PREFACE

This manual covers the construction, function and servicing procedure of the Honda HP500H power carrier. Careful observance of these instructions will result in better, safer service work.

Illustrations in this manual are based primarily on the HP500H BE type.

HONDA MOTOR CO., LTD.
SERVICE PUBLICATIONS OFFICE

CONTENTS

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MEMO

1. SPECIFICATIONS

• DIMENSIONS AND WEIGHTS

Unit: mm (in)

Model	HP500H			
Description code	NZAA			
Type	BE	BXE	NE	NXE
Overall length	2,140 (84.3)		1,730 (68.1)	
Overall width*1:	650 (25.6)		600 (23.6)	
Overall height	1,005 (39.6)	1,100 (43.3)	1,005 (39.6)	1,100 (43.3)
Ground clearance	92 (3.6)			
Handlebar height	920 (36.2)			
Dry weight	197 kg (434.4 lb)		144 kg (317.5 lb)	
Curb weight	200 kg (441.0 lb)		147 kg (324.1 lb)	

*1: When carrier width is 560 mm (22.0 in) [BE/BXE types only]

• FRAME

Unit: mm (in)

Model		HP500H			
Type		BE	BXE	NE	NXE
Carrier	Length	1,200 (47.2)		——	
	Width	560 (22.0), 730 (28.7), 900 (35.4)		——	
	Depth	200 (7.9)		——	
Maximum load	Horizontal	500 kg (1,102.5 lb)			
	Gradient*2:	350 kg (771.8 lb)			
Track	Width × Length	180 × 2,220 (7.1 × 87.4)			
	Pitch × Link number	60 × 37			
	Track grounding length	695 (27.4)			
	Tread*3:	420 (16.5)			
Main transmission	Type	Hydrostatic transmission (HST)			
	Number of speed	Non-stage			
	Lubrication oil	SAE 10W-30			
	Lubrication oil capacity	0.6 ℓ (0.63 US qt, 0.53 Imp qt)			
Sub transmission	Type	Sub gear transmission			
	Lubrication oil	SAE 10W-30			
	Lubrication oil capacity	2.3 ℓ (2.43 US qt, 2.02 Imp qt)			
Driving speed	Forward	0—4.3 km/h (0—2.67 mph)			
	Reverse	0—3.6 km/h (0—2.24 mph)			
Main clutch		Belt tension			
Side clutch		Power disengagement type			
Brake type		Expanding shoe brake			
Dumping mechanism		Manual dump, cable release			
Maximum inclination		25° [when loaded with 350 kg (771.8 lb)]			

*2: When gradient is 15° or above.

*3: Distance from center to center of the tracks.

• **ENGINE**

Model	GX160 K1
Description code	GC02
Type	4-stroke, overhead valve single cylinder, inclined by 25°
Displacement	163 cm^3 (9.9 cu in)
Bore and stroke	68 × 45 mm (2.7 × 1.8 in)
Max. horsepower	4.0 kw (5.5 HP)/3,600 min^{-1} (rpm)
Max. torque	10.8 N·m (1.1 kg-m, 8.0 ft-lb)/2,500 min^{-1} (rpm)
Compression ratio	8.5 : 1
Fuel consumption	310 g/kwh (230 g/HPh, 0.51 lb/HPh)
Cooling system	Forced air
Ignition system	Transistorized magneto ignition
Ignition timing	25° B.T.D.C. (Fixed)
Spark plug	BPR6ES (NGK), W20EPR-U (NIPPONDENSO)
Carburetor	Horizontal type, butterfly valve
Air cleaner	Semi-dry type
Governor	Centrifugal
Lubrication system	Splash type
Oil capacity	0.6 ℓ (0.63 US qt, 0.53 Imp. qt)
Starting system	Recoil starter
Stopping system	Ignition primary circuit ground
Fuel tank capacity	3.6 ℓ (0.95 US gal, 0.79 Imp gal)
Recommended fuel	Regular gasoline (86 pump octane: unleaded preferred)
Recommended oil	SAE 10W-30

2. SERVICE INFORMATION

1. GENERAL SAFETY

Pay attention to these symbols and their meanings:

⚠ WARNING **Indicates a strong possibility of severe personal injury or death if instructions are not followed.**

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

⚠ WARNING

- **Stop the engine, and remove the spark plug caps and ignition key before servicing the power carrier.**
- **If the engine must be running to do some work, make sure the area is well ventilated. Never run the engine in a closed area; the exhaust contains poisonous carbon monoxide gas.**
- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in your working area.**

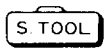
CAUTION

- **Keep away from rotating or hot parts and high voltage wires when the engine is run with the engine cover off.**

2. SERVICE RULES

1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may damage the unit.
2. Use the special tools designed for the product.
3. Install new gaskets, O-rings, etc. when reassembling.
4. When torquing bolts or nuts, begin with larger-diameter or inner bolts first and tighten to the specified torque diagonally, unless a particular sequence is specified.
5. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
6. After reassembly, check all parts for proper installation and operation.
7. Many screws used in this machine are self-tapping. Be aware that cross-threading or overtightening these screws will strp the female threads and ruin the hole.
8. Use only metric tools when servicing this unit. Metric bolt, nuts and screws are not interchangeable with nonmetric fasteners. The use of incorrect tools and fasteners will damage the unit.
9. Follow the instructions represented by these symbols when they are used:

: Apply oil



: Use special tool

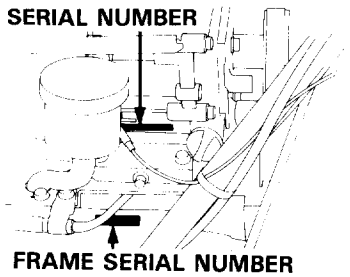
: Apply grease

○ × ○ (○) : Indicates the type, length, and number of the flange bolt used.
P. : Indicates the reference page.

3. SERIAL NUMBER LOCATION

Engine serial number is stamped on the cylinder barrel and the frame serial number on the L. main frame, with seven figures respectively. These numbers are required by your Honda dealer when ordering or inquiring of the parts.

ENGINE SERIAL NUMBER



FRAME SERIAL NUMBER

4. MAINTENANCE STANDARDS

• **ENGINE**

Part	Item	HP500H	
		Standard	Service limit
Engine	Maximum speed	3,600 $^{0}_{-100}$ min^{-1} (rpm)	—
	Idle speed	2,000 ± 100 min^{-1} (rpm)	—
	Cylinder compression	6.0—8.5 kg/cm^2 (85—121 psi) at 600 min^{-1} (rpm)	—
Cylinder	Sleeve I.D.	68.0 mm (2.68 in)	68.165 mm (2.6837 in)
Cylinder head	Warpage	—	0.10 mm (0.004 in)
Piston	Skirt O.D.	67.985 mm (2.6766 in)	67.845 mm (2.6711 in)
	Piston-to-cylinder clearance	0.015—0.050 mm (0.0006—0.0020 in)	0.12 mm (0.005 in)
	Piston pin bore I.D.	18.002 mm (0.7087 in)	18.048 mm (0.7105 in)
	Pin O.D.	18.0 mm (0.71 in)	17.954 mm (0.7068 in)
	Piston-to-piston pin bore clearance	0.002—0.014 mm (0.0001—0.0006 in)	0.06 mm (0.002 in)
Piston rings	Ring side clearance: Top/second/oil	0.015—0.045 mm (0.0006—0.0018 in)	0.15 mm (0.006 in)
	Ring end gap: Top/second	0.2—0.4 mm (0.008—0.016 in)	1.0 mm (0.04 in)
	Oil	0.15—0.35 mm (0.006—0.014 in)	1.0 mm (0.04 in)
	Ring width: Top/second	1.5 mm (0.06 in)	1.37 mm (0.054 in)
	Oil	2.5 mm (0.10 in)	2.37 mm (0.093 in)
Connecting rod	Small end I.D.	18.005 mm (0.7089 in)	18.07 mm (0.711 in)
	Big end I.D.	30.02 mm (1.182 in)	30.066 mm (1.1837 in)
	Big end oil clearance	0.040—0.063 mm (0.0016—0.0025 in)	0.12 mm (0.005 in)
	Big end side clearance	0.1—0.7 mm (0.004—0.028 in)	1.1 mm (0.043 in)
Crankshaft	Crankshaft O.D.	29.98 mm (1.180 in)	29.92 mm (1.178 in)
Valves	Valve clearance IN	0.15 ± 0.02 mm (0.006 ± 0.001 in)	—
	EX	0.20 ± 0.02 mm (0.008 ± 0.001 in)	—
	Stem O.D. IN	5.48 mm (0.216 in)	5.318 mm (0.2094 in)
	EX	5.44 mm (0.214 in)	5.275 mm (0.2077 in)
	Guide I.D. IN/EX	5.50 mm (0.217 in)	5.572 mm (0.2194 in)
	Stem clearance IN	0.02—0.044 mm (0.0008—0.0017 in)	0.10 mm (0.004 in)
	EX	0.06—0.087 mm (0.0024—0.0034 in)	0.12 mm (0.005 in)
	Seat width	0.8 mm (0.03 in)	2.0 mm (0.08 in)
	Spring free length	34.0 mm (1.34 in)	32.5 mm (1.28 in)
Camshaft	Cam height IN	27.7 mm (1.09 in)	27.45 mm (1.081 in)
	EX	27.75 mm (1.093 in)	27.50 mm (1.083 in)
	Camshaft O.D.	13.984 mm (0.5506 in)	13.916 mm (0.5479 in)
Crankcase cover	Camshaft holder I.D.	14.0 mm (0.55 in)	14.048 mm (0.5531 in)
Carburetor	Main jet	#72	—
	Float height	13.7 mm (0.54 in)	—
	Pilot screw opening	2-1/8 turns out	—
Spark plug	Gap	0.7—0.8 mm (0.028—0.031 in)	—
Spark plug cap	Resistance	7.5—12.5 kΩ	—
Ignition coil	Resistance Primary coil	0.8—1.0 Ω	—
	Secondary coil	5.9—7.1 kΩ	—
	Air gap (at flywheel)	0.4 ± 0.2 mm (0.016 ± 0.008 in)	—

• **FRAME**

Part	Item	Standard	Service limit
Drive clutch cable	Gap of belt tension spring between when drive clutch lever being at "DRIVE" and when the lever at "STOP".	5—7 mm (0.2—0.3 in)	——
Brake	Cable Lining thickness Drum I.D.	14—16 mm (0.55—0.63 in) 3.5 mm (0.14 in) 80.0 mm (3.15 in)	—— 2.7 mm (0.11 in) 81.0 mm (3.19 in)
Side clutch cable	Lever-to-handlebar grip clearance	30—35 mm (1.18—1.37 in)	——
Carrier bed release cable (BE, BXE types only)	Lever free play	15—20 mm (0.6—0.8 in)	——
Track	Lock nut-to-frame clearance Slack amount [when pushing center of track with 10 kg (22 lb) of force].	5—10 mm (0.2—0.4 in) 8—12 mm (0.31—0.41 in)	—— ——
V-belt	Belt-to-belt stopper clearance	8—10 mm (0.31—0.4 in)	——

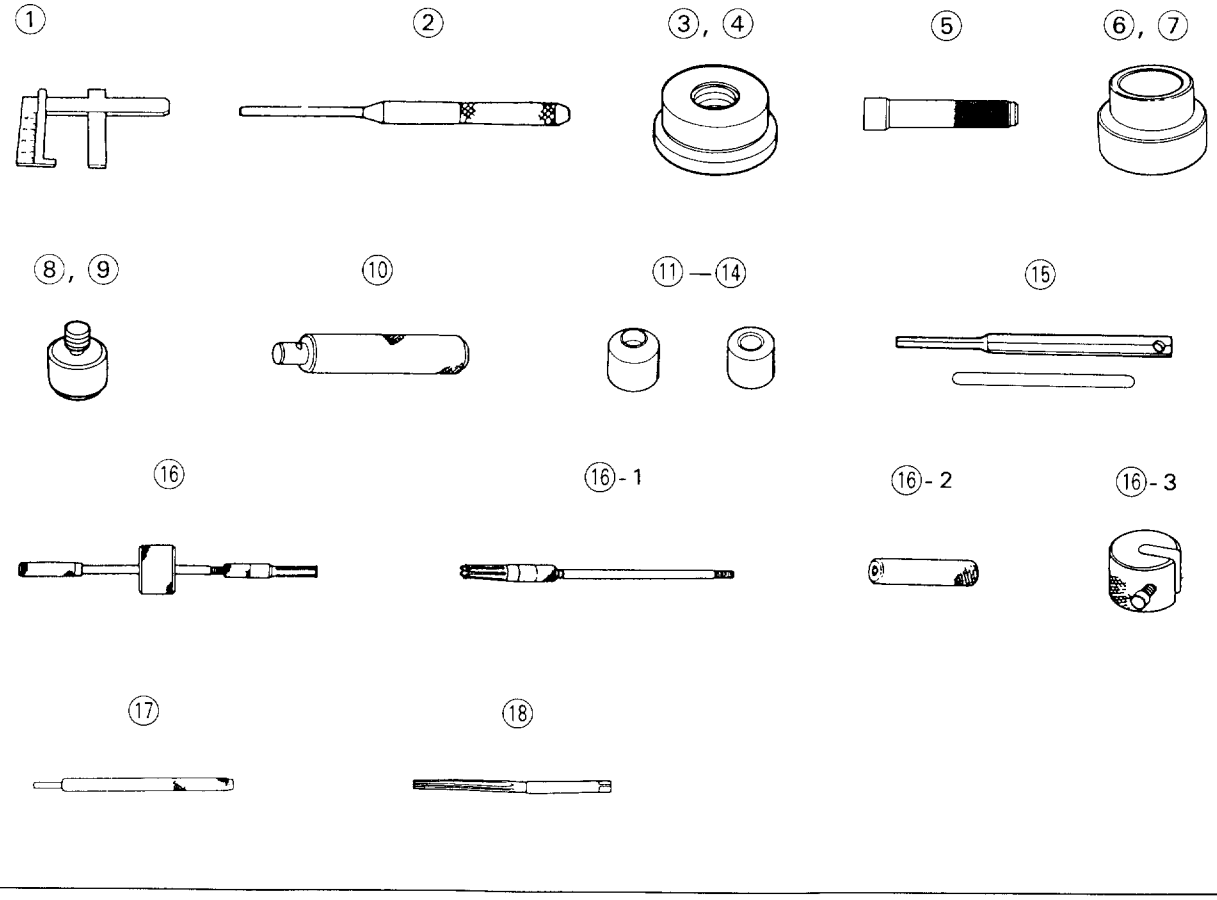
5. TORQUE VALUES

Item	Thread dia. (mm)	Torque		
		N·m	kg-m	ft-lb
• **ENGINE**				
Engine mounting nut	M8 × 1.25	16	1.6	12
Cylinder head bolt	M8 × 1.25	24	2.4	17
Oil drain bolt	M10 × 1.25	18	1.8	13
Connecting rod bolt	M7 × 1.0	12	1.2	9
Flywheel nut	M14 × 1.5 (Special nut)	70—80	7.0—8.0	51—58
Muffler nut	M8 × 1.25	24	2.4	17
Pivot lock nut	M6 × 0.5 (Special nut)	10	1.0	7
Pivot bolt	M8 × 1.25 (Special nut)	24	2.4	17
Fuel tank mounting bolt/nut	M6 × 1.0	10	1.0	7
Fuel filter joint nut	M10 × 1.25	2	0.2	1.4
Air cleaner nut	M6 × 1.0	9	0.9	6.5
Crankcase cover bolt	M8 × 1.25	24	2.4	17
• **FRAME**				
Track tension lock nut	M12 × 1.25	35	3.5	25
Drive sprocket hub bolt	M10 × 1.25	35	3.5	25
Center track roller	M10 × 1.25	35	3.5	25
Driven wheel bolt	M10 × 1.25	35	3.5	25
Transmission case bolt	M10 × 1.25	35	3.5	25
	M6 × 1.0	10	1.0	7
Hydrostatic transmission bolt	M8 × 1.25	18	1.8	13
	M8 × 1.25	24	2.4	17
Bevel gear cover	M8 × 1.25	24	2.4	17
Suction port connector		4.5	0.45	3.3
Side clutch fork bolt	M6 × 1.0 (Special bolt)	13	1.3	9
Side clutch bearing case bolt	M8 × 1.25 (Special bolt)	24	2.4	17
Handlebar bolt	M10 × 1.25	35	3.5	25
Carrier bed bracket bolt (BE, BXE types only)	M10 × 1.25	35	3.5	25
Carrier bed hinge (BE, BXE types only)	M12 × 1.25	58	5.8	42
Brake drum nut	M10 × 1.25 (Castle nut)	35	3.5	25
Transmission case drain bolt	M12 × 1.25	34	3.4	24
Drive sprocket bolt	M10 × 1.25	55	5.5	40
Standard torque values	5 mm screw, bolt, nut	5	0.5	3.6
	6 mm screw	9	0.9	6.5
	6 mm bolt, nut	10	1.0	7
	6 mm flange bolt, nut	11	1.1	8
	8 mm bolt, nut	21	2.1	15
	8 mm flange bolt, nut	22	2.2	16
	10 mm bolt, nut	35	3.5	25
	10 mm flange bolt, nut	40	4.0	29
	12 mm bolt, nut	60	6.0	43
	12 mm flange bolt, nut	60	6.0	43

NOTE: Use standard torque values for fasteners that are not listed in this table.

6. SPECIAL TOOLS

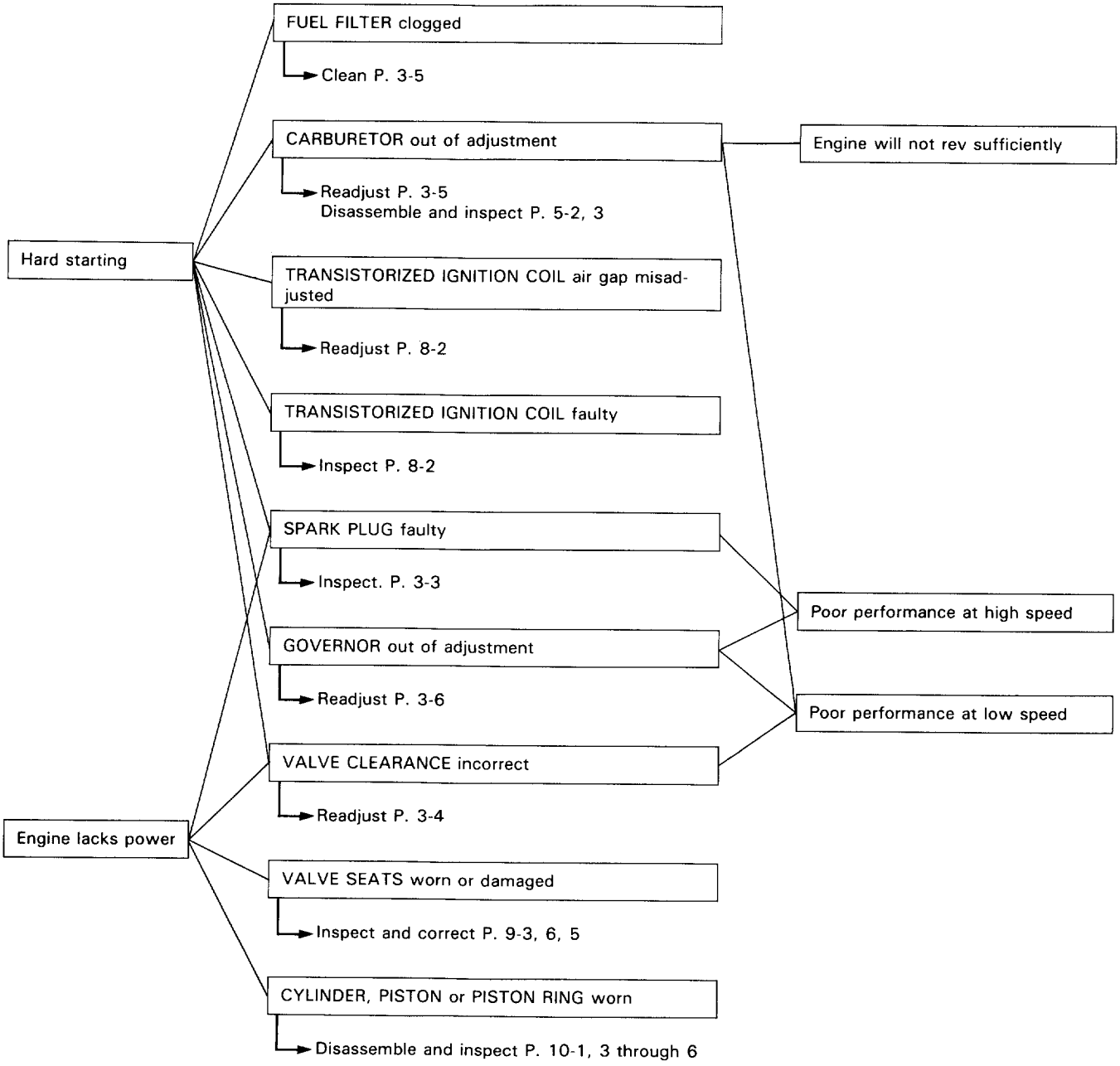
Tool name	Tool number	Application
1. Float level gauge	07401—0010000	Carburetor float level inspection
2. 5.0 mm pin driver	07744—0010400	5 x 20 mm spling pin removal/installation
3. Attachment, 42 x 47 mm	07746—0010300	6203 radial ball bearing installation
4. Attachment, 52 x 55 mm	07746—0010400	6205 radial ball bearing installation
5. Driver, 40 mm I.D.	07746—0030100	Driver for tools 6 and 7
6. Attachment, 30 mm I.D.	07746—0030300	Timing gear installation
7. Attachment, 35 mm I.D.	07746—0030400	Governor drive gear installation
8. Pilot, 15 mm	07746—0040300	6203 radial ball bearing installation
9. Pilot, 25 mm	07746—0040600	6205 radial ball bearing installation
10. Driver	07749—0010000	Driver for tools 3, 4, 8 and 9
11. Valve seat cutter, 45° ϕ24.5	07780—0010100	Valve seat reconditioning EX
12. Valve seat cutter, 45° ϕ27.5	07780—0010200	Valve seat reconditioning IN
13. Valve seat cutter, 32° ϕ25	07780—0012000	Valve seat reconditioning EX
14. Valve seat cutter, 32° ϕ28	07780—0121000	Valve seat reconditioning IN
15. Cutter holder, 5.5 mm	07781—0010101	Valve seat reconditioning
16. Bearing remover set, 15 mm	07936—KC10000	} 6203 radial ball bearing installation
16-1. Bearing remover, 15 mm	07936—KC10500	
16-2. Bearing remover handle	07936—3710100	
16-3. Bearing remover weight	07936—3710200 or 07741—0010200	
17. Valve guide driver	07942—8920000	Valve guide removal/installation
18. Valve guide reamer	07984—4600000	Valve guide reaming



7. TROUBLESHOOTING

- **ENGINE**

a. GENERAL SYMPTOMS AND POSSIBLE CAUSES



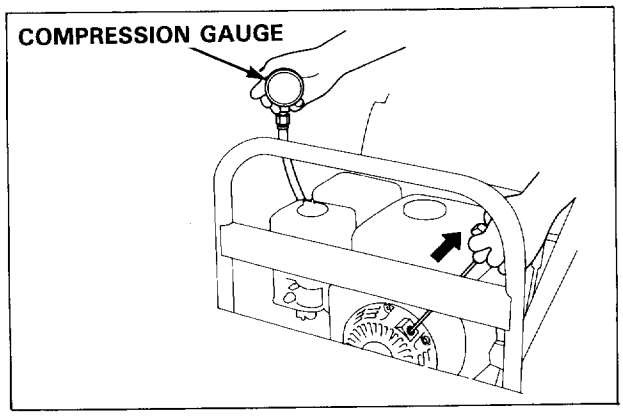
b. HARD STARTING

1. First, check the fuel level in the tank.
   - No fuel → • Fill with fuel and start again.
   - Sufficient fuel ↓
2. Remove spark plug and inspect for wet or fouled electrodes.
   - Dry → • Check for blockage of the fuel tube or filter. • Check for blockage of the main jet or nozzle of the carburetor.
   - Wet → • Clean electrodes and restart, taking care that the choke is not closed too much. • If flooding is severe, check the carburetor float valve.
3. Check the ignition system (P. 2-8)
   - No spark or weak spark → • Replace with new spark plugs and retest (P. 2-8). • Check for broken or frayed high-tension cords or insulation resulting in current leaks (P. 8-1). • Check ignition coil resistance (P. 8-2).
   - Good spark ↓
4. Check the cylinder compression.
   - Abnormal compression → • Check that the valve clearance is correct. • Check that the cylinder head is correctly tightened. • Check to see whether excessive carbon has accumulated in the combustion chamber. • Check for defective cylinder head gasket, valves or valve seats. • Check for worn piston rings, piston or cylinder.
   - Normal compression ↓
5. Install the spark plug and restart the engine.

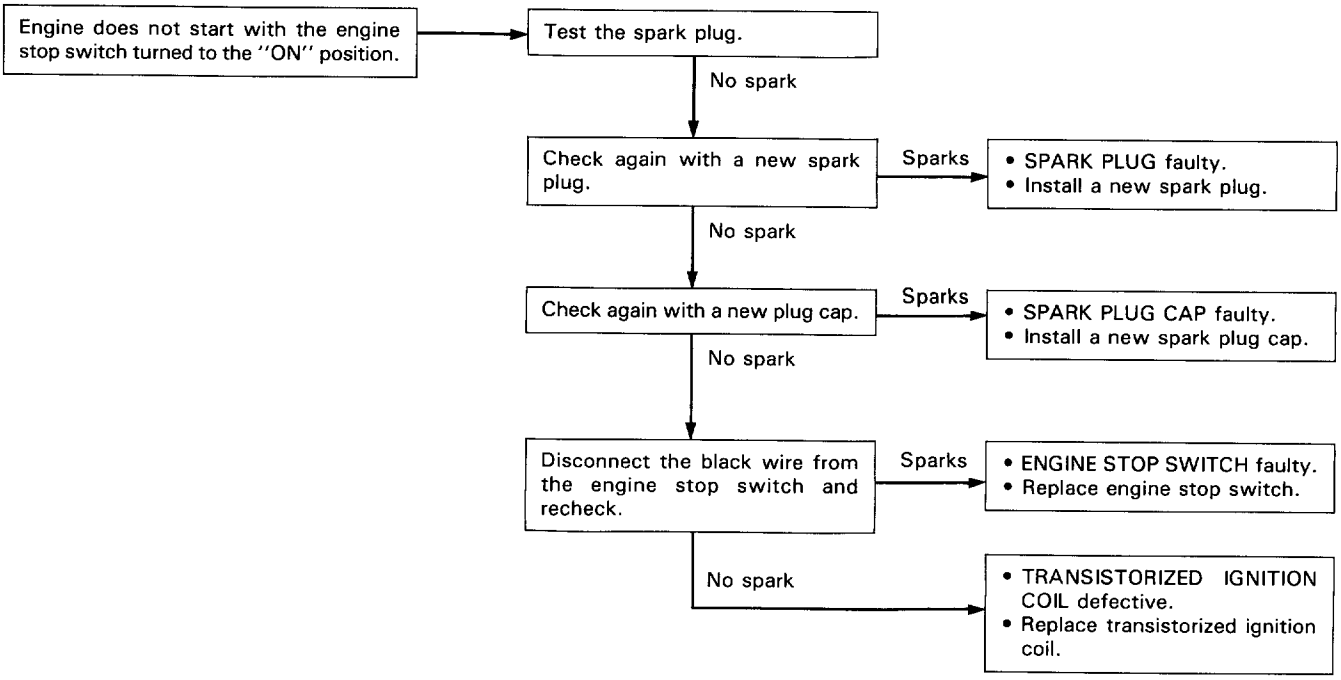
CYLINDER COMPRESSION CHECK

1) Remove the spark plug and install a compression gauge in the spark plug hole.
2) Crank the engine several times with the recoil starter and measure the compression.

Compression	6.0—8.5 kg/cm² (85—121 psi) at 600 min⁻¹ (rpm)



c. IGNITION SYSTEM

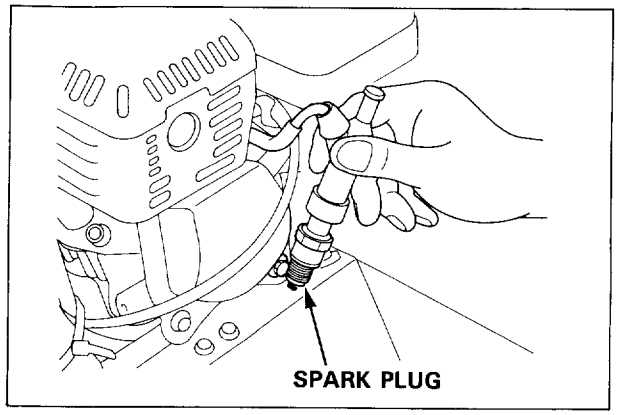


SPARK TEST

1) Remove the spark plug, attach it to the spark plug cap, and ground the side electrode against the cylinder head cover bolt.
2) Turn the engine stop switch to the "ON" position, pull the recoil starter and check to see if sparks jump across the electodes.

⚠ WARNING

- **Never hold the spark plug lead with wet hands while performing this test.**
- **Make sure that no fuel has been spilled on the engine and the plug is not wet with fuel.**
- **To avoid fire hazards, do not allow sparks near the plug hole.**



d. POOR ENGINE PERFORMANCE

Engine starts but stops soon.	• Wet fouled spark plug • Flooded carburetor • Carburetor pilot screw misadjusted • Damaged carburetor inslulator gasket
Engine rpm does not increase.	• Faulty/contaminated spark plug • Choke stays closed • Clogged muffler • Incorrect valve timing • Water in the carburetor • Overheat • Incorrect contact of the valve seat • Overloading
Engine rpm does not decrease.	• Governor misadjusted • Carburetor throttle valve not returned properly • Governor slider misinstalled
Hunting	• Governor misadjusted • Clogged carburetor slow jet • Pilot screw misadjusted • Lean fuel mixture in the carburetor • Damaged carburetor insulator gasket • Governor spring out of place • No or low fuel level in the tank

e. OVERHEAT

Engine overheats.	• Faulty cylinder head gasket/packing
	• Low engine oil level

• FRAME

Does not run. (Does not rotate HST input shaft.)	V-belt is damaged.	Replace (P. 11-1).
	Belt tension spring is out of place.	Install the spring (P. 11-2).
	Tension arm roller is out of place.	Install the roller.
	Drive clutch cable is out of place or improperly adjusted.	• Connect the cable. • Adjust (P. 3-6).
	Engine crankshaft is damaged.	Replace the crankshaft (P. 10-1).
Does not run. (Rotates the HST input shaft.)	Change lever is in "LOW" position.	Move the change lower to "FORWARD" position.
	Change rod is bend.	Replace the rod (P. 16-3).
	5 x 20 mm spring pin on change arm on hydrostatic transmission is out of place.	Install the spring pin (P. 16-5).
	Improperly adjusted side clutch cable.	Adjust (P. 3-8).
	Track is damaged or come off.	• Replace the transk (P. 12-1). • Install the tracks.
	Wheel shaft is bend.	Replace the wheel shaft (P. 14-11, 12)
	Transmission is damaged.	Disassemble and service (P. 14-1, 2, 10 through 12).
	Internal faults are in the hydrostatic transmission.	Replace.
Side clutch does not operate.	Side clutch cable is out of place or improperly adjusted.	• Connect the cable. • Adjust (P. 3-8).
	Transmission is damaged.	Disassemble and service (P. 14-1, 2, 10 through 12).

Drive sprocket and track will not mesh.	Foreign matter struck in track.	Remove foreign matter.
	Drive sprocket is damaged.	Replace (P. 12-1).
	Track tension is improperly adjusted.	Readjust (P. 3-8)
Power carrier moves with change lever in "LOW" position.	Change lever is improperly adjusted.	Adjust (P. 3-9).
Abnormal noise from hydrostatic transmission.	Insufficient warming up when temperature is low.	Sufficient warming up.
	Hydrostatic transmission fluid level is too low.	Refill (P. 3-11).
	Overload of hydrostatic transmission.	Shift to low speed.
	Internal faults are in the hydrostatic transmission.	Replace (P. 14-4).
Power carrier does not stop with the drive clutch lever in "STOP" position or glides down on a slope.	Drive clutch cable improperly adjusted.	Adjust the drive clutch cable (P. 3-6).
	Brake cable improperly adjusted.	Adjust the brake cable (P. 3-7).
	Worn brake shoes.	Replace the brake shoes (P. 13-1).
Power carrier does not turn with the side clutch lever squeezed or sounds rattling.	Side clutch cable improperly adjusted.	Adjust the side clutch cable (P. 3-8).

BE, BXE types only:

Carrier bed does not rise with the carrier bed release lever squeezed.	Carrier bed release cable improperly adjusted.	Adjust the carrier bed release cable (P. 3-8).
Carrier bed does not lock when pressed on the frame.		

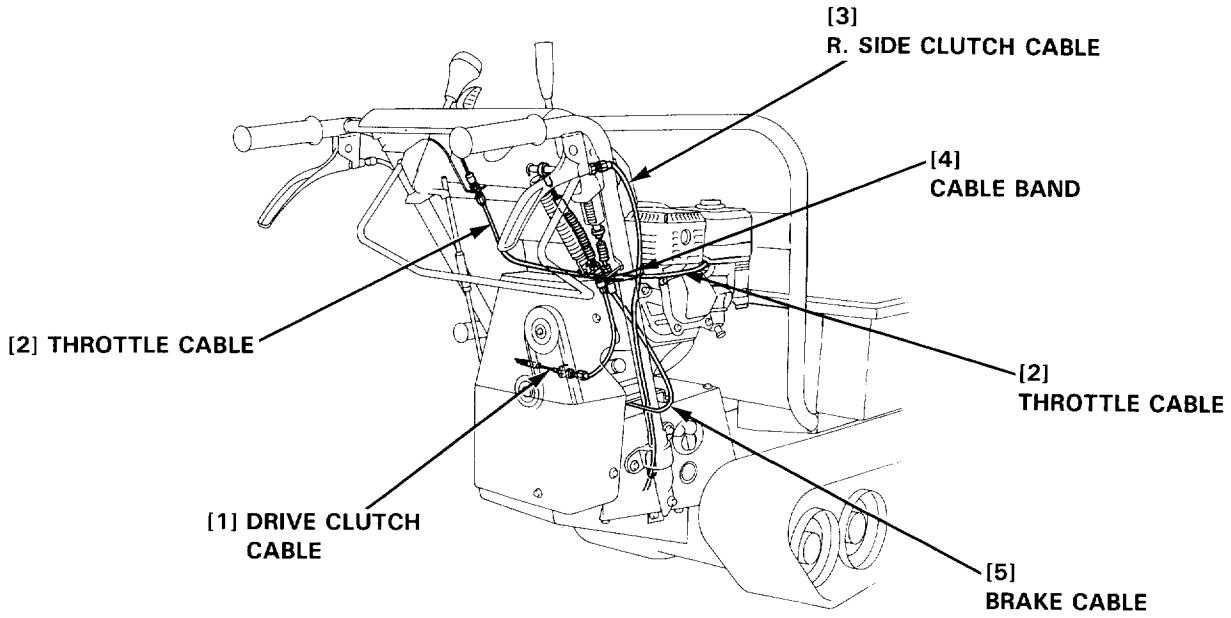
8. MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (2) / ITEM Perform at every indicated month or operating hour interval, whichever comes first.		EACH USE	FIRST MONTH OR 20 HRS	EVERY 3 MONTHS OR 50 HRS	EVERY 6 MONTHS OR 100 HRS	EVERY YEAR OR 300 HRS
Engine oil	Check level Change	○	○		○	
Air cleaner	Check Clean	○		○(1)		
Tracks	Check Adjust	○	○			○
Drive clutch cable	Check-Adjust		○		○	
Side clutch cable	Check-Adjust		○		○	
Parking brake cable	Check-Adjust		○		○	
Spark plug	Check-Clean				○	
Carrier bed release cable	Check-Adjust				○	
Throttle control cable	Check-Adjust					○
Brake shoe	Check Change				○	○
HST fluid	Check	○				
Transmission oil	Check					○
Grease	Apply					○
Valve clearance	Check-Adjust					○
Fuel tank and filter	Clean					○
Fuel line	Check (Replace if necessary)	Every 2 years				

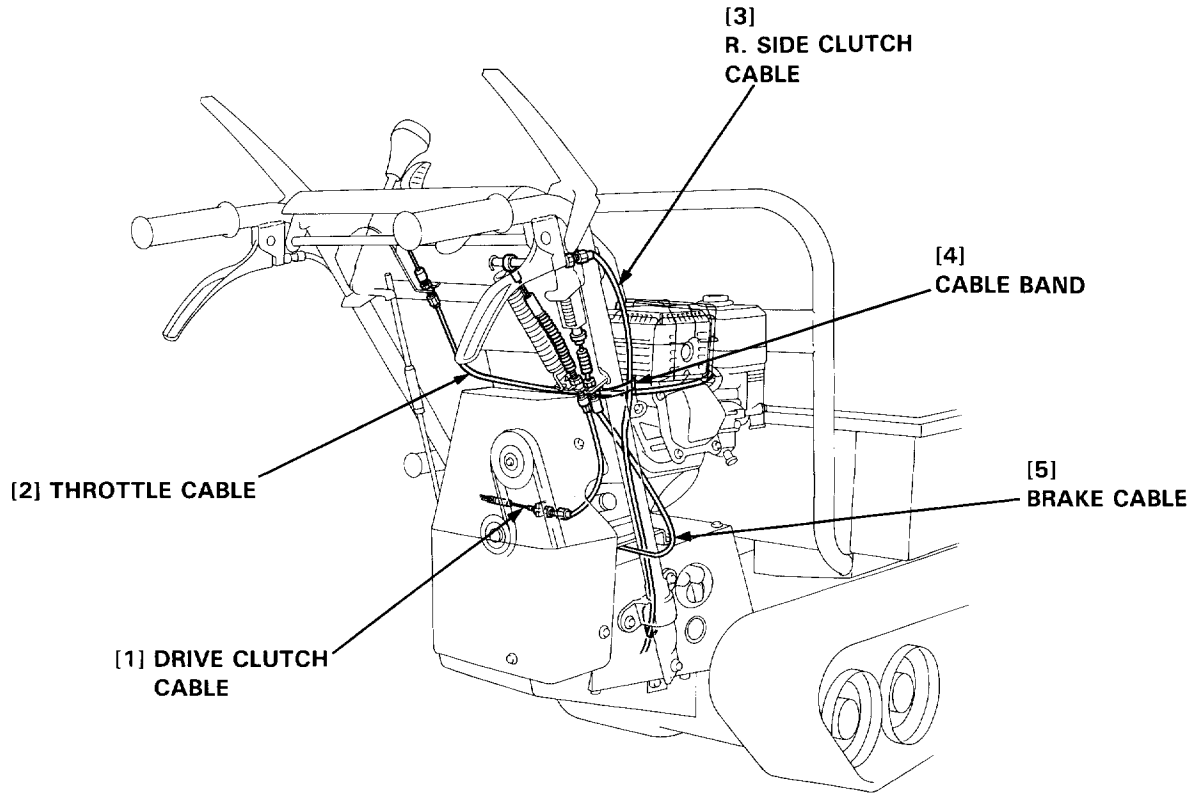
NOTE (1): Service more frequently when used in a dusty area.
(2): For professional commercial use, log hours of operation to determine proper maintenance intervals.

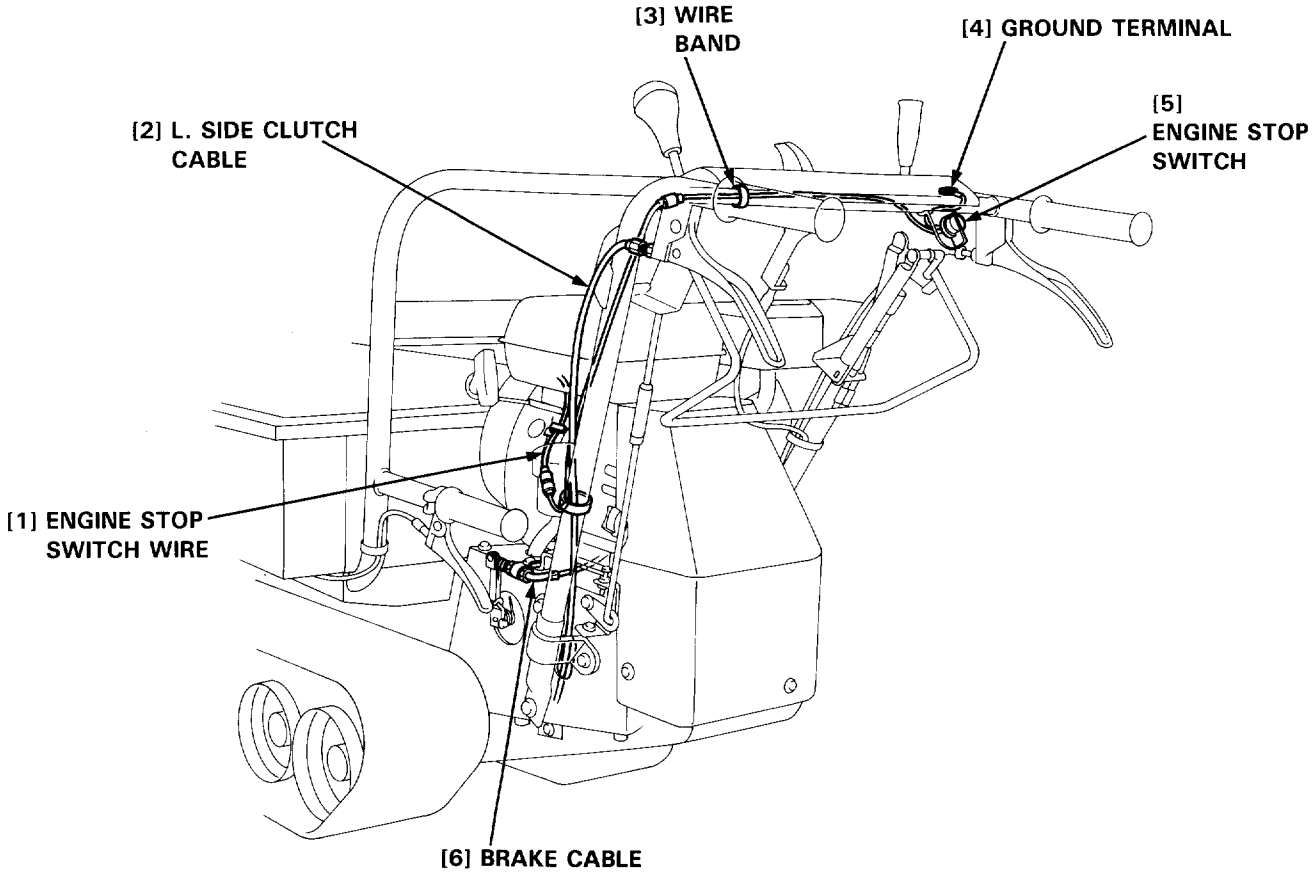
9. CABLE/HARNESS ROUTING

BE, NE types:

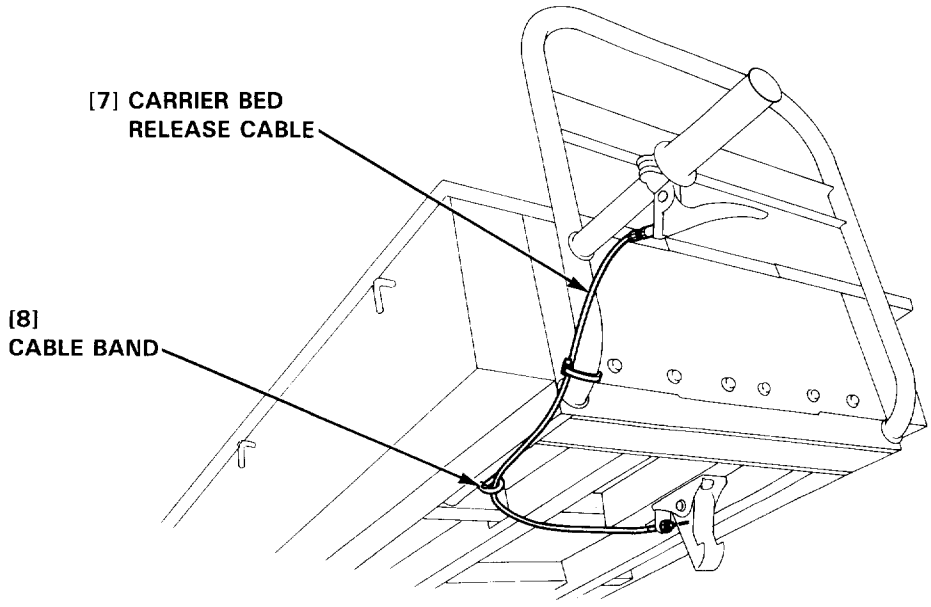


BXE, NXE types:

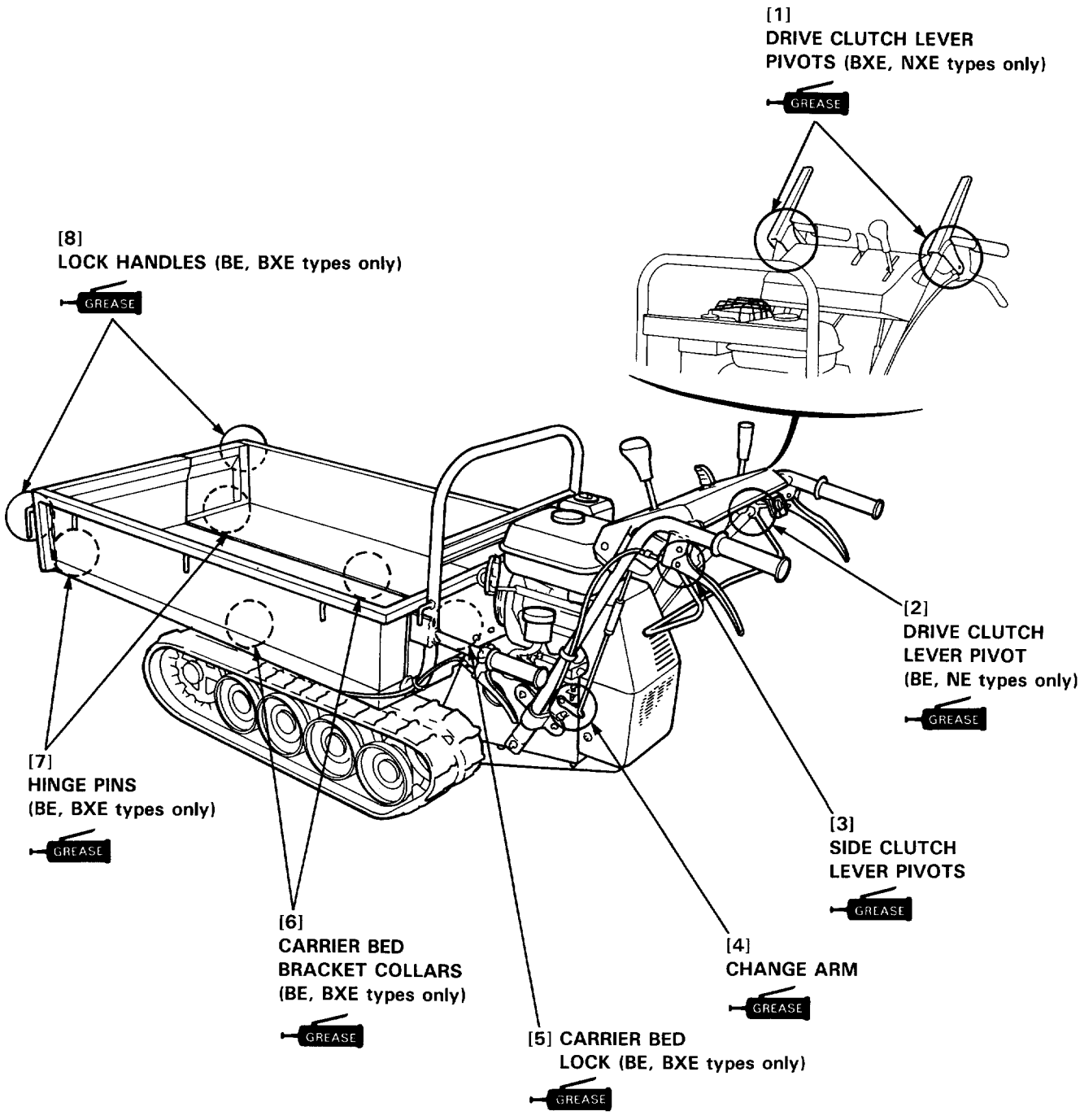




BE, BXE types only:



10. GREASE POINTS



3. MAINTENANCE

1. ENGINE OIL

⚠ WARNING

- **Used motor oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.**

NOTE

- Draining can be performed rapidly and completely when the engine is still warm.

