



Mack Chassis -Technical Service Bulletin M-284 - 068, Exhaust Particulate Sensor, Repair (2016 Vehicles)



> **Internal Content**

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Exhaust Particulate Sensor, Repair

V-284-068

(October 2020)

Valid for

Volvo with a 2 Box exhaust after-treatment system (EATS) and built between January 1st, 2016 and February 3rd, 2020.

Case description

Some trucks may experience a Particulate Matter (PM) Sensor fault that can result in the MIL lamp illuminating. These faults may be P24DA, "PM Sensor Exhaust Sample Error," or P24D1, "PM Sensor Regen Incomplete." These faults may be caused by contamination of the PM sensor. In order to reduce the likelihood of sensor contamination, new exhaust pipe parts are being made available that contain an internal water management feature along with an integrated drain that will prevent contamination of the sensor. If either of these two faults occur, follow the instructions outlined in this bulletin to clean the exhaust pipes and install a new exhaust pipe with the new contamination prevention measures.

Required Parts – All Years

Inspect and replace the v-band clamp as needed

A new gasket will be needed when disconnecting the SCR exit.

Note: No gasket needed for vertical SCR.

Part Description	Part Number
SCR Gasket	21095726
V-band Clamp	21021850
Particulate Matter Sensor	22303391

Note: Customer adaptations can change required parts. Check for adaptations before ordering parts. (For example, under-slung exhaust)

Table of Contents

Model	Cab Type	Exhaust Configuration	Repair Number
VNL	Day Cab	Single Outlet Right Side Outboard	1
VNM / VHD	Day Cab	Single Outlet Right Side Inboard	2
VNM / VHD	430 / 630	Single Outlet Right Side Inboard	3

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VNL	430 / 670 / 780 Sleeper	Single Outlet Right Side Inboard	4
VNL	430 / 670 / 780 Sleeper	Dual Outlet Inboard	5
VHD / VNM	All	SCR RH Horizontal Forward Mount	6
VNL 11 / 13	All	SCR Horizontal	6
All	All	Exhaust Stack Right Side	7

Repair Procedure

Determine which Flex Pipe and Clamp the truck currently has installed on it. If the truck you are repairing has the Flex Pipe and Clamp shown in scenario 1, you will need to order the improved Flex Pipe (P/N 21142254) and Clamp (P/N 25172497). If the truck you are repairing has the Flex Pipe and Clamp shown in scenario 2, this truck already has the improved parts and ordering a new Flex Pipe and Clamp is NOT required.

	<p>Scenario 1</p> <p>This style Flex Pipe and Clamp will no longer work with the upper adjacent connecting pipe. The below parts in scenario 2 are required to perform this FSB.</p> <p>Follow the repair below that is applicable for your configuration.</p>
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Scenario 2

This style Flex Pipe and Clamp only needs the upper adjacent pipe replaced. Reuse the existing Flex Pipe and Clamp, or order as needed.

