

VT No. 32-1769

This is a custom application and rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.

CAUTION: READ INSTRUCTIONS CAREFULLY BEFORE STARTING INSTALLATION

INTRODUCTION

The Volt Tech Ignition system is intended for use with HD motorcycles. The Volt Tech replaces the original points on early models. Each cylinder is fired independently and only on the compression stroke. Single fire operation increases engine power at high RPM, improves starting, and helps reduce backfiring at low RPM. The Volt Tech features an adjustable advance and rev limiter. A timing LED indicates static timing (top dead center) and gives diagnostic information. Two starting modes are provided: electric start and kick start. A tach output gives accurate tach readings even at the rev limit.

COIL AND SPARK PLUG CABLE CONSIDERATIONS

We recommend replacing the OEM coil. Coils used with the Volt Tech must have at least 2 ohms primary resistance. Coils with 4 ohms or higher may be used, but may not produce optimum output. We recommend the following coils for single and dual-plug applications.

Volt Tech Ignition With Single Plug Heads. Use VT No. 32-9224 coil. This is a "Siamese" coil with two independent sections and will fit in the stock mounting location on most HD motorcycles. You can also use two dual spark tower coils and ground one of the towers on each coil to the engine case or frame. You will have to fabricate a bracket to mount the second coil.

Volt Tech Ignition With Dual Plug Heads. Use two VT No. 32-3006 coils. You will have to fabricate a bracket to mount the second coil. Do not use solid copper spark plug cables; they may cause interference with your ignition system and accessories.

Volt Tech Installation

1. ROTATE ENGINE UNTIL TIMING MARK ON FLYWHEEL IS AT TDC ON FRONT CYLINDER.
2. INSTALL VOLT TECH SYSTEM IN PLACE OF OEM BREAKER.
3. ROUTE THE VOLT TECH HARNESS BEHIND THE PUSHROD TUBES AND ALONG THE FRAME TO THE COIL. MAKE SURE THAT HARNESS WILL NOT BE CHAFED OR BURNED BY EXHAUST HEAT. SECURE HARNESS W/ TIE WRAP.
4. REMOVE DISTRIBUTOR TOP.
5. REMOVE TWO SCREWS THAT HOLD THE IGNITION THE DISTRIBUTOR HOUSING.
6. PULL DISTRIBUTOR UP SLIGHTLY AND TURN DISTRIBUTOR DRIVE SHAFT SO THAT WINDOW IS CENTERED WITH TOP HOLD DOWN CLIP. SEE PHOTO A.

PHOTO A



Volt Tech Hookup

Use the ring terminals for coil hookup. Use male-female quick disconnects for connections to the tach. Tape up unused wires.

NOTE: Damage will result if the brown tach wire comes in contact with +12V.

1. Identify switched +12 volt wire and tach wire (if equipped) going to the coil. Refer to your service manual, or reconnect the battery and use a test light or voltmeter. The switched +12 volt wire will be hot when the ignition key is turned on.
2. Refer to Figure 5 or 6, depending on your application. Connect the Volt Tech red wire and switched +12 volt wire to Coil + (positive).
3. Connect the Volt Tech black wire to the Coil – terminal on the coil for the front cylinder.
4. Connect the Volt Tech white wire to the Coil – terminal on the coil for the rear cylinder.
5. Connect the Volt Tech green wire to the vacuum switch if used. Tape if unused.

