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SERVICE INFORMATION

WORKING PRACTICE

To repair the crankshaft, connecting rod, primary shaft and the transmission including the shift fork and drum, it is necessary to separate the crankcase halves.

The following parts must be removed before disassembling the crankcase.

Item to be serviced	Items to be removed
Crankshaft and connecting rod	Cylinder head, cylinder, pistons and primary shaft assembly
Primary shaft	A.C. generator and lock nut (inside the clutch)
Transmission	Clutch, oil pump drive chain and gear shift linkage

TORQUE VALUES

8mm bolt (Crankshaft)	2.3-2.7 kg-m (17-20 ft-lb)
8mm bolt (Crankcase)	2.3-2.7 kg-m (17-20 ft-lb)
6mm bolt	1.0-1.4 kg-m (7-10 ft-lb)
10mm bolt	3.3-3.7 kg-m (24-27 ft-lb)
Oil path cap	1.0-1.4 kg-m (7-10 ft-lb)



CRANKCASE DISASSEMBLY

Remove the cylinder head, cylinder, pistons and oil filter (Sections 6 and 7).

Remove the clutch, clutch related parts, A. C. generator, gear shift linkage and starting motor (Sections 8, 9, 16 and 18).

NOTE

The crankcase can be separated without removing the clutch, clutch related parts, A. C. generator, gearshift mechanism and starting motor. However, we recommend removal of these parts, because the transmission gears may be dropped when separating the crankcase.

Remove the upper crankcase bolts.

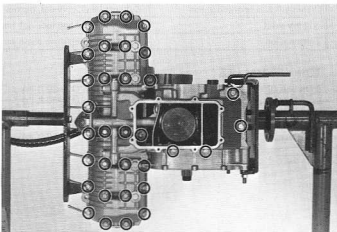
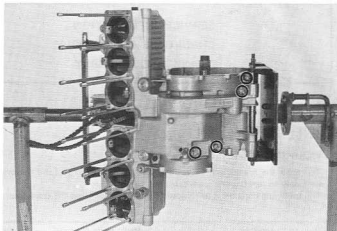
Turn the engine upside down.

Remove the oil pan.

Remove the lower crankcase bolts.

NOTE

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

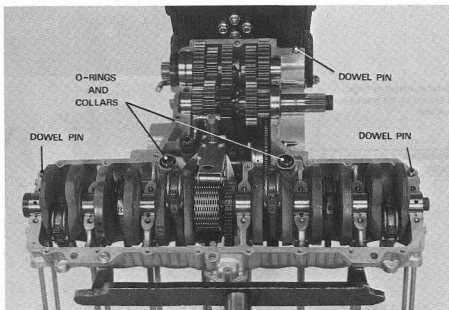
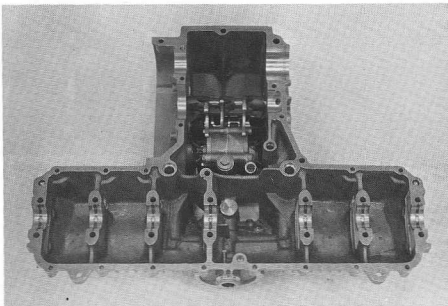




Separate the lower case half.

CAUTION

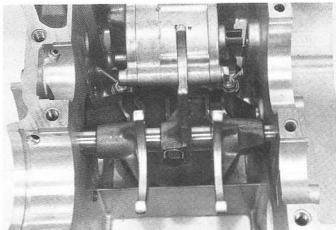
Do not pry between the upper and lower cases.





CRANKCASE ASSEMBLY

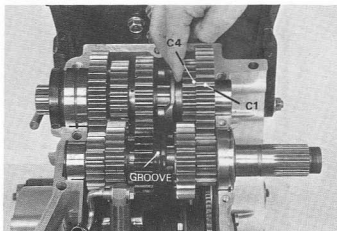
If the gearshift linkage, shift fork and shift drum are installed in the lower crankcase, shift the gearshift linkage into 1st gear for easier assembly.



Slide the C4 gear into the C1 gear. Make sure that the other gears are not engaged.

Apply molybdenum disulfide grease to the groove of the M3 gear.

Apply molybdenum disulfide grease to the crankshaft main bearings.

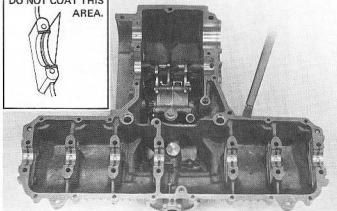


Clean the crankcase mating surfaces. Apply liquid sealant to the mating surface of the lower crankcase.

CAUTION

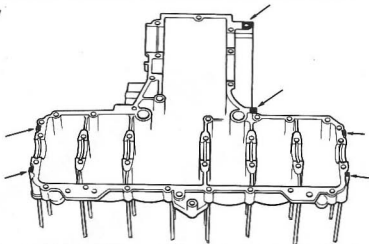
Do not apply sealant to the portion near the main bearing.

DO NOT COAT THIS AREA.





For the upper crankcase, apply sealant only where shown.



Assemble the crankcase halves, aligning the shift fork claws with the gears. Tighten the bolts to the specified torques in the sequence shown.

TORQUE SPECIFICATIONS:

8 mm bolt (Crankshaft)	2.3–2.7 kg-m (17–20 ft-lb)
8 mm bolt (Crankcase)	2.3–2.7 kg-m (17–20 ft-lb)
6 mm bolt	1.0–1.4 kg-m (7–10 ft-lb)
10 mm bolt	3.3–3.7 kg-m (24–27 ft-lb)

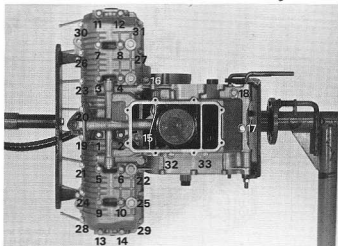
NOTE

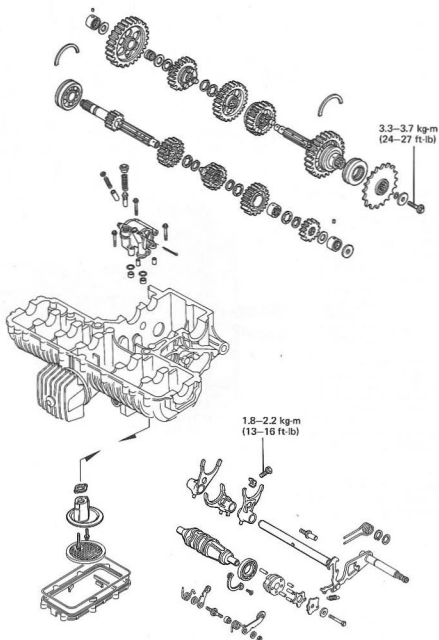
- Make sure that the plain washers are under the crankshaft bearing bolts.
- Apply molybdenum disulfide grease to the threads and head of the fourteen crankshaft holding bolts.

Tighten the upper crankcase bolts to the specified torque, proceeding front to rear.

NOTE

- If the oil path cap is removed, apply molybdenum disulfide grease to the threads when reinstalling.






