

Engine Mechanical - 4.3L

Specifications

SIE-ID = 645451

Fastener Tightening Specifications (G Van)

Application	Specification	
	Metric	English
Accelerator Control Cable Bracket Nut	12 N·m	106 lb in
Accelerator Control Cable Bracket Stud to Intake Manifold	6 N·m	53 lb in
Accelerator Control Cable Bracket Stud to Throttle Body	12 N·m	106 lb in
Air Cleaner Adapter Stud	8 N·m	71 lb in
Balance Shaft Driven Gear Bolt		
First Pass	20 N·m	15 lb ft
Final Pass	35 degrees	
Balance Shaft Retainer Bolt	12 N·m	106 lb in
Battery Negative Cable Bolt to Engine	25 N·m	18 lb ft
Belt Idler Pulley Bolt	50 N·m	37 lb ft
Camshaft Retainer Bolt	12 N·m	106 lb in
Camshaft Sprocket Bolt	25 N·m	18 lb ft
Connecting Rod Nut		
First Pass	27 N·m	20 lb ft
Final Pass	70 degrees	
Crankshaft Balancer Bolt	95 N·m	70 lb ft
Crankshaft Bearing Cap Bolt – Preferred Method		
First Pass	20 N·m	15 lb ft
Final Pass	73 degrees	
Crankshaft Bearing Cap Bolt – Optional Strategy	105 N·m	77 lb ft
Crankshaft Position Sensor Bolt	9 N·m	80 lb in
Crankshaft Pulley Bolt	58 N·m	43 lb ft
Crankshaft Rear Oil Seal Housing Bolt and Nut	12 N·m	106 lb in
Crankshaft Rear Oil Seal Housing Retainer Stud	6 N·m	53 lb in
Cylinder Head Bolt – Preferred Method		
All Bolts First Pass in Sequence	30 N·m	22 lb ft
Long Bolts Final Pass in Sequence	75 degrees	
Medium Bolts Final Pass in Sequence	65 degrees	
Short Bolts Final Pass in Sequence	55 degrees	
Cylinder Head Bolt – Optional On-Vehicle Strategy		
First Pass in Sequence	35 N·m	26 lb ft
Second Pass in Sequence	60 N·m	44 lb ft
Final Pass in Sequence	90 N·m	66 lb ft
Cylinder Head Core Hole Plug	20 N·m	15 lb ft
Distributor Cap Bolt	2.4 N·m	21 lb in
Distributor Clamp Bolt	25 N·m	18 lb ft
Drive Belt Tensioner Bolt	50 N·m	37 lb ft
EGR Valve Bolt		
First Pass	7 N·m	62 lb in
Final Pass	30 N·m	22 lb ft
EGR Valve Inlet Pipe Clamp Bolt	25 N·m	18 lb ft
EGR Valve Inlet Pipe Nut at Exhaust Manifold	30 N·m	22 lb ft

Fastener Tightening Specifications (G Van) (cont'd)

