



TELORVEK II RJ-22 Small Block RamJet Fuel Injection System

This wiring system is compatible with the GM Performance part small block Ramjet 350 engine part number 12495515.

The harness is designed to dress up the appearance of the engine by moving the engine control module (ECM), fuel pump relay, data link connector and fuse connector out of the engine compartment for a much cleaner, neater look than the factory supplied harness. This harness allows a custom fit to your vehicle application by allowing you to position (run) the wiring the way you want to for a custom finish look.

NOTE!!

Your engine was shipped with a set of installation instructions that should be read prior to installing this kit. They contain good general information pertaining to the engine installation and operation as well as GM part numbers for replacement parts. Also noted in the Ramjet instructions is a service manual part number 12486611 that can be ordered through your local GM dealer. This is an inexpensive tool to diagnose and learn more about the operation of your engine.

WIRING INSTRUCTIONS

Thank you for purchasing the absolute finest of wiring kits for the General Motors fuel injection system. We have taken considerable time to work out the circuitry so that you will understand at least some of what this is all about. We ask that you follow our instructions closely. We recommend a high pressure in-tank fuel pump that produces 43-55 pounds of pressure and can supply 35 gallons of fuel per hour. Custom installations are available from Tanks, Inc. (phone # 320-558-6882) and Rock Valley (phone #800-344-1934).

Should you eliminate a sensor your injection system will not work at its peak and will probably be in some variation of back up mode. There are many factors that will keep you from a trouble free start up that you must consider.

STARTING INSTALLATION

Since there are so many individual circuits to complete, we recommend that you connect them in the order that we prescribe. Disconnect the battery before starting and do not reconnect until instructed.

Plug in the computer (ECM) to the wires running from the TELORVEK II panel and mount them in an **ACCESSIBLE LOCATION. For safety, now disconnect the ECM connectors until finished the installation.** Under the dash, under the seat or in the trunk are good. There are a lot of wires so allow room to work. A poor installation will result in a poor running car. The number referred to from this point on will be the location on one of the terminal blocks located on the TELORVEK II panel.

After all wires are in place, wire tie them together. This can be done before any connections are made to the Telorvek panel. Since all wires are marked, running the entire group to the panel at one time is fine. Some terminals on the panel will not be used!

All sensors are important if you desire your conversion to run as good as a factory engine. Eliminating any part of this kit WILL cause some portion of the EFI to work improperly.

WARNING!

After the kit installation is complete and it is necessary to diagnose a starting or drive-ability problem, follow the procedures recommended in the shop manual. All voltage tests must be preformed using a HIGH impedance, digital voltmeter. DO NOT use a test light on this system! DAMAGE WILL BE DONE to the engine computer if a test light is used on this system.

Important! We have supplied two sizes of terminals for your use on the panel itself. The Blue, used for 14-16 gauge wire and red for the bulk of the smaller wires. Each individual bag instructions will be marked as to when to use the blue terminals. All others will use the red terminals.

Ron Francis Wiring has made every effort to assure a quality product and can assure you that this system works well in your application. Once you have confirmed proper installation and set the timing, any trouble you experience will be a defective part or seat of the pants repair. Your unit can be tested at any General Motors Dealership with no difficulty.

Bag #21 ENGINE COOLANT TEMPERATURE SENSOR (ECT) After attaching the plug to the sensor, run the two wires to the panel and connect the Yellow wire to **#4** and the Black wire to **#5**. The sensor is located in the left front of the intake manifold in the water jacket.

Bag #22 MANIFOLD ABSOLUTE PRESSURE SENSOR (MAP) is located on the left side of the intake manifold. Plug in the connector and run the Black wire to **#5**, Green to **#6** and the Gray wire to **#7**.

Bag #23. IDLE AIR CONTROL: The IAC is located on the left side of the throttle body assembly. After plugging in the connector, run Green to **#8**, Yellow to **#9**, Red to **#10** and Brown to **#11**.

Bag #24 THROTTLE POSITION SENSOR The TPS sensor is also located on the left side of the throttle body assembly. After plugging in the connector run the Gray wire to **#12**, Dk Blue to **#13** and black to **#14**. No adjustment is required.

