SERVICE DATA

CHAIN SAW

ECHO: CS-2511P

(Serial number : C83715000001 - C83715999999)

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. **00-25E-00**
ISSUED: 20200930

1 SERVICE INFORMATION

1-1 Specifications

Dimensions	Length*	mm(in)	400 (15.7)
	Width	mm(in)	213 (8.4)
	Height	mm(in)	210 (8.3)
Dry weight*		kg(lb)	2.6 (5.7)
Engine	Type		YAMABIKO, air-cooled, two-stroke, single cylinder
	Rotation		Clockwise as viewed from the output end
	Displacement	$cm^3(in^3)$	25.0 (1.525)
	Bore	mm(in)	35.0 (1.378)
	Stroke	mm(in)	26.0 (1.024)
	Compression ratio		7.9
Carburetor	Type		Diaphragm, horizontal-draft
	Model		Walbro WT-1243
	Venturi size-Throttle bore	mm(in)	11.11 - 14.3 (0.437 - 0.563)
Ignition	Type		CDI (Capacitor discharge ignition) system, Digital Magneto
	Spark plug		NGK CMR7H
Exhaust	Muffler type		Spark arrester muffler
Starter	Type		i-30
	Rope diameter x length	mm(in)	3.0 x 720 (0.12 x 28.3)
Fuel	Type		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 M345-FC/FD
	Tank capacity	L (US.fl.oz.)	0.19 (6.4)
Clutch	Type		Centrifugal type, 3-shoe slide with 3-tension spring
Guide bar / Saw chain lubrication type			Adjustable automatic oil pump
Oil	Tank capacity	L (US.fl.oz.)	0.14 (4.7)
Auto oiler	Type		Clutch driven type
Sprocket	Type		Spur
	Number of teeth		6
	Pitch	in	3/8

* Without guide bar and saw chain.

Cutting devices				
Guide bar	Type		12A0CD3745	14A0CD3752
	Called length	in	12	14
	Gauge	in	0.050	
Saw chain	Type		OREGON 91PXL	
	Number of drive links		45	52
	Pitch	in	3/8	
	Gauge	in	0.050	

1-2 Technical data

Engine			
Compression pressure		MPa (kgf/cm^2) (psi)	1.03 (10.5) (150)
Clutch engagement speed		RPM	4,300
Engagement Minimum†		RPM	3,900
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	800 - 1,200
Pole shoe air gaps		mm(in)	0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 1,000 RPM	°BTDC	9
	at 3,000 RPM	°BTDC	12
	at 10,000 RPM	°BTDC	29
Carburetor			
Test Pressure, minimum		MPa (kgf/cm^2) (psi)	0.05 (0.5) (7.0)
Metering lever height		mm(in)	1.65 (0.06) lower than diaphragm seat
Limiter plug / cap			Limiter cap P003000010
Tool to adjust mixture needles			2.5mm Flat Blade Screwdriver P/N 91027
Carburetor adjustment			
1) Initial setting			
H mixture needle		turn out	2
L mixture needle		turn out	3 1/8
Throttle adjust screw		turn in*1	1 5/8
Engine warm-up	Idle - WOT : Total	sec.	5 - 5 : 100
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed*2
3) Set idle maximum speed w/ TAS		RPM	4,100
4) Set idle speed by turning L mixture needle CCW		RPM	3,200
5) Confirm H mixture needle position before WOT setting			Turn H mixture needle CCW to confirm engine speed reduces less than 12,000 RPM
6) WOT setting			Turn H mixture needle CW and set engine speed within 12,500 - 12,700 RPM
7) Final WOT setting			Turn H mixture needle CW by : 1/2
8) Verify final engine speed with standard equipment		RPM	Idle: 2,800 - 3,600 WOT: 12,700 - 13,400
Chain oil discharge volume		mL/min(UK.fl.oz./min)	Adjustable: 1.5 - 13 (0.05 - 0.46) (Factory set: 6 mL/min)

BTDC: Before top dead center. WOT: Wide open throttle

CCW: Counterclockwise TAS: Throttle adjust screw

† If clutch engagement speed is lower than minimum clutch engagement speed, replace clutch assembly with new one.

