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Coding Information

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Title: PSI LPG and Gasoline Oil Consumption Diagnostics

Applies To: 8.8L PSI gasoline and propane engines all generations

Change Log

Please refer to the change log text box below for recent changes to this article:

10/09/2025 - Initial Article Release.

Description

This document will guide users through supplemental oil consumption diagnostics for 8.8L PSI gas and propane engines.

Symptoms

Diagnostic Trouble Codes & Dashboard Indicator Lights:

DTC/Light	Description
N/A	N/A

Customer Observations or Concerns:

- Oil Consumption
- Blue smoke from exhaust
- Engine running rough
- Poor fuel mileage
- Carbon fouled spark plugs
- Puff of smoke on engine start-up after sitting
- Rough idle/low idle speed
- Sludge or milky buildup under the valve covers
- High blowby causing repeat engine oil leaks

Special Tools / Software

Tool Description	Tool Number	Comments
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Cylinder Compression Test Kit	OTC5606	Manual Link
Cylinder Leak Down Test Kit	OTC5609	Manual Link
Spark Plug Socket	N/A	Source Locally
Spark Plug Boot Pliers	SES84A	Manual Link

Service Parts Information

Please consult the dealer parts department for current part numbers.

WARNINGS

WARNING! To prevent property damage, personal injury, and / or death, park vehicle on a hard, flat surface, turn the engine off, set the parking brake, and install wheel chocks to prevent the vehicle from moving in either direction.

WARNING! To prevent property damage, personal injury, and / or death, if the vehicle must be raised, do not work under the vehicle supported only by jacks. Jacks can slip or fall over.

WARNING! To prevent personal injury and / or death, always wear safe eye protection when performing vehicle maintenance.

WARNING! To prevent property damage, personal injury, and / or death, keep flames or sparks away from vehicle and do not smoke while servicing the vehicle's batteries. Batteries expel explosive gases.

WARNING! To prevent property damage, personal injury, and / or death, remove the ground cable from the negative terminal of the battery box before disconnecting any electrical components. Always connect the ground cable last.

Considerations

NOTE: Oil present in the combustion chamber can raise engine compression, possibly masking a cylinder compression issue. Be sure to follow the instructions for cylinder leak-down diagnostics carefully.

NOTE: Approved Dexos full synthetic 5W-30 engine oil must be used, and maintenance schedules followed per the PSI engine on-road application engine operation and maintenance manual. The engine oil and filter should be changed every 6 months, 5,000 miles, or 200 engine hours of operation. Whichever comes first. DO NOT proceed with the IKNOW article diagnostics if the maintenance records do not confirm that the engine oil is being changed according to the manuals outlined maintenance schedule.

NOTE: Both the PSI 8.8L LPG and PSI 8.8L Gasoline utilize the same PCV (Positive Crankcase Ventilation) system. Both an inlet and outlet filter, composed of stainless-steel mesh that resembles Brillo pads, are used. This is designed to collect engine oil vapor and return it into the crankcase. It is normal to have a light oil residue in the intake manifold due to this type of PCV system.

Diagnostic Steps

Step	Verify published diagnostics.	Decision

#1	<p>Confirm that the 2.6.2 oil consumption diagnostics were performed from the PSI Service Diagnostic Manual:</p> <p>Were the published oil consumption diagnostics completed?</p>	<p>Yes.</p> <p>Proceed to step 2.</p>
		<p>No.</p> <p>Complete the published oil consumption diagnostics.</p> <p>NOTE: If the diagnostics lead to no trouble found, proceed to step 2.</p>

Step	Confirm engine oil level inspection.	Decision
#2	<p>Confirm the engine oil level was checked within 10 minutes of the engine shutting down, per the 1.2.7 engine oil level procedure:</p> <p>Was the engine oil level verified per 1.2.7 engine oil level procedure?</p> <p>NOTE: It is imperative to confirm oil level per the proper procedures. These engines are equipped with a self-draining oil cooler, which has an internal oil capacity of approximately 2 quarts.</p>	<p>Yes.</p> <p>Proceed to step 3.</p>
		<p>No.</p> <p>Verify oil level and quality per 1.2.7 procedure.</p> <p>NOTE: If the issue continues, proceed to step 3.</p>

