

<b>Subject:</b>  <b>SERVICE CAUTIONS FOR DIESEL ENGINE OIL REPLACEMENT (SKYACTIV-D)</b>	<b>Service Alert No.: SA-076/22</b>
	<b>Last Issued : 11/22/2022</b>

## BULLETIN NOTES

### APPLICABLE MODEL(S)/VINS

2019 CX-5 (with SKYACTIV-D)

**NOTE:** The oil level gauge is replaced during the Recall 5522H. Check and ensure this recall is completed prior to performing any oil change.

### DESCRIPTION

When replacing the engine oil on the diesel engine, be sure to drain the old oil properly and refill with the accurate amount. The latest engines are equipped with an oil level sensor that measures the amount of oil and stores a DTC according to the oil status. For proper detection of the DTC, proper oil drainage and an accurate replacement amount of oil are required when replacing the engine oil.

**NOTE: When draining the engine oil, replace the oil filter at the same time.**

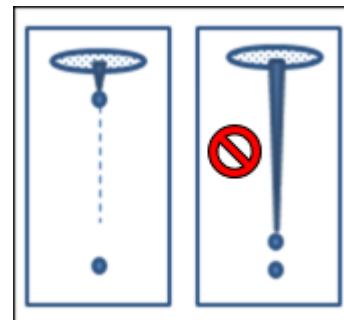
Using the oil level sensor, oil deterioration is accurately evaluated. Therefore, including new oil filled in a new oil filter, the dilution amount of the oil can be calculated. Follow the supplemental information in the instructions in MGSS (ENGINE OIL REPLACEMENT [SKYACTIV-D 2.2]).

### Engine oil replacement procedure

**WARNING:** A hot engine can cause severe burns. Be careful when servicing the vehicle.

#### Draining the old oil

1. Position the vehicle on level ground or horizontally on a lift.
2. Warm up the engine to allow the engine oil temperature to reach 140 °F (60 °C) or higher.
3. Stop the engine and wait 5 (five) minutes to allow the oil to drain back into the oil pan.
4. Remove the oil filler cap.
5. Remove the drain plug and drain the oil until it starts to drip as shown.
6. Install the drain plug with a new gasket.



GOOD / NOT good

**CONSUMER NOTICE:** The information and instructions in this bulletin are intended for use by skilled technicians. Mazda technicians utilize the proper tools/ equipment and take training to correctly and safely maintain Mazda vehicles. These instructions should not be performed by "do-it-yourselfers." Customers should not assume this bulletin applies to their vehicle or that their vehicle will develop the described concern. To determine if the information applies, customers should contact their nearest authorized Mazda dealership. Mazda North American Operations reserves the right to alter the specifications and contents of this bulletin without obligation or advance notice. All rights reserved. No part of this bulletin may be reproduced in any form or by any means, electronic or mechanical---including photocopying and recording and the use of any kind of information storage and retrieval system ---without permission in writing.

**Point 1: Drain the engine oil while the engine is in a warm condition**

An amount of oil will remain in the engine if draining the oil while the engine is cold. Due to the high viscosity of the oil, a certain amount of the oil still remains on the wall surfaces of the engine.

Refilling with the specified amount of oil

- Refill with the specified amount of oil with an accurate oil jug.

**NOTE:** Commercially available oil jugs may have inaccurate graduation resulting in as much as 0.2 to 0.3 QT (200 to 300 ml) of excess oil for the engine. Refer to "Recommended measuring method" in this document.

**Point 2: Refill with the correct amount of oil**

**If the correct amount of oil is refilled after proper drainage, it does not deviate significantly from the F level.**

Checking for an accurate amount of oil using an oil level gauge

1. Warm up the engine to allow the engine oil temperature to reach 176 °F (80 °C) or higher.

- Monitor the PID "EOT" (Engine Oil Temperature) using Mazda Modular Diagnostic System (M-MDS).

or

- With the A/C switched off, wait until the cooling fan starts running (coolant temperature is at 212 °F (100 °C) or higher).

2. Stop the engine and wait for about 10 minutes.

3. Pull the oil level gauge straight out without twisting and make sure the oil level is at the F level (read with the reading surface of the L-F mark facing the front of the vehicle).

4. After changing the engine oil, perform the engine oil data reset procedure according to the instructions in MGSS (ENGINE OIL DATA RESET [SKYACTIV-D 2.2]).

