



SERVICE DATA

HEDGE TRIMMER

HCAS-2200

(Serial number : 36000001 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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REVISED: 200606

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KIORITZ CORPORATION

1 SERVICE INFORMATION

1-1 Specifications

Model			HCAS-2200
Dimensions	Length	mm(in)	1695 (66.7)
	Width	mm(in)	250 (9.8)
	Height	mm(in)	234 (9.3)
	Dry weight	kg(lb)	6.4 (14.0)
Engine	Type		KIORITZ, air-cooled, two-stroke, single cylinder
	Rotation		Counterclockwise as viewed from the output end
	Displacement	cm ³ (in ³)	21.2 (1.29)
	Bore	mm(in)	32.2 (1.27)
	Stroke	mm(in)	26.0 (1.02)
	Compression ratio		5.9
Carburetor	Type		Rotary type : Diaphragm, horizontal-draught, with purge bulb
	Model		ZAMA RB-K75
Ignition	Type		CDI (Capacitor discharge ignition) system Slope advance ignition system combined with electronic speed governor
	Spark plug		BPMR8Y
Exhaust	Muffler type		Spark arrestor muffler
Starter	Type		Automatic rewind
	Rope diameter x length	mm(in)	3.0 x 1000 (3.0 x 39.5)
Fuel	Type		Premixed two-stroke fuel
	Mixture ratio		50 : 1 (2%)
	Gasoline		Minimum 89 octane
	Two-stroke engine oil		ISO-L-EGD (ISO/CD13738), JASO FC
	Tank capacity	L (U.S.fl.oz.)	0.45 (15.2)
Clutch	Type		Centrifugal, 2-shoe pivot
Handle	Type	Front	Loop type with hand guard
		Rear	Rubber grip with throttle trigger
Drive shaft	Type		Flexible
	Inner shaft : Diameter	mm(in)	6.15 (0.24)
	Inner shaft : Length	mm(in)	864 (34.0)
	Housing OD - ID - L	mm(in)	25.0 - 22.0 (0.98 - 0.86)
	(Main pipe) Length	mm(in)	844 (33.2)
Gear case	Reduction ratio		3.95
	Gear tooth		Spiral bevel gear
	Lubrication		Lithium based grease or ECHO LUBE™
Cutter	Type		Double reciprocating, double edge blade
	Length	mm(in)	450 (18)
	Pitch	mm(in)	35.0 (1.38)
	Height	mm(in)	21.0 (0.83)
	Thickness	mm(in)	2.5 (0.098)

OD: Outer diameter.

ID: Inner diameter.

1-2 Technical data

Engine			
Idling speed	r/min		2700 - 3200
Wide open throttle speed	r/min		9500 - 11500
Clutch engagement speed	r/min		3700 - 4300
Compression pressure	MPa (kgf/cm ²) (psi)		0.72 (7.3) (104)
Ignition system			
Spark plug gap	mm (in)		0.6 - 0.7 (0.024 - 0.028)
Primary coil resistance	Ω		300 - 400
Minimum secondary voltage at 1500 r/min	kV		15.0
Secondary coil resistance	kΩ		2.4 - 3.2
Pole shoe air gaps	mm (in)		0.30 - 0.40 (0.012 - 0.016)
Ignition timing	at 1000 r/min	°BTDC	19.0
	at 8500 r/min	°BTDC	42.0
	at 11500 r/min	°BTDC	14.0
Carburettor			
Venturi Size	mm(in)		9.0 (0.354)
Throttle Bore	mm(in)		10.5 (0.413)
Idle adjust screw initial setting	turn in*		2 1/2
L mixture needle initial setting	turn back		2
H mixture needle initial setting	turn back		2
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 center.

* Set idle adjust screw to contact throttle plate before initial setting.

