



SERVICE DATA

CHAIN SAW

ECHO:

CS-620P

(Serial number : C26712000001-C26712999999)
 (Serial number : C26813000001-C26813999999)
 (Serial number : C69215000001-C69215999999)

CS-620PW

(Serial number : C26912000001-C26912999999)
 (Serial number : C27013000001-C27013999999)
 (Serial number : C69315000001-C69315999999)

shindaiwa:

600sx

(Serial number : C35912000001-C35912999999)
 (Serial number : C36013000001-C36013999999)
 (Serial number : C69415000001-C69415999999)

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 Ord. 401-30 (Model : CS-600P) contains lots of information for servicing this model.

CONTENTS

	page
1 SERVICE INFORMATION	2
1-1 Specifications.....	2
1-2 Technical data.....	3
1-3 Torque limits.....	4
1-4 Special repairing materials	5
1-5 Service limits.....	6
1-6 Special tools	7

Reference No. **01-59E-01**

REVISED: 201702

ISSUED: 201306



1 SERVICE INFORMATION

1-1 Specifications

Model			CS-620P, 600sx	CS-620PW
Dimensions	Length	mm(in)	448 (17.6)	
	Width	mm(in)	246 (9.7)	317 (12.5)
	Height	mm(in)	296 (11.7)	
Dry weight*		kg(lb)	6.2 (13.7)	6.4 (14.1)
Engine	Type		YAMABIKO, air-cooled, two-stroke, single cylinder Ventilated piston, Semi-automatic decompression	
	Rotation		Clockwise as viewed from the output end	
	Displacement	cm ³ (in ³)	59.8 (3.649)	
	Bore	mm(in)	45.0 (1.772)	
	Stroke	mm(in)	37.6 (1.480)	
	Compression ratio		6.9	
Carburetor	Type		Diaphragm horizontal-draft	
	Model		Walbro HDA-316	
	Venturi size-Throttle bore	mm(in)	15.88 - 19.03 (0.625 - 0.749)	
Ignition	Type		CDI (Capacitor discharge ignition) system	
	Spark plug		BPMR8Y (S/N 12 series: BPM8Y)	
Exhaust	Muffler type		Spark arrester muffler	
Starter	Type		Automatic rewind	
	Rope diameter x length	mm(in)	4.0 x 950 (0.15 x 37.4)	
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.)	0.65 (22.0)	
Clutch	Type		Inboard clutch : Centrifugal, 3-shoe slide with 3-tension spring	
Guide bar / Saw chain lubrication type			Automatic with volume adjuster	
	Tank capacity, oil	L (U.S.fl.oz.)	0.3 (10.1)	
Sprocket	Type		Floating rim	
	Number of teeth		7	
	Pitch	in	3/8	

* Without guide bar and saw chain.

Cutting devices							
Guide bar	Type	CS-620P/PW	16D0PS3860	18D0PS3866	20D0PS3870	24D0PS3881	27D0PS3893
		600sx	-	-	S20D0PS3870	S24D0PS3881	S27D0PS3893
	Called length	in	16	18	20	24	27
	Gauge	in	0.050				
Saw chain	Type		OREGON 72LPX				
	Number of drive links		60	66	70	81	93
	Pitch	in	3/8				
	Gauge	in	0.050				

1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm ²) (psi)		1.06 (10.8) (154)
Clutch engagement speed	RPM		4,000
Engagement Minimum [†]	RPM		3,600
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		2.6 - 3.0
Pole shoe air gaps	mm (in)		0.3 - 0.4 (0.012 - 0.016)
Ignition timing	at 3,000 RPM	°BTDC	9
	at 8,000 RPM	°BTDC	26
PET-9000	Parameter 1		329
	Parameter 2		01
Chain oil discharge volume at 7,000 RPM			Adjustable: 1.5 - 13 (0.05 - 0.39)
mL/min (US.fl.oz./min)			(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)		Flush with diaphragm seat
Limiters cap / plug			Limiters cap P/N P003-000010
Tool to adjust mixture needles			Screwdriver 2.5 mm
Carburetor adjustment			
1) Initial setting			
H mixture needle	turn out		7/8
L mixture needle	turn out		1 7/8
Throttle adjust screw	turn in* ¹		1/2
Engine warm-up	Idle - WOT : Total	sec.	5 - 5 : 120
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed* ²
3) Set idle maximum speed w/ TAS	RPM		3,600
4) Set idle speed by turning L mixture needle CCW	RPM		2,800
5) Confirm H mixture needle position before WOT setting	RPM		Turn H mixture needle CCW to confirm engine speed decreases less than 12,000
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 engine speed should fall within: 12,700 - 12,900
7) Verify final engine speed with standard equipment	RPM		Idle: 2,600 - 3,300 WOT: 12,600 - 13,400

