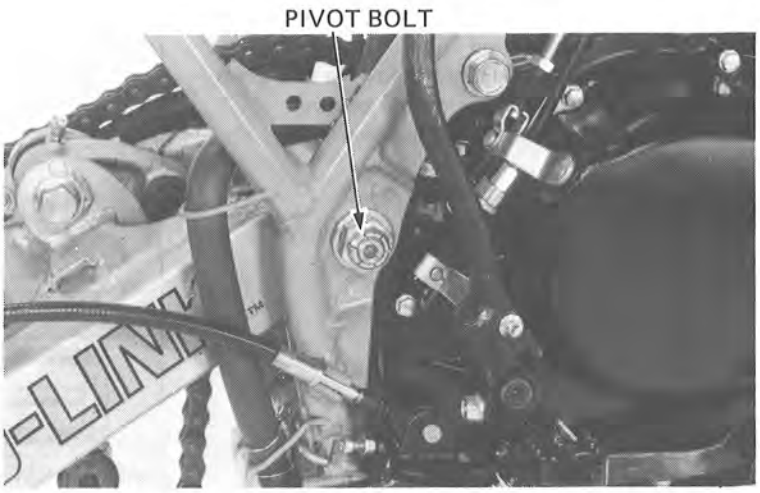
Install the following:
air cleaner case
exhaust pipe
muffler
side covers
seat



SWING ARM

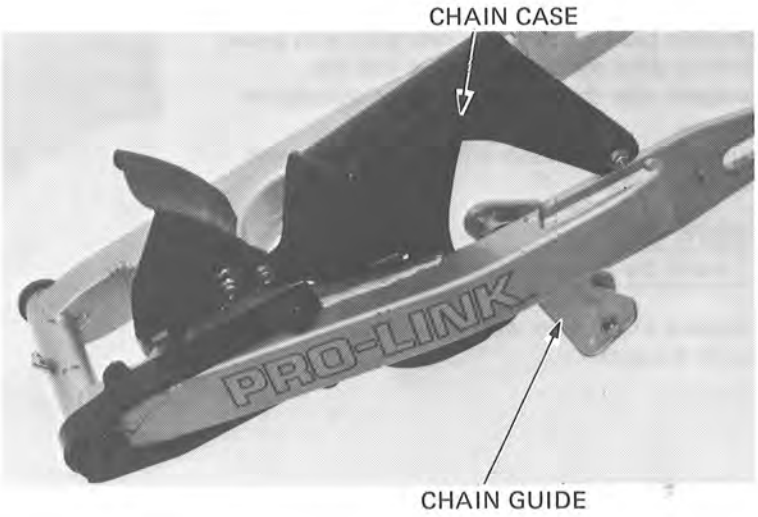
SWING ARM REMOVAL

Raise the near wheel off the ground with a jack or block under the engine.
Remove the rear wheel (Page 14-3).
Remove the rear shock absorber (Page 14-10).
Remove the swing arm pivot bolt.



DISASSEMBLY

Remove the shock arm from the swing arm.
Remove the chain guide, chain case and mud guard.



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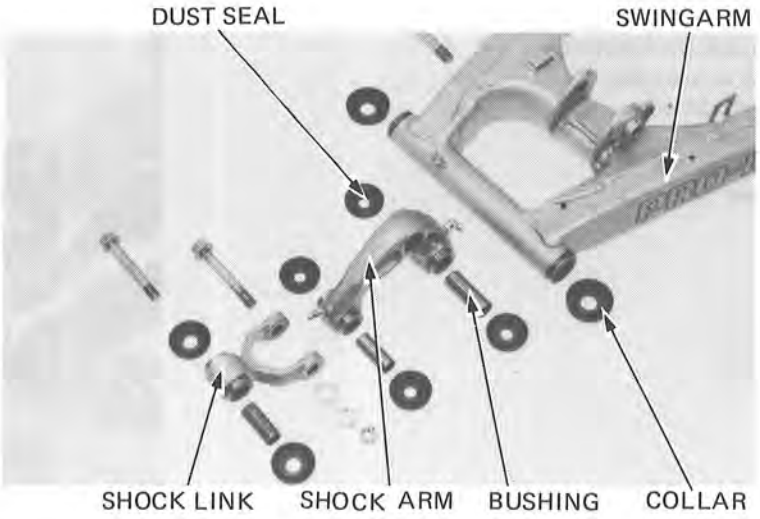
INSPECTION

Inspect the collars, bearings.
Replace them if they have score marks, scratches, or excessive or abnormal wear.

Apply molybdenum disulfied (MoS2) paste (containing more than 45% of MoS2) to the insides of the bushings and dust seal lips.

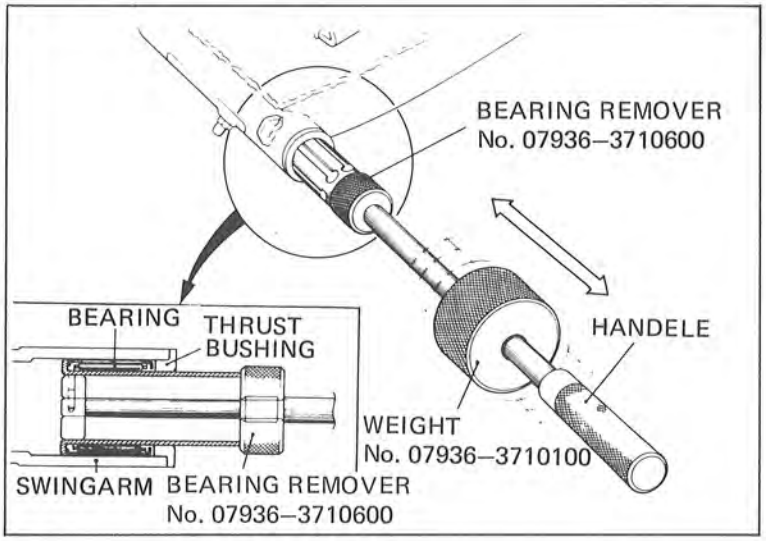
NOTE

Use MoS2 paste (containing more than 45% of MoS2) as follows:
- Molykote® G-n Paste manufactured by Dow Corning U.S.A.
- Rocol Paste manufactured by Sumico Lubricant Co., LTD., Japan.
- Other lubricants of equivalent quality.



PIVOT BEARING REPLACEMENT

Remove the dust covers and collar.
Install the bearing remover into the swing arm pivot hole and expand the tool behind the bearing.
Drive bearing out with the slide hammer.

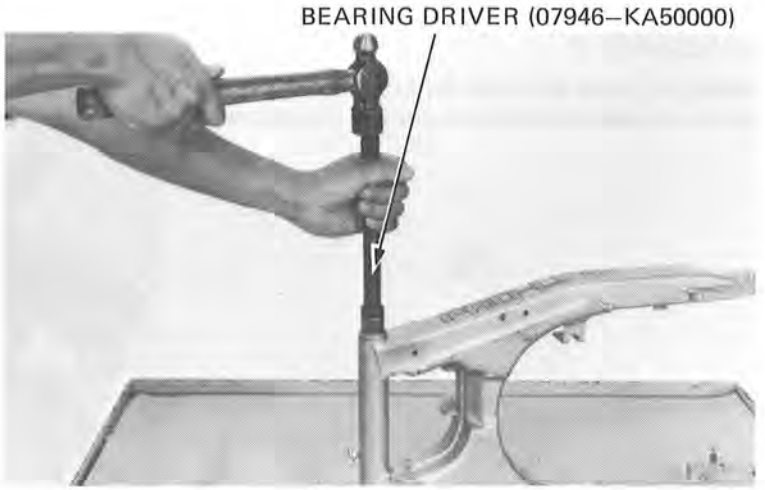


Clean the bearings, then lubricate them with grease.
carefully drive the needle bearings into the swingarm with the special tool below the edge of the hole.
Drive the thrust bushings into the swingarm with the same tool.

NOTE

Install the bearings with the marks facing out

Lubricate the bearings with grease after installation.
Install the collar.



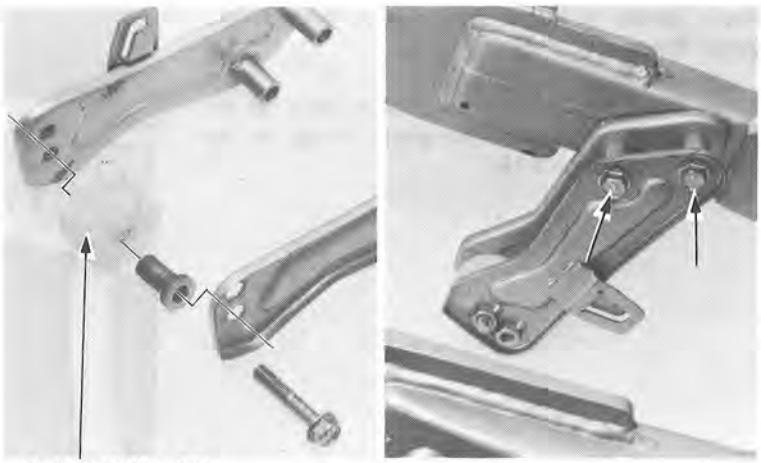
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SWING ARM ASSEMBLY

Assemble the drive chain guide roller plates.
Install them onto the swingarm.
Tighten the bolts securely.

NOTE

Install the guide roller to the rear hole in the chain guide roller plates.

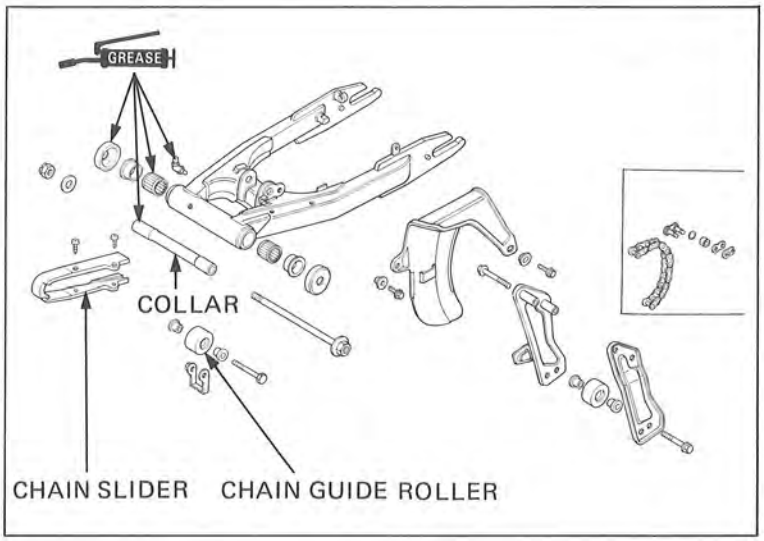


Install the chain case and mudguard.
Install the chain slider.
Install the shock link to the shock arm.

TORQUE: 60–75 N·m (6.0–7.0 kg-m, 43–54 ft-lb)

Install the shock arm onto the swingarm.

TORQUE: 90–120 N·m (9–12 kg-m, 65–87 ft-lb)

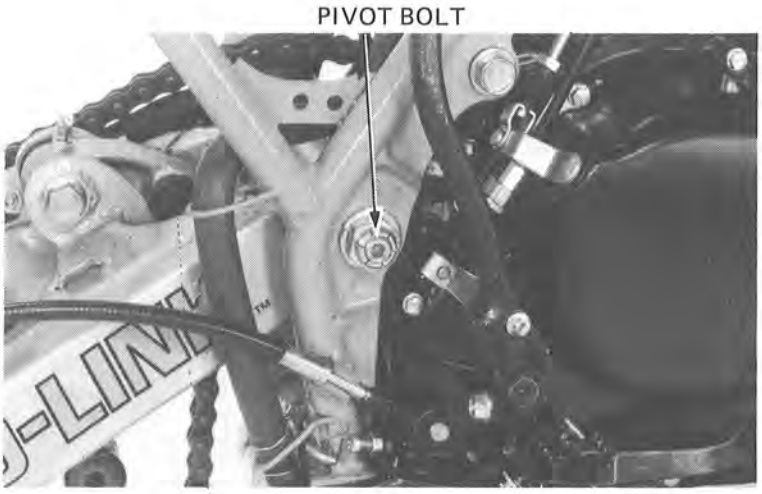


SWINGARM INSTALLATION

Install the swingarm and torque the pivot bolt.

TORQUE: 70–100 N·m
(7–10 kg-m, 50.6–72.2 ft-lb)

Install the shock absorber (Page 14-18).
Connect the rear brake cable.
Adjust the rear brake pedal free play (Page 3-16).



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Apply grease to the swingarm pivot through the grease fitting.

Apply molybdenum disulfied (MoS2) paste to the linkage bushings through the grease fittings on the linkage pivots (page 3-19).



