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Rovers North +3 Digital Gauge Kit Instructions for Defender

Part Nr. RNDSKIT3

Fits: Early Defenders without an ECU that have a Rovers North Digital Speedometer Kit2 (RNDSKIT2) installed.

BEFORE BEGINNING, COMPLETE AND TEST THE INSTALLATION OF ROVERS NORTH DIGITIAL SPEEDOMETER KIT2 (RNDSKIT2)

READ ALL INSTRUCTIONS COMPLETELY BEFORE BEGINNING!

Suggested Tools:

- Safety glasses
- Phillips screw driver
- Zip-ties and/or tape
- Wire-cutting tool
- Wire-stripping tool
- 4x your preferred way to connect wires (butt connectors, snap connectors or soldering iron, solder and heat shrink).
- Electrical tape
- Multi-meter or test light
- Masking tape
- 13mm deep well socket and ratchet

Included components:

-Voltmeter gauge
-Water temperature gauge
-Fuel level gauge
-Custom wiring harness
-Water temp sender (optional—install afterward as needed)

For your convenience, Rovers North has extensively tested and preprogrammed your gauges. This kit was developed to be "plug and play" in as many "non-ECU" Defenders as possible. If you have any questions or issues with installation, please email VDO@RoversNorth.com

Wire-Cutting Tool

Wire-Stripping Tool

Phillips Screw Driver

Small zip-ties

Safety Glasses

13mm Deep Well Socket

1/4" Socket Driver

Multi-meter or test light

Electrical Tape

Wire Crimpers

Soldering Iron

Installation

1. Remove 4 screws holding the instrument panel located at the top-side corners and underneath the bottom right and left. The lower side screws do not need to be removed.

2. Unplug the RNDSKIT2 speedometer from its wiring harness by squeezing the tab and pulling.

3. Identify the sending wire for the fuel level and water temperature gauges. Use the masking tape to make note of these wires.

4. Use masking tape to label L and R on the bundles of wires going into the lower instrument light cluster.

5. Wrap a piece of masking tape around the set of wires going into each instrument and label which instrument the wires went to. By the end, you'll have used or terminated all of these wires.

6. Unplug all the wires from the instrument cluster and warning lights.

7. Note the order of the gauges (volts, water, fuel) then remove all three smaller gauges.

8. Replace with the new gauges. Straighten then tighten into place by screwing on the retaining ring.

9. Set instrument panel aside.

10. Plug the new RNDSKIT3 "+3 gauge" wiring harness into the existing RNDSKIT2 "speedometer harness" using the one male connector on the far-right side of the +3 gauge harness.

11. Using your preferred wire connection method, attach the green sender wires for the water temperature gauge (second from left) and fuel level gauge (third from left) to those in your vehicle's wiring harness. For folks interested in the most accurate readings, we've supplied a ground wire (black) that can be run to the sender; however, this is not necessary. Most Defender wiring does not use a dedicated (reference) ground to the sender and instead relies on the common ground (negative earth of chassis/body) picked up near the sender. Unless connecting to a ground wire that runs all the way to the sender, the two black grounding wires on the RNDSKIT3 wiring harness can be wrapped around the wiring harness and taped into position or carefully cut off the harness.

12. **Properly terminate the unused wires.** None of the remaining wires from the old voltmeter, water temp or fuel gauge will be reused, as the included RNDSKIT3 wiring harness receives everything but 2 sender wires (water temp and fuel level) from the speedometer harness.

    • To tidy things up, we recommend trimming any unnecessary wires, but leaving a few inches free so you can later repurpose them for other accessories as needed. Depending on your vehicle, it may be possible to trim back several forks in the ground, switched power, battery power, and illumination circuits so that you're only terminating one wire per circuit. Once the wires have been trimmed back, they should be properly terminated.

    • The end of the ground wire (black) does not need to be protected, as your dash is full of exposed grounds (most all metal bits are grounded, negative earth). Tape or ziptie the loose ground wires out of the way.

• All + current carrying wires must be properly terminated/capped/taped to prevent shorting and potential electrical fires. This can be done by cutting the wire, folding it back on itself about 1" and using electrical tape to secure it in place and cover the clean-cut end to prevent shorting. It's also possible to achieve a similar result with heat shrink tubing.

13. Gently place the instrument panel back in position and plug in the 4 Molex connectors to the back of the gauge.

14. Plug in the connectors for the warning light assembly.

15. Check to make sure there are no loose wires anywhere near the heater control levers. Reposition any wires that might get pushed into the heater controls.

16. Turn on the vehicle to test that all gauges are receiving power and the illumination circuit is working. The new gauges will automatically adopt the color and brightness settings of your speedometer. Follow the speedometer instructions to adjust these settings.

17. Replace the 4 screws that hold the instrument panel in place.

18. Go for a test drive long enough for the engine to reach normal operating temperatures. The temperature gauge should read around 198—208f. **Unlike some gauges that display a stationary "normal" position for a wide range of temperatures, this gauge shows you the actual temperature of your engine; under normal use, it will fluctuate with changes in engine temperature due to load, speed and thermostat position. This is normal and not cause for concern.**

However– if the temp meter does not register in the neighborhood of 200f (and you've no reason to suspect your vehicle is operating outside of normal temperatures) then WAIT UNTIL VEHICLE HAS COOLED and install the supplied temp sender as follows. Locate the temp sender. Be sure to have the new sender close by, out of the package and ready to install before removing the old sender. Place a suitable bucket or catch container below the engine. Use a 13mm deep well socket (size may vary depending on vehicle) to remove the old sender and quickly replace with the new sender to prevent coolant loss. Screw in the new sender by hand to avoid cross threading. Snug the sender using a 13mm deep well socket and ratchet to approximately 10lb per ft. Properly dispose of any spilled coolant. If you've swapped the sender quickly, there should be minimal coolant loss and no need to purge air from the coolant system. If significant air was introduced to the cooling system (rare), it may be necessary to bleed the coolant system. To do this, follow the service manual instructions.