



USER INSTRUCTIONS

DYNA 4000 PRO HIGH ENERGY IGNITION SYSTEM FOR HARLEY-DAVIDSON ENGINES

(DUAL OUTPUT MODEL DP 4000-HD1, FOR SINGLE
PLUGGED HEADS ONLY)

This ignition is a dual output model for use with single plugged heads only. For dual plugged heads use the quad output DP 4000-HD2 ignition module.

DESCRIPTION

The DYNA 4000 Pro Ignition is a high energy inductive ignition designed to meet the needs of the professional drag racer. The DYNA 4000 includes a built-in two stage rev limiter that is used for launch control and over rev protection.

The DYNA 4000 ignition represents a significant enhancement in the ignition performance available to the serious racer. Traditionally the two types of ignitions available, inductive and capacitive discharge, both have limitations in the racing environment. Inductive ignitions have the benefit of a very long spark duration, but the disadvantage that they can't fully charge the coil at high rpm due to slow charging coils. Capacitive discharge (CD) ignitions can work at high rpm, but can't deliver much spark energy and have a very short spark duration (about 1/5 the spark duration of an inductive system).

The answer!

The best ignition imaginable would have a long spark duration and deliver high spark energy even at very high rpm. This is exactly what the DYNA 4000 has been designed to accomplish. By using specially designed coils, and special microprocessor based control circuitry to manage the high currents that these coils draw, the DYNA 4000 can deliver four times the spark energy of the most popular CD booster all the way up to 17,000 rpm! These high energy sparks also have the desirable long duration characteristics of inductive ignitions. This translates directly into better engine performance across the board.

The DYNA 4000 is not only a powerful ignition system, but also the smoothest two stage rev limiter available. The DYNA 4000 has a programmable launch limiter activated by a clutch switch to help maintain consistency at the starting line. A programmable over rev limiter is also implemented to prevent engine damage due to drive line breakage or missed shifts. The DYNA 4000 launch system is the choice of world champion drag racers due to its rock steady limiting characteristics. Other popular launch limiters cause engine harming banging and popping due to their unsteady limiting. The DYNA 4000 holds the rpm to a perfectly steady and smooth limit while preparing to launch.

The DYNA 4000 is not just an improvement in available ignition technology for drag racing, it sets a new standard of performance and quality.

INSTALLATION

****IMPORTANT**** With any microprocessor based engine system, such as the DYNA 4000, you must use carbon core type suppression spark plug wires with a resistance of at least 3000 ohms per foot to reduce radio frequency interference caused by ignition sparks. Use of copper or spiral core wires may cause malfunction of this ignition system due to severe electrical noise.

****** The DYNA 4000-HD1 Pro ignition uses the popular DYNA S, DS6-2 (single fire, w/two power modules) ignition as a pickup signal source. The DYNA S must be fitted with the special two magnet rotor included with this kit for the DYNA 4000 to function. The DYNA 4000 Pro can be wired in either single fire mode or dual fire mode (you need a DS6-2, single fire DYNA S as a pickup regardless of mode used).

****** The DYNA 4000 must be used with DYNATEK #DC9-1, 0.7 ohm, blue ignition coils. The DYNA 4000 will not work properly with other coils.

SINGLE FIRE/DUAL FIRE CONSIDERATIONS

A Harley ignition can take two basic forms, dual fire or single fire. In a dual fire system, the outputs of one dual output coil are connected to the spark plugs of both cylinders. In a single fire system, two coils are used. In single fire, each coil feeds only one cylinder. The DYNA 4000 can be used in either dual fire or single fire mode.

COILS

For single fire w/single plugged heads you need two DC9-1 coils; for dual fire w/single plugged heads you need one DC9-1 coil.

1. Choose a mounting place for the DYNA 4000 that is well away from the ignition coils and spark plug wires. The coils are a source of intense magnetic interference which can cause erratic operation of sensitive electronics. The most common ignition placement is under the seat near the rear tire.

For dual fire installation skip down to step DF 2 ('DUAL FIRE INSTALLATION').

