



# SERVICE DATA

## TRIMMER/BRUSHCUTTER

**ECHO:**

**SRM-3611T**

(Serial number : U47038000001 - U47038999999)

**shindaiwa:**

**T361T**

(Serial number : U47138000001 - U47138999999)

**C361T**

(Serial number : U47238000001 - U47238999999)

### 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.

### CONTENTS

<b>1. SERVICE INFORMATION.....</b>	<b>2</b>
1-1 Specifications .....	2
1-2 Technical data .....	3
1-3 Torque limits .....	4
1-4 Special repairing materials .....	5
1-5 Service limits.....	6
1-6 Special tools.....	7
<b>2. SERVICE HINT FOR VALVE SYSTEM.....</b>	<b>8</b>
2-1 Inspecting and Adjusting valve clearances.....	9
2-2 Inspecting pushrods and cam gear assembly ..	10
2-3 Inspecting intake valve and exhaust valve.....	13
2-4 Inspecting reed valve .....	16

Reference No. **10-36B-00**  
**ISSUED : 202102**



## 1. SERVICE INFORMATION

## 1-1 Specifications

Model		SRM-3611T/L, T361T	SRM-3611T/U, C361T	
Dimensions* <sup>1</sup>	Length	mm (in) 1806 (71.1)		
	Width	mm (in) 340 (13.4)	646 (25.4)	
	Height	mm (in) 363 (14.3)	569 (22.4)	
Dry weight** <sup>2</sup>	kg (lb)	6.1 (13.4)	6.3 (13.9)	
Engine	Type	YAMABIKO, air-cooled, Hybrid 4-stroke, single cylinder		
	Rotation	Counterclockwise as viewed from the output end		
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	36.3 (2.215)	
	Bore	mm (in)	43.0 (1.693)	
	Stroke	mm (in)	25.0 (0.984)	
	Compression ratio		7.8	
Carburetor	Type	Diaphragm, horizontal-draft		
	Model	ZAMA RB-110137B		
	Venturi size-Throttle bore	mm (in)	9.0 - 10.5 (0.354 - 0.413)	
Ignition	Type	CDI (Capacitor discharge ignition) system, Digital Magneto		
	Spark plug	NGK CMR5H		
Exhaust	Muffler type	Spark arrester muffler		
Starter	Type	Automatic rewind with Mechanical decompression		
	Rope diameter x length	mm (in)	3.5 x 750 (0.14 x 29.5)	
Fuel* <sup>3</sup>	Type* <sup>4</sup>	Mixed two-stroke fuel		
	Mixture ratio	50 : 1 (2 %)		
	Gasoline	Minimum 89 octane		
	Two-stroke air cooled engine oil	ISO-L-EGD (ISO/CD13738), JASO FC/FD* <sup>5</sup>		
	Tank capacity	L (U.S.fl.oz.)	Full tank capacity: 0.85 (28.7) Usable capacity: 0.70 (23.7)	
Clutch	Type	Centrifugal, 2-shoe pivot		
Handle	Type	Front	D-Loop type with rubber anti-vibration grip	U-handle with integrated control grip
		Rear	Throttle handle with rubber anti-vibration grip	
Drive shaft	Type	Solid, spline type with 7-tooth		
	Diameter - Length	mm (in)	7.0 - 1540 (0.28 - 60.6)	
	Housing OD - ID	mm (in)	25 - 22 (0.98 - 0.87)	
	(Main pipe) Length	mm (in)	1500 (59.1)	
Gear case	Reduction ratio	1.62		
	Gear tooth	Spiral bevel gear		
	Lubrication	Lithium based grease		
Cutter	Type	Nylon line head Z5 with 3.0 mm SilentSpiral		
	Fastener type, size	mm	Left-hand thread nut, M10 x 1.25 pitch	
	Cutting rotation	Counterclockwise as viewed from top		

**OD:** Outer diameter. **ID:** Inner diameter.

\*<sup>1</sup> Without Nylon line head \*<sup>2</sup> Without Nylon line head and Shield \*<sup>3</sup> Refer to Operator's manual

\*<sup>4</sup> Premixed alkylate fuel for 2-stroke can be used.

\*<sup>5</sup> Do not use poor quality 2-stroke oil to keep operating valves.

1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)	0.74 (7.5) (107) (Decompression system is activated.)	
Clutch engagement speed	r/min	3,800	
Ignition system			
Spark plug gap	mm(in)	0.6 - 0.7 (0.024 - 0.028)	
Spark test	Tester gap with spark plug	mm(in)	4.0 (0.16)
	Tester gap without spark plug	mm(in)	6.0 (0.24)
Secondary coil resistance	Ω	950 - 990	
Pole shoe air gaps	mm(in)	0.3 - 0.4 (0.012 - 0.016)	
Ignition timing	at 2,900 r/min	°BTDC	5
	at 9,000 r/min	°BTDC	40
Carburetor			
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)	0.05 (0.5) (7.0)	
Metering lever height	mm(in)	0.1 - 0.25 (0.004 - 0.01) lower than diaphragm seat	
Limiter cap / plug		Limiter plug P/N P005-001270	
Tool to adjust mixture needles		Screwdriver 2.5 mm	
Carburetor adjustment			
Cutting head preparation	Nylon line head	Z5	
	Line length* <sup>1</sup>	230 mm without shield	
1) Initial setting	H mixture needle	turn out	1 1/4
	L mixture needle	turn out	1 3/4
	Throttle adjust screw	turn out* <sup>2</sup>	9 3/4
Engine warm-up	Idle - WOT : Total	sec.	10 - 50 : 180
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed* <sup>3</sup>
3) Set idle maximum speed w/ TAS		r/min	3,500
4) Set idle speed			2,700
	by turning L mixture needle CCW	r/min	
5) Set idle speed w/ TAS		r/min	2,900
6) Confirm maximum WOT speed			Confirm maximum WOT speed just before the max. WOT speed drops, turning H mixture needle clockwise. Maximum WOT speed: approx. 9,000 r/min If the WOT speed does not obtain above speed, adjust nylon line length.
7) WOT setting		turn	Then turn H mixture needle CCW by : 5/8
8) Verify final engine speed with standard equipment			Idle: 2,600 - 3,300 WOT: 9,900 - 10,300 Line length * <sup>1</sup> : 200 mm (Cut by shield knife)
9) 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

\*<sup>1</sup> From eyelet on nylon head

\*<sup>2</sup> Turn TAS clockwise until its head touches boss. Then turn TAS counterclockwise.