Flex Pipe –
21142254

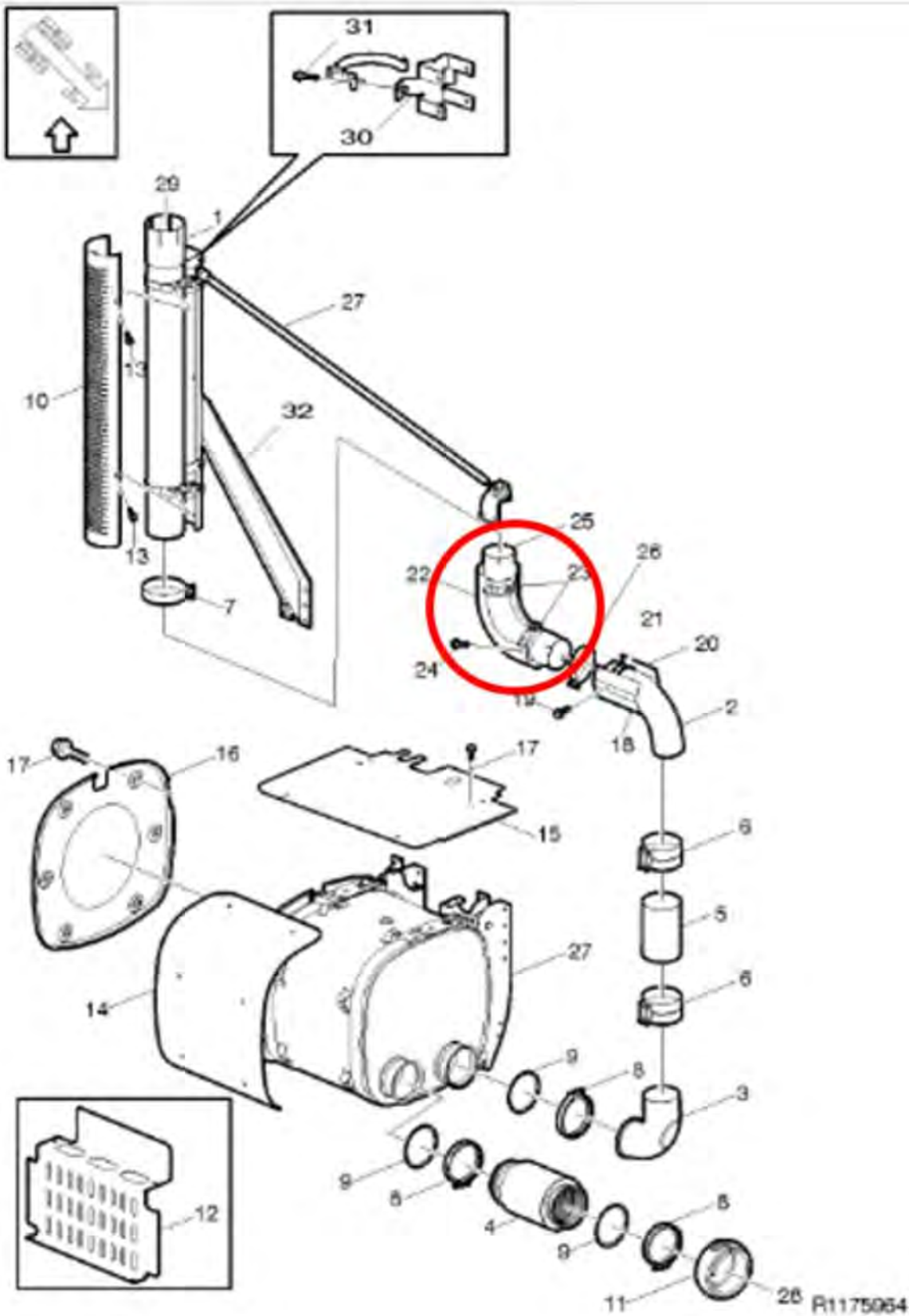
Clamp –
25172497



Follow the repair below that is applicable for your configuration.

Under Cab SCR Exhausts

Repair 1



Model	Cab Type	Exhaust Configuration	Pipe 1
VNL	Day Cab	Single Outlet Right Side Outboard	(Not Bright) 23154798 (Bright) 23154799

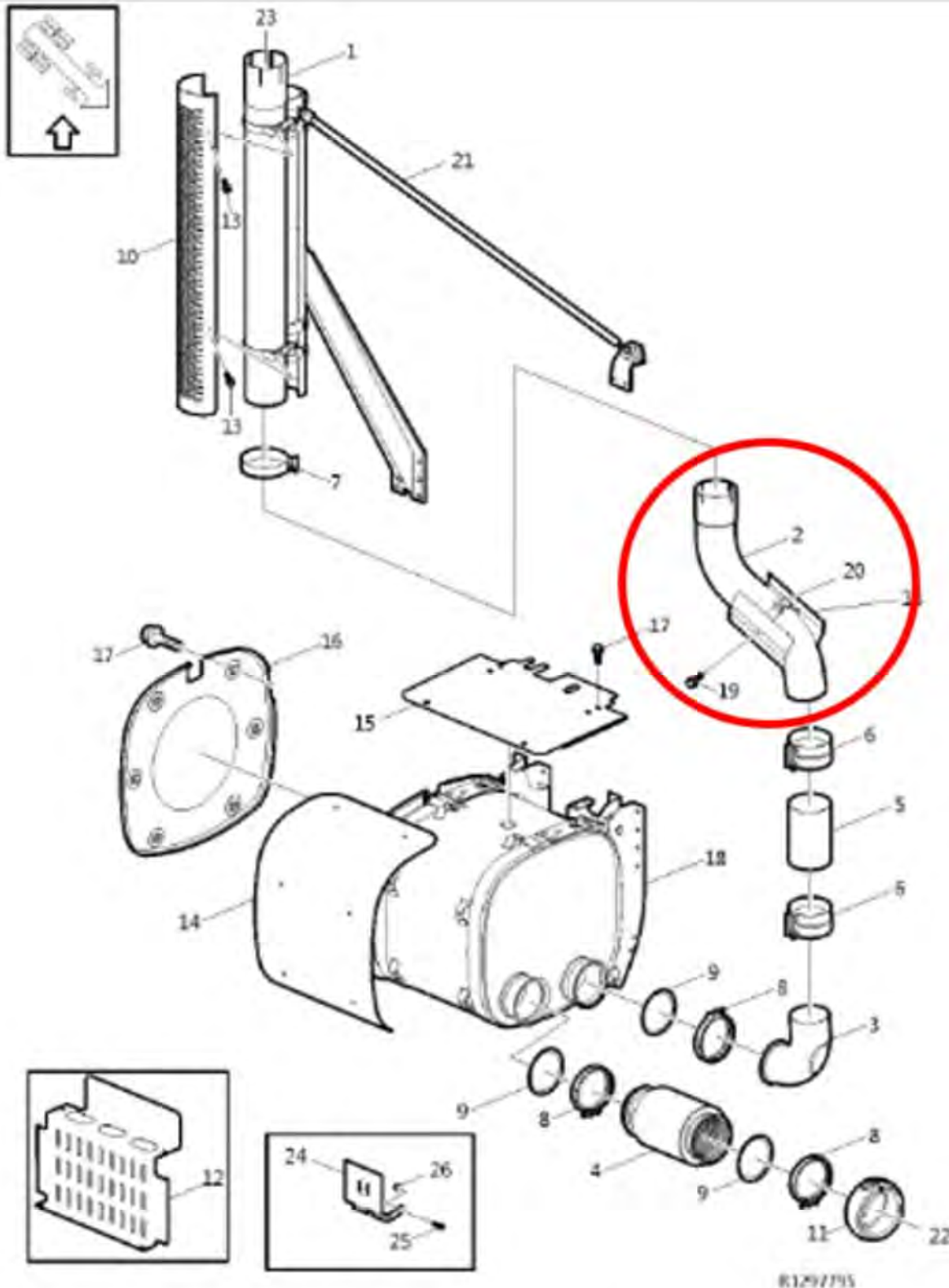
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Note: If the original flex pipe has previously been replaced, you will need a new elbow in addition to the new flex pipe.

