SERVICE DATA

CHAIN SAW

ECHO: CS-361P

(Serial number : C51913000001-C51913999999)
(Serial number : C51814000001-C51814999999)
(Serial number : C67315000001-C67315999999)

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. **00-36K-01**
REVISED: 201702
ISSUED: 201509

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1 SERVICE INFORMATION

1-1 Specifications

Dimensions	Length*	mm(in)	392 (15.4)
	Width	mm(in)	260 (10.2)
	Height	mm(in)	242 (9.5)
Dry weight*		kg(lb)	3.8 (8.4)
Engine	Type		YAMABIKO, air-cooled, two-stroke, single cylinder
	Rotation		Clockwise as viewed from the output end
	Displacement	$cm^3(in^3)$	35.8 (2.184)
	Bore	mm(in)	39.0 (1.535)
	Stroke	mm(in)	30.0 (1.181)
	Compression ratio		6.5
Carburetor	Type		Diaphragm horizontal-draft with fast idle latch
	Model		ZAMA C1Q-110124A with Large D-shaped mixture needles
	Venturi size-Throttle bore	mm(in)	12.5 - 16 (0.492 - 0.630)
Ignition	Type		CDI (Capacitor discharge ignition) system Digital magneto
	Spark plug		NGK BPMR8Y (S/N 14 series: BPM8Y)
Starter	Type		Automatic rewind
	Rope diameter x length	mm(in)	3.5 x 900 (0.14 x 35.43)
Fuel	Type		Premixed two-stroke fuel
	Mixture ratio		50 : 1 (2 %)
	Gasoline		Minimum 89 octane gasoline
	Two-stroke air cooled engine oil		ISO-L-EGD (ISO/CD13738), JASO M345-FC/FD
	Tank capacity	L (U.S.fl.oz.)	0.32 (10.8)
Exhaust	Muffler type		Spark arrester muffler with catalyst
Clutch	Type		Centrifugal, 3-shoe slide with 3-tension spring
Guide bar / Saw chain lubrication type			Adjustable automatic oil pump
Oil	Tank capacity	L (U.S.fl.oz.)	0.23 (7.8)
Auto oiler	Type		Clutch related type
Sprocket	Type		Spur
	Number of teeth		6
	Pitch	in	3/8

* Without guide bar and saw chain.

Cutting devices								
Guide bar	Type		12A0ES3745	14A0ES3752	16A0ES3757	12A0ED3745	14A0ED3752	16A0ED3757
	Called length	in	12	14	16	12	14	16
	Gauge	in	0.050					
Saw chain	Type		Oregon 91PXL			Oregon PX		
	Number of drive links		45	52	57	45	52	57
	Pitch	in	3/8					
	Gauge	in	0.050					

1-2 Technical data

Engine			
Compression pressure		MPa (kgf/cm^2) (psi)	0.94 (9.6) (137)
Clutch engagement speed		RPM	4,200 - 4,700
Engagement Minimum†		RPM	3,800
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)
Pole shoe air gaps		mm(in)	0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 1,000 RPM	°BTDC	13
	at 3,000 RPM	°BTDC	18.5
	at 10,000 RPM	°BTDC	34
Chain oil discharge volume at 7,000 RPM		mL/min (US.fl.oz./min)	Adjustable: 1.5 - 13 (0.05 - 0.43) (Factory set: 7 mL/min)
Carburetor			
Test Pressure, minimum		MPa (kgf/cm^2) (psi)	0.05 (0.5) (7.0)
Metering lever height		mm(in)	0 - 0.15 (0 - 0.006) lower than diaphragm seat
Tool to adjust mixture needles			D-shaped tool P/N 91159L
Carburetor adjustment			
1) Initial setting			
H mixture needle		turn out	2 1/2
L mixture needle		turn out	1 5/8
Throttle adjust screw		turn in*1	1 7/8
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	4,200
4) Set idle speed by turning L mixture needle CCW		RPM	3,200
5) Confirm H mixture needle position before WOT setting		RPM	Turn H mixture needle CCW to confirm engine speed decreases less than 13,000
6) WOT setting		RPM	Turn H mixture needle CW in 1/8 turn increments with the engine at idle, then accelerate to WOT and check engine speed. The final engine speed should fall within: 13,000 - 14,000
7) Verify final engine speed with standard equipment		RPM	Idle: 2,800 - 3,500 WOT: 13,000 - 14,000

