



# SERVICE DATA

## CHAIN SAW

# ECHO: CS-7310P

(Serial number : C80915000001 - C80915999999)

### 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. **01-73B-00**  
**ISSUED: 20200827**



## 1 SERVICE INFORMATION

## 1-1 Specifications

Dimensions	Length*	mm(in)	477 (18.8)
	Width	mm(in)	249 (9.8)
	Height	mm(in)	323 (12.7)
Dry weight*		kg(lb)	6.7 (14.8)
Engine	Type	YAMABIKO, air-cooled, two-stroke, single cylinder	
	Rotation	Clockwise as viewed from the output end	
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	73.5 (4.485)
	Bore	mm(in)	51.0 (2.008)
	Stroke	mm(in)	36.0 (1.417)
	Compression ratio	6.8	
Carburetor	Type	Diaphragm, horizontal-draft	
	Model	ZAMA Z011-120-060A-A YZ0009	
	Venturi size-Throttle bore	mm(in)	17.9 - 20 (0.705 - 0.787)
Ignition	Type	CDI (Capacitor discharge ignition) system, Digital Magneto	
	Spark plug	NGK BPMR8Y* <sup>1</sup>	
Exhaust	Muffler type	Spark arrester muffler	
Starter	Type	Automatic rewind	
	Rope diameter x length	mm(in)	3.5 x 1000 (0.14 x 39.4)
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 (UK.fl.oz.)	0.8 (27.1)
Clutch	Type	Centrifugal type, 3-shoe slide with 3-tension spring	
Guide bar / Saw chain lubrication type		Adjustable automatic oiler	
Oil	Tank capacity	L (UK.fl.oz.)	0.36 (12.2)
Auto oiler	Type	Clutch driven type	
Sprocket	Type	Floating rim	
	Number of teeth	7	
	Pitch	in	3/8

\* Without guide bar and saw chain.

\*1 Electrode gap must be set to 0.4 - 0.5 (0.016 - 0.02)

## 1-1 Specifications (continued)

<b>Cutting devices</b>						
Guide bar	Type		20H0PS3872	24H0PS3884	28H0PS3893	32H0PS3805
	Called length	in	20	24	28	32
	Gauge	in	0.050			
Saw chain	Type		Oregon 72LPX, 72EXL			
	Number of drive links		72	84	93	105
	Pitch	in	3/8			
	Gauge	in	0.050			

<b>Cutting devices</b>						
Guide bar	Type		20H8PS3872	24H8PS3884	28H8PS3892	32H8PS3805
	Called length	in	20	24	28	32
	Gauge	in	0.058			
Saw chain	Type		Oregon 73LPX, 73EXL			
	Number of drive links		72	84	92	105
	Pitch	in	3/8			
	Gauge	in	0.058			

## 1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)		0.77 (7.9) (112)
Clutch engagement speed	RPM		4200
Engagement Minimum <sup>†</sup>			3700
Ignition system			
Spark plug gap	mm(in)		0.4 - 0.5 (0.016 - 0.02)
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		5.5 - 11.5
Pole shoe air gaps	mm(in)		0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3000 RPM	°BTDC	8
	at 10000 RPM	°BTDC	24
Carburetor			
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)		0.05 (0.5) (7.0)
Metering lever height	mm(in)		0 - 0.3 (0 - 0.01) lower than diaphragm seat
Limiter cap / plug			P005004220
Tool to adjust mixture needles			2.5mm Flat Blade Screwdriver P/N 91027
Carburetor adjustment			
1) Initial setting	H mixture needle	turn out	1 5/8
	L mixture needle	turn out	1 1/2
	Throttle adjust screw	turn in* <sup>1</sup>	3
Engine warm-up	Idle - WOT : Total	sec.	5 - 10 : 120
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed.* <sup>2</sup>
3) Set idle maximum speed w/ TAS	RPM		3700
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 or equal to 12000 RPM.
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
		RPM	12600 - 12800
7) Verify final engine speed with standard equipment			Idle: 2700 - 3400
		RPM	WOT: 12600 - 12800
Chain oil discharge (Factory set: 7 mL/min)	mL (oz)		Adjustable: 1.5 - 13 (0.05 - 0.44)

**BTDC:** Before top dead center. **WOT:** Wide open throttle **CCW:** Counterclockwise **TAS:** Throttle adjust screw

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

\*<sup>1</sup> Set Throttle adjust screw to the point that its tip just contacts throttle plate before initial setting.

