



# **SERVICE DATA**

## **TRIMMER/BRUSHCUTTER**

**ECHO: SRM-335ES SRM-335TES**

**shindaiwa: T335TS C335TS**

**(Serial number : 37000001 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.

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Reference No. **10-30A-02**

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## 1 SERVICE INFORMATION

## 1-1 Specifications

Model		SRM-335ES (L)	SRM-335TES (L) T335TS	SRM-335ES (U)	SRM-335TES (U) C335TS
Dimensions*	Length	mm (in)	1838 (72.4)	1816 (71.5)	1846 (72.7) 1816 (71.5)
	Width	mm (in)	340 (13.4)		667 (26.3)
	Height	mm (in)	304 (11.0)		458 (18.0)
Dry weight*	kg (lb)	7.2 (15.8)	6.8 (15.1)	7.2 (15.8)	7.1 (15.6)
Engine	Type	YAMABIKO, air-cooled, two-stroke, single cylinder			
	Rotation	Anticlockwise as viewed from the output end			
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	30.5 (1.86)		
	Bore	mm (in)	36.0 (1.42)		
	Stroke	mm (in)	30.0 (1.18)		
	Compression ratio	7.9			
Carburettor	Type	Rotary type : Diaphragm, horizontal-draught, with primer			
	Model	WALBRO WYK-283			
Ignition	Type	TCI (Transistor controlled ignition) system in a single integrated piece			
	Spark plug	BPMR8Y			
Exhaust	Muffler type	Spark arrester muffler with catalyst			
Starter	Type	ES (effortless-start)			
	Rope diameter x length	mm (in)	3.8 x 1000 (0.15 x 39.8)		
Fuel**	Type	Premixed two-stroke fuel			
	Mixture ratio	50 : 1 (2%)			
	Petrol	Minimum 89 octane			
	Two-stroke engine oil	ISO-L-EGD (ISO/CD13738), JASO FC/FD			
	Tank capacity	L (U.S.fl.oz.)	0.84 (28.4)		
Clutch	Type	Centrifugal, 2-shoe pivot			
Handle	Type	Front : Crescent loop with cushion grip		U-handle with integrated control grip	
		Rear : Integrated control grip with cushion			
Gear case	Reduction ratio	1.33	2.07	1.33	2.07
	Gear tooth	Spiral bevel gear			
	Lubrication	Lithium based grease or ECHO XTended Protection™ Lubricant			
Cutter	Type	Nylon line cutter Z5		3-tooth blade (255 mm)	Nylon line cutter Z5
	Pilot diameter for blade	mm(in)	25.4 (1.0)		
	Fastener type, size	mm	Left-hand thread nut, M10 x 1.25 pitch		
	Cutting rotation	Anticlockwise as viewed from top			

OD: Outer diameter. ID: Inner diameter. \* Without shoulder harness and cutter. \*\* Refer to Operator's manual.

Drive shaft		SRM-335ES	SRM-335TES, T335TS, C335TS
Type		Solid type with spline (10 tooth)	Solid type with spline (7 tooth)
Diameter - Length	mm (in)	8.0 - 1590 (0.31 - 62.60)	7.0 - 1540 (0.27 - 60.62)
Housing OD-ID	mm (in)	28.0 - 24.8 (1.10 - 0.98)	25.0 - 22.0 (0.98 - 0.87)
Main pipe Length	mm (in)	1530 (60.2)	1500 (59.1)

1-2 Technical data

Model		SRM-335ES (L)	SRM-335ES (U)	SRM-335TES (L/U) T335TS, C335TS
<b>Engine</b>				
Idling speed	r/min	2,800 - 300 + 500		
Wide open throttle speed	r/min	8,500-9,500*	10,500- 12,500**	10,000-11,000*
Clutch engagement speed	r/min	3,800		
Engagement Minimum <sup>†</sup>	r/min	3,600		
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)	0.95 (9.7) (138)		
<b>Ignition system</b>				
Spark plug gap	mm (in)	0.6 - 0.7 (0.024 - 0.028)		
Minimum secondary voltage at 1,500 r/min	kV	15		
Primary coil resistance	Ω	1 - 5		
Secondary coil resistance	kΩ	10 - 15		
Pole shoe air gaps	mm (in)	0.30 - 0.40 (0.012 - 0.016)		
Ignition timing	at 3,000 r/min	°BTDC		
	at 8,000 r/min	°BTDC		
<b>Carburettor</b>				
Venturi Size	mm(in)	12.2 (0.480)		
Throttle Bore	mm(in)	12.2 (0.480)		
Throttle adjust screw initial setting	turns in***	3 1/4		
L mixture needle initial setting	turns in****	12 1/2		
H mixture needle initial setting	turns out	3 1/8		
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)	0.05 (0.5) (7.0)		
Metering lever height	mm (in)	1.5 (0.06) lower than diaphragm seat		

BTDC: Before top dead centre.

