



SERVICE DATA

CHAIN SAW

ECHO: CS-3510

(Serial number : C82015000001 - C82015999999)

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. **01-34i-00**

ISSUED : 202005



1 SERVICE INFORMATION**1-1 Specifications**

Dimensions	Length*	mm(in)	386 (15.2)
	Width	mm(in)	233 (9.2)
	Height	mm(in)	271 (10.7)
Dry weight*		kg(lb)	3.7 (8.2)
Engine	Type		YAMABIKO, stratified scavenging, air-cooled, two-stroke, single cylinder
	Rotation		Clockwise as viewed from the output end
	Displacement	cm ³ (in ³)	34.4 (2.099)
	Bore	mm(in)	40.0 (1.575)
	Stroke	mm(in)	27.4 (1.079)
	Compression ratio		7.4
Carburetor	Type		Diaphragm, horizontal-draft
	Model		WT-1239
	Venturi size-Throttle bore	mm(in)	14.0 - 15.85 (0.551 - 0.624)
Ignition	Type		CDI (Capacitor discharge ignition) system, Digital Magneto
	Spark plug		NGK BPMR8Y
Exhaust	Muffler type		Spark arrester muffler
Starter	Type		i-30
	Rope diameter x length	mm(in)	3.5 x 910 (0.14 x 35.8)
Fuel	Type		Mixed two-stroke fuel
	Mixture ratio		50 : 1 (2 %)
	Gasoline		Minimum 89 octane petrol
	Two-stroke air cooled engine oil		ISO-L-EGD (ISO/CD13738), JASO M345-FC/FD
	Tank capacity	L (U.S.fl.oz.)	0.28 (9.5)
Clutch	Type		Centrifugal type, 2-shoe slide with 2-tension spring
Guide bar / Saw chain lubrication type			Pencil type Automatic oil pump
Oil	Tank capacity	L (U.S.fl.oz.)	0.23 (7.8)
Auto oiler	Type		Pencil shape, 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		14A0CD3752 16A0CD3757
	Called length	in	14 16
	Gauge	in	0.050
Saw chain	Type		OREGON 91PX
	Number of drive links		52 57
	Pitch	in	3/8
	Gauge	in	0.050

1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm ²) (psi)		0.99 (10.1) (143)
Clutch engagement speed	RPM		4500
Engagement Minimum [†]	RPM		3800
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		2.5 - 2.9
Pole shoe air gaps	mm(in)		0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3000 RPM	°BTDC	8
	at 8000 RPM	°BTDC	28
	at 10000 RPM	°BTDC	28
Carburetor			
Test Pressure, minimum	MPa (kgf/cm ²) (psi)		0.05 (0.5) (7.0)
Metering lever height	mm(in)		1.65 lower than diaphragm seat
Limiter plug / cap			Limiter cap: P003000010
Tool to adjust mixture needles			2.5 mm Flat blade screwdriver
Carburetor adjustment			
1) Initial setting			
H mixture needle	turn out		3 3/16
L mixture needle	turn out		3 1/4
Throttle adjust screw	turn in* ¹		7/8
Engine warm-up	Idle - WOT : Total	sec.	5 - 10 : 150
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed* ²
3) Set idle maximum speed w/ TAS		RPM	3900
4) Set idle speed			
by turning L mixture needle CCW		RPM	3000
5) Confirm H mixture needle position before WOT setting			Turn H mixture needle CCW to confirm engine speed decreases less than lower value of the range below
6) WOT setting			Turn H mixture needle CW in 1/8 turn increment with the engine at idle, then accelerate to WOT and check engine speed. The final engine speed should fall within : 12800 - 13000
7) Verify final engine speed with standard equipment			Idle: 2800 - 3500 WOT: 12800 - 13000
Chain oil discharge volume at 7,000 r/min			
mL/min(U.S.fl.oz./min)			Fixed: 6 (0.20)

