

Makita

MODEL EH561/EH760

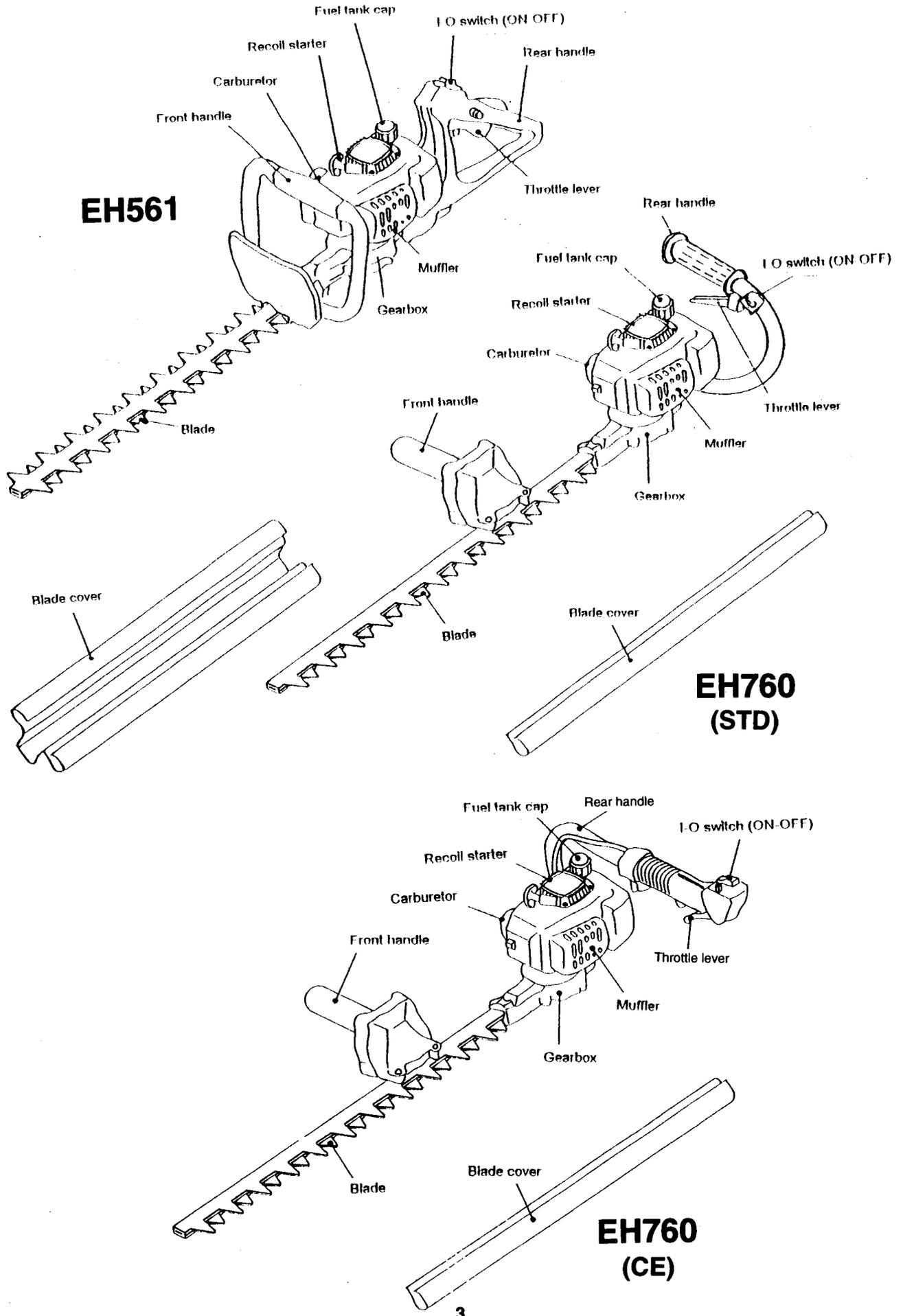
SERVICE MANUAL

CONTENTS

1. SPECIFICATIONS	
a. Designation of Parts	3
b. Specifications	4
2. PREPARATIONS	
a. Disassembly & Reassembly Procedure	5
b. Cautions	6
3. DISASSEMBLY & ASSEMBLY PROCEDURES	7 – 9
a. Removal of Engine and Machine Body	10 – 11
b. Disassembly & Assembly of Machine Body	12 – 13
c. Disassembly & Assembly of Engine	14 – 18
d. Disassembly & Assembly of Carburetor	19 – 24
4. CHECKUP AND ADJUSTMENT	
a. Daily Checkup and Adjustment	25
b. Checkup and Adjustment for Every 30 – 50 Hours. (Every 10 Days)	26
c. Checkup and Adjustment for Every 100 – 200 Hours. (Monthly)	26
5. STANDARD OF ADJUSTMENT	
a. Tightening Torque of Components	27
b. Standard Adjustment Table	28
c. Lubrication Procedure	28
d. Blade Sharpening	28
e. Blade Adjustment	29
6. TROUBLESHOOTING	30 – 31

1. SPECIFICATIONS

a. Designation of Parts



b. Specifications

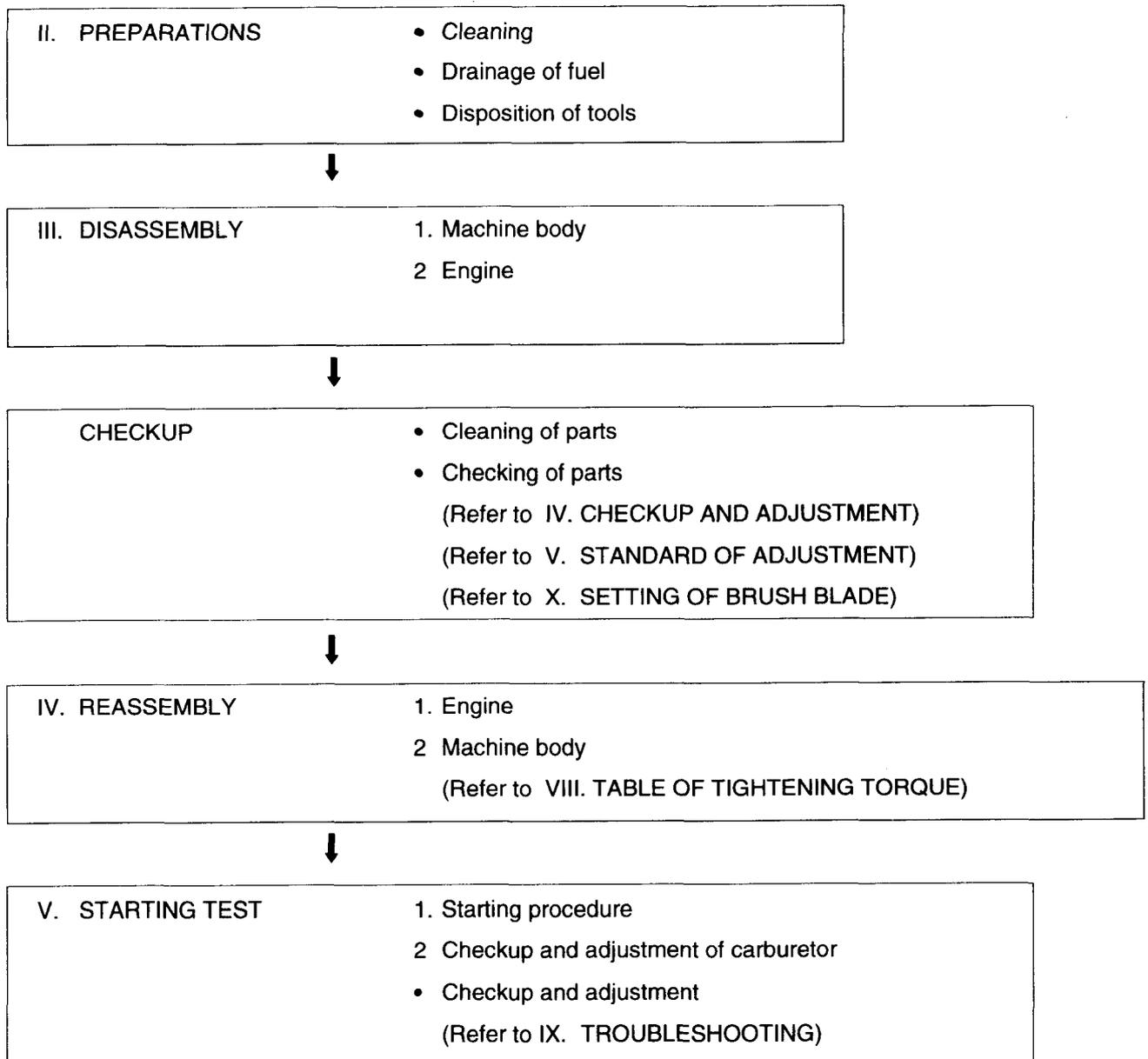
Model		EH760	EH561
Dimensions (L x W x H)	mm	1,041 x 280 x 258	840 x 246 x 225
Mass (with blade cover)	kg	5.8	5.8
Volume (fuel tank)	cm ³	600	
Engine displacement	cm ³	21.7	
Cutting length	mm	735	560
Maximum engine performance	kw	0.74	
Maximum blade speed	m/s	1.88	
Idling speed	1/min	2,600	
Clutch engagement speed	1/min	3,600	
Carburetor type	type	WALBRO WYL	
Ignition system	type	Solid ignition system	
Spark plug	type	NGK-BMR7A	
Electrode gap	mm	0.6 – 0.7	
Mixture ratio (fuel: MAKITA 2-stroke oil)		50 : 1	
Gear ratio		14 : 58	

1) The data takes equally into account idling and racing speed operating modes.

