

Crankcase Ventilation Tube Heater
 Installation
 D11, D13, D16

**FSB 257-003, Crankcase Ventiation Tube Heater
 Installation**

(October 2015)

For customer operating vehicles in extreme cold temperatures, Volvo Trucks has developed a device that will prevent the crankcase ventilation (CCV) tube from building up ice and freezing over which could lead to engine damage. The kit (part number 22578454) is available from the PDC and consists of two components:

- Heater Cable 12 volt
- Vent Heater Jumper

Procedure

You must read and understand the precautions and guidelines in Service Information, Function Group 2, Engine Safety Practices before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.

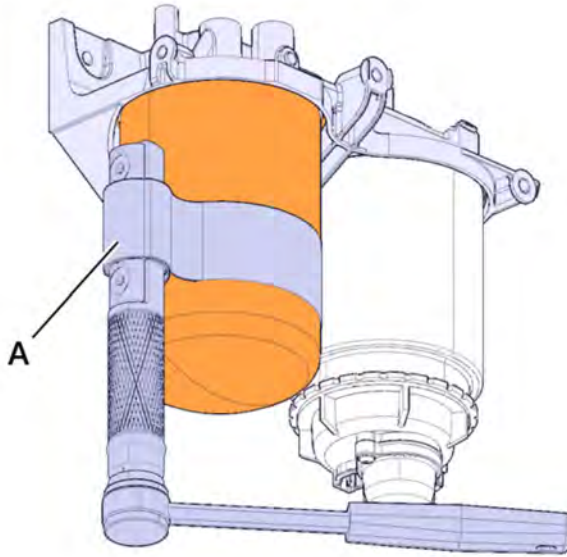
- 1 Secure the vehicle for service by parking it on a flat level surface, applying the parking brake, chocking the rear wheels, and placing the transmission in neutral or park.
- 2 Disconnect all cables from the negative (ground) battery terminals to prevent personal injury from electrical shock and prevent damage to electrical components

Service personnel: Please circulate, read and initial

Service Manager	Warranty Administrator	Workshop Foreman	Service Technicians					

D11 Engines

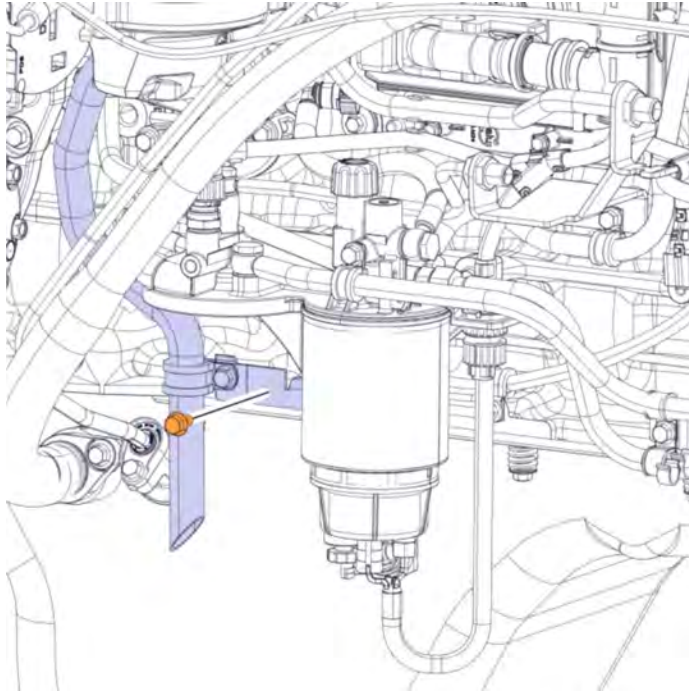
- 1 Remove the secondary fuel filter and discard the filter.



W2106368

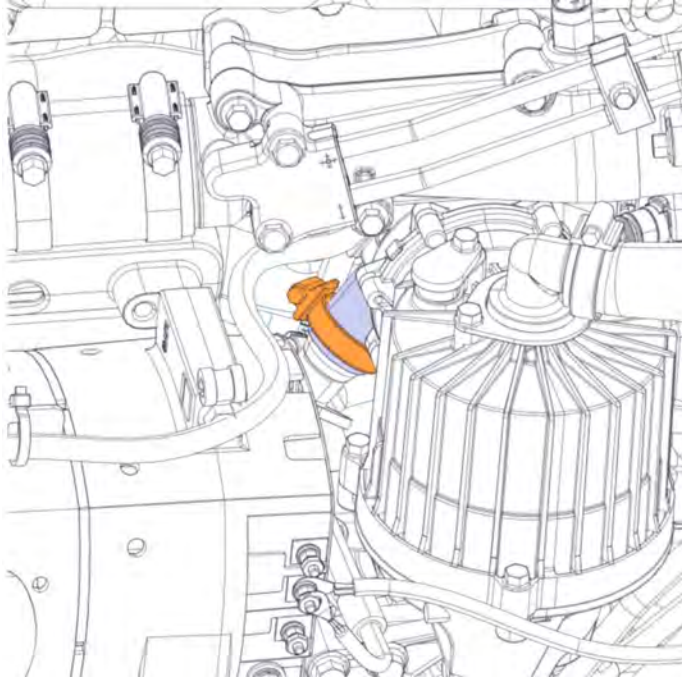
A. Filter Wrench

- 2 Remove the bracket bolt at the bottom of the CCV pipe.