Model	Cab Type		Elbow
VNL	Day Cab	Single Outlet Right Side Outboard	21274193

Repair 2



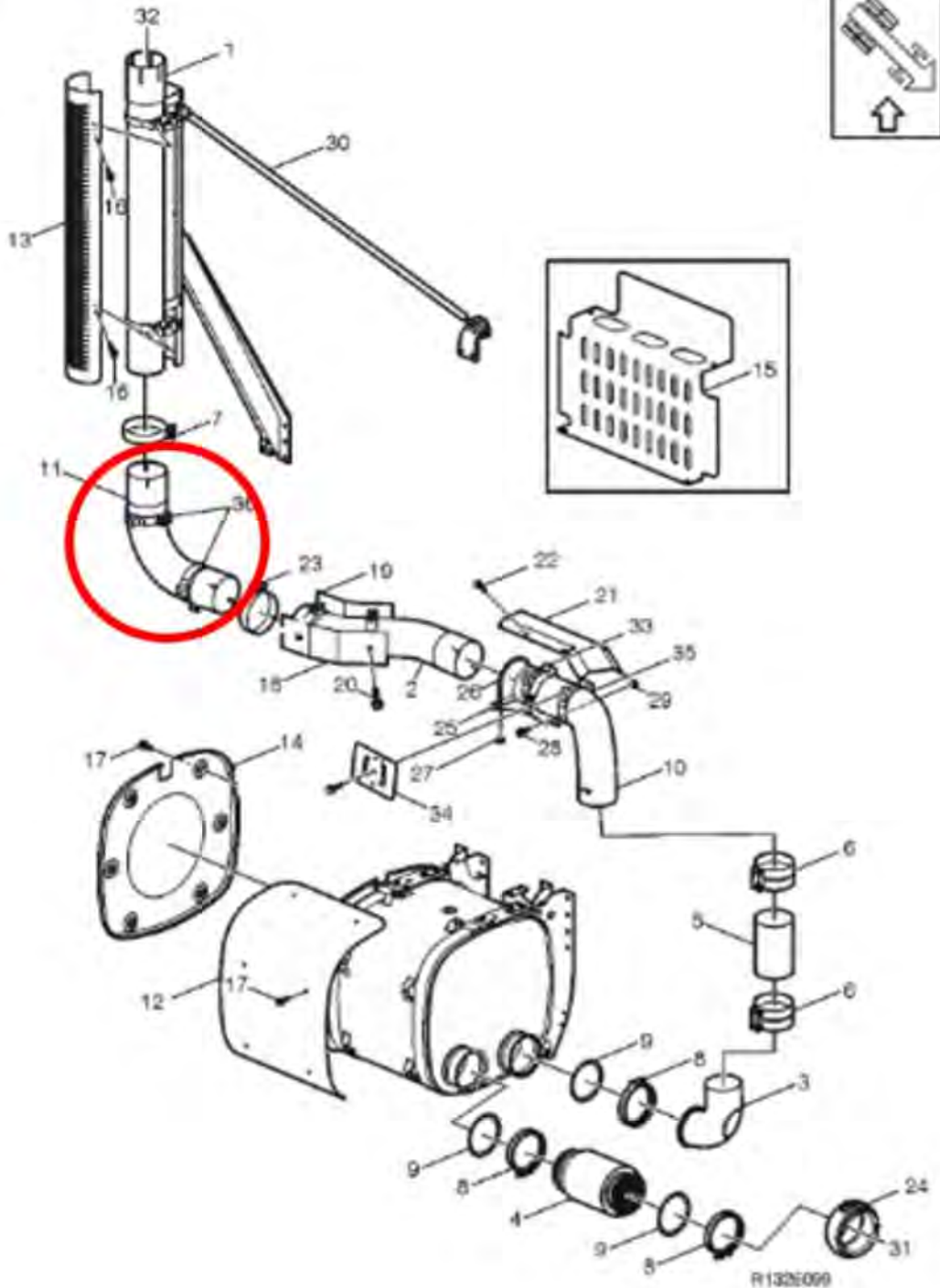
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Model	Cab Type	Exhaust Configuration	Pipe 1
VNM/VHD	Day Cab	Single Outlet Right Side Inboard	23630037

Repair 3



Model	Cab Type	Exhaust Configuration	Pipe 1
VNL/VHD	430/630 Sleeper	Single Outlet Right Side Inboard	(Not Bright) 23154798

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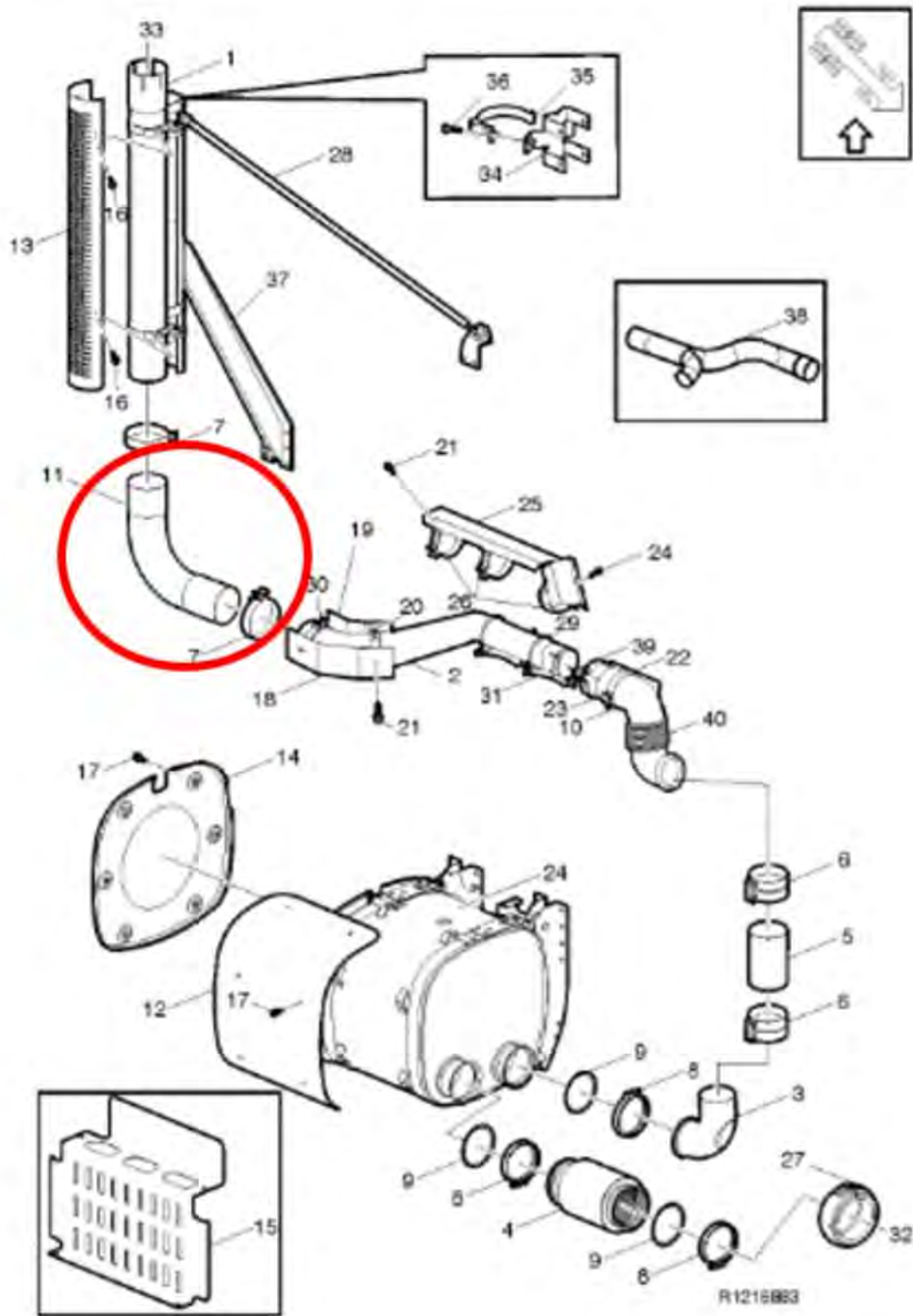
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			(Bright) 23154799
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Note: If the original flex pipe has previously been replaced, you will need a new elbow in addition to the new flex pipe.

