SERVICE DATA

HEDGE TRIMMER

ECHO : HCA-265ES-HD

shindaiwa : AH265S-HD

(Serial number : 37000001 and after)
(Serial number : 38000001 and after)

INTRODUCTION

We are constantly working on technical improvement of our products. For this reason, technical data, equipment and design are subject to change without notice. All specifications and directions in this SERVICE DATA are based on the latest product information available at the time of publication.

SERVICE MANUAL Ref. No. 402-43 (Model: SRM-2620ES, SRM-2620TES, T262XS, C262S, T262TXS and C262TS) contains lots of information for servicing these models.

CONTENTS

Reference No. **15-25H-02**
REVISED: 201911
ISSUED: 201708

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1 SERVICE INFORMATION

1-1 Specifications

Dimensions	Length*1		mm (in)	2446 (96.3)
	Width		mm (in)	246 (9.7)
	Height		mm (in)	250 (9.8)
Dry weight*1			kg (lb)	6.7 (14.8)
Engine	Type			YAMABIKO, air-cooled, 2-stroke, single cylinder
	Rotation			Counterclockwise as viewed from the output end
	Displacement		cm^3 (in^3)	25.4 (1.550)
	Bore		mm (in)	34.0 (1.339)
	Stroke		mm (in)	28.0 (1.102)
	Compression ratio			7.3
Carburetor	Type			Diaphragm, horizontal-draught
	Model			ZAMA RB-K94
	Venturi size - Throttle bore		mm (in)	10.5 - 10.5 (0.413 - 0.413)
Ignition	Type			CDI (Capacitor discharge ignition) system, Digital Magneto
	Spark plug			NGK BPMR8Y
Exhaust	Muffler type			Spark arrester muffler with catalyst
Starter	Type			ES (Effortless-Start) / S (Soft-start)
	Rope diameter x length		mm (in)	3.0 x 850 (0.12 x 33.5)
Fuel*2	Type*3			Mixed two-stroke fuel
	Mixture ratio			50 : 1 (2 %)
	Gasoline			Minimum 89 octane
	Two-stroke engine oil			ISO-L-EGD (ISO/CD13738), JASO FC/FD
	Tank capacity			Full tank capacity: 0.5 (16.9)
			L (U.S.fl.oz.)	Usable capacity: 0.4 (15.0)
Clutch	Type			Centrifugal, 2-shoe pivot
Handle	Type		Front	Rubber anti-vibration grip
			Rear	Throttle handle with rubber anti-vibration grip
Drive shaft	Type			Flexible
	Diameter - Length		mm (in)	6.15 - 1522 (0.24 - 59.9)
	Housing	OD - ID	mm (in)	25 - 22 (0.98 - 0.87)
	(Main pipe)	Length	mm (in)	1504 (59.2)
Gear case	Reduction ratio			4.6
	Gear tooth			Spur gear
	Lubrication			Lithium based grease
Cutter	Type			Double reciprocating, double sided
	Effective length		mm (in)	536 (21.1)
	Pitch		mm (in)	35 (1.4)
	Height		mm (in)	21 (0.8)
	Thickness		mm (in)	2.5 (0.1)
	Lubrication			Apply oil every 4 hours of use

OD: Outer diameter ID: Inner diameter

*1 With blades *2 Refer to Operator's manual. *3 Premixed alkylate fuel for 2-stroke can be used.

1-2 Technical data

Engine			
Compression pressure		MPa (kgf/cm^2) (psi)	0.99 (10.1) (143)
Clutch engagement speed		RPM	4,200
Ignition system			
Spark plug gap		mm(in)	0.6 - 0.7 (0.024 - 0.028)
Spark test			
Tester gap w/ spark plug		mm(in)	4.0 (0.16)
Tester gap w/o spark plug		mm(in)	6.0 (0.24)
Secondary coil resistance		KΩ	2.7 - 3.3
Pole shoe air gaps		mm(in)	0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3,000 RPM	°BTDC	13
	at 8,000 RPM	°BTDC	34
Carburetor			
Test Pressure, minimum		MPa (kgf/cm^2) (psi)	0.05 (0.5) (7.0)
Metering lever height		mm(in)	0.05 - 0.2 (0.002 - 0.008) lower than diaphragm seat
Limiter cap / plug			Limiter plug P/N P005-001270
Tool to adjust mixture needles			Screwdriver 2.5 mm P/N X603-000050 (Carb. adjustment tool P/N Y089-000094)
Carburetor adjustment			
1) Initial setting			
H mixture needle		turn out	1 1/2
L mixture needle		turn out	2
Throttle adjust screw		turn out*1	7
Engine warm-up	Idle - WOT : Total	sec.	5 - 5 : 120
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed*2
3) Set idle maximum speed w/ TAS		RPM	3,700
4) Set idle speed by turning L mixture needle CCW		RPM	2,900
5) Find WOT maximum speed			Adjust H mixture needle to maximum WOT speed
6) WOT setting		RPM	Turn H mixture needle CCW to decrease WOT speed by : 10
7) Verify final engine speed with standard equipment		RPM	Idle: 2,600 - 3,300 WOT: 10,300 - 11,300
8) Verify clutch engagement speed			Confirm clutch engagement speed. If it is less than 1.25 times the idle speed, adjust the idle speed by turning TAS CCW.

BTDC: Before top dead center. **WOT:** Wide open throttle **CCW:** Counterclockwise **TAS:** Throttle adjust screw

*1 Turn TAS clockwise until its head touches boss. Then turn TAS counterclockwise.

*2 If clutch engages during adjustment process 2), decrease engine speed by turning TAS CCW until clutch disengages and then redo 2).

1-3 Torque limits

Descriptions		Size	kgf•cm	N•m	in•lbf
Starter system	Starter pawl assembly	M8	80 - 100	8 - 10	70 - 90
	Starter case	M4*†	15 - 30	1.5 - 3	13 - 25
Ignition system	Magneto rotor (Flywheel)	M8	160 - 200	16 - 20	140 - 175
	Ignition coil	M4	30 - 50	3 - 5	25 - 44
	Fan cover	M4*†	25 - 35	2.5 - 3.5	22 - 30
	Spark plug	M14	130 - 170	13 - 17	112 - 150
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	25 - 40
	Intake insulator	M5*	60 - 80	6 - 8	55 - 70
	Fuel tank with stand	M5*	40 - 60	4 - 6	35 - 55
Clutch	Clutch shoe	M6	70 - 110	7 - 11	60 - 95
Cylinder cover	Starter side	M5*	30 - 45	3 - 4.5	25 - 40
	Fan cover side	M5*	20 - 30	2 - 3	17 - 25
Engine	Crankcase	M5**	70 - 110	7 - 11	60 - 95
	Cylinder	M5**	70 - 110	7 - 11	60 - 95
	Muffler	M5	60 - 80	6 - 8	55 - 70
	Exhaust guide	M4	15 - 30	1.5 - 3	13 - 25
	Muffler cover	M5*	30 - 45	3 - 4.5	25 - 40
Gear case cover		M4	40 - 50	4 - 5	35 - 44
Cutter	Cutter bolts	M5	50 - 70	5 - 7	45 - 60
	Cutter nuts	M6	70 - 90	7 - 9	60 - 80
	Cutter support	M5	50 - 70	5 - 7	45 - 60
Regular bolt, nut and screw		M3	6 - 10	0.6 - 1	5 - 9
		M4	15 - 25	1.5 - 2.5	13 - 22
		M5	25 - 45	2.5 - 4.5	22 - 40
		M6	45 - 75	4.5 - 7.5	40 - 65
		M8	110 - 150	11 - 15	95 - 130

* Apply thread locking sealant. (See below)