Bag #25 INJECTORS: The injector wiring is in two sections, one for the left side injectors and one for the right side injectors. Note the printing on the wires running from the injectors. The left injector harness has INJ 1, INJ 3, INJ 5, INJ 7 on the wires and the right injector harness has INJ 2, INJ 4, INJ 6, INJ 8. Follow the paragraphs below on their connections:

LEFT INJECTOR CONNECTIONS (drivers side): Starting from the front of the engine plug in the injectors as follows: INJ 1 with the pink and blue wires, INJ 3 with the pink and Green wires, INJ 5 with the pink and green wires and INJ 7 with the pink and blue wires.

RIGHT INJECTOR CONNECTIONS: Starting from the front of the engine plug in the injectors as follows: INJ 2 with the pink and green wires, INJ 4 with the pink and blue wires, INJ 6 with the pink and blue wires and INJ 8 with the pink and green wires

Now run all the wires to the panel. Connect the Pink wire from the left injector harness (INJ 1 A) to **#17**. Connect the Pink wire from the right injector harness (INJ 2 A) to **#16**. Connect the Blue wire from the left injector harness (INJ 1 B) and the Blue wire from the right injector harness (INJ 4 B) to **#19**. Connect the Green wire from the left injector harness (INJ 3 B) and the Green wire from the right injector harness (INJ 2 B) to **#18**.

Bag #26 DISTRIBUTOR IGNITION, COIL IGNITION, TACH. At this time to connect the distributor ignition control module (ICM) wiring to the distributor. After plugging in the connector run the wires back to the panel. Connect the Red wire to **#31**, Tan wire to **#32**, Purple wire to **#33** and White wire to **#34**.

COIL IGNITION: Plug the gray connector into the coil. Using the blue terminal run the orange wire to **#35** on the Telorvek panel. The purple wire (TACH) runs to the tach.

NOTE: A SHORT TWO WAY COIL TO DISTRIBUTOR JUMPER HARNESS SUPPLIED WITH THE ORIGINAL RAMJET HARNESS IS NEEDED AND REUSED. PLUG IT INTO THE REMAINING CONNECTOR POSITION ON THE DISTRIBUTOR (ICM) AND CONNECT THE OTHER END TO THE IGNITION COIL.

Bag #27 KNOCK SENSOR WIRING is a single wire hookup to the knock sensor. This will inform the computer of detonation and readjust the timing accordingly. Connect the plug to the sensor and run the Blue wire to **#37**.

Bag #28 FUEL PUMP: The fuel pump relay connector is located in the cover of the TELORVEK panel and is pre-wired. A relay must be installed in the connector (GM part #14100455) or the pump WILL NOT operate. Connect the tan wire to **#46** on the panel and run it to the fuel pump. The tan wire then connects to the positive terminal on the pump. The black PUMP GROUND wire connects to the negative side of the pump and then to a good ground.

We recommend a high pressure in-tank fuel pump that produces 43-55 pounds of pressure and can supply 35 gallons of fuel per hour. Custom installations are available from Tanks, Inc. (phone # 320-558-6882) and Rock Valley (phone #800-344-1934).

NOTE: There is one relay socket in the cover of the panel. Relays are not supplied with our wiring kit. The proper can be ordered locally under Airtex part #1R1061, Standard Motor Products part #RY116 or GM part #14100455.

Bag #29 DATA LINK CONNECTOR (DLC) and MALFUNCTION INDICATOR LAMP (MIL)

The DLC is the diagnostic link for computerized testing at your local GM dealer or a hand held scanner. The connector covering the DLC with the short black wire is used as a protective covering for the DLC connector itself. Please consider a very accessible location for this important part. Connect the Black wire to #22, White wire to #39, Brown wire to #40, Red wire to #41 and the Orange wire to #42.

The malfunction indicator lamp can be any low amperage 12 volt lamp located on the dash board or where ever desired. Connect the Brown wire to #40 and the Pink (positive) wire to #44. Using an L.E.D light requires connecting the positive wire from the light to the pink and the negative from the light to the brown wire. The computer controls the light by internally grounding the brown wire. This light is not required as the yellow light on top of the TELORVEK Panel has the same function.

Bag #30 ENGINE GROUNDS. Although some of these wires are marked ground they actually complete individual circuits that happen to be grounded. For this reason these are important wires in the kit and must be connected properly. The Black wire marked FRT ENG GRD is connected to a bolt in the front of the intake manifold and run to the number #21 on the panel. The Black wire marked REAR ENG GRD is run from a starter mounting bolt to number #24 on the panel.