1-3 Torque limits

Descriptions	Size	kgf•cm	N•M	in•lbf
Starter system	M 4*	45 - 55	4.5 - 5.5	40 - 48
Starter case				
Ignition system	Ignition coil	M 4*	45 - 55	4.5 - 5.5
	Ignition switch	M 4	30 - 40	3 - 4
	Fan cover	M 4	30 - 40	3 - 4
	Spark plug	M 14	150 - 170	15 - 17
Fuel system	Carburettor	M 5	26 - 37	2.6 - 3.7
	Intake insulator	M 5	26 - 37	2.6 - 3.7
	Fuel tank	M 5	26 - 37	2.6 - 3.7
Clutch	Clutch hub	M 8	180 - 220	18 - 22
Engine	Crankcase	M 5**	70 - 110	7 - 11
	Cylinder	M 5**	70 - 110	7 - 11
	Cylinder cover	M 4*	22 - 32	2.2 - 3.2
	Muffler	M 5*	90 - 110	9 - 11
Regular bolt, nut, and screw	M 3	6 -10	0.6 - 1.0	5 - 9
	M 4	15 -25	1.5 - 2.5	13 - 22
	M 5	25 -45	2.5 - 4.5	22 - 40
	M 6	45 -75	4.5 - 7.5	40 - 65
	M 8	110 -150	11 - 15	95 - 130

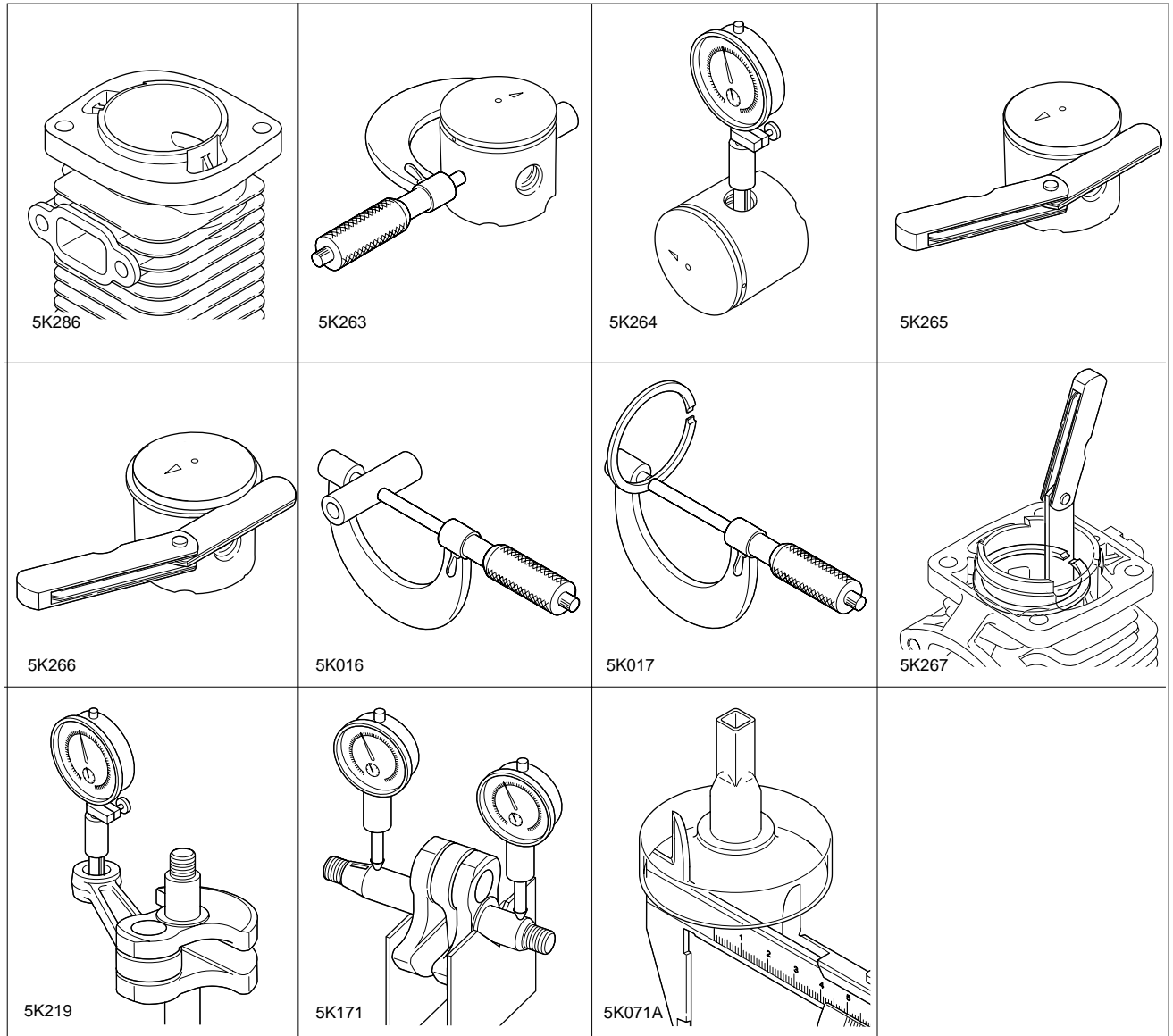
*Apply thread locking sealant. (See below)

