



# SERVICE DATA

## HEDGE TRIMMER

# HCA-2500

(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, illustrations and directions in this SERVICE DATA are based on the latest products information available at the time of publication.

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**KIORITZ CORPORATION**

Reference No. **15-23C-00**

**ISSUED: 200606**

## 1 SERVICE INFORMATION

## 1-1 Specifications

Dimensions	Length	mm(in)	2330 (91.7)
	Width	mm(in)	225 (9.3)
	Height	mm(in)	225 (9.3)
	Dry weight	kg(lb)	6.4 (14.1)
Engine	Type	KIORITZ, air-cooled, two-stroke, single cylinder	
	Rotation	Anticlockwise as viewed from the output end	
	Displacement	cm <sup>3</sup> (in <sup>3</sup> )	23.6 (1.440)
	Bore	mm(in)	34.0 (1.339)
	Stroke	mm(in)	26.0 (1.024)
	Compression ratio	6.3	
Carburettor	Type	Rotary type : Diaphragm, horizontal-draught, with primer (purge pump)	
	Model	Walbro WT-424C	
	Venturi size-Throttle bore	mm(in)	7.9 - 12.7 (0.31 - 0.5)
Ignition	Type	CDI (Capacitor discharge ignition) system with electronic speed governor	
	Spark plug	BPMR7A	
Starter	Type	Automatic rewind	
	Rope diameter x length	mm(in)	3.0 x 1000 (0.12 x 39.4)
Fuel	Type	Premixed two-stroke fuel	
	Mixture ratio	50 : 1 (2 %)	
	Petrol	Minimum 89 octane petrol (RON)	
	Two-stroke air cooled engine oil	ISO-L-EGD (ISO/CD13738), JASO FC	
	Tank capacity	L (U.S.fl.oz.)	0.4 (13.5)
Clutch	Type	Centrifugal, 2 - shoe slide	
Handle	Type	Front	Rubber grip
		Rear	Rubber grip with throttle trigger
Drive shaft	Type	Flexible	
	Inner shaft: Diameter - Length	mm(in)	6.15 - 1522 (0.24 - 60.0)
	Housing	OD -ID mm(in)	25 - 22 (0.98 - 0.87)
	(Main pipe)	Length mm(in)	1500 (59.0)
Gear case	Reduction ratio	3.95	
	Gear tooth	Spiral bevel	
	Lubrication	Lithium based grease	
Cutter	Type	Double reciprocating, double edge blade	
	Called 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)
	Articulate adjustment	180° variable at 15° pitch + storage position	

OD: Outer diameter.

ID: Inner diameter.

## 1-2 Technical data

Engine			
Idling speed	r/min	2400 - 3200	
Operating speed	r/min	7000 - 8000	
Wide open throttle speed	r/min	9000 - 10500	
Clutch engagement speed	r/min	3700 - 4300	
Compression pressure	MPa (kgf/cm <sup>2</sup> ) (psi)	0.94 (9.6) (136)	
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	200 - 400	
Secondary coil resistance	kΩ	1.3 - 1.8	
Pole shoe air gaps	mm (in)	0.30 - 0.40 (0.012 - 0.016)	
Ignition timing	at 3000 r/min	°BTDC	29
	at 8000 r/min	°BTDC	28
	at 9000 r/min	°BTDC	12
Carburettor			
Idle adjust screw initial setting	turn in*	1 1/2	
L mixture needle initial setting	turn back	2 1/4	
H mixture needle initial setting	turn back	3 1/4	
Test Pressure, minimum	MPa (kgf/cm <sup>2</sup> ) (psi)	0.05 (0.5) (7.0)	
Metering lever height	mm (in)	1.65 (0.065) lower than diaphragm seat	

BTDC: Before top dead centre.

