DYNA 2000
DIGITAL PERFORMANCE IGNITION
Kit Number DDK1-6
1987 - 90 Honda CBR 600F

Installation & Users Guide

Product Description

The Dyna 2000 is a high energy, high RPM capable ignition system designed for late model four-cylinder sport bikes and other vehicles equipped with these engines. This ignition also works well on many early model applications due to the broad range of advance curves and RPM limit settings. Important features of this unit include:

- Five advance curves to cover a wide range of engine builds
- Retard Mode with 4 levels of retard
- Adjustable Rev Limiter - Adjusts from 8500 to 16,000 RPM
- Easy static timing with built in timing light.
- Complete wiring harness for error free installation

Crank Trigger Installation

1. Remove the pickup side cover. Remove the rotor from the end of the crankshaft. Remove the pickups from the housing. The pickups can be left connected to the harness for now - just push them out of the way.
2. Install the black timing rotor on the crank with the marked side facing you. Place the large flat washer supplied with this kit on the crank bolt. Apply fresh threadlock and torque to factory specs.
3. Install the new crank trigger plate in the cover. Lightly tighten the 4 cap screws. Reinstall the cover on the engine using one screw to temporarily hold the cover in place.

Ignition Timing

1. Unbolt the clutch side cover and push it out of the way of the flywheel. Wipe the oil off the outside of the flywheel.
2. Cut out one of the flywheel marking templates included with these instructions. Line up the 1/4 TDC mark on the template with the "T" mark on the flywheel. Wrap the template around

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the flywheel and attach with a rubber band or tape.

3. Scribe a line in the flywheel below the 35°, 37.5°, and 40° lines on the template for both the 1/4 and 2/3 cylinder pairs. Also make a line for 2/3 TDC. Remove the template and re-install the side cover.

The LED on the front of the module is used to time the engine. Since the LED is usually easier to see before the module is mounted, you will need to temporarily wire up the module.

1. Plug the four pin crank trigger connector into the mating harness connector. Attach the black harness ground wire to the battery negative terminal. Strip the harness red wire about ½" and attach to the battery positive terminal. Do not attach any other wires. This completes the temporary wiring.
2. Plug in the Dyna 2000 module. The switches can be set to any position for this procedure.
3. Unscrew the two hole plugs in the clutch cover. Turn the crankshaft forward (CW) until the 1/4 advance marks just become visible in the small hole (the 1/4 marks are slightly ahead of the stamped "T"). Continue to rotate the crank until the LED turns on. The middle mark (37.5°) should line up with the notch in the small hole. If the LED turns on before the marks line up, roll back the crank, retard the pickup plate slightly, and check again.

   After the 1/4 pickup is set, check the 2/3 timing. Move the pickup (not the plate) to make adjustments. Tighten the crank trigger plate screws and re-install the side cover on the engine.

Module Installation

Locate the stock ignition module and unplug it. The Dyna 2000 can be mounted on the bike using the same rubber sleeve that held the stock module. The module can also be mounted using the two plastic mounting saddles and cable ties included in the kit.

Wiring

1. Remove the gas tank. Run the short leg of the Dyna 2000 harness down to the crank trigger and plug in. If the harness is too long, fold up and tape the excess - do not cut. Run the long leg down to where the ignition coils are.
2. Trim the harness to length. The White wire needs to reach the 1/4 coil. The Red and Blue wires need to reach the 2/3 coil. Allow an extra 4" for a "service loop" in case the connection needs to be repaired. Strip each wire about 1/4", slide on a piece of shrink sleeve, and crimp on the supplied piggyback terminals. Shrink the sleeve over the back of the terminal.

   The Green and Yellow wires are for use with aftermarket tachs and accessories. Connection of these wires is discussed in the "Tach" section of these instructions. Roll them up out of the way for now.
3. Remove the Black/White wire from the 2/3 coil and push it on to the piggyback terminal attached to the Red wire. Re-connect these wires to the coil.

Remove the Blue/Yellow wire from the 2/3 coil and push it on to the piggyback terminal attached to the Blue wire. Re-connect these wires to the coil.

Remove the Yellow/Blue wire from the 1/4 coil and push it on to the piggyback terminal attached to the White wire. Re-connect these wires to the coil.

5. Connect the Black wire *directly to the battery negative terminal.* Do not lengthen this wire. If this wire is shortened, solder on a good quality ring terminal. This completes the wiring.

Tach

The factory tach is normally connected to the 1/4 coil negative terminal. If the wiring procedure described above was used, this connection is already in place. If a different wiring procedure was followed, you will need to locate the wire that ran between the tach and the coil and attach it where the White wire is connected.

Note: The fuel pump relay is also connected to this circuit. This connection must be in place for the vehicle to operate.

