

TEMP-A-START ANALOG 2003 UNIT

SECTION I SYSTEM DESCRIPTION

The Temp-A-Start Analog 2003 Unit is an automatic start/stop control system for diesel powered tractors. The Temp-A-Start system provides the following features to prevent excessive idle time, eliminate cold-start, dry-start, provide driver comfort and maintain engine in a ready-to-go state, there by increasing per truck profit.

- ⇒ AUTOMATICALLY STARTS AND STOPS THE ENGINE BASED ON OIL TEMPERATURE TO ASSURE QUICK STARTS AND INSTANT RE-OILING.
- ⇒ AUTOMATICALLY STARTS AND STOPS THE ENGINE BASED ON BUNK TEMPERATURE TO HEAT OR COOL THE BUNK AND CAB AREA WHEN DRIVER ACTIVATED.
- ⇒ AUTOMATICALLY STARTS AND STOPS THE ENGINE TO MAINTAIN BATTERY CHARGE.
- ⇒ AUTOMATICALLY STOPS THE ENGINE TO PREVENT EXCESSIVE WARM-UP IDLING.
- ⇒ PROVIDES DELAYED STOP TO COOL THE ENGINE BLOCK AND TURBOCHARGER BEFORE ENGINE SHUTDOWN.
- ⇒ CONTROLS ENGINE SPEED AT THE MAUNFACTURER'S RECOMMENDED FAST IDLE RPM TO MAINTAIN HIGH HEAT.
- ⇒ SHUTDOWN PROTECTION IN THE EVENT OF ENGINE OR STARTER MOTOR OVERLOAD DURING A START.
- ⇒ PROVIDES INTERFACE WITH ELECTRONIC ENGINE CONTROLS.
- ⇒ PROVIDES DIAGNOSTICS TO DETECT WEAK BATTERY.
- ⇒ PROVIDES SAFETY SYSTEMS TO PREVENT STARTING IN GEAR OR WITH HOOD OR CAB UP.
- ⇒ THESE SYSTEMS ALSO PREVENT TRUCK THEFT. PROVIDES THEFT DETERANT WHEN IN ENGINE MODE, IGNITION KEY REMOVED.

FACTORY PREWIRED TRUCKS

Some Companies will factory wire the Temp-A-Start system when it is assembled. Factory wired tractors have the Temp-A-Start wiring harness and all sensors installed at the time of manufacture. The remaining Temp-A-Start components are installed by any local participating dealer. Currently only MACK trucks are offering the Temp-A-Start system factory wired and units installed at the factory.

SECTION II SYSTEM COMPONENTS

The Temp-A-Start system is currently designed for operation with ALL CLASS 6, 7 and 8 DIESEL ENGINES.

MAIN CONTROL MODULE

The MAIN CONTROL MODULE is the heart of the Temp-A-Start system. All sensing and control devices are connected to the MAIN CONTROL MODULE.

LCD DISPLAY / 2 COLOR LED

The Temp-A-Start 2 color LED display will indicate when the Temp-A-Start system is NEUTRAL by displaying a RED light, and when it is ON LINE by displaying a GREEN light.

BUNK THERMOSTAT DISPLAY PANEL (OPTIONAL)

The optional Temp-A-Start bunk thermostat allows the driver to engage the bunk and cab Heat/Air Conditioning mode, select HEAT or AIR CONDITION MODE and select the temperature from the bunk.

TILT SWITCH

The tilt switch is used to insure that Temp-A-Start can not start the engine when the hood is up or the cab is raised. It is part of the safety circuit.

NEUTRAL SAFETY SWITCH

This switch is used to insure that the transmission is in neutral. It is also part of the safety circuit.

PARKING BRAKE SWITCH

This switch is used to insure that the parking brakes are set on the tractor. An optional second switch may be installed on the tractor brakes if desired. This switch (or switches) are also part of the safety circuit.

MASTER RELAY

The Master Relay controls the truck battery feed to the switch and supplies power to the truck for normal key operation or to control power for the heater/air conditioning controls and fans when Temp-A-Start is also controlling the temperature of the sleeper bunk.