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* [†]	60 - 90	6 - 9	50 - 80	
	Starter center shaft screw	M5*	30 - 45	3 - 4.5	25 - 40	
	Starter case	M5	70 - 90	7 - 9	60 - 80	
Ignition system	Magneto rotor (Flywheel)	M8	230 - 270	23 - 27	200 - 235	
	Ignition coil	M5	60 - 90	6 - 9	50 - 80	
	Ignition switch	M10	15 - 30	1.5 - 3	13 - 25	
	Spark plug	M14	130 - 170	13 - 17	113 - 150	
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	25 - 40	
	Intake bellows	M5	60 - 90	6 - 9	50 - 80	
Clutch	Clutch hub	LM10	400 - 500	40 - 50	350 - 450	
Engine	Crankcase	M5 [†]	60 - 90	6 - 9	50 - 80	
	Cylinder	M5 [†]	70 - 110	7 - 11	60 - 95	
	Cylinder cover	M5	60 - 90	6 - 9	50 - 80	
	Muffler	M5*	70 - 110	7 - 11	60 - 95	
	Muffler lid	M4	15 - 25	1.5 - 2.5	13 - 22	
Others	Auto-oiler	M4	35 - 50	3 - 5	25 - 45	
	Compression spring	Cushion bracket	M5	30 - 40	3 - 4	25 - 35
		Crankcase	M5	60 - 80	6 - 8	50 - 70
		Front handle	M6	40 - 55	4 - 5.5	35 - 48
	Front handle	M5	40 - 60	4 - 6	35 - 50	
	Rear handle	M5	40 - 60	4 - 6	35 - 50	
	Brake lever (Hand guard)	M5	60 - 90	6 - 9	50 - 80	
	Brake cover	M5*	40 - 60	4 - 6	35 - 50	
	Sprocket guard plate	M4	35 - 50	3 - 5	25 - 45	
	Spike	M5	90 - 110	9 - 11	80 - 95	
	Chain catcher	M5*	60 - 90	6 - 9	50 - 80	
	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		
M8		110 - 150	11 - 15	95 - 130		

LM: Left-hand thread

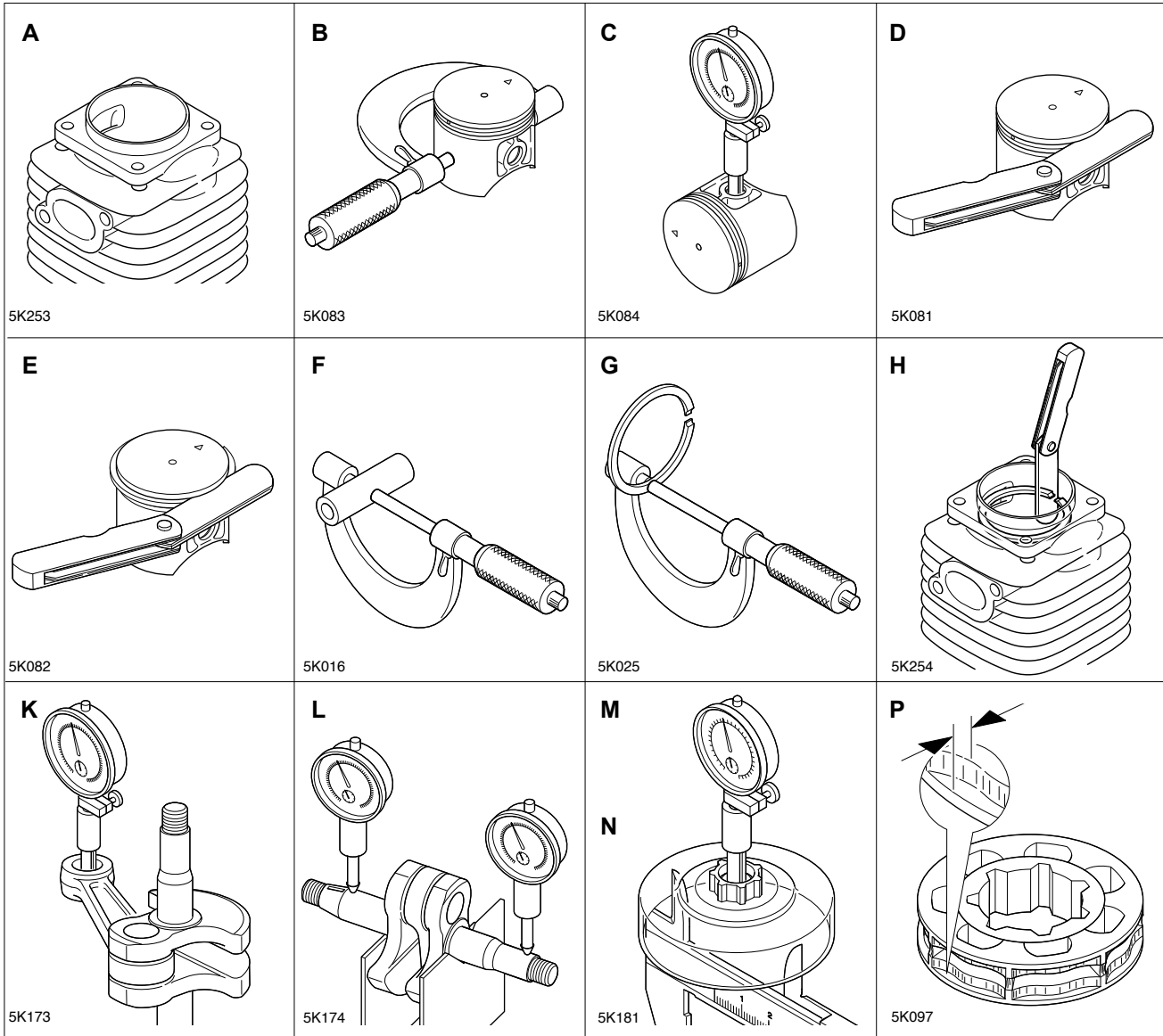
*Thread locking sealant (See next page)