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

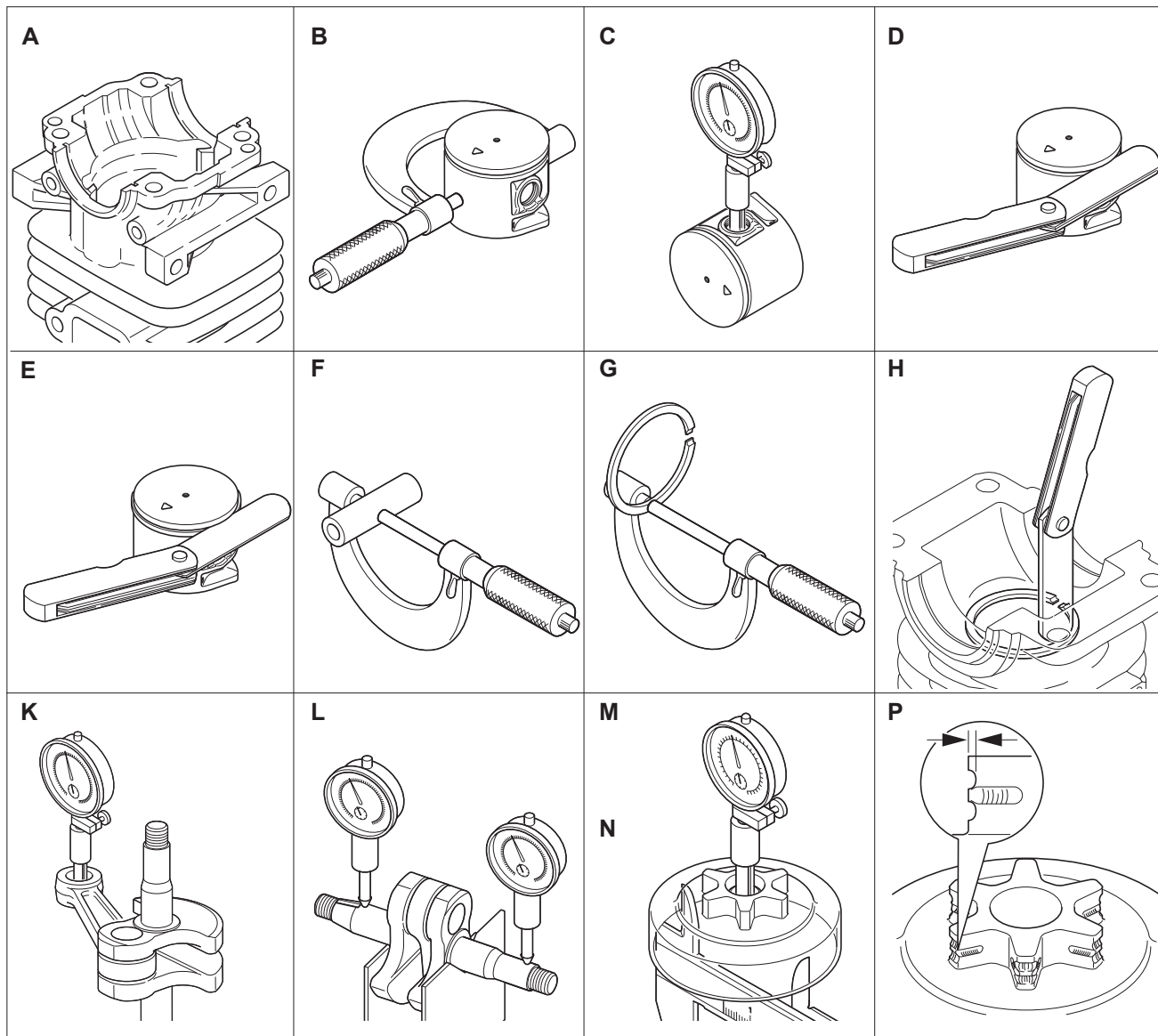
Descriptions		Size	kgf•cm	N•m	in•lbf
Starter system	Starter pawl	M5	30 - 45	3 - 4.5	26 - 40
	Starter case	M5 [†]	35 - 50	3.5 - 5	30 - 45
Ignition system	Magneto rotor (Flywheel)	M8	250 - 290	25 - 29	220 - 255
	Ignition coil	M5	30 - 45	3 - 4.5	26 - 40
	Spark plug	M14	130 - 170	13 - 17	110 - 150
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	26 - 40
Clutch	Clutch hub	LM8	230 - 260	23 - 26	200 - 230
Engine	Cylinder / Crankcase	M5	60 - 100	6 - 10	60 - 90
	Engine mount	M5	70 - 110	7 - 11	60 - 95
	Muffler	M5	70 - 90	7 - 9	60 - 80
	Intake insulator	M4	30 - 45	3 - 4.5	26 - 40
Handle	Rear handle assembly with compression spring	M5	50 - 75	5 - 7.5	45 - 65
		M5 [†]	30 - 50	3 - 5	26 - 45
Others	Brake lever	M5	30 - 45	3 - 4.5	26 - 40
	Brake cover	M4 [†]	15 - 25	1.5 - 2.5	13 - 22
	Guide bar nut	M8	200 - 230	20 - 23	175 - 200
Regular bolt, nut, and screw		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