\*<sup>2</sup> 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	90 - 110	9 - 11	80 - 95	
	Starter center shaft screw	M5	50 - 70	5 - 7	45 - 60	
	Starter case	M5	70 - 90	7 - 9	60 - 80	
Ignition system	Magneto rotor	M8	240 - 280	24 - 28	210 - 245	
	Ignition coil	M5	50 - 70	5 - 7	45 - 60	
	Spark plug	M14	130 - 170	13 - 17	110 - 150	
Fuel system	Carburetor	M4	20 - 35	2 - 3.5	17 - 30	
	Intake bellows	M5 <sup>†</sup>	60 - 80	6 - 8	52 - 70	
	Carburetor case	M5 <sup>**</sup>	70 - 90	7 - 9	60 - 80	
	Carburetor case cover	M5	40 - 60	4 - 6	35 - 52	
Clutch	Clutch assembly	LM12	500 - 600	50 - 60	435 - 522	
Engine	Crankcase	M5	70 - 90	7 - 9	60 - 80	
	Cylinder	M5	70 - 100	7 - 10	60 - 87	
	Muffler	Screws	M6	90 - 110	9 - 11	80 - 95
		Nuts	M6 <sup>*</sup>	90 - 110	9 - 11	80 - 95
	Muffler plate	M4 <sup>*</sup>	15 - 25	1.5 - 2.5	13 - 22	
	Decompression valve	M10	70 - 100	7 - 10	60 - 87	
Others	Auto-oiler	M4 <sup>*</sup>	25 - 35	2.5 - 3.5	22 - 30	
	Compression spring	Rear handle	M5 <sup>***</sup>	30 - 45	3 - 4.5	26 - 40
		Crankcase	M6 <sup>†</sup>	50 - 60	5 - 6	45 - 52
		Cylinder	M5	50 - 60	5 - 6	45 - 52
		Front handle	M6 <sup>†</sup>	50 - 60	5 - 6	45 - 52
	Spring holder	M5 <sup>**</sup>	30 - 45	3 - 4.5	26 - 40	
	Front handle	M5 x 16 <sup>**</sup>	60 - 80	6 - 8	52 - 70	
		M5 x 30 <sup>*</sup>	50 - 70	5 - 7	45 - 60	
	Spike	Crankcase side	M5 <sup>*</sup>	90 - 110	9 - 11	80 - 95
		Sprocket side	M5 <sup>*</sup>	70 - 90	7 - 9	60 - 80
	Brake lever (Hand guard)	M5	50 - 70	5 - 7	45 - 60	
	Brake band	M4 <sup>*</sup>	30 - 50	3 - 5	26 - 45	
		M5 <sup>*</sup>	50 - 70	5 - 7	45 - 60	
	Brake cover	M5 <sup>**</sup>	30 - 40	3 - 4	26 - 35	
	Chain catcher	M6	90 - 110	9 - 11	80 - 95	
	Chain tensioner	M4 <sup>*</sup>	20 - 30	2 - 3	17 - 26	
	Sprocket guard pieces	M4 <sup>*</sup>	15 - 20	1.5 - 2	13 - 17	
	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 (See next page)

\*\* Precoated bolt: If the coat is peeled off, replace new one or apply thread locking sealant. (See next page)

\*\*\* Precoated bolt: Replace new one when removing the bolt. Do not re-use.

