RON FRANCIS Wiring

TELORVEK EFI
5.0 Coyote Sequential Fuel Injection System Part # CY-11

WIRING INSTRUCTIONS

Thank you for purchasing the absolute finest of wiring kits for the Ford Motor Co. Coyote modular engine. This harness works on the 2011 through 2014 Ford Mustang GT and Ford Truck fuel injected engine. We have taken considerable time to work out the circuitry so that you, the customer will understand at least some of what this is all about. We ask that you follow our instructions closely.

These engines originally used a “returnless” fuel system. The ECM maintained a fuel pump that was equipped to operate at variable speeds. A fuel pump driver module and a fuel rail pressure transducer worked with the ECM to control this special factory fuel pump that was designed to run at variable voltages and thus variable speeds. That is how fuel pressure was controlled in these factory vehicles. This wiring kit allows you to use an aftermarket fuel pump. You will need to install a fuel pressure regulator between the pump and the fuel rail and run a return line from that fuel pressure regulator back to the fuel tank. Please call if you have questions.

These engines require 48-50 PSI at idle and 55 PSI at WOT. We recommend that the fuel pump be mounted in the fuel tank. Custom installations are available from Tanks Inc. (320-558-6882) and Rock Valley (800-344-1934).

NOTE: FORD diagnostic procedures are very detailed, lengthy and impossible to cover in this set of instructions. Purchasing the FORD ENGINE/ EMISSIONS DIAGNOSIS shop manual will help you learn about the engine you installed and guide you through the correct diagnostic procedures Ford recommends. **This book is available through your local Ford dealer or Helm Inc. Helm is the distributor for the shop manuals for General Motors and Ford Motor Company. Helm can be contacted at 800-782-4356 or on their web site www.helminc.com**

*****Note*****

The ECM for this engine must be reprogrammed to have the PATS anti-theft removed, along with other necessary changes. This was explained to you at the time of order. If you have not had the ECM reprogrammed or have any questions please call us at 610-485-1981.

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.

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.

There will be many connections to the TELORVEK panel so plan the location of the panel in an area with room to work. We suggest mounting the panel in an assessable location, in the trunk, under the seat or under the dash are good. In order to allow for the proper spacing between the computer and the Telorvek panel, plug the connector into the computer (ECM) and mount the panel and computer. **For safety, disconnect the ECM connector until finished the installation.** 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 panel.**

After all wires are connected to the engine, wire tie them together or use 3/4 inch Zip loom to protect them. This can be done before any connections are made to the panel. Since all wires are marked, running the entire group to the panel at one time is fine. Some terminals on the panel may not be used!

Important! We have supplied three sizes of terminals for your use on the panels itself. The Yellow is for 10-12 gauge wire, Blue for 14-16 gauge wire and red for 18 gauge wire. Each individual bag instructions will be marked as to which terminal to use.

☞ NOTE ☜

You will be moving around to different terminals on the TELORVEK panel to make connections. For this reason extra care is needed when making all connections to the panel.

Bag #60 MASS AIR FLOW SENSOR: Attach the connector to the M.A.F sensor located in the air intake tube between the intake manifold and air cleaner. Using a blue terminal run the Red wire (MAF 3->23) to **#23**. Now using the red terminals run the Purple (MAF 2->2) to **#2**, Yellow (MAF 5->1) to **#1** and Lt Blue (MAF 4->3) to **#3.**

Bag #61 THROTTLE POSITION SENSOR (TPS): Plug into the sensor located in the front of the engine on the throttle body and run the wires back to the panel. Using the red terminals run the Purple (TPS 1->4) to **#4**, Dk Blue (TPS 2->5) to **#5**, Yellow (TPS 3->6) to **#6,** Brown (TPS 4->7) to **#7**, Orange (TPS 5->8) to **#8** and Lt Green (TPS 6->9) to **#9**.