[†] The torque difference between four bolts should not exceed 20 kgf•cm (2N•m, 17in•lbf) per bolt.

1-4 Special repairing materials

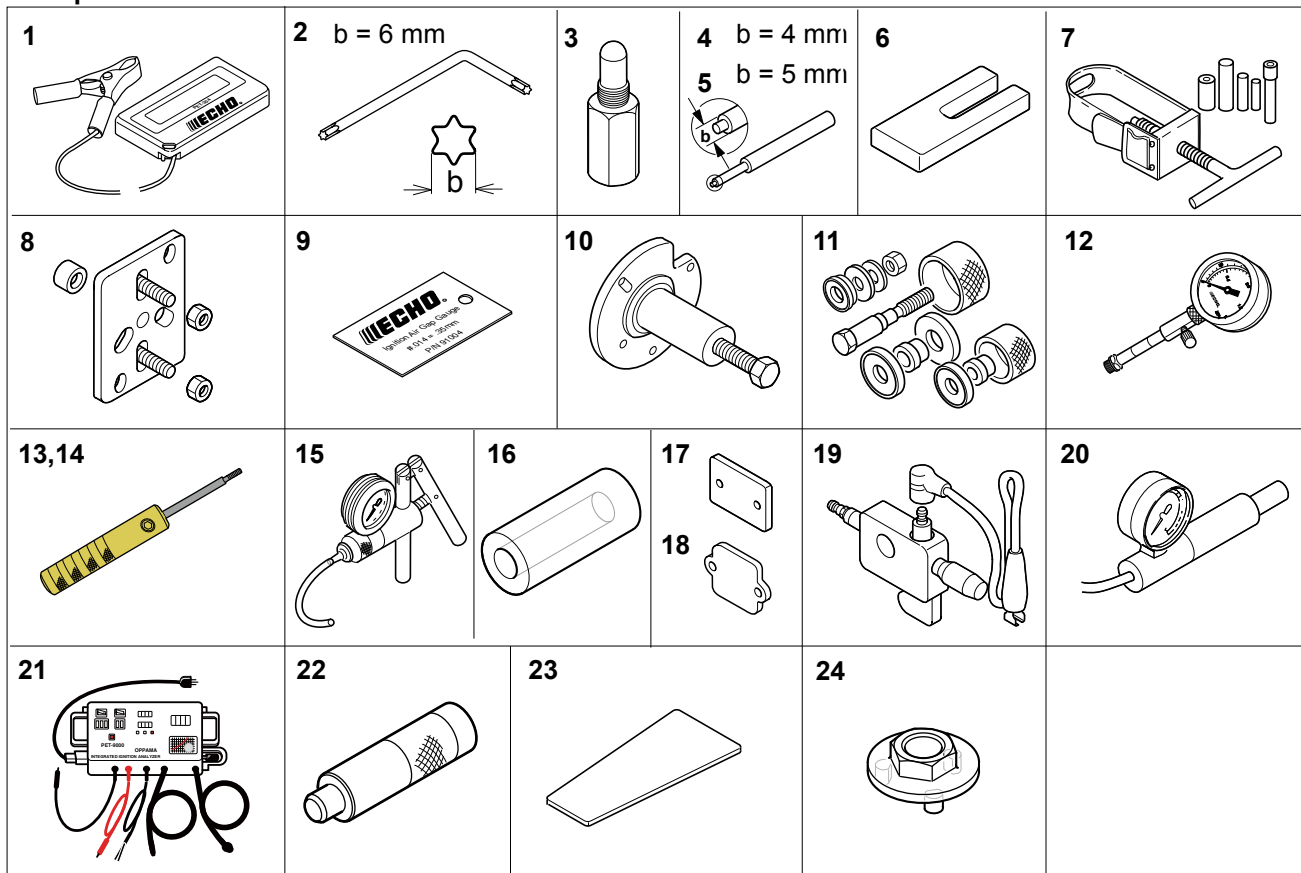
Material	Location	Remarks
Adhesive	Guide bar stud	Loctite #609, ThreeBond 1373 or equivalent
	Starter center shaft screw	Loctite #222, ThreeBond1342 or equivalent
	Chain catcher	
Grease	Auto-oiler worm	Lithium based grease or ECHO XTended Protection™ Lubricant
	Clutch needle bearing	
	Rubber cushion, inside	
	Choke knob	
	Rewind spring	
	Oil seal inner lips	
	Brake cover	
	Chain brake (metal contact part)	Molybdenum grease (approx. 1 gram)
Thread locking sealant	Muffler	Loctite #242, ThreeBond #1324 or equivalent
	Spike	
	Starter pawl	

