



SERVICE DATA

POWER PRUNER

ECHO: PPF-236ES PPT-236ES

(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. **17-211-01**

REVISED : 201906

ISSUED: 201610



1 SERVICE INFORMATION

1-1 Specifications

Models		PPF-236ES	PPT-236ES
Dimensions	Length	mm (in)	2400 (94.5)
	Width	mm (in)	2663 (104.8) Extended: 3675 (144.7)
	Height	mm (in)	246 (9.7)
Dry weight* ¹		kg (lb)	235 (9.3)
			5.8 (12.8)
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 with purge bulb
	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)
	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%)
	Petrol		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: 0.42 (14.2) Usable tank capacity: 0.35 (11.8)
Clutch	Type		Centrifugal, 2-shoe pivot
Handle	Type		Right hand grip w/ throttle trigger and throttle trigger lockout
Gear case	Reduction ratio		1.53
	Gear tooth		Bevel gear
	Lubrication		Lithium based grease
Guide bar / Saw chain lubrication type			Adjustable automatic oil pump
Oil	Tank capacity	L (U.S.fl.oz.)	0.20 (6.8)
Sprocket	Type		Spur
	Number of teeth		6
	Pitch	in	3/8

1-1 Specifications (Continued)

Cutting devices			Sprocket nose bar	
Guide bar	Type		10A0CD3739	
	Called length	cm (in)	25.4 (10)	
	Gauge	in	0.050	
Saw chain	Type		OREGON 91VXL	
	Number of drive links		39	
	Pitch	in	3/8	
	Gauge	in	0.050	

Drive shaft and Housing (Main pipe)				PPF-236ES	
Drive shaft	Type		Flexible shaft		
	Inner shaft:	Diameter	mm (in)	6.35 (0.25)	
		Length	mm (in)	1855 (73.0)	
Housing	OD - ID	mm (in)	25.4 - 23.6 (1.00 - 0.93)		
	Length	mm (in)	1828 (72.0)		

Drive shaft and Housing (Main pipe)				PPT-236ES		
Drive shaft	Type		Aluminum Extrusion			
	Upper	OD - ID	mm (in)	15.0 - 9.9 (0.59 - 0.39)		
		Length	mm (in)	1521 (59.9)		
	Lower	Length	mm (in)	1543 (60.8)		
Housing	Type		Aluminium / Fiberglass			
	Upper	OD - ID	mm (in)	34.7 - 32.3 (1.37 - 1.27)		
		Length	mm (in)	1524 60		
	Lower	OD - ID	mm (in)	44.5 - 39.0 (1.75 - 1.54)		
		Length	mm (in)	1416 55.7		
Front handle fixed pipe	Type		Aluminium			
	Upper	OD - ID	mm (in)	24.9 - 22.0 (0.98 - 0.87)		
		Length	mm (in)	454 17.9		
	Drive shaft		Type		Flexible shaft	
	Inner shaft:	Diameter	mm (in)	7.9 (0.31)		
Length		mm (in)	503 (19.8)			

OD: Outer diameter. ID: Inner diameter.

*¹ Without cutting attachment

*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		4,300
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	Ω		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
Limiting cap / plug			Limiting 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			Idle: 2,500 - 3,500 WOT: 10,400 - 11,400
Chain oil discharge volume at 7,000 r/min	mL/min (US.fl .oz./min)		Adjustable: 1.5 - 13 (0.05 - 0.44) (Factory set: 7 mL/min)

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	
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	22 - 40
		Starter side†	M5	30 - 40	3 - 4	25 - 35
Other	Cutter fastener	LM10	280 - 320	28 - 32	245 - 280	
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	

