



Technical Journal

TITLE:
SPA Brake noise

REF NO: TJ 34246.1.0	ISSUING DEPARTMENT: Technical Service	CAR MARKET: United States and Canada	
PARTNER: 3 US 7510 Volvo Car USA		ISSUE DATE: 2018-12-14	STATUS DATE: 2018-12-19
FUNC GROUP: 5100	FUNC DESC: Wheel brake	Page 1 of 19	

“Right first time in Time”

Attachment

File Name	File Size
TJ 34246.pptx	13.412 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
224							2019-9999		0000001-9999999	201835-999952
225							2019-9999		0000001-9999999	201817-999952
227							2019-9999		0000001-9999999	201846-999952
234							2017-2017		0000001-9999999	201617-999952
235							2017-9999		0000001-9999999	201624-999952
236							2017-9999		0000001-9999999	201646-999952
238							2018-9999		0000001-9999999	201646-999952
246							2018-9999		0000001-9999999	201717-999952
256							2016-9999		0000001-9999999	201505-999952

CSC Customer Symptom Codes

Code	Description
1P	Brakes/Unusual noise/Rear
B6	Brakes/Unusual noise/Front
V4	Brakes/Vibration/shudder/While braking



VST Operation Number

VST Operation Number	Description
99921-2	Front carriers replace
77064-2	Wheels 4 pcs remove-install/replace
99921-2	Change to damped dust shield
51247-3	Brake discs rear x2 replace
51123-3	Brake pads/discs front 2 wheels replace
51247-3	Brake discs front x2 replace
51147-3	Brake discs front x2 replace
99925-2	Front carriers replace
51214-3	Brake pads/discs rear 2 wheels replace
76062-2	Wheel x2 remove - install / replace
51001-2	Brake system 2 wheels bleeding
51243-3	Brake caliper rear x2 replace

DTC Diagnostic Trouble Codes

Text

DESCRIPTION:

For the purpose of correct fault tracing of the brake noise, the attached guideline has been developed, as an overview of the brake noise and indicates possible faults/solutions.

SERVICE:

Before replacing parts, please follow the attached fault tracing guideline.

VEHICLE REPORT:

Yes, please submit a Vehicle Report if the service solution described in this TJ has no effect. Use concern area "Vehicle Report" and sub concern area "Support needed", use function group 5100.

NOTE: Sound file must be attached.

To view TJ attachment continue to next page. This TJ has one attachment.

Brake NVH issues in SPA platform

Comfort markets (VDN RC02)

Concerned vehicles:

XC90 / S90 / S90L / V90 / XC60 / S60 / V60 / V60CC

Steps to be taken

- Identify noise: listen to the videos/recordings to identify which issue the customer is complaining about (page 3)
- Go to the correct page corresponding to the identified issue and look for the action for that specific issue (page 4-10)
 - If the issue is squeal, then identify the brake / frequency / built date in order to find out which action to follow (page 11-17)
- If the complaining issue is not part of the issues presented in page 3, please report the identified issue to Volvo Cars, writing a TIE report (Vehicle report – Support needed) with sound file included.

Rattle/clapper noise: Low frequency vibration noise over bumpy road (ex: gravel road)



Chirp noise: Unbraked noise while driving (off-braking, intermittent noise)



Judder: Vibration in the steering wheel / brake pedal / car body / seats

End-of-stop metallic noise: Metallic noise at end-of-stop



Trumpet noise: Noise that occurs when rolling slowly in Drive or Reverse (automatic gearbox) while braking



Creep groan: Noise/vibration that occurs when releasing brake pedal from standstill in Drive or Reverse (automatic gearbox)



Brake squeal: Sharp and define noise (usually at low speeds)



Rattle / Clapper noise

Action:

- Change to damped dust shield (Protecting plate) according to VIDA (all service part dust shields (Protecting plates) are damped)

Note : 16" rear brake -> service part dust shield is not damped

Expectation:

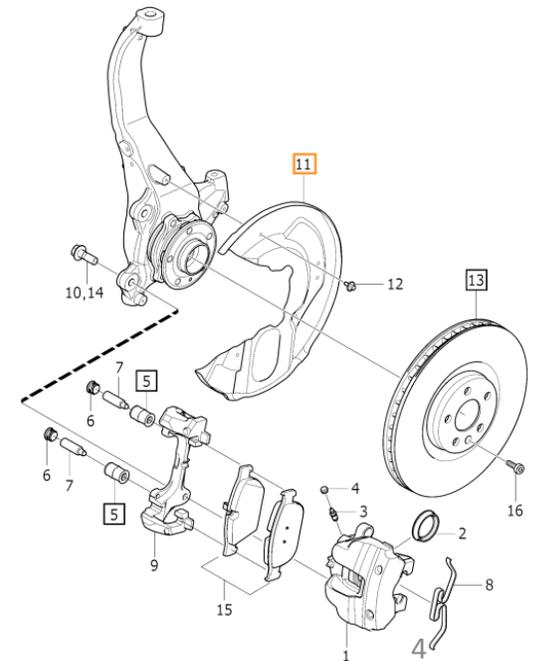
- Issue solved

- VST Operation No.