Step	Review the vehicle maintenance records.	Decision
#3	<p>Obtain the vehicles' maintenance records.</p> <p>Confirm the average oil change interval aligns with the vehicle mileage and engine hours (see example formula below):</p> <p>Do the vehicle maintenance records meet the On-Road Applications Engine Operation and Maintenance Manual?</p> <p>Example calculation:</p> <p>1,250 total engine hours (Vehicle's current engine hours) ÷ 200 engine hours (typical average engine hours for oil changes) = 6.25 oil changes per unit engine hours</p>	<p>Yes.</p> <p>Proceed to step 4.</p>
		<p>No.</p> <p>Change the engine oil and filter. Mark the engine oil level and return the unit to service.</p> <p>Educate the owner and operator on proper maintenance practices.</p> <p>Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.</p>

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Step	Inspect the intake manifold.	Decision
#4	1. Confirm the ignition is off. 2. Remove the intake manifold plenum. 3. Unplug the electrical connector from the throttle valve. 4. Use a non-marring tool to prop open the throttle plate. **WARNING** (Do NOT use your fingers to prop open the throttle plate) 5. Inspect the intake manifold for signs of engine oil pooling (See Figure #1 for an example of oil pooling): Does the intake manifold show signs of oil pooling?	Yes. Proceed to step 5.
	No. Proceed to step 6.	

Figure #1



Example of oil pooling in the intake manifold.

Step	Inspect the PCV system and air filter.	Decision
#5	Inspect the air filter and PCV system for signs of kinks and/or restrictions (See Figure #2 for PCV orifice inspection location example):	Yes. Proceed to step 6.

Was the PCV system free of kinks and restrictions?

NOTE: Only OEM air filters should be used for this application. Aftermarket air filters can cause lean fuel trims and other issues, causing vacuum issues that may draw excessive air from the crankcase.

No.

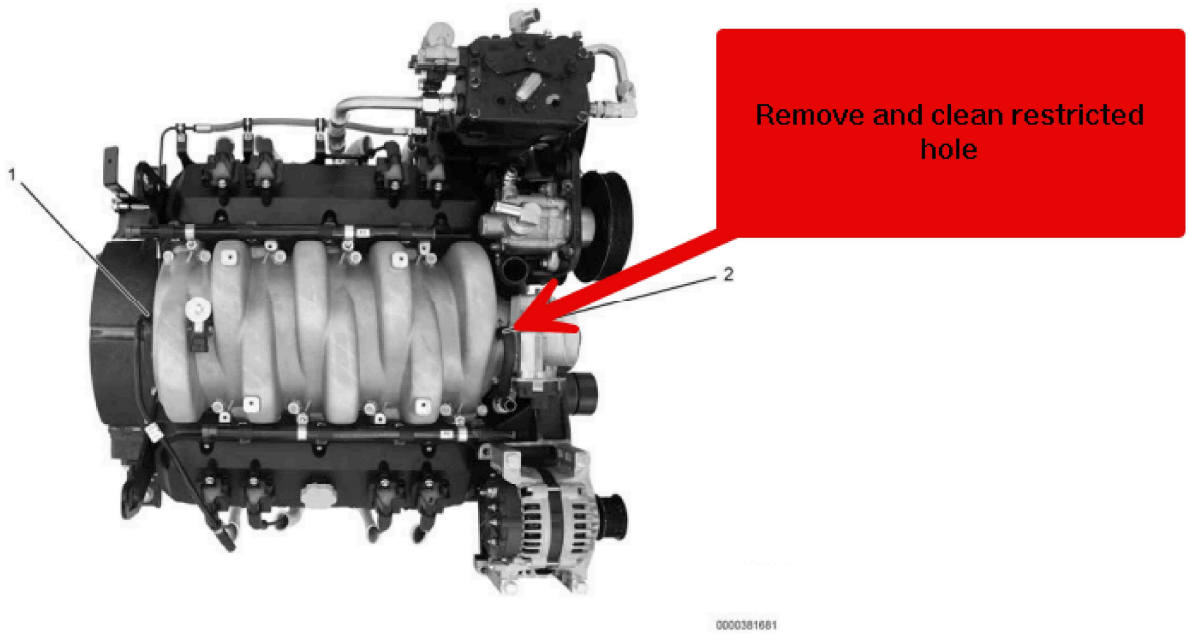
Repair or replace the PCV system. Clean the orifice hole, if it was found to be restricted, with a 5/32 drill bit or smaller.

Change the engine oil and filter. Mark the engine oil level and return the unit to service.

Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.

NOTE: Do NOT enlarge the PCV orifice hole. Anything larger than a 5/32 drill bit can enlarge the hole.