SINGLE FIRE INSTALLATION (separate coil for each cylinder)

SF 2. Mount the DC9-1 coils close to the spark plugs to minimize spark plug wire length. Assign one coil to the front cylinder and the other coil to the rear cylinder. Connect carbon core spark plug wires from one of the output towers of each coil to the spark plug in the appropriate head.

Locate the 6 inch coil tower grounding wires included with your kit. Plug a tower grounding wire into the second (unused) coil output on each coil and attach the other end of the wire to chassis ground (usually attached to the coil mounting bracket) (see wiring diagram).

*******Refer to the included system wiring diagram during the following steps

SF 3. Find the main extension harness in your kit (the one with four wires in a six position connector). Position the six position connector in the area where you will be mounting the DYNA 4000. This harness has four 16 gauge wires: red, black, blue and white. Route these wires to the coil area. It is best to route the blue and white wires away from the red and black wires. For instance, run the blue and white wires down one side of the frame backbone and the red and black wires down the other side of the frame backbone. This will help to isolate the high voltage pulses found in the blue and white wires from the rest of the system. (Other wiring on the vehicle should also be kept away from the blue and white wires)

Connect the 16 gauge white wire to one of the primary terminals on the coil assigned to the rear cylinder. Connect the 16 gauge blue wire to one of the primary terminals on the coil assigned to the front cylinder.

SF 4. Locate the 16 gauge 6 inch red power jumper included in your kit. Connect this jumper between the other unused primary terminals of the two coils, connect +12V from the ignition switch to this jumper. Connect the 16 gauge red wire from the DYNA 4000 to the +12V side of the ignition coils.

Skip to 'SINGLE OR DUAL FIRE CONTINUED'

DUAL FIRE INSTALLATION (one coil for both cylinders)

DF 2. Mount the DC9-1 coil close to the spark plugs to minimize spark plug wire length. Connect carbon core spark plug wires from the output towers of the coil to the spark plugs.

***Refer to the included system wiring diagram during the following steps

DF 3. Find the main extension harness in your kit (the one with four wires in a six position connector). Position the six position connector in the area where you will be mounting the DYNA 4000. This harness has four 16 gauge wires: red, black, blue and white. Route these wires to the coil area. It is best to route the blue and white wires away from the red and black wires. For instance, run the blue and white wires down one side of the frame backbone and the red and black wires down the other side of the frame backbone. This will help to isolate the high voltage pulses found in the blue and white wires from the rest of the system. (Other wiring on the vehicle should also be kept away from the blue and white wires)

Connect both the 16 gauge white and blue wires to one of the primary terminals on the coil (connect them to the same terminal).

DF 4. Connect +12V from the ignition switch to the other, unused primary terminal on the coil. Connect the 16 gauge red wire from the DYNA 4000 to the +12V primary terminal of the ignition coil (to ignition switch side).

SINGLE OR DUAL FIRE CONTINUED

****IMPORTANT**** This is a +12V only system, do not connect +18V or other voltages to the ignition coils. More voltage will not produce more energy on this system, it will only cause overheating of the DYNA 4000 ignition module.

5. Connect the 16 gauge black wire from the DYNA 4000 to a good chassis ground point.

6. Locate the pickup extension harness. This harness contains four wires, red, black/wht, white, and blue on a four position connector. Route these wires separately from the main harness going to the coils for best electrical noise isolation. Route the DYNA 4000 pickup wires to the wires coming from your DYNA S ignition. Connect the DYNA 4000 pickup wires to the DYNA S wires as follows:

<u>DYNA 4000 pickup wire</u>	<u>to</u>	<u>DYNA S wire</u>
red	to	red
white	to	white
blue	to	black
black/wht	to	DYNA S base plate mounting screw

Route the black/wht pickup wire from the DYNA 4000 down to the DYNA S ignition base plate and connect it to one of the base plate mounting screws using a ring terminal.

7. Install the special two magnet DYNA S rotor onto the camshaft. The extra magnet is located 90 degrees ahead of the normal firing magnet as seen by the pickups when the camshaft is rotating (the camshaft rotates counterclockwise).