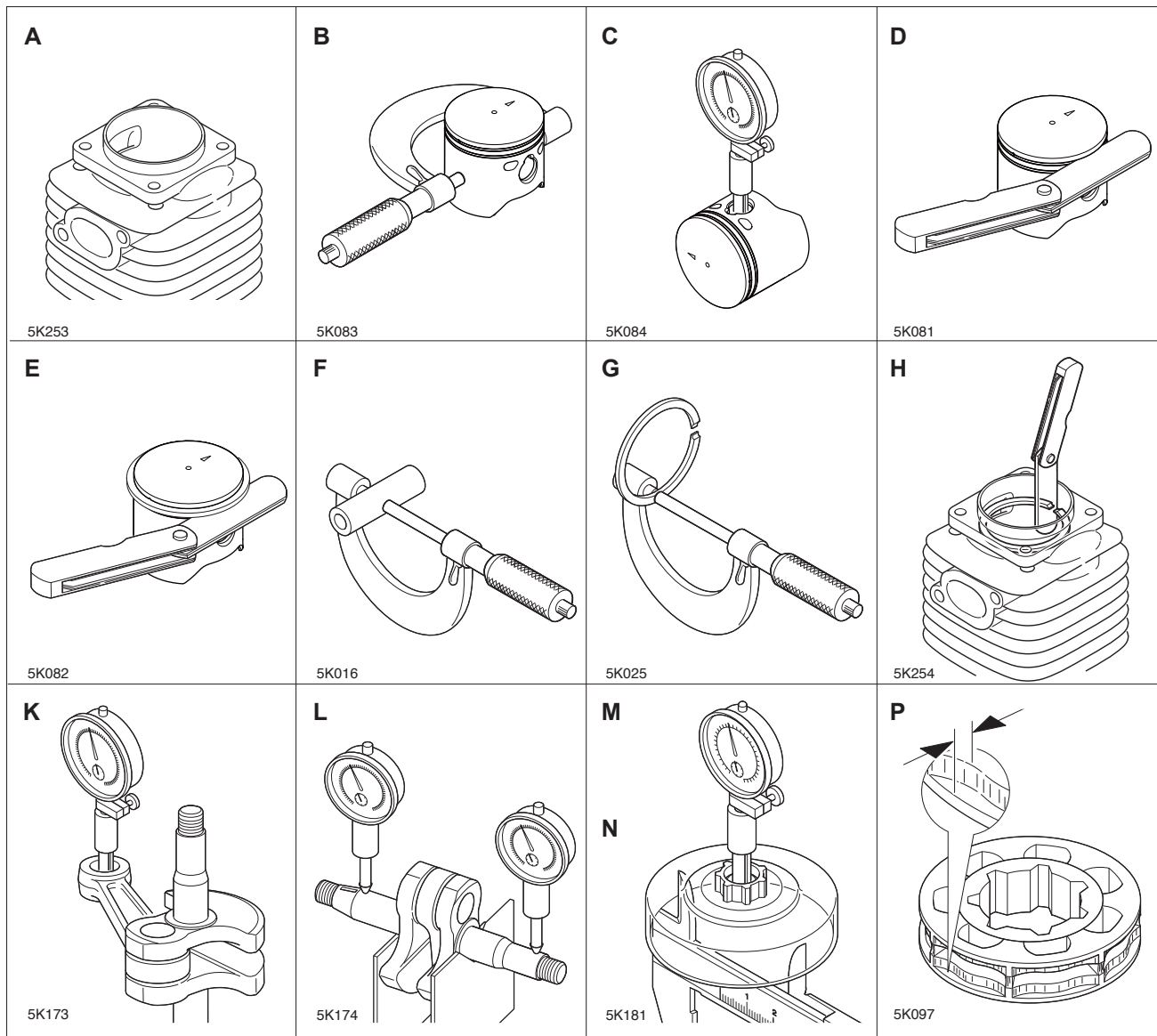
† Tapping screw

## 1-4 Special repairing materials

Material	Location	Remarks
Adhesive	Stud bolt	Loctite <sup>®</sup> #675 or equivalent
	Cushion on Rear handle cover	Loctite <sup>®</sup> #424 or equivalent
Thread locking sealant	Muffler nuts (Through Bolts)	ThreeBond #1344J or equivalent
	Spike	ThreeBond #1324N or equivalent
	Front handle M5 x 30	
	Auto-oiler	
	Intake bellows	
	Chain tensioner	
	Sprocket guard pieces	
	Brake band	
	Carburetor case (Re-use*)	
	Brake cover (Re-use*)	
	Front handle M5 x 16 (Re-use*)	
	Spring holder (Re-use*)	
	Muffler plate	
Grease	Clutch needle bearing	Lithium based grease or ECHO XTended Protection <sup>™</sup> Lubricant
	Recoil starter	
	Worm gear	
	Oil seal inner lips	
	Chain brake (metal contact part)	

