



# SERVICE DATA

TRIMMER/BRUSHCUTTER

ECHO: SRM-3020TES

shindaiwa: T302TS C302TS

(Serial number : 37000001 and after)

(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 products information available at the time of publication.

SERVICE MANUAL Ref. No. 402-43 (Model: SRM-2620ES, SRM-2620TES, T262XS, C262S, T262TXS and C262TS) contains lots of information for servicing these models.

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Reference No. **10-30B-01**

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## 1 SERVICE INFORMATION

## 1-1 Specifications

Model		SRM-3020TES (L) T302TS	SRM-3020TES (U) C302TS
Dimensions* <sup>1</sup>	Length	mm (in)	1799 (70.8)
	Width	mm (in)	349 (13.7)
	Height	mm (in)	344 (13.5)
Dry weight* <sup>2</sup>		kg (lb)	5.8 (12.8)
Engine	Type	YAMABIKO, air-cooled, two-stroke, single cylinder	
	Rotation	Counterclockwise as viewed from the output end	
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	30.5 (1.861)
	Bore	mm (in)	36.0 (1.417)
	Stroke	mm (in)	30.0 (1.181)
	Compression ratio		7.2
Carburetor	Type	Diaphragm, horizontal-draft, with purge bulb	
	Model	Walbro WYG-11	
	Venturi size-Throttle bore	mm (in)	12.2 - 12.2 (0.48 - 0.48)
Ignition	Type	CDI (Capacitor discharge ignition) system	
	Spark plug	NGK CMR7H	
Exhaust	Muffler type	Spark arrester muffler with catalyst	
Starter	Type	ES-start (effortless) / S Start (Soft)	
	Rope diameter x length	mm (in)	3.5 x 800 (0.14 x 31.5)
Fuel* <sup>3</sup>	Type* <sup>4</sup>	Mixed two-stroke fuel	
	Mixture ratio	50 : 1 (2 %)	
	Gasoline	Minimum 89 octane	
	Two-stroke engine oil	ISO-L-EGD (ISO/CD13738), JASO FC/FD	
	Tank capacity	L (U.S.fl.oz.)	Full tank capacity: 0.71 (24.0) Usable capacity: 0.66 (22.3)
Clutch	Type	Centrifugal, 2-shoe pivot	
Handle	Type	Front:	Crescent loop w/ cushion grip
		Rear:	Integrated control grip w/ cushion
Drive shaft	Type	Solid type with spline (7-tooth)	
	Diameter - Length	mm (in)	7 - 1540 (0.27 - 60.62)
	Housing (Main pipe)	OD - ID mm (in)	25.0 - 22.0 (0.98 - 0.87)
		Length mm (in)	1500 (59.1)
Gear case	Reduction ratio	1.62	
	Gear tooth	Spiral bevel gear	
	Lubrication	Lithium based grease	
Cutter	Type	Nylon line cutter SF400 w/ 2.4mm Silentwist	
	Arbor diameter for blade	mm (in)	25.4 (1.0)
	Fastener type, size	mm	Left-hand thread M10 x 1.25pitch
	Cutting rotation	Counterclockwise as viewed from top	

**OD:** Outer diameter. **ID:** Inner diameter.

\*<sup>1</sup> Without Nylon line head \*<sup>2</sup> Without Nylon line head and Shield \*<sup>3</sup> Refer to Operator's manual

\*<sup>4</sup> Premixed alkylate fuel for 2-stroke can be used

1-2 Technical data

Engine			
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)	1.04 (10.6) (151)	
Clutch engagement speed	r/min	4,000	
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	960 - 1,000	
Pole shoe air gaps	mm(in)	0.3 - 0.4 (0.012 - 0.016)	
Ignition timing	at 3,000 r/min	°BTDC	12
	at 9,000 r/min	°BTDC	33
Carburetor			
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)	0.05 (0.5) (7.0)	
Metering lever height	mm(in)	0.66 (0.03) lower than diaphragm seat	
Tool to adjust mixture needles		D-shaped tool (S) P/N X645-000022 (Carb. adjustment tool P/N Y089-000094)	
Carburetor adjustment			
Cutting head preparation	Nylon line cutter	SF400	
	Line length* <sup>1</sup>	245 mm	
1) Initial setting	H mixture needle	turn out	3 5/8
	L mixture needle	turn out	4 1/8
	Throttle adjust screw	turn out** <sup>2</sup>	9 7/8
Engine warm-up	Idle - WOT : Total	sec.	10 - 50 : 180
2) Find idle maximum speed			Adjust L mixture needle to maximum idle speed* <sup>3</sup>
3) Set idle maximum speed w/ TAS		r/min	4,000
4) Set idle speed by turning L mixture needle CCW		r/min	2,900
5) Find WOT maximum speed		r/min	Adjust H mixture needle to maximum WOT speed
6) WOT setting		r/min	Turn H mixture needle CCW to decrease WOT speed by : 30 - 50
7) Verify final engine speed with standard equipment		r/min	Idle: 2,700 - 3,200
		r/min	WOT: 9,900 - 10,500
8) Verify clutch engagement speed			Line length* <sup>1</sup> : 200 mm (Cut by shield knife)
			Confirm clutch engagement speed. If it is less than 1.25 times the idle speed, adjust the idle speed by turning TAS CCW.