Model	Cab Type	Exhaust Configuration	Elbow
VNL/VHD	430/630 Sleeper	Single Outlet Right Side Inboard	21687278

Repair 4



Model	Cab Type	Exhaust Configuration	Pipe 1
VNL	430/670/780 Sleeper	Single Outlet Right Side Inboard	(Not Bright) 23154798 (Bright) 23154799

Note: If the original flex pipe has previously been replaced, you will need a new elbow in addition to the new flex pipe

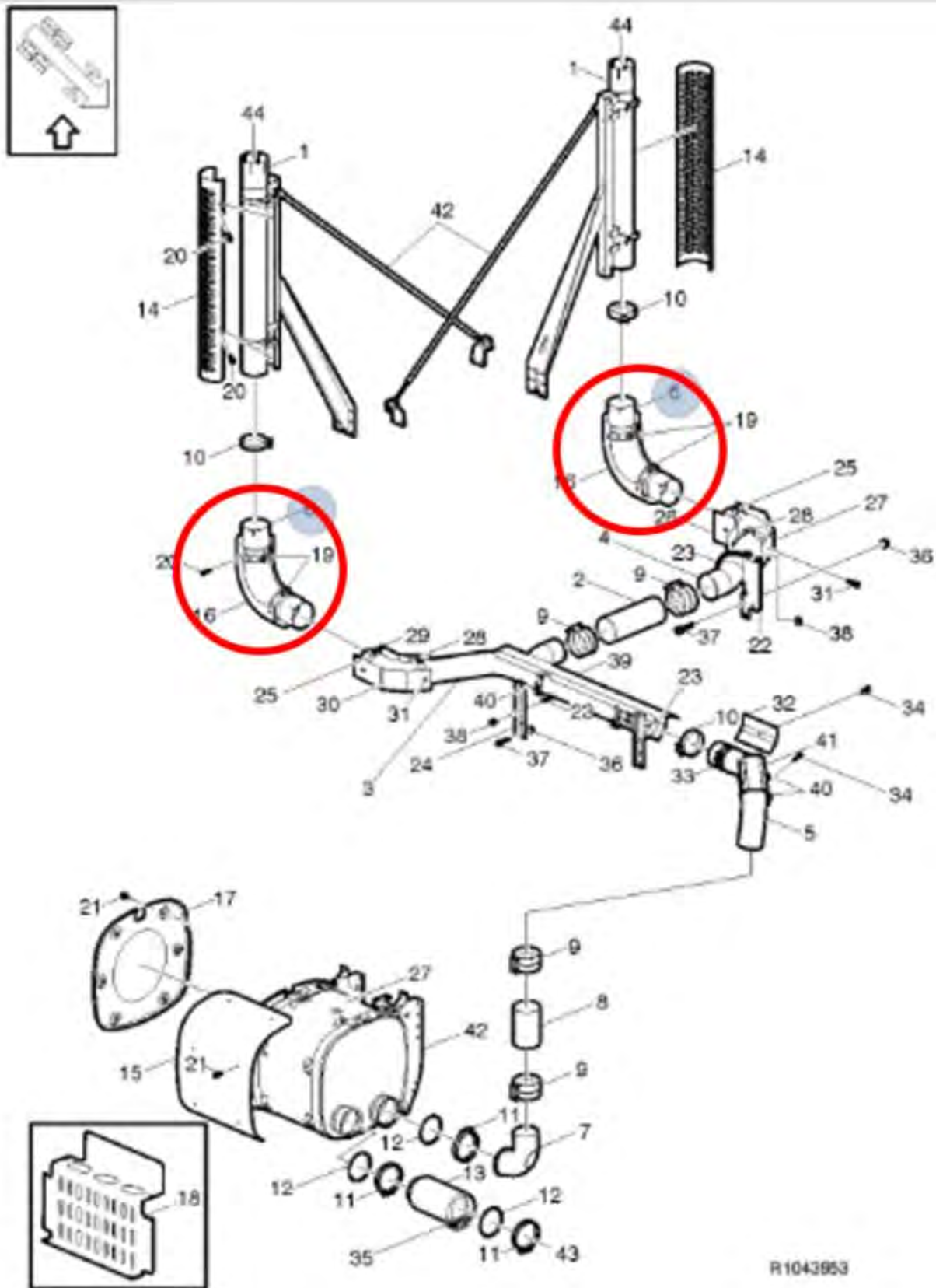
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Model	Cab Type	Exhaust Configuration	Elbow
VNL	430 Sleeper	Single Outlet Right Side Inboard	21625282