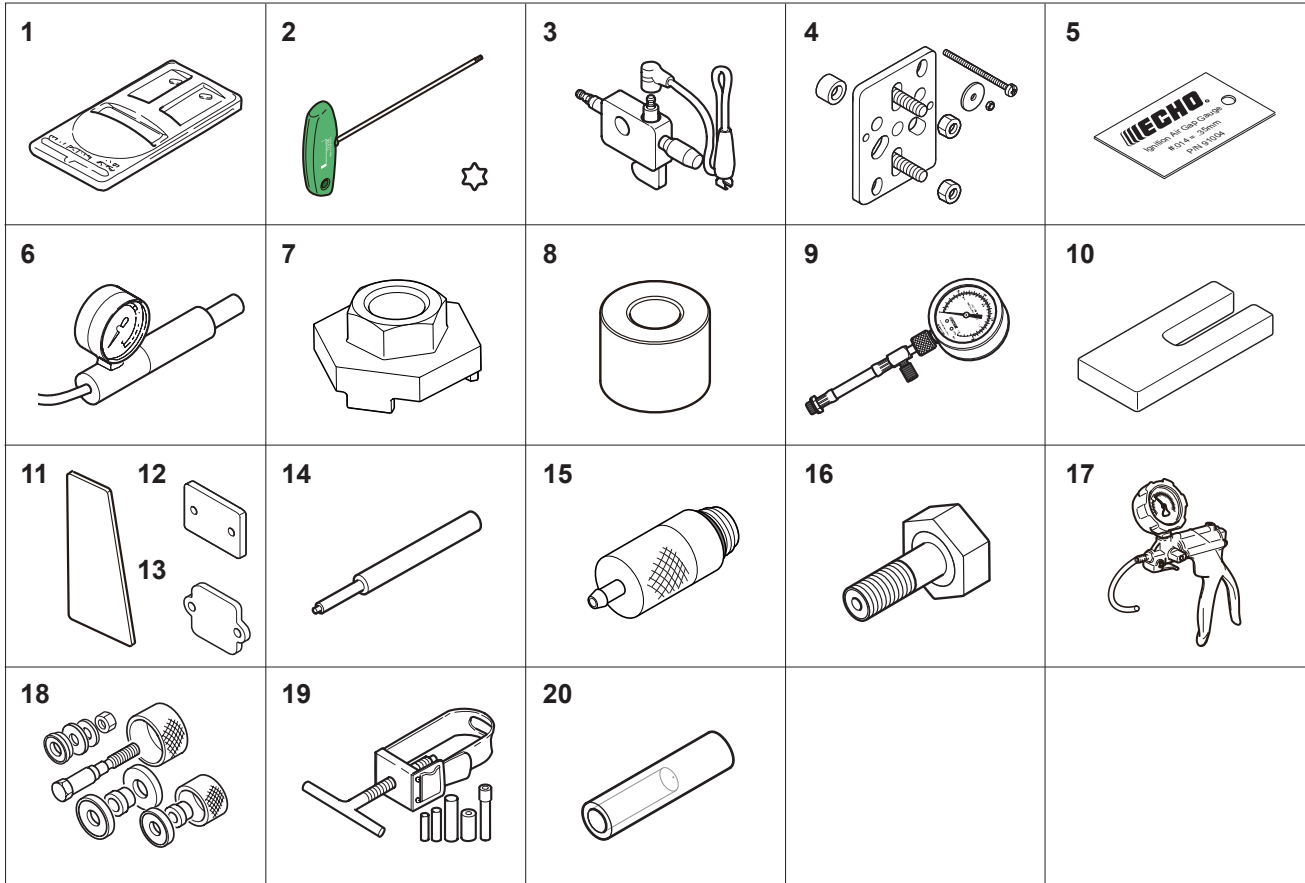
\* If old thread locking sealant is left in threads, correct torque may not be secured. In case old thread locking sealant is left, remove it.

1-5 Service Limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminium can be seen	
B	Piston outer diameter	Min.	50.89 (2.004)
C	Piston pin bore	Max.	12.030 (0.4736)
D	Piston ring groove	Max.	1.3 (0.051)
E	Piston ring side clearance	Max.	0.15 (0.006)
F	Piston pin outer diameter	Min.	11.98 (0.4717)
G	Piston ring width	Min.	1.15 (0.045)
H	Piston ring end gap	Max.	0.6 (0.02)
K	Con-rod small end bore	Max.	15.025 (0.5915)
L	Crankshaft runout	Max.	0.05 (0.002)
M	Sprocket bore	Max.	70.5 (2.78)
N	Clutch drum bore	Max.	14.07 (0.5539)
P	Sprocket wear limit	Max.	0.5 (0.02)

## 1-6 Special tools



Key	Part Number	Description	Reference
1	89780233330	Tachometer PET-1000R	Measuring engine speed to adjust carburetor
2	X602000340	Torx wrench (T27)	Removing and installing Torx bolts
3	89780079931	Spark tester	Checking ignition system
4	Y089000111	Puller	Removing magneto rotor (flywheel)
5	91004	Module air gap gauge	Adjusting pole shoe air gaps
6	89780330133	Pressure tester	Testing carburetor and crankcase leakage
7	X640000570	Clutch tool	Removing and installing clutch assembly
8	X648000150	Oiler gap adjuster	Making appropriate gap between auto-oiler assembly and worm gear
9	91037	Compression gauge	Measuring cylinder compression
10	89771902830	Piston holder	Making piston steady to remove and install piston/ring
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	89772401361	Spring pin tool	Removing and installing spring pin (4 mm)
15	A131000150	Pressure connector	Testing crankcase and cylinder leakage
16	X646000620	Collar nut installer	Install collar nuts in sprocket guard
17	91149	Pressure / vacuum tester	Testing tank vent and crankcase leakages
18	89770114732	Bearing tool	Removing and installing ball bearings on crankcase
19	89770230131	Piston pin tool	Removing and installing piston pin
20	89772621430	Oil seal tool	Installing oil seals