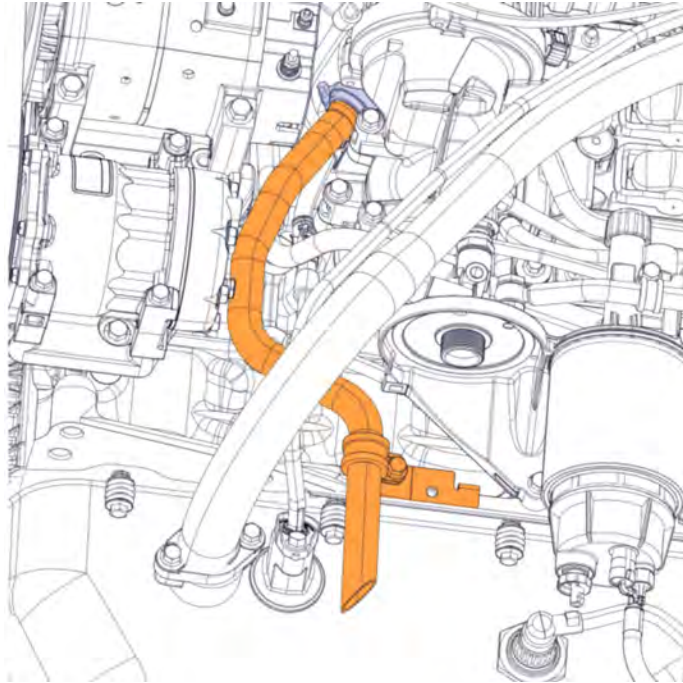
W2106365

- 3 Loosen the hose clamp at the top of the CCV pipe.



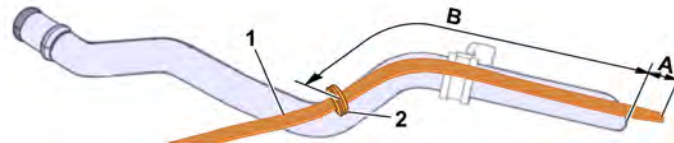
W2106369

4 Remove the CCV pipe.



W2106370

5 Measure and mark the CCV pipe for drilling. Install the grommet on the heating element. The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.

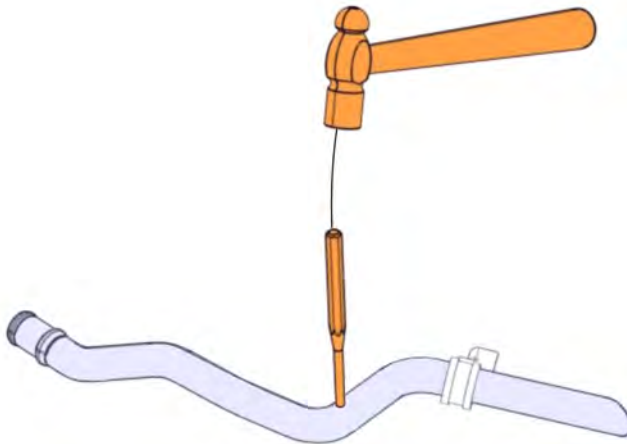


W2106371

Mark the pipe at the grommet area

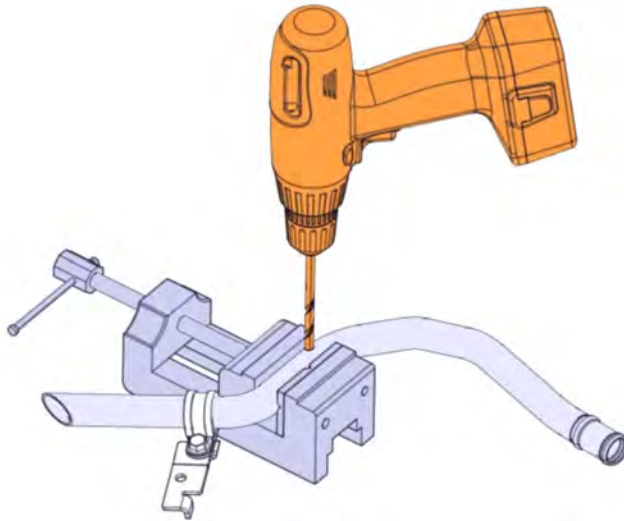
A. 25.4 mm (1 in)
B. 267 mm (10.5 in)
1. Heating Element
2. Grommet

6 Center punch the CCV pipe.



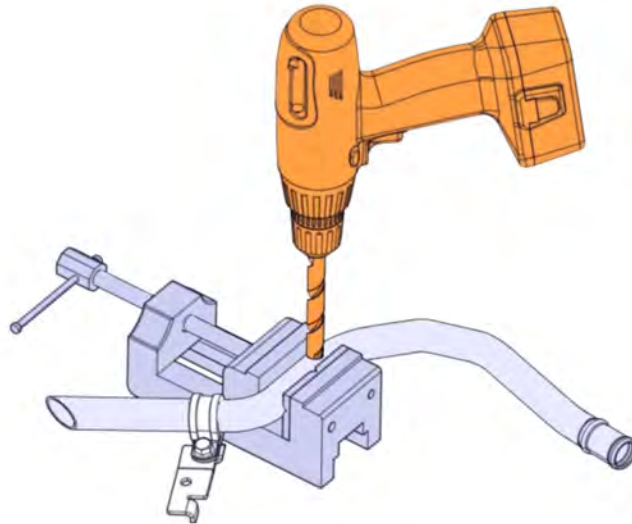
W2106372

7 Drill a 6 mm (0.25 in) pilot hole.



W2106373

8 Drill a 16 mm (0.625 in) hole. De-burr the hole.



W2106374

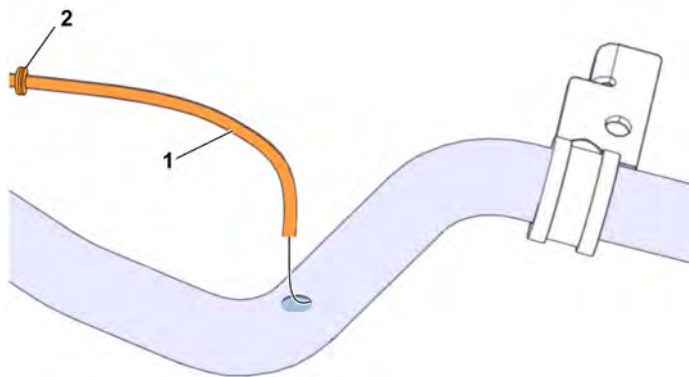
- 9 Install the CCV heater element in the pipe. Secure the heating element to the pipe. The radius of the heater element cable must not be less than 25 mm (0.98 in).



