Official

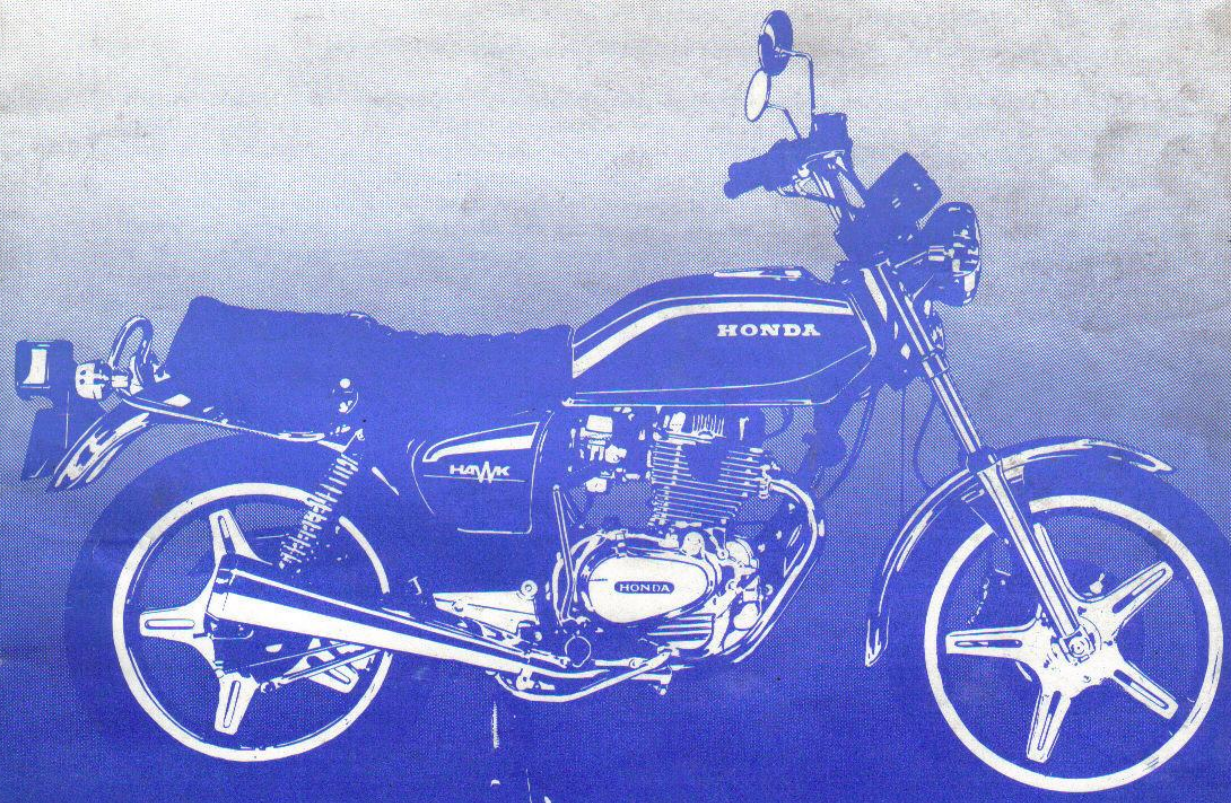
HONDA

SHOP MANUAL

HAWK CB400T

CB400A

"FOR 1978 MOTORCYCLES MANUFACTURED BEFORE JANUARY 1, 1978"



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PRINTED IN JAPAN

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IMPORTANT SAFETY NOTICE

WARNING *Incidates a posibility of personal injury or loss of life if instructions are not followed.*

CAUTION *Indicates a possibility of equipment damage if instructions are not followed.*

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

CB400A

HOW TO USE THIS MANUAL

This Shop Manual includes service information pertinent to the HONDA CB400A HONDAMATIC equipped model. For information and procedures which are not described in this manual, refer to the CB400T Shop Manual.

Sections 1 through 3 apply to the whole motorcycle, while sections 4 through 10 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 and all the required specifications, torque values, working practices, tools and materials required for the section. The subsequent pages give detailed procedures for the section.

If you are not familiar with this motorcycle, first read through the TECHNICAL FEATURES in section 11.

If you don't know what the source of the trouble is, go to section 12-TROUBLESHOOTING-for aditional help.

HONDA MOTOR CO., LTD.
Service Publications Office

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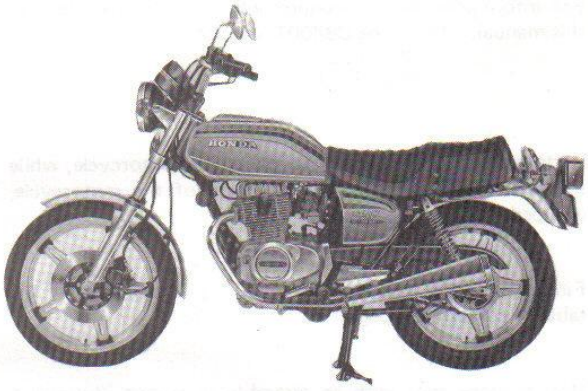
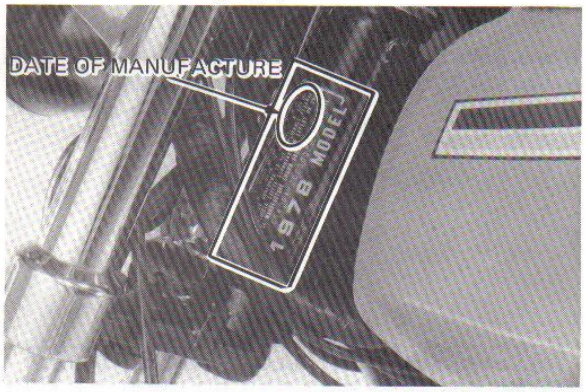
MODEL IDENTIFICATION



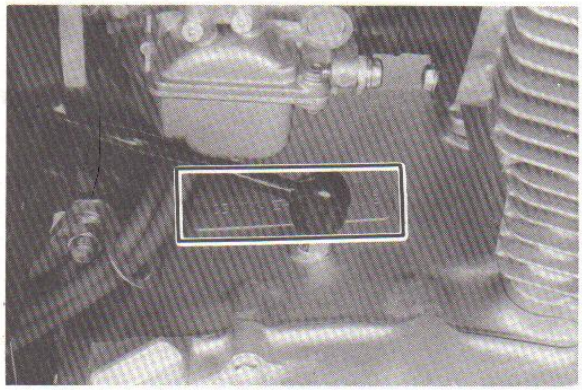
CB400A BEGINING F/N 2000015

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

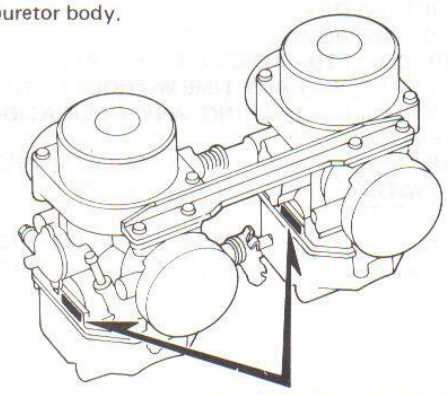
The legal vehicle identification number (VIN) is on the left side of the steering head.



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



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



IDENTIFICATION NUMBER

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SPECIFICATIONS

	Item			Metric	English
Dimensions	Overall length			2,130 mm	83.9 in.
	Overall width			840 mm	33.1 in.
	Overall height			1,180 mm	46.5 in.
	Wheel base			1,390 mm	54.7 in.
	Seat height			800 mm	31.5 in.
	Foot peg height		Right	315 mm	12.4 in.
			Left	325 mm	12.8 in.
	Ground clearance			165 mm	6.5 in.
	Dry weight			174 kg	384 lbs.
Frame	Type			Diamond Type	
	F. suspension and travel			Telescopic fork, 139.5 mm (5.5 in.)	
	R. suspension and travel			Swing arm, 96 mm (3.8 in.)	
	F. tire size			3.60S19-4PR	
	R. tire size			4.10S18-4PR	
	Cold tire pressures	Up to 90kg (206 lbs.) load	Front	1.75 kg/cm²	24 psi
			Rear	2.25 kg/cm²	32 psi
		Up to vehicle capacity load	Front	1.75 kg/cm²	24 psi
			Rear	2.5 kg/cm²	36 psi
	F. brake			Disk brake	
	R. brake			Internal expanding shoes	
	Fuel capacity			13 lit.	3.4 U.S. gal., 2.9 Imp. gal.
	Fuel reserve capacity			3.0 lit.	0.8 U.S. gal., 0.6 Imp. gal.
	Caster angle			63 degrees	
	Trail length			100 mm	3.9 in.
	Front fork oil capacity			140 ± 3 cc	4.9 ± 0.1 ozs.
Engine	Type			Air cooled 4 stroke O.H.C. engine	
	Cylinder arrangement			Vertical twin parallel	
	Bore and stroke			70.5 x 50.6 mm	2.776 x 1.992 in.
	Displacement			395 cc	24.1 cu-in.
	Compression ratio			9.3:1	
	Valve train			Chain driven overhead camshaft	
	Oil capacity			3.3 lit.	3.5 U.S. qt., 2.9 Imp. qt.
	Lubrication system			Forced pressure and wet sump	
	Cylinder head compression pressure			12.5 ± 1.0 kg/cm²	178 ± 14 psi

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	Item		Metric	English
	Intake valve	Opens	39° BTDC (At 0 lift), 5° ATDC (At 1.0 mm lift)	
		Closes	74° ABDC (At 0 lift), 30° ABDC (At 1.0 mm lift)	
	Exhaust valve	Opens	94° BBDC (At 0 lift), 40° BBDC (At 1.0 mm lift)	
		Closes	49° ATDC (At 0 lift), 5° BTDC (At 1.0 mm lift)	
	Valve clearance	IN.	0.10 ± 0.02 mm	0.004 ± 0.0008 in.
		EX.	0.14 ± 0.02 mm	0.006 ± 0.0008 in.
	Idle speed		1,250 ± 100 rpm	
Carburetion	Carburetor type		CV type, 28 mm (1.10 in.) venturi bore	
	Setting number		VB24A	
	Pilot screw		1-3/4 turns out	
	Float level		15.5 mm	0.61 in.
Drive train	Transmission		2 speed semi-automatic transmission with torque converter	
	Primary reduction ratio		1.463	
	Gear ratio I		2.923	
	Gear ratio II		2.058	
	Final reduction ratio		2.312	
	Gear shift pattern		Left foot operated return system	
Electrical	Ignition		Capacitive discharge ignition	
	Ignition timing	"FN" mark	7.5° BTDC at 1,250 rpm idle speed (Transmission in neutral)	
		"F" mark	15° BTDC at 1,250 rpm idle speed (Transmission in gear)	
		Full advance	43° BTDC ± 2° at 4,500 to 5,350 engine rpm	
	Starting system		Starting motor and kick starter	
	Alternator		A.C. generator, 0.17 kw/5,000 rpm	
	Battery capacity		12V, 12 ampere-hours	
	Spark plug		NGK-D8EA, ND-X24ES-U	
	Spark plug gap		0.6–0.7 mm	0.024–0.028 in.
Lights	Headlight (low/high beam)		35/50W	
	Tail/stoplight		3/32 cp SAE TRADE NO. 1157	
	Turn signal light (Front/Rear)		32/32 cp SAE TRADE NO. F.1034 R.1073	
	Speedometer light		2 cp SAE TRADE NO. 57	
	Parking brake warning light		2 cp SAE TRADE NO. 57	
	Turn signal indicator light		2 cp SAE TRADE NO. 57	
	High beam indicator light		2 cp SAE TRADE NO. 57	
	Position light		3 cp SAE TRADE NO. 1034	
	Shift position light (3)		2 cp SAE TRADE NO. 57	
	Oil pressure light		2 cp SAE TRADE NO. 57	

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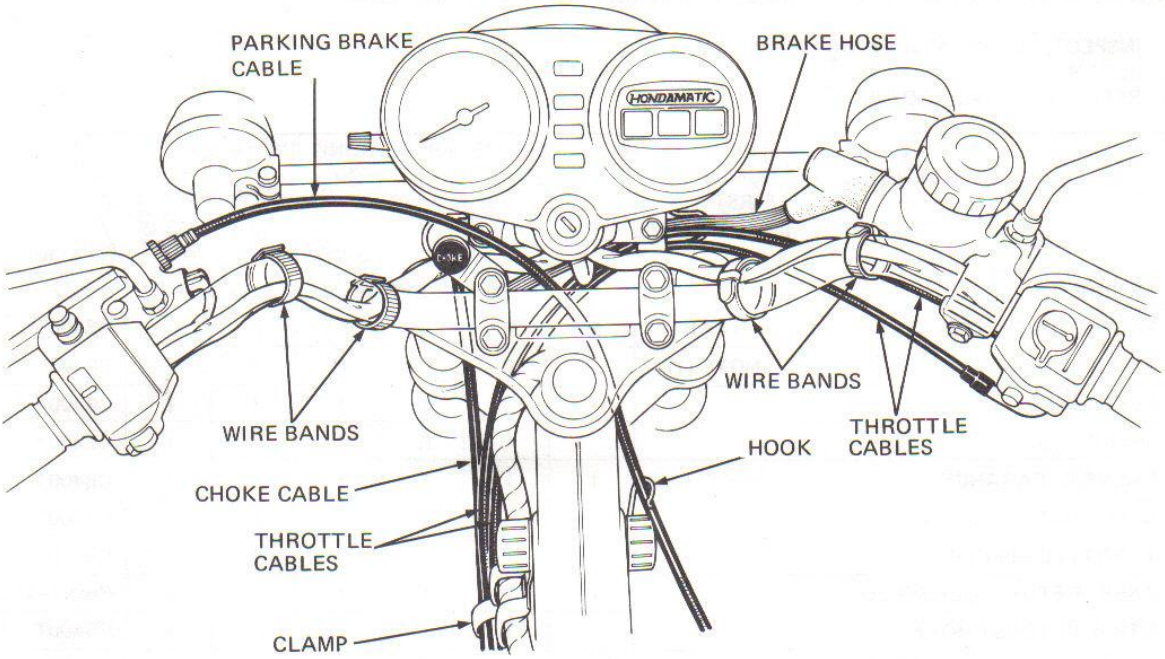
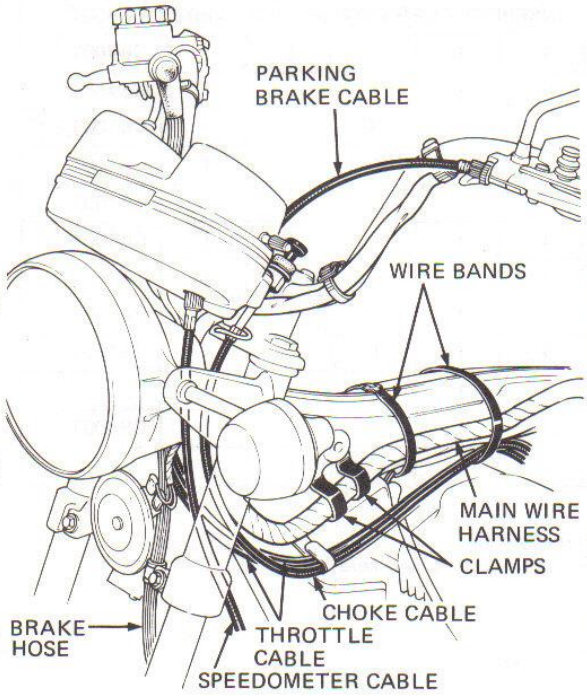
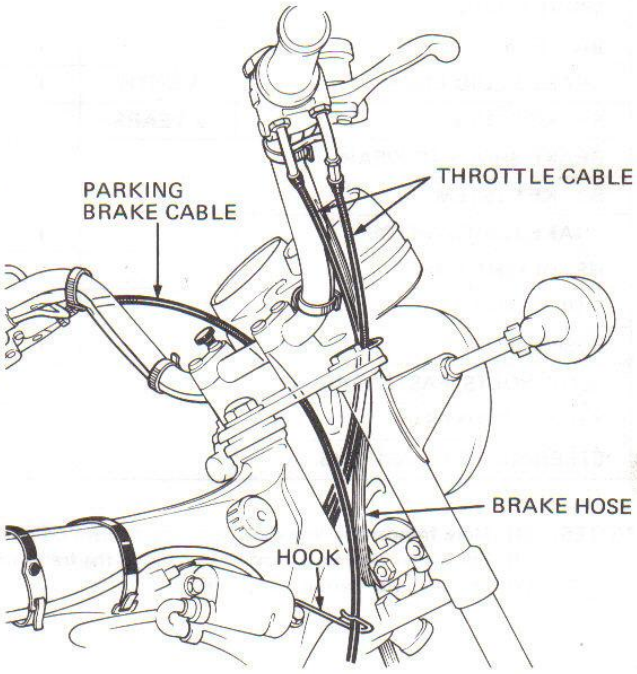
MEMO

CABLE & HARNESS ROUTING

For further details, refer to CB400T Shop Manual.







MAINTENANCE SCHEDULE

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

I: INSPECT, CLEAN, ADJUST, OR REPLACE IF NECESSARY.
C: CLEAN
R: REPLACE A: ADJUST

FREQUENCY / ITEM	WHICHEVER ➡ COMES FIRST ⬇ EVERY	ODOMETER READING [NOTE (2)] 600 mi. (1,000 km)	3,600 mi. (6,000 km)	7,200 mi. (12,000 km)	10,800 mi. (18,000 km)	14,400 mi. (24,000 km)	18,000 mi. (30,000 km)	Refer to
ENGINE OIL	YEAR	R	REPLACE EVERY 1,800 mi. (3,000 km)					Page 2–2
ENGINE OIL FILTER	YEAR	R	R	R	R	R	R	CB400T
AIR CLEANER	NOTE (1)		C	C	C	C	C	CB400T
FUEL LINES			I	I	I	I	I	CB400T
SPARK PLUGS			I	R	I	R	I	CB400T
VALVE CLEARANCE		I	I	I	I	I	I	CB400T
CAM CHAIN TENSION		A	A	A	A	A	A	CB400T
THROTTLE OPERATION		I	I	I	I	I	I	CB400T
CARBURETORS IDLE SPEED		I	I	I	I	I	I	Page 3–1
CARBURETORS CHOKE			I	I	I	I	I	CB400T
CARBURETORS-SYNCHRONIZE		I	I	I	I	I	I	CB400T
BALANCER CHAIN TENSION					A			CB400T
DRIVE CHAIN	NOTE (3)	INSEPECT EVERY 600 mi. (1,000 km)						CB400T
BATTERY	MONTH	I	I	I	I	I	I	CB400T
BRAKE FLUID LEVEL	MONTH	I	I	I	I	I	I	CB400T
BRAKE FLUID	2 YEARS				R			CB400T
BRAKE SHOE/PAD WEAR			I	I	I	I	I	CB400T
BRAKE SYSTEM		I	I	I	I	I	I	CB400T
BRAKE LIGHT SWITCH		I	I	I	I	I	I	CB400T
HEADLIGHT AIM		I	I	I	I	I	I	
SIDE STAND			I	I	I	I	I	Page 9–3
SUSPENSION		I	I	I	I	I	I	CB400T
NUTS, BOLTS, FASTENERS		I	I	I	I	I	I	
WHEELS/SPOKES		I	I	I	I	I	I	CB400T
STEERING HEAD BEARING		I		I		I		

NOTES: (1) More frequent service may be required when riding in dusty areas.
(2) For higher odometer readings, repeat at the frequency interval established here.
(3) Initial service period: 200 miles.

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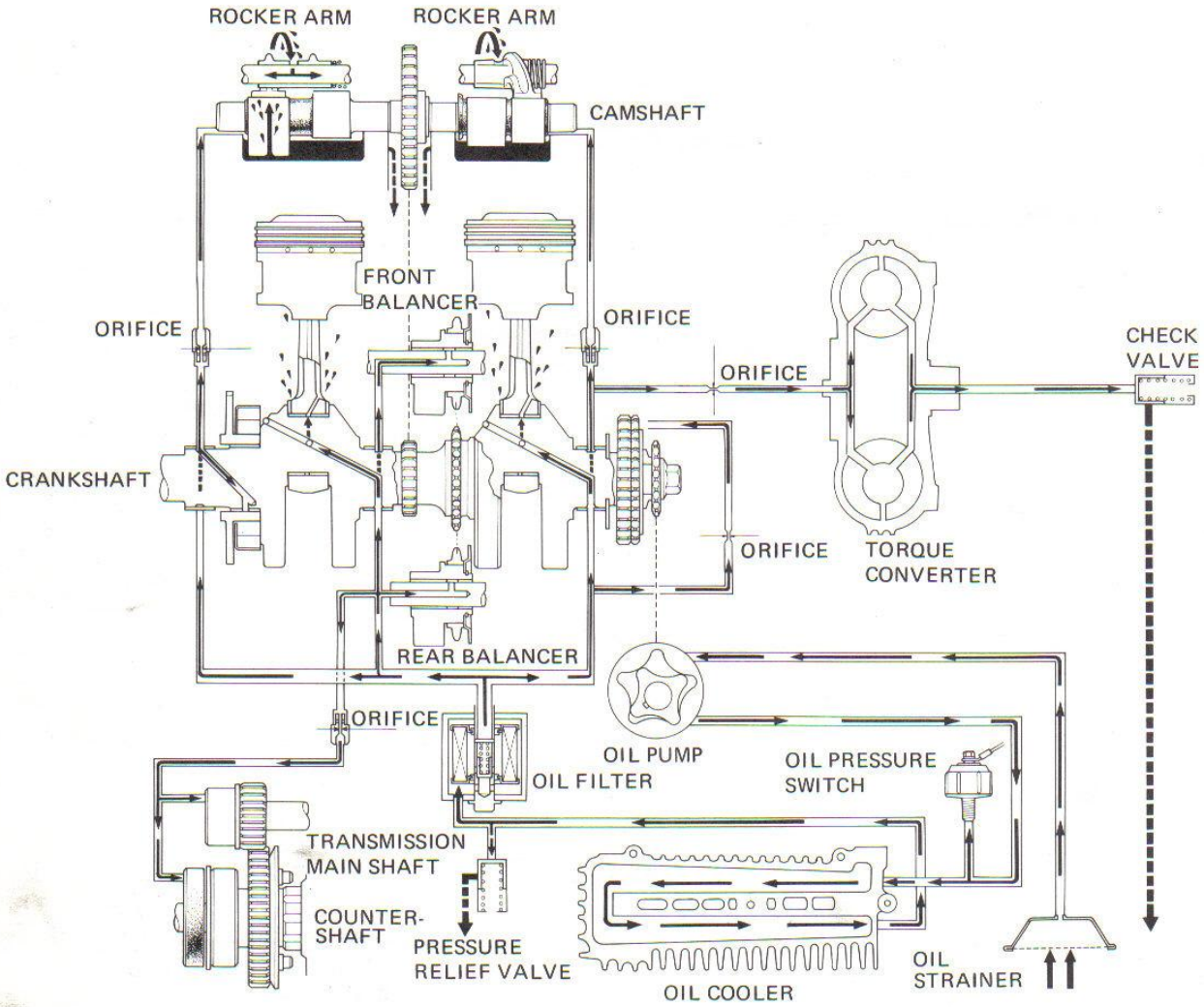
LUBRICATION DIAGRAM



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2. LUBRICATION

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SERVICE INFORMATION

- WORKING PRACTICE

Oil Pump	:See CB400T Shop Manual, Section 8.
Oil Pressure Relief Valve	:See CB400T Shop Manual, Section 8.
Oil Filter	:See CB400T Shop Manual, Section 2.
Oil Filter Screen	:See CB400T Shop Manual, Section 10.
Oil Cooler	:See Section 7.
Torque Converter	:See Section 6.

- SPECIFICATIONS

Oil Capacity	:3.3 liters (3.5 U.S. qt.) at engine assembly, 2.5 liters (2.6 U.S. qt.) at oil change.
Oil	:HONDA 4-stroke oil or equivalent rated SE 10W-40
Oil Pump Delivery	:17.5 liters/min at 3000 rpm (oil pump)

TROUBLESHOOTING

Oil Level Tool Low:
1. Normal oil consumption
2. External oil leaks
3. Worn piston rings

Oil Contamination:
1. Oil or filter not changed often enough
2. Defective head gasket

Low Oil Pressure:
1. Defective warning light switch
2. Pressure relief valve stuck open
3. Plugged oil pick-up screen
4. Oil pump worn
5. Worn torque converter sealing ring
6. Weak or damaged torque converter check valve spring

High Oil Pressure:
1. Pressure relief valve stuck closed
2. Plugged oil filter, gallery, or metering orifice
3. Torque converter check valve stuck closed
4. Incorrect oil being used

No Oil Pressure:
1. Oil level too low
2. Oil pump drive chain broken
3. Defective oil pump

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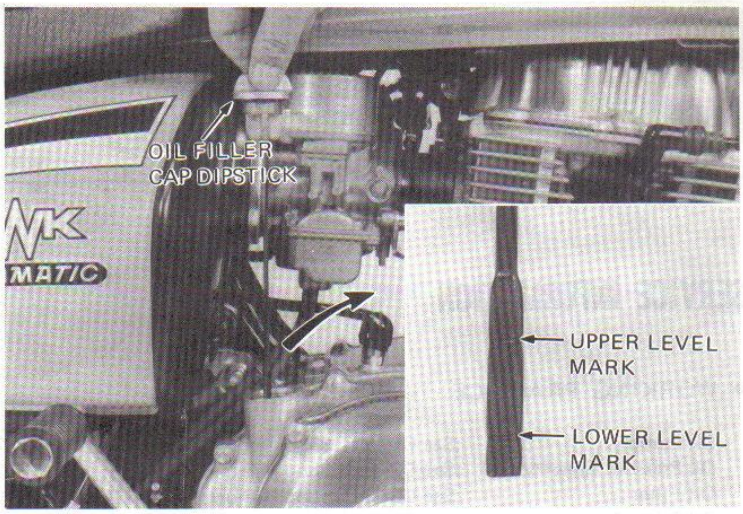
ENGINE OIL LEVEL

Run the engine for 1-2 minutes to allow oil to flow into the torque converter.

NOTE

Apply the parking brake when warming up the engine.

Stop the engine and support the motorcycle on the center stand.
Check the oil level with the filler cap dipstick after 2-3 minutes.
Do not screw in the cap when making this check. If the level is below the lower level mark on the dipstick, fill to the upper level mark.



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3. INSPECTION AND ADJUSTMENT

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SERVICE INFORMATION

The information below pertains to the CB400A. For inspection and adjustment specifications which are common to the CB400T, refer to Section 3 of the CB400T Shop Manual.