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

1-4 Special repairing materials

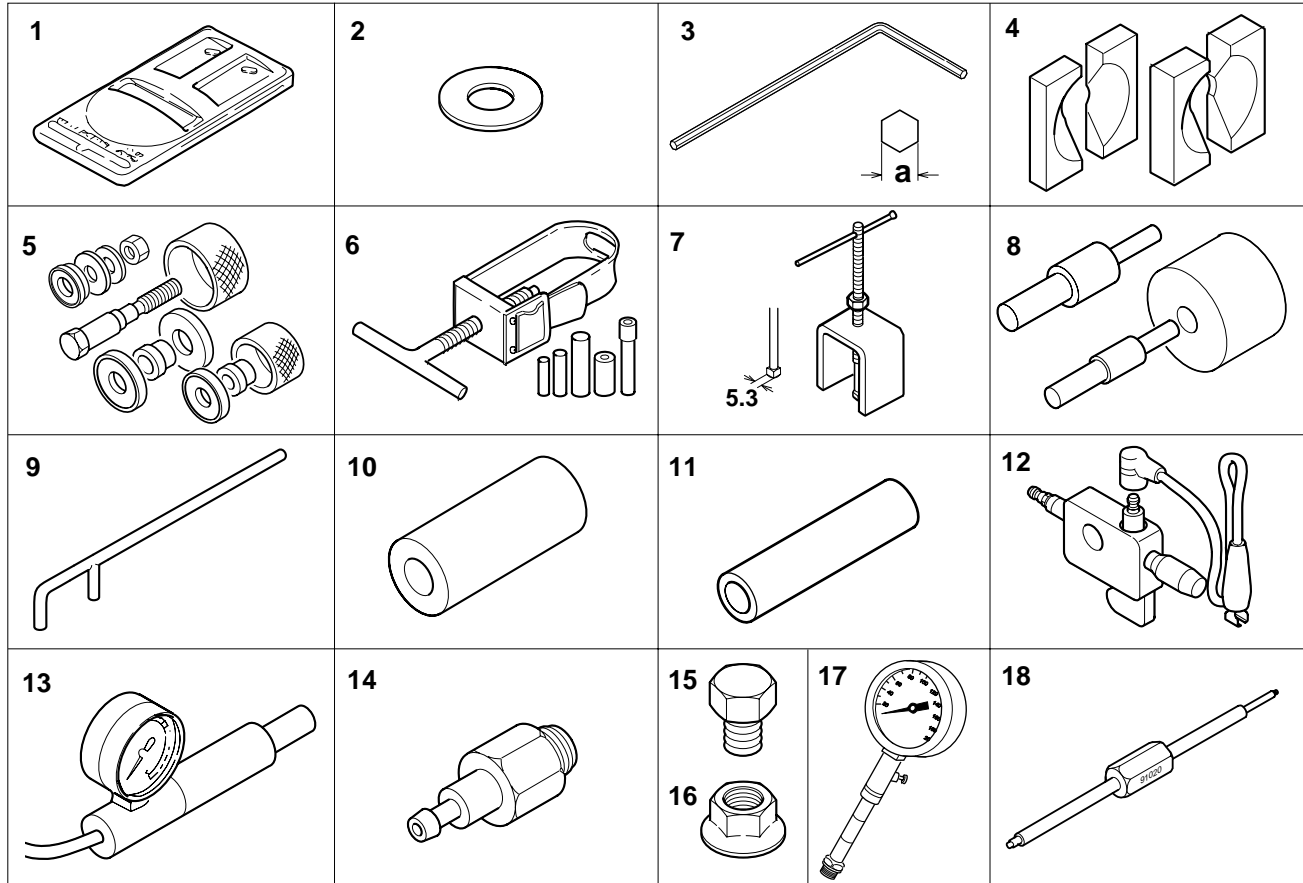
Material	Location	Remarks
Grease	Drive shaft	Lithium based grease or ECHO LUBE™
	Gear case	
	Rewind spring	
	Starter center post	
	Oil seal inner lips	
Thread locking sealant	Starter case	Loctite #222, ThreeBond #1342 or equivalent
	Cylinder cover (Starter side)	
	Ignition coil	Loctite #675 or equivalent
	Muffler	