8. After the main extension harness and pickup harness have been installed and the two magnet DYNA S rotor is in place and the 0.7 ohm coil(s) have been installed, you are ready to static time the motor. Plug the DYNA 4000 ignition module onto the 6 position main harness connector and the four position pickup harness connector. Apply +12V power to the DYNA 4000 by turning on the ignition switch. While slowly turning the engine in its normal forward direction with a wrench (camshaft turns counterclockwise), watch the red LED lamp located on the top of the DYNA 4000. When either magnet of the DYNA S pickup rotor passes in front of one of the DYNA S modules, the red LED will light. This indicates the switching action of the pickup. When the crankshaft is turned in its normal forward direction, the first magnet to pass the DYNA S module is the 90 degree lead magnet. Do not static time off this magnet. Static timing must be checked when the second magnet comes near the DYNA S, at the point where the LED comes on. The crankshaft timing marks should be visible in the inspection hole on the flywheel side of the motor when the 2nd magnet passes the front cylinder (larger) module of the DYNA S.

9. You should be able to start the motor at this point. If the motor will not start, check that you are getting +12V from the ignition switch to the coil(s) and DYNA 4000 and check all other wiring.

10. In order to use the two stage rev limiter, complete the following: Locate the red and black two wire extension harness in your kit. Connect the two pin connector on the harness to the mating two pin connector on the DYNA 4000 ignition module. The red and black wires should be routed to the clutch switch on the handle bar. Again it is best to route these wires on the opposite side of the frame as the blue and white coil wires to minimize electrical noise in the clutch switch circuitry. Connect the red and black wires to either side of the clutch switch. When the clutch switch is closed (lever pulled in) the DYNA 4000 low side rev limiter will be active. When the clutch switch is open (lever released) the high side rev limiter will be active. If you do not connect these wires to anything, the high side limiter will always be active.

11. If you wish to use an air kill switch to interrupt the ignition during shifts, complete the following: Locate the orange and black two wire extension harness included with your kit. Connect the two pin connector on the harness to the mating connector on the DYNA 4000 ignition module. The orange and black wires should be connected to either side of the air kill switch. Use the switch contacts that are normally open. When the switch contacts close, connecting the black and orange wires, the ignition will be interrupted. No other wires should be connected to the air kill switch. Do not run +12v ignition power through the air kill switch as you would with other systems.

12. Tach out wire. The green tach output wire extending from the DYNA 4000 ignition module can be used to directly drive an electronic tachometer or other crank speed sensing device, such as a DYNA Shiftminder or DYNA Datalog computer.