**NOTE:** If the oil temperature is low or the wait time after engine stop is short, the oil level gauge will not be able to accurately measure the amount of engine oil. Also, just after oil filter replacement, the oil level looks higher until the oil filter is completely filled with oil.

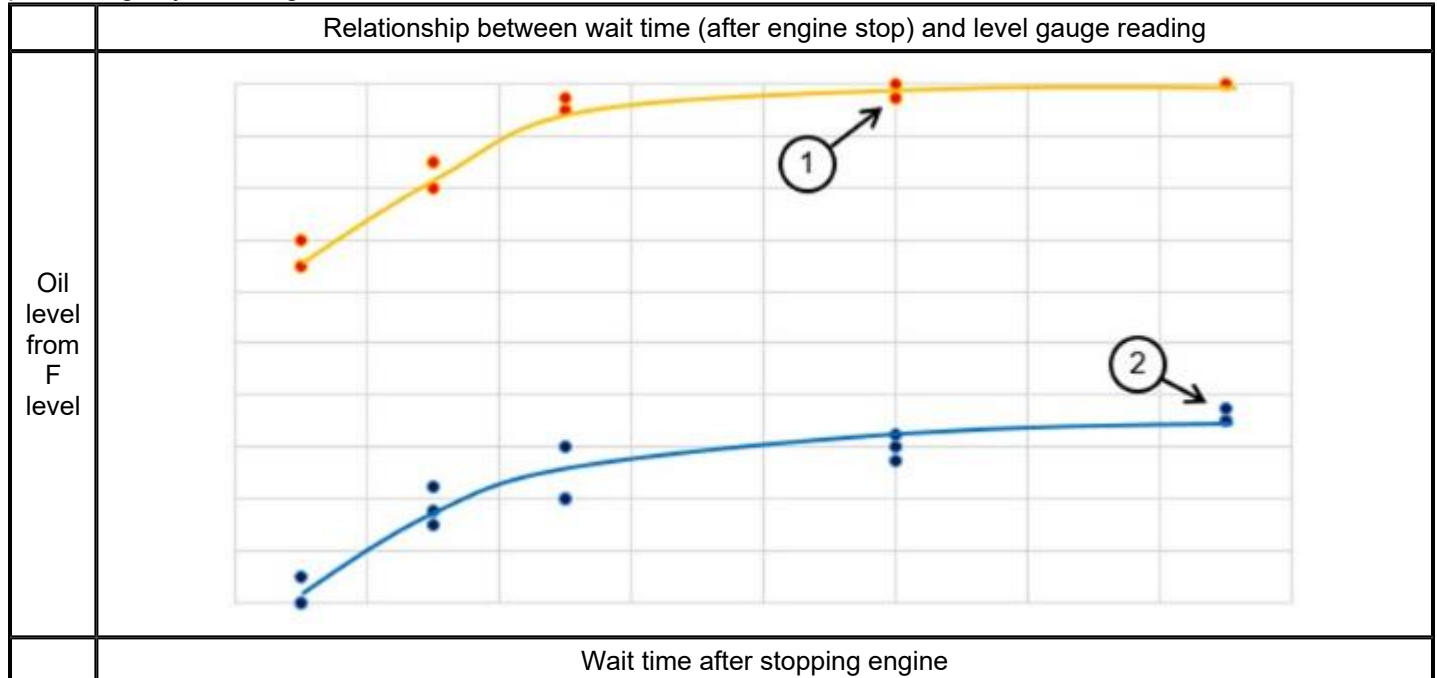
As shown in the verification results below, the oil level gauge reading may be lower than the actual amount of oil depending on the oil temperature and the wait time. If it is adjusted (adding engine oil) to the F level in this situation, it will be overfilled and there is a risk of early detection of DTC P252F.

**CONSUMER NOTICE:** The information and instructions in this bulletin are intended for use by skilled technicians. Mazda technicians utilize the proper tools/ equipment and take training to correctly and safely maintain Mazda vehicles. These instructions should not be performed by "do-it-yourselfers." Customers should not assume this bulletin applies to their vehicle or that their vehicle will develop the described concern. To determine if the information applies, customers should contact their nearest authorized Mazda dealership. Mazda North American Operations reserves the right to alter the specifications and contents of this bulletin without obligation or advance notice. All rights reserved. No part of this bulletin may be reproduced in any form or by any means, electronic or mechanical--including photocopying and recording and the use of any kind of information storage and retrieval system ---without permission in writing.

**Trend with reading of the oil level gauge**

The following graphs show the trend with reading of the oil level gauge vs the wait time (after engine stop) started at certain oil temperatures.