1-5 Service limits



Description		mm (in)
Cylinder bore		When plating is worn and aluminum can be seen
Piston outer diameter	Min.	32.10 (1.264)
Piston pin bore	Max.	8.030 (0.3161)
Piston ring groove	Max.	1.6 (0.063)
Piston ring side clearance	Max.	0.1 (0.004)
Piston pin outer diameter	Min.	7.970 (0.3138)
Piston ring width	Min.	1.45 (0.057)
Piston ring end gap	Max.	0.5 (0.02)
Con-rod small end bore	Max.	12.000 (0.4724)
Crankshaft runout	Max.	0.05 (0.002)
Clutch drum bore	Max.	51.5 (2.03)

1-6 Special tools



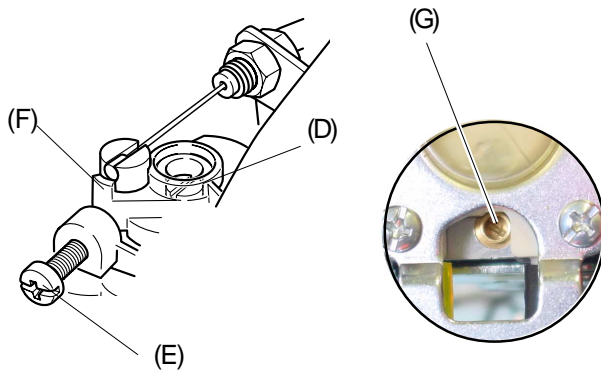
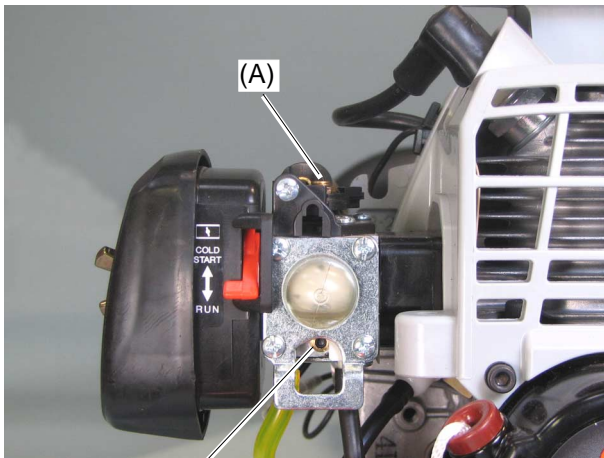
Key	Part Number	Description	Used for:
1	897801-33330	Tachometer PET-1000	Measuring engine speed
2	363018-00310	Washer	Installing crankcase oil seal of starter side
3	895610-79920	L-hex wrench (4 mm)	Removing and installing hex. socket bolts (M5)
4	897603-23030	PTO shaft puller	Removing driven (PTO) shaft
5	897701-06030	Bearing wedge	Removing ball bearings on crankshaft
6	897701-14732	Bearing tool	Removing and installing crankcase ball bearings
7	897701-06030	Puller	Removing drive gear assembly
8	897705-11520	Bearing tool	removing and installing con-rod small end needle bearing
9	897712-04630	2-pin wrench	Removing and installing pawl carrier
10	897726-16431	Oil seal tool	Installing crankcase oil seals
11	897726-09130	Oil seal tool	Removing clutch drum and installing clutch drum ball bearing
12	990511-30023	Spark tester	Checking ignition system
13	897803-30133	Pressure tester	Checking carburetor and crankcase leakages
14	91009	Retaining ring pliers	Removing and installing retaining ring
15	900100-08008	Bolt	Removing magneto rotor (flywheel)
16	433019-12330	Flange nut	Removing magneto rotor (flywheel)
17	91007	Compression gauge	Measuring cylinder compression
18	91020	Limiter plug tool	Removal and installing limiter plug