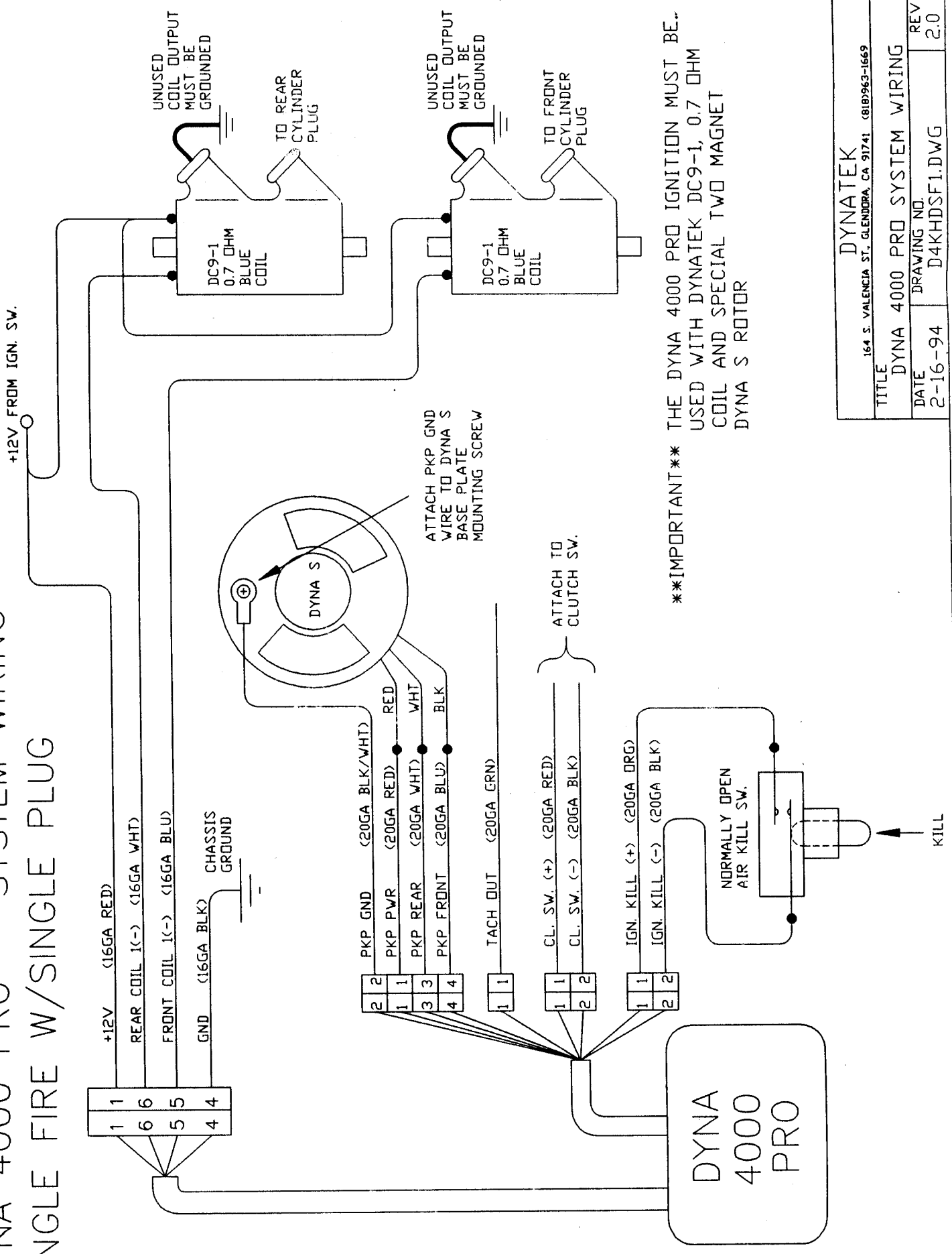
USING YOUR DYNA 4000 SYSTEM

You should have your system completely installed at this point, and the motor timed and ready to run. Locate the two white knobs on the end of the DYNA 4000 ignition module. These are used to set the rev limiters. Adjust the left knob according to the legend to set the low side launch limit to the desired rpm. Adjust the right knob according to the legend to set the high side over rev limit. Both rev limiters are adjustable in 250 rpm increments.

The DYNA 4000 reads the settings of the rpm limit switches only when the unit is first turned on. In other words, if you make an adjustment to one of the rev limit switch settings while the ignition power is on, you must turn off power to the DYNA 4000 then reapply power for the new switch settings to be recognized.

When you have the clutch lever pulled in you should be able to rev the motor up to the preset low side limit and slowly roll the throttle wide open. The limiter should hold the motor to the desired rpm until the clutch lever is released, then the high side limit will take over.