• SPECIFICATIONS

<ENGINE>

Spark plug gap, type	: 0.6–0.7 mm (0.024–0.028 in.), NGK-D8EA, ND-X24ES-U	
Ignition timing	: "FN" mark 7.5°BTDC at 1,250 rpm idle speed (Transmission in neutral)	
	"F" mark 15° BTDC at 1,250 rpm idle speed (Transmission engaged)	
	Advance marks 43° ± 2° BTDC at 4,500–5,350 rpm	
Valve clearance	: IN 0.10 ± 0.02 mm (0.004 ± 0.0008 in.)	
	EX 0.14 ± 0.02 mm (0.006 ± 0.0008 in.)	
Throttle free play	: 2–6 mm (0.08–0.24 in.) on the outer edge of the throttle grip flange	
Idle speed	: 1,250 ± 100 rpm	
Synchronization vacuum	: 200–240 mmHg	
Fast idle speed	: 2,000 ± 500 rpm	
Compression	: 12.5 ± 1.0 kg/cm^2 (178 ± 14 psi)	

<CHASSIS>

Rear brake free play	: 20–30 mm (3/4–1-1/4 in.)		
Drive chain play	: Approximately 20 mm (3/4 in.)		
Tire pressure	: Up to 90 kg (200 lbs) load	Front: 1.75 kg/cm^2 (24 psi)	
		Rear: 2.25 kg/cm^2 (32 psi)	
	Up to vehicle capacity load	Front: 1.75 kg/cm^2 (24 psi)	
		Rear: 2.5 kg/cm^2 (36 psi)	
Parking brake lever free play	: 0–5 mm (0–0.2 in.)		

• TORQUE VALUES

Balancer adjuster nut (8 mm)	: 2.0–2.5 kg-m (15–18 lbs-ft)
Balancer pivot nut (10 mm)	: 3.0–3.5 kg-m (22–25 lbs-ft)

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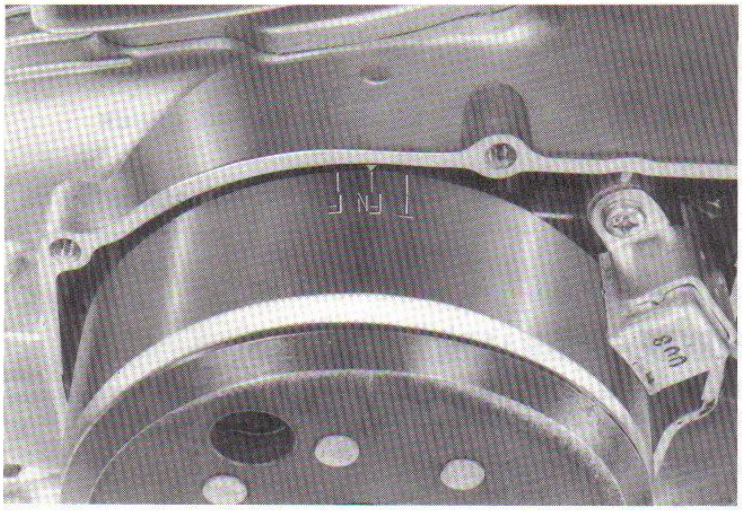
IGNITION TIMING CHECK

NOTE

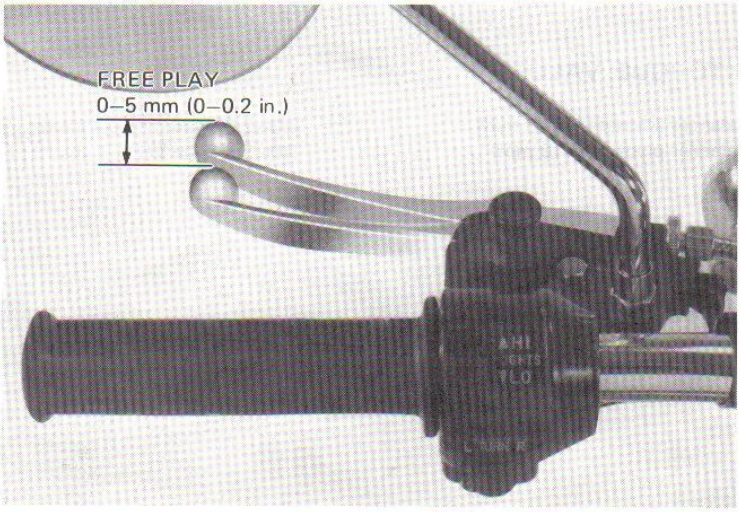
The C.D.I. (Capacitive discharge ignition) is not adjustable. If the ignition timing is incorrect, check the C.D.I. unit and A.C. generator and replace any defective parts. (Section 9)

Place the motorcycle on the main stand.
Remove the left crankcase cover.
Check the ignition timing using a stroboscopic timing light (P/N 07308–0070000):
The timing is correct if the "FN" mark aligns with the index mark with the engine idling in neutral.
The "F" mark should also be aligned with the index mark with the engine idling in "1" or "2" range.
Also check that the index mark is between the advance marks at 5,350 rpm.



PARKING BRAKE ADJUSTMENT

Measure the parking brake lever free play.



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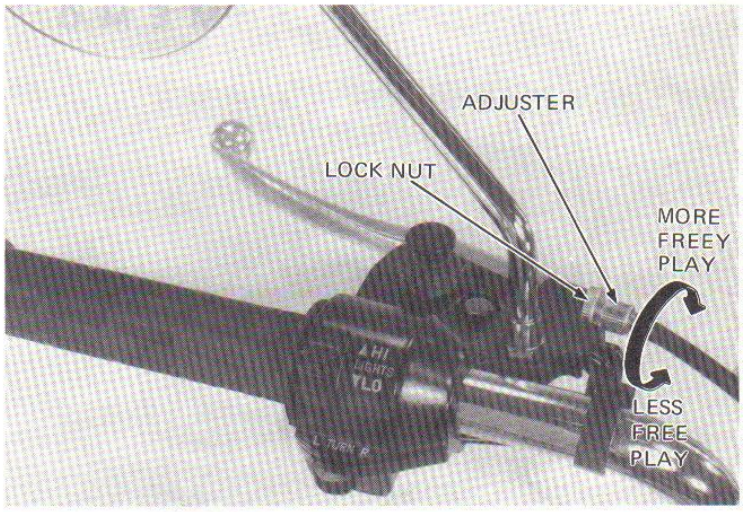
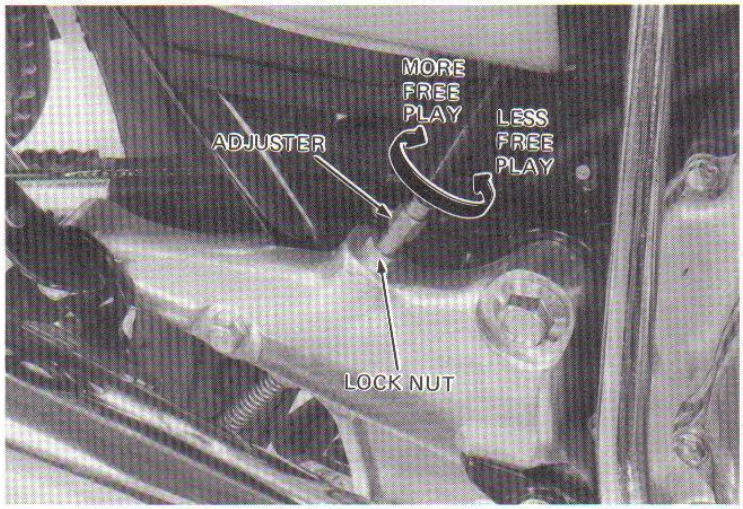
NOTE

Adjust the rear brake pedal height and free play before making adjustment to the parking brake.

to make minor adjustments, loosen the lock nut and turn the upper adjuster.



For major adjustments, loosen the lock nut and turn the lower adjuster either in or out as necessary.



4. FUEL SYSTEM

SERVICE INFORMATION

• WORKING PARCTICE

Use caution when working with gasoline. Always work in a well-ventilated area and away from sparks or open flames.
When disassembling fuel system parts, note the locations of O-rings. Replace them with new ones on re-assembly.
The float bowls have drain plugs that can be removed to drain residual gasoline.

• SPECIAL TOOL

Common Tool
FLOAT GAUGE 07401–0010000

• SPECIFICATIONS

The information below pertains to the CB400A. For fuel system specifications that are common to the CB400T, refer to Section 4 of the CB400T Shop Manual.

Venturi dia.	28 mm (1.10 in.)
Setting mark	VB24A
Float level	15.5 mm (0.061 in.)
Pilot screw opening	1-3/4
Idle speed	1,250 ± 100 rpm
Fast idle	2,000 ± 500 rpm
Vacuum (at idle speed)	200–240 mmHg
Throttle grip free play	2–6 mm (0.08–0.24 in.)

5. ENGINE REMOVAL/ INSTALLATION

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ENGINE REMOVAL	5–1

SERVICE INFORMATION

This section includes engine removal procedures that are pertinent to the CB400A. For additional information and installation procedures, refer to Section 5 of the CB400T Shop Manual.

- WORKING PRACTICE

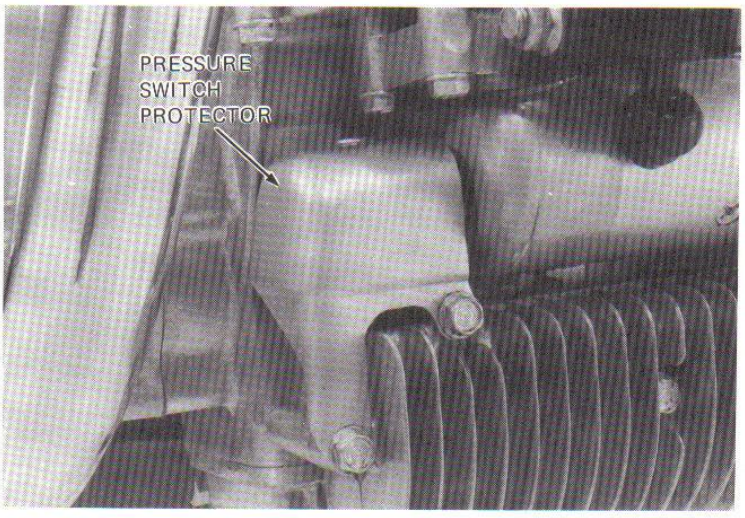
Parts requiring engine removal for servicing:

- Blancer
- Crankshaft
- Connecting rod
- Transmission
- Shift drum and shift fork
- Starter gear

Place a jack under the engine to support its weight during removal and installation.
Engine weight: 65 kg (143 lbs) approx.

ENGINE REMOVAL

Perform the following operations before removing the engine.
Remove the protector from the oil pressure switch.



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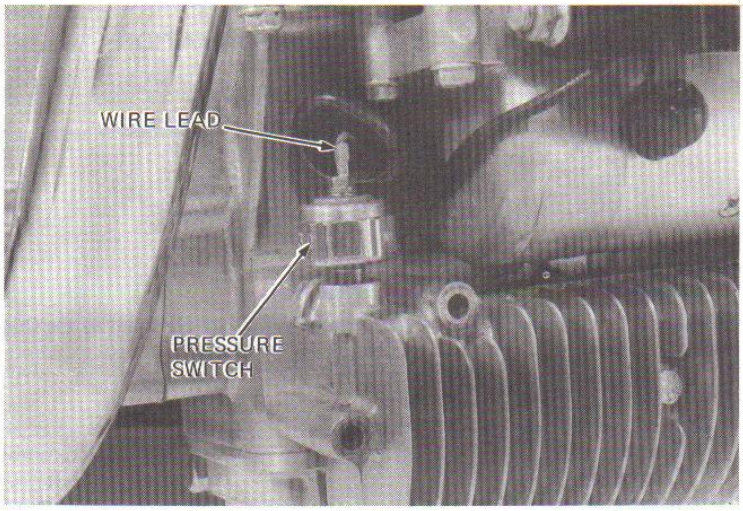
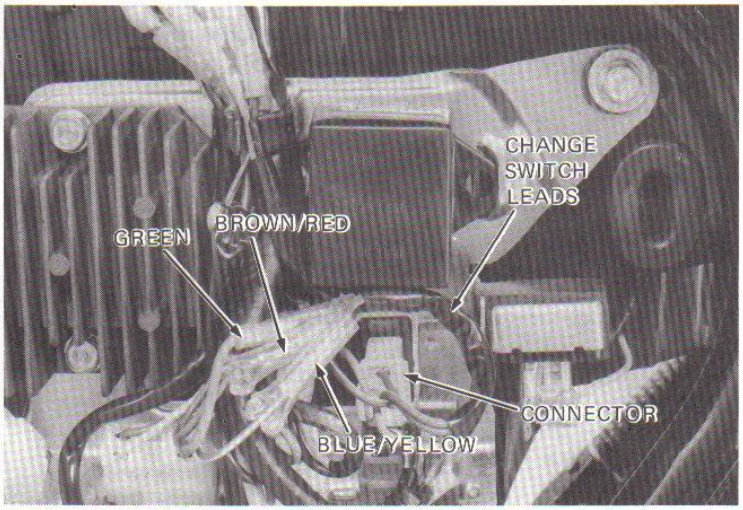
Disconnect the wire lead from the pressure switch.



Disconnect the change switch wire leads.

NOTE

After removing and installing the engine per the procedures detailed in the CB400T Shop Manual, complete installation of the CB400A by reversing the sequence above.



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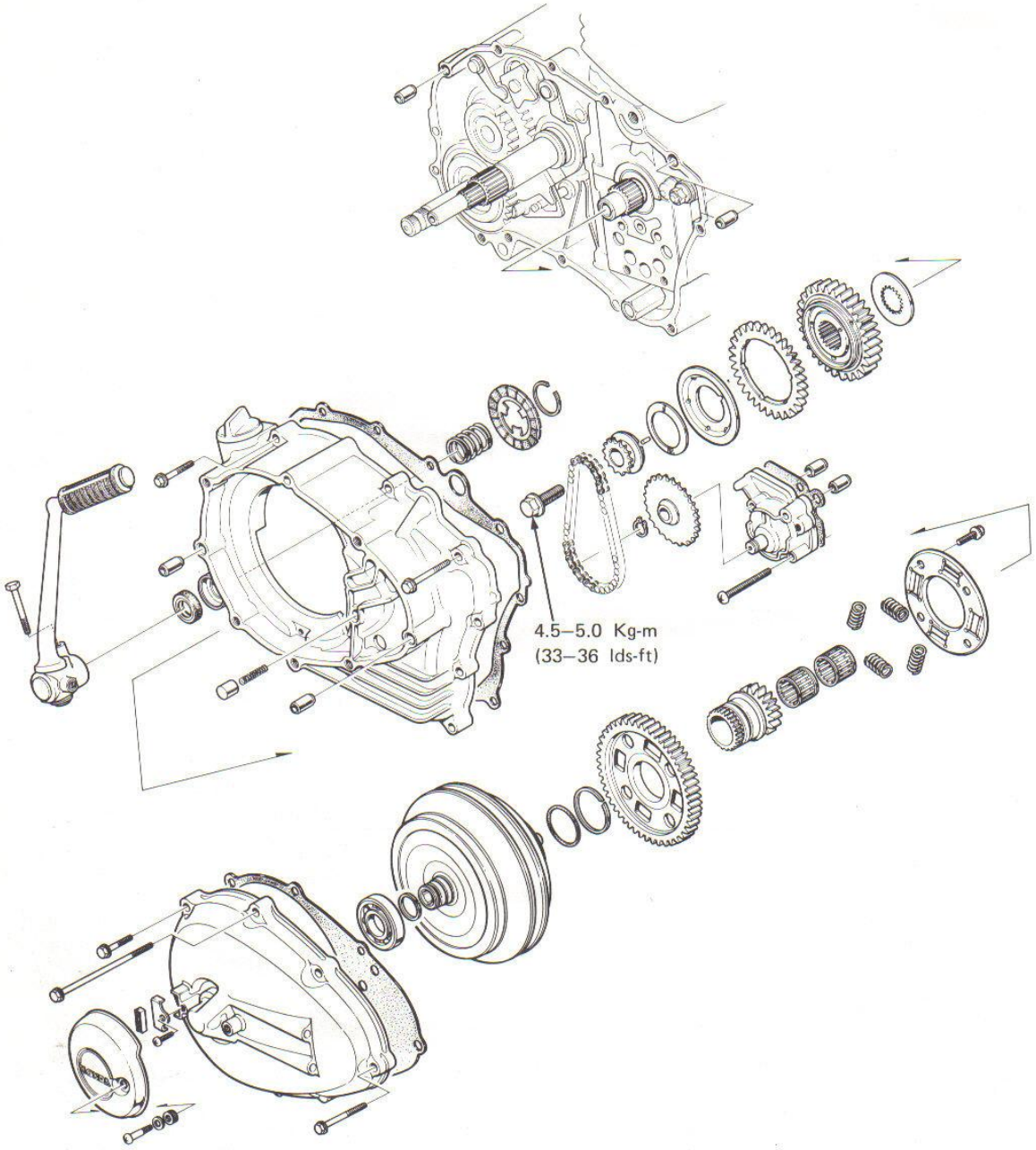

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6. TORQUE CONVERTER/ OIL PUMP

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SERVICE INFORMATION

For oil pump and pressure relief valve repairs, refer to Section 8 of the CB400T Shop Manual.

- WORKING PRACTICE

This section deals with torque converter repairs, and removal and installation of the right crankcase cover. The kick starter and gearshift linkage (Section 8) and crankshaft balancer adjustment must be performed with the torque converter and right crankcase cover off the engine. These operations can be performed with the engine in frame.
The torque converter acts as a hydraulic torque multiplier and a fluid coupling. Oil flow is from the oil pan, through the oil passage in the torque converter case, to the torque converter, to the check valve via the oil passage in the torque converter case, and back to the oil pan.
When servicing the torque converter, inspect the oil passages and check valve for clogging or any other defective condition.

- SPECIAL TOOL

Common Tool
UNIVERSAL HOLDER 07725–0010101

• SPECIFICATIONS

		STANDARD	SERVICE LIMIT
Stall RPM		3,550–3,850 rpm	3,400 rpm
Main shaft O.D. (at end)		12.966–12.984 mm (0.510–0.511 in.)	12.96 mm (0.510 in.)
Stator shaft O.D.		24.974–24.993 mm (0.983–0.984 in.)	24.97 mm (0.983 in.)
Torque converter case I.D.		13.000–13.018 mm (0.512–0.513 in.)	13.04 mm (0.513 in.)
Kick starter driven gear I.D.		30.000–30.021 mm (1.181–1.182 in.)	30.03 mm (1.182 in.)
Damper spring	Free length	18.0 mm (0.71 in.)	16.0 mm (0.63 in.)
	Tension	20.5–25.5 kg/15.0 mm (45.2–56.2 lbs/0.591 in.)	18 kg/15.0 mm (40 lbs/0.591 in.)
Check valve spring	Free length	18.5 mm (0.73 in.)	16.7 mm (0.66 in.)
	Tension	0.745–0.761 kg/12 mm (1.64–1.68 lbs/0.472 in.)	0.67 kg/12 mm (1.48 lbs/0.472 in.)
Main shaft-to-torque converter case clearance		0.007–0.022 mm (0.0003–0.0009 in.)	0.08 mm (0.003 in.)

TROUBLESHOOTING

Engine Runs, but Motorcycle Does Not Move in 1st and 2nd:
1. No or lack of oil in oil pan
2. Torque converter check valve not installed
3. Torque converter check valve stuck open, or weak or damaged check valve spring
4. Clogged oil passage
5. Oil pump drive chain broken
6. Defective oil pump
7. Damaged primary drive and/or driven gear
8. Torque converter pump flange or 6 mm rivets broken

Poor Acceleration when Shifting into 1st and 2nd:
1. Torque converter inlet orifice clogged (2.5 mm)
2. Torque converter check valve stuck open or weak or broken check valve spring
3. Burnt or seized primary drive and/or driven gear or stator shaft
4. Stator slipping

Poor Acceleration At High Speed (Slippage at High speed)
1. Oil level too high
2. Torque converter oneway clutch seized

Poor Acceleration At Low Speed (Good Acceleration at High Speed):
1. Torque converter oneway clutch slipping

Poor Acceleration At Both Speed Ranges:
1. Damaged oneway clutch roller spring or cam

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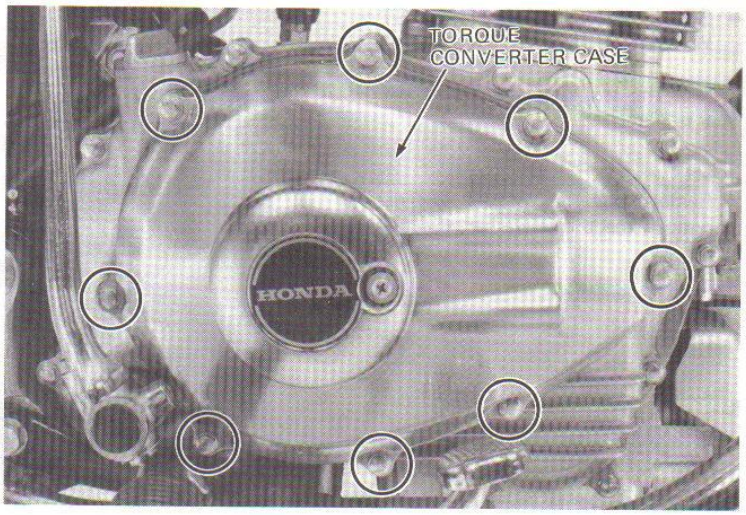
TORQUE CONVERTER REMOVAL

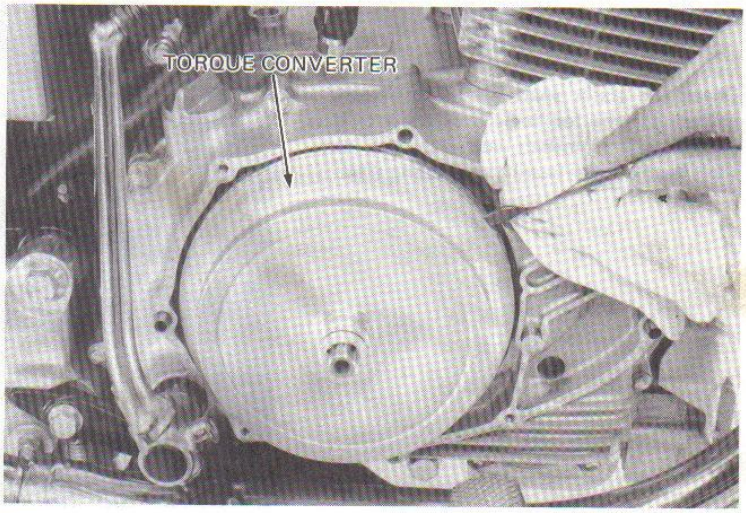
Drain all oil from the egnine.
Remove the torque converter case.



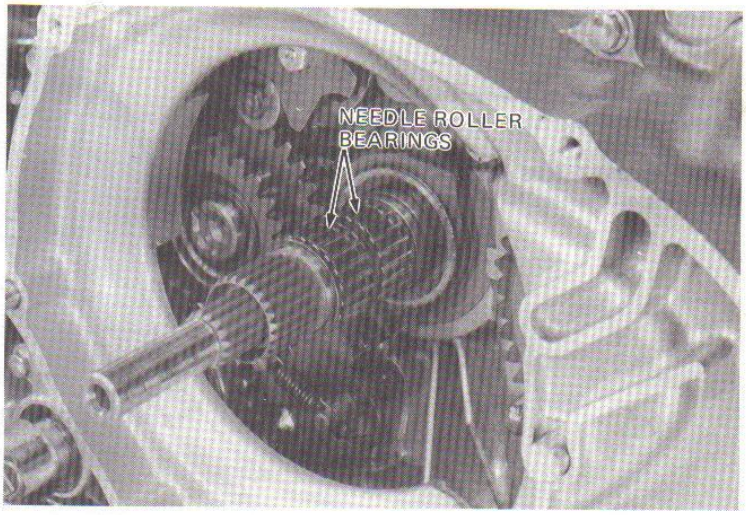
Remove the torque converter by applying a screwdriver blade to the groove in its periphey.

NOTE

Use care not to damage the gasket surface of the crankcase.



Remove the needle roller bearings. Check them for wear, damage or other defects.

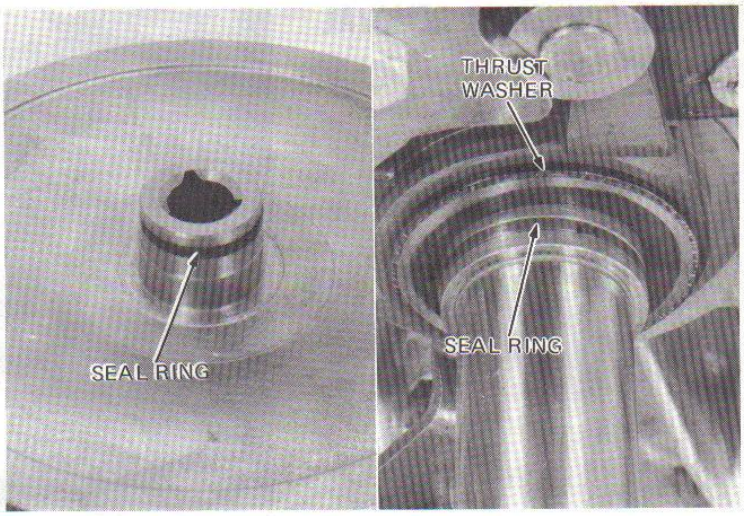


• SEAL RING AND THRUST WASHER INSPECTION

Inspect the seal ring and thrust washer for wear or damage.

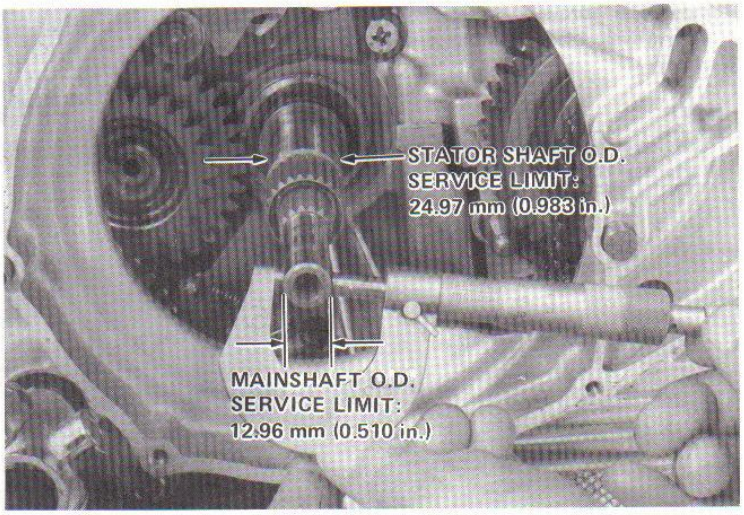
NOTE

Remove the kick starter idle gear to remove the thrust washer. (Section 8)



• MAINSHAFT AND STATOR SHAFT INSPECTION

Check the stator shaft needle roller bearing contacting area for damage or other defects. Measure the mainshaft end O.D. and stator shaft needle roller bearing contacting area.