2 EMISSION ADJUSTMENT GUIDE

2-1 General adjusting rules

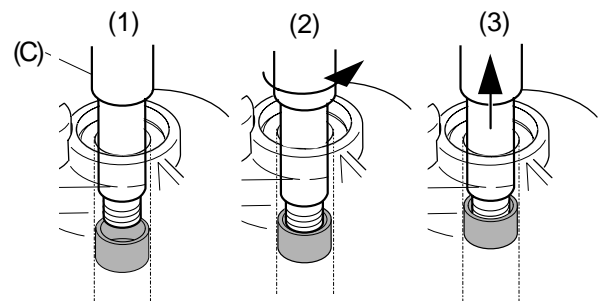
- A. Before starting the unit for adjustment, check the following items.
1. The correct spark plug must be clean and properly gapped.
 2. The air filter element must be clean and properly installed.
 3. The muffler exhaust port must be clear of carbon.
 4. The fuel lines, tank vent and fuel filter are 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" 2-stroke oil.
 6. The gear case assembly with blade set adjusted clearance properly must be installed for proper engine loading.
- B. Start and run engine for 2 minutes alternating engine speed between WOT and idle every 5 seconds. Adjust idle adjust screw to 2900 +/- 200 r/min. 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 on Idle and H mixture needle(s) hole(s) to comply with Emission Directive.

2-2 Presetting idle adjust screw, idle mixture needle and H mixture needle



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

- (1) Put limiter plug tool (C) on limiter plug in needle hole.
- (2) Screw limiter plug tool anticlockwise 2 turns into limiter plug.
- (3) Pull out limiter plug tool with the limiter plug from needle hole.