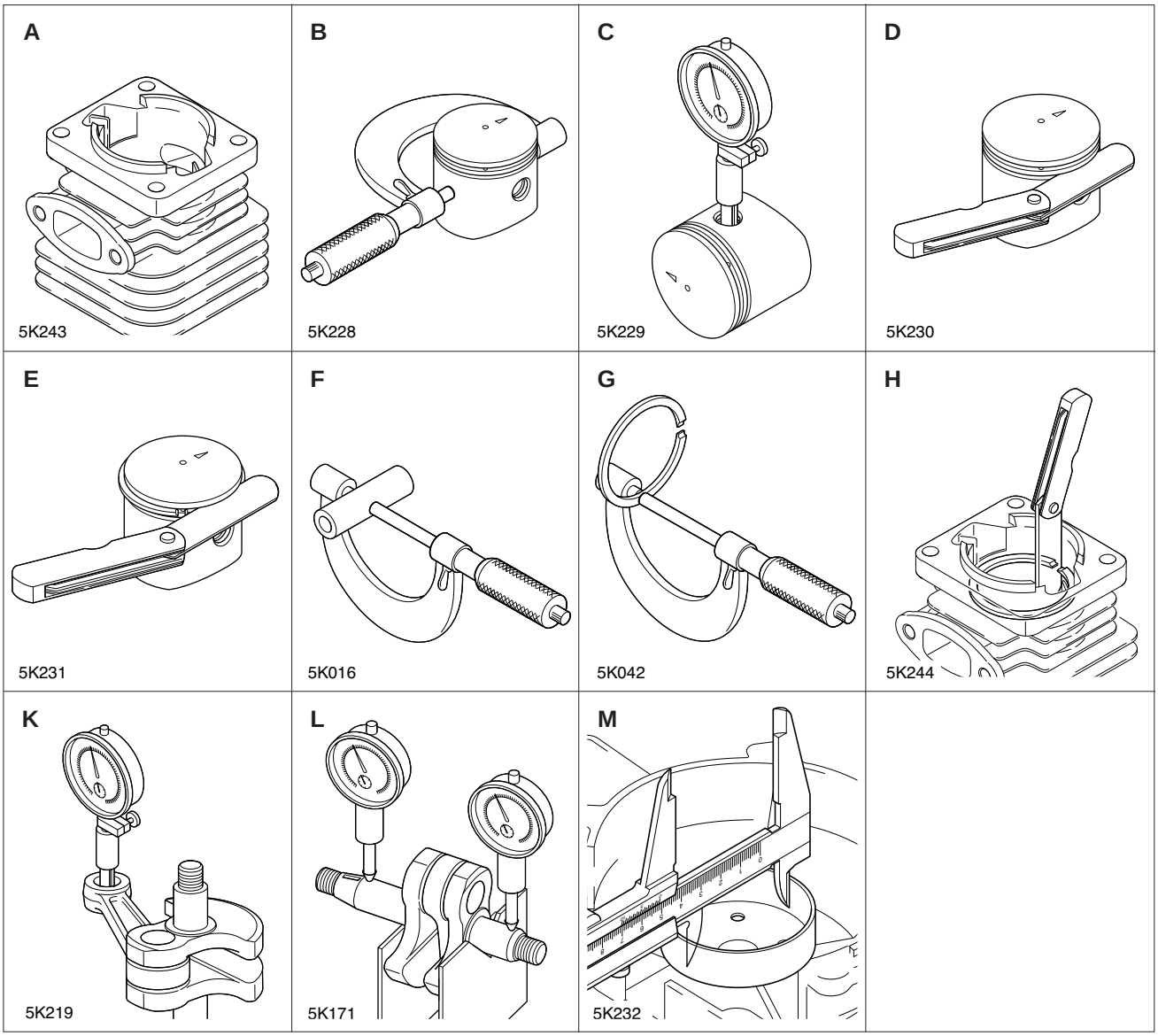
** The torque differences among four bolts should not exceed 20 kgf•cm (2N•m, 17in•lbf) on one cylinder or crankcase.

† Precoat bolt: If old thread locking sealant is left in threads, correct torque may not be secured. In case old thread locking sealant is left, remove it.

1-4 Special repairing materials

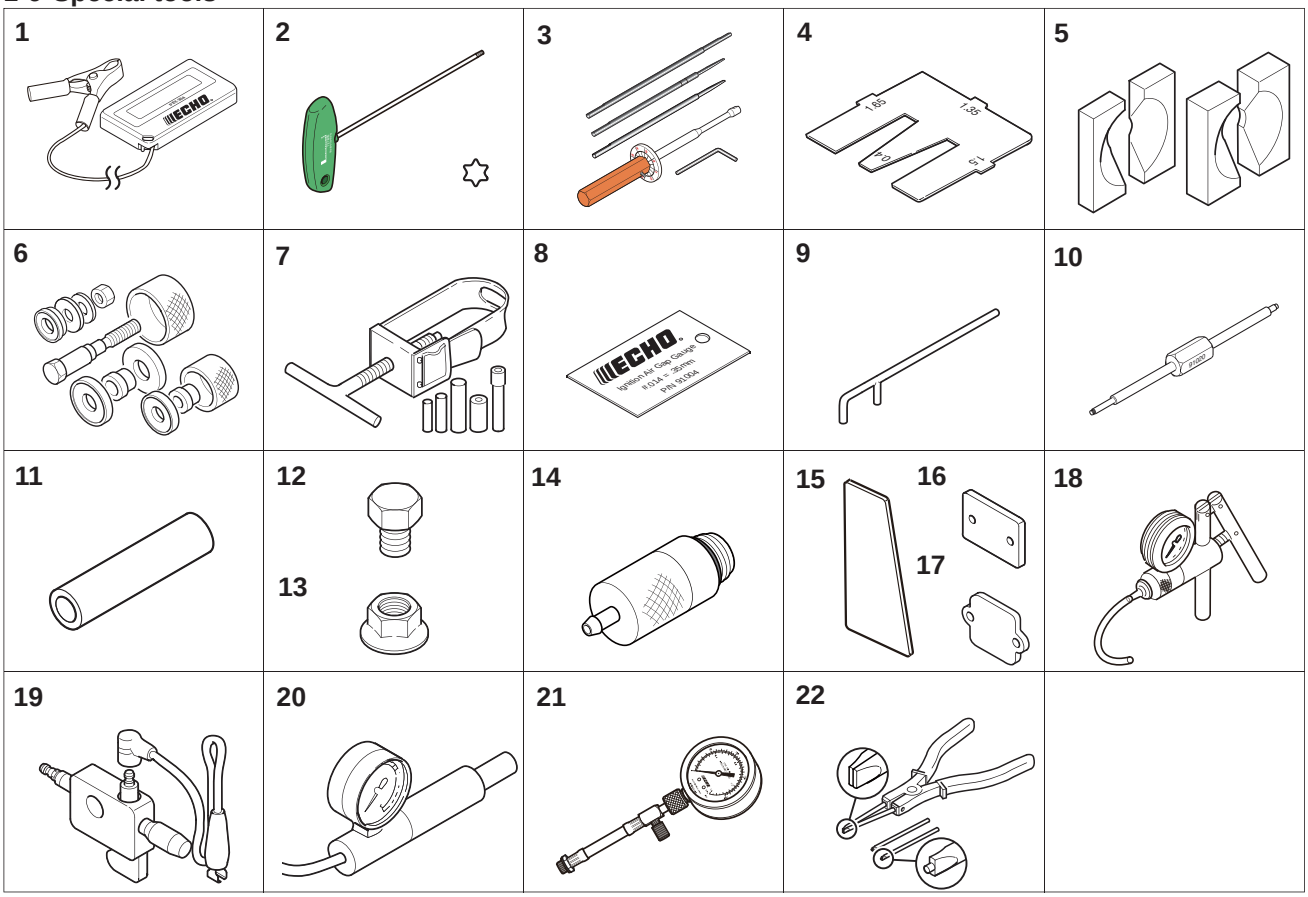
Material	Location	Remarks
Grease	Drive shaft	EPNOC AP2 (Lithium based grease) P/N X695-000060
	Gear case	
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Muffler cover	Loctite #222, ThreeBond #1342 or equivalent
	Cylinder cover	
	Intake insulator	
	Fuel tank with stand	
	Starter case	Loctite #242, ThreeBond #1324 or equivalent
	Fan cover	

