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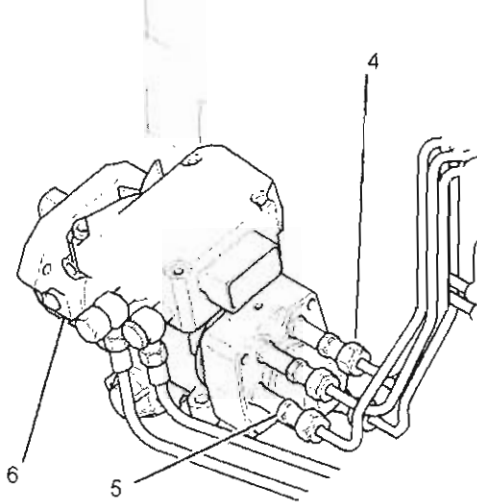


Illustration 10

g01136262

4. Loosely connect the nuts at both ends of the fuel injection lines.
5. Ensure that each fuel injection line does not contact any other fuel injection line or any other engine component. Tighten the fasteners for the clamps (3) for the fuel injection lines. Check that the fuel injection lines are still clear of other components.
6. Tighten the fuel injection lines (2) at the fuel injectors (1) to a torque of 30 N·m (22 lb ft).
7. Tighten the fuel injection lines (4) at the fuel injection pump (6) to 30 N·m (22 lb ft). Ensure that the connection (5) can not turn.
8. Remove the air from the fuel system. Refer to the Operations and Maintenance Manual, "Fuel System - Prime".

End By:

- a. Install the cover for the fuel injectors. Refer to this Disassembly and Assembly Manual, "Fuel Injector Cover - Remove and Install".

Fuel Injector Cover - Remove and Install

Removal Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

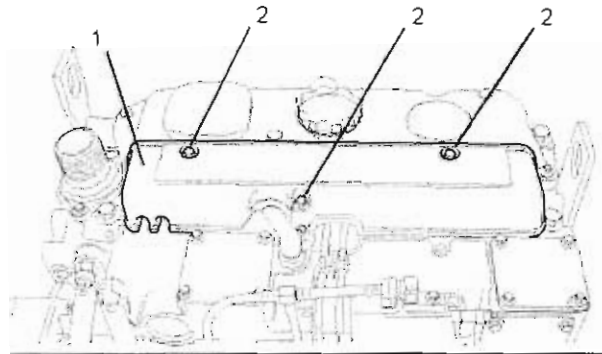


Illustration 11

g01011111

Typical example

1. Thoroughly clean all of the outer surfaces of the cover (1) for the fuel injectors.
2. Remove the setscrews (2) from the cover (1).
3. Remove the cover (1).

Installation Procedure

NOTICE

Keep all parts clean from contaminants.

Contaminants may cause rapid wear and shortened component life.

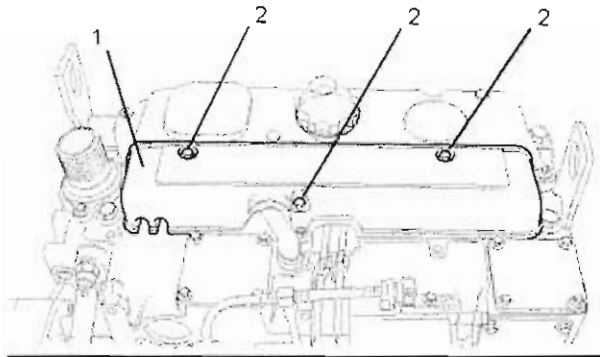


Illustration 12
Typical example
g01011111

1. Thoroughly clean all of the inner surfaces of the cover (1) for the fuel injectors.
2. Install the cover (1).
3. Install the setscrews (2) for the cover (1). Tighten the setscrews (2) to a torque of 9 N·m (7 lb ft).

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Fuel Injection Pump - Remove

Removal Procedure

Table 1

Required Tools		
Part Number	Part Name	Qty
27610032	(Timing Pin)	1

Start By:

- a. Remove the fuel injection lines. Refer to this Disassembly and Assembly Manual, "Fuel Injection Lines - Remove".
 - b. Remove the crankshaft pulley. Refer to this Disassembly and Assembly Manual, "Crankshaft Pulley - Remove and Install".
 - c. Remove the front cover. Refer to this Disassembly and Assembly Manual, "Front Cover - Remove and Install".
1. Ensure that the No. 1 cylinder is at top dead center on the compression stroke. Refer to the Testing and Adjusting Manual, "Finding Top Center Position for No. 1 Piston".

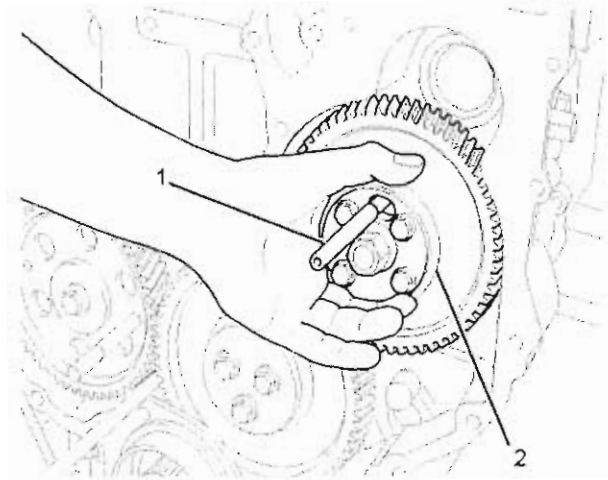


Illustration 13
Typical example
g01136992

2. Push the timing pin (1) through the fuel injection pump gear (2) and into the fuel injection pump.
3. When the timing pin is installed the fuel injection pump can be locked.