1) Park the power carrier on a level surface.
2) Remove the oil filler cap/dipstick and drain plug. Allow the oil to drain completely.
3) Reinstall the drain plug, and tighten it securely.

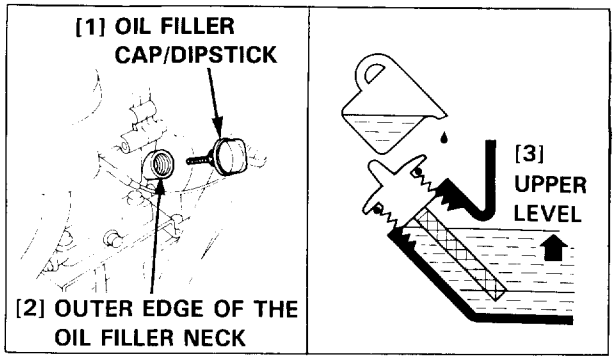
TORQUE: 18 N·m (1.8 kg-m, 13 ft-lb)

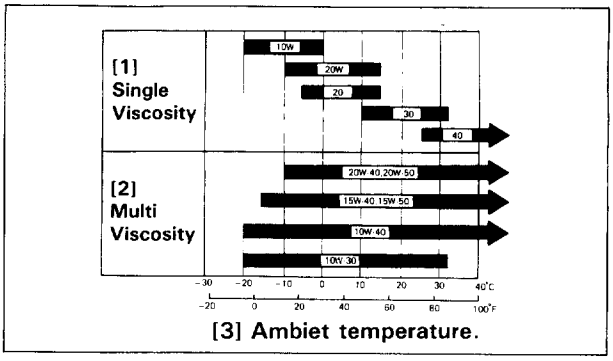
4) Fill the crankcase with the recommended engine oil to the lower edge of the oil filler neck.

Engine oil capacity	0.6 ℓ (0.63 US qt, 0.53 Imp. qt)

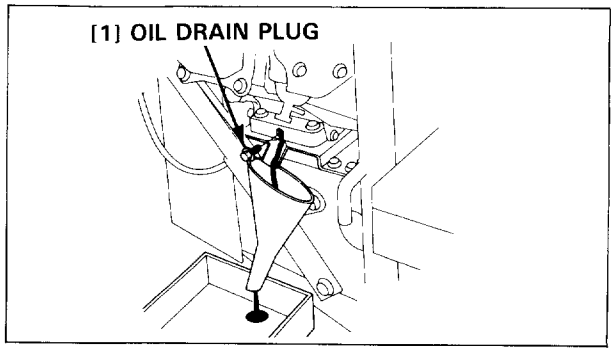
Recommended engine oil	SAE 10W-30 Service classification SG. SF/CC. CD.

5) Reinstall the oil filler cap/dipstick.





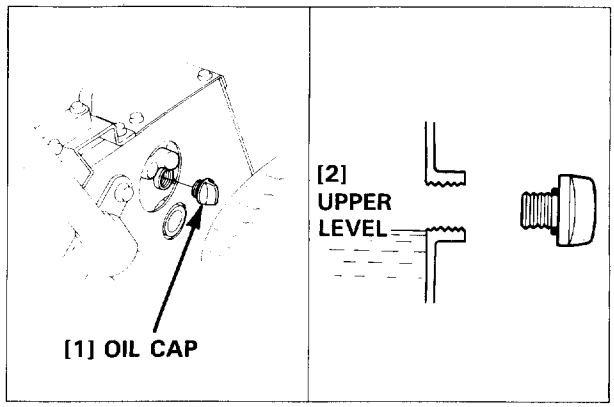
[3] Ambiet temperature.



2. TRANSMISSION OIL

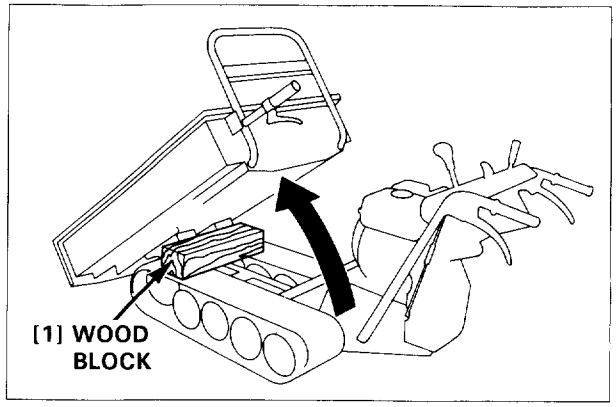
INSPECTION:

1) Park the power carrier on a level surface.
   Remove the oil cap and check whether the oil level is at the upper level.
2) If the level is low, add the oil to the upper level.



REPLACEMENT:

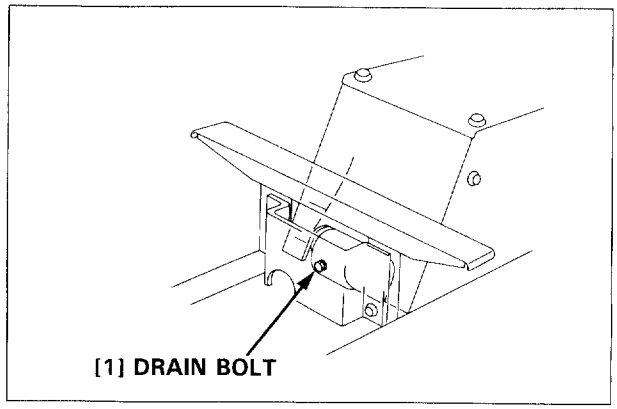
1) Raise the carrier bed and set a wood block or equivalent material between the track and frame to support the carrier bed (BE, BXE types only).



2) Remove the oil cap and drain bolt, and drain the oil.
3) Tighten the drain bolt to the specified torque.

TORQUE: 34 N·m (3.4 kg-m, 24 ft-lb)

4) Fill the fresh oil to the upper level.



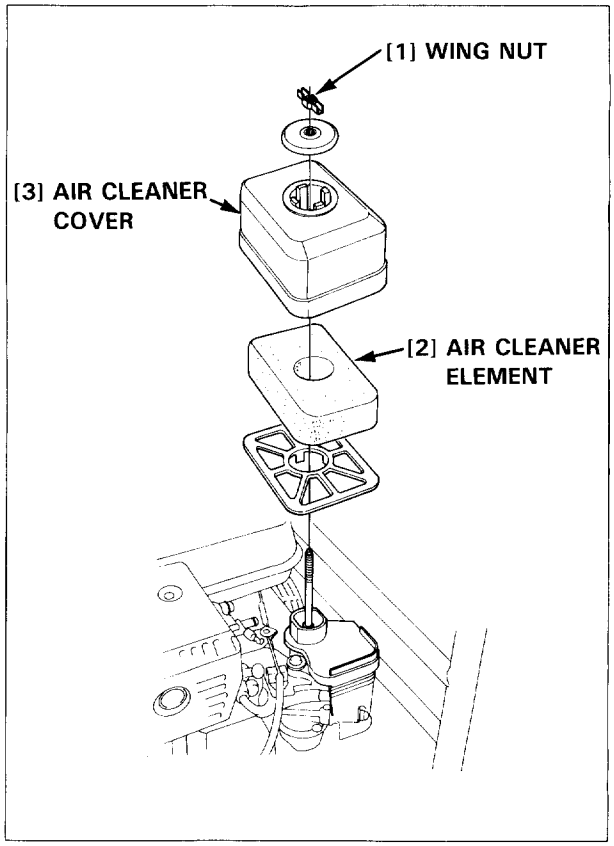
Transmission oil capacity	2.3 ℓ (2.43 US qt, 2.02 Imp. qt)

Recommended oil	SAE 10W-30 Service classification SG. SF/CC. CD.

5) After refilling the oil, check the oil level again and add to the upper level if necessary.

3. AIR CLEANER

1) Loosen the wing nut and remove the air cleaner cover and air cleaner element.



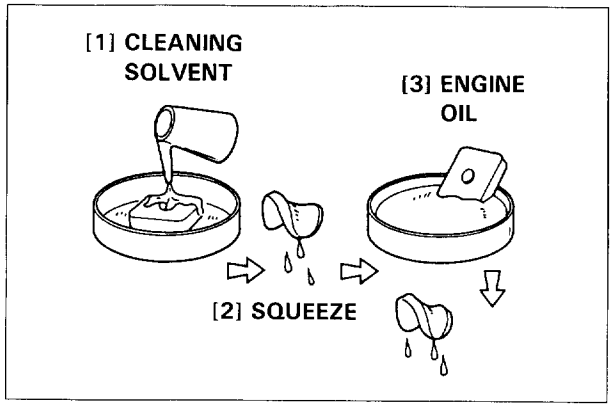
2) Wash the air cleaner element in solvent and squeeze it or blow with compressed air to dry. Soak it in the clean engine oil, squeeze out the excessive oil and reinstall.

CAUTION

- **Carefully check elements for holes or tears and replace as required. Damaged elements will pass dirt into the system. Always clean the air cleaner, air cleaner cover and air passages before installing clean elements.**

NOTE

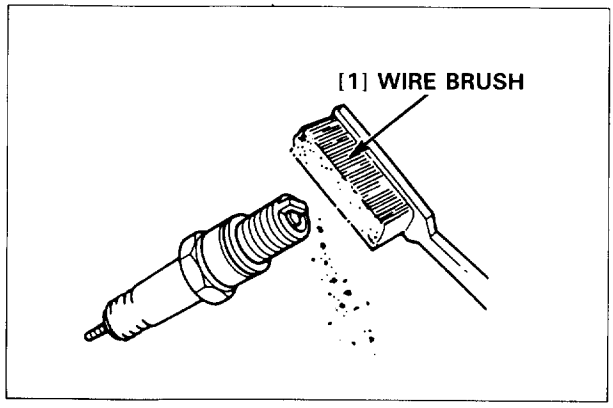
- Install the elements securely. There should be no clearance between the air cleaner case and element.
- The engine will run poorly when the air cleaner needs maintenance. If it runs better without the air cleaner than it does with clean elements, or if the length of time between cleanings keeps getting shorter, replace the elements. Under extremely dusty conditions such as volcanic ash, silt, etc., the system may need daily maintenance.



3) Reinstall the air cleaner elements and air cleaner cover securely.

4. SPARK PLUG

1) Clean any dirt from around the spark plug.
2) Remove the plug cap, and use a spark plug wrench to remove the plug.
3) Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. The center electrode should have square edges and the side electrode should not eroded.
4) Remove any deposits with a wire brush.



5) Check the plug gap with a wire-type feeler gauge and correct the gap as necessary by bending the side electrode.

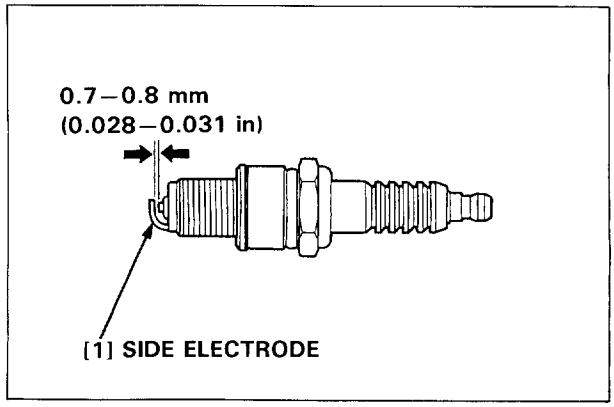
Spark plug gap	0.7—0.8 mm (0.028—0.031 in)

Recommended spark plug	BPR6ES (NGK) W20EPR-U (NIPPONDENSO)

6) Make sure the sealing washer is in good condition.
7) Install the plug fingertight to seat the washer, then tighten with a plug wrench (an additional 1/2 turn if a new plug) to compress the sealing washer. If you are reusing a plug, tighten 1/8-1/4 turn after the plug seats.

CAUTION

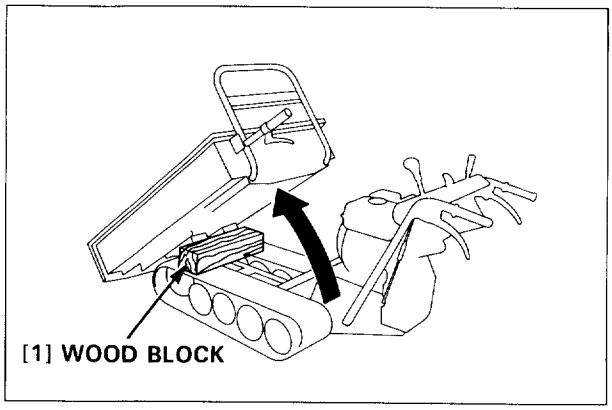
- **The spark plug must be securely tightened. An improperly tightened plug can become very hot and possibly damage the engine.**
- **Never use spark plug with an improper heat range.**



5. VALVE CLEARANCE

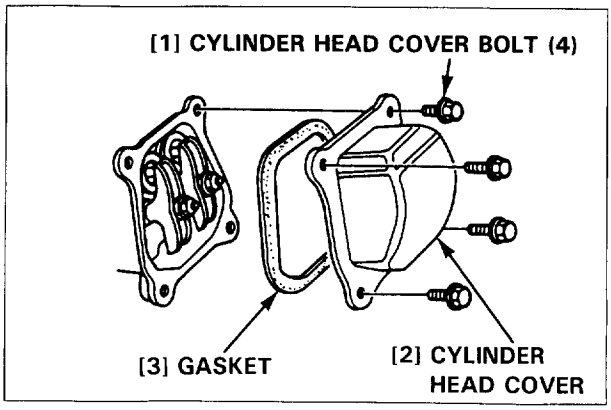
Valve clearance inspection and adjustment must be performed with the engine cold.

1) Remove the spark plug cap.
   Raise the carrier bed and set a wood block or equivalent material between the carrier bed and track to support the carrier bed (BE, BXE types only).
2) Remove the four cylinder head cover bolts, cylinder head cover and gasket.



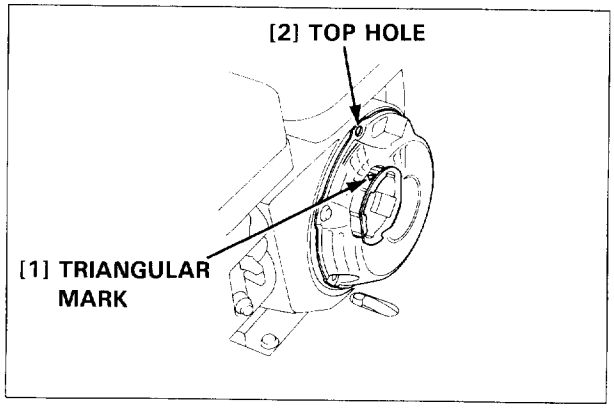
NOTE

- After the cylinder head cover is removed, engine oil may flow.
  Be sure to wipe up any flowed oil.

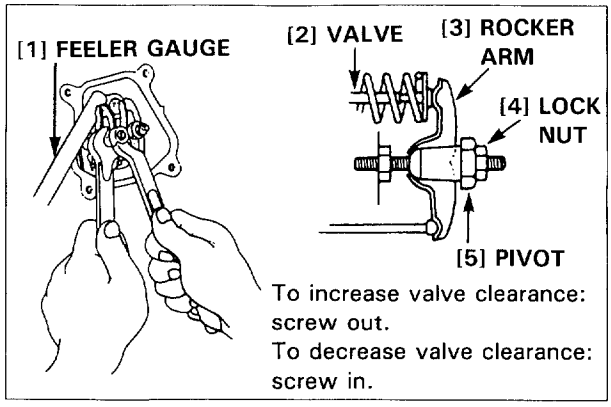


3) Set the piston at top dead center of the compression stroke (both valves fully closed). The triangular mark on the starter pulley will align with the top hole on the fan cover when the piston is at top dead center of the compression or exhaust stroke.
4) Insert a feeler gauge between the rocker arm and valve to measure valve clearance.

Standard valve clearance	IN	0.15±0.02 mm (0.006±0.001 in)
	EX	0.20±0.02 mm (0.008±0.001 in)



5) If adjustment is necessary, proceed as follows:
   a. Hold the rocker arm pivot and loosen the pivot lock nut.
   b. Turn the rocker arm pivot to obtain the specified clearance.
   c. Retighten the lock nut while holding the rocker arm pivot.
   d. Recheck valve clearance after tightening the lock nut.

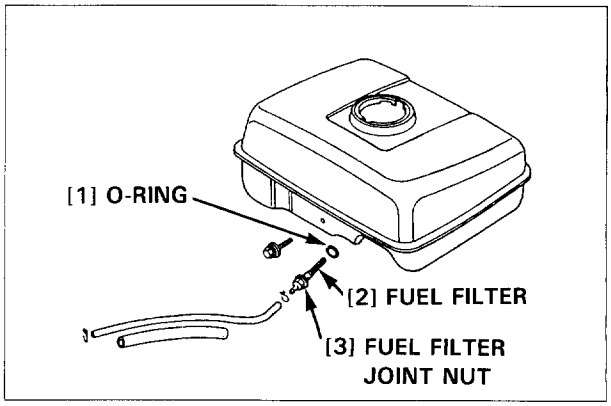


6. FUEL TANK/FUEL FILTER

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**
- **After installing the fuel filter, check for leaks, and make sure the area is dry before starting the engine.**

1) Drain the fuel from the fuel tank, disconnect the fuel line from the fuel valve and remove the fuel tank. (P. 5-4)
2) Disconnect the fuel line from the fuel tank and remove the fuel filter.
3) Clean the fuel tank with solvent and dry the fuel tank completely.
4) Clean the fuel filter screen by blowing it out with compressed air.
5) Check the fuel filter screen for damage, replace if necessary.
6) Connect the fuel filter and the fuel tank line to the fuel tank. Reinstall the fuel tank.
7) Connect the fuel tank line to the fuel valve.



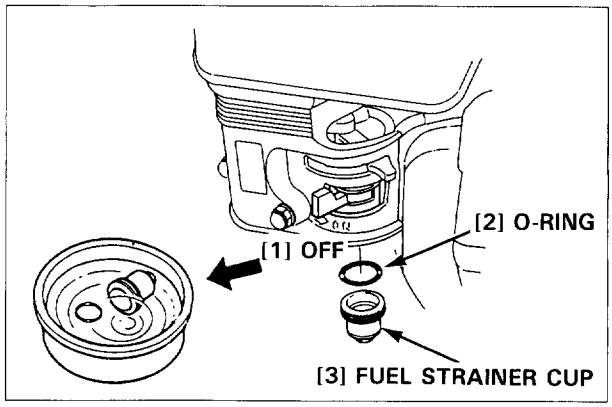
7. FUEL STRAINER CUP

⚠ WARNING

- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**
- **After installing the fuel strainer cup, check for leaks, and make sure the area is dry before starting the engine.**

1) Set the fuel valve to "OFF" and remove the fuel strainer cup.
2) Clean dirt and water from the bottom of the fuel strainer cup with solvent.
3) Install the O-ring and the fuel strainer cup after cleaning. Tightening them securely to prevent leakage.

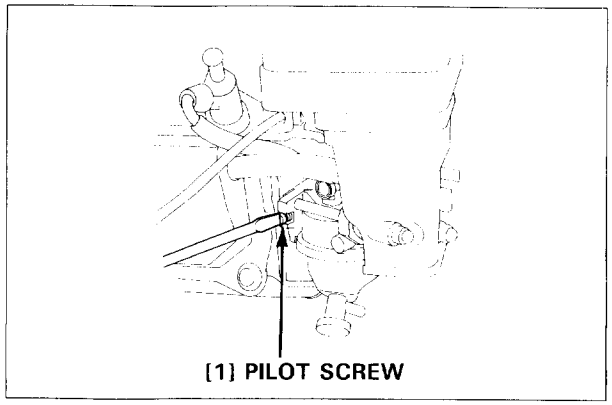
TORQUE: 4 N·m (0.4 kg-m, 3 ft-lb)



8. CARBURETOR

1) Start the engine and allow it to warm up to normal operating temperature.
2) Move the throttle lever to the "LOW" position.
3) Turn pilot screw in until it seat lightly and then back it to specified opening below.

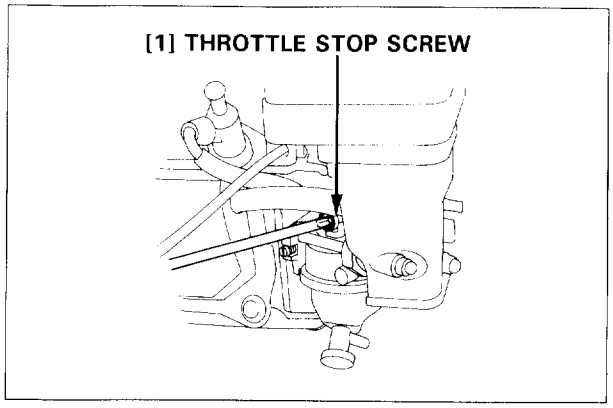
Pilot screw opening	2−1/8 turns out



4) Start the engine and turn the pilot screw in or out to obtain the highest idle speed.
5) Set a tachometer and adjust the idle speed by turning the throttle stop screw.

Idle speed (with throttle cable disconnected)	1,400 $^{+200}_{-150}$ min^{-1} (rpm)

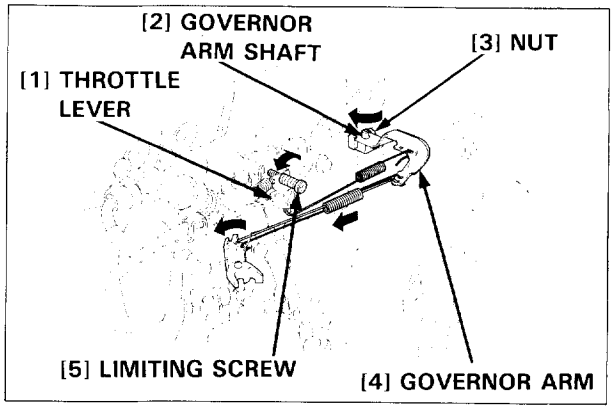
6) For the idle speed with the throttle cable connected, refer to the throttle cable adjustment (P. 3-12).



9. GOVERNOR

1) Remove the fuel tank (P. 5-4)
2) Loosen the nut on the governor arm pinch bolt, and move the governor arm to fully open the throttle.
3) Rotate the governor arm shaft as far as it will go in the same direction and governor arm moved to open the throttle.
4) Start the engine and allow it to warm up to normal operating temperature. Move the throttle lever to run the engine at the standard maximum speed, and adjust the throttle lever limiting screw so the throttle lever cannot be moved past that point.

Standard maximum speed (No load)	3,600 $^{0}_{-100}$ min^{-1} (rpm)

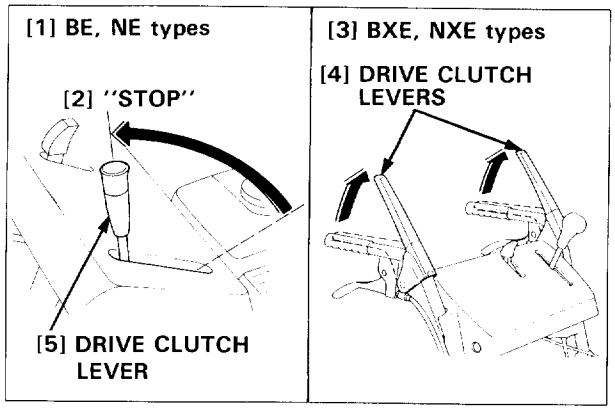


10. DRIVE CLUTCH CABLE

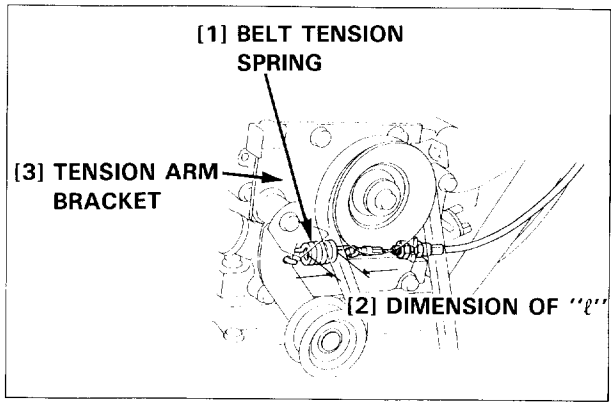
1) Remove the spark plug cap.
2) Remove the belt cover (P. 4-1).
3) Move the drive clutch lever to the "STOP" position (BE, NE types).
   Release the drive clutch levers (BXE, NXE types).

NOTE

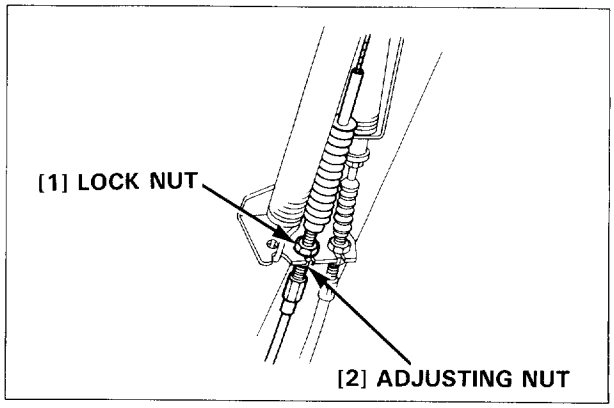
- BXE and NXE types: The drive clutch engages when the drive clutch levers are squeezed and the drive clutch disengages when the lever are relesed.



4) Measure the belt tension spring length, i.e. dimension of "ℓ", with the drive clutch lever in the "STOP" position.
5) Move the drive clutch lever to the "DRIVE" position and measure the belt tension spring length.
6) Compare the belt tension spring length when the drive clutch lever is in the "STOP" position with the belt tension spring length when the lever is in the "DRIVE" position. If the gap is 5 mm (0.2 in) or less, adjust as follows.

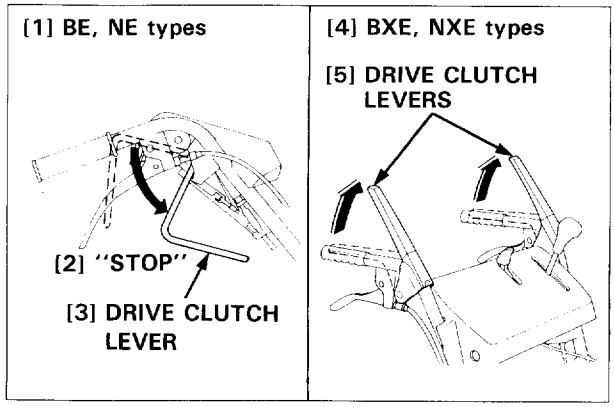


7) Move the drive clutch lever to the "STOP" position. Loosen the lock nut of the drive clutch lever side and turn adjusting nut right or left so that the gap between the two spring lengths is 5—7 mm (0.2—0.3 in).
8) After adjustment, tighten the lock nut securely. Compare the spring length when the drive clutch lever is in the "STOP" position with the spring length when the drive clutch lever is in the "DRIVE" position again. The gap between the two spring lengths must be 5—7 mm (0.2—0.3 in).
Adjust the belt stopper (P. 3-10).
9) Install the spark plug cap and start the engine. Operate the drive clutch lever and be sure that the transmission cooling fan does not ratate when the drive clutch lever is in the "STOP" position.

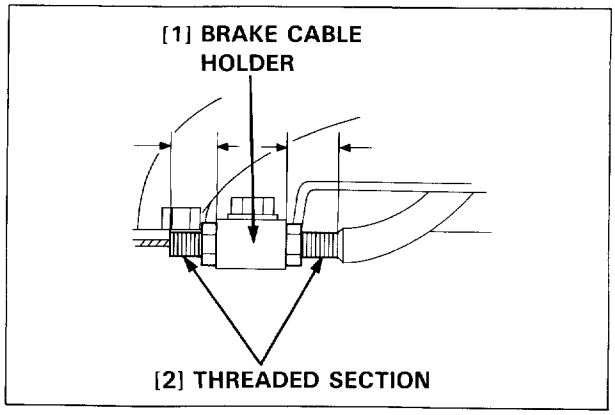


11. BRAKE CABLE

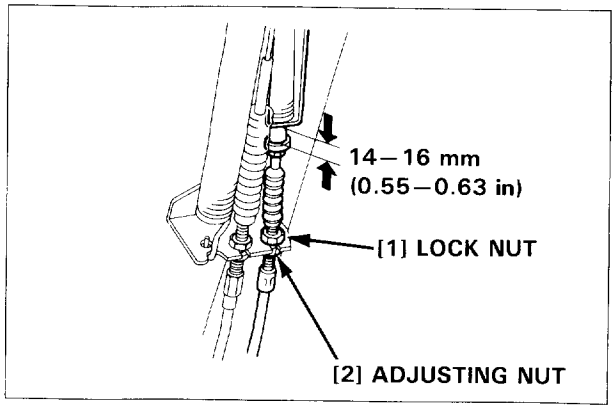
1) Inspect and adjust with the drive clutch lever in the "STOP" position (BE, NE types) or release the drive clutch levers (BXE, NXE types).



2) Be sure that threaded section of the brake cable of the brake arm side is set at the center of the brake cable holder.

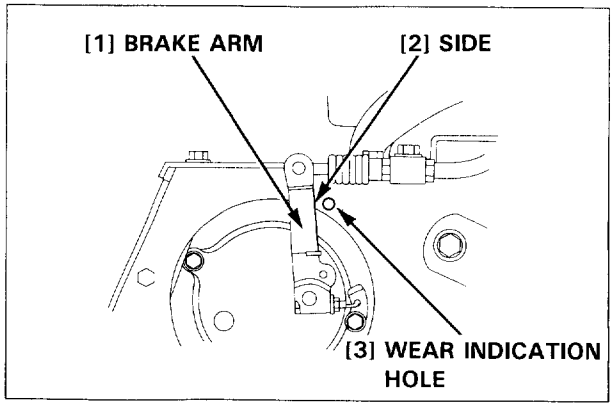


3) Check that the brake spring collar protrudes 14—16 mm (0.55—0.63 in) from the brake spring holder.
4) Adjust the brake cable by loosening the lock nut and turning the adjusting nut.



12. BRAKE SHOES

1) Move the drive clutch lever to the "STOP" position (BE, NE types) or release the drive clutch levers (BXE, NXE types). Be sure that the brake arm side is not in alignment with the wear indication hole in the left main frame.
2) If the brake arm side is in alignment with the wear indication hole, replace the brake shoe (P. 13-1).



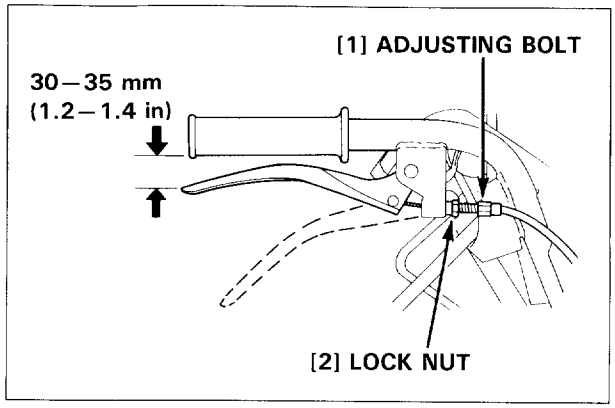
13. SIDE CLUTCH CABLE

1) Move the power carrier back and forth while holding the side clutch levers.

NOTE

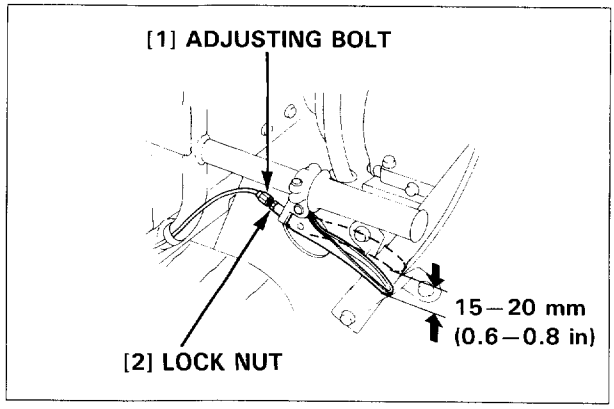
- This is the position where the side clutch gear projection is not interfering with the side clutch bearing case projection (P. 14-11).

2) Squeeze the side clutch lever and measure the clearance between the tip of the lever and the handlebar grip. It should be 30—35 mm (1.2—1.4 in).
3) To adjust the clearance, loosen the lock nut and turn the adjusting bolt right or left while squeezing the side clutch lever. After adjustment, tighten the lock nut securely.



14. CARRIER BED RELEASE CABLE (BE, BXE types only)

1) Make sure the carrier is locked by pushing it down firmly.
2) Check that the carrier bed release lever free play is 15—20 mm (0.6—0.8 in). Adjust by loosening the lock nut and turning the adjusting bolt if necessary.
3) After adjustmen, tighten the lock nut securely.

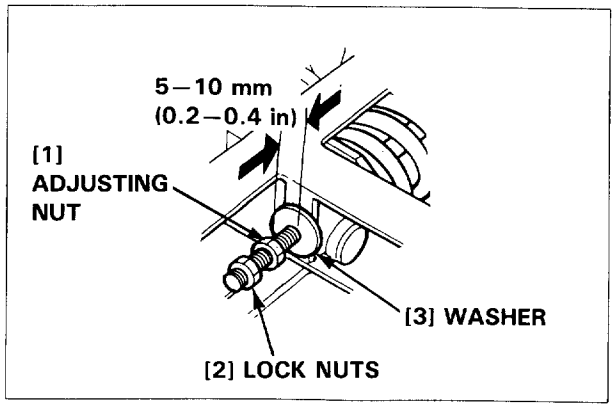


15. TRACKS

TENSION ADJUSTMENT

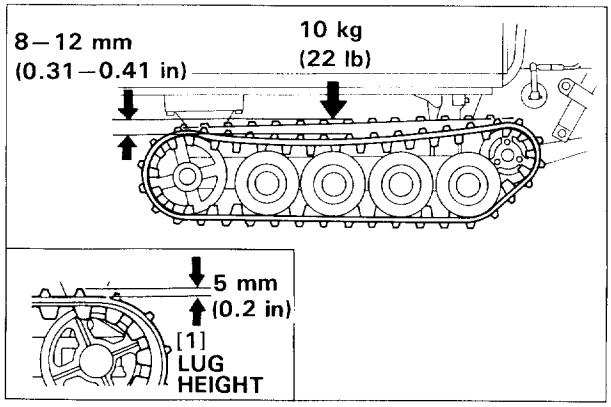
1) Squeeze the carrier bed release lever.
   Raise the carrier bed and prop it open to prevent it from accidentally closing while you are working under it.
2) Loosen the lock nut on both right and left tension spring rods.
3) Turn the adjusting nuts to obtain a clearance of 5—10 mm (0.2—0.4 in) between the adjusting nuts and the frame.

   NOTES:
   - Right and left sides must be adjusted simultaneously to ensure that both tension springs extend freely.
   - If correct track tension (see INSPECTION) cannot be obtained with clearance between the adjustment nuts and the frame, replace the track.



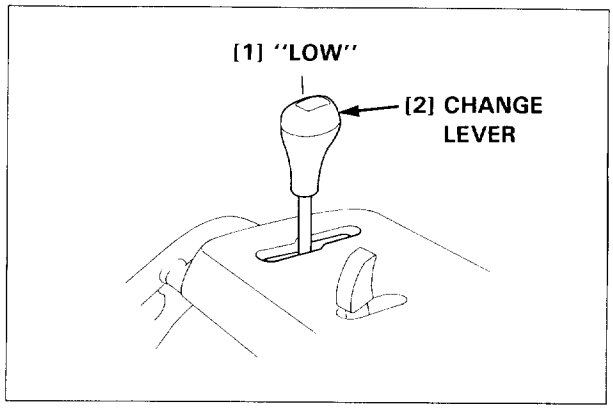
INSPECTION

1) Measure the height of the track lugs.
   Replace the tracks if the lugs are worn to a height of less than 5 mm (0.2 in).
2) Check track tension by measuring its deflection at the mid-point of the track. If tension is correct, the track will deflect 8—12 mm (0.31—0.41 in) when pressed downward with a force of 10 kg (22 lb).
   Adjustment is required if the track deflects 15 mm (0.6 in) or more.

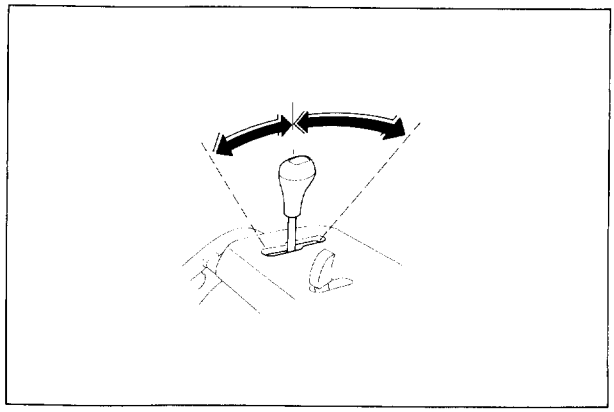


16. CHANGE LEVER

1) Place the power carrier on a level surface.
2) Move the change lever to the "LOW" position (the power carrier does not move) and start the engine.



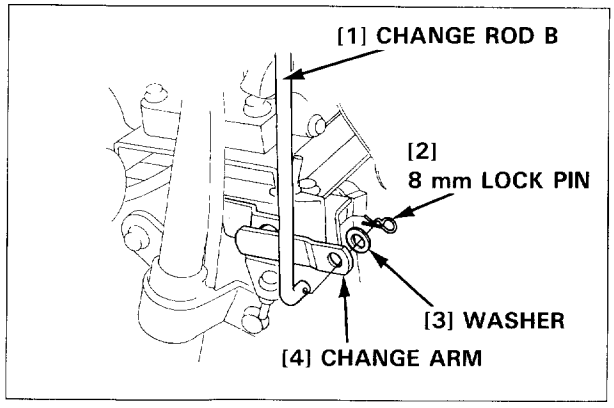
3) Move the drive clutch lever to the "DRIVE" position (BE, NE types) or release the drive clutch levers (BXE, NXE types). Operate the change lever to find the position where the power carrier does not move. Stop the engine.



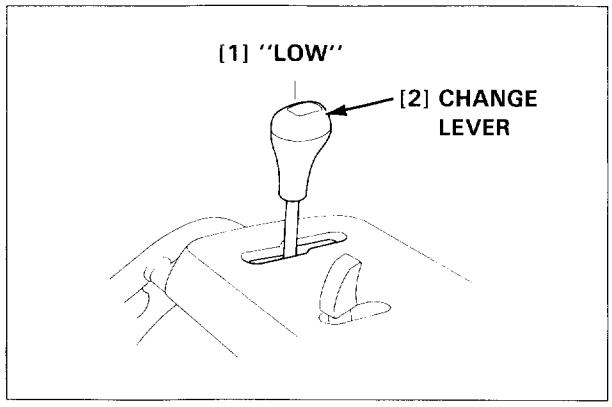
4) Remove the lock pin and washer from the change rod B, then remove the change rod B from the change arm.

NOTE

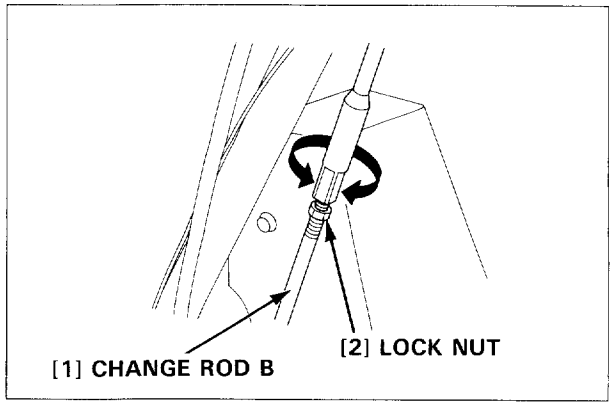
- Hold the change lever not to move and remove the change rod.
- If the change lever moved repeat from the stop 3.



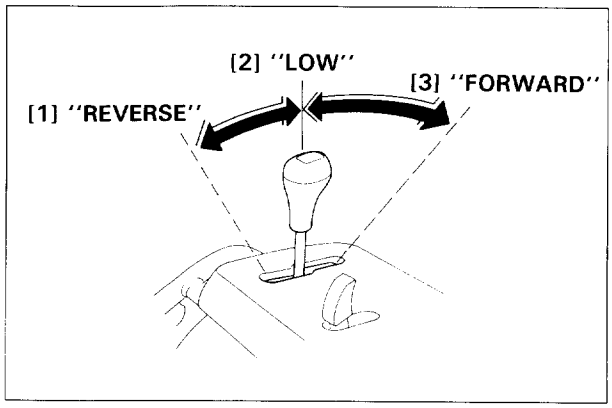
5) If the change lever is not in the "LOW" position, i.e. position where the power carrier does not move, move the change lever to the "LOW" position.



6) Loosen the lock nut on the change rod.
Turn the change rod B right or left and adjust the change rod length so that the change rod can be inserted into the hole in the change arm smoothly.
After adjustment, install the washer and lock pin and tighten the lock nut securely.

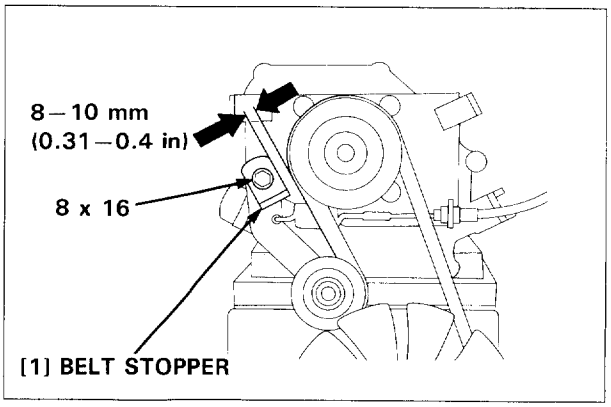


7) Start the engine and move the drive clutch lever to the "DRIVE" position (BE, NE types) or release the drive clutch levers (BXE, NXE types). Move the change lever slowly from the "FORWARD" or "REVERSE" position to the "LOW" position, i.e. position where the power carrier does not move, and be sure that the power carrier stops.
8) If the power carrier does not stop when the change lever is in the "LOW" position, repeat the above steps 3 through 6.