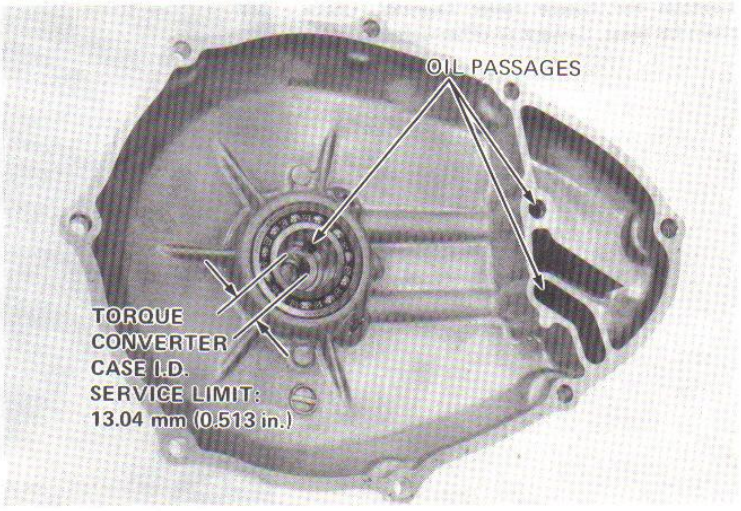


• TORQUE CONVERTER CASE INSPECTION

Measure the torque converter case. I.D.. Determine the mainshaft-to-torque converter case clearance.

SERVICE LIMIT: 0.08 mm (0.003 in.)

Check the oil passages for clogging.



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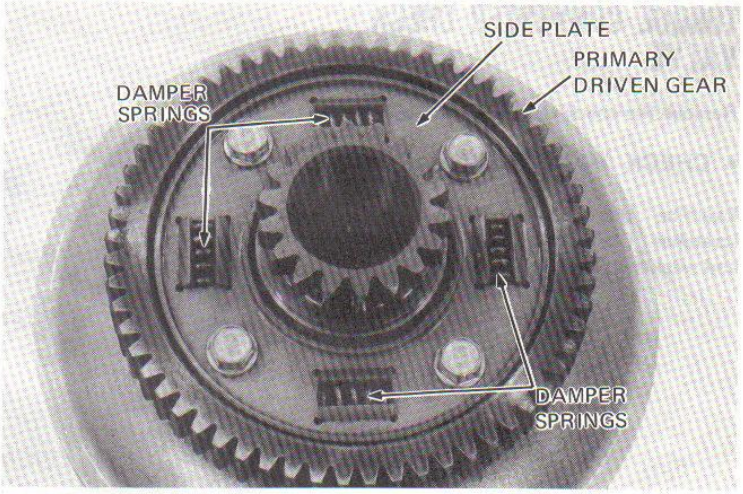
PRIMARY DRIVEN GEAR DISASSEMBLY

Remove the 6 mm bolts.
Remove the side plate, damper springs and primary driven gear.

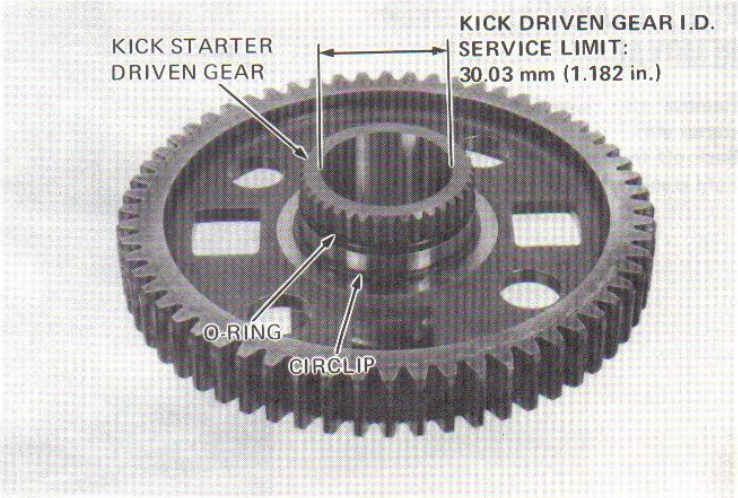


Pry off the circlip and remove the kick starter driven gear.
Remove the O-ring.

- KICK STARTER DRIVEN GEAR INSPECTION

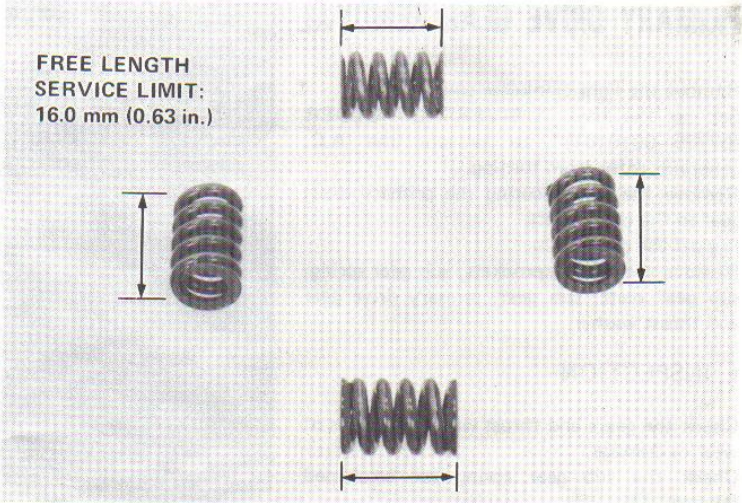
Check the kick starter driven gear for damage or other defects.

Measure the kick starter driven gear I.D..



- DAMPER SPRING INSPECTION

Check the damper springs' free length. Check for evidence of damage or other defects.

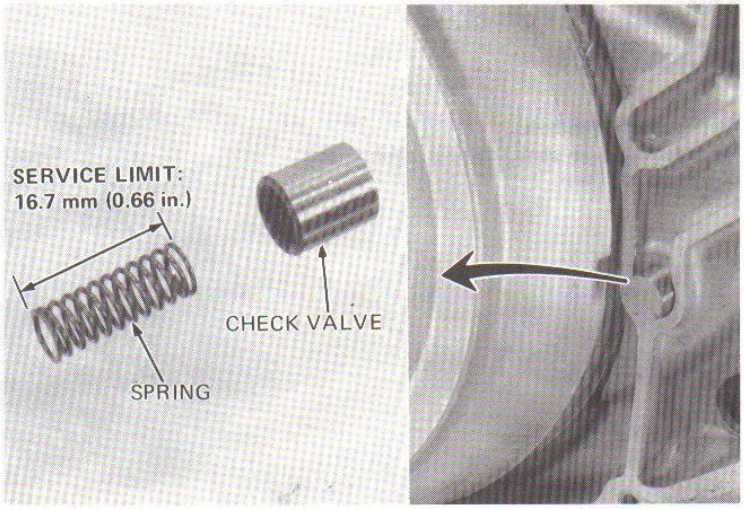


TORQUE CONVERTER CHECK VALVE

Remove the check valve and valve spring.

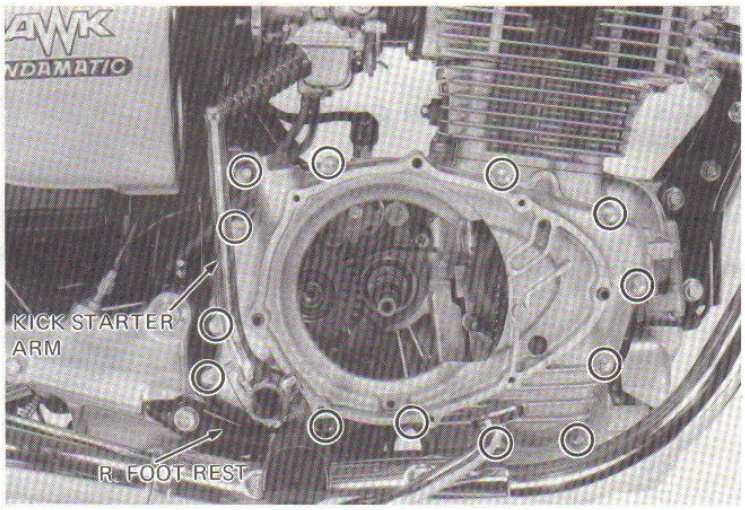
- CHECK VALVE INSPECTION

Examine the valve body for scores or scratches. Check the spring for free length and weakened tension.



RIGHT CRANKCASE COVER REMOVAL

Remove the right foot rest and the kick starter arm.
Back off thirteen 6 mm bolts and remove the right crankcase cover.

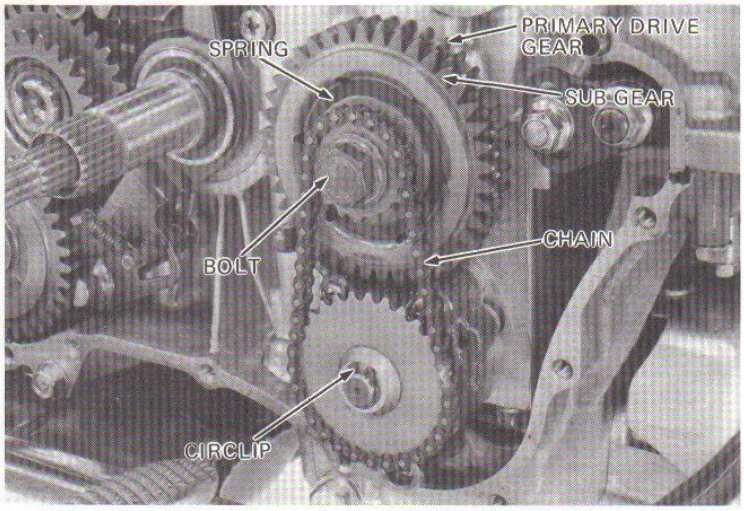


PRIMARY DRIVE GEAR REMOVAL

Remove the right crankcase cover.
Set up the tool "UNIVERSAL HOLDER (07725–0010101)" to prevent the A.C. generator rotor from turning.
Remove the bolt securing the primary drive gear to the crank shaft.
Pry off the circlip.
Remove the chain, sprockets, sub gear spring, sub gear plate, sub gear, primary drive gear and thrust washer.

- INSPECTION

Check the gears and thrust washer for signs of wear or damage.
Check the sub gear spring for weakened tension.



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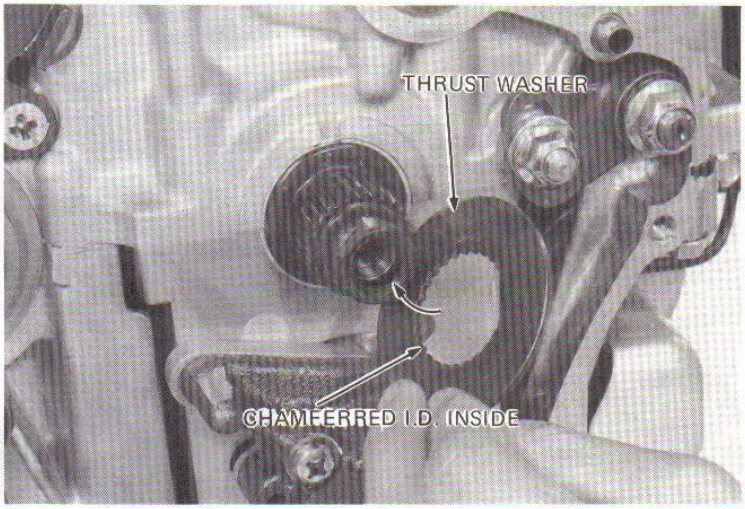
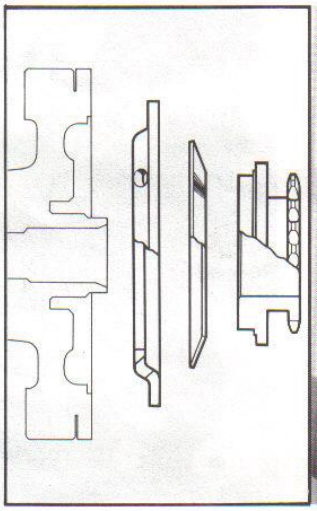
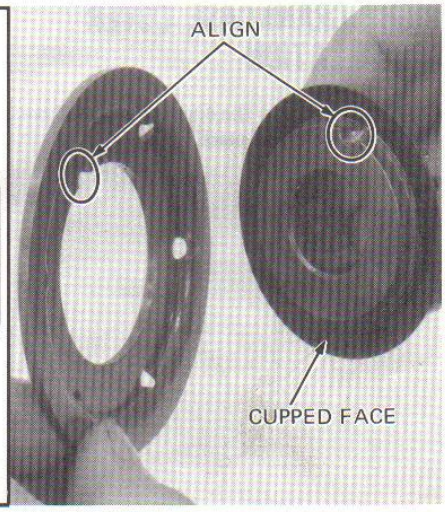
PRIMARY DRIVE GEAR INSTALLATION

Install the thrust washer on the crankshaft with the chamferred end inside.

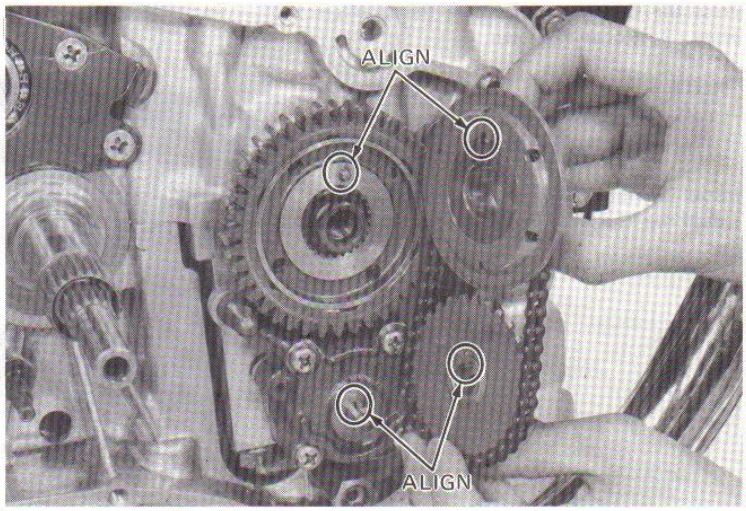


Install the sub gear spring on the oil pump drive sprocket as illustrated.
Align the dowl holes and install the drive sprocket on the sub gear plate.





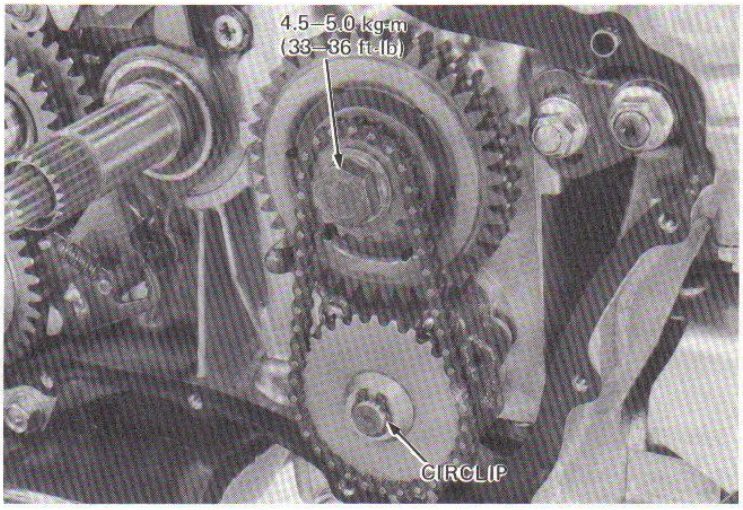
Install the primary drive gear and sub gear.
Press the dowel pin into place in the drive gear.
Align the pin with the holes in the drive sprocket and sub gear plate.
Align the dowel pin on the pump shaft with the dowel groove in the driven sprocket.
Install the drive sprocket, driven sprocket and chain at the same time.



Install the circlip.
Tighten the 12 mm flange bolt to the specified torque.

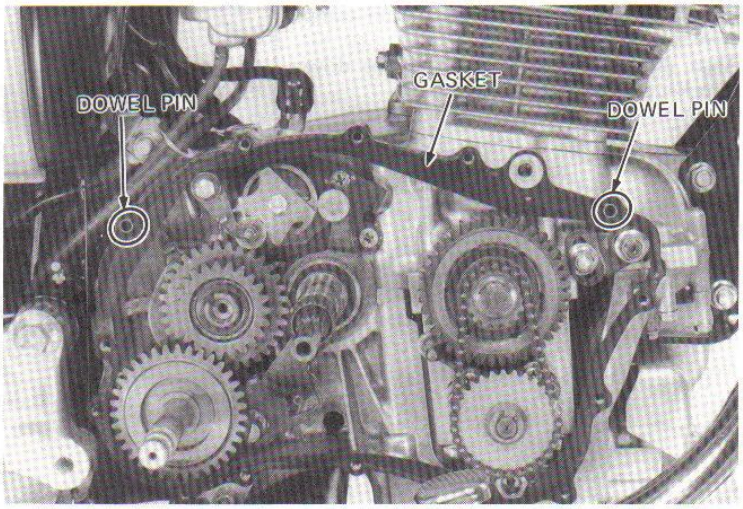
NOTE

Use the tool "UNIVERSAL HOLDER (07725–0010101)" to prevent the A.C. generator rotor from turning when the bolt is tightened.



RIGHT CRANKCASE COVER INSTALLATION

Place the gasket on the engine block and press the two dowels into place.

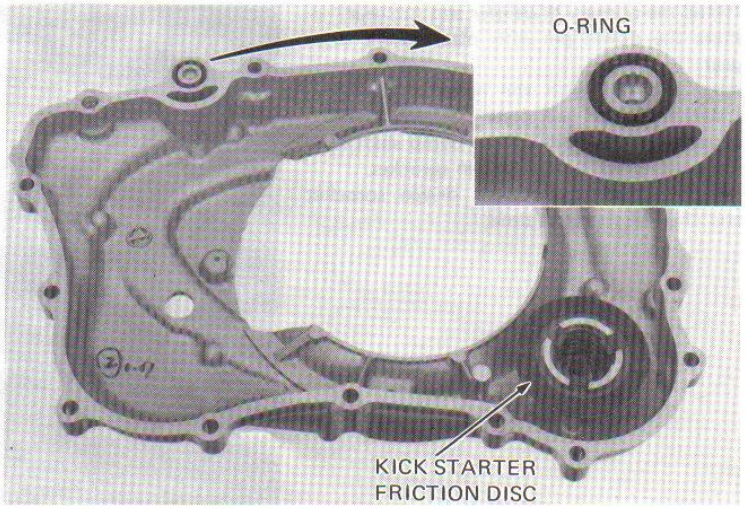


Press the O-ring into place in the crankcase cover ring groove as shown.

NOTE

Check the kick starter friction disc for proper installation. (Section 8).

Install the right crankcase cover.
Install the kick starter arm and the right foot rest.



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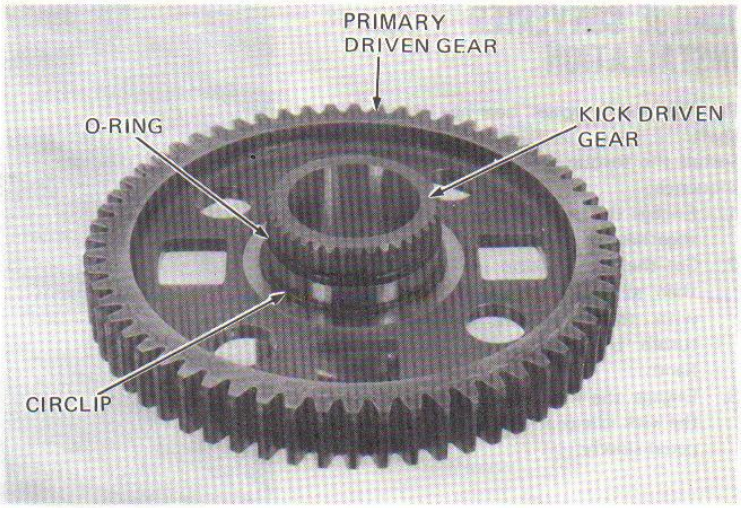
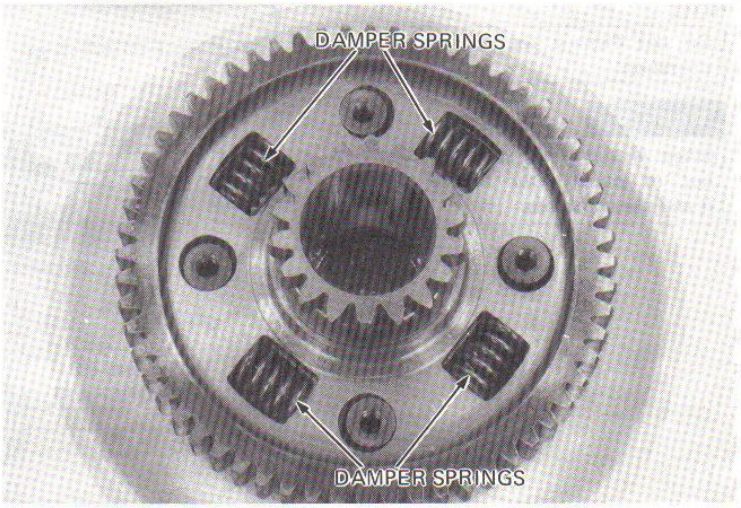
PRIMARY DRIVEN GEAR INSTALLATION

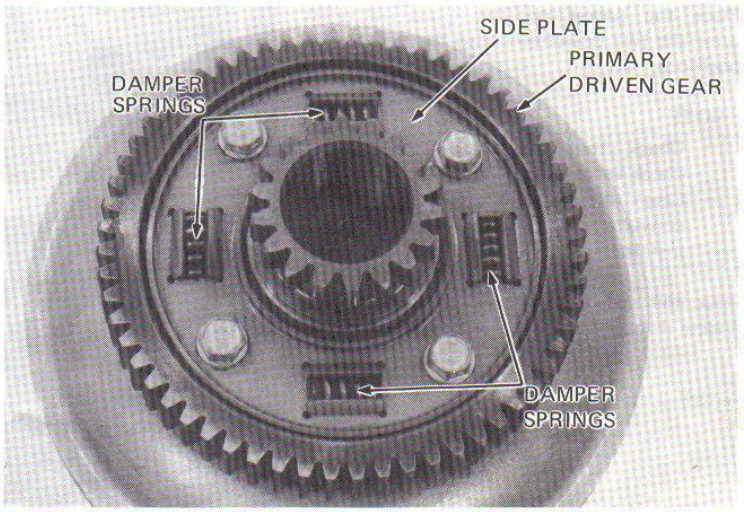
Install the kick starter driven gear in the primary driven gear.
Install the circlip and the O-ring.



Install the driven gear and damper springs into place in the torque converter. Check that each spring is seated properly.



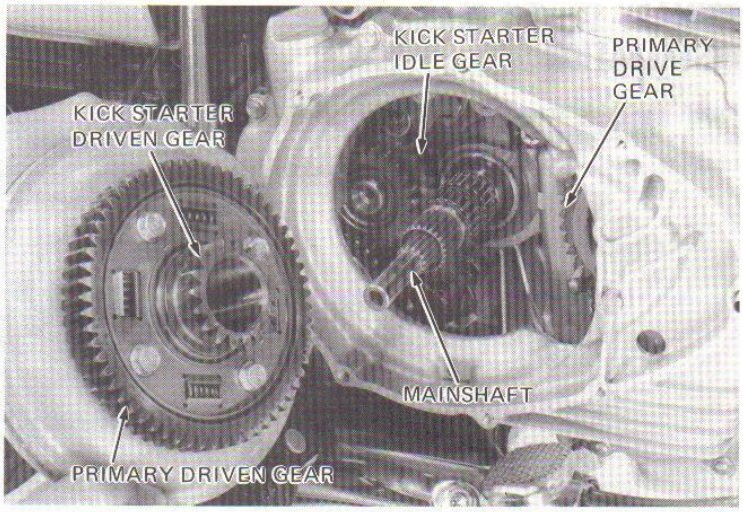
Install the side plate with the four 6 mm bolts.



TORQUE CONVERTER INSTALLATION

Put the needle roller bearings on the stator shaft.
Install the torque converter in the following sequence:

1. Engage the primary driven and drive gears together.
2. Set the transmission in 1st or 2nd gear, then align the splines of the main shaft with those of the torque converter turbin by rotating the rear wheel by hand.
3. Engage the kick starter driven gear with the kick idle gear while operating the kick pedal slowly.

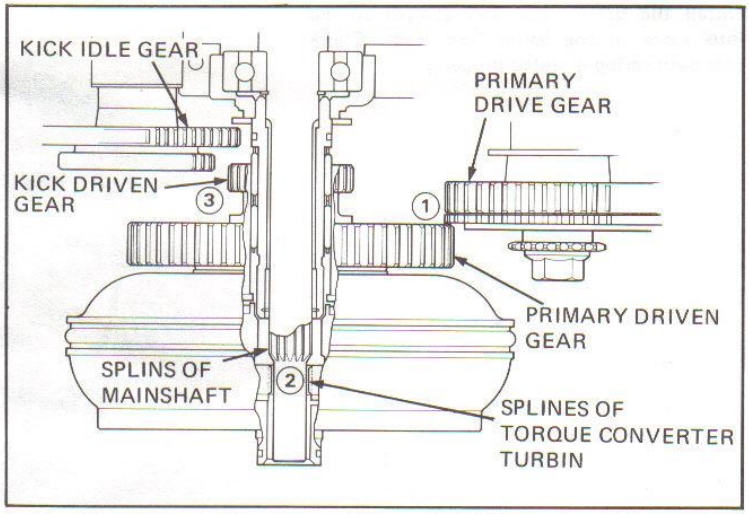


NOTE

Do not damage the seal rings during operation.

WARNING

When installing the converter use care not to pinch your fingers between it and the crankcase.

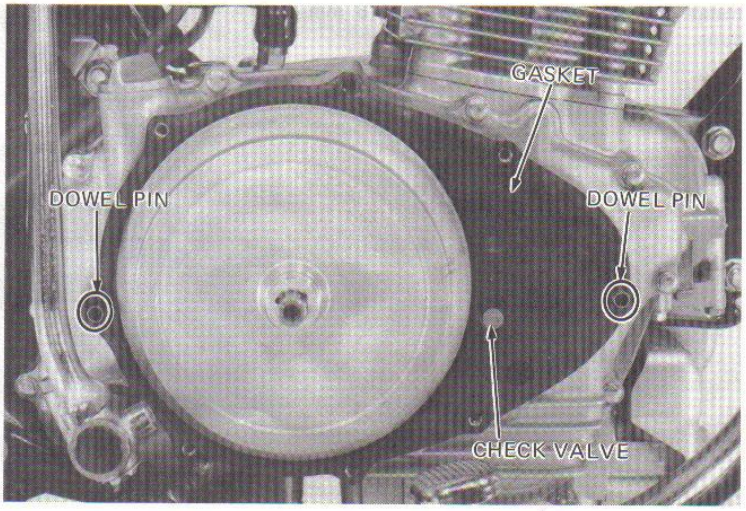


Place the gasket on the crankcase, then press the two dowel pins into their respective positions.

NOTE

- Check that the torque converter check valve is installed.
- Clean all passages in the torque converter case in/with solvent before installation.

Pour the specified amount of oil into the engine through the oil filler opening.



