GEN 3 F150 Coyote 5.0L Stand-Alone Harness

10R80 10 Speed Automatic Transmission

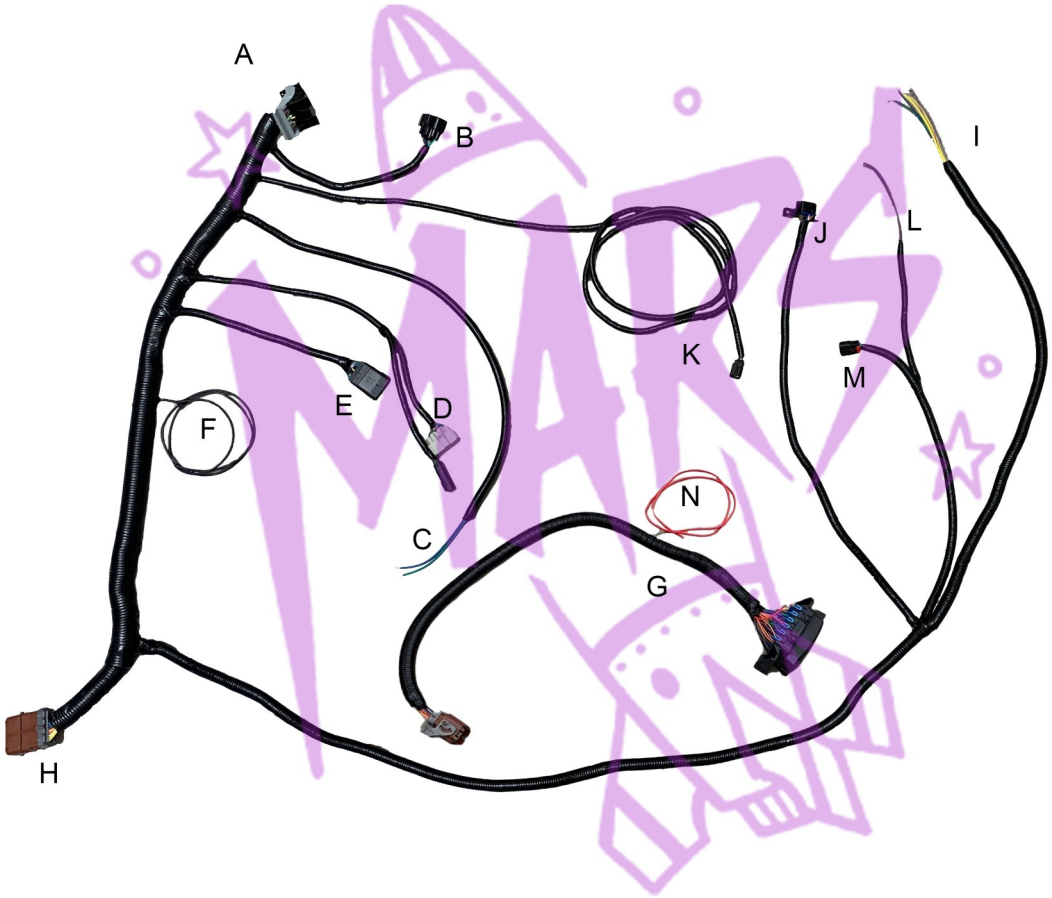
2018-2020 ONLY

This harness was designed by Mars Auto for easy installation for hot-rod builders. Meant for “plug-and-play” use with factory donor vehicle engine, transmission, and battery cable harnesses. This specific harness is utilized only with 10R80 5.0L transmissions. This harness will run and operate the Gen 3 F150 Coyote 5.0L and 10R80 in your hotrod project!

Works with PATS deleted factory ECM. We can program your donor ECM or supply you with one. (Not Included)

Cruise control, Emissions, and A/C functions not included.

OFF ROAD USE ONLY



A	C1381B	ECM Connector		I	I/O	Inputs and Outputs
B	C139	Inline connector to Engine Harness		J	DLC	Data Link Connector/ OBD2 Port
C	——	Hi & Low Fan Power Supply Leads		K	AAT	Ambient Air Tempurature
D	C140	Inline connector to Transmission Harness		L	BRAKE	Brake Switch Lead
E	C146	Inline Connector to Batter Harness		M	ACC	Accelerator Pedal
F	GRND	Ground Lead		N	BAT	Battery Power Lead
G	——	Fuseblock				
H	— —	C-36 Fuse Block Connector				

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Required harnesses **NOT** included with this kit:

1. Engine Harness—JU5Z-12A581-B
2. Transmission Harness—KL3Z-15525-E
3. Battery Cable Harness—KL3Z-14300-B

These harnesses are required for our stand-alone harness to be plugged in. Many times these harnesses are already included in used donor vehicle take outs.