Note: The timing pin must be a hand push fit. The timing pin must not be forced into position.

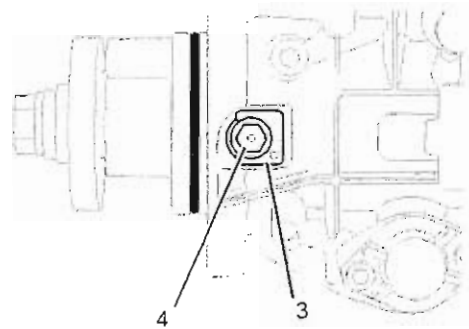


Illustration 14
Typical example
g01136963

4. Remove the spacer (3) and tighten the locking screw (4) to 31 N·m (22 lb ft).

Note: Remove the timing pin (1).

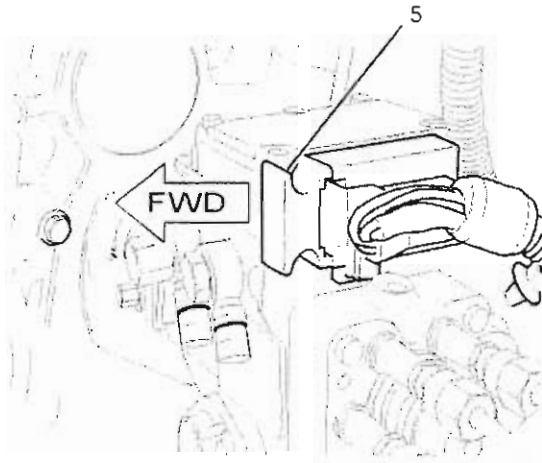


Illustration 15
Typical example

5. Remove the electrical connecting plug (5).

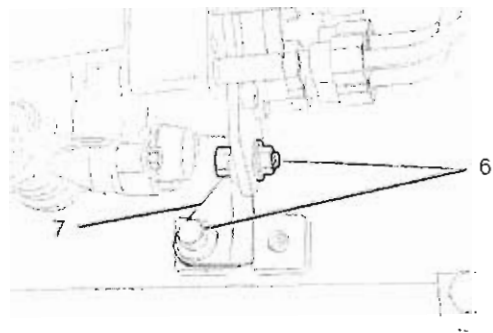


Illustration 16
Typical example

6. Remove the fasteners (6) for the support bracket and remove the support bracket (7).

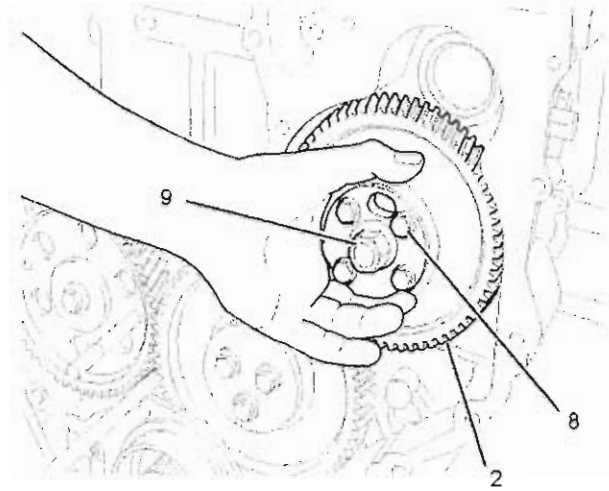


Illustration 17
Typical example

7. Remove the setscrews and washers (8). Remove the fuel pump gear (2).

Note: The nut (9) must not be loosened. If the nut was loosened then the timing for the fuel injection pump will be lost.

