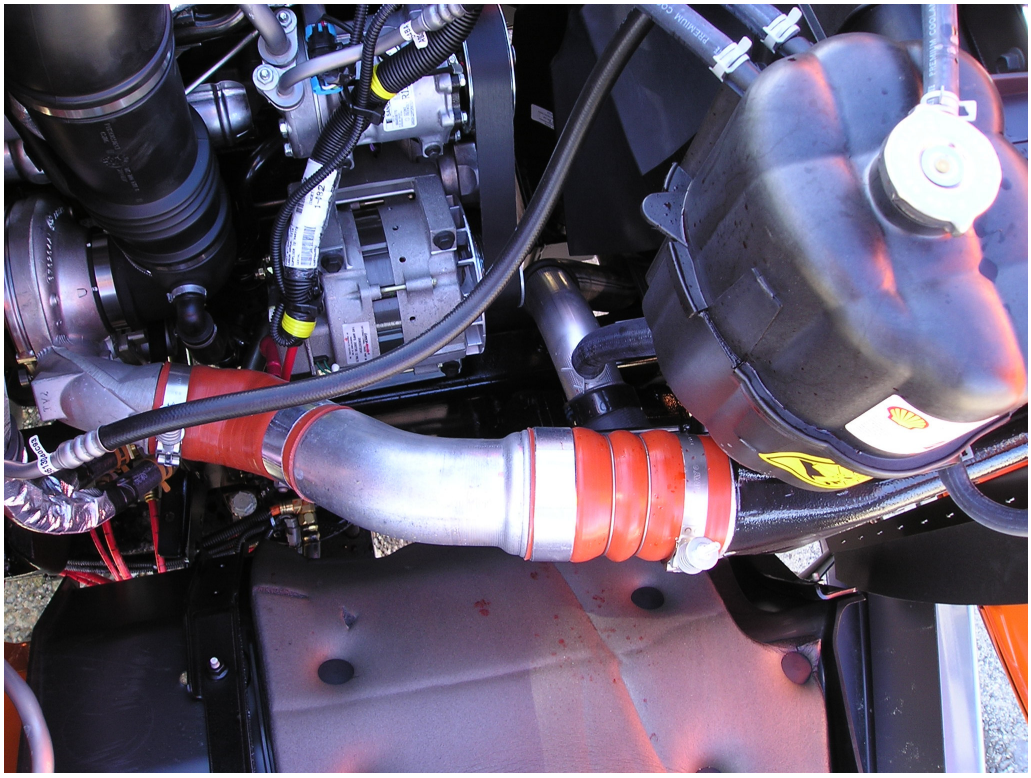
BLACKBIRD INSTALLATION SUPPLEMENT



FOR INTERNATIONAL 7400 MAXXFORCE9
VERSION 10-07

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
	Wiring Manual	ZX120-Large Diesel
	Installation Supplement	MaxxForce 9 7400
	Owner's Manual	Including Warrantee Registration
	Engine Bracket	
	Lower bracket bolt	M18 x 150mm w/ flat washer
	Bracket spacer	
	Bracket Spacer Block	
	Fasteners	(2) M8 x 95mm studs w/ flat washer & nut
	OEM alternator brace	
	Bolt bar	
	bolts	(4) M10 x 40mm w/ flat washers
	Replacement OEM Alt. bolts	(2) M10 x 110 w/ flat washers
	Generator Bracket	With idlers and tensioner
	Bracket bolts	(3) M10 x 25mm w/ flat washers
	Generator belt	NAPA 25-061123 or equivalent
	Generator mounting bolts	(4) 3/8-16 x ¾" flat head socket
	Generator Temporary alignment stud	3/8-16 x 1 ½"
	Clutch	3" 6-groove electric
	Clutch key	3/16" x 1 ¾"
	Clutch bolt (1)	7/16"-20 x 2 1/4" Grade w/ lock washer
	Crankshaft Pulley	13" diameter
	Pulley bolts	(6) M10-1.5 x 60mm w/flat washers
	Forward to Electrical Dept.:	
	Clutch Electrical Harness	16' Red/Black
	Soft Start Command Module	SSCM

General Instructions

This document supplements the Blackbird SSCM Wiring Manual with information specific to the International MaxxForce 9 in the 7400 chassis. Installation cannot be completed without the SSCM Wiring Manual. Contact Raven Product Support (207-721-1044) if more documentation is needed.

This installation provides for full 5kW output from engine idle of 750 RPM to governed high RPM. Between 750 RPM and governed engine RPM the generator output will be unaffected by changes in engine speed.

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

	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

- 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.
- All fasteners must be checked and re-torqued after 2 hours of engine operation.

Installing the Raven Bracket and Crankshaft Pulley

Figures 1 provides an overview of 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.