2. PREPARATIONS

a. Disassembly and Reassembly Procedures

The disassembly and reassembly procedures mentioned below are given as a general rule. These procedures can be added to or omitted according to your operating conditions.



NOTE: The numbers are the same as those in this manual.

b. Cautions

1) Preparations

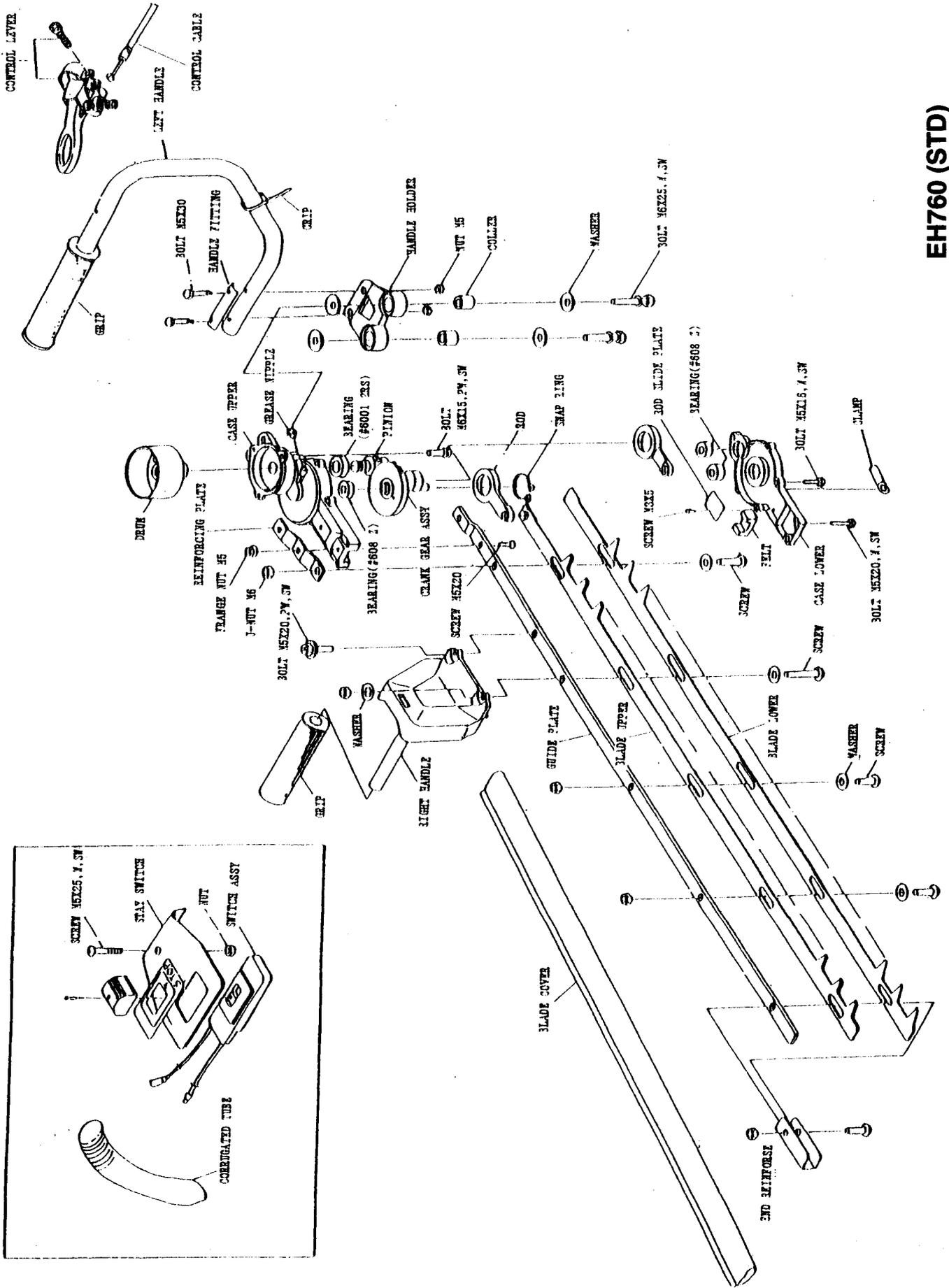
- (1) Workbench
- (2) Disassembly and reassembly kits and gauges
- (3) Washing bowl
- (4) Rinse oil (light oil, gasoline, etc.)
- (5) Oil (mobile oil), grease
- (6) Adhesive, sealant
- (7) File, sandpaper
- (8) Shop cloth

2) Cautions in Disassembly

- (1) Use standard tools correctly.
- (2) Handle disassembled parts with care and be sure to clean them.
 - In particular, remove dust or dirt adhering to the mounting surfaces of packings.
 - Bearings in rod are easy to separate. If there is no abnormality on rod, no special maintenance is needed without removing contaminated grease.
- (3) Keep disassembled parts in order to avoid loss or error in reassembly.
- (4) If it is hard to loosen bolts or screws, use an impact driver.

3) Cautions in Reassembly

- (1) Pay attention to the combination of parts (in particular, mounting direction: front and rear, right and left, upper and lower).
- (2) Replace packings and gaskets with new ones.
- (3) Tighten bolts and screws twice in a diagonal manner.
- (4) Apply two-cycle engine oil (or Mobile oil) to rotary and sliding parts.
- (5) During reassembly, be careful to keep parts free of dust and dirt.
- (6) For rotating parts, turn them by hand to check for movement or noise.
- (7) After reassembly, turn the rotating parts by hand and confirm that there is no abnormality (loosening, etc.)
- (8) Never fail to apply genuine grease into case.

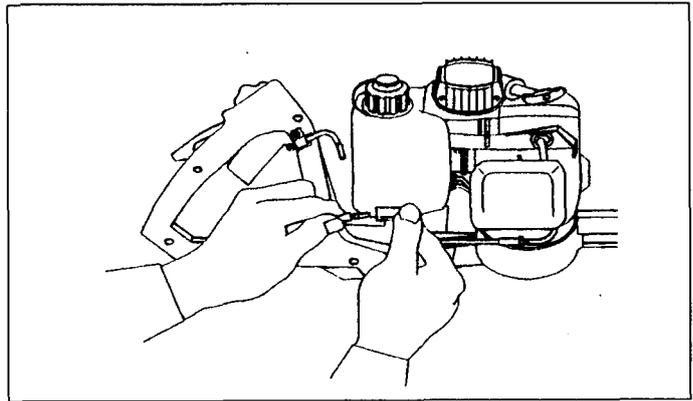


EH760 (STD)

