



SERVICE DATA

HEDGE TRIMMER

ECHO :
HCA-236ES-LW HCAS-236ES-LW
shindaiwa :
AH236S-LW AHS236S-LW

(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.

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Reference No. **15-21F-02**

REVISED : 201906

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1 SERVICE INFORMATION

1-1 Specifications

Models			HCA-236ES-LW AH236S-LW	HCAS-236ES-LW AHS236S-LW	
Dimensions	Length*	mm (in)	2407 (94.8)	1749 (68.9)	
	Width	mm (in)	246 (9.7)		
	Height	mm (in)	235 (9.3)		
Dry weight* ¹		kg (lb)	6.2 (13.7)	5.9 (13.0)	
Engine	Type		YAMABIKO, air-cooled, two-stroke, single cylinder		
	Rotation		Counterclockwise as viewed from the output end		
	Displacement	cm ³ (in ³)	21.2 (1.294)		
	Bore	mm (in)	32.2 (1.268)		
	Stroke	mm (in)	26.0 (1.024)		
	Compression ratio		6.9		
Carburetor	Type		Diaphragm, horizontal-draft		
	Model		ZAMA RB-K113		
	Venturi size - Throttle bore	mm (in)	9.0 - 10.5 (0.35 - 0.41)		
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 830 (0.12 x 32.7)		
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	L (U.S.fl.oz.)	Full tank capacity: 0.44 (14.9), Usable capacity: 0.38 (12.8)		
Clutch	Type		Centrifugal, 2-shoe pivot		
Handle	Type	Front	Rubber anti-vibration grip	D-Loop type with rubber anti-vibration grip	
		Rear	Rubber anti-vibration grip		
Drive shaft	Type		Flexible		
	Inner shaft	Diameter	mm (in)	6.15 (0.24)	
		Length	mm (in)	1522 (59.9)	864 (34.0)
	Housing (Main pipe)	OD - ID	mm (in)	25.0 - 22.0 (0.98 - 0.86)	
		Length	mm (in)	1504 (59.2)	844 (33.2)
Gear case	Reduction ratio		5.63		
	Gear tooth		Spiral bevel gear		
	Lubrication		Lithium based grease		
Cutter	Type		Double reciprocating, Double edge blade		
	Effective length	mm (in)	519 (20.4)		
	Pitch	mm (in)	30 (1.2)		
	Height	mm (in)	20 (0.8)		
	Thickness	mm (in)	2.1 (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)		0.9 (9.1) (130)
Clutch engagement speed	r/min		4,150
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 r/min	°BTDC	17
	at 8,000 r/min	°BTDC	33
Carburetor			
Test Pressure, minimum	MPa (kgf/cm ²) (psi)		0.05 (0.5) (7.0)
Metering lever height	mm(in)		0.1 - 0.25 (0.004 - 0.01) lower than diaphragm seat
Limiters cap / plug			Limiters 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 5/8
L mixture needle	turn out		3 3/4
Throttle adjust screw	turn in*1		5 1/2
Engine warm-up	Idle - WOT : Total	sec.	10 - 50 : 180
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed*2
3) Set idle maximum speed w/ TAS		r/min	4,300
4) Set idle speed by turning L mixture needle CCW		r/min	3,000
5) Find WOT maximum speed			Pull throttle trigger to WOT, and after stabilizing engine WOT speed, adjust H mixture needle to maximum WOT speed
6) WOT setting		turn	Turn H mixture needle CCW by: 3/8
7) Verify final engine speed with standard equipment		r/min	Idle: 2,500 - 3,500 WOT: 10,500 - 11,700
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 Set Throttle adjust screw to the point that its tip just contacts throttle plate before initial setting.

*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*	30 - 45	3 - 4.5	25 - 40
Ignition system	Magneto rotor (Flywheel)	M8	160 - 200	16 - 20	140 - 175
	Ignition coil	M4	35 - 50	3.5 - 5	30 - 44
	Fan cover	M4	30 - 45	3 - 4.5	25 - 40
	Spark plug	M14	130 - 170	13 - 17	112 - 150
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	25 - 40
	Intake insulator	M5*	35 - 45	3.5 - 4.5	30 - 40
	Fuel tank with stand	M5*	40 - 60	4 - 6	35 - 55
Clutch	Clutch shoe	M8	160 - 200	16 - 20	140 - 175
Cylinder cover	Fan cover side	M5	25 - 45	2.5 - 4.5	22 - 40
	Starter side [†]	M5	30 - 40	3 - 4	25 - 35
Engine	Crankcase	M5**	70 - 110	7 - 11	60 - 95
	Cylinder	M5**	70 - 110	7 - 11	60 - 95
	Muffler	M5*	90 - 110	9 - 11	80 - 95
	Exhaust guide	M4	15 - 30	1.5 - 3	13 - 25
	Muffler cover	Fan cover side	M5*	25 - 45	2.5 - 4.5
Starter side [†]		M5	30 - 40	3 - 4	25 - 35
Cutter	Cutter bolts	M6	See NOTE below		
	Cutter nuts	M6	See NOTE below		
	Gear case cover	M4	40 - 50	4 - 5	35 - 44
M5		90 - 110	9 - 11	80 - 95	
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	