*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 pawls	M5	30 - 45	3 - 4.5	25 - 40
	Starter case	M4	20 - 30	2 - 3	20 - 25
Ignition system	Magneto rotor (Flywheel)	M8	250 - 290	25 - 29	220 - 255
	Ignition coil	M4*	30 - 45	3 - 4.5	25 - 40
	Ignition switch	M3*	3 - 5	0.3 - 0.5	3 - 4
	Spark plug	M10	100 - 150	10 - 15	90 - 135
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	26 - 40
	Intake bellows	M4	30 - 45	3 - 4.5	26 - 40
Clutch	Clutch hub	LM8	250 - 290	25 - 29	220 - 255
Engine	Crankcase	M4	30 - 45	3 - 4.5	26 - 40
	Cylinder	M4	30 - 45	3 - 4.5	26 - 40
	Engine mount	M4	35 - 50	3.5 - 5	30 - 45
	Muffler	M5	60 - 90	6 - 9	52 - 80
	Muffler cover	M4†	20 - 30	2 - 3	20 - 25
Others	Auto-oiler	M4	30 - 45	3 - 4.5	26 - 40
	Front handle Clutch side	M5	30 - 40	3 - 4	26 - 35
	Front handle Recoil side	M4†	25 - 30	2.5 - 3	18 - 26
	Compression springs	M4†	20 - 35	2 - 3.5	20 - 30
	Brake cover	M4†	20 - 30	2 - 3	20 - 25
	Sprocket guard plate (Sprocket guard side)	M4†	20 - 30	2 - 3	20 - 25
	Brake lever (Hand guard)	M5	30 - 45	3 - 4.5	26 - 40
	Chain catcher	M5	30 - 45	3 - 4.5	26 - 40
	Stud bolt	M8*	150 - 200	15 - 20	130 - 220
	Bolt (at guide bar mount)	M5	30 - 45	3 - 4.5	26 - 40
	Guide bar nut	M8	150 - 200	15 - 20	130 - 220
	Spike	M5†	30 - 45	3 - 4.5	26 - 40
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