Bag #62 KNOCK SENSORS (2): The knock sensors are located under the intake, screwed into the block. There is a short piece of harness that connects the two knock sensors together and exits out the rear of the engine. Our harness plugs into that short harness, located at the back of the intake. Plug the connector into the short harness and run the wires back to the panel. You will notice these wires are twisted together. Keep them twisted together as they make their way back to the panel. This minimizes interference for these circuits. Using the red terminals, connect the Purple wire (KNOCK 5 ->10) to **#10,** White wire (KNOCK 6->11) to **#11**, the Brown wire (KNOCK 1->12) to **#12** and the Dk Green (KNOCK 2 -> 13) to **13**.

Bag #63 CYLINDER HEAD TEMPERATURE SENSOR: This sensor is located in rear of the passenger side cylinder head. It is reachable without removing the intake. Plug in the connector and run the wires back to the panel. Using the red terminals, connect the Grey wire (CHT 2->31) to **#31** and the Yellow wire (CHT 1-120) to **#120**.

Bag #64 INJECTORS: The injector wiring is made up in two harnesses, one for the left bank of injectors and one for the right bank. Locate the right injector connector with the Red and Lt Green wires and connect it to cylinder number (1) (passenger front) injector one. Now plug in the rest of the injector connectors (injectors 2, 3, 4) in that half of the harness. In the left injector harness locate the injector connector with the Red and Yellow wires and connect it to injector number (5) (driver side front). Plug in the rest of the injector connectors (injectors 6, 7, 8) and run all the wires from both haves of the harness to the Telorvek Panel. Using the blue terminals connect the Red wires (INJ 1->69) and (INJ 5->69) to **#69**. Now connect the remaining eight wires as follows using the red terminals, Lt Green (INJ 1->61) to **#61**, Pink (INJ 2->62) to **#62**, White (INJ 3->63) to **#63**, Dk Green (INJ 4->64) to **#64**, Yellow (INJ 5->65) to **#65**, Orange (INJ 6->66) to **#66**, Lt Blue (INJ 7->67) to **#67** and Dk Blue (INJ 8->68) to **#68**.

Bag #65 IGNITION COIL: This 4.6 engine has eight coil packs, one for each spark plug. The coil packs are located above each cylinder. Locate the right coil connector with the Red and Lt Green wires and connect it to cylinder number (1) coil one (front passenger side). Now plug in the rest of the coil connectors (coils 2, 3, 4) in that half of the harness. In the left coil harness locate the coil connector with the Red and Yellow wires and connect it to coil number (5) (front driver side). Plug in the rest of the coil connectors (coils 6, 7, 8) and run all the wires from both haves of the harness to the Telorvek Panel.

Using the blue terminals connect the Red wires (IGN COIL 1->49) and (IGN COIL 5->49) to **#49**. Now connect the remaining eight wires as follows using the red terminals, Lt Green (IGN COIL 1->41) to **#41**, Pink (IGN COIL 2->42) to **#42**, White (IGN COIL 3->43) to **#43**, Dk Green (IGN COIL 4->44) to **#44**, Yellow (IGN COIL 5->45) to **#45**, Orange (IGN COIL 6->46) to **#46**, Lt Blue (IGN COIL 7->47) to **#47** and Dk Blue (IGN COIL 8->48) to **#48**.

WARNING !!!

The distributorless ignition system (DIS) on this engine is a high energy system operating in a dangerous voltage range which could prove to be fatal if exposed terminals or live parts are contacted. Use extreme caution when working on the vehicle with the ignition on or the engine running.

Bag #66 CAMSHAFT POSITION SENSORS (SET 1): This engine uses four cam position sensors, two for each bank of cylinders. All four cam sensors are located at the back of the engine. CAM POS SEN 2 is the passenger side, CAM POS SEN 4 is the driver side. These circuits require the wires to be twisted together to help prevent electrical interference. Carefully uncoil the harnesses and plug it into the correct cam position sensors located on the rear of the engine. Run the wires to the Telorvek panel. Connect the wires as follows: Dk Blue (CAM POS SEN 2->37) to **#37**, the Grey (CAM POS SEN 2->38) to **#38**, the Dk Blue wire (CAM POS SEN 4->39) to **#39** and the Gray (CAM POS SEN 4->40) to **#40.**