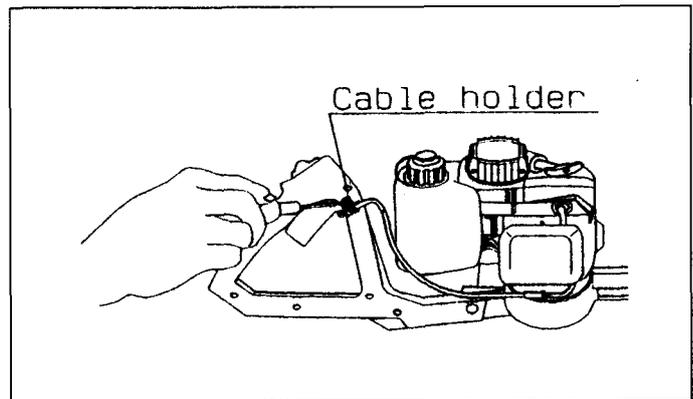
a. Removal of Engine and Machine Body

For EH561

1. Start/Stop lead wire
Remove lead wire connecting rear-handle stop switch with engine.

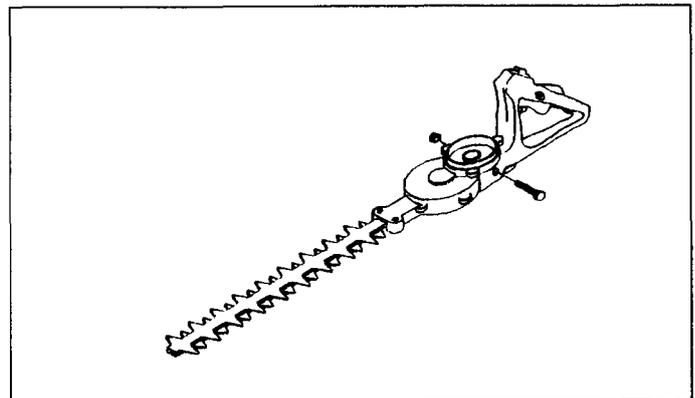


2. Throttle wire
Remove cable holder fixed to rear handle by loosening screw (M4 x 10).
Remove throttle wire from throttle lever parts.



3. Engine
Remove engine by loosening two bolts (M6 x 15, PW, SW) with fixing case and engine and one bolt (M6 x 40, W, SW) with combine rear handle with case and engine.

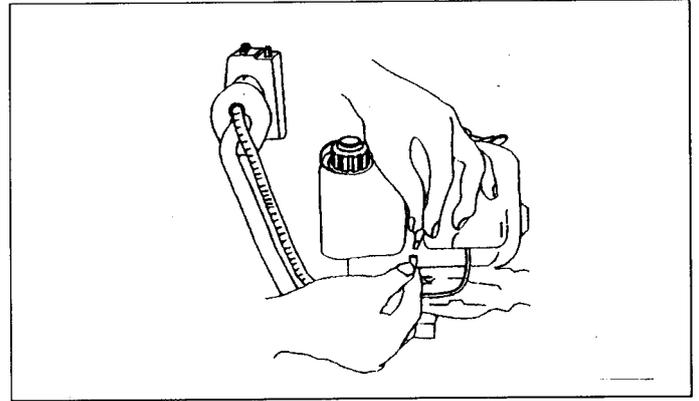
4. Rear handle
Loosen bolt (M6 x 50, W, SW) on case side and remove rear handle.



5. Front handle
Loosen bolt (M6 x 35, SW) with fixing case and front handle and remove front handle.

For EH760

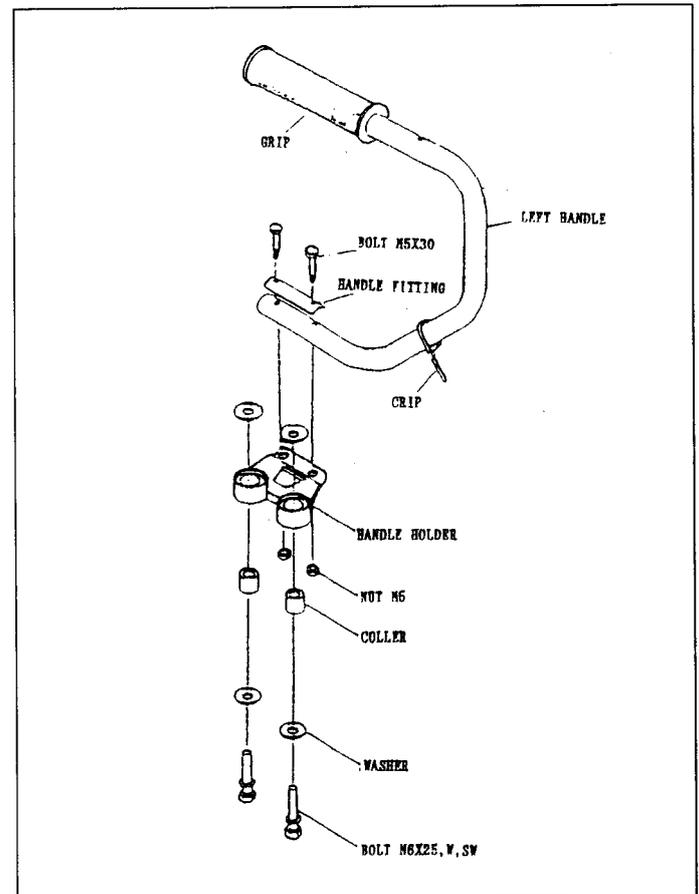
1. Start/Stop lead wire
Remove lead wire connecting rear-handle stop switch with engine.



2. Throttle wire
(For STD) Remove throttle wire from throttle lever.
(For CE) Remove throttle wire from carburetor.

3. Left handle
Loosening two bolts (M5 x 30) with handle holder.

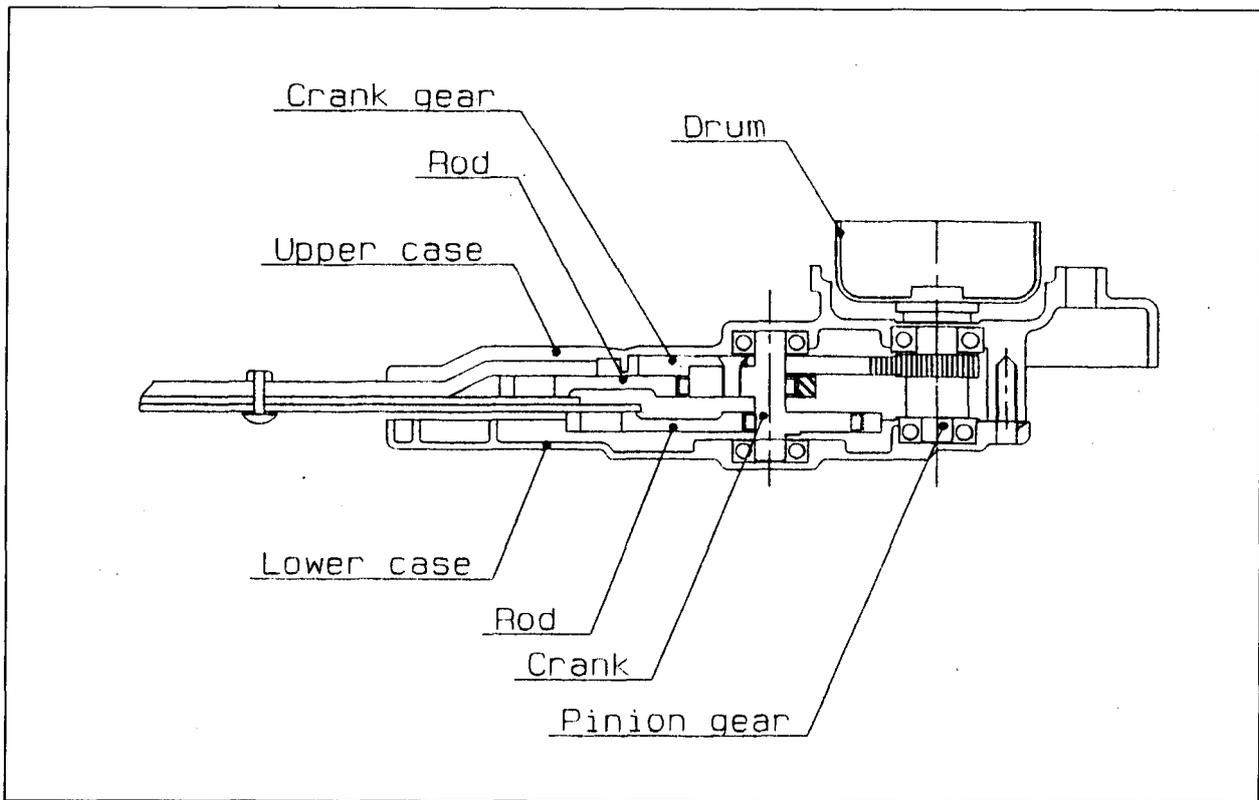
4. Handle holder
Loosen two bolts (M6 x 35, W, SW) with engine.



