

Yoshimura Advanced Fuel Management System

Adjuster Box - Instruction Sheet

R-421 Adjuster Box Suzuki DL1000 2002-07 / DL650 2004-07

The YAFMS adjuster box adjusts both stages of the Suzuki two-stage fuel injection system. The Adjust-A section affects the idle & steady state cruise circuit portion of the fuel injection. The idling system is in effect during low-load (cruising-idling) situations. The Adjust-B portion affects the acceleration portion of the fuel injection. The acceleration system is in effect during high-load and/or acceleration situations normally resulting from throttle opening of $\frac{1}{4}$ or larger. The idle stage selects fuel maps based mainly on the motorcycle's various sensor inputs while the acceleration stage selects maps based on throttle position and RPM. This translates to the Adjust-A portion of the adjuster affecting slow-speed/low-load adjustments and the Adjust-B portion adjusts the higher RPM acceleration range.

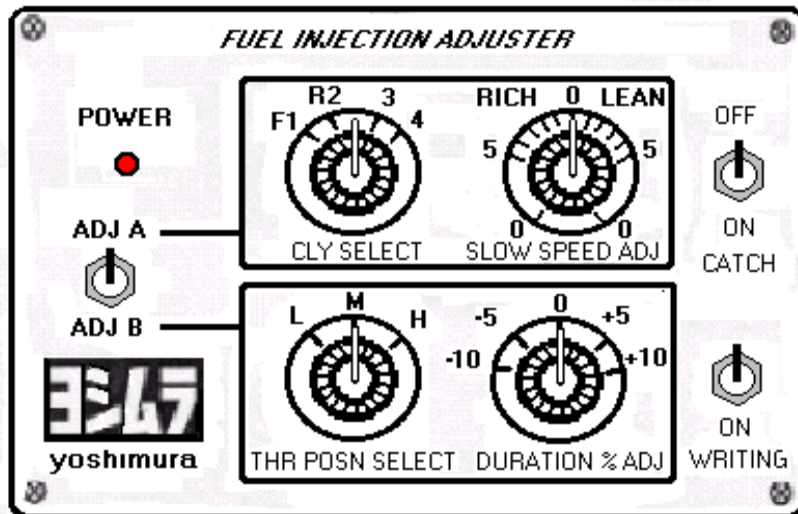
The following is a read ahead information only section, DO NOT perform and connections at this point.

The first step when making adjustments is to connect the adjuster box cable to the eight-pin male connector on the OEM harness. This connector is located behind the left rear frame cover fairing. The seat must be removed to gain access. You will have to fish this connector out and lay it in the under seat storage area. You will have to remove the waterproof cap on the coupler before connecting the cable. When finished tuning, be sure to replace the waterproof cap on the OEM male coupler!

IMPORTANT: Always confirm the ignition switch is **OFF** on the motorcycle and that the **CATCH** toggle switch located at the upper right of the adjuster box is in the **OFF** position prior to connecting or disconnecting the cable or **DAMAGE may result to the adjuster box and/or your expensive ECU.**

Once the connection is made, select the fuel curve (idle or acceleration) you want to adjust using the Adjust A/B toggle switch located on the left side of the adjuster box.

Please keep a logbook of adjustments made to the motorcycles fuel injection so changes can be monitored and the bike can be tuned in the most efficient manner.



Checking the box out:

Whoever designed this box was a little weird. Notice on the top right dial the rich settings are in the counter-clockwise (CCW) direction and on the lower dial rich settings are in the clockwise (CW) direction. Also notice that the top dial has a scale that goes from 0 to 5 to 0 in both directions. You will only be interested in the 12 O-Clock Zero position to the 9 O'clock (5% rich) or the 12 O-Clock Zero position to the 3 O'clock (5% lean) range on this dial.

V-Strom Tuning Concerns:

If your primary concern is poor running during low-load (cruising-idling) situations, you may only need to adjust the "A" fuel injection maps. This will cover areas such as poor idle, stumbles at low throttle settings, stalling, low speed/low load surging & popping/backfiring on deceleration. Bottom line, do the "A" adjustment first and see if further "B" adjustments are necessary.

After doing the "A" adjustment if you feel (or just want to see what happens) the acceleration maps may need a little extra, go ahead and try out the "B" adjustment. You will only want to add to the LOW map, unless you have aftermarket pipes, and then the MID map may need a little help also. The **L**, **M**, & **H** settings on the "B" range relate to ¼ throttle position, ½ throttle position & full throttle position respectively. All in the RPM range above 3000.

Remember, any +’s added (making it richer) will reduce your fuel mileage. This is especially true for the "B" range **L**, **M** & **H** adjustments. So you’ll have to decide if it’s performance or mileage you desire. The Strom it plenty rich in the MID & HIGH range as it comes from the factory. So adding gas in these ranges is usually not needed.

Before any FI tuning is done, everything else on your bike should be spot on. This includes throttle bodies tight in the manifold boots, throttle body synchronization within ½ inch of Mercury, no vacuum leaks present, throttle cables adjusted properly, spark plugs looking good, clean air filter & idle speed set at 1200 RPM. After FI tuning is accomplished, expect the idle to drop a little. Adjust it back to 1200 RPM.

If performing adjustments in the cooler months, you may want to increase your ADJ A setting by 0.5-1.0% to allow for the ECU leaning the engine out during hot weather.