SECONDARY STARTER SOLENOID

This is used in cases where the tractor does not already have a "mag switch" installed.

ALARM

The engine compartment Alarm is used to sound an audible warning for 15 seconds before the engine starts. The Alarm is operational in ENGINE MODE ONLY.

SECTION III INSTALLATION PROCEDURES

The following procedures are suggested for installing the Temp-A-Start system in all Class 6, 7 and 8 diesel powered tractors. These procedures will offer suggested mounting locations and installation processes. However, the large number of different tractors and tractor configurations available may require alternate locations and modified installation processes.

TOOLS AND EQUIPMENT REQUIRED

To properly install the Temp-A-Start system, you will require the following tools and equipment:

- electric or pneumatic drill
- 1 inch hole saw
- soldering gun
- solder (rosin core only)
- Hot air gun (to install shrink tubing)
- TORX drivers of various sizes (for instrument panel fasteners)
- high quality wire stripper and crimper
- Digital volt meter
- Teflon pipe thread compound
- Black plastic electrical tape
- Standard hand tools

CAUTION:

Battery powered continuity testers should not be used on electronic components if used to check circuits connected to the MAIN CONTROL MODULE, ELECTRONIC INTERFACE MODULE, and DISPLAY PANEL. They may cause damage.

CAUTION:

Remember, Temp-A-Start controls the start/stop functions of the tractor engine. To prevent possible down time caused by a dead engine, the following requirements must be strictly observed.

- 1.All connections made in the engine compartment and other locations outside the cab must be crimped, soldered and covered with heat shrink tubing.**
- 2.All heat shrink tubing must be completely and tightly shrunk to prevent possible short circuits. A heat gun designed for this purpose should be used.**
- 3.NOTE: Do not attempt to use a “hair dryer” heat gun to install heat shrink tubing. These guns do not supply adequate heat for this purpose.**

INSTALLATION PROCEDURES CONT.

CAUTION:

Heat guns used for the installation of heat shrink tubing get very hot, and may damage the wire insulation. Exercise extreme caution to prevent burns or damage to the wire insulation.

- ⇒ All crimped connections made within the cab area must be “pull tested” to verify the integrity of the connection. Be absolutely certain the wire was properly stripped, and that bare wire is not exposed outside the crimp. Also, be sure the connector is crimped on bare wire rather than on the wire insulation.
- ⇒ After the main wiring harness has been positioned, it should be taped and cable tied securely in place. Be certain the harness is protected from heat, abrasion, pinching, and sharp edges. Allow adequate spacing for engine torque and vibration.
- ⇒ Do not coil up excess wire. Cut to length as required, and discard extra wire.
- ⇒ Coiled excess wire can cause false signals in the Temp-A-Start system. If needed, run wire loosely in dash left to right, or right to left, leaving space between loops.

PRE-INSTALLATION CHECKS:

Before beginning installation, the following preliminary checks should be performed.

ENGINES WITH ELECTRONIC CONTROLS

If the tractor does not have cruise control it will usually have a PTO (power take off) or high idle option that is used to raise the idle for a power take off or other accessory equipment. The high idle option is always installed in an electronic engine control system, but it may not be activated. Be sure to determine if the cruise control high idle or PTO option is functioning. The local engine dealer can easily activate the option if it hasn't been already. If the cruise control is inoperative, it must be repaired before proceeding with the installation.

POWER BUS LOCATIONS:

Most tractors have several power distribution points referred to as power buses located within the instrument panels and/or fuse panels. Three of these points or buses must be identified. Use a volt meter to identify them. They will usually have a number of circuit breakers or fuses grouped together.

- ⇒ The power bus ahead of the ignition switch. This bus will be “hot” whenever the battery is connected.
- ⇒ The ignition switch power bus. This bus will be “hot” when the key is in the “ON” position.
- ⇒ The accessory power bus. This bus will be “hot” when the key is in the “ACCESSORY” position.

If these buses are not available, a terminal block may have to be installed to facilitate wire connection.

SECTION III INSTALLATION PROCEDURES CONT.

