

FORD 6R80

NO START

COMPLAINT: A 2013 Ford F150 equipped with the 3.5 liter Turbo engine and 6R80 transmission has a complaint of a no start condition. The shift quadrant indicator lamps do not illuminate. In addition, diagnostic trouble codes P0706 "Transmission Range Sensor Range Performance" , P0707 "Transmission Range Sensor Circuit Low Input", P1701 "Reverse Engagement Error" and P1921 "Transmission Range Signal" were set. With this information, the technician decides to inspect the transmission range sensor power supply at transmission case connector terminal 4. The inspection revealed voltage being much lower then the expected 12 volts in this circuit.

CAUSE: In the process of checking for power to the TRS, the technician found the wiring to be severely damaged by engine oil saturation (figure 1). This began a hunt to find where this oil was coming from. It was discovered that this 3.5 Liter Turbo engine uses a dedicated vacuum pump to supply vacuum for the brake booster. This vacuum pump is known to leak engine oil (figure 2). When it does, it runs down over the transmission converter housing and onto the wire harness going to the transmission (figure 3).

This vacuum pump is driven by the engine camshaft (figure 4), and is lubricated by engine pressure fed lube oil. The vacuum pump uses a rubber gasket to seal the pump to the engine. When this gasket fails, it causes engine oil to leak onto the transmission wire harness (figure 5).

CORRECTION: Replacing the vacuum pump and gasket eliminates the oil leak (figure 6). The shop can decide if the wire harness is repairable or if it requires replacement.

SERVICE INFORMATION:

3.5 Liter Turbo Vacuum Pump.....DL3Z-2A451-B

Thank you goes out to Kenneth from Trans-Matic for the photos and sharing his experience with ATSG.