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STALL SPEED MEASUREMENT

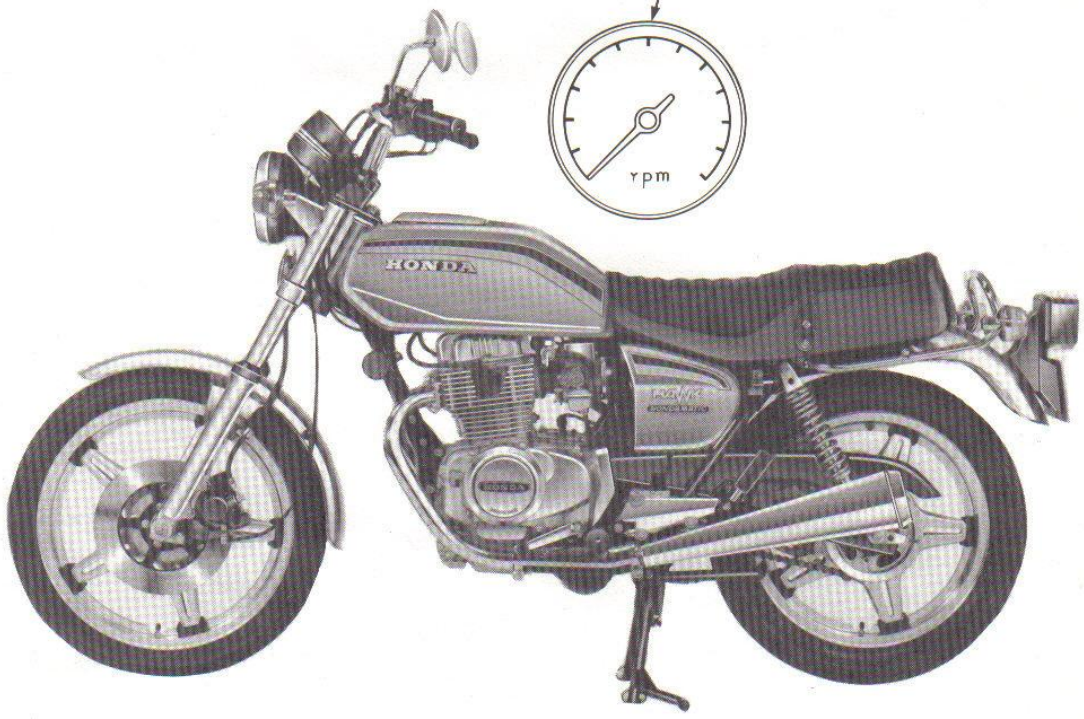
Place the motorcycle on the main stand and apply the parking brake.
Warm up the engine until its RPM stabilizes; then, stop the engine.
Connect a tachometer and restart the engine.
Shift the transmission into "1".
With the rear brake pedal held down securely, open the throttle fully. Note the engine RPM indicated on the tachometer.

NOTE

- Use both the foot and parking brakes to make this test. Use of the parking brake alone will allow the rear wheel to rotate, resulting in damage to the brake shoes.
- Do not keep the grip in full throttle for more than 10 seconds at a time.
- Do not change gears with the engine running.

Repeat the above steps for "2" range.

STANDARD: 3,550–3,850 rpm
LIMIT: 3,400 rpm



7. CRANKCASE

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CRANKCASE ASSEMBLY	7–2
INSTALLATION OF PARTS	7–3

SERVICE INFORMATION

To repair the crankshaft, connecting rod and transmission, it is necessary to separate the crankcase. Although the following parts must be removed before disassembling the crankcase, all photos, illustrations and step-by-step procedures for these parts are described as single parts or units for simplicity.

Items to be serviced	Items to be removed
Crankshaft and connecting rod	Cylinder head (CB400T, Section 6), cylinder/pistons (CB400T, Section 7), oil pump drive chain (Section 6), kick idle gear, kick starter pinion, kick inhibitor arm (Section 8), and A.C. generator (CB400T, Section 9).
Balancer	Oil pump, drive chain, kick starter idle gear, kick starter pinion, kick inhibitor arm and A.C. generator.
Transmission and starter idle gear	Kick idle gear, kick starter pinion, kick inhibitor arm and A.C. generator.

- SPECIAL TOOLS

Common Tools

UNIVERSAL HOLDER	07725–0010101
ROTOR PULLER	07733–0020000

- TORQUE VALUES

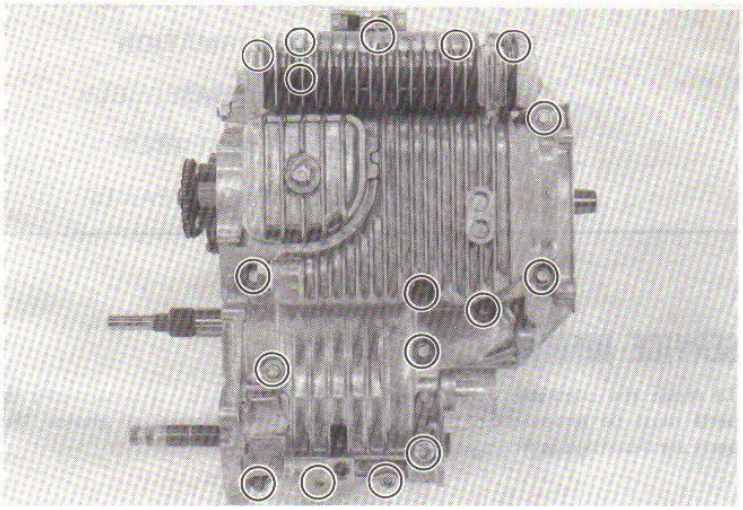
6 mm Crankcase Bolts x 14	1.0–1.4 kg-m (7–10 lbs-ft)
8 mm Crankcase Bolt	2.0–3.0 kg-m (15–22 lbs-ft)
Generator Rotor Bolt	10.0–12.0 kg-m (70–90 lbs-ft)

CRANKCASE DISASSEMBLY

Remove the oil pressure switch.
Turn the engine upside down.
Remove the starter motor.
Remove the 8 mm bolt and fourteen 6 mm bolts.

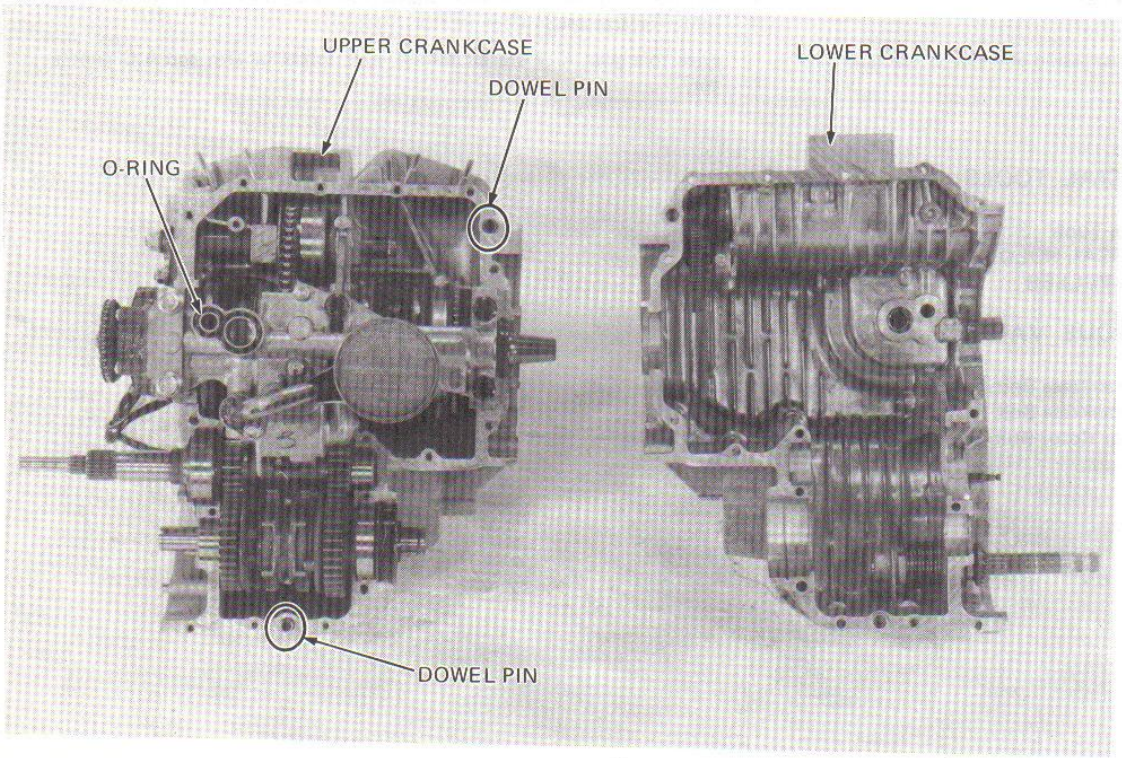
NOTE

Remove the bolts in two or more steps in a cross pattern to prevent warpage.



CRANKCASE ASSEMBLY

Before assembly, apply liquid sealant to the mating surfaces.



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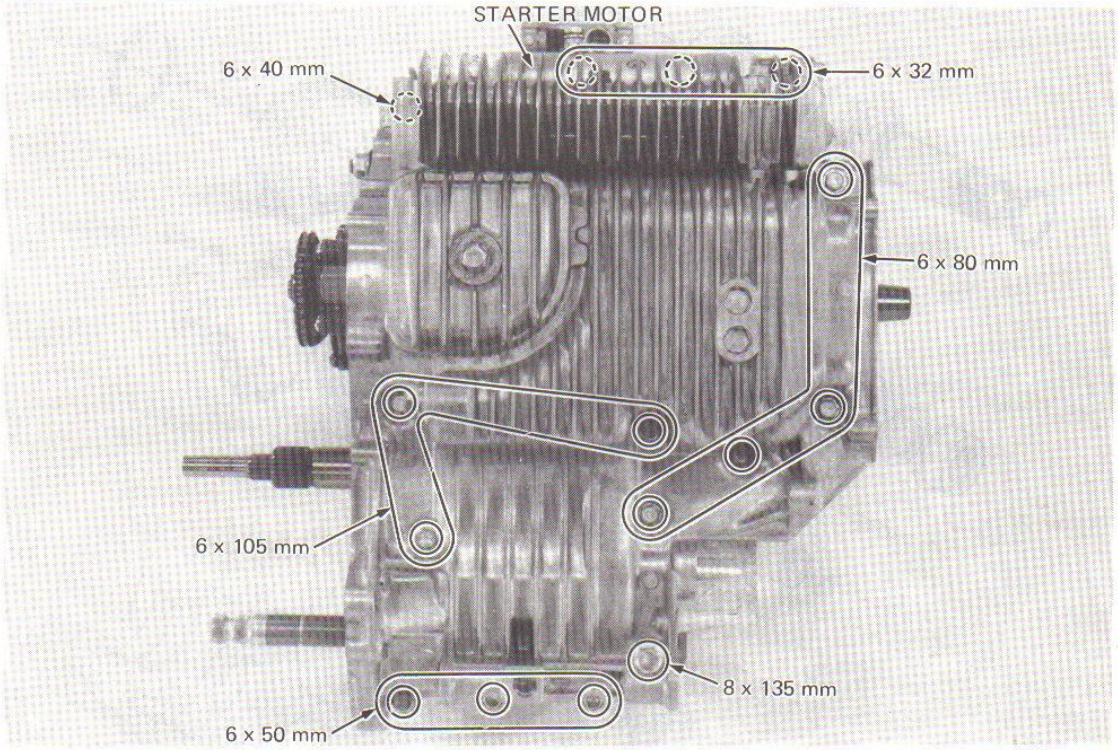
Install the lower case on the upper case and tighten the bolts to the specified torques.

TORQUE SPECIFICATIONS:
8 mm bolt: 2.0—3.0 kg-m (15—22 lbs-ft)
6 mm bolt: 1.0—1.4 kg-m (7 —10 lbs-ft)

NOTE

Tighten the bolts in two or more steps and in a cross pattern.

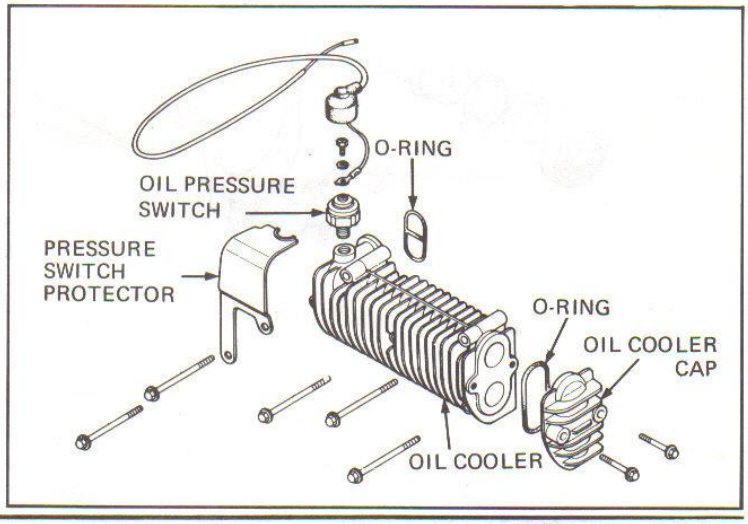
Reinstall the starter motor.

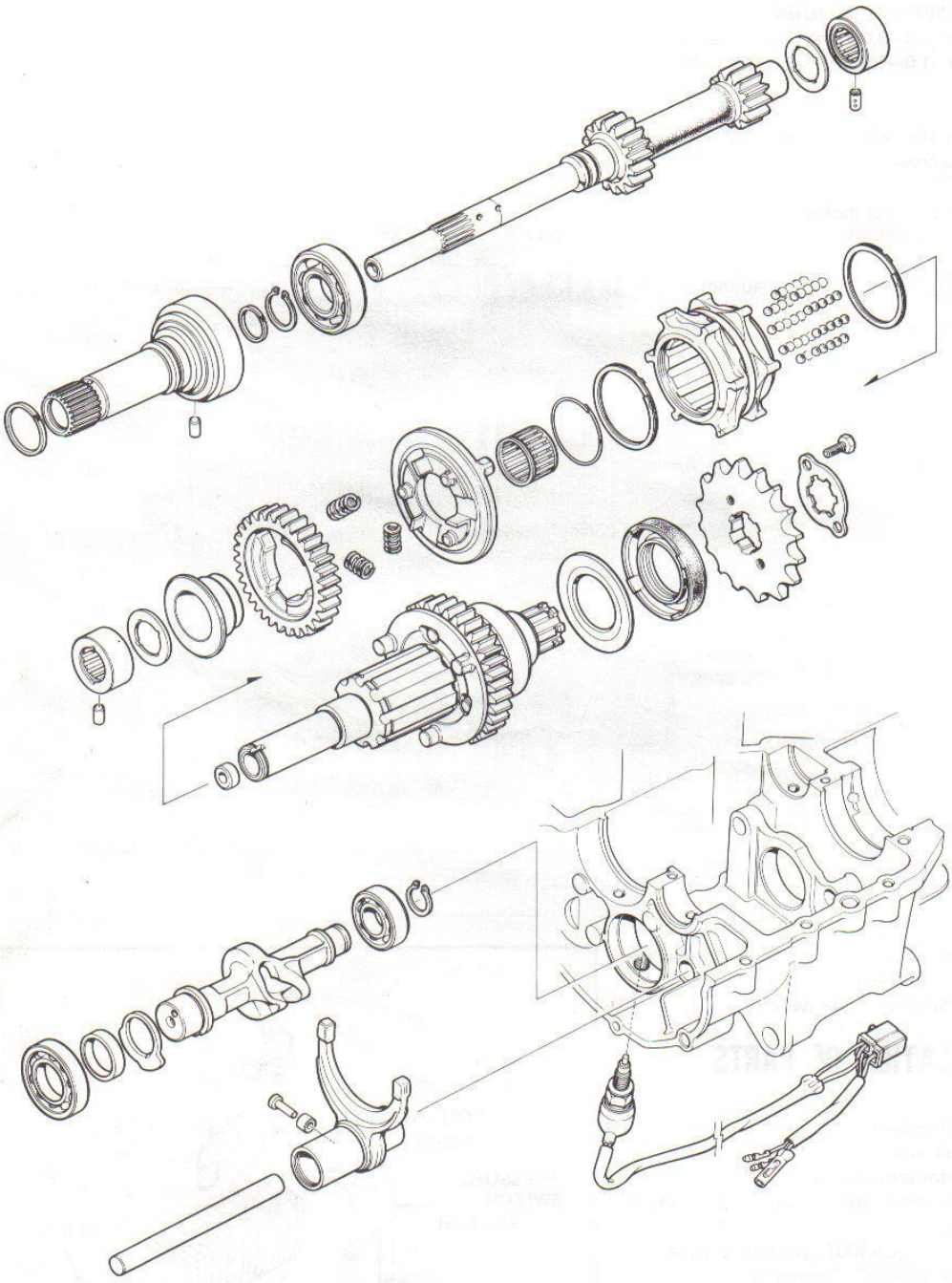


Replace the O-ring with a new one when the oil cooler is removed.
Reinstall the oil pressure switch.

INSTALLATION OF PARTS

Install the following parts:
Kick starter idle gear, kick starter pinion and kick inhibitor arm (Section 8).
Torque converter and oil pump drive chain (Section 6).
Cylinder head (CB400T, Section 6),cylinders and pistons (CB400T, Section 7).
Engine (in frame) (Section 5).
Fill crankcase with recommended oil (Section 3).





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8. TRANSMISSION

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TRANSMISSION DISASSEMBLY	8–5
GEARSHIFT DRUM/SHIFT FORK REMOVAL	8–7
GEARSHIFT DRUM/SHIFT FORK INSTALLATION	8–9
TRANSMISSION ASSEMBLY	8–9
KICK STARTER/GEARSHIFT LINKAGE ASSEMBLY	8–12

SERVICE INFORMATION

- WORKING PRACTICE

The gearshift linkage and the kick starter can be serviced with the engine in the frame. For internal transmission repairs, the engine cases must be separated. (See Section 7)

- SPECIFICATIONS

			STANDARD	SERVICE LIMIT
Kick starter	Friction disc oil groove depth		0.3–0.7 mm (0.012–0.028 in.)	0.1 mm (0.004 in.)
	Pinion I.D.		18.500–18.521 mm (0.7283–0.7292 in.)	18.54 mm (0.730 in.)
	Spindle O.D.		18.459–18.480 mm (0.7267–0.7276 in.)	18.44 mm (0.726 in.)
Transmission	Gear backlash		0.045–0.140 mm (0.0018–0.0055 in.)	0.2 mm (0.008 in.)
	Minimum clearance at end of dog		———	0.3 mm (0.012 in.)
	Stator shaft bushing I.D.		16.000–16.018 mm (0.6299–0.6306 in.)	16.05 mm (0.632 in.)
	Mainshaft O.D.		15.966–15.984 mm (0.6286–0.6293 in.)	15.95 mm (0.628 in.)
	Countershaft O.D.		19.980–19.993 mm (0.7866–0.7871 in.) 24.994–25.007 mm (0.9840–0.9845 in.)	19.95 mm (0.785 in.) 24.97 mm (0.983 in.)
	Gear shifter groove width		6.10–6.18 mm (0.240–0.243 in.)	6.4 mm (0.25 in.)
	Gear damper spring	Free length	13.9–14.7 mm (0.547–0.579 in.)	13.3 mm (0.52 in.)
		Tension	20.25–20.40 kg/11.5 mm (44.64–44.97 lbs/0.453 in.)	18 kg/11.5 mm (40 lbs/0.453 in.)
	Top gear center I.D.		30.014–30.027 mm (1.1817–1.1822 in.)	30.04 mm (1.183 in.)
Shift drum Shift fork	Gearshift roller pin O.D.		5.95–6.00 mm (0.234–0.236 in.)	5.93 mm (0.233 in.)
	Gearshift roller	I.D.	6.05–6.10 mm (0.238–0.240 in.)	6.15 mm (0.242 in.)
		O.D.	9.9–10.0 mm (0.390–0.394 in.)	9.8 mm (0.386 in.)
	Shift fork shaft O.D.		12.973–12.984 mm (0.5107–0.5112 in.)	12.97 mm (0.510 in.)
	Shift fork	Pawl thickness	5.9–6.0 mm (0.232–0.236 in.)	5.8 mm (0.228 in.)
	Shift drum groove width		10.05–10.15 mm (0.396–0.400 in.)	10.4 mm (0.41 in.)

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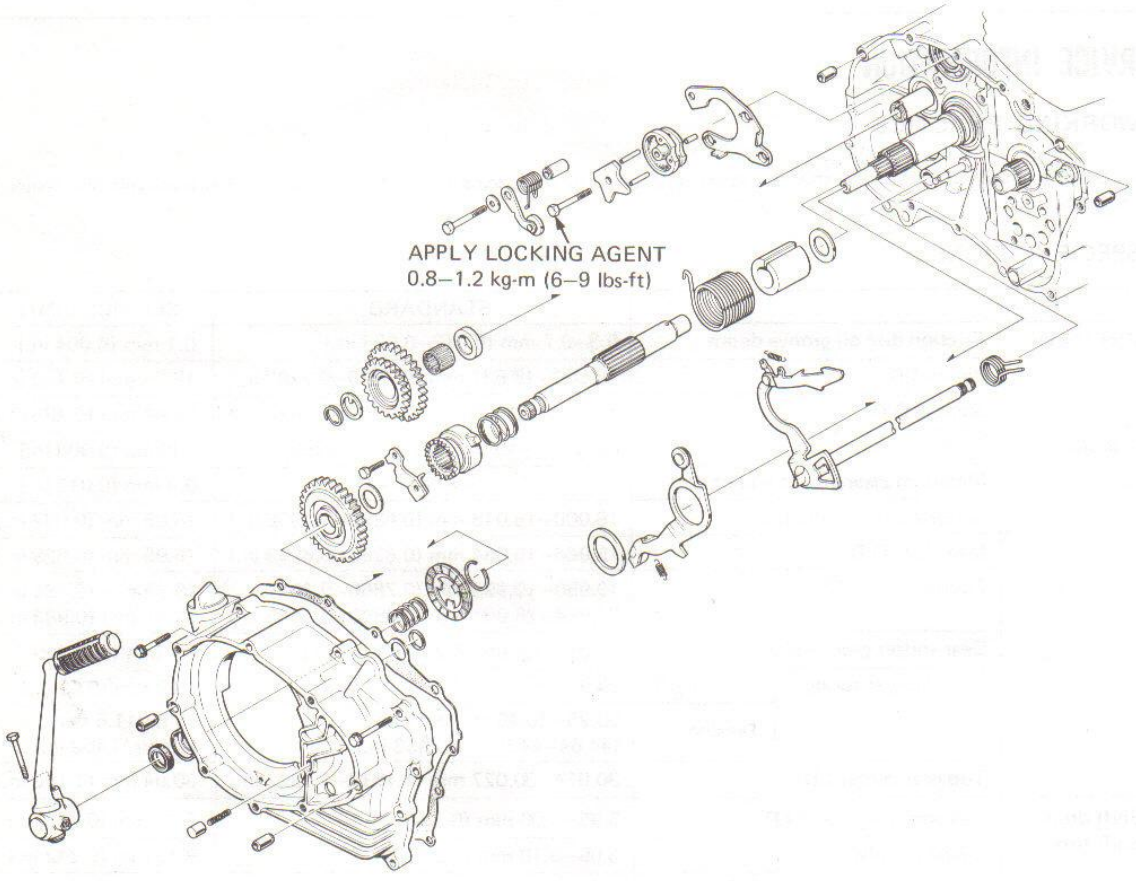
TROUBLESHOOTING

Hard to Shift into "1" or "2".
1. Damaged gearshift roller pin
2. Damaged gearshift pin
3. Damaged "1" or "2" gearshift plate and shifter dog
4. Damaged gearshift arm.

Engine Can Be Kick Started in "1" or "2" Range
1. Damaged kick inhibitor arm
2. Kick inhibitor arm out of position

Transmission Jumps Out of Gear:
1. Shift drum stopper roller cam plate loose
2. Shift drum stopper spring damaged or weakened
3. Shift drum stopper cam plate bent or damaged
4. Drum stopper plate bent
5. Shift drum damaged
6. "1" or "2" gearshifter plate or shifter dog abnormally worn



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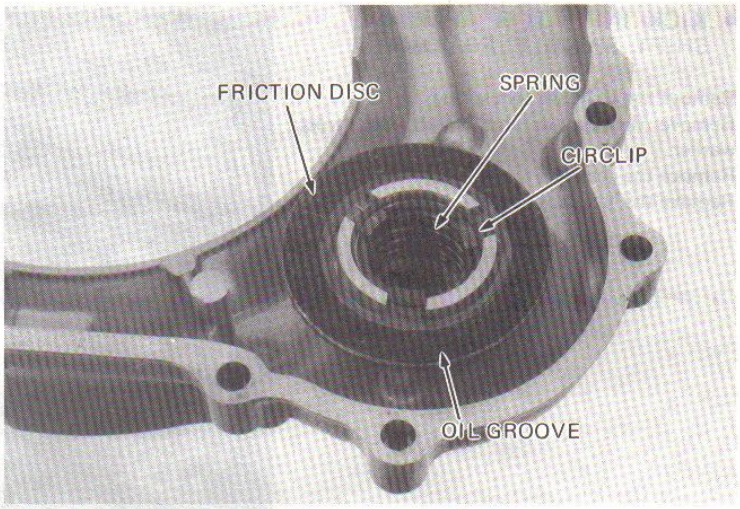
KICK STARTER AND GEARSHIFT LINKAGE DISASSEMBLY

Remove the torque converter and right crankcase cover.

- KICK STARTER FRICTION DISC REMOVAL

Remove the circlip, kick starter friction disc and spring.

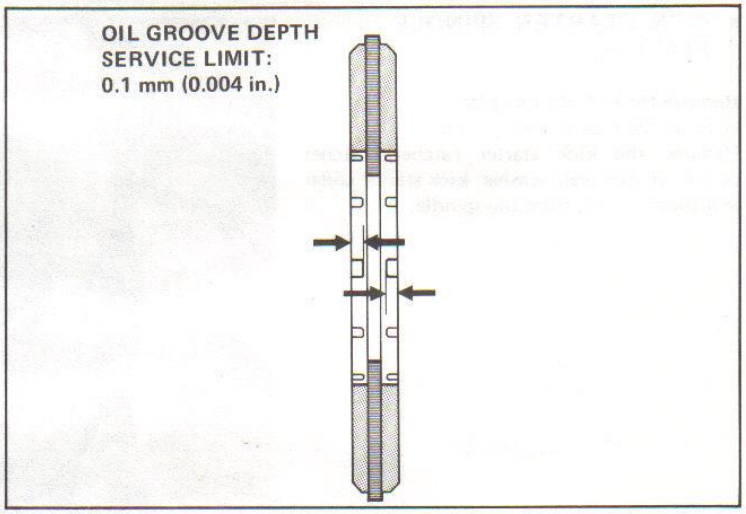


- KICK STARTER FRICTION DAMPER SPRING INSPECTION

Check the spring for weakness or damage.

