KENR9116-01
May 2011

# Troubleshooting

## 1204E-E44TA, 1204E-E44TTA and 1206E-E66TA Industrial Engines

**BK1 (Engine)**
**MK1 (Engine)**
**ML1 (Engine)**

# Important Safety Information

Most accidents that involve product operation, maintenance and repair are caused by failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing potentially hazardous situations before an accident occurs. A person must be alert to potential hazards. This person should also have the necessary training, skills and tools to perform these functions properly.

**Improper operation, lubrication, maintenance or repair of this product can be dangerous and could result in injury or death.**

**Do not operate or perform any lubrication, maintenance or repair on this product, until you have read and understood the operation, lubrication, maintenance and repair information.**

Safety precautions and warnings are provided in this manual and on the product. If these hazard warnings are not heeded, bodily injury or death could occur to you or to other persons.

The hazards are identified by the “Safety Alert Symbol” and followed by a “Signal Word” such as “DANGER”, “WARNING” or “CAUTION”. The Safety Alert “WARNING” label is shown below.

**⚠ WARNING**

The meaning of this safety alert symbol is as follows:

**Attention! Become Alert! Your Safety is Involved.**

The message that appears under the warning explains the hazard and can be either written or pictorially presented.

Operations that may cause product damage are identified by “NOTICE” labels on the product and in this publication.

**Perkins cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by Perkins is used, you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose.**

The information, specifications, and illustrations in this publication are on the basis of information that was available at the time that the publication was written. The specifications, torques, pressures, measurements, adjustments, illustrations, and other items can change at any time. These changes can affect the service that is given to the product. Obtain the complete and most current information before you start any job. Perkins dealers or Perkins distributors have the most current information available.

**⚠ WARNING**

**When replacement parts are required for this product Perkins recommends using Perkins replacement parts.**

**Failure to heed this warning can lead to premature failures, product damage, personal injury or death.**

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# Electronic Troubleshooting

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## Welding Precaution

Correct welding procedures are necessary in order to avoid damage to the following components:

- Electronic Control Module (ECM) on the engine
- Clean Emissions Module (CEM)
- Sensors
- Associated components

Components for the driven equipment should also be considered. When possible, remove the component that requires welding. When welding on an engine that is equipped with an ECM and removal of the component is not possible, the following procedure must be followed. This procedure minimizes the risk to the electronic components.

1. Stop the engine. Remove the electrical power from the ECM.
2. Ensure that the fuel supply to the engine is turned off.
3. Disconnect the negative battery cable from the battery. If a battery disconnect switch is installed, open the switch.
4. Disconnect all electronic components from the wiring harnesses. Include the following components:
   - Electronic components for the driven equipment
   - ECM
   - Sensors
   - Electronically controlled valves
   - Relays
   - Aftertreatment ID module

NOTICE
Do not use electrical components (ECM or ECM sensors) or electronic component grounding points for grounding the welder.

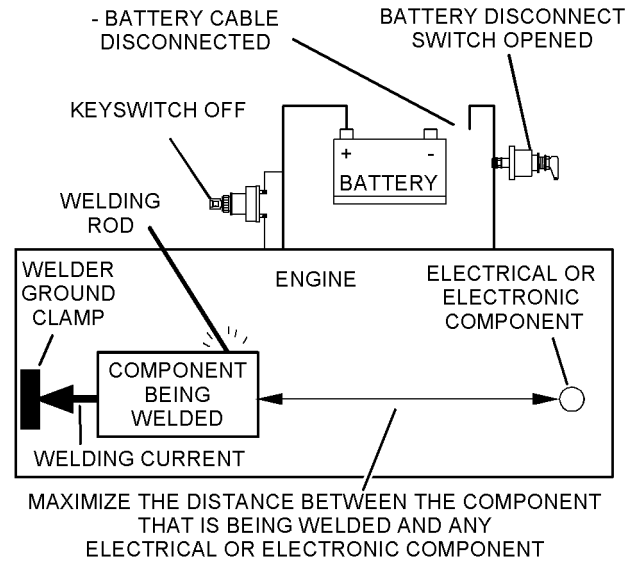


Illustration 1 g01143634

Service welding guide (typical diagram)

5. When possible, connect the ground clamp for the welding equipment directly to the engine component that will be welded. Place the clamp as close as possible to the weld. Close positioning reduces the risk of welding current damage to the engine bearings, to the electrical components, and to other components.
6. Protect the wiring harnesses from welding debris and/or from welding spatter.
7. Use standard welding procedures to weld the materials together.

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## System Overview

The engine has an electronic control system. The system also monitors the Diesel Particulate Filter (DPF) and the NOx Reduction System (NRS).

The control system consists of the following components:

- Electronic Control Module (ECM)
- Software (flash file)
- Wiring
- Sensors
- Actuators