DRIVER ACCESSORIES

After Temp-A-Start has been installed, the ignition key power will not be available at all times when Temp-A-Start is being used. However, driver accessories such as radios, tape players, CB radios and the like are commonly connected to a power source activated by the ignition key. If this is the case, these accessories must be reconnected to a fuse source of power ahead of the ignition switch. Do not use the accessory terminals on the ignition switch. If necessary, in-line fuse holders may be utilized.

SUGGESTED ORDER OF INSTALLATION

The following outline is designed to give the installer a general idea of the steps and processes involved. Each main topic of the outline is then discussed in detail in the following material:

1. LAY OUT AND IDENTIFY ALL TEMP-A-START COMPONENTS

- ✓Verify against parts list that all parts are present.

2. DETERMINE THE LOCATIONS OF THE TEMP-A-START MODULES.

MAIN CONTROL MODULE

- ✓Usual location is behind the instrument panel or in the tractor fuse panel or under the bunk.

DRIVER DISPLAY

- ✓May be mounted at any convenient location within reach of the driver and the harness wires.

BUNK THERMOSTAT (Optional)

- ✓Must be mounted in the bunk area, usually midway between the floor and the ceiling.

3. INSTALL THE ENGINE COMPARTMENT COMPONENTS

- ✓Install all engine sensors, tilt switch, flywheel sensor, and alarm. (See CAT ECM Adapter Kit)

4. INSTALL THE NEUTRAL SAFETY SWITCH AT THE TRANSMISSION.

5. INSTALL THE MAIN HARNESS

- ✓Locate the MAIN WIRING HARNESS connectors as required to plug into the associated modules.
- ✓Extend the balance of the MAIN WIRING HARNESS to the engine compartment as required.
- ✓Make all connections to sensors and other engine compartment components.

6. COMPLETE THE DASH INSTALLATION

- ✓Install the PARKING BRAKE SWITCH(s) and connect.
- ✓Install the MASTER RELAY and connect.

7. COMPLETE ALL CONNECTIONS EXCEPT PLUGGING IN MAIN CONTROL MODULE.

- ✓Tachometer (See CAT ECM Adapter Kit)
- ✓Starter button

- ✓ Main power wire must be fused, use Temp-A-Start supplied fuse holder.
- ✓ Blue and green fuel wires
- ✓ Fan clutch (If Needed)
- ✓ Driver Display Panel
- ✓ Bunk Thermostat (where used)

8. CONNECT THE MAIN CONTROL MODULE TO THE MAIN HARNESS.

9. REWIRE THE TRACTOR RADIO, TAPE PLAYER, AND ANY OTHER ACCESSORIES AS REQUIRED.

- ✓ Be sure to wire at a fused point ahead of the ignition switch.

10. SYSTEM CHECKOUT

- ✓ Start truck and warm engine.
- ✓ Activate the Temp-A-Start system and thoroughly check all functions.
- ✓ Verify that the tractor accessories such as radios, tape players, etc. are functional and powered ahead of the ignition switch.
- ✓ Apply CAUTION DECALS as required:
 - ⇒ One decal must be applied to the driver's door.
 - ⇒ One decal must be applied at each hood latch or a decal must be applied at each cab tilt lock.

IDENTIFICATION OF COMPONENTS

Carefully unpack and inspect all components to be sure there is no shipping damage. Cross check the kit list to be sure all components necessary for the installation are present. It may be helpful to lay out the entire Temp-A-Start system on the bench as an aid in parts identification and to familiarize yourself with the system configuration.

DETERMINE THE LOCATION OF THE TEMP-A-START SYSTEM MODULES

Using the modules and the MAIN WIRING HARNESS, determine the final location of each module. Be sure the MAIN WIRING HARNESS connectors will reach the module without straining the harness and that ample space is available to mate the connectors. Suggested locations for components are mentioned throughout this manual. These locations have proven effective for the majority of installations. Locations and harness routing may have to be modified in some applications due to unforeseen circumstances, customer modifications, and the like. Be certain to follow good engineering and workmanship practices. The usual location of the MAIN CONTROL MODULE is behind the instrument panel or in the tractor fuse panel. This location will vary from tractor to tractor, depending on space available. The usual location of the DRIVER DISPLAY MODULE is on or near the instrument panel, within easy reach of the driver.

