DESIGN ENGINEERING, INC.®

CryO2™ THE POWER OF COOL

INSTALLATION INSTRUCTIONS

Thank you for purchasing genuine Design Engineering, Inc. products. Be sure to always wear the proper safety equipment when installing any DEI product. Design Engineering Inc. WILL NOT BE HELD LIABLE FOR IMPROPER INSTALLATION OR USE OF THIS PRODUCT. Please follow all instructions provided. If you are unsure of any installation procedure, please contact a certified technician.

DESCRIPTION: DEI CryO2 Tank & Installation Kit™

PART NUMBER: 080102, 080103, 080105, 080108

KIT CONTENTS:

1 - CryO2 Tank
1 - CGA-320 Tank Adaptor
2 - Tank mounting brackets
1 - Solenoid valve
1 - 1/8" Male NPT to -4AN Male fitting
1 - Fuse holder w/one 15 Amp fuse
3 - Electrical Loop Connectors
1 - Wire Tap
2 - Male Wire Connectors
6 - Female Wire Connectors
2 - Nuts & Bolts for Microswitch
1 - Prime Button
1 - Arming Switch
1 - Microswitch
1 - Microswitch Bracket
1 - Nylon Washer
1 - CryO2 Sticker

TOOLS NEEDED:

1/2" Wrench
11/16" Wrench
9/16" Wrench
Drill
5/16" drill bit
Teflon Tape or Teflon Paste
Clamps or zip ties to secure lines
Vice
Locking Pliers
Hammer
Misc mounting hardware for bottle bracket

WARNINGS

Improper installation can result in injury or death. If CO2 is inhgaled, it can cause suffocation and/or death. Frostbite can occur if it comes in contact with skin. Failure to comply with instructions may result in damage to equoiment. Use minimum 14-gauge wire wor electrical component wiring. Teflon Tape aor Teflon pste is required for installation on NPT fittings. If Teflon paste is used, allow ample amount of drying time. DO NOT use Teflon tape or paste or any other form of thread sealant on ANY -AN fittings. NEVER leave arming switch in "ON" position when system not in use.

OVERVIEW: CryO2™ is a revolutionary product designed to reduce air and fuel temperatures thus creating more power. Through the science of aerodynamics and cryogenics, Design Engineering has developed a system to harness the cryogenic properties of liquid CO^2 to lower the intake charge temperature by up to 50°F.

It is recommended to have the CryO² tank filled prior to installation

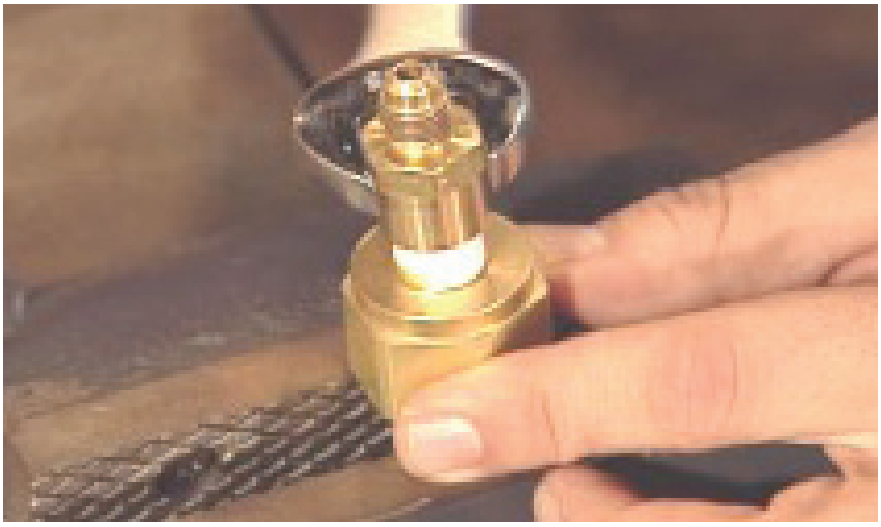
Image A

1. Before starting any part of the installation, remove the negative battery terminal cable.

2. (Image A) Wrap the threads of the 1/2" NPT on the CGA-320 tank adapter with Teflon tape.

TIP: Use vice to hold the CGA-320 adapter

Image B



3. (Image B) Thread the 1/2"NPT to -4AN fitting onto the CGA-320 adapter. Tighten until a secure seal is made.