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

\*<sup>1</sup> From eyelet on nylon head

\*<sup>2</sup> Turn TAS clockwise until its head touches boss. Then turn TAS anticlockwise.

\*<sup>3</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 pawl assembly	M8	70 - 110	7 - 11	60 - 95
	Starter case	M5	40 - 60	4 - 6	32 - 55
Ignition system	Magneto rotor (Flywheel)	M8	160 - 200	16 - 20	140 - 175
	Ignition coil	M5* <sup>†</sup>	40 - 60	4 - 6	32 - 55
	Fan cover	M5	50 - 70	5 - 7	45 - 60
	Spark plug	M10	100 - 150	10 - 15	87 - 130
Fuel system	Carburetor	M5	30 - 45	3 - 4.5	25 - 40
	Intake insulator	M5	25 - 35	2.5 - 3.5	22 - 30
	Insulator plate	M5 <sup>†</sup>	40 - 60	4 - 6	32 - 55
	Fuel tank with stand	M5	40 - 60	4 - 6	32 - 55
	Fan cover side	M5 <sup>†</sup>	70 - 90	7 - 9	60 - 80
Clutch	Clutch shoe	M6	70 - 110	7 - 11	60 - 95
Cylinder cover	Starter side	M5* <sup>†</sup>	30 - 45	3 - 4.5	25 - 40
	Fan cover side	M5	30 - 45	3 - 4.5	25 - 40
Engine	Crankcase	M5	70 - 110	7 - 11	60 - 95
	Cylinder	M5	70 - 110	7 - 11	60 - 95
	Muffler	M5	70 - 110	7 - 11	60 - 95
	Muffler stay	M5	50 - 70	5 - 7	45 - 60
	Muffler cover	M5* <sup>†</sup>	30 - 45	3 - 4.5	25 - 40
Other	Cutter fastener	LM10	280 - 320	28 - 32	245 - 280
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

\*<sup>†</sup> Precoat bolt: If the coat is peeled off, replace new one or apply thread locking sealant as shown below.