\*<sup>3</sup> 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 pulley	M8	70 - 100	7 - 10	60 - 90	
	Starter case	M5*	20 - 35	2 - 3.5	17 - 30	
Ignition system	Flywheel (Magneto rotor)	M8	140 - 170	14 - 17	120 - 150	
	Ignition coil	M5*	30 - 50	3 - 5	26 - 45	
	Fan cover	M5	40 - 60	4 - 6	35 - 52	
	Spark plug	M10	100 - 150	10 - 15	87 - 130	
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	26 - 40	
	Intake insulator	M4*	25 - 35	2.5 - 3.5	22 - 30	
	Fuel tank with stand	Fan cover side	M5*	40 - 60	4 - 6	35 - 52
		Starter side	M5*	30 - 50	3 - 5	26 - 45
Clutch	Clutch shoe	M6	70 - 110	7 - 11	60 - 95	
Cylinder cover		M5*	20 - 35	2 - 3.5	17 - 30	
Engine	Crankcase/Cylinder	M5*	50 - 70	5 - 7	45 - 60	
	Rocker arm cover	M4	20 - 35	2 - 3.5	17 - 30	
	Cam gear cover	M4	30 - 40	3 - 4	26 - 35	
	Muffler	M5	70 - 110	7 - 11	60 - 95	
	Muffler cover	M5*	20 - 35	2 - 3.5	17 - 30	
	Reed valve/Crankcase	M3*	8 - 12	0.8 - 1.2	7 - 10	
Other	Cutter fastener	LM10	280 - 320	28 - 32	245 - 280	
	Handle fixture (See <b>NOTE</b> below)	M5**	30 - 40	3 - 4	26 - 35	
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 - 13	

LM: Left hand thread

\* Apply thread locking sealant. (See next page)

\*\* Pre-coated bolt: If the coat is peeled off, replace new one or apply thread locking sealant. (See next page)

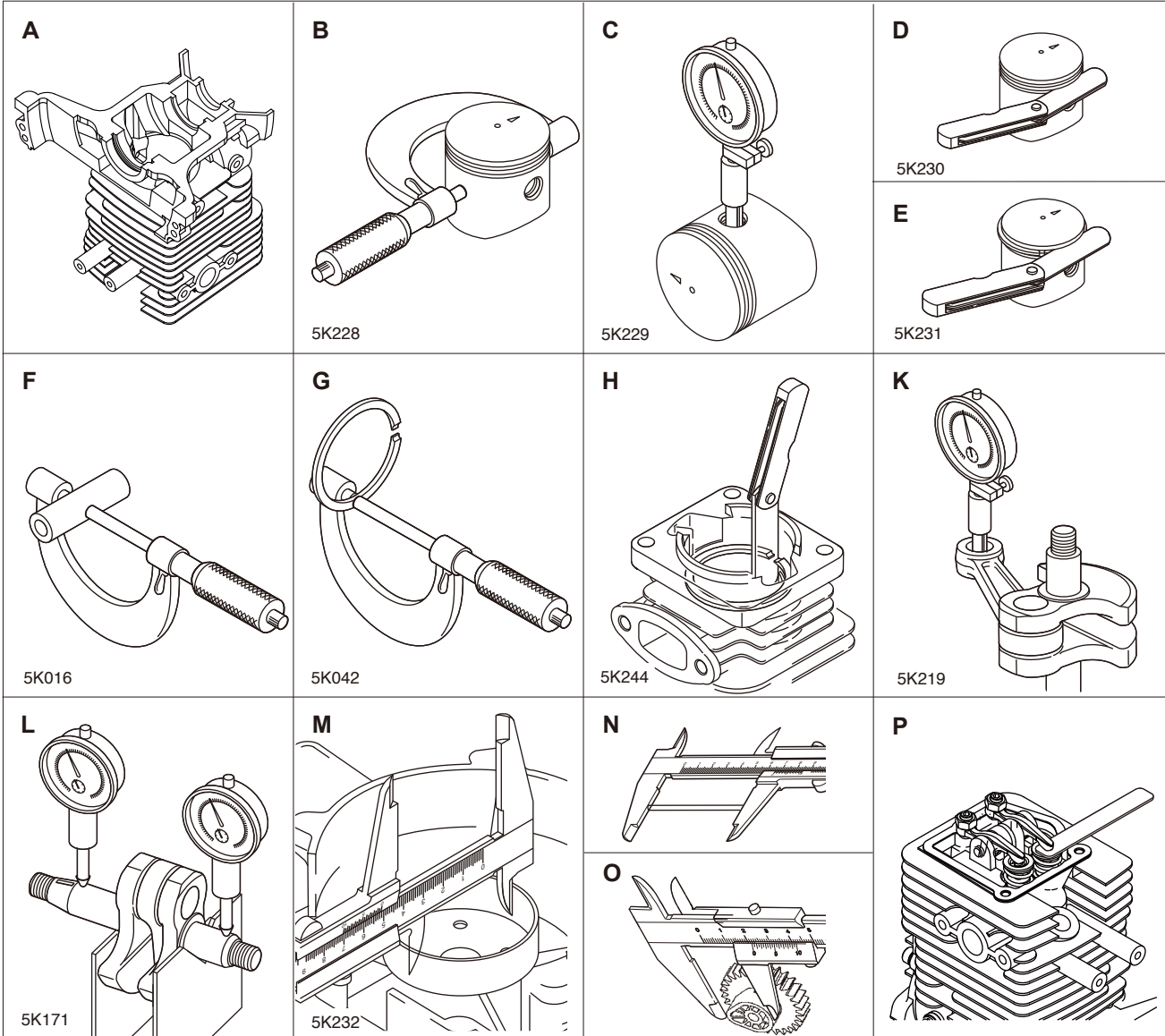
**NOTE:** After tightening the bolts, turn the bolts counterclockwise 1 3/4 turns.

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	
Liquid gasket	Crankcase seams	ThreeBond 1207D (P/N X686-000000)
Thread locking sealant	Starter case	Loctite #243, ThreeBond #1360 or equivalent
	Ignition coil	
	Intake insulator	
	Fuel tank with stand	
	Cylinder cover	
	Crankcase/Cylinder	
	Muffler cover	
	Reed valve/Crankcase	
	Handle fixture (re-use*)	ThreeBond #1344J or equivalent

\* 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.