5. Engine
Remove engine by loosening three bolts (M6 x 15, PW, SW) with fixing case and engine.

6. Right handle
Loosening two screws with Blade and remove right handle.

b. Disassembly & Assembly of Machine Body

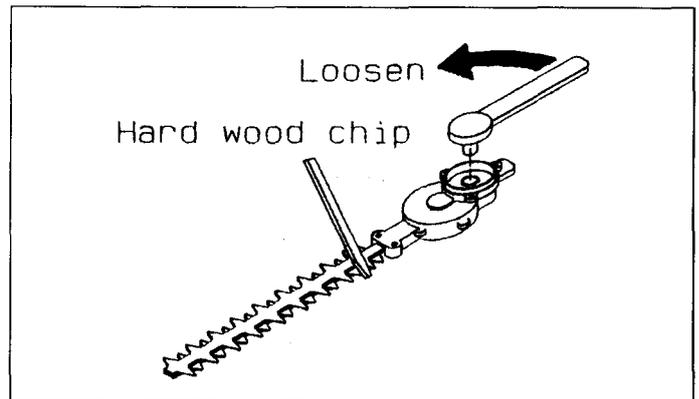


1. Drum

Lock blade by tightening 3 blade slide screws to the full. Then remove drum by using drum hole. If drum can not be loosened, apply wood chip under blade nearer at engine and remove drum by using drum hole.

<Caution>

The screws are right-handed. Turn to the left in loosening.
Be careful not to miss collar under drum.



2. Lower case

Remove 3 blade-fixing U-nuts first. Then loosen 7 bolts (5 M5 x 16 and 2 M5 x 20) and remove lower case. It is advisable to remove lower case, tapping it with plastic hammer. If it is hard to remove case, pry case with flat-headed screwdriver paying attention not to damage case or parts inside case. After mounting, temporarily tighten 3 blade-fixing U nuts. (Apply oil to sliding parts in proper amount.)

<Caution>

This work must be done at a place as low as possible, as there is possibility that needles separate if rod is detached together with case.
Be careful not to damage case contact surfaces.
Apply grease to rod and gear in proper amount.

3. Rod slide plate, Pinion gear, Felt

Loosen 2 screws (M3 x 5) and remove rod slide plate fixed under lower case.

Then remove pinion gear from upper case. If it is hard to remove, tap pinion with plastic hammer.

Then remove felt.

4. Rod

Remove rod on lower-blade side.

<Caution>

Before removing rod, apply a small amount of grease to needles and turn rod several times so that they will not separate.

Keep in memory rod mounting direction.

Apply grease to crank and lower-blade rod shift and mount rod.

5. Lower/Upper blade

Loosen 3 blade-slide screws and remove lower blade.

<Caution>

Be careful not to miss blade slide washer.

Then remove upper blade.

6. Crank gear, Crank

Remove crank gear and crank from upper case. If it is hard to remove, tap case with plastic hammer.

Then loosen screws (M5 x 10) fixing crank gear and crank and remove crank.

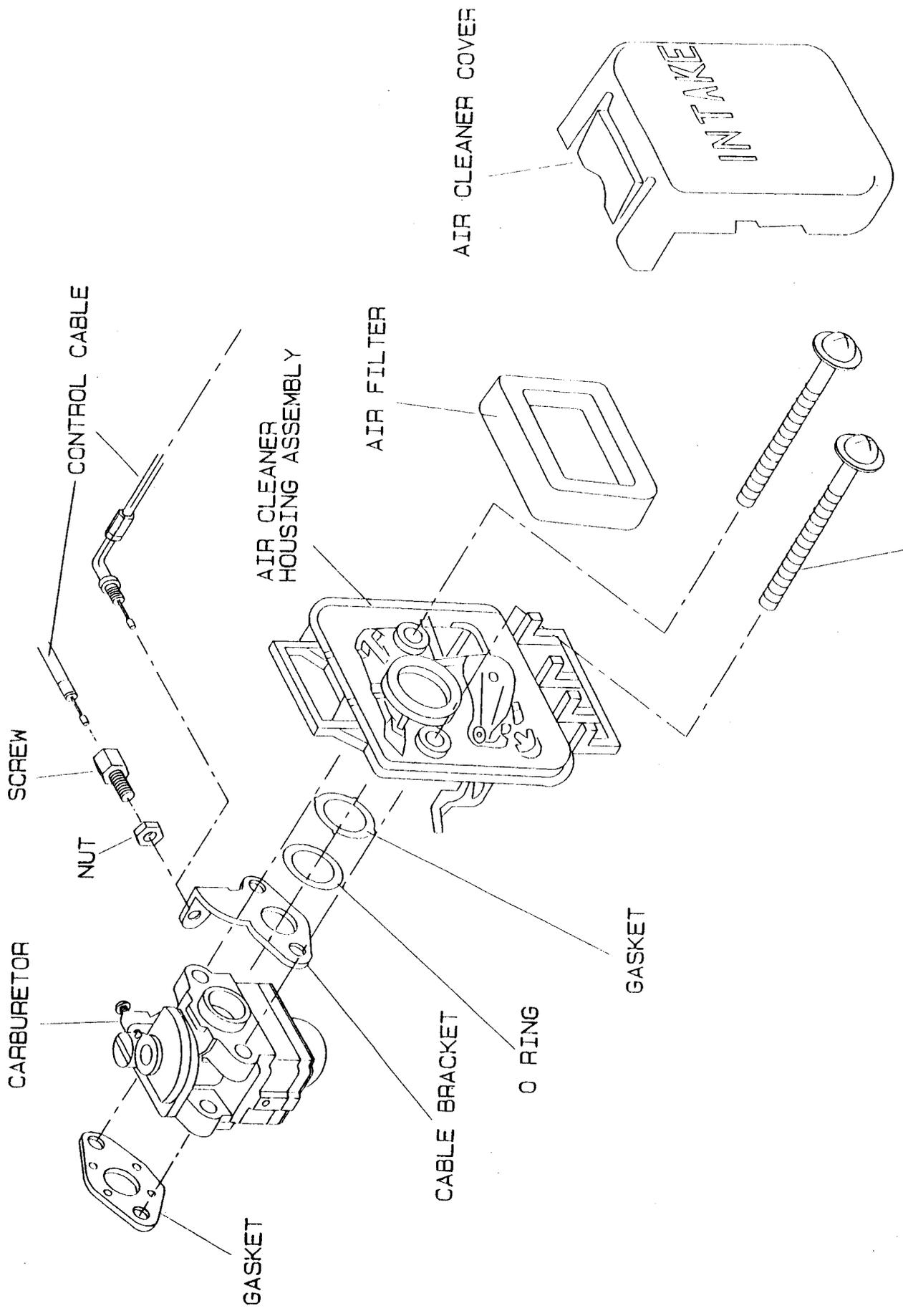
<Caution>

Apply grease to upper case in proper amount.

Apply grease to crank gear and crank in proper quantity and mount them in upper.

7. Retainer plate, Grease nipple

Loosen flange nut and 2 screws (M5 x 16) and remove retainer plate. Then remove grease nipple.



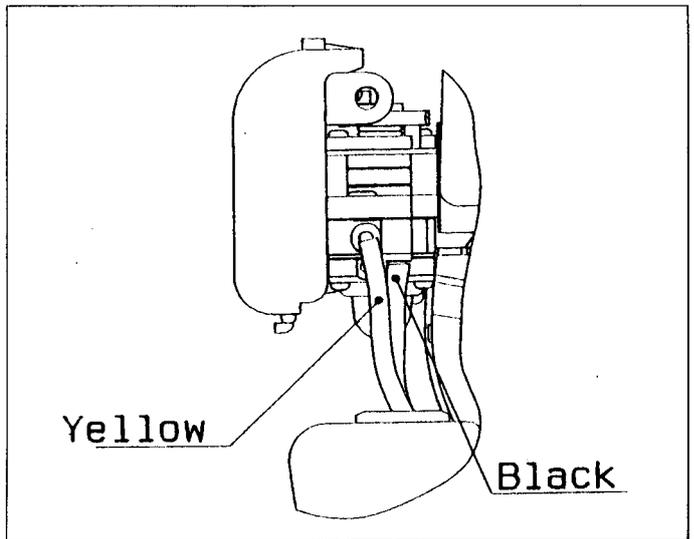
1. Fuel tube

Pull fuel tube about 20 – 30 mm out side fuel tank for easy assembly.

Assemble fuel tube as shown in the figure.