ONLY THE ENGINE HARNESS IS INCLUDED WITH FORD CRATE ENGINES

INSTALLATION:

1. Start by plugging the ECM (A) connector onto the "VEH" plug of the ECM. This connector can and will only fit into one slot on the ECM.
2. Then connect C139 (B) to the mating plug on the Engine harness. (Will be located close to the ECM plug)
3. Connect the C146 (E) plug to the Starter/Battery Cable harness mating plug.
4. Next connect C140 (D) to the mating plug on the Transmission harness.
5. Find a good Ground location for the Ground Lead (F). We recommend the ground battery terminal if possible.
6. The Fan Power Supply Leads (C) can be routed to your fans. They are already fused and relay operated.

   Blue Fan Supply lead—**Hi Fan** Power
   You will still need to ground the fan along with this power supply

   Green Fan Supply lead—**Low Fan** Power
   You will still need to ground the fan along with this power supply.
7. Route the front harness extension with the Ambient Air Temp (K) plug along the front of your project vehicle keeping out of the way of fans and belts. Find a good location to securely fasten and plug in the AAT temp sensor.
8. The remaining plugs can be routed through your firewall inside with the Fuse Block or you can leave the water-tight fuse block in the engine-compartment.

Plug the **C-36** Brown Connector (H) into the fuseblock's (G) matching **C-36** connector. Then route the DLC/OBD2 Port (J), Inputs & Outputs (I), Accelerator Pedal (M), and Brake Switch (L) to the drivers side of the dash as needed.

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INSTALLATION (Continued)

10. Connect the Accelerator Plug to the pedal (M).

11. Wire the Brake Switch Lead (L) to +12v when the brake pedal is depressed.

12. Mount and secure the DLC/OBD2 Port (J) in a convenient place for diagnostic trouble shooting and future tuning.

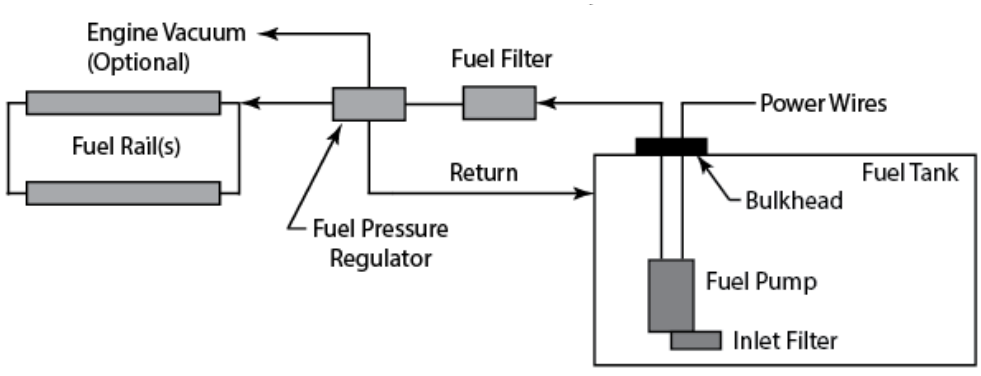
13. Apply a quality battery lead to the Fuse Block (N) batter lead. We recommend this runs directly to the battery.

INPUTS AND OUTPUTS (I)

Fuel Pump Supply (YEL)

This +12v fuel pump supply wire is a fused relay operated supply for your fuel system. It commands the fuel pump to prime for 2 seconds when key is first turned on. Then will come on when engine is started and running. This wire can be extended or spliced to utilize your projects factory fuel pump as long as it meets the below requirements.

RETURN STYLE FUEL SYSTEM IS REQUIRED; 175LPH REGULATED AT 58 psi.



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INPUTS AND OUTPUTS (M) Continued...

IGN Power (YEL/VIO)

Apply a +12v to this wire to power on and wake-up the ECM and system. As stated above, this will also turn on the fuel pump. This can be either tied into an aftermarket ignition switch or your projects factory ignition switch.

CRANK Request (GRN/WHT)

Apply a +12v to this wire to engage the starter relay and solenoid to start the engine. The factory 10R80 transmission has a built-in Park/Neutral safety switch for safe starting conditions. If you are experiencing a “no-start” situation, check to make sure your transmission is in either Park or Neutral.

OPTIONAL PADDLE SHIFTING:

SHIFT UP (GRY)

Apply this wire through a paddle shifter switch with the opposite side being the SHIFT RTN. When switch is applied and transmission is in Sport Mode the shifting will be done manually by your inputs.

SHIFT DOWN (GRY/VIO)

Apply this wire through a paddle shifter switch with the opposite side being the SHIFT RTN. When switch is applied and transmission is in Sport Mode the shifting will be done manually by your inputs.

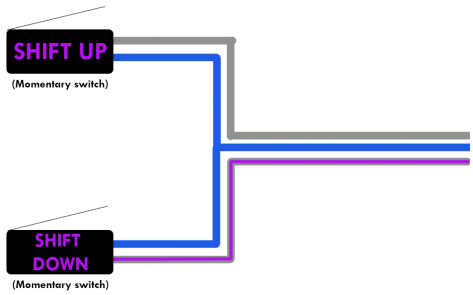
SHIFT RTN (BLU)

Apply this wire as the signal return to both of the SHIFT UP/SHIFT DOWN paddle switches. This is required for the paddle shifting to function properly.