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

## 1-3 Torque limits

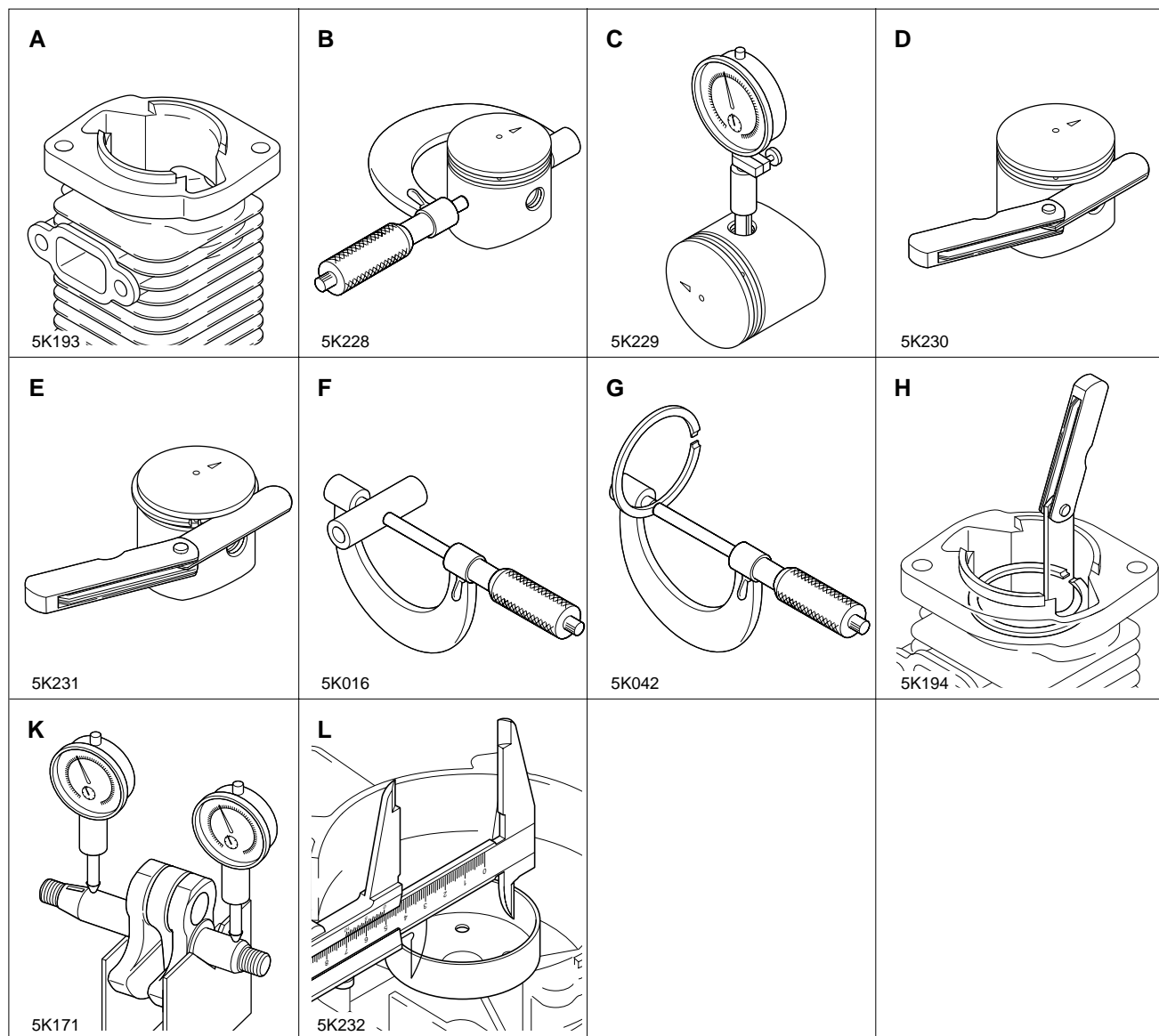
Descriptions		Size	kgf•cm	N•m	in•lbf
Starter system	Pawl carrier	M 8	80 - 100	8 - 10	70 - 85
	Starter case	M 4*	22 - 28	2.2 - 2.8	19 - 24
Ignition system	Ignition coil (CDI module)	M 4*	38 - 55	3.8 - 5.5	35 - 50
	Spark plug	M 14	150 - 170	15 - 17	130 - 150
	Fan cover	M 4*	38 - 55	3.8 - 5.5	35 - 50
Fuel system	Carburettor insulator	M 5*	30 - 40	3 - 4	26 - 35
	Carburettor	M 5	35 - 45	3.5 - 4.5	30 - 40
	Throttle wire housing nut	M 6	6 - 10	0.6 - 1.0	5 - 9
	Fuel tank	M 5*	27 - 32	2.7 - 3.2	23 - 28
Clutch	Clutch hub	M 8	180 - 200	18 - 20	155 - 175
Engine	Crankcase	M 5	75 - 85	7.5 - 8.5	65 - 75
	Cylinder	M 5	75 - 85	7.5 - 8.5	65 - 75
	Cylinder cover	M 4*	35 - 45	3.5 - 4.5	30 - 40
	Muffler	M 5	55 - 65	5.5 - 6.5	50 - 55
	Top guard	M 5*	25 - 35	2.5 - 3.5	22 - 30
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	
	M 10	210 - 300	21 - 30	180 - 260	