BRAKE PEDAL

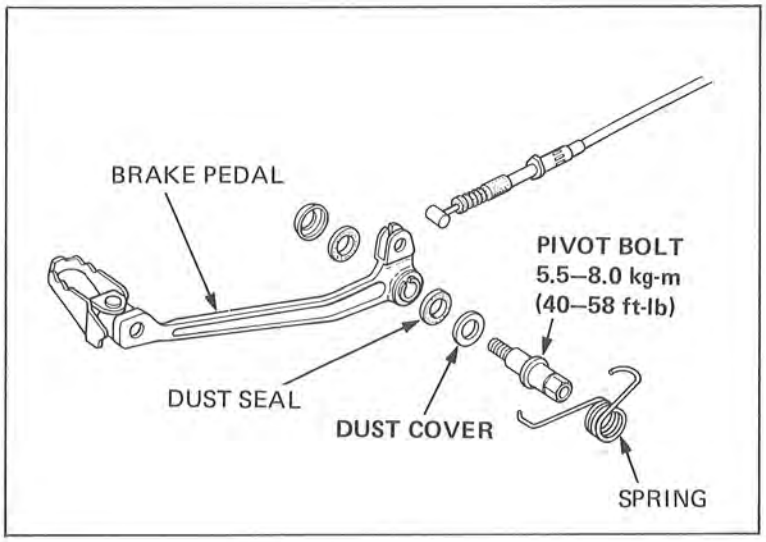
REMOVAL

Disconnect the brake pedal spring.
Remove the right foot peg mounting bolt.
Disconnect the brake cable and remove the right foot peg and brake pedal.

INSTALLATION

When assembling, apply grease to the brake pedal pivot bolt, dust cover and dust seals.

Install the brake pedal in the reverse order of removal.



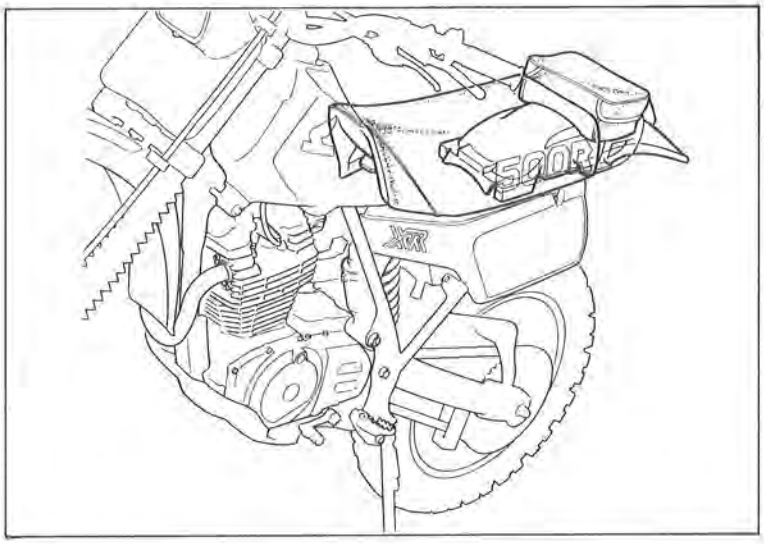
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REAR FENDER

REMOVAL

Remove the seat.
Remove the tool bag.

Disconnect the taillight wire and remove the taillight.
Remove rear fenders A and B.

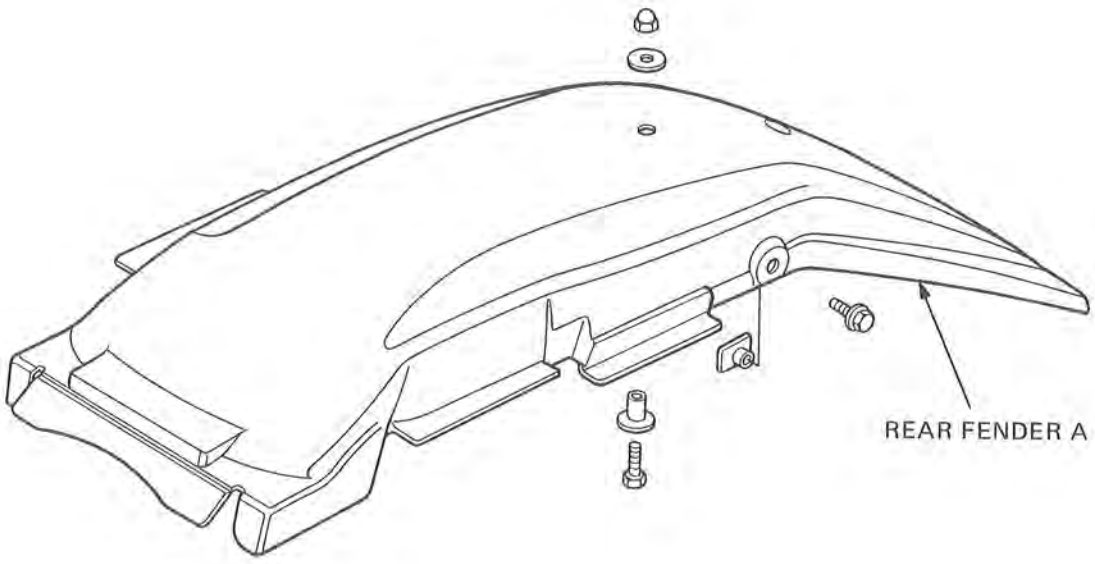


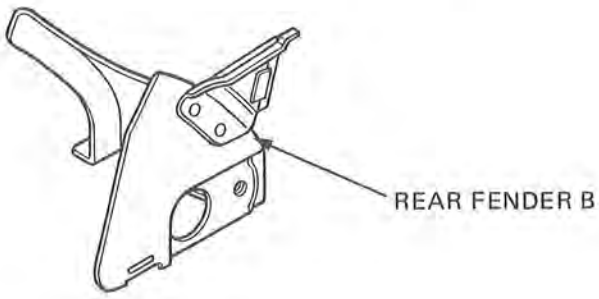
INSTALLATION

Install the fenders in the reverse order of removal.

NOTE

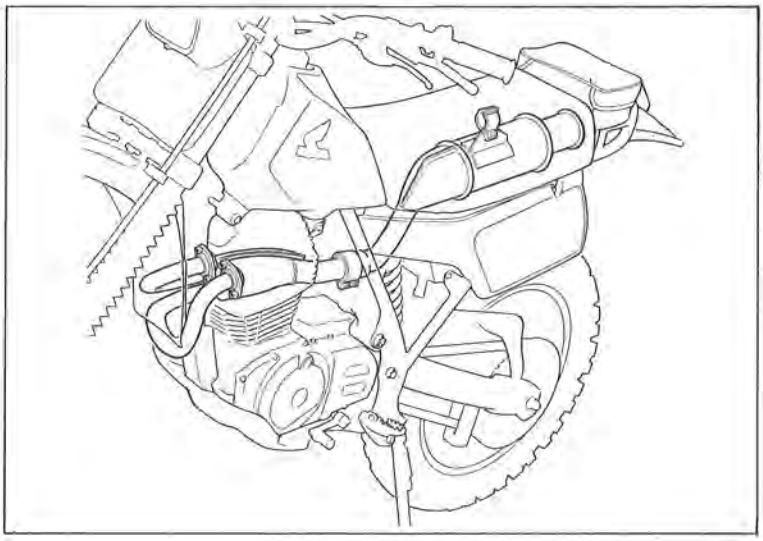
Before installing the seat, check that the rear fender is set on the frame cross member properly.





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EXHAUST PIPE



WARNING

Do not service the exhaust pipes while they are hot.

REMOVAL

Remove the seat.
Remove the right side cover.
Loosen the exhaust pipe clamp bolt.

Remove the exhaust pipe joint nuts and remove the exhaust pipe.

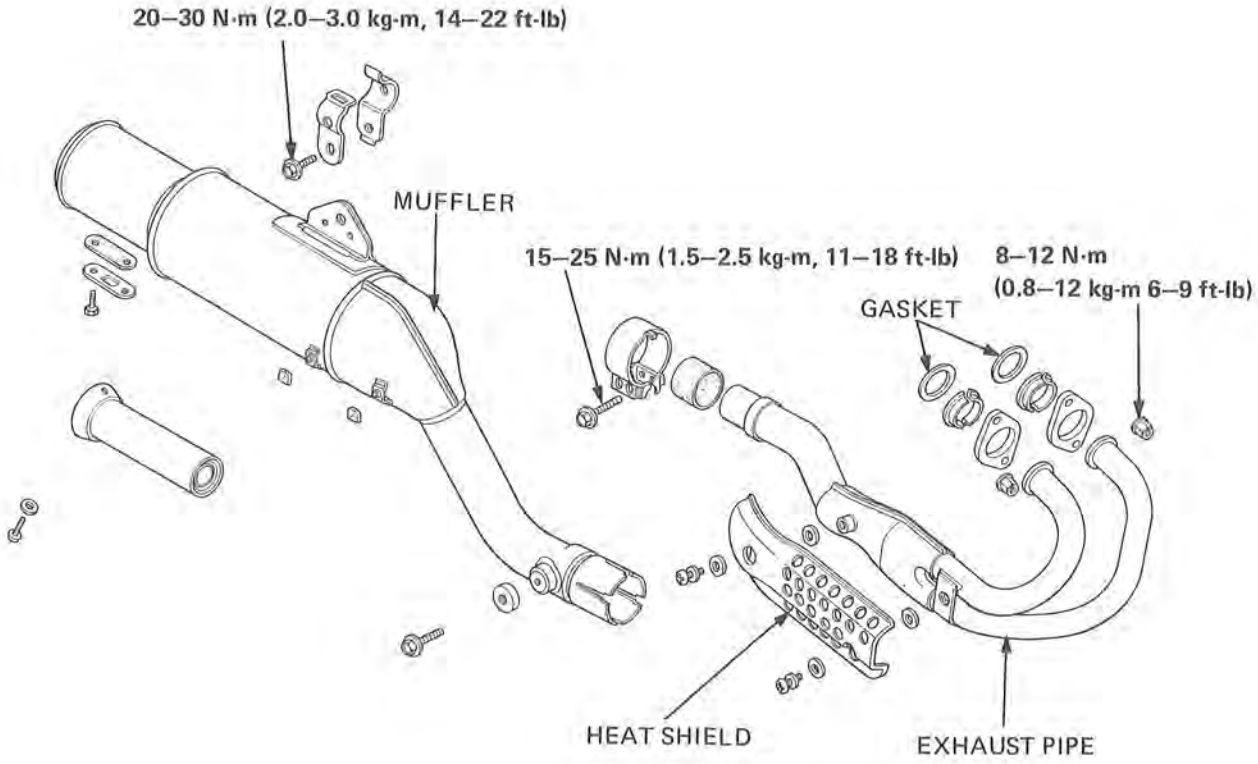
Remove the muffler mounting bolts and muffler.
Check the gasket and pipe seal for wear or damage. Replace if necessary.

INSTALLATION

Installation is essentially the reverse of removal.

NOTE

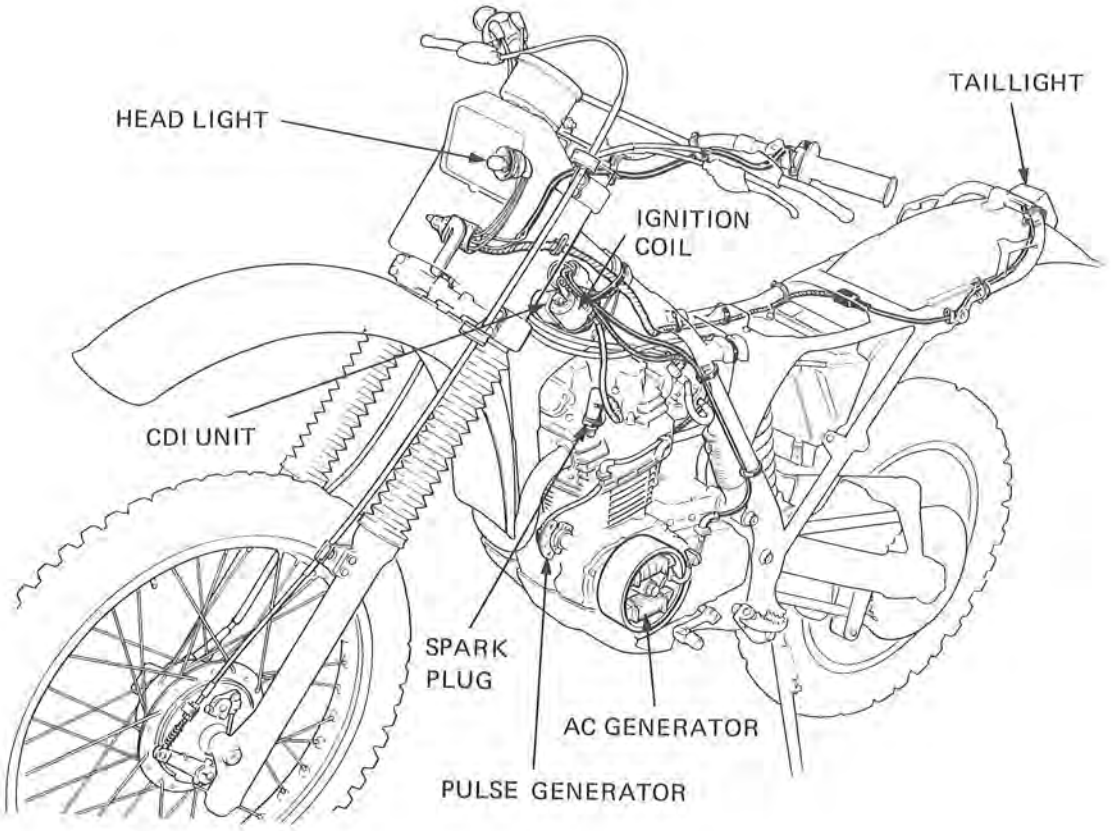
After installing, make sure that there are no exhaust leaks.