Figure #2



NOTE: Airflow comes from the back, under the intake valley cover, through the Breather Boxes (Stainless Steel Mesh), and then up through the outlet to the throttle body. Remove hose #2 and clean the hole with contact cleaner and the correct-size twist drill. Do NOT enlarge the hole.

Step	Inspect the spark plugs.	Decision
#6	Remove and inspect all spark plugs for signs of oil buildup/fouling (See Figure #3 below for an example):	Yes. Proceed to step 7.
	Do the spark plugs show signs of oil buildup/fouling?	No. End diagnostics. Change the engine oil and filter. Mark the engine oil level and return the unit to service. Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.

NOTE: If this has already been performed, open a technical service case file. Provide your step-by-step results with numerical readings where applicable at case opening.

Figure #3





Example of oil fouled spark plugs.

Step	Verify cylinder compression.	Decision
#7	<p>Perform cylinder compression testing:</p> <p>Was a cylinder identified to have compression out of specification?</p> <p>NOTE: Record the numerical results of the cylinder compression testing, as this may be needed if a technical service case file is required.</p>	<p>Yes.</p> <p>Proceed to step 8.</p>
		<p>No.</p> <p>End diagnostics.</p> <p>Change the engine oil and filter. Mark the engine oil level and return the unit to service.</p> <p>Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.</p> <p>NOTE: If this has already been performed, open a technical service case file. Provide the step-by-step results with numerical readings where applicable at case opening.</p>

Step	Verify cylinder leak down.	Decision
#8	<p>Perform cylinder leak-down testing on the cylinder with identified compression issues:</p> <p>Is the cylinder leak-down test within specification?</p> <p>NOTE: If air is escaping during the test, determine the location of the leak before proceeding to the next step.</p>	<p>Yes.</p> <p>Open a technical service case file. Provide the step-by-step results with numerical readings where applicable at case opening.</p>
		<p>No, air is leaking through the crankcase.</p> <p>Proceed to step 9.</p>
		<p>No, air is leaking through the intake or exhaust.</p> <p>Proceed to step 10.</p>

Step	Determine the cause of cylinder leakage.	Decision
#9	<p>Verify the piston is on the compression stroke at TDC (Top Dead Center) for the cylinder in question. If it was not, place the piston at compression TDC and run the test again. Return to step 8 to determine the next step.</p> <p>If the piston orientation was correct, rotate the engine so the piston is at BDC (Bottom Dead Center). Borescope the cylinder in question and inspect for damage. See Figures #4, #5, and #6 for example:</p> <p>Was any damage to the top of the piston or cylinder walls found?</p> <p>NOTE: The cylinder in question should have the piston rotated to BDC so a proper inspection can be performed.</p>	<p>Yes.</p> <p>Open a Powertrain Technical Service case file.</p> <p>Provide the step-by-step results of this article with numerical readings where applicable, images of inspection results, compression, and leak down test results with numerical readings.</p> <p>NOTE: Providing your full step-by-step results can result in a better opening note from tech service, either leading</p>

to the next step in diagnostics or the decision to replace the engine immediately.

No.

Proceed to step 12.

Figure #4



Example of severe cylinder scoring.

Figure #5





Example of a melted piston.

Figure #6



Example of light scoring. This can be considered normal and should not be considered as a reason for failure.

Step	Determine the cause of the cylinder leakage.	Decision
#10	Remove the valve cover to access the rocker arms on the cylinder in question. Confirm the piston is on the compression stroke TDC. Remove the rocker arms for the associated cylinder while monitoring cylinder leak down:	Yes. End diagnostics. Change the engine oil and filter. Mark the engine oil level and return the unit to