Image C

4. (Image C) Place the Teflon Washer inside the large threads of the CGA-320 adapter. Then tighten securely to the $CryO^2$ tank using a 11/16" wrench or an adjustable crescent wrench.

Image D

5. (Image D) Loosely install the tank mounting brackets to the tank. The tank will be mounted with the nozzle pointing downwards; taller bracket toward the top of the tank and the shorter bracket toward the bottom of the tank.

NOTE:
The brackets provided will orient the bottle to the proper angle so that the liquid CO^2 rests in the bottom of the bottle for the internal siphon tube to pick up.

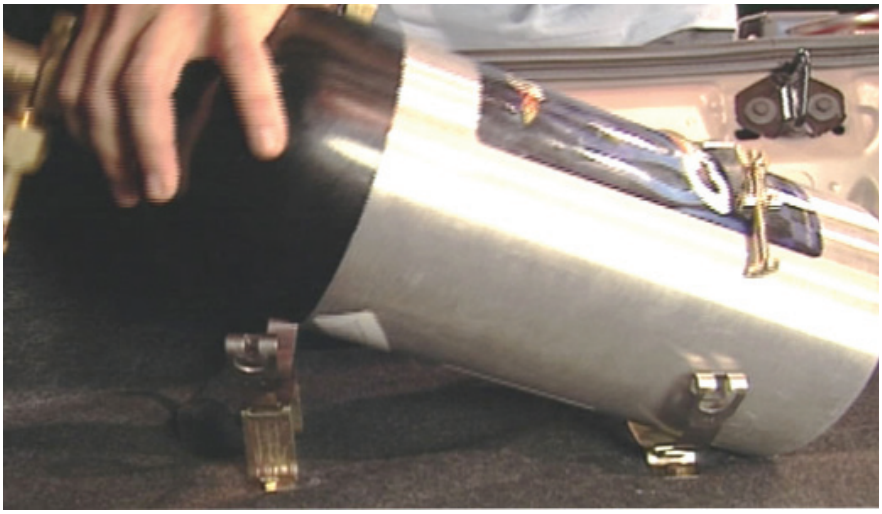
Image E

6. (Image E) Remove the trunk carpeting, exposing bare sheet metal. Find a flat location to mount the tank. Look under the vehicle, insuring desired tank location does not interfere with any fuel lines, electrical wires, brake lines, or exhaust tubing. Once a location is determined, mark the sheet metal with a marker through the holes of the mounting brackets. Make a mark of each of the four mounting holes.

Image F

7. (Image F) Remove the tank from the location. Using a 5/16” drill bit, drill holes through each mark. Also, be sure to drill a hole for the stainless steel line to go through the trunk, under the car. There should be a rubber grommet placed in this drilled hole so that the sharp edges of the drilled hole do not puncture the pressurized stainless steel supply line.

Image G



8. (Image G) Replace the trunk interior. Punch holes through the carpet for the mounting bracket bolts. Install the tank and mounting brackets with 5/16” bolts. Install 5/16” lock-nuts or use well-nuts to ease installation.

NOTE:
Have a friend hold the bolts on top while you tighten the nuts under the vehicle.

INSTALLING SUPPLY LINES

Image H

9. (Image H) Install the 14’ -4AN supply line, routing it through the hole with the rubber grommet going underneath the vehicle. Thread the -4AN line onto the assembled CGA-320 adapter with attached fitting.

NOTE:
Do NOT use Teflon Tape, Teflon Paste, or any other form of thread sealant on ANY -AN fittings

Image I

10. (Image I) Route the 14’ supply line toward the front of the vehicle. Make sure the area is clear from any moving suspension parts or exhaust piping. Use clamps, zip ties, or other hardware to secure this line. Finish securing the supply line allowing it to enter the engine compartment from under the vehicle.