HONDA
CB X

11. TRANSMISSION/OIL PUMP

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SERVICE INFORMATION

WORKING PRACTICE

The gear shift linkage can be serviced with engine in the frame. For internal transmission repairs, the crankcase must be separated (Refer to Section 10).

SPECIAL TOOLS

Common Tools

Driver Handle	07746-0030100
30mm Inner Driver	07746-0030300

TORQUE VALUES

Drive sprocket	3.3-3.7 kg-m (24-27 ft-lb)
Shift fork shaft	1.8-2.2 kg-m (13-16 ft-lb)

SPECIFICATIONS

			STANDARD	SERVICE LIMIT
Transmission	Backlash		0.024-0.074 mm (0.0009-0.0029 in)	0.12 mm (0.005 in)
	Gear I.D.	M4 gear	28.020-28.041 mm (1.1031-1.1040 in)	28.06 mm (1.105 in)
		M5 gear	31.000-31.025 mm (1.2205-1.2215 in)	31.04 mm (1.222 in)
		C1 gear	28.000-28.021 mm (1.1024-1.1032 in)	28.04 mm (1.104 in)
		C3 gear	28.020-28.041 mm (1.1031-1.1040 in)	28.06 mm (1.105 in)
	Gear bushing	M5 O.D.	30.950-30.975 mm (1.2185-1.2195 in)	30.93 mm (1.218 in)
		C1 O.D.	27.959-27.980 mm (1.1007-1.1016 in)	27.94 mm (1.100 in)
		C1 I.D.	24.007-24.028 mm (0.9452-0.9460 in)	24.05 mm (0.947 in)
	Mainshaft O.D.	at M4	27.959-27.980 mm (1.1007-1.1016 in)	27.94 mm (1.100 in)
	Countershaft O.D.	at C1 bushing	23.9935-24.0065 mm (0.9446-0.9451 in)	23.97 mm (0.944 in)
		at C3	27.959-27.980 mm (1.1007-1.1016 in)	27.94 mm (1.100 in)
	Gear to bushing or shaft clearance	M4 to shaft	—	0.10 mm (0.004 in)
		M5 to M5 bushing	—	0.10 mm (0.004 in)
		C1 to C1 bushing	—	0.10 mm (0.004 in)
		C1 bushing to shaft	—	0.10 mm (0.004 in)
		C3 to shaft	—	0.10 mm (0.004 in)



		Standard	Service limit
Shift fork	Claw thickness	6.43–6.50 mm (0.253–0.256 in)	6.1 mm (0.24 in)
	I.D. Center	16.009–16.012 mm (0.6303–0.6304 in)	—
	Left and right	16.000–16.021 mm (0.6299–0.6307 in)	16.55 mm (0.652 in)
Fork shaft	O.D.	15.966–15.984 mm (0.6286–0.6293 in)	15.95 mm (0.628 in)
Oil pump	Pressure	Left pump	0.5–1.0 kg/cm ² (7.1–14.2 psi)
		Right pump	4.0–5.3 kg/cm ² (56.9–75.4 psi)
	Left pump clearances	Tip clearance	0.08–0.12 mm (0.003–0.005 in)
		Body clearance	0.15–0.21 mm (0.006–0.008 in)
		End clearance	0.02–0.07 mm (0.001–0.003 in)
	Right pump clearances	Tip clearance	0.08–0.12 mm (0.003–0.005 in)
		Body clearance	0.15–0.21 mm (0.006–0.008 in)
		End clearance	0.02–0.07 mm (0.001–0.003 in)

TROUBLESHOOTING

Hard to shift

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

Transmission Jumps Out of Gear

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

Low Oil Pressure

1. Pressure relief valve stuck open
2. Plugged oil pick-up screen
3. Oil pump worn
4. External oil leaks
5. Oil level low

High Oil Pressure

1. Pressure relief valve stuck closed
2. Plugged oil filter, gallery, or mating orifice
3. Incorrect oil being used

No Oil Pressure

1. Oil level low
2. Oil pump drive chain broken
3. Oil pump faulty
4. Internal oil leakage

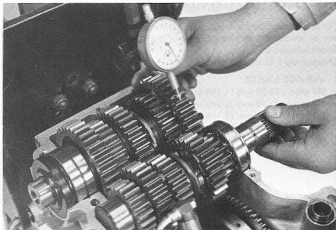


For servicing of the gearshift linkage, see Section 9.

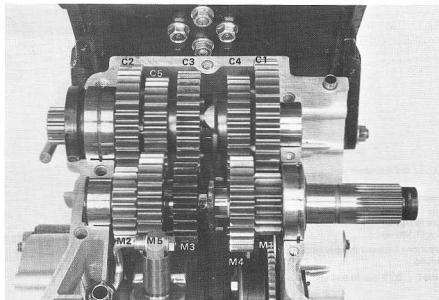
TRANSMISSION DISASSEMBLY

Separate the crankcase (Section 10).
Inspect each gear for backlash.

SERVICE LIMIT: 0.12 mm (0.005 in)



Remove the main and countershafts.
Remove the dowel pins from the crankcase.





TRANSMISSION INSPECTION

Check gear dogs, dog hole and teeth for excessive or abnormal wear, or evidence of insufficient lubrication.

Measure the I. D. of each gear.

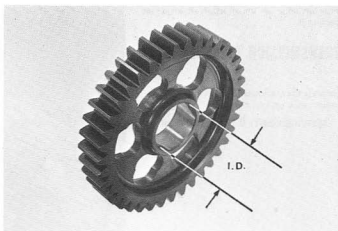
SERVICE LIMITS:

M4 gear: 28.06 mm (1.105 in)

M5 gear: 31.04 mm (1.222 in)

C1 gear: 28.04 mm (1.104 in)

C3 gear: 28.06 mm (1.105 in)



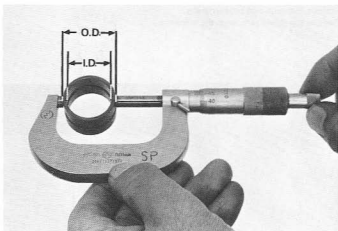
Measure the I.D. and O.D. of the gear bushings.

SERVICE LIMITS:

M5 O.D.: 30.93 mm (1.218 in)

C1 O.D.: 27.94 mm (1.100 in)

C1 I.D.: 24.05 mm (0.947 in)



Measure the O.D. of the mainshaft and countershaft.

SERVICE LIMITS:

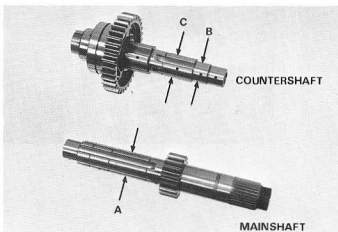
A: 27.94 mm (1.100 in)

B: 23.97 mm (0.944 in)

C: 27.94 mm (1.100 in)

Calculate the clearance between the gear and gear shaft or bushing.