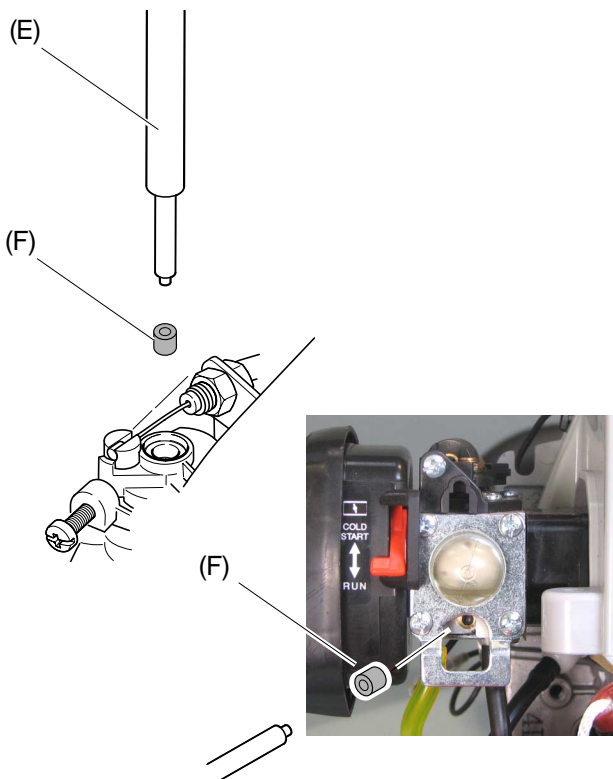
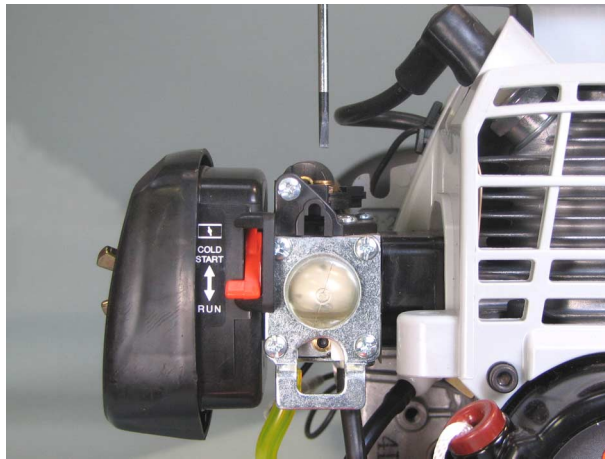
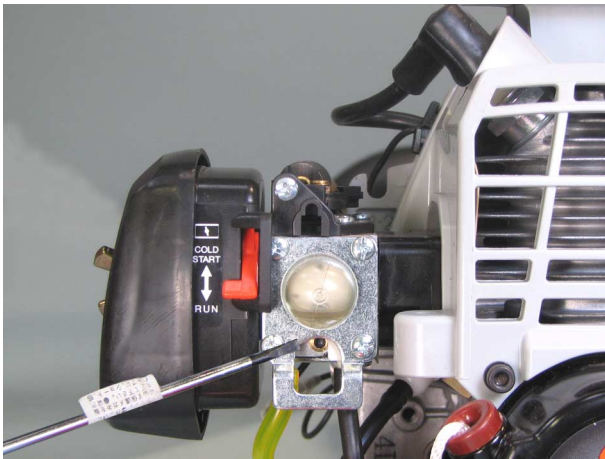
NOTE : When plug is damaged and left in the hole, use needle or pin-shaped tool to scrape.

2. Turn idle mixture needle (D) and H mixture needle (G) clockwise until lightly seated. And then turn out both needles following turns.

Idle mixture needle : 2 H mixture needle : 2

3. Turn idle adjust screw (E) anticlockwise until its tip just touches throttle plate (F). Then turn it in clockwise 2 1/2 turns.

2-3 Adjusting carburettor



1. Start engine and warm it up alternating engine speed between WOT and idle every 5 seconds for 1 minute.

2. Adjust idle mixture needle and obtain maximum idle speed with 2.5 mm blade small screw driver.

3. Set idle speed to 3,500 r/min by turning idle adjust screw.

4. Turn idle mixture needle anticlockwise to reduce idle speed 500 to 750 r/min in the range of 2,750 to 3,000 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 and obtain maximum WOT engine speed.

6. Turn H mixture needle anticlockwise to reduce WOT engine speed 100 r/min.

7. Restart engine again and make sure engine runs in the range of 2,700 to 3,200 r/min at idling and the range of 9,500 to 11,500 r/min at WOT. Also make it sure cutting device would not move at engine idle speed and suitable acceleration.

8. After adjusting carburettor, insert and secure new plug(s) (F) P005-001270 deep in the needle holes per the Emission regulation using limiter plug tool (E).

NOTE : Initial carburettor setting (idle adjust screw, idle and H mixture needles) shown on page 3 and 7 is to start the engine after restoration or carburettor change. Idle adjust screw, idle and H 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.