You are now ready to install the generator bracket. Review **Figure 1** to get familiar with the how the bracket attaches with the engine.

Lower Engine Plate (**Figure 2**)

1. Disconnect all battery negative terminals.
2. Remove and discard the passenger's side motor mounting bolt (18mm) located on the front of the engine just to the side of the harmonic damper, see **Figure 2**.
3. Insert the two 95 mm studs into the holes located below the fan hub. Take care to use the correct holes as shown in **Figure 2**. Slide the two hole spacer block over the studs and hang the engine plate from these studs. Secure the plate to the spacer using the nuts and washers supplied; don't tighten these until the lower 18 mm bolt is in place.
4. Insert the new engine motor mount bolt through the plate and supplied spacer bushing. The nuts and bolts holding the Lower Engine Plate can now be tightened. The engine bolt should be tightened to 250 in-lbs.

Generator Plate (**Figure 3**)

5. Figure 3 points out that a slot has been added to the Generator Plate to aid installation. Install a bolt in the lower of the three holes of the Engine Plate to work with this slot.
6. Lower the Generator Plate down in front of the engine until the 3 mounting hole aligns with the Engine Plate. Make sure the 1/8 spacer, as shown in **Figure 2**, is bolted between the two plates. Insert the bolt through the bracket and finger tighten.

Alternator Brace (**Figure 4**)

7. Remove and discard the two 10mm upper OEM alternator bolts. Mount the Brace Plate to the alternator, as shown in **Figure 4**, using the two M10 x 110mm M bolts provided. Take care to notice the OEM angle bracket that is held by the aft alternator bolt. Make sure our brace is mounted under the angle bracket when re-assembling. Bolt the Brace to the Generator Plate.
8. Tighten all the fasteners associated with the bracket.

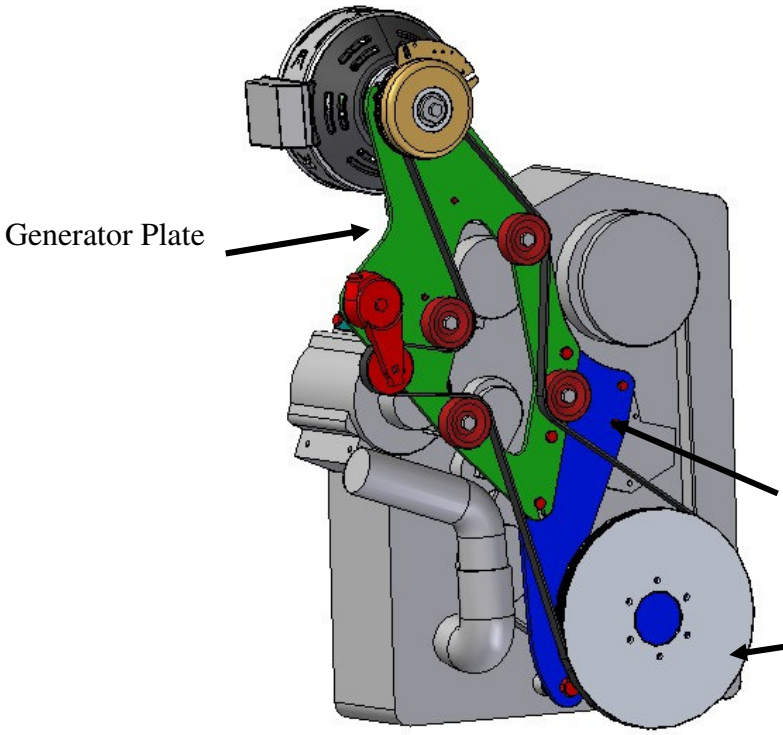
Crank Pulley and Generator (**Figure 1**)

9. Check that the face of the harmonic damper is clean and true, and install the Raven crankshaft pulley on the face of the damper using the pulley spacer and 6 supplied bolts. The pulley mounts flat-face-forward. Tighten in opposing sequence.
10. The end of the metal tubing that exits the top of the air conditioning compressor needs to be pushed approximately 1.5 inches in toward the engine to make room for the generator.
11. Before mounting the generator, bench-fit the clutch and key to the Generator shaft to ensure a slip-fit. Dress as necessary.
12. Ensure that the Generator electrical junction box cover is securely in place. Slip the generator into the bracket as shown in **Figure 1**. A 3/8-16 by 1 inch stud is provided to aid installation by helping locate a hole in the generator plate; the stud will be replaced by a mounting bolt when the generator is secured. Assure that the large generator mating ring is seated fully in the large bracket hole. Install four 3/8 16 X ¾" flat head generator bolts. Do not Loctite!

