

034EFI INSTALLATION CONSIDERATIONS

HARNESS AND WIRING

-All ECU's are supplied with pre-fabricated flying lead harnesses. Before any actual wiring connections are made, verify the position of all wires in the connector with the standard wiring pinouts. Verify not only wire color, but pin position in the connector as well. This will not only help identify any mistakes made in the flying lead harness during assembly, it will help familiarize yourself with the wiring pinouts.

-Injectors, coils and solenoids/motors need a constant, ignition switched (voltage is supplied when the ignition is energized) 12v supply. The ground (12v -) for any of these components will be supplied by the ECU driver or a GPO; this is how the ECU controls these components. Injectors do not have a polarity, coils and most motors do. The switched ignition 12v+ can be supplied by one 30A relay typically, and should be fused with a 30A protection (fuse, circuit breaker, etc). This switched supply should ALWAYS be relayed and never driven off one of the original factory circuits, though a factory circuit is appropriate to use as the switching lead to the relay.

-Always pull the supplied 12v ground and power directly from the battery terminals, this prevents electrical interference problems and also filters out large voltage spikes caused by the starter and alternator. Avoid using chassis grounds, always ground directly to the battery negative terminal. A positive and negative terminal strip can be used to make supply voltage wiring more convenient and reliable.

-Use 18g wire for positive connections to injectors, coils can do with 14g wire, or use an appropriately sized (larger) single conductor before splitting off to each component.

-When building the harness (from the supplied flying lead harness), avoid attempts to duplicate an OEM "trunk-shaped" harness where all the wiring begins in a single, large bundle ("trunk") and progressively splits off to components as the harness passes by them. Use a more modular approach where "sub-harnesses" are used. Each component or set of components represent a module, for example, the injectors will have a subharness, the coils, the temp sensors, the GPO drivers, etc. This way, when future changes are made to the harness, it will only affect one of the subharnesses and not the entire, "trunk-shaped" harness. This also makes fixing or trouble shooting wiring problems in the future easier.

-Before a harness is bundled or "sealed up" for the last time, it's a good idea to test continuity and functionality first, to ensure no wiring changes are needed before the "heat shrink is shrunk and the crimps have been crimped".

-We recommend using crimp connections whenever possible over soldered joints. One problem we've seen repeatedly with soldered joints is that they create sharp edges that wear through electrical tape and heat shrink tubing. Also, when making wire connections inside a harness, stagger the connections so they do not bundle up in one spot where shorts can develop, and so that the connections will not create a large bulge in the harness.

-Always build subharnesses for the “input and output” portions of the harness. For example, do not put the temp sensor wiring in (or adjacent with) the same harness as the injector and coil drivers. Input wiring often transmits low voltage signals that are prone to radiated EMI, which can cause input errors to the data the ECU uses to create the outputs. This is especially true for VR Sensor wiring, which can create RPM errors if the wiring is not sufficiently separated or shielded.

-We recommend using heat-shrink tubing and “tech-flex” (available from www.034efi.com or www.partsexpress.com) for wire covering. Factory style vinyl covering also works well, but is more difficult to work with and more difficult to source. Split loom tubing is functional and convenient, just please don't show it to anyone or create any associations between your work and 034efi, Inc. In all cases, avoid using “Chrome” split loom tubing, or chrome triple-effect windshield wiper units.

-Take great care in routing wiring; keep in consideration heat sources, engine/component movement, and convenience for servicing access in the future. When wiring comes in conjunction to hot exhaust components, use fire sleeve and heat shielding to protect from radiated heat, or better yet, reroute wiring to avoid this completely. Melted wiring can leave you stranded and can cause permanent (and unwarranted!) damage to your ECU.

-Securely mount wiring and harnesses to prevent excessive movement, but also design enough excess length to allow free, un-binding movement of the engine and componentry.

-NEVER coil excess wiring, either build harnesses the right length or loosely route wiring in a bundle or in a longer path to take up excess. Coiled wiring creates magnetic fields that can play havoc with interference errors.

ECU MOUNTING

-The ECU should always be mounted securely, using the supplied rubber feet when possible.

-Mount the ECU away from heat and moisture sources, the ECU is NOT water or heat resistant.

-Make the ECU easily accessible, use easily removable fastening hardware in the case that the ECU must be pulled or quickly accessed.

-Leave sufficient play for the wiring harness so that connections are not taut or stressed, this can cause connection intermittency, and be a real PITA.

VACUUM SIGNAL

-The vacuum signal provides an intake manifold reference to the built in MAP sensor. Use 1/8” ID tubing to feed the internal MAP sensor, no larger or smaller. Clamp and secure all connections to ensure no leaks or separation can occur, which would result in immediate cease of function.

-Tap the intake manifold plenum directly, do not “T” off this line, the MAP signal should be direct w/o any takeoffs of the signal.