SERVICE DATA

TRIMMER/BRUSHCUTTER

SRM-335ES

(Serial number : 37000001 and after)

STAGE Ⅱ MODEL

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.

CONTENTS

Reference No. **10-30A-00**
ISSUED: 200712

KIORITZ CORPORATION

1 SERVICE INFORMATION

1-1 Specifications

Model			SRM-335ES (L)	SRM-335ES (U)
Dimensions*	Length	mm (in)	1838 (72.4)	1846 (72.7)
	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)	
Engine	Type		KIORITZ, air-cooled, two-stroke, single cylinder	
	Rotation		Anticlockwise as viewed from the output end	
	Displacement	cm^3 (in^3)	30.5 (1.86)	
	Bore	mm (in)	36.0 (1.41)	
	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.)	0.62 (20.9)	
Clutch	Type		Centrifugal, 2-shoe pivot	
Handle	Type		Front : Crescent loop with cushion grip Rear : Integrated control grip with cushion	U-handle with integrated control grip
Drive shaft	Type		Solid, hollow type with 10-tooth	
	Diameter - Length	mm (in)	8.0 - 1590 (0.31 - 62.60)	
	Housing OD - ID	mm (in)	24.8 - 28.0 (0.98 - 1.10)	
	Main pipe Length	mm (in)	1530 (60.2)	
Gear case	Reduction ratio		1.4	
	Gear tooth		Spiral bevel gear	
	Lubrication		Lithium based grease or ECHO LUBE™	
Cutter	Type		Nylon line cutter	3-tooth blade (255 mm)
	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.

1-2 Technical data

Model			SRM-335ES (L)	SRM-335ES (U)
Engine				
Idling speed		r/min	2500 - 3000	
Wide open throttle speed		r/min	8500 - 9500*	10500 - 12500**
Clutch engagement speed		r/min	3800 - 4100	
Compression pressure		MPa (kgf/cm^2) (psi)	0.95 (9.7) (138)	
Ignition system				
Spark plug gap		mm (in)	0.6 - 0.7 (0.024 - 0.028)	
Minimum secondary voltage at 1500 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 3000 r/min	°BTDC	23	
	at 8000 r/min	°BTDC	20	
Carburettor				
Venturi Size		mm(in)	12.2 (0.480)	
Throttle Bore		mm(in)	12.2 (0.480)	
Idle adjust screw initial setting		turn in***	3 1/4	
Idle mixture needle initial setting		turn in†	12 1/2	
Hi speed (H) mixture needle initial setting		turn back	3 1/8	
Test Pressure, minimum		MPa (kgf/cm^2) (psi)	0.05 (0.5) (7.0)	
Metering lever height		mm (in)	0.1-0.25 (0.004-0.01) lower than diaphragm seat	

BTDC: Before top dead centre.
*With Nylon line cutter and shield.

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

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

† Screw in idle mixture needle from initial thread engagement (at the point that the clicking sound is heard).

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)

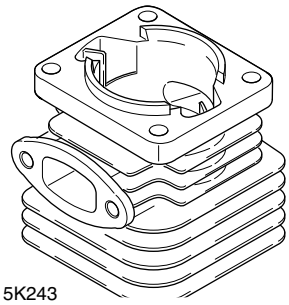
** The torque differences among four bolts should not exceed 20 kgf•cm (2N•m, 17in•lbf) on one cylinder or crankcase

1-4 Special repairing materials

Material	Location	Remarks
Grease	Drive shaft	Lithium based grease or ECHO LUBE™
	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

A



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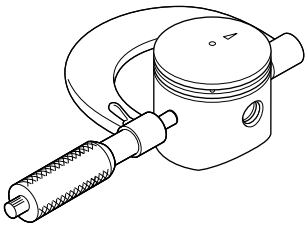

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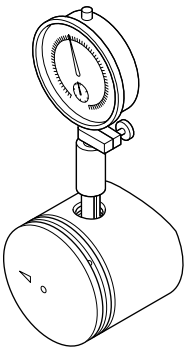

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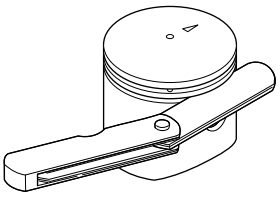

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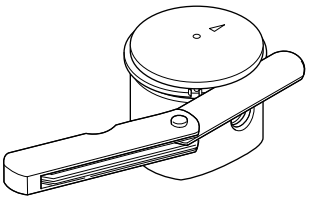

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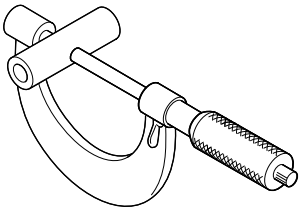