17. BELT STOPPER

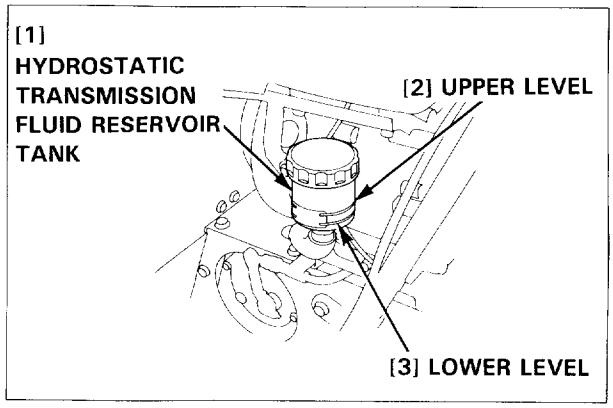
Adjust the belt stopper after adjusting the drive clutch cable.
1) Remove the spark plug cap.
Move the drive clutch lever to the "DRIVE" position (BE, NE types) or release the drive clutch levers (BXE, NXE types).
Remove the belt cover (P. 4-1).
2) Loosen the 8 x 16 mm flange bolt and adjust the clearance between the belt and belt stopper to 8—10 mm (0.31—0.4 in).
After adjustment, tighten the 8 x 16 mm flange bolt securely.



18. HYDROSTATIC TRANSMISSION FLUID

INSPECTION:

1) Place the power carrier on a lever surface.
2) Check the hydrostratic transmission fluid level.
   It should be between the "UPPER" and "LOWER" levels.
   If the fluid level is below or near the "LOWER" level, refill the recommended hydrostatic transmission fluid to the "UPPER" level.



REPLENISHMENT:

1) Place the power carrier on a level surface.
2) Remove the fluid cap body and rubber cap from the hydrostatic transmission fluid reservoir tank.

CAUTION

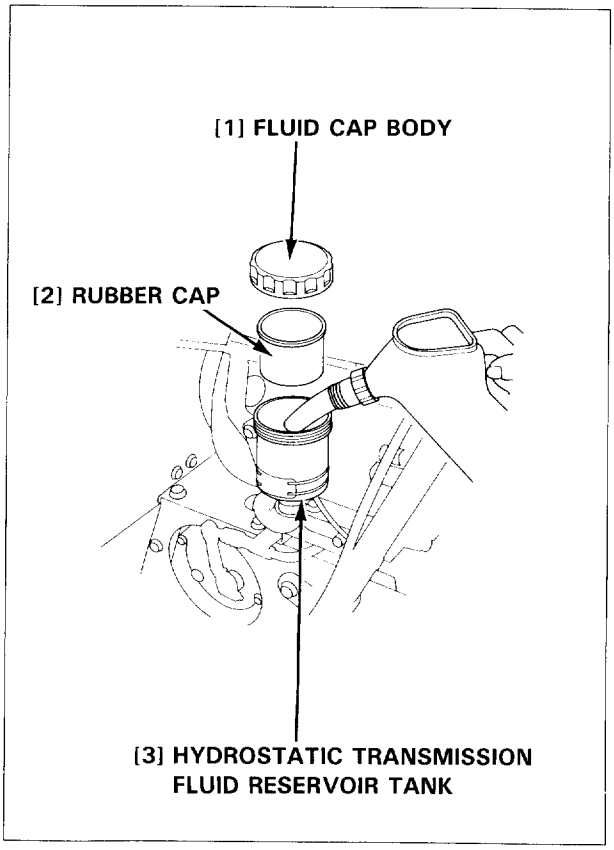
- **Take care not to let dust, dirt, or other foreign materials enter the transmission fluid reservoir tank.**

3) Refill the recommended fluid to the "UPPER" level.

Oil capacity	0.6 ℓ (0.64 US qt, 0.53 Imp. qt)

Recommended fluid	SAE 10W-30 Service classification SG. SF/CC. CD.

4) After replenishment, install the rubber cap and tighten the fluid cap body.

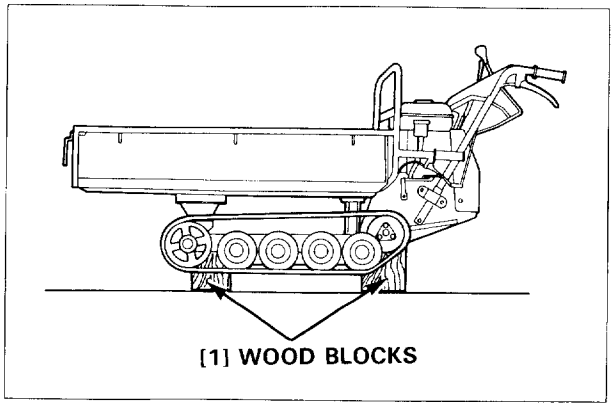


19. HYDROSTATIC TRANSMISSION AIR BLEEDING

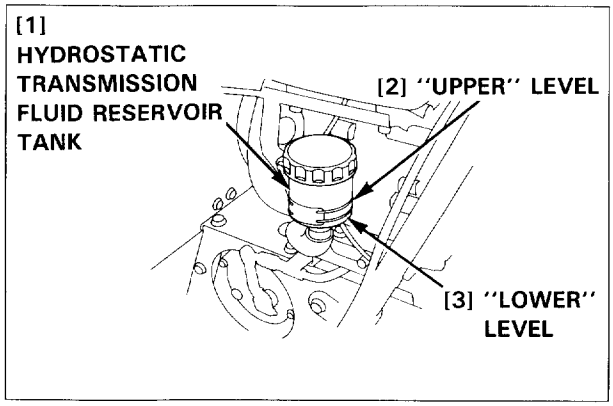
1) Park the power carrier on a level surface.
   Set the wood blocks or equivalent material at two points under the power carrier to raise the tracks off the ground.

CAUTION

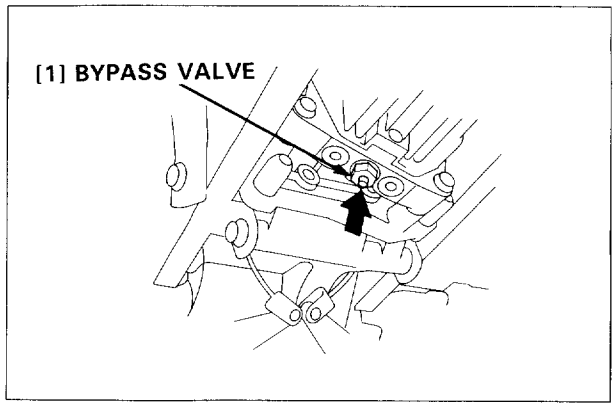
- **Do not set the wood blocks or equivalent material under the transmission case.**



2) Check that the change lever is set in the "LOW" position (power carrier does not move).
3) Check that the hydrostatic transmission fluid level is between the "UPPER" and "LOWER" levels. If the level is low, refill the hydrostatic transmission fluid reservoir tank with the hydrostatic transmission fluid (P. 3-11).
4) Remove the under cover (P. 11-1).
5) Remove the fluid cap body and rubber cap from the hydrostatic transmission fluid reservoir tank.



6) Start the engine. More the drive clutch lever to the "DRIVE" position (BE, NE types) or release the drive clutch levers (BXE, NXE types) and push in the bypass valve fully located under the hydrostatic transmission.
7) Push the bypass valve until there are no bubbles in the hydrostatic transmission fluid reservoir tank. Return the valve and check the hydrostatic transmission fluid level.
8) If the fluid level is low, stop the engine and fill the fluid tank up to the "UPPER" level.
9) Drive the power carrier and recheck the fluid level.

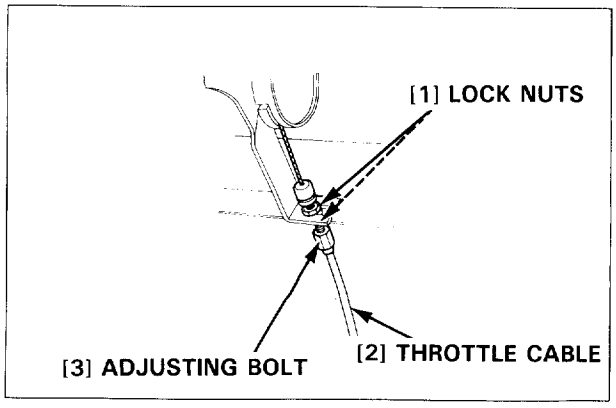


Oil capacity	0.6 ℓ (0.64 US qt, 0.53 Imp. qt)

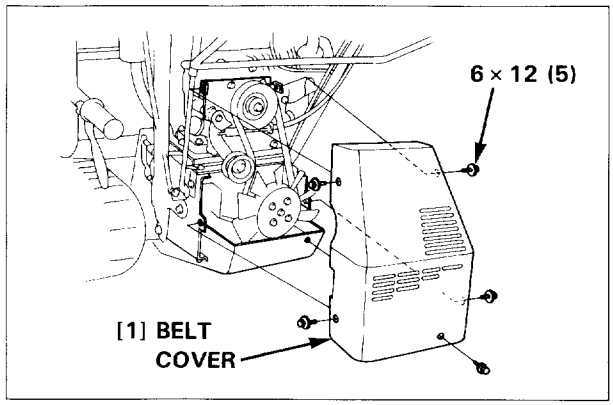
Recommended fluid	SAE 10W-30 Service classification SG. SF/CC. CD.

20. THROTTLE CABLE

1) Move the throttle lever to the "LOW" position.
2) Check that the throttle cable has no free play.
   If the cable has free play, adjust as follows.
3) Loosen the two throttle cable lock nuts.
4) Start the engine. Turn the adjusting bolt slowly until the engine speed reaches 2,000 ± 100 min^{-1} (rpm), then tighten the two lock nuts securely.

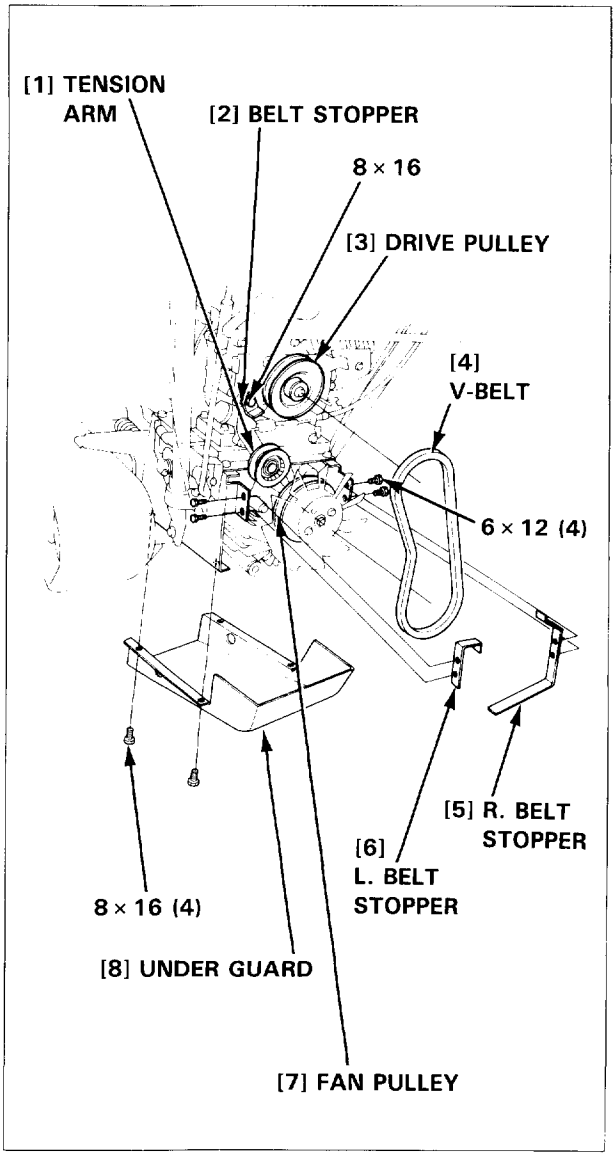


1. ENGINE REMOVAL/INSTALLATION

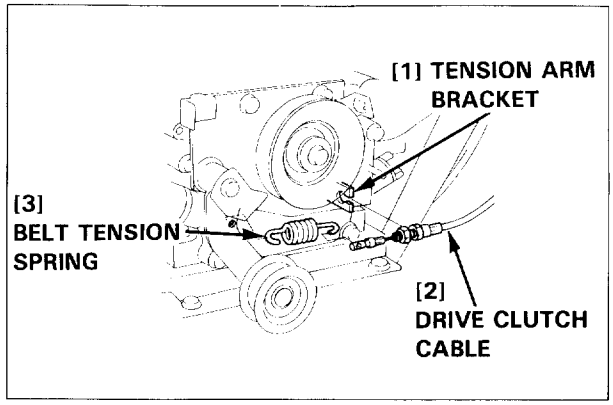


• REMOVAL

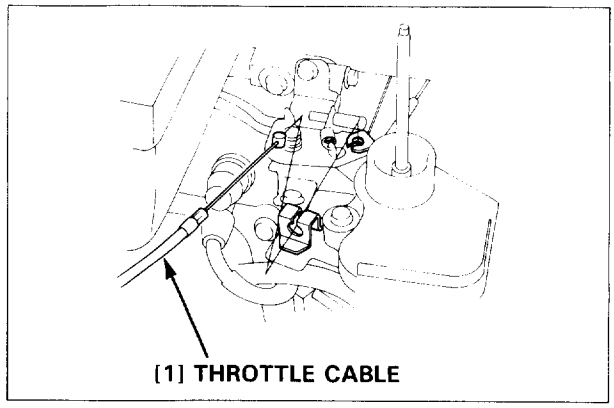
1) Park the power carrier on a level surface.
   Move the drive clutch lever to the "STOP" position (BE, NE types).
   Release the drive clutch levers to stop the power carrier (BXE, NXE types).
2) Remove the five 6 × 12 mm flange bolts and belt cover.
3) Loosen the 8 × 16 mm flange bolt from the belt stopper.
4) Remove the four 8 × 16 mm flange bolts and under guard.
5) Remove the four 6 × 12 mm flange bolts and L./R. belt stoppers.
6) Pulling the tension arm out, remove the V-belt from the drive pulley then remove the V-belt from the fan pulley.



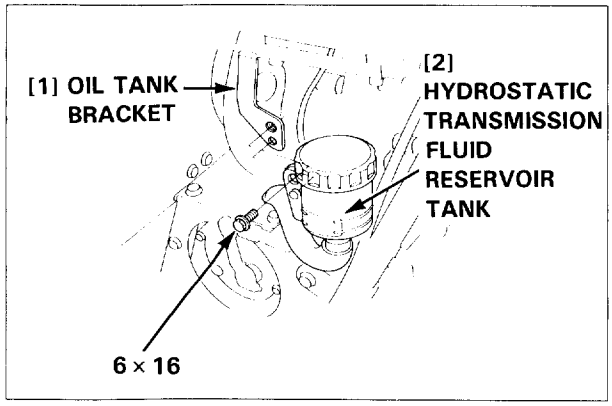
7) Disconnect the drive clutch cable and belt tension spring from the tension arm bracket.



8) Remove the air cleaner cover, air cleaner element and air cleaner grid (P. 5-1).
9) Disconnect the throttle cable.



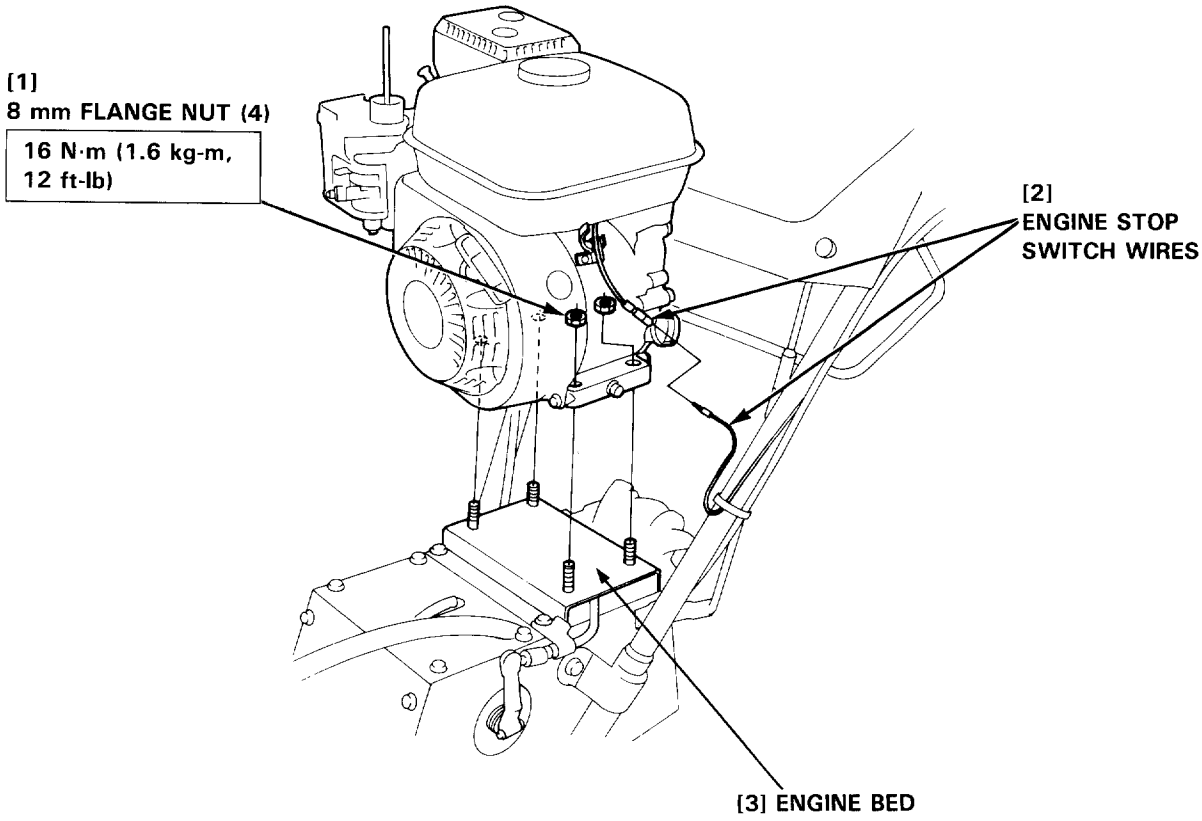
10) Remove the 6 x 16 mm flange bolt and the hydrostatic transmission fluid reservoir tank from the oil tank bracket.



11) Disconnect the engine stop switch wire and remove the four 8 mm flange nuts. Then remove the engine from the engine bed.

⚠ WARNING

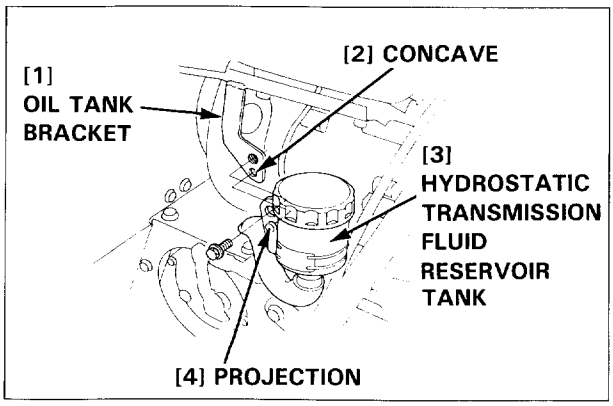
- **When raising the carrier bed, support it by placing the wood blocks or equivalent material between the carrier bed and frame (BE, BXE types only).**



• INSTALLATION

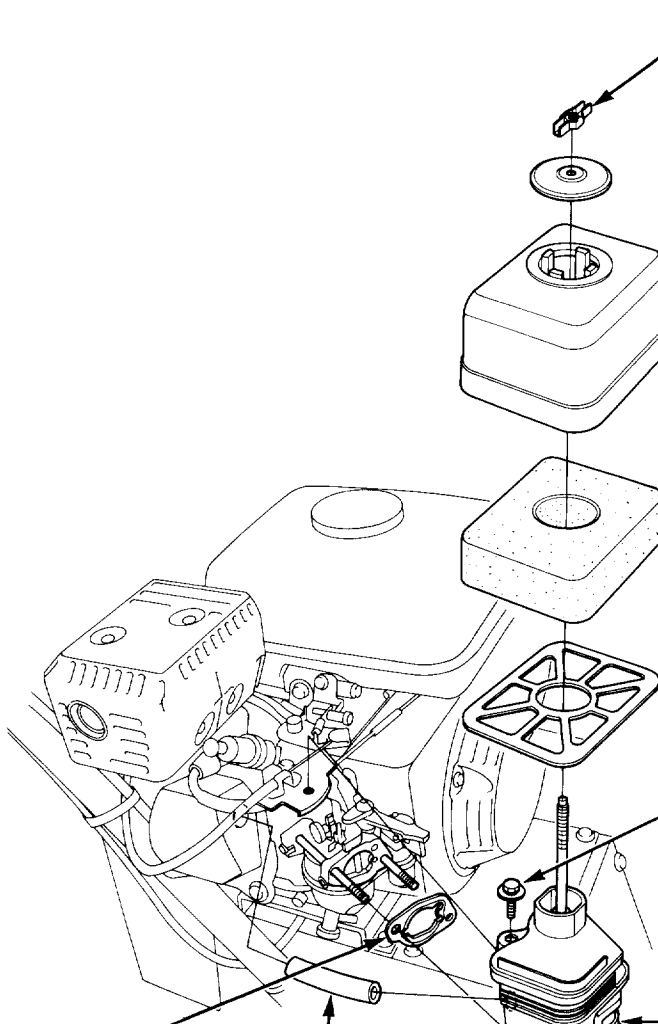
Install the engine in the reverse order of removal, noting the following points.

1) Align the projection of the hydrostatic transmission fluid reservoir tank with the concave of the oil tank bracket and tighten the hydrostatic transmission fluid reservoir tank with the 6 x 12 mm flange bolt.



After mounting, adjust the followings:
- Drive clutch cable (P. 3-6).
- Belt stopper (P. 3-10).

1. AIR CLEANER



[1]
WING NUT
9 N·m (0.9 kg-m, 6.5 ft-lb)

[2]
AIR CLEANER COVER
REASSEMBLY:
After reassembling the element and grid into the cover, install the cover to the body.

[3]
AIR CLEANER ELEMENT (FORM)
CLEANING: P. 3-3

[4]
AIR CLEANER GRID

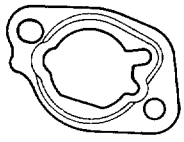
[5]
6 × 20 mm WASHER-BOLT

[6]
AIR CLEANER ELBOW
DISASSEMBLY/REASSEMBLY:
- Remove and install with the choke lever and fuel valve in the "ON" position.
- Clean the inside of the elbow with compressed air before installation.

[7] 6 mm CAP NUT (2)

[8]
BREATHER TUBE
REASSEMBLY:
After installing on the air cleaner elbow, insert into the hole in the cylinder head cover.

[9]
AIR CLEANER ELBOW GASKET
REASSEMBLY:
Check for damage and install. Note the installation direction.



[9]-1
VIEW FROM THE AIR CLEANER SIDE

2. CARBURETOR

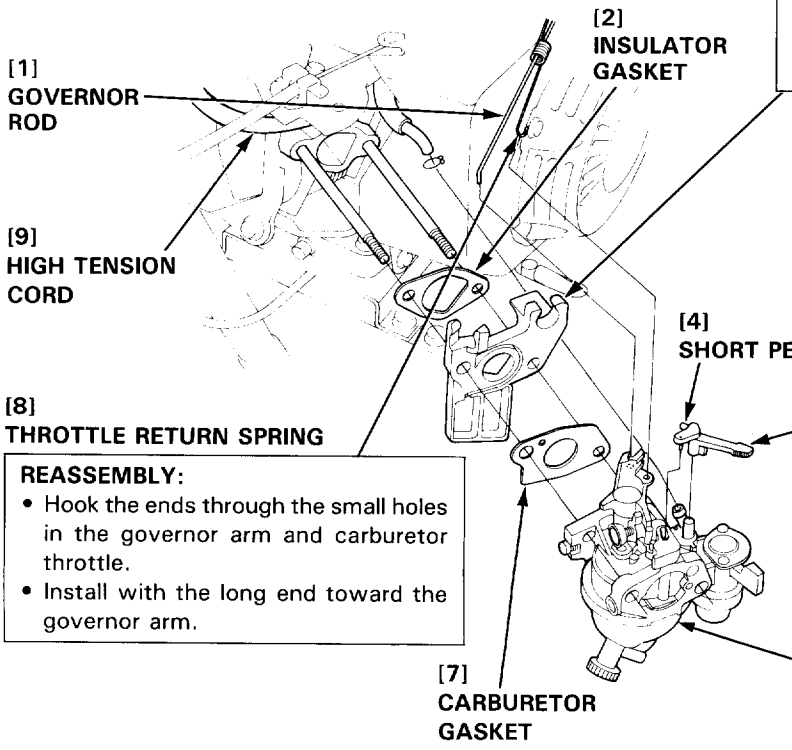
a. REMOVAL/INSTALLATION

⚠ WARNING

- **Before disassembly, drain the fuel tank and fuel line completely.**
- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**

1) Remove the air cleaner elbow (P. 5-1).
2) Disconnect the throttle return spring and governor rod from the carburetor. Remove the carburetor.

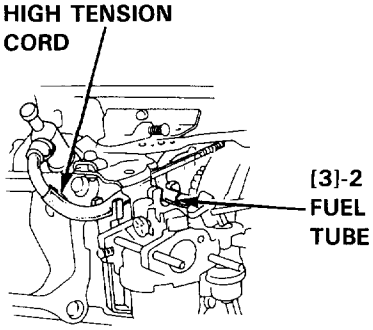
Install the carburetor in the reverse order of removal.



REASSEMBLY:
- Hook the ends through the small holes in the governor arm and carburetor throttle.
- Install with the long end toward the governor arm.

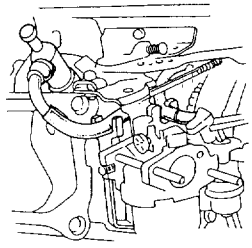
[3]
CARBURETOR INSULATOR

REASSEMBLY:
- Blow out the passages with compressed air and install, noting the installation direction.
- After installation, connect the high tension cord and fuel tube securely.



[5]
CHOKE LEVER

DISASSEMBLY:
The short peg on the choke lever can be used to plug the end of the fuel tube.

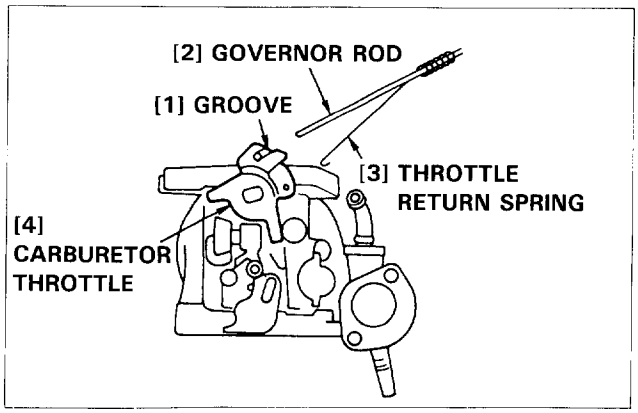


[6]
CARBURETOR ASSEMBLY

DISASSEMBLY/REASSEMBLY: P. 5-3

• GOVERNOR ROD DISASSEMBLY/REASSEMBLY

Unhook the throttle return spring. Pull the carburetor forward to a point where the groove in the throttle arm lines up with the rod, and lift the rod out of its hole. Reassembly is in the reverse order of disassembly.



b. DISASSEMBLY/REASSEMBLY

⚠ WARNING

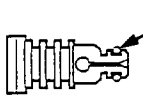
- **Remove the drain bolt and drain the carburetor before disassembling. Fuel vapor or spilled fuel may ignite.**

NOTE

- Clean the outside of the carburetor before disassembly.

[1] PILOT JET

REASSEMBLY:
Clean thoroughly with compressed air before installation. Lightly lubricate the O-ring to ensure easy installation into carburetor body.



[1]-1 O-RING

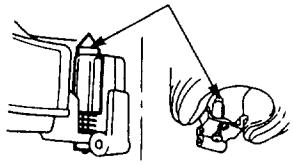
[2] CARBURETOR BODY

REASSEMBLY:
Clean internal passages and orifices with compressed air before installation.

[3] FLOAT VALVE

REASSEMBLY:
Check for worn head or weak spring.

[3]-1 FLOAT VALVE



[4] FLOAT

REASSEMBLY:
Check for smooth movement after installation.

[5] FLOAT CHAMBER

REASSEMBLY:
Install so that the drain bolt faces to the choke valve.

[6] SET BOLT

REASSEMBLY:
After assembly, check for any sign of fuel leakage.

[7] DRAIN SCREW

[8] FLOAT PIN

[9] MAIN JET [#72]

REASSEMBLY:
Clean thoroughly with compressed air before installation.

[10] MAIN NOZZLE

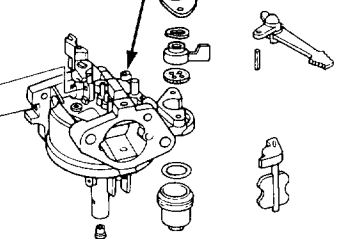
REASSEMBLY:
Clean thoroughly with compressed air before installation.

[11] PILOT SCREW

REASSEMBLY:
Inspect for wear or damage before installation.
ADJUSTMENT: P. 3-5

[12] THROTTHE STOP SCREW

ADJUSTMENT: P. 3-6



c. INSPECTION

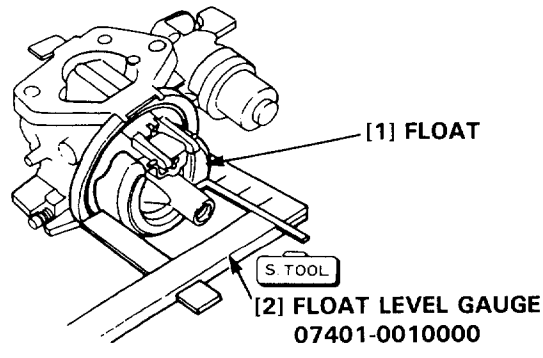
• FLOAT LEVEL HEIGHT

With the carburetor in an upright position, measure the distance between the float top and the carburetor body when the float just contacts the float valve.

Standard float height	13.7 mm (0.54 in)

If the height is out of specification, replace the float.

Check the float operation.



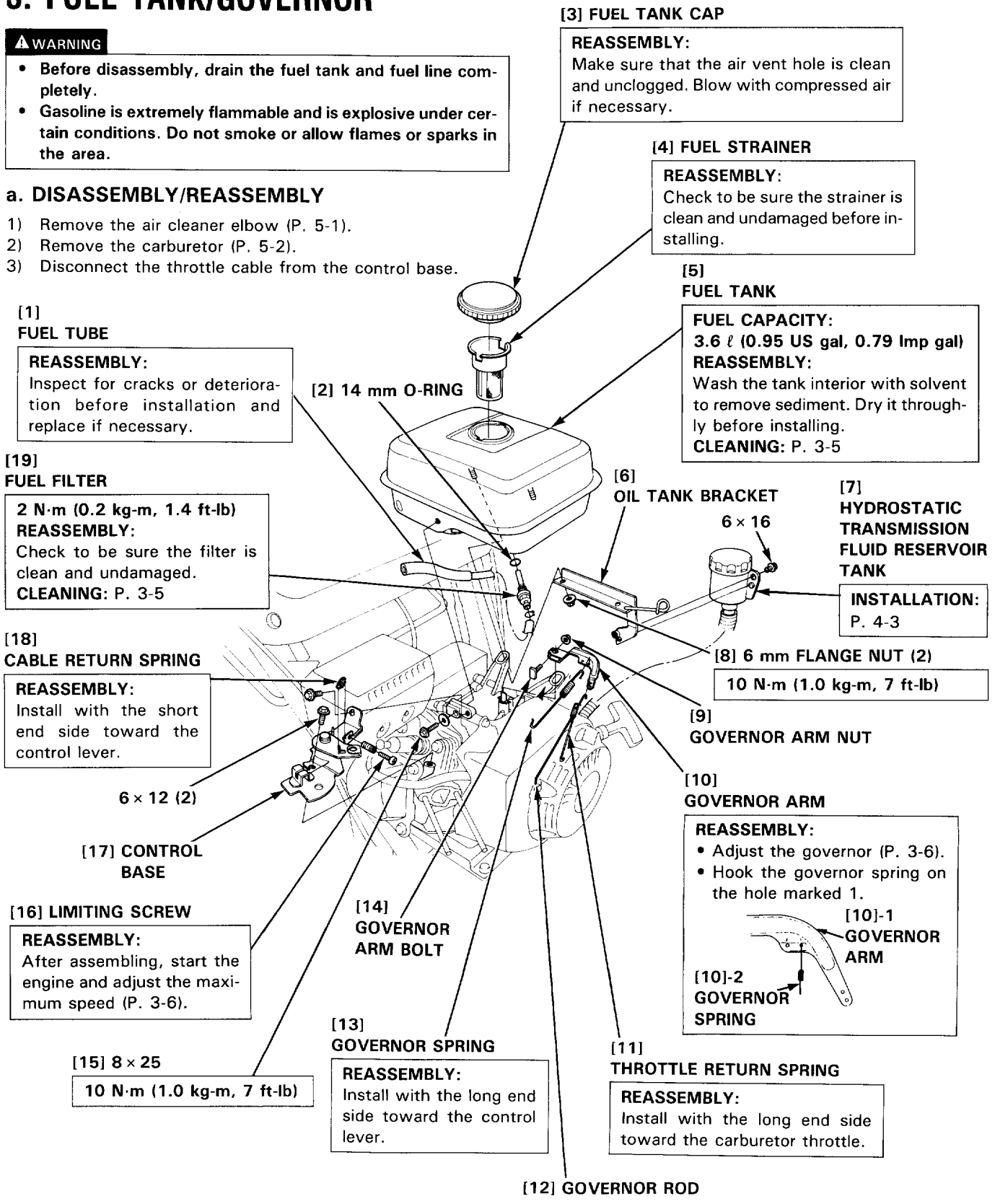
3. FUEL TANK/GOVERNOR

⚠ WARNING

- **Before disassembly, drain the fuel tank and fuel line completely.**
- **Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.**

a. DISASSEMBLY/REASSEMBLY

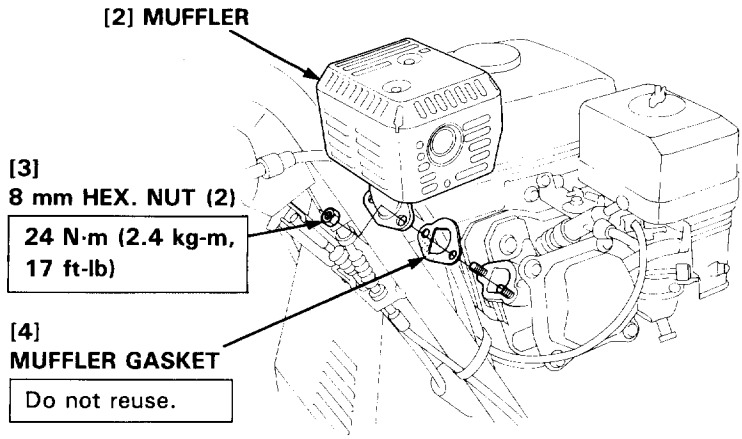
1) Remove the air cleaner elbow (P. 5-1).
2) Remove the carburetor (P. 5-2).
3) Disconnect the throttle cable from the control base.



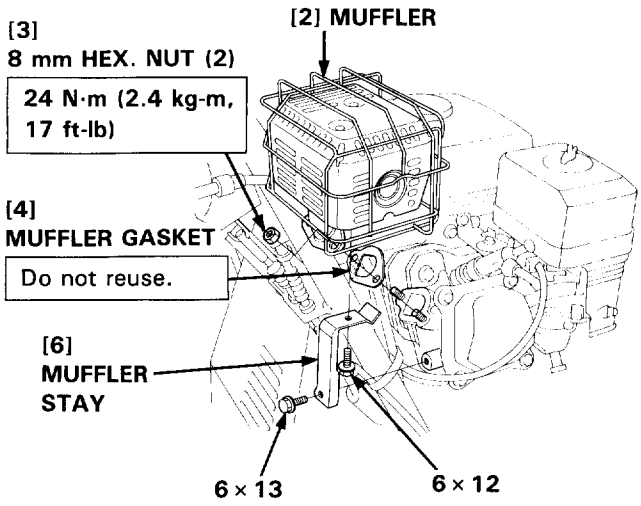
1. MUFFLER

a. REMOVAL/INSTALLATION

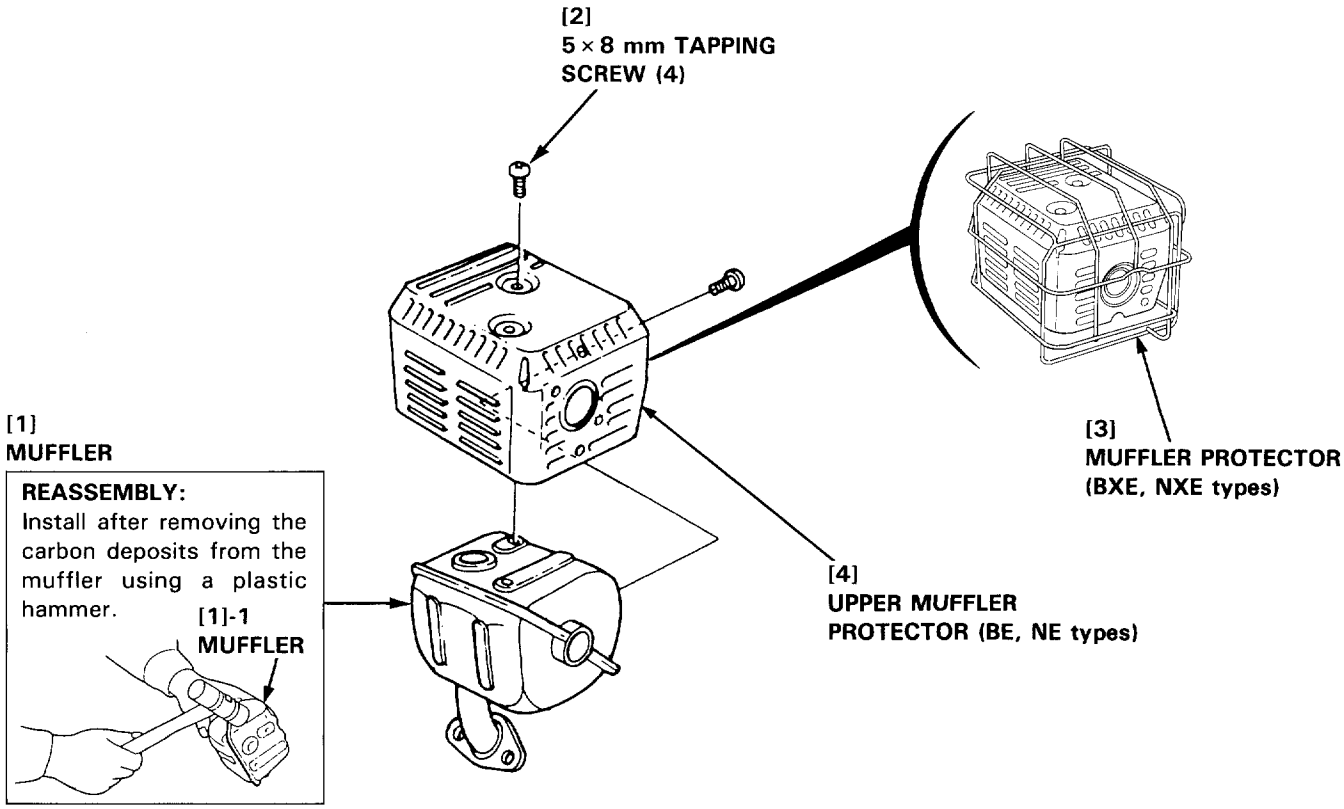
[1] BE, NE types:



[5] BXE, NXE types:



b. DISASSSEMBLY/REASSEMBLY



7. RECOIL STARTER/FAN COVER

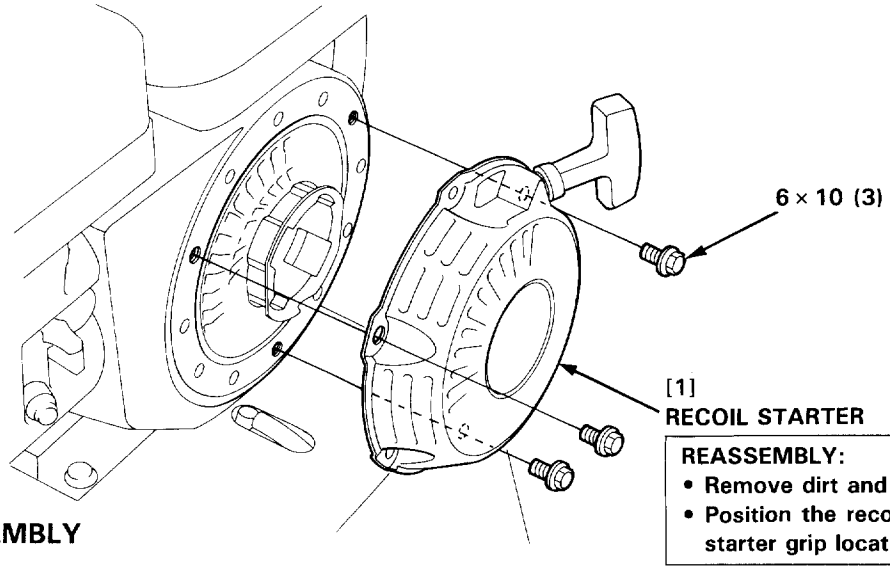
1. RECOIL STARTER

a. REMOVAL/INSTALLATION

⚠ WARNING

- **When removing/installing the recoil starter by raising the carrier bed, support the carrier bed by placing the wood blocks or equivalent material between the tracks and carrier bed (BE, BXE types only).**

1) Disconnect the starter grip from the oil tank bracket.

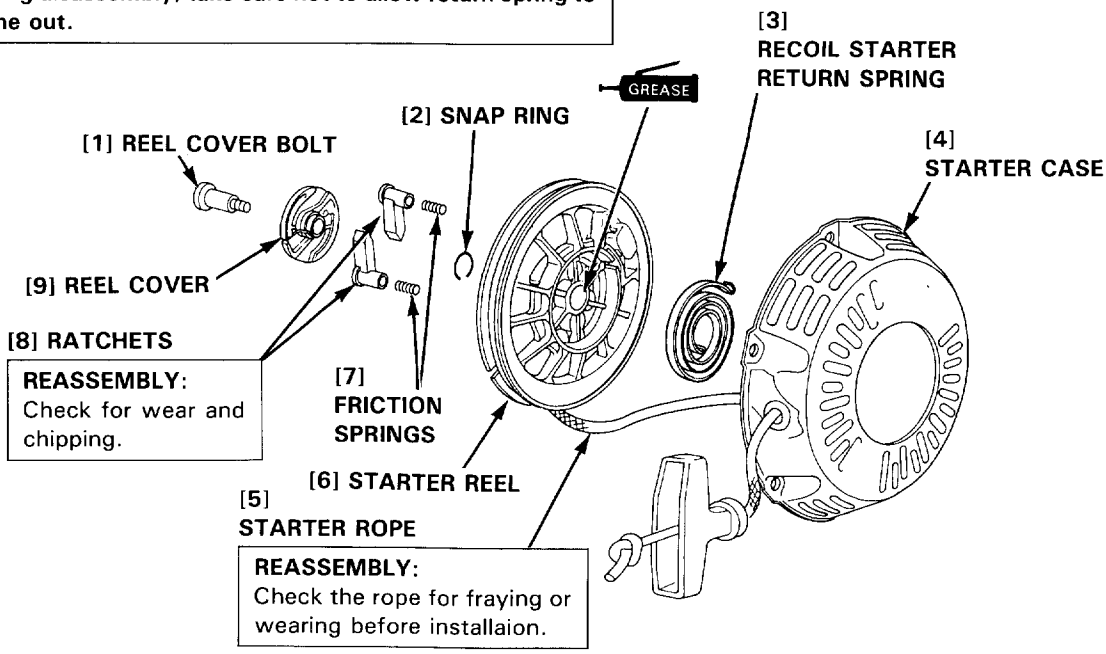


REASSEMBLY:
- **Remove dirt and debris before installation.**
- **Position the recoil starter case for the best starter grip location.**

b. DISASSEMBLY

⚠ WARNING

- **Wear gloves and eye protection.**
- **During disassembly, take care not to allow return spring to come out.**



REASSEMBLY:
Check for wear and chipping.

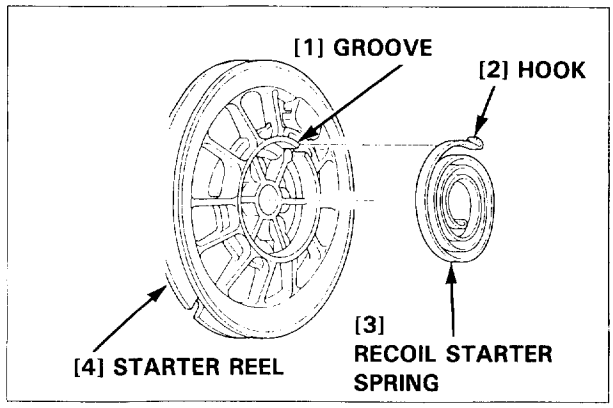
REASSEMBLY:
Check the rope for fraying or wearing before installaion.

b. RECOIL STARTER ASSEMBLY

⚠ WARNING

- **Wear gloves and eye protection.**
- **During assembly, take care not to allow return spring to come out.**

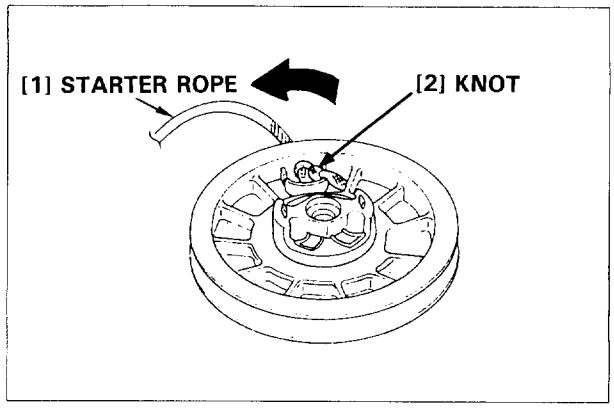
1) Insert the hook on the outer side of the spring into the groove inside the reel.