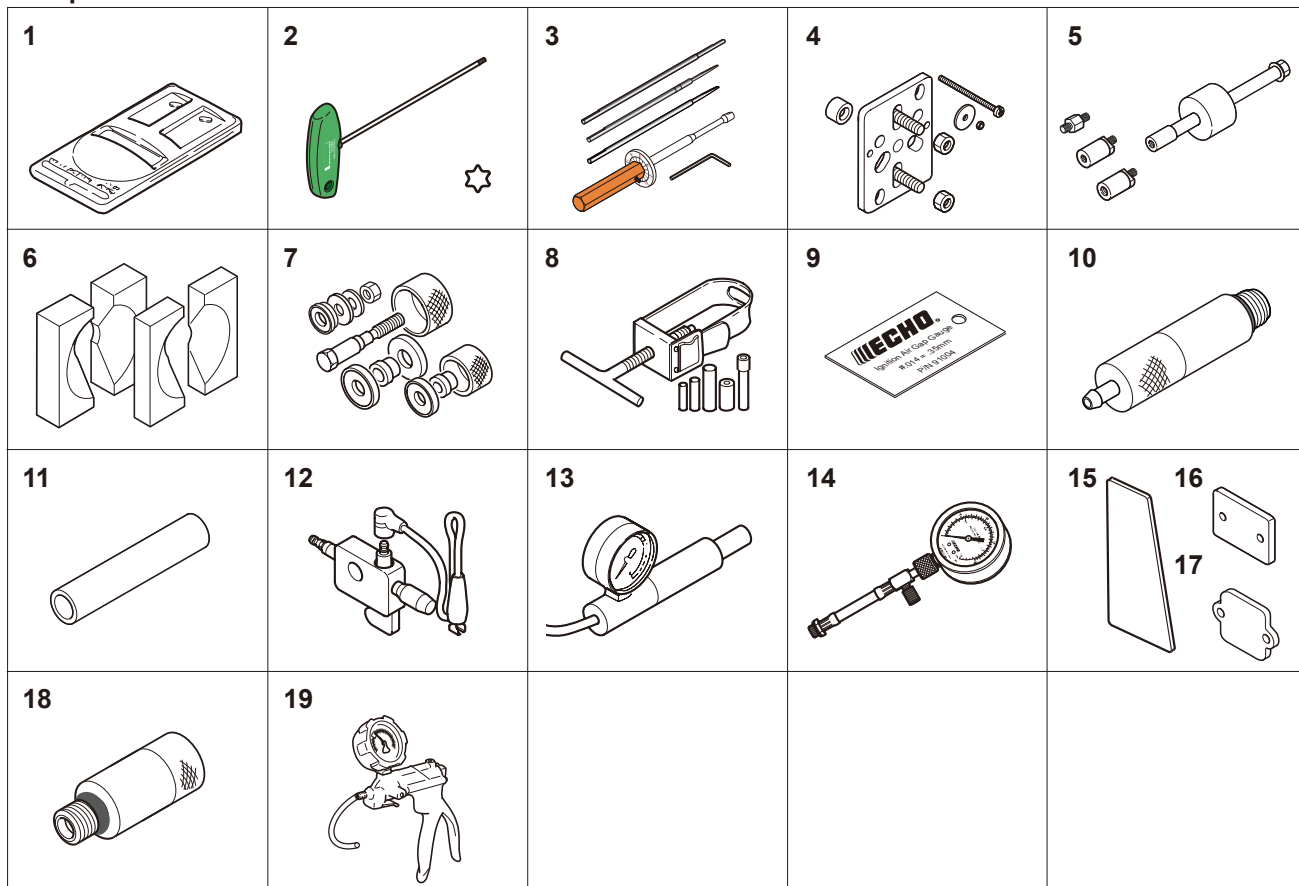
#### 1-5 Service limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminium can be seen	
B	Piston outer diameter	Min.	42.90 (1.689)
C	Piston pin bore	Max.	10.030 (0.3949)
D	Piston ring groove	Max.	1.3 (0.051)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	11.98 (0.4717)
G	Piston ring width	Min.	1.15 (0.045)
H	Piston ring end gap	Max.	0.5 (0.02)
K	Con-rod small end bore	Max.	14.025 (0.5522)
L	Crankshaft runout	Max.	0.03 (0.001)
M	Clutch drum bore	Max.	71.5 (2.81)
N	Push rod length	Min.	56.9 (2.240)
O	Cam gear height	Min.	22.9 (0.902)
P	Valve clearance	0.1 - 0.3 (0.004 - 0.012)*, Adjustment : 0.08 (0.003)*	

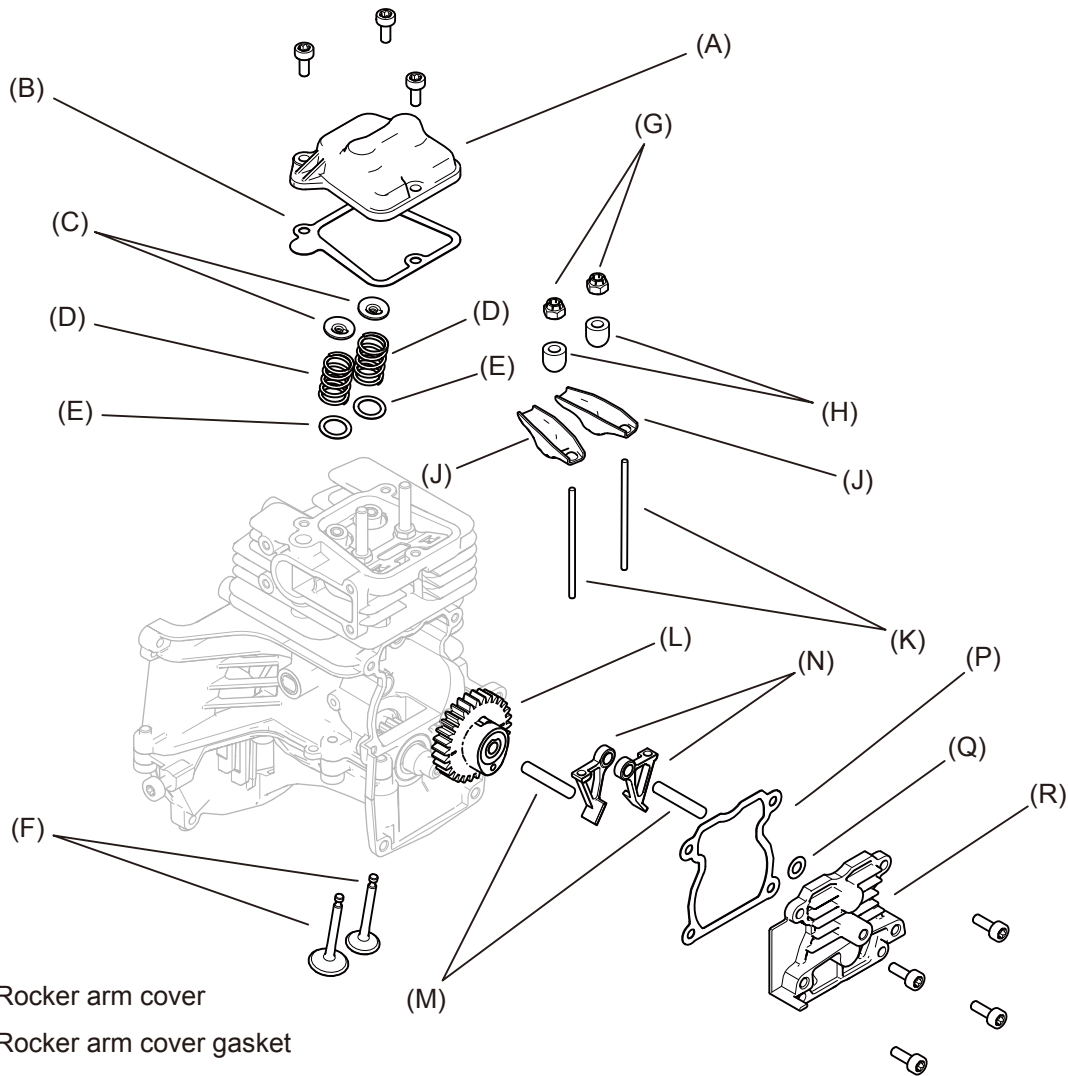
\*Inspect valve clearance when pulling the stater is felt heavy.