1-5 Service limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminum can be seen
B	Piston outer diameter	Min.	32.10 (1.264)
C	Piston pin bore	Max.	8.030 (0.3161)
D	Piston ring groove	Max.	1.6 (0.063)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	7.97 (0.3138)
G	Piston ring width	Min.	1.45 (0.057)
H	Piston ring end gap	Max.	0.5 (0.02)
K	Con-rod small end bore	Max.	12.000 (0.4724)
L	Crankshaft runout	Max.	0.03 (0.001)
M	Clutch drum bore	Max.	51.5 (2.03)

1-6 Special tools

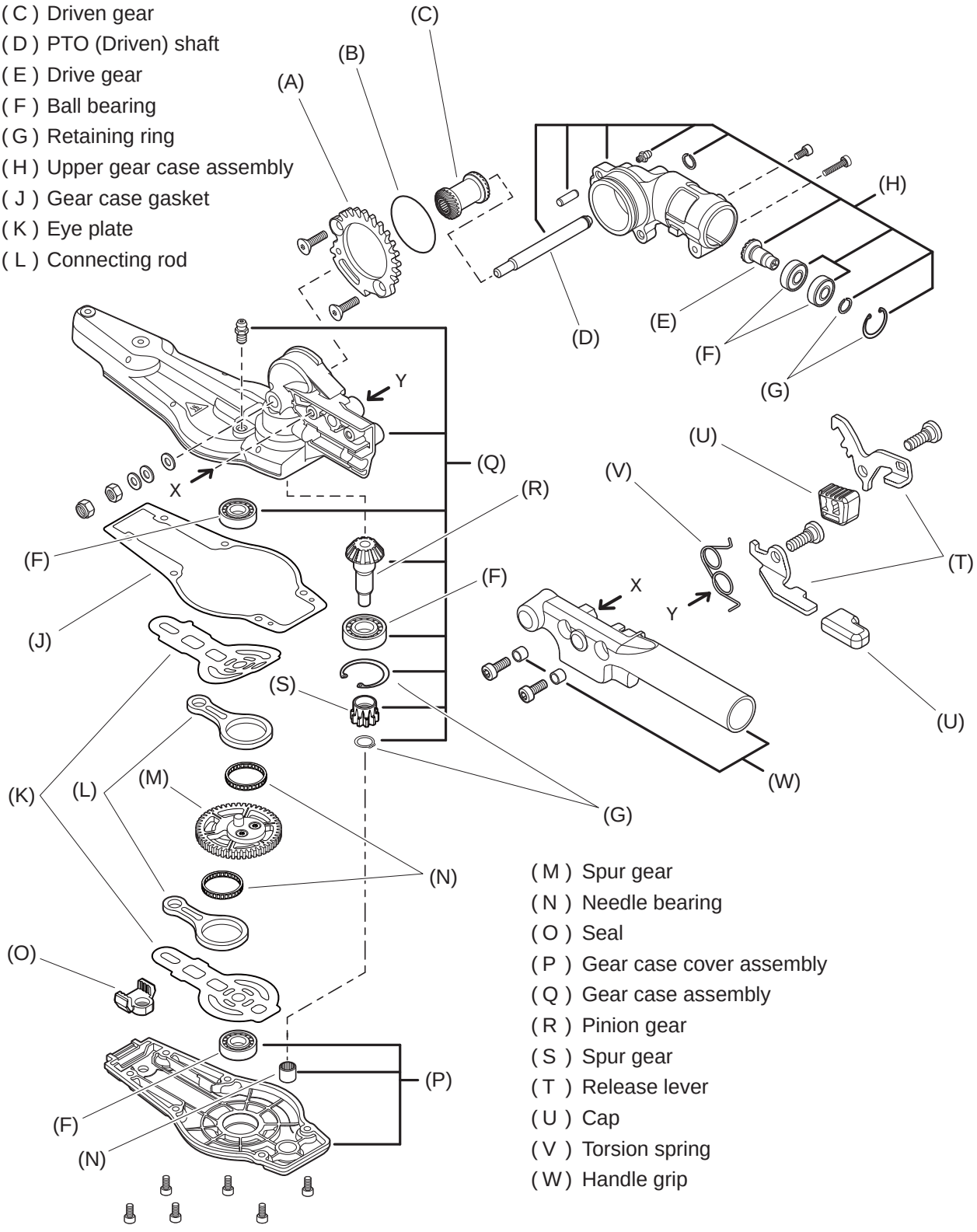


Key	Part Number	Description	Reference
1	G310-000050	Tachometer PET-304	Measuring engine speed to adjust Carburetor
2	X602-000340	Torx wrench (T27)	Removing and installing bolt
3	Y089-000094	Carburetor adjustment tool	Adjusting Carburetor
4	897563-19830	Metering lever gauge	Measuring metering lever height on carburetor
5	897701-02830	Bearing wedge	Removing ball bearings on cankshaft
6	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
7	897702-30131	Piston pin tool	Removing and installing piston pin
8	91004	Module air gap gauge	Adjusting pole shoe air gaps
9	897712-04630	2-pin wrench	Removing and installing pawl carrier
10	91020	Limiter plug tool	Removing and installing plug
11	897726-21430	Oil seal tool	Installing oil seals and ball bearings
12	900100-08008	Bolt	Removing magneto rotor (flywheel), crankshaft from crankcase
13	V265-000200	Flange nut	Removing magneto rotor (flywheel)
14	A131-000150	Pressure connector	Testing crankcase and cylinder leakage
15	91041	Pressure rubber plug	Plugging exhaust port to test crankcase / cylinder leakages
16	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
17	897827-16131	Pressure plate	Plugging intake port to test crankcase / cylinder leakages
18	91139	Pressure / vacuum tester	Testing crankcase / cylinder leakages
19	897800-79931	Spark tester	Checking ignition system
20	897803-30133	Pressure tester	Testing Carburetor and crankcase leakages
21	91037	Compression gauge	Measuring cylinder compression
22	P021-051610	Snap ring pliers	Installing and removing retaining ring on drive gear

2 SERVICE MANUAL FOR GEAR CASE AND CUTTER

Gear case assembly

(A) Latch resetter
(B) O-ring
(C) Driven gear
(D) PTO (Driven) shaft
(E) Drive gear
(F) Ball bearing
(G) Retaining ring
(H) Upper gear case assembly
(J) Gear case gasket
(K) Eye plate
(L) Connecting rod