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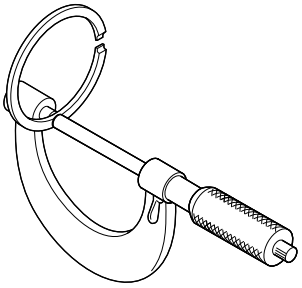

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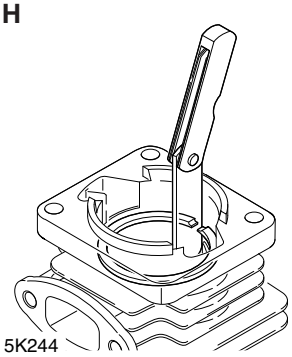

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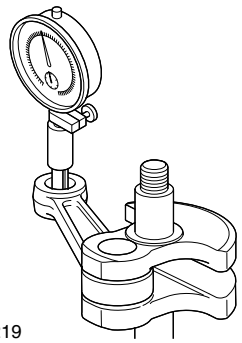

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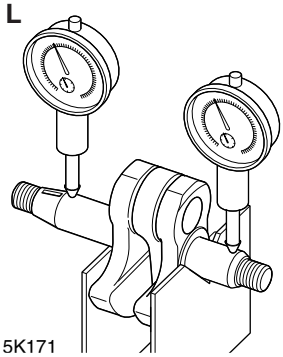

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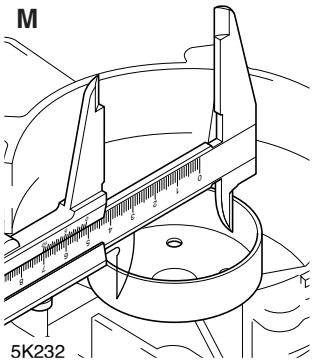

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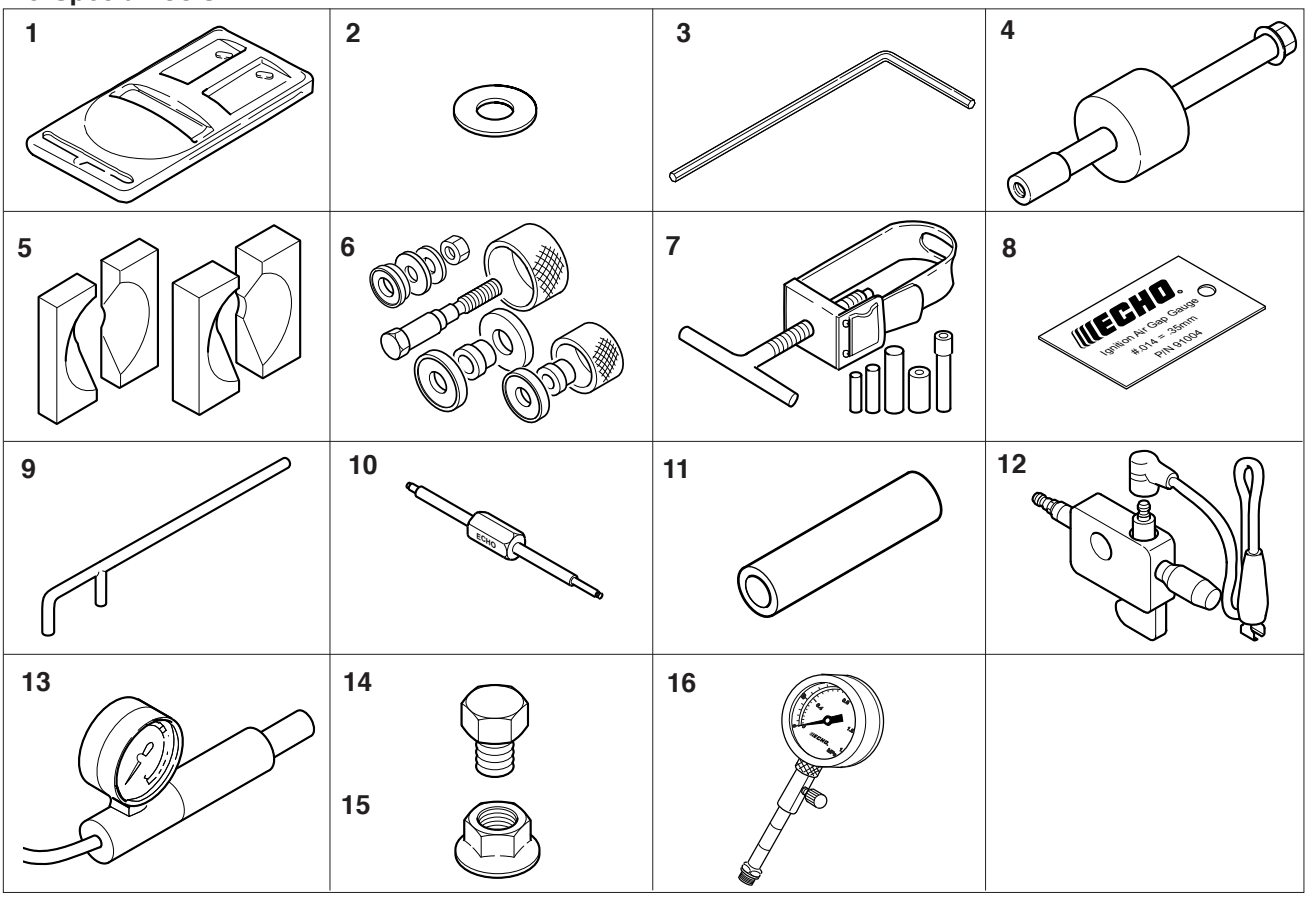
Description			mm (in)
A	Cylinder bore		When plating is worn and aluminium can be seen
B	Piston outer diameter	Min.	35.95 (1.415)
C	Piston pin bore	Max.	9.030 (0.3555)
D	Piston ring groove	Max.	1.65 (0.065)
E	Piston ring side clearance	Max.	0.1 (0.004)
F	Piston pin outer diameter	Min.	9.98 (0.3929)
G	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	897801-33330	Tachometer PET-1000	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	897701-06030	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	990511-30023	Spark tester	Checking ignition system
13	897803-30133	Pressure tester	Checking carburetor 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