Bag #67 CAMSHAFT POSITION SENSORS (SET 2): These are three wire connectors. CAM POS SEN 1 is the passenger side, CAM POS SEN 3 is the driver side. Carefully uncoil the harnesses and plug it into the correct cam position sensors located on the rear of the engine. Run the wires to the Telorvek panel. Connect the wires as follows: Grey wire (CAM POS SEN 1->32) to **#32**, the Purple wire (CAM POS SEN 1->72) to **#72**, the White wire (CAM POS SEN 1->73) to **#73,** the Grey wire (CAM POS SEN 3->32) to **#32**, the Purple wire (CAM POS SEN 3->72) to **#72** and the Yellow (CAM POS SEN 3->74) to **#74.**

Bag #68 CRANK POSITION SENSOR (CPS): Requires the wires to be shielded from any electrical interference. Carefully uncoil the harness and plug it into the CPS located on the rear of the engine down by the crank hub, accessible from the passenger side. Run the wires to the Telorvek panel. Remove the tape and shielding material back only as far as it is necessary for the length of the wire to be cut and allowing enough wire to make the connections on the panel. In the shielded harness there is a solid strand wire with no insulation, install a blue terminal on it and connect it to **#26**. After the connection is made wrap the exposed wire from the shielded harness to **#26** with electrical tape. Connect the remaining two wires as follows: Purple wire (CPS->70) to **#70** and the Brown wire (CPS->71) to **#71**.

Bag #69 VARIABLE VALVE TIMING SOLENOIDS: There are four VVT Solenoids located on the top front of the valve covers. There is two for each bank of cylinders. VVT SOL 1 passenger side intake cam, VVT SOL 2 is passenger side exhaust cam, VVT 3 is driver side intake cam and VVT 4 is driver side exhaust cam. PLACE CLOSE ATTENTION TO HOW YOU HOOK THESE UP AS THEY ALL TAKE THE SAME CONNECTOR.
Plug in the connectors and run the wires back to the panel. Using the red terminals, connect the White wire (VVT 1->78) to **#78**, Red wire (VVT 1->76) to **#76**, Purple wire (VVT 2->79) to **#79,** Red wire (VVT 2->76) to **#76**, Yellow wire (VVT 3->80) to **#80**, Red wire (VVT 3->77) to **#77,** Brown wire (VVT 4->81) to **#81** and the Red wire (VVT 4->77) to **#77**.

Bag #70 OXYGEN SENSOR (2) This area of the vehicle is hot so keep the wires away from the exhaust. The LEFT Oxygen Sensor is to be mounted on the driver's side. The RIGHT Oxygen Sensor is to be mounted on the passenger's side. Mount them as close to the head as possible. Mounting them in header collectors may take longer for them to heat up causing the ECM to stay in OPEN LOOP longer than normal. If you must install an adapter, use part # OS-30. You will notice these wires are twisted together. Keep them twisted together as they make their way back to the panel. This minimizes interference for these circuits.

LEFT O2: The six gang connector with the Red, Dk Green, Brown, White, Purple and Lt Green wires running from it plugs into the left front oxygen sensor.

RIGHT O2: The six gang connector with the Red, Brown, Dk Green, Yellow, Lt Blue and Purple wires running from it plugs into the right front oxygen sensor.

Run all the wires back to the panel and using the red terminals connect the Red wire (LEFT FRT O2->22) to **#22**, Dk Green wire (LEFT FRT O2->82) to **#82**, Brown wire (LEFT FRT O2->83) to **#83**, White wire (LEFT FRT O2->84) to **#84**, Purple wire (LEFT FRT O2->85) to **#85**, Lt Green wire (LEFT FRT O2->86) to **#86**, Red wire (RIGHT FRT O2->21) to **#21**, Brown wire (RIGHT FRT O2->87) to **#87**, Dk Green wire (RIGHT FRT O2->88) to **#88**, Yellow wire (RIGHT FRT O2->89) to **#89**, Lt Blue wire (RIGHT FRT O2->90) to **#90** and the Purple wire (RIGHT FRT O2->91) to **#91**.