CAUTION

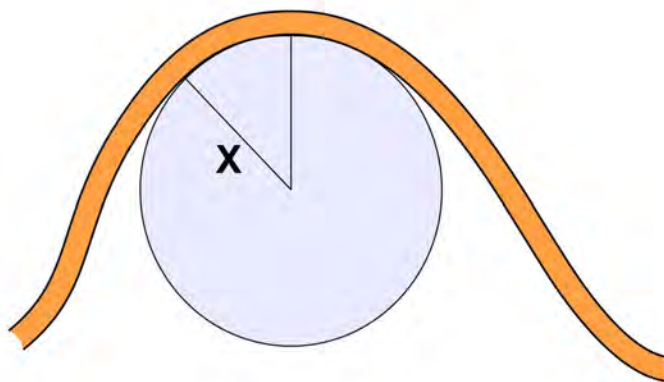
Do not bend the heater cable excessively. Damage to the cable may result.

Note: The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.



W2106375

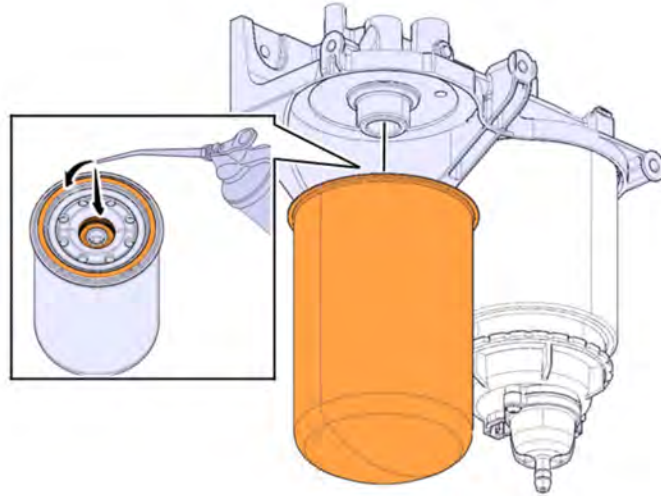
- 1. Heating Element
- 2. Grommet



W2106447

X must be greater than 25 mm (0.98 in)

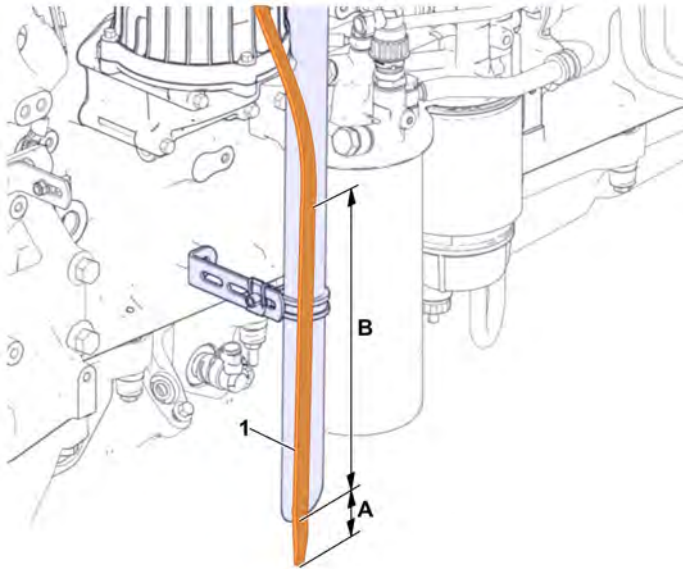
- 10 Install the CCV pipe. Tighten the bracket bolt at the bottom of the CCV pipe to 24 ± 4 Nm (18 ± 3 ft-lb) and tighten the hose clamp to 4 ± 0.6 Nm (35 ± 5 in-lb).
- 11 Install a new secondary fuel filter.



W2106448

D13 Engines with Molded Rubber CCV Pipe

- 1 Measure and mark the CCV pipe for cutting. The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.

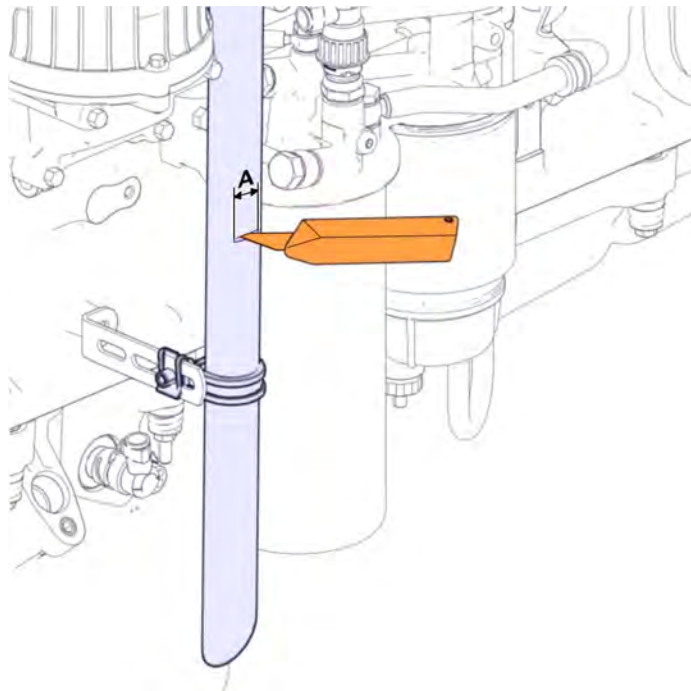


W2106453

Mark the pipe at the grommet area

A. 25.4 mm (1 in)
B. 267 mm (10.5 in)
1. Heating Element

- 2 Cut a 16 mm (0.6 in) horizontal slice in the pipe.