Model	Cab Type	Exhaust Configuration	Elbow
VNL	670/780 Sleeper	Single Outlet Right Side Inboard	21625281

Repair 5



R1043953

Model	Cab Type	Exhaust Configuration	Pipe 1
VNL	430/670/780 Sleeper	Single Outlet Right Side Inboard	(Not Bright) 23154798 (Bright) 23154799

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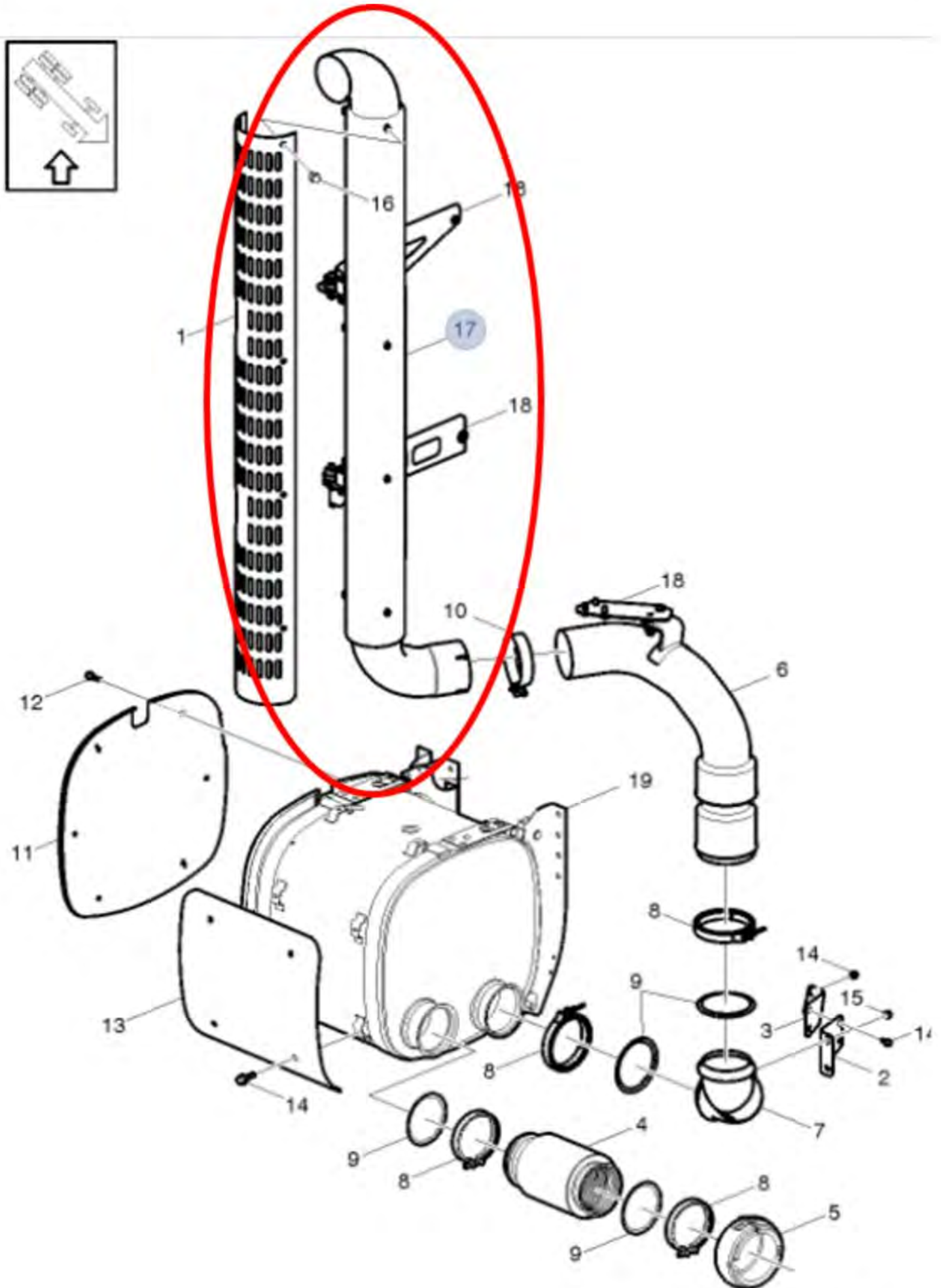
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Note: If the original flex pipe has previously been replaced, you will need a new elbow in addition to the new flex pipe

Model	Cab Type	Exhaust Configuration	Elbow
VNL	430 Sleeper	Single Outlet Right Side Inboard	21625282

Model	Cab Type	Exhaust Configuration	Elbow
VNL	670/780 Sleeper	Single Outlet Right Side Inboard	21625281