2 CARBURETTOR ADJUSTMENT PROCEDURE

2-1 General adjusting 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.

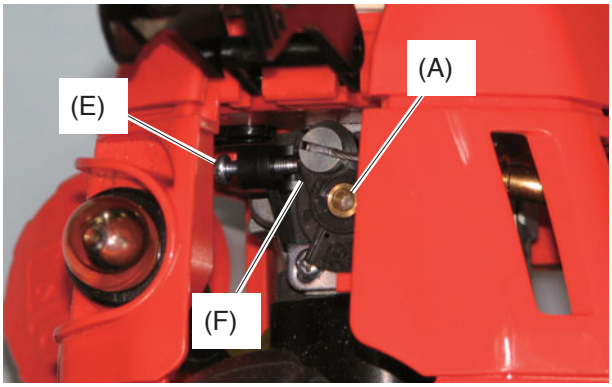
5. The fuel is fresh (> 89 octane : RON) and properly mixed at 50 : 1 with “ISO L-EGD” or “JASO-FC/FD” 2-stroke oil.

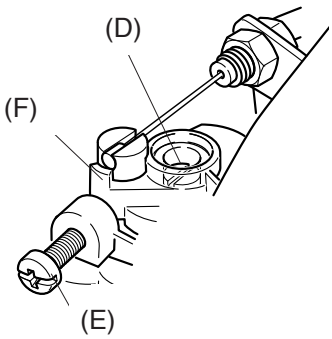
6. Remove shield from gear case, and install nylon line cutter if 3-tooth blade is installed. Extend nylon line cutter and cut nylon line cutter length to 175 mm (7.0 inches) for proper engine loading to adjust carburettor on both SRM-335ES(L) and SRM-335ES(U).

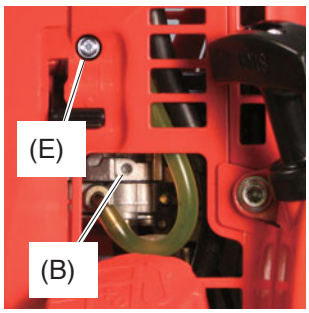
B. Start and run engine for 2 minutes alternating rpm between WOT and idle every 5 seconds. Adjust idle speed to 2,800 +/- 200 r/min by turing idle adjust screw. If engine does not run correctly after this adjustment, proceed to the next step 2-2.

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

2-2 Presetting idle adjust screw, idle mixture needle and hi speed (H) mixture needle







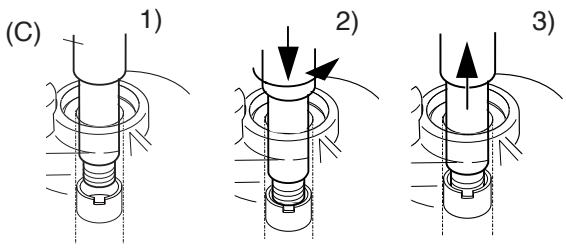
Parts Required : 2 limiter plugs P/N A259-000000

1. Remove the plugs from idle mixture needle hole (A) and hi speed 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.