SECTION IV

COMPONENT PLACEMENT

TILT SWITCH AND BRACKET

TILT SWITCH ORIENTATION - CONVENTIONAL CAB (INSTALL UNDER HOOD

**NEAR HEAD LIGHT ASSEMBLY)
TILT - SWITCH ORIENTATION - CAB OVER ENGINE
FLYWHEEL SENSOR (May Be Used In Some Applications)**

The **FLYWHEEL SENSOR** is installed as follows:

- ✓ Install the jam nut on the flywheel sensor.
- ✓ Screw the **FLYWHEEL SENSOR** into the existing tapped hole on the engine housing.
- ✓ When the **FLYWHEEL SENSOR** bottoms out on the flywheel, back off $\frac{3}{4}$ to 1 full turn and secure the jam nut.
- ✓ With an AC voltmeter connected to the leads, it should indicate approximately 3 to 5 volts when the engine is idling.
- ✓ Route the **FLYWHEEL SENSOR CABLE** to the firewall. Routing will be completed when the **MAIN WIRING HARNESS** is installed.
- ✓ It will later be connected to the **MAIN CONTROL MODULE**

ENGINE COMPARTMENT ALARM

The engine compartment **ALARM** provides an audible alarm for 15 seconds before the engine starts when Temp-A-Start is in **ENGINE MODE**. It is installed as follows:

- ✓ Secure the alarm to the firewall of the truck, using silicone adhesive.
- ✓ The cable will be routed back to the cab when the main wiring harness is installed.
- ✓ It will be connected to the **MAIN CONTROL MODULE** later.

NEUTRAL SAFETY SWITCH

The **NEUTRAL SAFETY SWITCH** is used by Temp-A-Start to verify that the tractor transmission is in neutral. **NEUTRAL SAFETY SWITCHES** are available for the following transmissions: (Customer needs to order in advance from OE's)

- ⇒ EATON/FULLER transmissions with neutral switch provisions.
- ⇒ EATON/FULLER transmissions equipped with air slide.
- ⇒ ROCKWELL transmissions with neutral switch provisions.

These switches will cover the majority of applications. Additional **NEUTRAL SAFETY SWITCHES** will be made available as required by market demands.

**EATON/FULLER TRANSMISSIONS AND ROCKWELL TRANSMISSIONS
(WITH NEUTRAL SAFETY SWITCH TAPPED HOLE) HARNESS AND
SENSOR INSTALLATION**

These transmissions have provisions for a neutral switch for use with electric engine control systems.

Page 7

SECTION IV

**EATON/FULLER TRANSMISSIONS AND ROCKWELL TRANSMISSIONS
(WITH NEUTRAL SAFETY SWITCH TAPPED HOLE) HARNESS AND
SENSOR INSTALLATION**

CONT.

A 1.0 inch diameter hole should be drilled where the harness passes through the firewall. Be certain to use the enclosed grommet to protect the harness from chaffing and cutting where it passes from the tractor interior to the engine compartment, and plug any air leaks that may exist in the feed through area.

NOTE: In some cases a pre existing hole may be used to access the engine compartment. If the supplied grommet does not fit this hole, similar protection must be utilized to protect the harness and seal the opening.

After the harness is laid in place, the individual wires should be cut to the appropriate lengths. These wires, such as the wires to the oil pressure and temperature sensors should be securely taped together along their length to complete the harness. The connections to the sensors and other engine compartments should now be completed. Be sure these connections are securely crimped, soldered and covered with heat shrink tubing.

NEUTRAL SAFETY SWITCH (INSTALLING DEALER RESPONSIBLE MUST ORDER SWITCH PRIOR TO INSTALLATION)- RED/ORANGE & BROWN/YELLOW WIRES

Connect the ring terminals to the RED/ORANGE, BROWN/YELLOW wires.