1-6 Special tools



Key	Part Number	Description	Reference
1	897802-33330	Tachometer PET-1000R	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	Y089-000111	Puller	Removing magneto rotor
5	897603-23030	PTO shaft puller	Removing PTO shaft
6	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
7	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
8	897702-30131	Piston pin tool	Removing and installing piston pin (Use 8mm dia. adapter)
9	91004	Module air gap gauge	Adjusting pole shoe air gaps
10	A131-000160	Pressure connector	Testing crankcase and cylinder leakage
11	897726-09130	Oil seal tool	Installing crankcase oil seals
12	897800-79931	Spark tester	Checking ignition system
13	897803-30133	Pressure tester	Testing carburetor and crankcase leakages
14	91037	Compression gauge	Measuring cylinder compression
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	P021-051690	Adapter	Measuring cylinder compression (with P/N: 91037)
19	91149	Pressure / vacuum tester	Testing crankcase / cylinder leakages

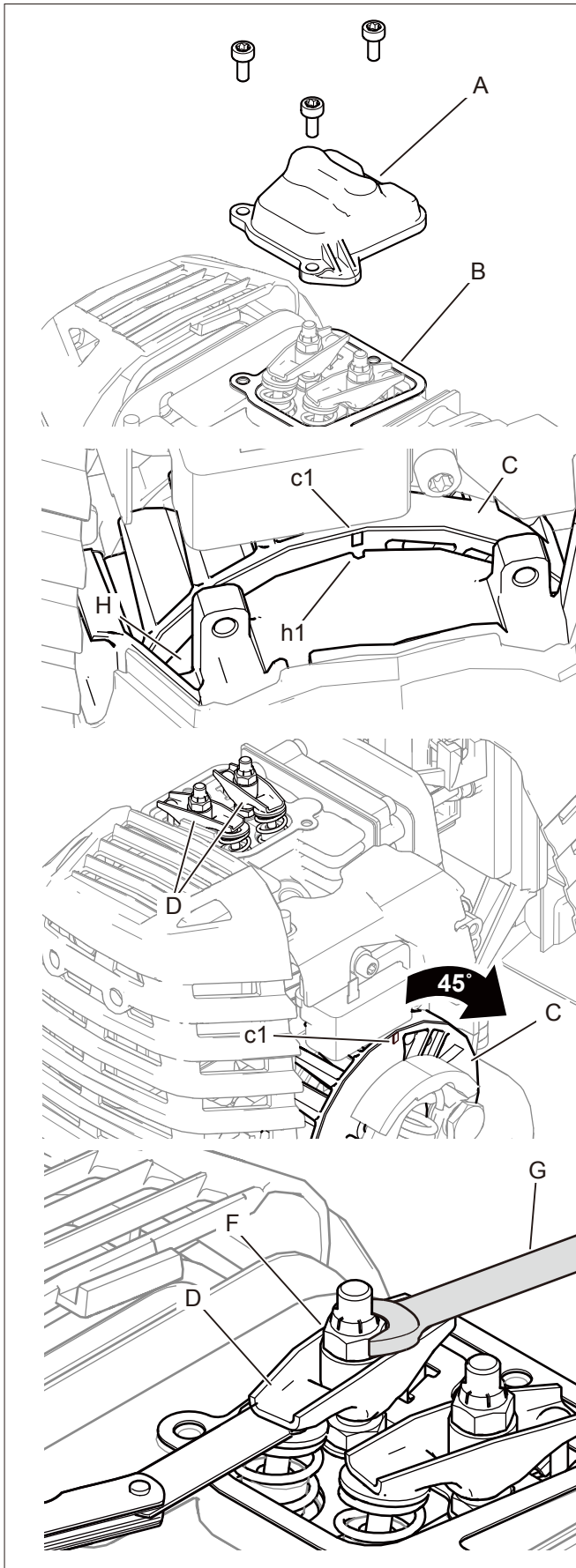
2. SERVICE HINT FOR VALVE SYSTEM



- ( A ) Rocker arm cover
- ( B ) Rocker arm cover gasket
- ( C ) Retainers
- ( D ) Valve springs
- ( E ) Plates
- ( F ) Valves
- ( G ) Nuts
- ( H ) Collars
- ( J ) Rocker arms
- ( K ) Pushrods
- ( L ) Cam gear assembly
- ( M ) Rollers
- ( N ) Lifters
- ( P ) Cam gear cover gasket
- ( Q ) Washer
- ( R ) Cam gear cover



2-1 Inspecting and Adjusting valve clearances



If pulling starter grip is felt heavy or power is low, inspect valve clearances.