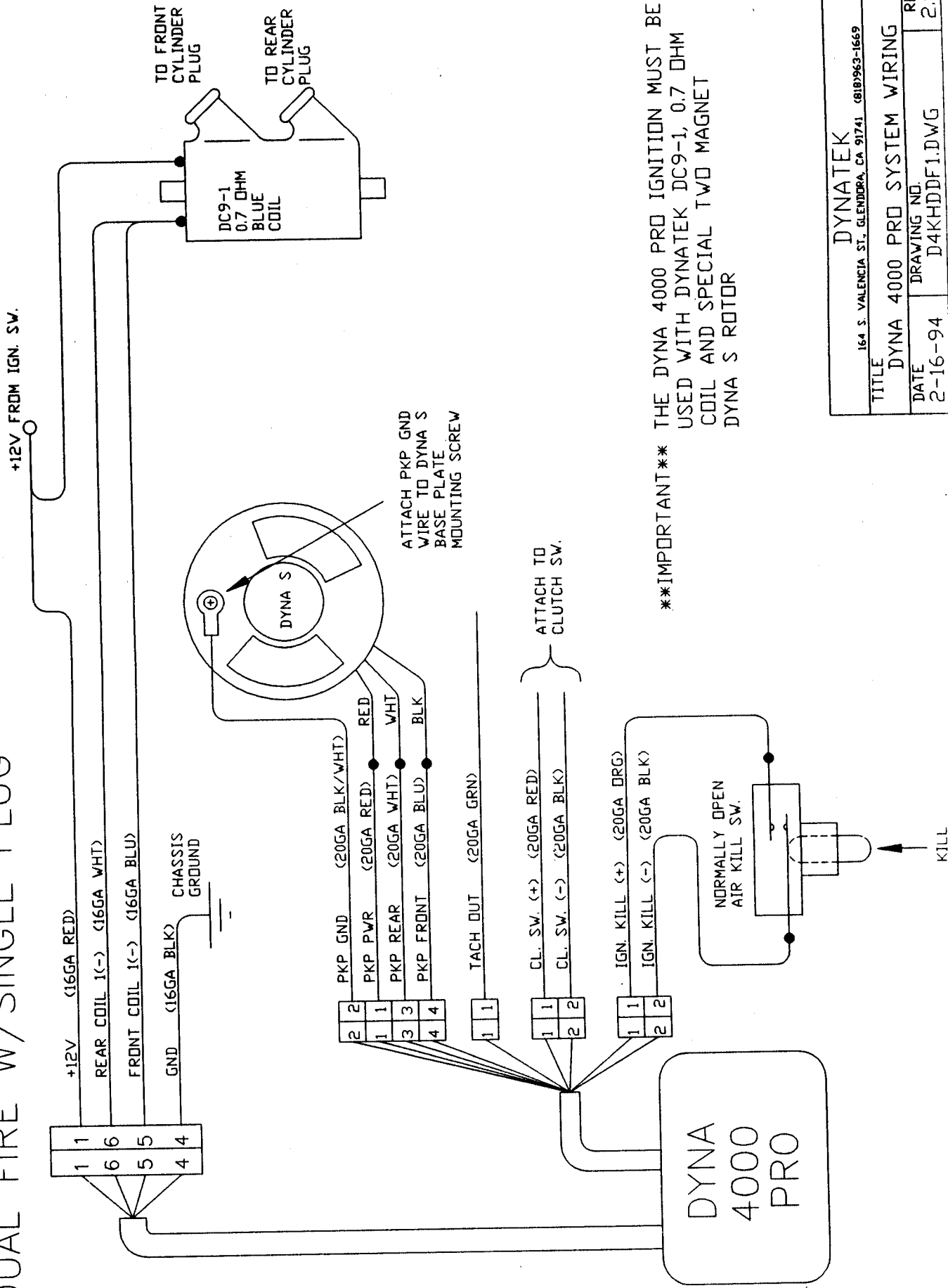
DYNA 4000 PRO - SYSTEM WIRING SINGLE FIRE W/SINGLE PLUG



****IMPORTANT**** THE DYNA 4000 PRO IGNITION MUST BE USED WITH DYNATEK DC9-1, 0.7 OHM COIL AND SPECIAL TWO MAGNET DYNA S ROTOR

DYNATEK 164 S. VALENCIA ST., GLENDDORA, CA 91741. (818)963-1669	
TITLE	DYNA 4000 PRO SYSTEM WIRING
DATE	2-16-94
DRAWING NO.	D4KHDSF1.DWG
REV	2.0

DYNA 4000 PRO - SYSTEM WIRING DUAL FIRE W/SINGLE PLUG



DYNATEK

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