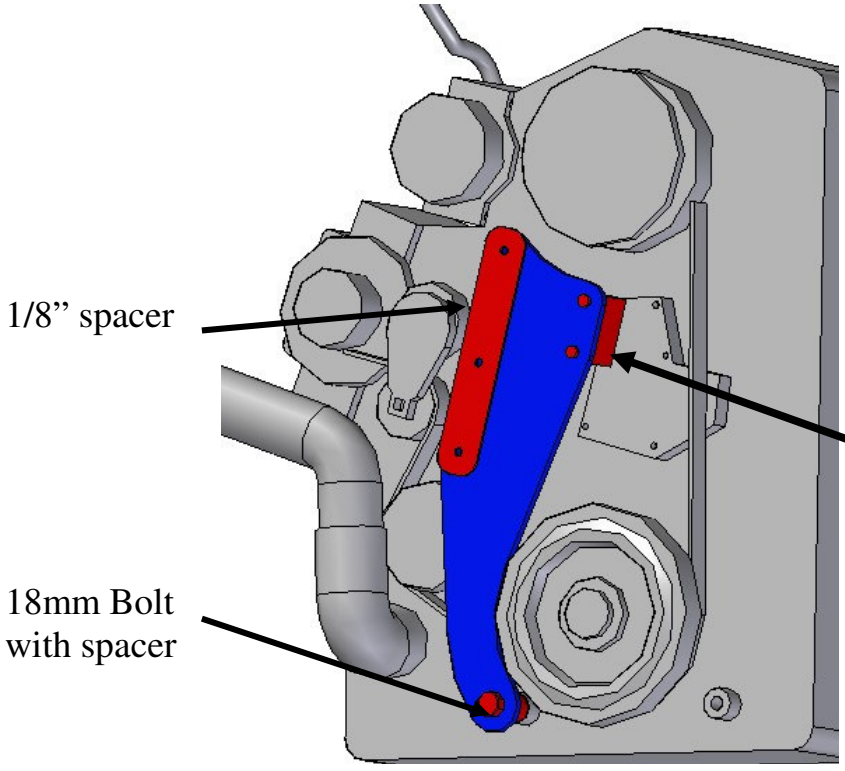
Clutch and Belt Installation (**Figures 5 &6**)

13. Loop the supplied drive belt over the Generator shaft before installing the electric clutch. The clutch is a tight fit due to the closeness of the fan shroud. To make a little more space the radiator must be pitched forward by un-bolting the two radiator brace rods located on either side of the radiator. Even with this additional step the clutch must be some what dismantled to allow installation. **Figures 5 & 6** show the clutch and how it can be disassembled. Reassembling the clutch on the generator shaft will allow all the parts to fit. The bolt must be part of the coil assembly, the last part of the clutch, in order to fit. Assure alignment of the clutch key with the keyways in the clutch. The coil retaining stud engages the **slot** in the clutch flange-**do not use the oblong hole or the clutch flange will interfere with the cooling fan**. Note: the belt passes between the clutch pulley and the retaining standoff (inside, not outside, the standoff). Torque the 7/16 clutch bolt and washer to 50 ft. lb.
14. Install the Raven belt according to **Figure 1**. Assure that the belt is seated correctly on all pulleys and idlers.

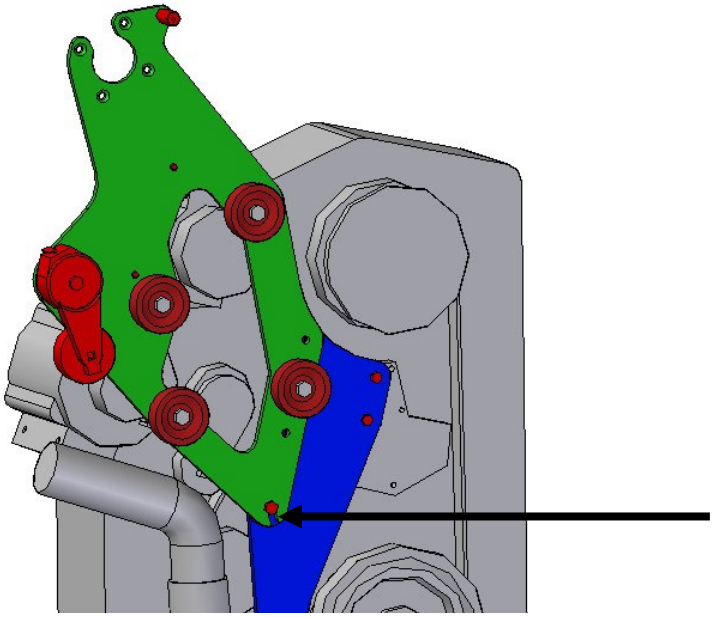
This completes the vehicle-specific installation. Refer to the Large Diesel Wiring Manual for wiring, run up, and troubleshooting instructions.