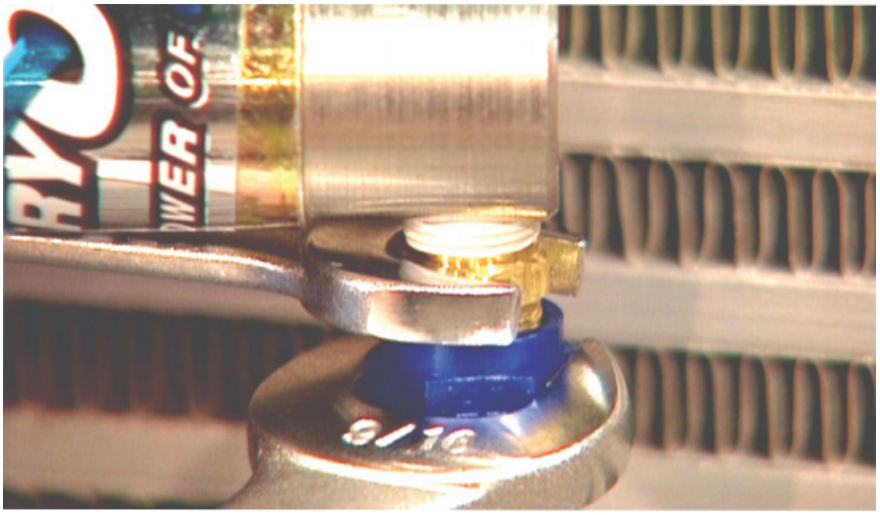
NOTE:
It is easy to route the supply line parallel to the brake and fuel lines utilizing zip ties to secure it.

Image J

11. (Image J) Apply thread sealant to the NPT side of the the 1/8" NPT Male to -4AN Male fitting. Thread the fitting into the "IN" port of the CryO^2 Solenoid using a 7/16" wrench to tighten the fitting.

NOTE:
It may be helpful to clamp the solenoid, port-end, into a vice while tightening.

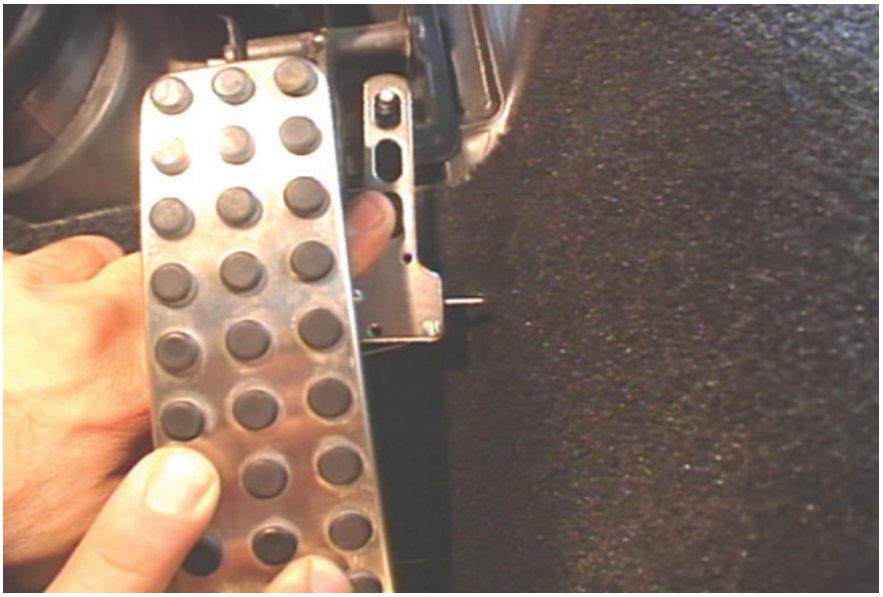
Image K



12. (Image K) Attach the -4AN supply line to the "IN" port fitting of the CryO^2 Solenoid. Tighten it with a 9/16" wrench while holding the fitting with a 7/16" wrench.

