



INSTRUCTIONS

-J00930

REV. 1-25-99

Kit Numbers 32654-98 and 32655-98

SCREAMIN' EAGLE SELECTABLE CURVE RACE IGNITION MODULE

General

These ignition modules fit the following models:

32654-98

1995 and later 1340 models, except when equipped with Electronic Fuel Injection.

1994 to 1997 XL 883 and 1200 models.

32655-98

1991-1993 models; 1994 Softail and Dyna Glide models; 1990 and earlier models when used with Wire Harness Kit, Part No. 32408-90.

IMPORTANT COMPATIBILITY NOTE

When installing this ignition module, you must use a coil with a primary resistance of 2.5-3.5 Ω. We recommend Screamin' Eagle coils (Part Number 31653-97, 31654-97, or 31620-88A). The stock coil (Part Number 31614-83A) is also acceptable.

CAUTION

This engine related performance part is intended for High Performance or Racing applications and is not legal for sale or use on pollution controlled motor vehicles. This kit may reduce or void the limited vehicle warranty. Engine related performance parts are intended for the experienced rider only.

CAUTION

This Screamin' Eagle ignition module can be set to allow the engine to rev up to 7500 rpm. It is extremely important that the rider use the tachometer and avoid harmful over-revving. See your Harley-Davidson dealer for product recommendation.

This Kit Contains:

QTY	DESCRIPTION
1	Module, Screamin' Eagle Ignition
1	Jumper wire
1	Wiring bundle

NOTE

Faulty ignition module operation may result from wiring harness problems. If this Screamin' Eagle ignition system malfunction exists, inspect the motorcycle's wiring harness to determine if it is faulty. If the existing wiring harness is faulty, repair or replace it before installing the new ignition module.

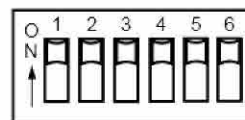
NOTE

Ignition modules being replaced under warranty must be submitted with all wire terminals intact (warranty claims will be rejected for modules submitted with wires cut and/or terminals removed). Regardless of warranty considerations, do not splice the wires of the new ignition modules to the wires of the original module's wiring harness.

Configuring Mode Switches

Before installing module configure switches on the back of module. There are six mode switches located on the back of the module which allow you to custom configure the module. Make sure each switch is in the proper position before you start the motor. Description of the four modes controlled by the switches is provided starting on page 3.

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Switch 1 (VOES)

- ON** Only select ON in special applications such as with nitrous oxide or turbo kits.
- OFF** Improves part throttle driveability. Most bikes should be set to OFF.

Switches 2 and 3 (ADVANCE CURVE)

- OFF/OFF** This curve brings up the advance the earliest and to the highest final value (most aggressive). OFF/OFF is Curve 1 on page 6.
- ON/OFF** This curve brings up the advance a little slower than curve 1 to prevent detonation on near-stock motors. ON/OFF is Curve 2 on page 6.
- OFF/ON** This curve brings up the advance slower than curve 2 and to a lower final value, and is good for built motors that tend to detonate. OFF/ON is Curve 3 on page 6.
- ON/ON** This curve should only be used if your motor still detonates using Curve 3. This curve brings up the advance the latest and to the lowest final value (least aggressive). ON/ON is curve 4 on page 6.

Switches 4 and 5 (REV LIMIT)

- OFF/OFF** 6000 rpm
- ON/OFF** 6500 rpm
- OFF/ON** 7000 rpm
- ON/ON** 7500 rpm

Switch 6 (FIRING MODE)

- ON** Single Fire
- OFF** Dual Fire

Configuring Mode Switches

Installation

Important Installation Notes

- Use of spiral core type spark plug wires, or metal core wires, may cause malfunction of the ignition. You must use spark plug wires with a resistance of 2000-7000 Ω -per-foot (we recommend using Screamin' Eagle spark plug wires. Original Equipment Harley-Davidson spark plug wires are also acceptable).
- If you have a motorcycle that does not have an ignition harness that can be unplugged from the ignition module (pre-1991), use Harley-Davidson's Wire Harness Kit, Part No. 32408-90.
- The stock pickup assembly consists of two pieces, a sensor plate and a rotating cup attached to the camshaft. The rotating cup used on 1983 and later models (Part No. 32402-83) is gold in color. This is the correct cup to use. Pre-1983 electronic ignition bikes have a silver colored cup with different window widths. The advance curves will not work properly with the old cup design. If you have one of these older cups, get a newer cup (Part No. 32402-83).
- Any of the sensor plates produced from 1983 on will work with this module. Motorcycles originally equipped with points (except distributors) or early electronic ignition will accept the later model sensor and cup without modification.