Recommended Starting Settings (DL1000 Only):

For 02/03 models start with a +1 on the ADJ A range, for 04/05 models start with a +1.5 on the ADJ A range and for 06/07 models start with a +0.75 on the ADJ A range. Usually you will find a happy spot somewhere between +1 and +3, with +5 the maximum you can go. Don't forget this is an infinitely adjustable control, so settings of +1.5 or +2.3 are possible.

For all models, +5 on the LOW ADJ B range will be enough. If you have aftermarket pipes and/or air box modifications a +5 on the MID ADJ B range may be needed for optimum performance. Adjustments in the ADJ B range will affect your high-speed cruise gas mileage.

Idle Map Adjustment Procedure

The slow speed adjustments are made to each cylinder and please note that the adjuster knob is very sensitive. Very slight movements counter-clockwise of the top center **0** on the **SLOW SPEED ADJ.** knob richen and slight movements to the right lean the idle mixture. A practical range for proper mixture will be found +/- 90° from the 12 o'clock position. Note that maximum richness or leanness correction occurs at the halfway point between the 12 o'clock position and the left or right **0** positions. Each motorcycle reacts differently to adjustments made with the **SLOW SPEED ADJ.** knob and requires fine-tuning similar to a pilot mixture screw on a carburetor.

To richen the slow speed-stage of the forward cylinder only on a DL1000 follow the steps below. Each cylinder must be adjusted separately.

1. Make sure the **CATCH** toggle switch on the box and the bikes **ignition switch** is in the **OFF** position.
2. Attach the communication cable from the adjuster box to the diagnostic tool connector & make sure the bike is in neutral.
3. Move the Adjust A/B toggle switch up to the **ADJ. A** position.
4. Select **F1** on the **CYL. SELECT** switch.
5. Position the **SLOW SPEED ADJ.** knob to the median position (at the 12 o'clock **0** position). Turn the **SLOW SPEED ADJ.** knob counter-clockwise to richen the idle mixture. This is a sensitive adjustment – rotate the knob to the left (CCW) to a 1, 2 or 3 setting as desired. This is in the richer direction
6. Turn the Ignition key to the **ON** position. **DO NOT START THE MOTORCYCLE!** You should hear the fuel pump for a few seconds. Once the fuel pump stops, confirm that the YAFMS power light is **ON**. If the light is not **ON** check the connection and make sure the ignition switch is at the **ON** position. When the YAFMS power light is confirmed to be **ON**, proceed to the next step.
7. Move the **CATCH** toggle switch down to the **ON** position.
8. Move the **WRITING** momentary switch down and hold it down for 4 seconds then release it.
9. Move the **CATCH** switch up to the **OFF** position. The change is saved to the electronic control module after the **CATCH** switch is moved up to the **OFF** position.
10. Wait for 2 seconds then turn the ignition key to the **OFF** position.
11. Remove the adjuster box from the motorcycle when finished tuning. **Never leave the adjuster box connected when starting or riding the motorcycle.** This does not have to be done if you are continuing on to Acceleration Map Adjustments.

For the **rear cylinder**, repeat the above steps starting at step 4. But at step 4 select **R2**. Remember that the idle-speed adjustments are made to each individual cylinder and not tuning both cylinders may result in a rough idle and/or poor off-idle acceleration.

To return to stock settings, set the adjustment to the 12 o'clock **0** and program per instructions above. The bike will now be at the original factory settings.

Important Note: If your V-Strom is equipped with aftermarket pipes and a small after-fire is present when closing the throttle from full open throttle, your PAIR system may have to be disabled to prevent this from occurring.

Acceleration Map Adjustment Procedure

To adjust the fuel injector duration for heavy load and/or acceleration conditions, follow the steps below.

Note: Adjustments made to the acceleration circuit are made for all cylinders simultaneously. If you have just performed the Idle Map Adjustment Procedure above, you do not have to disconnect and reconnect the Yosh box.

1. Make sure the **CATCH** toggle switch on the box and the bikes **ignition switch** is in the **OFF** position.
2. Attach the communication cable from the adjuster box to the diagnostic tool connector & shift the bike into neutral.
3. Move the Adjust A/B toggle switch down to the **ADJ. B** position.
4. Select **L** (low throttle position, approx. ¼ throttle) on the **THR POSN SELECT** switch.
5. Select **+5** (five percent increased injector duration from the standard map) on the **DURATION % ADJ.** switch.
6. Turn the ignition key to the **ON** position. **DO NOT START THE MOTORCYCLE!** You should hear the fuel pump for a few seconds. Once the fuel pump stops, check to see that the YAFMS power light is **ON**. If the light is not **ON** check the connection and make sure the ignition switch is in the **ON** position. When the power light is **ON** proceed to the next step.
7. Move the **CATCH** toggle switch down to the **ON** position.
8. Move the **WRITING** momentary switch down and hold it down for 4 seconds then release it.
10. Repeat steps starting at step 4 with the **THR POSN SELECT** set the **M** (mid throttle position, approx. ½ throttle) or **H** (full throttle position) as desired.
11. Once all tuning is completed for the Adjust B fuel curve, move the **CATCH** switch up to the **OFF** position. All changes are saved to the electronic control module after the **CATCH** switch is moved up to the **OFF** position.
11. Wait for 2 seconds then turn the ignition key to the **OFF** position.
12. Disconnect the adjuster box from the motorcycle wire harness when finished tuning. **Never leave the adjuster box connected when starting or riding the motorcycle.**

To return to stock fuel injection settings, select **0** during step 5 for all throttle positions. Remember that changing the **ADJ. B** portion affects all cylinders at the same time. To return to stock settings, set the adjustment to **0** and program the box per the above instructions. The bike will now be at the original factory settings.

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