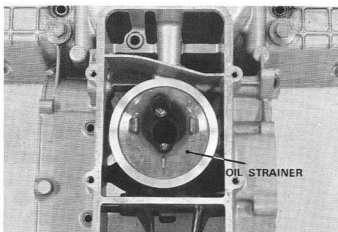
SERVICE LIMIT: 0.10 mm (0.004 in)



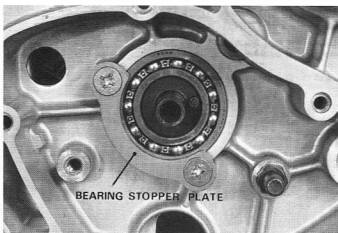


SHIFT FORK, SHIFT DRUM AND OIL PUMP REMOVAL

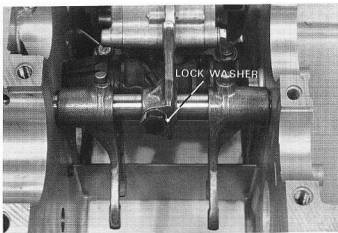
Remove the oil strainer.



Remove the bearing stopper plate.
Remove the bearing.

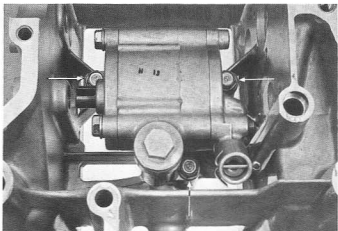


Bend the tabs of the lock washer at the center
shift fork.
Loosen the bolt.
Remove the shift fork shaft.
Remove the shift forks, shaft and shift drum.





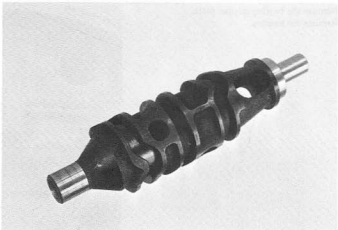
Remove the oil pump.



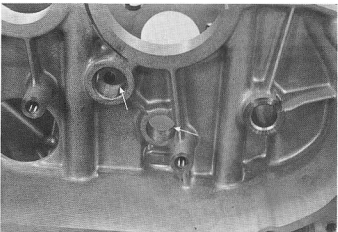
GEAR SHIFT DRUM AND SHIFT FORK INSPECTION

Inspect the shift drum end for scoring, scratches, or evidence of insufficient lubrication.

Check the shift grooves for damage.



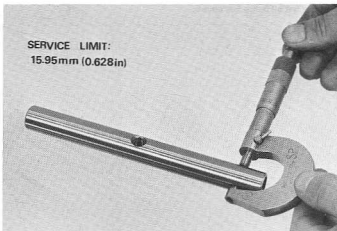
Inspect the shift drum hole and shift fork shaft hole for scoring or scratches.





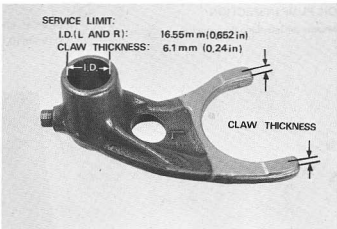
Measure the shift fork shaft O.D.
Check for scratches, scoring, or evidence of
insufficient lubrication.

SERVICE LIMIT:
15.95mm (0.628in)



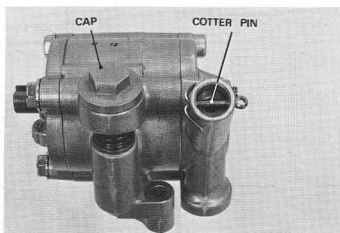
Measure the shift fork I.D. and claw thick-
ness.

SERVICE LIMIT:
I.D.(L AND R): 16.55mm(0.652in)
CLAW THICKNESS: 6.1mm (0.24in)



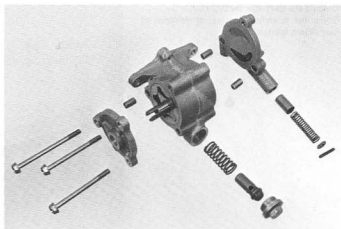
OIL PUMP DISASSEMBLY

Remove the relief valve cap and cotter pin.





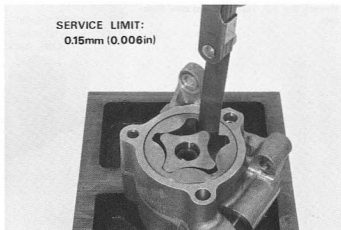
Remove the oil pump side covers.



OIL PUMP INSPECTION

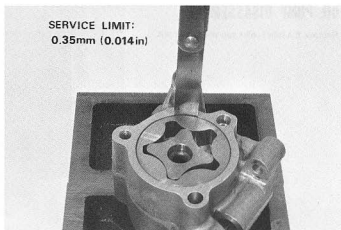
Measure the left pump tip clearance.

SERVICE LIMIT:
0.15mm (0.006in)



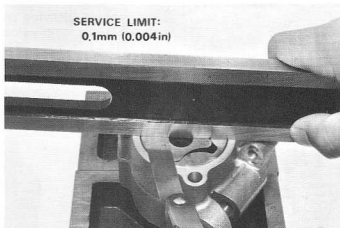
Measure the left pump body clearance.

SERVICE LIMIT:
0.35mm (0.014in)

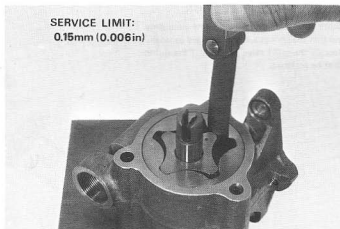




Measure the left pump end clearance.



Measure the right pump tip clearance.



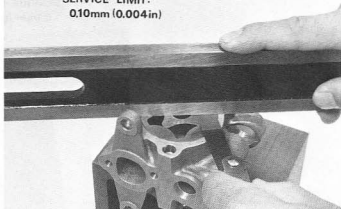
Measure the right pump body clearance.





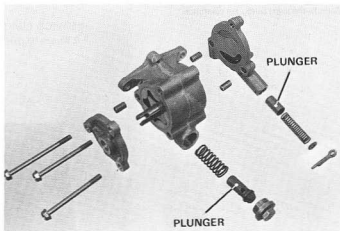
Measure the right pump end clearance.

SERVICE LIMIT:
0.10mm (0.004in)



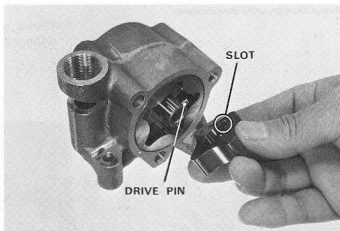
RELIEF VALVE INSPECTION

Check that the plungers operate smoothly and that the springs are not damaged or weak. Replace the relief valve as a unit if the spring must be replaced.



OIL PUMP ASSEMBLY

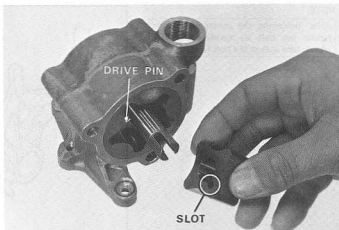
Install the left outer rotor.
Insert the drive pin into the shaft.
Align the slot in the left inner rotor with the drive pin.





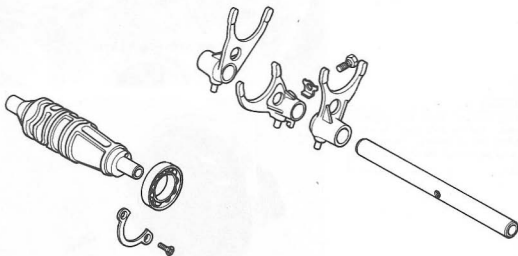
Install the right outer rotor.
Insert the drive pin into the shaft.
Align the slot in the inner rotor with the drive pin.