⚠WARNING

To avoid accidental start-up of vehicle and possible personal injury, disconnect the battery cables before proceeding. Always disconnect the negative cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion resulting in personal injury.

NOTE

A Service Manual for your motorcycle is available from your Harley-Davidson Dealer.

Dual Fire Installation

1. Locate and gain access to existing ignition module and disconnect module from wiring harness. If there is no main harness plug on your existing module, you will need the Wire Harness Kit, Part No. 32408-90. If you need to install this harness, follow the instructions included with the harness kit.
2. Remove and save ignition module mounting fasteners and remove existing ignition module.
3. Install new ignition module with original mounting fasteners. Connect new module to wiring harness. The blue wire is left unconnected. The green wire is for the tachometer and its use is optional on dual fire installations. To connect tachometer see step 4 under *Single Fire Installation*.

⚠WARNING

Always connect the positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion resulting in personal injury.

4. Install any components or covers which may have been removed to gain access to ignition module. Connect battery cables to battery, positive cable first.

Single Fire Installation

1. Locate and gain access to existing ignition module and disconnect module from wiring harness. If there is no main harness plug on your existing module, you will need the Wire Harness Kit, Part No. 32408-90. If you need to install this harness, follow the instructions included with the harness kit.
2. Remove and save ignition module mounting fasteners and remove existing ignition module.
3. Install new ignition module with original mounting fasteners. Connect new module to wiring harness. The blue wire is left unconnected.
4. If your motorcycle does not have a tachometer leave the green wire unconnected. If it does have a tachometer, connect as follows:

Locate the pink wire on the ignition coil that goes to the tachometer. This wire is normally connected to the minus side of the coil along with another pink wire that runs back to the ignition module.

Locate the green extension wire in kit. Connect the bullet connector end of this wire to the matching green wire on the ignition module. Route this extension wire to the coil area and splice it to the pink wire going to the tachometer.

⚠CAUTION

Do not reconnect the tachometer wire to the coil or damage to the ignition may result.

Some motorcycles with a tachometer have only one pink wire at the ignition coil. If this is the case with your motorcycle, you will need to connect the ignition module tachometer output directly to the tachometer.

Access the back of the tachometer housing and remove the pink wire from the back of the tachometer. Plug the bullet connector end of the green tachometer extension wire in kit into the mating connector on the green wire at the module. Route the green tachometer extension wire to the tachometer and connect it where the pink wire was attached. You may need to lengthen the green wire. Put ample electrical tape on the exposed end of the pink wire that was removed (if this end touches anything conductive it will cause the ignition to fail).

5. Remove the original single coil. Typically, there is a white wire from the Run/Stop switch on one of the coil primary terminals. On the same terminal there is a second white wire going to the ignition module. These wires are the +12V supply to the coil and the +12V supply to the ignition module. On the other coil primary terminal, you should find a pink wire from the ignition module. This is the coil minus wire from the ignition module. There may be a second pink wire from the tachometer which should have been rerouted in a previous step. Remove all these wires from the coil.

NOTE

On later model motorcycles, there is only one white wire (with black stripe) and one pink wire (with black stripe) connected to the coil. The +12V supply for the module, and the tachometer input, are spliced into the harness at some other point.

6. Mount the ignition coils securely so they can withstand normal vehicle vibration without loosening or bracket fatigue. Assign one coil to the front cylinder and one to the rear cylinder. Connect spark plug wires accordingly.
7. Locate the six inch white jumper wire in kit. Connect this jumper wire from one of the primary terminals (terminal marked +) on the front cylinder coil to one of the primary terminals on the rear cylinder coil. Locate the original white wires on the motorcycle that are the +12V supply from the ignition switch and the +12V supply to the ignition module. Connect both of these original white wires to one of the coil primary terminals with the white jumper wire attached.
8. Locate the original pink wire that goes to the ignition module (the coil minus wire discussed previously). Connect this wire to the unconnected primary terminal on the rear cylinder coil.
9. Locate the blue extension wire in kit. Plug this wire into the matching terminal on the ignition module and route the wire to the front cylinder coil. Connect the loose end of the blue wire to the unconnected primary terminal; on the front cylinder coil.

⚠WARNING

Always connect the positive battery cable first. If the positive cable should contact ground with the negative cable installed, the resulting sparks may cause a battery explosion resulting in personal injury.

10. Install any components or covers which may have been removed to gain access to ignition module. Connect battery cables to battery, positive cable first.

