



BLACKBIRD INSTALLATION SUPPLEMENT



**2008 GM 2500 AND 3500
6.6 DURAMAX DIESEL
VERSION 5-08**



Parts Included in Installation Kit

Before beginning installation, check the parts kit thoroughly against the parts inventory list, and make sure that every necessary part is in hand. If parts are missing or you have questions regarding the parts and components, contact Raven Product Support (207-721-1044) before beginning installation.

Parts	Description
Mounting Bracket	
Base bracket	
Fasteners	(1) M14-2.0 x 30mm w/ flatwasher (1) M10-1.5 x 25mm w/ flatwasher (3) M10-1.5 x 50mm w/ flatwashers
Generator bracket	
Fasteners	(2) 5/8-11 x 1 1/2" flange head (1) M10 x 25mm w/ flat washer
Air Conditioning Compressor Bolts	(4) M10-1.5 x 80mm w/ flatwashers
Power steering pump bolts	(2) M10 1.5 x 15mm w/ flatwashers
Cooling fan spacer	04-05 Chassis: male thread/female thread 06 Chassis : 1 3/4" OD X 3/16" thick
Crankshaft Pulley	6-groove X 7 1/2"
Replacement washer	56mm OD flatwasher
Generator belt	NAPA 25-060806 (or equivalent)
Generator mounting bolts	(4) 3/8-16 x 3/4" flat head socket
Generator Temporary alignment stud	3/8-16 x 1 1/2"
Replacement OEM belt	GM# 97300655
ECM relocation bracket 04-05 Chassis	Aluminum offset
Fasteners	(2) 5/16-18 x 3/4" hex with nuts and flatwashers
ECM relocation bracket 06-08 Chassis	Triangular aluminum
Fasteners	(3) 1/4-20 x 3/4" truss head w/ nuts and flatwashers (2) 1/4-20 x 1/2" truss head w/ nuts and flatwashers
PCM relocation bracket 04-05 Chassis	Aluminum 'T' bracket
Fasteners	(3) 1/4-20 x 1 1/2" hex with nuts and flatwashers
Clutch	3" 6-groove electric
Air deflector remount spacer 06-08 Chassis	1"
Fastener	(1) M8 x 40mm w/ flat washer
Upper radiator hose replacement 06-08 Chassis	! 3/4" hose el and coupling
Clamps	(2) XXXXXXXX
Clutch key	3/16" x 1 3/4"
Clutch bolt (1)	7/16"-20 x 2 1/4" Grade w/ lock washer
Electrical: Mechanical Installers forward these parts to the Electrical Department	
Clutch harness	16' red/black w/ 2-conductor thermal sensor
116Hz Command Module	



General Instructions

This document supplements the Blackbird Wiring Manual with information specific to the 2008 General Motors 2500 and 3500 chassis with the 6.6 liter Duramax diesel engine. Installation cannot be completed without the Blackbird Wiring Manual. Contact Raven Product Support (207-721-1044) if more documentation is needed.

This installation provides for full 5kW output of the system from elevated engine idle to 3400 rpm. Beyond 1200 RPM, the generator output will be unaffected by changes in engine speed.

- **All installation steps in this supplement and the Blackbird Wiring Manual must be completed before operating the system.**

- Use Loctite 262 on all engine and bracket mounted bolts.

- All hoses and wires moved or relocated during installation must be secured to prevent chafing and exposure to hot surfaces. At no time should wiring be secured to fuel or exhaust system components.

Tools required:

- Standard mechanic's tools
- 36 mm 12-point socket x 3/4" drive
- Crankshaft holding tool (GM Part # J-44643) or substitute
- 1 7/8" open end wrench for fan removal

Figures 1 and 2 show the Raven components to be installed and their mounting locations. *We suggest you take a minute before proceeding to review the steps below to familiarize yourself with the parts and their mounting locations.*

Steps 1 through 30 will establish a "hole" on the driver's side of the engine for the generator and bracket.