Install the side covers.
Install the relief valves.



OIL PUMP, SHIFT DRUM AND SHIFT FORK INSTALLATION

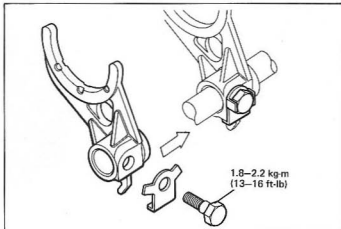
To install the oil pump, shift drum and shift fork, reverse the removal procedure.
Key points are shown here.





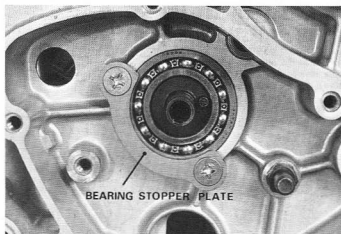
NOTE

After tightening the center shift fork, secure the bolt by bending the lock washer tabs against the bolt head.



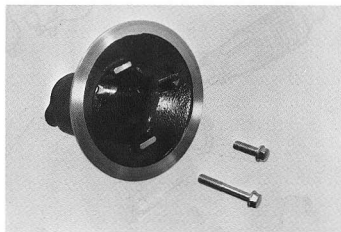
NOTE

When installing the bearing stopper plate, apply a locking agent to the screw threads.



CAUTION

The oil strainer bolts are different lengths. Use the bolts correctly when installing the oil strainer. If the bolts are used incorrectly, the shift drum may lock.

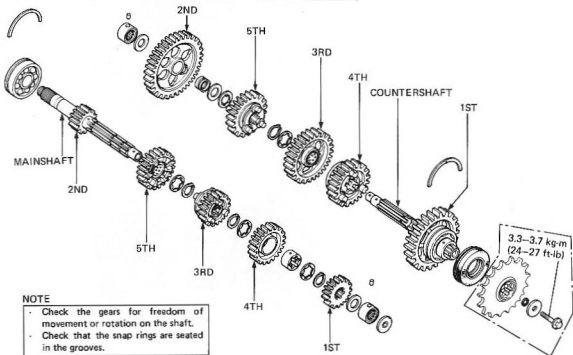


**TRANSMISSION ASSEMBLY**

Assemble the mainshaft and countershaft.

CAUTION

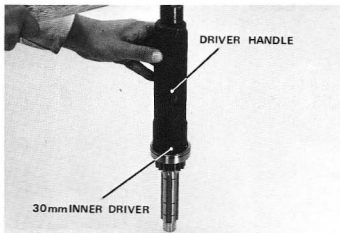
Note the installation direction of the C3 gear. The 8.5 mm recess should face the C5 gear. The 4.0 mm recess should face the C4 gear. If installed incorrectly, proper gear engagement will not occur.

**NOTE**

- Check the gears for freedom of movement or rotation on the shaft.
- Check that the snap rings are seated in the grooves.

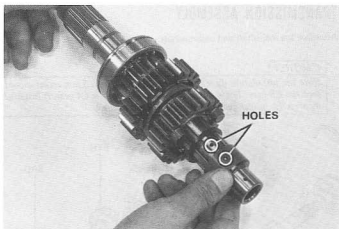
NOTE

- Install the mainshaft bearing with the special tools.

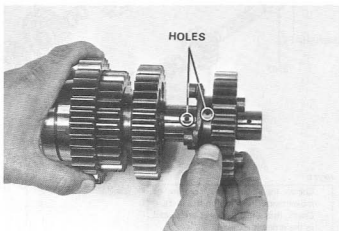




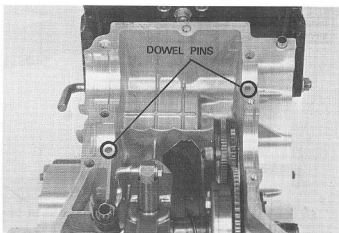
Align the hole in the M5 gear bushing with the hole in the mainshaft.



Align the hole in the C5 gear with the hole in the countershaft.

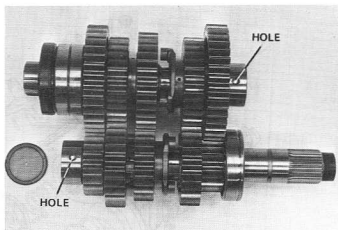


Insert the dowel pins.



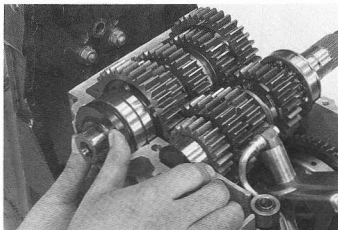


Align the holes in the mainshaft bearing and countershaft bearing with the dowel pins.



NOTE

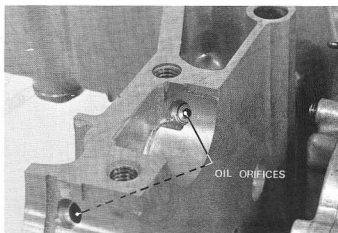
- Install the countershaft oil seal carefully so that the oil seal lip is seated completely on the bearing before assembling the lower crankcase.
- Apply molybdenum disulfide grease to the shift fork groove of M-3 gear.

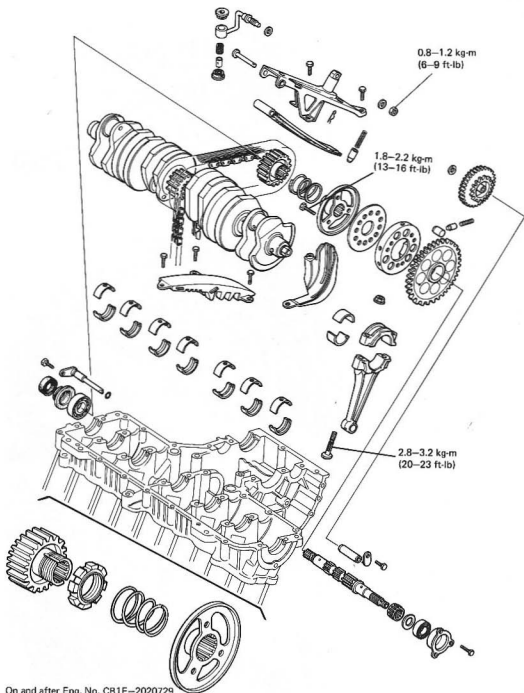


Install the lower crankcase (Refer to Section 10).

NOTE

- Check the oil orifice for clogging, before installing the lower crankcase.





On and after Eng. No. CB1E-2020729


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12. CRANKSHAFT/PRIMARY SHAFT

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SERVICE INFORMATION

WORKING PRACTICE

All bearing inserts are select fit and are identified by color code. Select replacement bearings from the code tables. After installing new bearings, recheck them with plastigauge to verify clearance.

Apply molybdenum disulfide grease to the main journals and crankpins during assembly.

