

DETROIT DIESEL



Installation Instructions

18SP564 – Install CTO Sensor Kit 23531905 in Hazardous-Environment Series 60[®] Engine CAC Piping

Introduction

The turbocharger compressor outlet temperature may exceed 392 °F (200 °C) under full load operation in high ambient conditions with high horsepower ratings; for example, 113 °F (45 °C) using the 600-horsepower 14 L Series 60.

An OEM-installed Compressor Outlet Temperature Sensor is included with the hazardous environment petroleum engines. Programming is included to reduce torque in the event of high compressor outlet temperatures that could allow the skin temperature of the turbocharger compressor to exceed 392 °F (200 °C).

Use the following instructions to install CTO (compressor temperature-out) sensor kit P/N 23531905 components in the charge air cooler piping of Series 60 hazardous environment engines. This kit includes the items listed in Table 1.

Item	Part No.	Qty.	Description
1	23524760	1	Adaptor, M14 X 1.5-6
2	23524980	1	Cap, M14 X 1.5
-	18SP564	1	Installation Instructions

Table 1 Components of Kit 23531905

Installation

Install the CTO sensor as follows:

CAUTION:

To avoid injury from hot surfaces, allow engine to cool before removing any component. Wear protective gloves.

⚠ CAUTION:

To avoid injury from accidental engine startup while servicing the engine, disconnect/disable the starting system.

1. With the engine at ambient temperature and cool to the touch, mark the adaptor insertion location on the CAC (charge air cooler) pipe. This should be 1 in. – 3 in. (25.4 mm – 76.2 mm) from the end of the compressor outlet pipe. See Figure 1.

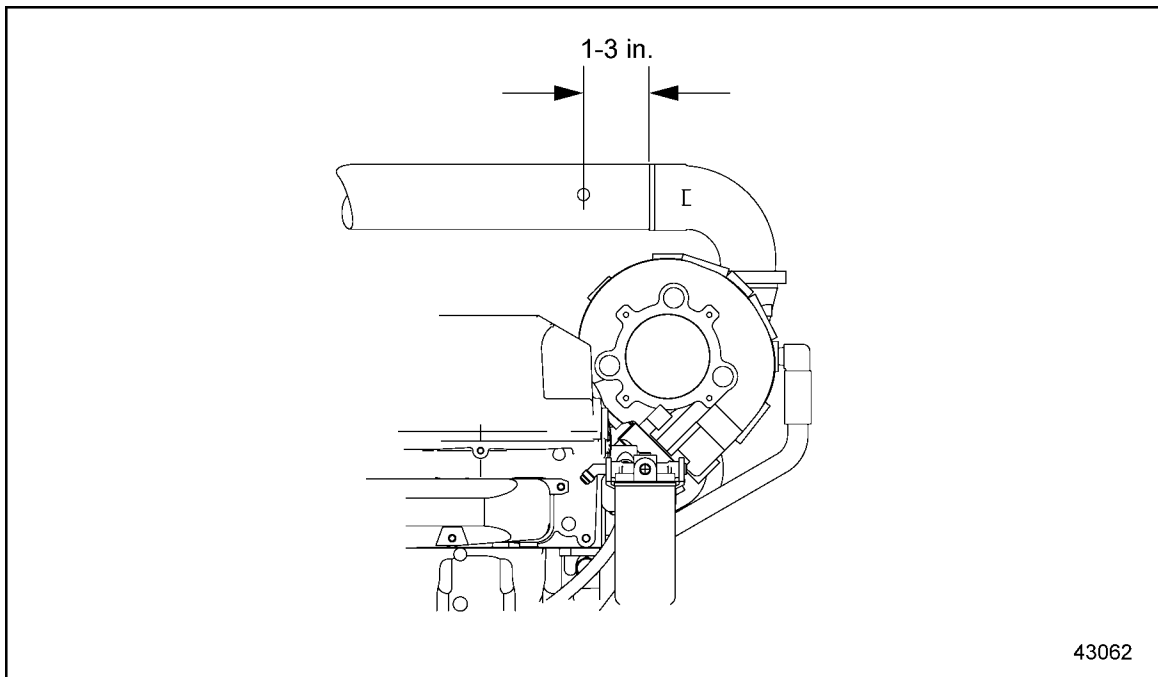


Figure 1 Adaptor Insertion Location

NOTICE:

Failure to remove metal shavings from inside the CAC pipe after drilling may allow the shavings to enter the cylinders, resulting in severe cylinder kit damage.

2. Remove the CAC pipe. Using the adaptor insertion mark as the centerline of the hole, carefully drill a 0.65 in. - 0.67 in. (16.5 mm - 17 mm) hole through the CAC pipe. Remove any sharp edges or burrs from this surface. Remove all metal shavings from the inside of the pipe.

NOTICE:

To prevent damage to the DDEC[®] electronic control system, disconnect the 5-pin power connector at the ECM (electronic control module) before welding. Failure to isolate the DDEC system from high current yield can result in severe ECM damage.

3. With the power harness disconnected from the engine ECM, seat the CTO sensor adaptor (parts list item 1) on the surface of the CAC piping. The threads of the adaptor should face a protected area. Install the adaptor cap (parts list item 2) by rotating it approximately four (4) full turns, and then weld the adaptor in place. See Figure 2.

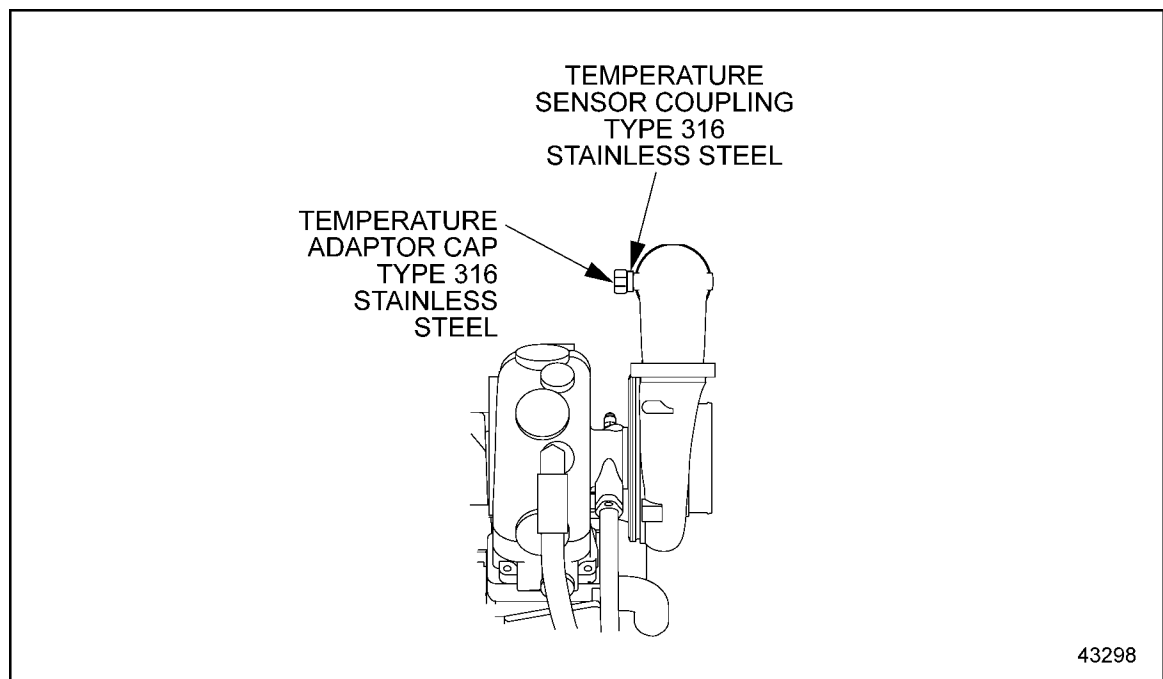


Figure 2 Temperature Sensor Coupling Prepared for Welding

4. Remove the adaptor cap while the adaptor is cooling and reinstall the CAC pipe onto the turbo exhaust outlet.
5. With the adaptor at ambient temperature, install the CTO sensor. Torque fitting to 45 N·m (33 lb-ft).
6. See Figure 3 and note the arrows for correct sensor harness routing. Use care to route the harness away from the CAC piping and turbocharger compressor. Butterfly wrap the extra-long sensor cord lengths and secure with nylon ties. See Figure 3.

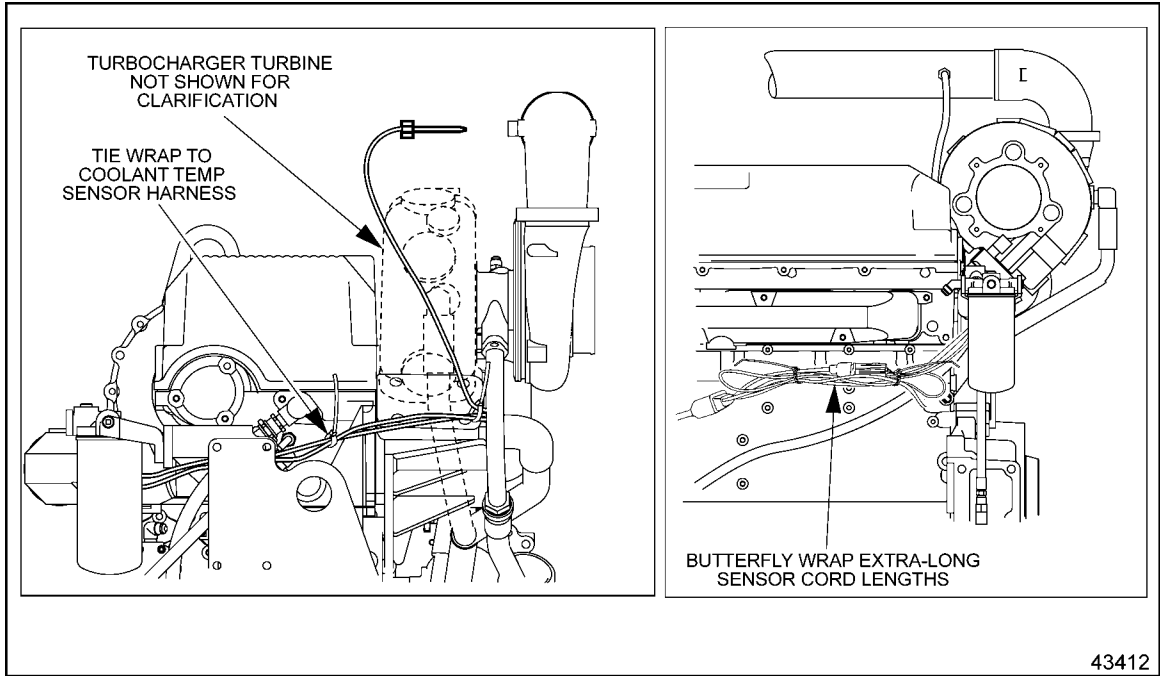


Figure 3 CTO Sensor Harness Routing

DETROIT DIESEL



13400 Outer Drive, West, Detroit, Michigan 48239-4001
 Telephone: 313-592-5000
 www.detroitdiesel.com

18SP564 - Page 4 of 4

©Copyright 2003 Detroit Diesel Corporation. Detroit Diesel,® DDC,® DDEC,® and Series 60® are registered trademarks of Detroit Diesel Corporation.

18SP564 0303 As technical advances continue, specifications will change. All rights reserved. Printed in U.S.A.