\*With Nylon line cutter and shield.

\*\*With 3-tooth blade (255 mm).

\*\*\* Set throttle adjust screw to the point that its tip just contacts throttle plate before initial setting.

\*\*\*\* Screw in L mixture needle from initial thread engagement (at the point that the clicking sound is heard).

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

## 1-3 Torque limits

Descriptions		Size	kgf·cm	N·m	in·lbf
Starter system	Starter pawl assembly	M 8	160 - 200	16 - 20	140 - 175
	Starter case	M 4*	30 - 45	3 - 4.5	26 - 39
Ignition system	Flywheel	M 8	180 - 230	18 - 23	158 - 201
	Ignition coil	M 4*	70 - 90	7 - 9	61 - 79
	Fan cover	M 5*	50 - 90	5 - 9	44 - 79
	Spark plug	M 14	130 - 170	13 - 17	112 - 150
Fuel system	Carburettor	M 5	35 - 50	3.5 - 5	31 - 44
	Intake insulator	M 5	50 - 70	5 - 7	44 - 61
	Fuel tank with stand	M 5*	50 - 80	5 - 8	44 - 70
Clutch	Clutch shoe	M 6	70 - 110	7 - 11	61 - 95
Cylinder cover	Flanged bolt	M 5*	30 - 45	3 - 4.5	26 - 39
Engine	Crankcase	M 5**	70 - 90	7 - 9	61 - 79
	Cylinder	M 5**	70 - 90	7 - 9	61 - 79
	Muffler	M 5	60 - 100	6 - 10	53 - 88
	Exhaust guide	M 4	14 - 28	1.4 - 2.8	12 - 24
	Muffler cover	M 5*	30 - 45	3 - 4.5	26 - 39
Other	Cutter fastener	LM 10	280 - 320	28 - 32	245 - 280
Regular bolt, nut and screw		M 3	6 - 10	0.6 - 1	5 - 9
		M 4	15 - 25	1.5 - 2.5	13 - 22
		M 5	25 - 45	2.5 - 4.5	22 - 39
		M 6	45 - 75	4.5 - 7.5	39 - 65
		M 8	110 - 150	11 - 15	95 - 130