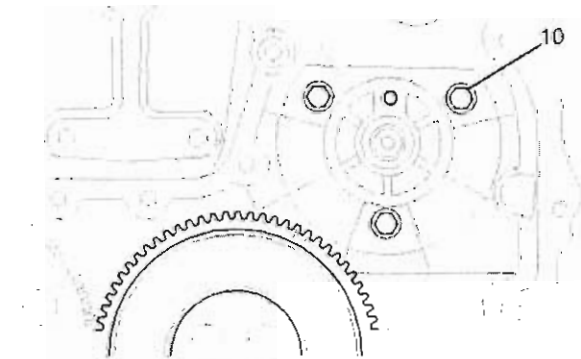


Illustration 18
Typical example

8. Remove the three setscrews (10) and the sealing washers. Discard the used sealing washers.

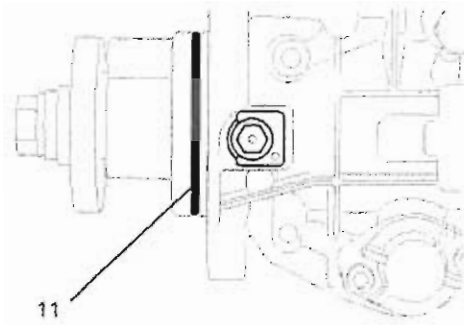


Illustration 19
Typical example
g01137006

9. Remove the fuel injection pump and remove the O-ring (11). Discard the O-ring.

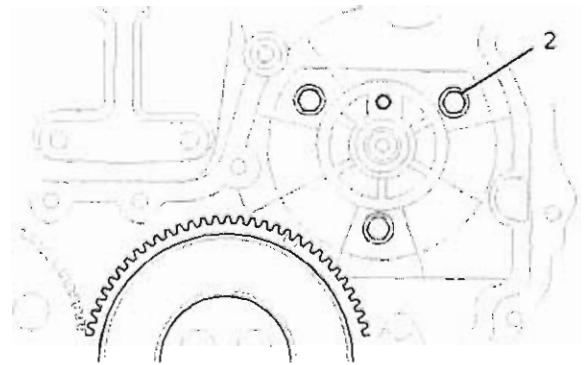


Illustration 21
g01137346

4. Install the fuel injection pump. Install new sealing washers onto the setscrews and install setscrews (2). Tighten the setscrews to 22 N·m (16 lb ft).

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Fuel Injection Pump - Install

Installation Procedure

1. Ensure that the No. 1 cylinder is at top dead center on the compression stroke. Refer to the Testing and Adjusting Manual, "Fuel Injection Timing - Check".
2. Ensure that all the mating surfaces are clean and free from fluid.

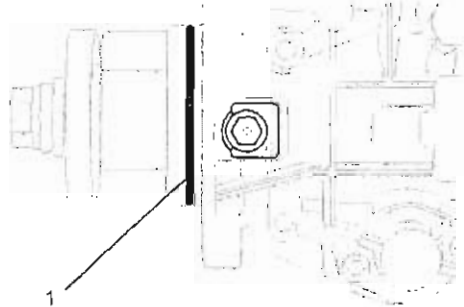


Illustration 20
g01137345

3. Install a new O-ring (1) onto the fuel injection pump.

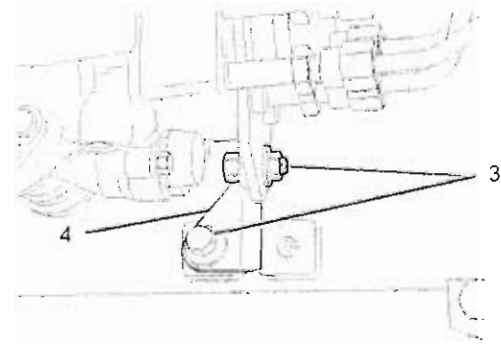


Illustration 22
g01137347

5. Align the support bracket (4). Tighten the fasteners (3) by hand.

Note: The fasteners (3) must be secured after the front cover is installed.

6. Install the timing pin (6) through the hub (7) and into the fuel injection pump. The timing pin must be a hand push fit.

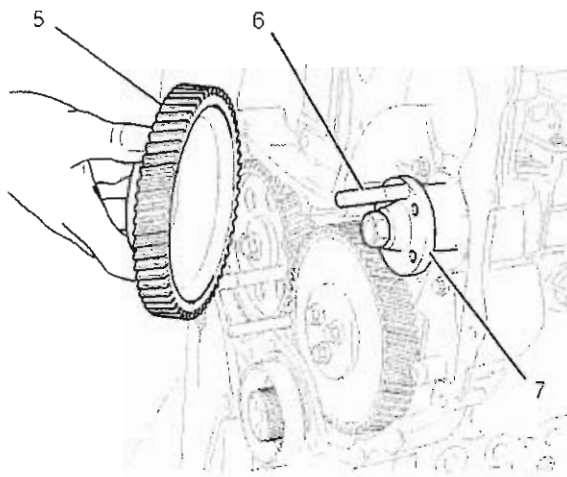


Illustration 23 g01137348

7. When the timing pin is correctly installed the fuel injection pump can be locked.

Note: New fuel injection pumps are supplied in the locked position.

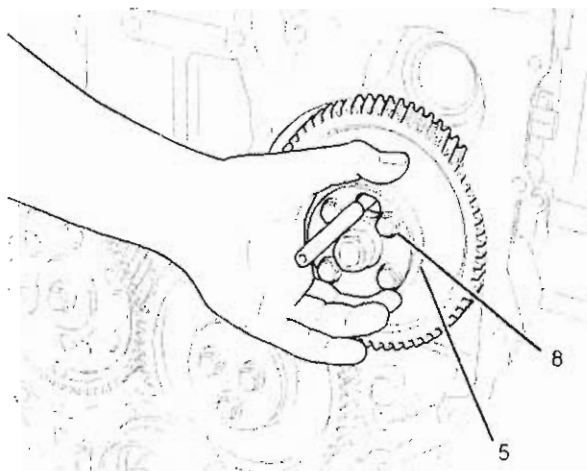


Illustration 24 g01137367

8. Refer to illustration 23. Position the fuel injection pump gear (5) through the timing pin and onto the hub (7) of the fuel injection pump. Refer to illustration 24. Install the setscrews and washers (8) and tighten the setscrews by hand. The fuel injection pump gear (5) must be rotated counterclockwise. Tighten the setscrews (8) to 25 N·m (18 lb ft). Remove the timing pin.

