



SERVICE DATA

CHAIN SAW

ECHO: CS-362WES

shindaiwa: 362Ws

(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.

ECHO SERVICE MANUAL Ref. 401-24 (Model : CS-350WES) contains lots of information for servicing these models.

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Reference No. **00-36M-00**
ISSUED : 201902



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	6.54	
Carburetor	Type	Diaphragm, horizontal-draft	
	Model	ZAMA C1Q-Z011/71B	
	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	
Exhaust	Muffler type	Spark arrester muffler with catalyst	
Starter	Type	ES (Effortless-Start) / S (Soft-start)	
	Rope diameter x length	mm(in)	3.5 x 900 (0.14 x 35.43)
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 FC/FD	
	Tank capacity	L (U.S.fl.oz.)	0.32 (10.8)
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 driven type	
Sprocket	Type	Spur	

* Without guide bar and saw chain.

** Premixed alkylate fuel for 2-stroke can be used.

Cutting devices		Sprocket nose bar			Carving		
Guide bar	Type	C30S91-47ML	C35S91-53ML C35S91-53AL (CS-362WES only)	C40S91-58AA	C30H25-68CL	C35H25-76CL	
	Called length	cm	30	35	40	30	35
	Gauge	in	0.050				
Saw chain	Type	Oregon 91VXL, 91PX			Oregon 25AP, 25A		
	Number of drive links	47	53	58	68	76	
	Pitch	in	3/8			1/4	
	Gauge	in	0.050				
Sprocket	Number of teeth	6			8		
	Pitch	in	3/8			1/4	

1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm ²) (psi)		0.90 (9.2) (131)
Clutch engagement speed	r/min		4,150 - 4,900
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		950 - 990
Pole shoe air gaps	mm(in)		0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3,000 r/min	°BTDC	20
	at 10,000 r/min	°BTDC	39
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 (L) P/N X645-000031 (Carb. adjustment tool P/N Y089-000094)
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		r/min	4,200
4) Set idle speed by turning L mixture needle CCW		r/min	3,200
5) Confirm H mixture needle position before WOT setting			Turn H mixture needle CCW to confirm engine speed decreases less than or equal to 13,000 r/min.
6) WOT setting		r/min	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		r/min	Idle: 2,800 - 3,500 WOT: 13,000 - 14,000
8) Verify clutch engagement speed			Confirm clutch engagement speed. If it is less than 1.25 times the idle speed, adjust the idle speed by turning TAS CCW.
Chain oil discharge volume at 7,000 r/min	mL/min (US.fl.oz./min)		Adjustable: 1.5 - 13 (0.05 - 0.43) (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 chain starts to rotate during adjustment process step 2), decrease engine speed by turning TAS ACW 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	
	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		LM8	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 - 3.5	17 - 30	
	Front handle	M4**	20 - 30	2 - 3	17 - 26	
	Rear handle assembly	M5**	20 - 30	2 - 3	17 - 26	
	Spike	Upside	M5**	20 - 60	2 - 6	17 - 50
		Downside	M5**	20 - 40	2 - 4	17 - 35
	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