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 chain starts to rotate during adjustment process step 2), decrease engine speed by turning TAS CCW until chain stops and then redo step 2). Repeat this until chain no longer rotates after the adjustment step 2).

1-3 Torque limits

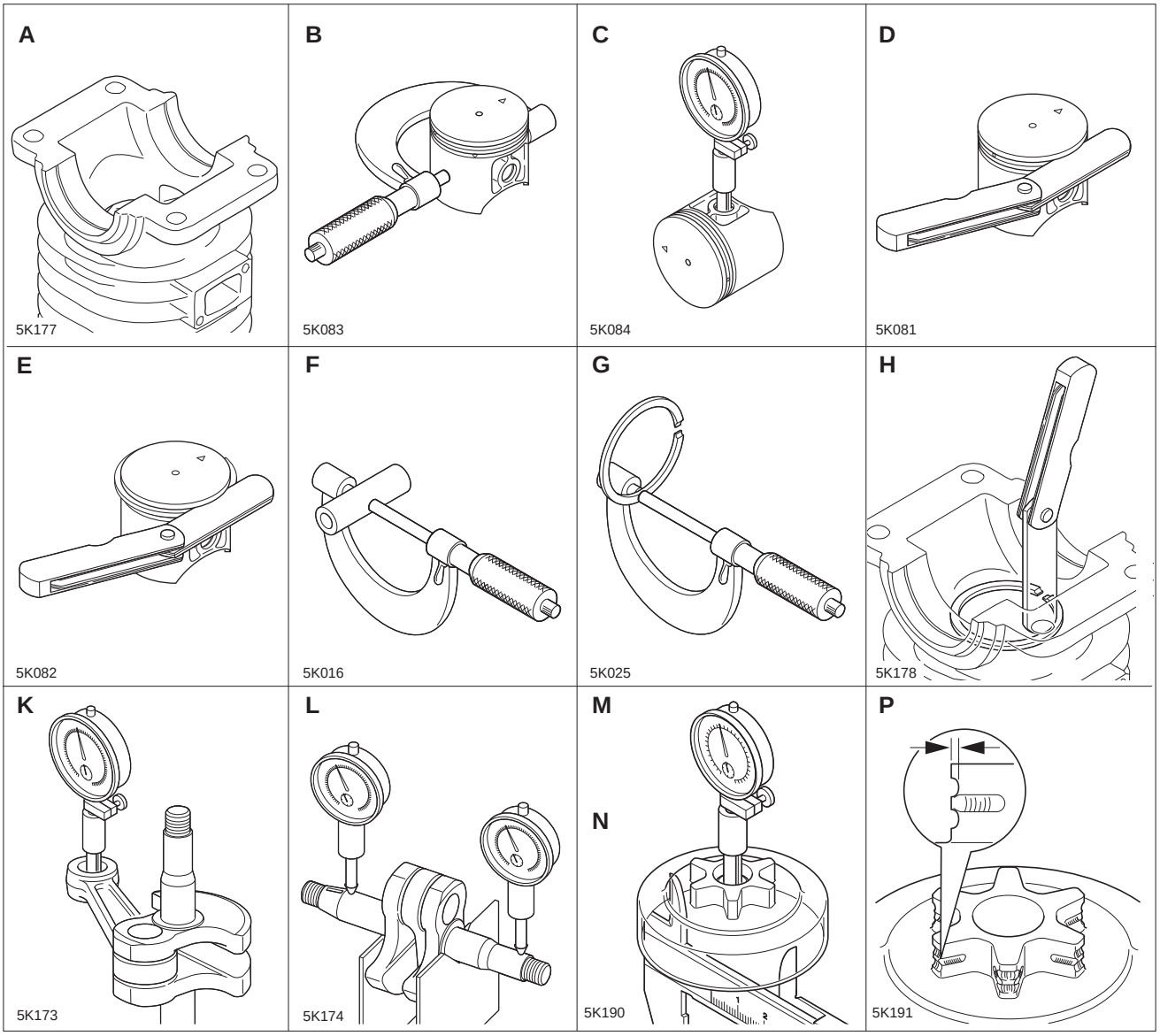
Descriptions		Size	kgf•cm	N•m	in•lbf
Starter system	Starter pawl	M5*	30 - 45	3 - 4.5	26 - 40
	Starter case	M4**	15 - 25	1.5 - 2.5	13 - 22
Ignition system	Magneto rotor (Flywheel)	M8	250 - 290	25 - 29	220 - 255
	Ignition coil	M5*	30 - 45	3 - 4.5	26 - 40
	ON/OFF switch	M6	15 - 30	1.5 - 3	13 - 26
	Spark plug	M14	130 - 170	13 - 17	110 - 150
Fuel system	Carburetor	M5	25 - 40	2.5 - 4	18 - 35
	Intake bellows	M5	30 - 50	3 - 5	26 - 45
Clutch	Clutch hub	LM10	230 - 260	23 - 26	200 - 230
Engine	Crankcase	M5*	60 - 80	6 - 8	50 - 70
	Engine mount	M5	70 - 110	7 - 11	60 - 95
	Dust cover	M4**	10 - 20	1 - 2	9 - 18
	Muffler	M5	70 - 100	7 - 10	60 - 90
	Muffler cover	M4**	10 - 20	1 - 2	9 - 18
Others	Auto-oiler	M4	20 - 35	2.5 - 3.5	18 - 30
	Front handle	M4*	20 - 30	2 - 3	17 - 26
	Rear handle assembly	M5	20 - 30	2 - 3	17 - 26
	Guide bar	M8	200 - 230	20 - 23	175 - 200
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