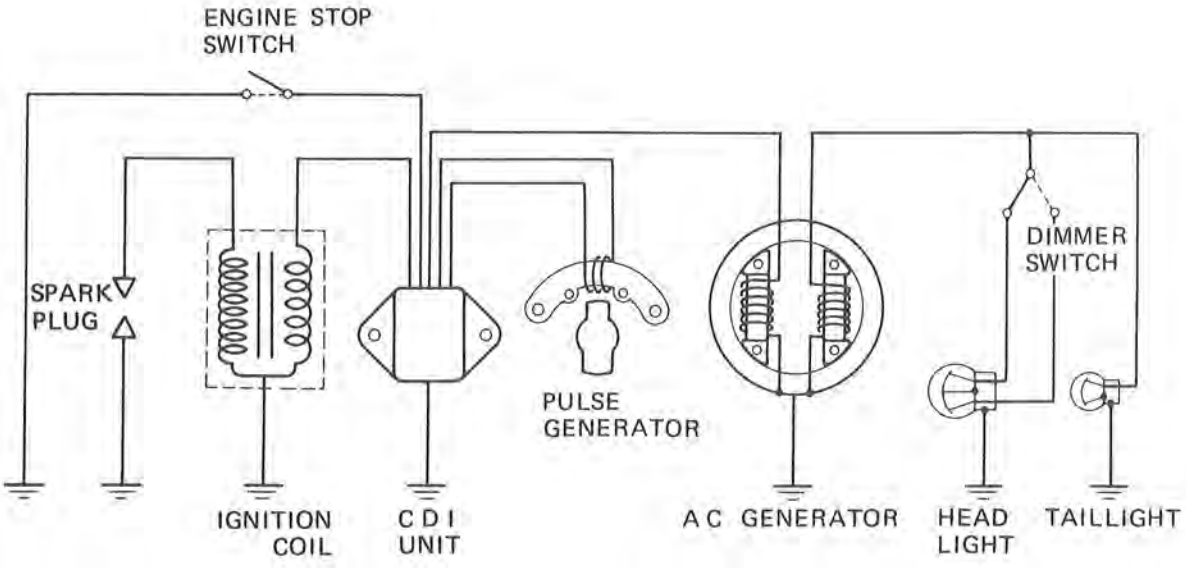


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16. IGNITION SYSTEM

SERVICE INFORMATION	16–1
TROUBLESHOOTING	16–1
SPARK PLUG	16–2
IGNITION COIL	16–2
AC GENERATOR	16–2
CDI UNIT	16–3
PULSE GENERATOR	16–3
IGNITION TIMING	16–4
ENGINE STOP SWITCH	16–4

SERVICE INFORMATION

GENERAL INSTRUCTION

- Ignition timing cannot be adjusted since the CDI (Capacitive Discharge Ignition) unit is non-adjustable. If ignition timing is incorrect, check the CDI unit and AC generator and replace the faulty parts.

SPECIFICATIONS

Spark plug:

USA model	D8EA (NGK)
	X24ES-U (ND)
Canada model	DR8ES-L (NGK)
	X24ESR-U (ND)

Plug gap: 0.6 – 0.7 mm (0.024 – 0.028 in)

Ignition timing:	
Initial	10° BTDC at 2,250 ± 250 rpm
Full advance	36° ± BTDC at 3,500 rpm
Headlight	6V 25W
Taillight	6V 3W
AC generator	50W/5,000 rpm

TROUBLESHOOTING

No Spark at Plug

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

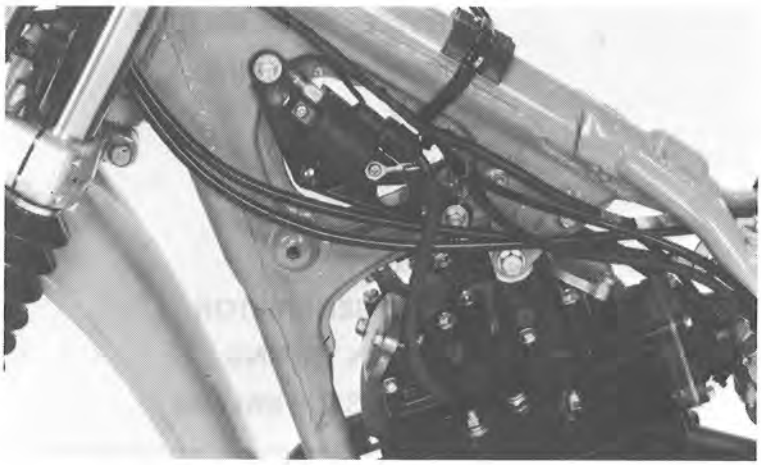
Engine Starts but Runs Poorly

1. Ignition primary circuit
   - Faulty ignition coil
   - Loose or bare wire
   - Faulty pulse generator
2. Secondary circuit
   - AC generator faulty
   - CDI unit faulty
   - Faulty pulse generator
   - Faulty spark advancer

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SPARK PLUG

For spark plug gap inspection and adjustment procedure, see page 3-7.



IGNITION COIL

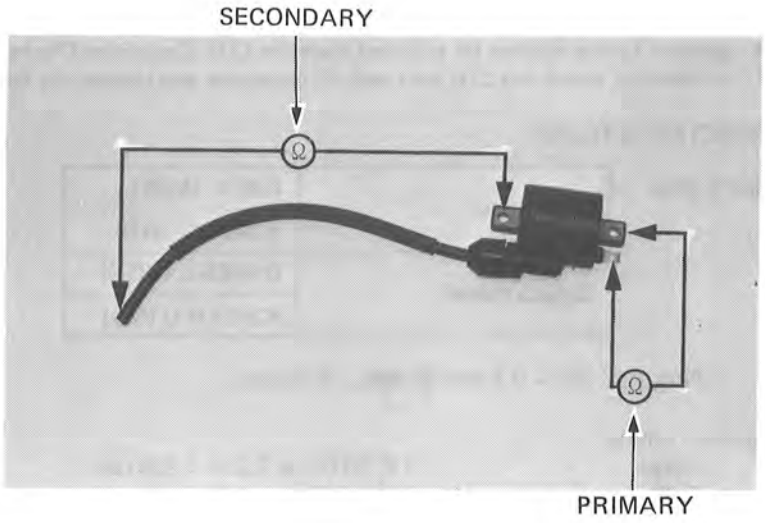
REMOVAL

Remove the seat and fuel tank.
Disconnect the wire leads.
Remove the attaching bolts and remove the coil.

INSPECTION

Measure the resistance of the primary and secondary coil.

PRIMARY: **0.2–0.8Ω**
SECONDARY: **2–6 kΩ**



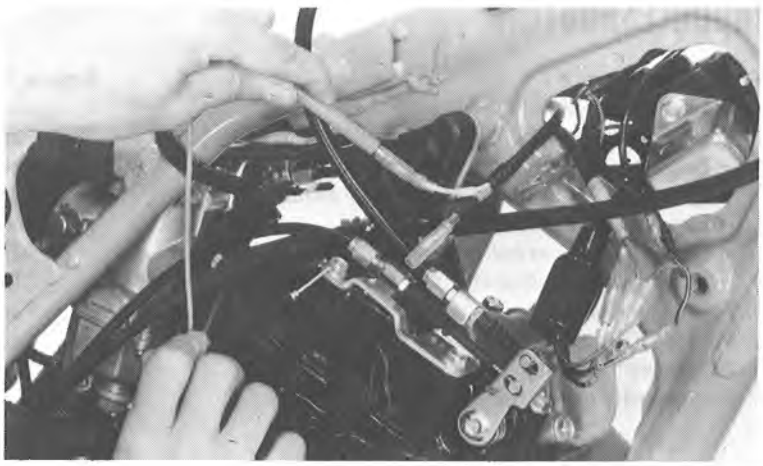
INSTALLATION

Install the ignition coil in the reverse order of removal:

AC GENERATOR

NOTE

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



LIGHTING COIL INSPECTION

The lamp coil is correct if there is continuity between the blue wire and ground.

EXCITER COIL INSPECTION

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

RESISTANCE: **100–450Ω**

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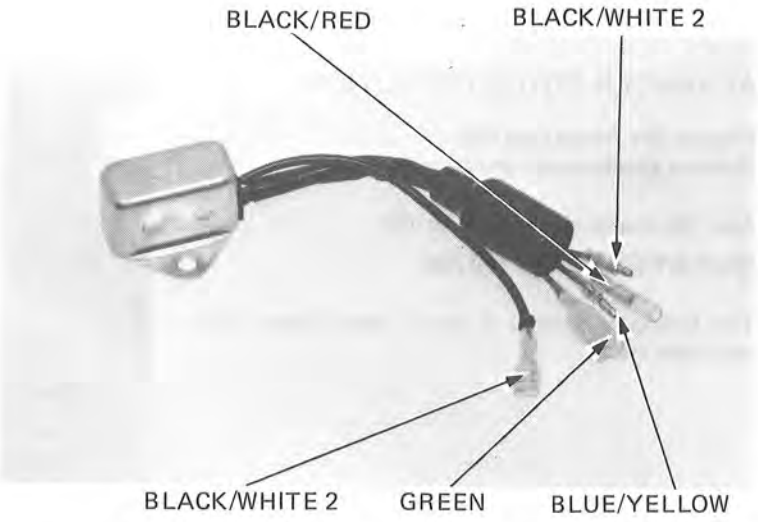
CDI UNIT

INSPECTION

Disconnect the wires and check continuity of the CDI terminals. 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 electric tester. Use of an improper tester may give false readings.
- Use a SANWA ELECTRIC TESTER (P/N 07308-0020000) or KOWA ELECTRIC TESTER (TH-5H)



Range:
SANWA: x KΩ
KOWA: x 100Ω

+ Probe / −	Black/Red	Green	Black/White[1]	Blue/Yellow	Black/White[2]
Black/Red		∞	0.3–20	∞	∞
Green	1–30		10–100	∞	∞
Black/White[1]	∞	∞		∞	∞
Blue/Yellow	2–50	2–50	10–150		∞
Black/White[2]	∞	∞	∞	∞	

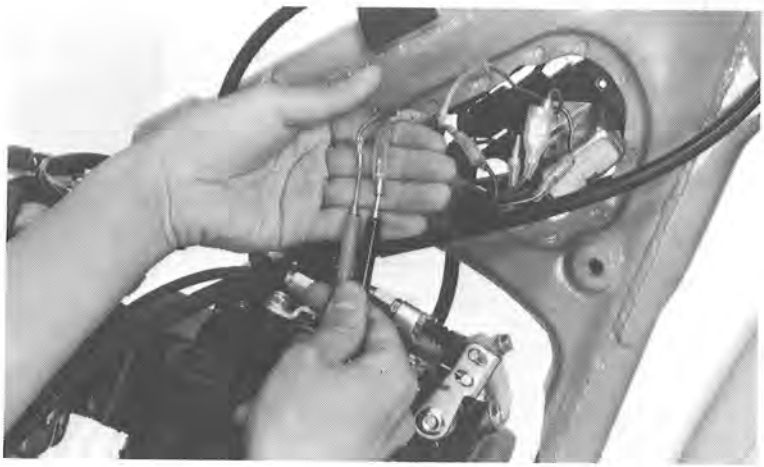
Black/White 1 ..... Engine stop switch
Black/White 2 ..... Primary coil

PULSE GENERATOR

INSPECTION

Disconnect the pulse generator wire connector. Measure the resistance between green and blue/yellow.

RESISTANCE: 90–110 Ω



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IGNITION TIMING

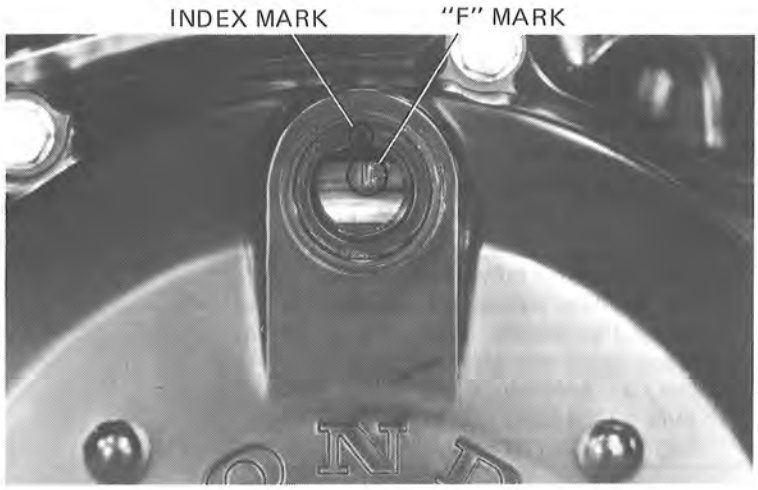
ADVANCER ROTOR INSPECTION

Remove the timing hole cap.
Connect a tachometer and a timing light.

Start the engine and allow it to idle.

IDLE SPEED: 1,200 ± 100 rpm

The timing is normal if the F mark aligns with the index mark.