SPECIAL TOOLS

Common Tools	
Driver Handle	07749-0010000
25mm Driver pilot	07746-0040600
37 x 40mm Outer Driver	07746-0010200
52 x 55mm Outer Driver	07746-0010400
Driver Handle	07746-0030100
25 mm Inner driver	07746-0030200
Primary shaft holder	07924-6340300

Special Tools

Pin Spanner 55 mm	07902-4220000
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TORQUE VALUES

Crankpin	2.8-3.2 kg-m (20-23 ft-lb)
Starter clutch	1.8-2.2 kg-m (13-16 ft-lb)
Crankshaft	2.3-2.7 kg-m (17-20 ft-lb)
Primary chain tensioner nut	0.8-1.2 kg-m (6- 9 ft-lb)
Primary driven sprocket	See page 12-18

SPECIFICATIONS

		STANDARD	SERVICE LIMIT
Electric Starter	Drive gear O.D.	47.175-47.200 mm (1.8573-1.8583 in)	47.155 mm (1.8565 in)
	Idle gear I.D.	10.000-10.015 mm (0.3937-0.3943 in)	10.04 mm (0.395 in)
	Idle gear shaft O.D.	9.972-9.987 mm (0.3926-0.3932 in)	9.95 mm (0.392 in)
	Idle gear-to-shaft clearance	—	0.1 mm (0.004 in)
Crankshaft	Connecting rod big end side clearance	0.05-0.20 mm (0.002-0.008 in)	0.3 mm (0.01 in)
	Runout	—	0.05 mm (0.002 in)
	Crankpin oil clearance	0.020-0.060 mm (0.0008-0.0024 in)	0.08 mm (0.003 in)
	Main journal oil clearance	0.020-0.060 mm (0.0008-0.0024 in)	0.08 mm (0.003 in)
Cam chain	Length	260.35-260.57 mm (10.250-10.259 in)	261.8 mm (10.31 in)
Primary chain	Length	194.65-194.92 mm (7.663-7.674 in)	195.8 mm (7.71 in)

TROUBLESHOOTING

Excessive Noise

- Worn main journal bearing —Worn crank pin bearing



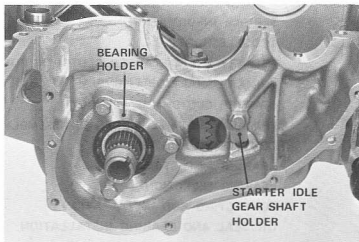
PRIMARY SHAFT/STARTER CLUTCH REMOVAL

Disassemble the crankcase (Section 10).
Remove the primary shaft drive gear (Section 8).

Remove the starting motor (Section 18).
Remove the transmission assembly (Section 11).

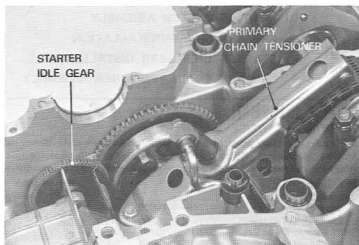
Remove the A. C. generator (Section 16).

Remove the starter idle gear shaft holder.
Loosen the primary shaft bearing holder bolts.

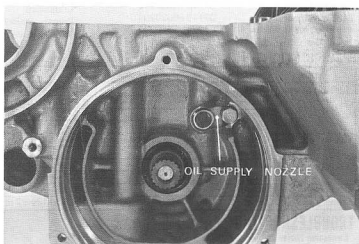


Remove the starter idle gear shaft.
Remove the starter idle gear and wave washer.

Remove the primary chain tensioner.



Remove the oil supply nozzle.





On and after Eng. No. CB1E-2020729

Hold the shaft with the special "PRIMARY SHAFT HOLDER" tool.

Loosen the primary driven sprocket collet ring nut with the special tool "PIN SPANNER".

NOTE

The ring nut has left-hand threads.

Remove the drive gear and then primary shaft.

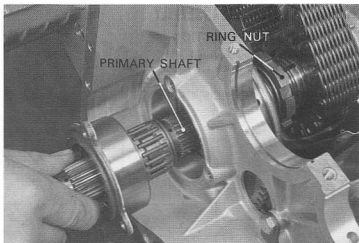
RING NUT



DRIVEN
SPROCKET

Lift the primary driven sprocket and starter clutch and remove the primary chain.

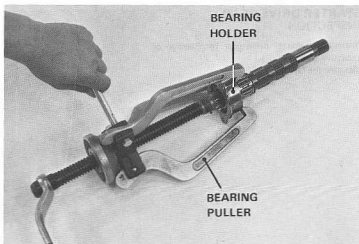
Remove the primary driven sprocket, ring nut, spring and starter clutch.



PRIMARY SHAFT DISASSEMBLY

Remove the bearing holder.

Remove the bearing from the holder.

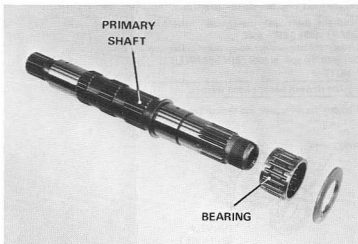


**PRIMARY SHAFT INSPECTION**

Check for scoring, wear or other damage.

BEARING INSPECTION

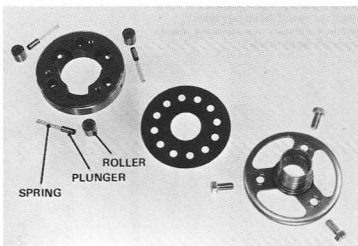
Check for damage.

**STARTER CLUTCH DISASSEMBLY****STARTER CLUTCH INSPECTION**

Inspect the rollers for smooth operation.

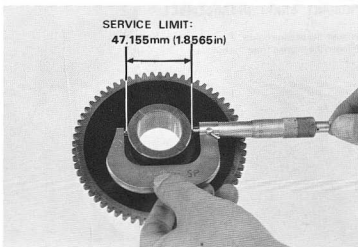
Remove the roller and check for excessive wear.

Clean all parts with non-flammable or high flashpoint solvent.

**STARTER DRIVE GEAR INSPECTION**

Inspect the starter drive gear for damage or excessive wear.

Measure the O. D..

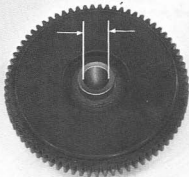




STARTER IDLE GEAR INSPECTION

Inspect the idle gear for tooth damage.
Measure the idle gear I. D..

SERVICE LIMIT:
10.04 mm (0.395 in)



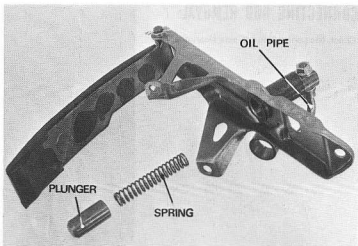
Measure the idle gear shaft O. D..
Measure the idle gear-to-shaft clearance.
SERVICE LIMIT: 0.1 mm (0.004 in)

SERVICE LIMIT:
9.95 mm (0.392 in)



PRIMARY CHAIN TENSIONER DISASSEMBLY

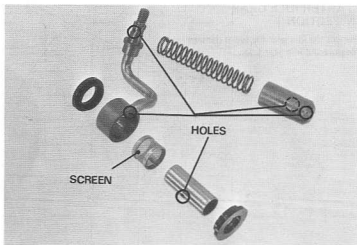
Remove the inner oil pipe and screen.
Remove the spring and plunger.
Remove the lock pin and slipper.
Remove the nut and oil pipe.