LM: Left hand thread. † Tapping screw

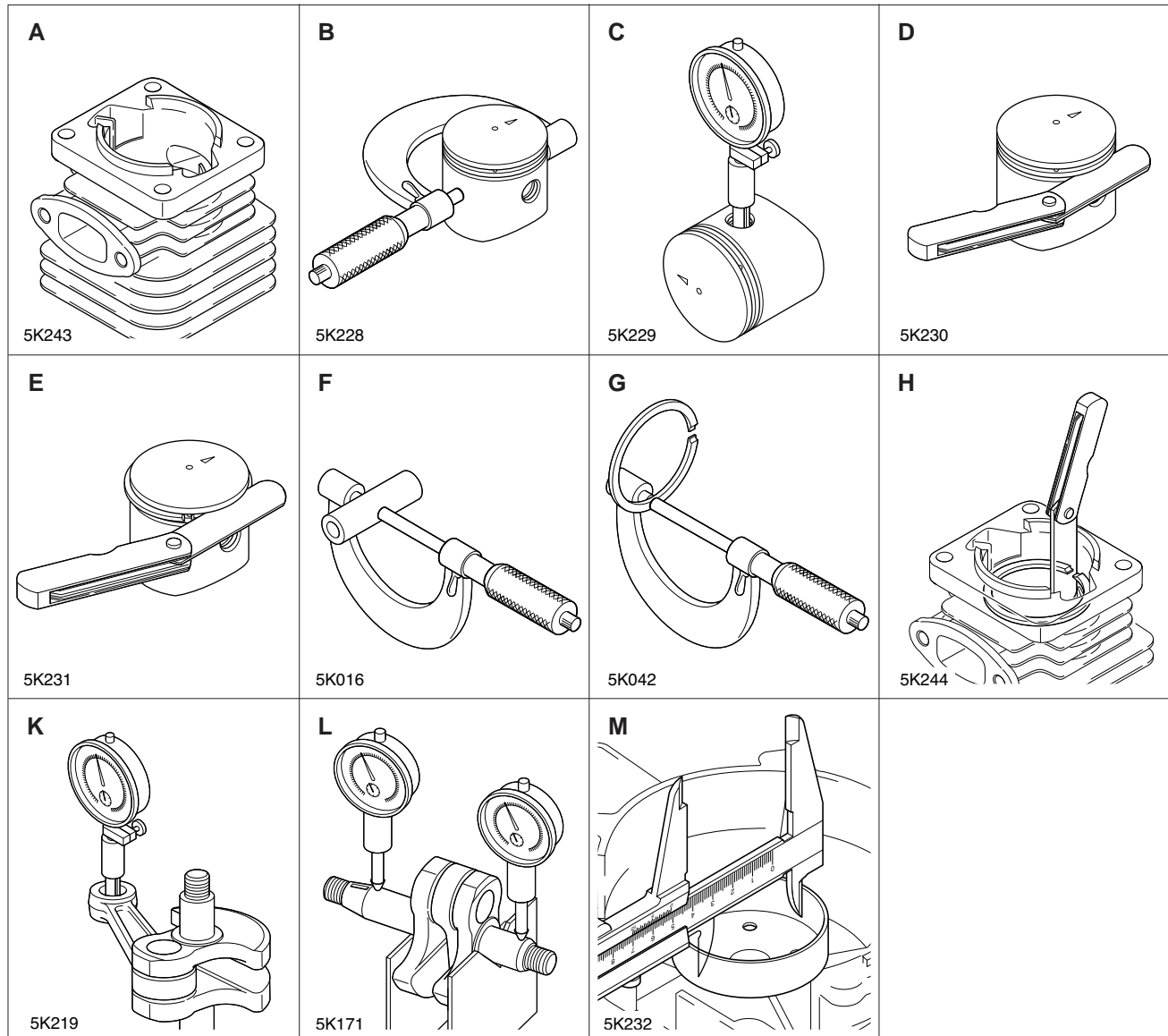
* Apply thread locking sealant. (See below)