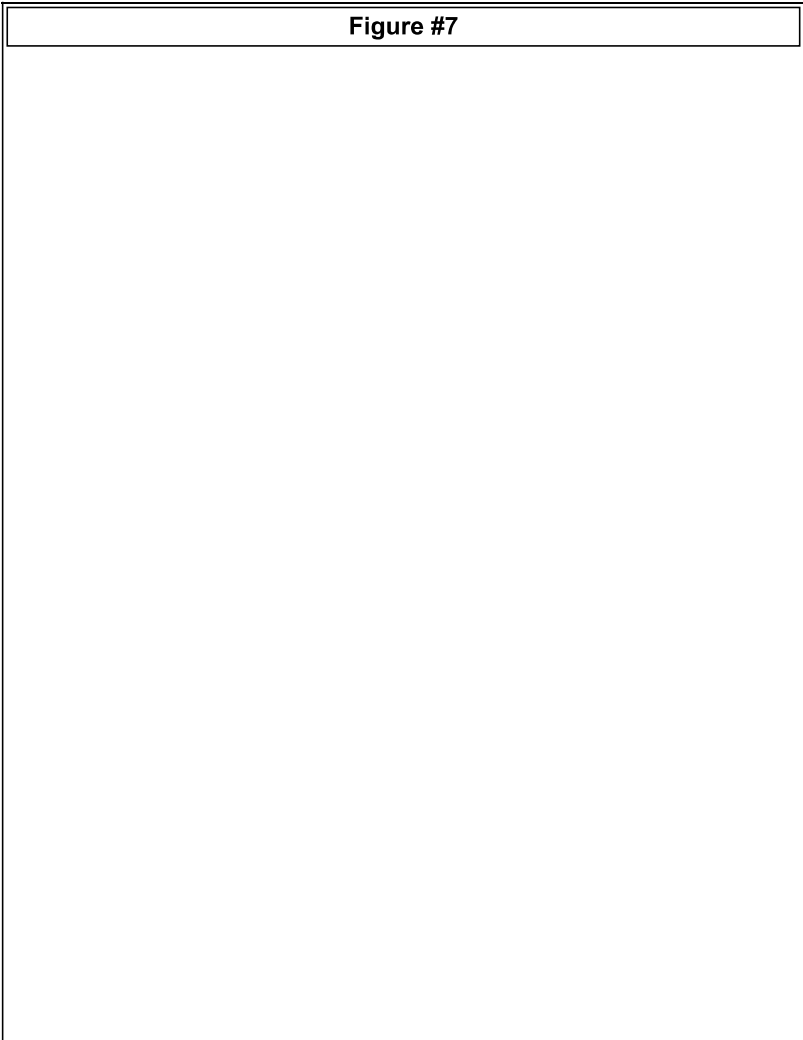
	<p>Does the cylinder leakage return to specification with the rocker arms removed?</p>	<p>service.</p> <p>Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.</p> <p>NOTE: If this has already been performed, open a technical service case file. Provide your step-by-step results with numerical readings where applicable at case opening.</p> <hr/> <p>No.</p> <p>Proceed to step 11.</p>
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Step	Determine the cause of cylinder leakage.	Decision
#11	<p>With the leak-down tester still connected, supply regulated air to the cylinder in question. Lightly tap the intake and exhaust valves while monitoring cylinder leak down:</p> <p>Does cylinder leakage return to specification after tapping the valves?</p> <p>NOTE: If leakage returns to specification after tapping the valve, this typically indicates a sticking valve in the valve guide.</p>	<p>Yes.</p> <p>Remove and replace the cylinder head.</p> <p>Change the engine oil and filter. Mark the engine oil level and return the unit to service.</p> <p>Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.</p> <hr/> <p>No.</p> <p>Open a Powertrain Technical Service case file.</p> <p>Provide the step-by-step results of this article with numerical readings where applicable, images of inspection results, compression, and leak down test results with numerical readings.</p> <p>NOTE: Providing your full step-by-step results can result in a better opening note from tech service, either leading to the next step in diagnostics or the decision to replace the engine immediately.</p>

Step	Determine the cause of cylinder leakage.	Decision
#12	<p>Remove the engine oil pan. While monitoring cylinder leakage, check for large amounts of air passing by the cylinder wall and piston rings:</p> <p>Is a large amount of air passing by the piston and/or cylinder wall?</p> <p>NOTE: A small amount of air passing by the piston can be normal.</p>	<p>Yes.</p> <p>Proceed to step 13.</p> <hr/> <p>No.</p> <p>End diagnostics.</p> <p>Change the engine oil and filter. Mark the engine oil level and return the unit to service.</p> <p>Advise the customer to return after 500 miles to check the oil level and confirm the consumption amount.</p>

NOTE: If this has already been performed, open a technical service case file. Provide your step-by-step results with numerical readings where applicable at case opening.