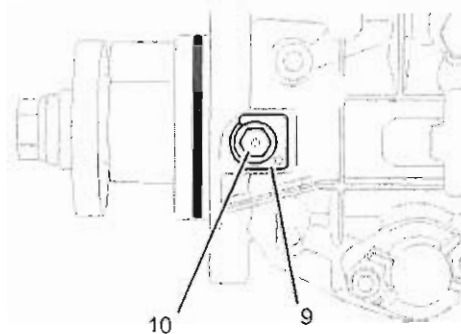


Illustration 25 g01137366

9. Loosen the locking screw (10). Install the spacer (9). Tighten the locking screw to 31 N·m (22 lb ft).

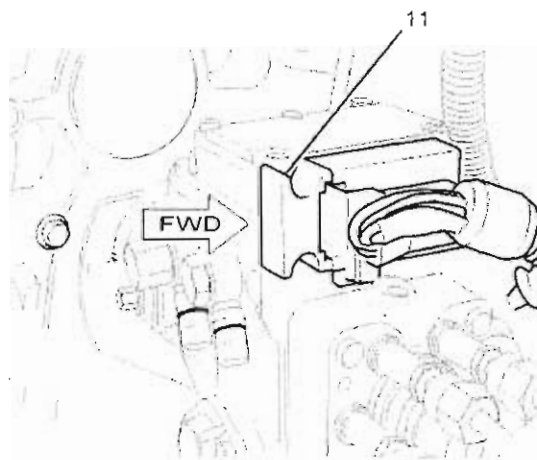


Illustration 26 g01137350

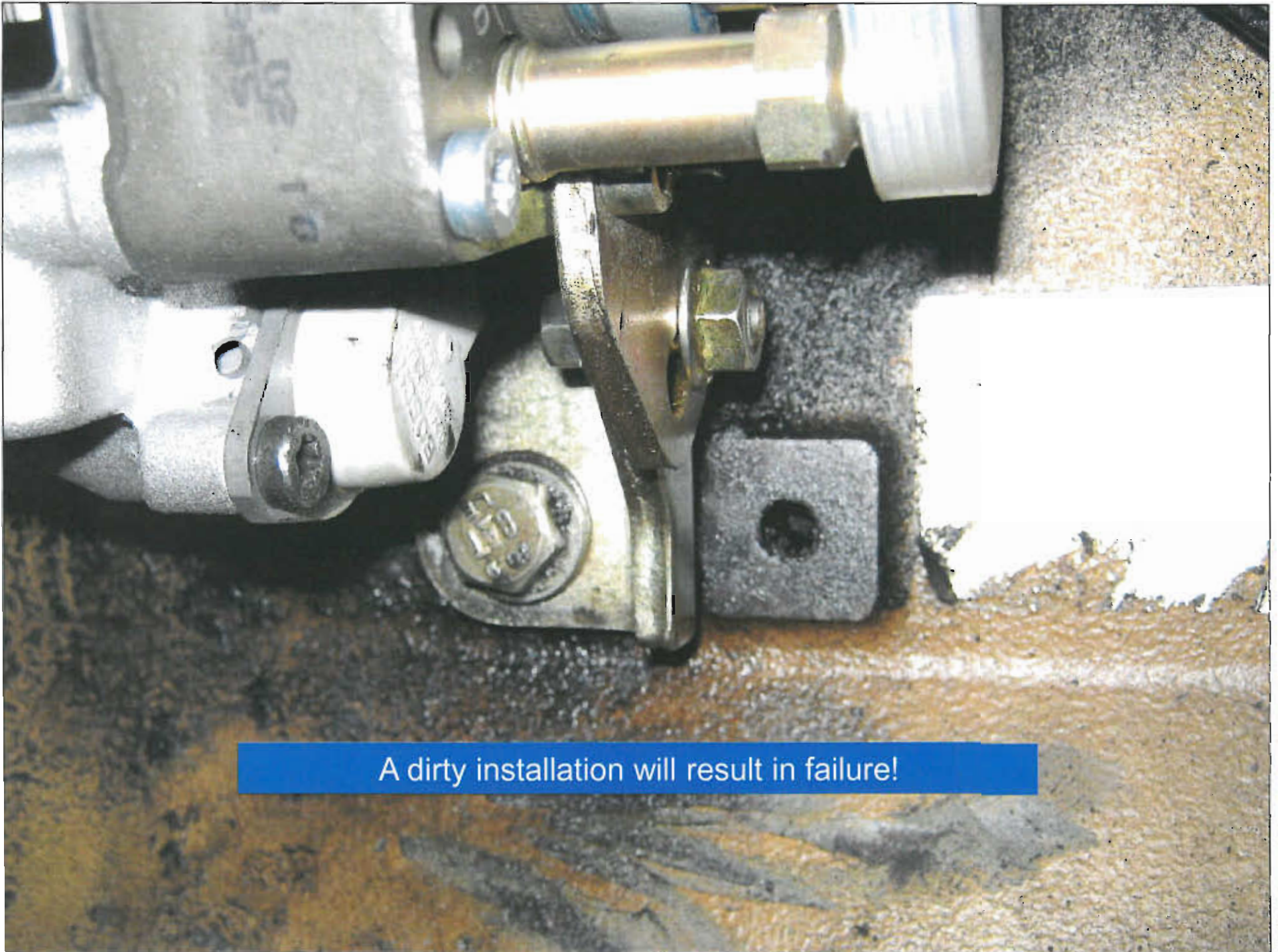
10. Install the electrical connecting plug (11).