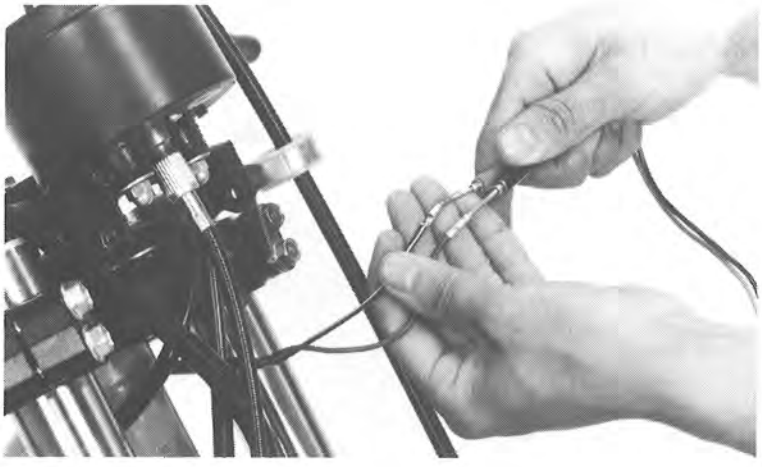
The index mark should be between the advance marks at 3,500 rpm.



ENGINE STOP SWITCH

Remove the headlight and disconnect the terminals. Check the switch for continuity between the BK/W and G terminals with the switch OFF.

	Bk/W	G
OFF	○———	———○
RUN		



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17. TECHNICAL FEATURES

PRO-LINK REAR SUSPENSION	17–1
REED VALVE	17–4

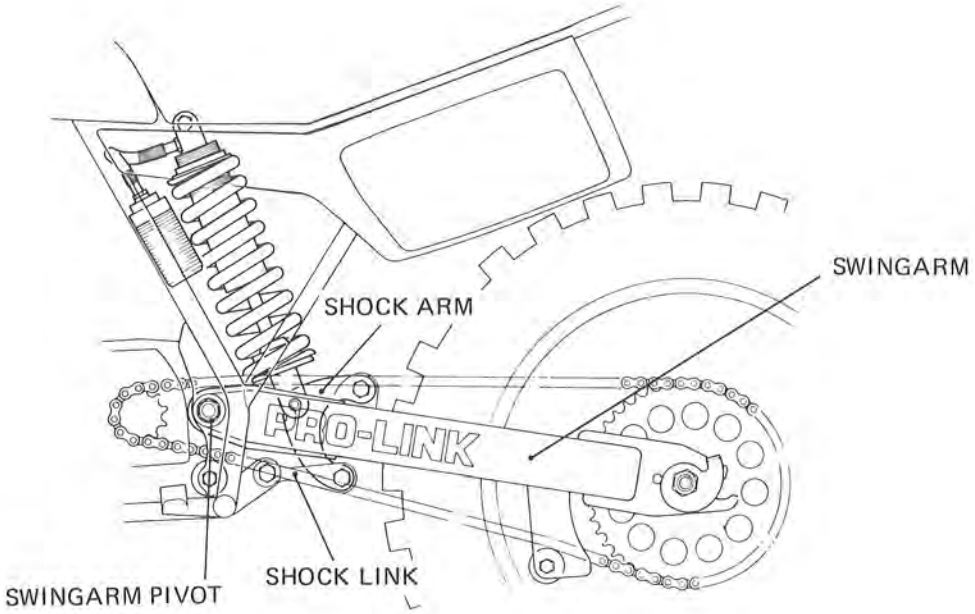
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PRO-LINK REAR SUSPENTION

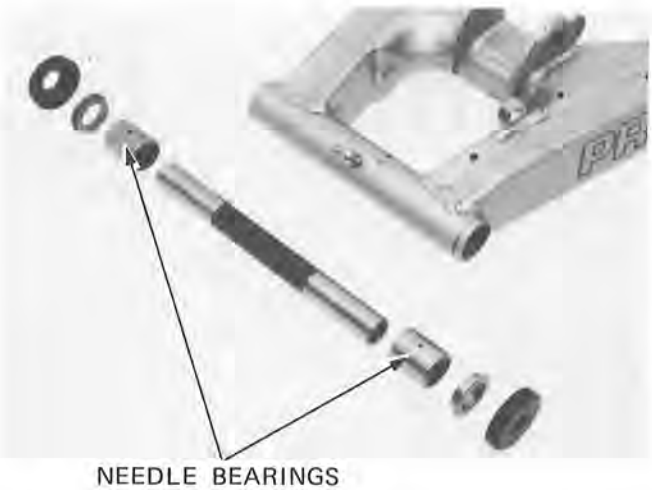
INTRODUCTION

The Pro-Link suspension system is one shock absorber connected to the swingarm and lower frame with a shock arm and shock link. The shock and linkage are located in front of the rear tire.
The carefully designed shock arm and shock link, combined with the shock's matched spring and damping rates provides what is known as a "progressive rising rate" during wheel travel, providing soft springing and damping during initial wheel travel and increasing spring and damping rates proportional to increasing wheel travel.

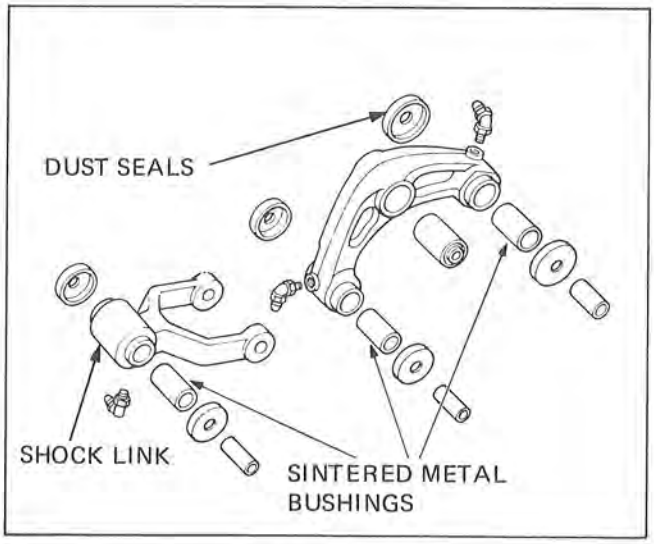
This progressive rising rate enables the rear wheel to stay on the ground, giving the rider the best possible control over rough terrain.



The swing arm pivots on two needle bearings for smooth up and down movement of the wheel.



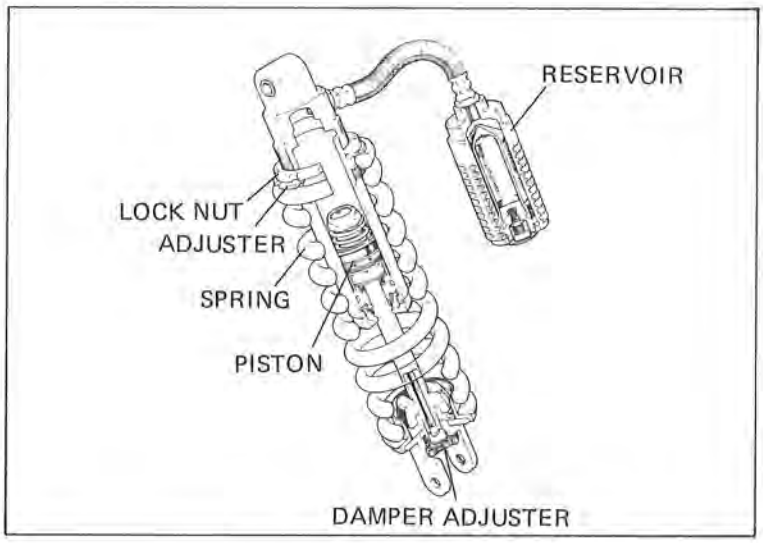
Low maintenance sintered metal bushings are used at the pivot points for the shock arm and shock link. Dust seals protect these bushings from excessive wear caused by dust and dirt.



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The shock absorber has a finned oil/nitrogen remote reservoir to cool the shock oil and prevent frothing. The nitrogen is separated from the oil with a rubber bladder.

There are four damping adjustment positions and the spring preload can be adjusted softer or stiffer.

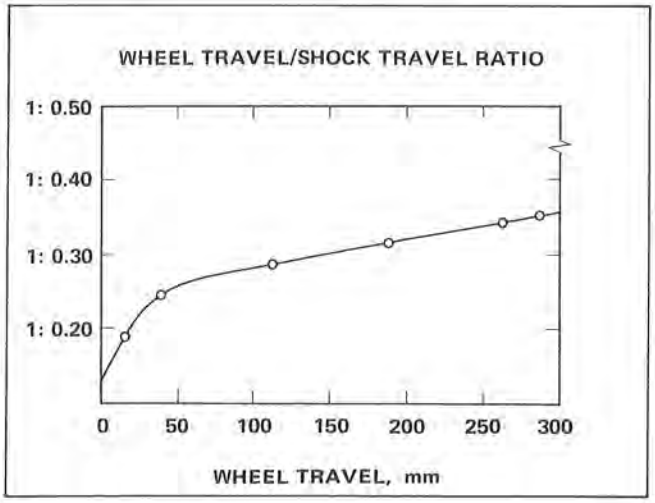


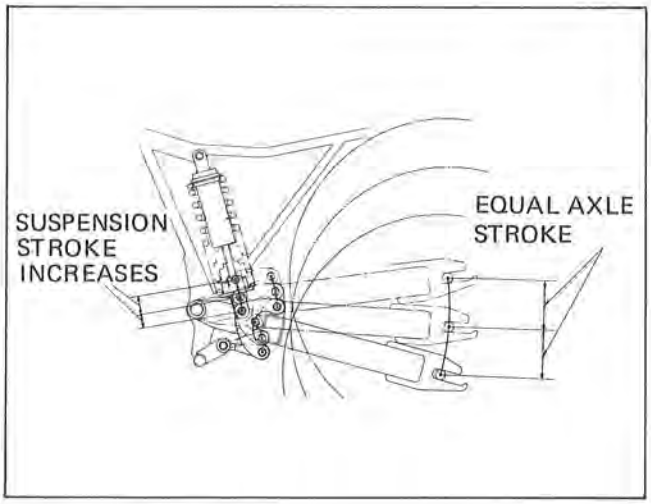
OPERATION

As the wheel and swingarm are driven up by bumps, the shock absorber is compressed by the shock arm which is held in a precise arc by the shock link. As wheel travel increases the shock arm rises above the swingarm, proportionately increasing absorber compression.

This provides the required progressive rise rate; the shock absorber moves only about one-fourth of wheel travel at the beginning and moves about one-third of wheel travel near the end.

This graph shows the wheel travel/shock travel ratio through the entire stroke of a XR500R Pro-Link system.