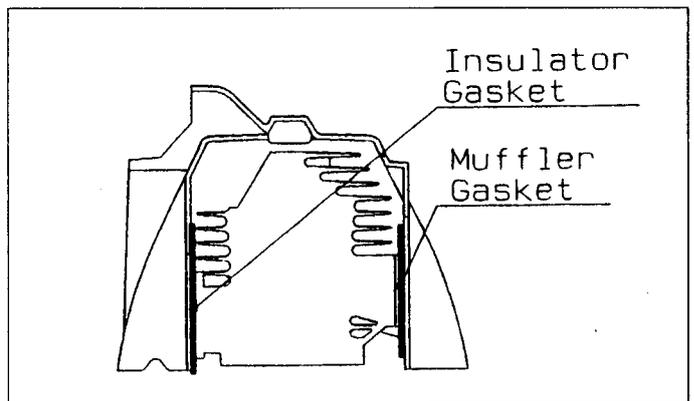
Return fuel tube to within the tank following assembly.

(with no bends that might prevent smooth fuel flow)

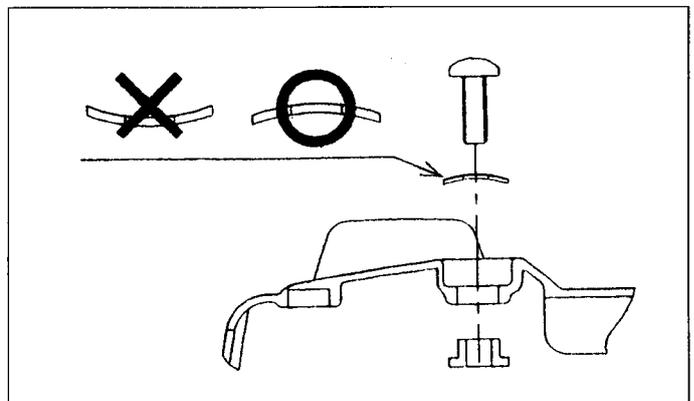


2. Cylinder cover

Keep the muffler gasket and insulator gasket in the correct position when assembling the cylinder cover.

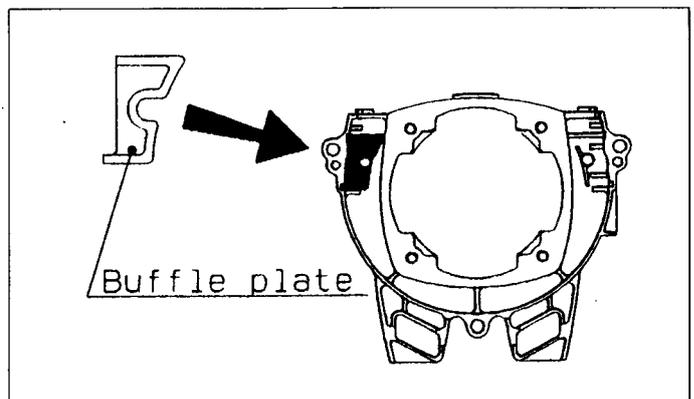


Keep the cover spacer and washer in the correct position when assembling the cylinder cover to the cylinder.



3. Baffle plate

Assemble baffle plate to blower housing as shown in the figure.



4. Clutch

Keep the washer in the correct position when assembling the clutch.

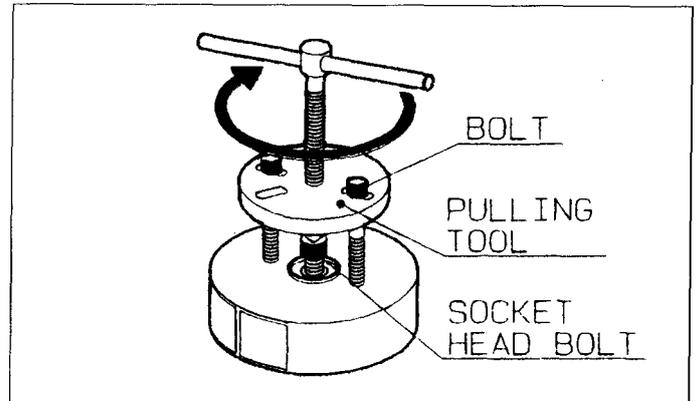
5. Ignition coil

Use thickness gauge to assure that the air gap will be 0.3 – 0.4 mm between the ignition coil and flywheel magnet portion when installing the ignition coil.

6. Flywheel

Install the socket head bolt onto the crankshaft and tighten them securely. Remove the flywheel with a pulling tool as shown in the figure.

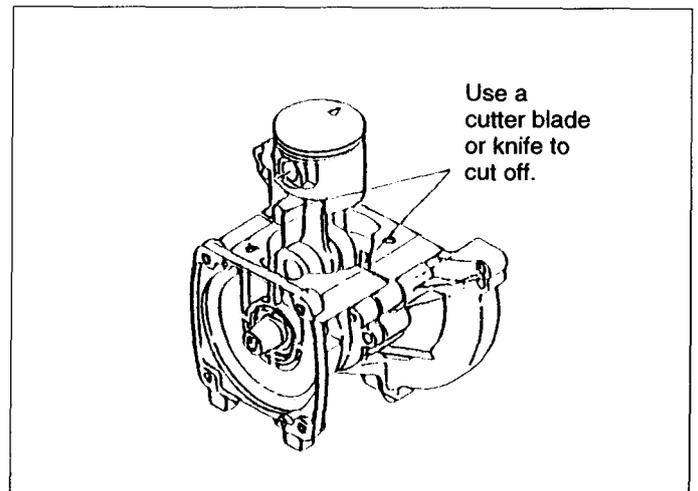
During assembly, be sure first that you have the crankshaft key slot properly aligned with before installing. Then check the key slot and flywheel alignment indication.



7. Crankcase

When assembling the crankcase, cut off the crankcase gasket sticking out from the cylinder installing surface.

(See figure at right)

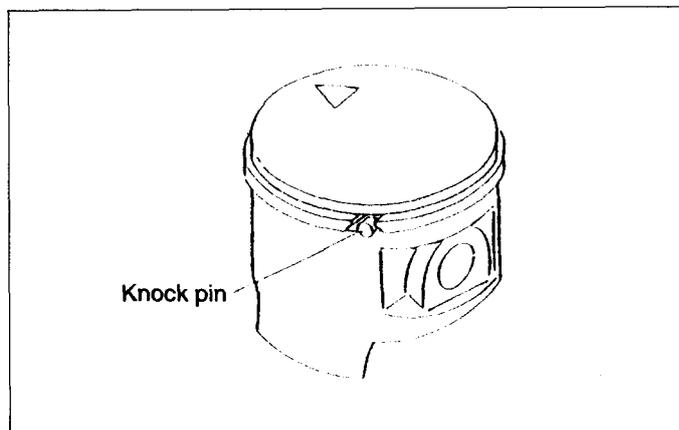


8. Cylinder

When assembling the cylinder, coat both the cylinder inner surface and the piston itself with 2-cycle engine oil.

9. Piston

When equipping the piston in the crankshaft ass'y, the triangular mark (Δ) on the top of the position should be on the crankshaft key slot side.