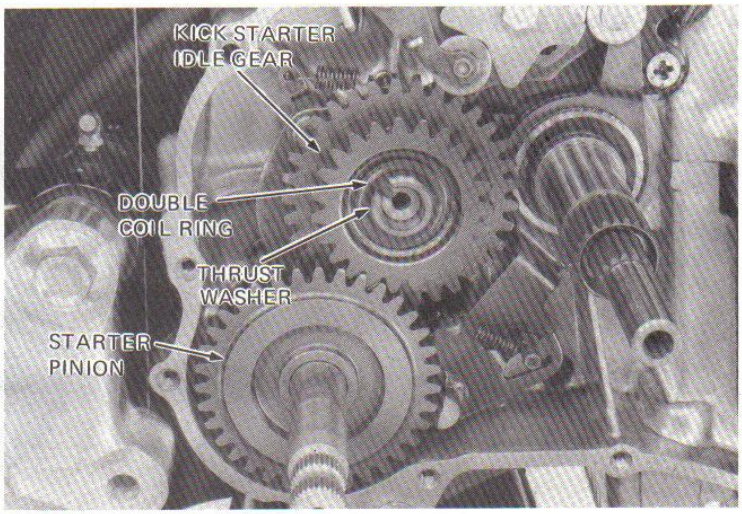
- KICK STARTER FRICTION DISC INSPECTION

Measure the disc oil groove depth.
If the service limit (one side) is exceeded, relocate the disc inside out so that the new wearing surface is on the kick starter spindle side.



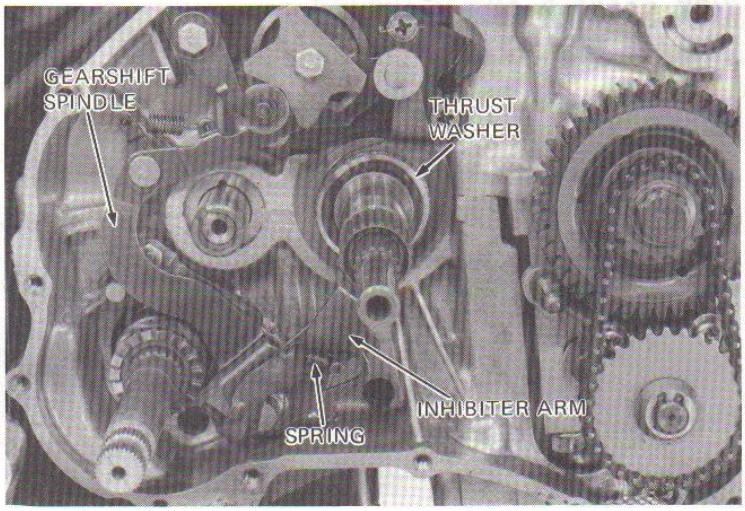
- KICK STARTER IDLE GEAR AND PINION GEAR REMOVAL

Remove the kick starter pinion.
Remove the double coil ring, thurst washer, kick starter idle gear, needle roller bearing and countershaft collar.



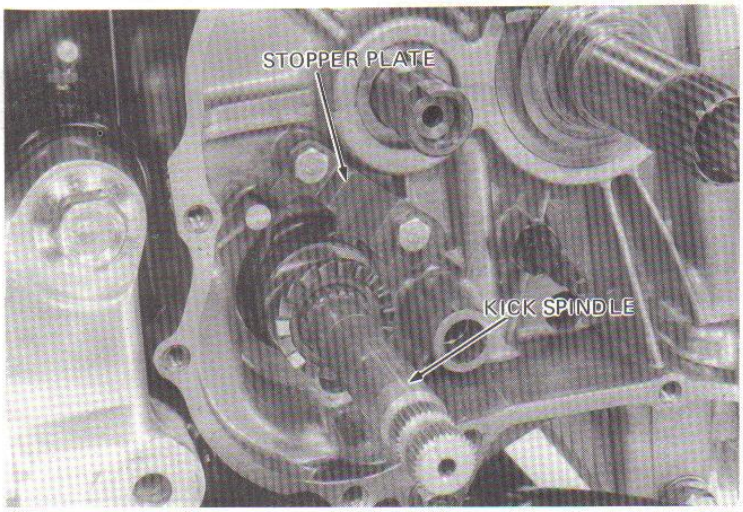
- KICK INHIBITOR ARM AND SHIFT SPINDLE REMOVAL

Remove the gearshift arm spring.
Remove the kick inhibitor arm and thrust washer.
Remove the gearshift pedal.
Remove the gearshift spindle.



- KICK STARTER SPINDLE REMOVAL

Remove the kick stopper plate.
Remove the kick starter spindle.
Remove the kick starter ratchet, ratchet spring, 16 mm plain washer, kick starter collar and starter spring from the spindle.

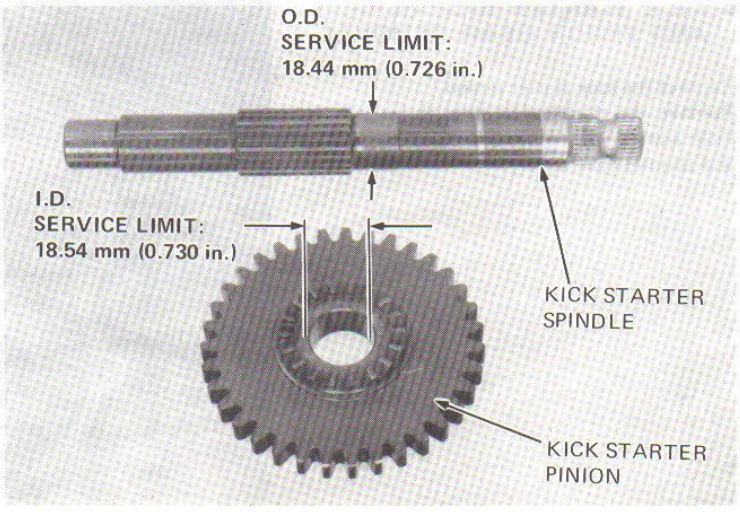


- KICK STARTER PINION INSEPCTION

Measure the pinion I.D..

- KICK STARTER SPINDLE INSPECTION

Measure the spindle O.D. at the pinion contacting area.



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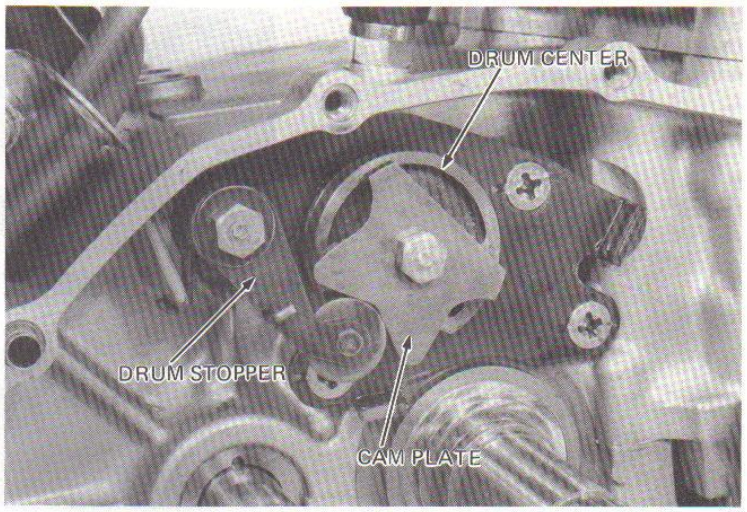
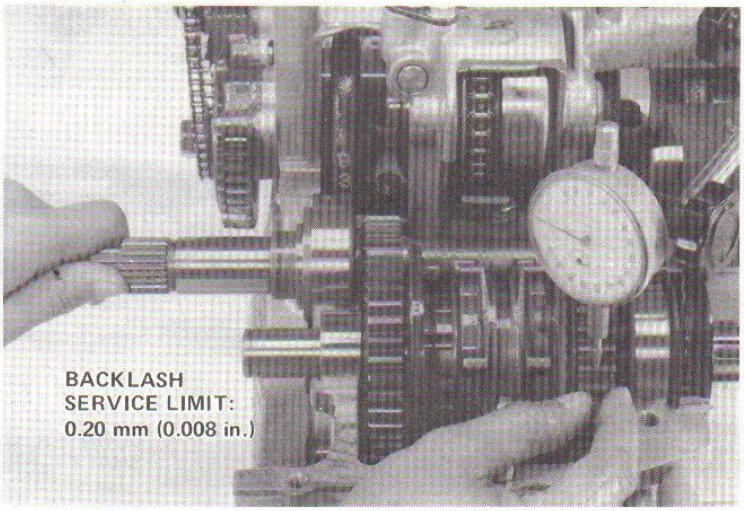
- DRUM STOPPER AND CAM PLATE REMOVAL

Remove the 6 mm bolt, plain washer, drum stopper, spring, and collar.
Remove the 6 mm bolt, shift drum stopper cam plate and shift drum center.

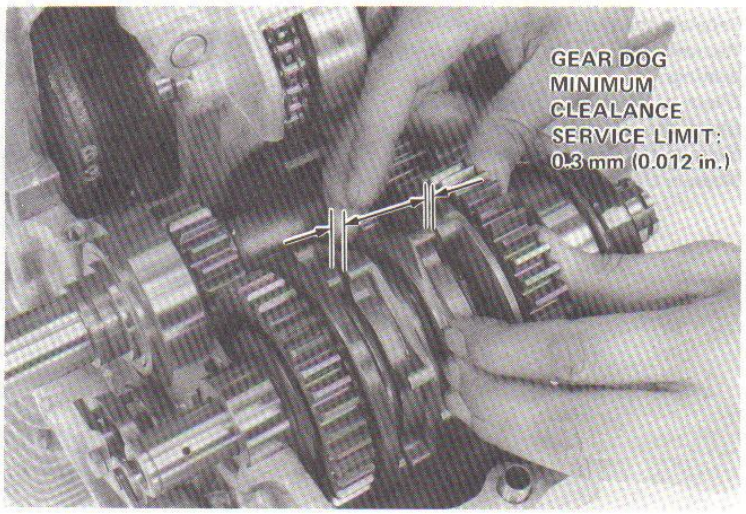


TRANSMISSION DISASSEMBLY

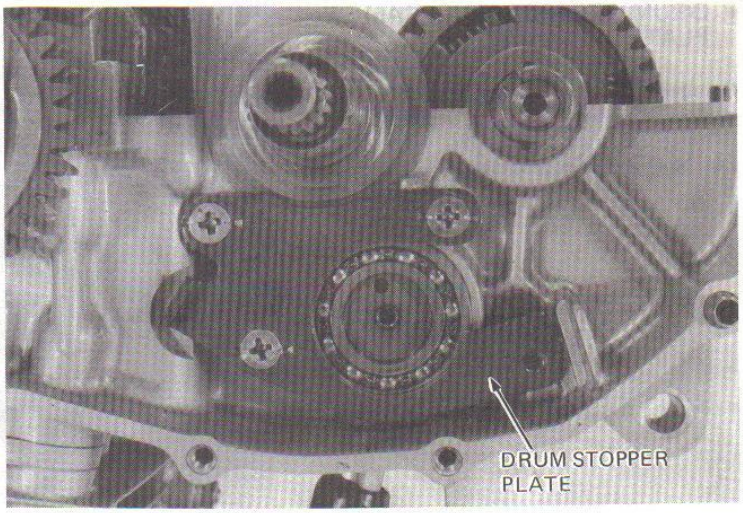
Separate the crankcase halves. (See Section 7)
Check gears for backlash.



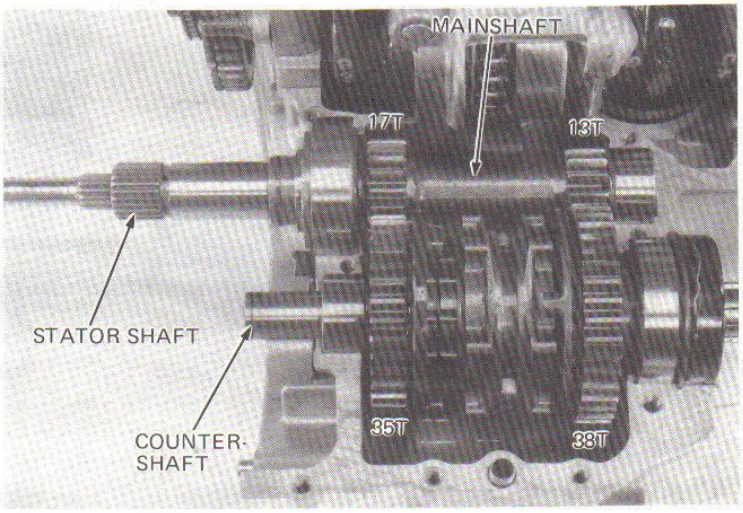
Set the gears in neutral and measure the gear dog minimum clearance on "1" and "2" ranges.



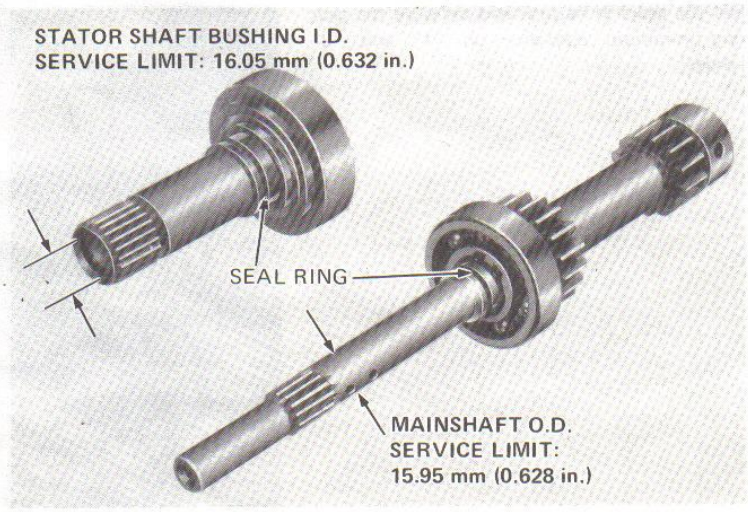
Remove the drum stopper plate.
Check the plate for bending (play in the drum thrust direction).



Remove the mainshaft and countershaft.



Separate the stator from the mainshaft.
Remove the needle roller bearing and ball bearings.
Check bearings for damage or play.
Check the seal ring for damage or wear.
Measure the stator shaft bushing I.D..
Measure the mainshaft O.D..



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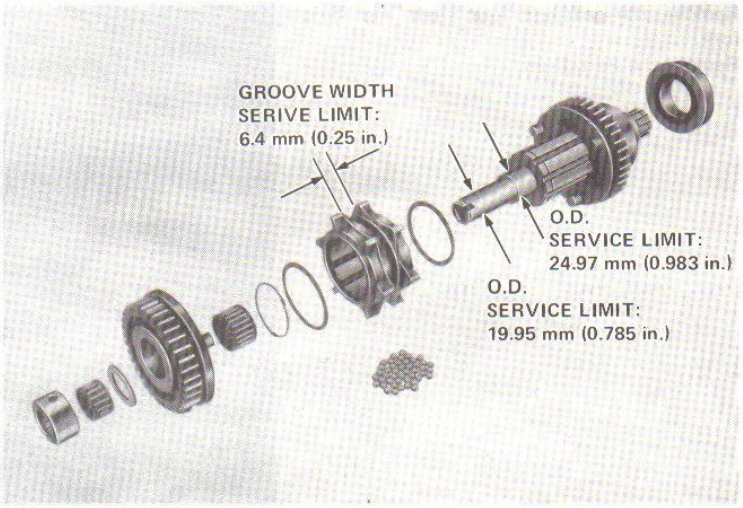
Remove the oil seal, needle roller bearing and 2nd speed gear from the countershaft.
Check the needle roller bearing for play or damage.
Remove the clip, gearshifter, and forty five steel balls.

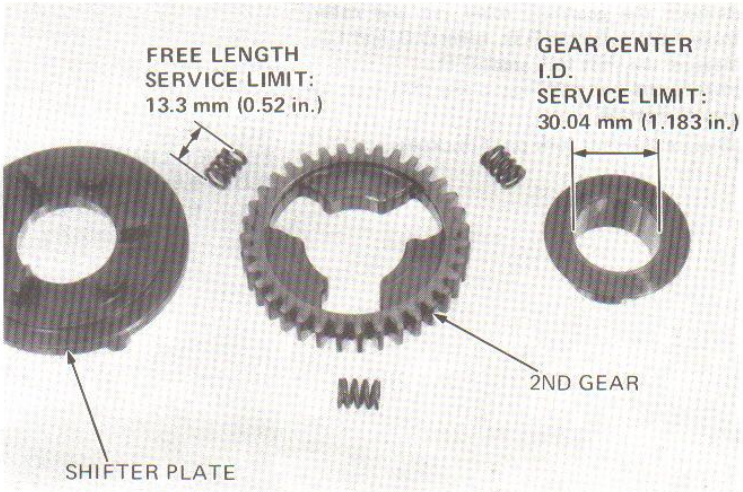
NOTE

Keep the steel balls in a parts rack so that they are not scattered and lost.

Check the balls and splines for wear or damage.
Measure the countershaft O.D..
Measure the gearshifter groove width.

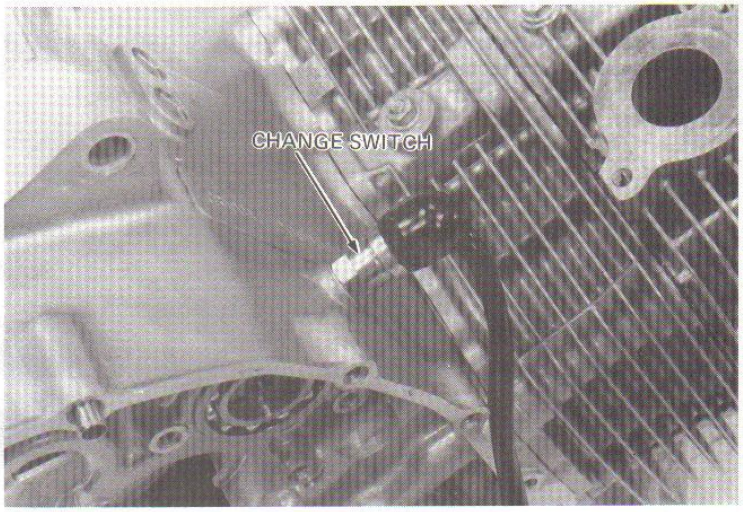


Remove the gear center, damper springs and shifter plate from the 2nd speed gear.
Check the springs for free length and weakend tension.
Measure the gear center I.D..
Check the gearshifter and shifter plate dogs for wear.

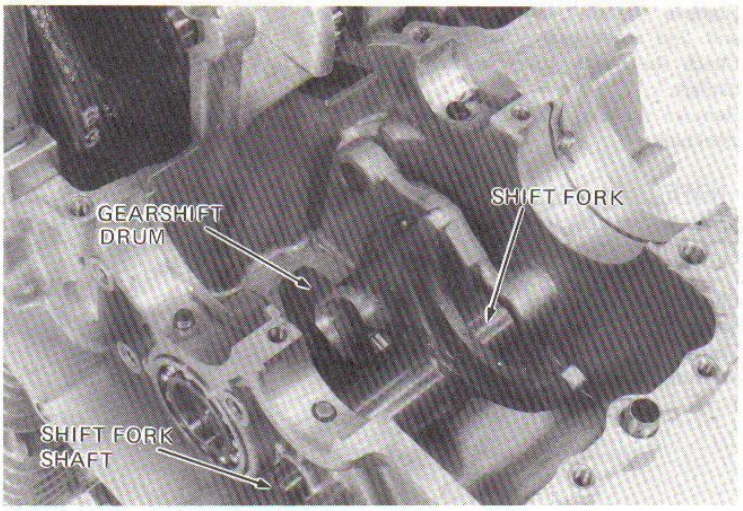


GEARSHIFT DRUM AND SHIFT FORK REMOVAL

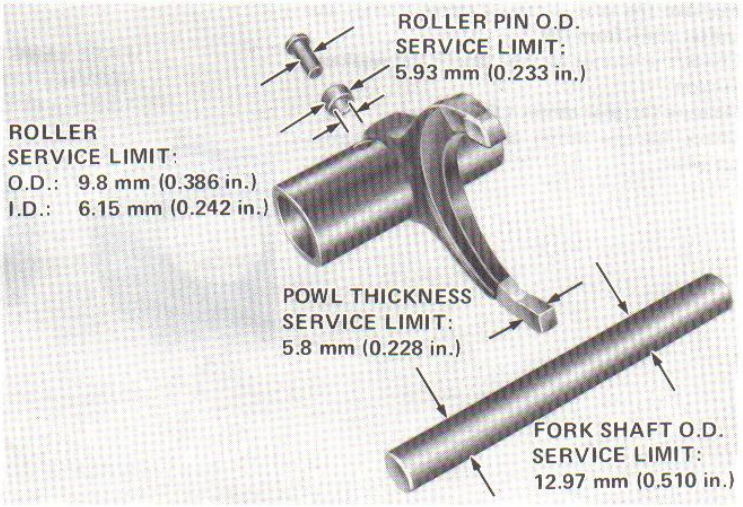
Remove the change switch.



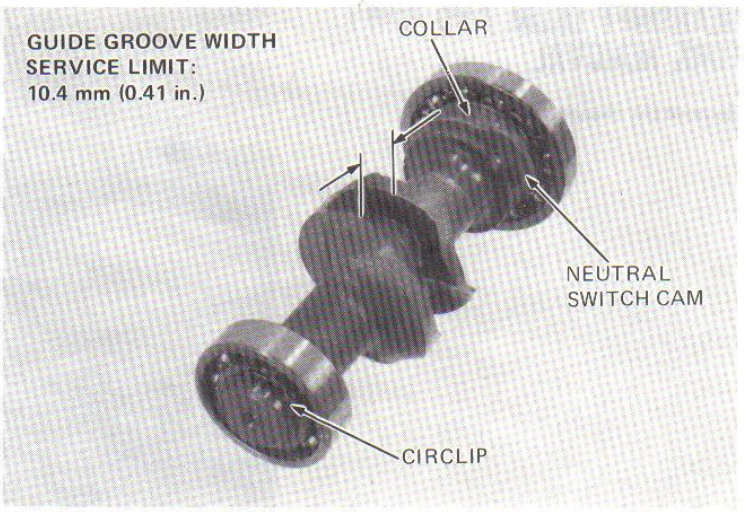
Remove the gearshift fork shaft and shift fork.
Remove the shift drum.



Remove the gearshift roller pin and roller.
Inspect the roller pin O.D., roller O.D. and I.D..
Measure the shift fork shaft O.D..
Inspect the ball bearings in the shift fork for play or damage.
Measure the shift fork pawl thickness.



Remove the bearings, distance collar and neutral switch cam from the shift drum.
Check the bearings for wear or damage.
Measure the gearshift roller guide groove width.



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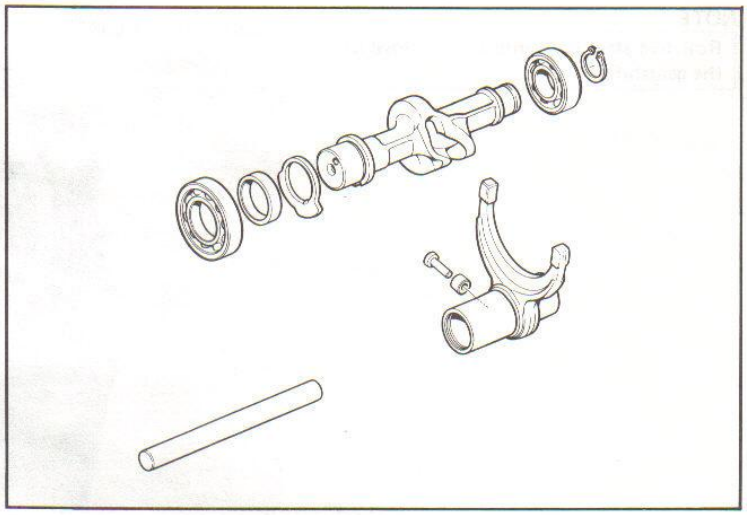
GEARSHIFT DRUM AND SHIFT FORK INSTALLATION

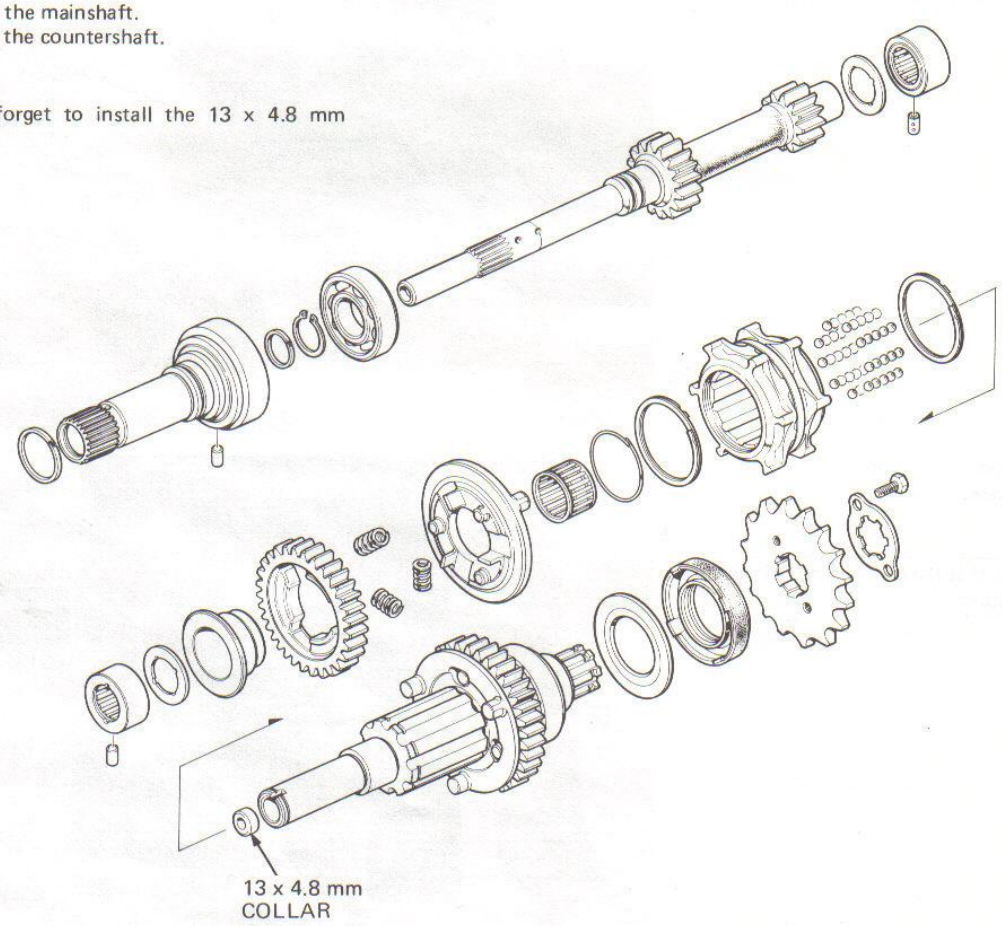
Assemble the shift drum, then install the drum in the crankcase.
Install the change switch.
Install the shift fork, fork shaft, guide roller and pin.