The Green and Yellow wires can be used to activate a number of accessories such as tachs, shift lights, RPM switches and other devices triggered by a 12 volt pulse. The Green wire outputs 2 pulses per crankshaft revolution. The Yellow outputs one pulse per rev. Both tach outputs will provide pulses during rev limiting and shift kill. This prevents the tach from becoming erratic when the engine is limiting.

NOTE: The factory tach requires the high voltage pulse from the coil negative terminal. It may not work properly if connected to the Yellow or Green wire.

Safety Interlock

The factory safety interlock on '87 and '88 models consisted of a neutral switch to prevent starting in gear. These models do not require use of the Dyna 2000 safety interlock. The Orange wire near the crank trigger connector can be left unconnected.

1989 models added a side stand switch and '90 and later added a clutch switch. The Dyna 2000 does not require these switches to run. If you wish to retain these features, contact Dynatek Tech Services for additional information

The following information is presented for non-stock or custom applications.

The Dyna 2000 safety interlock feature prevents the engine from starting when the Orange wire is grounded. It is normally used with the side stand safety switch but can also be used as a shift kill when activated by a shift lever or air kill switch.

The safety interlock can also be used as a theft prevention switch. Connect the Orange wire to one side of a toggle switch and the other side to ground. When the switch is closed, the ignition will be disabled.

The safety interlock only interrupts the ignition when advance curves 1 through 5 are being used. When the module is set to one of the retard modes, the safety acts as the ignition retard trigger and does not interrupt the ignition.

RPM Limiter

The Dyna 2000 includes an extremely accurate rev limiter that can be set from 8,500 to 16,000 RPM in 500 RPM steps. The limit set is by turning the rev limit knob on the end of the Dyna 2000 module to the desired position. NOTE: The rev limit setting is read into memory only during power up. When changing the setting, the power must be switched off then back on for the new setting to be recognized.

Advance Curves

The Dyna 2000 ignition module allows selection between five different advance curves and four levels of retard. The advance curves are as follows:

Advance Curve #	Total Span	Reaches Final Timing At	Typical Application
1	20 deg	2,500 rpm	4 valve stock
2	20 deg	4,500 rpm	4 valve increased compression
3	20 deg	6,500 rpm	4 valve high compression
4	25 deg	3,500 rpm	2 valve stock
5	25 deg	6,500 rpm	2 valve high compression

The final timing is determined by where the crank trigger is set. Most modern 4 valve sport bikes run best with 35 to 40 degrees total ignition timing. Older 2 valve engines will run well with about 40 degrees total timing. The Dyna 2000 ignition will generate an advance curve based upon the total timing that you set with the crank trigger.

Curves 1,2, and 3 generate a curve that changes a total of 20 degrees from idle to high rpm. This means that if you set the crank trigger to 35 degrees, at idle you will have 20 degrees less than this, so the engine will be idling at 15 degrees.

Curves 4 and 5 generate a curve that changes a total of 25 degrees from idle to high rpm.

During cranking, the module fires approx 30° retarded from the final timing point on all curves. Refer to the graphs for a detailed description of each curve.

Retard Mode

The Dyna 2000 has four a four level retard feature that allows the final timing to be retarded in steps of 4, 8, 12, and 16 degrees. Refer to the graphs for a detailed description.

When a retard setting is selected, the Orange wire (located by the crank trigger connector) becomes the retard trigger. Grounding this wire causes the final timing is reduced by the number of degrees the knob is set to. When the retard line is not grounded, the curve follows the same slope as advance curve 1. If the setting is changed, the power to the module must be turned off then back on for the new setting to be recognized.

The Orange wire can be grounded along with a nitrous solenoid to provide retard when nitrous is activated. Or, a boost switch (Dynatek part no. PPS-75) can be used to activate retard above a preset boost level on turbo charged vehicles.

Test Mode

The Dyna 2000 includes a special test mode feature for checking the ignition without the engine running. Test mode is selected by turning the knob to the "TEST" position. Remember, power to the module needs to be turned on *after* moving the knob for the new setting to be recognized. NOTE: Do not try to start the engine with the ignition set in test mode - it will not run properly.

When in test mode, the Dyna 2000 will fire each coil as the magnet on the crankshaft rotor is rotated to the firing point for each cylinder pair. This allows you to easily determine if each crank trigger sensor is working, that each coil is working, and which coil is being controlled by which crank trigger sensor.

When the magnet in the crankshaft rotor reaches the pickup for cylinders 1 & 4, the 1/4 coil should spark. When the magnet in the crankshaft rotor reaches the sensor for cylinders 2 & 3, the 2/3 coil should spark.

Troubleshooting Tips

The Dyna 2000 should provide years of trouble-free operation. However, if problems arise, the following questions should help locate the source of the problem.

