

EMISSIONS SERVICE BULLETIN

To: **All RedMax Distributors and Dealers**
 Subject: **Emission Carburetor: Low Speed/ High Speed Mixture Needle and Altitude Adjustment Procedures**
 Emissions Carburetor: **Walbro-Model: WYA- 67A - PART # 848-F0G-8101 (511354201)**

PRODUCT MODEL	ENGINE SERIAL NUMBER
Hedge Trimmer: HTZ 2401(L)/ HTZ 2460(L) CHTZ 2401(L)/ CHTZ 2460(L)	From: All units listed with above carburetor models.

The carburetors on the listed model have been factory preset to C.A.R.B. Tier III and E.P.A Phase II emissions regulations. The **idle-speed** adjustment is controlled by idle speed throttle valve screw. The HIGH-speed and Low-speed mixture needles have been preset and sealed to insure compliance with emission regulations. The **Low-speed Fuel mixture needle** adjustment controls the Fuel/ Air mixture at idle and mid-range engine speeds. The **High-speed Fuel mixture needle** adjustment controls the Fuel/Air mixture at wide open throttle (WOT) speed. Extended operation above 4000 ft, or after carburetor rebuild, requires readjustment of idle screw and mixture needles to insure the engine continues to comply with C.A.R.B, and E.P.A, emission regulations.

1. REQUIRED TOOLS

Carburetor adjustment screw driver 2.5 mm flat tip, Limiter cap removal tool, Electronic digital tachometer with sensitivity capable to within 10 RPM increments, and Two (2) Limiter caps.

WARNING!!! DANGER!!!

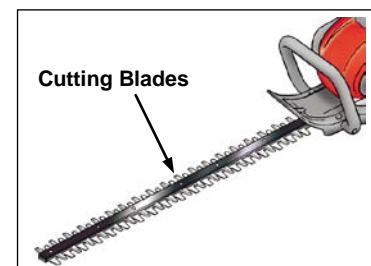
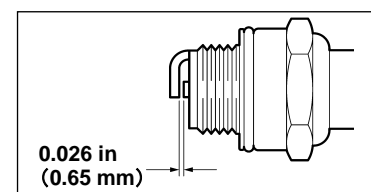
Always operate unit in a well ventilated and clear work area. Keep hands clear of the cutting blades during adjustment otherwise serious bodily injury may occur.

2. PRE - ADJUSTMENT CHECK LIST

IMPORTANT: Before performing carburetor adjustment, the following areas must be inspected and in good working order.

- Correct spark plug set to specified gap must be used.
Spark Plug: NGK-CMR7H Gap: 0.026 inch (0.65 mm)
- Standard cutting blades must be installed properly.
- The air filter must be clean and properly installed.
- The carburetor and carburetor insulator block screws must be tight.
- The fuel filter must be clean and properly installed.
- The muffler spark arrestor screen and exhaust port must be clear of carbon.

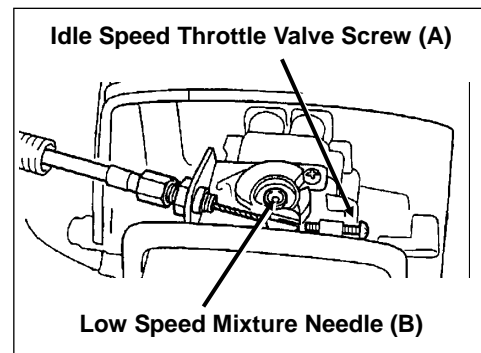
- The fuel must be fresh (> 89 Octane or higher: RON+MON/ 2) and properly mixed at 50:1 ratio with RedMax or (ISO-L-EGD/ JASO FD) registered 2-stroke oil.



3. Carburetor Adjustment WITH limiter caps INSTALLED

1. Start and run engine for 3.5 minutes alternating RPM between, Wide Open Throttle (WOT) for 1 minute and Idle for 10 seconds.
2. Adjust idle speed throttle valve screw **(A)** to 3000 RPM +/- 200 RPM. Unit should Idle at 2800-3200 RPM. The W.O.T. (Wide Open Throttle) should be at 9000-10700 RPM.

If engine does not run correctly after idle adjustment, follow guidelines for “**4. Carburetor Adjustment WITH limiter caps REMOVED**”.



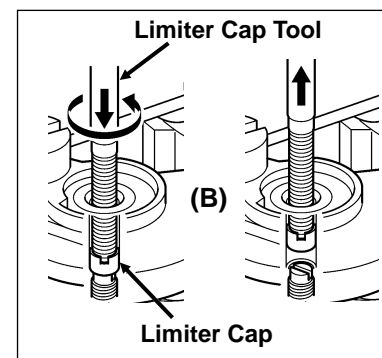
4. Carburetor Adjustment WITH limiter caps REMOVED

Low and High Speed Limiter Cap Removal

NOTE (CHTZ models): Take a carburetor off an engine when removal of Limiter Caps and any Initial Start Settings.

1. Screw Limiter cap removal tool counterclockwise (CCW) 2 turns into Low **(B)** and High speed mixture needle **(C)** limiter caps.
2. Pull limiter caps out from, both Low and High speed mixture needle holes.

