2011-2014 Ford F-150 - Timing Chain Replacement

2011-2014 Ford F-150 | Expert | 15-20 hours

TOOLS

Camshaft holding/alignment tool set (Ford 303-1248 or equivalent) 3-jaw harmonic balancer puller
Torx Plus TP55 bit Timing chain wedge tools
Torque wrench and torque angle gauge Breaker bar and harmonic balancer holding tool Socket and wrench set (8 mm, 10 mm, 13 mm, 15 mm) Drain pans for oil and coolant Pick set and brake cleaner
Floor jack and jack stands

PARTS

Timing Chain Kit with Water Pump (primary + 2 secondary chains, guides, tensioners, crank sprocket) 9-0738SBWP $495.00
Cam Phaser Set, 4 VCT Units (2 intake Melling VCTA-1005I, 2 exhaust Melling VCTA-1005E) $720.00
VCT Solenoids, Set of 4 CM-5089
Front Crankshaft Seal Kit TCS 46117 $17.00
Motorcraft Orange Coolant Concentrate VC-3-B, 2 Gallons (mix 50/50 with distilled water) VC-3-B $134.00
Motorcraft 5W-30 Full Synthetic Engine Oil, 6 Quarts XO-5W30-Q1FS $87.00
Motorcraft Oil Filter FL-500S FL-500S $13.00

STEPS

1. **Confirm the diagnosis - This guide covers the 3.5L EcoBoost V6 only. The 3.7L V6, 5.0L V8 and 6.2L V8 in** these trucks use different t...
2. **Drain fluids and disconnect the battery - Let the engine cool fully, then disconnect the negative battery** terminal. Drain the engine oil and drain the...
3. **Clear the front of the engine - Remove the air intake assembly, the cooling fan, the radiator hoses and** the serpentine belt, plus any accesso...
4. **Remove the intake manifold and valve covers - Remove the upper intake manifold, then both valve covers.** The VCT solenoids sit on the front of each cylinder...
5. **Remove the lower oil pan - Remove the lower oil pan. This step is required: several front cover bolts sit** behind it, and the cover canno...
6. **Lock the engine at top dead center - Rotate the crankshaft by hand to top dead center on cylinder 1** compression stroke, timing mark at 4 o’clock....
7. **Remove the harmonic balancer and front cover - Remove the harmonic balancer with a 3-jaw puller and a** holding tool. Remove all front cover bolts and note th...
8. **Remove the VCT solenoid housings - Each VCT solenoid housing is held by 3 bolts. Remove both housings and** pull them straight outward to release...
9. **Release the tensioners and remove the old timing set - Use wedge tools to carefully release tension on the** primary and secondary chains. Remove the chains, guides a...
10. **Replace the water pump and front crankshaft seal - The water pump is chain-driven and lives behind the** front cover, so replace it now while access is free. Inst...
11. **Install the new phasers with new bolts - Slide the new phasers onto the camshafts and install NEW** torque-to-yield bolts. Torque each bolt in four stag...
12. **Install the secondary chains, then the primary chain - Install the secondary chains first. Then route the** primary chain: align the single gold link on each phaser t...
13. **Install the new guides and tensioners - Install the new chain guides and tensioners and torque their bolts** to 89 in-lb. Manually activate the seconda...
14. **Reinstall the front cover - Clean both sealing surfaces, apply RTV sealant to the front cover as** specified, and reinstall the cover, torq...
15. **Reassemble and refill - Reinstall the lower oil pan, valve covers, intake manifold, serpentine belt,** cooling fan and hoses. Replace t...
16. **Start, verify and road test - Start the engine and listen: the cold-start rattle should be gone. Check for** oil and coolant leaks around the...

TORQUE