MAIN WIRING HARNESS (COILED FOR SHIPPING PURPOSES) TEMP-A-START CIRCUIT IDENTIFICATION OEM & RETROFIT HARNESS SYSTEMS

The following wire numbers conform to the ATA (American Trucking Association) codes. Temp-A-Start has been assigned the 402 series of numbers by the AMERICAN TRUCKING ASSOCIATION.

WIRE ID FUNCTION:

- **402 (RED)** MAIN POWER SUPPLY CIRCUIT: CONNECTS TO TRACTORS 12 V POSITIVE {+} BATTERY SUPPLY.
- **402A (GRN)** FUEL REQUIRED SENSING CIRCUIT: CONNECTS THE ORIGINAL TRUCK FUEL SUPPLY WIRE.
- **402B (BLU)** TEMP-A-START ENGINE CIRCUIT: CONNECTS TO THE "FUEL ON" SOLENOID ON MECHANICAL FUEL CONTROL ENGINES OR TO THE ENGINE CONTROL MODULE ON ENGINES WITH ELECTRONIC FUEL CONTROL.
- **402C (YEL)** STARTER CIRCUIT: CONNECTS TO OUTPUT SIDE OF STARTER BUTTON OR, START TERMINAL OF IGNITION SWITCH.

SECTION IV MAIN WIRING HARNESS (COILED FOR SHIPPING PURPOSES) TEMP-A-START CIRCUIT IDENTIFICATION OEM & RETROFIT HARNESS SYSTEMS

WIRE ID FUNCTION CONT.

- **402D (ORG)** OIL TEMPERATURE CIRCUIT: CONNECTS TO TEMP-A-START ENGINE MOUNTED OIL TEMPERATURE SENSOR.
- **402G (BLK)** GROUND CIRCUIT: GROUND DIRECTLY TO THE ENGINE BLOCK AS CLOSE AS POSSIBLE TO THE SENSORS. DO NOT GROUND TO THE EXHAUST MANIFOLD.
- **402H1 (VIO)** SENSES IGNITION SWITCH POSITION: A DIODE CIRCUIT THAT CONNECTS TO THE IGNITION SWITCH TERMINALS (IGNITION AND ACCESSORY).
- **402H2 (VIO/WHT)** SENSES IGNITION SWITCH POSITION.
- **402J (BRN)** USED ONLY ON MACK ENGINES, FACTORY WIRED.
- **402K (PNK)** ACTIVATES THE MASTER RELAY.
- **402L1 (GRY)** TILT SWITCH CIRCUIT: COMPLETE THE CIRCUIT THROUGH
- **402L2 (GRY)** TILT SWITCH. NOT POLARITY CONCIOUS.
- **402N1 (RED/ORANGE)** NEUTRAL SAFETY SWITCH CIRCUIT.
- **402N1 (BRN/YELLOW)** NEUTRAL SAFETY SWITCH.
- **402R (BRN/WHT)** MASTER RELAY COIL RETURN CIRCUIT.
- **402P1 (TAN)** PARK BRAKE SWITCH(S) CIRCUIT: TWO (2) WIRES COMPLETE THIS
- **402P2 (TAN)** PARK BRAKE SWITCH. THIS CIRCUIT MAY BE PARALLEL WIRED TO A SECOND SWITCH FOR THE TRAILER - BRAKES IF DESIRED.

COMPLETE THE INSTRUMENT PANEL INSTALLATION

The parking brake switch is used to determine that the tractor brakes have been engaged. If desired, a second switch can be installed on the trailer brakes. The PARKING BRAKE SWITCH is installed as follows:

- ⇒ The PARKING BRAKE SWITCH must be installed in an air line or in an available port of the park brake valve body that has: POSITIVE AIR PRESSURE WITH THE PARKING BRAKES NOT APPLIED. And NO AIR

SECTION IV MAIN WIRING HARNESS (COILED FOR SHIPPING PURPOSES) TEMP-A-START CIRCUIT IDENTIFICATION OEM & RETROFIT HARNESS SYSTEMS

INSTRUMENT PANEL INSTALLATION CONT.

Pressure when the parking brake is applied. Confirm the correct connection point by loosening the selected air line or plug, then applying or releasing the PARKING BRAKE observing the presence or absence of air pressure.