\* Apply thread locking sealant. (See below)

## 1-4 Special repairing materials

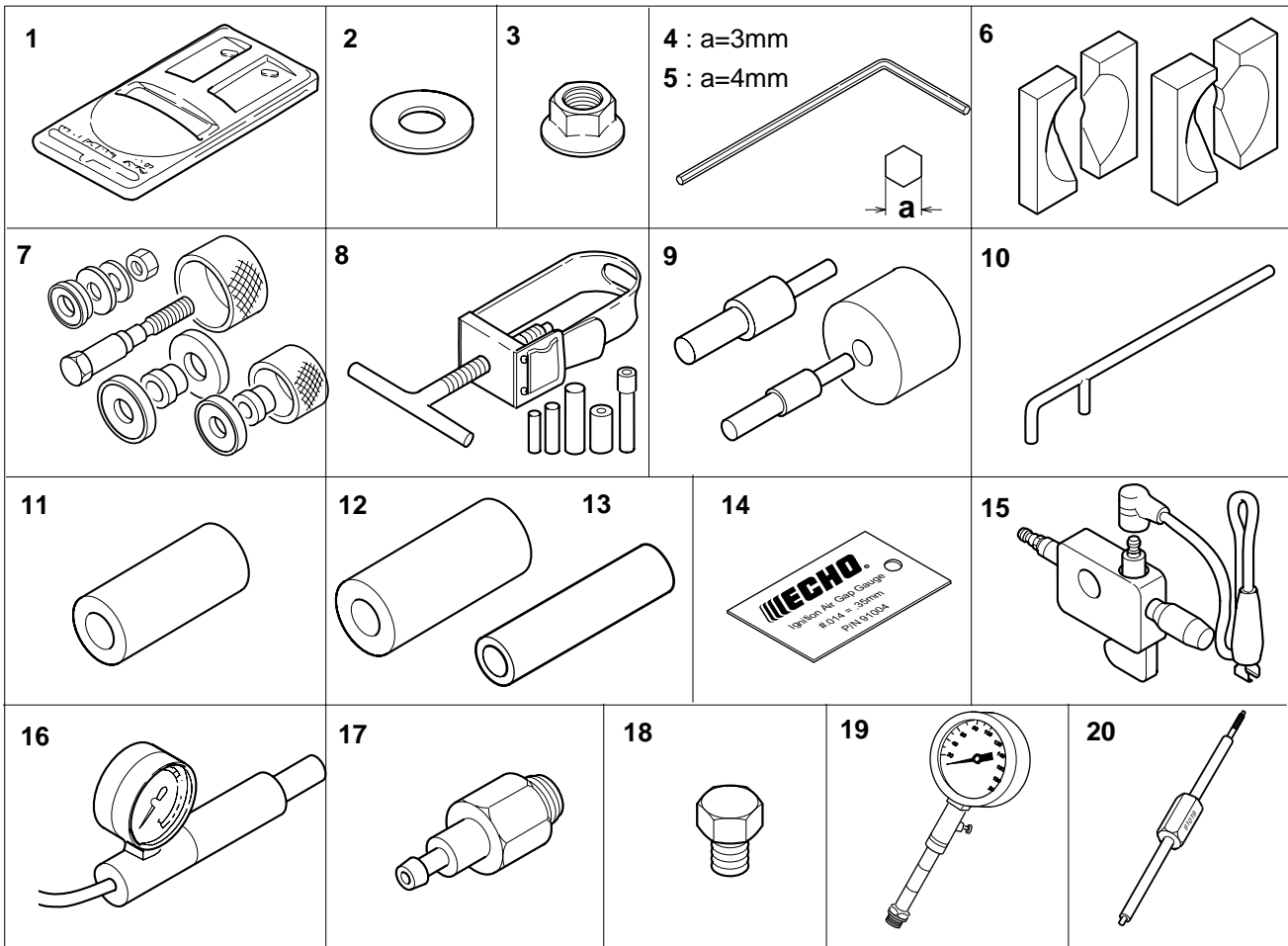
Material	Location	Remarks
Grease	Drive shaft	Lithium based grease
	Gear case	
	Rewind spring	
	Starter center post	
Thread locking sealant	Starter case	Loctite #222, ThreeBond 1342 or equivalent
	Ignition coil	
	Fan cover	
	Carburettor insulators	
	Fuel tank	
	Cylinder cover	
	Top guard	
	Latch	Loctite #675 or equivalent
PTO shaft		