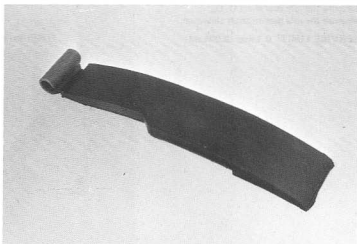
**INSPECTION**

Check the holes in the oil pipes and plunger for blockage.

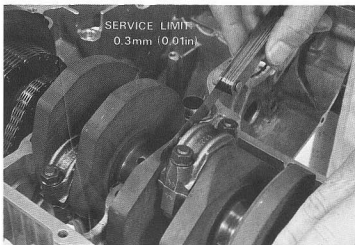
Clean all parts with non-flammable or high flashpoint solvent.



Inspect the slipper for damage or excessive wear.

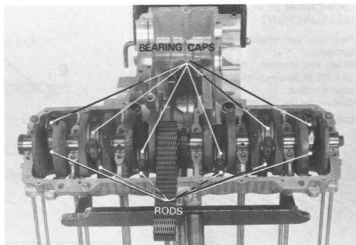
**CONNECTING ROD REMOVAL**

Check the connecting rod side clearance.



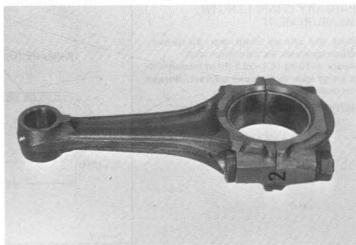


Remove the bearing caps and rods.



NOTE

Mark the rods, bearings and bearing caps to indicate cylinder position.



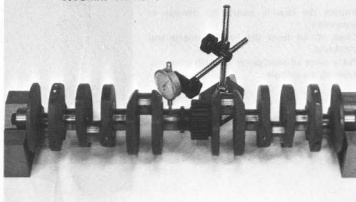
CRANKSHAFT INSPECTION

Remove the cam chain and primary chain.

Set the crankshaft on a stand or V blocks.
Set a dial gauge into the center main journal.
Rotate the crankshaft two revolutions and read runout at the center journal.

Actual runout is 1/2 of Total Indicator Reading.

SERVICE LIMIT:
0.05mm (0.002in)



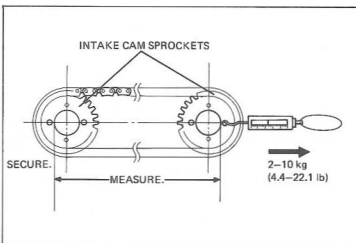
CAM CHAIN LENGTH
MEASUREMENT

Place the cam chain over the intake cam sprockets.

Secure one sprocket. Apply 2–10 kg (4.4–22.1 lb) of tension with a spring scale to the other sprocket.

Measure the chain length as shown.

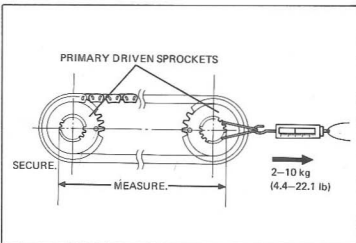
SERVICE LIMIT: 261.8 mm (10.31 in)

PRIMARY CHAIN LENGTH
MEASUREMENT

Place the primary chain over the primary driven sprockets. Secure one sprocket.

Apply 2–10 kg (4.4–22.1 lb) of tension with a spring scale to the other sprocket. Measure the chain length as shown.

SERVICE LIMIT: 195.8 mm (7.71 in)



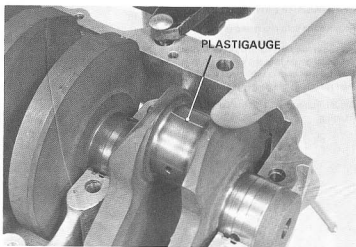
BEARING INSPECTION

CONNECTING RODS

Inspect the bearing inserts for damage or separation.

Clean all oil from the bearing inserts and crankpins.

Put a piece of plastigauge on each crankpin, avoiding the oil hole.





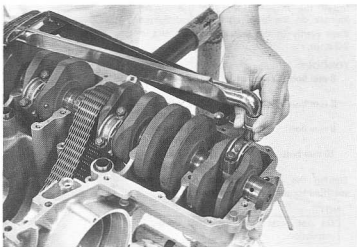
Install the bearing caps and rods on the correct crankpins, and tighten them evenly.

TORQUE:

2.8–3.2 kg-m (20–23 ft-lb)

NOTE

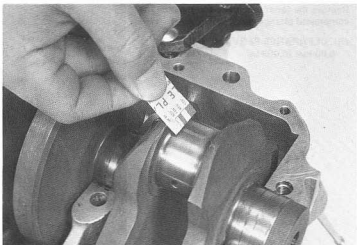
Do not rotate the crankshaft during inspection.



Remove the caps and measure the compressed plastigauge on each crankpin.

OIL CLEARANCE SERVICE LIMIT:

0.08 mm (0.003 in)

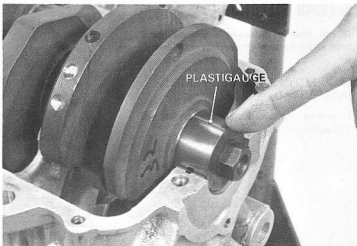


MAIN BEARINGS

Inspect the bearing inserts for damage or separation.

Clean all oil from the bearing inserts and journals.

Put a piece of plastigauge on each journal, avoiding the oil holes.





Install the main bearings on the correct journals on the lower crankcase and tighten them evenly in the sequence shown and in 2-3 steps.

TORQUES:

8 mm bolt (Crankshaft)	2.3-2.7 kg-m (17-20 ft-lb)
8 mm bolt (Crankcase)	2.3-2.7 kg-m (17-20 ft-lb)
6 mm bolt	1.0-1.4 kg-m (7-10 ft-lb)
10 mm bolt	3.3-3.7 kg-m (24-27 ft-lb)

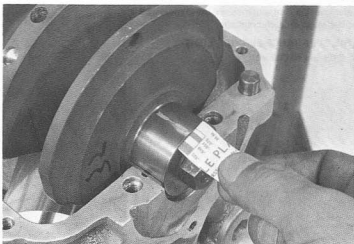
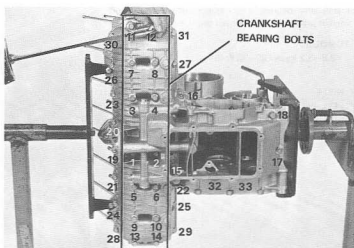
Tighten the upper crankcase bolts to the specified torque, proceeding front to rear.

NOTE

Do not rotate the crankshaft during inspection.

Remove the lower crankcase and measure the compressed plastigauge on each journal.

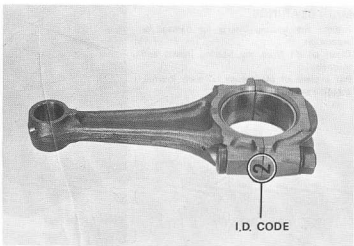
OIL CLEARANCE SERVICE LIMIT:
0.08 mm (0.003 in)

**BEARING SELECTION**

If rod bearing clearance is beyond tolerance, select replacement bearings as follows:

CONNECTING ROD BEARING INSERTS

Determine and record the corresponding rod I.D. code number.