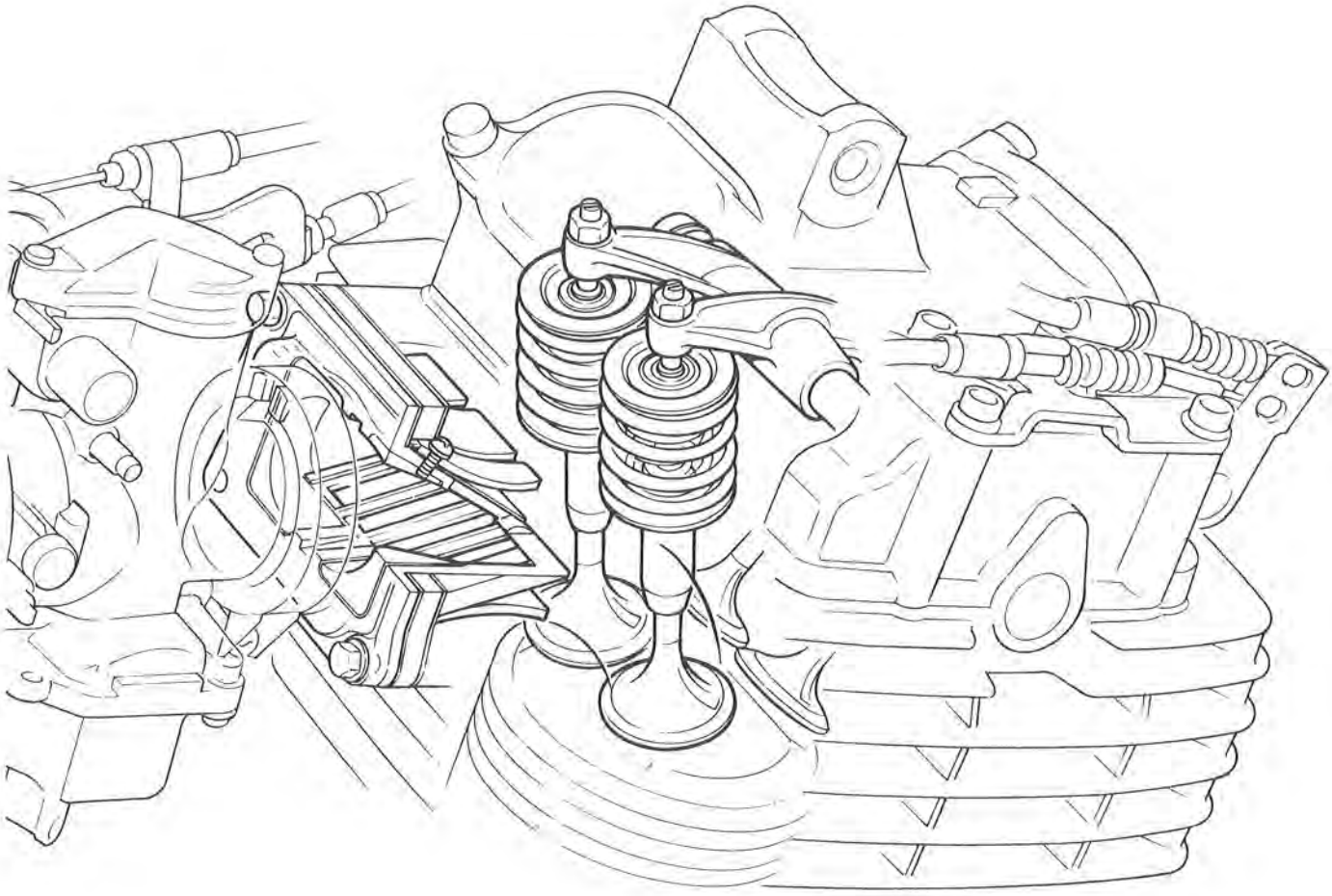




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REED VALVE

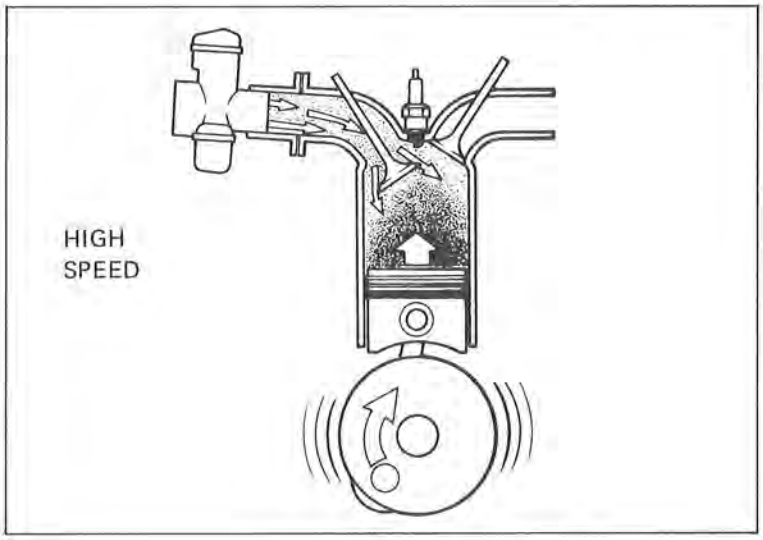
The reed valve is placed in the intake tract between the carburetor and intake valves. It allows the engine to develop high torque at low and medium engine speeds.



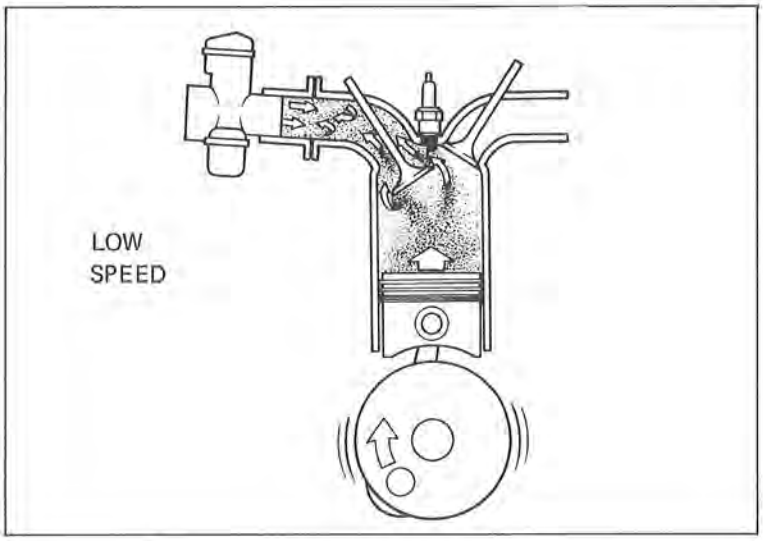
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1. High torque at low and medium speeds
In the 4-stroke engine, intake valve closing is timed to prevent any air-fuel mixture in the cylinder from being forced back into the intake tract.

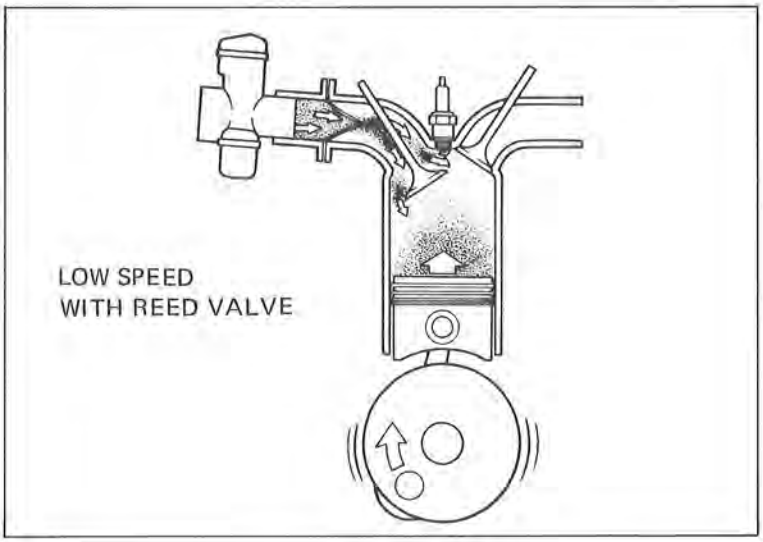
This is usually not a problem at high speed due to the high velocity of the air-fuel charge flowing past the intake valve into the cylinder.



However, at low and medium speeds, part of the air-fuel charge is forced back into the intake tract because of the reduced velocity of the air-fuel charge.



The reed valve prevents the air-fuel mixture from being forced back into the intake tract at low and medium speeds. This allows the engine to develop maximum torque at these speeds.



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18. TROUBLESHOOTING

ENGINE DOES NOT START OR IS HARD TO START	18–1
ENGINE LACKS POWER	18–2
POOR PERFORMANCE AT LOW AND IDLESPEEDS	18–3
POOR PERFORMANCE AT HIGH SPEED	18–4
POOR HANDLING	18–4

ENGINE DOES START OR IS HARD TO START

		Pcobable Cause
1. Check if fuel is getting to the carburetor	NOT GETTING 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 tube.
GETTING TO CARBURETOR ↓		
2. Try spark test	WEAK OR NO SPARK →	(1) Faulty spark plug (2) Fouled spark plug (3) Faulty CDI unit (4) Broken or shorted high tension cord (5) Faulty AC generator (6) Broken or shorted ignition coil (7) Faulty engine stop switch (8) Faulty pulse generator (9) Poorly connected, broken or shorted wires
SPARKS JUMP ↓		
3. TEST CYLINDER COMPRESSION	LOW COMPRESSION →	(1) Valve clearance too small (2) Valve stuck open (3) Worn cylinder and piston rings (4) Damaged cylinder head gasket (5) Improper valve timing (6) Improperly adjusted decompression mechanism (7) Seized valve
COMPRESSION NORMAL ↓		
4. Start by following normal starting procedure	ENGINE FIRES BUT SOON STOPS →	(1) Choke excessively open (2) Carburetor pilot screw excessively closed (3) Air leaking past manifold (4) Improper ignition timing (CDI unit or pulse generator faulty
ENGINE DOES NOT FIRE ↓		
5. Remove spark plug	WET PLUG →	(1) Carburetor flooded (2) Carburetor choke excessively closed (3) Throttle valve excessively open
DRY ↓		
6. START WITH CHOKE APPLIED		

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ENGINE LACKS POWER

		Probable Cause:
1. Raise wheels off ground and spin by hand	WHEEL DOES NOT SPIN FREELY →	(1) Brake dragging (2) Worn or damaged wheel bearing (3) Wheel bearing needs lubrication (4) Drive chain too tight (5) Rear axle nut excessively tightened
WHEEL SPINS FREELY ↓		
2. Check tire pressure with tire gauge	PRESSURE TOO LOW →	(1) Punctured tire (2) Faulty tire valve
PRESSURE NORMAL ↓		
3. Try rapid acceleration from low to second	ENGINE SPEED DOES NOT CHANGE WHEN CLUTCH IS RELEASED →	(1) Clutch slipping (2) Worn clutch disc/plate (3) Warped clutch disc/plate
ENGINE SPEED LOWERED WHEN CLUTCH IS RELEASED ↓		
4. Lightly accelerate engine	ENGINE SPEED DOES NOT INCREAS SUFFICIENTLY →	(1) Carburetor choke closed (2) Clogged air cleaner (3) Restricted fuel flow (4) Clogged fuel tank breather tube (5) Clogged muffler
ENGINE SPEED INCREASE ↓		
5. Check ignition timing	INCORRECT →	(1) Faulty CDI unit (2) Faulty pulse generator (3) Faulty ignition advancer
CORRECT ↓		
6. Check valve clearance	INCORRECT →	(1) Improper valve adjustment (2) Worn valve seat
CORRECT ↓		
7. Test cylinder compression using compression gauge	TOOL LOW →	(1) Valve stuck open (2) Worn cylinder and piston rings (3) Leaking head gasket (4) Improper valve timing (5) Improperly adjusted decompression mechanism
NORMAL ↓		
8. Check carburetor for clogging	CLOGGED →	(1) 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 ↓		

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10. Remove oil level gauge and check oil level and fouling	OIL LEVEL INCORRECT →	(1) Oil level too high (2) Oil level too low (3) Contaminated oil
CORRECT ↓		
11. Remove cylinder head cover and inspect lubrication	VALVE TRAIN NOT LUBRICATED PROPERLY →	(1) Clogged oil passage (2) Clogged oil control orifice
VALVE TRAIN LUBRICATED PROPERLY ↓		
12. Check if engine overheats	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. Accelerater or run at high speed	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 advancer)
ENGINE DOES NOT KNOCK		

POOR PERFORMANCE AT LOW AND IDLE SPEEDS

		Probable Cause:
1. Check ignition timing and valve clearance	INCORRECT →	(1) Improper valve clearance (2) Improper ignition timing (Faulty CDI unit or spark advancer)
CORRECT ↓		
2. Check carburetor pilot screw adjustment	INCORRECT →	(1) Fuel-air mixture too lean (To correct, screw out) (2) Fuel-air mixture too rich (To correct, screw in)
CORRECT ↓		
3. Check if air is leaking past manifold	LEAKING →	(1) Deteriorated insulator O-ring (2) Loose carburetor
NOT LEAKING ↓		
4. Try spark test	WEAK OR INTERMITTENT SPARK →	(1) Faulty, carbon or wet fouled spark plug (2) Faulty CDI unit (3) AC generator faulty (4) Faulty ignition coil (5) Faulty pulse advancer
GOOD SPARK		

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POOR PERFORMANCE AT HIGH SPEED

		Probable Cause
1. Check ignition timing and valve clearance	INCORRECT →	(1) Improper valve clearance (2) Faulty CDI unit (3) Faulty pulse generator (4) Faulty advancer
CORRECT ↓		
2. Disconnect fuel tube at carburetor	FUEL FLOW RESTRICTED →	(1) Lack of fuel in tank (2) Clogged fuel line (3) Clogged fuel tank breather tube (4) Clogged fuel cock
FUEL FLOWS FREELY ↓		
3. Remove carburetor and check for clogged jet	CLOGGED →	(1) Clean
NOT CLOGGED ↓		
4. Check valve timing	INCORRECT →	(1) Cam sprocket not installed properly
CORRECT ↓		
5. Check valve spring tension	WEAK →	(1) 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) Distorted rim (3) Improperly installed wheel hub (4) Swing arm pivot bushing excessively worn (5) Distorted frame (6) Improper drive chain tension or adjustment (7) Loose swing arm pivot bolt (8) Loose engine hanger bolt
3. If the motorcycle pulls to one side →	(1) Misadjusted shock absorber (2) Front and rear wheels not aligned (3) Bent front fork (4) Bent swing arm

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INTRODUCTION

This Honda Shop Manual addendum contains information for the 1982 XR500R.

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1. GENERAL INFORMATION

SPECIFICATIONS

This addendum lists only specifications which are different for 1982. Refer to the base shop manual for information not covered here.

FRAME	Front fork oil capacity	395 cc (13½ oz)	
ELECTRICAL	Spark plug	Standard	DR8ES-L (NGK) or X24ESR-U (ND)
		For cold climate	DR7ES (NGK) or X22ESR-U (ND)
		For extended high-speed riding	DR8ES (NGK) or X27ESR-U (ND)

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TORQUE VALUES

This addendum lists only torque values which are different from 1981. Refer to the base shop manual for values not shown here.

ENGINE

Item	Qty	Thread Dia, mm	Torque N· (kg-m, ft-lb)
Cylinder head cover bolt	2	7	13-17 (1.3-1.7, 9-12)
AC generator, stator coil bolt	2	6	8-12 (0.8-1.2, 6-9)

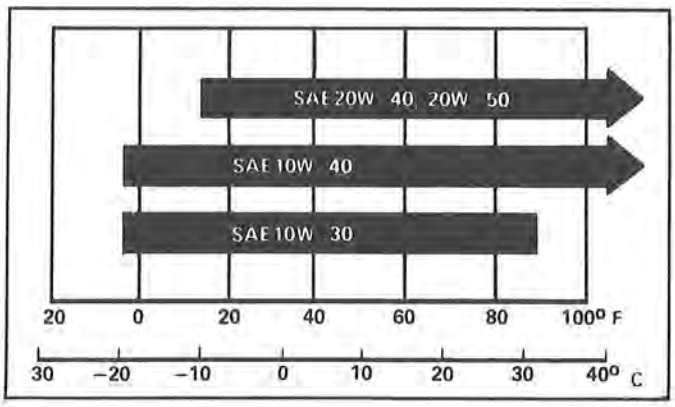
FRAME

Item		Qty	Thread Dia, mm	Torque N· (kg-m, ft-lb)
Engine hanger	8 mm bolt	4	8	30-37 (3.0-3.7, 22-27)
	10 mm bolt	3	10	55-65 (5.5-6.5, 40-47)
	12 mm bolt	2	12	90-100 (9.0-10.0, 65-72)

2. LUBRICATION

Recommended oil

Use HONDA 4-STROKE OIL or equivalent.
API SERVICE CLASSIFICATION: SE or SF
VISCOSITY: SAE 10W-40



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3. MAINTENANCE

MAINTENANCE SCHEDULE

REGULAR SCHEDULE

Perform the PRE-RIDE INSPECTION in the Owner's Manual at every maintenance period.