1-5 Service limits



Description		mm (in)
A	Cylinder bore	When plating is worn and aluminium can be seen
B	Piston outer diameter	Min. 33.91 (1.335)
C	Piston pin bore	Max. 8.030 (0.3161)
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. 7.970 (0.3138)
G	Piston ring width	Min. 1.45 (0.057)
H	Piston ring end gap	Max. 0.5 (0.02)
K	Crankshaft runout	Max. 0.05 (0.002)
L	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 to adjust carburettor
2	363018-00310	Washer	Installing crankcase oil seal of starter side
3	433019-12330	Flange nut	Removing magneto rotor (flywheel)
4	895612-79920	L-hex wrench (3 mm)	Removing and installing hex. socket bolts (M4)
5	895610-79920	L-hex wrench (4 mm)	Removing and installing hex. socket bolts (M5)
6	897701-06030	Bearing wedge	Removing ball bearings on crankshaft
7	897701-14732	Bearing tool	Removing and installing crankcase bearings
8	897702-30131	Piston pin tool	Removing and installing piston pin (Use 8 mm dia. adapter)
9	897705-11520	Bearing tool	Removing and installing con-rod small end needle bearing
10	897712-04630	2-pin wrench	Removing and installing pawl carrier
11	897714-22830	Oil seal tool	Installing ball bearing in gear case
12	897714-24330	Oil seal tool	Installing crankcase oil seals
13	897726-09130	Oil seal tool	Removing clutch drum and installing clutch drum ball bearing
14	91004	Module air gap gauge	Adjusting pole shoe air gaps
15	897800-79931	Spark tester	Checking ignition system
16	897803-30132	Pressure tester	Checking carburettor and crankcase leakages
17	897835-16131	Pressure connector	Checking crankcase and cylinder leakages
18	900100-08008	Bolt	Removing magneto rotor (flywheel)
19	91007	Compression gauge	Measuring cylinder compression
20	91019	Limiter cap tool	Removing and installing limiter cap

## 2 EMISSION ADJUSTMENT GUIDE

### 2-1 General adjusting rules

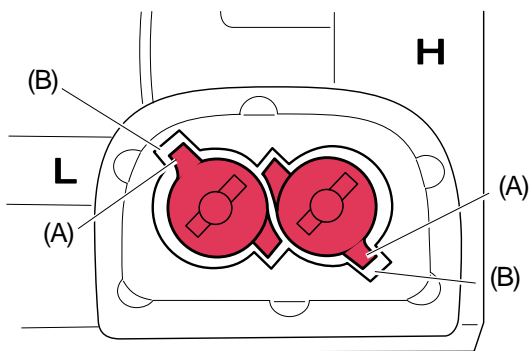
A. Before starting the unit for adjustment, check the following items.

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. Set L and H mixture needles with limiter caps anticlockwise to rich side stop. Start and run engine for 2 minutes alternating engine speed between WOT and idle every 5 seconds. Adjust idle adjust screw to 2800 +/- 300 r/min. Adjust H mixture needle with limiter cap to 10000 +/- 500 r/min. If engine does not run correctly after this adjustment, proceed to the next step (2-2).

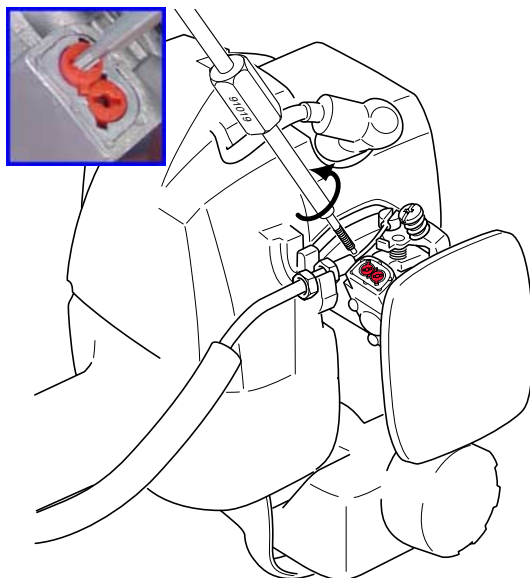
C. After adjusting carburettor according to the steps 2-2 and 2-3, the limiter cap(s) must be installed on L and/or H mixture needle(s) to comply with Emission Directive.