W2106454

A. 16 mm (0.6 in)

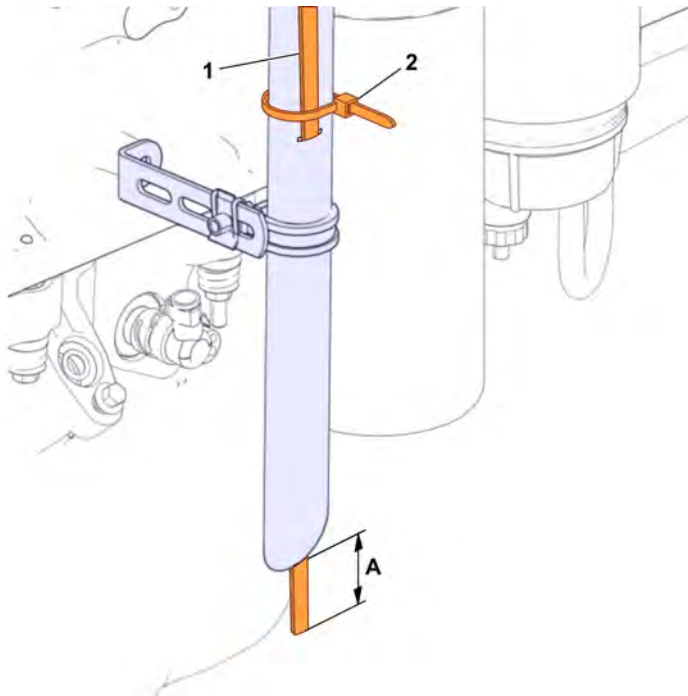
- 3 Install the CCV heater element in the pipe. Secure the heating element to the pipe. The radius of the heater element cable must not be less than 25 mm (0.98 in).



CAUTION

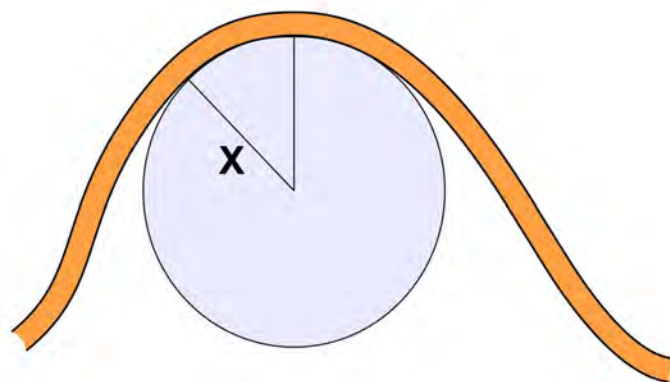
Do not bend the heater cable excessively. Damage to the cable may result.

Note: The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.



W2106455

- A. 25.4 mm (1 in)
1. Heating Element
2. Cable Tie

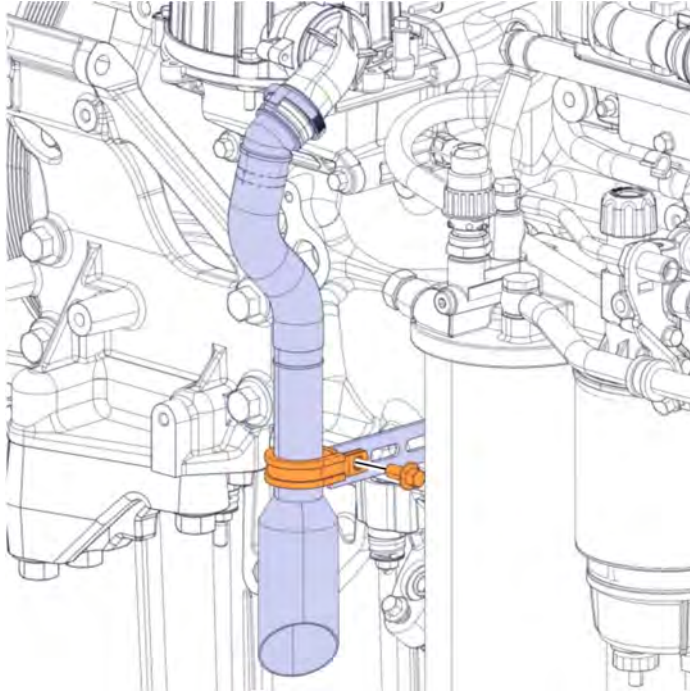


W2106447

X must be greater than 25 mm (0.98 in)

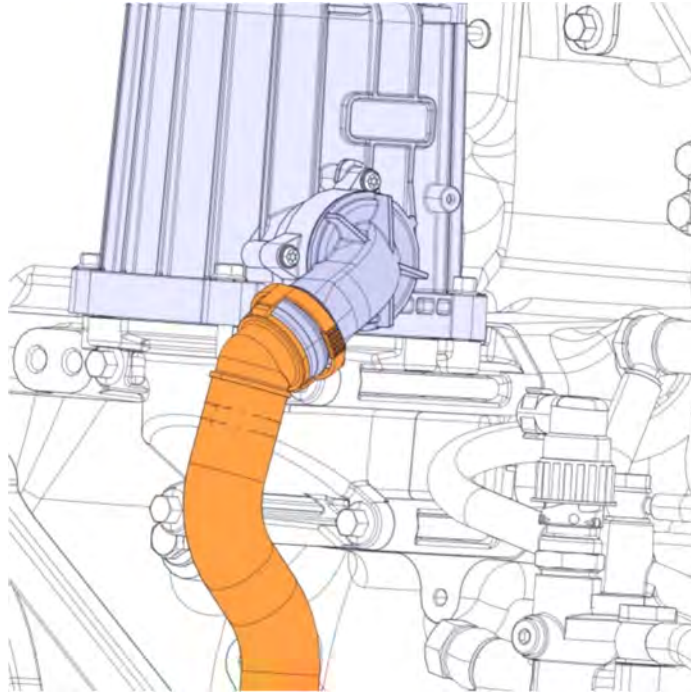
D13 Engines with Plastic CCV Pipe

- 1 Remove the clamp.