LM: Left-hand thread [†]Tapping screw

1-4 Special repairing materials

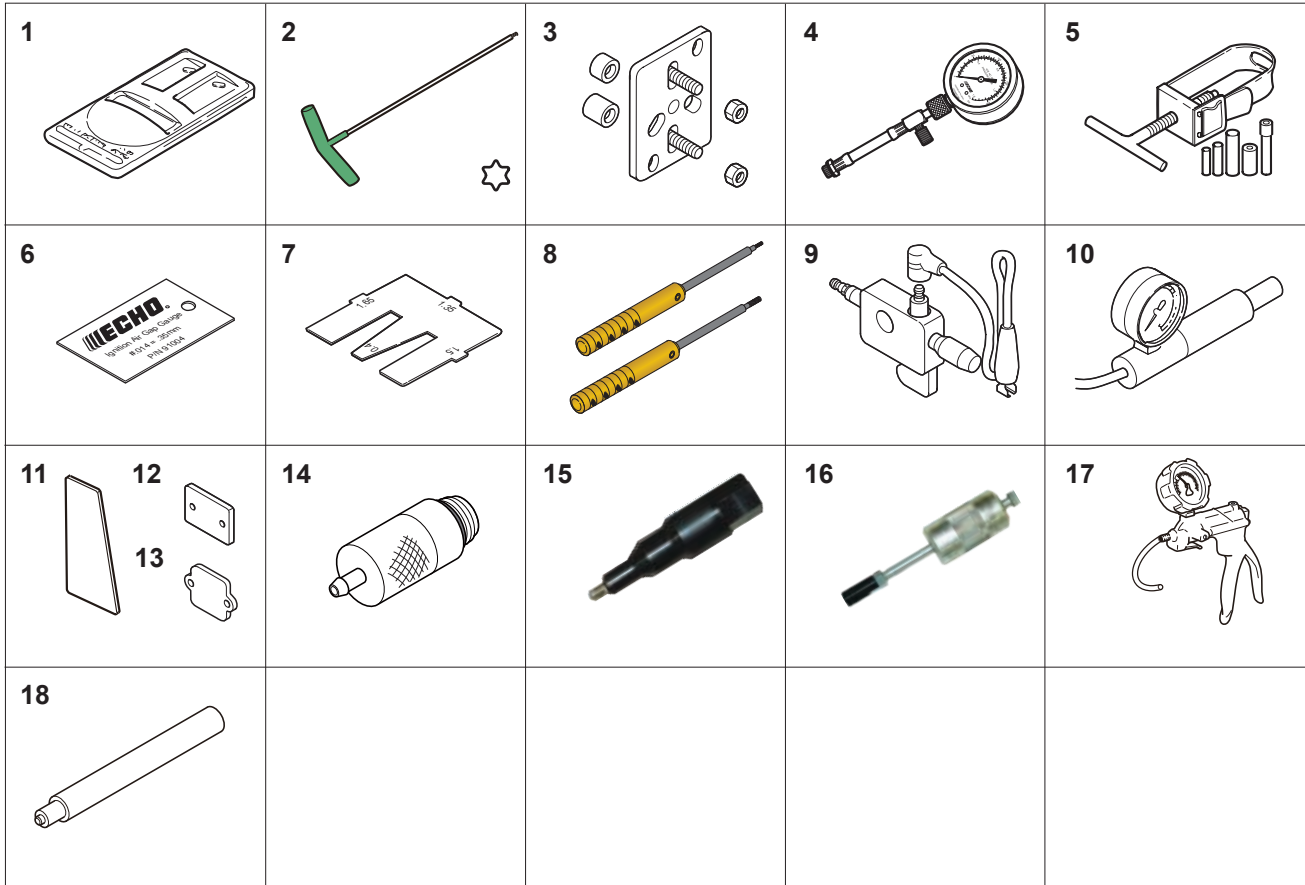
Material	Location	Remarks
Adhesive	Ball bearing outer / crankcase	Loctite [®] #675 or equivalent
Liquid gasket	Crankcase seams	ThreeBond 1207D
Grease	Clutch needle bearing	Lithium based grease or ECHO XTended Protection [™] Lubricant
	Starter center shaft	
	Auto-oiler assembly gear part	
	Worm gear	
	Oil seal inner lips	

1-5 Service Limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminium can be seen	
B	Piston outer diameter	Min.	39.90 (1.571)
C	Piston pin bore	Max.	9.035 (0.3557)
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.	8.98 (0.3535)
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.	13.000 (0.5118)
L	Crankshaft runout	Max.	0.02 (0.001)
M	Sprocket bore	Max.	12.80 (0.5039)
N	Clutch drum bore	Max.	61.5 (2.42)
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	91160	T-27 Torx Driver	Removing and installing torx bolts
3	91134	Flywheel Puller	Removing magneto rotor (flywheel)
4	91147	Compression gauge	Measuring cylinder compression
5	89770230131	Piston pin tool	Removing and installing piston pin
6	91004	Module air gap gauge	Adjusting pole shoe air gaps
7	89790000001	Metering lever gauge	Measuring metering lever height on carburetor
8	91077	Limiter Cap Removal Kit	Removing and installing Limiter caps
9	PET4000EC	PET-4000 Spark Checker	Checking ignition system
10	89780330133	Pressure tester	Testing carburetor and crankcase leakage
11	91041	Pressure rubber plug	Plugging exhaust port to test crankcase/cylinder leakages
12	89782616131	Pressure rubber plug	Plugging intake port to test crankcase/cylinder leakages
13	89782716131	Pressure plate	Plugging intake port to test crankcase/cylinder leakages
14	91018	14mm Pressure Test Plug	Testing crankcase and cylinder leakage
15	91110	Auto Oiler Remover	Use with 91097 to remove pencil type oiler
16	91097	PTO shaft puller	Remove output shaft on ECHO trimmer gear cases
17	91149	Pressure / vacuum tester	Testing crankcase / cylinder leakages
18	91073A	Oiler Installer	Installing pencil type Auto-oiler