Bag #31 VEHICLE SPEED SENSOR (VSS) (OPTIONAL CONNECTION). The Ramjet ECM has the capability to accept a VSS input but is not required. This input however is TURNED OFF in your ECM and requires a Scan Tool to activate this circuit. A 4000 pulse per mile signal is required. Connect the Yellow (VSS SIGNAL) wire to #45 and the Black (VSS GROUND) wire to #23 and run both wires to your pulse generator. **NOTE:** Some speedometer cable driven pulse generators will also require a keyed ignition 12 volts. That connection can be completed at #44.

Electronic speedometers can be connected to terminal #45 to pick up the VSS signal.

Bag #32 OXYGEN SENSOR (OPTIONAL AFTERMARKET CONNECTION): GM did not design the engine control computer to utilize the input from an O2 sensor due to the application the Ramjet engine was designed for. Aftermarket companies such as Arizona Speed & Marine (480-753-0208) offers a kit to install the O2 sensor into this system. The ECM must be sent to the aftermarket company for reprogramming to allow it to accept and utilize this input. We have supplied the most common four wire heated style O2 sensor connector on the wires to make this connection. If you sensor connector differs from the one supplied please contact our customer service #302-475-2907. After plugging in the sensor connect the wires to the panel as follows:

ORANGE: Connect to #36 on the panel. This wire is the keyed ignition source to the sensor.

BLACK: Read the printing on the wire carefully and connect it to #21. This wire is the "sensor" ground.

PURPLE: Connect to #3 on the panel. This is the signal wire to the computer. **NOTE: This signal is being sent into computer pin J2-16. If your aftermarket supplier requires using a different computer pin please call our tech line at 610-485-1981.**

BLACK: Read the printing on the wire carefully and connect it to #20. This wire is the "signal" ground wire.

Using a 700 R4 Transmission

The Detail Zone offers a torque converter lock up kit (TC-70) for this type transmission. This unit is electronic, not vacuum controlled. It reads speed of the vehicle through a sensor that attaches to the speedometer cable. Transmissions with factory internal speed generators must be converted to a cable drive to use this unit. The system locks up the converter at a set speed and unlocks it when the signal generator senses the vehicle speed is below lock up speed or when the brakes are applied. The unit is set to lock the converter a 42-47 mph and can be adjusted if necessary.

Final Hookups

Connect the large prewired **orange** wire to the ignition circuit of your ignition switch. This is an ignition feed that is controlled by the ignition switch. **This is not an accessory feed and must remain hot even when the engine is cranking.**

Connect the large prewired **red** battery feed wire to a battery feed. **This is a battery feed that must remain hot even with the key off.** Make sure this is a good connection. If you have a Master Disconnect switch, install this wire on the battery side of the switch so it will remain hot with the Disconnect off.

The black ground wire from the TELORVEK II Panel runs direct to the battery. Do not consider grounding the battery to the frame and then the engine to the frame. Run the battery ground directly to the engine.

You have now completed the kit installation. You may have noted empty terminals on the Telorvek panel that do not have any wire connections to them. Ron Francis Wiring runs all computer connections out of the computer plug(s) even if they are not used in aftermarket applications.

TROUBLE CODES

Listed below are trouble codes the ECM will store in the event of a sensor failure. Accessing the codes can be done by installing the diagnostic trouble code (DTC) tool (GM part #12489400 not supplied) into the DLC connector or by jumping terminals A to terminal B (white and black wires) in the DLC connector, will allow the computer to "flash" trouble codes in the "CODES" light mounted on the TELORVEK II panel and (or) on the dash mounted light.

With A and B jumped together in the DLC the light will flash a code 12 which is a notification that the computer is in diagnostic mode. Each code (if any) will follow if any are stored in memory. Each number is flashed separate. Example: Thirteen is flashed as a single flash followed by three flashes. Not all that can go wrong on an EFI computer controlled system will set a service code. If no codes are present and there is a runability problem it may be necessary to connect a scan tool to the system or have it serviced at a qualified repair facility.