Application	Specification	
	Metric	English
EGR Valve Inlet Pipe Nut at Intake Manifold	25 N·m	18 lb ft
Engine Block Coolant Drain Hole Plug	20 N·m	15 lb ft
Engine Block Left Rear Oil Gallery Plug	30 N·m	22 lb ft
Engine Block Left Side Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Right Rear Oil Gallery Plug	20 N·m	15 lb ft
Engine Coolant Heater Bolt/Screw	2 N·m	18 lb in
Engine Coolant Temperature (ECT) Sensor	20 N·m	15 lb ft
Engine Flywheel Bolt	100 N·m	74 lb ft
Engine Front Cover Bolt	12 N·m	106 lb in
Engine Lift Front Bracket Stud	35 N·m	26 lb ft
Engine Mount Bolt to Engine Mount Bracket – Frame Side	58 N·m	43 lb ft
Engine Mount Bracket Bolt to Engine	54 N·m	40 lb ft
Engine Mount Bracket Bolt to Frame	45 N·m	33 lb ft
Engine Mount Bracket Nut to Engine Mount Bracket Bolt – Through-bolt	68 N·m	50 lb ft
Engine Mount Heat Shield Bolt	6 N·m	53 lb in
Engine Oil Pressure Gage Sensor	30 N·m	22 lb ft
Engine Oil Pressure Gage Sensor Fitting – Plus Required Angle	15 N·m	11 lb ft
Engine Wiring Harness Retainer Nut to Transmission to Engine Stud	10 N·m	89 lb in
Evaporative Emission (EVAP) Canister Purge Solenoid Valve Nut to Intake Manifold	10 N·m	89 lb in
Exhaust Manifold Bolt/Stud		
First Pass	15 N·m	11 lb ft
Final Pass	30 N·m	22 lb ft
Fan and Water Pump Pulley Bolt	25 N·m	18 lb ft
Fuel Meter Body Bracket Bolt	10 N·m	89 lb in
Fuel Pipe Bracket Bolt	6 N·m	53 lb in
Fuel Pipe Retainer Nut	3 N·m	27 lb in
Generator and Drive Belt Tensioner Bracket Bolt to Engine	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud Nut	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud to Engine	20 N·m	15 lb ft
Ground Wire Bolt to Rear of Left Cylinder Head	10 N·m	89 lb in
Ground Wire Nut to Water Outlet Stud	10 N·m	89 lb in
Ground Wire Stud to Rear of Right Cylinder Head	10 N·m	89 lb in
Heater Inlet and Outlet Hose Bracket Bolt to Oil Fill Tube Lower Support	5 N·m	44 lb in
Ignition Coil Stud	12 N·m	106 lb in
Knock Sensor	25 N·m	18 lb ft
Lower Intake Manifold Bolt		
First Pass in Sequence	3 N·m	27 lb in
Second Pass in Sequence	12 N·m	106 lb in
Final Pass in Sequence	15 N·m	11 lb ft
Oil Fill Tube to Oil Fill Tube Lower Support Bolt	5 N·m	44 lb in
Oil Fill Tube Lower Support Bolt and Stud	25 N·m	18 lb ft
Oil Fill Tube Nut	12 N·m	106 lb in
Oil Filter Adapter Bolt	21 N·m	15 lb ft
Oil Filter Fitting	55 N·m	41 lb ft

Fastener Tightening Specifications (G Van) (cont'd)

Application	Specification	
	Metric	English
Oil Level Indicator Tube Bolt	12 N·m	106 lb in
Oil Level Indicator Tube to Oil Fill Tube Lower Support Bolt	5 N·m	44 lb in
Oil Pan Baffle Bolt	12 N·m	106 lb in
Oil Pan Bolt and Nut	25 N·m	18 lb ft
Oil Pan Drain Plug	25 N·m	18 lb ft
Oil Pump Bolt to Rear Crankshaft Bearing Cap	90 N·m	66 lb ft
Oil Pump Cover Bolt	12 N·m	106 lb in
Power Steering Pump Bolt	50 N·m	37 lb ft
Power Steering Pump Bracket Bolt to Engine	41 N·m	30 lb ft
Power Steering Pump Bracket Stud Nut	41 N·m	30 lb ft
Power Steering Pump Bracket Stud to Engine	20 N·m	15 lb ft
Power Steering Pump Rear Bracket Nut to Engine	41 N·m	30 lb ft
Power Steering Pump Rear Bracket Nut to Power Steering Pump	50 N·m	37 lb ft
Spark Plug		
Initial Installation – NEW Cylinder Head	30 N·m	22 lb ft
All Subsequent Installations	15 N·m	11 lb ft
Spark Plug Wire Support Bolt	12 N·m	106 lb in
Starter Motor Wiring Harness/Transmission Cooler Pipe Bracket Bolt to Oil Pan	9 N·m	80 lb in
Throttle Body Stud	9 N·m	80 lb in
Transmission Bolt to Oil Pan	47 N·m	35 lb ft
Transmission Control Cable Bracket Bolt	40 N·m	30 lb ft
Transmission Cover Bolt	12 N·m	106 lb in
Transmission Fluid Fill Tube Bolt to Rear of Engine	10 N·m	89 lb in
Upper Intake Manifold Stud		
First Pass	5 N·m	44 lb in
Final Pass	9 N·m	80 lb in
Vacuum Brake Booster Hose Bracket Nut	11 N·m	97 lb in
Valve Lifter Pushrod Guide Bolt	16 N·m	12 lb ft
Valve Rocker Arm Bolt	30 N·m	22 lb ft
Water Outlet Stud	25 N·m	18 lb ft
Water Pump Bolt	45 N·m	33 lb ft