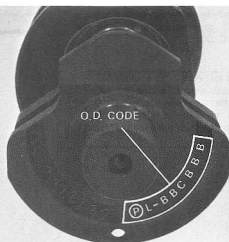




Determine and record the corresponding crankpin O. D. code number (or measure the crankpin O. D.).

NOTE

The six letters "P L-BBCBBB" on the crank weight indicate the code numbers for the crankpin O. D. from left to right; e. g. O. D. code number for the second crankpin from left is B.



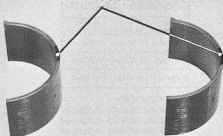
Cross reference the crankpin and rod codes to determine the replacement bearing color.

CONNECTING ROD I. D. CODE NO.		CRANKPIN O. D. CODE NO.		
		A	B	C
		35.992— 36.000 mm	35.984— 35.992 mm	35.976— 35.984 mm
1	39.000— 39.008 mm	E (Yellow)	D (Green)	C (Brown)
2	39.008— 39.016 mm	D (Green)	C (Brown)	B (Black)
3	39.016— 39.024 mm	C (Brown)	B (Black)	A (Blue)

BEARING INSERT THICKNESS:

A (Blue)	: 1.502—1.506 mm (0.0591—0.0593 in)
B (Black)	: 1.498—1.502 mm (0.0590—0.0591 in)
C (Brown)	: 1.494—1.498 mm (0.0588—0.0590 in)
D (Green)	: 1.490—1.494 mm (0.0587—0.0588 in)
E (Yellow)	: 1.486—1.490 mm (0.0586—0.0587 in)

COLOR CODE

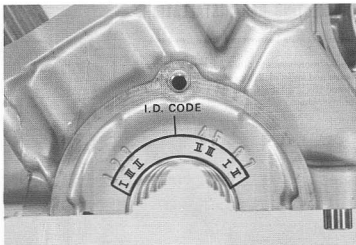


MAIN BEARING

Determine and record crankcase I. D. code numbers.

NOTE

The seven numbers "I III I I I I I" on the upper left crankcase indicate the code numbers for the main journal I.D. from left to right; e. g. I. D. code number for the fifth main journal from left to right is III.

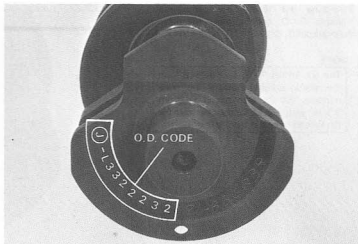




Determine and record the corresponding main journal O. D. code letters (or measure the main journal O. D.).

NOTE

The seven numbers "① L-332232" on the crank weight indicate the code numbers for the main journal O. D. from left to right; e. g. O.D. code number for the third main journal from left to right is 2.

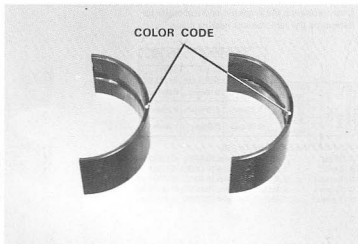


Cross reference the case and journal codes to determine the replacement bearing.

CASE I.D. CODE NO.	I	MAIN JOURNAL O. D. CODE NO.		
		1	2	3
I	39.000—39.008 mm	D (Yellow)	C (Green)	B (Brown)
	39.008—39.016 mm	C (Green)	B (Brown)	A (Black)
II	39.016—39.024 mm	B (Brown)	A (Black)	AA (Blue)

MAIN BEARING INSERT THICKNESS:

AA (Blue)	: 1.502—1.506 mm (0.0591—0.0593 in)
A (Black)	: 1.498—1.502 mm (0.0590—0.0591 in)
B (Brown)	: 1.494—1.498 mm (0.0588—0.0590 in)
C (Green)	: 1.490—1.494 mm (0.0587—0.0588 in)
D (Yellow)	: 1.486—1.490 mm (0.0585—0.0587 in)

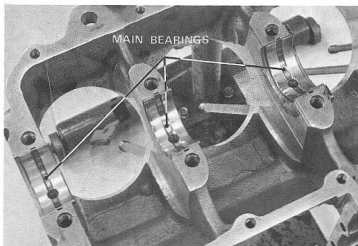


CONNECTING ROD INSTALLATION

Install the main bearings into the upper crankcase.

Apply molybdenum disulfide grease to the upper and lower main bearings.

Install the crankshaft with the cam chain and primary chain.





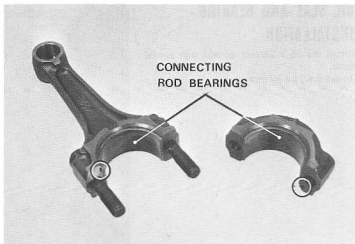
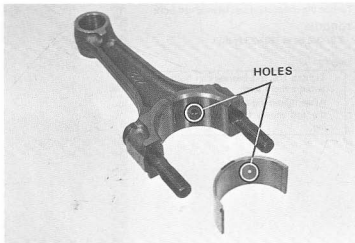
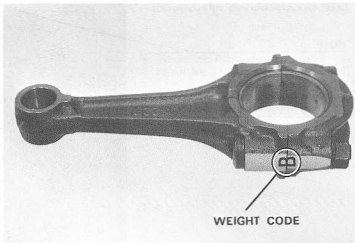
Before installing the connecting rods, make sure that the weight code combination is correct:

Factory set code	Available code
A	→ B
B	→ D
C	→ D
E	→ D
F	→ F
G	→ F

Align the hole in the bearing insert with the hole in the connecting rod.

Install the connecting rod and cap bearing inserts.

Apply molybdenum disulfide grease to the connecting rod bearings.

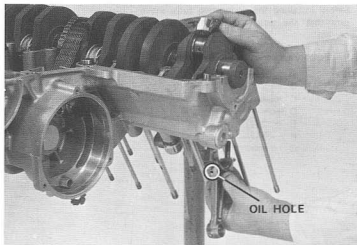




Install the connecting rods and bearing caps.

NOTE

- Be sure connecting rods are installed in their correct position and the oil holes point to the rear.
- Cross reference the rod and cap I, D, codes to insure original assembly.



Torque the connecting rod bearing cap bolts.

TORQUE:

2.8–3.2 kg-m (20–23 ft-lb)

NOTE

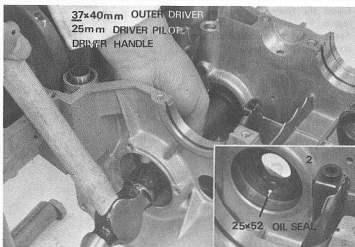
- Tighten the rod bearing cap bolts in two or more steps.
- After tightening the bolts, check that the rod moves freely without binding.



OIL SEAL AND BEARING INSTALLATION

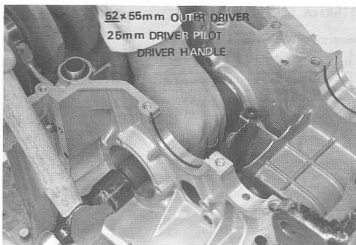
Install the 25 x 38 mm oil seal with special tools.