NOTE: If cap is damaged and stays in the hole, use pick type tool to remove.



■ Initial Start Settings, if original needle settings were NOT disturbed

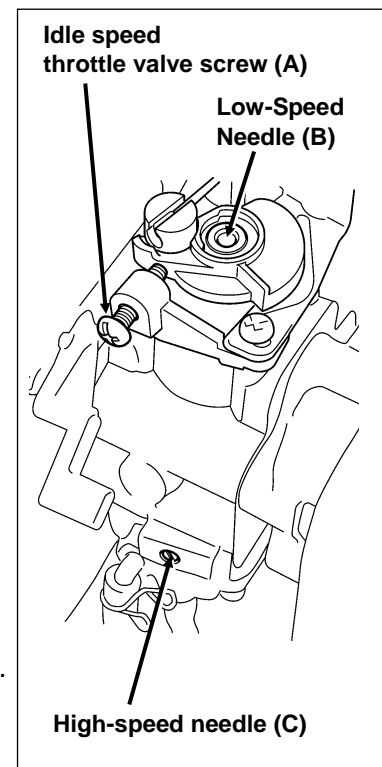
1. Turn throttle valve adjust screw **(A)** IN clockwise (CW) **ONE** and one half (1-1/2) turns.
2. Turn Low speed mixture needle **(B)** OUT counterclockwise (CCW) 1/8 turns.

■ Initial Start Settings, if original settings WERE disturbed

1. Turn throttle valve adjust screw **(A)** counterclockwise (CCW) until its tip just touches throttle plate stop. Then turn the screw in clockwise (CW) Six and one half (6-1/2) turns.
2. Turn High speed mixture needle **(C)** clockwise (CW) until very gently seated, then come out counterclockwise (CCW) 2-1/4 Turns.
3. Turn Low speed mixture needle **(B)** counterclockwise (CCW) completely out until a clicking sound is heard. Then turn it in clockwise (CW) Ten and one half (10-1/2) turns.

NOTE (CHTZ models): Insert new limiter cap in the High-speed mixture needle hole then set a carburetor on an engine.

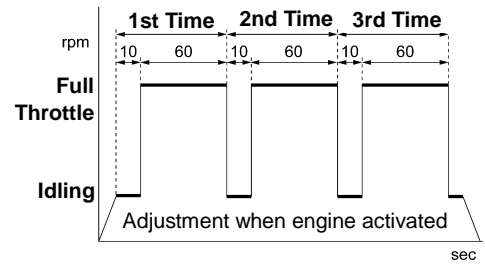
4. **START ENGINE USING WIDE OPEN THROTTLE** to prevent spark plug fouling.
5. If engine idles and does not die out at idle, continue to the warm up procedure and “**Low Speed Mixture Needle Adjustment**” on Page 3.
6. If engine Does Not Idle and Dies Out at idle, turn Low speed mixture needle **(B)** in clockwise (CW) 1/8 turn. Again **START ENGINE USING WIDE OPEN THROTTLE** and confirm idle condition.



Repeat step 6 until steady idle is obtained before moving to “**Low Speed Mixture Needle Adjustment**” procedure on Page 3.

NOTE: The initial carburetor settings for throttle valve idle speed adjust screw, Low speed mixture, and High speed mixture needles are intended to start and run the engine before final carburetor adjustments are made. Actual turns required for starting engine may vary slightly.

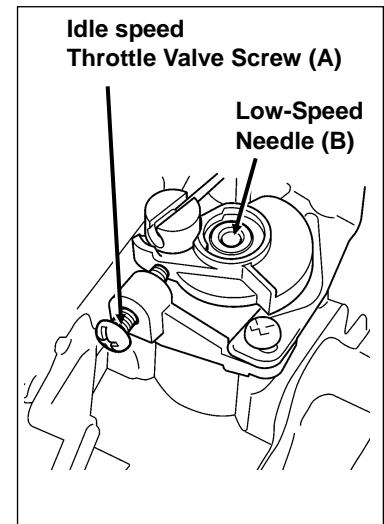
Start and run the unit to warm up the engine. Engine must be at operating temperature before completing Low speed mixture and High speed mixture needle adjustments. Warm up engine for minimum of 3.5 minutes by alternating between Wide Open Throttle (WOT) for 1 minute, then idle for 10 seconds.



■ Low Speed Mixture Needle (B) Adjustment

- 1) Set engine Idle Speed at 4500 +/- 10 RPM by turning Idle speed throttle valve screw (A). The engine RPM should be stable in the 4500 RPM range.
- 2) **NOW** adjust Low speed mixture needle (B) Clockwise (CW) Leaning or Counter clockwise (CCW) Richening to reach Maximum engine speed AT IDLE just before lean drop off, where RPM just begins to drop.
- 3) If the idle speed at lean drop of is **HIGHER** than 4500 rpm. Adjust Idle speed throttle valve screw (A) Counterclockwise (CCW) down 500 RPM.
- 4) **Repeat** step 2) and 3) as needed using 500 RPM step reduction, until maximum lean drop of speed is reached and speed AT IDLE is stable at 4500 +/- 10 RPM.
- 5) Turn Low speed mixture needle (B) counterclockwise (CCW) in 1/8th turn increments and **Rich Down** the mixture 1400-1600 RPM to reduce engine speed AT IDLE, down to 3000 RPM.