LM: Left-hand thread *Apply special repairing materials
**Tapping screw

1-4 Special repairing materials

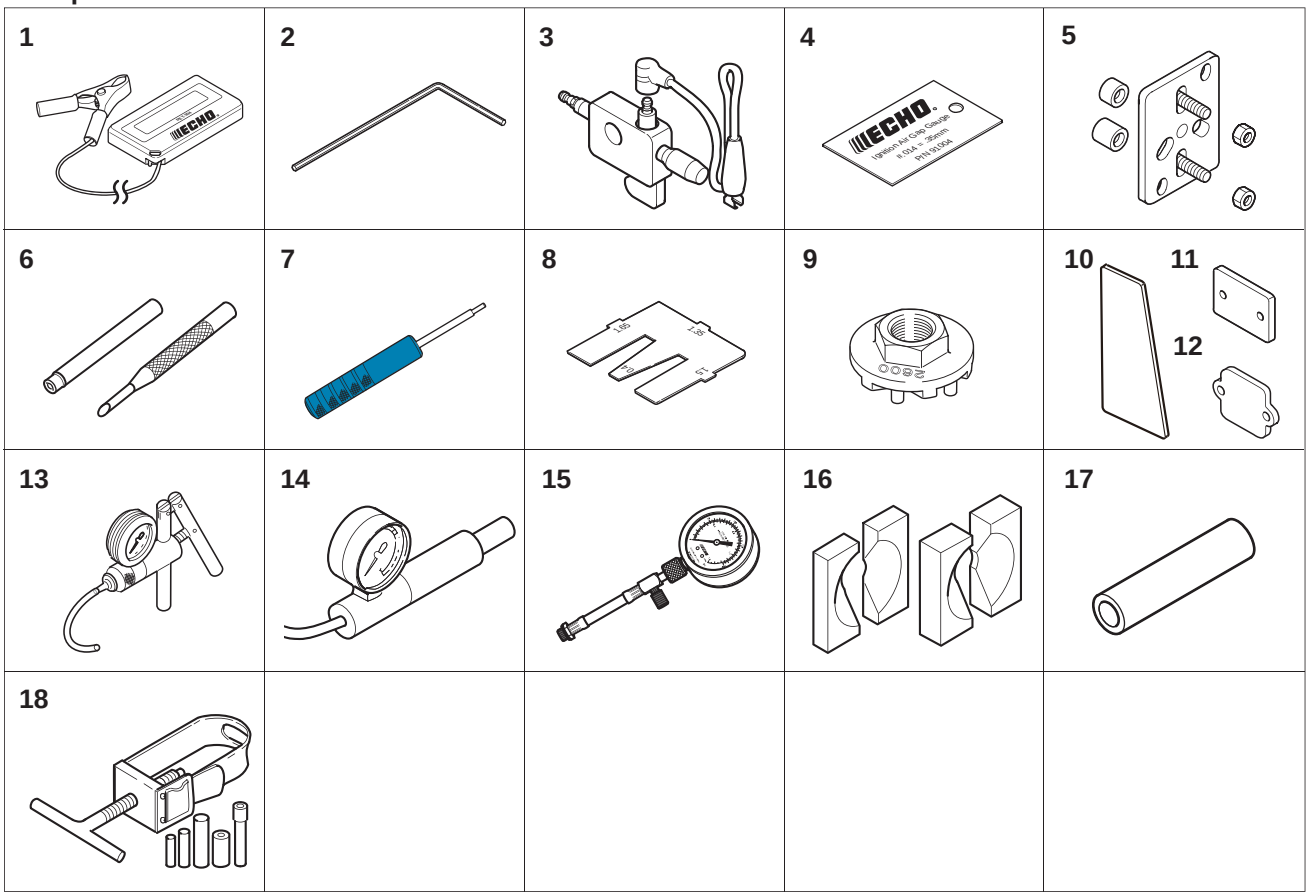
Material	Location	Remarks
Adhesive	Ball bearing outer / crankcase	Loctite #675 or equivalent
	Stud bolt	
Liquid gasket	Crankcase seam part	ThreeBond 1207D (P/N X686-000000)
Thread locking sealant	Starter pawl	Loctite #222, ThreeBond #1342 or equivalent
	Ignition coil	
Grease	Clutch needle bearing	Lithium based grease or ECHO XTended Protection ^{TM} Lubricant
	Starter center shaft	
	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.	38. 90 (1.531)
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. 025 (0.4341)
L	Crankshaft runout	Max.	0. 01 (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	G310-000050	Tachometer PET-304	Measuring engine speed to adjust carburetor
2	X605-000180	L-hex wrench (3 mm)	Removing and installing hex. socket bolt (M4)
3	897800-79931	Spark tester	Checking ignition system
4	91004	Module air gap gauge	Adjusting pole shoe air gaps
5	Y089-000110	Puller	Removing magneto rotor
6	500-500	Welch plug tool (Walbro)	Removing and installing welch plug
7	91159L	D-shaped tool	Adjusting mixture needle
8	897563-19830	Metering lever gauge	Measuring metering lever height on carburetor
9	X640-000011	Clutch tool	Removing and installing clutch assembly
10	91041	Pressure rubber plug	Plugging exhaust port to test crankcase / cylinder leakages
11	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
12	897827-16131	Pressure plate	Plugging intake port to test crankcase / cylinder leakages
13	91139	Pressure / vacuum tester	Testing crankcase / cylinder leakages
14	897803-30133	Pressure tester	Testing carburetor and crankcase leakages
15	91037	Compression gauge	Measuring cylinder compression
16	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
17	897726-21430	Oil seal tool	Installing oil seals and clutch plate
18	897702-30131	Piston pin tool	Removing and installing piston pin