**NOTE:** The oil level gauge is replaced during the Recall 5522H. Check and ensure this recall is completed prior to performing any oil change.



For an accurate measurement, at 176 °F (80 °C) as shown (1), it is necessary to check after waiting for 10 minutes after engine stop. If the oil temperature is as low as 104 °F (40 °C), the variation is large as shown (2). The oil level is still low after 15 minutes.

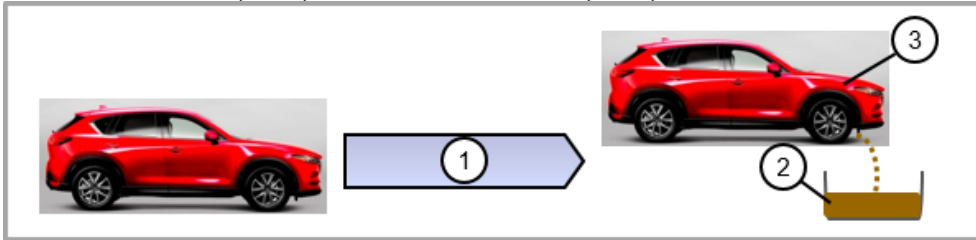
**Problem with overfilling (DTC P252F:00)**

The viscosity of oil is higher when the engine is cold, and if oil is drained immediately after a cold start, the amount of oil that adheres to the engine wall surface and cannot be completely drained is larger than after warming the engine up (oil temperature is 140 °F (60 °C) or higher). Up to 0.5 QT (0.5 L) can remain in the engine than after warming it up. When the specified amount 5.4 QT (5.1 L) is refilled in this situation, the amount of oil remaining on the wall surface 0.5 QT (0.5 L) is added, resulting in overfilling.

**CONSUMER NOTICE:** The information and instructions in this bulletin are intended for use by skilled technicians. Mazda technicians utilize the proper tools/ equipment and take training to correctly and safely maintain Mazda vehicles. These instructions should not be performed by "do-it-yourselfers." Customers should not assume this bulletin applies to their vehicle or that their vehicle will develop the described concern. To determine if the information applies, customers should contact their nearest authorized Mazda dealership. Mazda North American Operations reserves the right to alter the specifications and contents of this bulletin without obligation or advance notice. All rights reserved. No part of this bulletin may be reproduced in any form or by any means, electronic or mechanical---including photocopying and recording and the use of any kind of information storage and retrieval system ---without permission in writing.

## [Sample situation]

When the engine is stopped at oil temperature of 50 °F (10 °C) and the oil is drained after 5 minutes.  
 Drained oil: 4.8 QT (4.6 L) / Residual oil: 0.5 QT (0.5 L) adhered to the wall surface.



The vehicle is driven to a dealership by short-distance and short-time driving (1).

4.8 QT (4.6 L) (2) is drained but 0.5 QT (0.5 L) (3) remains in the engine. In this situation, if 5.4 QT (5.1 L) is refilled, it is over filled by residual 0.5 QT (0.5 L).

**NOTE:** If the amount of oil is measured with the oil level gauge immediately after starting the engine (as it takes time for highly viscous oil to return to the oil pan), the reading on the oil level gauge looks lower than F. If an amount of oil is added to bring it to the F level, it will result in a large amount of overfilling.

### Recommended measuring method

- Before using an oil jug, use an accurate measuring cup etc., confirm the accuracy of the graduation on the oil jug and mark the correct level.
- Before using an automatic oil dispenser, pour the specified amount of oil into a container and, using an accurate measuring cup etc., confirm the accuracy.



Accurately measure the specified amount and mark the oil jug.



Graduation of your oil jug may differ as much as 0.2-0.3 QT (200-300 ml) from actual amount.

**CONSUMER NOTICE:** The information and instructions in this bulletin are intended for use by skilled technicians. Mazda technicians utilize the proper tools/ equipment and take training to correctly and safely maintain Mazda vehicles. These instructions should not be performed by "do-it-yourselfers." Customers should not assume this bulletin applies to their vehicle or that their vehicle will develop the described concern. To determine if the information applies, customers should contact their nearest authorized Mazda dealership. Mazda North American Operations reserves the right to alter the specifications and contents of this bulletin without obligation or advance notice. All rights reserved. No part of this bulletin may be reproduced in any form or by any means, electronic or mechanical---including photocopying and recording and the use of any kind of information storage and retrieval system ---without permission in writing.