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



1. Remove cleaner lid. Turn the L and H mixture needles anticlockwise to rich side stop and meet limiter caps tabs (A) with locating slot (B), using 3 mm blade screw driver.

**NOTE :** If cap tabs (A) misalign with locating slots (B), there is a chance to strip thread.

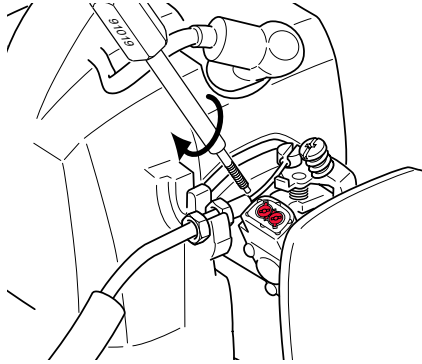


2. Screw left hand thread of limiter cap tool 91019 into centre hole of limiter cap anticlockwise until tab of the limiter cap just come out from locating slot.

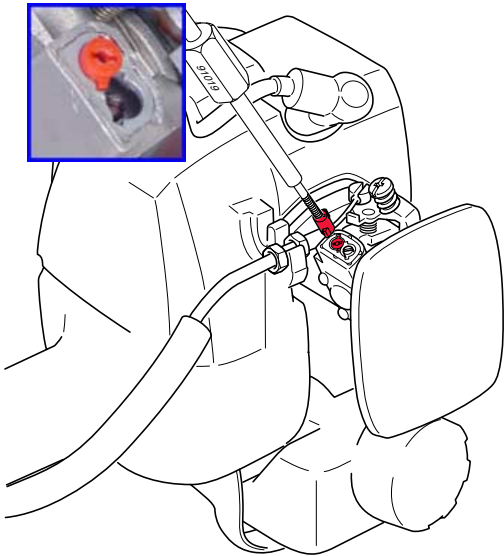
**NOTE :** DO NOT COMPLETELY REMOVE LIMITER CAP FROM CARBURETOR! If the limiter cap were pulled out completely, there is a chance that the other mixture needle would turn and limiter cap tab would misalign with locating slot when screwing the limiter cap tool into centre hole of the other limiter cap, and thread is stripped. When the thread is stripped by limiter cap tool, screw 3 mm wood screw in the stripped centre hole of the limiter cap, and pull off the cap.

(Continued)

## 2-2 Presetting idle adjust screw, L mixture needle and H mixture needle (continued)



3. Remove the limiter cap tool from the limiter cap turning the tool clockwise, leaving the limiter cap in place.



4. Screw threaded end of limiter cap tool 91019 into centre hole of the other limiter cap anticlockwise until the limiter cap is come out from the mixture needle completely. Remove the limiter cap from limiter cap tool turning clockwise. Screw thread of limiter cap tool 91019 into centre hole of previous limiter cap to pull out completely.

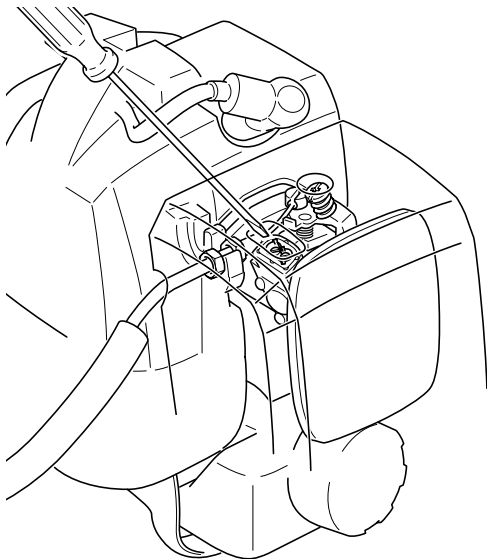
5. Turn idle adjust screw anticlockwise and set the screw until the tip to just contact throttle plate. Then turn idle adjust screw 1 1/2 turns clockwise. Install removed cleaner lid.

6. Turn L and H mixture needle clockwise until lightly seated, and then turn both mixture needles anticlockwise following turns.