Bag #71 ACCELERATOR PEDAL POSITION SENSOR: As this is a drive by wire engine, you will need to use the original style gas pedal with the corresponding sensor that measures commanded throttle. Once you have located and mounted your accelerator pedal assembly, connect the plug to the sensor run the wires to the panel. Connect them using the red terminals, Orange wire (APP SENSOR 1->55) to **#55**, Yellow wire (APP SENSOR 2->57) to **#57,** Purple wire (APP SENSOR 3->56) to **#56**, Dk Green wire (APP SENSOR 4->59) to **#59**, the White wire (APP SENSOR 5->58) to **#58** and the Grey wire (APP SENSOR 6->60) to **#60**.

Bag #72 ALTERNATOR: The alternator on these engines are computer controlled. We have supplied the control wires and connectors but you will also have to connect a large charge wire to the alternator for proper charging. Plug in the connector at the alternator and run the two long wires to the panel. The short Red wire connects to the back stud on the alternator. Using the red terminals, connect the Yellow wire (ALT 1->113) to **#113** and the Lt Blue wire (ALT 2->114) to **#114**.

Bag #73 LOW OIL LEVEL SENSOR: Locate the sensor the oil pan. Plug in the connector and run the wires back to the panel. Using the red terminals, connect the White wire (OIL LEVEL->112) to **#112** and the Grey wire (OIL LEVEL->31) to **#31**.

Bag #74 TRANSMISSION (6R80 AUTOMATIC TRANSMISSION ONLY): Connect the large transmission connector in to the transmission and run the wires back to the panel. Connect the White wire (TRANS 1->97) to **#97**, the Lt Blue wire (TRANS 3->98) to **#98**, the Purple wire (TRANS 4->99) to **#99**, the Grey wire (TRANS 5->100) to **#100**, the Brown wire (TRANS 6->101) to **#101**, the Dk Green wire (TRANS 7->102) to **#102,** the Yellow wire (TRANS 8->103) to **#103**, the Lt Green wire (TRANS 9->104) to **#104**, the White wire (TRANS 10->105) to **#105**, the Dk Blue wire (TRANS 11->106) to **#106**, the Pink wire (TRANS 12->107) to **#107**, the Orange wire (TRANS 13->108) to **#108,** the Black wire (TRANS 14->109) to **#109**, the Red wire (TRANS 15->110) to **#110** and the Tan wire (TRANS 16->111) to **#111.**

If you have are having shifting issues after completing installation, switch the transmission wires running to panel numbers 108 and 109. This is due to some differences in Ford 5.0 ECM's.If this change does not help, change wires back to the original configuration.

Bag #75 VEHICLE SPEED SENSOR (MANUAL TRANSMISSION ONLY): The vehicle speed sensor is located on the left of the transmission case, rearward on the tailshaft.. After plugging in the connector run the wires back to the panel. Connect the Purple wire (VSS 1->107) to **#107**, the Dk Blue wire (VSS 3->106) to **#106** and the Brown wire (VSS 2->110) to **#110**.

SPEEDOMETER CONNECTION: Terminal 110 on the panel should provide you an 8000 pulse per mile (standard Ford) signal for most available speedometers.

Bag #76 TACH WIRING: If you choose to wire in a tach, a wire is supplied. Connect the Purple wire (36->TACH) to **#36** on the panel and connect it to the tach

Bag #77 DATA LINK CONNECTOR (DLC): Mount the connector inside the vehicle under the dash. Now run the wires to the Telorvek Panel and using the red terminals connect the Yellow wire (DLC 16->20) to **#20**, Black wire (DLC 4->28) to **#28**, Black wire (DLC 5->28) to **#28**, White wire (DLC 6->115) to **#115,** Purple wire (DLC 13->116) to **#116** and the Lt Green wire (DLC 14->117**) to #117**.

A check engine light is not available for this system as Ford handled the signaling for this circuit through the high speed data line from the ECM to the stock gauge cluster.

Bag #78 FUEL PUMP & INERTIA SWITCH: We have included the wiring necessary for the Ford inertia switch. The inertia switch cuts off the electric fuel pump in the advent of an accident. Mount the inertia switch in the rear of the vehicle in a dry area. Using the blue terminals, plug in the connector to the inertia switch and run the Tan wires (INERTIA SW->14) to **#14** and (INERTIA SW->15) to **#15** on the Telorvek panel. Run the other Tan wire (14->PUMP) to the electric fuel pump. Hook the wire to the positive terminal on the pump. From the negative terminal on the pump connect a wire and run it to a good ground. The relay housings mounted in the cover of the Telorvek panel is for the FUEL PUMP and ELECTRIC FAN. 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.