- ⇒ Use the most convenient location for installation. Suggested locations for the PARK BRAKE SWITCH are:
- ⇒ PARK BRAKE VALVE BODY or MANIFOLD: Remove the original air line connector, install the BRASS TEE and SWITCH, reinstall the air line.
- ⇒ AIR LINE SPACE: Splice into the proper air line using compression fittings and inserts, install the BRASS TEE and SWITCH.
- ⇒ **NOTE:** The original nut and ferrule may not be compatible with the base of the compression fittings supplied. In this case, an air line splice is the easiest method to use.
- ⇒ **NOTE:** Always use the metal inserts with the compression fittings or plastic air lines. Use sealant on pipe thread fittings. **DO NOT OVER TIGHTEN** ferrules and nuts on plastic tubing.
- ⇒ Connect **WIRES P1-P2 (TAN)**, one to each terminal of the switch. This connection is not polarity conscious.
- ⇒ **NOTE:** A second PARK BRAKE SWITCH may be installed on the trailer brake in the same manner. If installed, this switch must be wired in parallel with the first.

MASTER RELAY

The MASTER RELAY enables Temp-A-Start to bypass the ignition switch.

NOTE: As the H/A (Heater/Air Conditioning MODE) calls for the engine to shut down, accessories controlled through the ignition switch will be shut off. Any accessory the driver may desire to use at any time such as the radio or tape player should be wired to a fused point, battery HOT.

MASTER RELAY

MASTER RELAY INSTALLATION

- ⇒ The MASTER RELAY should be mounted as close to the ignition key as possible. Usual locations are behind the instrument panel or behind a kick panel or drop down panel close to the switch. It should be firmly secured in position.

SECTION IV

MASTER RELAY INSTALLATION

CONT.

NOTE: The relay may be mounted in any position, even upside down.

- ⇒ The MASTER RELAY has three (3) wires (RED, PINK, and BROWN/WHITE

and 2 VIOLET) leading to a black female connector that will plug into a corresponding male connector in the MAIN HARNESS.

- ⇒ Connect one violet wire to the IGNITION TERMINAL
- ⇒ Connect one violet wire to the ACCESSORY TERMINAL
- ⇒ Identify the two (2) 18" long red 12 gauge wires connected to the MASTER RELAY. One is labeled BATTERY HOT, the other is labeled BATTERY SUPPLY TO KEY SWITCH. Connect as follows:
 - ✓ Identify and remove the wire that supplies 12 volts {+} to the IGNITION SWITCH and connect it to the RED 12 GAUGE WIRE MARKED BATTERY HOT.
 - ✓ Connect the red 12 gauge wire labeled BATTERY SUPPLY TO KEY SWITCH to the battery terminal of the ignition switch.
- ⇒ The MASTER RELAY installation is now complete. The two remaining red wires with the yellow connectors are provided should you need to bypass the relay. Connecting these two bypass wires reconnects battery power direct to the ignition switch and under most conditions bypasses Temp-A-Start.

MASTER RELAY WIRING COMPLETING REMAINING CONNECTIONS EXCEPT PLUGGING IN MAIN CONTROL MODULE

TACHOMETER/FLYWHEEL SENSOR OR ECM CAT INSTALL

The Temp-A-Start system must be able to monitor RPM in order to disengage the starter. Most tractors use an electronic tachometer and Temp-A-Start uses it to determine engine RPM. If the tractor doesn't have an electronic tachometer, a flywheel sensor must be installed and adjusted. On Cat engines, see custom ECM Connector Kit.

TACHOMETER CONNECTIONS

NOTE: For square wave tachometers ONLY - do NOT hook up if DIGITAL dash. The tachometer is polarity sensitive. If you hook the tachometer harness wires to the tachometer backwards, the tachometer won't operate. Reverse the wires and it should operate correctly. The tachometer will not operate when the Temp-A-Start system is operating in engine mode with the key off because the tachometer is not receiving power. This is normal. Turn key on and it should operate. If it still doesn't, recheck the polarity of the connections.