INSTALLING MICROSWITCH / WIRING INSTALLATION

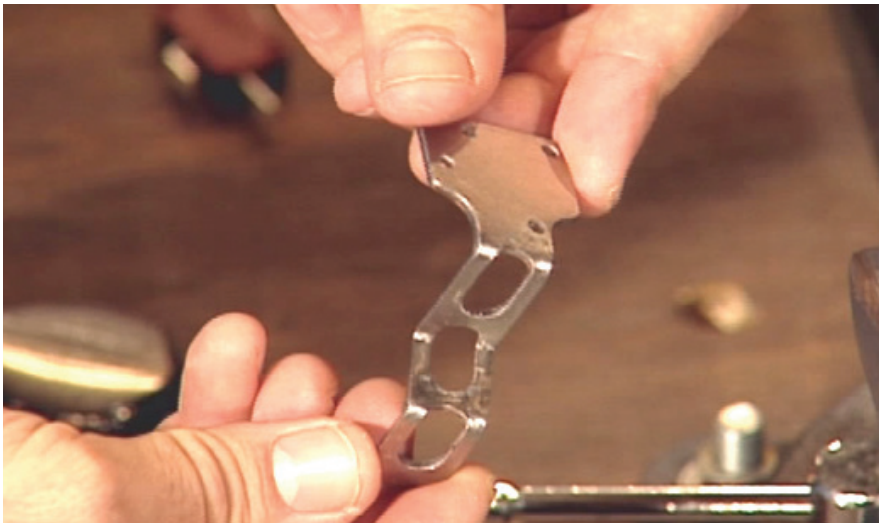
Image L



13. (Image L) Use the long bolts and nuts provided in the kit to secure the microswitch to the bracket. Find a desired location where the switch will be activated when the throttle pedal is depressed fully. This should be on your throttle body. For vehicles equipped with Throttle-By-Wire, it will be mandatory to mount the switch behind the throttle pedal.

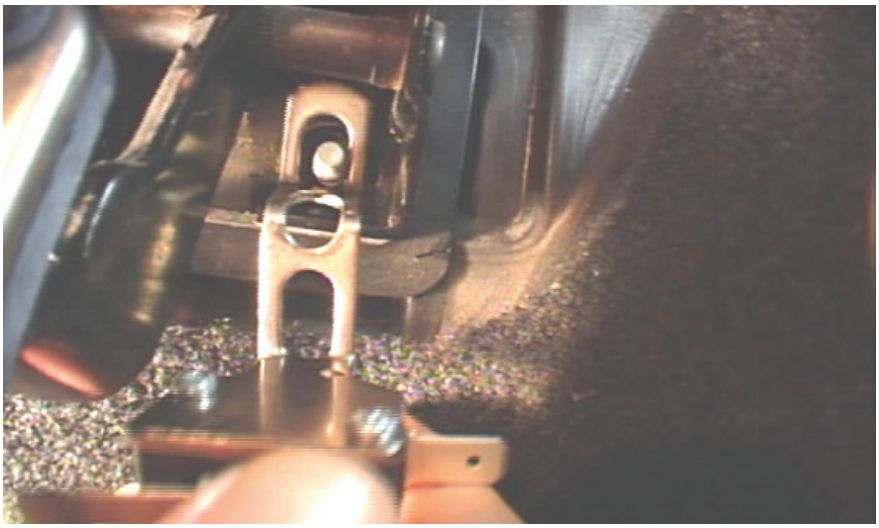
WARNING: Binding or dragging of throttle operation can create a potentially dangerous stuck-throttle condition. Ensure that the microswitch does not interfere with normal throttle operation.

Image M



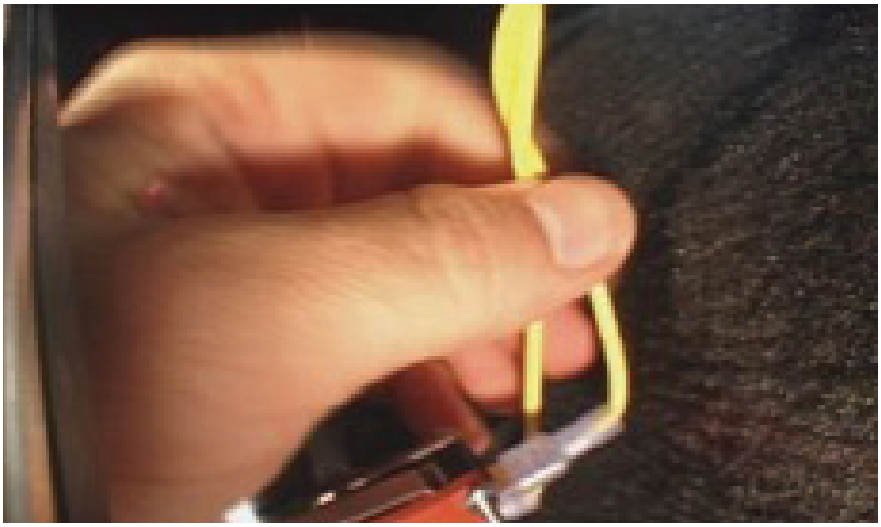
14. (Image M) A vice, locking pliers, and hammer will be useful in modification of the microswitch bracket. Bending the bracket will require some trial and error to detemine the best fitment.