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

1-4 Special repairing materials

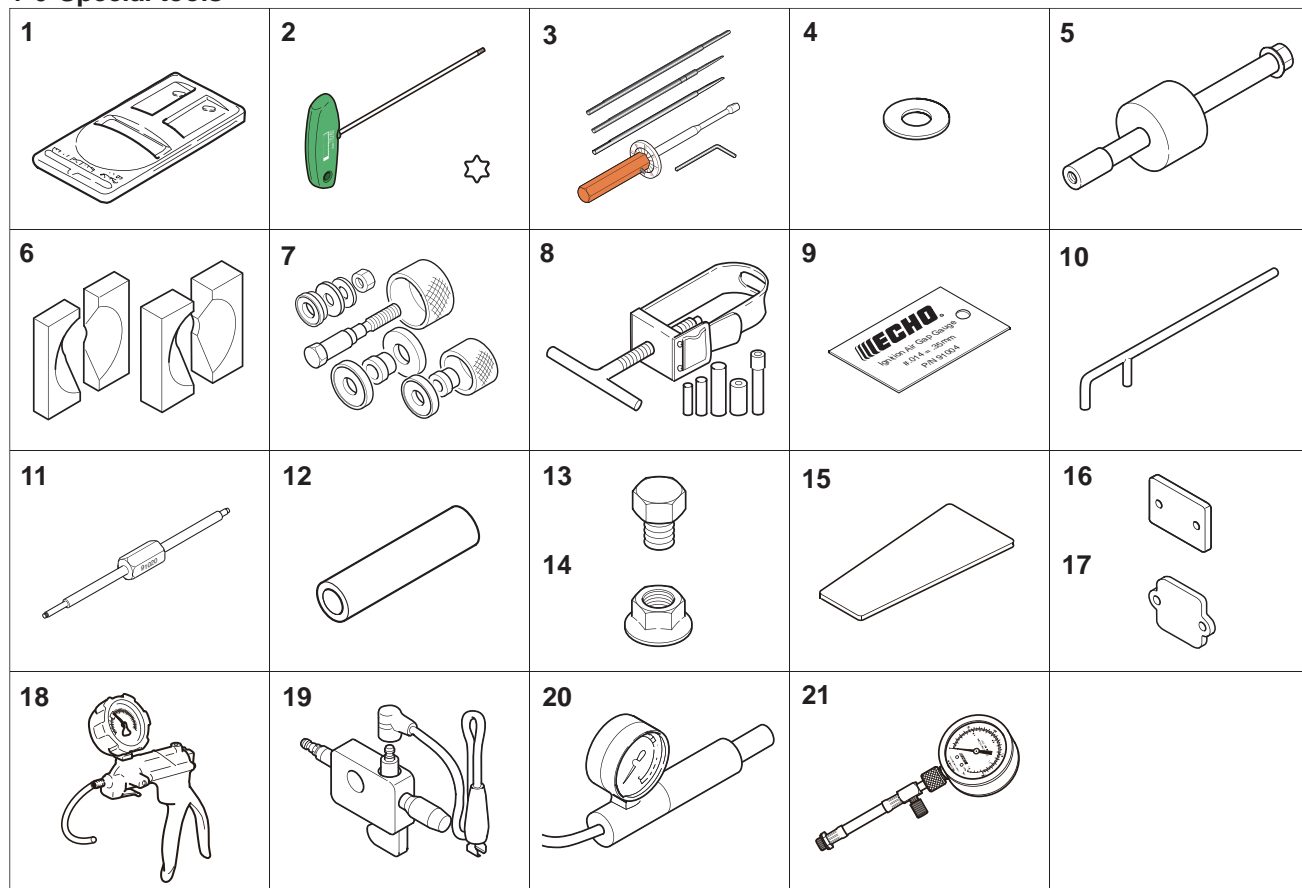
Material	Location	Remarks
Grease	Drive shaft	EPNOC AP2 (Lithium based grease) P/N X695-000060
	Gear case	
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Muffler	Three Bond #1327 or equivalent
	Starter case	Three Bond #1324N or equivalent
	Muffler cover	
	Fuel tank	
	Intake insulator	Loctite #648 or equivalent

1-5 Service limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminium 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 cankshaft
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	897726-09130	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	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