NOTE: Engine speed must be allowed to stabilize a minimum of 20 seconds after each 1/8th of a turn adjustment of Low speed mixture needle to assure accurate tachometer readings.
Verifying Engine RPM Using Tachometer



■ Checking Maximum RPM

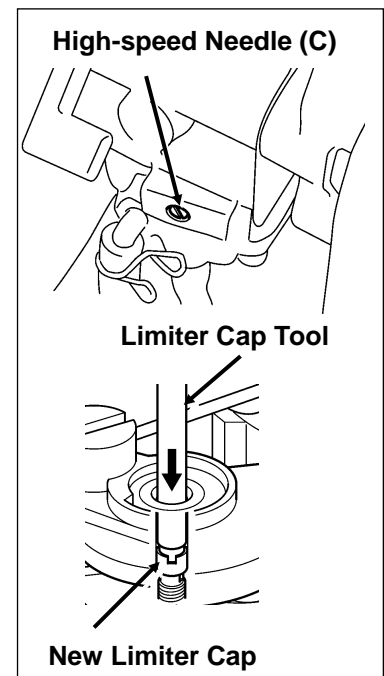
NOTE: High speed mixture needle adjustments are not required.

- 1) Accelerate engine to Wide Open Throttle (WOT).
- 2) Check the acceleration state of the engine speed, and make sure that the engine speed is 9000 rpm or more.
- 3) If (WOT) engine speed is **LOWER** than 9000 RPM, turn High speed mixture needle (C) clockwise (CW) 1/8 turns.

NOTE: Maximum RPM is controlled less than 10500 RPM by speed governor in the ignition module.

- 4) After checking WOT RPM, **stop** the engine. To comply with the Emission regulations, insert new limiter caps in the Low and High speed mixture needle holes. Press new limiter caps deep into Low speed and High speed mixture needle holes to prevent tampering.
- 5) Re-Start engine and verify engine Idle speed range from 2800 to 3200 RPM.
- 6) Verify Wide Open Throttle (WOT) engine speed range from 9000 to 10500 RPM, and the engine should idle and accelerate smoothly.

NOTE: If problem persists, check carburetor for dirt, varnish, gum, moisture and corrosion contamination.



ATTENTION !!! IMPORTANT !!!

Carburetor adjustments with caps removed must be conducted by Authorized Emission Certified Servicing Dealers ONLY. The dealer must supply the unit to the customer in the original configuration, using manufacturer's carburetor adjustment procedure, which includes having the limiter caps in place before the unit is put into service. Knowingly removing or rendering inoperative a device, element, or design installed on or in a non-road engine which is in compliance with E.P.A. or C.A.R.B. regulations is classified as **TAMPERING**.

TAMPERING is a violation of FEDERAL LAW, resulting in significant civil penalties (fines) of up to \$25,000 for each violation.



Gasoline Requirements

Attention:

RedMax-Hi-Performance 2-stroke engines produce higher HP outputs as compared to standard Home Owner Duty or Light Commercial Duty production engines offered by most manufacturers.

The RedMax Engines are registered and certified with CARB (California Air Resources Board) and EPA (Environmental Protection Agency) to operate on CLEAN Mid-grade 89 octane or Premium, unleaded (lead-free) gasoline and RedMax Air-Cooled "Max Life", Synthetic blend Premium two-stroke engine oil mixed at 50:1 ratio.

This Hi-Performance Air Cooled 2-stroke Engine requires the use of **Minimum** 89 Octane $\frac{[R+M]}{2}$ (Mid grade or Premium) clean gasoline. Gasoline may contain maximum of 10% Ethanol (grain alcohol) or up to 15% MTBE (Methyl tertiary-butyl ether). Gasoline containing Methanol (Wood Alcohol) is **NOT** approved.

Note: IF octane rating of the Mid Grade gasoline in your area is lower than 89 Octane use Premium Unleaded Gasoline. The majority of all 2-stroke engine manufacturers in the USA and Canada recommend using gasoline with 89 Octane or higher.

WARNING: Gasoline with a octane rating lower than 89 will greatly increase the engines operating temperature. Low octane gasoline will cause detonation (knock) resulting in piston seizures and major internal engine components damage.

NOTE: Failures caused by operating engines on gasoline with octane rating lower than 89 are not covered by the RedMax Two-Stroke engine warranty.

WARNING: Alternative Fuels (Not Gasoline)

Alternative fuels, such as E-15 (15% ethanol), E-20 (20% ethanol), E-85 (85% ethanol) are NOT classified as gasoline and are NOT approved for use in RedMax 2-stroke gasoline engines. Use of alternative fuels will cause major engine performance and durability problems such as: improper clutch engagements, overheating, vapor lock, power loss, lubrication deficiency, deterioration of the fuel lines, gaskets and internal carburetor components, etc... Alternative fuels cause high moisture absorption into the fuel/oil mixture leading to oil and fuel separation.