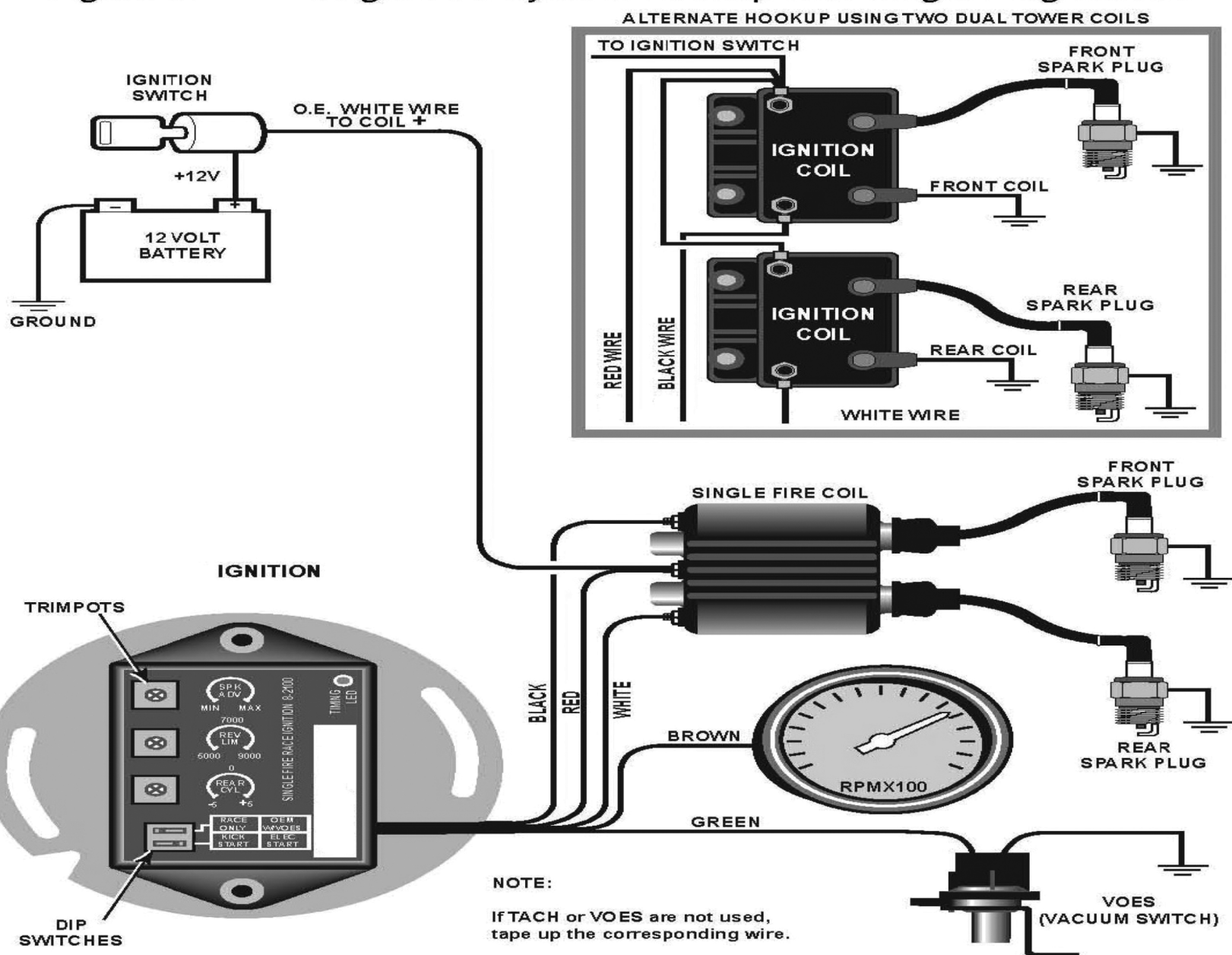
NOTE: Most motorcycle coils do not have terminals marked. Most single fire coils use the center terminal for +12V and the outer two terminals for front and rear cylinder Coil–. For dual fire coils use either terminal for Coil+ and the other one for Coil–.

6. Connect the Volt Tech brown wire to the tach wire, if equipped with a tachometer. Tape up if unused.
7. The Volt Tech is grounded via the timing housing; a separate ground connection is not required.
8. Reconnect battery ground cable. Verify proper ground connections to the frame and engine.

NOTE: Each trimpot can be adjusted over a range of just under one turn. At the ends of the adjustment range, mechanical stops prevent further rotation of the trimpot. Do not attempt to turn the trimpots past their limits.

Refer to the label on the Volt Tech. The unit has two DIP switches that select the advance curve and starting mode. The top switch sets the advance curve. Use the OEM with VOES advance curve for stock and modified engines. Use the Race Only advance curve for high compression engines. The bottom switch sets the starting mode. Kick start mode fires the first cylinder for quick starting. Electric start mode delays firing for 2-3 revolutions of the crankshaft for smoother starts and less strain on the starter. Trimpots on the Volt Tech allow adjustment of advance and RPM limit settings. The trimpot setting is indicated by a slot that has two small dots on each side. The advance curve is adjustable over a limited range via the advance trimpot (SPARK ADV). Advance curves are given in Figures 7 and 8. Each set of advance curves includes minimum and maximum curves. The actual advance curve will be between the minimum and maximum curves depending on advance trimpot setting. If you have a passenger or are using low octane gasoline, minimum advance will reduce spark knock. Maximum advance will give higher performance, but may require the use of high octane gasoline. An additional trimpot (REAR CYL) is provided for rear cylinder timing offset over a +/-5 degree range. This feature allows slight offset of rear cylinder timing for critical race applications. Normally, the rear cylinder offset trimpot should be set to zero (midrange). The RPM limit trimpot (REV LIM) is adjustable from 5,000 to 9,000 RPM. Use a safe RPM limit for your engine.