Repair 6

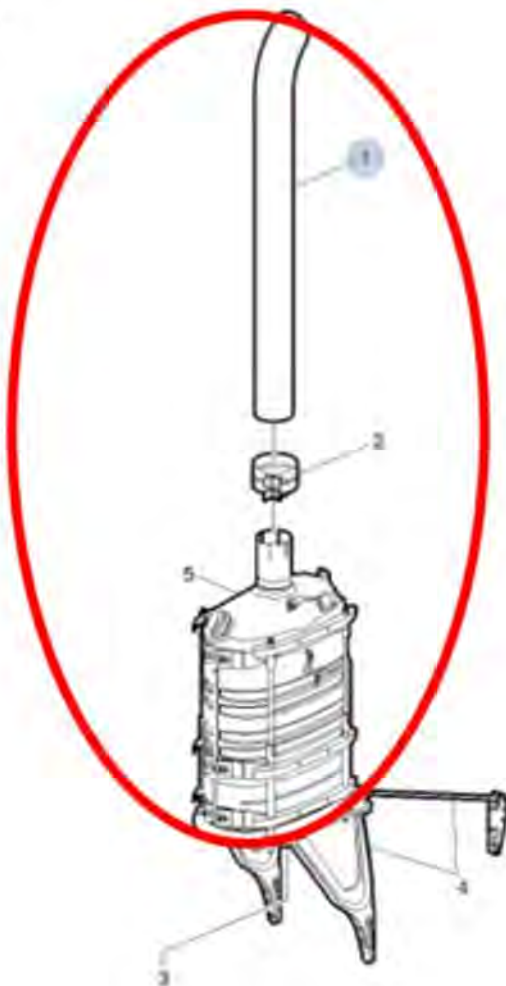


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Model	Cab Type	Exhaust Configuration	Pipe 1	Clamp (Qty will vary)
VHD/VNM	Cab Mounted	SCR RH Horizontal Forward Mount	23154823	20961913
VHD/VNM	Cab Mounted	SCR Horizontal	23154825	20961913
VNL 11/13	Cab Mounted	SCR Horizontal	23154827	20961913

Repair 7



R164222

Model	Cab Type	Exhaust Configuration	Pipe 1	Pipe Insert	Clamp (Qty will vary)
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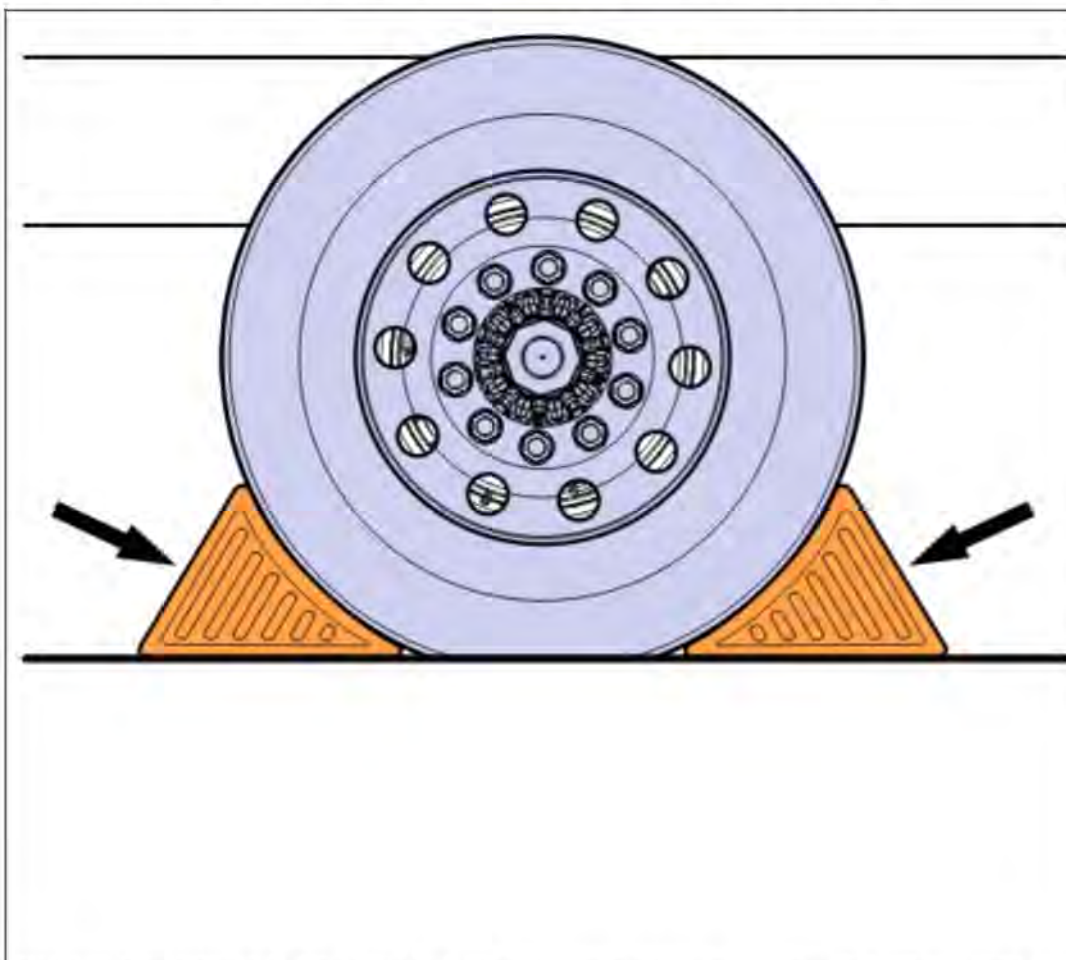
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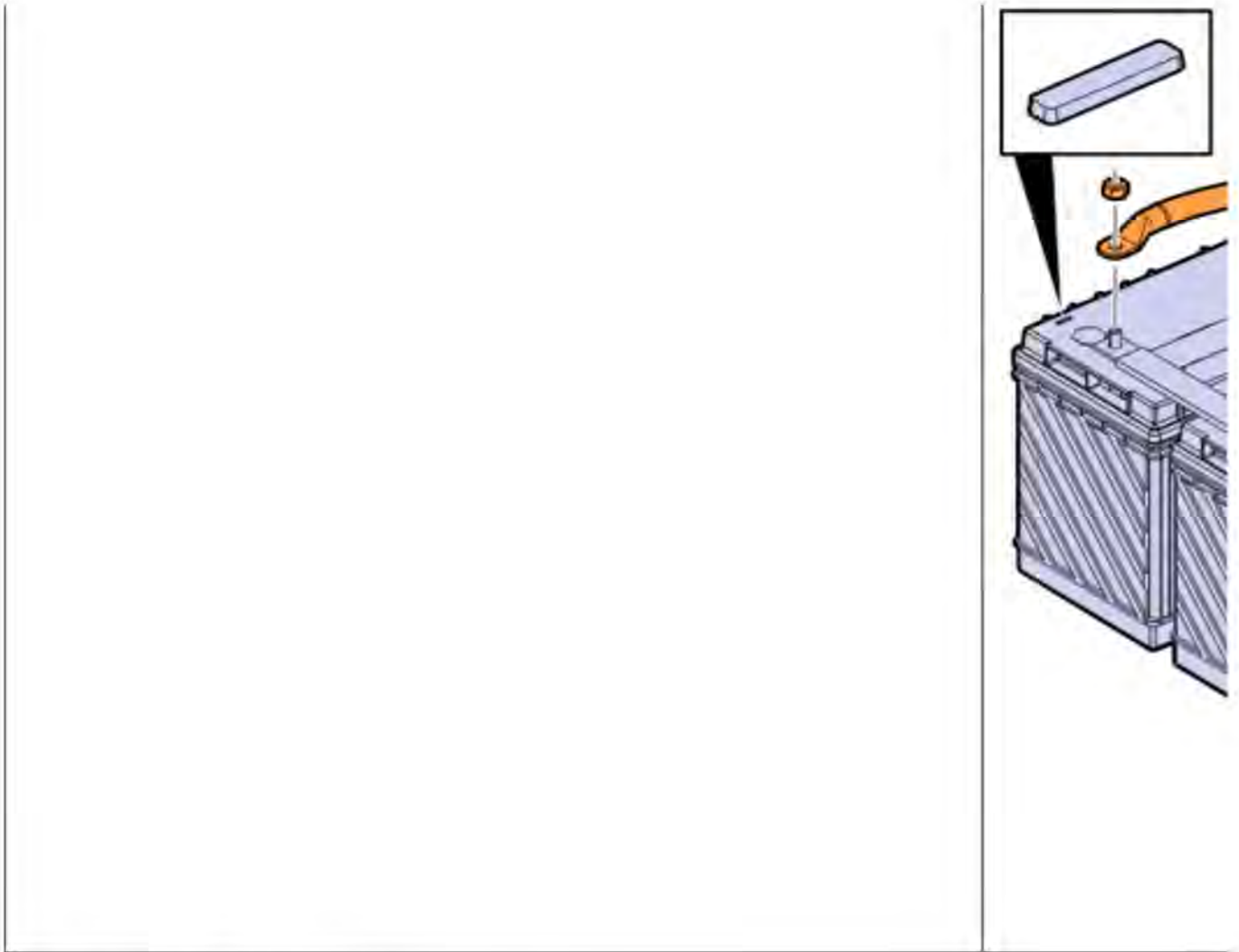
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					vary)
All	16L	12.5 ft Exhaust Stack Right Side	23208705	23296273	23189982
All	11L / 13L	11 ft 8 in Exhaust Stack Right Side	(Not Bright) 23208698 (Bright) 23208699	23176623	23189982
All	11L / 13L	12 ft 6 in Exhaust Stack Right Side	(Not Bright) 23208700 (Bright) 23208701	23176623	23189982
All	11L / 13L	13 ft 5 in Exhaust Stack Right Side	(Not Bright) 23208702 (Bright) 23208703	23176623	23189982