NOTE: These optional paddle shifting wires can be spliced and routed to a factory Select Shift Ford Transmission Gear Selector lever from 2011+ F150/Mustang

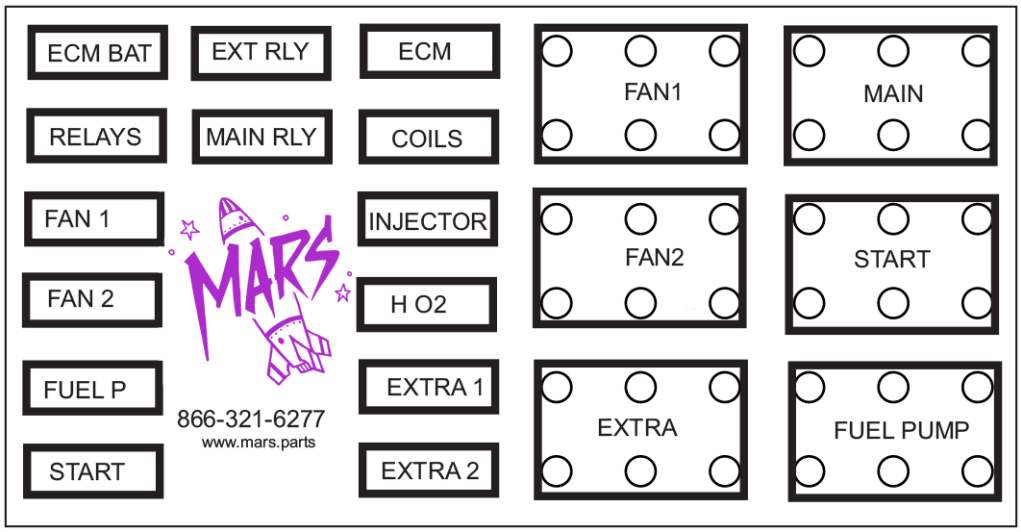
OPTIONAL PADDLE SHIFTER WIRING

NOTE: Momentary switches are not included

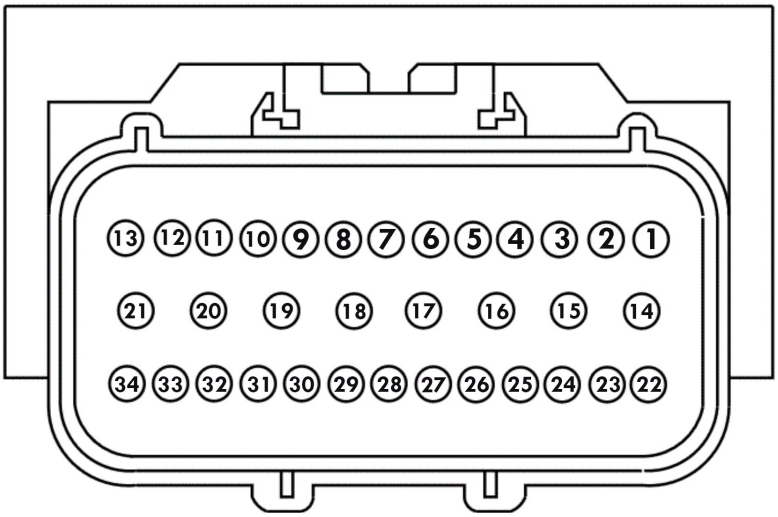


Fuseblock

Fuses and Relay Layout



C36 In-Line Connector Pinout **(BROWN)**



1	NOT USED	13	Fuel Pump Relay Control
2	OBD2 Port 12v Power	14	Starter Solenoid Supply
3	NOT USED	15	Fuel Pump Power Supply
4	Fuseblock 12v Power	16	Fan 1 Power Supply
5	Injectors & MAF Ignition Power	17	Fan 2 Power Supply
6	Oil Press., HO2S, & VCT Ign Pwr	18	NOT USED
7	ECM Ignition Power	19	NOT USED
8	Coil Ignition Power	20	NOT USED
9	Main Relay Control	21	NOT USED
10	Fuseblock 12v Power	22	Fuseblock 12v Power
11	Starter Relay Control	23	Fan 1 Relay Control
12	Starter Relay Control	24	Fan 2 Relay Control

REV 1.1

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Troubleshooting Tips:

- **Grounds—Make sure all grounds have nice contact and are securely fastened. May try even cleaning up area with sandpaper for premium connection. Test with multimeter for true continuity.**
- **Use DLC/OBD2 Port for reading Diagnostic Trouble Codes. Use factory guides for diagnosing issues.**
- **Check all sensor reference voltage for +5v. Use multimeter for checking volts or back pining with a continuity test.**
- **Make sure all connectors are fully connected and locks are locked.**
- **Call 866-321-6277 for support**