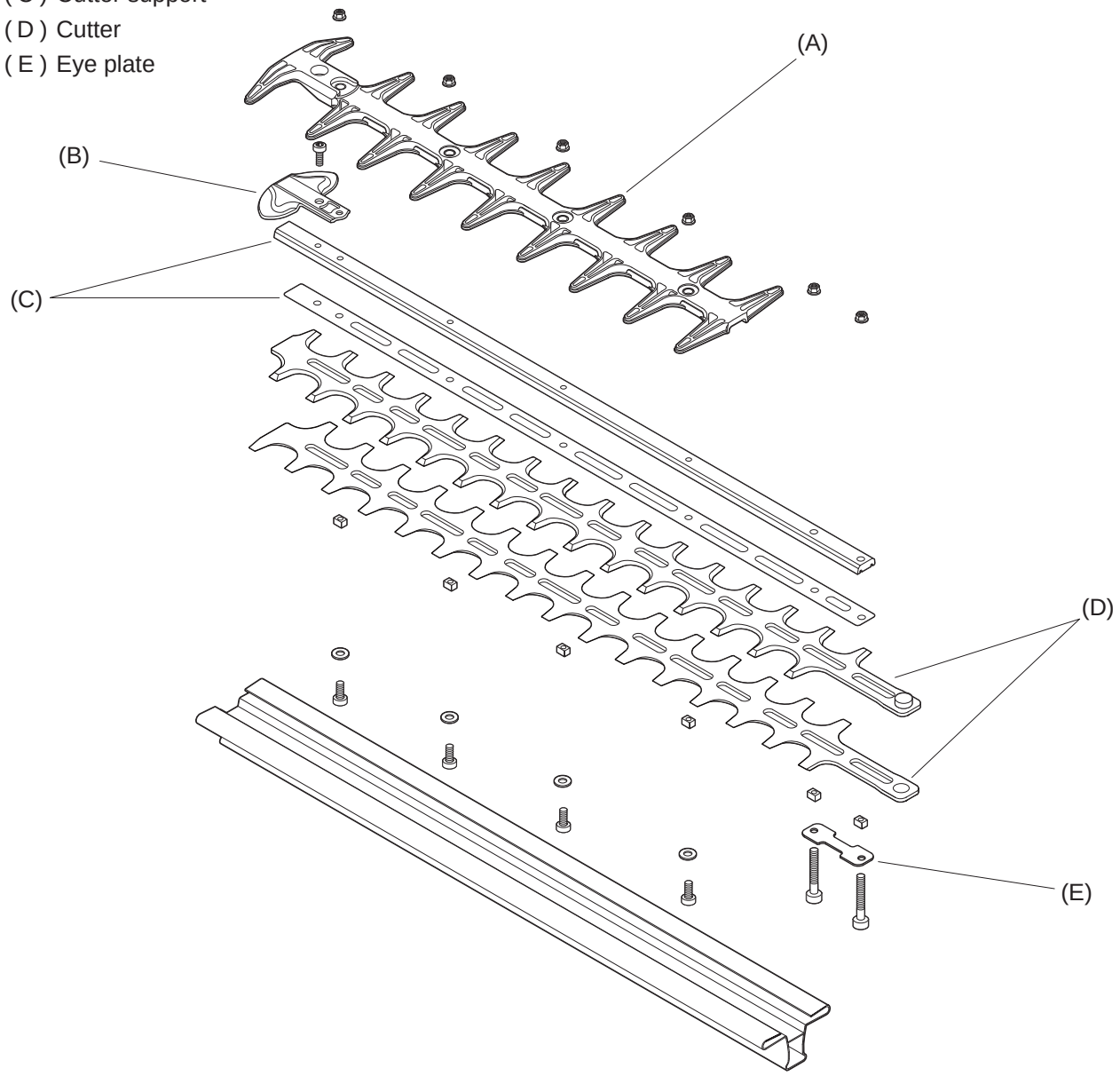


(M) Spur gear
(N) Needle bearing
(O) Seal
(P) Gear case cover assembly
(Q) Gear case assembly
(R) Pinion gear
(S) Spur gear
(T) Release lever
(U) Cap
(V) Torsion spring
(W) Handle grip

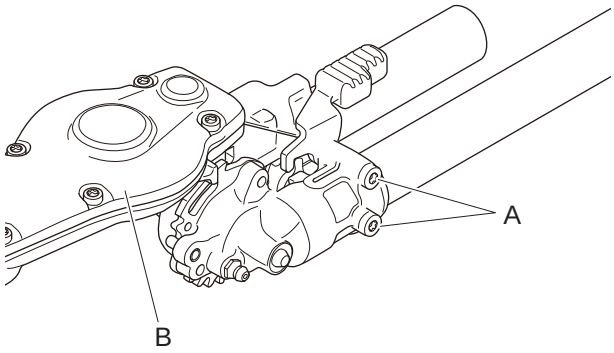
2 SERVICE MANUAL FOR GEAR CASE AND CUTTER (continued)

Cutter assembly

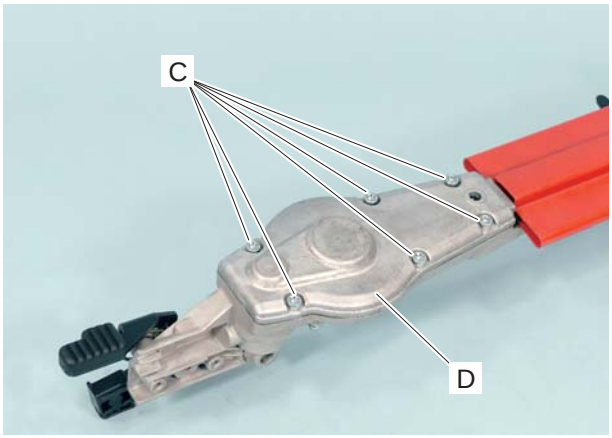
(A) Blunt
(B) Blade protector
(C) Cutter support
(D) Cutter
(E) Eye plate



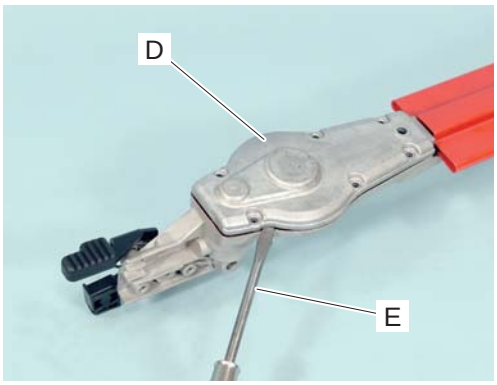
2-1 Disassembling gear case assembly

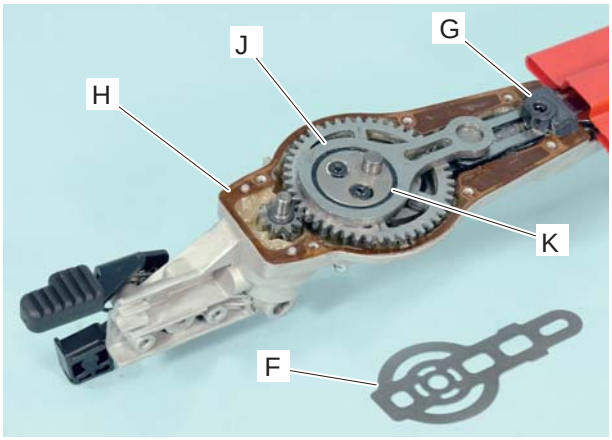


1. Remove two bolts (A) and remove gear case assembly (B) together with cutters from main pipe.



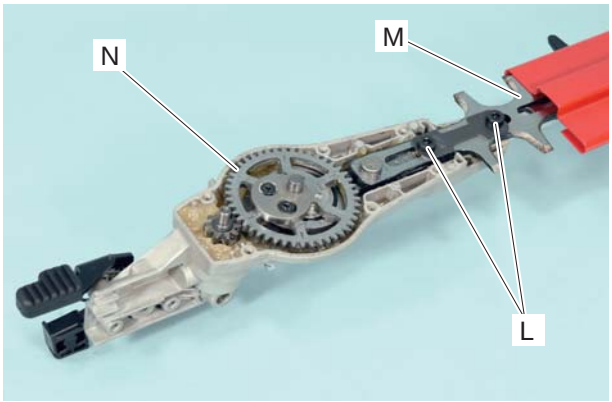
2. Remove six bolts (C) and remove gear case cover (D). If gear case cover is hard to remove, insert blade screwdriver (E) to gap of gear case assembly and lift up the cover as shown.





3. Remove eye plate (F), seal (G) and gasket (H).

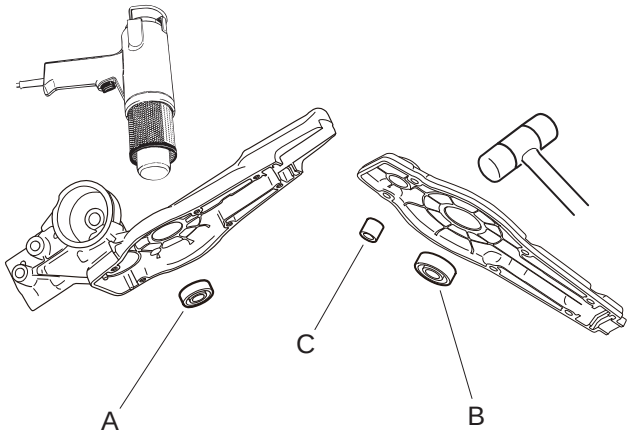
4. Remove connecting rod (J) with needle bearing (K).



5. Loosen two bolts (L) with nuts and remove cutter assembly (M) from gear case assembly. Remove all nuts and bolts securing cutters to cutter support.