TRANSMISSION ASSEMBLY

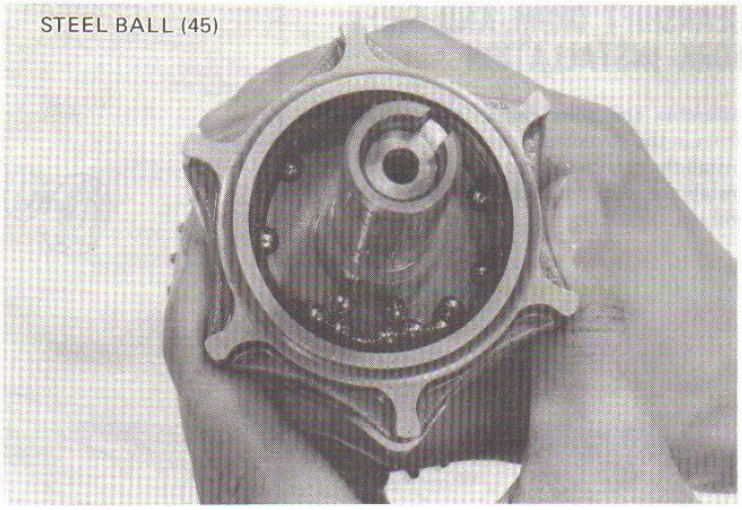
Assemble the mainshaft.
Assemble the countershaft.

Do not forget to install the 13 x 4.8 mm collar.

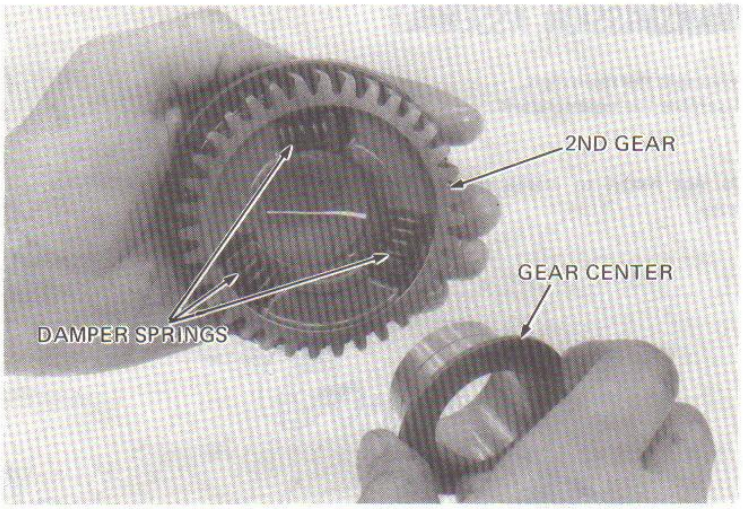


NOTE

Roll five steel balls into each groove of the gearshifter.



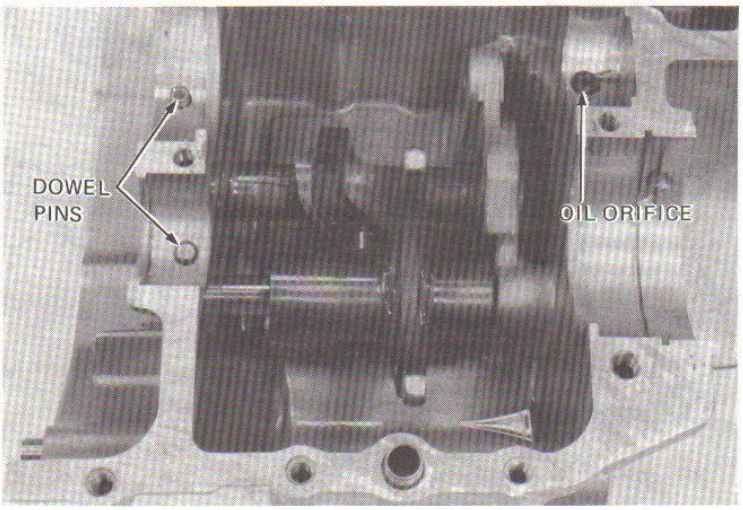
Install the damper springs in the 2nd speed gear.
Check that each spring is seated properly.



Install the two dowel pins and the oil orifice in the crankcase.

NOTE

Make sure that the orifice is not clogged before installation.



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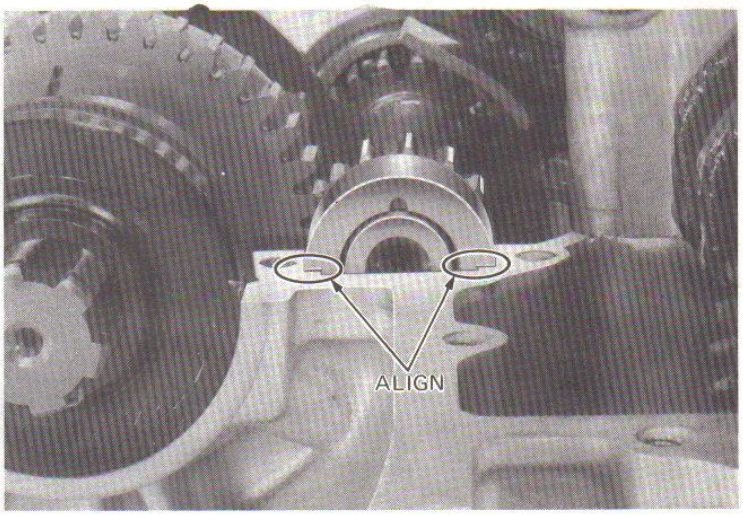
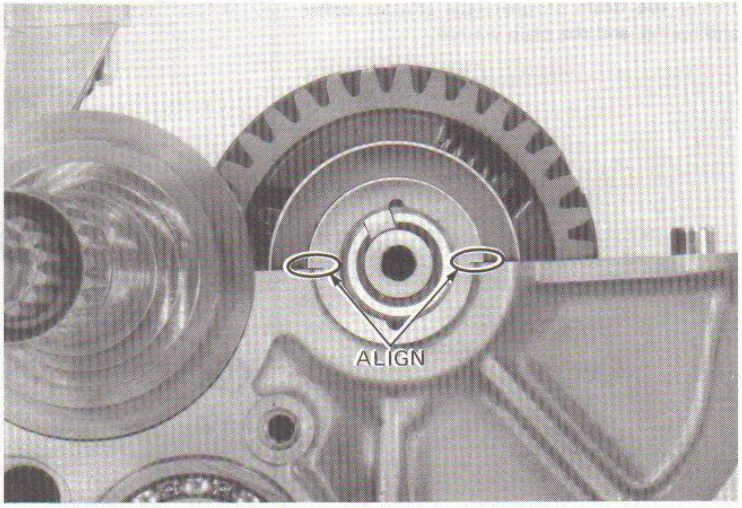
Lay the mainshaft on the bearing saddles with the hole in the needle bearing pointing downward. Align the marks with the end of the crankcase.
Install the stator shaft, making sure that the dowel pin fits in its hole in the shaft.



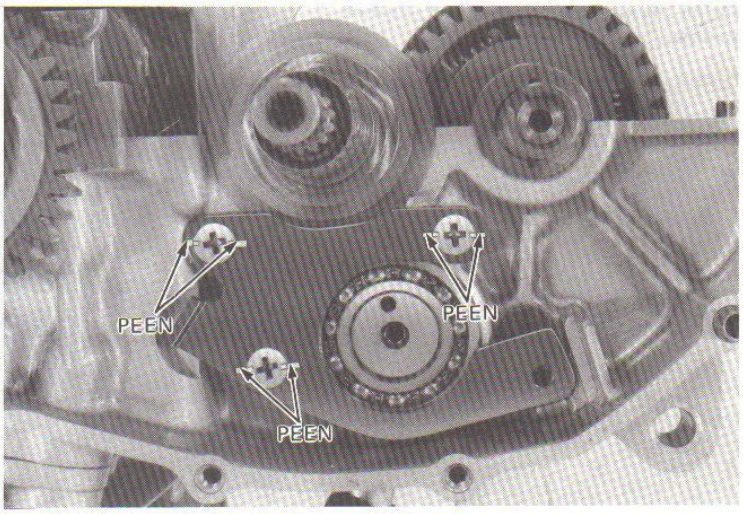
Install the countershaft with its marks aligned with the end of the crankcase. Make sure that the countershaft needle roller bearing hole is pointing down.



Install the drum stopper plate.
Peen each screw head into the stopper plate grooves in two places.

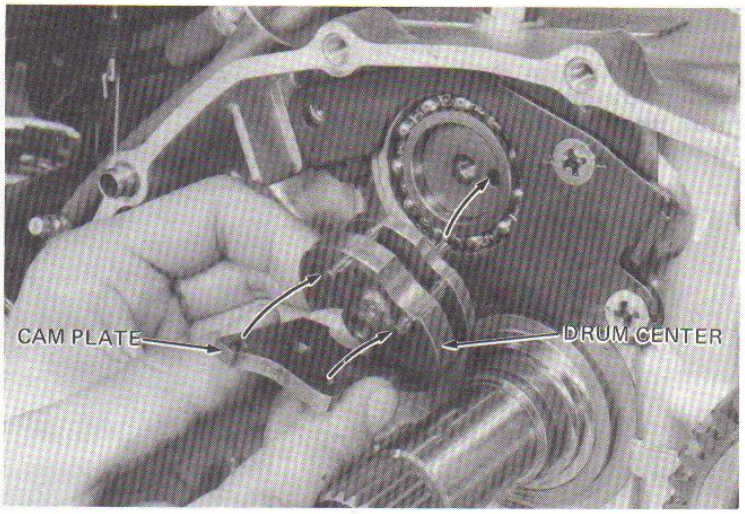
NOTE

Check that the mainshaft and countershaft rotate freely.

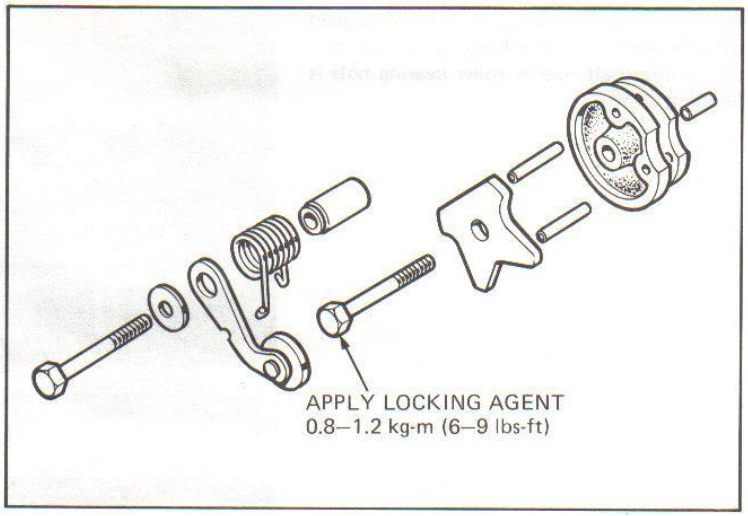


KICK STARTER AND GEARSHIFT LINKAGE ASSEMBLY

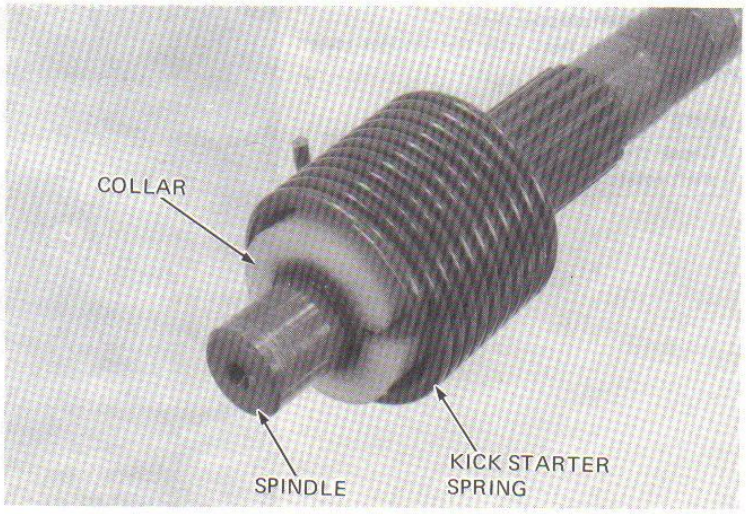
Install the gearshift drum center and cam plate:
Place the dowel pin in its hole, and the gearshift pins in the cam plate holes.



Install the drum stopper, the stopper collar and spring, and the plain washer.



Install the kick starter spring and collar on the spindle.



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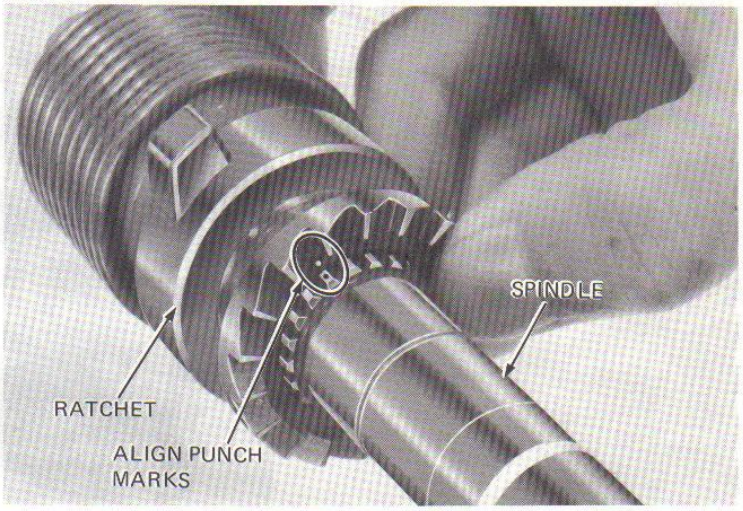
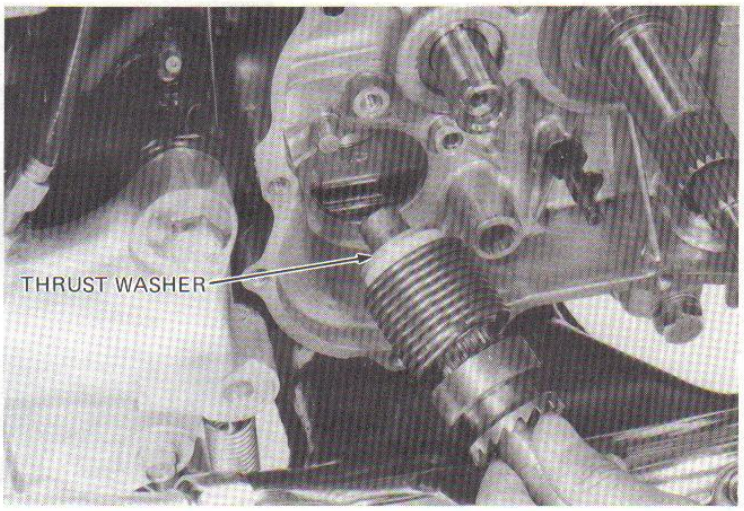
Install the ratchet spring and kick starter ratchet on the spindle.

NOTE

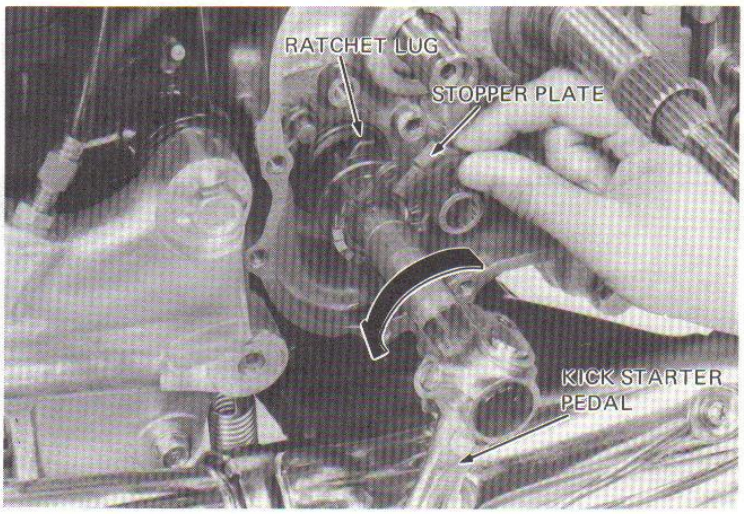
Align the punch marks on the ratchet and spindle.



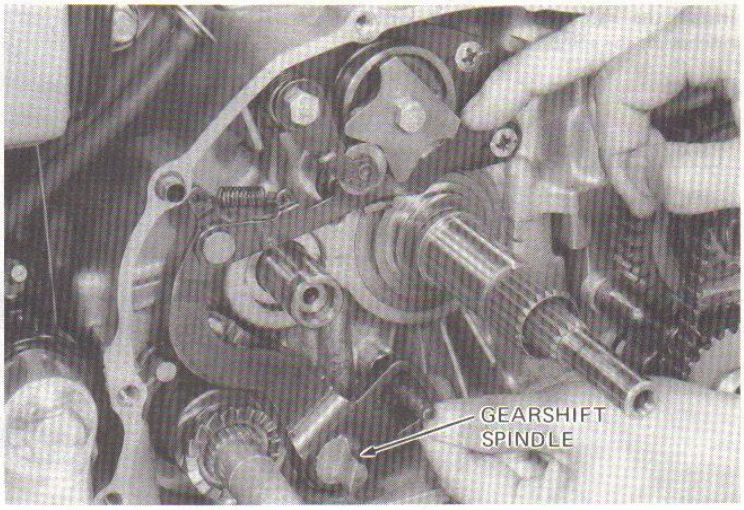
Place the thrust washer on the spindle.
Insert the spindle in the crankcase.



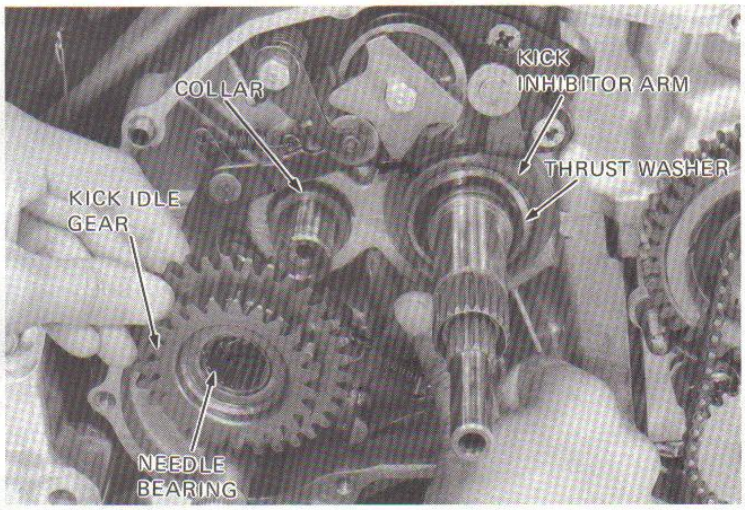
Hook the kick starter spring on the crankcase abutment.
Install the kick stopper plate so that the ratchet lug contacts the plate stopper by rotating the spindle with the kick starter pedal.



Install the gearshift spindle.



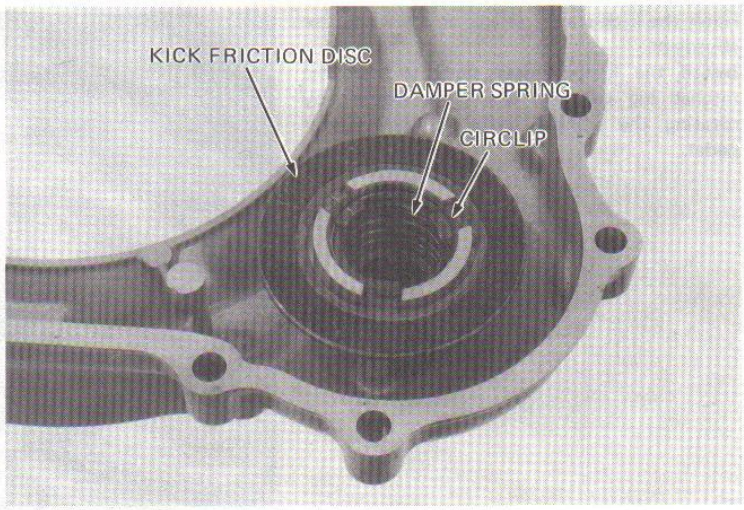
Install the kick inhibitor arm and thrust washer.
Install the collar and needle roller bearing. While pressing the inhibitor arm into place on the stator shaft, install the kick starter idle gear.
Secure the idle gear with the thrust washer and double coil ring.
Install the kick starter pinion.



Assemble the friction damper spring, friction disc and circlip in the right crankcase cover.
Install the right crankcase cover.

NOTE

After assembling, check operation of each part.



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9. IGNITION

SERVICE INFORMATION	9–1
TROUBLESHOOTING	9–1
C.D.I. UNIT	9–2
A.C. GENERATOR	9–2
SIDE STAND SWITCH	9–3

SERVICE INFORMATION

• WORKING PRACTICE

Ignition timing cannot be adjusted since the C.D.I. (Capacitive Discharge Ignition) is non-adjustable.
If ignition timing is incorrect, check the C.D.I. unit and A.C. generator and replace any defective part.

• SPECIFICATION

Spark Plug			ND X24ES-U NGK D8EA
Spark Plug Gap			0.6–0.7 mm (0.024–0.028 in.)
Ignition timing	Initial	"FN" mark	7.5°
		"F" mark	15°
	Full advance		48°
	Engine speed (initial)		1,700–2,100 rpm
	Engine speed (full advance)		4,500–5,350 rpm
Ignition coil 3-point spark test			6 mm (0.24 in.) minimum

TROUBLESHOOTING

Engine Cranks but Will Not Start
1. Engine stop switch OFF
2. No spark at plugs
3. Defective C.D.I. unit
4. A.C. generator faulty
5. Poorly connected, broken or shorted wires between spark plugs and A.C. generator, C.D.I. unit and ignition coil

No Spark at Plugs
1. Engine stop switch OFF
2. Poorly connected, broken or shorted wires:
   - Between A.C. generator and ignition coil
   - Between C.D.I. unit and engine stop switch
   - Between C.D.I. unit and ignition coil
   - Between C.D.I. unit and ignition switch
   - Between ignition coil and plug
3. Defective ignition switch
4. Defective ignition coil
5. C.D.I. unit faulty
6. Defective A.C. generator

Engine Starts but Runs Poorly
1. Ignition primary circuit
   - Defective ignition coil
   - Loose or bare wire
   - Intermittent short-circuit in a switch
2. Secondary circuit
   - Defective plug
   - Defective high tension cord
3. Ignition timing
   - Defective A.C. generator
   - Defective C.D.I. unit

Engine Stops when Transmission Is Shifted into Gear
1. Side stand not raised
2. Defective side stand switch
3. Improperly connected side stand switch wires

Idle Speed Fluctuates Widely When Transmission Is Shifted into Gear
1. Improper wiring connection between A.C. generator, change switch, change relay and C.D.I. unit
2. Improper ignition timing

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C. D. I. UNIT

• INSPECTION

Disconnect the wiring. Set the tester at xkΩ or x100Ω and check continuity of C.D.I. terminals. Replace the C.D.I. unit if the readings do not fall within the limits shown in the table.

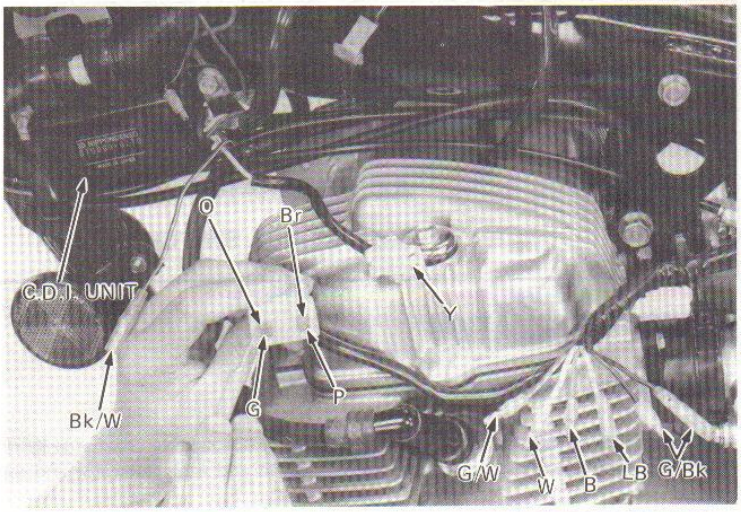
NOTE

- The C.D.I. unit is fully transistorized. For accurate testing, it is necessary to use a specified electrical tester. Use of an improper tester or measurements in improper range may give false readings.
- Use SANWA ELECTRICAL TESTER (P/N 07308–0020000) or KOWA ELECTRICAL TESTER (TH-5H).

MEASURING RANGE (SANWA TESTER) xkΩ

MEASURING RANGE (KOWA TESTER) x100Ω

The resistances shown in the table indicate those to be read on the tester, not of specific circuits or parts.



(–) Probe \ (+) Probe	Blue	White	Brown	Pink	Green	Yellow	Black/White	Green/White	Light blue (To change ignition timing)	Orange
Blue		∞	∞	∞	∞	∞	5~50	∞	∞	∞
White	∞		∞	∞	∞	∞	∞	∞	∞	∞
Brown	∞	2~50		2~50	0~20	∞	5~50	0~20	0~20	0~20
Pink	∞	2~50	0~20		0~20	∞	10~70	0~20	0~20	0~20
Green	∞	0~20	0~20	0~20		∞	2~50	0	0~20	0~20
Yellow	∞	2~50	2~50	2~50	0~20		5~70	0~20	0~20	0~20
Black/White	∞	∞	∞	∞	∞	∞		∞	∞	∞
Green/White	∞	0~20	0~20	0~20	0	∞	2~50		0~20	0~20
Light blue (To change ignition timing)	∞	0~20	0~20	0~20	0~20	∞	5~50	0~20		0~20
Orange	∞	0~20	0~20	2~50	0~20	∞	10~70	0~20	0~20	

UNIT: kΩ

A. C. GENERATOR

• INSPECTION

Disconnect wiring from the stator.

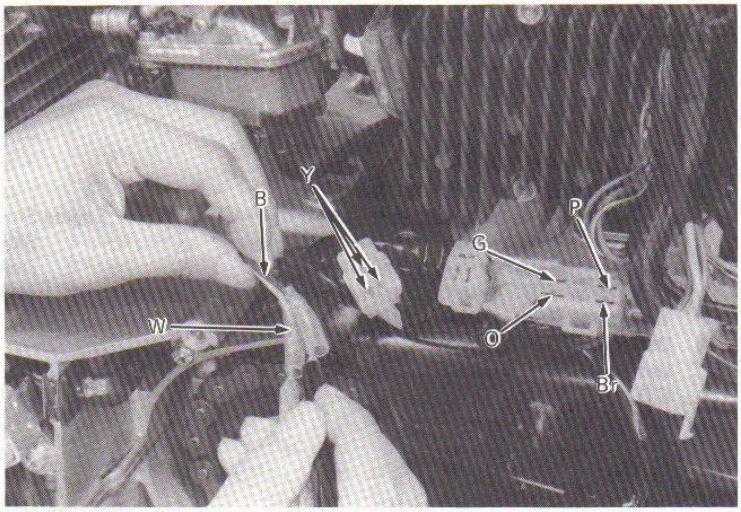
Measure resistances between the terminals:

Blue-White	4–7 Ω
White-Green	200–500Ω
Brown-Orange	100–200Ω
Pink-Green	10–30 Ω
Yellow-Yellow	0.2–1 Ω
Yellow-Yellow	0.2–1 Ω
Yellow-Yellow	0.2–1 Ω

NOTE

- Use a specified tester. (07308–0020000)
- Set the tester knob at x10Ω range to make this test.