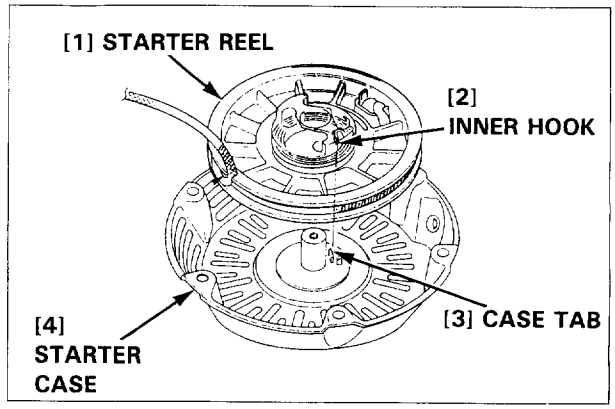
2) Pass the starter rope through the starter reel and tie it as shown. Wind the starter rope around the starter reel in direction of arrow. Leave approximately 30 cm (12 in) of the starter rope outside of the starter reel.

NOTE

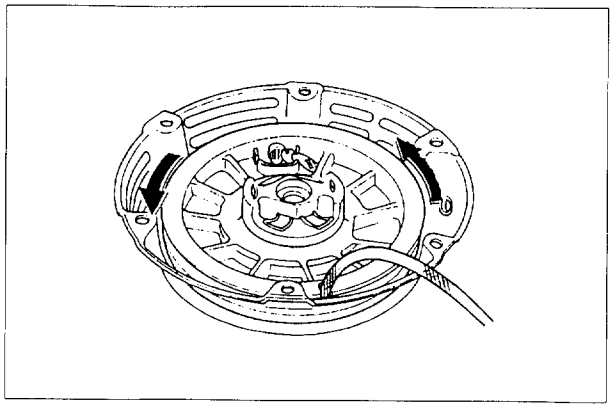
- Be sure to leave approximately 30 cm (12 in) of the starter rope outside of the starter reel.



3) Install the starter reel on the starter case so that the spring inner hook is hooked to the case tab.



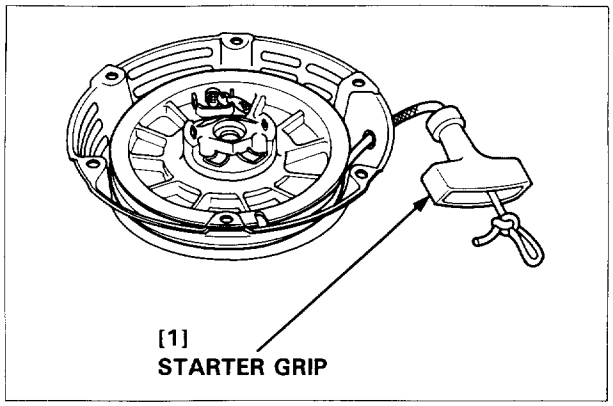
4) Hold the starter case and rotate the starter reel two revolutions in the direction of the arrow for preliminary winding.



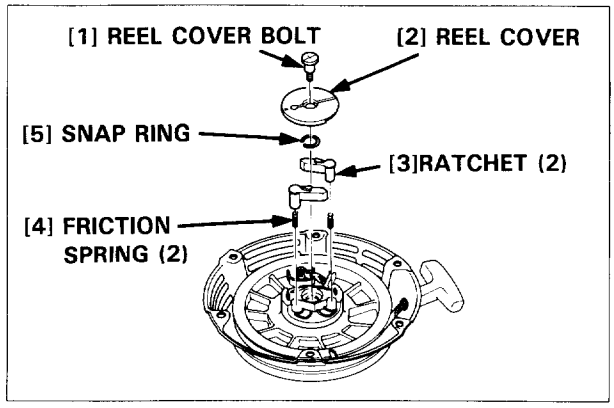
5) Pass the starter rope end through the starter case rope guide and pull it outwards. Pass the starter rope through the starter grip and tie the rope as shown.

⚠ WARNING

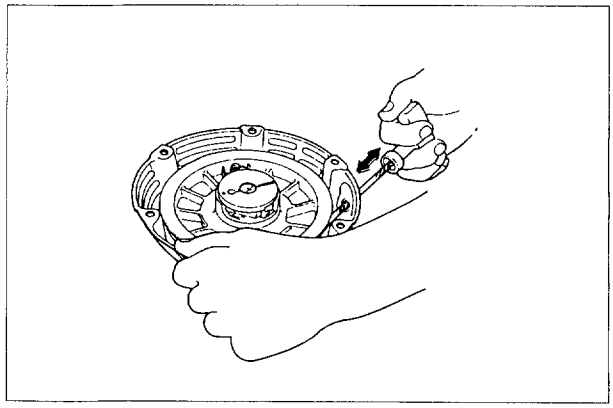
- **Do not separate the starter reel from the starter case. Otherwise the return spring inside the case will come off, which could cause injuries.**



6) Install the ratchet with the spring and reel cover. Tighten the reel cover bolt.



7) Check the operation of the ratchet by pulling the starter rope several times.



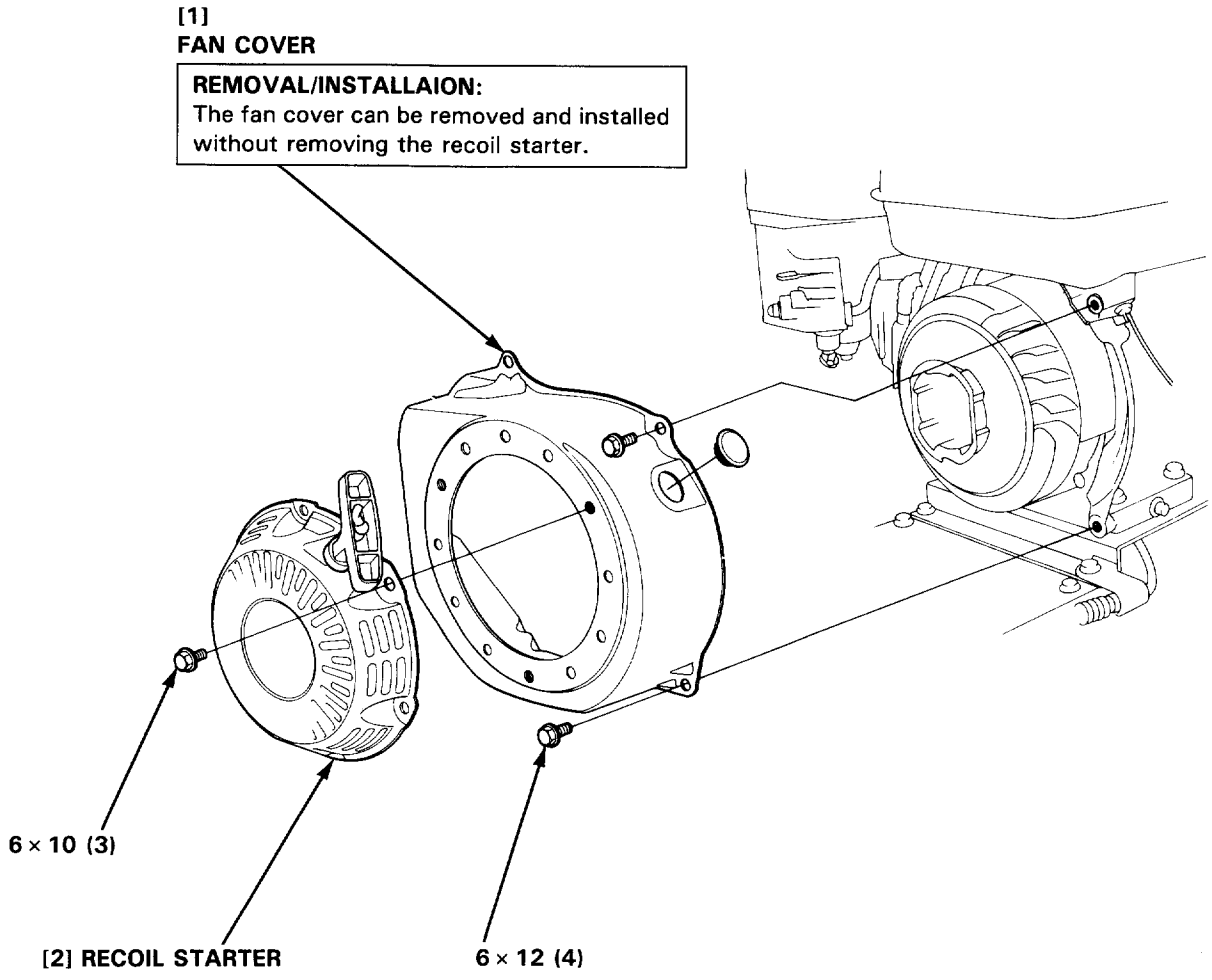
2. FAN COVER

⚠ WARNING

- **When removing/installing the fan cover by raising the carrier bed, support the carrier bed by placing the wood blocks or equivalent material between the tracks and carrier bed (BE, BXE types only).**

a. REMOVAL/INSTALLATION

1) Disconnect the starter grip from the oil tank bracket.



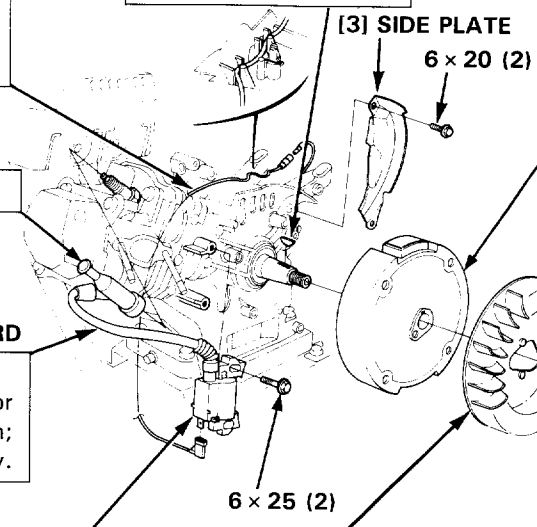
1. FLYWHEEL/IGNITION COIL

a. DISASSEMBLY/REASSEMBLY

⚠ WARNING

- **When removing/installing the flywheel/ignition coil by raising the carrier bed, support the carrier bed by placing the wood blocks or equivalent material between the tracks and carrier bed (BE, BXE types only).**

1) Remove the air cleaner and carburetor (P. 5-1, 2).
2) Remove the fuel tank/governor (P. 5-4).
3) Remove the recoil starter and fan cover (P. 7-4).



[1]
BLACK WIRE

REASSEMBLY:
Insert securely into the two ribs on the crackcase.

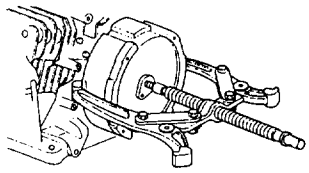
[2]
WOODRUFF KEY

REASSEMBLY:
After installing the flywheel, check to be sure that the woodruff key is still in its slot on the crankshaft.

[3] SIDE PLATE
6 × 20 (2)

[4] **FLYWHEEL**

DISASSEMBLY:
- Remove the ignition coil before removing the flywheel.
- Do not hit the flywheel with a hammer.
- Remove with a commercially available six-inch puller.
- Avoid the magnet section when attachting the puller.



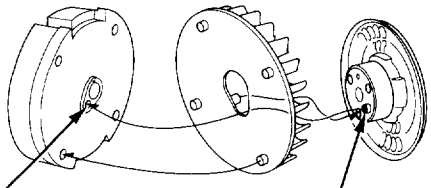
REASSEMBLY:
Clean the crankshaft tapered surface before installation.

[5] **14 mm SPECIAL NUT**

70—80 N·m (7.0—8.0 kg-m, 51—58 ft-lb)
DISASSEMBLY/ REASSEMBLY:
Hold the flywheel by placing a screwdriver into the pulley.

[6] **STARTER PULLEY**

REASSEMBLY:
Attach by aligning the lug on the pulley with the small hole at the center of the flywheel.



[6]-1 SMALL HOLE

[6]-2 LUG

[7]
COOLING FAN

CAUTION:
When disassembling and ressembling, take care not to damage the fan blades.
REASSEMBLY:
Attach by aligning the four lugs on the rear side of the fan with the small holes in the flywheel.

[8]
IGNITION COIL

INSPECTION/ ADJUSTMENT: P. 8-2

[9]
HIGH TENSION CORD

REASSEMBLY:
Check for cracked or damaged insulation; replace if necessary.

[10]
SPARK PLUG CAP

INSPECTION: P. 8-3

6 × 25 (2)

b. ADJUSTMENT

• IGNITION COIL AIR GAP

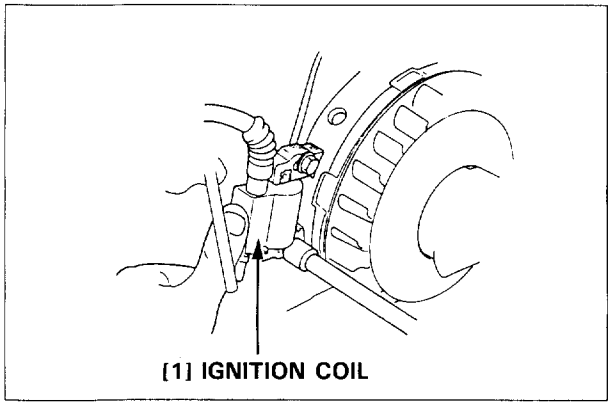
Adjustment is required only when the ignition coil or the flywheel has been removed.

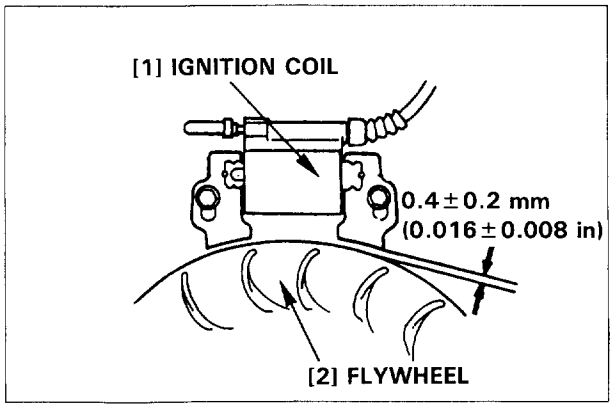
1) Loosen the ignition coil bolts.
2) Insert a long feeler gauge or a piece of paper of the proper thickness between the ignition coil and the flywheel. Both gaps should be adjusted simultaneously.
3) Push the ignition coil firmly toward the flywheel and tighten the bolts.

Specified clearance	0.4±0.2 mm (0.016±0.008 in)

NOTE

- Avoid the magnet part of the flywheel when adjusting.



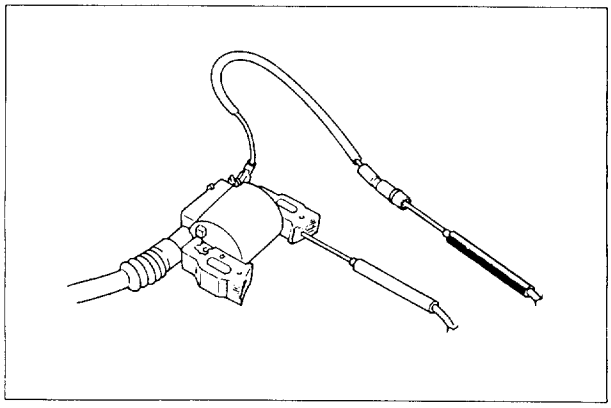


c. INSPECTION

• IGNITION COIL

<Primary side>
Measure the resistance of the primary coil by attaching one ohmmeter lead to the ignition coil's primary (black) lead while touching the other test load to the iron core.

Primary side resistance value	0.8—1.0 Ω

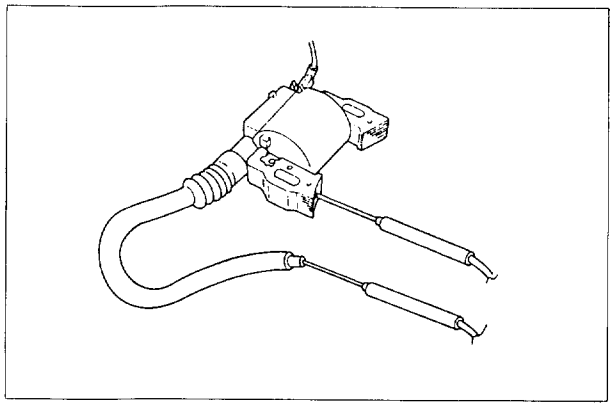


<Secondary side>
Measure the resistance of the secondary side of the coil by removing the spark plug cap and touching one test lead to the spark plug lead wire while touching the other lead tothe coil's iron core.

Secondary side resistance value	5.9—7.1 kΩ

NOTE

- A false reading will result if the spark plug cap is not removed.

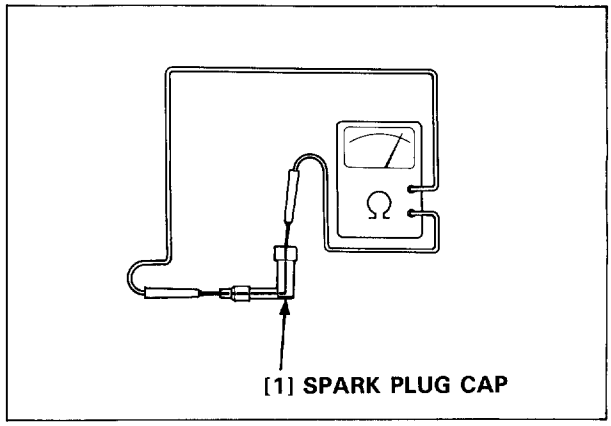


• SPARK PLUG CAP

Measure the resistance of the spark plug cap by touching one test lead at the wire end of the cap, and the other at the spark plug end.

Resistance	7.5—12.5 kΩ

Replace the spark plug cap if the resistance is not within the range specified.



[1] SPARK PLUG CAP

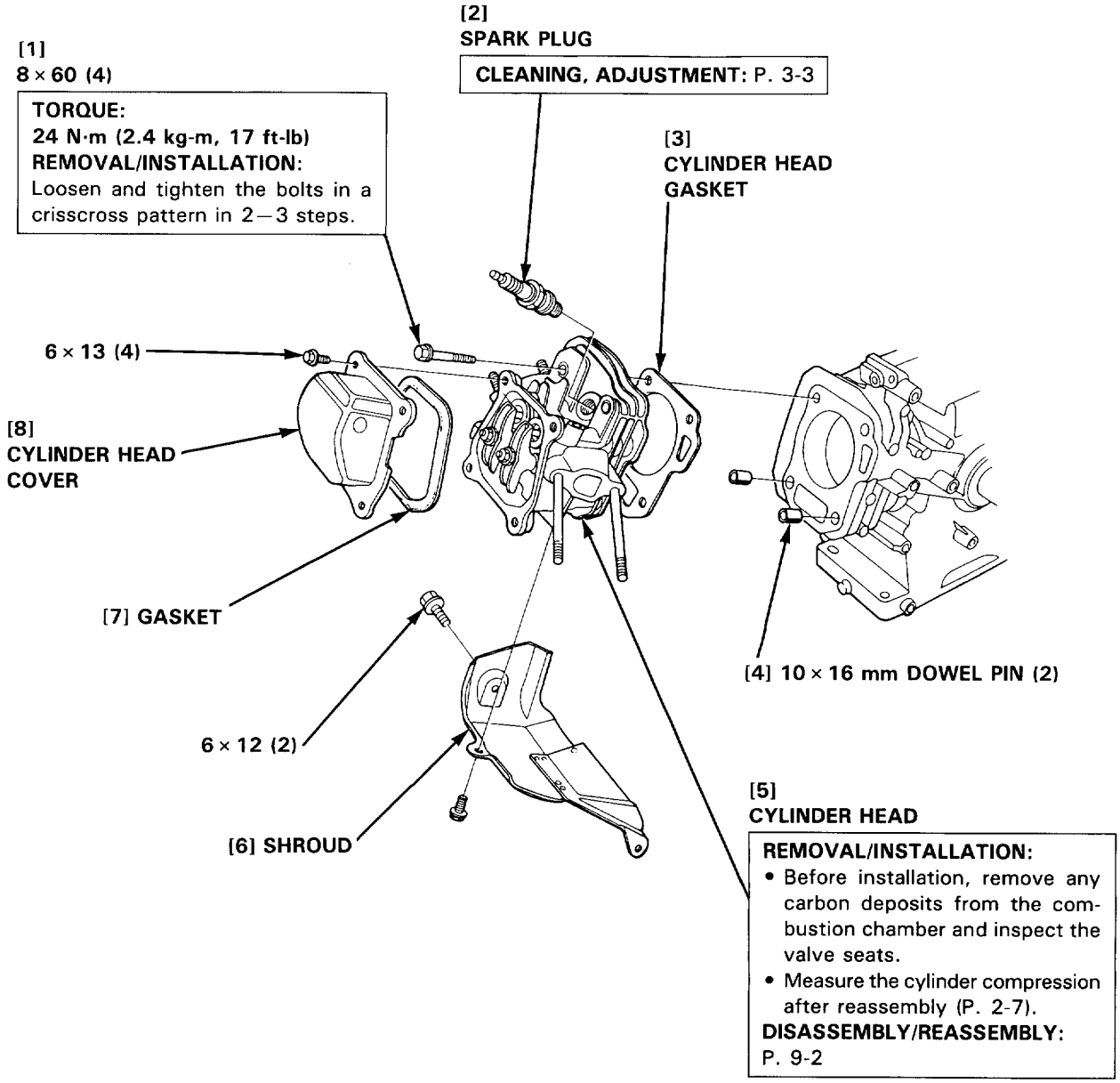
9. CYLINDER HEAD/VALVES

1. CYLINDER HEAD

a. REMOVAL/INSTALLATION

- Cylinder head/valves removal/installation can be made with the engine installed in the frame. Before removal, perform the following:

—Air cleaner (P. 5-1).
—Carburetor (P. 5-2).
—Muffler (P. 6-1).
—Control base (P. 5-4).

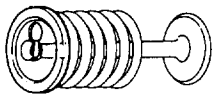


2. VALVES

b. DISASSEMBLY/REASSEMBLY

[1]
VALVE SPRING RETAINER (2)

DISASSEMBLY:
Push down and slide the retainer to the side, so the valve stem slips through the hole at the side of the retainer.
REASSEMBLY:
The exhaust valve retainer has a larger center recess than the intake valve retainer, so it can accept the valve rotator.



CAUTION
Do not remove the valve spring retainers while the cylinder head is installed, or the valves will drop into the cylinder.

[2]
VALVE SPRING (2)
INSPECTION: P. 9-3

[3] **CLIP**

[4]
VALVE GUIDE
REASSEMBLY:
Clip installed on EX side only.
REPLACEMENT: P. 9-5

[5]
EXHAUST VALVE
REASSEMBLY:
Before installation, remove carbon deposits and inspect the valve.
INSPECTION: P. 9-4

[6]
INTAKE VALVE
REASSEMBLY:
Do not interchange with the exhaust valve.
VALVE HEAD DIAMETER
IN: 25 mm (0.98 in)
EX: 24 mm (0.94 in)
INSPECTION: P. 9-4

[7]
CYLINDER HEAD
REASSEMBLY:
Before installation, remove carbon deposits from the combustion chamber and inspect the valve seats.
INSPECTION: P. 9-3, 5

[8]
PUSH ROD (2)
REASSEMBLY:
Check both ends for wear and check the rod for straightness. Be sure the rod ends are firmly seated in the lifters.

[9] **PUSH ROD GUIDE**

[10]
ROCKER ARM PIVOT BOLT (2)
24 N·m (2.4 kg-m, 17 ft-lb)

[11]
ROCKER ARM (2)
REASSEMBLY:
Before installing, check for wear on the surfaces which contact the pivot bolt, the push rod and the rocker arm pivot.

[12]
ROCKER ARM PIVOT (2)

[13]
ROCKER ARM PIVOT LOCK NUT (2)
10 N·m (1.0 kg-m, 7, ft-lb)

[14]
VALVE ROTATOR
(Exhaust valve only)
CAUTION:
If the valve rotator is not installed, the exhaust valve may drop into the cylinder when starting the engine.

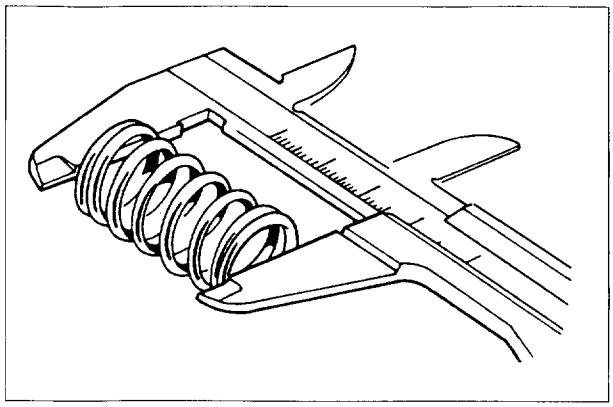
c. INSPECTION

• VALVE SPRING FREE LENGTH

Measure the free length of the valve springs.

Standard	Service limit
34.0 mm (1.34 in)	32.5 mm (1.28 in)

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

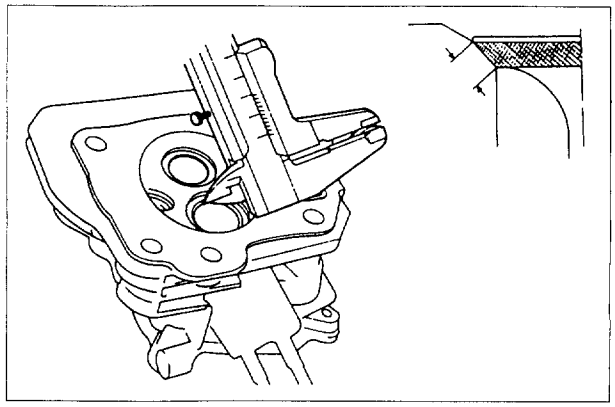


• VALVE SEAT WIDTH

Measure the valve seat width.

Standard	Service limit
0.8 mm (0.03 in)	2.0 mm (0.08 in)

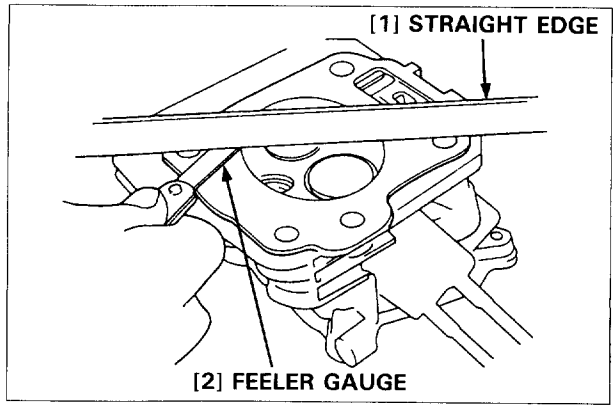
If the valve seat width is under the standard, or over the service limit, recondition the valve seat (P. 9-5).

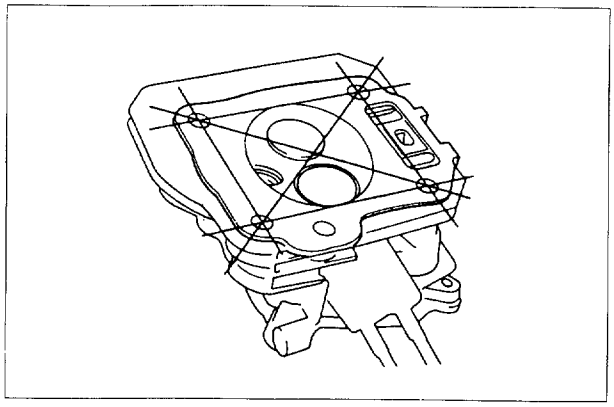


• CYLINDER HEAD

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

Service limit	0.10 mm (0.004 in)



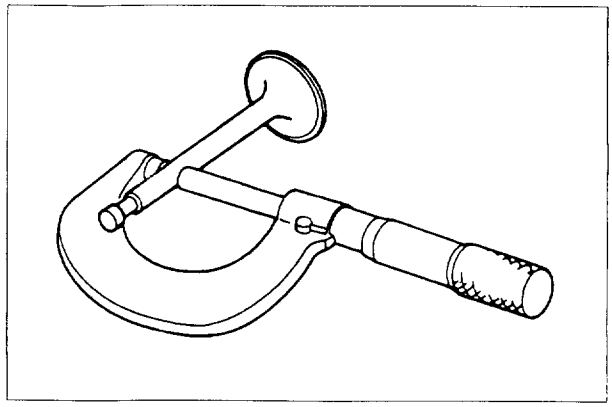


• VALVES STEM O.D.

Inspect each valve for face irregularities, bending or abnormal stem wear. Replace the valve if necessary. Measure and record each valve stem O.D.

	Standard	Service limit
IN	5.48 mm (0.216 in)	5.318 mm (0.2094 in)
EX	5.44 mm (0.214 in)	5.275 mm (0.2077 in)

Replace the valves if their O.D. is smaller than the service limit.



• VALVE GUIDE I.D.

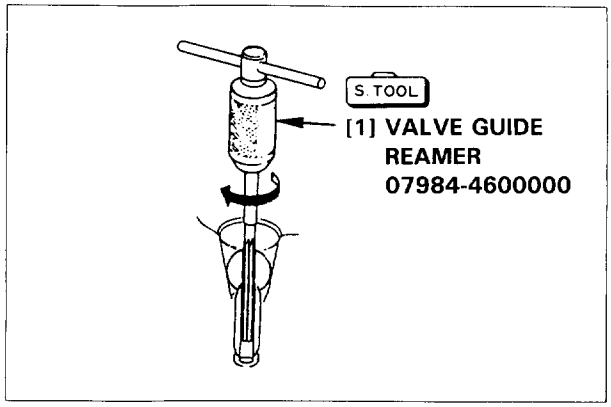
NOTE

- Ream the valve guides to remove any carbon deposits before measuring.

Measure and record each valve guide I.D.

Standard	Service limit
5.50 mm (0.217 in)	5.572 mm (0.2194 in)

Replace the guides if they are over the service limit (P. 9-5).

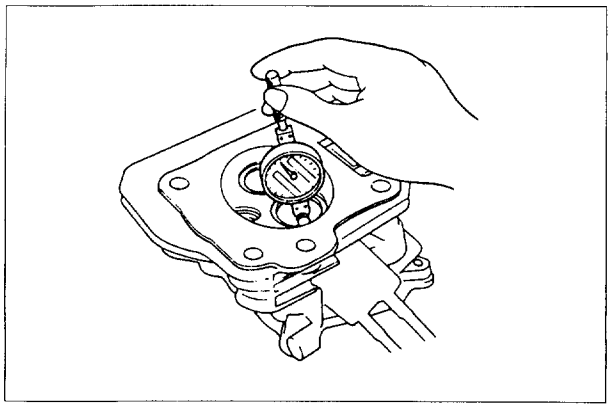


• GUIDE-TO-STEM CLEARANCE

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

	Standard	Service limit
IN	0.02—0.044 mm (0.0008—0.0017 in)	0.10 mm (0.004 in)
EX	0.06—0.087 mm (0.0024—0.0034 in)	0.12 mm (0.005 in)

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

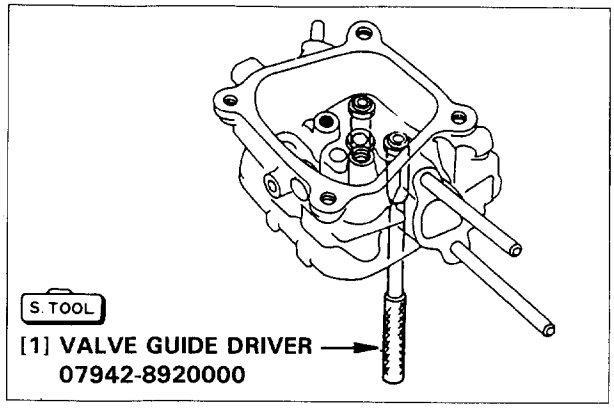


NOTE

- Recondition the valve seats whenever the valve guides are replaced (P. 9-6).

d. VALVE GUIDE REPLACEMENT

1) Drive the valve guides out of the head from the combustion chamber side using a valve guide driver (special tool).



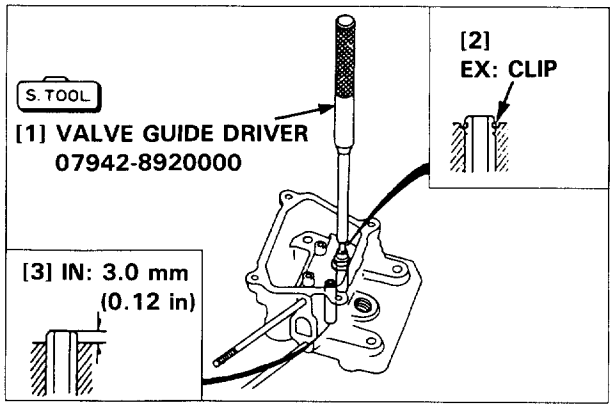
CAUTION

- **When driving the valve guides out, be careful not to damage the head.**

2) Install the new valve guides from the valve spring side of the cylinder head.

   Exhaust side: Drive the exhaust valve guide until the clip is fully seated as shown.

   Intake side: Drive the intake valve guide to the specified height (measured from the top of the valve guide to the cylinder casting as shown).

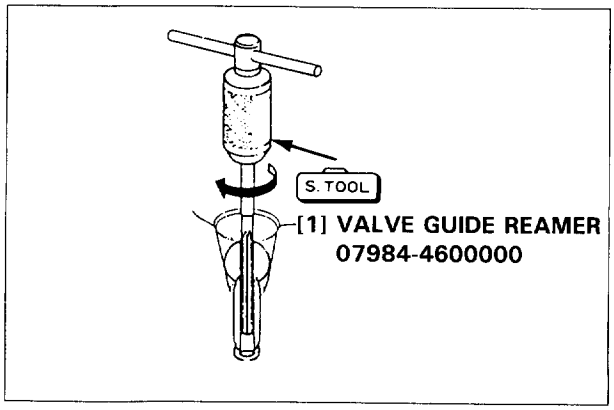


IN valve guide installation height	3.0 mm (0.12 in)

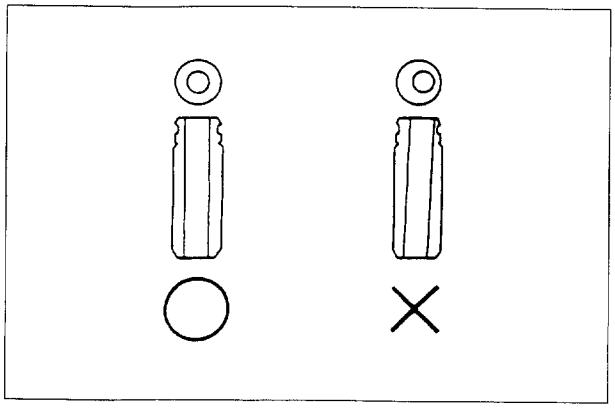
3) After installation, inspect the valve guide for damage, replace the guide if damaged.

• VALVE GUIDE REAMING

1) Coat the reamer and valve guide with cutting oil.
2) Rotate the reamer clockwise through the valve guide the full length of the reamer.
3) Continue to rotate the reamer clockwise while removing it from the valve guide.

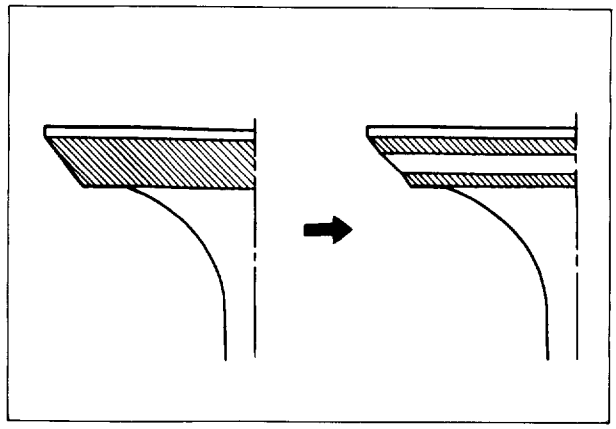


4) Throughly clean the cylinder head to remove any cutting residue.
5) Check the valve guide bore; it should be straight, round and centered in the valve guide. Insert the valve and check operation. If the valve does not operate smoothly, the guide may have been bent during installaiton. Replace the valve guide if it is bent or damaged.
6) Check the Valve Guide-to-Stem Clearance (P. 9-4).



e. VALVE SEAT RECONDITIONING

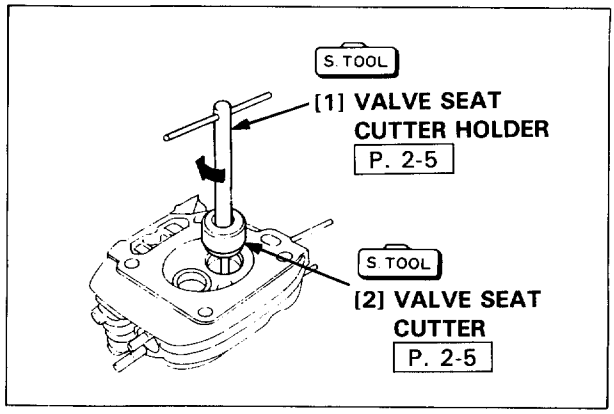
1) Throughly clean the combustion chamber and valve seats to remove carbon deposits.
   Apply a light coat of Prussian Blue or erasable felt-tipped marker ink to the valve face.
2) Insert the valve, and snap it closed against its seat several times. Be sure the valve does not rotate on the seat. The transferred marking compound will show any area of the seat that is not concentric.



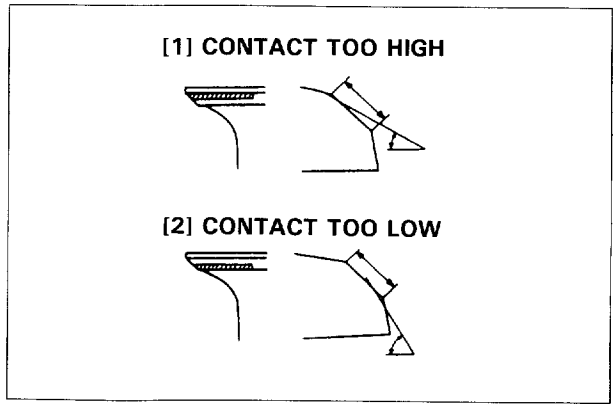
NOTE

- Follow the instructions of the valve seat cutter manufacturer.

3) Using a 45° cutter, remove enough material to produce a smooth and concentric seat.
   Turn the cutter clockwise, never counterclockwise.
   Continue to turn the cutter as you lift it from the valve seat.

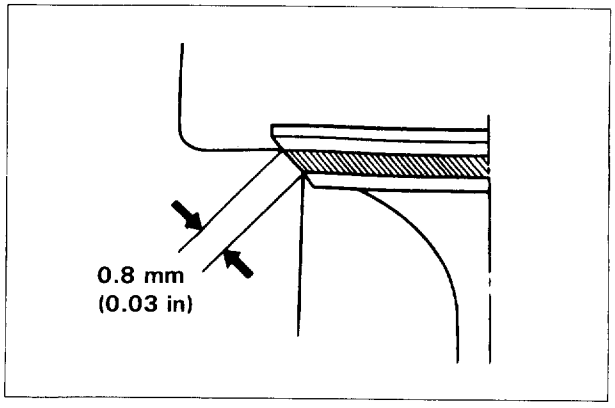


4) Use the 30°—32° and 60° cutters to narrow and adjust the valve seat so that it contacts the middle of the valve face. The 30°—32° cutter removes material from the top edge (contact too high).
   The 60° cutter removes material from the bottom edge (contact too low). Be sure that the width of the finished valve seat is within specification.



• VALVE SEAT WIDTH

Standard	Service limit
0.8 mm (0.03 in)	2.0 mm (0.08 in)



5) Make a light pass with 45° cutter to remove any possible burrs at the edges of the seat.
6) After resurfacing the seats, inspect for even valve seating. Apply Prussian Blue compound or erasable felt-tipped marker ink to the valve face. Insert the valve, and snap it closed against its seat several times. Be sure the valve does not rotate on the seat.
   The seating surface, as shown by the transferred marking compound, should have good contact all the way around.

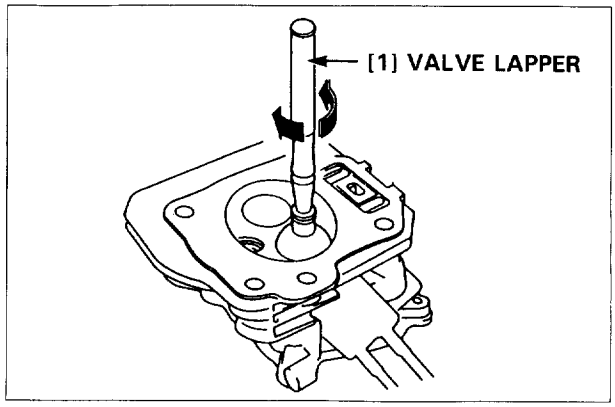
7) Lap the valves into their seats, using a hand valve lapper and lapping compound (commercially available).

CAUTION

- **To avoid severe engine damage, be sure to remove all lapping compound from the engine before reassembly.**

NOTE

- Adjust the valve clearance after reassembly.



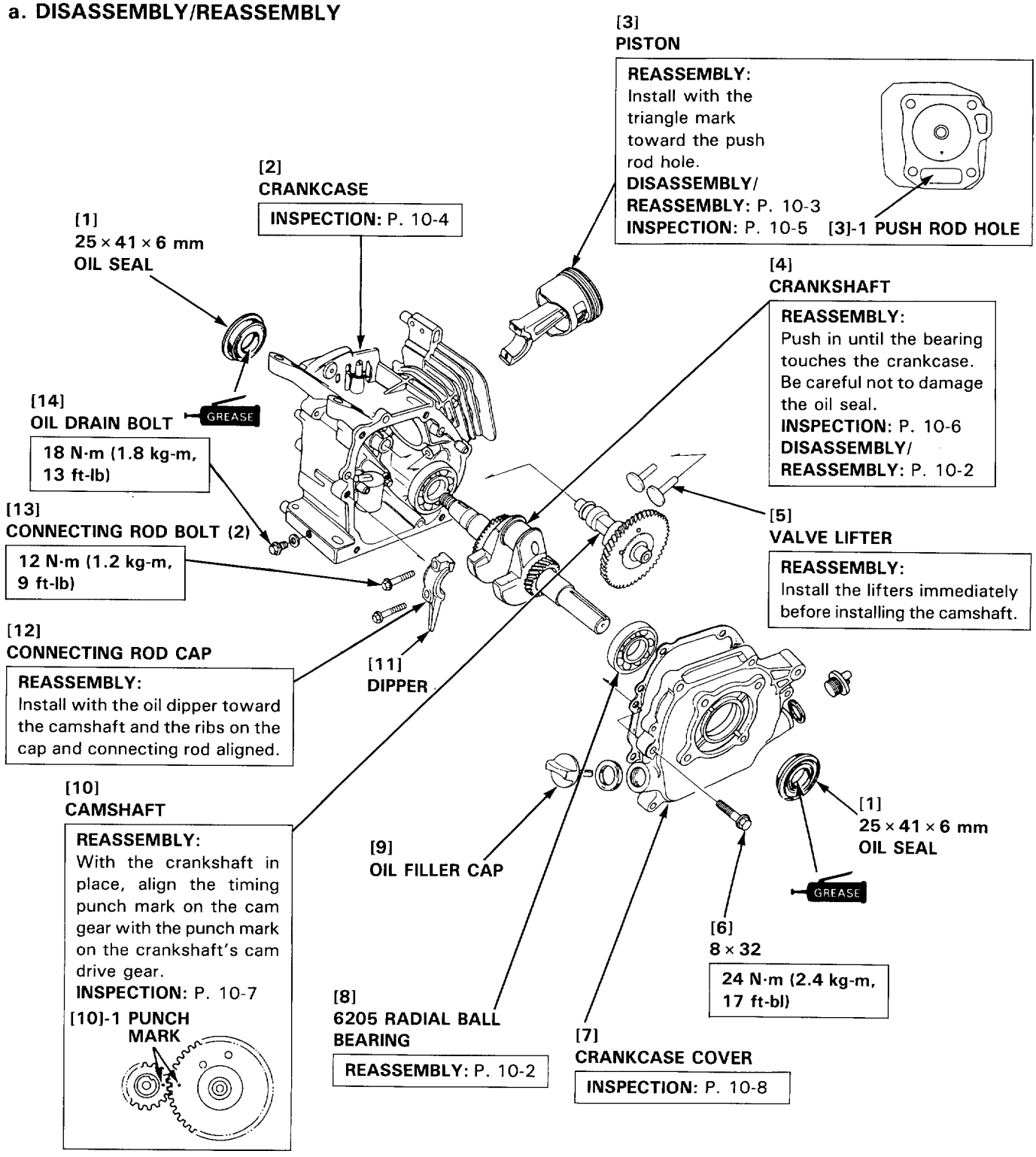
10. CRANKSHAFT/PISTON/GOVERNOR

HONDA
HP500H

1. CRANKCASE COVER/CRANKSHAFT/PISTON 2. GOVERNOR

1. CRANKCASE COVER/CRANKSHAFT/PISTON

a. DISASSEMBLY/REASSEMBLY

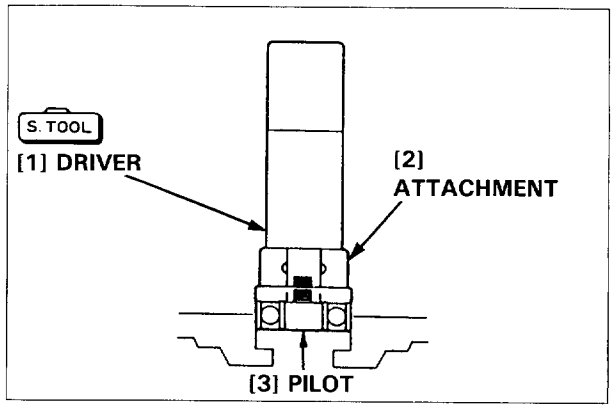


• CRANKSHAFT BEARING (6205)

REASSEMBLY:
Oil the circumference of the bearing, and install the bearing with the following special tools.