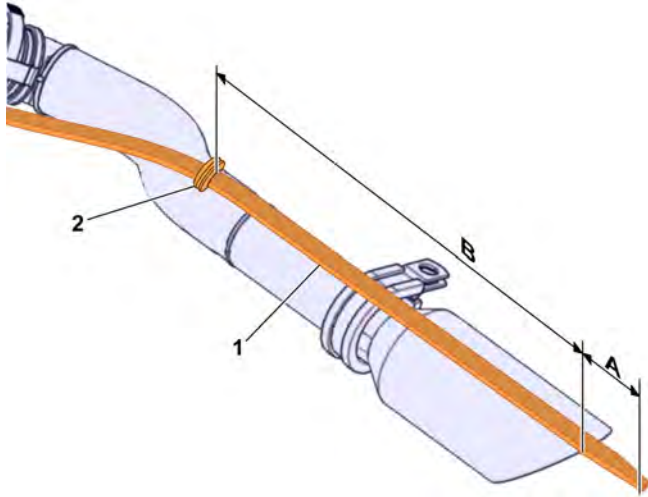
W2106457

2 Remove the CCV pipe.



W2106458

- 3 Measure and mark the CCV pipe for drilling. Install the grommet on the heating element. The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.

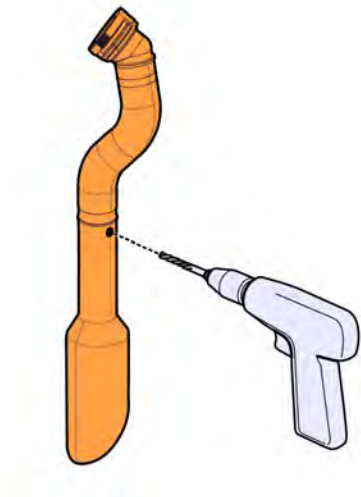


W2106459

Mark the pipe at the grommet area

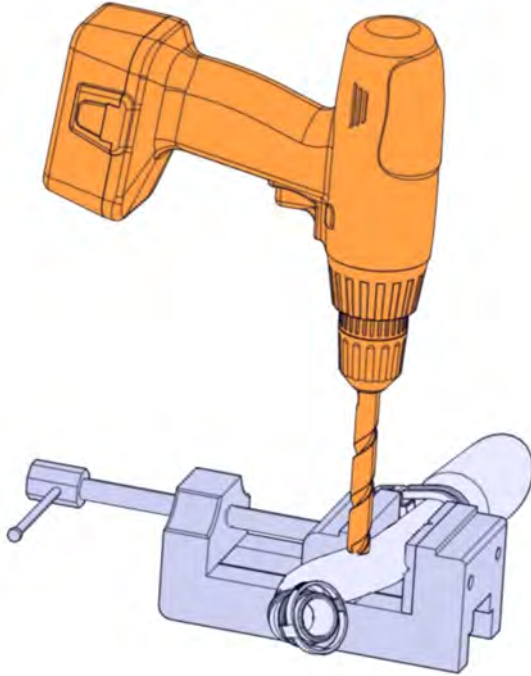
A. 25.4 mm (1 in)
B. 267 mm (10.5 in)
1. Heating Element
2. Grommet

- 4 Drill a 6 mm (0.25 in) pilot hole.



W2106460

5 Drill a 16 mm (0.6 in) hole. De-burr the hole.



W2106461

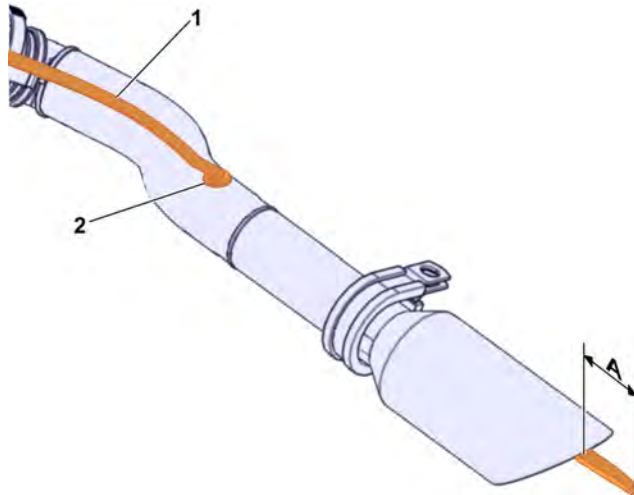
- 6 Install the CCV heater element in the pipe. Secure the heating element to the pipe. The radius of the heater element cable must not be less than 25 mm (0.98 in).



CAUTION

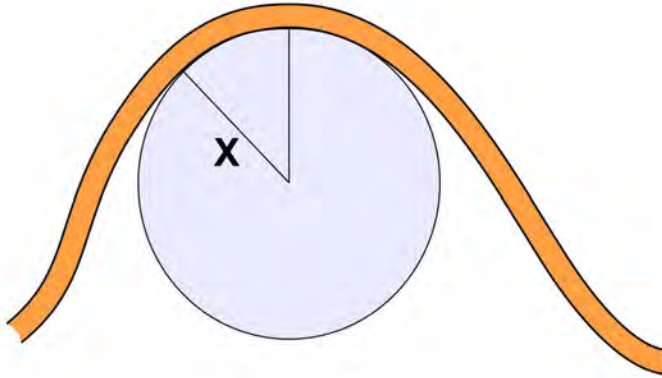
Do not bend the heater cable excessively. Damage to the cable may result.