- ✓ A two wire harness consisting of an (ORG/WHT) and a (BLK) wire and a two pin connector is contained in the kit. Remove the front dash panel to gain access to the tachometer.

SECTION IV TACHOMETER CONNECTIONS CONT.

- ✓ Trim any excess wire from the harness.
- ✓ Crimp on the ring terminals provided.

- ✓ Hook the harness to the tachometer as shown.

VEHICLE SPEED SENSOR

RED/WHT and BLACK uses DUAL Sensor on CAT engine ECM Adapter Kit.

MAIN POWER WIRE

The large gauge RED wire coming from the main wiring harness is the main power wire for the Temp-A-Start system. It must be connected to a power bus or terminal board that is always hot. This wire must be fused (25A).

BLUE AND GREEN FUEL WIRES

Temp-A-Start must be able to turn the fuel on and off to the engine just as drivers do when they use the key switch. Although Temp-A-Start MASTER RELAY is in series with the key switch and is controlled by the MAIN CONTROL MODULE, the MAIN CONTROL MODULE itself must control the fuel in engine mode while the key switch is off and the MASTER RELAY is off. The MASTER RELAY is only used to turn the blower fans on and off in heater/air mode.

The BLUE and GREEN wires from the MAIN WIRING HARNESS must be connected into the truck fuel system to allow Temp-A-Start to control the fuel and ECM.

BLUE WIRE

The MAIN MODULE takes power from the RED main power wire and sends it to the fuel controls through the BLUE wire when the engine has to be started to warm itself up, provide heating or cooling to the bunk, or to change the batteries.

GREEN WIRE

The GREEN wire is needed when the engine is being ran with Temp-A-Start not active. The GREEN wire intercepts the ignition circuit that delivers power to the fuel controls and instead of sending it to the fuel controls, it sends it to the MAIN CONTROL MODULE instead. The MAIN CONTROL MODULE then delivers the power to the fuel controls through the blue wire. When Temp-A-Start is active, MAIN CONTROL MODULE controls the fuel. When it is not, the key switch controls it, but through the MAIN CONTROL MODULE. The reason for this is that TEMP-A-Start must have the final control or it would be easily bypassed.

SECTION IV

FAN CLUTCH

Almost all tractors are equipped with a fan clutch. Most have a clutch this is operated by air. The air is controlled by a solenoid, which in turn is controlled by a temperature

sensing switch in the cooling system. When the engine reaches a certain temperature the switch closes, power is then sent through a breaker or ignition bus, through the switch, and on to the solenoid. Air is then applied, and the clutch engages the fan. There are two (2) variations of this system. One uses power to the solenoid to apply the clutch, and the other uses power removed from the solenoid to apply the clutch. The difference is the type of temperature sensing switch that is used. One closes on temperature rise and one opens on temperature rise. Some tractors are also equipped with a manual fan switch so the Driver can over ride the automatic function.

TYPICAL FAN CLUTCH CIRCUIT

Since Temp-A-Start controls engine idle and does not require the tractor's key switch to be on, the fan clutch sensor circuit and the manual fan switch circuit should be powered by the BLUE wire. If it's not controlled by the ECM directly.

NOTE:

For more efficient air conditioning, the Driver should be instructed to use the manual fan switch (if equipped) when using Temp-A-Start for bunk air conditioning.

WIRING THE FAN CLUTCH

- ⇒ Identify the breaker or fuse on the ignition bus that feeds the fan clutch sensor. It is usually marked. If not, a test light can be put on the temperature sensing switch and with the key on, breakers can be removed until the light goes out.
- ⇒ Identify the manual fan switch breaker or fuse (if equipped). Use the same method as above if it is unmarked.
- ⇒ Remove the breakers.
- ⇒ Run a jumper from the BLUE wire that is feeding the fuel circuit(s) to the wires to wires of the fan clutch sensor and manual fan switch.

CAUTION:

Make sure there are no other circuits attached to these fan circuits or feedback to the fuel circuits could occur.

When Temp-A-Start runs the engine the BLUE wire feeding the fuel controls will now also feed the fan clutch and the manual fan switch.