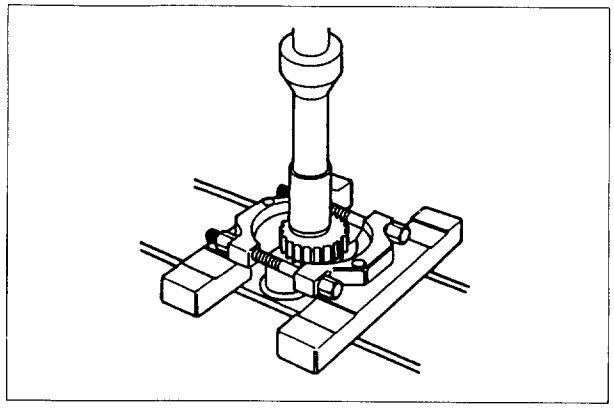
TOOLS:

DRIVER	**07749-0010000**
ATTACHMENT, 52 × 55 mm	**07746-0010400**
PILOT, 25 mm	**07746-0040600**



• TIMING GEAR/GOVERNOR DRIVE GEAR

DISASSEMBLY:
Mark a line on the crankshaft and timing gear.
Set the cmmercially available bearing puller plate on the bottom part of the governor drive gear and remove the crankshaft and timing gear using a hydraulic press.
Remove the governor drive gear in the same way.



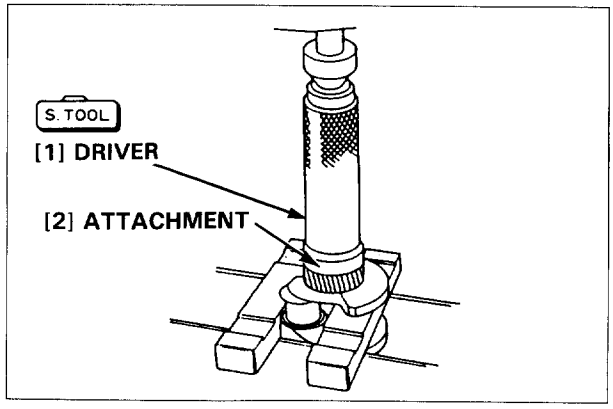
REASSEMBLY:

• TIMING GEAR

Using the old gear for reference, make a mark at the same position on the new gear.
Using a hydraulic press, driver and attachment I.D. (special tools), press the new gear onto the crankshaft.

TOOLS:

DRIVER, 40 mm I.D.	**07746-0030100**
ATTACHMENT, 30 mm I.D.	**07746-0030300**

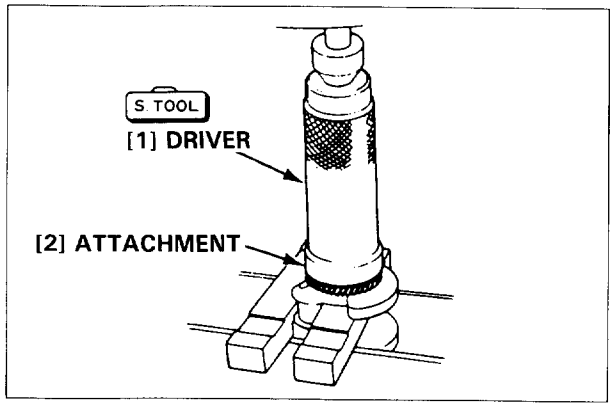


• GOVERNOR DRIVE GEAR

Use a hydraulic press and the driver and attachment I.D. (special tools), press in a new governor drive gear.

TOOLS:

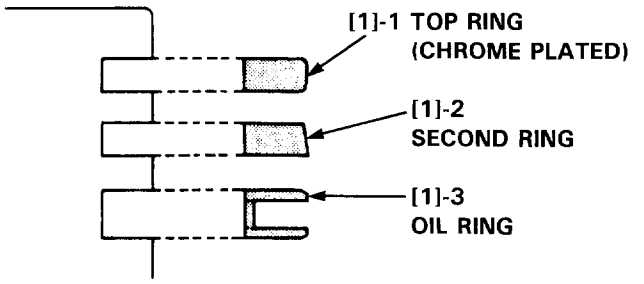
DRIVER, 40 mm I.D.	**07746-0030100**
ATTACHMENT, 35 mm I.D.	**07746-0030400**

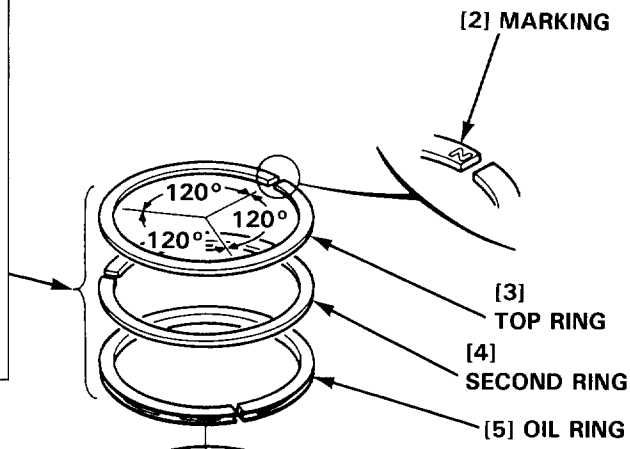


• PISTON

[1]
PISTON RING

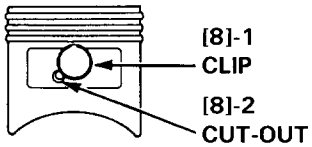
INSPECTION: P. 10-4, 5
REASSEMBLY:
- Install all rings with the markings facing upward.
- Be sure that the top and second rings are not interchanged.
- Check that the rings rotate smoothly after installation.
- Space the piston ring end gaps 120 degrees apart, and do not align the gaps with the piston pin bore.

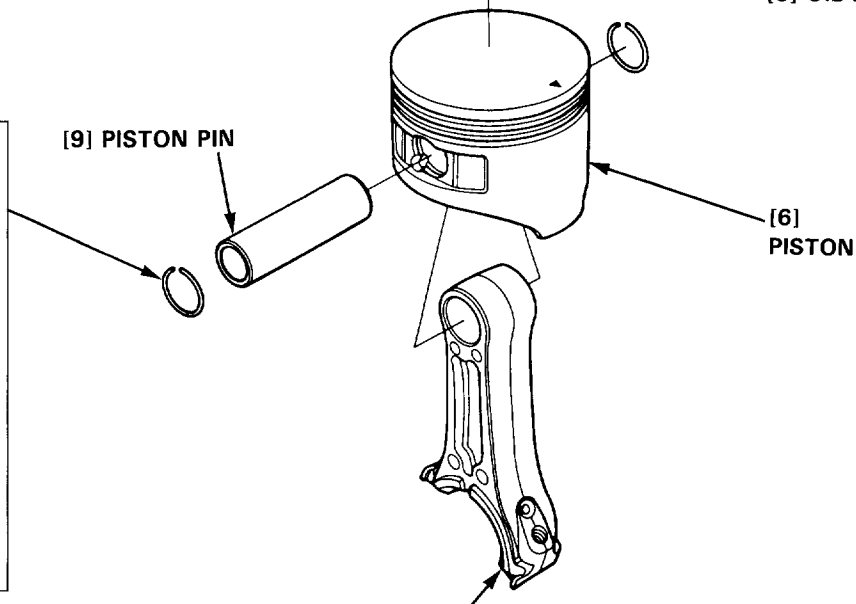




[8]
PISTON PIN CLIP

REASSEMBLY:
Install by setting one end of the clip in the piston groove, holding the other end with long-nosed pliers, and rotating the clip in. Do not align the end gap of the clip with the cutout in the piston pin bore.





[7]
CONNECTING ROD

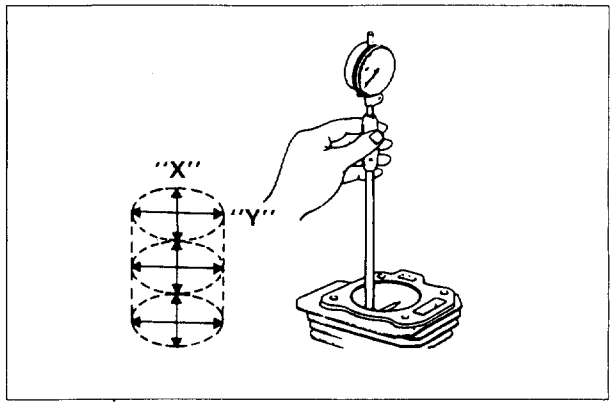
REASSEMBLY:
Install the connecting rod with the long end toward the triangle marked side of the piston.

b. INSPECTION

• CYLINDER I.D.

Measure and record the cylinder I.D. at three levels in both the "X" axis (perpendicular to crankshaft) and the "Y" axis (parallel to crankshaft).
Take the maximum reading to determine cylinder wear and taper.

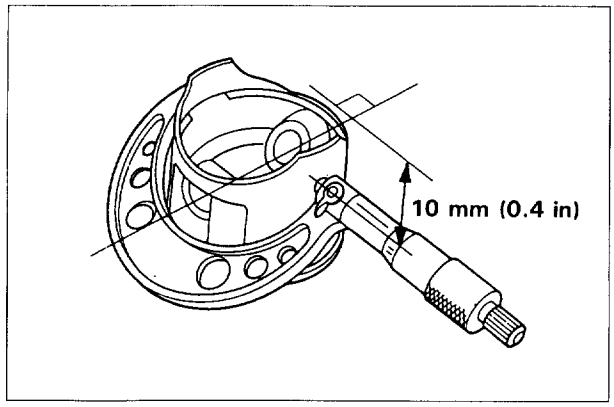
Standard	Service limit
68.0 mm (2.68 in)	68.165 mm (2.6837 in)



• PISTON SKIRT O.D.

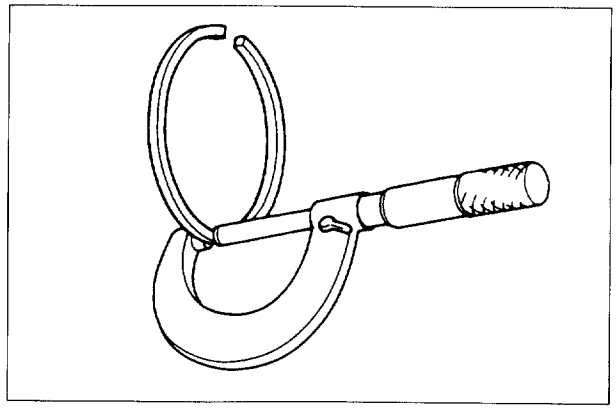
Measure and record the piston O.D. at a point 10 mm (0.4 in) from the bottom of the skirt, and 90° to the piston pin bore.

Standard	Service limit
67.985 mm (2.6766 in)	67.845 mm (2.6711 in)



• PISTON-TO-CYLINDER CLEARANCE

Standard	Service limit
0.015—0.050 mm (0.0006—0.0020 in)	0.12 mm (0.005 in)

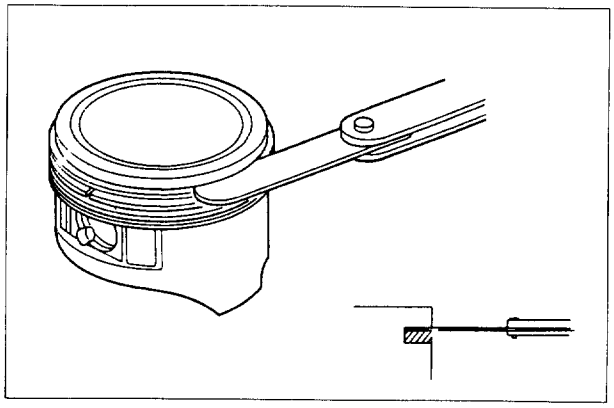


• PISTON RING WIDTH

	Standard	Service limit
Top/second	1.5 mm (0.06 in)	1.37 mm (0.054 in)
Oil	2.5 mm (0.10 in)	2.37 mm (0.093 in)

• PISTON RING SIDE CLEARANCE

	Standard	Service limit
Top/second/ oil	0.015—0.045 mm (0.0006—0.0018 in)	0.15 mm (0.006 in)

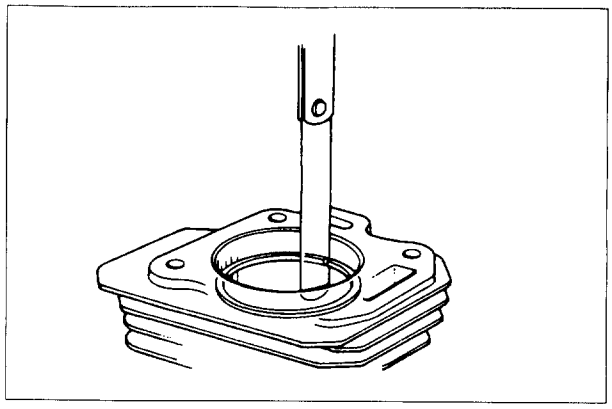


• PISTON RING END GAP

	Standard	Service limit
Top/second	0.2—0.4 mm (0.008—0.016 in)	1.0 mm (0.04 in)
Oil	0.15—0.35 mm (0.006—0.014 in)	1.0 mm (0.04 in)

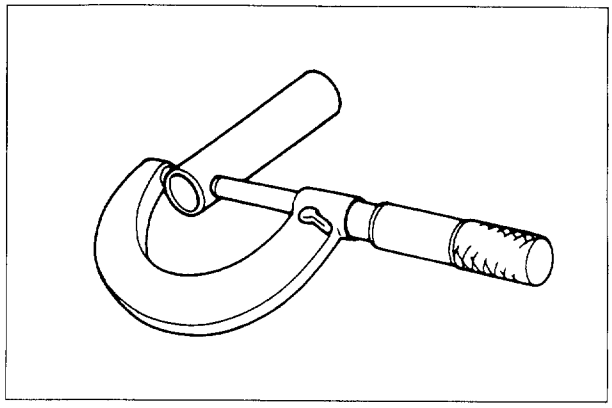
NOTE

- Use the top of the piston to position the ring horizontally in the cylinder.



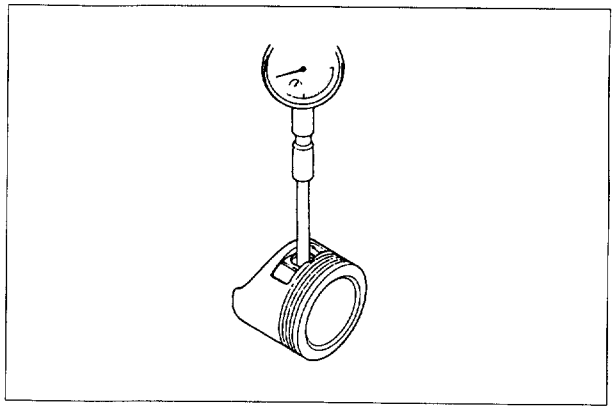
• PISTON PIN O.D.

Standard	Service limit
18.0 mm (0.71 in)	17.954 mm (0.7068 in)



• PISTON PIN BORE I.D.

Standard	Service limit
18.002 mm (0.7087 in)	18.048 mm (0.7105 in)

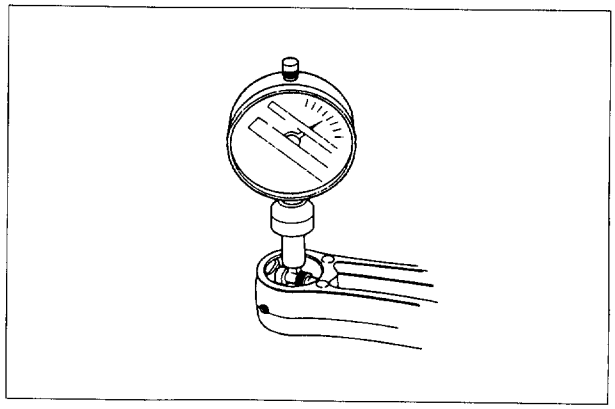


• PISTON-TO-PISTON PIN BORE CLEARANCE

Standard	Service limit
0.002—0.014 mm (0.0001—0.0006 in)	0.06 mm (0.002 in)

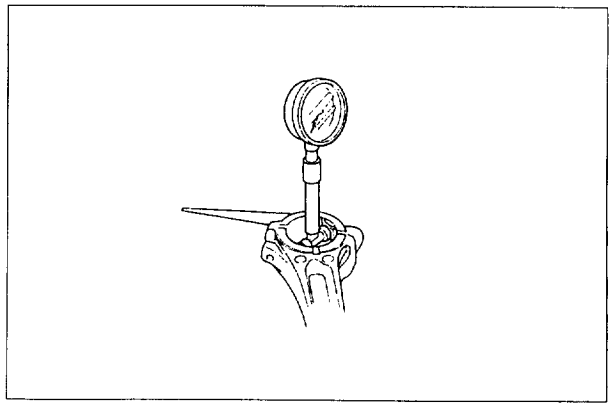
• CONNECTING ROD SMALL END I.D.

Standard	Service limit
18.005 mm (0.7089 in)	18.07 mm (0.711 in)



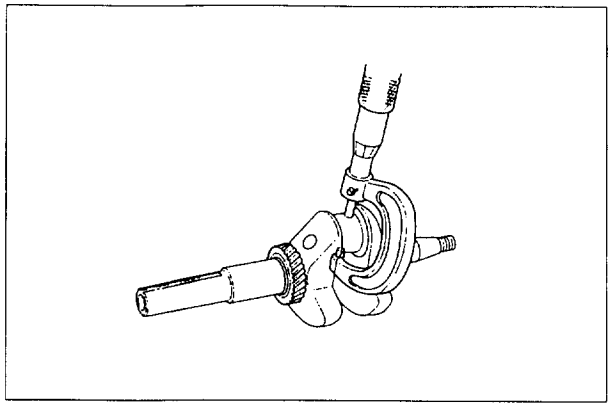
• **CONNECTING ROD BIG END I.D.**

Standard	Service limit
30.02 mm (1.182 in)	30.066 mm (1.1837 in)



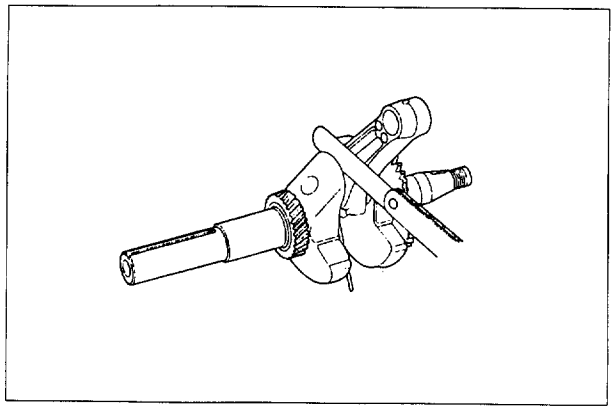
• **CRANKPIN O.D.**

Standard	Service limit
29.98 mm (1.180 in)	29.92 mm (1.178 in)



• **CONNECTING ROD BIG END SIDE CLEARANCE**

Standard	Service limit
0.1—0.7 mm (0.004—0.028 in)	1.1 mm (0.043 in)



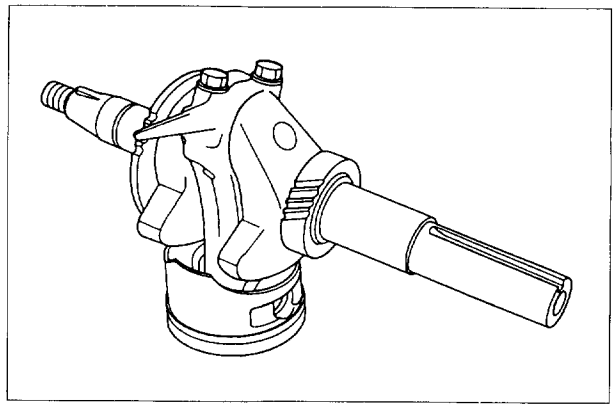
• CONNECTING ROD BIG END OIL CLEARANCE

1) Clean all oil from the crankpin and connecting rod big end surfaces.
2) Place a piece of plastigauge on the crankpin, install the connecting rod and cap, and tighten the bolts to the specified torque.

TORQUE: 12 N·m (1.2 kg-m, 9 ft-lb)

NOTE

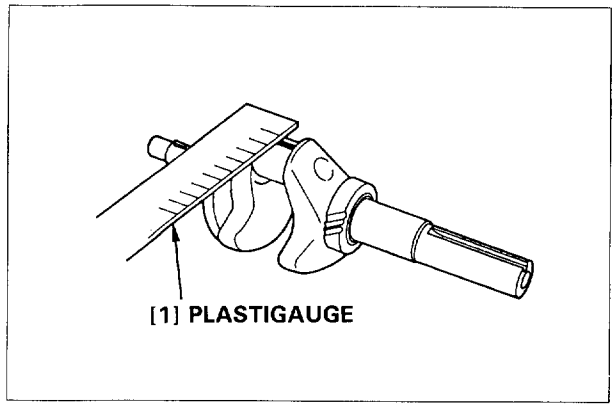
- Do not rotate the crankshaft while the plastigauge is in place.



3) Remove the connecting rod and measure the plastigauge.

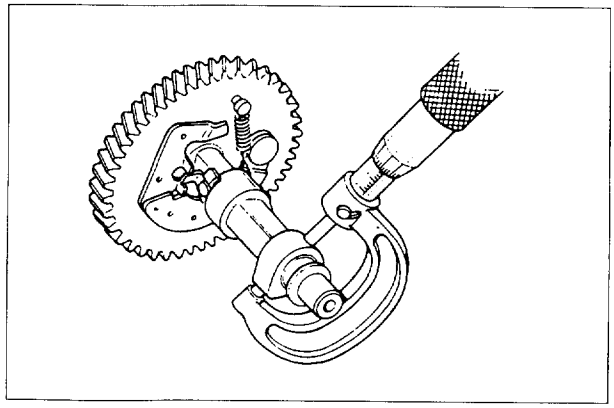
Standard	Service limit
0.040—0.063 mm (0.0016—0.0025 in)	0.12 mm (0.005 in)

4) If the clearance exceeds the service limit, replace the connecting rod and recheck the clearance.



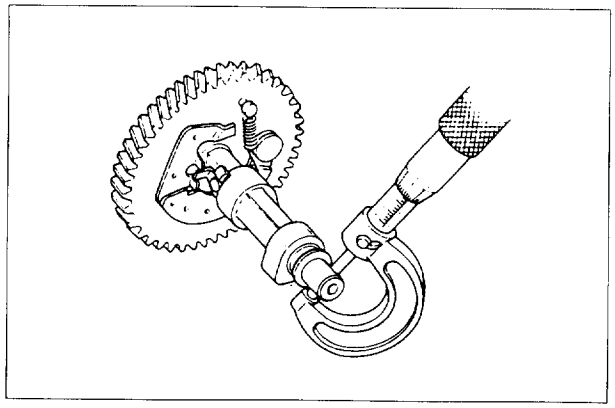
• CAMSHAFT CAM HEIGHT

	Standard	Service limit
IN	27.7 mm (1.09 in)	27.45 mm (1.081 in)
EX	27.75 mm (1.093 in)	27.50 mm (1.083 in)



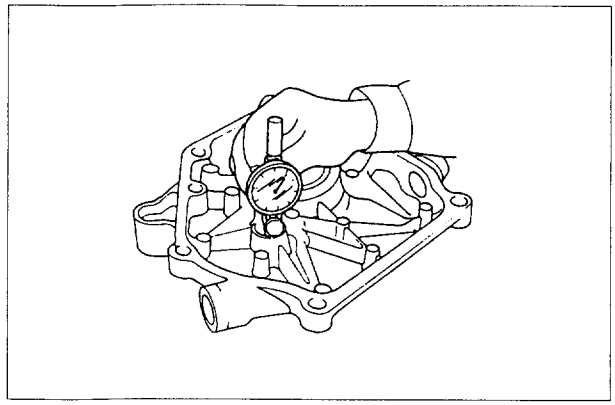
• CAMSHAFT O.D.

Standard	Service limit
13.984 mm (0.5506 in)	13.916 mm (0.5479 in)



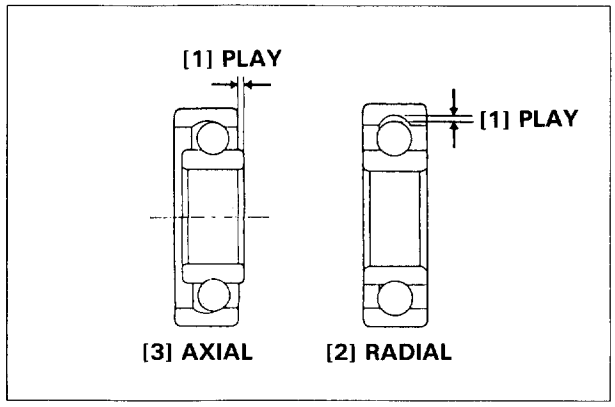
• CAMSHAFT HOLDER I.D.

Standard	Service limit
14.0 mm (0.55 in)	14.048 mm (0.5531 in)



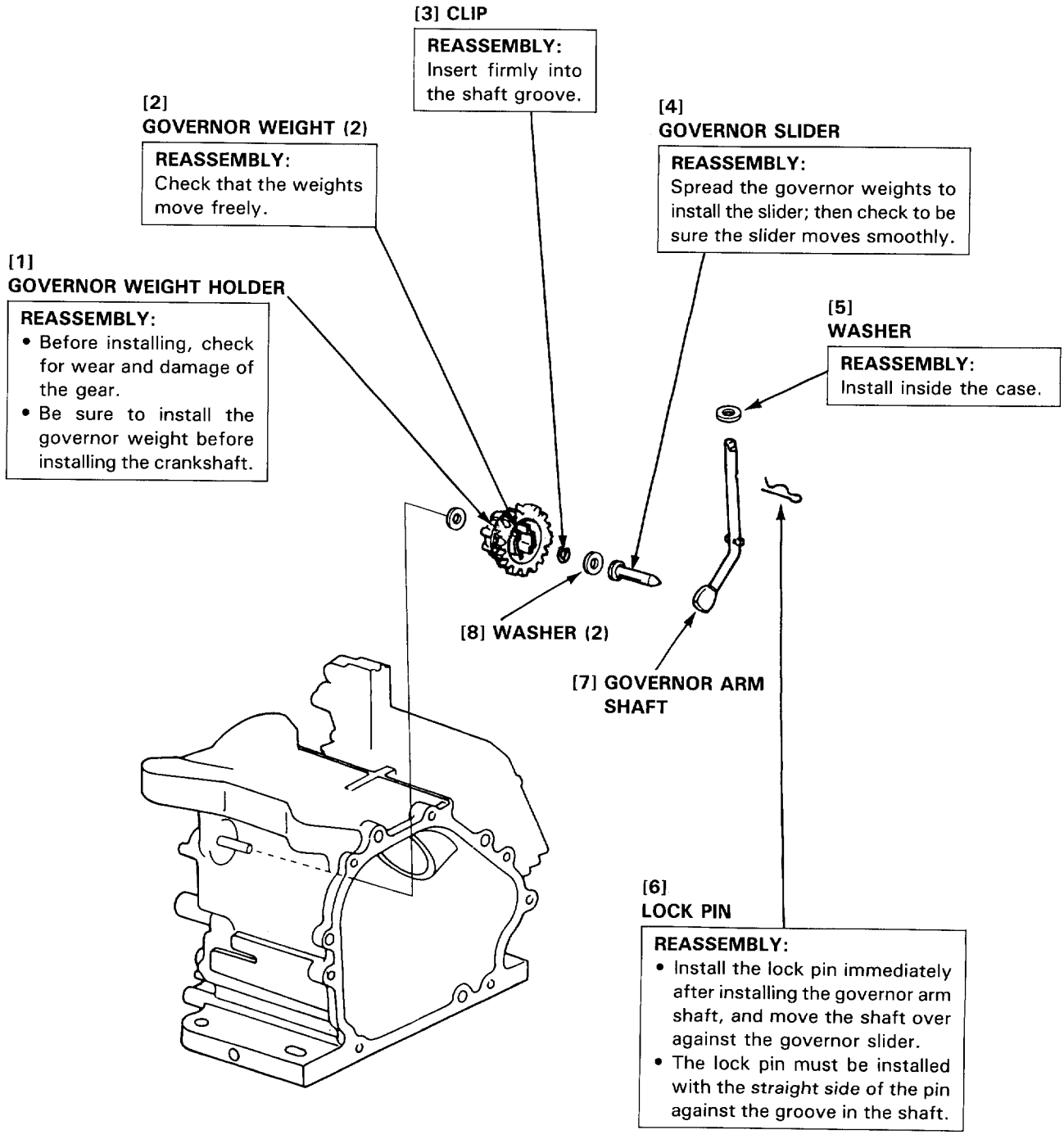
• CRANKSHAFT BEARING FREE PLAY

1) Clean the bearing in solvent and dry it.
2) Spin the bearing by hand and check for play. Replace the bearing if it is noisy or has excessive play.



2. GOVERNOR

a. DISASSEMBLY/REASSEMBLY



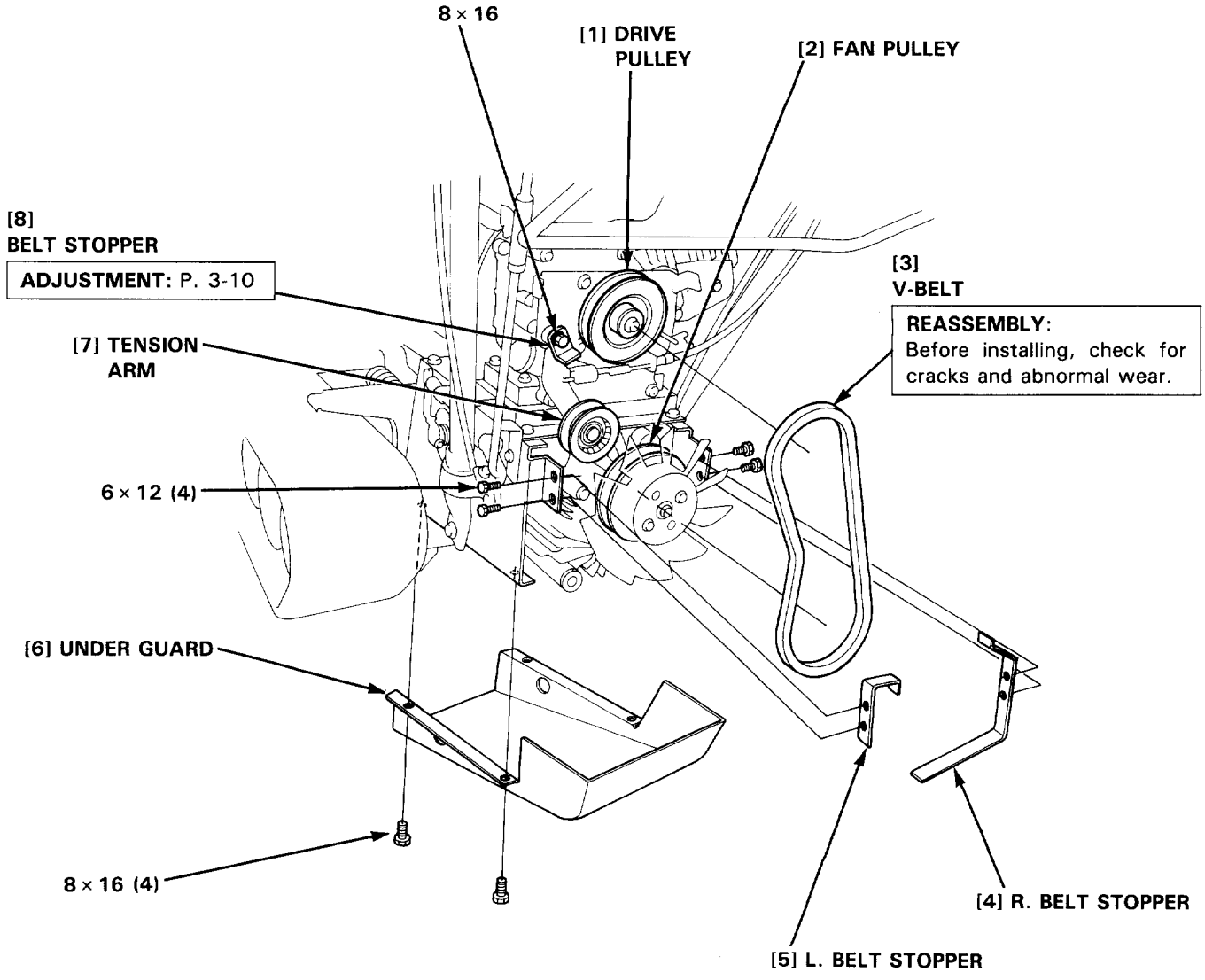
11. V-BELT/TENSION ARM

1. V-BELT/BELT STOPPER	2. DRIVE PULLEY/TENSION ARM/ TENSION ARM BRACKET

1. V-BELT/BELT STOPPER

a. REMOVAL/INSTALLATION

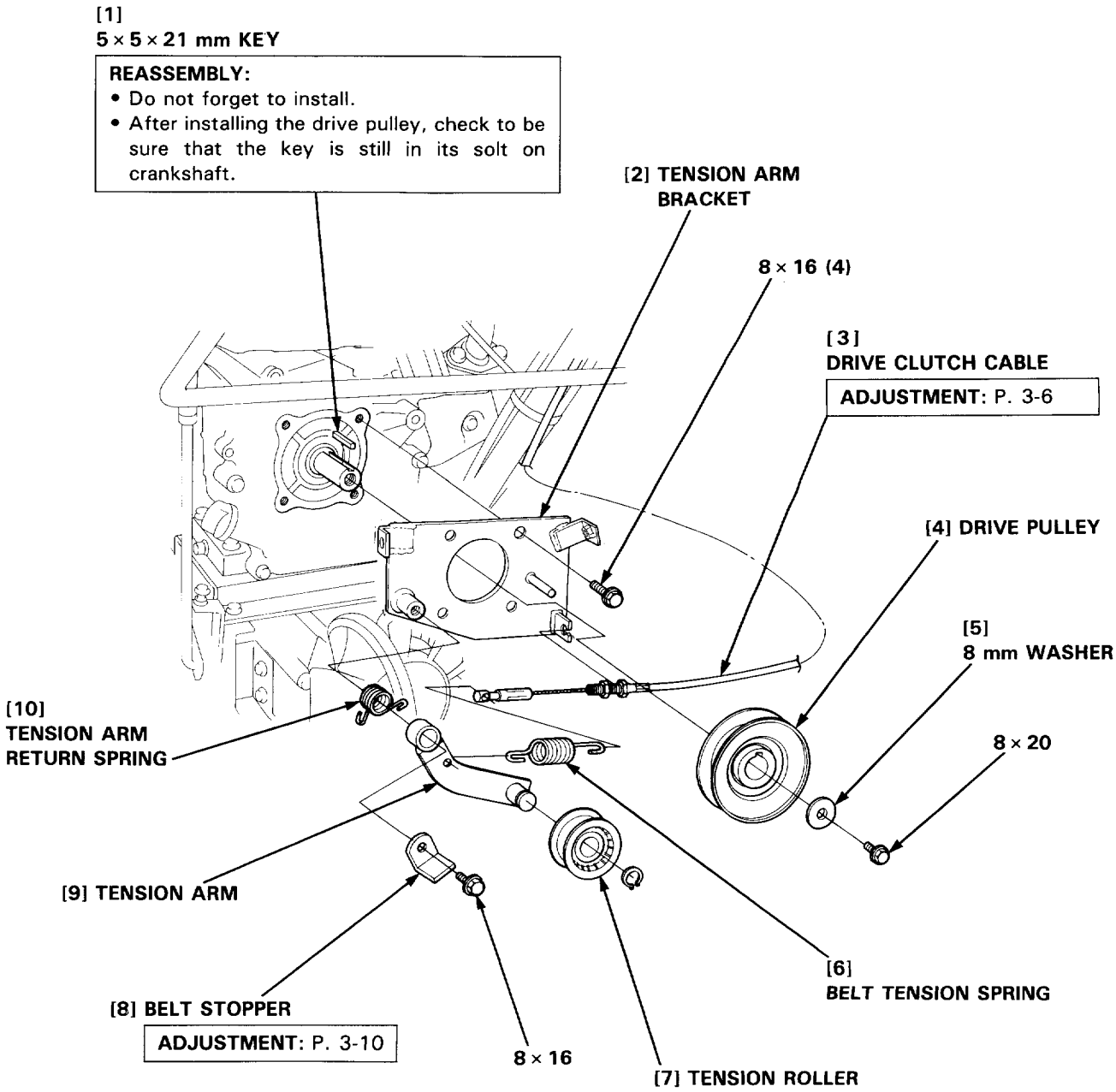
1) Remove the belt cover (P. 4-1). Loosen the 8 × 16 mm flange bolt which is tightening the belt stopper.
2) Remove the under guard and L./R. belt stoppers.
3) Pulling the tension arm out, remove the V-belt from the drive pulley then remove the V-belt from the fan pulley.



2. DRIVE PULLEY/TENSION ARM/TENSION ARM BRACKET

a. DISASSEMBLY/REASSEMBLY

1) Remove the spark plug cap and belt cover (P. 4-1).
2) Remove the V-belt from the drive pulley.



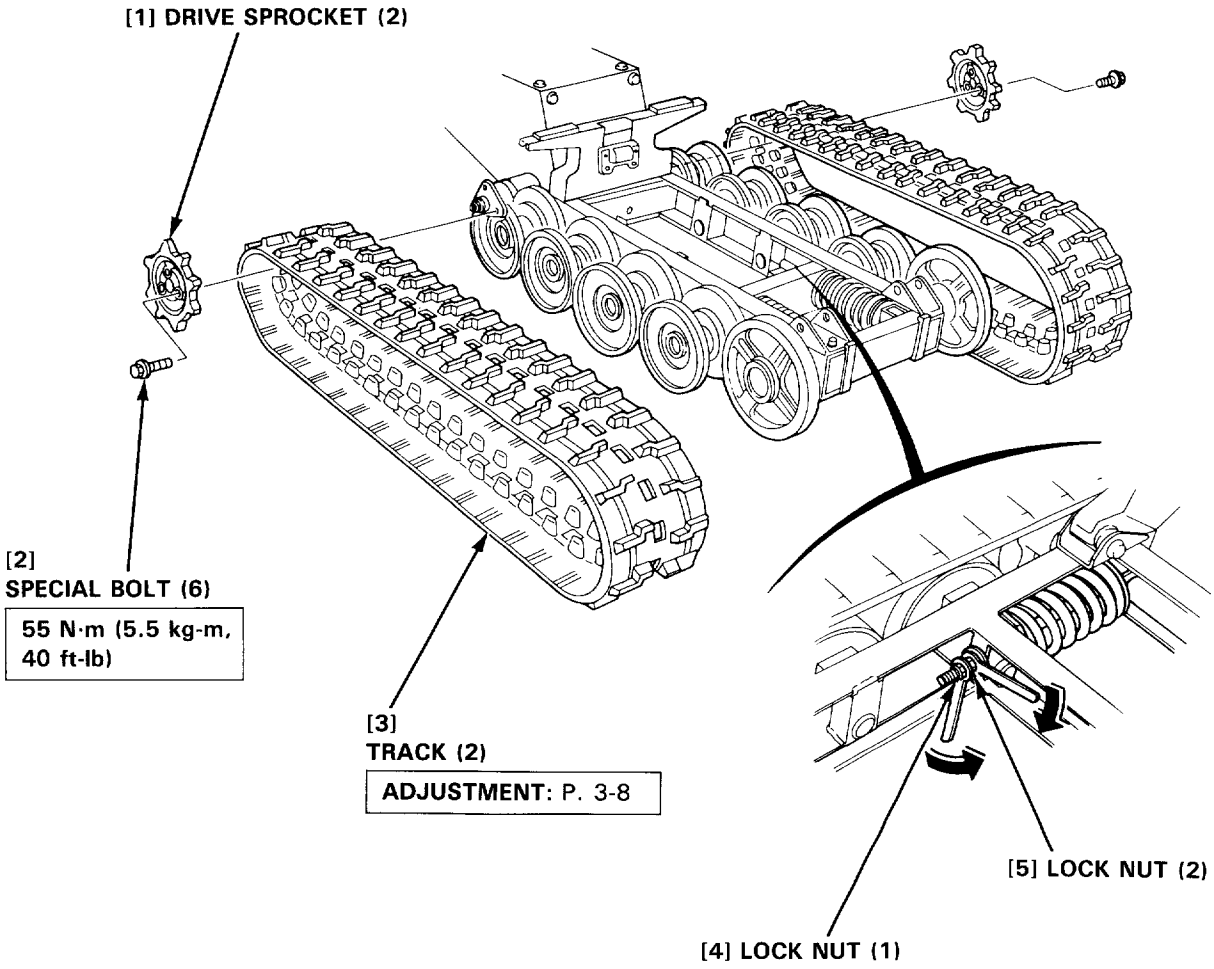
1. TRACKS

a. TRACK REMOVAL/INSTALLATION

⚠ WARNING

- **Do not remove/install the tracks by setting the power carrier vertically on its end. Gasline and oil can leak which causes fire hazard. When removing the tracks with the carrier bed mounted on the vehicle, place the wool blocks or equivalent material under the carrier bed to hold it in position securely (BE, BXE types only).**

1) Loosen the right and left tension spring lock nuts (1), then tighten the right and left lock nuts (2) equally and fully.



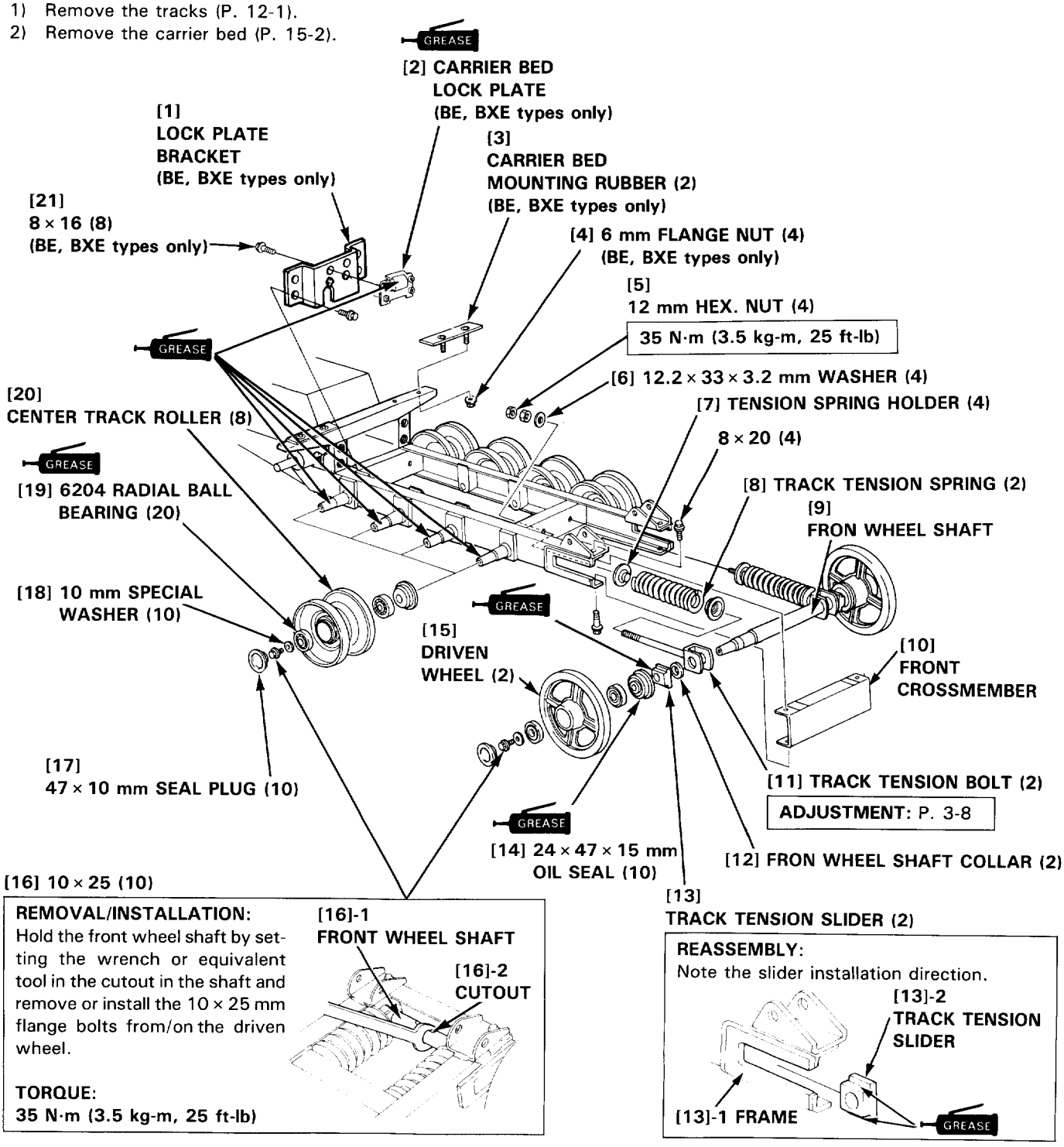
2. TRACK TENSION

a. DISASSEMBLY/REASSEMBLY

NOTE

- Apply grease to the center track roller radial ball bearings.
- Apply grease to the moving section of the carrier bed lock plate (BE, BXE types only).
- Tighten the 12 mm HEX. nuts fully before removing the front cross member.