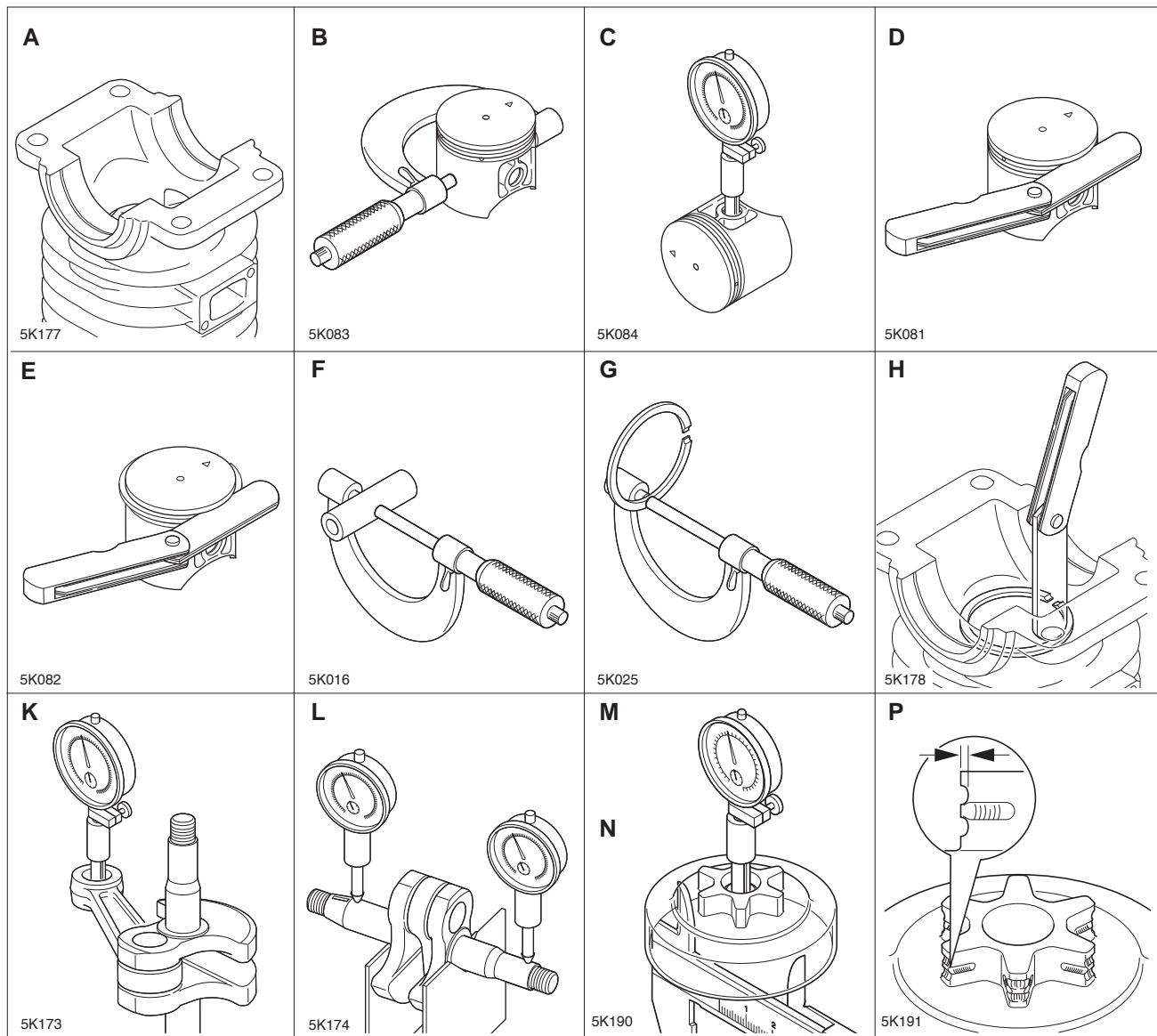
*** Precoat bolt: If the coat is peeled off, replace new one or apply thread locking sealant as shown below.

1-4 Special repairing materials

Material	Location	Remarks
Adhesive	Main bearing outer / crankcase	Loctite #638 or equivalent
	Stud bolt	Loctite #675 or equivalent
Liquid gasket	Crankcase seams	ThreeBond 1207D (P/N X686-000000)
Thread locking sealant	Starter pawl (Re-use*)	ThreeBond #1344 or equivalent
	Ignition coil	
Grease	Clutch needle bearing	EPNOC AP2 (Lithium based grease)
	Starter center shaft	P/N X695-000060
	Chain brake (metal contact part)	Molybdenum grease (approx.1 gram)