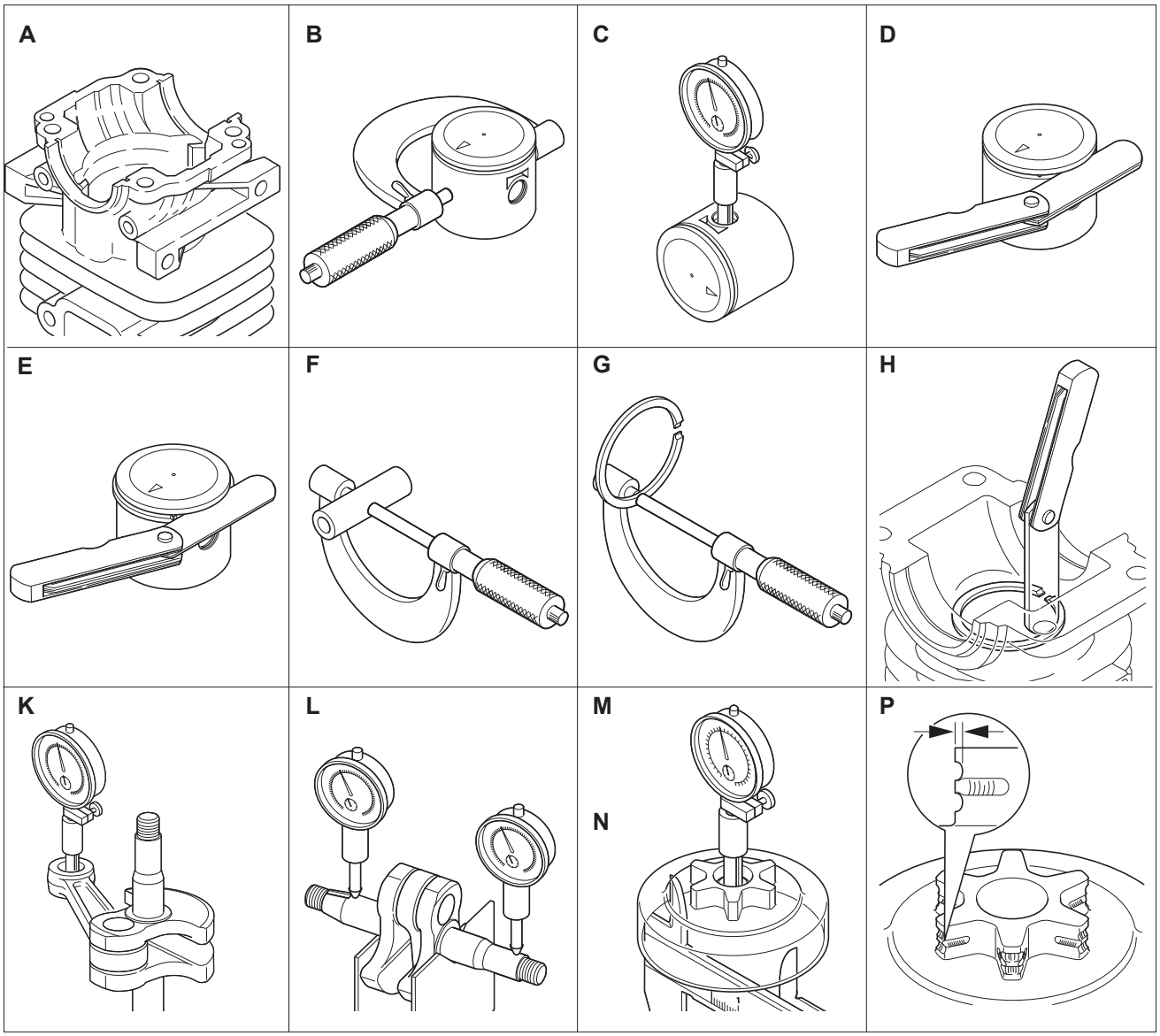
LM: Left-hand thread * Apply thread locking sealant. (See below)

† Tapping screw

1-4 Special repairing materials

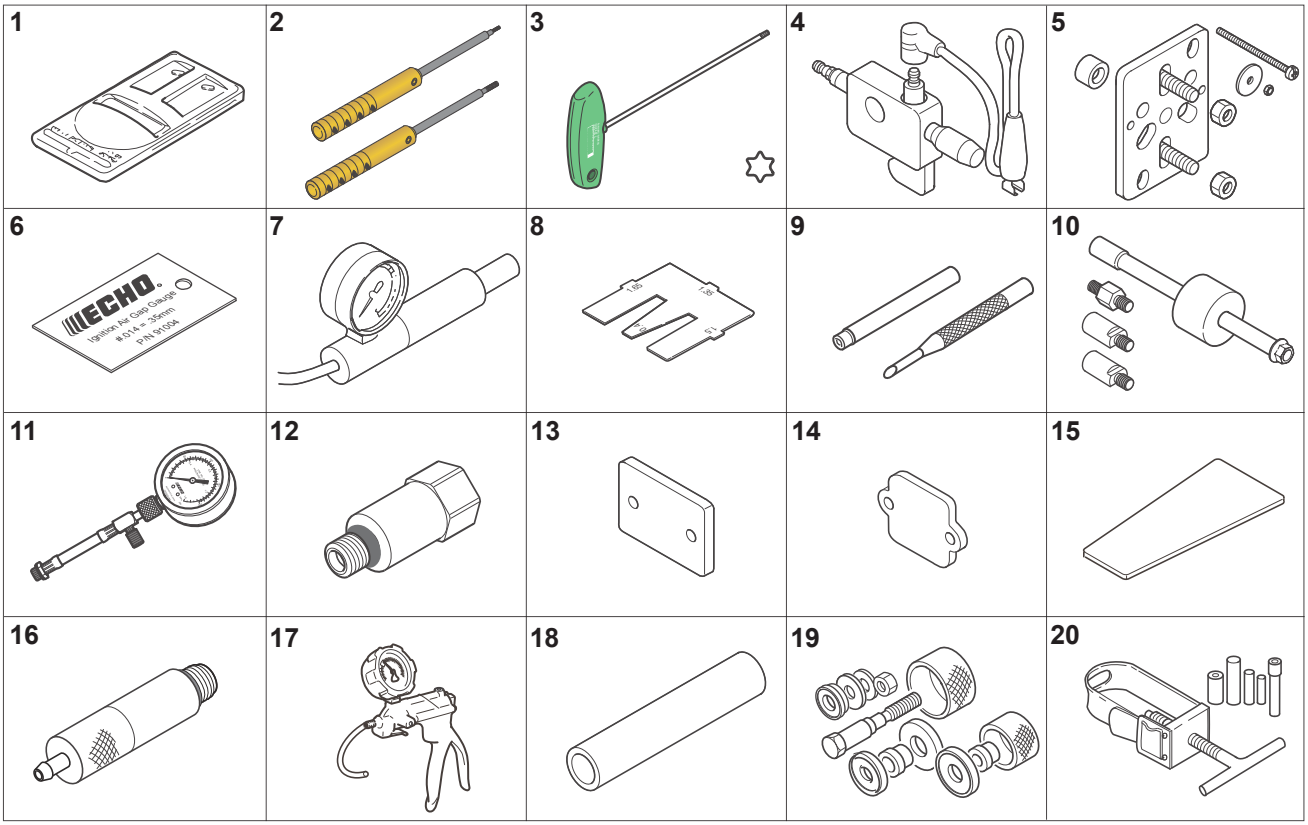
Material	Location	Remarks
Thread locking sealant	Stud bolt	Loctite® #272 or equivalent
	Ignition coil	ThreeBond #1344J or equivalent
	Ignition switch	ThreeBond #1324N or equivalent
Grease	Recoil starter	Lithium based grease or ECHO XTended Protection ™ Lubricant
	Needle bearing, clutch	
	Worm gear	
	Oil seal lips	
	Chain brake (metal contact part)	Molybdenum grease (approx.1 gram)

