

## KP: Charge Air Cooler (CAC) Pump

← KP: Introduction

### KP1 CHECK FOR DIAGNOSTIC TROUBLE CODES (DTCS)

Is DTC P1229 present?

Yes	No
For DTC P1229, GO to <a href="#">KP2</a> .	For a boost gauge indicates higher than normal boost, GO to <a href="#">KP9</a> .

### KP2 DTC P1229: CHECK THE VOLTAGE TO THE CAC PUMP RELAY COIL

- Ignition OFF.
- CAC Relay connector disconnected.
- Ignition ON, engine OFF.
- Measure the voltage between:

( + ) CAC Relay Connector, Harness Side	( - )
VPWR - Pin 1	Ground

Is the voltage greater than 10 V?

Yes	No
GO to <a href="#">KP3</a> .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

### KP3 CHECK THE CAC PUMP RELAY

- Ignition OFF.
- Remove the relay from the power distribution box.
- Measure the resistance between:

( + ) CAC Relay Connector, Component Side	( - ) CAC Relay Connector, Component Side
CAC - Pin 2	VPWR - Pin 1

Is the resistance between 65 - 100 ohms?

Yes	No
GO to <a href="#">KP4</a> .	INSTALL a new CAC relay. CLEAR the DTCs. REPEAT the self-test.

### KP4 CHECK THE CAC PUMP RELAY

- Carry out the CAC pump relay component test. Refer to the Wiring Diagrams Cell 149 Component Testing.

Does the CAC pump relay pass the component test?

Yes	No
GO to <a href="#">KP5</a> .	INSTALL a new CAC relay. CLEAR the DTCs. REPEAT the self-test.

## KP5 CHECK FOR AN OPEN CIRCUIT BETWEEN THE PCM AND THE CAC RELAY

- Ignition OFF.
- PCM connector disconnected.
- Measure the resistance between:

( + ) PCM Connector, Harness Side	( - ) CAC Relay Connector, Harness Side
CAC - Pin E64	CAC - Pin 2

Is the resistance less than 5 ohms?

Yes	No
GO to <a href="#">KP6</a> .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

## KP6 CHECK FOR A SHORT TO VOLTAGE BETWEEN THE PCM AND THE CAC RELAY

- Ignition ON, engine OFF.
- Measure the voltage between:

( + ) PCM Connector, Harness Side	( - ) Vehicle Battery
CAC - Pin E64	Negative terminal

Is the voltage less than 0.5 V?

Yes	No
GO to <a href="#">KP7</a> .	REPAIR the short circuit to PWR. CLEAR the DTCs. REPEAT the self-test.

## KP7 CHECK BETWEEN THE PCM AND THE CAC RELAY FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the resistance between:

( + ) PCM Connector, Harness Side	( - ) Vehicle Battery
CAC - Pin E64	Negative terminal

Is the resistance greater than 10K ohms?

Yes	No
GO to <a href="#">KP8</a> .	REPAIR the short circuit. CLEAR the DTCs. REPEAT the self-test.

## KP8 CHECK THE SCICP PID

- PCM connector connected.
- Access the PCM and monitor the SCICP PID.
- Enter output test mode. Refer to Section 2, [Output Test Mode \(OTM\)](#).
- Command the outputs ON.
- Command the outputs OFF.
- Exit output test mode.

Is the SCICP PID on?

Yes	No
<p>If the CAC reservoir is full, there is no air flow blockage at the CAC radiator, the IAT2 and connecting circuits are not high resistance or open, CAC hoses are not reversed and DTC P1229 is present in KOEO and KOER,</p> <p>GO to <a href="#">KP15</a>.</p>	<p>Unable to duplicate or identify the concern at this time.</p> <p>GO to Pinpoint Test <a href="#">Z</a>.</p>

## KP9 CHECK THE CAC FOR MECHANICAL OPERATION

- Ignition ON, engine OFF.
- Enter output test mode. Refer to Section 2, [Output Test Mode \(OTM\)](#).
- Command the outputs ON.
- Observe the CAC pump.
- Command the outputs OFF.
- Exit output test mode.