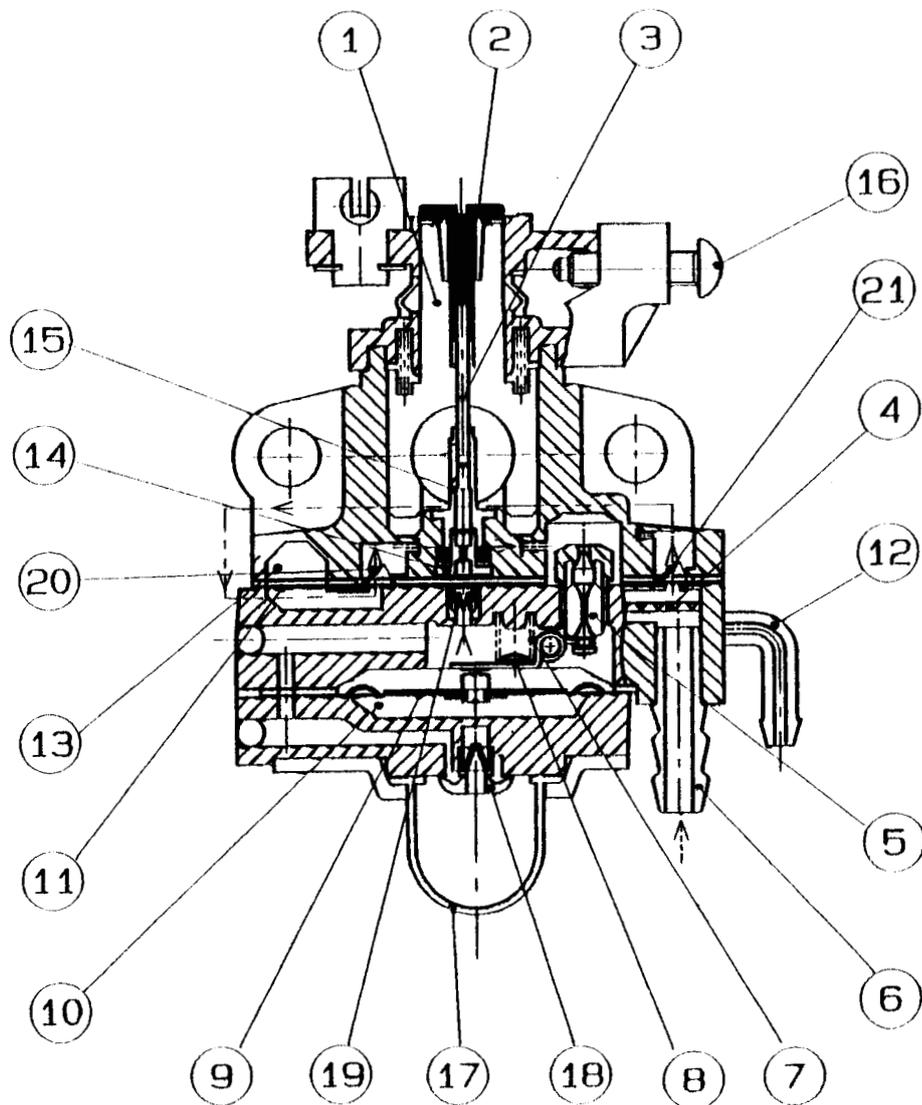


10. Piston ring

When installing the piston ring on the position, align the knock pin on the piston with the split on the piston ring. Unless they are lined up the cylinder cannot be assembled.

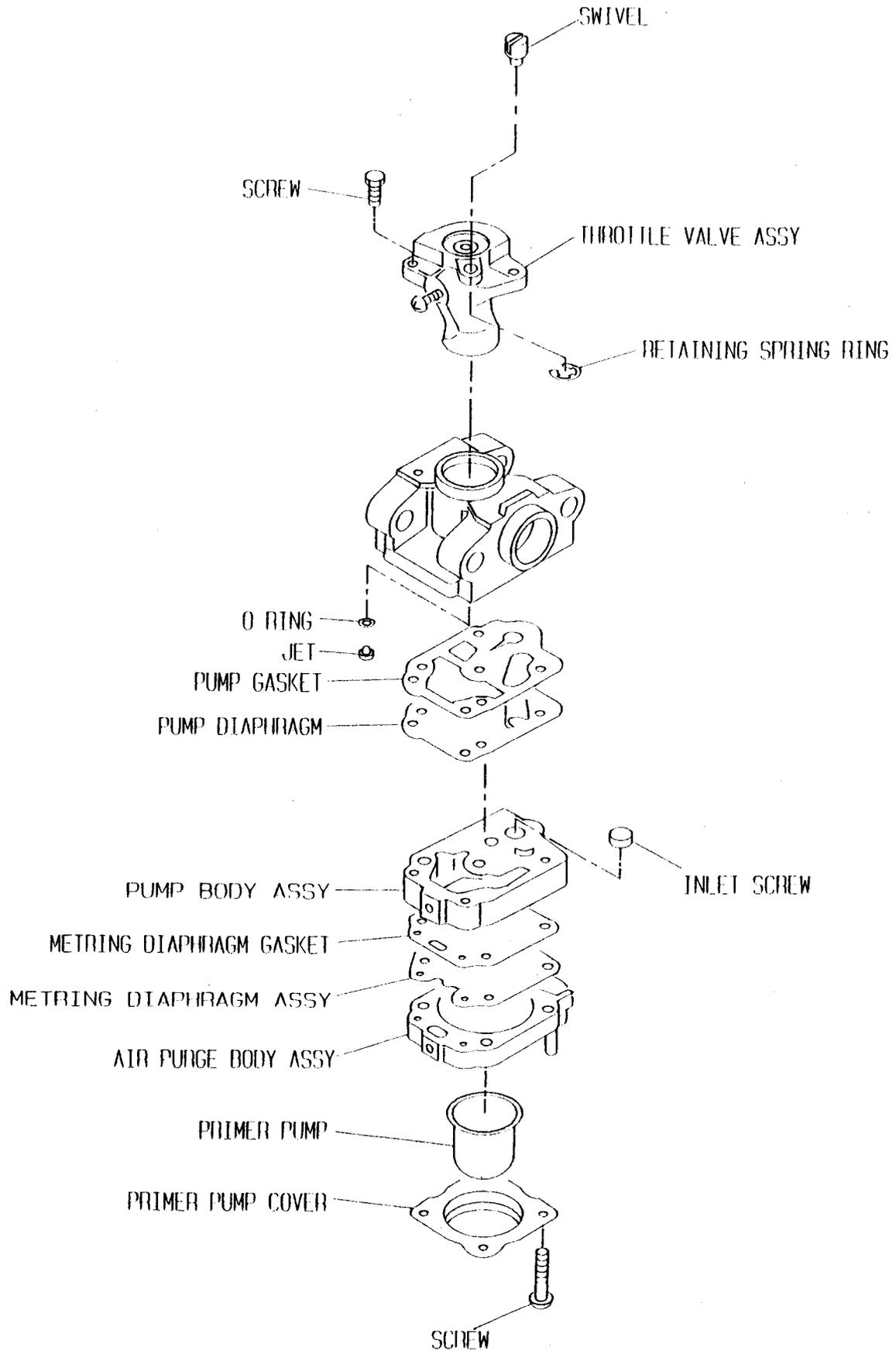
d. Disassembly & Assembly of Carburetor

1) Function of Parts



- | | |
|----------------------------|---|
| (1) Throttle Valve | Controls engine output. |
| (2) Tamper Resistant Plug: | Prevents entry of air and foreign matter. |
| (3) Low-Speed Needle: | Regulates fuel at idling or slow rpm. |
| (4) Inlet Screen: | Filters fuel intake to carburetor. |
| (5) Needle Valve: | Controls fuel supply to metering chamber from fuel pump. |
| (6) Fuel Inlet: | For fuel intake. |
| (7) Metering Lever Spring: | Works together with metering diaphragm to ensure constant pressure in metering chamber. |
| (8) Metering Lever: | Conveys operation of metering diaphragm to needle valve. |
| (9) Metering Diaphragm: | Works up or down depending on difference of pressure inside engine and atmospheric pressure so as to open or close the needle valve through the metering lever and metering spring. |
| (10) Metering Chamber: | Supplies fuel via nozzle by fuel tank. |
| (11) Fuel Pump Diaphragm: | Undulates, in keeping with engine pulse. This action serves to send fuel to the diaphragm chamber. |
| (12) Fuel Outlet: | Allows excess fuel to return to the tank during primer pump operation. |
| (13) Engine Pulse: | Takes the negative or positive pressure building up in the crankcase under piston operation and makes the fuel pump diaphragm work accordingly. |
| (14) Main Jet: | Regulates fuel at high speed. |
| (15) Nozzle: | Outlet for fuel sent into the cylinder. |
| (16) Idle Adjust Screw: | Controls idling rpm. |
| (17) Primer Pump: | Brings fuel up from the fuel tank into the metering chamber. |
| (18) Combination Valve: | Acts as a check valve between primer pump intake and charge. |
| (19) Main Check Valve: | Prevents air in the nozzle from entering the metering chamber when the primer pump is being worked. |
| (20) Outlet Valve: | Works just the opposite of the inlet valve. |
| (21) Inlet Valve: | Valve opens when diaphragm is subjected to negative pressure, and closes under positive pressure, corresponding to the pump action. |

2) Maintenance



A) DISASSEMBLY AND ASSEMBLY PROCEDURE

- 1) Refer to the disassembly drawing when disassembling or assembling.
- 2) Be careful not to damage gaskets and the like when assembling
- 3) Do not attempt to disassemble the throttle valve ass'y or pump body ass'y.
- 4) When you find during disassembly of the carburetor that the inlet screen is clogged or there is considerable dirt buildup in the carburetor itself, be sure to clean out the fuel tank and replace the fuel tank filter.

B) INSPECTION PROCEDURE

- 1) Clean off the tool body and dry off with an air nozzle.
- 2) Check for dirt adhering to the main jet or corrosion. Blow off any dirt with an air nozzle.
- 3) Be sure gaskets and the like are not damaged or deformed. Replace as necessary.
- 4) Check for damage or hardening of the pump diaphragm. Be sure inlet and outlet valves are horizontal and not bent.
- 5) Check for possible damage or hardening of the metering diaphragm. The plate should not be bent.
- 6) Check for bending or damage to the pump plate.
- 7) After cleaning the pump body ass'y, check spring deformation, lever height, inlet screen (for dirt clogging it), valve operation, etc. When inspecting check valve operation, look for blockage due to dirt at the check valve portion or vinyl pipe by blowing through the port. If blocked, replace.