[†] Tapping screw * Apply thread locking sealant. (See below)

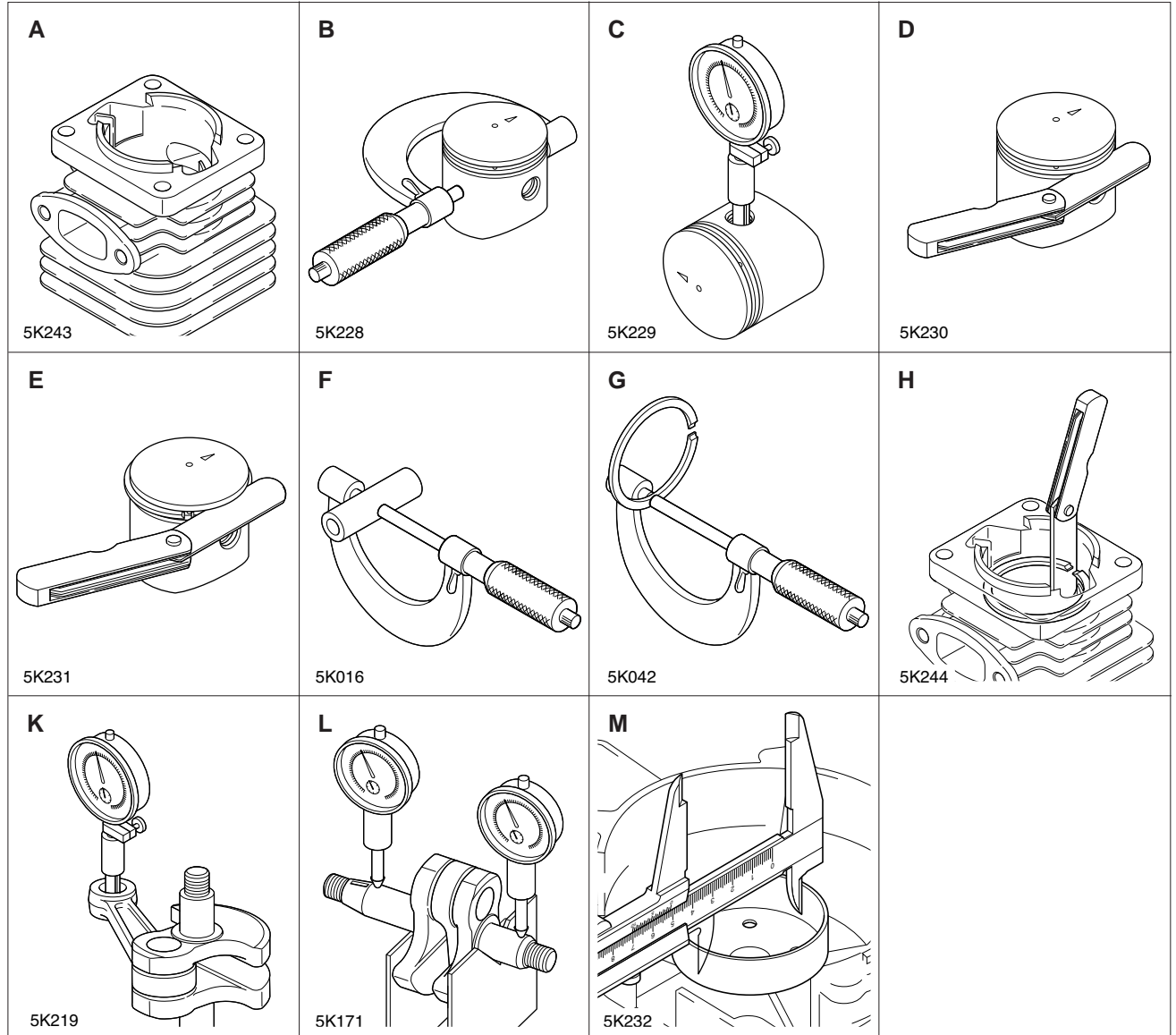
** The torque differences among four bolts should not exceed 20 kgf•cm (2N•m, 17in•lbf) on one cylinder or crankcase.

NOTE: To adjust cutter clearance, faster 5 pcs of cutter bolts 1-2 N•m, and back 1/2 turn counterclockwise. Then tighten the nuts 5-7 N•m holding cutter bolts with spanner.