6. Remove spur gear (N), the other connecting rod, the other needle bearing and the other bended eye plate.

2-2 Replacing ball bearings and needle bearing of gear case



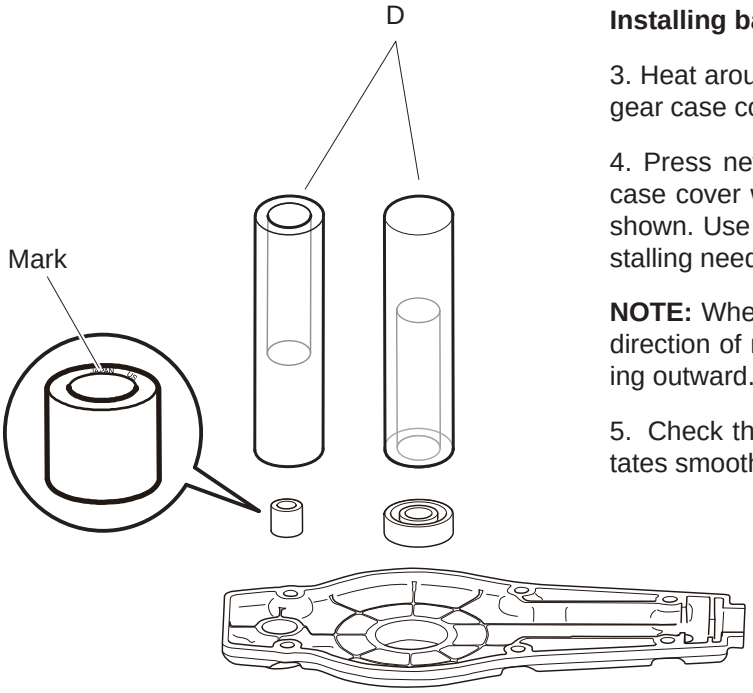
1. Inspect ball bearings (A), (B) and needle bearing (C) for smooth rotation. If not, replace them with new one.

Removing ball bearings (A), (B) and needle bearing (C):

2. Heat around bearing housing of gear housing or gear case cover with a heat-gun. Then remove the bearings, tapping bearing housing from back side with a plastic hammer.

WARNING ⚠ DANGER

When using a heat gun, put on gloves. Otherwise, a burn will result.



Installing ball bearings and needle bearing:

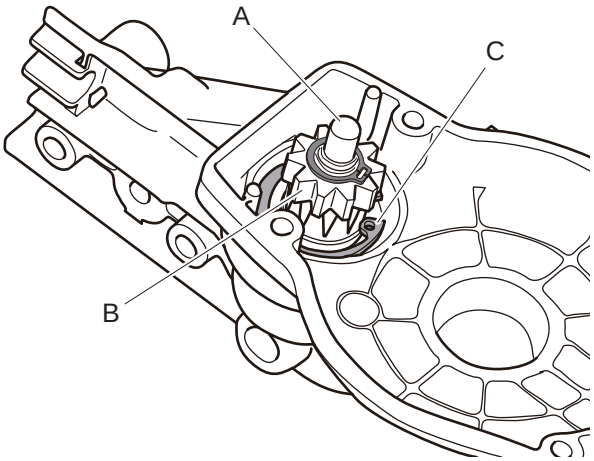
3. Heat around bearing housing of gear housing or gear case cover with a heat-gun.

4. Press new bearings into gear housing or gear case cover with oil seal tool 897726-21430 (D) as shown. Use the oil seal tool upside down when installing needle bearing.

NOTE: When installing needle bearing, make sure direction of mark on needle bearing is located facing outward.

5. Check that bearing is seated to bottom and rotates smoothly.

2-3 Replacing pinion gear and spur gear of gear case



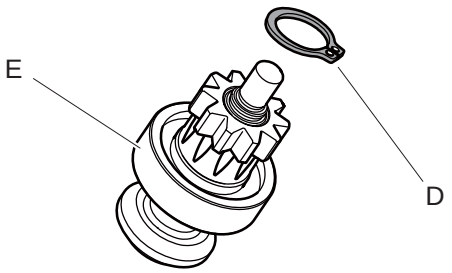
1. Check if pinion gear (A) with spur gear (B) rotate smoothly. If not, replace them with new one.

NOTE: Replace pinion gear (A), spur gear (B) and ball bearing (E) as a set.

Removing gears (A), (B) and ball bearing (E):

2. Remove retaining ring (C) using needle nose pliers.

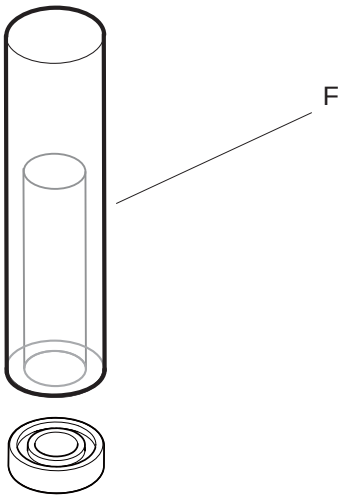
3. Heat around gear housing of gear case with a heat-gun. Then remove gears and ball bearing tapping gear housing from back side with a plastic hammer. (Refer to 2-2)



WARNING ⚠ DANGER

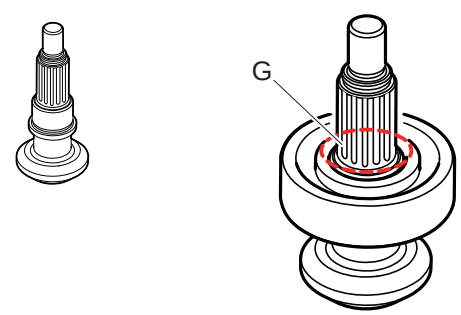
When using a heat gun, put on gloves. Otherwise, a burn will result.

4. Remove retaining ring (D) using needle nose pliers. Then gears and ball bearing (E) are can be saparated.



Installing gears and ball bearing :

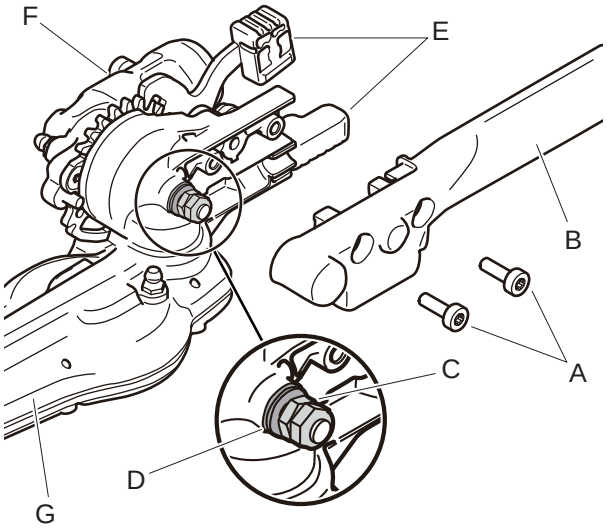
5. Install new ball bearing on new pinion gear using oil seal tool 897726-21430 (F) as shown.



6. Apply approx. 1 gram (0.04 oz) of lithium based grease to area (G) of pinion gear.

7. Install new spur gear. Install new retaining ring using needle nose pliers.

2-4 Disassembling upper gear case

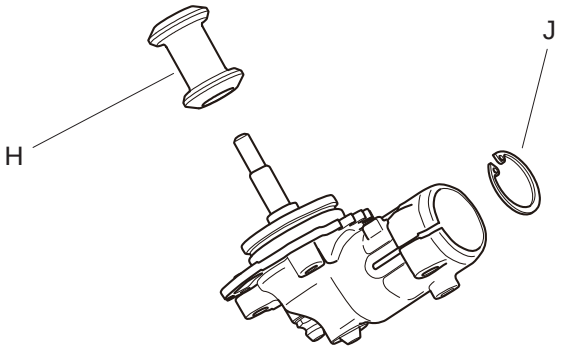


1. Check upper gear case for cracks and PTO shaft for smooth rotation. If they have a defect, disassemble upper gear case as follows.