Instructions

1. Decommission the vehicle. Install wheel chocks and disconnect the battery.





2. Remove the PM sensor and module.
3. Remove all exhaust pipes up to the SCR outlet pipe.
4. Pressure wash the inside of each pipe that will be reused.
5. Reassemble the exhaust system using the new parts referenced in the table above.
6. Mark the SCR outlet pipe 1.5" from the end also mark the new pipe (not flex) 1.5" from its inlet.
7. Slip the flex pipe as far over the SCR outlet pipe as possible.
8. Install the new exhaust pipe.
9. Using a new clamp assemble the new exhaust pipe to the new flex pipe using the 1.5" mark to get the correct amount of overlap.
10. Slide the assembly into place using the 1.5" mark on the SCR outlet as a reference point and to ensure the correct amount of overlap, once in both pipes are in place use clamps to secure.

Note: Correct installation is achieved when the flex pipe is in a "relaxed" state, there should be no compression or expansion visible on opposing sides of the pipe after installed.

11. Install the new PM sensor and module.

Note: Do not use any lubricant of any kind on the PM sensor threads.

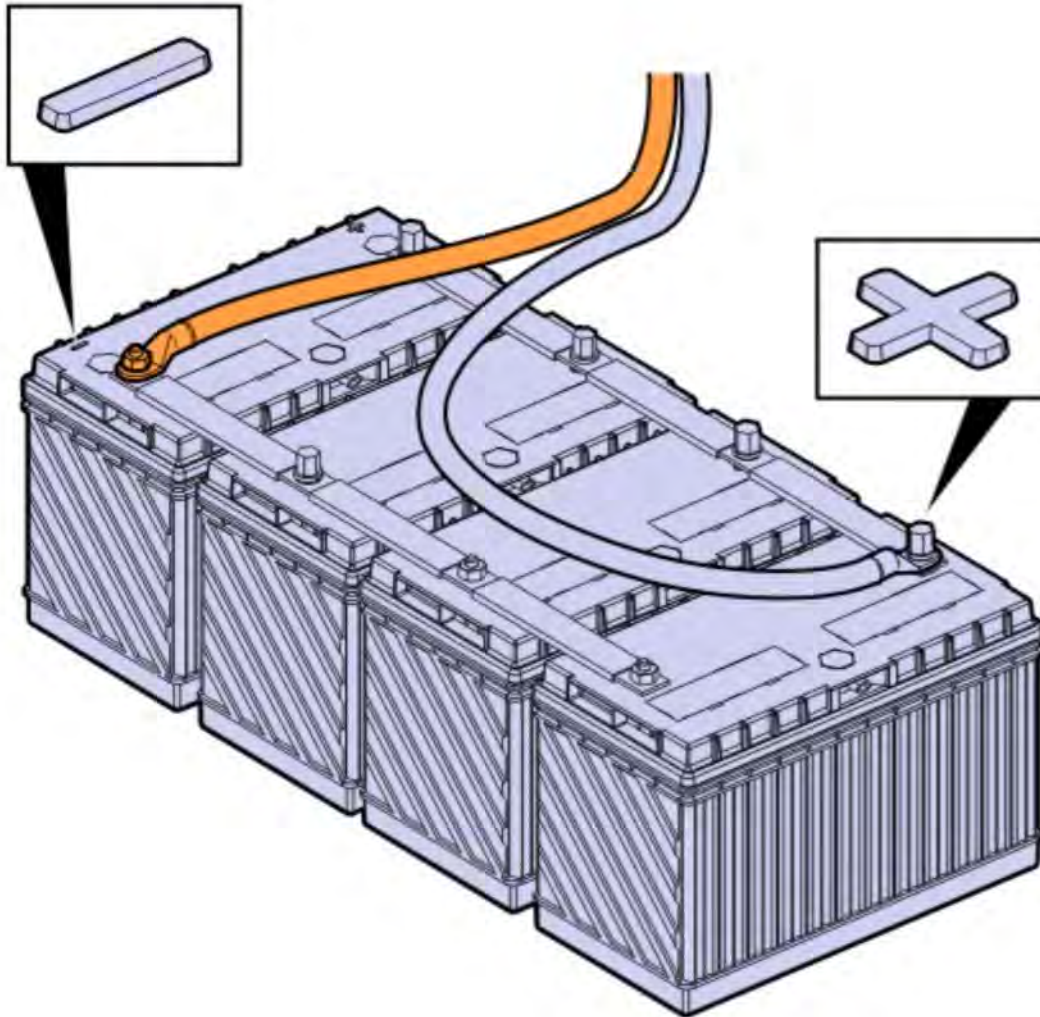
Note: Align the tab on the sensor with the slot.