Steps 31 through 37 cover the installation of the base bracket, the generator bracket, and the generator.

Steps 36 through 44 cover the final assembly of the engine compartment.

The Blackbird Wiring Manual covers the DC and AC electrical wiring.

	Torque-Ft-lbs.		
Grade	5	8	8.8
Bolt Size			
1/4	9	12	
5/16	18	27	
3/8	35	40	
7/16	55	60	
1/2	80	90	
5/8	150	180	
8mm			19
10mm			41
12mm			69
14mm			104

Creating the Hole

1. Disconnect all battery negative terminals.
2. Remove upper radiator hose.
3. Unclip the ECM (**Figure 5**) from the upper fan shroud and set aside. Remove the air intake assembly as needed to gain access to the passenger side fan shroud clips and fan stator mounting bolts.
4. Remove the upper fan shroud.
5. Place protective cardboard over the face of the radiator.
6. Remove the fan (right hand thread) and set aside. Remove the 3 fan stator bolts and remove the stator with the fan. Mark the stator upper bolt ear for orientation during reinstallation.



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7. Remove and discard the OEM serpentine belt.
8. Unbolt the air conditioning compressor and swing it out of the way. Discard the bolts.
9. Unbolt the power steering pump and swing it out of the way.
10. Remove the power steering/air conditioning mounting casting from the front of the engine.
11. Locate and remove the driver's side fan stator bracket. (Low on engine, two bolts).
12. Using the supplied hardware, install the Raven base bracket in its place, leading with the 'hook' end and rolling the bracket into position. (It *will* fit, this may be a two-person job. As you are rotating the bracket into place, adjust the routing of the power steering hoses as necessary). Fasten with (4) M10 bolts and (1) M14 bolt. See **Figure 1**.
13. Mount the air conditioning compressor on the Raven base bracket using the replacement 80mm bolts.
14. Mount the power steering pump on the Raven base bracket using the supplied replacement bolts
15. Install the supplied replacement serpentine belt (GM Part # 97300655) on the OEM belt train. See belt routing in **Figure 1**.
16. Remove the driver's side diagonal fender brace and , if required, the cover and shroud from the underhood fuse center.

2006-8 Chassis:

17. Using the supplied triangular ECM bracket, relocate the ECM under the driver's side fender-to-firewall brace. Locate and drill two 1/4" mounting holes in the brace and the bracket. Mount the bracket on the brace using the 2 supplied truss head bolts. Mount the ECM to the bracket. **Figure 6**.

All Chassis:

18. Using GM tool #J-44643 or other crankshaft holding device, and a 36mm 12-point socket, remove the harmonic damper bolt and washer from the front of the crankshaft. Discard the OEM washer.
19. Assure that the front of the damper is clean and free of dings or imperfections. Using the OEM bolt and the supplied 54mm washer, install the Raven crankshaft pulley to the face of the damper. Assure that the mating ring on the pulley seats into the damper.
20. Before tightening, rotate the pulley counterclockwise until the drive pin contacts the counterweight on the damper. Torque the crank bolt to 260 ft. lbs.
21. Check that the area the generator will occupy is free of hose and wire interference.

Installing the Generator, Clutch and Belt

22. Before mounting the Generator, bench-fit the clutch and key, to the shaft ensuring a slip-fit. Dress as necessary.
23. Ensure that the generator electrical junction box cover is securely in place. Insert the 3/8" temporary alignment stud finger tight in one threaded hole of the generator bearing plate (shaft end.)
24. Set the Generator, shaft forward, on top of the Raven base bracket, nestled between the power steering pump and the air conditioning compressor. It should sit temporarily without contacting the power steering reservoir cap.
25. Connect the generator bracket (**Figure 3**) to the base bracket using two 5/8-16 x 1" bolts and one M10 bolt. Loctite and tighten the 5/8 bolts and the M10 bolt.
26. Orient the electrical box to facilitate cable runs and allow clearance between engine and other components. Position the generator behind the bracket and slip the generator into the bracket,



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inserting the temporary alignment stud into a bracket hole. Assure that the large generator alignment ring machined into the bearing plate is seated fully in the large bracket hole. Install three 3/8 16 X 3/4" flat head generator bolts, and replace the temporary alignment stud with the fourth bolt.