Note: The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.



W2106462

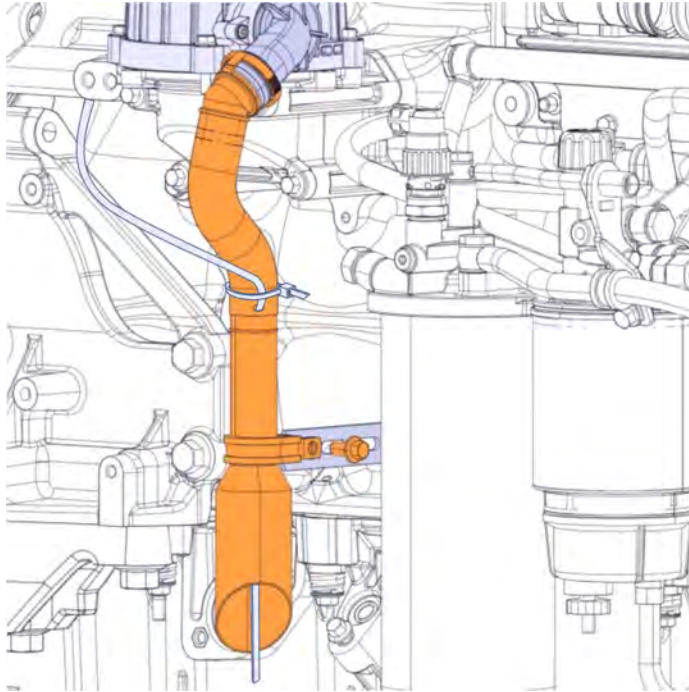
- A. 25.4 mm (1 in)
1. Heating Element
2. Grommet



W2106447

X must be greater than 25 mm (0.98 in)

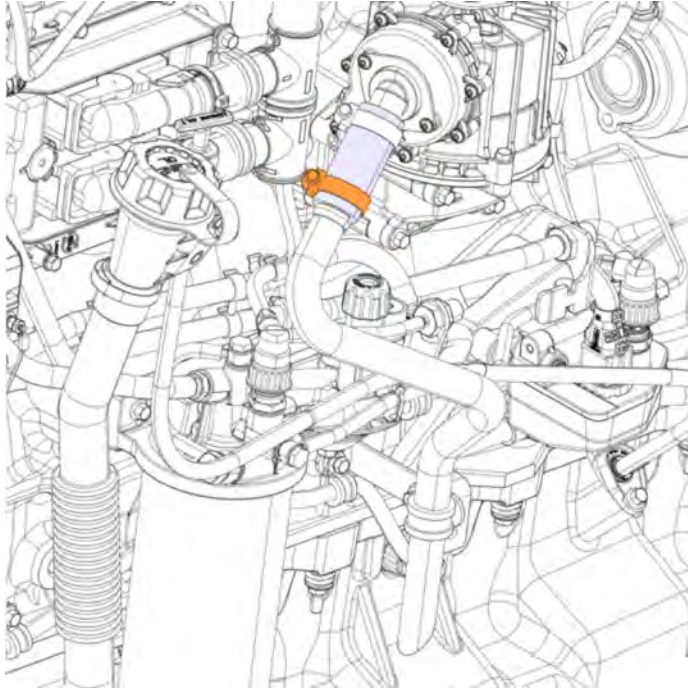
- 7 Install the pipe. Tighten the clamp fastener to 24 ± 4 Nm (18 ± 3 ft-lb).



W2106463

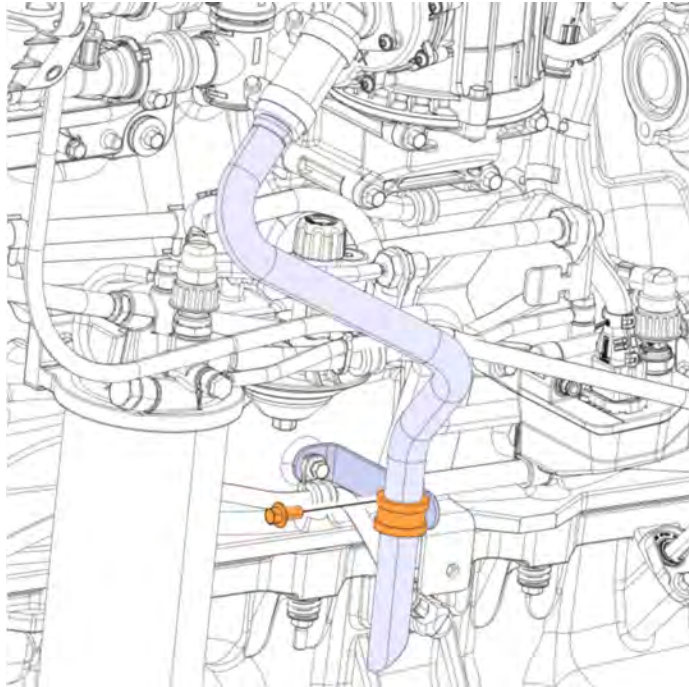
D16 Engines

- 1 Loosen the hose clamp.