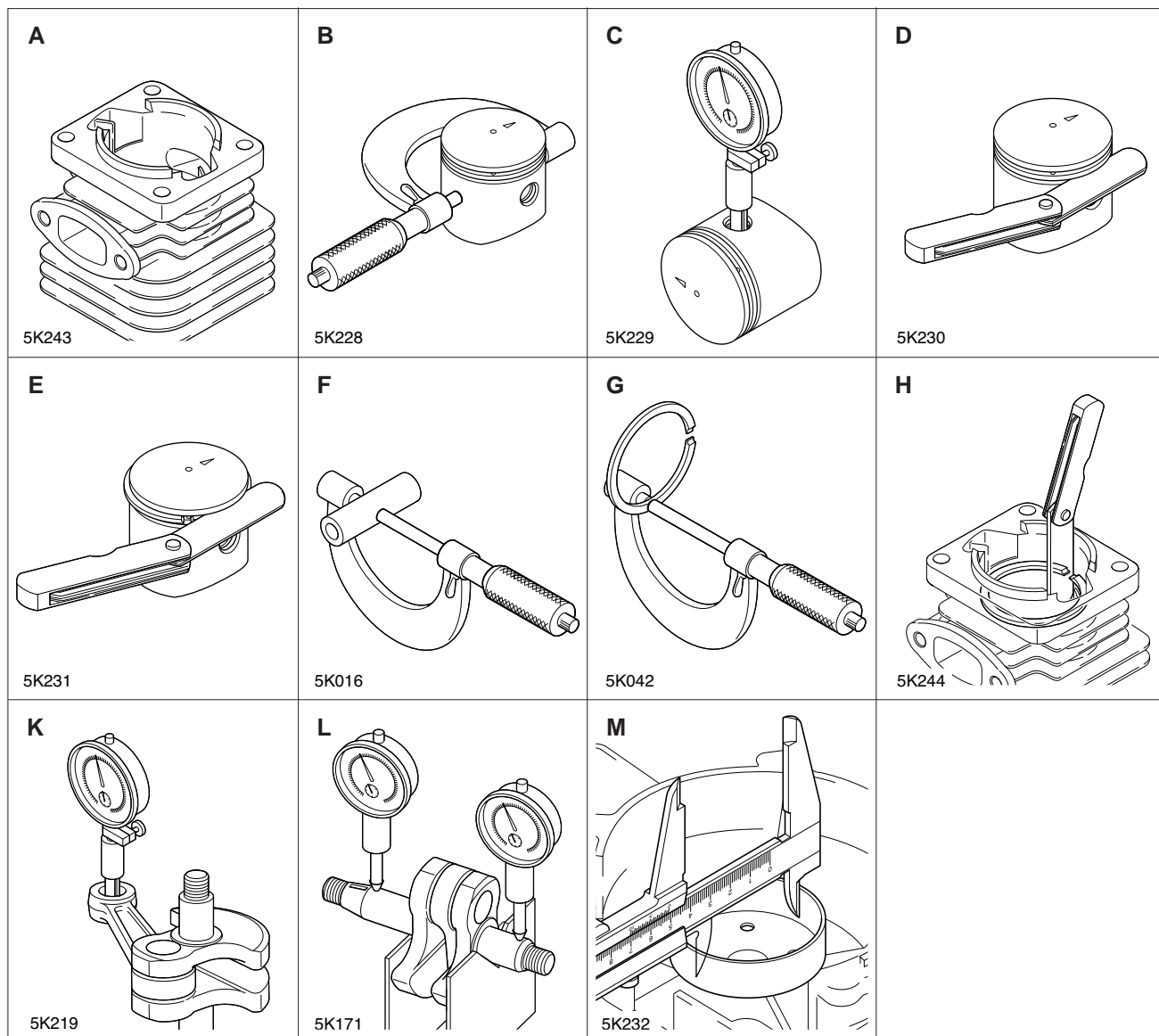
† Tapping screw : Apply Two-stroke oil (See blow)

## 1-4 Special repairing materials

Material	Location	Remarks
Grease	Drive shaft	EPNOC AP2 (Lithium based grease) P/N X695-000060
	Gear case	
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Ignition coil (re-use*)	ThreeBond #1324N or equivalent
	Starter side Cylinder cover (re-use*)	
	Muffler cover(re-use*)	
Oil	Intake insulator lip	Two-stroke engine oil or engine oil (SAE#30)
	Insulator plate bolts	
	Fuel tank bolts (Fan cover side)	