Image N



15. (Image N) Once the bracket is properly modified, mount it to an existing mounting bolt on the throttle body or the throttle pedal.

Image O



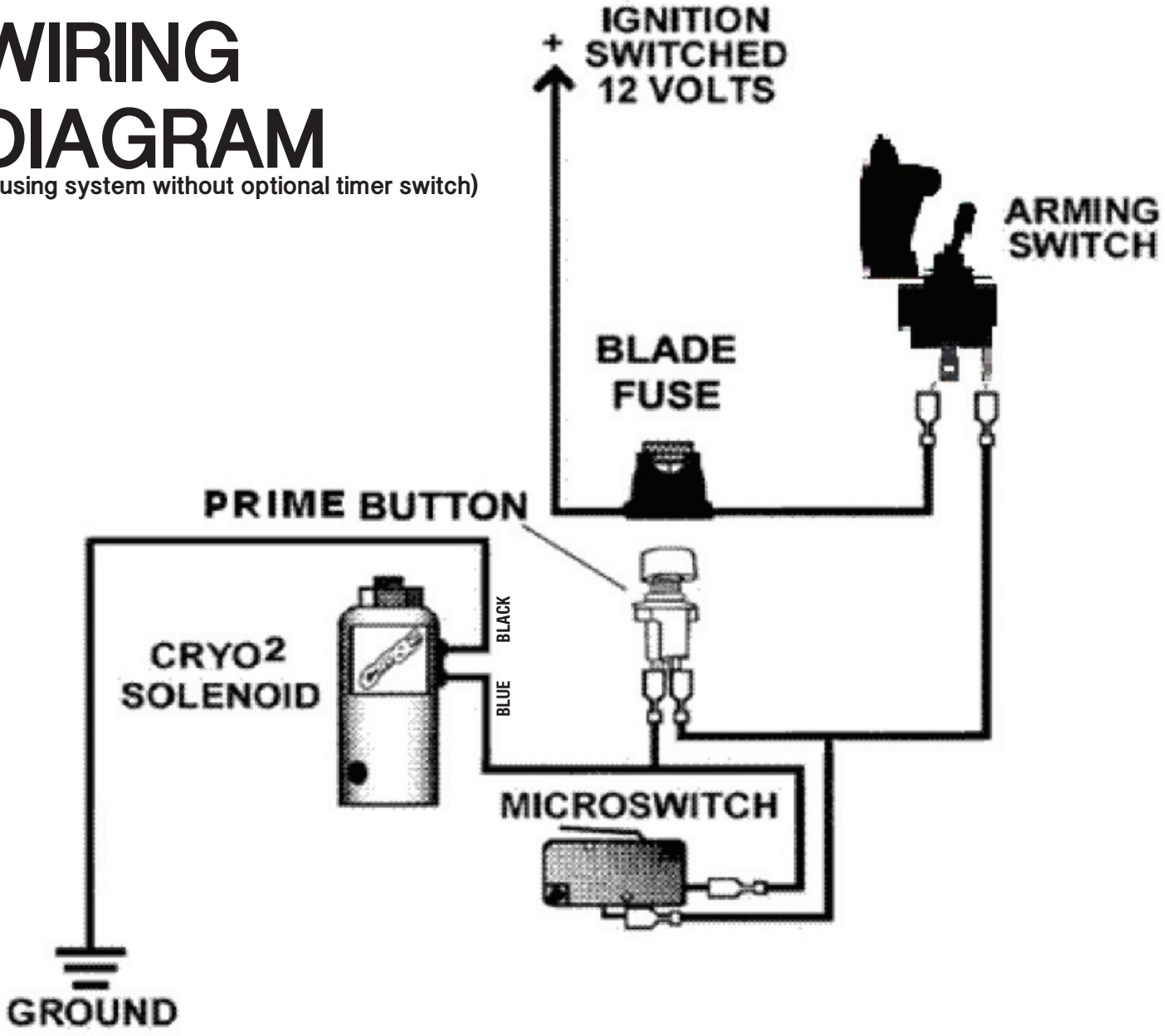
16. (Image O) Using two wire connectors, prepare two wires for the micoswitch to activation switch circuit. Place the connectors over the terminals on the microswitch and route accordingly.