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Fastener Tightening Specifications (S/T Truck)

Application	Specification	
	Metric	English
Accelerator Control Cable and Cruise Control Cable Bracket Nut	9 N·m	80 lb in
Accelerator Control Cable Bracket Nut	12 N·m	106 lb in
Accelerator Control Cable Bracket Stud to Intake Manifold	6 N·m	53 lb in
Accelerator Control Cable Bracket Stud to Throttle Body	12 N·m	106 lb in
Air Cleaner Adapter Stud	8 N·m	71 lb in
Balance Shaft Driven Gear Bolt		
First Pass	20 N·m	15 lb ft
Final Pass	35 degrees	
Balance Shaft Retainer Bolt	12 N·m	106 lb in
Battery Negative Cable Bolt to Engine	17 N·m	13 lb ft

Fastener Tightening Specifications (S/T Truck) (cont'd)

Application	Specification	
	Metric	English
Belt Idler Pulley Bolt	50 N·m	37 lb ft
Camshaft Retainer Bolt	12 N·m	106 lb in
Camshaft Sprocket Bolt	25 N·m	18 lb ft
Connecting Rod Nut		
First Pass	27 N·m	20 lb ft
Final Pass	70 degrees	
Crankshaft Balancer Bolt	95 N·m	70 lb ft
Crankshaft Bearing Cap Bolt – Preferred Method		
First Pass	20 N·m	15 lb ft
Final Pass	73 degrees	
Crankshaft Bearing Cap Bolt – Optional Strategy	105 N·m	77 lb ft
Crankshaft Position Sensor Bolt	9 N·m	80 lb in
Crankshaft Pulley Bolt	58 N·m	43 lb ft
Crankshaft Rear Oil Seal Housing Bolt and Nut	12 N·m	106 lb in
Crankshaft Rear Oil Seal Housing Retainer Stud	6 N·m	53 lb in
Cylinder Head Bolt – Preferred Method		
All Bolts First Pass in Sequence	30 N·m	22 lb ft
Long Bolt Final Pass in Sequence	75 degrees	
Medium Bolt Final Pass in Sequence	65 degrees	
Short Bolt Final Pass in Sequence	55 degrees	
Cylinder Head Bolt – Optional On-Vehicle Strategy		
First Pass in Sequence	35 N·m	26 lb ft
Second Pass in Sequence	60 N·m	44 lb ft
Final Pass in Sequence	90 N·m	66 lb ft
Cylinder Head Core Hole Plug	20 N·m	15 lb ft
Distributor Cap Bolt	2.4 N·m	21 lb in
Distributor Clamp Bolt	25 N·m	18 lb ft
Drive Belt Tensioner Bolt	50 N·m	37 lb ft
EGR Valve Bolt		
First Pass	7 N·m	62 lb in
Final Pass	30 N·m	22 lb ft
EGR Valve Inlet Pipe Clamp Bolt	25 N·m	18 lb ft
EGR Valve Inlet Pipe Nut at Exhaust Manifold	30 N·m	22 lb ft
EGR Valve Inlet Pipe Nut at Intake Manifold	25 N·m	18 lb ft
Engine Block Coolant Drain Hole Plug	20 N·m	15 lb ft
Engine Block Left Rear Oil Gallery Plug	30 N·m	22 lb ft
Engine Block Left Side Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Oil Gallery Plug	20 N·m	15 lb ft
Engine Block Right Rear Oil Gallery Plug	20 N·m	15 lb ft
Engine Coolant Heater Bolt/Screw	2 N·m	18 lb in
Engine Coolant Temperature (ECT) Sensor	20 N·m	15 lb ft
Engine Flywheel Bolt	100 N·m	74 lb ft
Engine Front Cover Bolt	12 N·m	106 lb in
Engine Lift Front Bracket Stud	35 N·m	26 lb ft
Engine Mount Bolt – Through-bolt	74 N·m	55 lb ft
Engine Mount Bolt to Engine	54 N·m	40 lb ft
Engine Mount Bracket Bolt to Frame	45 N·m	33 lb ft