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Figure 1

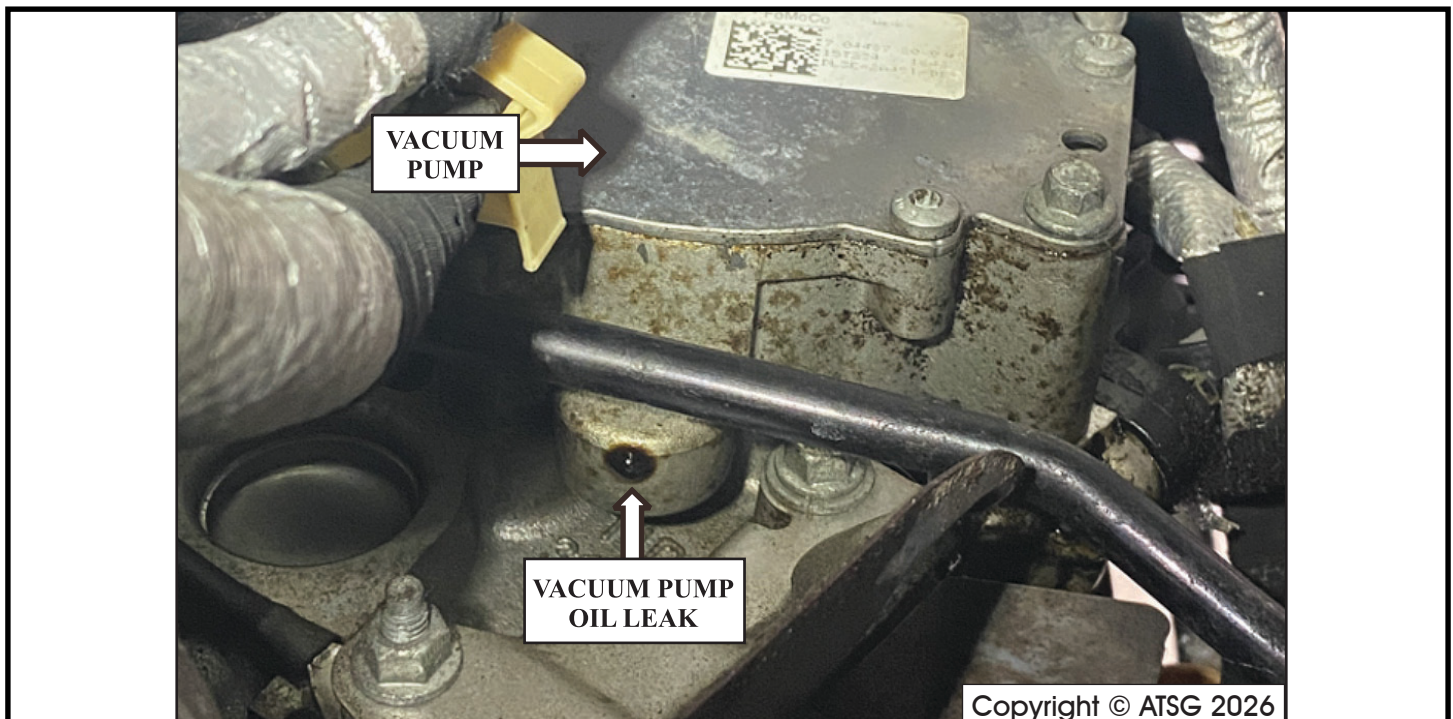


Figure 2

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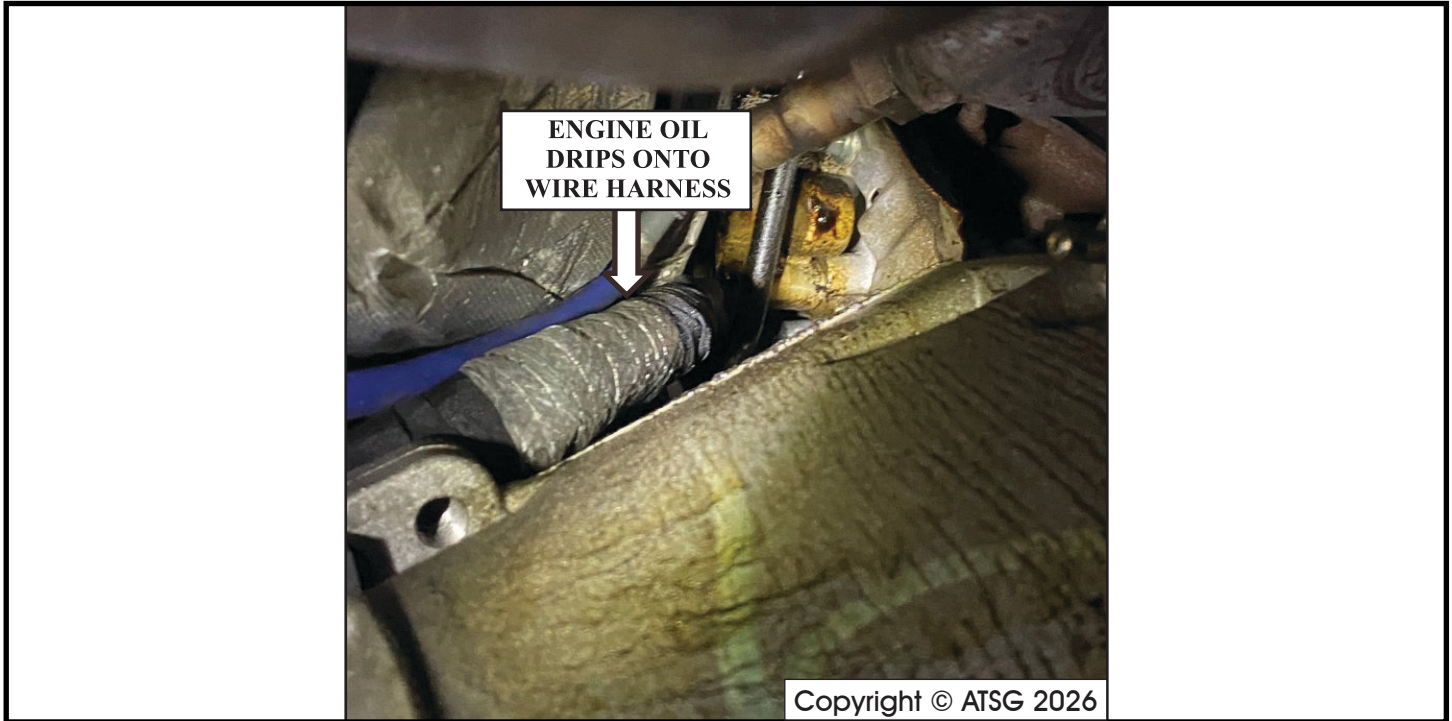


