



BLACKBIRD INSTALLATION SUPPLEMENT



**FOR 2004 FORD 5.4 LITER TRITON GAS
VERSION 6-06**



Blackbird Installation Supplement for Ford 5.4. Liter Triton Gas

	Parts specific to this supplement	Comments
	Crank Pulley	9.5" 6-groove aluminum
	Crank pulley mounting bolts	(3) M10-1.5 x 70mm
	Generator pulley	Cog pulley (Gates 8MX 26S 21)
	Generator belt	Cog belt (Gates 720-8MGT-20)
	Mounting Bracket	With countershaft, idlers, and tensioner
	Bracket mounting bolts	(3) M10-1.5 x 110 w/lock washers (1) M8-1.25 x 45 w lock washer
	Noise suppressor remount bolts	(2) 1/4"-20 x 1/4"
	Clutch	3" 6-groove
	Clutch key	3/16" x 1 3/4"
	Clutch electrical harness	16' red/black with thermal fuse
	Clutch bolt & lock washer	(1) 7/16"-20 x 2 1/4" Grade 8 (Inc. lock washer)
	Serpentine Belt.	NAPA 25-060820 or equivalent
	Vacuum tank relocation bracket	Aluminum offset bracket
	Modified washer bottle	Please return stock bottle to Raven for refund
	Self drilling/tapping screw	(1) #14
	Battery Tray Nut	(1)M8-1.25
	Battery tray bolts	(2) M8-1.25 x 25mm button head w/nuts
	Modified AC Line "pivot clamp"	
	Retainer Buttons-inner fender	3
	Edge guard-fender flange/battery	12"

	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



INSTALLATION

General Instructions

This document supplements the Blackbird General Installation Manual with information specific to the 2004 F-Series truck and 5.4 V-8 engine combination. No attempt should be made to continue the installation without the Blackbird Wiring Manual. Contact Raven (207-721-1044) if more documentation is needed.

Preparing for Installation

1. Disconnect all battery negative terminals.
2. Evacuate air conditioning system using approved methods. Disconnect the return line at the accumulator install the Raven supplied pivot clamp to reattach the line to the accumulator. Swing the return line out toward the inner fender to make room the generator. **See Figure 1** Recharge the system.
3. Remove the vacuum tank and plug resulting holes in the inner fender with the three retainer buttons provided. Leave the “t” bolts connected to the tank for re-use later.
4. Remove passenger side battery and tray. Remove and retain the 2 clip nuts for reuse later.
5. Remove window washer reservoir. *Set aside for return to Raven for core-charge refund.*
6. Remove the 3 bolt/studs from the front of the engine block as shown in **Figure 2**. (Prior to removing, detach wiring harness clips and 2 noise suppressors (the two small black gizmos attached to two of the studs).
7. Clean and inspect the face of the OEM crank pulley for debris or imperfection. Mount the Raven supplied crank pulley in front of the stock pulley, using the three M10-70mm bolts provided assuring a true, flat mating with the crank pulley. For better access to the crank bolts, remove the two bolts at the top of the fan shroud, raise it and shift it toward the engine. Replace shroud when pulley is installed.
8. Install the modified windshield washer bottle in its stock position in the well below the battery as shown in **Figure 3**. Reuse the stock bolt to attach bottle to inner fender. Do not secure the filler neck to the truck body for the time being.
9. Modify the battery tray by drilling out spot welds using a 3/8” drill bit as shown in **Figure 4**. This will separate the angle bracket from the tray.
10. Remount the angle bracket that was removed from the battery tray as shown in **Figure 5** using the two M8-1.25x25mm button head bolts supplied.
11. Install the battery tray angled to mount the battery close to angled fender bracket. **See Figure 6**. Note tray has been rotated 180 degrees to position the battery hold-down on the inboard side. Bend the edge of the repositioned angle bracket to provide clearance for the support bracket. Secure with the original mounting bolts and an M8 nut provided.
12. Install rubber edge guard to protect fender frame from chafing the edge of the battery.
13. If there is a relay mounted on the inner fender which interferes with installing the battery, relocate it slightly toward the rear to allow room for the battery.
14. Attach the Raven supplied bracket to the vacuum tank as shown in **Figure 8**.
15. Relocate the vacuum tank on inner fender as shown in **Figure 9** using the Raven bracket, the two clip nuts and bolts saved from the battery tray and the T bolts saved from the tank removal.
16. Reconnect vacuum hoses.



Mounting the Generator Bracket

Temporarily remove the belt guard and belt tensioner from the Raven bracket noting the tensioner's orientation.

17. Place the bracket in position on the engine (Be careful not to pinch the wiring harnesses between the bracket and engine). Secure with three M10x110 mm bolts with lock washers and one M8-45mm bolt w/lock washer. Refer to **Figure 10** for orientation and bracket position. Snug all bolts and check that the wiring harnesses are free to move, then tighten the M10 bolts and the M8 bolt.
18. Attach the noise suppressors (small black gizmos) to the holes in the back section of bracket using the 1/4"-20 bolts provided. See **Figure 11**.
19. Loop the serpentine belt past the fan to reach the crank pulley and loop over the intermediate shaft. Observe routing as shown in **Figure 10**.
20. Install the electric clutch on the counter 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 (**Figure 11**). Install the 7/16 clutch bolt and lockwasher.
21. Replace the belt tensioner on the bracket using the M10 x45mm bolt.
22. Retract the tensioner and install the belt observing routing in **Figure 12**.