Fastener Tightening Specifications (S/T Truck) (cont'd)

Application	Specification	
	Metric	English
Engine Mount Nut – Through-bolt	63 N·m	46 lb ft
Engine Oil Cooler Pipe Clip Bolt to Oil Pan	9 N·m	80 lb in
Engine Oil Pressure Gage Sensor	30 N·m	22 lb ft
Engine Oil Pressure Gage Sensor Fitting – Plus Required Angle	15 N·m	11 lb ft
Engine Wiring Harness Bracket Bolt to Generator and Drive Belt Tensioner Bracket	25 N·m	18 lb ft
Engine Wiring Harness Bracket Bolt to Rear of Cylinder Head	35 N·m	26 lb ft
Engine Wiring Harness Bracket Nut to Intake Manifold	12 N·m	106 lb in
Evaporative Emission (EVAP) Canister Purge Solenoid Valve Nut to Intake Manifold	10 N·m	89 lb in
Exhaust Manifold Bolt/Stud		
First Pass	15 N·m	11 lb ft
Final Pass	30 N·m	22 lb ft
Fan and Water Pump Pulley Bolt	25 N·m	18 lb ft
Fuel Meter Body Bracket Bolt	10 N·m	89 lb in
Fuel Pipe Bracket Bolt	6 N·m	53 lb in
Fuel Pipe Bracket Bolt to Rear of Cylinder Head	30 N·m	22 lb ft
Fuel Pipe Retainer Nut	3 N·m	27 lb in
Fuel Supply Pipe Nut – Fuel Tank Side	30 N·m	22 lb ft
Generator and Drive Belt Tensioner Bracket Bolt to Engine	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud Nut	41 N·m	30 lb ft
Generator and Drive Belt Tensioner Bracket Stud to Engine	20 N·m	15 lb ft
Ground Wire or Strap Bolt to Rear of Cylinder Head	35 N·m	26 lb ft
Heater Inlet Hose Fitting	25 N·m	18 lb ft
Ignition Coil Stud	12 N·m	106 lb in
Knock Sensor	25 N·m	18 lb ft
Lower Intake Manifold Bolt		
First Pass in Sequence	3 N·m	27 lb in
Second Pass in Sequence	12 N·m	106 lb in
Final Pass in Sequence	15 N·m	11 lb ft
Oil Filter Adapter Bolt	21 N·m	15 lb ft
Oil Filter Fitting	35 N·m	26 lb ft
Oil Level Indicator Tube Bolt	12 N·m	106 lb in
Oil Pan Baffle Bolt	12 N·m	106 lb in
Oil Pan Bolt and Nut in Sequence	25 N·m	18 lb ft
Oil Pan Drain Plug	25 N·m	18 lb ft
Oil Pump Bolt to Rear Crankshaft Bearing Cap	90 N·m	66 lb ft
Oil Pump Cover Bolt	12 N·m	106 lb in
Power Steering Fluid Reservoir Filler Neck Bolt to Power Steering Pump Bracket	20 N·m	15 lb ft
Power Steering Pump Bolt	50 N·m	37 lb ft
Power Steering Pump Bracket Bolt to Engine	41 N·m	30 lb ft
Power Steering Pump Bracket Stud Nut	41 N·m	30 lb ft
Power Steering Pump Bracket Stud to Engine	20 N·m	15 lb ft
Power Steering Pump Nut to Engine	41 N·m	30 lb ft
Power Steering Pump Rear Bracket Nut to Engine Stud	41 N·m	30 lb ft
Power Steering Pump Rear Bracket Nut to Power Steering Pump	50 N·m	37 lb ft
Radiator Inlet Hose Support Bracket Nut to Exhaust Manifold Stud	36 N·m	27 lb ft