Inspect and adjust valve clearances when engine is cold.

1. Remove cylinder cover and spark plug.
2. Remove rocker arm cover (A) with three bolts.

**NOTE:** Removing gasket (B) is not needed. If the gasket (B) is damaged, replace with new one.

**Inspecting**

1. Set the piston to top dead center of compression stroke in the following steps:

- Rotate magneto rotor (C) clockwise until mark (c1) aligns with edge (h1) on fan cover (H).

**NOTE:** If fan cover has been removed, rotate magneto rotor (C) clockwise until mark (c1) is on the top.

- Then, rotate magneto rotor clockwise 45 degrees, observing rocker arms (D).

- When rocker arms (D) are moved, the piston was set to top dead center of exhaust stroke.

- When rocker arms (D) are not moved, the piston was set to top dead center of compression stroke.

2. Insert feeler gauge between rocker arm (D) and end of valve stem as shown.

Standard : 0.1 - 0.3 mm (0.004 - 0.012 in)

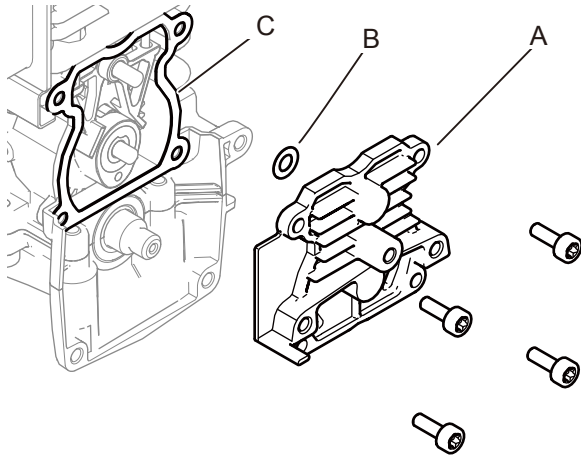
3. If not, adjust the clearance in the following steps.

**Adjusting**

1. Valve clearance is adjusted by nut (F).
2. Set clearance to 0.08 mm (0.003 in) using spanner (G) and feeler gauge.

**NOTE:** Do not use power tool to tighten nut (F).

## 2-2 Inspecting pushrods and cam gear assembly

**Removing**

1. Set the piston to top dead center of compression stroke (Refer to 2-1 Inspecting and Adjusting valve clearances).

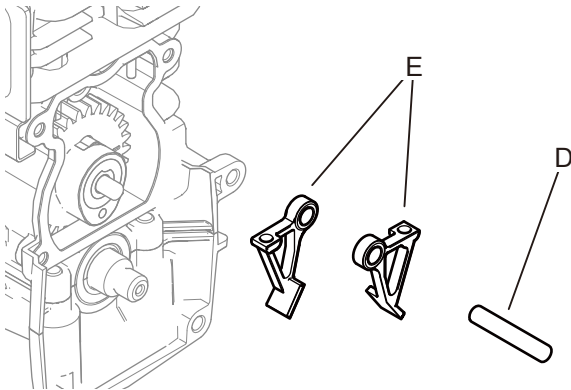
2. Remove starter assembly.

3. Remove cam gear cover (A) with four bolts.

4. Remove washer (B).

**NOTE:** Washer (B) may be stuck on cam gear cover (A) inside by oil residue. Take care not to lost.

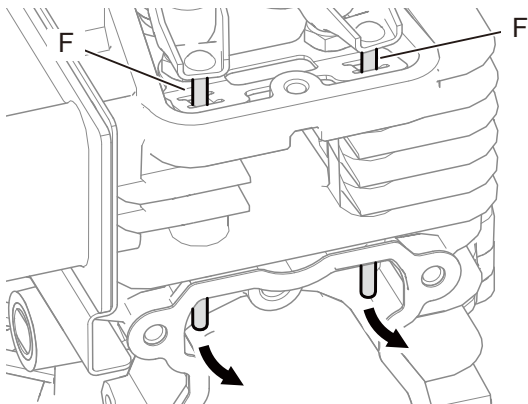
**NOTE:** Removing gasket (C) is not needed. If the gasket (C) is damaged, replace with new one.



5. Remove roller (D) and lifters (E).

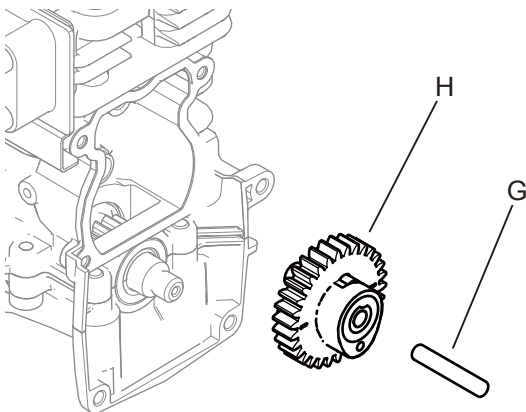
6. If they are damaged or cracked, replace with new ones.

**NOTE:** Lifters (E) for intake valve and exhaust valve are same parts, but the lifters have to be re-installed on each side. Because the wear volumes may be different.



7. Pull out pushrods (F).

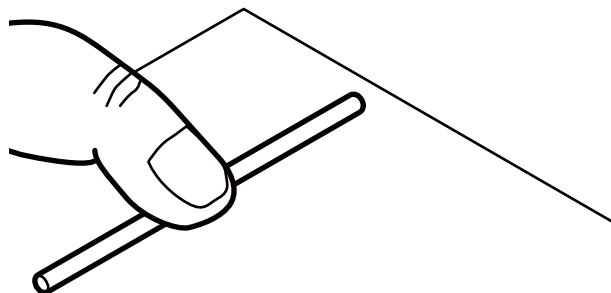
**NOTE:** Do not mix pushrods (F) for intake valve and exhaust valve.



8. Remove roller (G) and cam gear assembly (H).

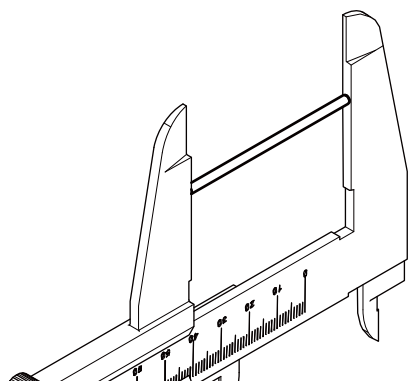
**NOTE:** Do not mix roller (D) and roller (G).

