2004-2008 Ford F-150 - Water Pump Replacement

2004-2008 Ford F-150 | Moderate | 3-4 hours | $137 DIY

TOOLS

36mm fan-clutch wrench (or large adjustable wrench + hammer) 8mm, 10mm, and 15mm sockets with ratchet and extensions 1/2-inch-drive ratchet or serpentine-belt tool (for the tensioner) Torque wrench Flat-head screwdriver (pulley-holding trick) Hose-clamp pliers / clamp tool Pick set Razor blade / scraper and rags Penetrating oil Drain pan / collection bucket Funnel Phillips screwdriver or trim tool (engine-cover clips) Hand and eye protection

PARTS

Water pump (4.6L/5.4L V8; the 4.2L V6 uses a different 9-hole pump) 3L3Z-8501-CA (Motorcraft PW-423) $65.00
Thermostat, 190F (Motorcraft RT-1254, 4.6L/5.4L V8) - replace while in there RT-1254 $29.00
Motorcraft Premium Gold coolant (yellow, VC-7-A) - 2 gallons for the 50/50 refill VC-7-A $72.00
Serpentine belt (ACDelco 6K966 - optional, inspect while it is off) 6K966 $34.00
Steel heater tube (replace if corroded - no verified part number; bring the old one to match)
Heater-tube O-ring (install it lubricated per the steps \u2014 replace if damaged)
Water pump gasket (usually included with the pump \u2014 confirm before buying)

STEPS

1. **Start with a cool engine and disconnect the battery - The 4.6L and 5.4L V8 water pumps are external and** serpentine-belt driven. Let the engine cool completely, wea...
2. **Drain the coolant - Slide a directional hose onto the radiator petcock on the passenger side, aim it into** a collection bucket, lo...
3. **Remove the plastic engine cover - Pop the push clips with a Phillips screwdriver or trim tool under the** center pin.
4. **Remove the upper radiator hose - Pull the upper radiator hose off the passenger-side radiator neck; expect** some spillage into the bucket.
5. **Remove the fan clutch and shroud - Remove the 2 fan-shroud bolts (driver and passenger top). Break the fan** clutch loose with a 36mm wrench turni...
6. **Record belt routing and remove the serpentine belt - Photograph the serpentine belt routing. Release the** belt tensioner with a 1/2-inch ratchet or belt tool in th...
7. **Remove the water-pump pulley - Remove the water-pump pulley bolts (10mm): wedge a flat-head screwdriver** across two bolts to hold the pulley,...
8. **Detach the wiring-harness bracket - Detach the wiring-harness bracket from the pump area so it is out of** the way.
9. **Soak the pump bolts and heater-tube joint with penetrating oil - Steel-in-aluminum corrodes and seizes, so** let penetrating oil work on every pump bolt and the heater-tube joi...
10. **Remove the steel heater tube and inspect it - Remove the heater-tube bracket bolt (8mm) and work the steel** heater tube out of the pump. Inspect it: in the...
11. **Disconnect the heater hoses from the tube - Disconnect the heater hoses from the tube (squeeze the clamps** with pliers or a clamp tool; use a pick or a ca...
12. **Remove the accessory bracket - Remove the 2 nuts on the studs, then the bolts (10mm/15mm); one bolt sits** behind the power-steering pump pull...
13. **Remove the lower radiator hose from the pump - Loosen the clamp and pull the lower radiator hose off the** pump.
14. **Remove the pump mounting fasteners - Remove the pump mounting fasteners (15mm bolts x4, 10mm bolts, and** the studs/nuts). Keep them organized by ho...
15. **Break the pump free and remove it - Light hammer taps will break the pump free; wiggle it out while** keeping the wiring clear.
16. **Clean the mounting surface - Clean the mounting surface completely with a rag plus a razor blade or** scraper: no raised gasket material. If...