I : Inspect, Clean, Adjust, Lubricate or Replace if Necessary.
C : Clean
R : Replace
A : Adjust
L : Lubricate

	ITEM / FREQUENCY	BREAK-IN MAINTENANCE	REGULAR SERVICE INTERVAL
		350 km (200 mi)	1,600 km (1,000 mi)
	ENGINE OIL NOTE	R	R, every 3,000 km (1,800 mi)
*	ENGINE OIL FILTER SCREEN		C
	AIR CLEANER NOTE	C	C, every 800 km (500 mi)
*	FUEL FILTER AND FUEL LINE	I	I
	SPARK PLUG	I	I
*	VALVE CLEARANCE	I	I
*	STARTER DECOMPRESSOR	I	I
*	THROTTLE OPERATION	I	I
*	CARBURETOR IDLE SPEED	I	I
*	CARBURETOR CHOKE	I	I
**	BALANCER CHAIN TENSION	I	A
	DRIVE CHAIN NOTE	I, L	I, L every 500 km (300 mi)
	DRIVE CHAIN GUIDE SLIDER	I	I
	DRIVE CHAIN SLIDER	I	I
*	BRAKE SHOE WEAR		I
	BRAKE SYSTEM	I	I
*	HEADLIGHT AIM	I	I
	CLUTCH FREE PLAY	I	I
*	SUSPENSION	I	I
	SWINGARM BEARINGS	I, L	I, L
	REAR SUSPENSION LINKAGE	I, L	I, L
*	REAR SHOCK ABSORBER UPPER BUSHING		I, L
**	SPARK ARRESTER		C
*	NUTS, BOLTS, FASTENERS NOTE	I	I
**	WHEELS/SPOKES NOTE	I	I
**	STEERING HEAD BEARING	I	I

* SHOULD BE SERVICED BY AN AUTHORIZED HONDA DEALER, UNLESS THE OWNER HAS THE PROPER TOOLS AND IS MECHANICALLY QUALIFIED.

** IN THE INTEREST OF SAFETY, WE RECOMMEND THESE ITEMS BE SERVICED ONLY BY AN AUTHORIZED HONDA DEALER.

NOTE : Service more frequently when ridden in wet or dusty conditions.

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SPARK PLUG

For 1982, resistor type spark plugs are specified. They are identified in the table.

Disconnect the spark plug cap and remove the spark plug.

Visually inspect the spark plug electrodes for wear. The center electrode should have a constant thickness. Discard the spark plug if the electrode is worn or if the insulator is cracked or chipped. If the spark plug is in good condition and the deposits can be removed by sandblasting, the spark plug can be reused.

Measure the gap with a wire gauge and adjust it, if necessary, by bending the side electrode.

SPARK PLUG GAP: 0.6-0.7 mm (0.024-0.028 in)

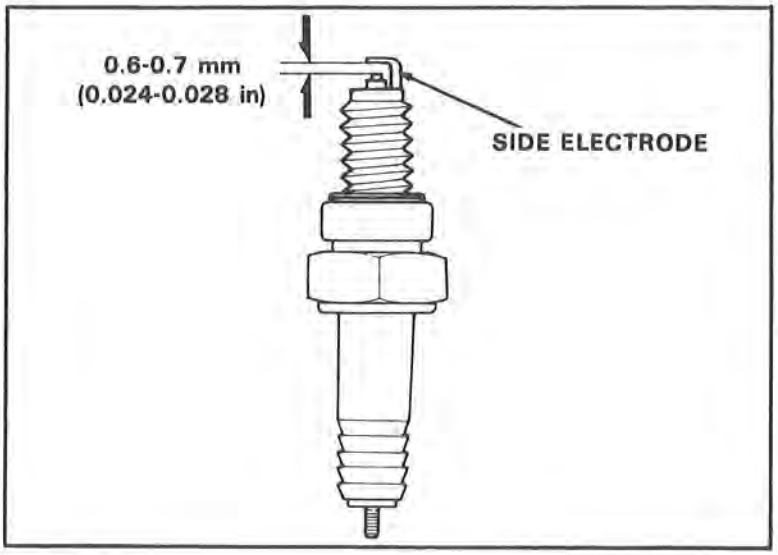
Check the spark plug sealing washer and replace it with a new one if it is damaged.

Install the washer on the spark plug and thread the plug into the head by hand to prevent cross-threading. After hand tightening, tighten the plug an additional 1/2 turn with a spark plug wrench to compress the washer.

Connect the spark plug cap.

RECOMMENDED SPARK PLUG

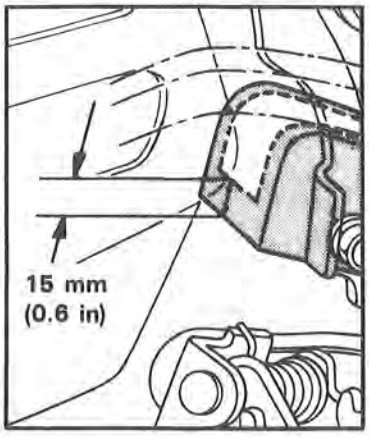
Standard	DR8ES-L (NGK) or X24ESR-U (ND)
For cold climate	DR7ES (NGK) or X22ESR-U (ND)
For extended high-speed riding	DR8ES (NGK) or X27ESR-U (ND)



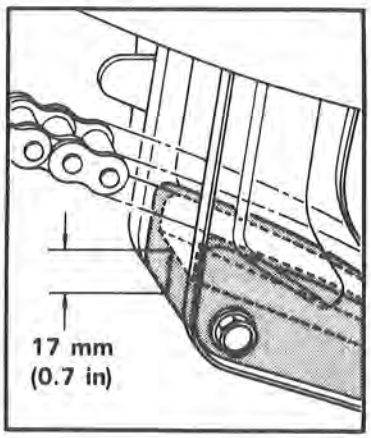
DRIVE CHAIN GUIDE SLIDERS

Inspect the chain guide sliders and replace them if the depth of the chain grooves is greater than specified.

SERVICE LIMIT: FRONT: 15 mm (0.6 in)
REAR: 17 mm (0.7 in)



FRONT

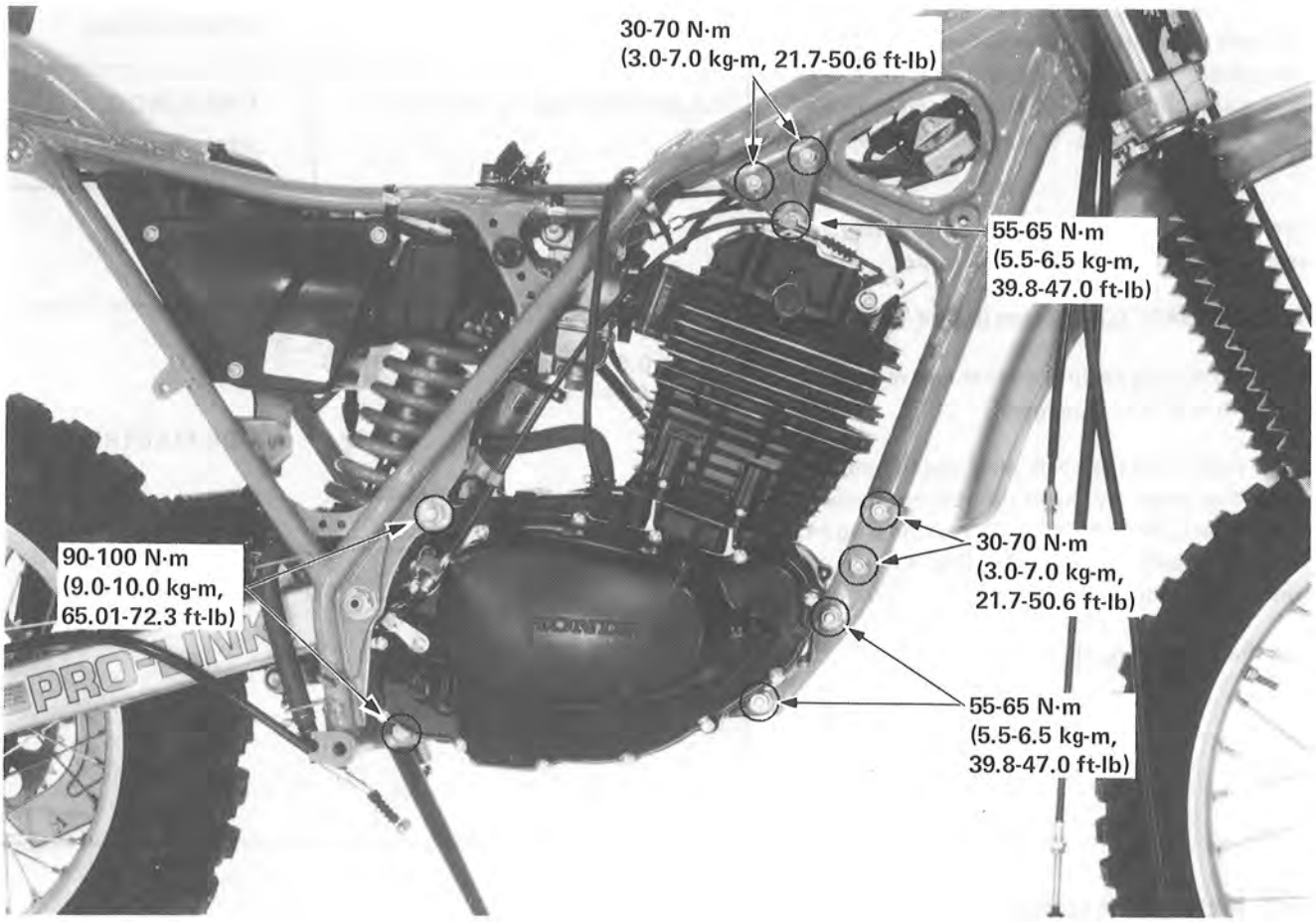


REAR

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4. ENGINE REMOVAL/ INSTALLATION

Engine mounting bolt torque values are changed for 1982 and they are shown below. Refer to page 5-4 for installation instructions.



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5. CYLINDER HEAD

CAMSHAFT

For 1982, the camshaft chain tensioner is automatic and requires no adjustment.

REMOVAL

Insert a 2 mm pin into the hole at the top of the tensioner wedge A.

NOTE

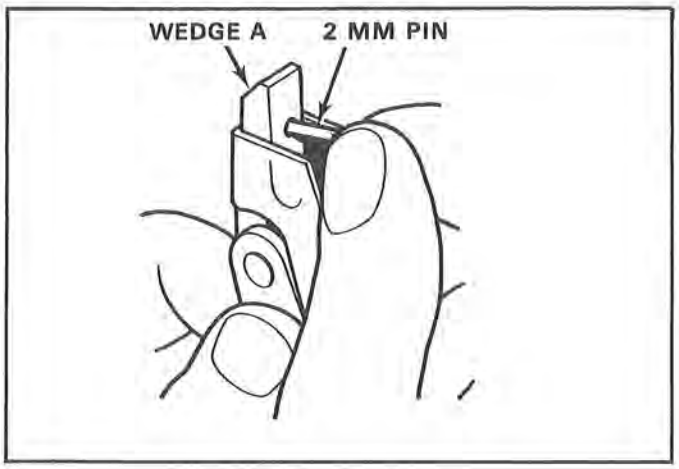
A straightened No. 2 paperclip can be used as a pin.

Pull up on the pin and at the same time compress the tensioner. When the pinhole clears the top of the tensioner holder, push the pin through the hole to lock the tensioner in place.

NOTE

It may be necessary to loosen the tensioner mounting bolt on the rear of the cylinder.

Refer to page 6-6 for the remaining camshaft removal steps.

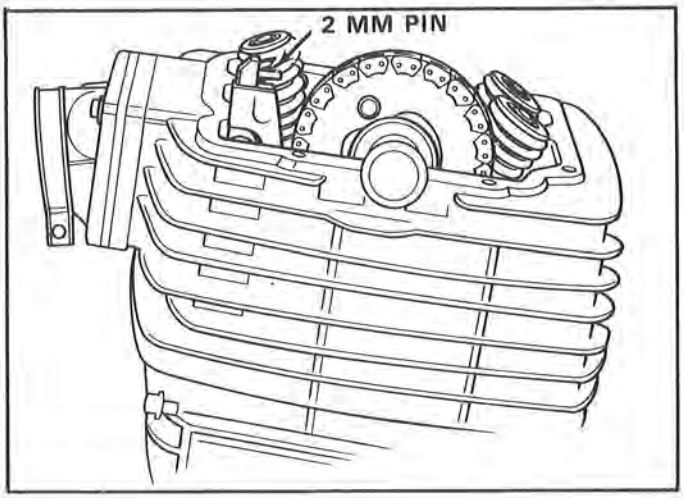


INSTALLATION

Refer to page 6-18, and install the camshaft as described. When installation is complete, remove the pin from the tensioner wedge. The tensioner will automatically apply correct tension to the camshaft chain.