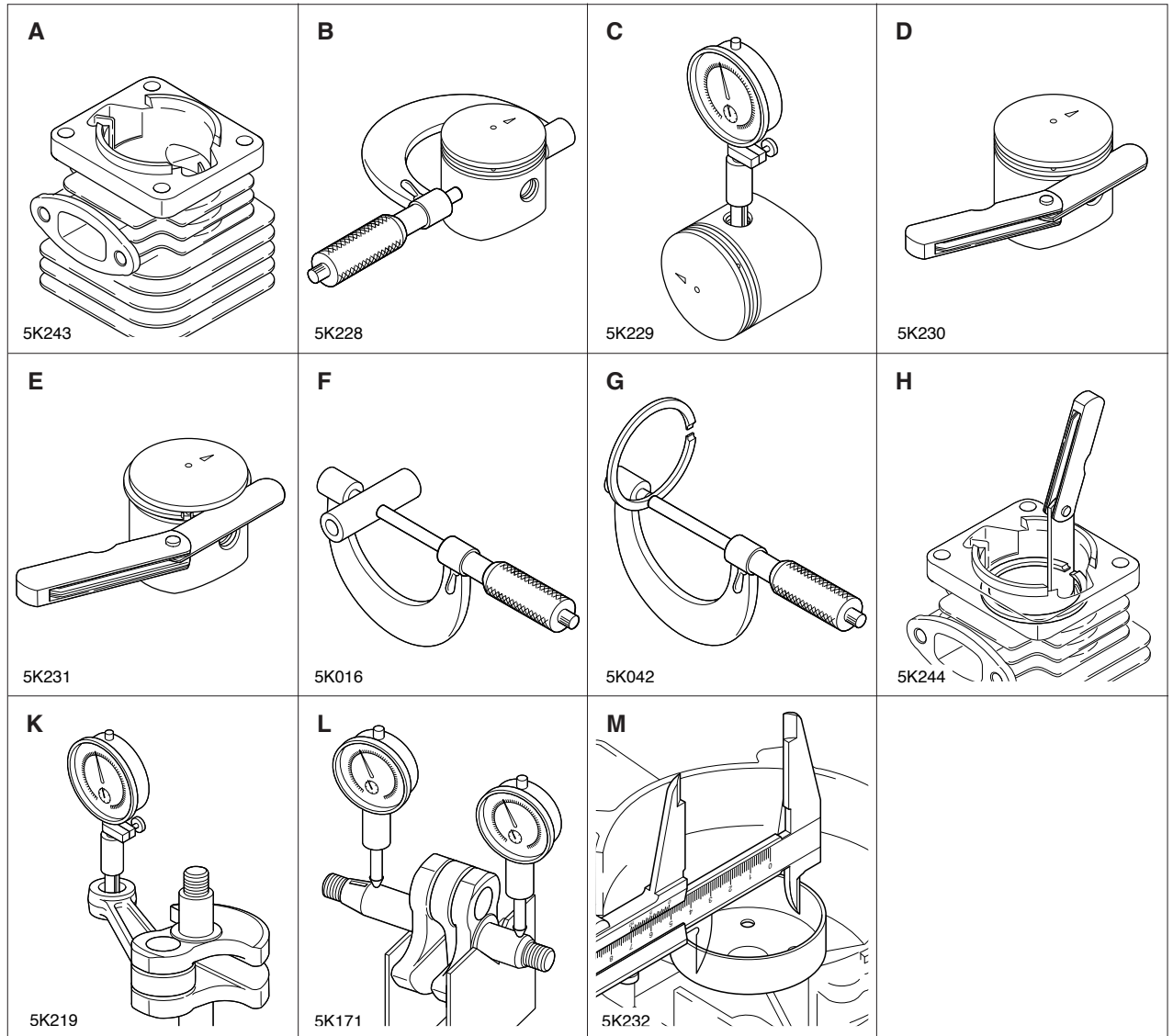
LM: Left-hand thread. \* Apply thread locking sealant. (See below)

\*\* The torque differences among four bolts should not exceed 20 kgf·cm (2N·m, 17in·lbf) on one cylinder or crankcase

## 1-4 Special repairing materials

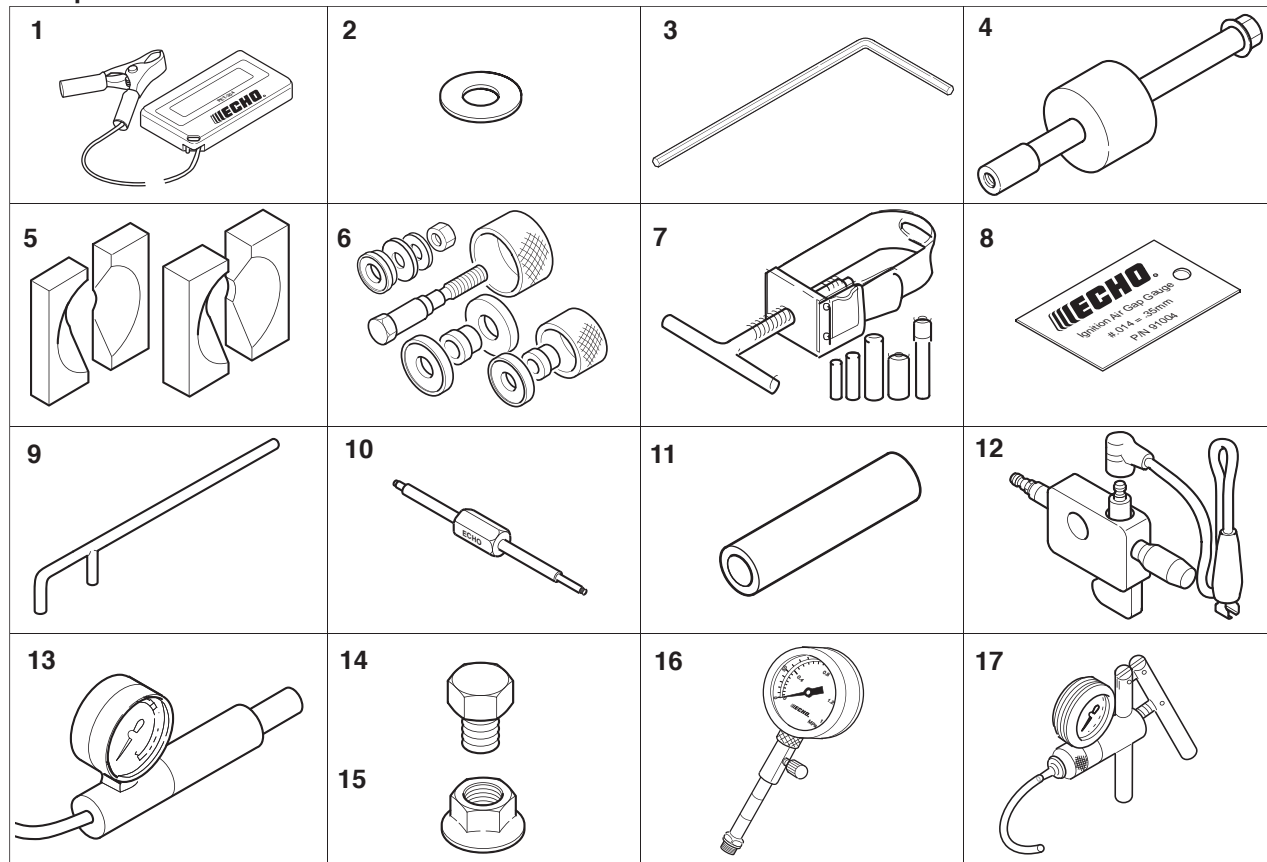
Material	Location	Remarks
Grease	Drive shaft	Lithium based grease or ECHO XTended Protection™ Lubricant
	Gear case	
	Rewind spring	
	Starter centre post	
	Oil seal inner lips	
Thread locking sealant	Starter case	Loctite #675 or equivalent
	Fuel tank	
	Ignition coil	Loctite #242, ThreeBond #1324 or equivalent
	Fan cover	Loctite #222, Three Bond #1342 or equivalent
	Top guard	
	Stand	
	Muffler cover	
Cylinder cover		