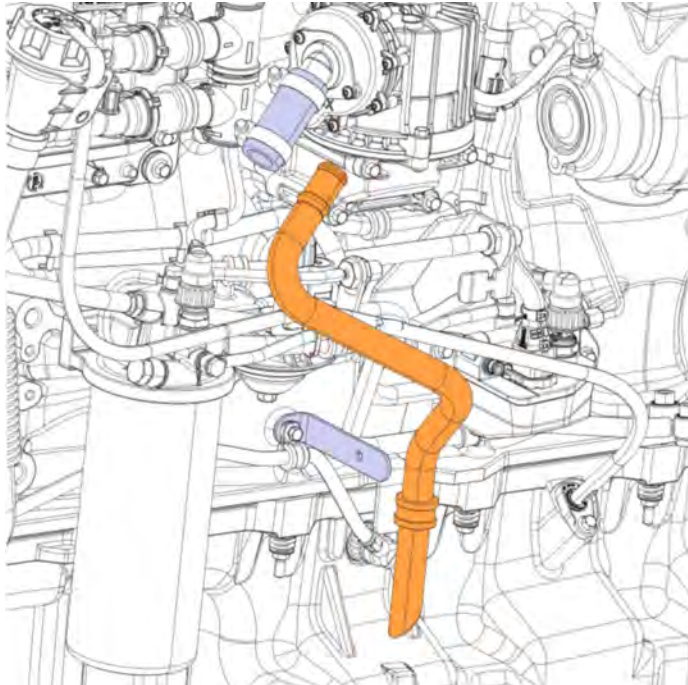
W2106464

2 Remove the clamp



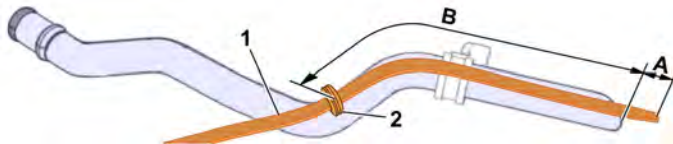
W2106465

3 Remove the pipe



W2106466

4 Measure and mark the CCV pipe for drilling. Install the grommet on the heating element. The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.

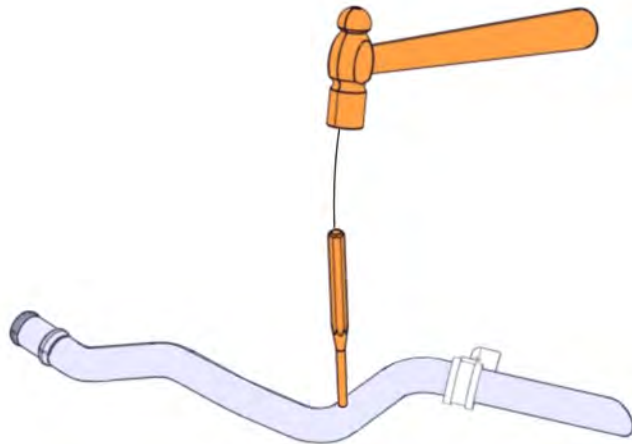


W2106371

Mark the pipe at the grommet area

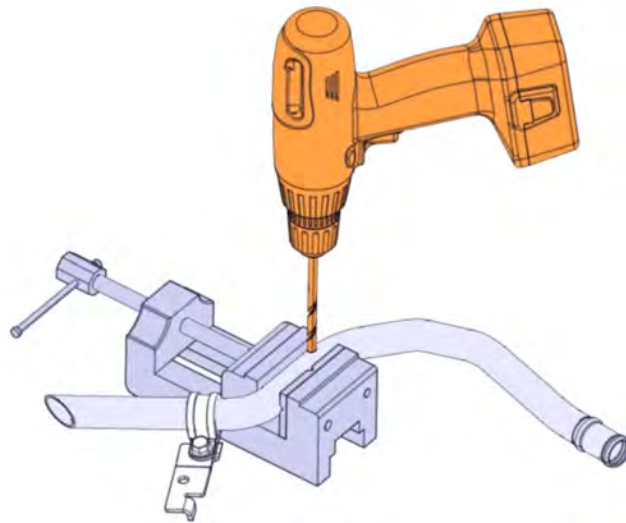
A. 25.4 mm (1 in)
B. 267 mm (10.5 in)
1. Heating Element
2. Grommet

5 Center punch the CCV pipe.



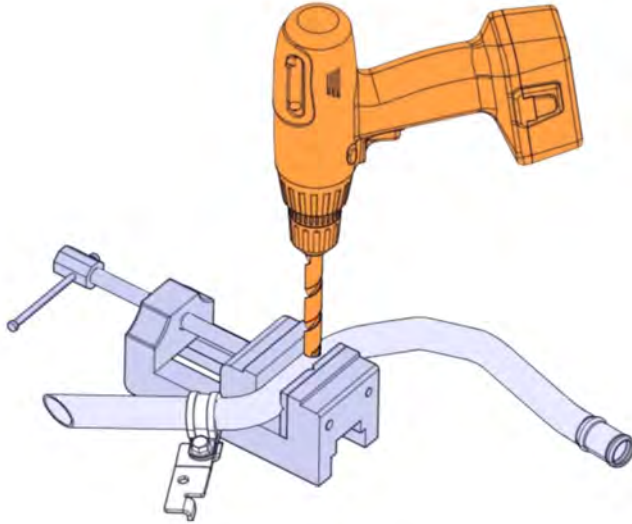
W2106372

6 Drill a 6 mm (0.25 in) pilot hole.




W2106373

7 Drill a 16 mm (0.625 in) hole. De-burr the hole.

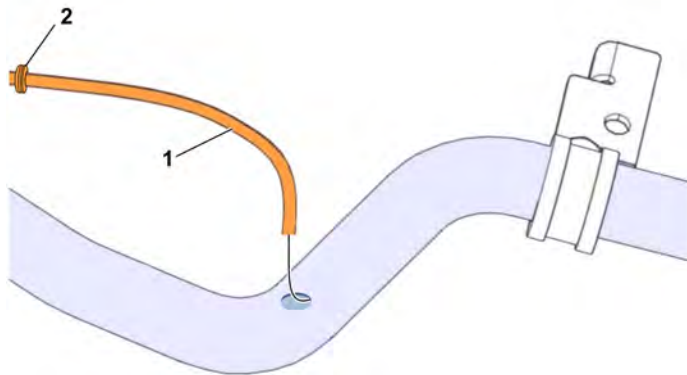


W2106374

- 8 Install the CCV heater element in the pipe. Secure the heating element to the pipe. The radius of the heater element cable must not be less than 25 mm (0.98 in).