27. Install the electric clutch on the generator shaft, assuring that the 3/16 key engages the clutch and the shaft without binding. Align the clutch coil flange so that the coil retaining standoff on the bracket passes through the open slot on the flange. Fasten with the 7/16 clutch bolt and lockwasher.
28. Install the generator serpentine drive belt. Check the OEM and the Raven belt trains for interference and tensioner operation. See **Figure 2**.

Final Assembly

29. Using a hacksaw or zip tool, trim the center from the fan air deflector. See **Figure 4**.
30. Place the supplied 3/16" fan spacer on the fan mounting threads.
31. Reinstall the fan and trimmed deflector. The lower driver's side deflector bolt now installs on the Raven bracket.
32. Remove the OEM mounting clip for the ECM from the upper fan shroud.
33. Reinstall the upper fan shroud. and the air intake assembly.
34. Trim approximately 6" from the upper radiator hose, radiator end, rotate it end-for-end, and reinstall it using the supplied elbow hose and coupling.
35. Check fluids, if necessary, and reconnect the battery.
36. Start the engine and allow it to run at normal idle. Observe the belt trains and check for proper tracking and alignment.

This completes the vehicle-specific instructions. Refer to the Blackbird Wiring Manual for wiring, run up, and troubleshooting instructions.

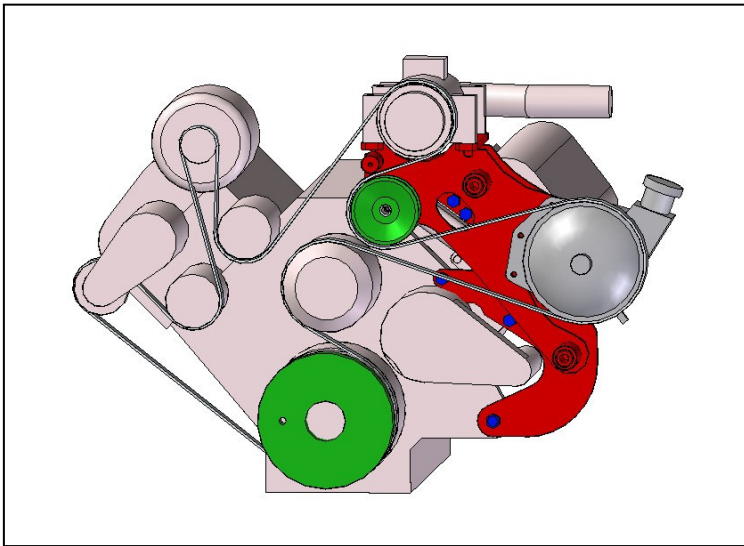


Figure 1

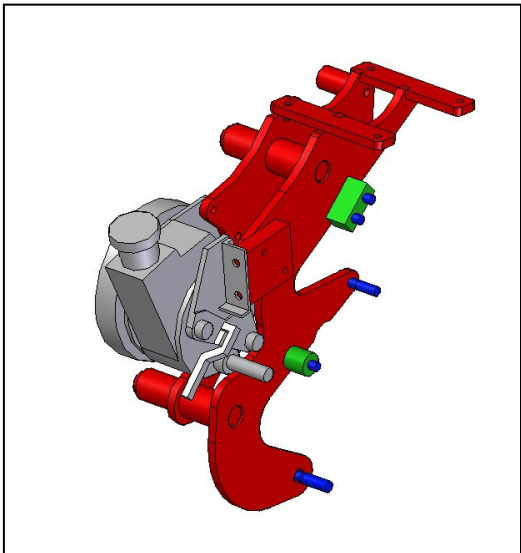


Figure 2

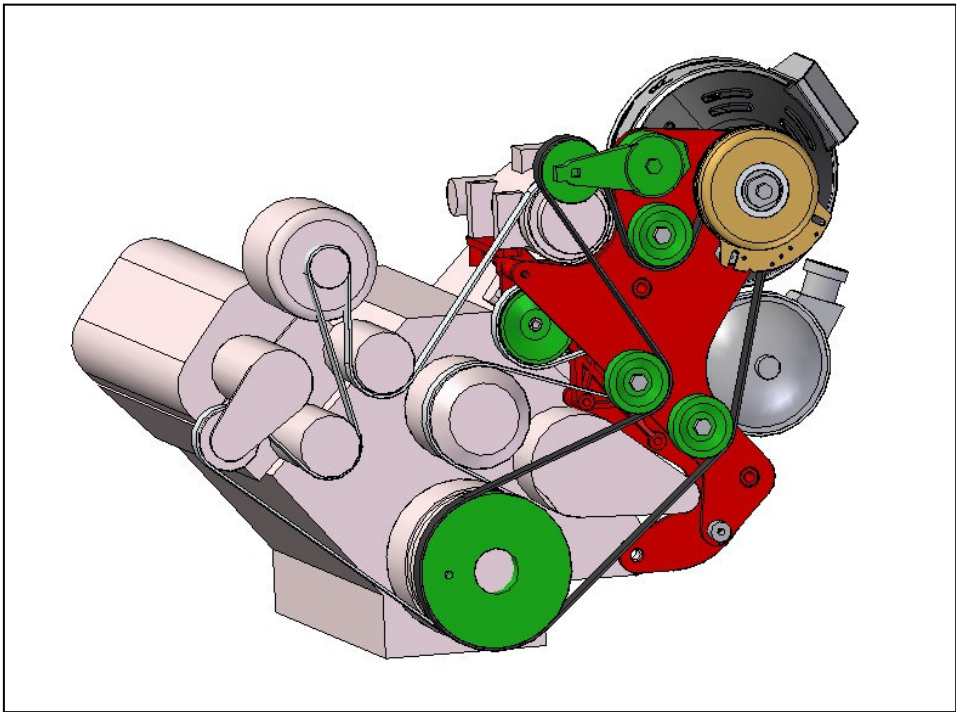


Figure 3

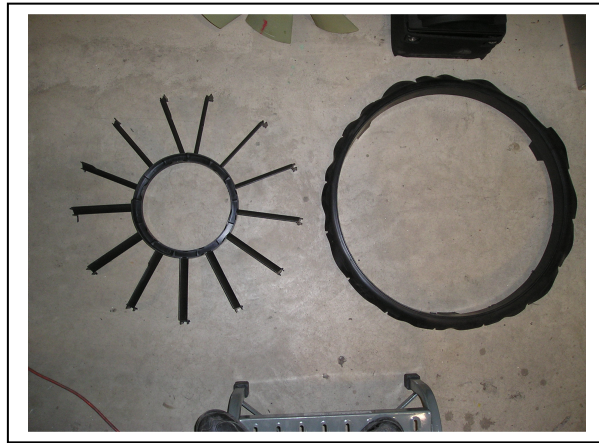


Figure 4

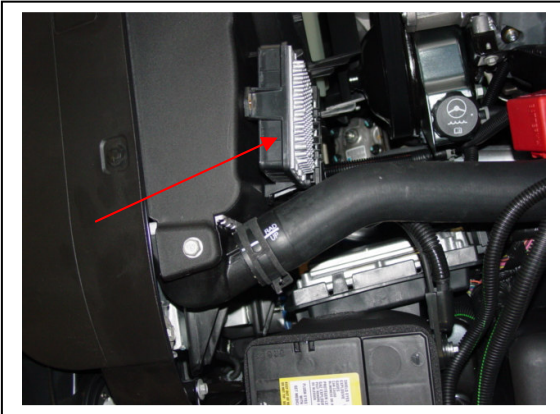


Figure 5



Figure 6



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