1-5 Service limits



Description			mm (in)
A	Cylinder bore		When plating is worn and aluminium can be seen
B	Piston outer diameter	Min.	35.95 (1.415)
C	Piston pin bore	Max.	9.030 (0.3555)
D	Piston ring groove	Max.	1.65 (0.065)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	9.98 (0.3929)
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.	12.025 (0.4734)
L	Crankshaft runout	Max.	0.02 (0.001)
M	Clutch drum bore	Max.	71.5 (2.81)

## 1-6 Special tools



Key	Part Number	Description	Used for:
1	PET304	Tachometer PET-304	Measuring engine speed
2	363018-00310	Washer	Installing crankcase oil seal
3	895610-79920	L-hex wrench (4 mm)	Removing and installing hex. socket bolts (M5)
4	897603-23030	PTO shaft puller	Removing driven (PTO) shaft
5	897701-02830	Bearing wedge	Removing ball bearings on crankshaft
6	897701-14732	Bearing tool	Removing and installing crankcase ball bearings
7	897702-30131	Piston pin tool	Removing and installing piston pin (Use 8 mm dia. adapter.)
8	91004	Module air gap gauge	Adjusting pole shoe air gaps
9	897712-04630	2-pin wrench	Removing and installing pawl carrier
10	91020	Limiter plug tool	Removing and installing plug
11	897726-09130	Oil seal tool	Installing crankcase oil seals
12	897800-79931	Spark tester	Checking ignition system
13	897803-30133	Pressure tester	Checking carburettor and crankcase leakages
14	900100-08008	Bolt	Removing magneto rotor (flywheel), crankshaft from crankcase
15	433019-12330	Flange nut	Removing magneto rotor (flywheel)
16	91037	Compression gauge	Measuring cylinder compression
17	91024	Pressure tester	Testing crankcase leakages