End By:

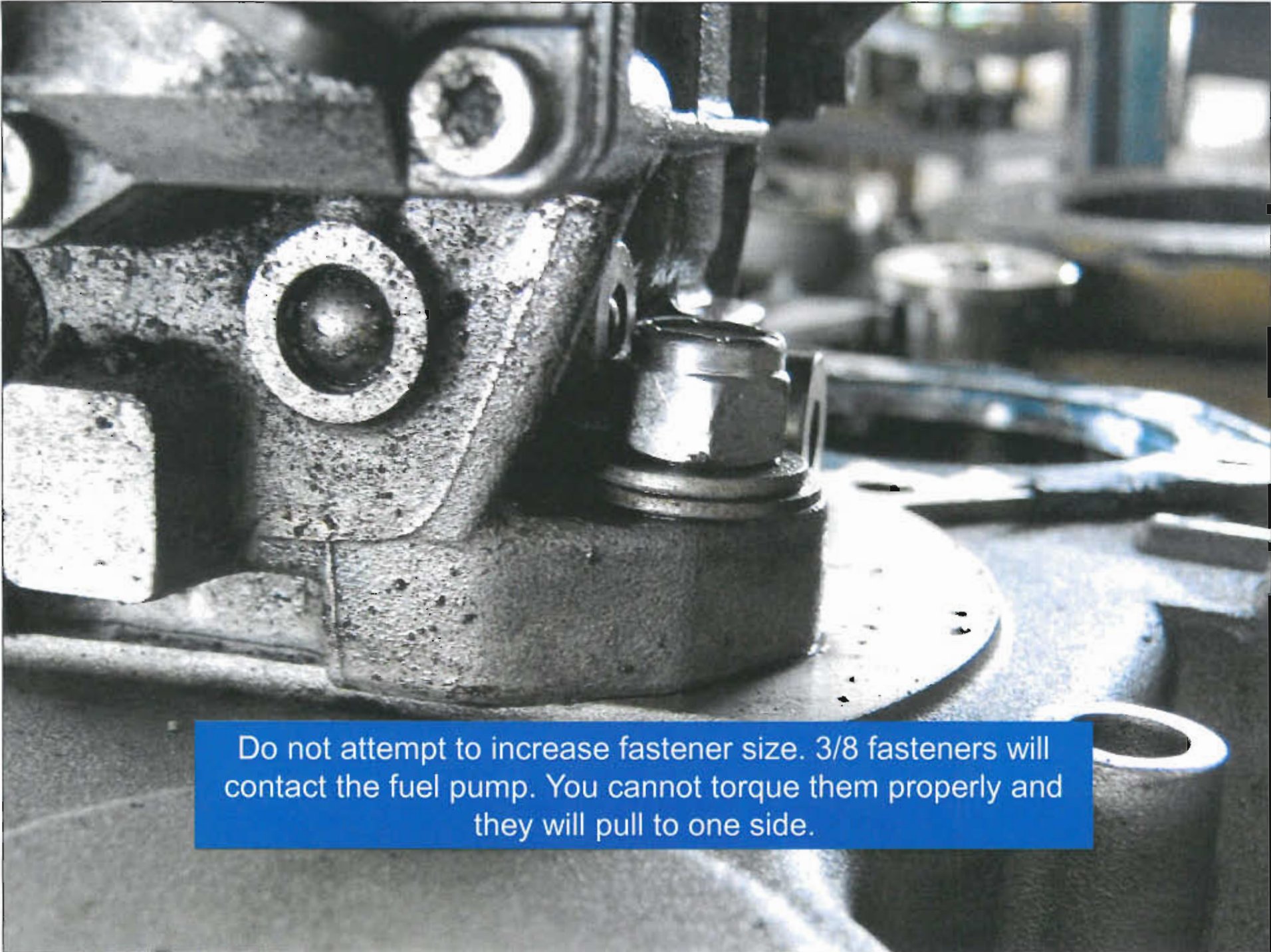
- a. Install the front cover. Refer to this Disassembly and Assembly Manual, "Front Cover - Remove and Install".
- b. Install the crankshaft pulley. Refer to this Disassembly and Assembly Manual, "Crankshaft Pulley - Remove and Install".
- c. Tighten the fasteners (3) for the support bracket. Tighten the nut and bolt to 22 N·m (16 lb ft). Tighten the setscrew that is installed into the cylinder block to 44 N·m (32 lb ft).