1-4 Special repairing materials

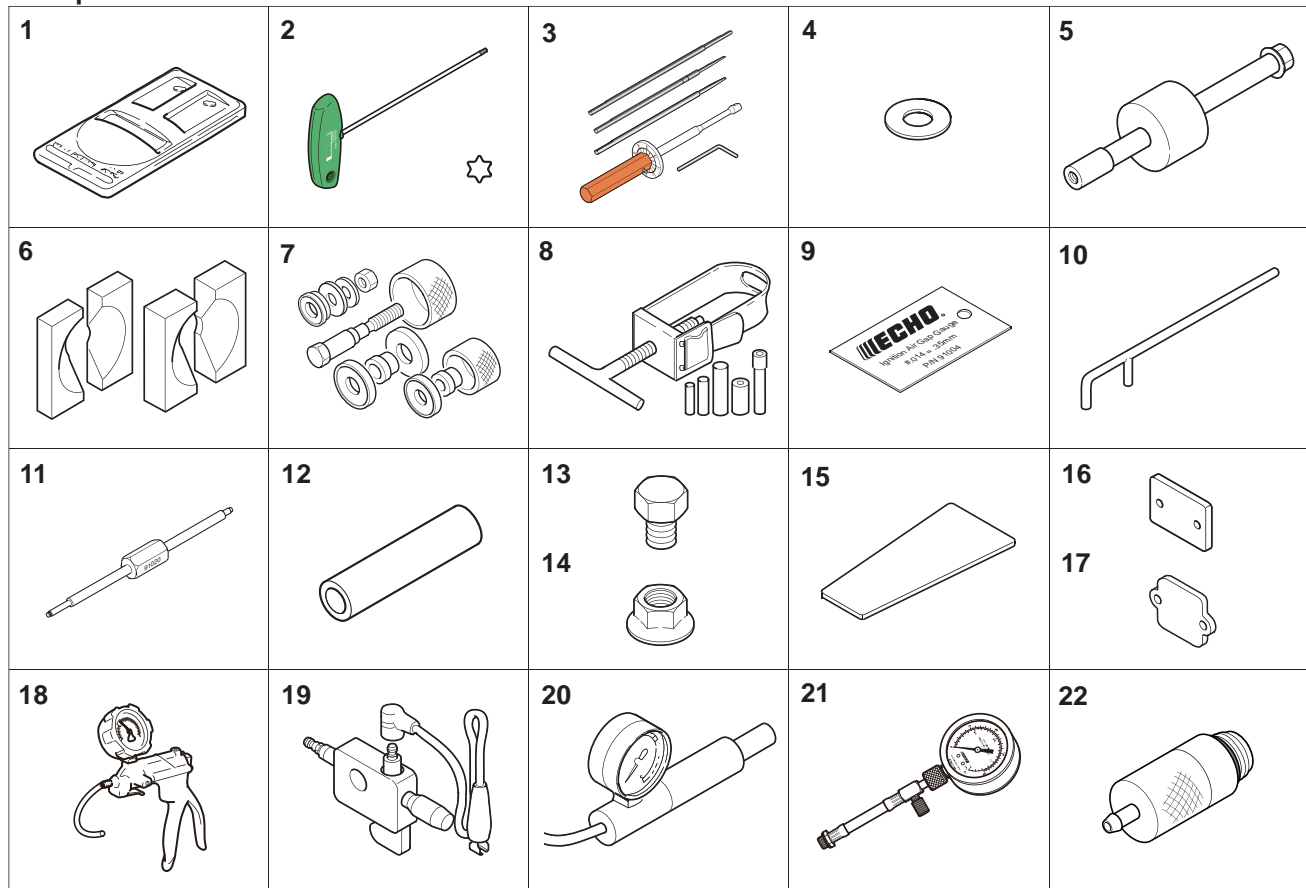
Material	Location	Remarks
Grease	Drive shaft	EPNOC AP2 (Lithium based grease) P/N X695-000060
	Gear case	
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Starter case	Loctite #242, Three Bond #1324 or equivalent
	Muffler	
	Muffler cover	
	Fuel tank	
	Intake insulator	Loctite #675 or equivalent

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	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	363018-00310	Washer	Installing crankcase oil seal (starter side)
5	P021-044870	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
9	91004	Module air gap gauge	Adjusting pole shoe air gaps
10	897712-04630	2-pin wrench	Removing and installing pawl carrier
11	91020	Limiter plug tool	Removing and installing plug
12	897726-21430	Oil seal tool	Installing oil seals
13	900100-08008	Bolt	Removing magneto rotor (flywheel), crankshaft from crankcase
14	V265-000200	Flange nut	Removing magneto rotor (flywheel)
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	91149	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	A131-000150	Pressure connector	Testing crankcase and cylinder leakage