Install the 25 x 52 mm oil seal.



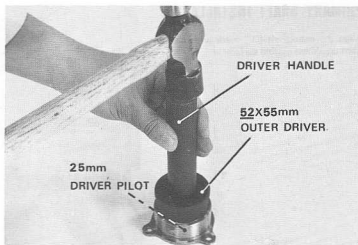


Install the bearing with special tools.



PRIMARY SHAFT ASSEMBLY

Insert the primary shaft bearing into the bearing holder.

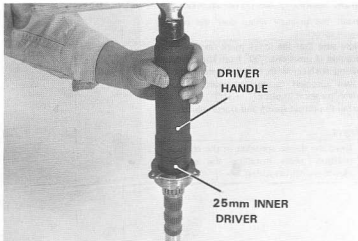


Slide the needle bearing and washer onto the shaft.

NOTE

Install the washer with the chamfered edge facing the spark advancer side.

Install the bearing over the shaft.



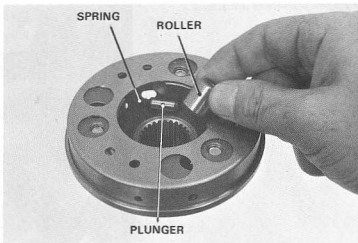


STARTER CLUTCH ASSEMBLY

Install the springs, plungers and rollers.

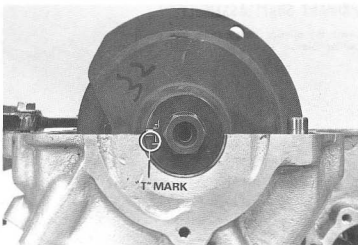
NOTE

Apply a locking agent to the threads of the locking bolts.



PRIMARY SHAFT INSTALLATION

Align the crankshaft "T" mark with the forward crankcase mating surface.



On and before Eng. No. CB1E-2020728

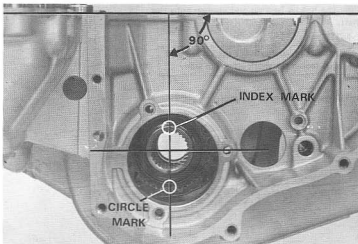
Install the primary chain over the primary driven sprocket.

Make sure that the index mark on the driven sprocket is positioned 90° from the crankcase mating surface, with the circle mark on the driven sprocket facing downward with the driven sprocket in place.

Install the thrust spring and starter clutch.

NOTE

Keep the driven sprocket in the correct position when installing the starter clutch and thrust spring.





On and after Eng. No. CB1E-2020729

Install the primary chain over the primary driven sprocket.

Make sure that the driven sprocket index mark aligns with the bearing boss mark as shown.

NOTE

One primary driven sprocket slot aligns with an index mark on the sprocket's other side. This slot can also be used as a reference.

Install the ring nut, thrust spring and starter clutch.

NOTE

Do not move the driven sprocket from the correct position when installing the starter clutch and thrust spring.

To facilitate operation, screw the ring nut onto the driven sprocket 1-2 turns.

Install the primary shaft assembly. Make sure that the recess in the primary shaft is positioned 90° from the crankcase mating surface, and the bearing holder is in position.

CAUTION

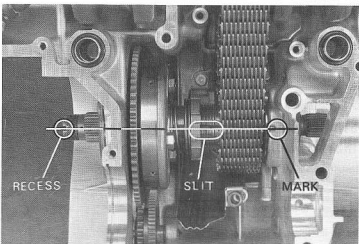
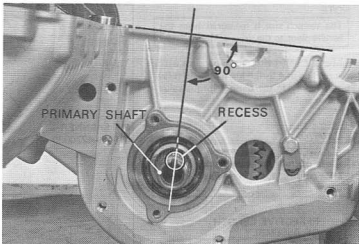
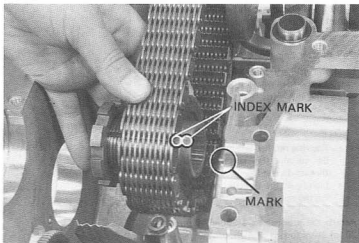
Do not damage the oil seals when installing the primary shaft.

On and before Eng. No. CB1E-2020728

Make certain that the primary shaft recess aligns with the driven sprocket index mark (page 12-16).

On and after Eng. No. CB1E-2020729

Make certain that the primary shaft recess aligns with the sprocket index mark and corresponding slot. The shaft recess, and sprocket slot/mark should align with the bearing boss mark as shown.





Tighten the primary shaft bearing holder bolts securely.

On and after Eng. No. CB1E-2020729

Hold the primary shaft with the special tool "PRIMARY SHAFT HOLDER". Tighten the collet ring nut with the special tool "55 mm PIN SPANNER."

NOTE

- The ring nut has left-hand threads.
- Be certain the sprocket and nut threads do not have any burrs.
- Lightly oil the threads before tightening the nut.

Attach the spanner to a 350-500 mm (14-20 in) beam torque wrench.

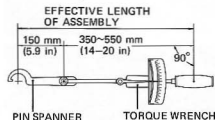
NOTE

The wrench size is measured from the handle pivot to the drive center.

Tighten the collet ring nut to obtain a wrench scale reading of 4.2-4.5 kg-m (30-35 ft-lb). This will provide the desired torque value at the pin spanner.

CAUTION

If other than a beam torque wrench is used, consult the manufacture's operating instructions regarding adapter usage.



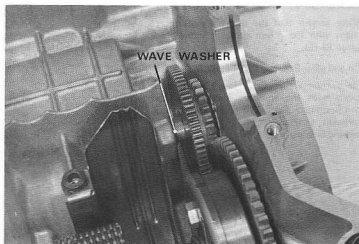
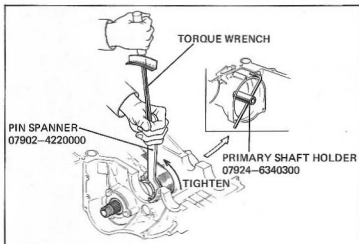
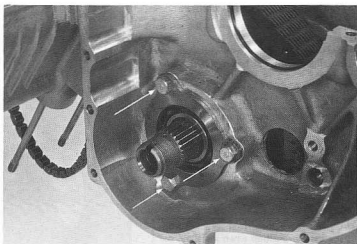
STARTER IDLE GEAR INSTALLATION

Install the starter idle gear as shown.

NOTE

Be sure to install the wave washer.

Install the idle gear shaft holder.

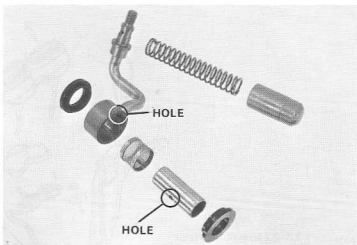




PRIMARY CHAIN TENSIONER ASSEMBLY

Before installing the oil pipe, check the holes for blockage.

Assemble the primary chain tensioner as shown.
Tighten the nut loosely.



Insert the oil pipe into oil opening.
Tighten the nut securely.

Install the oil supply nozzle.
Install the transmission (Section 11).
Assemble the crankcase (Section 10).