2. Remove bolts (A) and handle grip (B).

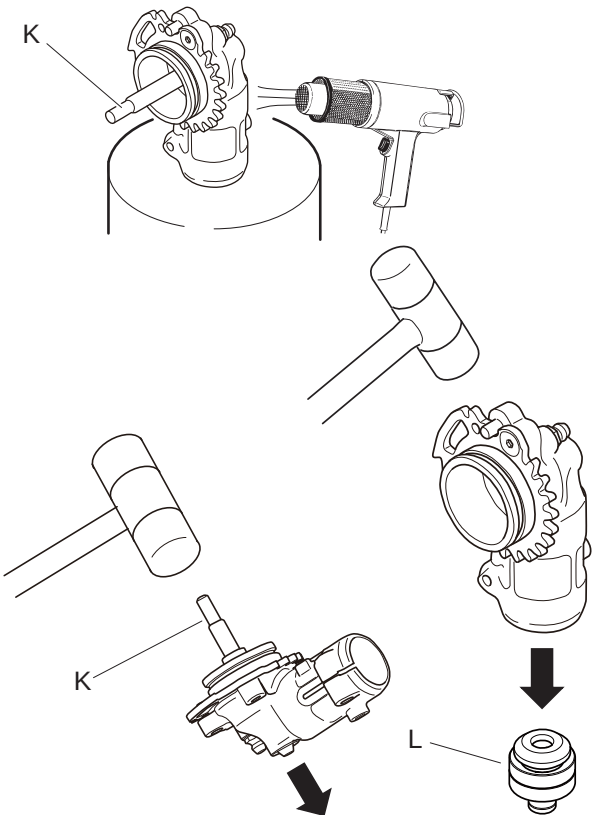
3. Remove two nuts (C) and three washers (D).

4. Spread release lever (E), then remove upper gear case (F) from gear case assembly (G).



5. Pull out driven gear (H) from upper gear case.

6. Remove retaining ring (J) using needle nose pliers.



7. Heat up the middle of upper gear case with a heat gun as shown.

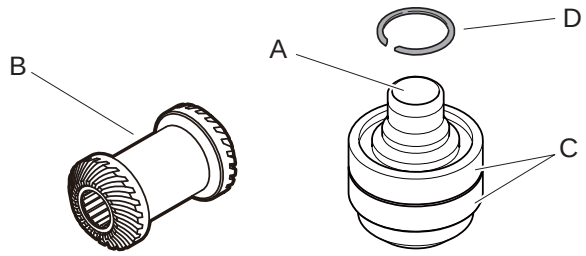
WARNING ⚠ DANGER

When using a heat gun, wear gloves. Otherwise, a burn will result.

8. Tap PTO shaft (K) several times using plastic hammer until PTO shaft come out as shown. Tap upper gear case several times using plastic hammer until drive gear with two ball bearings (L) come out as shown.

9. Check gears, PTO shaft, and ball bearings. If worn or rough rotation is found, replace the defective parts as required.

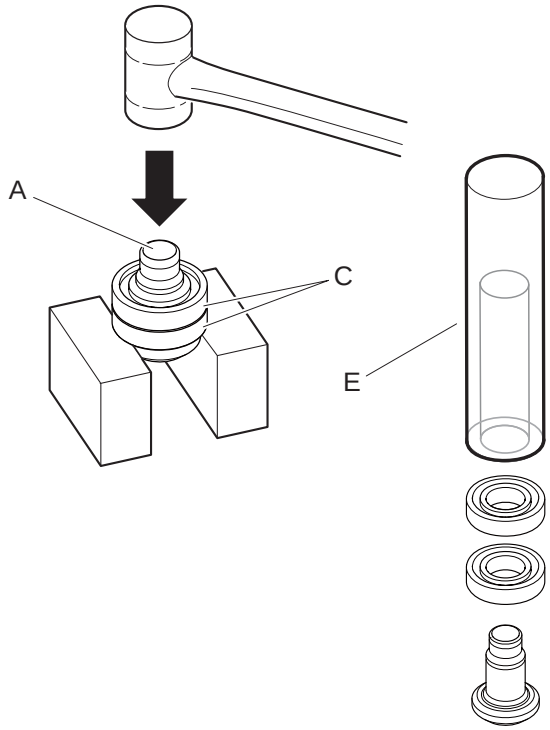
2-5 Replacing gears and ball bearings of upper gear case



NOTE : Replace drive gear (A), driven gear (B) and ball bearings (C) as a set.

Removing drive gear (A) and ball bearings (C):

1. Remove retaining ring (D) using flat tips of snap ring pliers P021-051610.



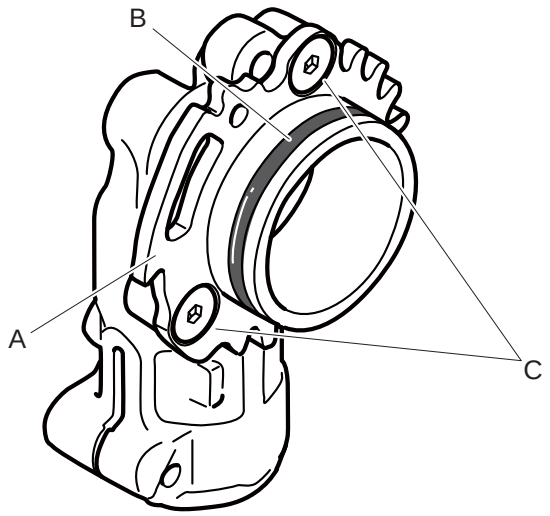
2. Set bearing cage on a vise or equivalent. Then push out drive gear (A) from ball bearings (C) tapping drive gear from back side with a plastic hammer as shown.

Installing drive gear and ball bearings:

3. Install new ball bearings on new drive gear using oil seal tool 897726-21430 (E) one by one.

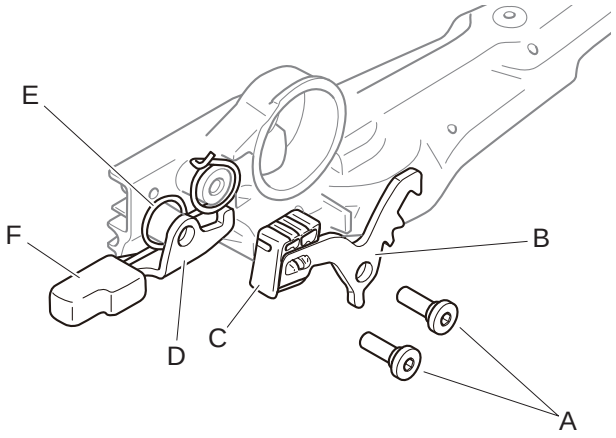
4. Install new retaining ring using flat tips of snap ring pliers P021-051610.

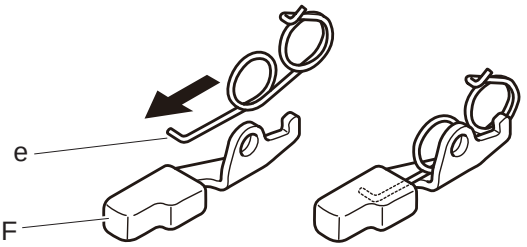
2-6 Replacing latch resseter and o-ring



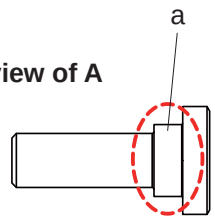
1. If latch resseter (A) and o-ring (B) are defective, replace with a new one. Latch resseter can be removed by removing two screws (C).

2-7 Replacing torsion spring of release lever





Side view of A



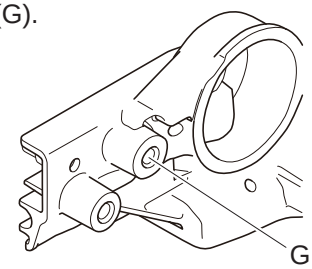
1. Loosen bolts (A) and remove release lever (B) with cap (C).