## 2 CARBURETTOR ADJUSTMENT PROCEDURE

### 2-1 General adjustment rules

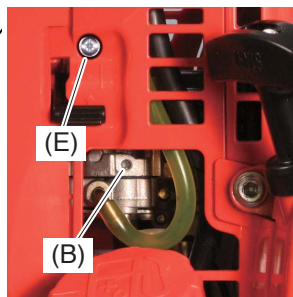
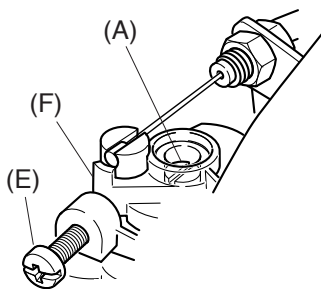
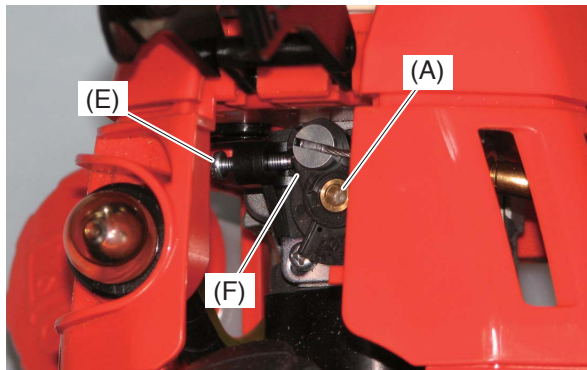
A. Before starting the unit for adjustment, check the following items.

1. The correct spark plug must be clean and properly gapped.
2. The air filter element must be clean and properly installed.
3. The muffler exhaust port must be clear of carbon.
4. The fuel lines, tank vent and fuel filter are in good condition and clear of debris.
5. The fuel is fresh (> 89 octane : RON ) and properly mixed at 50 : 1 with "ISO L-EGD" or "JASO-FC/FD" 2-stroke oil.
6. Remove shield from gear case, and install nylon line cutter if 3-tooth blade is installed. Extend nylon line cutter and cut nylon line cutter length to 175 mm (7.0 inches) for proper engine loading to adjust carburettor on both SRM-335ES(L) and SRM-335ES(U). For SRM-335TES, T335TS and C335TS, remove shield from gear case, extend, and cut nylon line cutter length to 270 mm (10.6 inches).

B. Start and run engine for 2 minutes alternating engine speed between WOT and idle every 5 seconds. Adjust idle speed to 2,800 +/- 200 r/min by tuning Throttle adjust screw. If engine does not run correctly after this adjustment, proceed to the next step 2-2.

**IMPORTANT : After adjusting carburettor according to the steps 2-2 and 2-3, the limiter plug(s) must be installed in Idle and H mixture needle(s) hole(s) to comply with Emission Directive.**

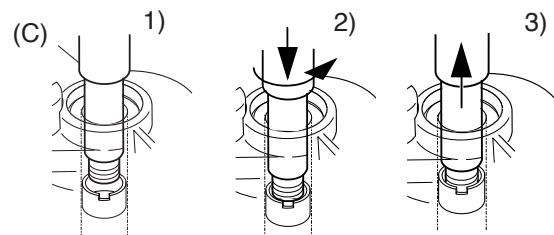
### 2-2 Initial setting Throttle adjust screw, L mixture needle and H mixture needle



Parts Required : 2 limiter plugs P/N A259-000000

1. Remove the plugs from L mixture needle hole (A) and H mixture needle hole (B) using limiter plug tool (C) as follows.

- 1) Put limiter plug tool (C) on limiter plug in mixture needle hole.
- 2) Push and turn limiter plug tool anticlockwise 2 turns into limiter plug slowly while pushing the tool.
- 3) Pull out limiter plug tool with the limiter plug from mixture needle hole.



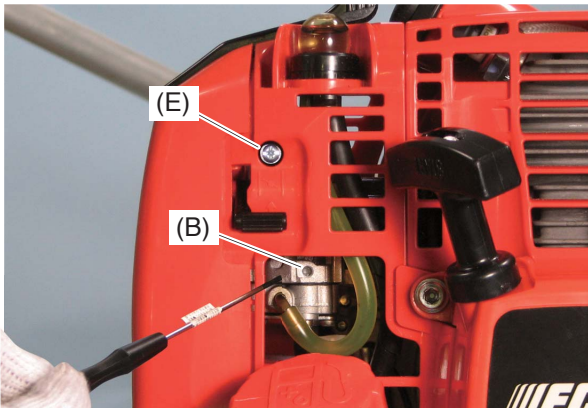
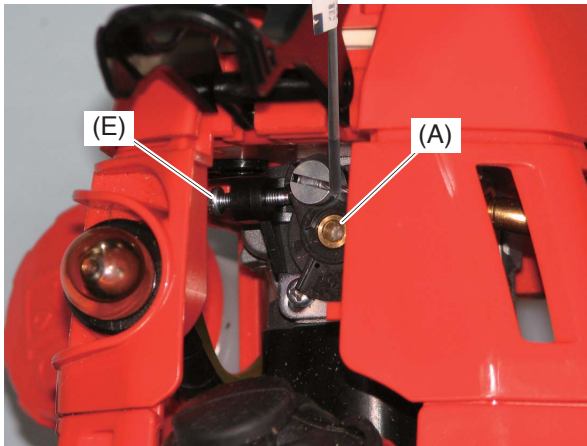
**NOTE :** If plug is damaged and stays in the hole, use hand auger or pin-shaped tool to scrape, and lift the cap pieces out of the hole.