NOTE

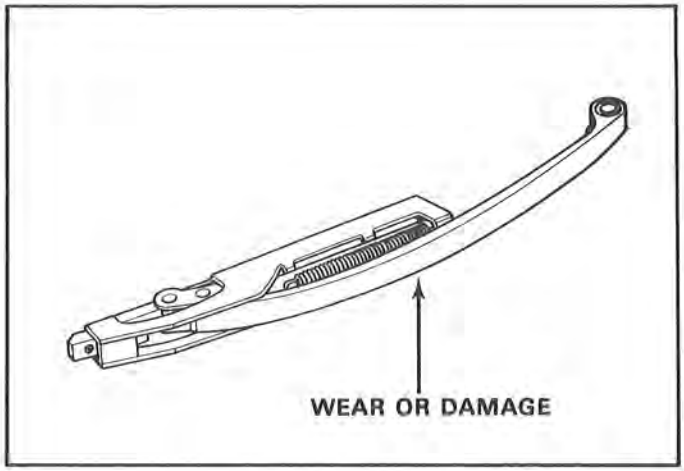
It may be necessary to press the wedge down to release it.



6. CRANKCASE

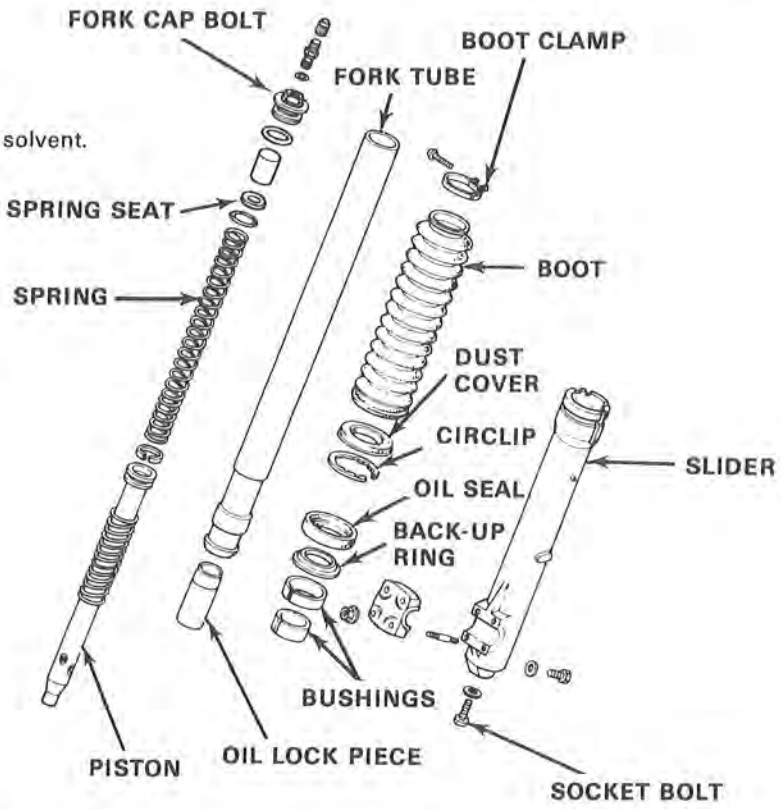
CAMSHAFT CHAIN TENSIONER

When the crankcase is disassembled, inspect the camshaft chain tensioner for wear or damage. Replace it if it is not in good condition.



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7. FRONT FORKS



ASSEMBLY

Clean all parts with non-flammable or high flash point solvent.

FRONT FORK OIL

Fork oil capacity has been increased for 1982. Pour in the specified amount of ATF.

STANDARD CAPACITY: 395 cc (13.5 oz)

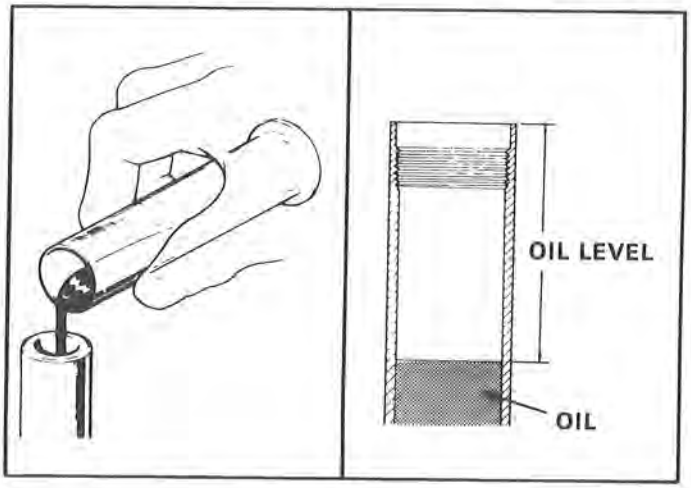
Compress the front fork and measure the oil level from the top of the tube.

STANDARD OIL LEVEL: 156 mm (6⅛ in)

RECOMMENDED OIL LEVEL: 146-186 mm (5¾-7⅜ in)

To obtain different damping characteristics, change the amount of oil in the forks.

Maximum level	146 mm (5¾ in)	Slightly stiffer spring effect when fork is charged with standard air pressure.
Minimum level	186 mm (7⅜ in)	Slightly softer spring effect when fork is charged with standard air pressure.



STANDARD AIR PRESSURE: 0 kg/cm^2 (0 kPa, 0 psi)

RECOMMENDED AIR PRESSURE RANGE: 0-1 kg-m (0-98 kPa, 0-14 psi)

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20. XR500R EUROPEAN/ GENERAL TYPE

INTRODUCTION

This section contains service information for the 1982 XR500R European and general type.
Refer to base shop manual for information not included in this section.

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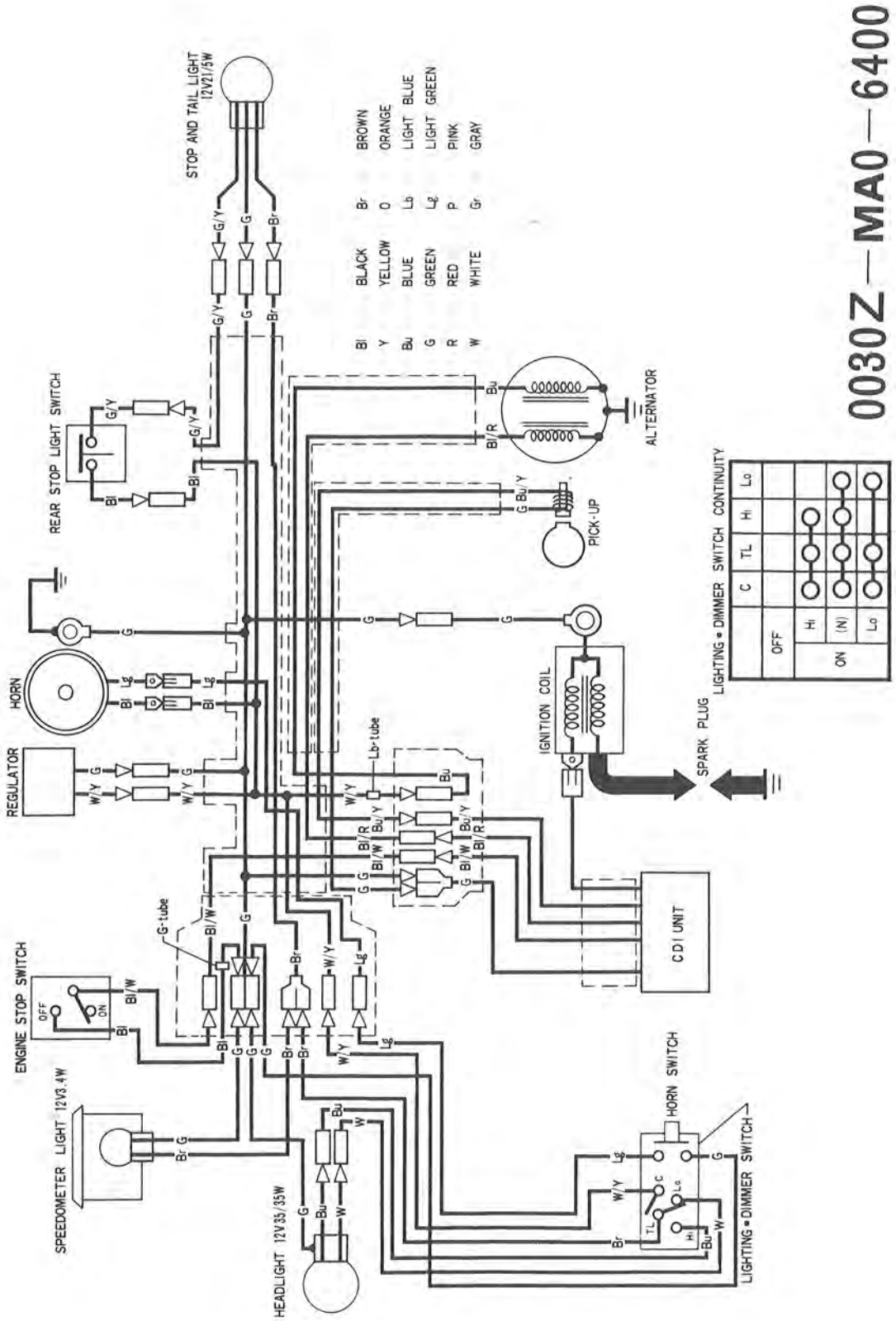
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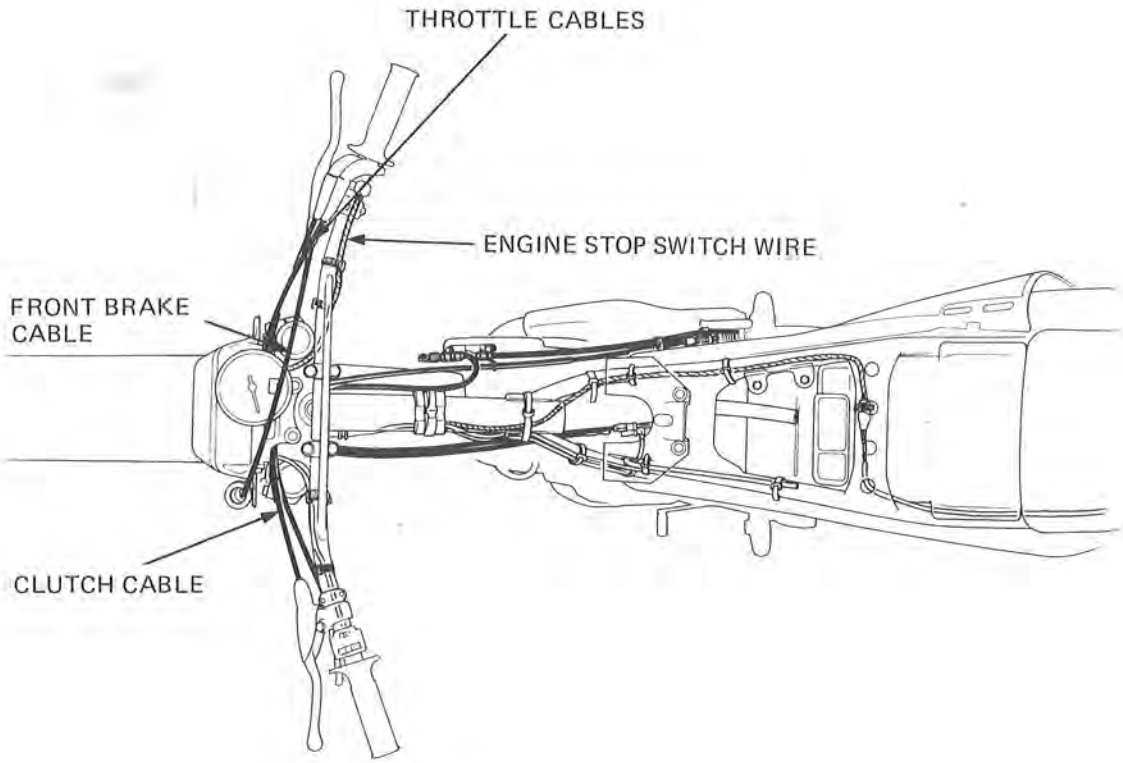
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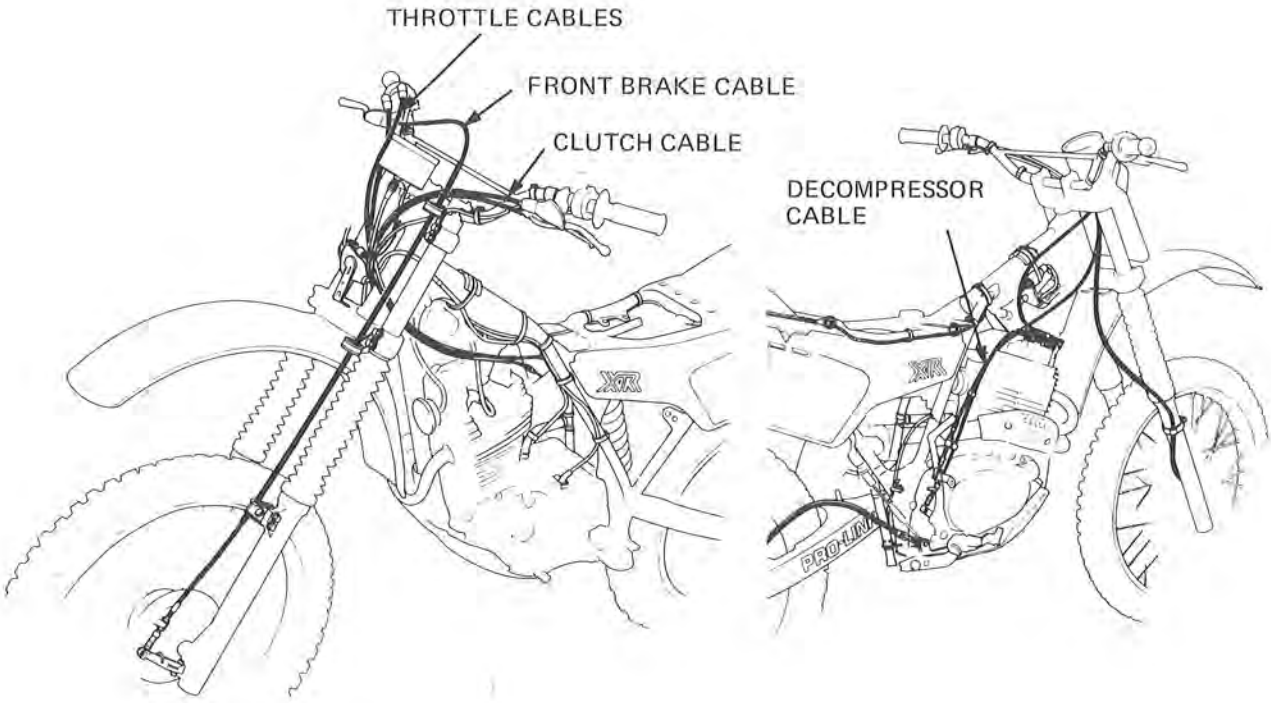
WIRING DIAGRAM