2. Remove release lever (D) with torsion spring (E) and cap (F).

3. If torsion spring is defective, replace it with new one.

4. Set torsion spring, installing end of torsion spring (e) into the cap (F) as shown.

5. Apply a small amount of thread locking sealant (locktite #242, ThreeBond #1324 or equivalent) in thread hole (G).

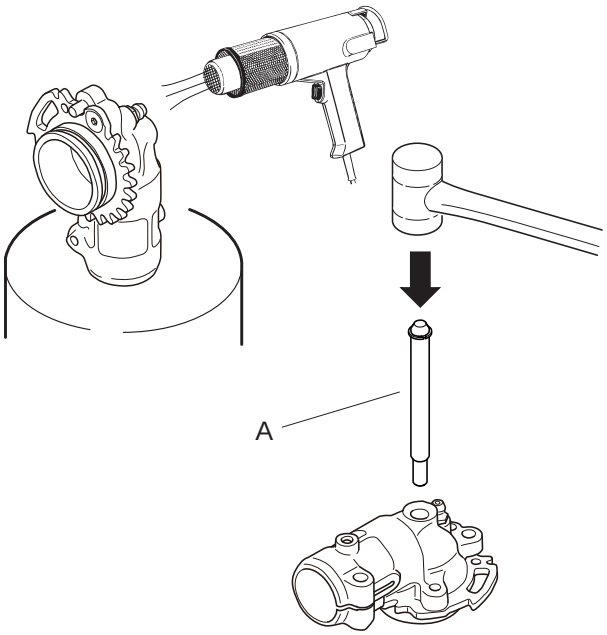


6. Apply a small amount of lithium based grease to neck (a) of bolts (A) as shown.

7. Reassemble the removed parts.

8. Apply a small amount of lithium based grease to contact part of levers.

2-8 Assembling upper gear case



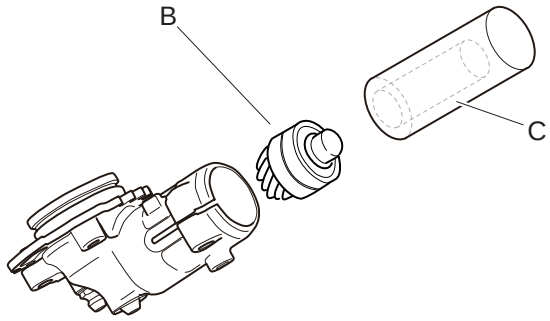
1. Heat up the top of upper gear case with a heat gun as shown.

WARNING ⚠ DANGER

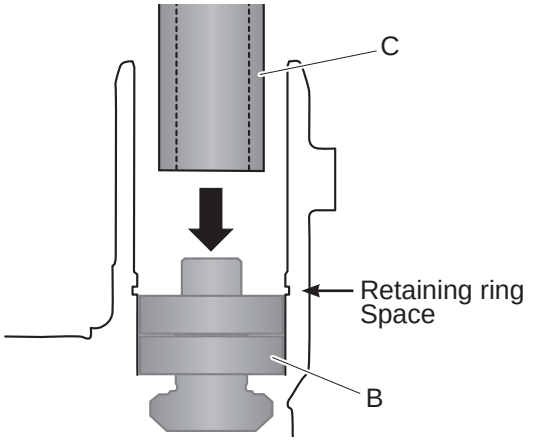
When using a heat gun, wear gloves. Otherwise, a burn will result.

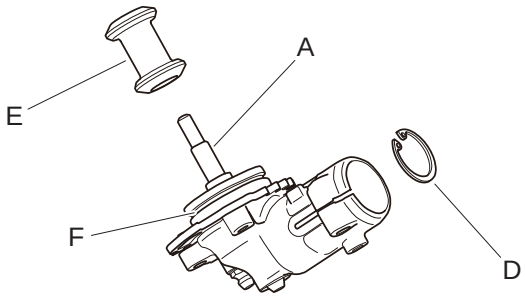
2. Insert PTO shaft (A) into gear case until it bottoms.

2-8 Assembling upper gear case (continued)



3. Insert drive gear assembly (B) into gear case using oil seal tool 22154-96440 (C).

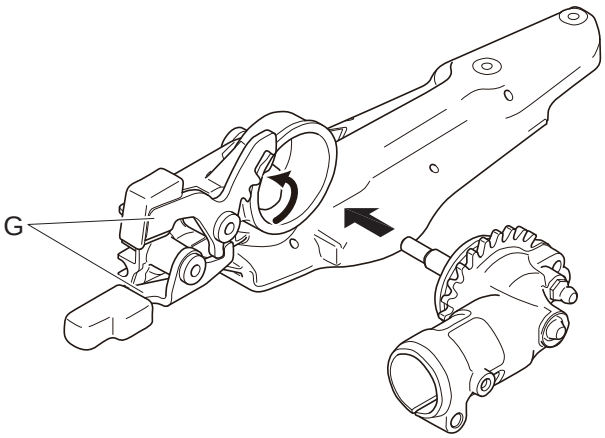




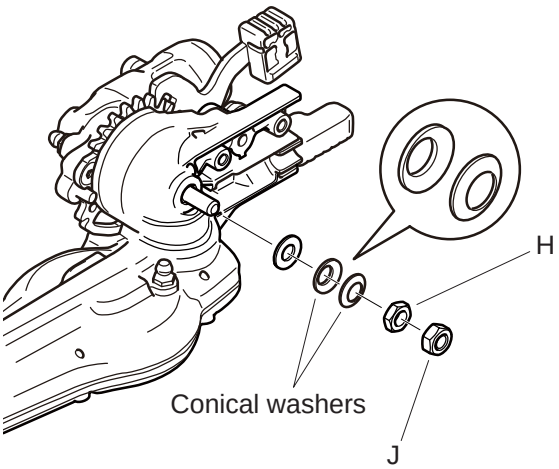
4. Install new retaining ring (D) to gear case bore using needle nose pliers.

5. Install driven gear (E) on PTO shaft (A).

6. Apply a small amount of lithium based grease to all-around of o-ring (F).



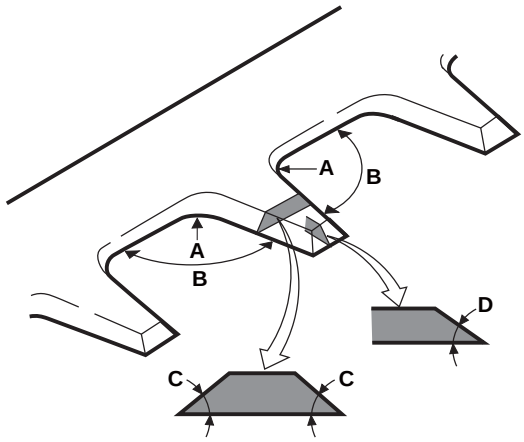
7. Install upper gear case to gear case opening release lever (G) while gripping it.



8. Tighten nut (H) by 10 kgf•cm (1 N•m, 9 in•lbf) after installed three washers as shown, then loosen the nut 1/8 turn (45 degree).

9. Hold nut (H) in position and secure lock nut (J) to 60 kgf•cm (6 N•m, 55 in•lbf) to lock nut (H) in place.

2-9 Sharpening cutter



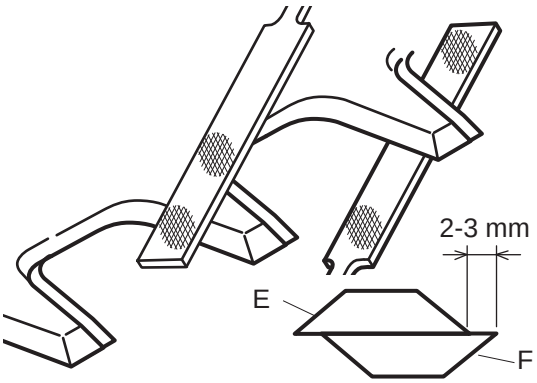
Check cutter sharpness. If cutting edges is dull, re-shape it.

File and reshape the cutter edges as shown.

(A)	8.0 mm (0.31 in) radius
(B)	100 degree (approx.)
(C)	45 degree
(D)	35 degree

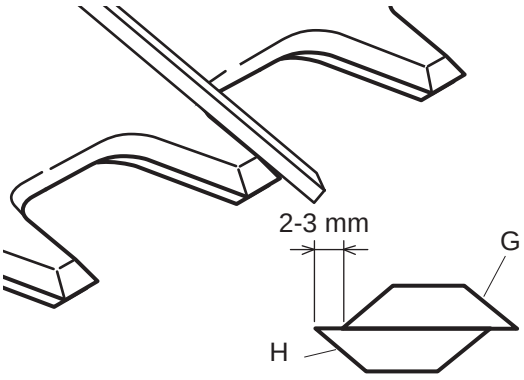
NOTE: Use a disk grinder, abrasive belt, or smooth flat file.