Figure 3



Figure 4

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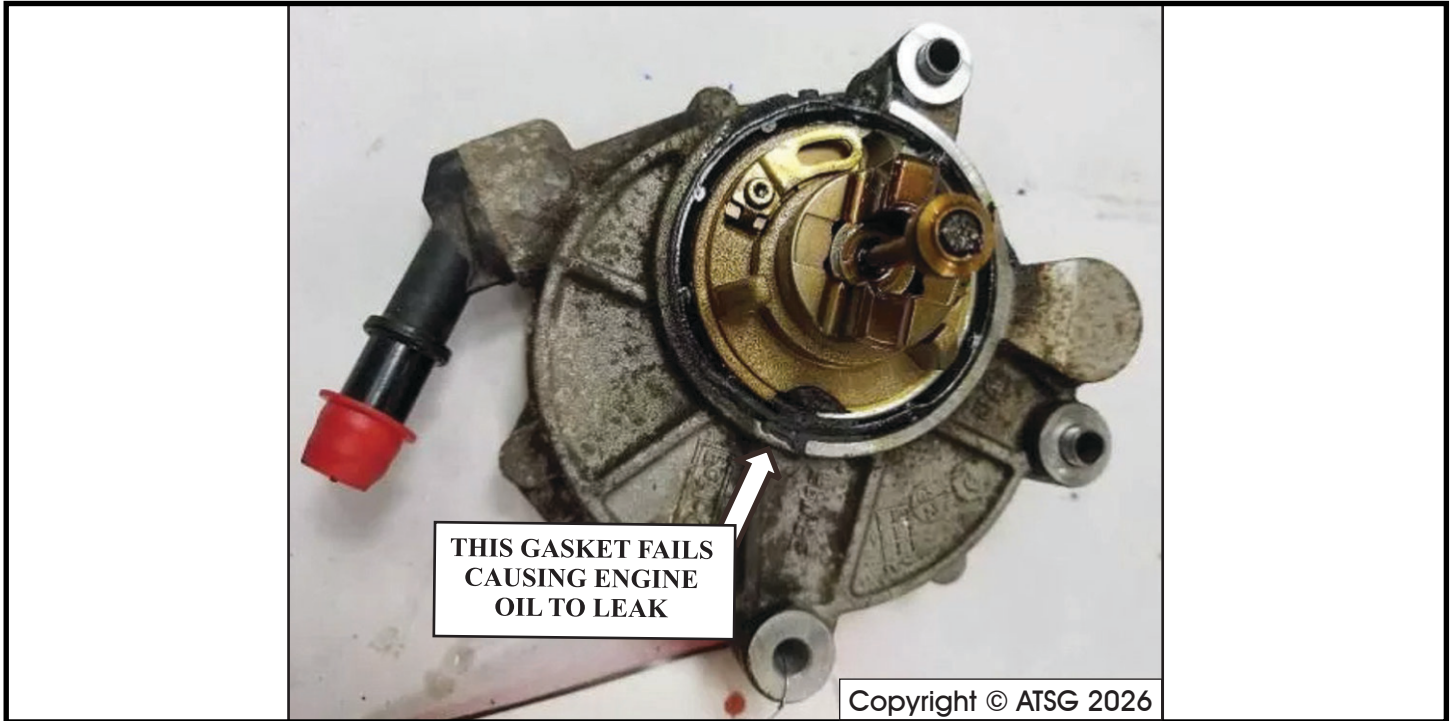


Figure 5

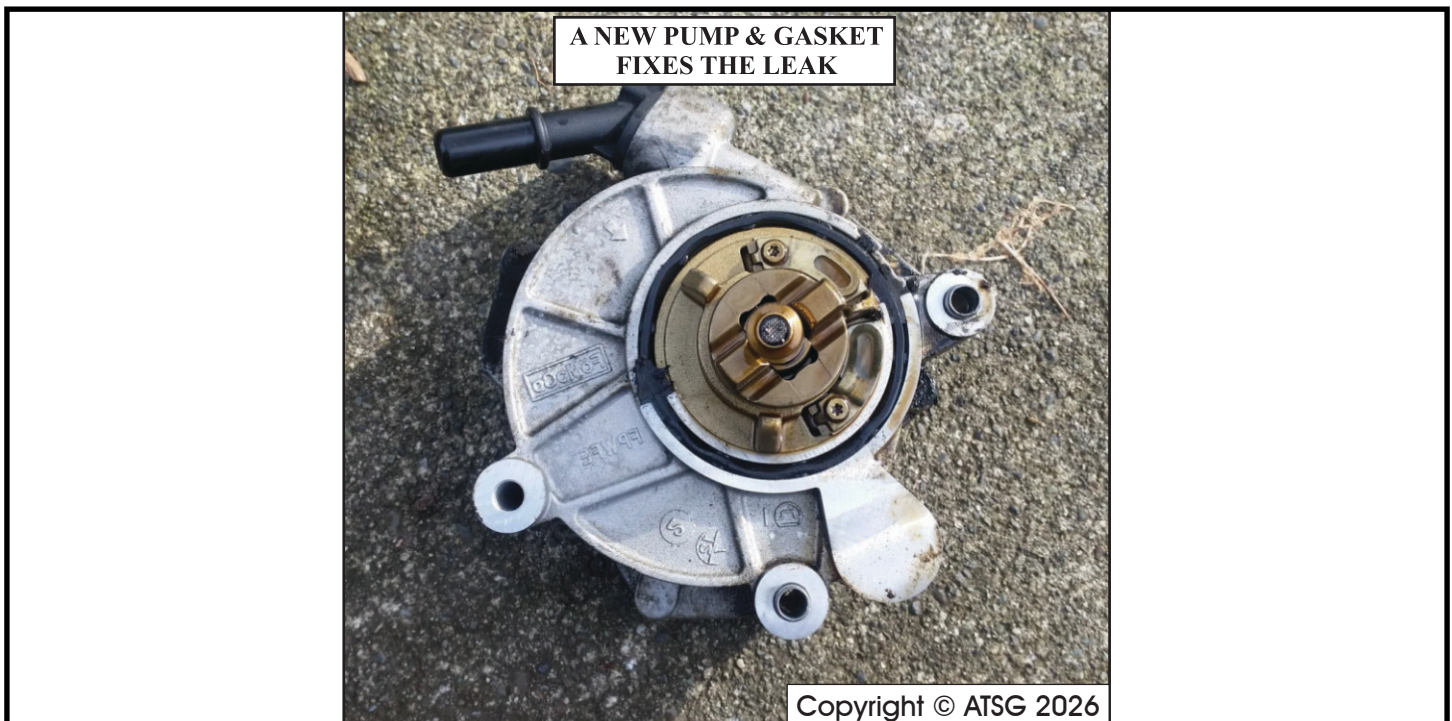


Figure 6