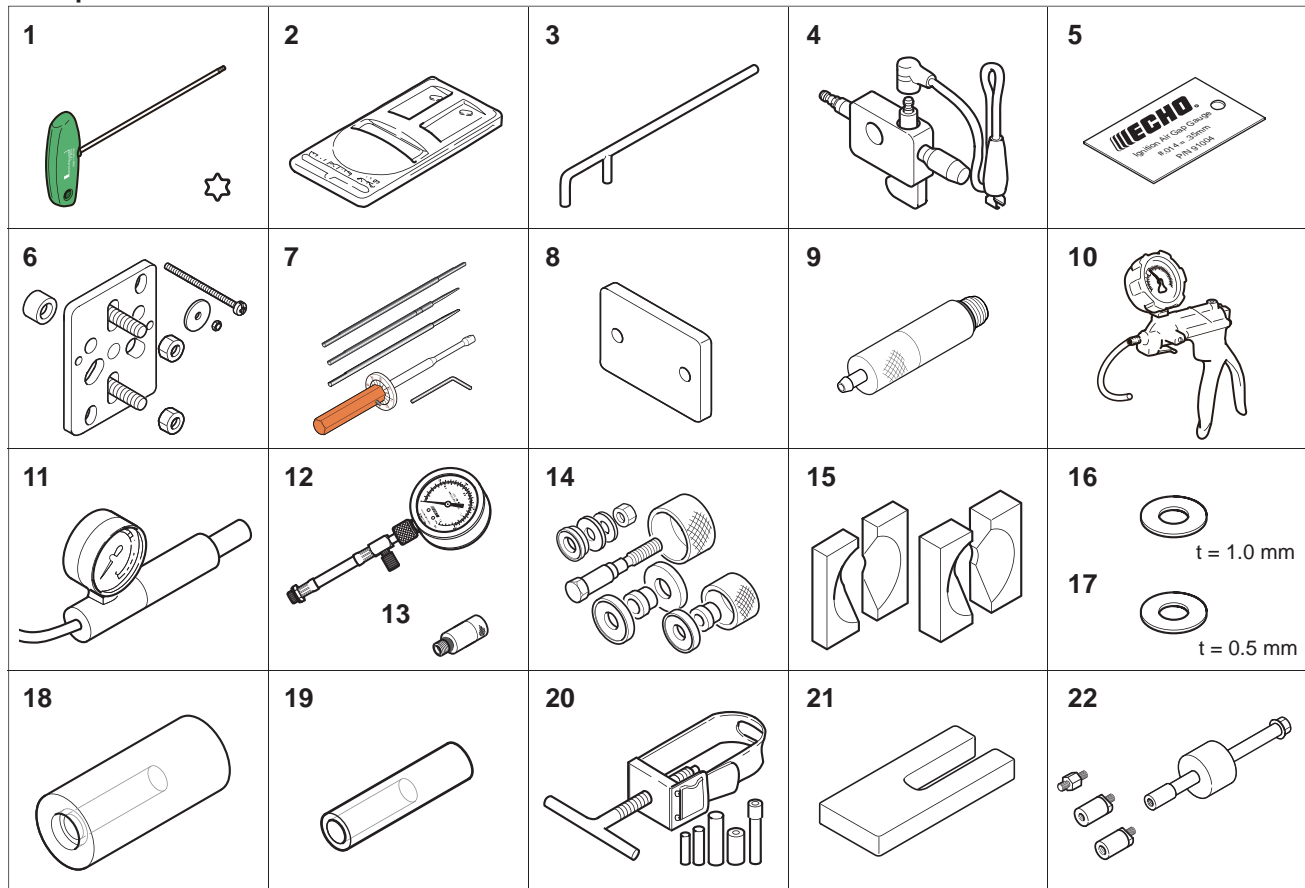
\* If old thread locking sealant is left in threads, correct torque may not be secured. In case old thread locking sealant is left, remove it.

1-5 Service limits



Description		mm (in)	
A	Cylinder bore	When plating is worn and aluminium can be seen	
B	Piston outer diameter	Min.	35.91 (1.414)
C	Piston pin bore	Max.	9.035 (0.3557)
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.	8.98 (0.3535)
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.	12.025 (0.4734)
L	Crankshaft runout	Max.	0.02 (0.001)
M	Clutch drum bore	Max.	65.5 (2.58)

## 1-6 Special tools



Key	Part Number	Description	Reference
1	X602-000340	Torx wrench (T27)	Removing and installing torx bolt
2	897802-33330	Tachometer PET-1000R	Measuring engine speed to adjust carburetor
3	897712-04630	2-pin wrench	Removing and installing pawl carrier
4	897800-79931	Spark tester	Checking ignition system
5	91004	Module air gap gauge	Adjusting pole shoe air gaps
6	Y089-000111	Puller	Removing magneto rotor
7	Y089-000094	Carburetor adjustment tool	Adjusting carburetor
8	897826-16131	Pressure rubber plug	Plugging intake port to test crankcase / cylinder leakages
9	A131-000160	Pressure connector	Testing crankcase and cylinder leakages
10	91149	Pressure / vacuum tester	Testing crankcase and cylinder leakages
11	897803-30133	Pressure tester	Testing carburetor and crankcase leakages
12	91037	Compression gauge	Measuring cylinder compression
13	P021-051690	Adapter	Measuring cylinder compression (Use with 91037)
14	897701-14732	Bearing tool	Removing and installing ball bearings on crankcase
15	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
16	363018-00310	Washer	Installing crankcase oil seal (clutch side)
17	10001-418430	Washer	Installing crankcase oil seal (starter side)
18	897714-24330	Oil seal tool	Installing crankcase oil seal
19	897726-21430	Oil seal tool	Installing crankcase oil seal
20	897702-30131	Piston pin tool	Removing and installing piston pin
21	897719-02830	Piston holder	Making piston steady to remove and install piston/ring
22	P021-044870	PTO shaft puller	Removing PTO shaft