Mounting the Generator

23. Install the cog pulley on the generator shaft. The center line of the pulley should be 1 3/8" from the generator end plate.
24. You are now ready to mount the Generator on the mounting bracket. 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.) Orient the electrical box at approximately "2 o'clock". Position the Generator behind the bracket and slip the Generator into the bracket, inserting the temporary alignment stud into a bracket hole. ***Do not apply any force or pressure to the electrical junction box.***
25. Loosely secure the Generator to the bracket using 3 of the 4 hex head bolts provided. Remove the alignment stud and install the fourth bolt. Do not fully tighten.
26. Install the cog belt between the generator pulley and the countershaft pulley.. Adjust the tension on the cog belt by rotating the generator in its mounting slots until 10 pounds applied at the mid span of the belt produces a 3/16" deflection. Take care not to over tension.
27. Tighten the Generator mounting bolts. Do not loctite.
28. Reinstall the belt guard with two stainless machine screws as shown in **Figure 13**.
29. Reinstall passenger-side battery on the modified tray using the OEM battery hold down.

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

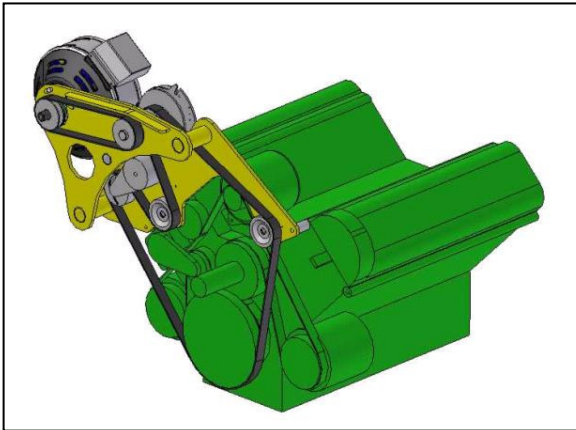


Figure 1

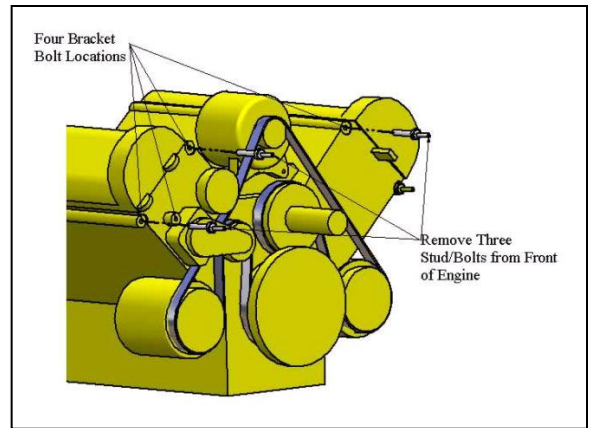


Figure 2



Figure 3

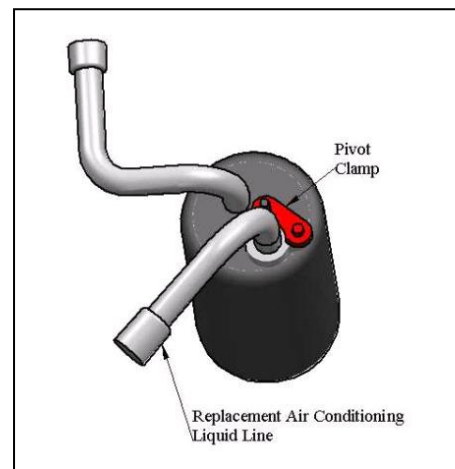


Figure 4

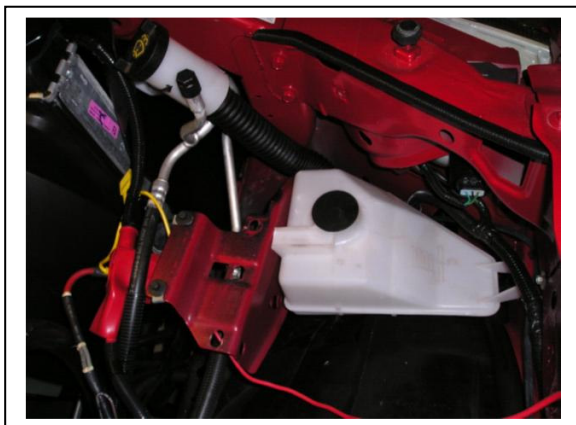


Figure 5

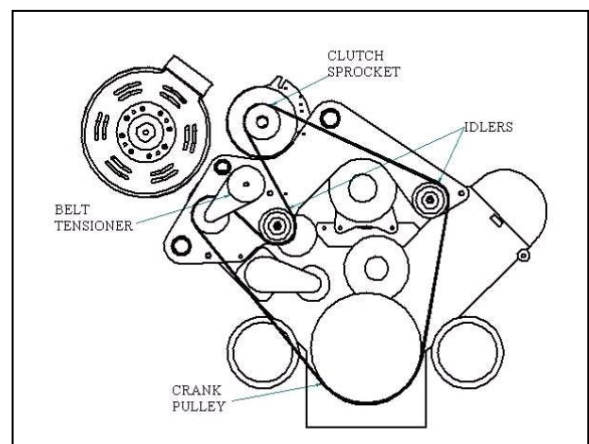


Figure 6



Figure 7



Figure 8



Figure 9