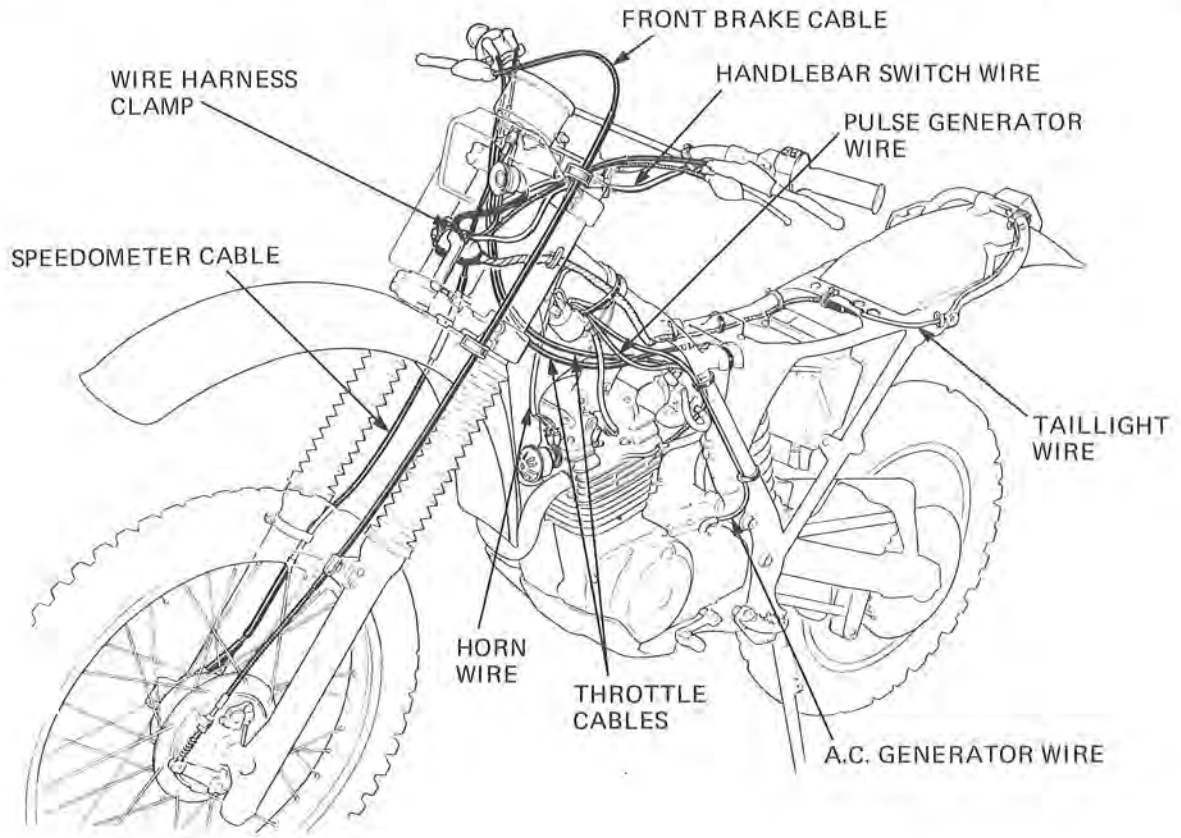
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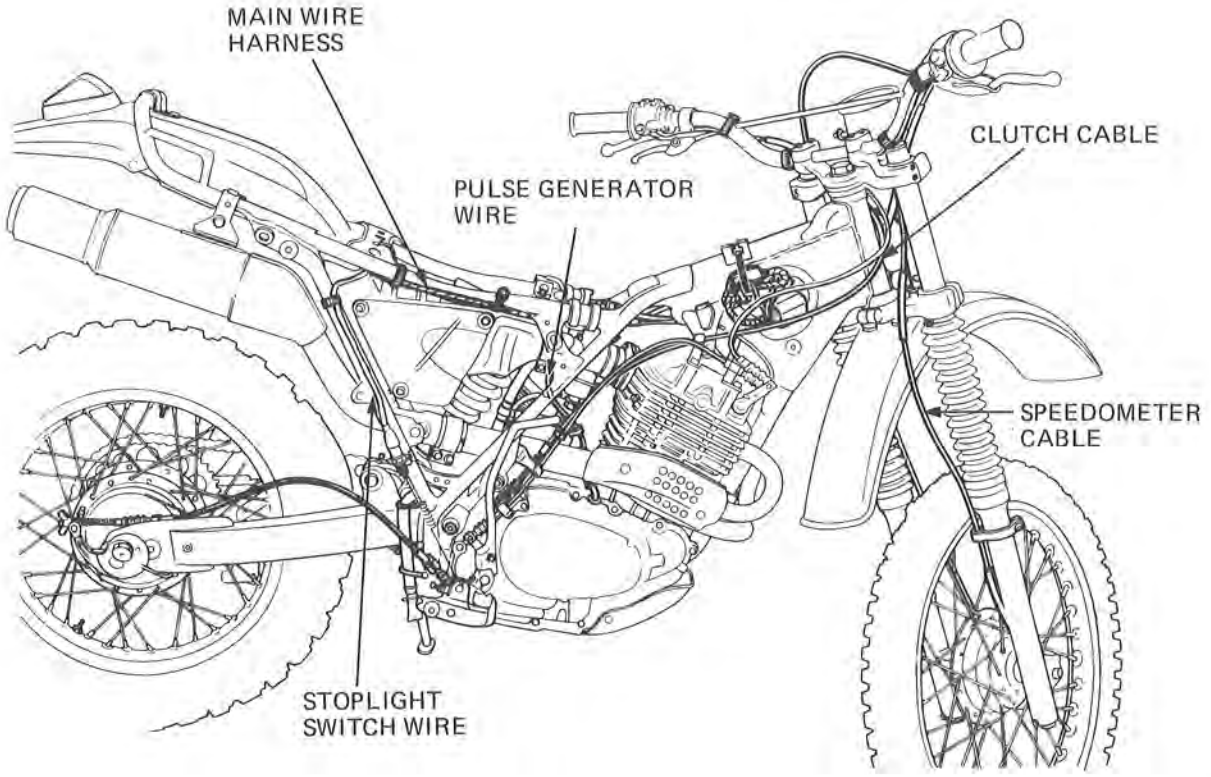
CABLE AND HARNESS ROUTING





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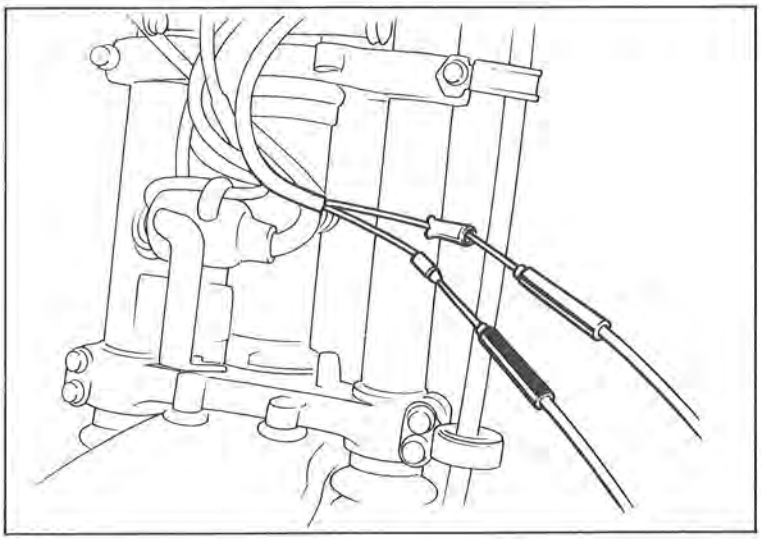


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HANDLEBAR SWITCHES

CONTINUITY TESTS

Remove the headlight case (page 13-3).
Disconnect the handlebar switch wires and check for continuity between connecters.



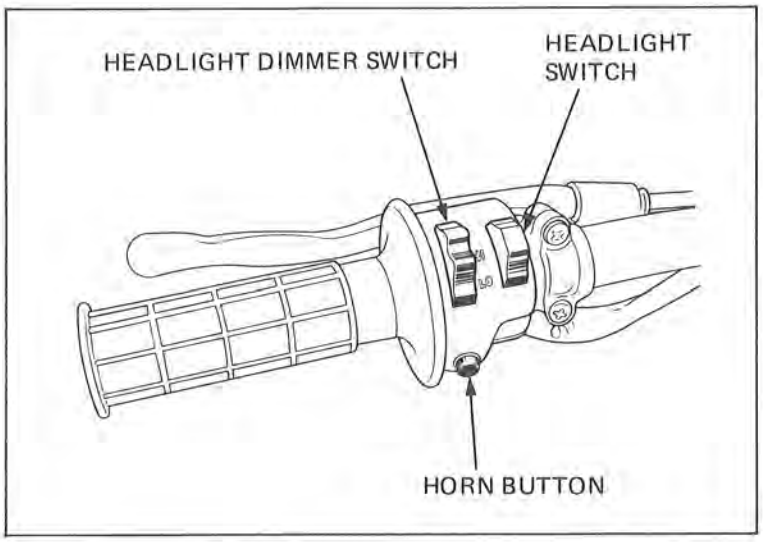
Headlight/dimmer Switch Continuity

HEADLIGHT SWITCH	DIMMER SWITCH	COLOR CODE			
		W/Y	Br	Bu	W
OFF					
ON	Hi	○	○	○	
	(N)	○	○	○	○
	Lo	○	○		○

Horn Button Continuity

	Lg	G
	○	○

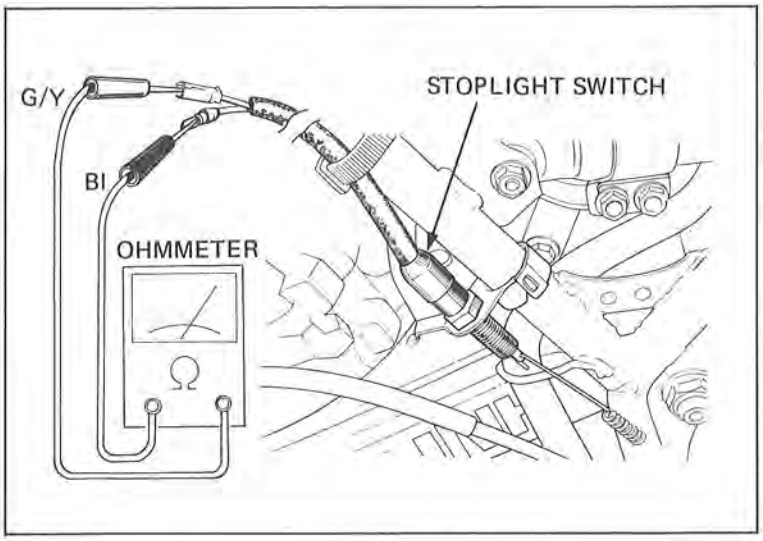
Lg to G with button depressed.
No continuity with button released.



BRAKE STOPLIGHT SWITCH

Check rear brake stoplight switch continuity with rear brake applied.

COLOR CORD	Bl	G/Y
ON	○	○
OFF		



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