CAUTION: Never blow air into the check valve under high pressure.

- 8) Check for possible deformation of the air purge body, combination valve, etc.
- 9) Look for holes, damage or hardening of the primer pump.

3) Adjustment of Carburetor

(1) Idle adjusting screw

The standard idling rotational speed is 2,500 – 2,700 rpm.
Adjust the speed as high as possible so that the blade does not turn.

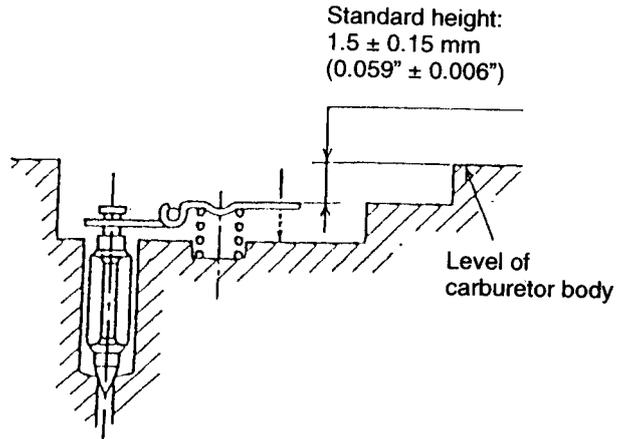
Right : for higher speed (rpm)

Left : for lower speed (rpm)

(2) Metering lever

The metering lever is a very important part. Never tamper with it under normal conditions.
Measure as shown below, when checking the height of the metering lever or when measurement is necessary.

The fuel is rich when the end of the control lever goes up as shown in the solid line in the drawing, and is lean when the dotted line goes down in the direction of the arrow.



(3) Main jet

When replacing the main jet, always use one with the same number.

4) Troubleshooting

STARTING Hard to start Overflow, fuel leakage Primer pump won't work IDLING (Low Speed) Won't idle Idling too high Unstable idling Always needs adjusting Won't keep idling ACCELERATION & DECELERATION Won't accelerate Engine stops when decelerating Acceleration to fast HIGH SPEED Poor	<input type="checkbox"/>	METERING SYSTEM • Inlet Needle & Seat <input type="checkbox"/> Foreign matter <input type="checkbox"/> Worn inlet needle valve <input type="checkbox"/> Inlet needle valve stuck												
	<input type="checkbox"/>	• Metering Diaphragm <input type="checkbox"/> Diaphragm damage <input type="checkbox"/> Loose screw on diaphragm cover <input type="checkbox"/> Gasket defect <input type="checkbox"/> Button damage												
	<input type="checkbox"/>	• Metering Lever Spring <input type="checkbox"/> Improper installation <input type="checkbox"/> Spring deformed												
	<input type="checkbox"/>	• Metering Lever <input type="checkbox"/> Lever operation failure <input type="checkbox"/> Lever set too low <input type="checkbox"/> Lever set too high <input type="checkbox"/> Lever damage												
	<input type="checkbox"/>	CIRCULATION SYSTEM <input type="checkbox"/> Loose carburetor <input type="checkbox"/> Manifold gasket failure <input type="checkbox"/> Air filter clogged												
	<input type="checkbox"/>	FUEL SYSTEM • Primer Pump <input type="checkbox"/> Check valve failure (foreign matter) <input type="checkbox"/> Primer pump damage (breakage)												
	<input type="checkbox"/>	• Fuel Pump <input type="checkbox"/> Pump diaphragm failure <input type="checkbox"/> Pump cover screw(s) loose <input type="checkbox"/> Pulse channel jammed <input type="checkbox"/> Pulse leakage												
	<input type="checkbox"/>	• Fuel Tank & Pump <input type="checkbox"/> Wrong fuel <input type="checkbox"/> Air leak in fuel passages <input type="checkbox"/> Fuel passages blocked <input type="checkbox"/> Tank filter jammed <input type="checkbox"/> Air vent holes clogged (tank cap)												
	<input type="checkbox"/>	ADJUSTMENT <input type="checkbox"/> Idle adjust screw												

4. CHECKUP AND ADJUSTMENT

a. Daily Checkup and Adjustment

1. Aspect
Confirm that there is no damage or wear.
2. Bolts, nuts, damper pin
Check bolts and nuts for damage, wear or tightening.
Retighten if necessary.
3. Safety cover
Check safety cover for damage or loosening.
Confirm that the safety cover is mounted in contact with gearcase.
4. Trimmer blade
Confirm that Trimmer blade is set correctly.
Checkup Trimmer blade for chipping, crack or bend.
Replace if necessary.
5. Handle
Confirm that handle-fixing bolt is fastened securely.
6. Cleaning of dirt, dust or saw dust
 - 1) Crankcase
If there is any dust or dirt adhering to cooling air inlet, fan cover-cylinder fins, etc. of rear crankcase, disassemble them and remove dust or dirt.
 - 2) Cylinder
If there is any dust or dirt adhering to cylinder fin, detach cylinder cover and remove it.
7. Throttle lever
Confirm that throttle lever can be operated smoothly.
Can engine be operated from low speed to high speed?
8. Stop button
Confirm that stop button can be operated smoothly.
Can engine be stopped without fail?
9. Muffler, Muffler cover
Check muffler and muffler cover for damage or loosening.
Remove carbon in muffler if present.
10. Operating and rotating parts
Check operating parts for abnormality and rotating parts for abnormal noise.

b. Checkup and Adjustment for Every 30 – 50 Hours (Every 10 Days)

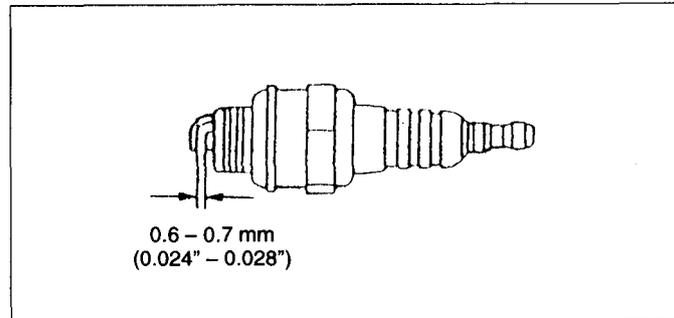
1. Air cleaner

Remove cover of air cleaner and cleaner filter inside with gasoline.

After wringing, fit it to air cleaner.

2. Spark plug

If spark plug is damaged or becomes dirty, clean it well with gasoline or sand it with sandpaper so as to adjust spark gap to 0.6 – 0.7 mm.



c. Checkup and Adjustment for Every 100 – 200 Hours (Monthly)

1. Cleaning and adjustment of carburetor

Clean diaphragm, throttle, etc. of carburetor with gasoline.

Refer to description on idling adjustment and fuel adjustment.

2. Fuel tank filter

Clean dust or dirt inside fuel tank with gasoline.

Clean tank inside. Replace filter if filter screen inside felt is clogged.

3. Muffler

Remove muffler. Remove carbon adhering to muffler, cylinder exhaust port and tail pipe.

4. Clutch shoe

Remove clutch bolt and detach clutch shoe from holder.

Apply grease to inside of shoe-mounting hole and clutch bolt and mount them.

5. Replacement

1) Replace cleaner element.

2) Replace spark plug.

4. STANDARD ADJUSTMENT

a. Tightening Torque of Components

Main Body

Tightening Part	Tightening Torque (kg · cm)	Screw (Diam. x Length)	Remarks
Grease nipple	35 ± 5	—	* Screw
Retainer plate	40 ⁺⁵ / ₋₃	M5 x 16	* Flange nut
	50 ± 5	M5	Screw
Crank gear	50 ± 5	M5x 10	Screw
Rod slide plate	15 ± 3	M3 x 15	Screw
Lower case	45 ± 5	M5 x 16, M5 x 20	Screw
Blade fixing U nut	80 ± 10	M6	U nut
Drum	170 ± 20	M10	—
Front case	50 ± 5	M6 x 30	Bolt
Upper case	75 ± 5	M6 x 15	Bolt
	50 ± 5	M6 x 40	Bolt
Cable holder	8 – 13	M4 x 10	Screw
Rear handle main unit	8 – 13	M4 x 16, M4 x 30	Screw

* Use quick-set bonding adhesive.