Does the LED on the front of the Dyna 2000 blink each time the power is turned on? If not, use a volt meter or test light to verify that +12V is getting to the red wire of the harness. Inspect the ground connection and the condition of the terminal - especially if the ground wire has been shortened Check your battery voltage. The battery should measure about +12.5 volts when the engine is not running. Check that the main battery ground cable goes to an engine case bolt.

With the ignition power on, turn the engine over slowly with a wrench. Does the LED on the Dyna 2000 come on when the magnet on the crankshaft rotor passes each Crank Trigger sensor module? If not you may have a bad connection on one of the Crank Trigger wires.

With ignition power on, measure the voltage between ground and each crank trigger wire *with the*

trigger plugged in. The Red wire should have +12 volts on it, the Black wire should have 0 volts on it. The White and Blue wires should read about +12 volts (more or less depending on battery voltage) when the magnet in the rotor lines up with the pickup. The voltage should drop back down to around 0 to 0.5 volts as the magnet moves away.

If the crank trigger operation is correct and the ignition module LED responds properly, you may have a problem with an ignition coil. With primary wires disconnected from a coil, you can measure if the coil is internally shorted by using a digital ohm meter. Measuring across the primary, you should read between 2.4 to 3.0 ohms resistance for the factory coils.

Measure the resistance from one spark plug tower to the other. Factory coils should read in the range of 9600 to 14,000 ohms. Also measure the spark plug caps. These should read between 7500 to 14,400 ohms.

If the ignition module and coils check out OK, take a close look at your spark plug wires. Inspect for damage or breakage of the internal conductor.

IMPORTANT It is necessary to use suppression core spark plug wires with the Dyna 2000 ignition system. Spiral core or carbon core spark plug wires are acceptable. The Dyna 2000 can also be used with the stock resistor cap spark plug wires. These have a small resistor located in a cavity in the top of the spark plug boot.

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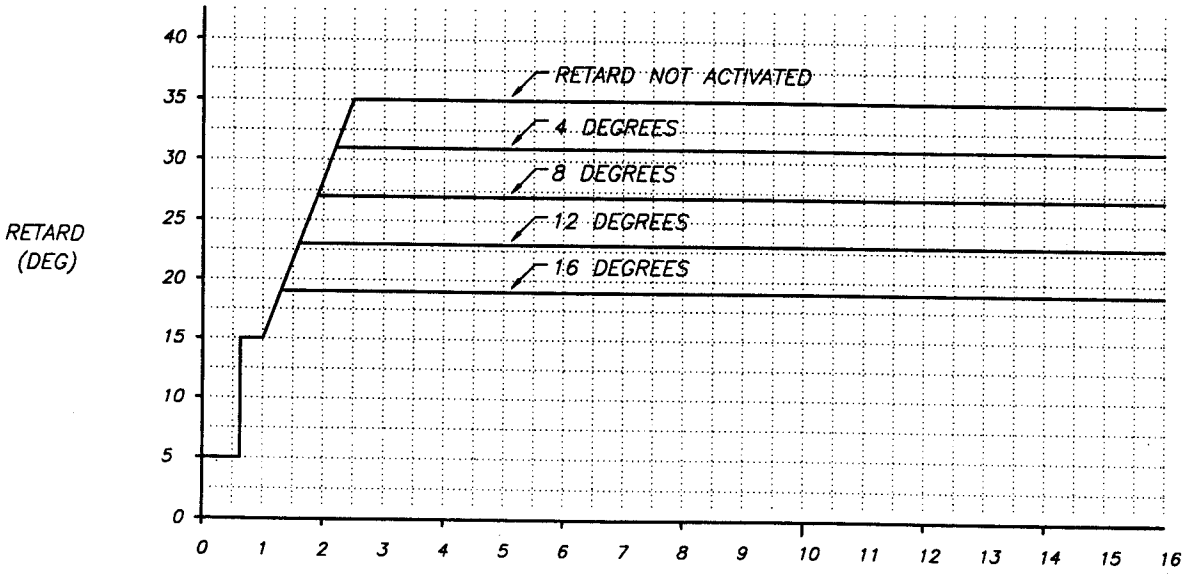
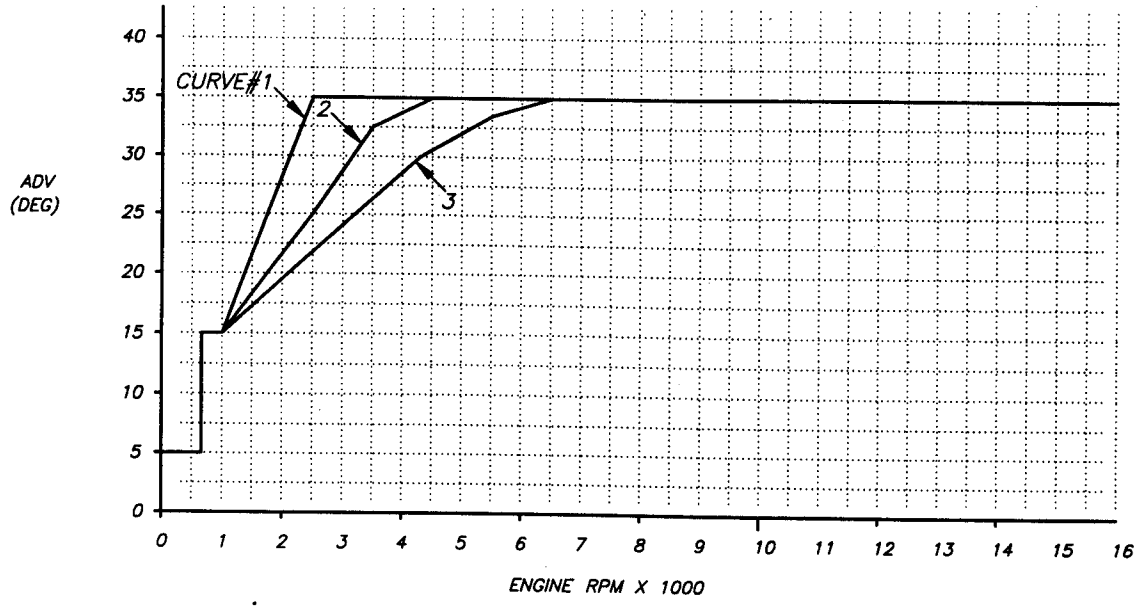
Revised 13July98

