Testing and Adjusting

Electric Protection System Energize-To-Shutoff (ETS) For Generator Set, Industrial and Marine Diesel Engines

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Time Delay Relay Verification Test

SMCS - 1400-081; 1435-081

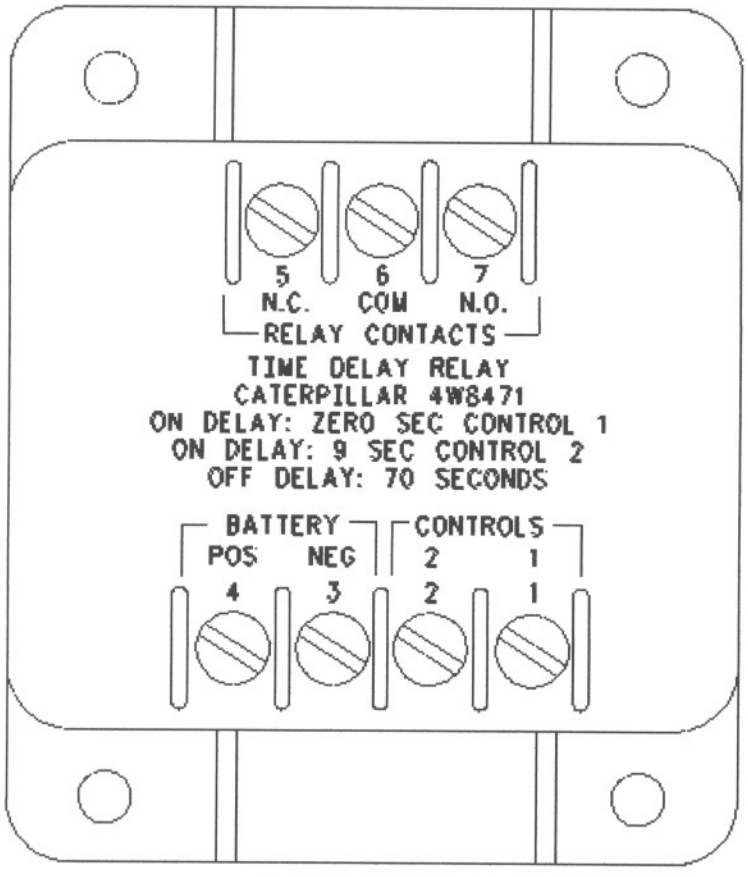

Illustration 1 g00565418

4W-8471 Time Delay Relay

1. Use a **6V-7070** Digital Multimeter, a stopwatch, and a battery (8 volts to 40 volts) for this test.

2. Connect the positive lead of the voltage source to terminal (TD-4) of the time delay relay. Connect the negative lead to terminal (TD-3). If the test is done on an engine, the start/stop switch must be in the STOP position in order to power terminal (TD-6). All connections must be maintained until the tests are completed.

3. Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 1

Terminals	**Relay Position**
5-6	Closed
6-7	Open

4. Connect the positive lead of the voltage source to terminal (TD-1). If the time delay relay is tested on the engine do not leave the voltage source hooked to terminal (TD-1) for more than 60 seconds. The fuel shutoff solenoid will be energized. Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 2

Terminals	**Relay Position**
5-6	Open
6-7	Closed

5. Remove the positive lead of the voltage source from terminal (TD-1). Use the stopwatch to measure the time that is needed for the position of the relay to change. Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 3

Terminals	**Delay Time of Relay Position**	
	0 to 60 seconds	**80 seconds or more**
5-6	Open	Closed
6-7	Closed	Open

Note: If a jumper is normally installed across terminals (TD-2) and (TD-3), the jumper must be removed before performing Step 5.

6. Connect the positive lead of the voltage source to terminal (TD-2). If the time delay relay is tested on the engine, do not leave the voltage source on terminal (TD-2) for more than 60 seconds. The fuel shutoff solenoid will be energized. Use the stopwatch to measure the time that is needed for the position of the relay to change. Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 4

Terminals	**Delay Time of Relay Position**	
	0 to 8 seconds	**10 seconds or more**
5-6	Closed	Open
6-7	Open	Closed

7. Remove the positive lead of the voltage source from terminal (TD-1). Use the stopwatch to measure the time that is needed for the position of the relay to change. Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 5

Terminals	**Delay Time of Relay Position**	
	0 to 60 seconds	**80 seconds or more**
5-6	Open	Closed
6-7	Closed	Open

8. Remove the voltage source from terminal (TD-4). Use the multimeter to determine continuity. Compare the measurements to the following table.

Table 6

Terminals	**Relay Position**
5-6	Closed
6-7	Open