1) Remove the tracks (P. 12-1).
2) Remove the carrier bed (P. 15-2).



REMOVAL/INSTALLATION:
Hold the front wheel shaft by setting the wrench or equivalent tool in the cutout in the shaft and remove or install the 10 × 25 mm flange bolts from/on the driven wheel.

TORQUE:
35 N·m (3.5 kg-m, 25 ft-lb)

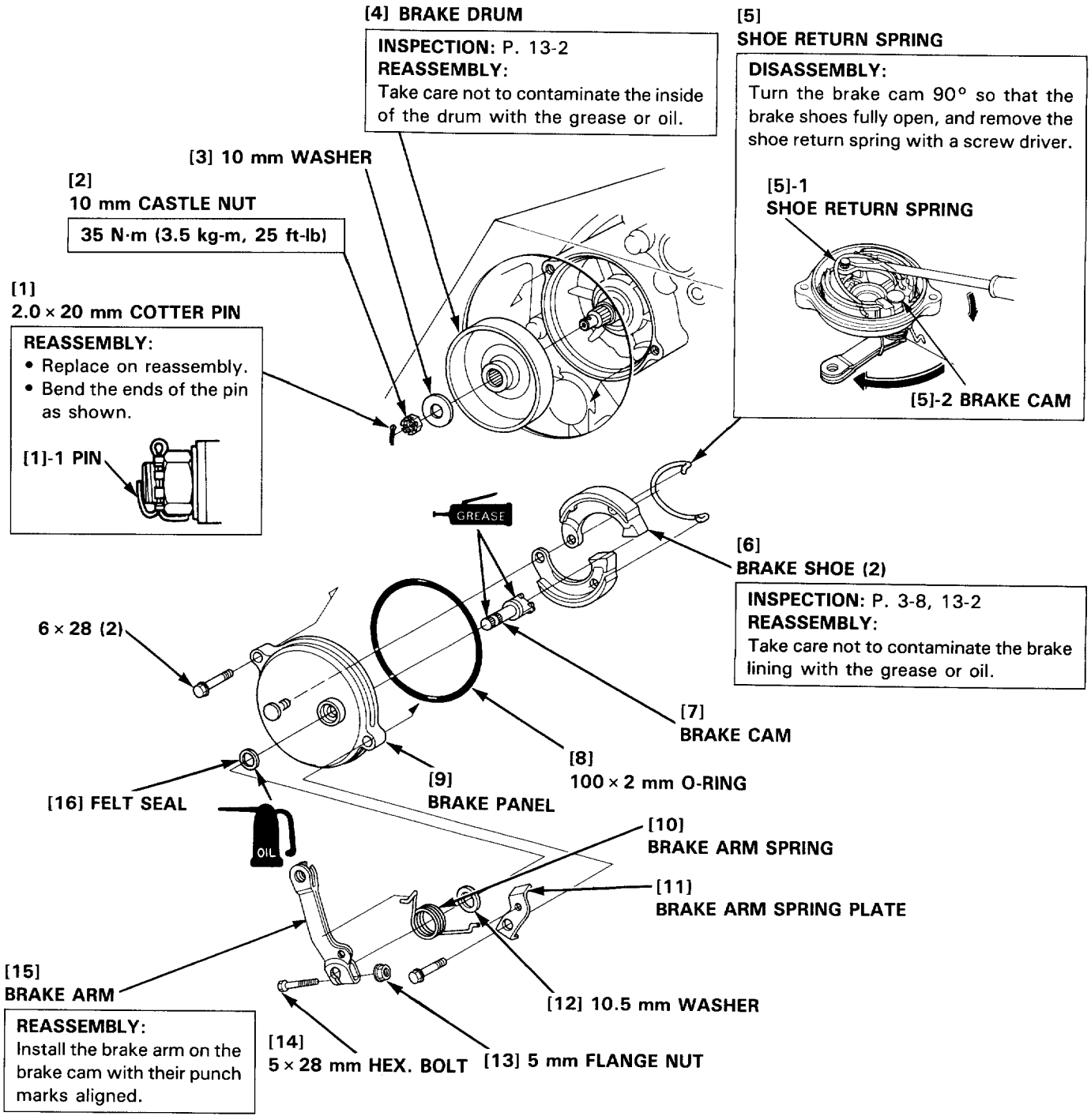
REASSEMBLY:
Note the slider installation direction.

1. BRAKE

1. BRAKE

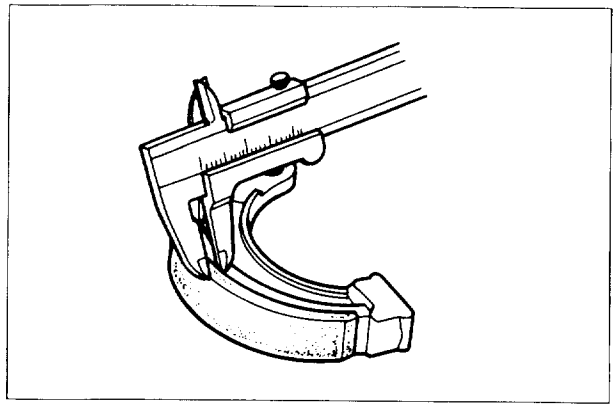
a. DISASSEMBLY

1) Disconnect the brake cable from the brake arm.



b. INSPECTION

Regardless of the brake lining thickness, replace the brake shoe with a new one when the side of the brake arm aligns with the wear indication hole in the left main frame (P. 3-8).



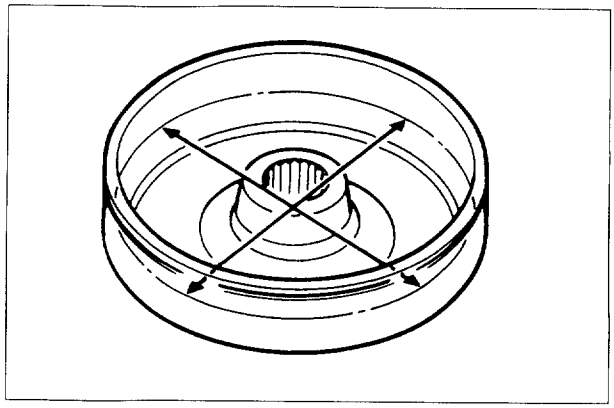
• BRAKE SHOE

Measure the brake lining thickness.

Standard	Service limit
3.5 mm (0.14 in)	2.7 mm (0.11 in)

• BRAKE DRUM I.D.

Remove the rust from the inside of the brake drum, if rusted, with #120 emery paper.
Measure the brake drum I.D. at several points and take the largest measurement.

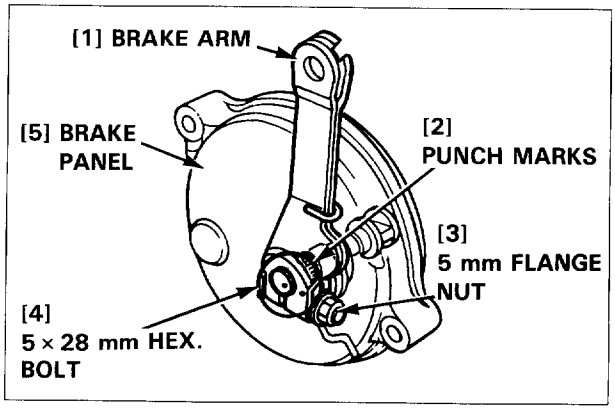


Standard	Service limit
80.0 mm (3.15 in)	81.0 mm (3.19 in)

c. REASSEMBLY

1) Apply grease to the brake cam shaft and cam surface and install the brake cam on the brake panel.

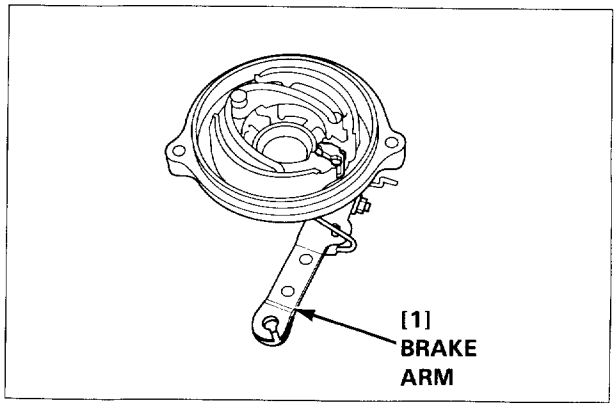
2) Install by aligning the punch mark on the brake cam with the punch mark on the brake arm.
Set the 5 x 28 mm HEX. bolt on the brake arm and tighten the 5 mm flange nut.



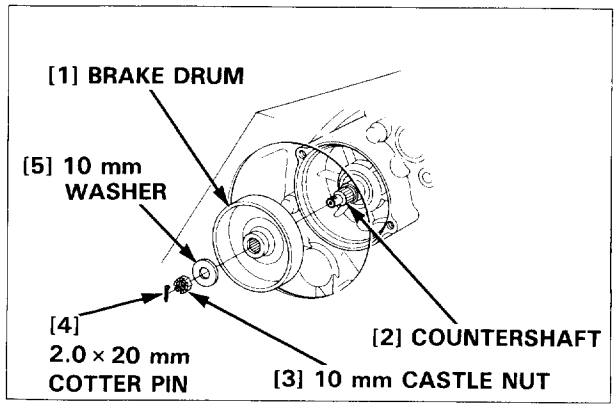
3) Install the brake shoe so that the brake arm is set in the position shown.
4) Install the shoe return spring using a screw driver.

CAUTION

- **Take care not to contaminate the brake lining with the grease and oil.**



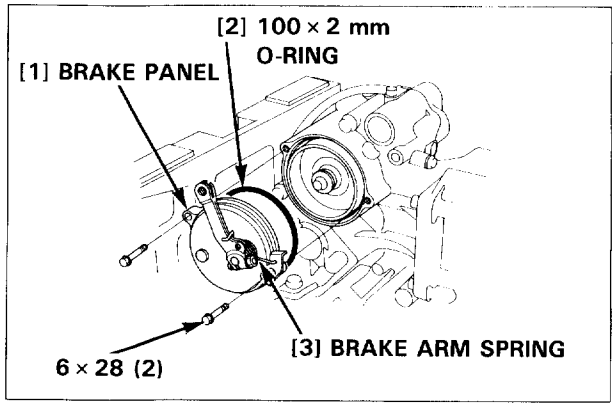
5) Install the brake drum on the countershaft.
6) Tighten the 10 mm castle nut to the specified torque.
TORQUE: 35 N·m (3.5 kg-m, 25, ft-lb)
7) Install the 2.0 × 20 mm cotter pin and bend the ends of the pin securely to stake the nut.



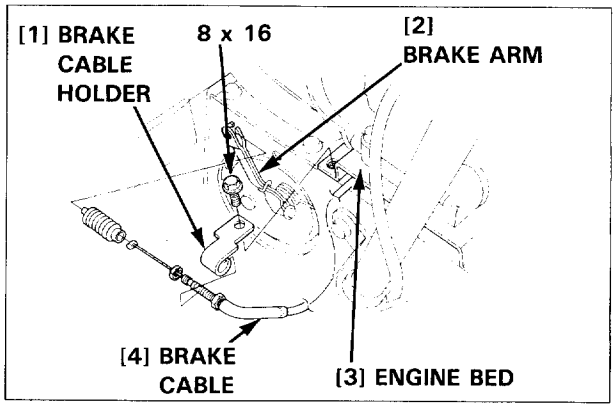
8) Install the brake panel and 100 × 2 mm O-ring on the transmission case.
Be sure that the brake arm spring is set in position securely.

NOTE:

Install the O-ring securely.



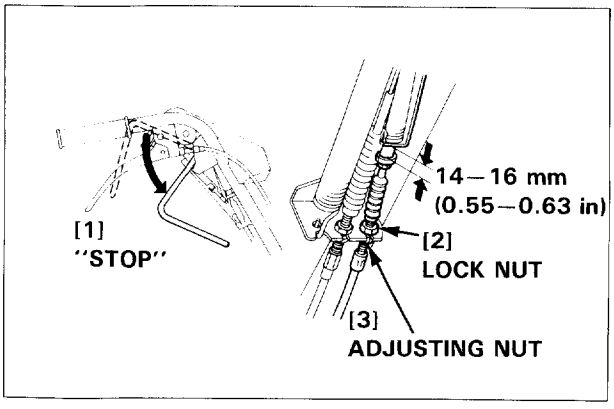
9) Attach the brake cable to the brake arm. Pass the brake cable through the brake cable holder and attach the brake cable to the engine bed.
Be sure to adjust the right and left cable threads to the same length this time.



10) Move the drive clutch lever to the "STOP" position (BE, NE types) or release the drive clutch levers (BXE, NXE types) and be sure that the brake spring collar extrudes from the brake spring holder by 14—16 mm (0.55—0.62 in).
Adjust if necessary (P. 3-7).

11) Move the drive clutch lever to the "DRIVE" position (BE, NE types) or release the drive clutch levers (BXE, NXE types) and be sure that the brake is released.

Check method:
Set the power carrier on a level (paved) surface and move the change lever to the "HIGH SPEED" position.
Check by pushing the power carrier forward or pulling it rearward.

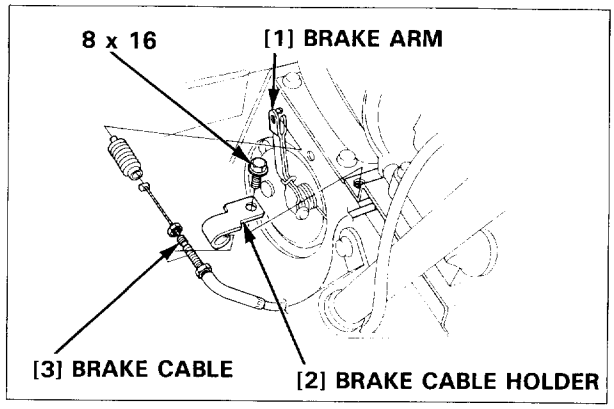


14. HYDROSTATIC TRANSMISSION/ TRANSMISSION

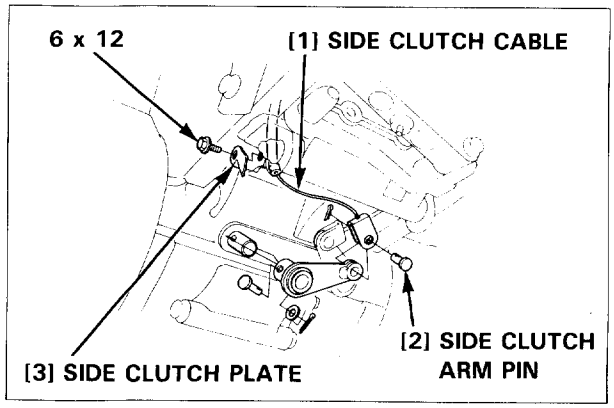
1. TRANSMISSION REMOVAL/INSTALLATION

• REMOVAL

1) Loosen the brake cable lock nut and adjusting nut and remove the brake cable from the brake arm.
2) Remove the 8 x 16 mm flange bolt and brake cable holder.
3) Remove the engine (P. 4-1).



4) Remove the two 6 x 12 mm flange bolts and L./R. side clutch plates.
5) Remove the two 2.0 x 12 mm cotter pins and two side clutch arm pins.
   Disconnect the two side clutch cables from the side clutch arms.
6) Remove the handlebar (P. 16-8).

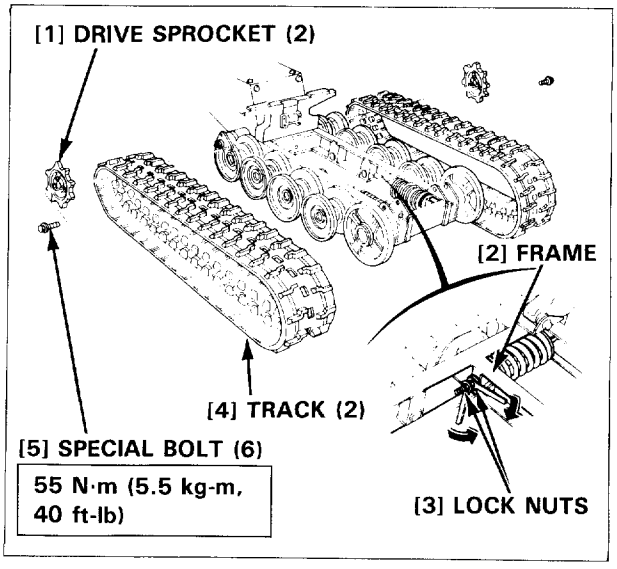


7) Set the wood blocks or equivalent material at the two points under the frame to raise the tracks.
8) Raise the carrier bed (BE, BXE types only).

⚠ WARNING

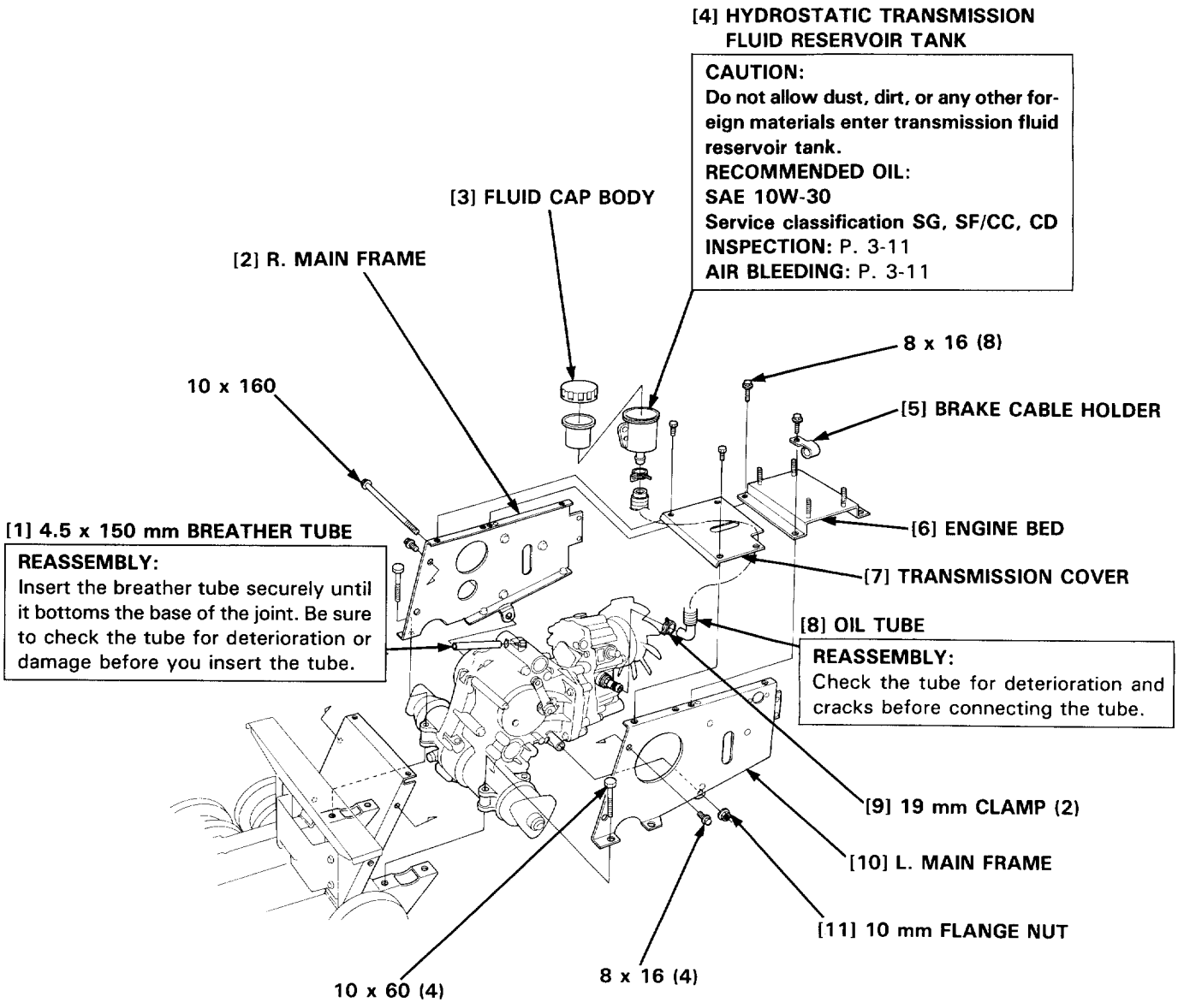
- **When raising the carrier bed, support it by placing the wood blocks or equivalent material between the carrier bed and frame (BE, BXE types only).**

9) Loosen the lock nuts and fully tighten the frame side lock nuts.
10) Remove the six special bolts from the right and left drive sprockets, then remove the right and left drive sprockets.
11) Remove the right and left tracks.



12) Remove the seven 8 x 16 mm flange bolt, engine bed and transmission cover.
13) Support the transmission case by placing the wood blocks or equivalent material under the transmission case.
14) Remove the 10 x 160 mm flange bolt, four 10 x 60 mm flange bolts and the L./R. main frames.
Remove the transmission from the frame.

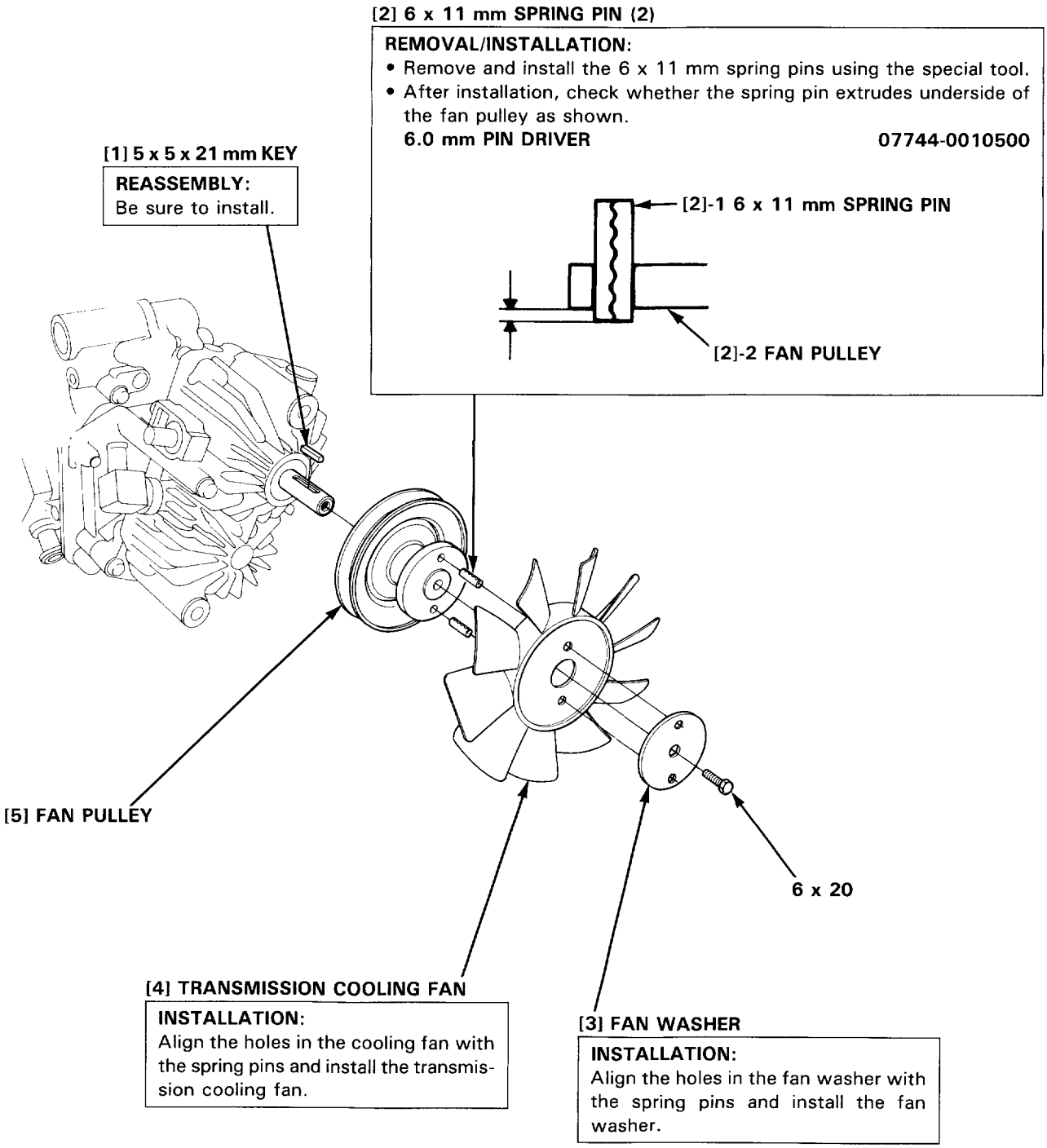
• Install the transmission in the reverse order of removal. After installation, perform the following adjustments.
— Track tension adjustment (P. 3-8).
— Side clutch cable adjustment (P. 3-8).
— Brake cable adjustment (P. 3-7).



2. FAN PULLEY/TRANSMISSION COOLING FAN

a. DISASSEMBLY/REASSEMBLY

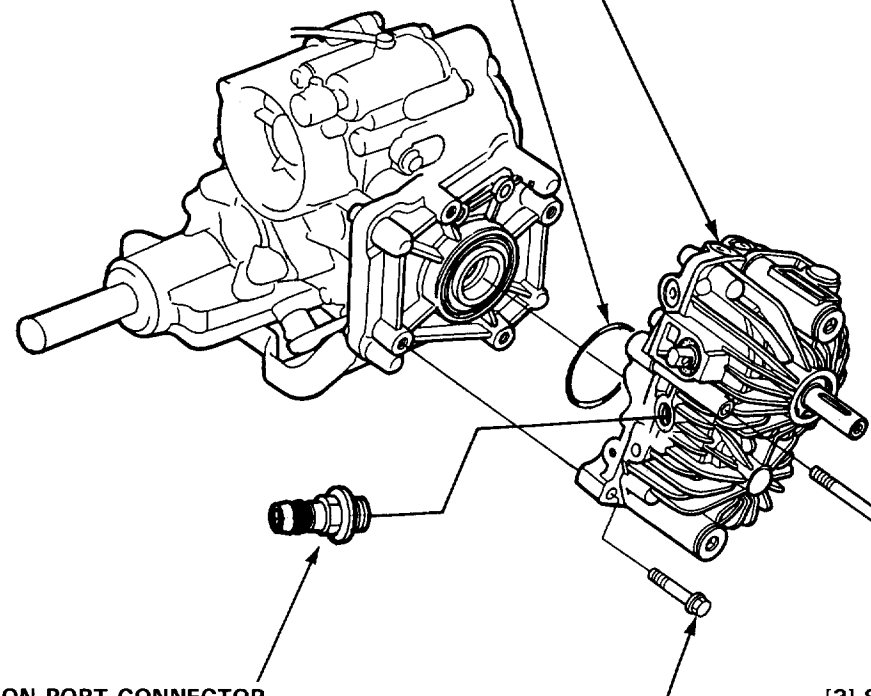
- Fan pulley/transmission cooling fan disassembly/reassembly can be made with the transmission installed in the frame. Before disassembly, perform the following:
- Remove the belt cover (P. 4-1).
- Remove the V-belt (P. 11-1).



3. HYDROSTATIC TRANSMISSION

a. REMOVAL/INSTALLATION

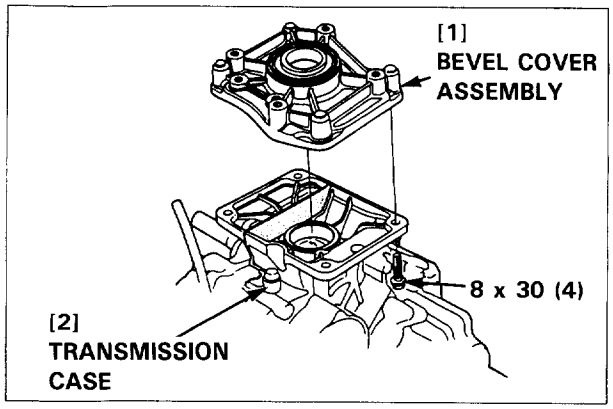
- Remove the transmission (P. 14-1).



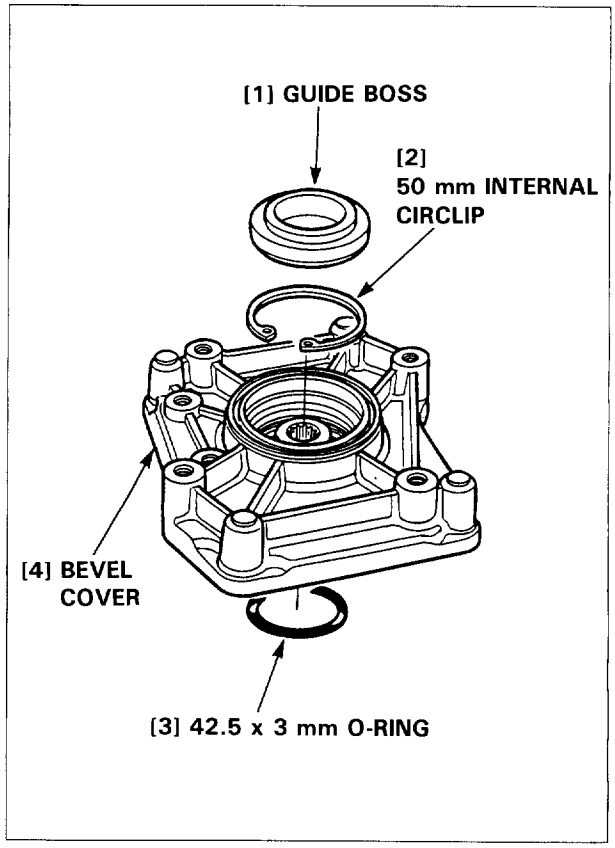
4. BEVEL COVER

DISASSEMBLY:

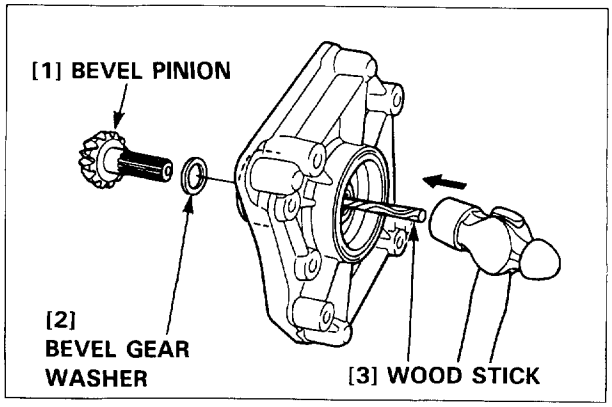
1) Remove the four 8 x 30 mm flange bolts and the bevel cover.
2) Remove the bevel cover assembly from the transmission case.



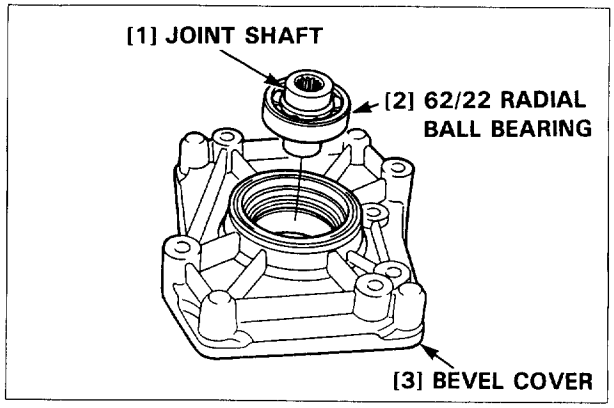
3) Remove the guide boss and the 50 mm internal circlip from the bevel cover.
4) Remove the 42.5 x 3 mm O-ring from the reverse side of the bevel cover.



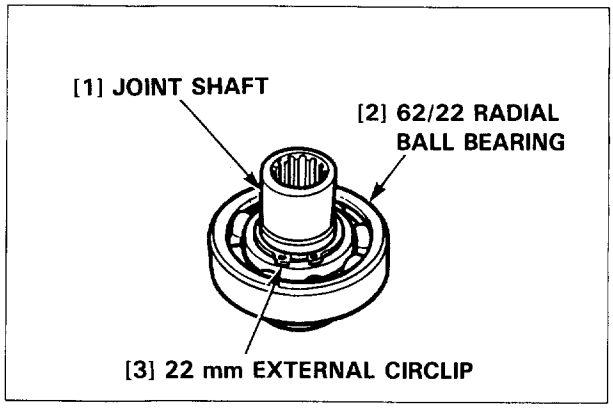
5) Drive out the bevel pinion by using a wood stick, etc. as shown in the drawing. Remove the bevel gear washer.



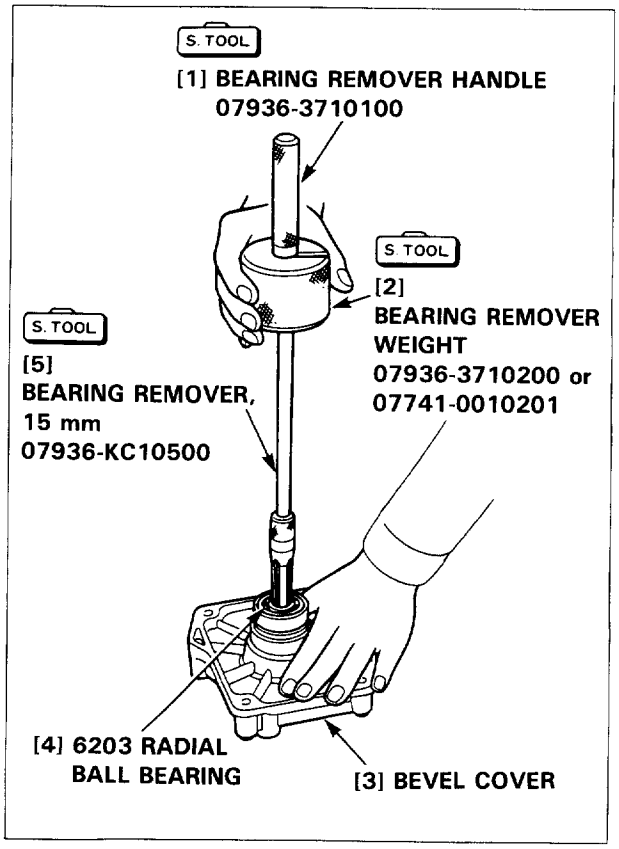
6) Remove the joint shaft and the 62/22 radial ball bearing from the bevel cover as a set.

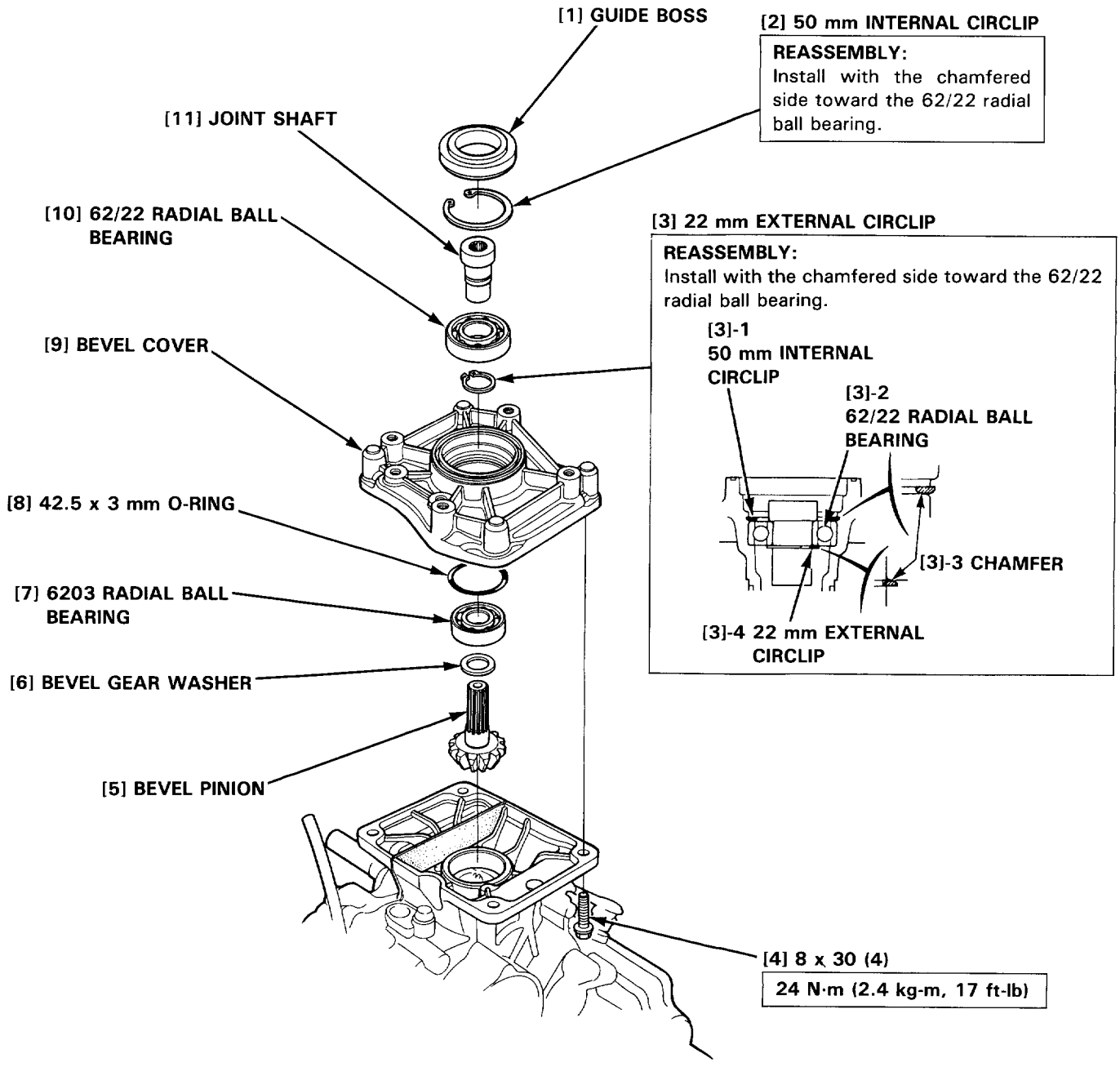


7) Remove the external circlip and remove the 62/22 radial ball bearing from the joint shaft.



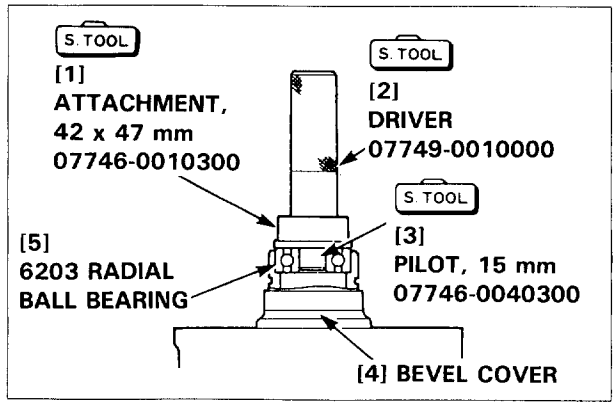
8) Drive out the 6203 radial ball bearing from the bevel cover by using the special tools.



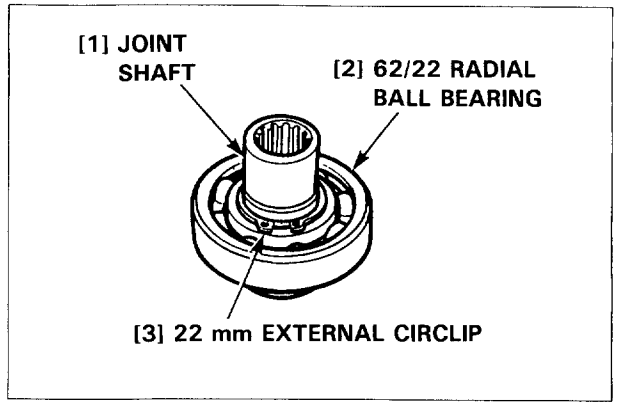

[1] GUIDE BOSS
[2] 50 mm INTERNAL CIRCLIP
REASSEMBLY:
Install with the chamfered side toward the 62/22 radial ball bearing.
[11] JOINT SHAFT
[10] 62/22 RADIAL BALL BEARING
[3] 22 mm EXTERNAL CIRCLIP
REASSEMBLY:
Install with the chamfered side toward the 62/22 radial ball bearing.
[3]-1 50 mm INTERNAL CIRCLIP
[3]-2 62/22 RADIAL BALL BEARING
[3]-3 CHAMFER
[3]-4 22 mm EXTERNAL CIRCLIP
[9] BEVEL COVER
[8] 42.5 x 3 mm O-RING
[7] 6203 RADIAL BALL BEARING
[6] BEVEL GEAR WASHER
[5] BEVEL PINION
[4] 8 x 30 (4)
24 N·m (2.4 kg-m, 17 ft-lb)

REASSEMBLY:

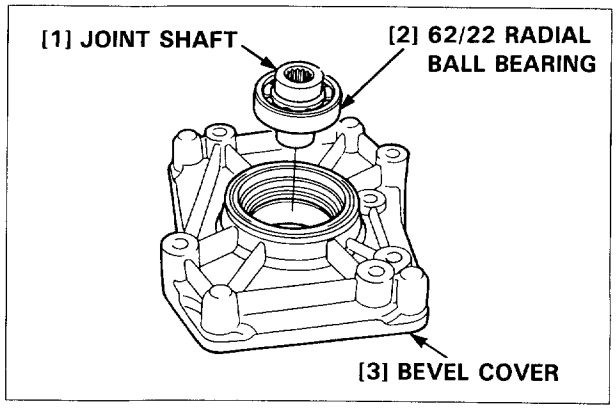
1) Drive the 6203 radial ball bearing into the bevel cover by using the special tools.



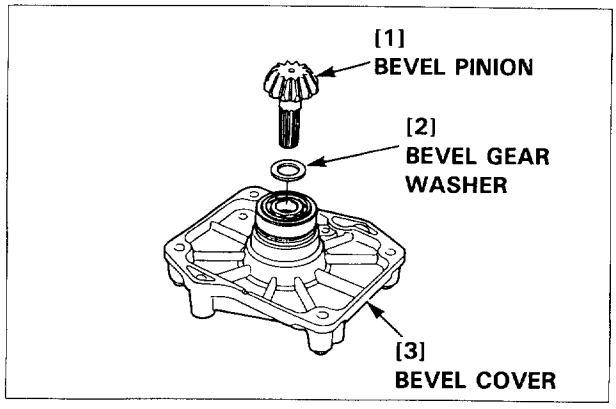
2) Install the 62/22 radial ball bearing on the joint shaft, then set the 22 mm external circlip in the groove in the joint shaft securely.



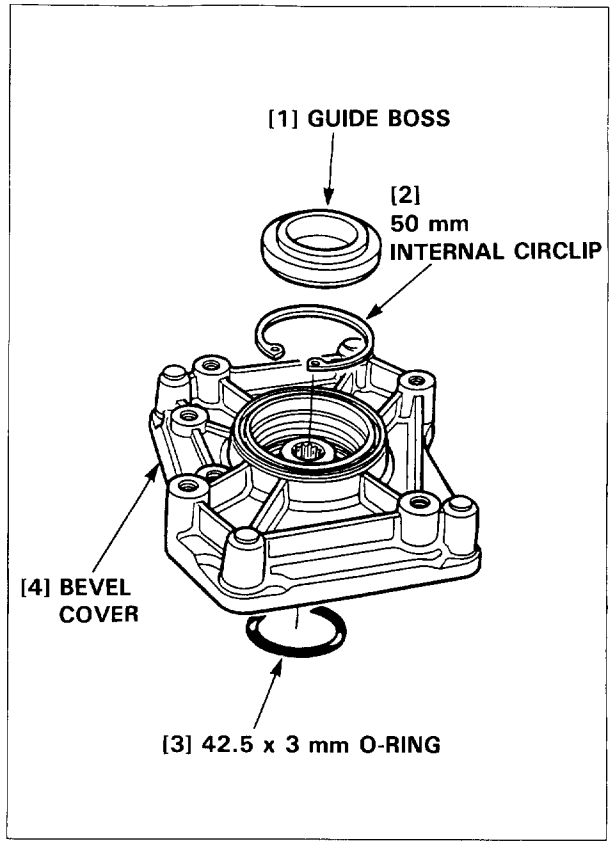
3) Install the joint shaft assembled in the above step 2 on the bevel cover.



4) Install the bevel gear washer on the bevel pinion and install the bevel pinion with its serrations aligned with the ones in the joint shaft.