DD2000-4 RETARD MODE CURVES



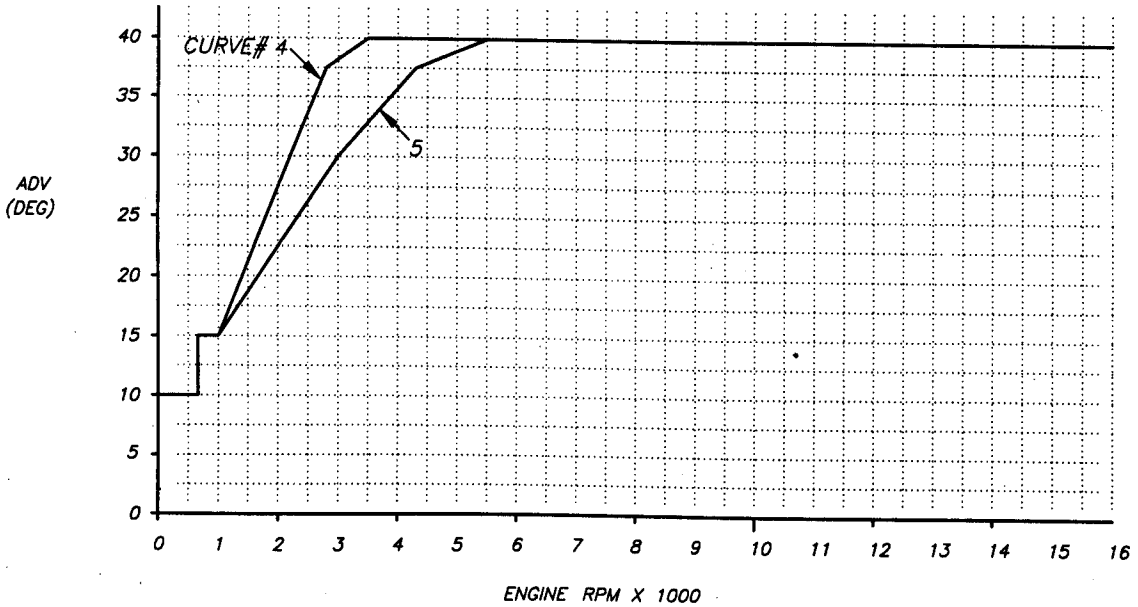
RETARD CURVES SHOWN WITH STATIC TIMING SET AT 35° BTDC.

DD2000-4 ADVANCE CURVES



ADVANCE CURVES 1, 2, AND 3

FOR 4 VALVE PER CYLINDER MOTORS
NOTE – THE ADVANCE VALUES SHOWN ARE FOR STATIC PICKUP TIMING SET AT 35° BTDC.



ADVANCE CURVES 4 AND 5

FOR 2 VALVE PER CYLINDER MOTORS
NOTE – THE ADVANCE VALUES SHOWN ARE FOR STATIC PICKUP TIMING SET AT 40° BTDC.

DD2000-4 WIRING DIAGRAM - TYPICAL