Image P

17. (Image P) Locate a desired location for the Push Button and Arming Switch in the interior of the vehicle. This should be easily accessible by the driver. Holes will need to be drilled to accommodate mounting. Once everything has been mounted, follow the wiring diagram to complete the electrical part of the installation.

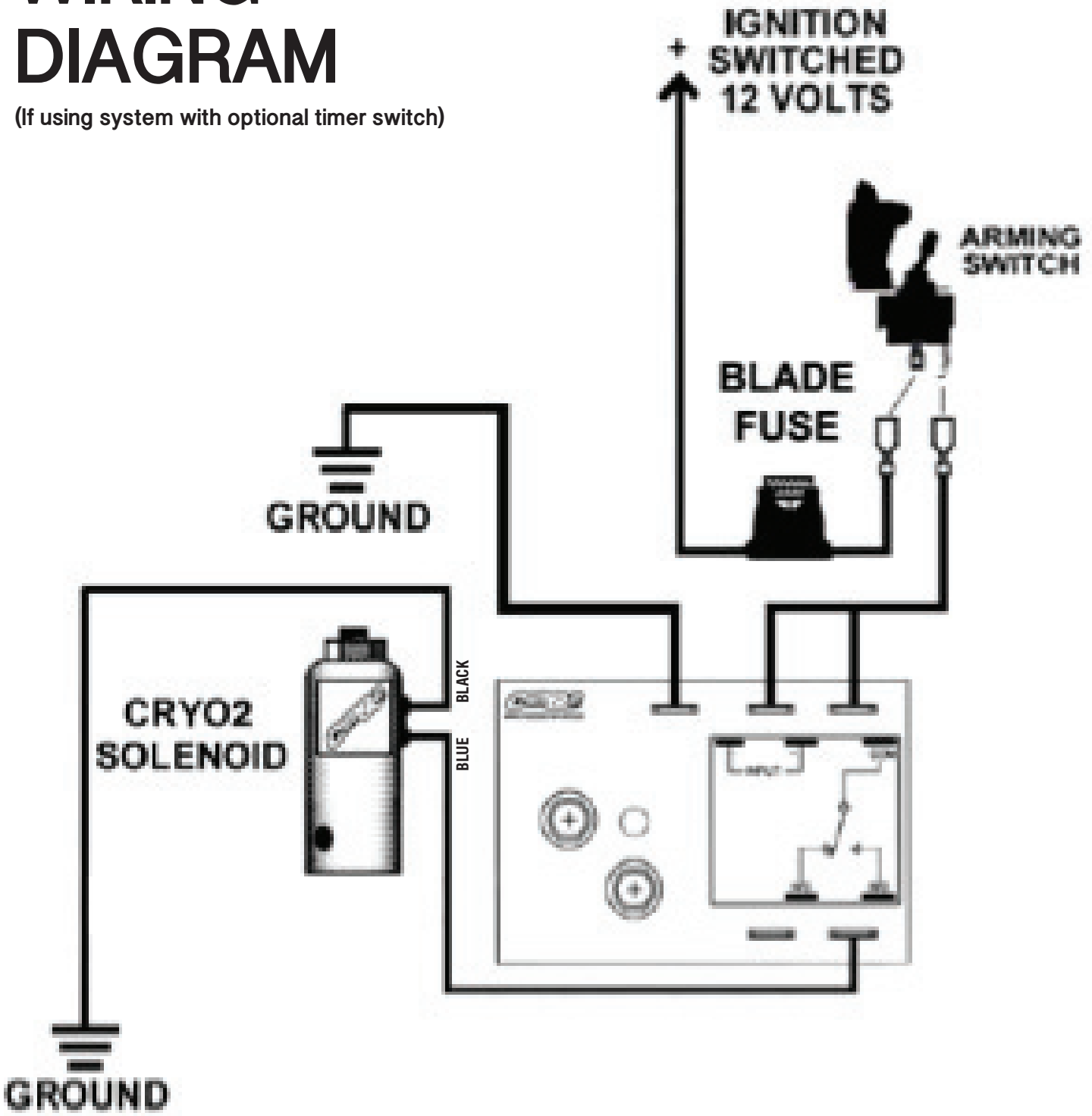
WIRING DIAGRAM

(If using system without optional timer switch)



WIRING DIAGRAM

(If using system with optional timer switch)



USING THE SYSTEM

1. Before or while in the staging lanes, insure tank is securely fastened to the mounting brackets. Then open the tank valve completely.