12. Torque the sensor to 35 +/- 5 Nm (26 +/- 4 Ft lb)

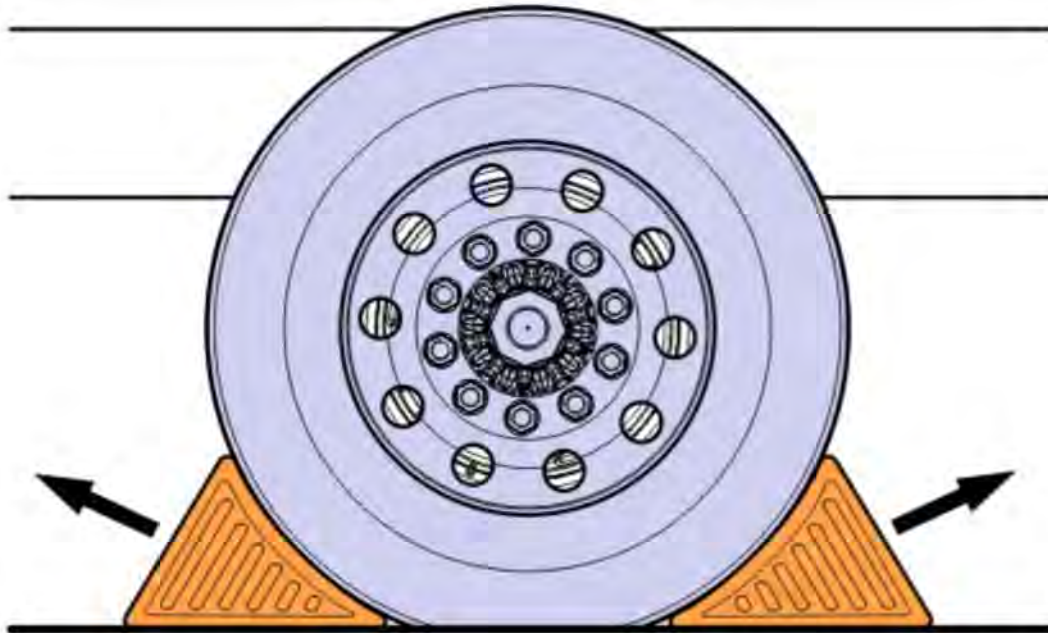
13. Install the sensor module.
14. Torque the nuts to
M6: 10 +/- 5 Nm (88 +/- 3 in lb)
M8: 24 +/- 4 Nm (17.1 +/- 3 ft lb)
15. Install the wire ties and clamps.

Note: Use high temperature cable ties.

16. Connect the battery.



17. Clear any DTC codes.
18. Remove the wheel chocks.



Warranty information

Reimbursement

This repair may be eligible for reimbursement if a product failure was experienced within time and mileage limits of the applicable Warranty coverage. Reimbursement is obtained via the normal claim handling process.	UCHP Reimbursement
Claim Type (used only when uploading from the Dealer Bus. Sys.)	W
Labor Code	
Primary Labor Code (Exhaust Particulate Sensor, Repair)	2846-16-09-01 See table for times.
Causal Part	22946032

Labor Times Reference – 2016 Vehicles

Model	Cab Type	Exhaust Configuration	Pipe 1
VNL	Day Cab	Single Outlet Right Side Outboard	2.1

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VNM VHD	Day Cab	Single Outlet Right Side Inboard	2.1
VNM VHD	430/630 Sleeper	Single Outlet Right Side Inboard	3.0
VNL	430 Sleeper	Single Outlet Right Side Inboard Dual Outlet	3.5
VNL	670/780 Sleeper	Single Outlet Right Side Inboard Dual Outlet	3.5
VHD/VNM	Cab Mounted	SCR RH Horizontal Forward Mount	1.7
VHD/VNM	Cab Mounted	SCR Horizontal	1.7
VNL 11/13	Cab Mounted	SCR Horizontal	1.7

Back of Cab SCR Exhausts

Model	Engine Size	Exhaust Configuration	Pipe
All	16L	12.5 ft Exhaust Stack Right Side	0.8
All	11L / 13L	11 ft 8 in Exhaust Stack Right Side	0.8
All	11L / 13L	12 ft 6 in Exhaust Stack Right Side	0.8
All	11L / 13L	13 ft 5 in Exhaust Stack Right Side	0.8

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