L mixture needle : 2 1/4,

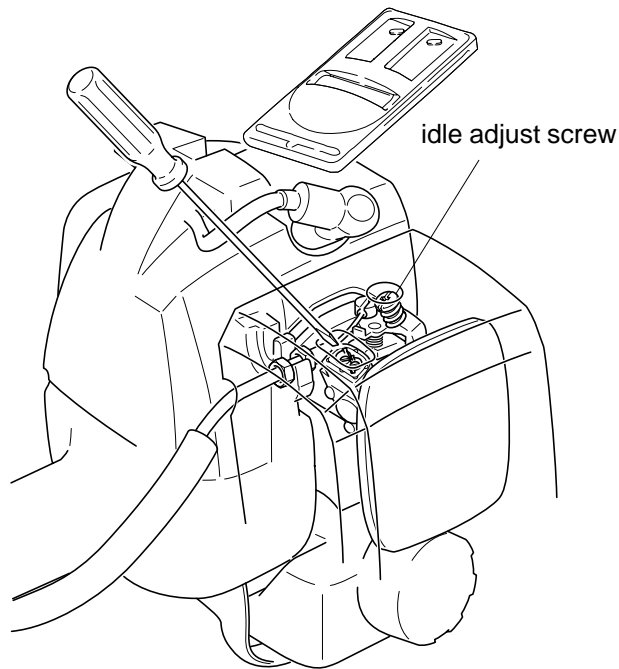
H mixture needle : 3 1/4

**NOTE :** If needles are forced during seating, damage to carburettor may occur.





### 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. Using 2.5 mm wide blade screw driver, adjust L mixture needle to obtain maximum idle speed.

3. Set idle speed in the range of 3,400 to 3,500 r/min by turning idle adjust screw.

4. Turn L mixture needle anticlockwise to reduce engine idle speed 700 to 800 r/min to set idle speed in the range of 2,600 to 2,800 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. Turn H mixture needle anticlockwise to reduce engine speed to approx. 9,000 r/min at WOT.

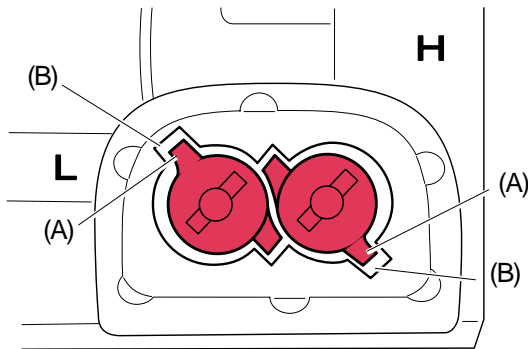
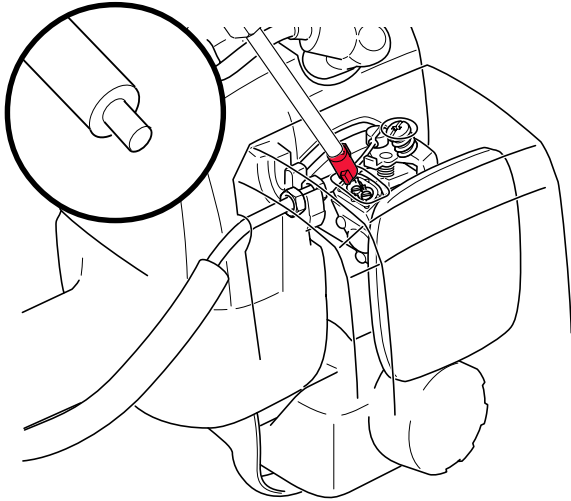
6. Turn H mixture needle clockwise to obtain 9,500 to 10,500 r/min at WOT.

**NOTE :** During H mixture needle adjustment, do not run engine at high speed without load longer than 10 seconds.

7. If the engine speed at WOT is above 10,500 r/min, adjust H mixture needle anticlockwise and set maximum engine speed at less than 10,500 r/min.

(Continued)

## 2-3 Adjusting carburettor (Continued)



8. After adjusting carburettor, put new limiter cap on the other side of limiter cap tool as shown, and press the limiter caps to the bottoms on L and H mixture needles respectively.

**NOTE :** Align the limiter cap's tabs (A) with locating slots (B) in extended housing of carburettor.

**IMPORTANT :** The limiter caps must be installed L and H mixture needles to comply with Emission Directive.

9. Start engine again and make sure engine runs at idle speed in the range of 2,400 to 3,200 r/min and at WOT engine speed in the range of 9,000 to 10,500 r/min. Also make sure blade would not move at engine idle speed and suitable acceleration.

**NOTE :** Initial carburettor setting (Idle adjust screw, L and H mixture needles) shown on page 3 and 8 is to start the engine after restoration or carburettor change. Idle adjust screw, L 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.