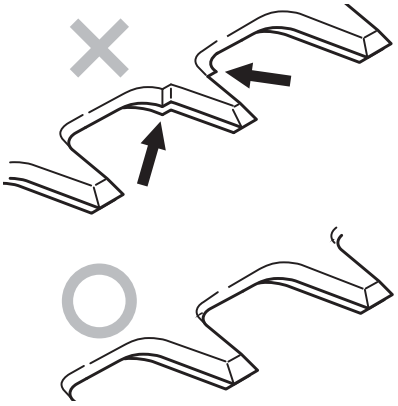
1. Move cutter position as shown.
2. Shapen cutter face (E) and (F).

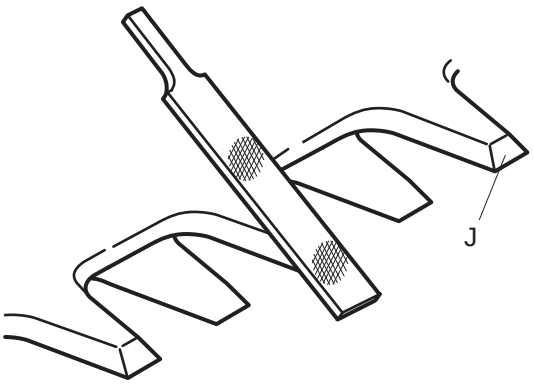


3. Move cutter position as shown.
4. Shapen cutter face (G) and (H).

NOTE: Shapen base of cutters smoothly as shown.



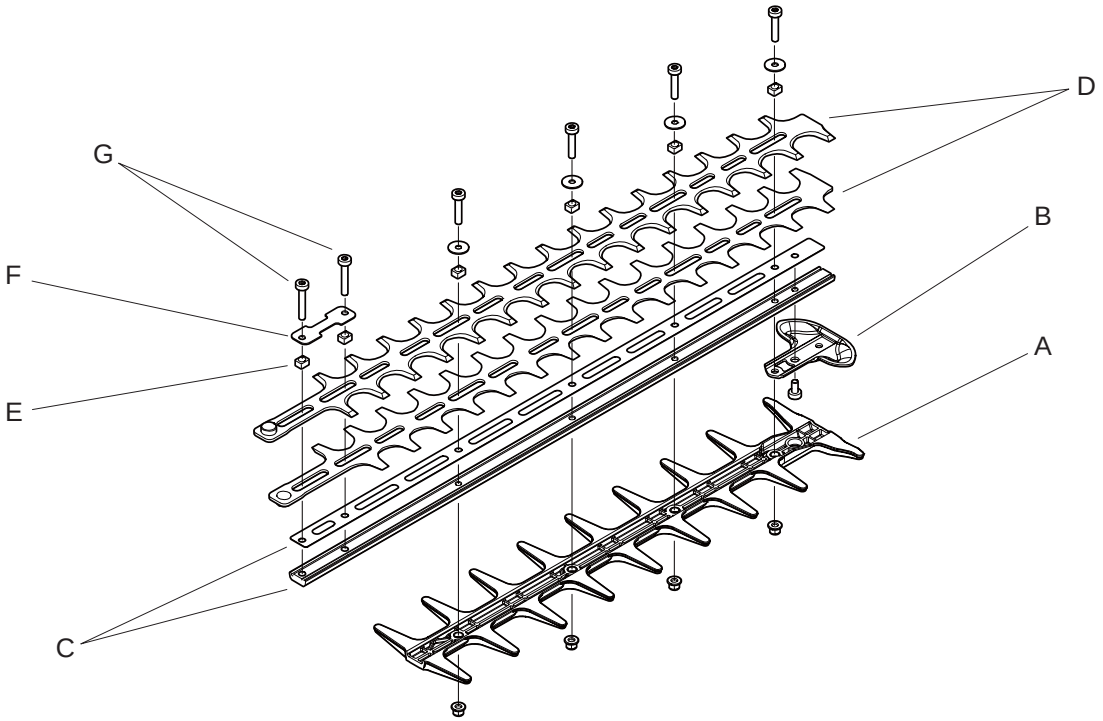


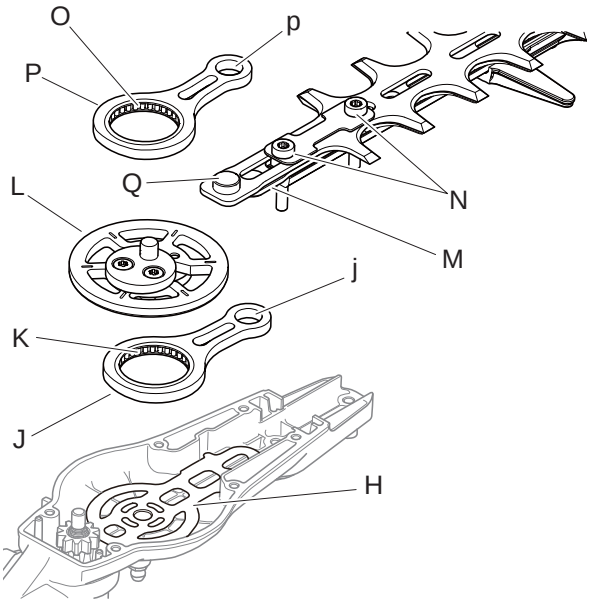


5. Move cutter position as shown.
6. Shapen cutter face (J) as shown.

2-10 Assembling cutters and gear case

1. Preassemble blunt (A), protector (B), cutter supports (C), cutters (D), six peaces of spacer (E) and eye plate (F), with two long bolts (G), other bolts, washers and nuts as shown.





2. Place eye plate (H) to gear housing.

NOTE: Eye plate is bent. Make sure the eye plate is placed with mountain side facing outward - spur gear (L) side - as shown.

3. Assemble connecting rod (J) and needle bearing (K) to spur gear (L), meeting chamfered side of connecting rod to spur gear. Insert shaft of spur gear into gear housing.

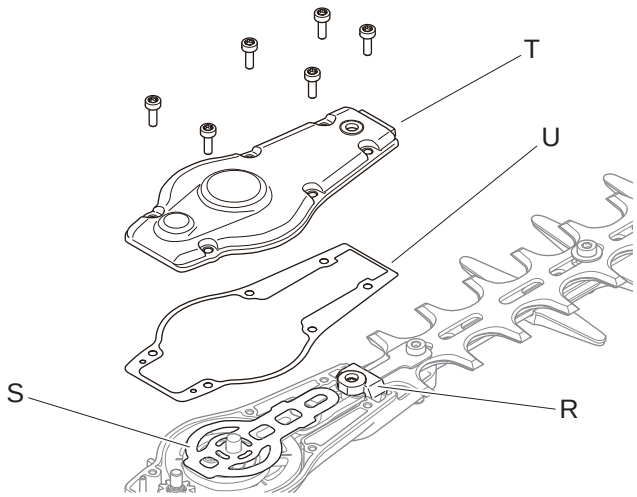
4. Apply a small amount of lithium based grease to the connecting rod small end hole (j).

5. Connect drive end pin of upper cutter (M) to connecting rod hole (j). Install cutter assembly to gear housing with two bolts (N).

6. Apply a small amount of lithium based grease to the connecting rod small end hole (p).

7. Assemble connecting rod (P) and needle bearing (O) to drive end pin (Q) of lower cutter and spur gear (L), meeting chamfered side of connecting rod to spur gear.

2-10 Assembling cutters and gear case (continued)



8. Install seal (R) to gear housing.

9. Fill gear housing with approx. 30 grams (1 oz) of lithium based grease.

10. Apply a small amount of thread locking sealant (locktite #242, ThreeBond #1324 or equivalent) in six thread holes of gear housing.

11. Place eye plate (S), and install gear case cover (T) together with gasket (U).