2-2 Inspecting pushrods and cam gear assembly (continued)



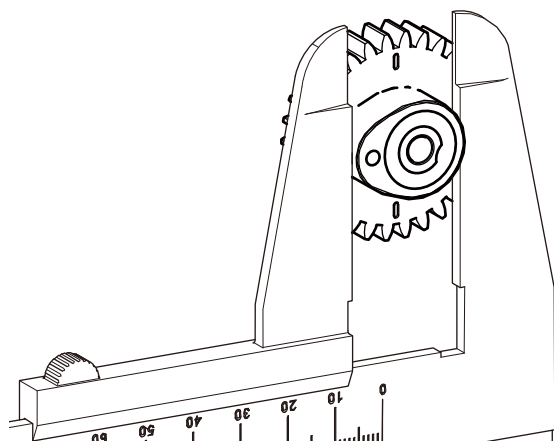
**Inspecting**

1. Check pushrod ends for wear.
2. Roll over on flat surface for straightness.
3. If the pushrod is wear or bent, replace with new one.



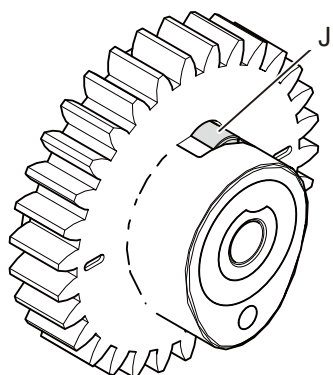
4. Measure pushrod length using a caliper.
5. If the length is out of the following range, replace with new one.

Standard: 56.9 - 57.0 mm (2.240 - 2.244 in)



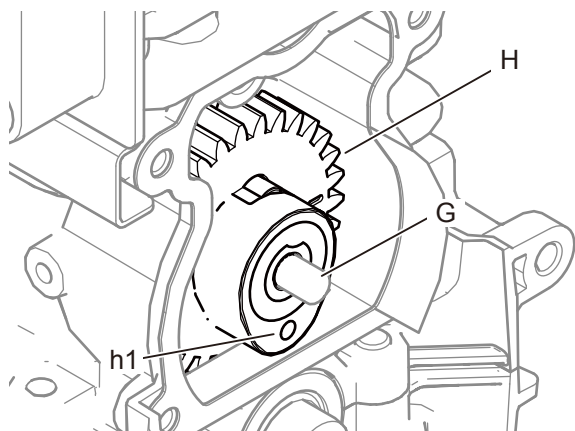
6. Check cam gear assembly for wear.
7. If the cam gear assembly is wear, replace with new one.
8. Measure cam height using a caliper.
9. If the height is out of the following range, replace with new one.

Standard: 22.86 - 22.96 mm (0.900 - 0.904 in)



10. Inspect decompression system. Check movement of decomp weight (J) by pushing it. If the decomp weight (J) is difficult to move or worn, replace with new one.

## 2-2 Inspecting pushrods and cam gear assembly (continued)

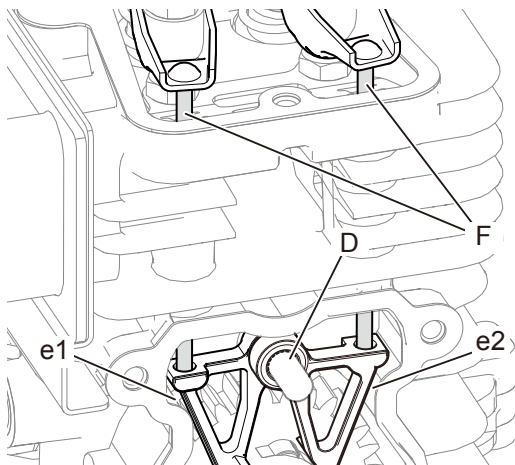
**Installing**

**Coat cam gear assembly, rollers and pushrods with two-stroke oil before installing.**

1. Install cam gear assembly (H).

**NOTE:** Cam lobe (h1) must be faced downward as shown.

3. Install roller (G).



4. Install pushrods (F).

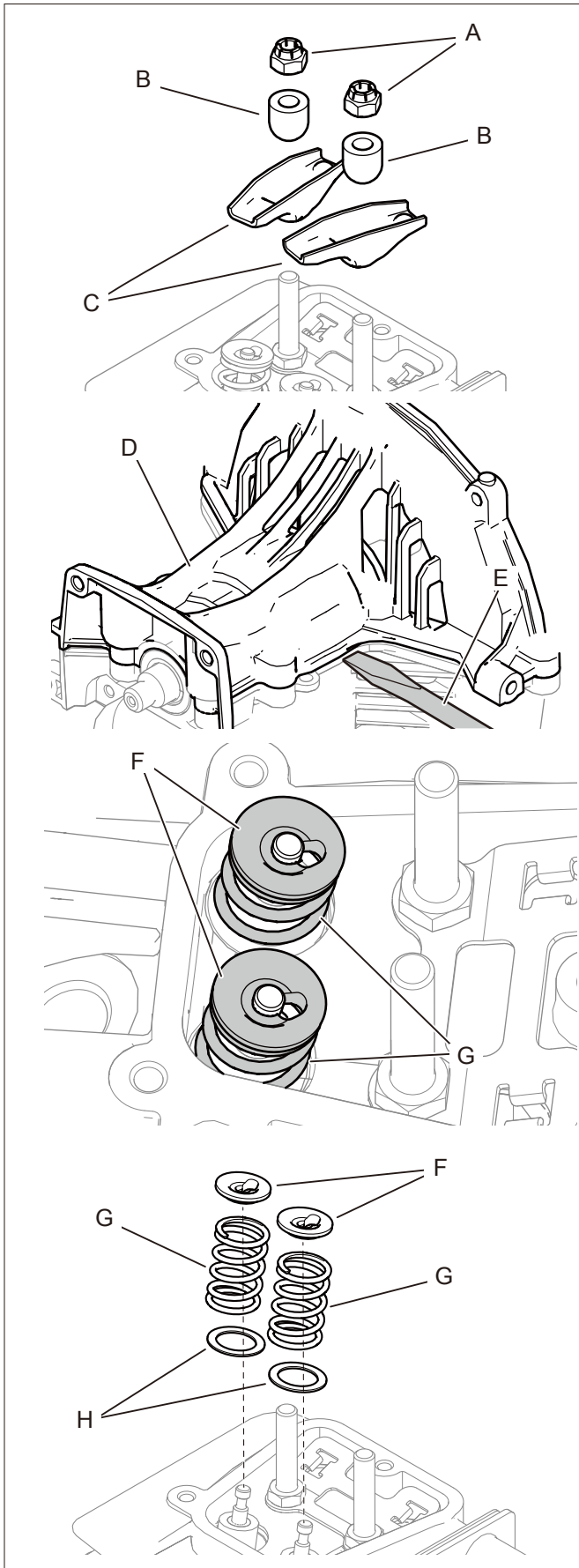
5. Install intake valve side lifter (e1) first, and then install exhaust valve side lifer (e2).