For generator removal and installation, refer to Section 9 of CB400T Shop Manual.



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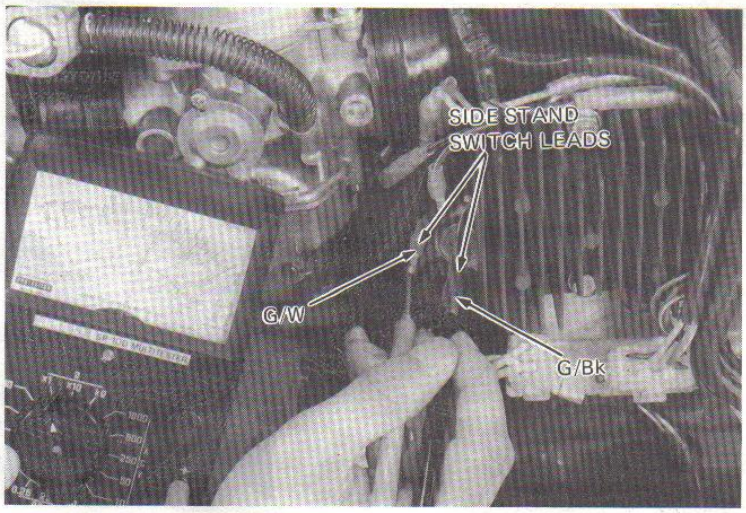
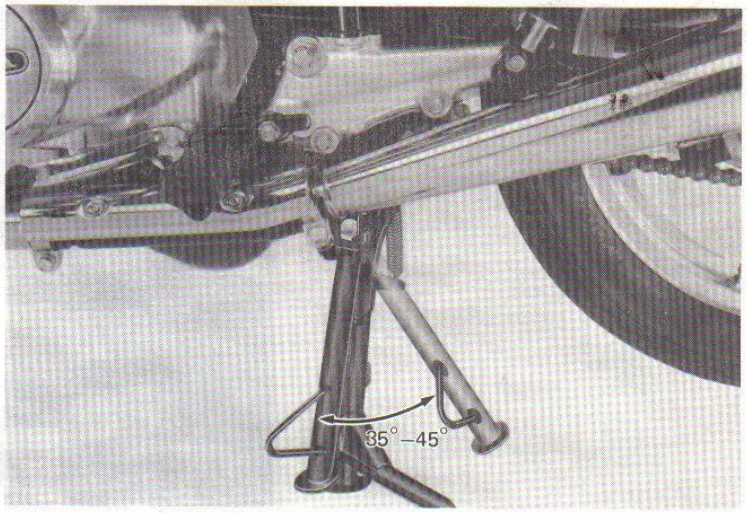
SIDE STAND SWITCH

- SIDE STAND SWITCH INSPECTION

Lower the side stand.
Disconnect the switch wire lead.
Check for continuity with an electric tester by moving the side stand.



The switch is good if there is continuity within 35° and 45° of side stand movement from the applied position.

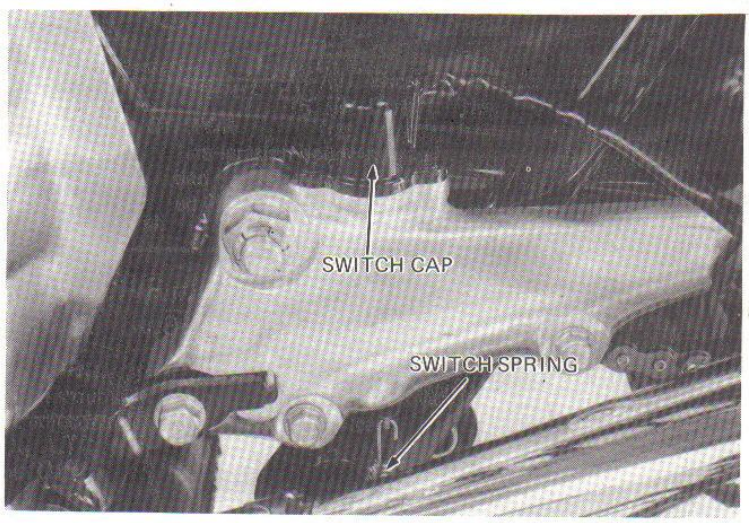


- SIDE STAND SWITCH REMOVAL

WARNING

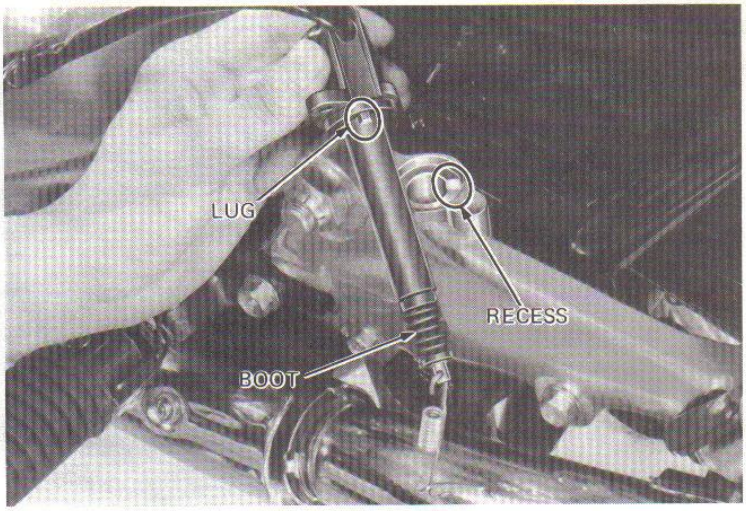
Do not touch the muffler immediately after warming up the engine.

Raise the side stand and remove the switch spring.
Disconnect the switch lead.
Unscrew the two screws and remove the cap.
Remove the switch.

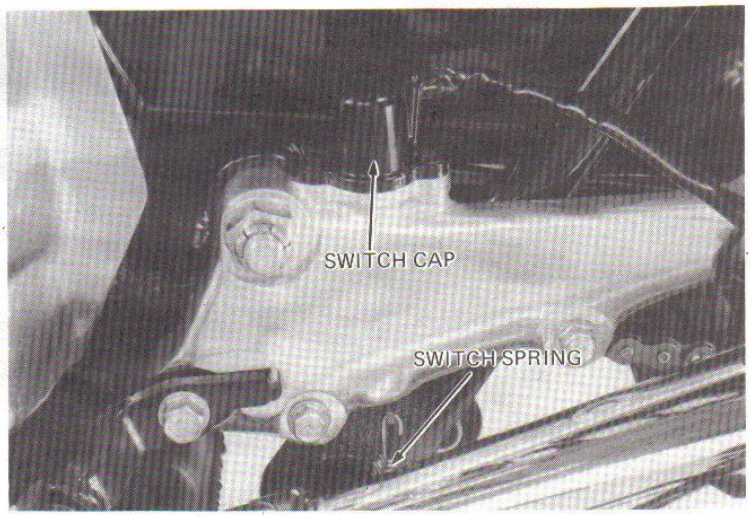


- SIDE STAND SWITCH INSTALLATION

Install the boot on the switch staff to prevent entry of dust and water.
Align the switch lug with the step holder groove and install the switch.



Hook the spring between the shaft and side-stand.



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HONDA CB400A

10. ELECTRIC STARTER

SERVICE INFORMATION	10–1
TROUBLESHOOTING	10–2
STARTER MOTOR	10–2
CHANGE RELAY	10–3

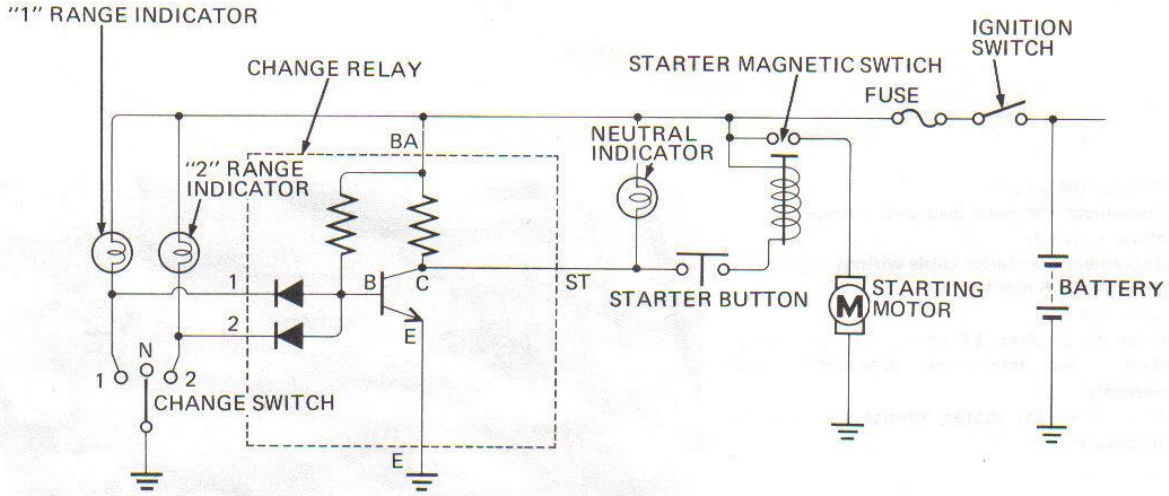
SERVICE INFORMATION

- WORKING PRACTICE

The starter motor can be removed with the engine in the frame.
The change switch prevents the starter from turning when the transmission is in "1" and "2". If the starter fails to crank the engine, first check the transmission to see if it is in neutral.
Refer to Section 11 for operation.

- SPECIFICATIONS

		STANDARD	SERVICE LIMIT
Starter motor	Brush spring tension	495–605 g	400 g
	Brush length	11.0–12.5 mm (0.43–0.49 in.)	5.5 mm (0.21 in.)



TROUBLESHOOTING

Starter Motor Will Not Turn:
1. Dead battery
2. Defective ignition switch
3. Defective starter switch
4. Defective change switch
5. Defective starter magnetic switch
6. Loose of disconnected wire or cable
7. Defective change relay

Starter Motor Turns, But Engine Does Not Turn:
1. Defective starter motor gears
2. Defective starter mtor or idle gear.

Starter Motor and Engine Turn, But Engine Does Not Start:
1. Defective ignition system
2. Engine problems

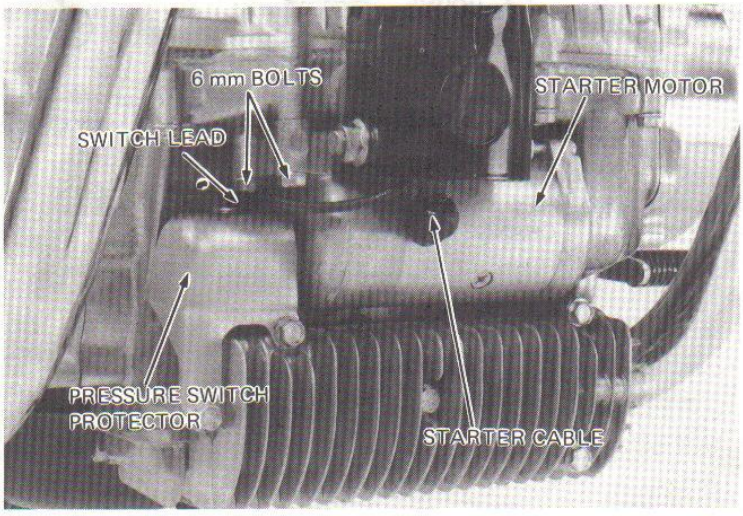
STARTER MOTOR

- REMOVAL

WARNING

With the ignition switch OFF, remove the negative cable at the battery before servicing the starter motor.

Remove the oil pressure switch protector.
Disconnect the wire lead and remove the oil pressure switch.
Disconnect tne starter cable wirings.
Remove the 6 mm bolts.
Remove the starter motor.
Refer to Section 17 of the CB400T Shop Manual for inspection, disassembly and assembly.
To reinstall the motor, reverse the removal procedures.



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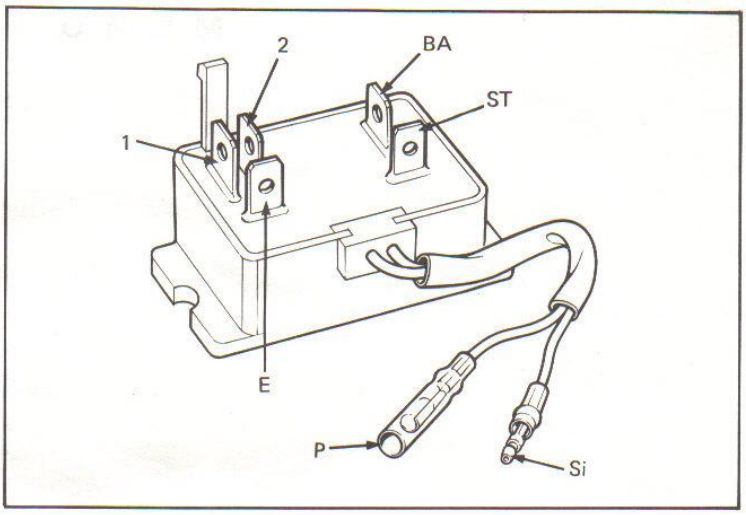
CHANGE RELAY

Disconnect wiring. Check resistance of change relay terminals. Replace the change relay if the readings do not fall within the limits shown in the table.

NOTE

- The change relay is transistorized. For accurate testing, it is necessary to use a specified electrical tester. Use of an improper tester or measurements in improper range may give false readings.
- USE SANWA ELECTRICAL TESTER P/N 07308–0020000.

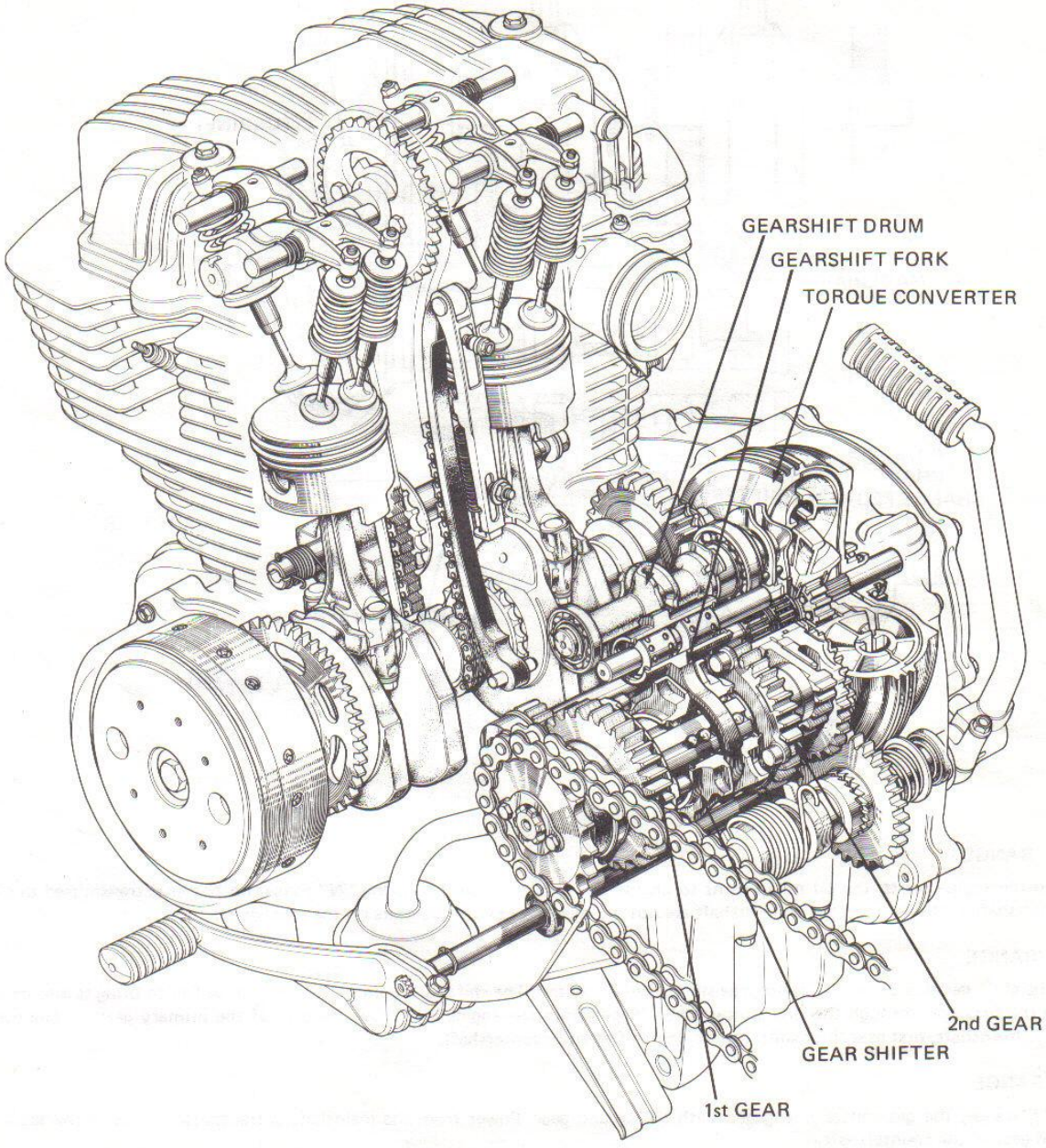


(−) PROBE \ (+) PROBE	1	2	BA	ST	Si	P	E
1		● 10kΩ MIN.	○ 500Ω ~2kΩ	○ 500Ω ~3kΩ	● 10kΩ MIN.	○ 500Ω ~5kΩ	○ 500Ω ~5kΩ
2	● 10kΩ MIN.		○ 500Ω ~2kΩ	○ 500Ω ~3kΩ	● 10kΩ MIN.	○ 500Ω ~5kΩ	○ 500Ω ~5kΩ
BA	● 10kΩ MIN.	● 10kΩ MIN.		○ 200Ω MAX.	● 10kΩ MIN.	○ 500Ω MAX.	○ 500Ω MAX.
ST	● 10kΩ MIN.	● 10kΩ MIN.	○ 200Ω ~1kΩ		● 10kΩ MIN.	○ 200Ω MAX.	○ 200Ω MAX.
Si	● 10kΩ MIN.	● 10kΩ MIN.	○ 400Ω ~2kΩ	○ 200Ω ~2kΩ		○ 200Ω ~3kΩ	○ 200Ω ~2kΩ
P	● 10kΩ MIN.	● 10kΩ MIN.	● 10kΩ MIN.	● 10kΩ MIN.	● 10kΩ MIN.		● 10kΩ MIN.
E	● 10kΩ MIN.	● 10kΩ MIN.	○ 300Ω ~2kΩ	○ 300Ω ~5kΩ	● 10kΩ MIN.	○ 500Ω ~10kΩ	

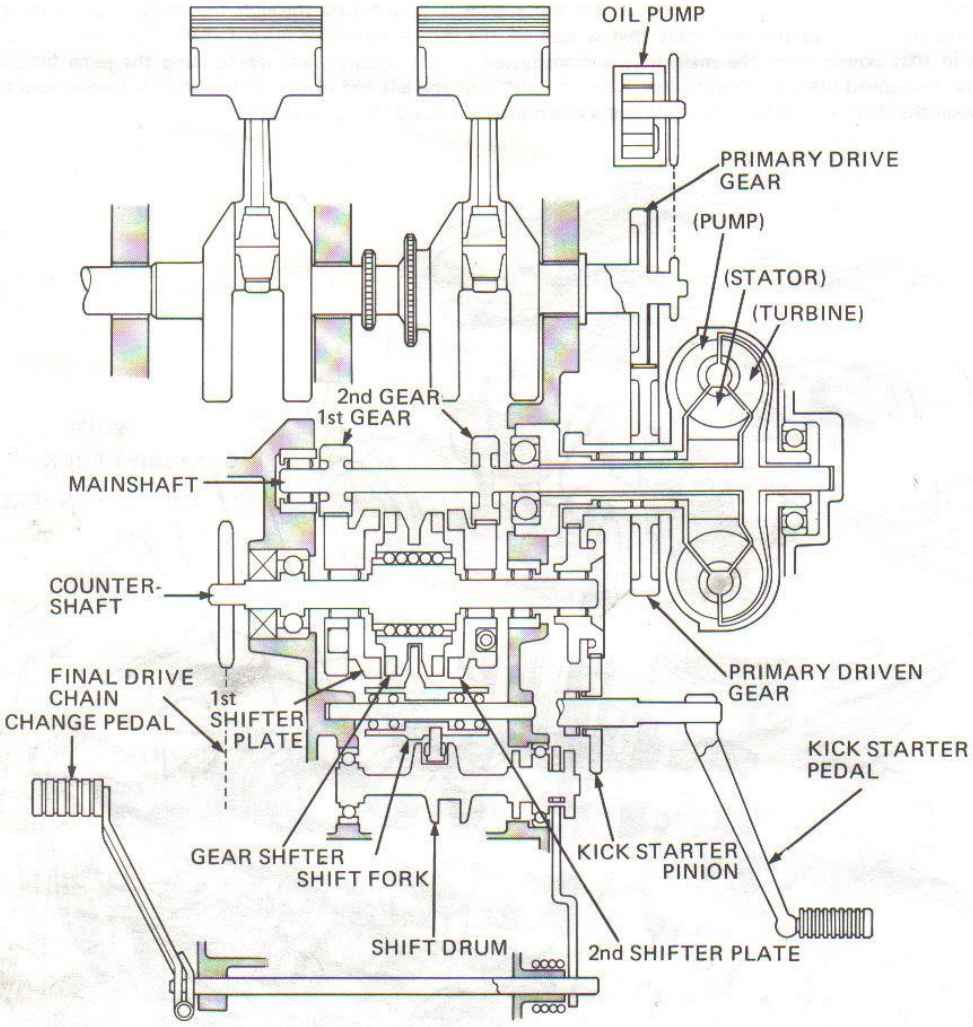
●: MEASURING RANGE xkΩ
○: MEASURING RANGE x10Ω

1. POWER TRANSMITTING SYSTEM-HONDAMATIC

HONDAMATIC Drive is a combination of a torque converter and a dual shaft, two-speed manual transmission. The transmission itself is essentially the same as those used on ordianry motorcycles and has no hydraulic shifting devices such as manual valves and hydraulic clutches. Power from the engine is transmitted through the primary gears to the torque converter and therefrom to the mainshaft that is part of the torque converter output shaft. The unit is of a constant-mesh type in that power from the mainshaft is transmitted to the countershaft, performing the same function as the conventional two-speed manual transmission. Power available at the left end of the countershaft is transmitted to the rear wheel through the drive and driven sprockets and a chain placed around the sprockets.



• POWER TRANSMITTING DIAGRAM



"N" RANGE

When the engine starts, the oil pump turns to charge the torque converter. In the "N" range, no power is transmitted to the countershaft as the gears on the countershaft are out of engagement with the gears on the mainshaft.

"1" RANGE

As the shift pedal is set in "1" range, the shift drum is rotated. The shift fork then moves the gear shifter to bring it into mesh with the first gear through the first shifter plate. Power from the engine now flows by way of the primary gear, torque converter, mainshaft, first gear, first shifter plate, gearshifter and countershaft.

"2" RANGE

In "2" range, the gearshifter is engaged with the second gear. Power from the mainshaft is transmitted through the second speed gear to the countershaft.

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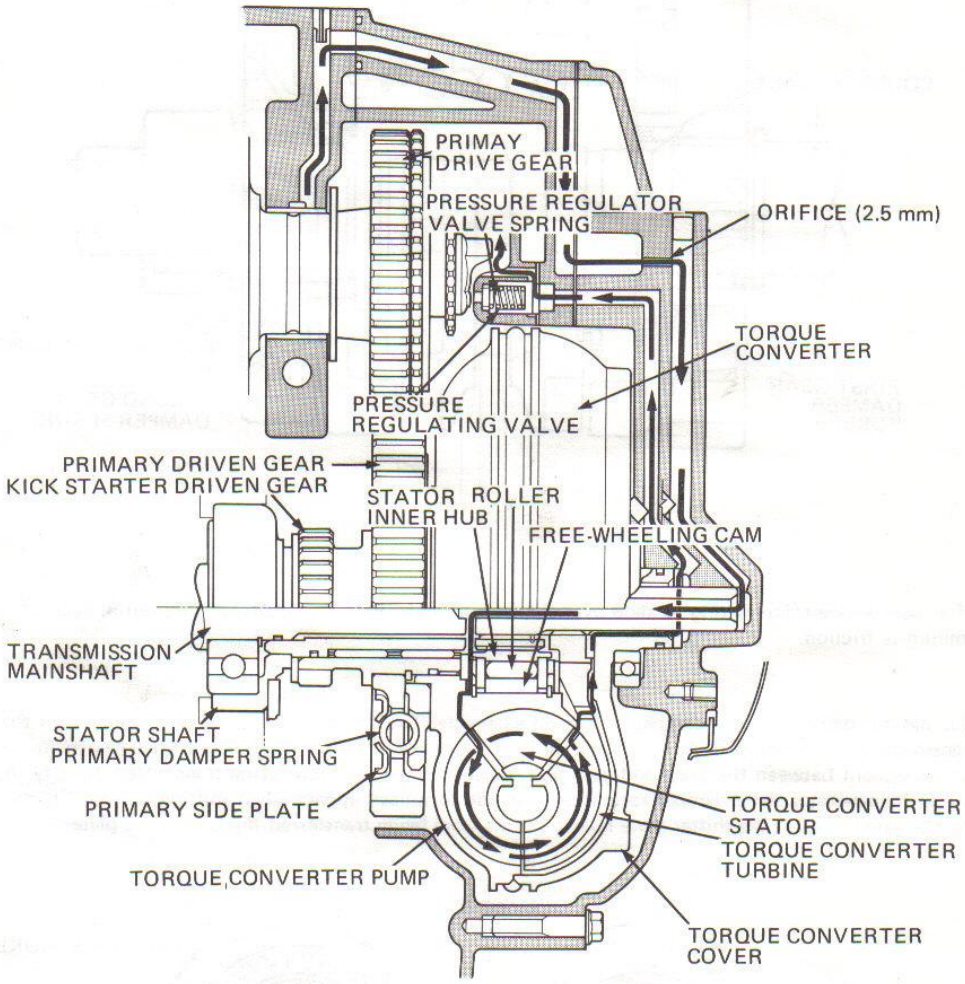
• TORQUE CONVERTER

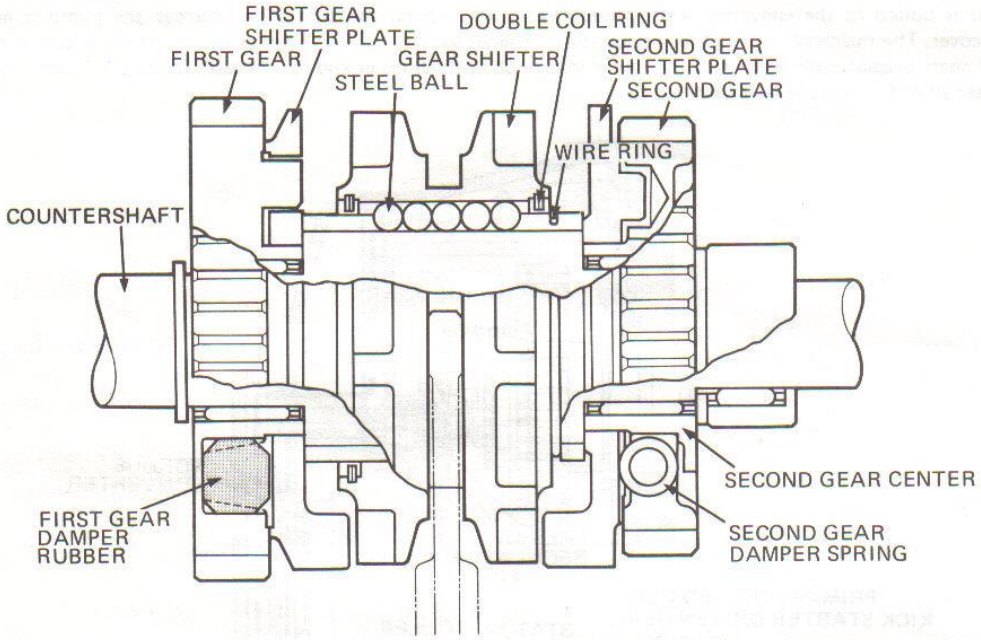
The torque converter serves as a hydraulic torque multiplier and a fluid coupling. It is a single stage, multi-phase design. In the converter phase, maximum torque multiplication occurs with the stator locked on the stator shaft. In the fluid coupling phase, the stator is free-wheeling on the shaft, causing the converter to act as a fluid coupling with a 1 to 1 torque ratio (at 0.85 turbine/pump speed ratio).
The torque converter consists of a pump, turbine, stator, free-wheeling cam, stator inner hub, and friction rollers. The primary driven gear is bolted to the converter pump through a damper spring and side plate whereas the pump is welded to the converter cover. The mainshaft is fitted to the turbine by splines so they turn together as a unit when the shaft is rotated.
The stator shaft is again spline fitted to the stator inner hub with its outer end "grounded" to the crankcase. The stator rides on the stator shaft through the free-wheeling cam.