Description of Modes

VOES

In the NORMAL mode, when high manifold vacuum is sensed by the VOES switch, the advance is brought in to its final value by 1500 rpm.

The RETARD mode is only for use with motorcycles that require ignition retard under certain conditions, such as motorcycles equipped with nitrous oxide systems, or a turbocharger. In this mode the VOES wire acts as a retard activation line and should not be connected to the VOES switch. To use this function, the VOES wire must be connected to a switch or relay that can ground this input at the desired time during operation. When the VOES wire is grounded, the ignition timing will be limited to 25 degrees final timing regardless of which advance curve is selected. When the VOES wire is not grounded, the ignition timing will follow the "quick" version of the selected advance curve.

ADVANCE CURVE

Which advance curve to choose will depend on several factors like: modifications to engine, type of gasoline used, air temperature, altitude, etc. A good procedure would be to start with curve 2, which is similar to the curve used in the stock ignition module. If you experience any pinging, try curve 3, then curve 4 if necessary. If your motorcycle runs well on curve 2, try curve 1 after several runs and find out if curve 1 is more suitable.

Generally, you should run the lowest number curve (the most aggressive) that you can without causing any pinging.

REV LIMIT

The rev limit is critical to engine life and performance.

⚠CAUTION

To avoid engine damage, ensure that all engine components are designed to handle the stresses of higher rpm applications.

FIRING MODE

See *INSTALLATION*.

LED

A diagnostic LED is located on the back of the module. The LED can be used to determine if the ignition module and pickup are working. When power is turned on to the ignition, the LED should flash ON for 1/4 second and then turn OFF. If the pickup is near a firing point, the LED will come on continuously. This "Flash Period" indicates that the microprocessor is functioning in the ignition module.

When the ignition power is ON, and the engine is cranked over, the LED on the back of the module will blink ON and OFF. This indicates that the pickup is generating timing pulses and the module is receiving them.

The engine can also be statically timed using the LED. See *TIMING*.

Timing

Static Timing Using LED

NOTE

If the motor was timed properly before installing this module, there should be no need to re-time it.

Remove the timing inspection plug. Remove the spark plugs to make it easy to turn the crankshaft. With the motorcycle in high gear, move the rear wheel to get the crankshaft to top dead center on the **compression** stroke of the front cylinder (TDC mark aligned in the inspection hole).

Rotate the pickup base plate to cause the LED to turn OFF and ON. CAREFULLY find the point where the LED just turns OFF while rotating the base plate in a clockwise direction. Lock down the pickup base plate at this location. Verify that the crankshaft is still on TDC. Your base timing should now be set properly.

If the plate has to be rotated an extreme amount, or does not have enough adjustment to bring the timing in, the engine may be on its exhaust stroke. Remove the pickup plate and observe the timing rotor. The pickup should be sitting in one of the notches when it is in place. If the notches are far away, rotate the crankshaft 180 degrees and check again.

To double check the timing, rotate the rear tire while still in gear so the engine is BTDC on the front cylinder compression stroke then slowly rotate the crankshaft forward to TDC and observe the LED turn OFF as the TDC mark on the flywheel passes the inspection window.

Replace the spark plugs and timing inspection plug.

Dynamic Timing

NOTE

Checking timing with the engine running (dynamic timing) is normally not necessary, but can be done as follows:

Set the switches on the back of the module to NORMAL VOES and advance curve #1. This will cause the ignition to go to 35 degrees advance at 1500 rpm and above.

If you are not using the VOES switch, ground the purple wire to the frame or engine. This will cause the "quick" VOES curve to be active. Now use a timing light connected to the front cylinder plug wire to observe the flywheel timing marks through the inspection hole. When the engine rpm is above 1500 rpm, the full advance mark should come into view. This will verify that the ignition pickup is set properly. Now reset the switches for the mode you want to run.

NOTE

When the switch settings are changed, the power to the module must be turned OFF and back ON for the new settings to take effect.