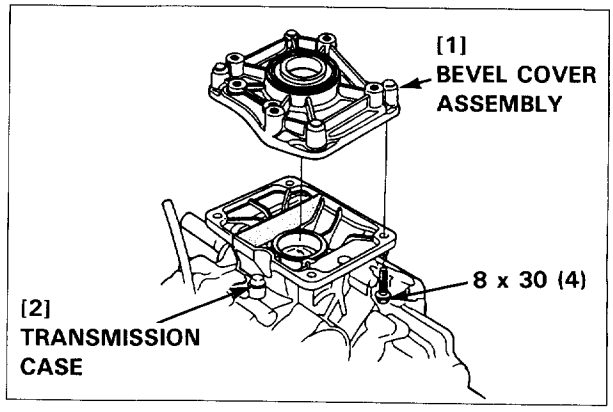


5) Set the 50 mm internal circlip on the bevel cover, then install the guide boss.
6) Install the 42.5 x 3 mm O-ring on the reverse side of the bevel cover.

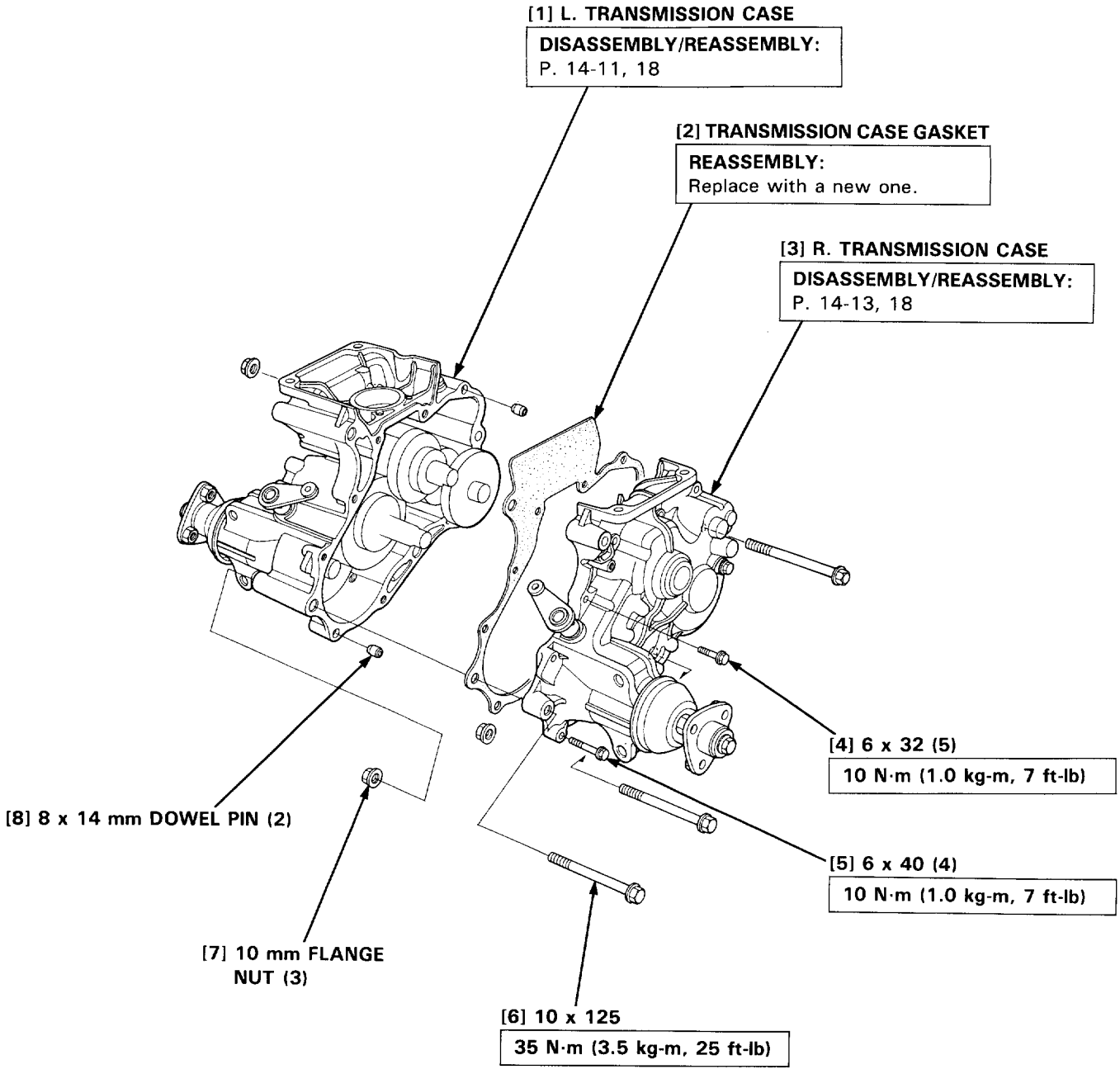


7) Set the bevel cover assembly on the transmission case and tighten the four 8 x 30 mm flange bolts to the specified torque.

TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)



5. TRANSMISSION DISASSEMBLY/REASSEMBLY

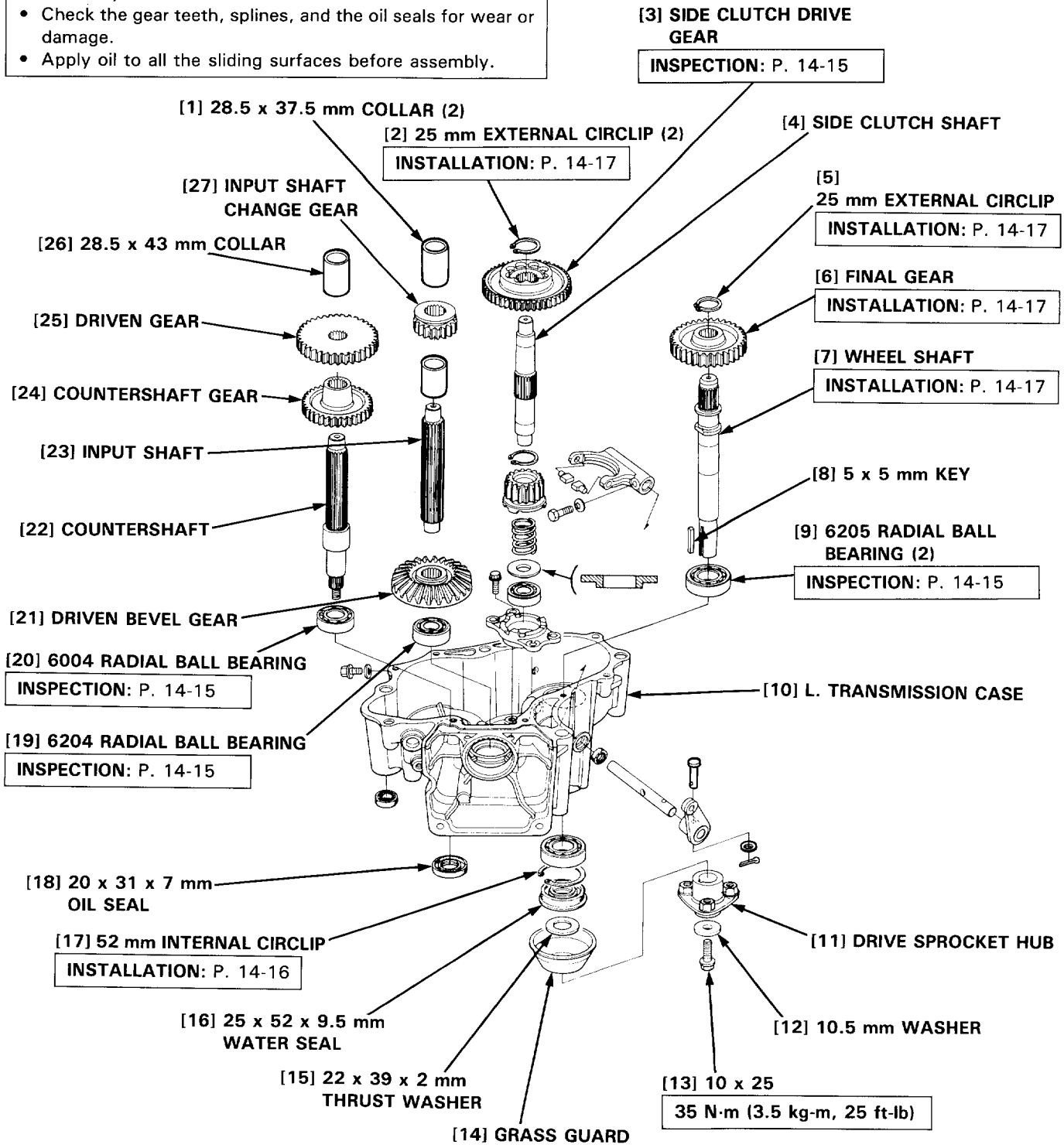


6. L. TRANSMISSION CASE DISASSEMBLY/REASSEMBLY

1) Remove the brake (P. 13-1).

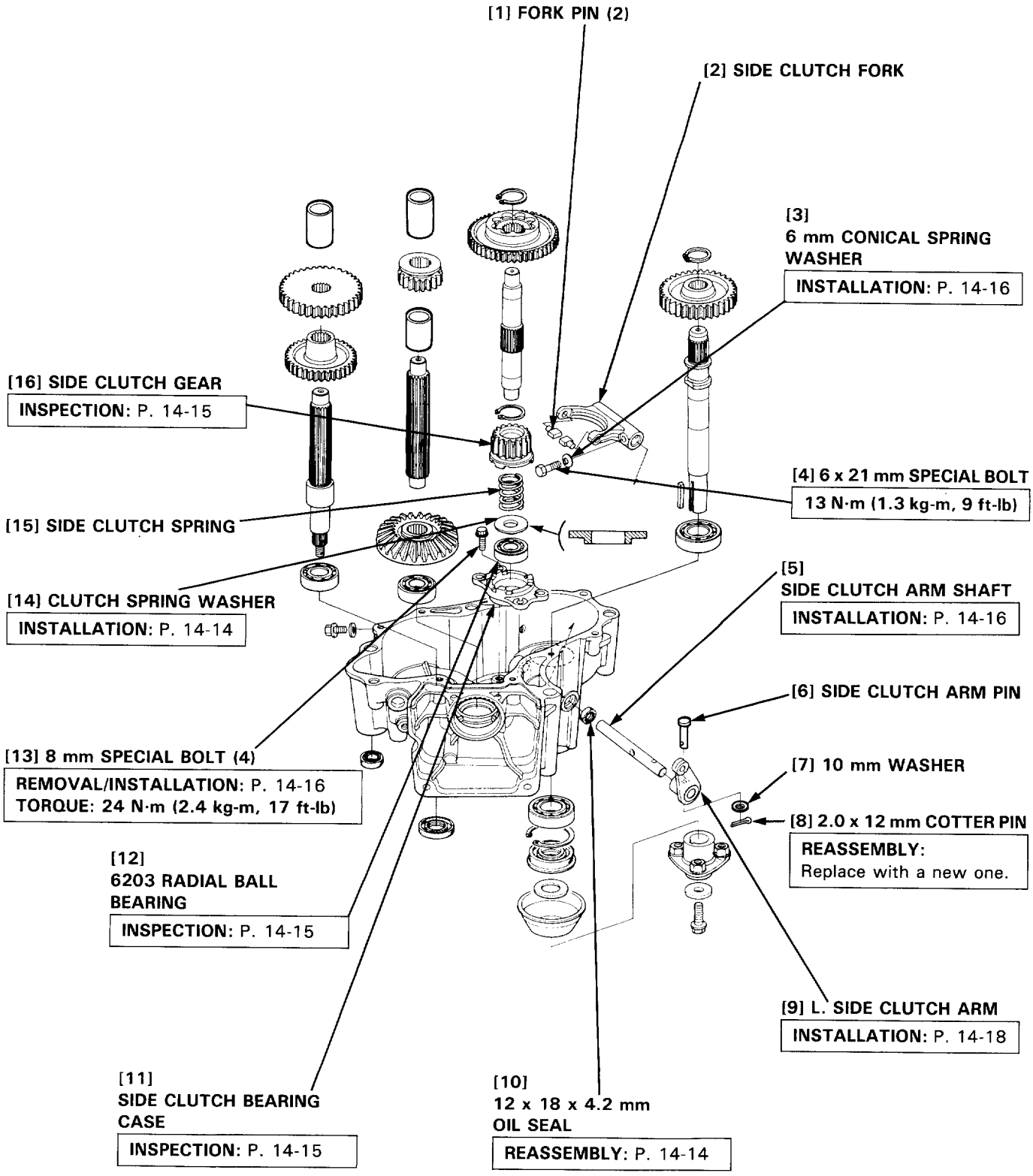
NOTE

- Clean all the parts with solvent and blow with compressed air to dry.
- Check the gear teeth, splines, and the oil seals for wear or damage.
- Apply oil to all the sliding surfaces before assembly.



(continued)

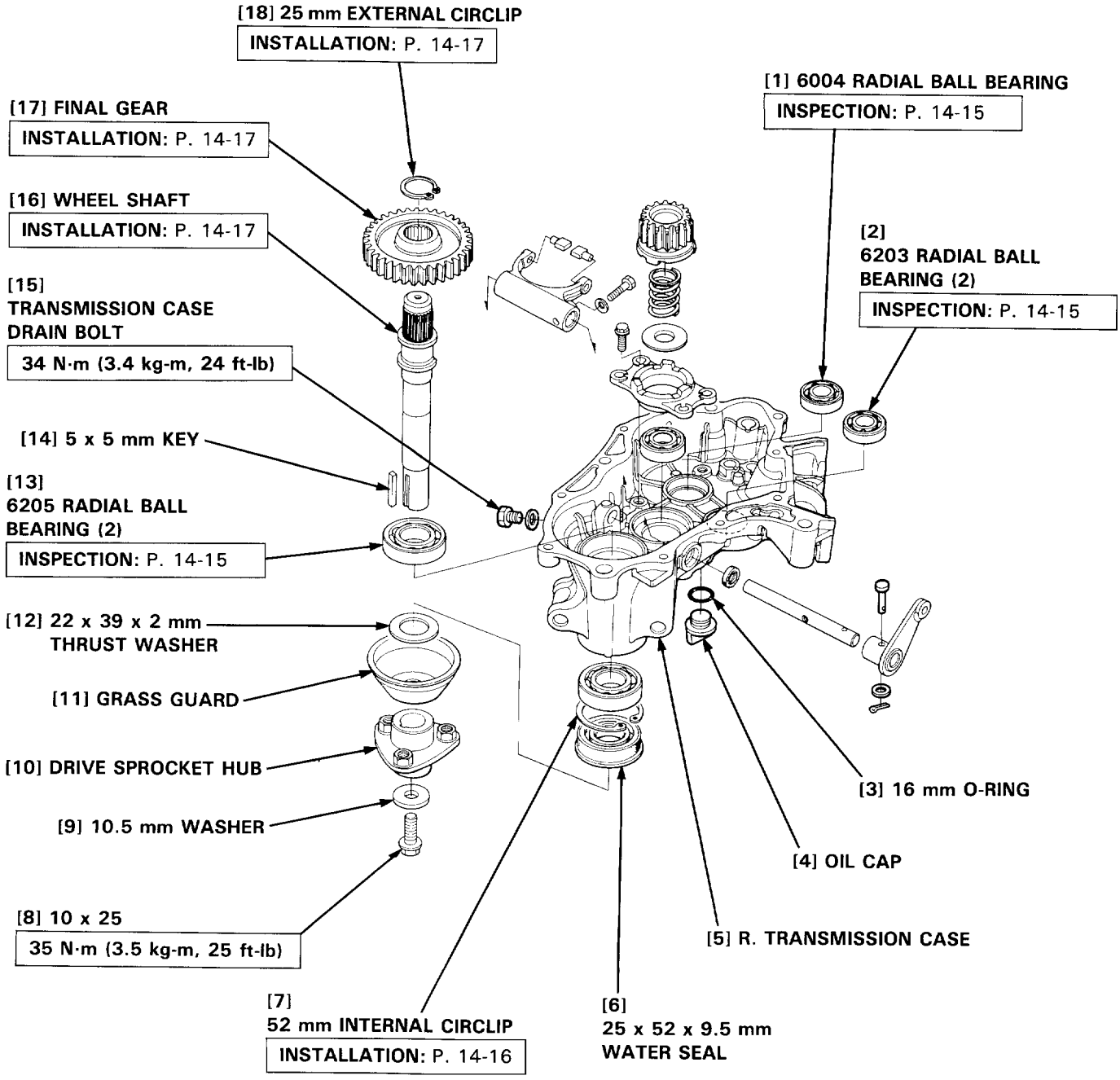
(continued)


[1] FORK PIN (2)
[2] SIDE CLUTCH FORK
[3]
6 mm CONICAL SPRING WASHER
INSTALLATION: P. 14-16
[16] SIDE CLUTCH GEAR
INSPECTION: P. 14-15
[4] 6 x 21 mm SPECIAL BOLT
13 N·m (1.3 kg-m, 9 ft-lb)
[15] SIDE CLUTCH SPRING
[14] CLUTCH SPRING WASHER
INSTALLATION: P. 14-14
[5]
SIDE CLUTCH ARM SHAFT
INSTALLATION: P. 14-16
[6] SIDE CLUTCH ARM PIN
[13] 8 mm SPECIAL BOLT (4)
REMOVAL/INSTALLATION: P. 14-16
TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)
[7] 10 mm WASHER
[8] 2.0 x 12 mm COTTER PIN
REASSEMBLY:
Replace with a new one.
[12]
6203 RADIAL BALL BEARING
INSPECTION: P. 14-15
[9] L. SIDE CLUTCH ARM
INSTALLATION: P. 14-18
[11]
SIDE CLUTCH BEARING CASE
INSPECTION: P. 14-15
[10]
12 x 18 x 4.2 mm
OIL SEAL
REASSEMBLY: P. 14-14

7. R. TRANSMISSION CASE DISASSEMBLY/REASSEMBLY

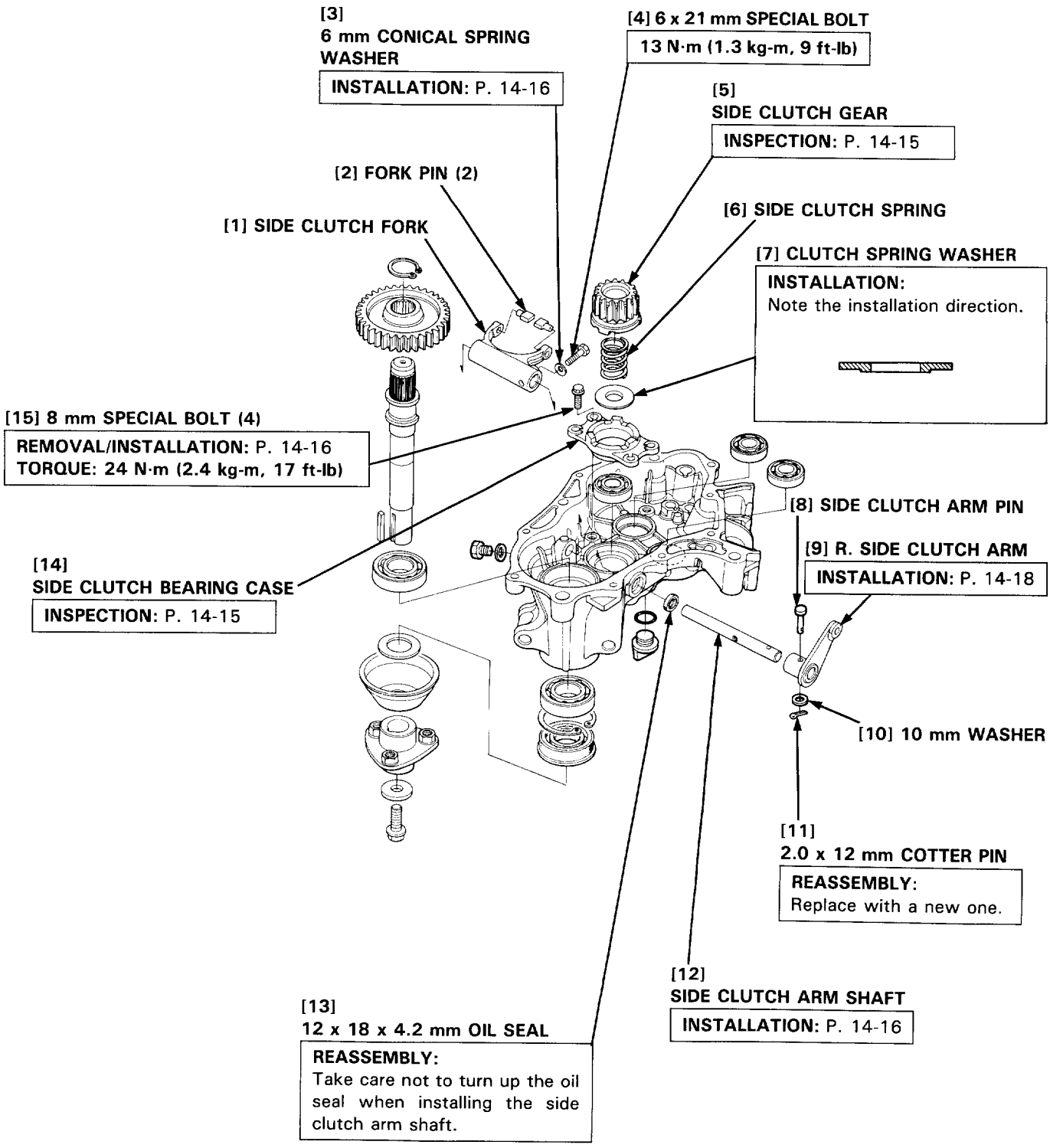
NOTE

- Clean all the parts with solvent and blow with compressed air to dry.
- Check the gear teeth, splines, and the oil seals for wear or damage.
- Apply oil to all the sliding surfaces before assembly.



(continued)

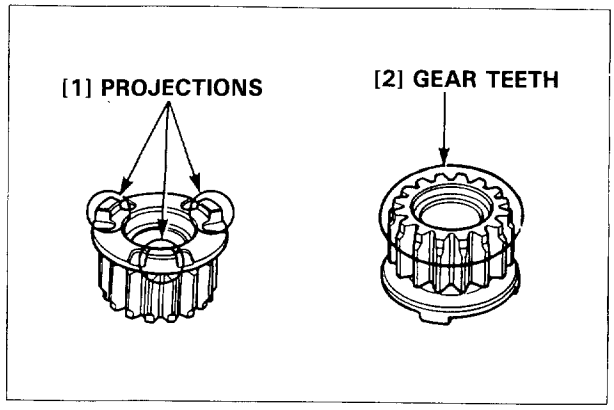
(continued)


[3]
6 mm CONICAL SPRING WASHER
INSTALLATION: P. 14-16
[4] 6 x 21 mm SPECIAL BOLT
13 N·m (1.3 kg-m, 9 ft-lb)
[5]
SIDE CLUTCH GEAR
INSPECTION: P. 14-15
[2] FORK PIN (2)
[1] SIDE CLUTCH FORK
[6] SIDE CLUTCH SPRING
[7] CLUTCH SPRING WASHER
INSTALLATION:
Note the installation direction.
[15] 8 mm SPECIAL BOLT (4)
REMOVAL/INSTALLATION: P. 14-16
TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)
[8] SIDE CLUTCH ARM PIN
[9] R. SIDE CLUTCH ARM
INSTALLATION: P. 14-18
[14]
SIDE CLUTCH BEARING CASE
INSPECTION: P. 14-15
[10] 10 mm WASHER
[11]
2.0 x 12 mm COTTER PIN
REASSEMBLY:
Replace with a new one.
[12]
SIDE CLUTCH ARM SHAFT
INSTALLATION: P. 14-16
[13]
12 x 18 x 4.2 mm OIL SEAL
REASSEMBLY:
Take care not to turn up the oil seal when installing the side clutch arm shaft.

• INSPECTION

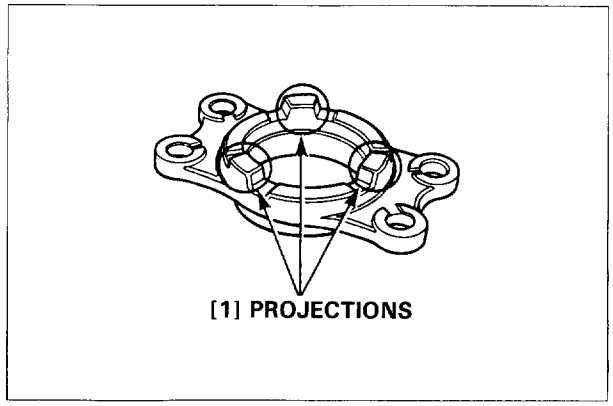
• SIDE CLUTCH GEAR

1) Check the side clutch gear for wear or damage to the projections and the gear teeth.
2) If it is worn or damaged, replace the side clutch gear.



• SIDE CLUTCH BEARING CASE

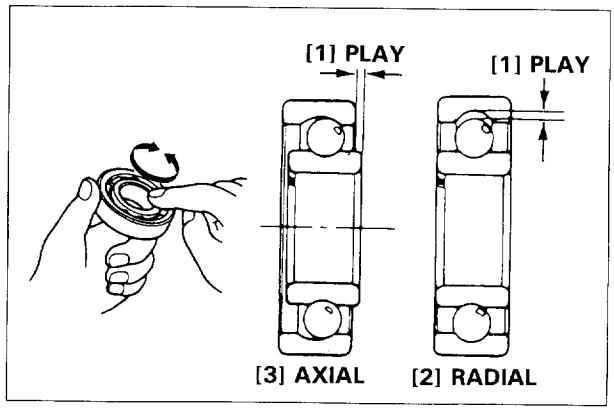
Check the projections on the side clutch bearing case for wear or damage.
If worn or damaged, replace the side clutch bearing case.



• RADIAL BALL BEARING

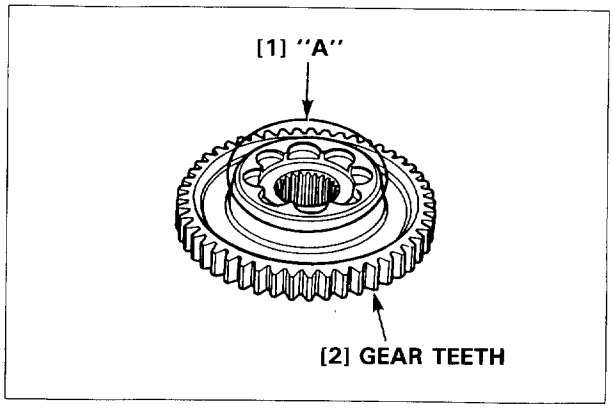
Spin the inner and outer races with your finger and check for the smooth rotation.

- If the radial and/or axial play is excessive, replace the bearing.
- If the bearing is rugged, clean with solvent or replace. (The both-side sealed type cannot clean with solvent.)
- Replace the bearing if its insertion section to the case or shaft is loose.



•SIDE CLUTCH DRIVE GEAR

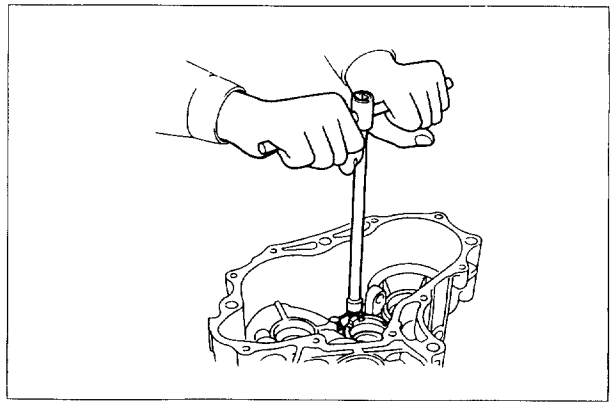
Check the "A" section of the side clutch drive gear and gear teeth for wear or damage.
Replace the gear with a new one if necessary.



• **8 mm SPECIAL BOLT**

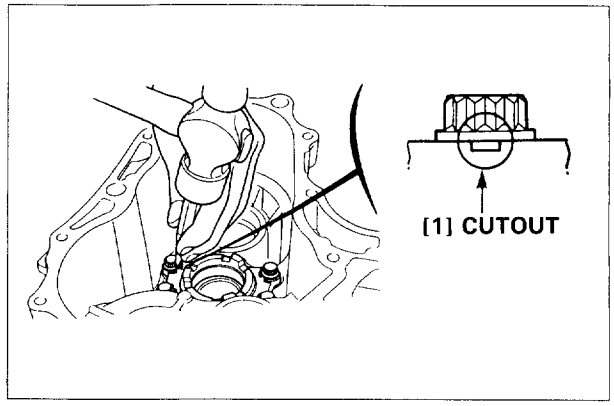
REMOVAL/INSTALLATION:

1) Removal/install the 8 mm special bolts by using a commercially available tool.



2) After tightening the 8 mm special bolt, stake the bolt into the cutout in the side clutch bearing case.

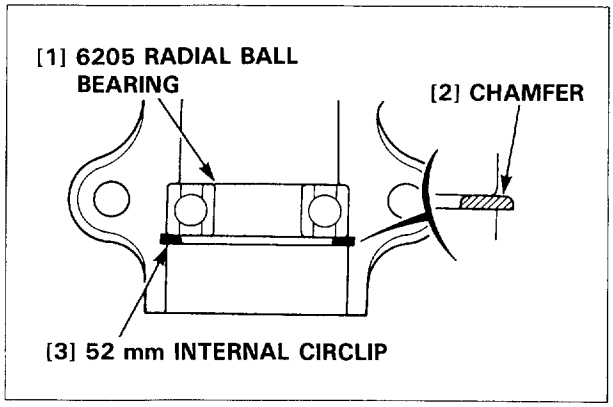
TORQUE: 24 N·m (2.4 kg-m, 17 ft-lb)



• **52 mm INTERNAL CIRCLIP**

INSTALLATION:

Install the 52 mm internal circlip with the chamfered side toward the 6205 radial ball bearing.

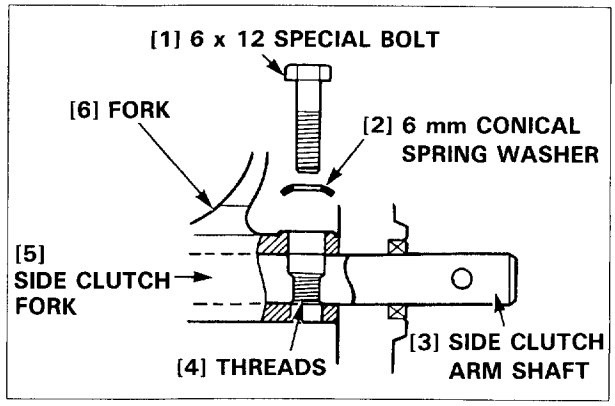


• **6 mm CONICAL SPRING WASHER/SIDE CLUTCH ARM SHAFT**

INSTALLATION:

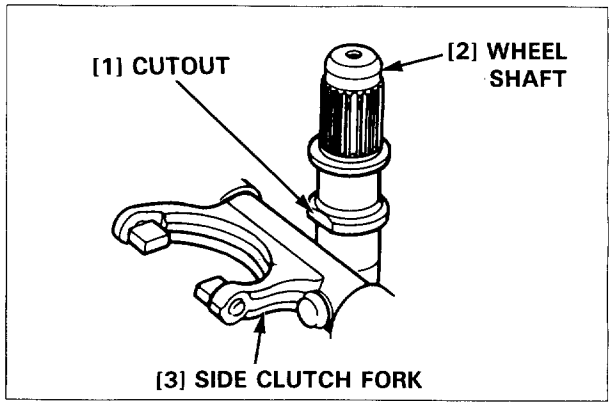
1) Install the side clutch arm shaft on the side clutch fork with the threaded section of the arm shaft toward the opposite from the fork of the side clutch fork as shown in the drawing.
2) Install the 6 mm conical spring washer with its concaved side toward the side clutch fork and tighten the 6 x 21 mm special bolt.

TORQUE: 13 N·m (1.3 kg-m, 9 ft-lb)



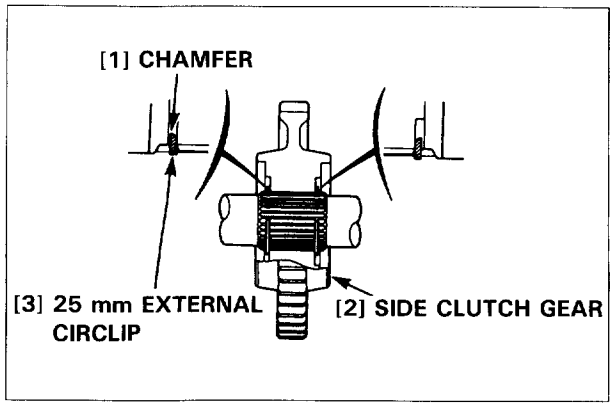
• **WHEEL SHAFT**

INSTALLATION:
Install the wheel shaft with its cutout toward the side clutch fork.

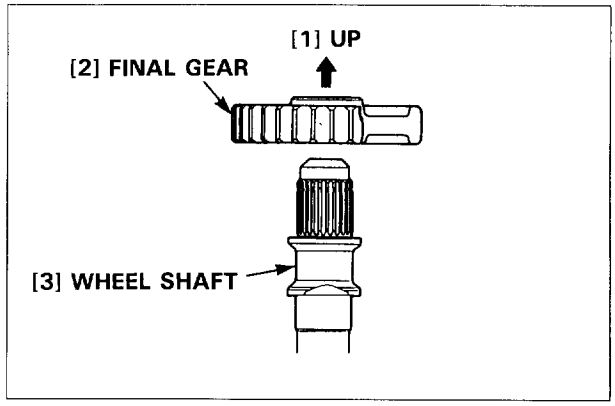


• **25 mm EXTERNAL CIRCLIP**

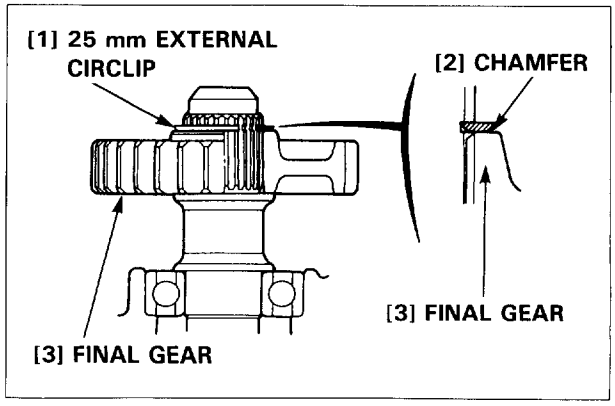
INSTALLATION:
Install the 25 mm external circlip with its chamfered side toward the side clutch drivd gear.



• **FINAL GEAR / 25 mm EXTERNAL CIRCLIP**
INSTALLATION:
1) Install the final gear over the wheel shaft with its projected side toward up as shown in the drawing.



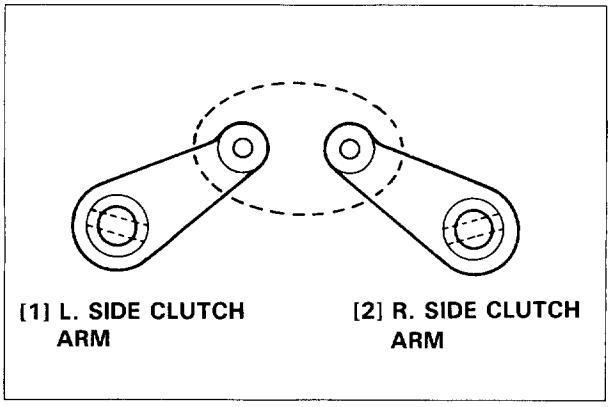
2) Install the 25 mm external circlip with its chamfered side toward the final gear.



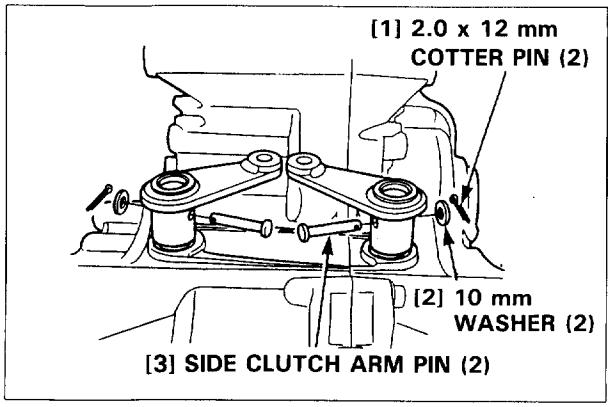
• L./R. SIDE CLUTCH ARM

INSTALLATION:

1) Install the left and right side clutch arms with care not to interchange them.

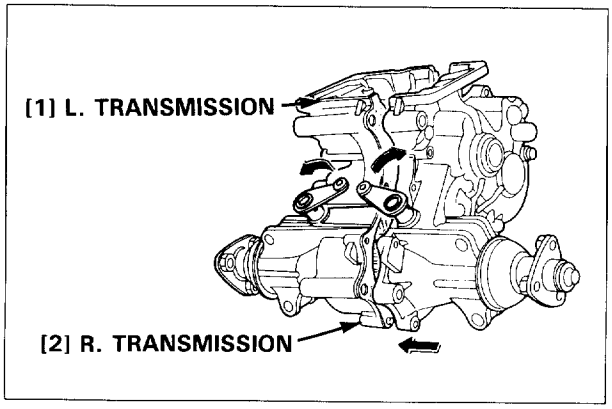


2) Install the side clutch arm pins from the inner side to the outer side, then install the 10 mm washers and the new 2.0 x 12 mm cotter pins.



8. L./R. TRANSMISSION CASE REASSEMBLY

1) Install a new gasket and the two 8 x 14 mm dowel pins.
2) Assemble the right and left transmissions while holding their side clutch arms depressed.



15. CARRIER BED (BE, BXE types only)

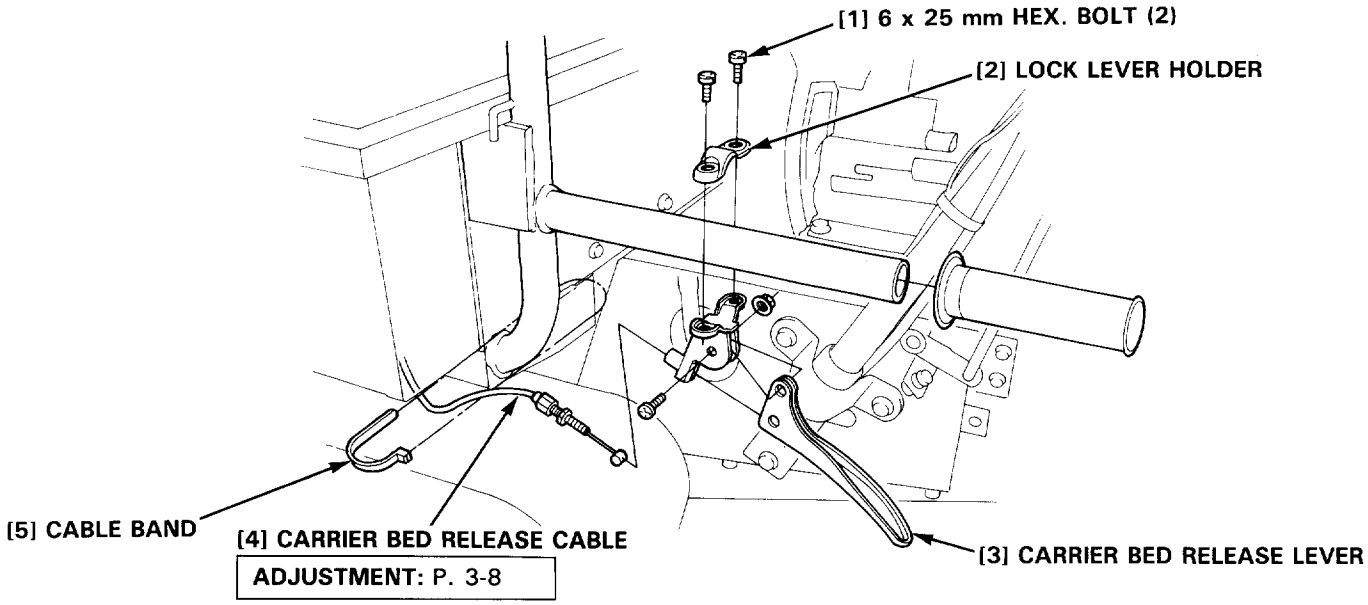
1. CARRIER BED RELEASE LEVER	2. CARRIER BED

1. CARRIER BED RELEASE LEVER

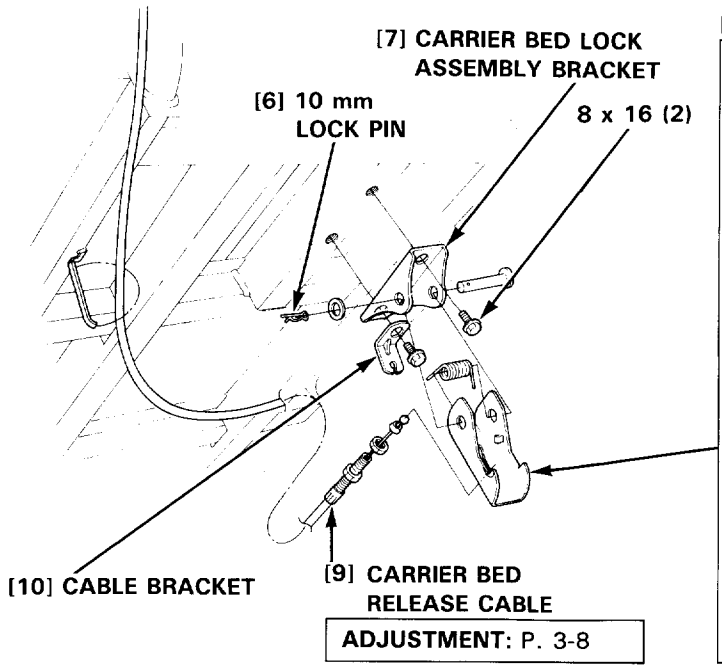
a. DISASSEMBLY/REASSEMBLY

⚠ WARNING

- **Raise the carier bed and support it by placing the wood blocks or equivalent material between the tracks and carrier bed before removing/installing the carrier bed lock assembly.**



ADJUSTMENT: P. 3-8

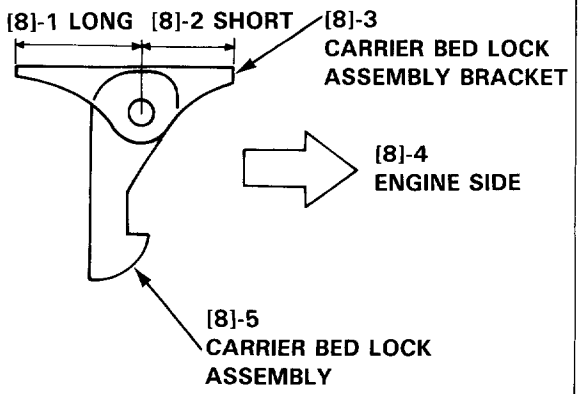


ADJUSTMENT: P. 3-8

[8] CARRIER BED LOCK ASSEMBLY

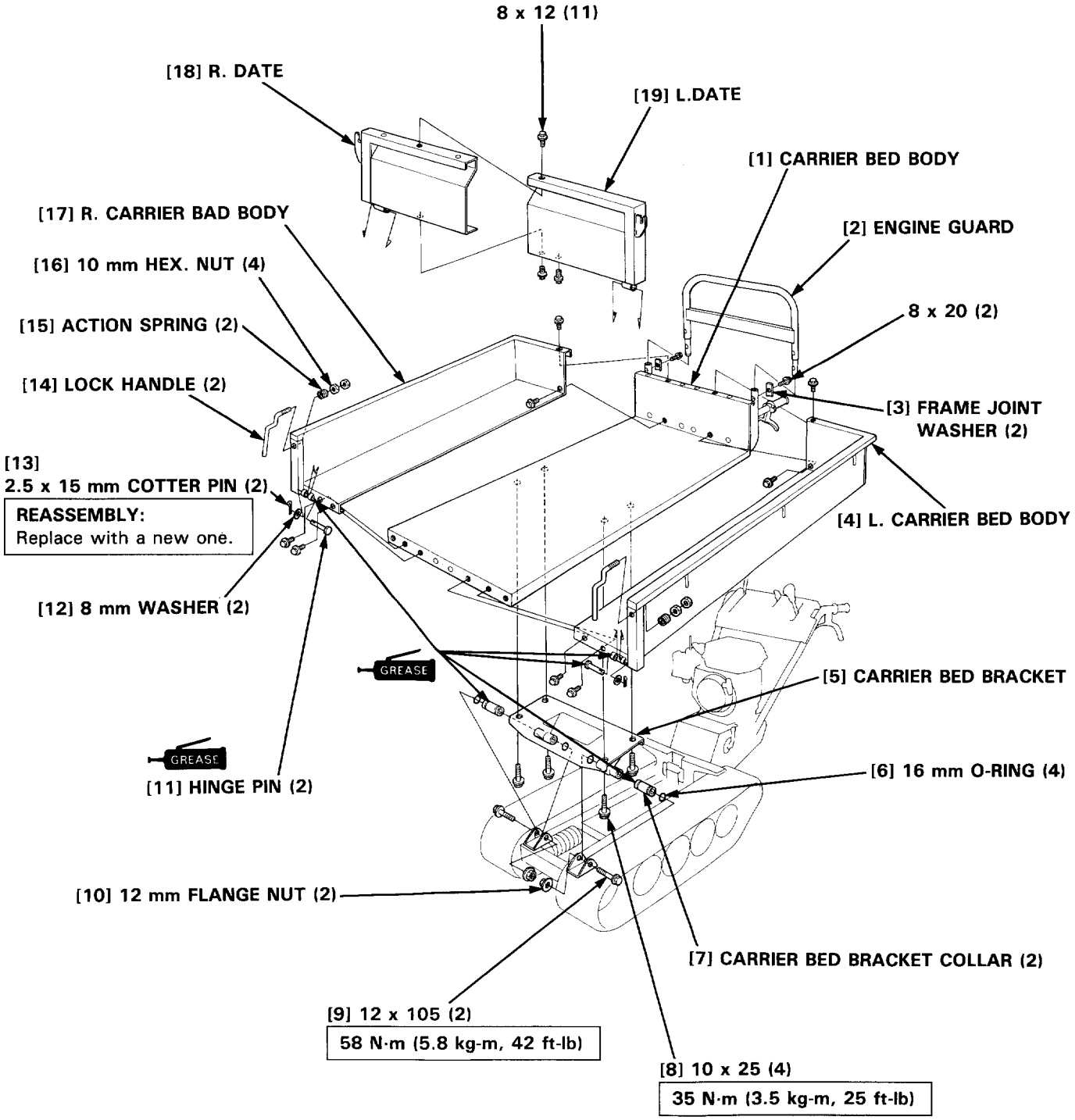
INSTALLATION:

Install the carrier bed lock assembly on the carrier bed lock assembly bracket as shown. Note the installation direction.