When the engine is started the oil pump, which is chain-driven by the engine crankshaft, charges the torque converter. Oil flow is from the oil pump, through part of the engine oil gallery and an orifice (2.5 mm) in the right crankcase cover, into the torque converter. After circulating through the converter, the oil is returned to the oil pan. An oil pressure regulating valve is provided in the oil return circuit to regulate the charging pressure of the converter. Oil flow is as follows: Oil pump-2.5 mm metering orifice-Converter pump-Turbine-Stator. Power from the engine is transmitted through the primary drive and driven gears, converter pump and turbine, to the transmission mainshaft.

• GEARSHIFTER/GEARS

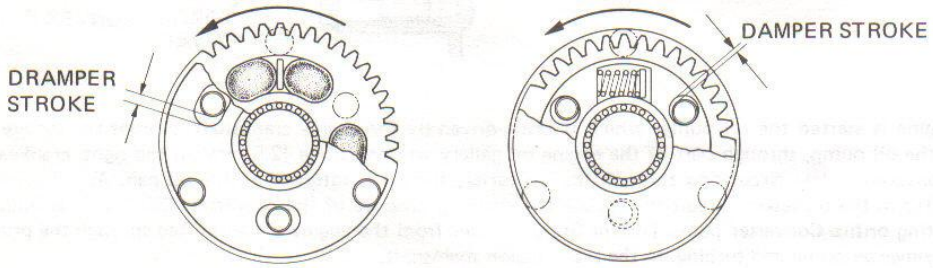
Shifting is similar to that of conventional manual transmissions. The anti-shock design reduces impact imposed on the shifter plate dogs and transmission gears.



The gearshifter uses a nine-spline fitting to slide over the countershaft. Five steel balls are inserted in each of the splines, or grooves, to minimize friction.

GEARS

The first gear has six pairs of rubber dampers, three on each side. The dampers absorb impact imposed on the shifter plate when the transmission is shifted up from neutral to "1", or down from "2" to "1". The elongated holes in the shifter plate allow relative movement between the plate and gear pins, preventing impact from being transmitted directly to the dampers. The second gear incorporates three damper springs on one side to relieve impact when shifting is from "1" to "2". As with first gear, the elongated holes in the shifter plate relieve shocks from being transferred directly to the plate.



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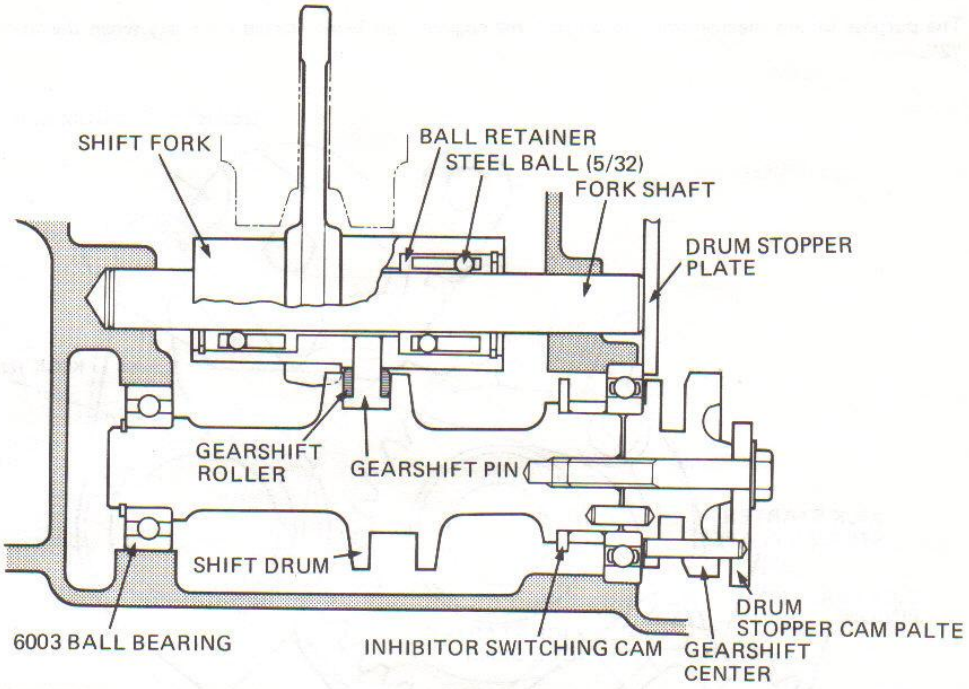
• SHIFT DRUM/SHIFT FORK



Smooth, easy shifting is one of the most important features of the HONDAMATIC transmission. It is accomplished through the use of friction roller and ball bearings in the shift fork and shift drum.

SHIFT DRUM

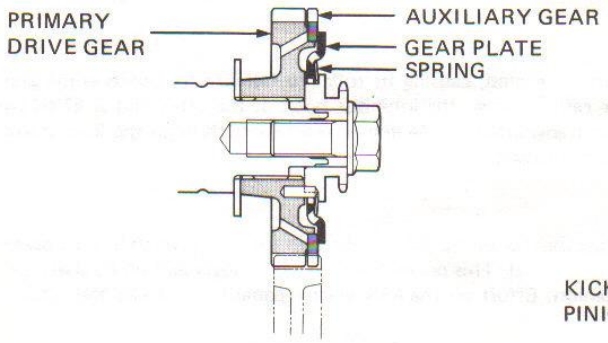
The gearshift roller between the gearshift pin and shift drum cam groove insures smooth drum operation. The drum runs on two ball bearings at both ends to reduce friction to a minimum.

SHIFT FORK

The slide ball bearings between the shift fork and the fork receive the momentum load imposed on the shift fork when the transmission is shifted.

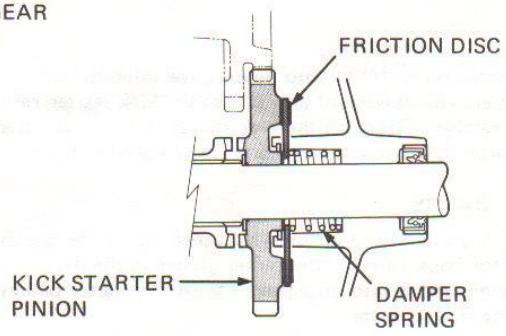
• PRIMARY GEAR ANTI-NOISE MECHANISM

The system is designed to eliminate backlash between the primary gears. The principle element of this system is an auxiliary gear and a disc spring. The gear is pressed against the side of the primary drive gear by the spring. The gear has forty teeth whereas the primary drive gear has forty-one teeth. Thus, as the primary gears turn, the driven gear must force the auxiliary gear out of way each time it meshes the drive gear. The net result of this design is reduced noise, particularly at idling.



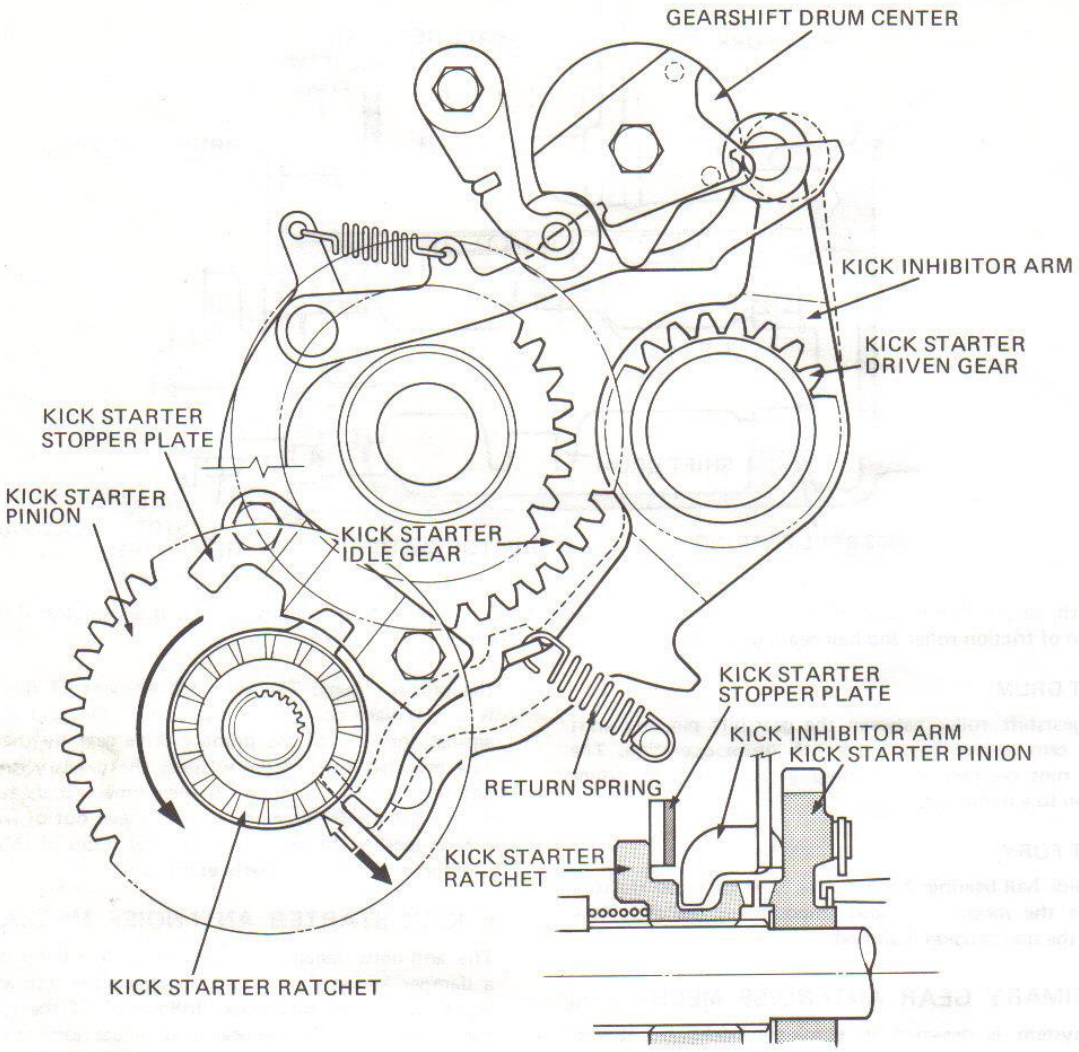
• KICK STARTER ANTI-NOISE MECHANISM

The anti-noise mechanism consists of a friction disc and a damper spring. The firction between the disc and kick starter pinion permits close "follow-up" of the pinion in conjunction with the idle gear to eliminate noise at idling.



2. KICK STARTER INHIBITING MECHANISM

The purpose of this mechanism is to prevent the engine from being started manually when the transmission is in "1" or "2".



"N" RANGE

When the transmission is shifted into neutral, the inhibitor arm is rotated, causing its roller to fall into the notch in the gearshift drum center. The movement also relases the kick starter ratchet since the inhibitor hook at the other end is lifted out of the starter ratchet. Effort on the kick starter pedal is then transmitted to the engine crankshaft through the kick starter pinion, kick starter idle gear and kick starter driven gear, to the crankshaft.

"1" AND "2" RANGE

In "1" or "2", the inhibitor arm roller is pushed up by the gearshift drum out of the notch in the drum which in turn causes the kick inhibitor hook to enter the center groove in the starter ratchet. This prevents any ratchet movement on its shaft; i.e., the ratchet cannot move into engagement with the starter pinion. Effort on the kick starter pedal just releases the ratchet-stopper from the stopper plate.

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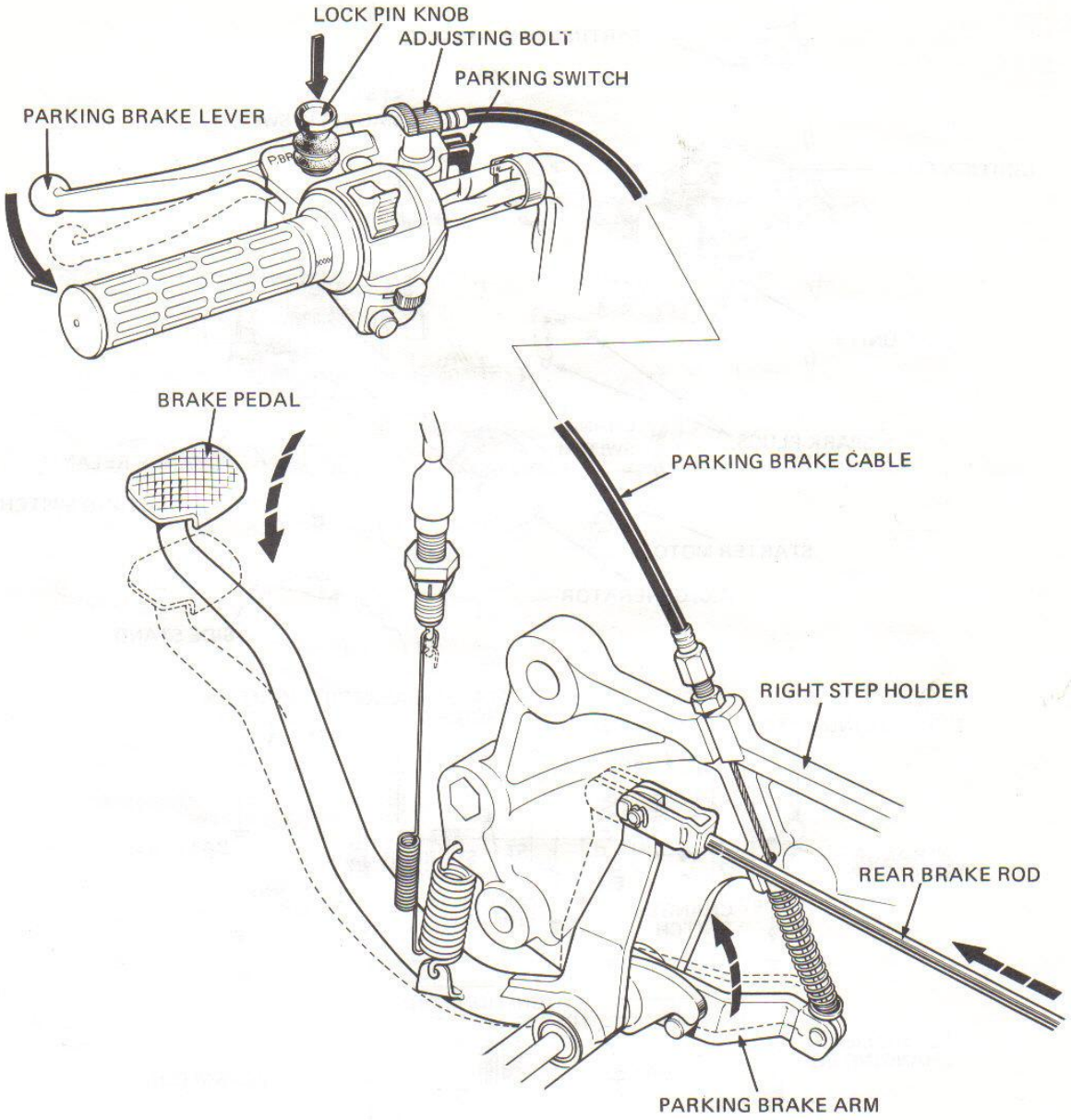
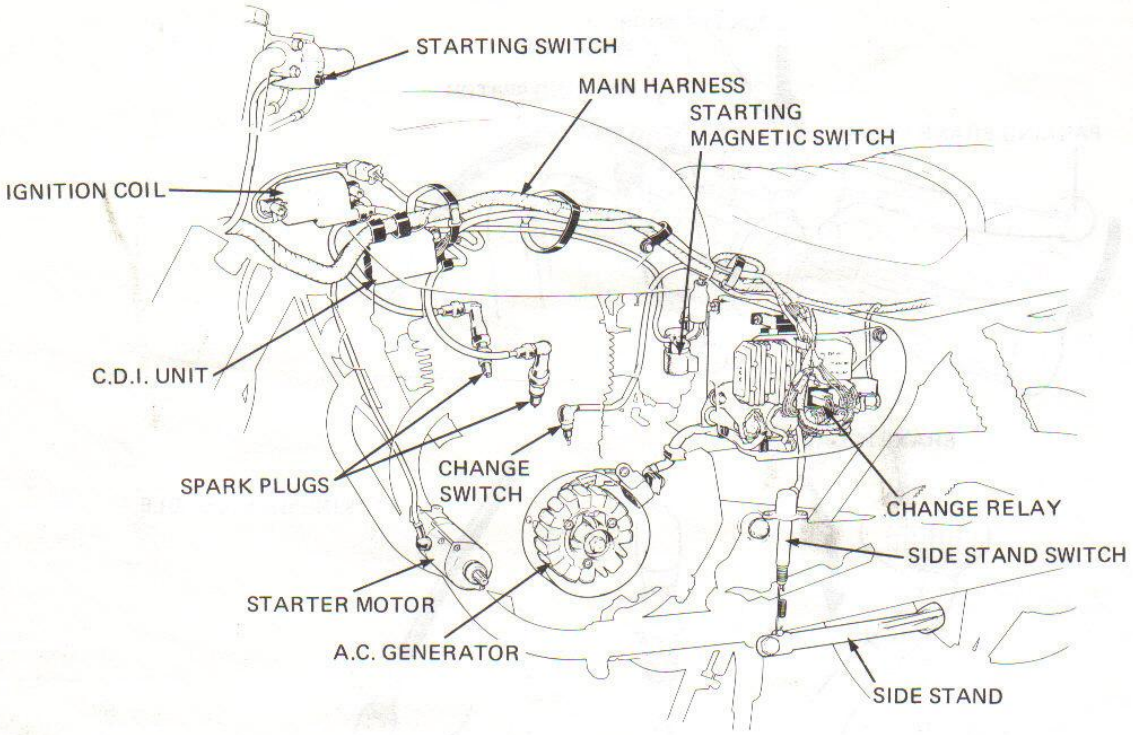
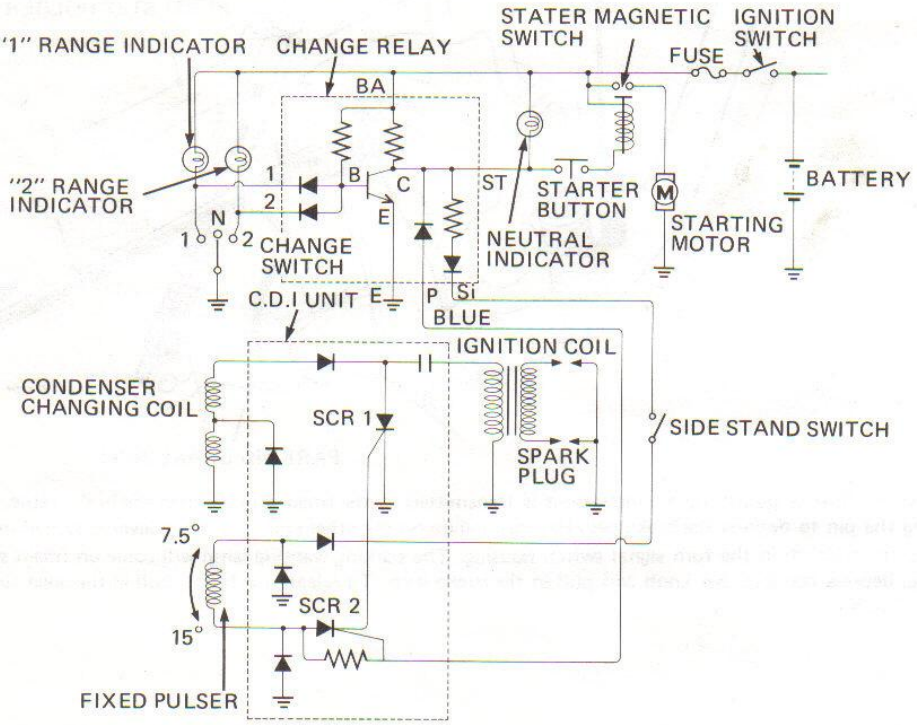
3. PARKING LOCK



When the parking brake lever is pulled in, the movement is transmitted to the brake arm through the brake cable. This forces the arm up, causing the pin to depress the brake pedal by pushing up on the other end. The brake lever is locked in its applied position by the lock mechanism in the turn signal switch housing. The parking warning lamp will come on (main switch ON). To apply the brake, depress the lock pin knob and pull in the brake lever. To release the brake, pull in the lever slightly, then depress the lock pin knob.

4. ELECTRICAL SYSTEM





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• ELECTRIC STARTER INHIBITOR

The HONDAMATIC transmission has no clutch. That is, the motorcycle would move out suddenly when the engine is started if it were not for preventative means. The electric starter inhibitor allows the starter to crank the engine only when the transmission is in neutral.

OPERATION

The change switch is OFF (Neutral) when the transmission is in NEUTRAL. Under such a condition, the base current flows through the change relay transistor. When the starter button is depressed (main switch ON), current flows through the battery, starter magnetic switch, starter switch and transistor to ground. As this happens, the starter magnetic switch is turned on, causing the starter to carnk the engine. In "1" or "2", the transistor is turned OFF since the base current is grounded. Under this condition, there is no current flow through the starter magnetic switch, hence, no turning effort of the starter, even if the starter button is depressed.

• IGNITION INHIBITOR (SIDE STAND INTERLOCKED)

To prevent sudden flying out or other dangers while parking, the motorcycle is equipped with an ignition inhibitor. The operation is as follows.

OPERATION

As in the electric starter inhibitor, the transistor in the change relay circuit is kept OFF when the transmission is in "1" or "2". Under this condition, the voltage at the change relay "ST" terminal is nearly equal to the battery voltage. As the side stand is lowered, the side stand switch is turned ON. Current then flows through the switch to SCR 1 gate (C.D.I. unit) causing SCR 1 to be triggered. As a reslut, the energy stored in the ignition condenser is discharged to the ground; that is, there are no electric sparks between the spark plug electrodes. In NEUTRAL, the change relay transistor is ON, the ST terminal voltage being nearly equal to the ground potential. In this position, no current flows through the side stand switch and the engine keeps firing regardless of the position of the side stand.

• IDLE STABILIZING CIRCUIT

The circuit is designed to stabilize engine idle speed. With an ordinary combination of mechanical transmission and clutch, no such system is necessary. However, when the transmission is shifted from NEUTRAL into "1" or "2", there must be a considerable drop in idle speed due to the load from the power-line components.

OPERATION

In NEUTRAL, the change relay transistor is kept ON. This causes SCR2 gate current to be grounded via the blue lead. With SCR2 OFF, only the 7.5° signal is sent from the fixed pulser to the SCR1 gate. Firing takes place at 7.5° Before Top Dead Center. SCR2 is triggered when the transmission is shifted into "1" or "2" . As this occurs, both the 7.5° and 15° signals are applied to the SCR1 gate. Firing then takes place at 15° Before Top Dead Center since the 15° singla triggers the SCR1 first. Note that there is not enough time for the condenser to be recharged and produce sparks at the spark plug when the 7.5° signal reaches SCR 1.

12. TROUBLESHOOTING

This Section Lists various symptoms and their probable causes for the troubles that are pertinent to the CB400A.
For information other than those described in this section, refer to the CB400T Shop Manual.

- ENGINE RUNS NORMALLY, BUT MOTORCYCLE WILL NOT MOVE IN "1" AND "2":

INSPECTION		PROBABLE CAUSE
Check stall speed in "1" and "2"	Engine does not stall at all	1. No oil in converter 2. Converter regulating valve not installed 3. Regulator valve stuck open 4. Clogged oil hole 5. Oil pump drive chain broken 6. Defective or damaged oil pump 7. Damaged primary drive/driven gear 8. Torque converter pump flange boss or 6 mm rivet damaged 9. Gearshifter plate or shifter dog damaged ("1" or "2")
	Engine stalls, but motorcycle will not start →	1. Burnt or seized gear ("1" or "2")

- MOTORCYCLE CANNOT RUN IN "1":

INSPECTION		PROBABLE CAUSE
Check stall speed in "1" →	Engine does not stall at all →	1. Damaged first gear 2. Damaged first gearshifter plate or shifter dog

- MOTORCYCLE CANNOT RUN IN "2":

INSPECTION		PROBABLE CAUSE
Check stall speed in "2"	Engine does not stall at all →	1. Damaged second gear 2. Damaged second gearshifter plate or shifter dogs
	Engine stalls, but motorcycle will not start →	1. Burnt or seized second gear

- HARD STARTING OR POOR ACCELERATION IN "1" AND "2":

INSPECTION		PROBABLE CAUSE
Check stall speed	Speed too high	1. 2.5 ϕ orifice clogged 2. Pressure regulating valve stuck or weakened or damaged valve spring
	Speed normal	1. Burnt or seized main/counter-shaft, gear or bearing
	Speed too low (not stable)	1. Seized or burnt primary drive/driven gear, stator shaft, gear or bearing 2. Reduced engine performance 3. Converter free-wheeling cam slipping 4. Damaged converter freewheeling cam or roller spring

- POOR ACCELERATION AT HIGH SPEED:

INSPECTION		PROBABLE CAUSE
Check stall speed	Speed normal	1. Engine oil level too high 2. Free-wheeling cam seized 3. Reduced engine performance
	Speed too low (not stable)	1. Damaged free-wheeling cam or roller spring

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