**NOTE:** Make sure the pushrod is properly seated in the rocker arm and lifter.

6. Install roller (D).

7. Assemble all removed parts.

2-3 Inspecting intake valve and exhaust valve



Removing

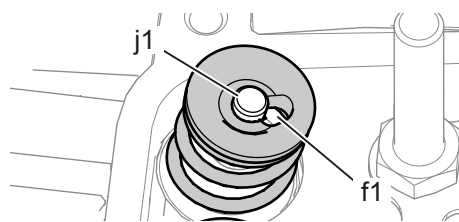
1. Remove pushrods, lifters and cam gear assembly (Refer to "2-2 Inspecting pushrods and cam gear").
2. Remove nuts (A), collars (B) and rocker arms (C).

3. Remove crankcase (D) with eight bolts.

**NOTE:** If it is hard to remove crankcase (D), insert flat head screwdriver (E) to the groove as shown.

4. Remove crankshaft with piston.

5. Press retainers (F) with valve springs (G) down and slide them to locate valve stem (j1) in the large hole (f1).



6. Remove retainers (F), valve springs (G) and plates (H).

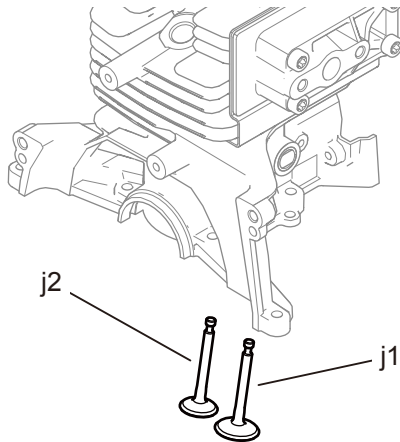
**NOTE:** Do not mix valve springs (G) for intake valve and exhaust valve.

7. If they are damaged, replace with new ones.

**WARNING**  **DANGER**

Wear eye protection and take care when removing valve spring, because valve spring may pop up suddenly and cause injury to eyes and body.

## 2-3 Inspecting intake valve and exhaust valve (continued)

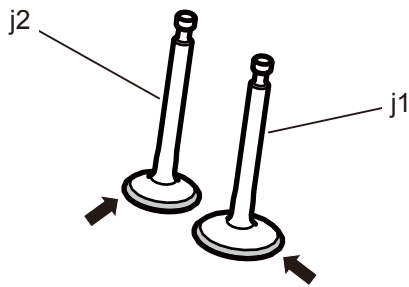


8. Remove intake valve (j1) and exhaust valve (j2) from cylinder.

**Inspecting**

1. If carbon and/or dust are deposited on the valves, clean with a wooden scraper.
2. If the valves are damaged or deformed, replace with new ones.
3. Inspect cylinder combustion chamber and valve seats. If carbon is deposited, clean with a wooden scraper. If the cylinder is damaged, replace as a set of crankcase and cylinder.

**NOTE:** Never use metal scraper to avoid damage.

**Installing**

1. Install intake valve (j1) and exhaust valve (j2) into cylinder.

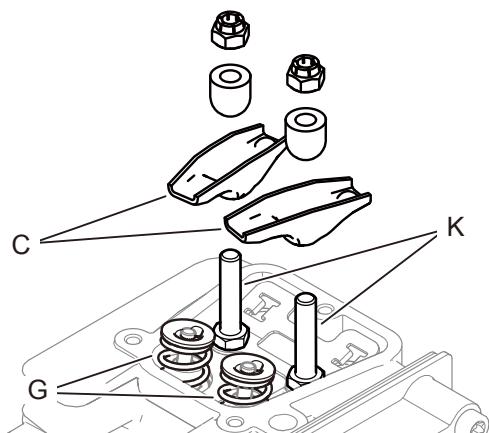
**NOTE:** Intake valve (j1) is larger than exhaust valve (j2).

**NOTE:** Take care not to damage the flanges.



2. Pack cloth or paper towel tightly into cylinder bore to keep the valves (j1) and (j2) on closed position.

2-3 Inspecting intake valve and exhaust valve (continued)

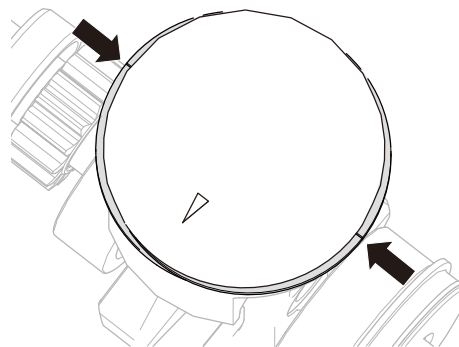
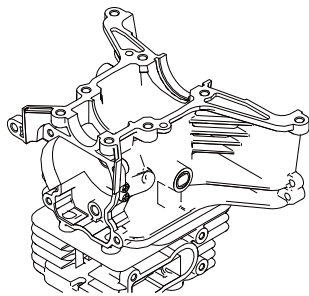
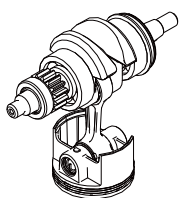


3. Install plates, valve springs and retainers.
4. Apply 2-stroke oil on valve springs (G).
5. Apply 2-stroke oil on under surface of rocker arms (C).
6. Apply 2-stroke oil on stud bolts (K).
7. Install rocker arms (C) and collars.
8. Tighten nuts (A).

**NOTE:** Do not use power tool to tighten nuts (A).

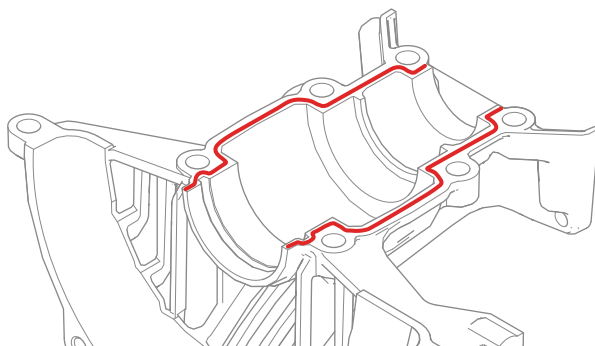
9. Apply 2-stroke oil inside of cylinder.
10. Install crankshaft with piston into the cylinder.