2. CARRIER BED

a. DISASSEMBLY/REASSEMBLY

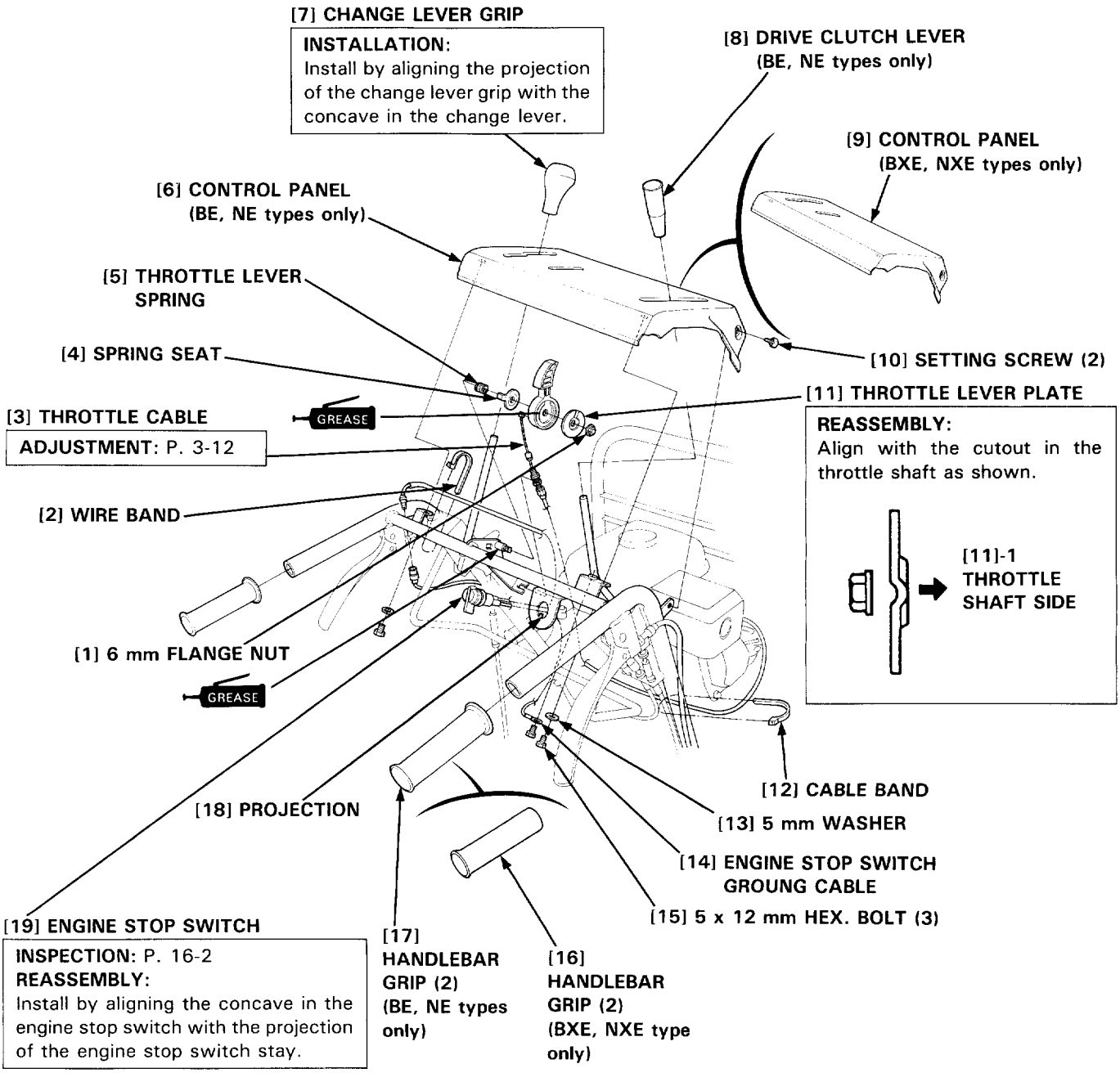


16. CONTROL PANEL/LEVER /HANDLEBAR

1. CONTROL PANEL/THROTTLE LEVER/ENGINE STOP SWITCH

a. REMOVAL/INSTALLATION

1) Remove the air cleaner and disconnect the throttle cable from the control base (P. 4-2).

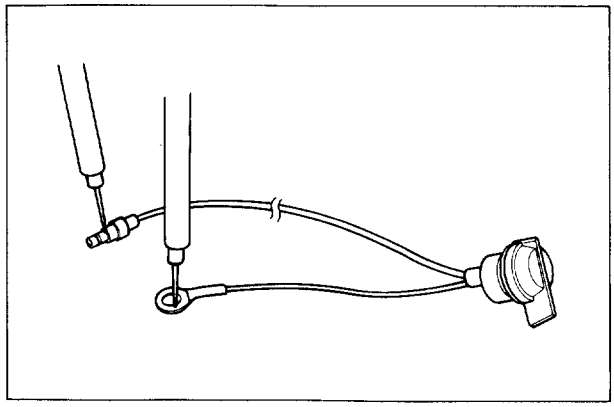


b. INSPECTION

• ENGINE STOP SWITCH

Check for continuity between the lead terminals.

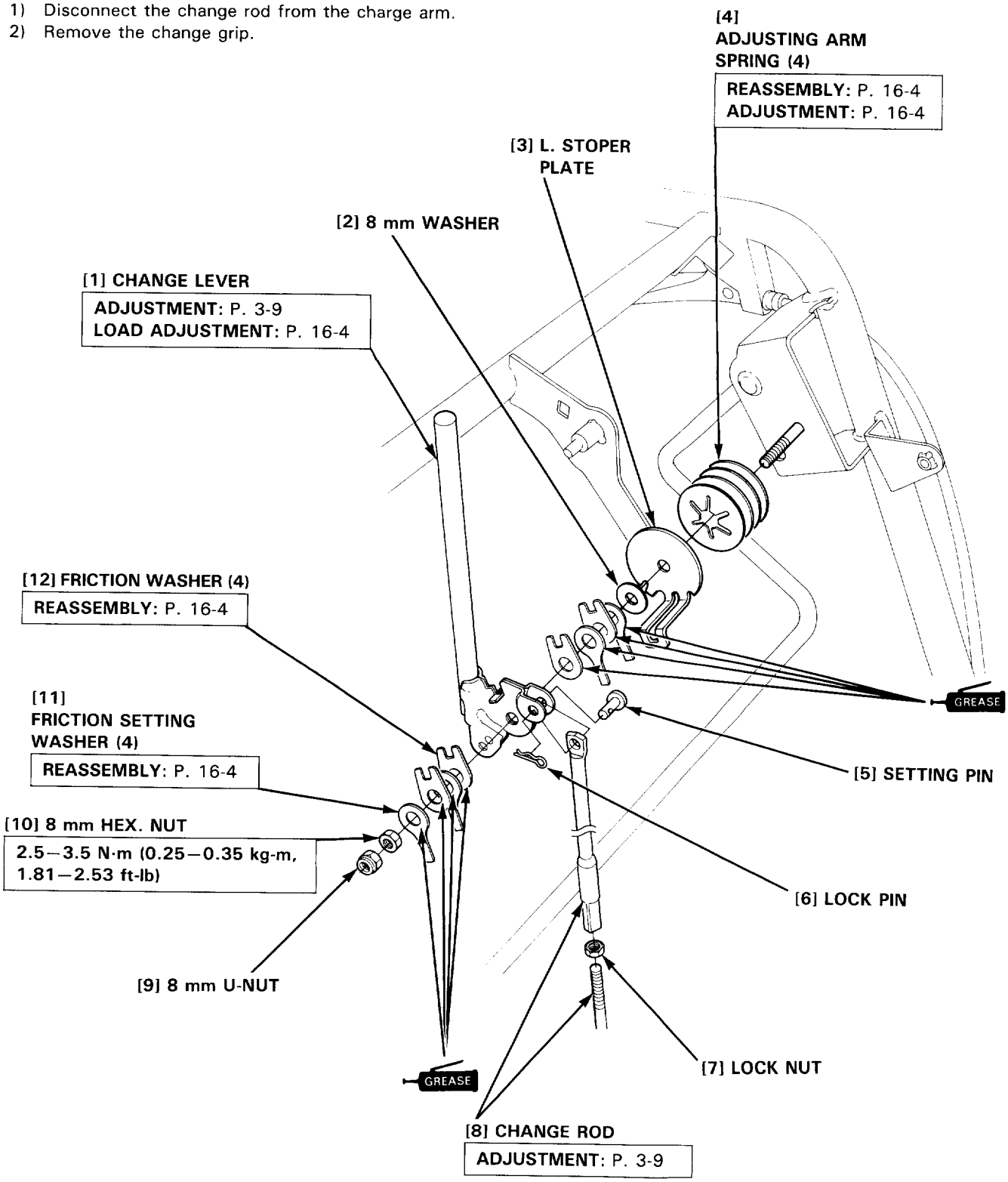
Switch position	Continuity
"ON"	NO
"OFF"	YES



2. CHANGE LEVER

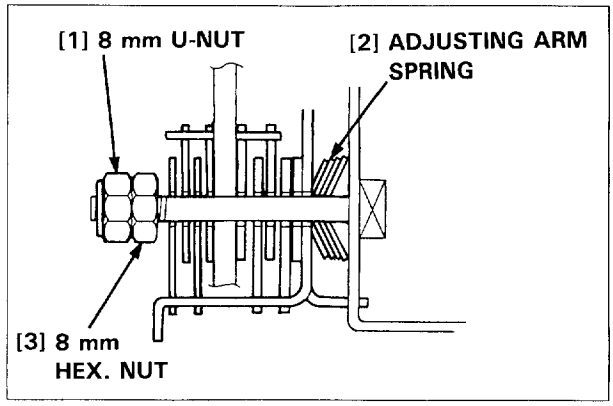
a. REMOVAL/INSTALLATION

1) Disconnect the change rod from the charge arm.
2) Remove the change grip.



• **FRICTION SETTING WASHER/FRICTION WASHER/ ADJUSTING ARM SPRING REASSEMBLY**

Install the adjusting arm spring, friction washer and friction setting washer as shown.



b. ADJUSTMENT

• **ADJUSTING ARM SPRING**

Tighten the 8 mm HEX. nut to the specified torque, then tighten the 8 mm U-nut.

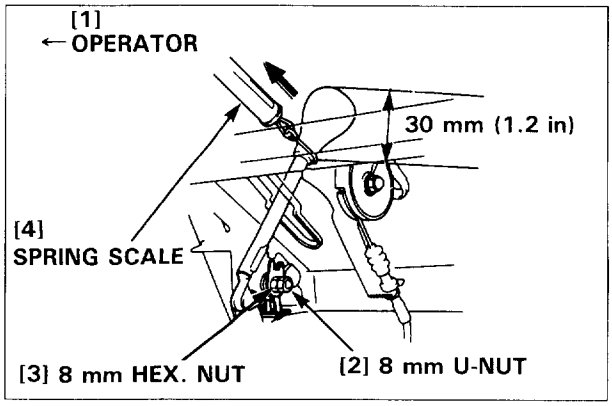
TORQUE: 2.5–3.5 N·m (0.25–0.35 kg-m, 1.8–2.5 ft-lb)

• **CHANGE LEVER LOAD ADJUSTMENT**

Adjust the change lever load by screwing the 8 mm HEX. nut in or out as follows.

1) Set the change lever in the "FORWARD" high speed position.
2) Turn the 8 mm HEX. nut right or left to bring the change lever load within the specified range.
   After adjustment, tighten the 8 mm U-nut securely.

CHANGE LEVER LOAD: 7.0–9.0 kg (15.4–19.8 lb)



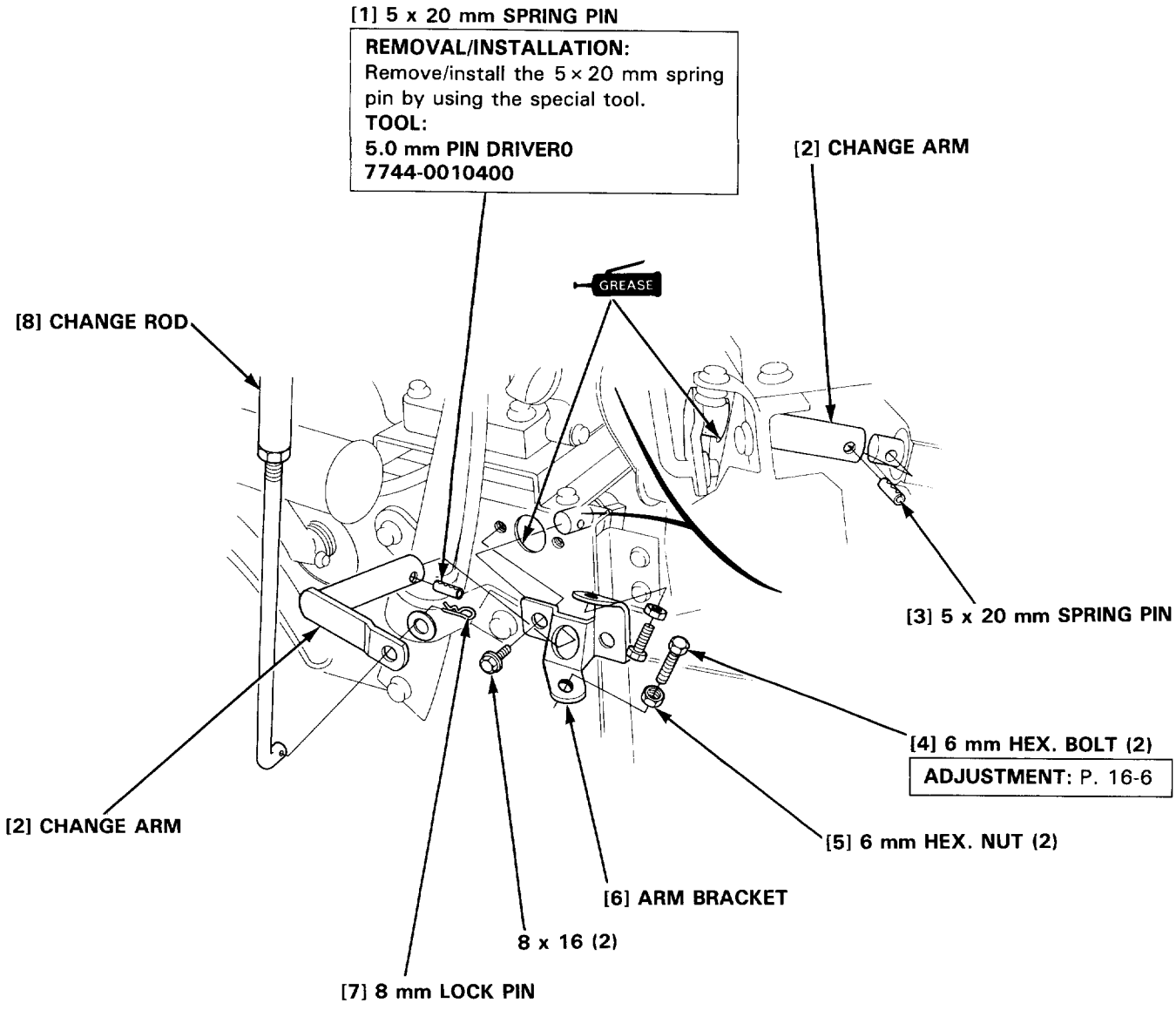
CAUTION

- **If the load is less than the specification, the change lever returned when excessive load is applied during operation. Be sure to measure the load at the position shown.**
- **Adjust the change lever (P. 3-9).**

3. CHANGE ARM/ARM BRACKET

a. DISASSEMBLY/REASSEMBLY

1) Remove the belt cover.



b. ADJUSTMENT

• 6 mm HEX. BOLT

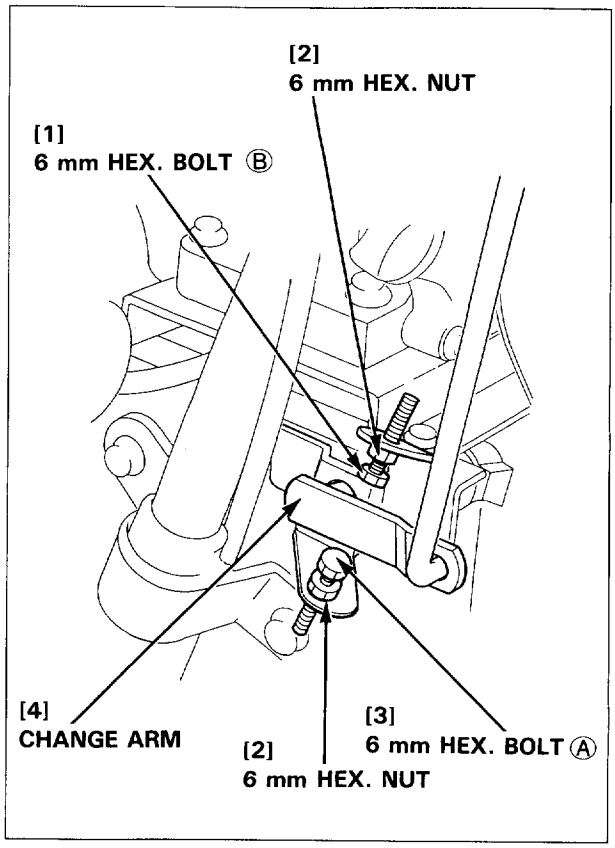
Place the power carrier on a level surface and check the maximum speed with no load. If must be 3,600 $^{+0}_{-100}$ min^{-1} (rpm).

FORWARD:

1) Move the change lever to the "FORWARD" high speed position and move the throttle lever "HIGH" position. Be sure that the power carrier moves 10 m (32.8 ft) forward in approximately 8.5—10 seconds.
2) If not, adjust by loosening the 6 mm HEX. nut and turning the 6 mm HEX. bolt Ⓐ right or left.
   After adjustment, tighten the 6 mm HEX. nut securely.

REVERSE:

1) Move the change lever the "REVERSE" high speed position and the throttle lever to the "HIGH" position. Be sure that the power carrier move 10 m (32.8 ft) rearward in approximately 10—12 seconds.
2) If not, adjust by loosening the 6 mm HEX. nut and turning the 6 mm HEX. bolt Ⓑ right or left.
   After adjustment, tighten the 6 mm HEX. nut securely.

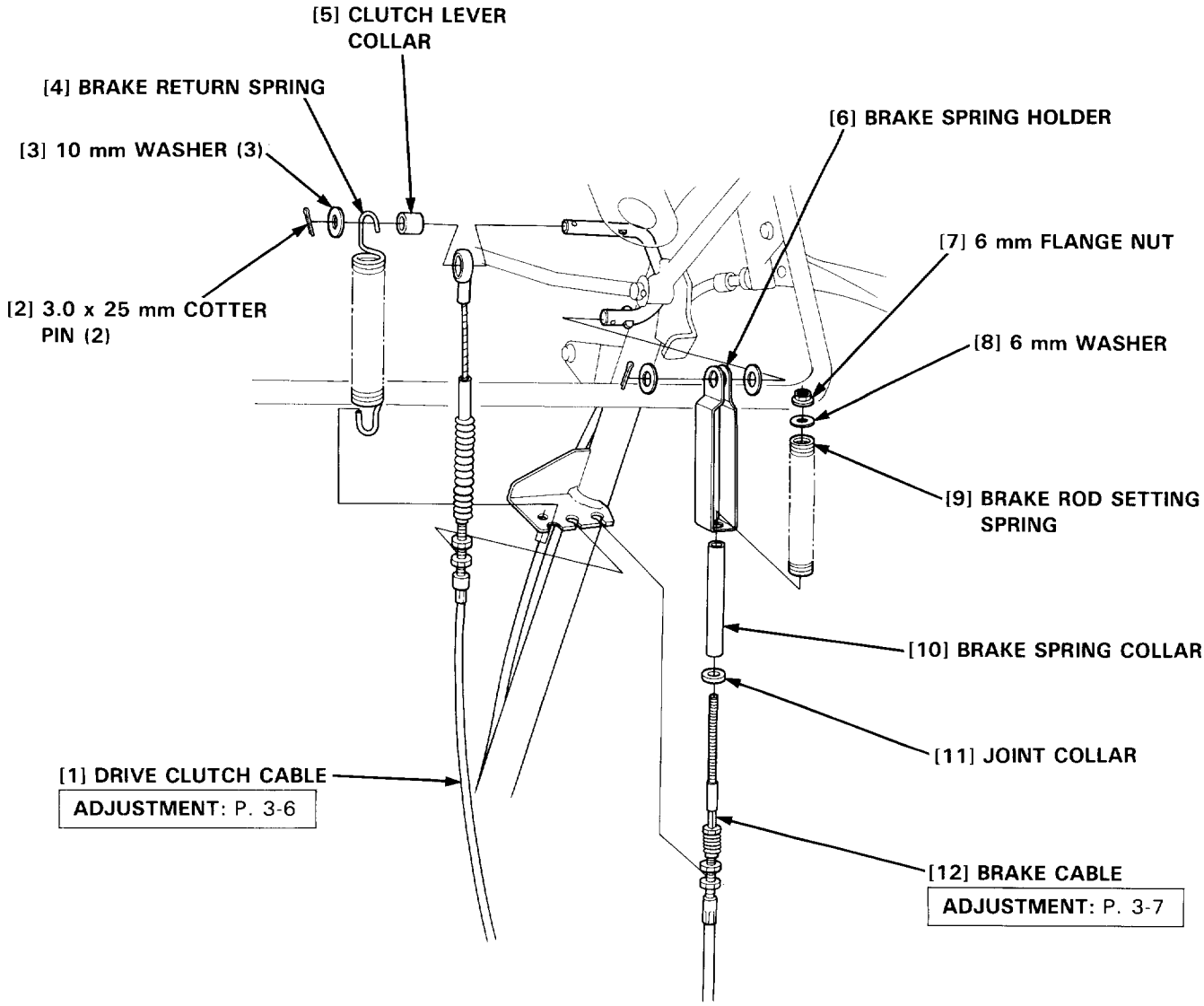


4. DRIVE CLUTCH CABLE/BRAKE CABLE

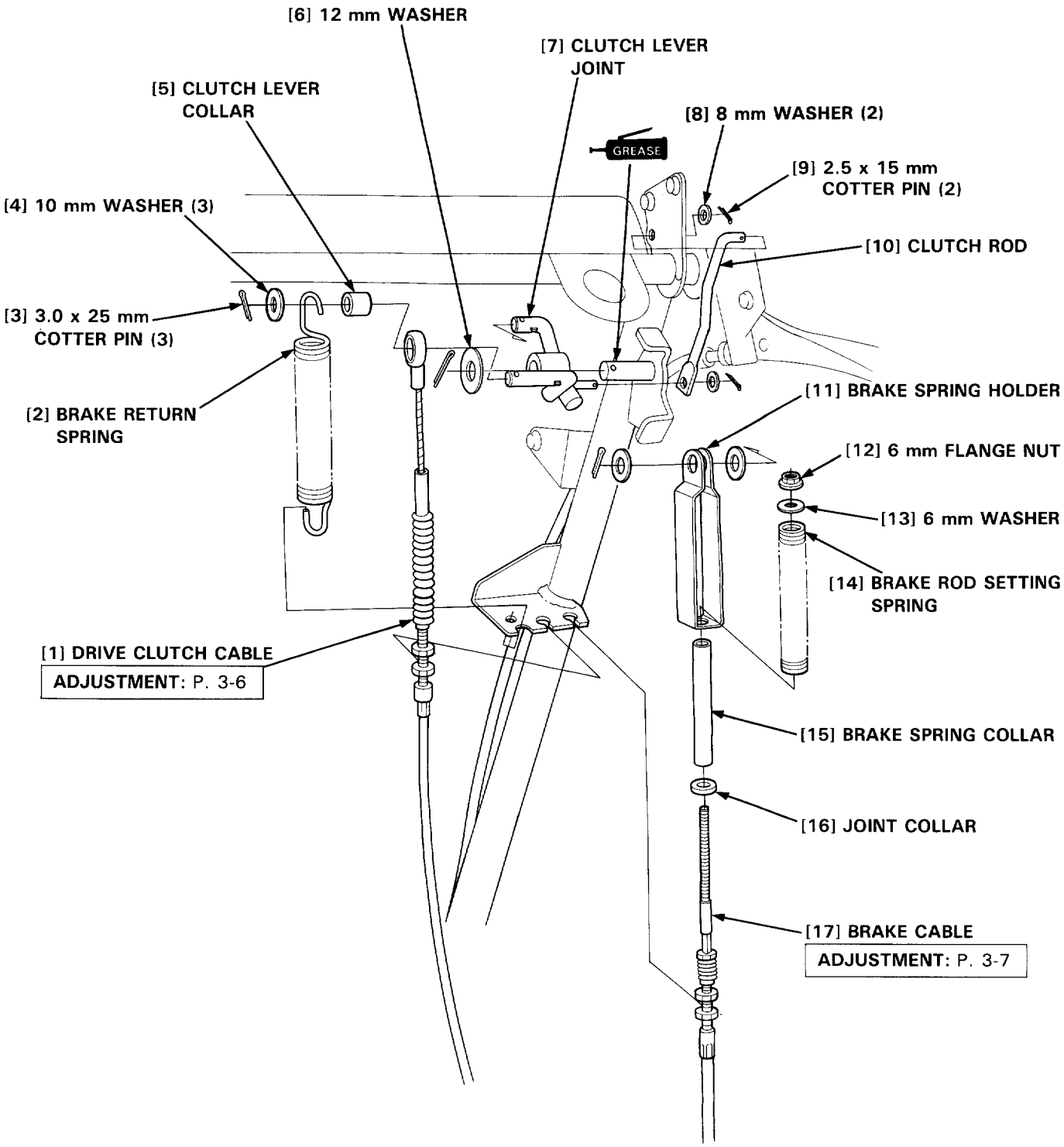
a. REMOVAL/INSTALLATION

1) Remove the belt cover. Disconnect the drive clutch cable from the tension arm and tension arm bracket (P. 4-2).
2) Disconnect the brake cable from the brake arm (P. 14-1).

BE, NE types only:



BXE, NXE types only:

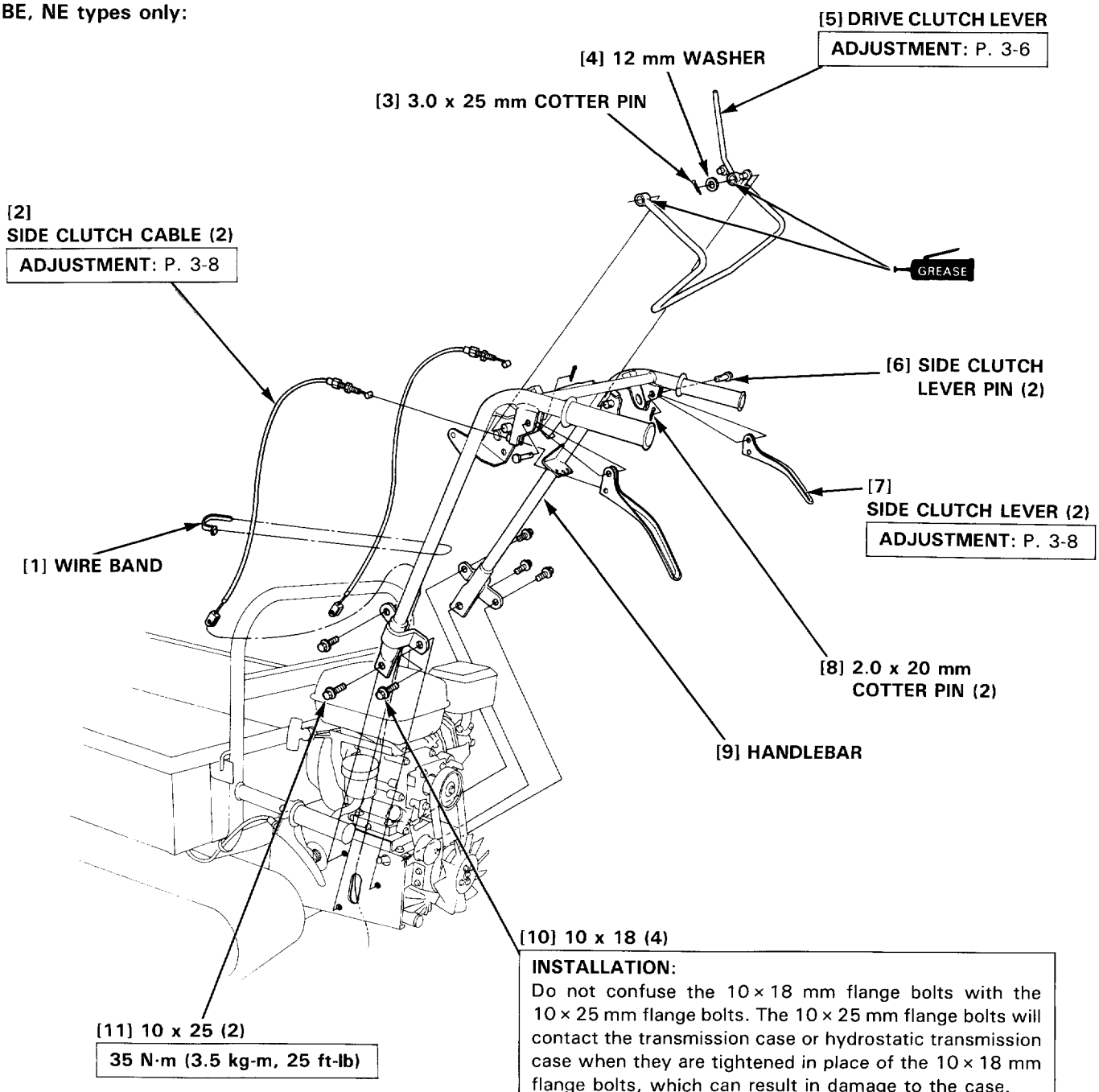


5. DRIVE CLUTCH LEVER/SIDE CLUTCH LEVER/HANDLEBAR

a. REMOVAL/INSTALLATION

1) Remove the belt cover (P. 4-1).
2) Disconnect the drive clutch cable/brake cable (P. 16-7).
3) Disconnect the throttle cable (P. 4-2).
4) Remove the change arm/arm bracket (P. 16-5).
5) Disconnect the L./R. side clutch cables from the side clutch arms (P. 14-1).

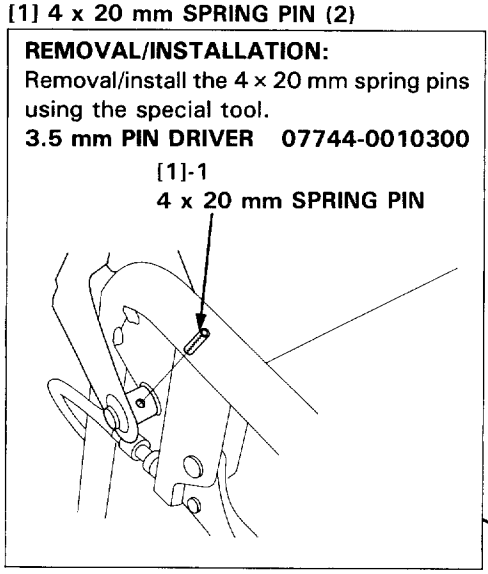
BE, NE types only:

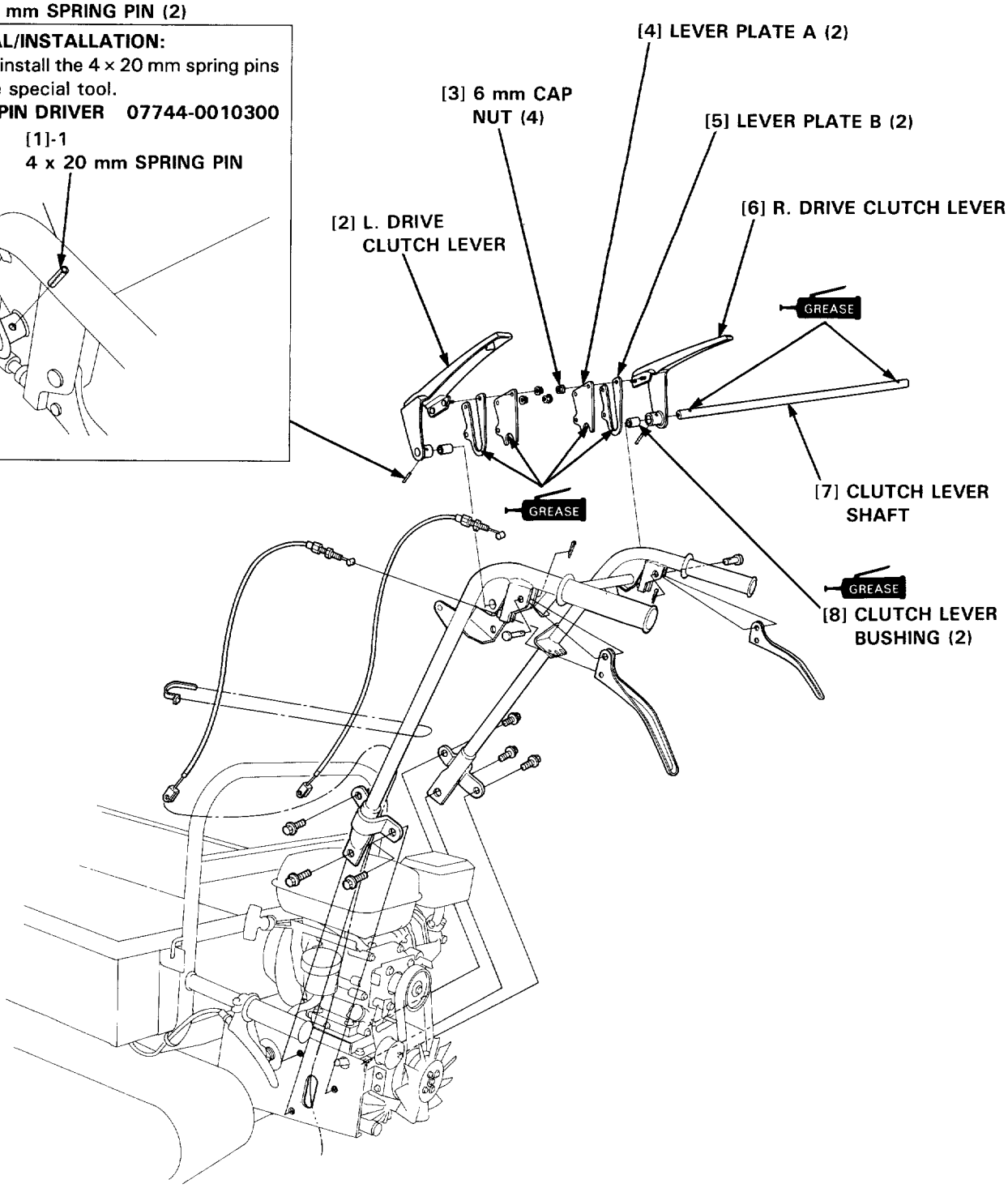


BXE, NXE types only:

[1] 4 x 20 mm SPRING PIN (2)

REMOVAL/INSTALLATION:
Removal/install the 4 x 20 mm spring pins using the special tool.
3.5 mm PIN DRIVER 07744-0010300





HONDA®

HP500H

Set-up Instructions

Instructions de préparation

Montageanleitung

Istruzion di messa a punto

WARNING TO DEALERS:

This manual provides information for the proper set-up of the Honda Power carrier HP500H. Proper set-up and predelivery inspection are essential for safe and reliable operation.
It is recommended that the Honda Power carrier HP500H Shop Manual and Owner's Manual be referred to in conjunction with these manuals for more detailed set-up instructions.

HONDA MOTOR CO., LTD.

AVERTISSEMENT AUX REVENDEURS:

Ce manuel fournit des informations sur la préparation correcte du transporteur mécanique HP500H de Honda. Une préparation correcte et des contrôles avant livrsison sont essentiels pour un fonctionnement sûr et fiable.
Il est recommandé de se reporter aux manuels d'atelier et du conducteur du transporteur mécanique HP500H de Honda en conjonction avec ces manuels pour des instructions de préparation plus détaillées.

HONDA MOTOR CO., LTD.

H, NDLERHINWEIS:

Diese Anleitung vermittelt Informationen für den richtigen Zusammenbau des Honda Raupentransporters HP500H. Der ordnungsgemäße Zusammenbau sowie die Vorauslieferungs-Inspektion sind ein wesentlicher Bestandteil für sicheren und zuverlässigen Betrieb.
Für ausführlichere Zusammenbauhinweise empfehlen wir die zusätzliche Verwendung des HP500H Werkstatt-Handbuchs sowie der HP500H Bedienungsanleitung.

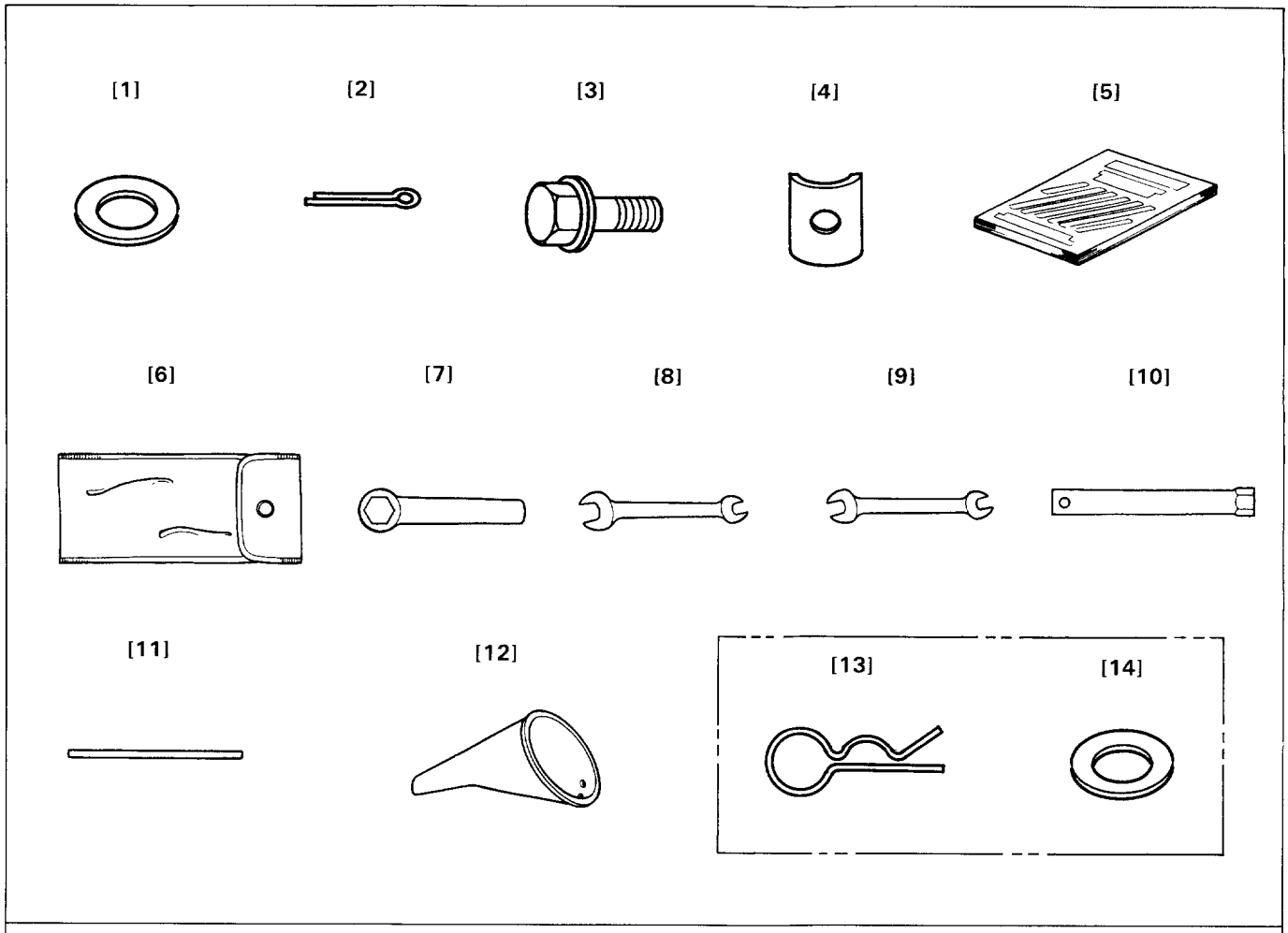
HONDA MOTOR CO., LTD.

AVVERTENZA PER I CONCESSIONARI:

Questo manuale fornisce ínformazioni per íl corretto montaggio del carrelo motorizzato Honda HP500H.
Un montaggio appropriato e l'íspczione prima della consegna sono condizioni essenziali per un funzionamento sícuro ed affidabile.
Per istruzioni più dettagliate, sí raccomanda di consultare anche il manuale di offícína ed il manuale dell'utente del carrello motorizzato Honda HP500H.

HONDA MOTOR CO., LTD.

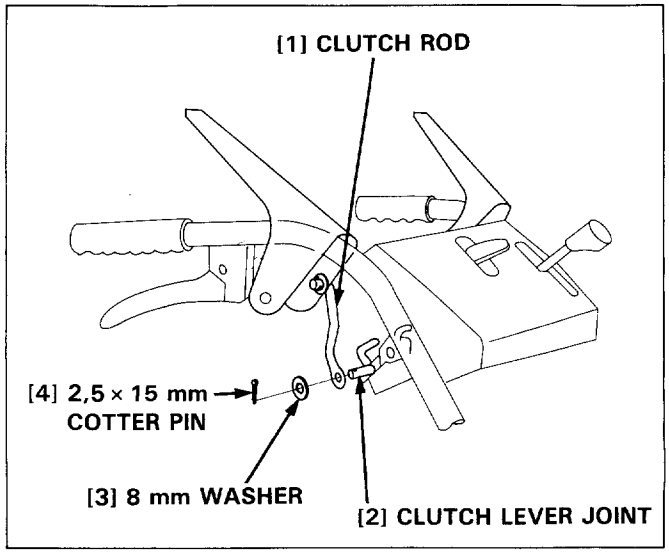
STEP 1 — Open the carton box and check all parts against the following list.



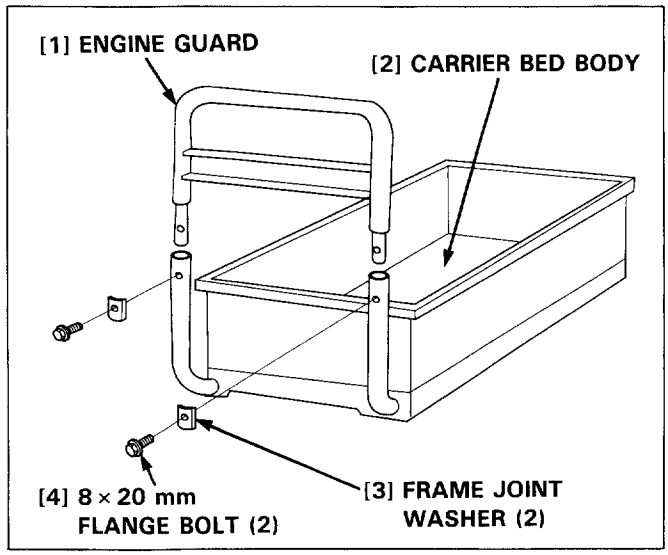
[1] 8 mm washer
[2] Cotter pin, 2.5 × 15 mm
[3] Flange bolt, 8 × 20 mm (2)
[4] Frame joint washer (2)
[5] Owner's manual
[6] Tool bog
[7] Wrench 19 (2)
[8] Wrench 10 × 14
[9] Open end wrench 10 × 12
[10] Spark plug wrench
[11] Spark plug wrench handle
[12] Oil funnel
[13] 8 mm lock pin
[14] 8 mm WASHER

Parts in the frame are for the type where the change rod is not connected to the change arm

BXE, NXE types only:
STEP 2 — Install the clutch rod on the clutch lever joint. Install the 8 mm washer and 2.5 x 15 mm cotter pin. Bent the ends of the 2.5 x 15 mm cotter pin securely.



BE, BXE types only:
STEP 3 — Install the engine guard on the carrier bed body. Set the frame joint washer on each of the 8 x 20 mm flange bolt and tighten the 8 x 20 mm flange bolts securely.



Type where the change rod is not connected to the change arm:
STEP 4 — Insert the change rod into the change arm. Set the 8 mm washer over the change rod and secure with the 8 mm lock pin.