Figure 5. Single Fire System Hookup with Single Plug Heads



SETTING ADVANCE TIMING USING STANDARD TIMING LIGHT

For racing and early points applications without a VOES switch, you must ground the VOES input (Volt Tech green wire) while setting the timing. Connect a timing light to the front cylinder. Set the Volt Tech advance trimpot to midrange. Run the engine at 2,400 to 2,500 RPM. Adjust Volt Tech position until advance timing mark is centered in the observation hole. Tighten the standoffs and verify that timing has not shifted.

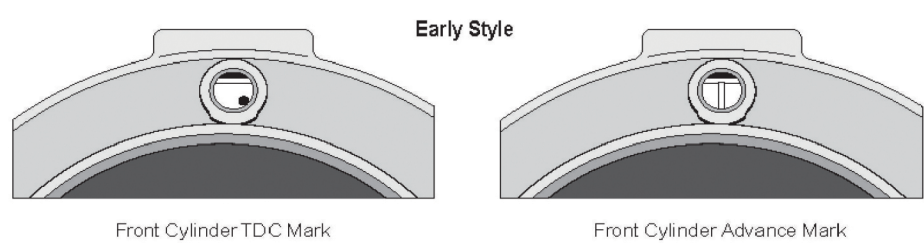
ADVANCE CURVE SETUP

After you have set the timing as explained above, set the Volt Tech advance trimpot to desired position. If you run 93 octane gasoline, you can usually leave the trimpot full clockwise for maximum advance and performance without spark knock. High compression engines may require less advance. You should use the Race Only advance curve for high compression engines.

TROUBLESHOOTING

Did the engine run properly before installation of the Volt Tech? If not, remove the Volt Tech, reinstall the OEM ignition or another known good unit and then find and correct the original problem. Did the Volt Tech function correctly before the problem occurred? If the answer is yes, did you change anything that may have affected it? Try going back to the last setup that worked OK to help isolate the problem. If the engine will not start, or runs rough or intermittently, use the following checklist steps.

Figure 9. Top Dead Center (TDC) and Front Cylinder Advance Marks for Various Models



ENGINE WILL NOT START

1. Check that timing LED lights up when ignition key is first turned on. If not, check for +12 volts on red wire from Volt Tech.
2. Check that timing LED blinks while engine is cranked. If not, Volt Tech may be defective.
3. If the timing LED blinks, but engine will not start, recheck all wire harness connections or replace coil(s).
4. Check for low voltage from a faulty or marginal charging system and battery.

WARNING: Never crank the engine with any spark plug wire disconnected. NOTE: The battery ground on most HD is connected to the frame behind the seat. In order to provide a dedicated ground for the high starter current, another cable should be installed from the point on the frame that the battery is already grounded to the starter mounting flange. This cable should be the same diameter as the battery ground cable presently on the bike, and will help prevent damage to your electronic components.

CHECKING FOR SPARK

To crank the engine and check for spark, use a test plug. These test plugs come with an alligator clip that must be attached to frame or engine ground. Use a length of spark plug wire to connect the test plug to the coil.

WARNING: Never crank the engine with any spark plug wire disconnected.

MISFIRE OR INTERMITTENT OPERATION

Field experience has shown that popping back through the carburetor, misfiring, and intermittent failure (especially after the engine gets hot) are usually not caused by electrical problems within the Volt Tech. Carburetor problems, fouled spark plugs, coil failure, and loose wire harness connections are the most common culprits. Verify that spiral core or suppression type spark plug wires and resistor spark plugs are being used.

TACH INOPERATIVE

If the tach is inoperative after installation of the Volt Tech, you may require a tach adapter. The Volt Tech tach output is compatible with ground sensing tachs which includes most OEM and aftermarket tachs. Some tachs require a high voltage trigger pulse. In this case, install VT No.32-7799 tach adapter.

Note: The tach will read correctly at the rev limit only if it is connected to the brown wire from the Volt Tech. Damage to the Volt Tech circuitry may have occurred if 12 volts was applied to the brown tach wire at any time.