Examples of What

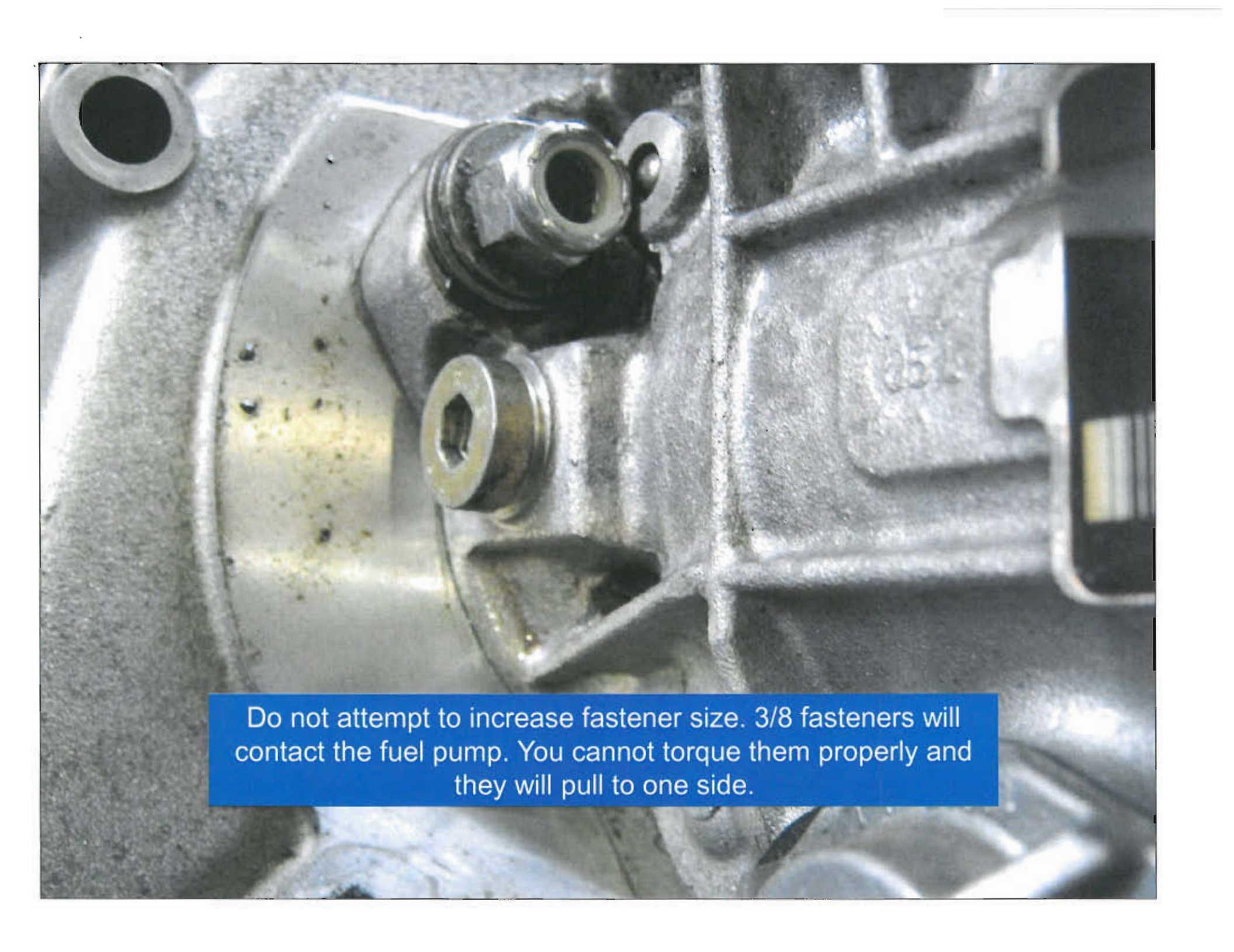
NOT TO DO!!!!



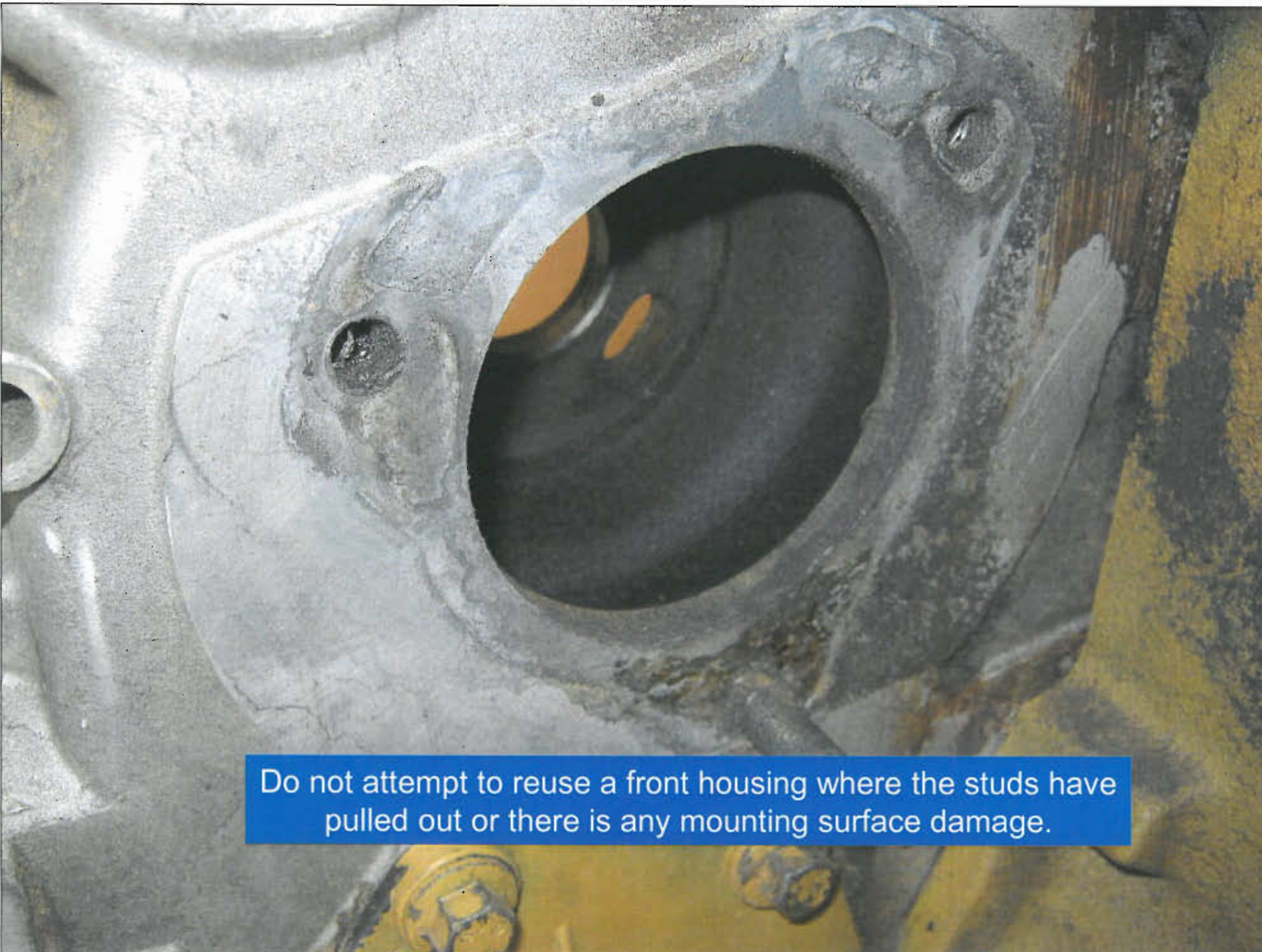
A dirty installation will result in failure!