Step	Determine the cause of cylinder leakage.	Decision
#13	<p>Remove the piston from the suspect cylinder.</p> <p>Inspect the piston for signs of blowby, stuck or damaged oil control rings, heavy scoring, and damaged or broken rings/ring lands. See Figures #7, #8, #9, and #10 for examples:</p> <p>Was any damage found to the piston?</p>	<p>Yes.</p> <p>Open a Powertrain Technical Service case file.</p> <p>Provide the step-by-step results of this article with numerical readings where applicable, images of inspection results, compression, and leak down test results with numerical readings.</p> <p>NOTE: Providing your full step-by-step results can result in a better opening note from tech service, either leading to the next step in diagnostics or the decision to replace the engine immediately.</p>
		<p>No.</p> <p>Proceed to step 14.</p>





Example of a burned piston with metal in the oil control ring.

Figure #8



Example of carbon buildup causing the piston rings to stick, creating blowby.

Figure #9



Example of a broken compression ring.

Figure #10



Example of stuck compression rings.

Step	Inspect the piston rings.	Decision
#14	<p>Inspect the piston rings and confirm they are not sticking in the piston:</p> <p>Do the piston rings move freely?</p> <p>NOTE: The piston compression rings should be able to spin freely by hand without sticking in the piston. They should be able to rotate fully and move back and forth in multiple directions. When the piston is removed from the cylinder, the rings should expand greater than the diameter of the piston.</p>	<p>Yes.</p> <p>Open a Powertrain Technical Service case file.</p> <p>Provide the step-by-step results of this article with numerical readings where applicable, images of inspection results, compression, and leak down test results with numerical readings.</p> <p>NOTE: Providing your full step-by-step results can result in a better opening note from tech service, either leading to the next step in diagnostics or the decision to replace the engine immediately.</p>
		<p>No.</p> <p>Open a Powertrain Technical Service case file.</p> <p>Provide the step-by-step results of this article with numerical readings where applicable, images of inspection results,</p>

compression, and leak down test results with numerical readings.

NOTE: Providing your full step-by-step results can result in a better opening note from tech service, either leading to the next step in diagnostics or the decision to replace the engine immediately.

Repair Step(s)

Review applicable service manuals for repair procedures.

Supporting Information:

Cylinder Compression test - Static compression testing can lead to inaccurate readings. For the most accurate readings, it is best to do a dynamic compression test. To perform a dynamic compression test, please follow the procedure below:

1. Disconnect the fuel injectors at the electrical connectors, so fuel is not introduced into the cylinders while cranking.
2. Disconnect the throttle body electrical connector and place a non-marring tool to hold the throttle plate open.
3. Ensure a Schrader valve is installed in the compression testing tool, so the pressure recorded is not lost.
4. Crank the engine until the highest value is recorded on the compression gauge.
 1. A new engine compression should be around 250 PSI.
 2. A healthy engine should be at or over 200 PSI.
 3. Anything lower than 180 PSI can point to a compression issue.
 4. Minimum compression on any one cylinder should not be less than 70% of the highest cylinder.
 1. Example: if the highest pressure in a cylinder is 200 PSI, the lowest allowable pressure for any other cylinder would be 140 (200 X 70% = 140).

NOTE: Oil present in the combustion chamber can raise engine compression, possibly masking a cylinder compression issue. Be sure to follow the instructions for cylinder leak-down diagnostics carefully. See [Figure #1](#) for an example of oil pooling in the intake manifold, which makes its way into the cylinders, causing the back cylinder compression to be greater. Mainly affecting the back cylinders.

[Return to step 7](#)

Cylinder Leak Down test:

1. Install dealer essential tool #OTC5609.
2. Ensure the piston for the associated cylinder being tested is on its compression stroke at TDC (Top Dead Center).
 1. Both intake and exhaust valves should be closed. If necessary, remove the valve covers to confirm valve orientation.
3. Set the air pressure to a minimum of 80 PSI.
 1. **Do NOT go over 100 PSI**
4. If a leak is present, take note of where the compression is leaking from.
 1. Intake
 2. Exhaust
 3. Crankcase
5. Record the percentage of leakage and air pressure for each cylinder.
 1. Cylinder leak down should be less than 25%

[Return to step 8](#)

Links to testing and manuals:

- [2015 PSI 8.8L Propane / 2018 PSI 8.8L Gasoline Engine Service Manual](#)
- [PSI 8.8L Gasoline For On-Road Applications Engine Operation and Maintenance Manual](#)
- [PSI 8.8L LP Engine Operation and Maintenance Manual](#)
- [PSI 8.8L LP Gen Two Engine Operation and Maintenance Manual](#)

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Warranty Information

Warranty Claim Coding:

Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

Standard Repair Time(s):

Refer to the [SRT Manual](#) for Repair Times

Other Resources

[Master Service Information Site](#)

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