2. Turn L mixture needle (A) anticlockwise to fully come out until clicking sound is heard. Then turn it clockwise 12 1/2 turns. Turn H mixture needle (B) clockwise until lightly seated. Then turn it anticlockwise 3 1/8 turns.

3. Turn Throttle adjust screw (E) anticlockwise until screw tip just touches throttle plate (F). Then turn it in clockwise 3 1/4 turns.

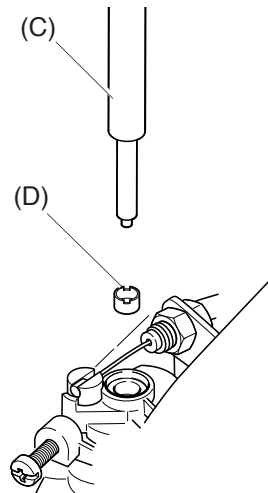
**NOTE :** Initial carburettor setting (Throttle adjust screw, Idle and H mixture needles) shown here is to start the engine after restoration or carburettor change. Throttle adjust screw, idle and H mixture needles turn for designated engine revolution through procedures indicated here may vary. As long as idle and WOT engine speed is set in given range, variance would be ignorable.

## 2-3 Adjusting carburettor



Nylon line lengths

Model name	SRM-335ES(L)	SRM-335ES(U)	SRM-335TES(L/U) T335TS, C335TS
Carburettor setting	175 mm	175 mm	270 mm
Confirming	160 mm	-	155 mm
Cutter type	Nylon head type : Z5	3-tooth blade	Nylon head type : Z5



1. Start and warm engine at WOT for 2 minutes.
2. Adjust L mixture needle (A) to reach maximum idle speed with 2.5 mm blade screwdriver.
3. Set idle speed to 3,600 r/min by turning Throttle adjust screw (E). Engine speed should be stable at 3,600 +/- 50 r/min.
4. Turn L mixture needle anticlockwise to reduce engine idle speed 800 r/min to set idle speed at 2,800 r/min. The idle speed range is 2,700 - 2,900 r/min.

**NOTE :** Engine speed must be allowed to stabilize a minimum of 20 seconds after each adjustment of L mixture needle to assure accurate tachometer readings.

5. Adjust H mixture needle (B) to reach maximum WOT engine speed. Then turn H mixture needle anticlockwise to reduce WOT engine speed 90 +/- 10 r/min on SRM-335ES or 110 +/- 10 r/min on SRM-335TES.

WOT max. : approx. 8,500 r/min

6. SRM-335ES(L) : Reinstall shield with cutting knife. Cut nylon line cutter length to 160 mm to match nylon line cutter reach to shield cut knife. Start engine again and verify engine idle speed ranges from 2,500 to 3,200 r/min, and WOT engine speed ranges from 8,500 to 9,500 r/min after 60 seconds at WOT.

SRM-335ES(U) : Reinstall shield for 3-tooth blade(255 mm) and the blade. Start engine again and verify engine idle speed ranges from 2,500 to 3,200 r/min, and WOT engine speed ranges from 10,500 to 12,500 r/min after 20 seconds at WOT.

SRM-335TES(L/U), T335TS, C335TS : Reinstall shield with cutting knife. Cut nylon line cutter length to 155 mm to match nylon line cutter reach to shield cut knife. Start engine again and verify engine idle speed ranges from 2,500 to 3,200 r/min, and WOT engine speed ranges from 10,000 to 11,000 r/min after 60 seconds at WOT.

Make sure the nylon line cutter/3-tooth blade(255 mm) does not rotate when engine is idle, and engine should accelerate smoothly.

7. After adjusting carburettor, insert and secure new plug(s) (D) A259-000000 deep in the needle holes per the Emission Directive using limiter plug tool (C).

**NOTE :** Engine WOT, and idle speed in field operation may vary from final adjustment specifications due to changing ambient conditions, fuel, and engine loads. Safe engine speed variances should be within the WOT and Idle speed ranges listed in Section 1-2, otherwise the carburettor should be readjusted.