Advanced Tuning Tips

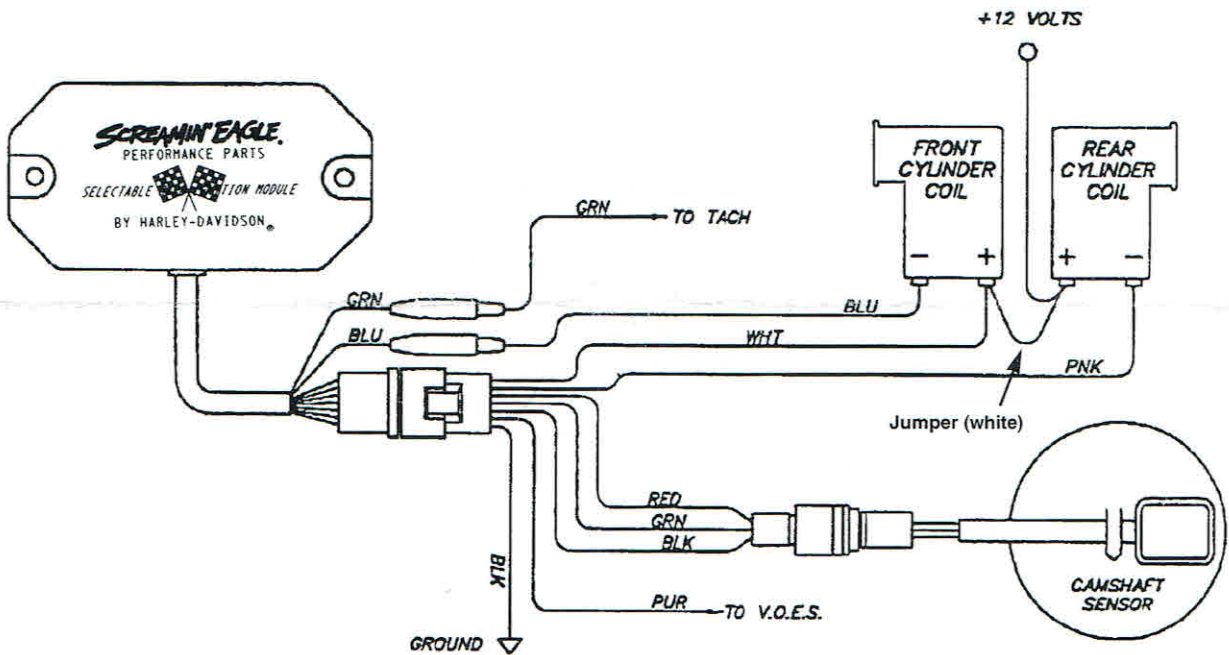
Occasionally, best performance may fall somewhere between the pre-programmed advance curves. By rotating the pickup clockwise (advanced) or counterclockwise (retarded), the entire curve will be shifted up or down.

⚠CAUTION

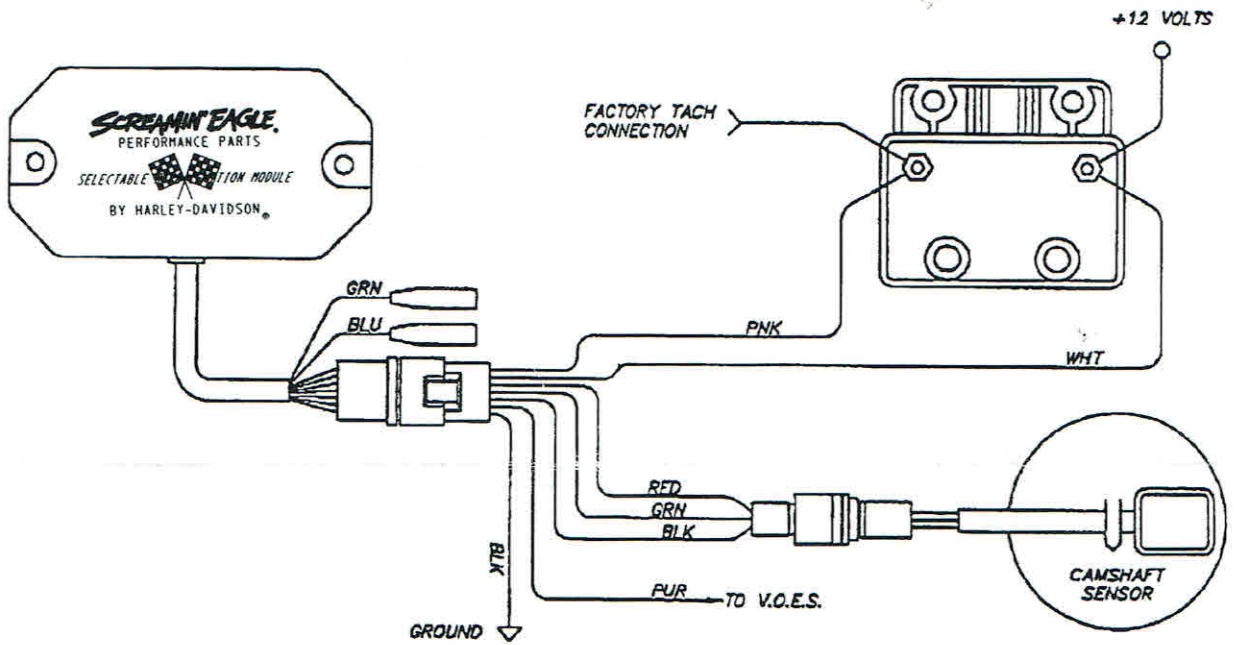
Be aware that if you advance the pickup, your final timing will be increased. Excessive advance may cause pinging and hard starting, so only turn the pickup one or two degrees at a time and note any changes to the motor.