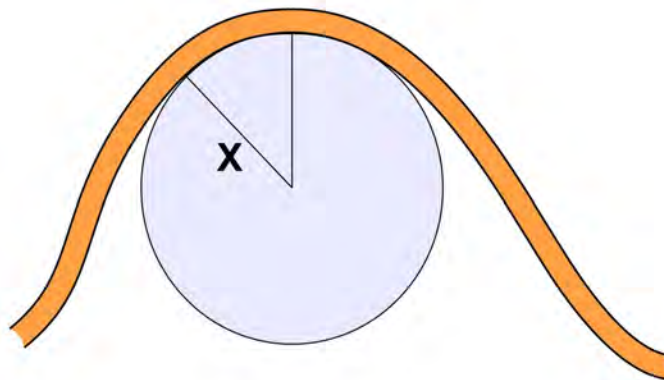
 CAUTION
Do not bend the heater cable excessively. Damage to the cable may result.

Note: The end of the heating element should extend 25.4 mm (1 in) below the end of the pipe.



W2106375

- 1. Heating Element
- 2. Grommet



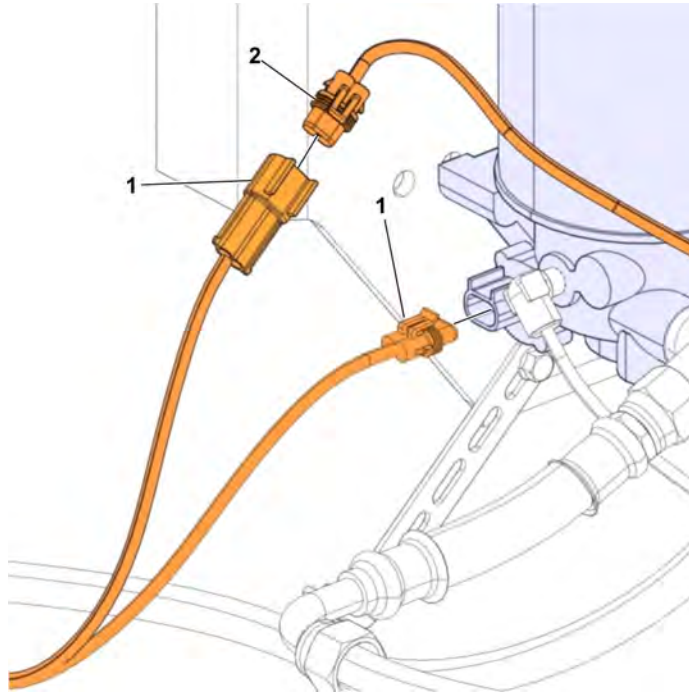
W2106447

X must be greater than 25 mm (0.98 in)

- 9 Install the CCV pipe. Tighten the bracket bolt at the bottom of the CCV pipe to 24 ± 4 Nm (18 ± 3 ft-lb) and tighten the hose clamp to 4 ± 0.6 Nm (35 ± 5 in-lb).

Complete the Installation, All Engines

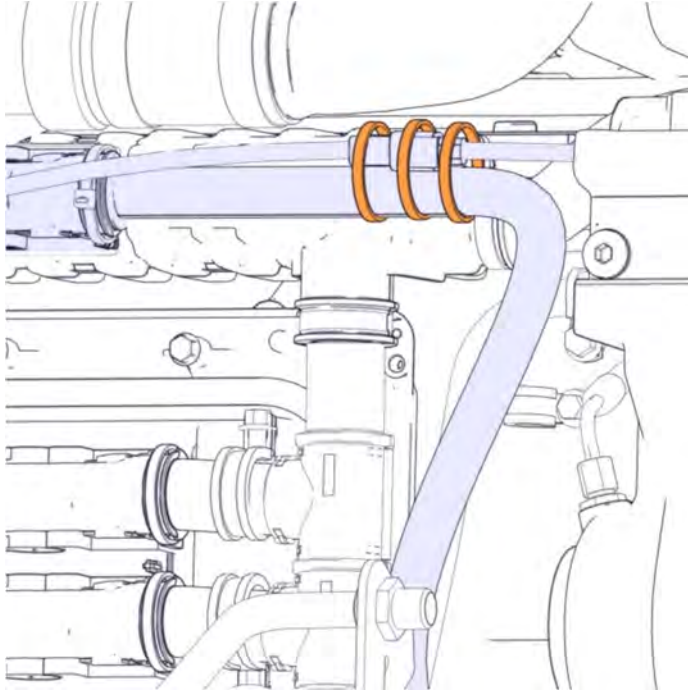
- 1 Disconnect the chassis harness from the air dryer. Connect the chassis harness to the CCV harness. Connect the CCV harness at the air dryer. Route the harness to the engine interface connector (EI). Install cable ties approximately 305 mm (12 in) apart.



W3106449

1. CCV Harness
2. Chassis Harness

- 2 Route the CCV heating element harness to the EI connector. Connect the harness to the CCV heater element. Secure the CCV harness as shown to the EI connector harness.



W3106450

- 3 Reconnect all previously removed cables to the negative (ground) battery terminals.
- 4 Prime the fuel system. Start the engine and check for leaks.