2. Just before staging is complete, switch the Arming Switch to the ON position.

3. Using the Prime Button, prime the CryO^2 System to “pre-freeze” the CryO^2 components. Hold the Prime Button for approximately 5 to 7 seconds.

4. With the Arming Switch in the ON position, the microswitch will take control of the system during the race.

5. **DO NOT** activate solenoid valve for a duration over 20 seconds as this may burn internal seals in solenoid.

AFTER USE

1. When you are finished using the CryO^2 system, close the tank valve completely.

2. With the Arming Switch in the ON position, press the Prime Button to deplete the supply lines of any remaining CO^2.

3. Switch the Arming Switch into the OFF position.

WORDS FOR THE WISE

DEI does not recommend the use of it’s products in illegal racing activities. Nationwide statistics show that 49 people are injured for every 1,000 who participate in illegal street racing. California State DMV has over 40 deaths accounted for in 2001 due to illegal street racing. **BE SMART AND TAKE IT TO THE DRAG STRIP.**

INTERCOOLER SPRAYER

CryO^2 Intercooler Sprayers mount directly to the front of air-to-air intercoolers and serves as a way to vent the liquid CO_2 directly on to the cooling fins thus, enhancing the performance of the intercooler by more than 50% eliminating intercooler heat soak. This component must always be the last in the CryO^2 system as it vents the liquid CO_2 charge.

INTERCOOLER SPRAYER

Part #	Description
080130	Front Mount –16" x 5"
080131	Front Mount – 8" x 4"
080134	Front Mount – 19" x 9"

Fittings and hardware included for multiple mounting options

AIR INTAKE & INTAKE BULBS

The CryO2™ patented* Air Intake consists of an aerodynamically designed bulb with a cryogenic chamber mounted in a short segment of air tube. Air is cooled as it passes over the bulb, resulting in a cooler, denser, more powerful intake air charge. Testing showed up to a 50°F reduction in intake air temperature.

- Designed for turbocharged, super-charged, & N/A applications
- Multiple units increase results
- Large 4 ½" O.D. for Diesel & hi-power applications
- Complete with silicone coupler, hose clamps, vent cap, & braided line

BLACK TITANIUM™ EXHAUST WRAP

- Same great Titanium wrap now in black
- Extremely pliable for a tight & secure wrap
- Withstands 1800˚F direct / 2500˚F intermittent heat
- Hi tech carbon fiber look
- High resistance to abrasions, temperatures, oil spills & vibration breakdown

BLACK TITANIUM EXHAUST WRAP

Part #	Description
010005	2 x 15 roll
010004	2 x 25 roll
010003	2 x 50 roll
010002	2 x 100 roll

BLACK UNDERHOOD THERMAL ACOUSTIC LINER

Designed primarily for the engine compartment as a way to greatly reduce heat and noise with an easy peel and stick product anyone can install. Engine heat and noise often is a problem with today's modified vehicles packed with high performance components. The use of Under Hood™ Thermal Acoustic Lining can help solve this issue.

- Black carbon fiber look
- Cooler hood surfaces protects your paint
- Reduced engine noise for quieter passenger compartment
- Easy peel & stick installation
- Resists mold & mildew issues
- Measures 32" x 59"

NEW BLACK CARBON FIBER LOOK

BLACK UNDERHOOD THERMAL ACOUSTIC LINER

Part #	Description
050129	Black Underhood Thermal Acoustic Liner

TURBO SHIELDS

Stronger and more durable than other turbo blankets or shields, DEI Turbo Shields include a hi-temp rated silica insulation under the tight outer layer for extra protection against extreme turbo-generated heat. Available in Titanium, Black ONYX and Ultra47

- Riveted anchors incorporated to secure shield
- Hi-Tech custom carbon fiber look
- Ultimate thermal barrier reduces turbo lag
- Double reinforced seams inside & outside