For some racing applications, the advance can be set to always come in quickly by using NORMAL VOES mode and permanently connecting the VOES wire to ground. These curves are similar to what is generated by a mechanical advancer.

For heavy motorcycles, or built motors that tend to detonate, the advance can be brought in more slowly. If the VOES wire is left unconnected, the advance will always follow the slower rpm curve as shown on the chart on page 6.



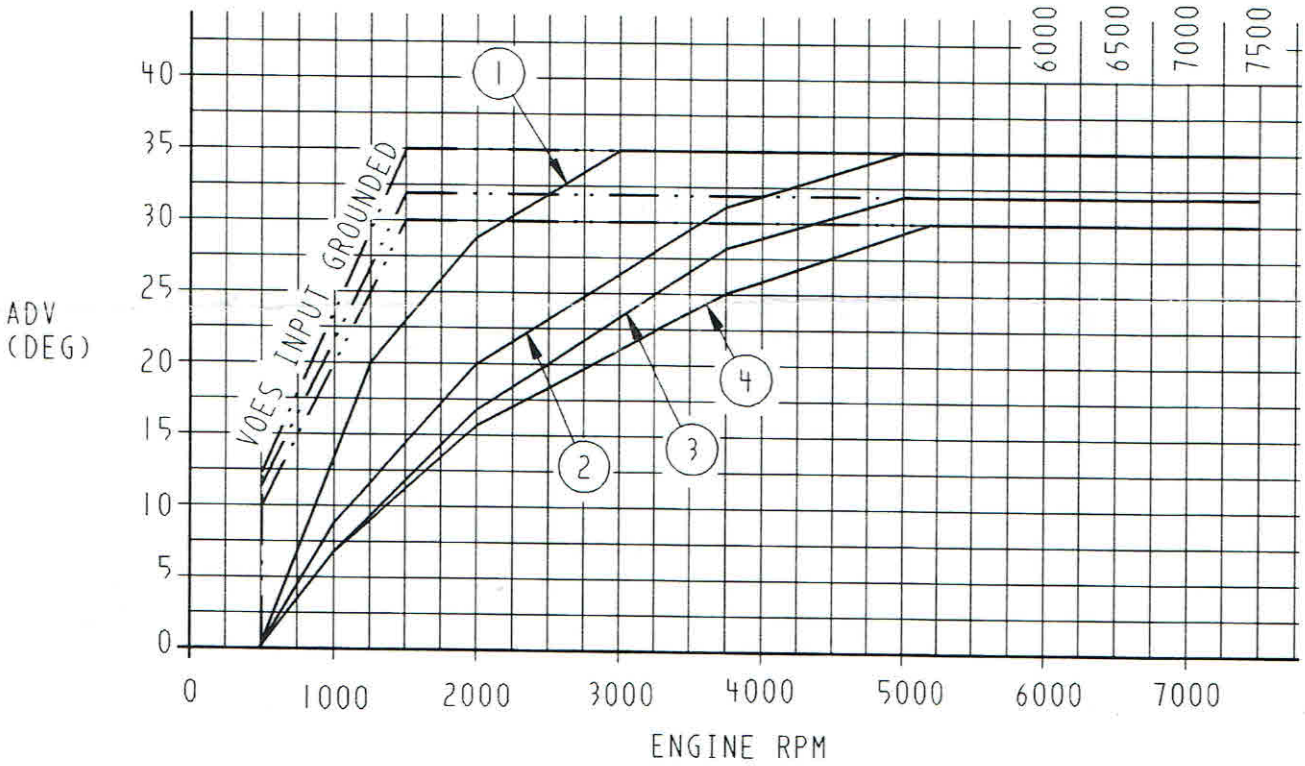
SINGLE-FIRE WIRING DIAGRAM



DUAL-FIRE WIRING DIAGRAM

NORMAL VOES MODE ADVANCE CURVES

RPM LIMIT CHOICES



RETARD MODE ADVANCE CURVES

RPM LIMIT CHOICES