1-5 Service limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminum can be seen
B	Piston outer diameter	Min.	34. 92 (1.375)
C	Piston pin bore	Max.	8. 035 (0.3163)
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.	7. 98 (0.3142)
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.	11. 03 (0.4341)
L	Crankshaft runout	Max.	0. 02 (0.001)
M	Sprocket bore	Max.	13. 07 (0.5146)
N	Clutch drum bore	Max.	53. 5 (2.11)
P	Sprocket wear limit	Max.	0. 5 (0.02)

1-6 Special tools



Key	Part Number	Description	Reference
1	89780233331	PET1000R Tachometer	Measuring engine speed to adjust Carburetor
2	91077	Limiter Cap Remover Kit	Removing and installing limiter cap
3	X602000340	Torx wrench (T27)	Removing and installing Torx bolt
4	PET4000EC	PET-4000 Spark Checker	Checking ignition system
5	Y089000111	Puller	Removing magneto rotor and crankcase
6	91004	Ignition Air Gap Gauge	Adjusting pole shoe air gaps
7	89780330133	Standard Pressure Tester	Testing Carburetor and crankcase leakage
8	89756319830	Metering lever gauge	Measuring metering lever height on Carburetor
9	500500	Welch plug tool	Removing and installing welch plug
10	P021044870	PTO shaft puller	Removing plug from auto-oiler assembly
11	91147	Compression gauge	Measuring cylinder compression
12	91151	10mm Adaptor	Measuring cylinder compression(for 10mm dia. spark plug)
13	89782616131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
14	89782716131	Pressure plate	Plugging intake port to test crankcase / cylinder leakages
15	91041	Pressure rubber plug	Plugging exhaust port to test crankcase / cylinder leakages
16	91081	10mm Pressure Test Plug	Checking crankcase and cylinder leakages
17	91149	Pressure/Vacuum Pump	Testing tank vent and crankcase leakages
18	89772609130	Oil seal tool	Installing oil seals
19	89770114732	Bearing tool	Removing and installing ball bearings on crankcase
20	89770230131	Piston pin tool	Removing and installing piston pin