A close-up photograph of a metal fastener, likely a bolt or nut, being installed on a fuel pump assembly. The fastener is positioned on a circular metal plate. The background shows a blurred industrial setting with various mechanical parts and tools.

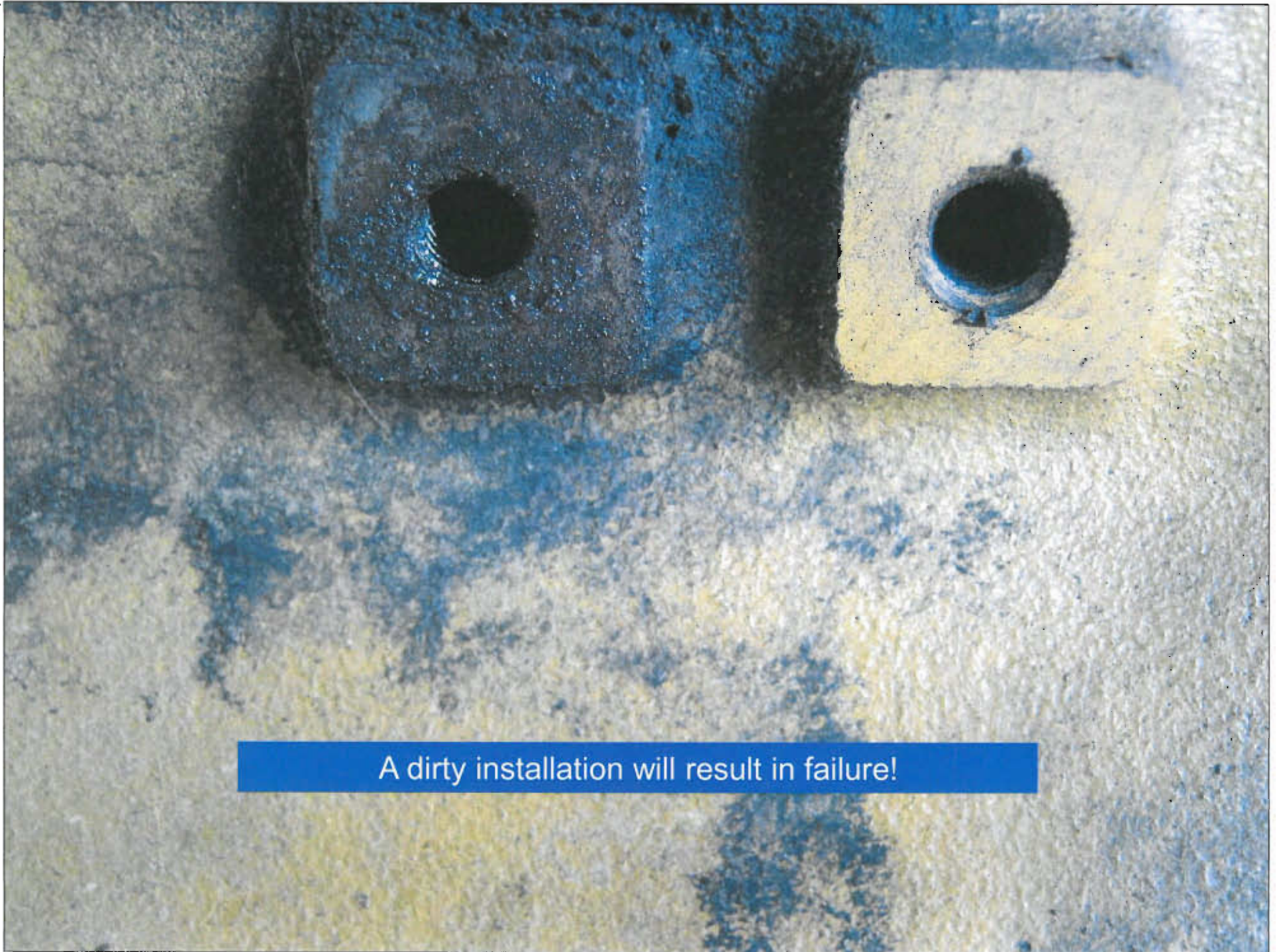
Do not attempt to increase fastener size. 3/8 fasteners will contact the fuel pump. You cannot torque them properly and they will pull to one side.

A close-up photograph of a metal fuel pump assembly. Two fasteners are visible, one above the other. The fastener on top is a 3/8 inch size, and the one below it is a 1/2 inch size. The metal surface is textured and shows some signs of wear and discoloration. A blue text box is overlaid at the bottom of the image.