Ron Francis Wiring Customer Service: 610-485-1981

Trouble Codes:**12** Diagnostic Mode**14** Engine Coolant Temperature Sensor Circuit
Low Temperature Indicated**15** Engine Coolant Temperature Sensor Circuit
High Temperature Indicated**21** Throttle Position Sensor Circuit
High Signal Voltage Indicated**22** Throttle Position Sensor Circuit
Low Signal Voltage Indicated**33** Manifold Absolute Pressure (MAP) Sensor Circuit
High Signal Voltage Indicated**34** Manifold Absolute Pressure (MAP) Sensor Circuit
Low Signal Voltage Indicated**41** Ignition Control (IC) System
Open Circuit**42** Ignition Control (IC) System
Grounded IC Circuit, Open or Grounded Bypass Circuit**44** Knock Sensor (KS) System Inactive**51** Calibration Checksum Failure

TIMING ADJUSTMENT: In order to change base timing on the system, the ECM has to be entered into the service mode using the diagnostic trouble code tool GM part number 12489400. This can be accomplished by attaching the DTC tool to the data link connector.

1. Turn the engine's ignition switch to the off position (engine not running)
2. Place the DTC tool's test switch in the off position and plug the tool into the data link connector on the wiring harness.
3. Start the engine and place the DTC tool test switch in the on position.

The IC module will then go to base timing. At this time the base timing can be adjusted by turning the distributor. Using a timing light, set base timing at 10 degrees before top dead center.

Optional Accessories

	GM Part #	Ron Francis Wiring #
Fuel Pump Relay	14100455	RL-5
Oxygen Sensor (heated)	25312184	OS-55
Oxygen Sensor bung		OS-30

Telorvek Panel Fuse Designation and Size Layout

Fuse Designation & Size

The harness has a total of eight fuses. Shown below is a diagram of what each fuse protects.

Top, Front View Of Fuse Blocks

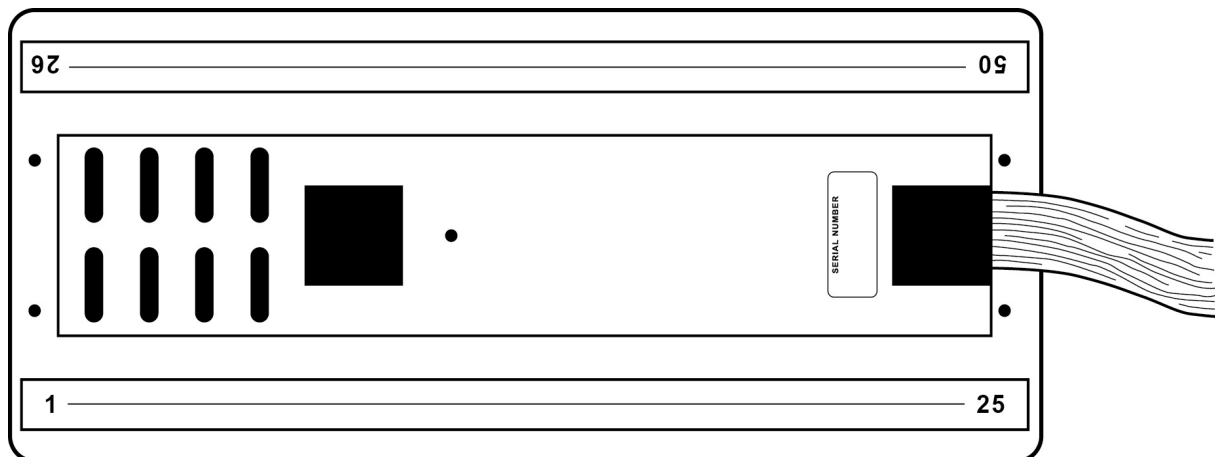
Fuse Row #1	
Fuse Designation	Fuse Size Block #1
(IGNITION FEED) Right Injectors	10 AMP
(IGNITION FEED) Left Injectors	10 AMP
(IGNITION FEED) Ignition Coil	10 AMP
(IGNITION FEED) MIL Indicator Light Fuel Pump Relay	5 AMP

Fuse Row #2	
Fuse Designation	Fuse Size Block #2
(IGNITION FEED) ECM	5 AMP
(BATTERY FEED) DLC	10 AMP
(BATTERY FEED) ECM	5 AMP
(BATTERY FEED) Fuel Pump Relay	15 AMP

Numbered terminal block cover strip reference.

The drawing below is for your reference on the correct positioning of the Telorvek fuel injection panel terminal block cover strips.

When connecting wires to the panel be sure the numbered terminals match the drawing below.



Copyright Infringement



**Ron Francis
Wiring has taken
the extra effort to
produce a quality, easy to understand instructions. We will
aggressively prosecute any other harness supplier who attempts
to copy this material!!**