NOTE: The inertia switch has a red button on top of it that must be set (pushed down) in order for the fuel pump to operate. If the pump fails to operate check the inertia switch making sure the red button is in the down position.

Bag #79 ELECTRIC FAN WIRING: Connect the Lt Blue wire (51->COOLING FAN) to terminal **#51** and the Black wire (27->FAN GRND) to terminal #**27** on the panel and run them to the electric radiator cooling fan. Connect the Lt Blue wire to the positive wire running from the fan motor and the other wire to the fan motor ground. The relay housings mounted in the cover of the Telorvek panel is for the FUEL PUMP and ELECTRIC FAN. 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 #80 BRAKE SWITCH (AUTOMATIC TRANS ONLY): Run this wire from the cold side of the brake switch to let the computer know if the brakes are on as it will schedule automatic transmission shifting accordingly. The Purple wire runs from the brake switch->**54**.

FINISHING UP

Connect the large pre-wired **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 pre-wired **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 Panel runs direct to the battery. Run the battery ground directly to the engine not the frame first.This includes rear mounted batteries.

STARTING THE ENGINE

You have now made all of the connections necessary to TRY to start your car. If you try now, you will be disappointed since you did not hook up the battery. You can do so now.

We're trying...

Ron Francis Wiring has made every effort to assure a quality product and can assure you that this system works well in your application. Most of the 'problem' calls we have had to date are basic trouble shooting questions which have nothing to do with the TELORVEK system we sold you. We are committed to offering the most user friendly wiring systems available and support this with many years experience in the wiring and fuel injection fields. Please be certain that all connections are correct and tests run before calling. Your unit can be tested at any Ford Motor Company Dealership with no difficulty.

Fuse Designation & Size

The harness has a total of eight fuses. Shown below is a diagram of what each fuse protects. The illustration is the front view of the Telorvek panel.

Fuse Block #1

Fuse Designation	Fuse Size Block #1
VVT Power	15 AMP
Mass Air Flow Sensor, Frt O2	15 AMP
Left & Right Coils & Transmission	20 AMP
Left & Right Injectors	20 AMP

Fuse Block #2

Fuse Designation	Fuse Size Block #2
SPARE FUSE TO #96	15 AMP
ECM, DLC	20 AMP
Fuel Pump Relay	30 AMP
Fan Relay	30 AMP

FUEL PUMP and ELECTRIC FAN RELAYS

The relay housings mounted in the cover of the Telorvek panel is for the FUEL PUMP and ELECTRIC FAN. 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.

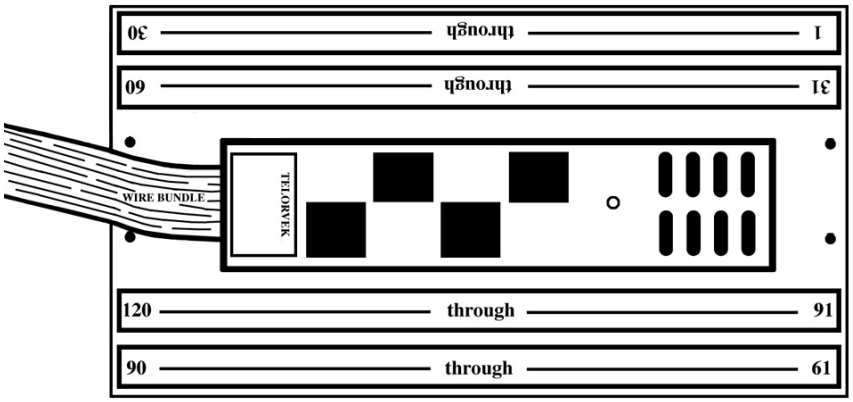
FUEL PUMP
RELAY

ELECTRIC FAN
RELAY

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!!