Do not attempt to increase fastener size. 3/8 fasteners will contact the fuel pump. You cannot torque them properly and they will pull to one side.

A close-up photograph of a metal front housing, likely for a vehicle component. The housing is made of a light-colored metal, possibly aluminum, and shows significant signs of wear and damage. A large, dark circular opening is visible in the center. The mounting surface around this opening is heavily pitted and cracked. Several studs or bolts are visible, some of which appear to be missing or severely damaged. The background shows a yellow-painted metal surface, possibly part of the vehicle's chassis or another component.

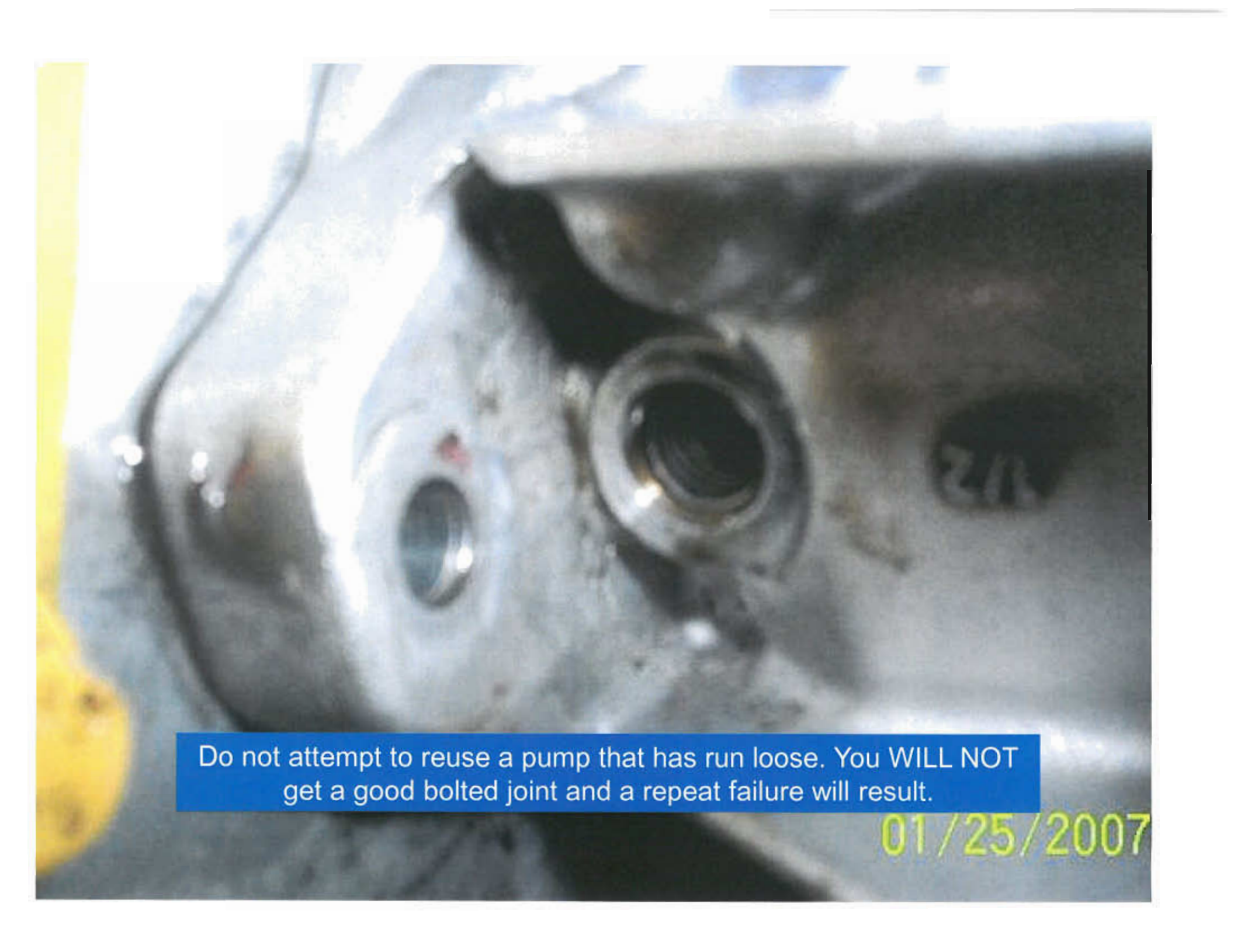
Do not attempt to reuse a front housing where the studs have pulled out or there is any mounting surface damage.



A dirty installation will result in failure!

A close-up photograph of a metal rear bracket assembly. The bracket is made of a dark, possibly steel, material and shows signs of wear and damage. A large hexagonal nut is visible, secured with a washer. The bracket is mounted to a larger metal component. The background is dark and out of focus, showing other parts of the assembly.

Do not attempt to reuse a damaged rear bracket.

A close-up photograph of a metal pump housing. The housing is made of a light-colored metal, possibly aluminum, and shows signs of wear and use. A large, circular bolted joint is visible in the center, with a dark, possibly greasy or oily, substance around it. To the left of this joint is a smaller, circular opening. The background is dark and out of focus, suggesting an industrial setting. A yellow object is partially visible on the left edge of the frame.

Do not attempt to reuse a pump that has run loose. You WILL NOT get a good bolted joint and a repeat failure will result.

01/25/2007