**NOTE:** Make sure that the ends of the piston rings face 180 degrees opposite side of each other.



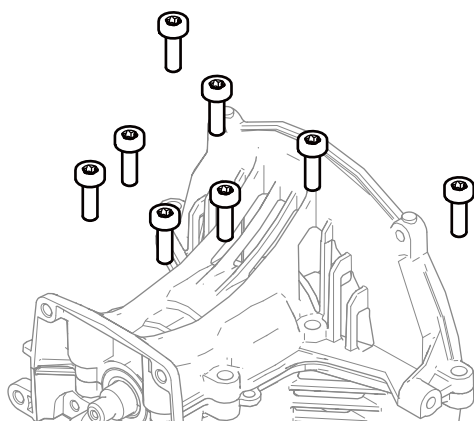
11. Remove sealant residue on mating surface of crankcase and cylinder using wooden or plastic scraper, or chemical gasket remover.

12. Apply ThreeBond #1207D (P/N X686-000000) on mating surface of crankcase as shown.



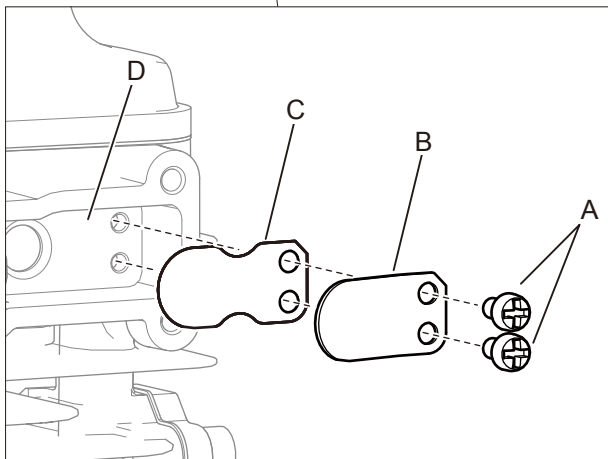
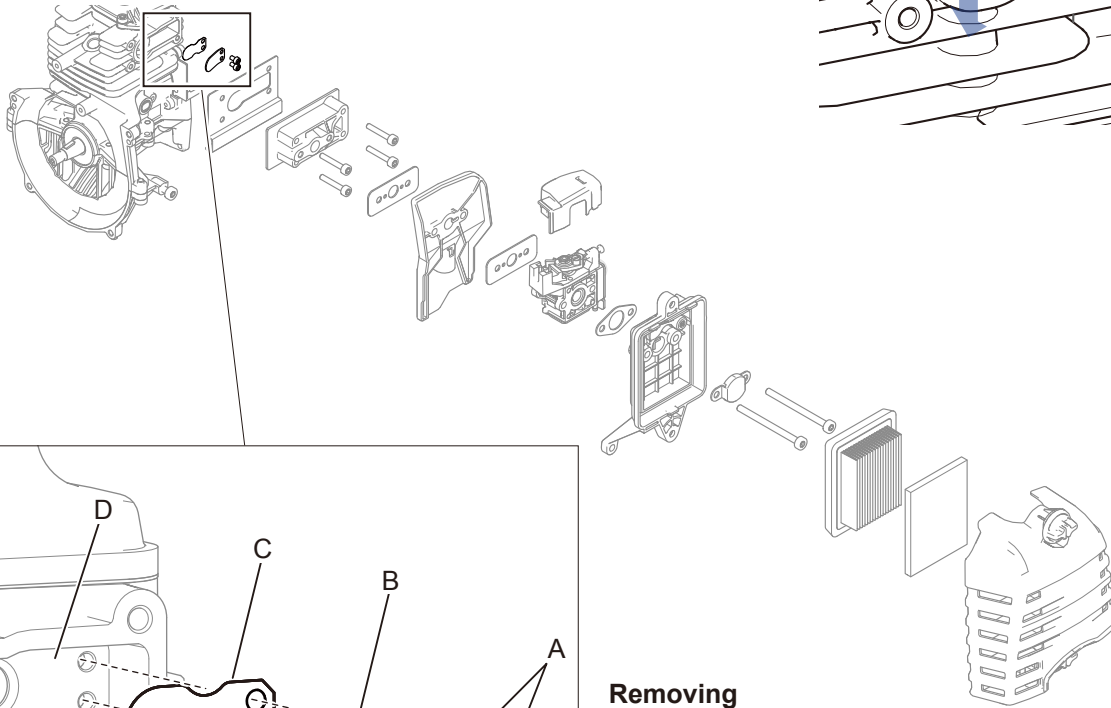
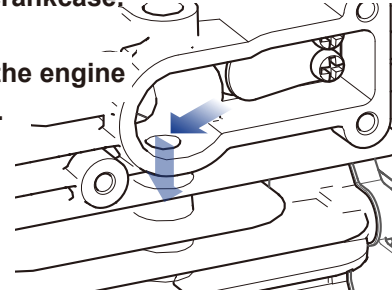
13. Set the crankcase on the cylinder.
14. Apply thread locking sealant (ThreeBond #1360) to eight bolts and fasten them.

15. Adjust valve clearances (Refer to "2-1 Inspecting and Adjusting valve clearances").



## 2-4 Inspecting reed valve

This reed valve controls flow of air-fuel mixture for lubrication in crankcase. Improper repair leads to the lack of the lubrication. Inspect reed valve only if the reed valve is obviously damaged or the engine is not working well after inspecting all items on the previous page.

**Removing**

1. Remove two bolts (A).
2. Remove valve guide (B) and reed valve (C).

**Inspecting**

1. Inspect valve guide (B) height.  
Standard: 3.5 - 3.9 mm (0.14 - 0.15 in)
2. If not, replace the valve guide with new one.
3. If there is gap between reed valve (C) and cylinder surface (D) by dust or deposit, clean with cloth or paper towel.
4. If reed valve (C) is deformed, replace with new one.

**Installing**

1. Corners on valve guide (B) and reed valve (C) are cut as shown. Install them, matching the corners each other.
2. Assemble all removed parts.

