

1UZ WIRING INSTALL INSTRUCTIONS

1UZ-FE Conversion Wiring Harness, 85-95 22R-E and 3VZ-E applications

*****NOTICE TO CUSTOMER: If there is a problem suspected with the wiring harness, call NWT. DO NOT cut, alter, or dissect the ORS conversion harness. NWT accepts no responsibility for a harness that has been tampered with – NO EXCETPTIONS.

- 1) This conversion harness will also require the use of the main 1UZ-FE engine harness, and the sub-harnesses that lead to the ignition coils, alternator and air conditioning.
- 2) Be sure the 1UZ engine wiring harness is properly installed on the engine and all connectors are plugged in. We highly recommend wrapping the harness with heat tape or exhaust wrap anywhere the harness passes close to the exhaust.
- 3) Be sure the wiring harness is free and clear of exhaust parts to prevent heat damage.

- 4) Route the engine harness main loom (under hood) toward the passenger side. If possible, we recommend routing this harness in front of the fuel and brake lines, under the clutch hose and behind the original evaporative canister. The canister firewall mount is a good location to secure this main loom to the firewall using routing clamps.



- 5) Route the engine wiring harness through the RH side firewall and down to the kick-panel. Connect the ECU connectors to the ECU and lay the ECU in the RH kick-panel area.
- 6) Lay the ORS conversion harness near the RH kick-panel. Orient the harness so that the leads are pointing in the proper direction.



- 7) Route the diagnostic lead under the dashboard to the LH side of the vehicle. Find a suitable location below the dashboard panel and secure the diagnostic connector. This connector serves as a port for diagnostic functions.
- 8) Route all other leads out the RH firewall into the engine bay.
- 9) Connect the ORS harness ECU connector(s) to the ECU.
- 10) Connect the ORS harness to the 1UZ-FE engine wiring harness (1 or 2 connectors). Secure the latch on the top of the connector(s), if applicable.
- 11) Connect the ORS harness to the vehicle body wiring harness. These are the 2 connectors found in the RH side kick-panel that originally connected to the 3VZ-E or 22R-E engine wiring harness.

- 12) Mount the ORS fuse holders and relays in a suitable location in the RH interior area. Connect the ground lead to a suitable body ground point, preferably an existing ground bolt.
 - 13) If applicable, connect the ORS harness to the Fuel Pump ECU and mount this ECU in the RH interior area.
 - 14) Mount the 1UZ-FE ECU. The brackets bolted to the side of the ECU share the same bolt pattern as all Toyota ECU's. This allows the installer to share brackets from any ECU to help in the mounting process. Find a location in the passenger side interior that will house the ECU. Be sure that the ORS wiring harness and the 1UZ-FE engine wiring harness leads will reach the ECU and plug in. If the vehicle does not have A/C it is possible to mount the ECU behind the glove box.
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- 15) Route the transfer case (and sometimes reverse light, oxygen sensor, speed sensor) leads (under the hood now) under the RH side of the vehicle. Using routing clamps and/or zip ties, secure the harness to the firewall and metal lines a safe distance from the exhaust.
 - 16) If the ORS harness has 2 leads labeled "reverse light S/W", cut and splice these wires into the reverse light switch on the side of the transmission. This switch is non-directional, meaning each wire has no specific match.
 - 17) If applicable, cut and splice the leads labeled "transfer case 4WD light S/W" into the transfer case position switch. This switch is also non-directional. Be sure that all connections are secure and sealed.
 - 18) If applicable, connect the lead labeled 'speed sensor' to the electronic speed sensor on the transfer case or back of transmission (2WD).
 - 19) If applicable, route the 'Fuel Pump' leads to the fuel pump and splice as labeled.
 - 20) Route the Sub-O2 sensor leads to the sub-O2 sensors and connect to each sensor. Secure the Sub-O2 sensor wire leads.
 - 21) Route the Battery fused leads across the top rail of the firewall and down the LH fender area to the battery. Connect the connector to the A/C sub-harness as labeled on the LH side of the engine.
 - 22) Mount the fuse-holders near the battery; do not connect to the battery until the installation is finished.
 - 23) Locate the connector labeled '*to engine sub-harness connection*'. Connect this connector to the corresponding connection on the LH side of the 1UZ engine wire harness.
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ALTERNATOR WIRING

- 24) There are 2 ways to wire the alternator.

FIRST METHOD (RECOMMENDED)

- 25) If it was purchased, connect the ORS sub-harness to the Toyota wire harness on the LH side of the engine.
- 26) Cut the alternator connector from the Truck/4Runner vehicle's original alternator connection. Splice the ORS sub harness leads to the vehicle's alternator leads, as labeled.
- 27) Connect the vehicle's alternator cable to the 1UZ-FE alternator cable on the LH side of the engine. One method is to simply connect the 2 eyelets using a bolt and nut. In this case, be sure to insulate this connection well. This can also be done w/ a splice connection.

SECOND METHOD

- 28) Cut the connector from the Truck/4Runner vehicle's alternator connection. Extend the 3 wires to the 1UZ-FE alternator. If the connector is the same, splice the Truck/4Runner connector back into the wires in the same order.
- 29) If the connector is different, cut the connector from the 1UZ-FE alternator. Splice the 1UZ alternator to the truck's wire leads, using the chart below:

Truck/4Runner	1UZ-FE
Yellow wire-----	Yellow wire

Red wire-----Black/yellow wire

White wire-----White/blue wire

- 30) Connect the vehicle's alternator cable to the 1UZ-FE alternator cable on the LH side of the engine. One method is to simply connect the 2 eyelets using a bolt and nut. In this case be sure to insulate this connection well. This can also be done w/ a splice connection.
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- 31) Find the power supply wire from the original fuse box, near the original battery location. This wire previously connected to the battery positive terminal. ORS offers an extension cable for this step, ORS-EC047. Using the ORS cable or 8-gauge cable, extend this power lead to reach the new battery location. If not using the ORS lead, be sure to install a fusible link of appropriate size at the end of this cable. Connect this lead to the battery positive terminal.
 - 32) Be sure the power supply wire that is routed in front of the radiator is loomed and properly secured below the radiator support. Excessive contact with the radiator when hot can damage this wiring. Use insulation or further fastening where necessary to prevent excessive contact with the radiator.
 - 33) **Important: If this step is not performed before engine is started, oil gauge damage may occur.** Some 1UZ-FE engines come standard with an oil pressure switch to operate a light on the dash. Many older vehicles had a gauge on the dash, which used an oil sender. If the original vehicle has a gauge, replace the oil switch on the engine with the oil sender from the original (22R or 3.0L work) engine - it is a direct swap.
 - 34) Go through all wiring and be sure that all wires are routed properly and securely fastened. Be sure that all wires are clear of exhaust parts, engine parts, and sharp edges.
 - 35) Connect the fused leads to the battery positive terminal.