Does the CAC pump run?

Yes	No
<p>CHECK for low fluid level in the CAC system. CHECK for cracked or incorrectly routed CAC lines or airflow blockage at the CAC radiator. REPAIR the system as necessary. If the symptom still exists, RETURN to Section 3, <a href="#">No Diagnostic Trouble Codes (DTCs) Present Symptom Chart Index</a>, to diagnose boost gauge indicates higher than normal boost.</p>	<p>GO to <a href="#">KP10</a>.</p>

## KP10 CHECK THE VOLTAGE AND GROUND CIRCUITS AT THE CAC PUMP

- Charge Air Cooler (CAC) Pump connector disconnected.
- Enter output test mode. Refer to Section 2, [Output Test Mode \(OTM\)](#).
- Command the outputs ON.
- Measure the voltage between:

( + ) Charge Air Cooler (CAC) Pump Connector, Harness Side	( - ) Charge Air Cooler (CAC) Pump Connector, Harness Side
PUMPPWR - Pin 1	GND - Pin 2

- Command the outputs OFF.
- Exit output test mode.

Is the voltage greater than 10 V?

Yes	No
INSTALL a new Charge Air Cooler (CAC) Pump. REFER to the Workshop Manual Section 303-03B, Supercharger Cooling.  CLEAR the DTCs. REPEAT the self-test.	GO to <a href="#">KP11</a> .

## KP11 CHECK THE CAC VOLTAGE CIRCUIT TO GND

- Measure the voltage between:

( + ) Charge Air Cooler (CAC) Pump Connector, Harness Side	( - ) Vehicle Battery
PUMPPWR - Pin 1	Negative terminal

Is the voltage greater than 10 V?

Yes	No
GO to <a href="#">KP12</a> .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

## KP12 CHECK THE INTEGRITY OF THE CAC PUMP GROUND CONNECTION

- Charge Air Cooler (CAC) Pump connector disconnected.
- Measure the resistance between:

( + ) Charge Air Cooler (CAC) Pump Connector, Harness Side	( - ) Vehicle Battery
GND - Pin 2	Negative terminal

Is the resistance less than 5 ohms?

Yes	No
GO to <a href="#">KP13</a> .	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

## KP13 CHECK THE VOLTAGE TO THE CAC PUMP RELAY

- CAC Relay connector disconnected.
- Measure the voltage between:

( + ) CAC Relay Connector, Harness Side	( - )
B+ - Pin 3	Ground

Is the voltage greater than 10 V?

Yes	No
GO to <a href="#">KP14</a> .	REPAIR the open circuit. CHECK the fuses.  CLEAR the DTCs. REPEAT the self-test.

## KP14 CHECK FOR AN OPEN CAC PUMP CIRCUIT

- Measure the resistance between:

( + ) CAC Relay Connector, Harness Side	( - ) Charge Air Cooler (CAC) Pump Connector, Harness Side
PUMPPWR - Pin 5	PUMPPWR - Pin 1

Is the resistance less than 5 ohms?

Yes	No
INSTALL a new CAC pump relay. CLEAR the DTCs. REPEAT the self-test.	REPAIR the open circuit. CLEAR the DTCs. REPEAT the self-test.

## KP15 CHECK FOR CORRECT PCM OPERATION

- Disconnect all the PCM connectors.
- Visually inspect for:
  - pushed out pins
  - corrosion
- Connect all the PCM connectors and make sure they seat correctly.
- Carry out the PCM self-test and verify the concern is still present.

Is the concern still present?

Yes	No
INSTALL a new PCM. REFER to Section 2, <a href="#">Flash Electrically Erasable Programmable Read Only Memory (EEPROM)</a> , Programming the VID Block for a Replacement PCM.	The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. GO to Pinpoint Test <a href="#">Z</a> .

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