1-5 Service Limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminum can be seen	
B	Piston outer diameter	Min.	44.90 (1.768)
C	Piston pin bore	Max.	11.030 (0.4343)
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.	10.98 (0.4323)
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.	15.025 (0.5915)
L	Crankshaft runout	Max.	0.01 (0.001)
M	Sprocket bore	Max.	13.90 (0.5472)
N	Clutch drum bore	Max.	71.5 (2.81)
P	Sprocket wear limit	Max.	0.5 (0.02)

1-6 Special tools



Key	Part Number	Description	Used for:
1	G310-000050	Tachometer PET-304	Measuring engine speed to adjust carburetor
2	X605-000050	Torx L wrench (T27)	Removing and installing bolt
3	897537-30130	Piston stopper	Locking crankshaft rotation
4	897724-01361	Spring pin tool (4 mm)	Removing and installing spring pin (4 mm dia)
5	897724-02831	Spring pin tool (5 mm)	Removing and installing spring pin (5 mm dia)
6	897719-02830	Piston holder	Making piston steady to remove and install piston / rings
7	897702-30131	Piston pin tool	Removing and installing piston pin
8	Y089-000110	Puller	Removing magneto rotor
9	91004	Module air gap gauge	Adjusting pole shoe air gaps
10	897502-19830	Crankcase tool	Separating crankcase
11	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
12	91037	Compression gauge	Measuring cylinder compression
13	91075	Limiter cap removal tool	Removal limiter cap (Left hand thread 2.5 mm)
14	91076	Limiter cap removal tool	Removal limiter cap (Left hand thread 3.0 mm)
15	91024	Pressure tester	Testing crankcase leakages
16	897726-16431	Oil seal tool	Installing starter side oil seal
17	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
18	897827-16131	Pressure plate	Plugging intake port to test crankcase / cylinder leakages
19	897800-79931	Spark tester	Checking ignition system
20	897803-30133	Pressure tester	Testing carburetor leakages
21	900300	Ignition Analyzer : PET-9000	Measuring Ignition timing, Primary/Secondary voltage engine speed
22	897714-12330	Oil seal tool	Installing crankcase side oil seal
23	91041	Pressure rubber plug	Plugging exhaust port to test crankcase / cylinder leakages
24	897505-16133	Clutch tool	Removing and installing clutch assembly