Bracket Overview
Figure 1

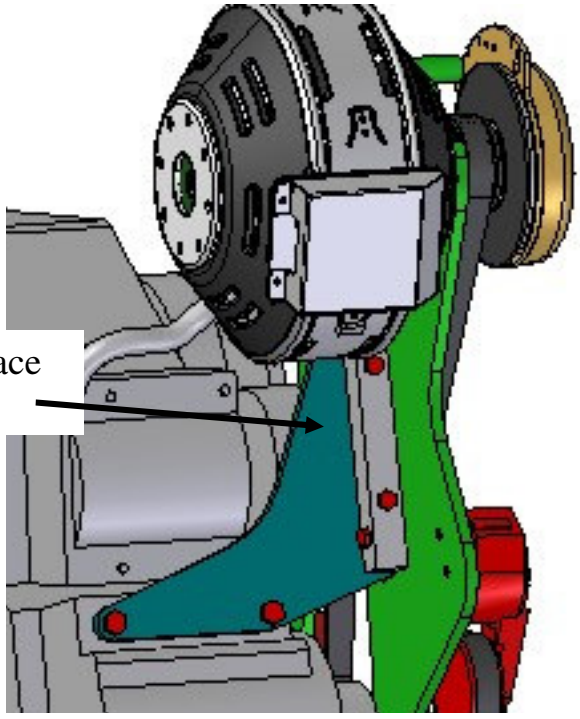


Engine Plate Detail
Figure 2



Use slot in plate to aid in installation

Generator Plate
Figure 3



Alternator Brace and Bolt Bar

Alternator Brace Detail
Figure 4

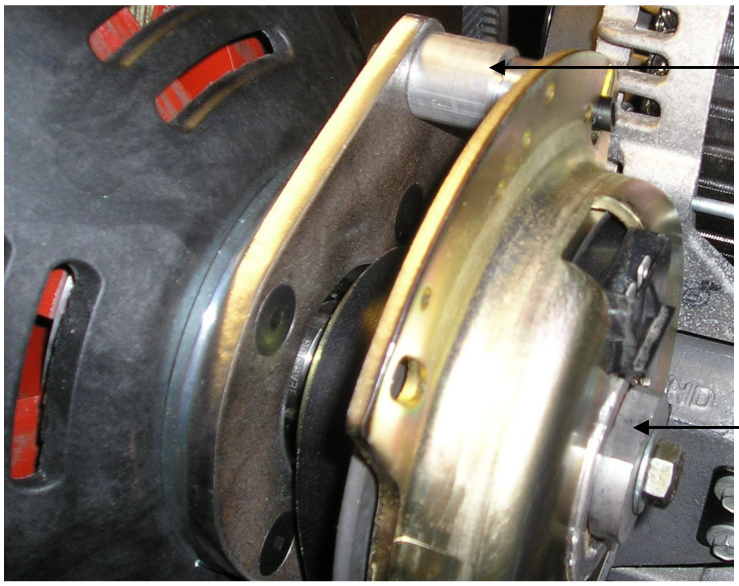
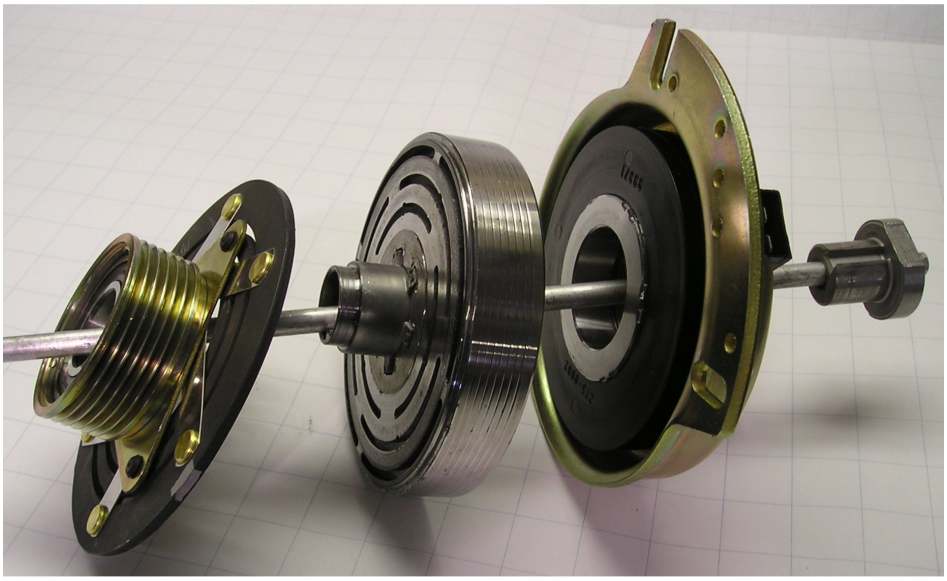


Figure 5
(Generic photo)



Clutch Assembly Diagram
Figure 6