

# EMISSIONS SERVICE BULLETIN

To: **All RedMax Distributors and Dealers**  
 Subject: **Emission Carburetor: Low Speed/ High Speed Mixture Needle and Altitude Adjustment Procedures**  
 Emissions Carburetor: **Zama-Model: C1Q- Z6 PART # 848-C50-8101 (521571201)**

PRODUCT MODEL	ENGINE SERIAL NUMBER
<b>Chain Saw:</b> <b>GZ4000</b>	<b>From:</b> <b>All units listed with above carburetor models.</b>

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 wide open throttle (WOT) speed operation is controlled by a **High-speed Fuel mixture needle**. 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.

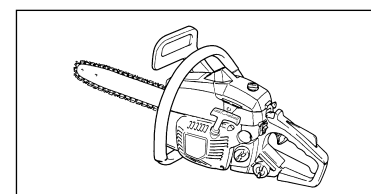
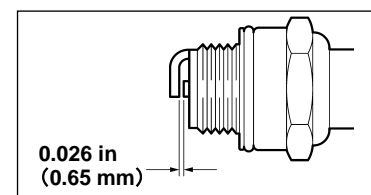
**WARNING!!! DANGER!!!**

**Always operate unit in a well ventilated and clear work area. Keep hands clear of moving, rotating, cutting attachment, or components 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.**

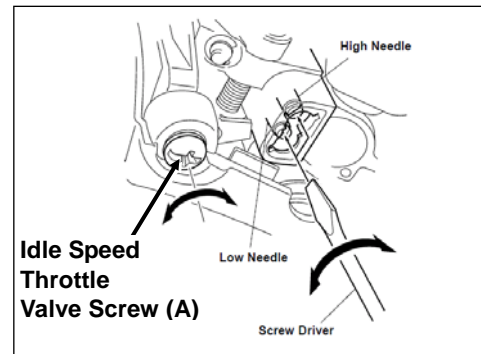
- Correct spark plug set to specified gap must be used.  
**Spark Plug: NGK-CMR7H Gap: 0.026 inch (0.65 mm)**
- Standard bar and chain must be set up properly.  
**Bar: Sprocket nose 14 in Chain: Oregon 91VG**
- The air filter must be clean and properly installed.
- The carburetor and carburetor insulator 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 chain oil must be scattered off sufficiently at medium chain speed.
- 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 2 minutes alternating RPM between Wide Open Throttle (WOT) for 5 seconds and Idle for 5 seconds.
2. Adjust idle speed throttle valve screw **(A)** to 2700 RPM +/- 200 RPM. Unit should Idle at 2500-2900 RPM. The W.O.T. (Wide Open Throttle) should be at 12500-13500 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

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

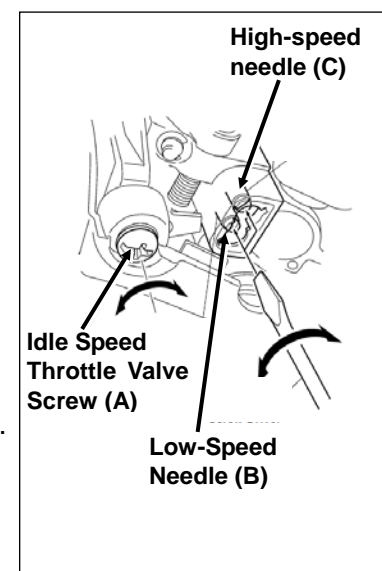
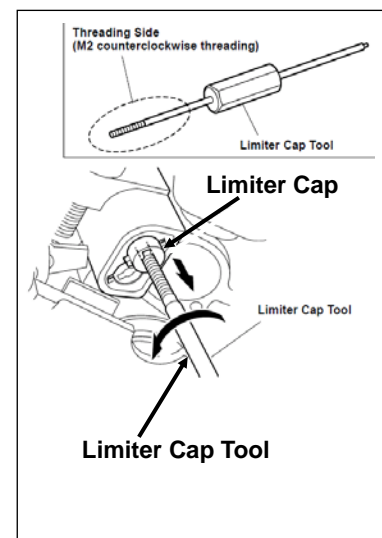
1. Turn throttle valve adjust screw **(A)** IN clockwise (CW) **ONE** turn.
2. Turn Low speed mixture needle **(B)** OUT counterclockwise (CCW) 1/2 turns.
3. Turn High speed mixture needle **(C)** OUT counterclockwise (CCW) 1/2 turns.

■ 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) **1-1/8** turns.
2. Turn High speed mixture needle **(C)** clockwise (CW) until very gently seated, then come out counterclockwise (CCW) **2-1/8** Turns.
3. Turn Low speed mixture needle **(B)** clockwise (CW) until very gently seated, then come out counterclockwise (CCW) **2-1/8** turns.
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.

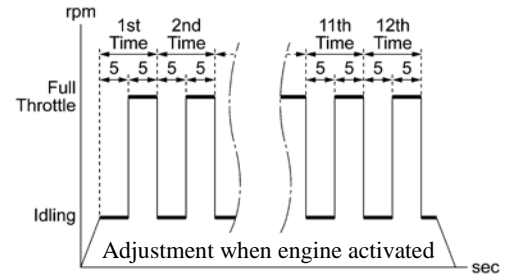
Repeat step 6 until steady idle is obtained before moving to “**Low Speed Mixture Needle Adjustment**” procedure on Page 3.

**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 2 minutes by alternating between Wide Open Throttle (WOT) for 5 seconds, then idle for 5 seconds.