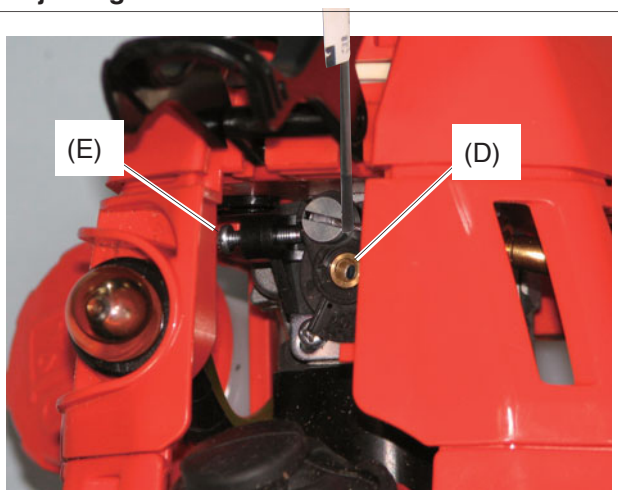
NOTE : If plug is damaged and stays in the hole, use hand auger or pin-shaped tool to scrape, and lift the cap pieces out of the hole.

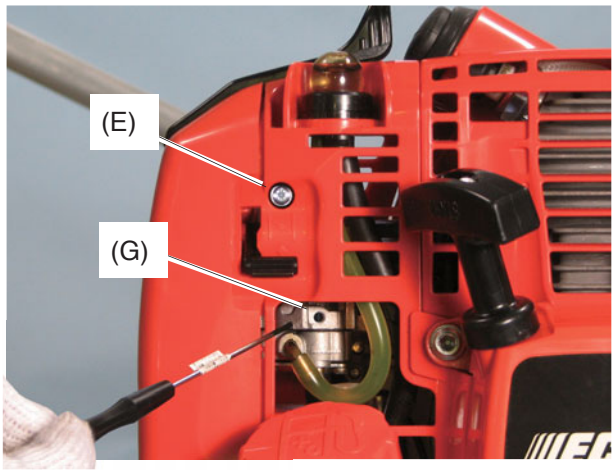
2. Turn idle mixture needle (D) anticlockwise to fully come out until clicking sound is heard. Then turn it clockwise 12 1/2 turns. Turn hi speed mixture needle (B) clockwise until lightly seated. Then turn it anticlockwise 3 1/8 turns.

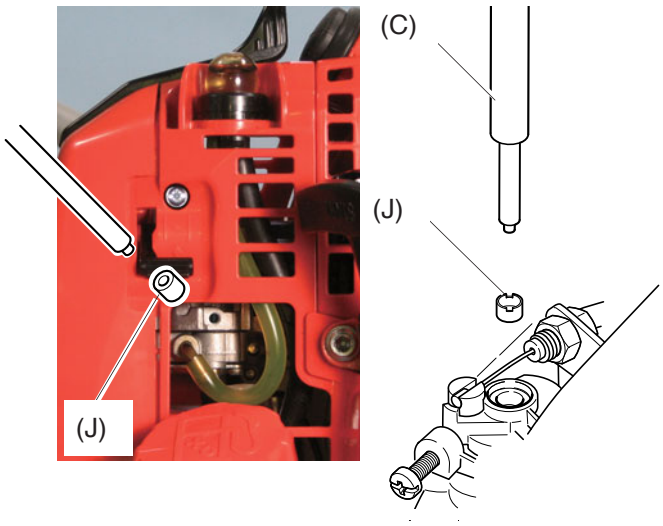
3. Turn idle adjust screw (E) anticlockwise until screw tip just touches throttle plate (F). Then turn it in clockwise 3 1/4 turns.

NOTE : Initial carburettor setting (Idle adjust screw, idle and hi speed mixture needles) shown here is to start the engine after restoration or carburettor change. Idle adjust screw, idle and hi speed 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







1. Start and warm up engine alternating engine speed WOT for 2 minutes.

2. Adjust idle mixture needle (D) to reach maximum idle speed with 2.5 mm blade screwdriver.

3. Set idle speed to 3,600 r/min by turning idle adjust screw (E). Engine speed should be stable at 3,600 +/- 50 r/min.

4. Turn idle 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 idle mixture needle to assure accurate tachometer readings.

5. Adjust hi speed mixture needle (G) to reach maximum WOT engine speed. Then turn hi speed mixture needle anticlockwise to reduce WOT engine speed 90 +/- 10 r/min (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 3,000 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 3,000 r/min, and WOT engine speed ranges from 10,500 to 12,500 r/min after 20 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) (J) A259-000000 deep in the needle holes per the Emission Directive using limiter plug tool (H).

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 1-1, otherwise the carburettor should be readjusted.