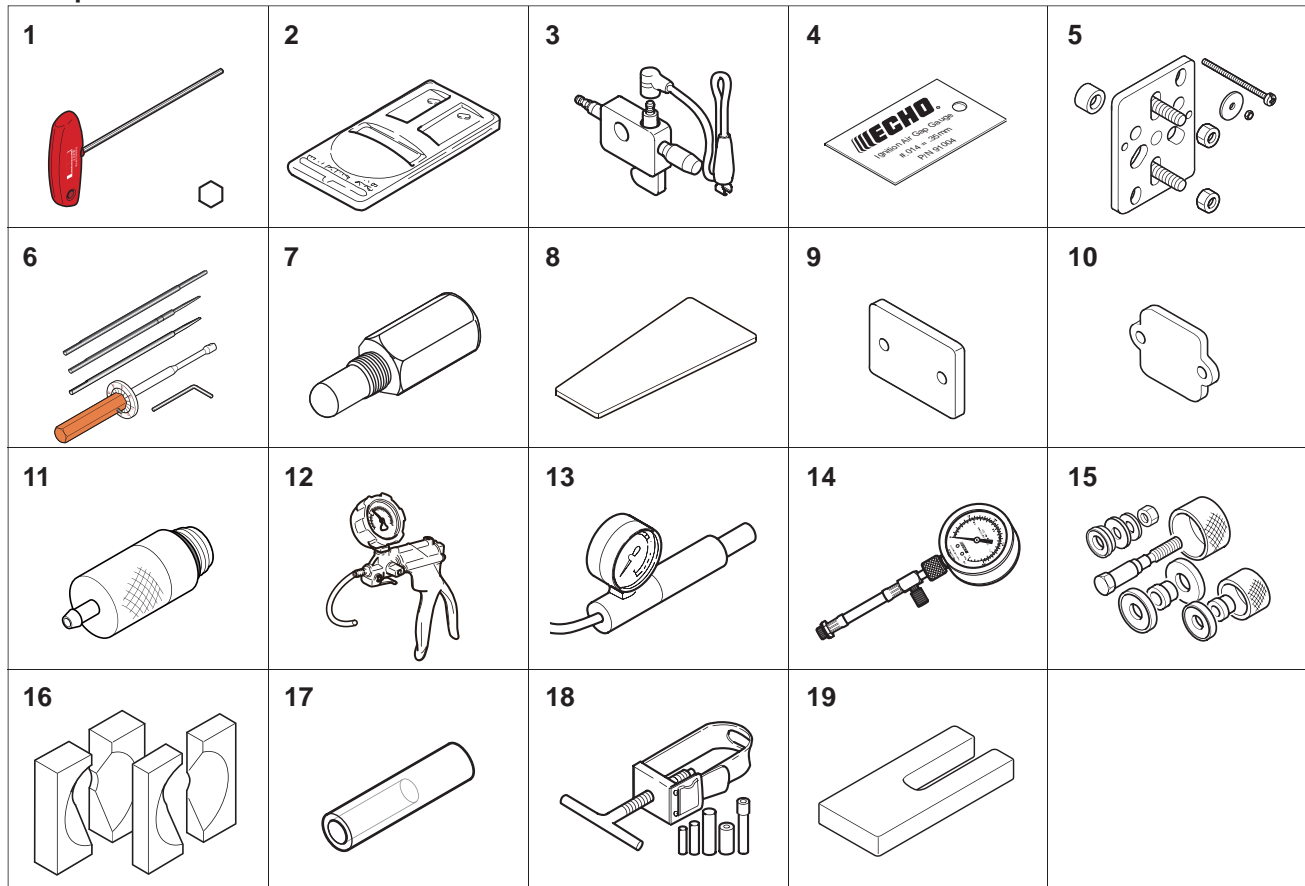
*If old thread locking sealant is left in threads, correct torque may not be secured. In case old thread locking sealant is left, remove it.

1-5 Service Limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminium can be seen	
B	Piston outer diameter	Min.	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	X602-000360	T-hex. wrench	Removing and installing hex. head bolt
2	897802-33330	Tachometer PET-1000R	Measuring engine speed to adjust carburetor
3	897800-79931	Spark tester	Checking ignition system
4	91004	Module air gap gauge	Adjusting pole shoe air gaps
5	Y089-000111	Puller	Removing magneto rotor (flywheel) and crankcase
6	Y089-000094	Carburetor adjustment tool	Adjusting carburetor
7	X644-000020	Piston stopper	Locking crankshaft rotation
8	91041	Pressure rubber plug	Plugging exhaust port to test crankcase/cylinder leakages
9	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase/cylinder leakages
10	897827-16131	Pressure plate	Plugging intake port to test crankcase/cylinder leakages
11	A131-000150	Pressure connector	Testing crankcase and cylinder leakage
12	91149	Pressure / vacuum tester	Testing crankcase / cylinder leakages
13	897803-30133	Pressure tester	Testing carburetor and crankcase leakage
14	91037	Compression gauge	Measuring cylinder compression
15	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
16	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
17	897726-21430	Oil seal tool	Installing oil seals
18	897702-30131	Piston pin tool	Removing and installing piston pin
19	897719-02830	Piston holder	Making piston steady to remove and install piston/ring