Engine

Tightening Part	Tightening Torque (kg · cm)	Screw (Diam. x Length)	Remarks
Crankcase	45 ± 5	M5 x 25	Screw
Cylinder	80 ± 10	M5 x 20	Socket head bolt
Flywheel	100 ± 10	M6 x 16	Bolt
Ignition coil	25 ± 5	M4 x 20	Screw
Spark plug	150 ± 3	M14	NGK-BMR7A
Muffler	75 ± 5	M5 x 50	* Socket head bolt
Insulator	45 ± 5	M5 x 25	Screw
Carburetor	25 ± 5	M5 x 65	Screw
Blower housing	45 ± 5	M5 x 16	Screw
Recoil starter	15 – 20	M5 x 14	Screw (Black)
Cylinder cover	30 ± 5	M5 x 14	Screw (Black)
Muffler cover	40 ± 5	M5 x 16	Screw
Tank plate	45 ± 5	M 5x 16	Screw
Fuel tank	45 ± 5	M5 x 16	Screw
Clutch	90 ± 10	M6 x 25	Bolt
Holder	75 ± 10	M6 x 14	Bolt

* Use quick-set bonding adhesive.

b. Standard Adjustment Table

Test Parts	Standard Size (mm)
Air gap	0.3 – 0.4
Spark plug electrodes gap	0.6 – 0.7

c. Lubrication Procedure

1) Oil

- Mobile Oil No. 30 Throttle wire

2) Grease

- Shell Albania No. 3 Gear case

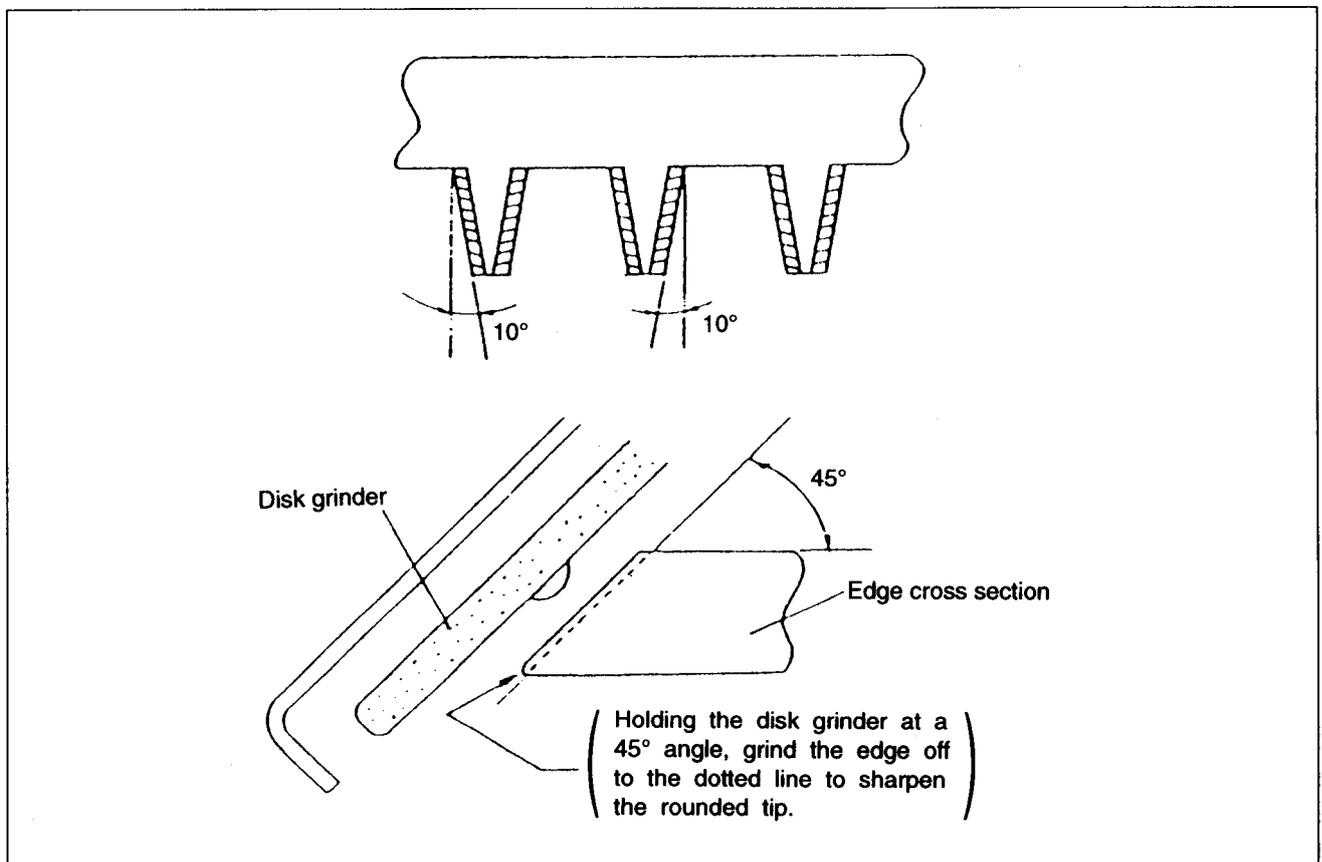
<CAUTION>

Always use above oil/grease or a comparable product.

d. Blade sharpening

If the edges are rounded and do not cut well any more, find off only the shaded portions.
Do not find the contact surface (sliding surfaces) of the top and bottom edges.

- Before grinding, be sure to secure the blade firmly and switch off the engine and remove the spark plug cap.
- Wear gloves, protective glasses, etc.
- An edges ground too much at a time or ground many times will lose its hardened layer. It becomes rounded and dull very quickly in use.



e. Blade Adjustment

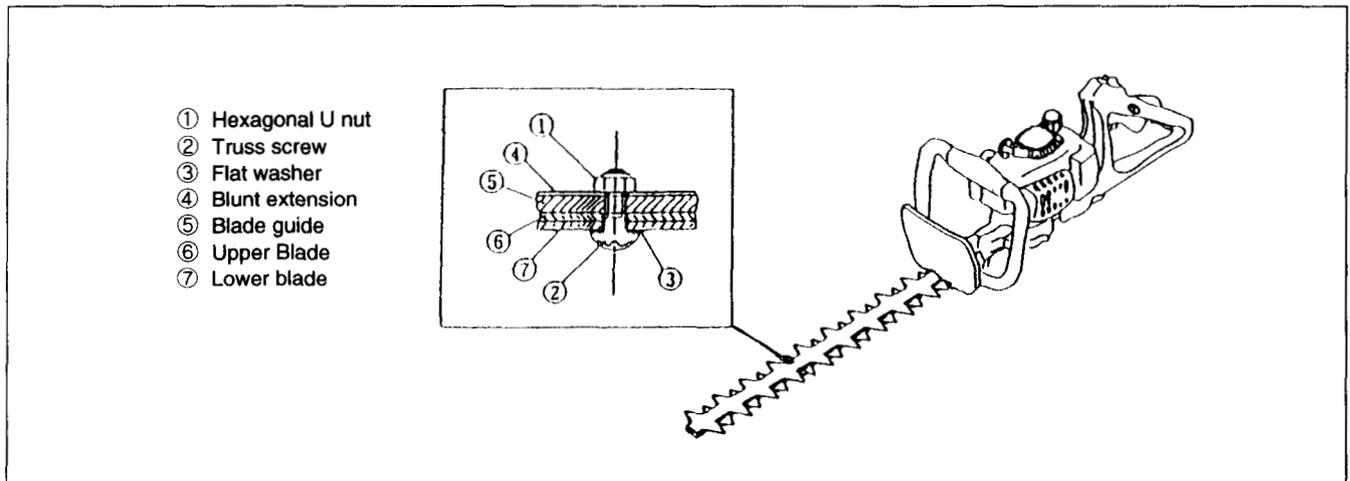
The blades will wear with long use. When you find that trimming is not as good as when the blades were new, adjust them as follows.

1. Turn Hexagonal U nut loose.
2. Truss screw in with the driver lightly till it stops turning, and then screw it back one quarter to a half turn.
3. Turn Hexagonal U nut tight, holding Truss screw at the same time with a driver.
4. Lubricate the blades after adjustments above with light oil.
5. Start the engine and operate the engine throttle on and off for a minutes.
6. Stop the engine and touch the blades with your hand. If they are warm enough for you to keep your hand on, then you have made the proper adjustment. If they are too hot for you to keep touching, give Truss screw, a little more turnback and repeat 5 to see if the are properly adjusted.

<NOTE>

Never fail to stop the engine before making the adjustment.

The blades have a slot around Truss screw. In case you find dust in the end of the slots, clean it.



6. TROUBLESHOOTING