Fastener Tightening Specifications (S/T Truck) (cont'd)

Application	Specification	
	Metric	English
Remote Oil Filter Adapter Mounting Bracket Bolt	30 N·m	22 lb ft
Remote Oil Filter Adapter Nut	25 N·m	18 lb ft
Remote Oil Filter Inlet and Outlet Hose Clip Bolt	10 N·m	89 lb in
Remote Oil Filter Inlet and Outlet Hose to Remote Oil Filter Adapter Bolt	35 N·m	26 lb ft
Remote Oil Filter Inlet and Outlet Hose to Remote Oil Filter Pipe Adapter Bolt	35 N·m	26 lb ft
Remote Oil Filter Pipe Clip Bolt to Oil Pan	9 N·m	80 lb in
Secondary Air Injection (AIR) Check Valve Pipe Bracket Bolt to Engine	40 N·m	29 lb ft
Secondary Air Injection (AIR) Check Valve Pipe Stud Nut	25 N·m	18 lb ft
Spark Plug		
Initial Installation – NEW Cylinder Head	30 N·m	22 lb ft
All Subsequent Installations	15 N·m	11 lb ft
Spark Plug Wire Support Bolt	12 N·m	106 lb in
Starter Motor Wiring Harness/Transmission Cooler Pipe Bracket Bolt to Oil Pan	9 N·m	80 lb in
Throttle Body Stud	9 N·m	80 lb in
Transmission Bolt to Oil Pan	47 N·m	35 lb ft
Transmission Cover Bolt	12 N·m	106 lb in
Upper Intake Manifold Stud		
First Pass	5 N·m	44 lb in
Final Pass	9 N·m	80 lb in
Valve Lifter Pushrod Guide Bolt	16 N·m	12 lb ft
Valve Rocker Arm Bolt	30 N·m	22 lb ft
Valve Rocker Arm Cover Bolt	12 N·m	106 lb in
Water Outlet Stud	25 N·m	18 lb ft
Water Pump Bolt	45 N·m	33 lb ft

SIE-ID = 645458

Fastener Tightening Specifications (C/K 800 Truck)

Application	Specification	
	Metric	English
Accelerator Control Cable Bracket Nut to Stud	12 N·m	106 lb in
Accelerator Control Cable Bracket Nut to Throttle Body	9 N·m	80 lb in
Accelerator Control Cable Bracket Stud to Intake Manifold	6 N·m	53 lb in
Accelerator Control Cable Bracket Stud to Throttle Body	12 N·m	106 lb in
Air Cleaner Adapter Stud	8 N·m	71 lb in
Balance Shaft Driven Gear Bolt		
First Pass	20 N·m	15 lb ft
Final Pass	35 degrees	
Balance Shaft Retainer Bolt	12 N·m	106 lb in
Battery Cable Bracket Bolt to Oil Pan	12 N·m	106 lb in
Battery Negative Cable Bolt to Engine	25 N·m	18 lb ft
Battery Positive Cable Junction Block Bracket Bolt	25 N·m	18 lb ft
Belt Idler Pulley Bolt	50 N·m	37 lb ft
Camshaft Retainer Bolt	12 N·m	106 lb in
Camshaft Sprocket Bolt	25 N·m	18 lb ft
Connecting Rod Nut		

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