After that, in order to remove the air in the carburetor, pull out the choke knob to "CHOKE" position two times at WOT.



### ■ Low Speed Mixture Needle (B) Adjustment

- 1) Set engine Idle Speed at 3500 +/- 10 RPM by turning Idle speed throttle valve screw **(A)**. The engine RPM should be stable in the 3500 RPM range.
- 2) **NOW** adjust Low speed mixture needle (B) Clockwise (CW) Leaning or Counterclockwise (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 off is **HIGHER** than 3500 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 3500 +/- 10 RPM.
- 5) Turn Low speed mixture needle (B) counterclockwise (CCW) in 1/8 turns increments and **Rich Down** the mixture 800 - 1000 RPM to reduce engine speed AT IDLE, down to 2700 RPM.

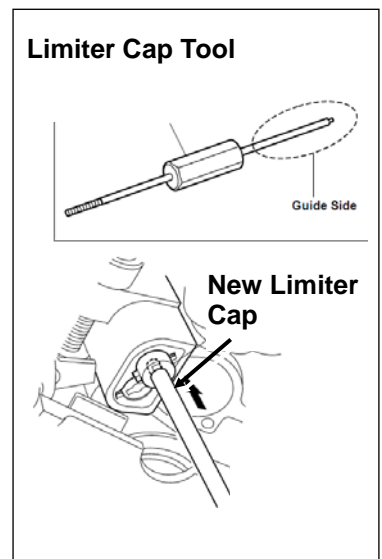
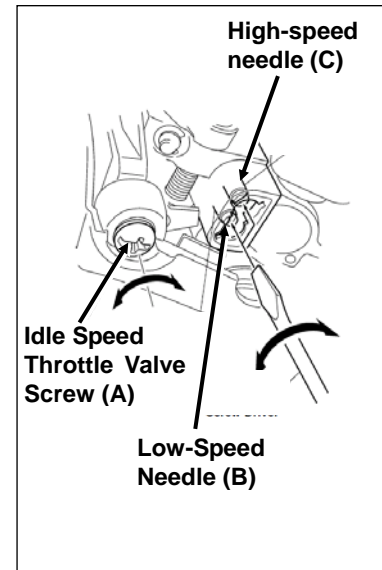
**NOTE: Engine speed must be allowed to stabilize a minimum of 20 seconds after each 1/8th of a turn adjustment of Low speed mixture needle to assure accurate tachometer readings.**

#### Verifying Engine RPM Using Tachometer

### ■ High Speed Mixture Needle (C) Adjustment

- 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 **12500-13500** rpm.
- 3) If the WOT speed is **LOWER** than 12500 rpm, turn **High speed mixture needle (C)** clockwise (CW) in 1/8 turns increments.  
**Repeat** step 2) and 3) as needed.
- 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 2500 to 2900 RPM.
- 6) Verify Wide Open Throttle (WOT) engine speed range from 12500 to 13500 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.



## 2 Stroke Oil Requirements

### **Attention:**

Use only RedMax "Max Life", Synthetic blend Premium Air-Cooled two-stroke engine oil or oil certified to ISO-L-**EGD** (ISO/ CD1378) standard AND one that is JASO-**FD** registered.

RedMax Air-Cooled "Max Life", Synthetic blend Premium two-stroke engine oil and ISO-L-**EGD** (ISO/ CD1378) AND JASO-**FD** oils are **fully compatible** with gasoline's containing 10 % Ethanol.

RedMax Air-Cooled "Max Life", Synthetic blend Premium two-stroke engine oil and ISO-L-**EGD** (ISO/ CD1378) AND JASO-**FD** oils are **Universal** and should be mixed at 50:1 ratio for all 2 stroke air cooled engines sold in the past regardless of mixing ratios specified in those manuals.

If the oil is registered with JASO, the JASO Logo with **FD** and **registration number** will be displayed on the container. The highest quality JASO rating is "**FD**", which equals the ISO-L-**EGD** rating. Lower ratings are "FC", "FB", and "FA".



**Attention:** Engine problems due to inadequate lubrication caused by failure to use ISO-L-**EGD** certified and JASO **FD** registered oil such as "Max Life", RedMax Synthetic blend Premium 2-stroke oil **WILL VOID THE RedMax TWO-STROKE ENGINE WARRANTY.**

**WARNING: Do not use NMMA (National Marine Manufacturers Association), BIA (Boating Industry Association), and TCW (two cycle water cooled) oils designed for MoPeds or Outboard, water cooled Marine Engines. Do not use API (American Petroleum Institute), TC (Two Cycle) labeled oils. The API-TC test standard has been discontinued by API in 1995 and it no longer exists.**

### **IMPORTANT: Gasoline/Oil mixture Storage Recommendations**

Store your gasoline or gasoline/oil mixture in a cool dry area in a tightly sealed approved container to limit the entry of moisture and additional air (oxygen). Moisture and air cause the development of varnish and gum, making the fuel stale. Stored gasoline and gasoline/ oil mixture ages and loses its octane rating and volatility. Do not mix more gasoline/ oil than you intend to use in 30 days, and 60 days when fuel stabilizer is added. RedMax Air-Cooled "Max Life" Synthetic blend Premium two-stroke engine oil "**Contains fuel stabilizer**" and will automatically extend your gasoline/ oil mixture life up to 60 days.

**9335 HARRIS CORNERS PARKWAY CHARLOTTE, NC 28269**