77062-2 Wheel x2 remove - install / replace

51147-3 Brake discs front x2 replace

99921-2 Change to damped dust shield



Chirp noise

Action:

- Change rear calipers to latest part number + change rear discs + change rear pads according to VIDA

(latest part number of rear calipers has increased rollback)

Expectation:

- Issue solved

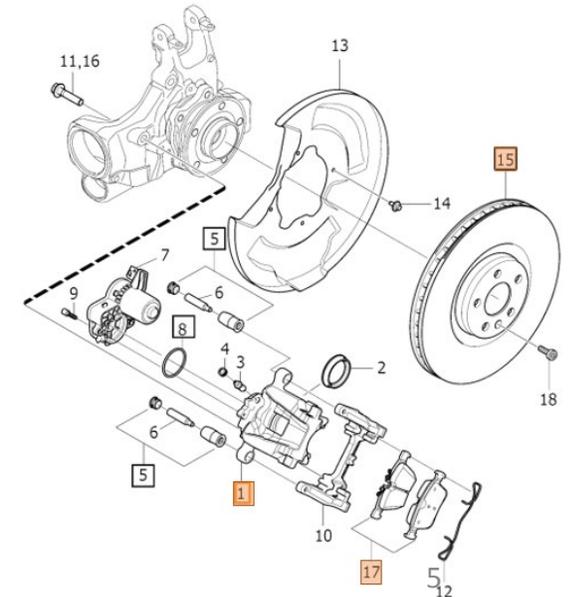
- VST Operation No.

77062-2 Wheel x2 remove - install / replace

51243-3 Brake caliper rear x2 replace

51247-3 Brake discs front x2 replace

51001-2 Brake system 2 wheels bleeding



Judder

Action:

- Change front and rear discs + front and rear pads according to VIDA

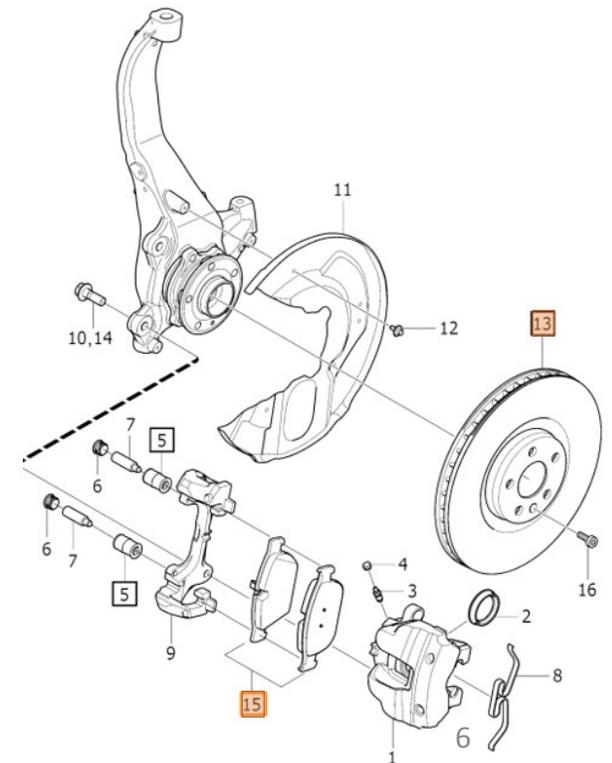
Expectation:

- Issue solved
- VST Operation No.

77064-2 Wheels 4 pcs remove-install/replace

51123-3 Brake pads/discs front 2 wheels replace

51214-3 Brake pads/discs rear 2 wheels replace



End-of-stop metallic noise

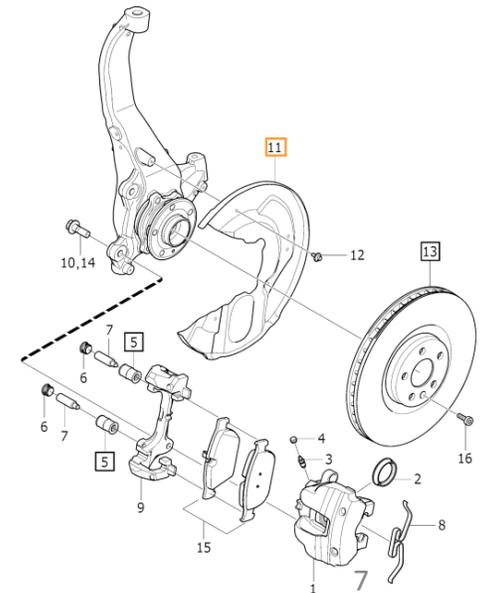
Action:

- Change to damped dust shield (Protecting plate) in the front and rear according to VIDA (all service part dust shields (Protecting plates) are damped)

Note : 16" rear brake -> service part dust shield is not damped

Expectation:

- Issue improved
- VST Operation No.
77062-2 Wheel x2 remove - install / replace
51147-3 Brake discs front x2 replace
99921-2 Change to damped dust shield



Trumpet noise

Action:

- Change to damped dust shield (Protecting plate) in the front brakes according to VIDA (all service part dust shields (Protecting plates) are damped)

Note : 16" rear brake -> service part dust shield is not damped

Expectation:

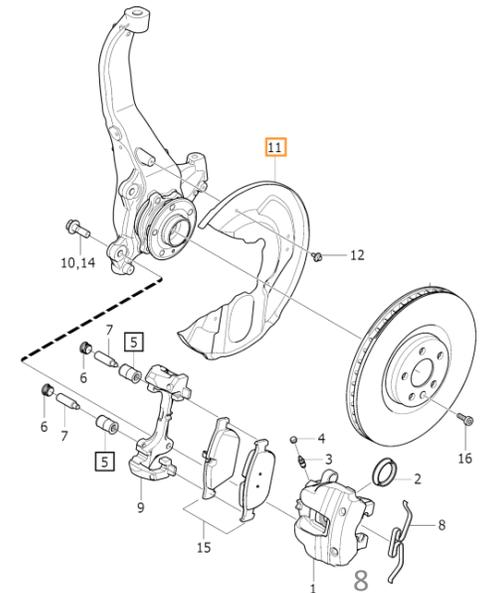
- Issue improved

- VST Operation No.

77062-2 Wheel x2 remove-install / replace

51147-3 Brake discs front x2 replace

99921-2 Change to damped dust shield



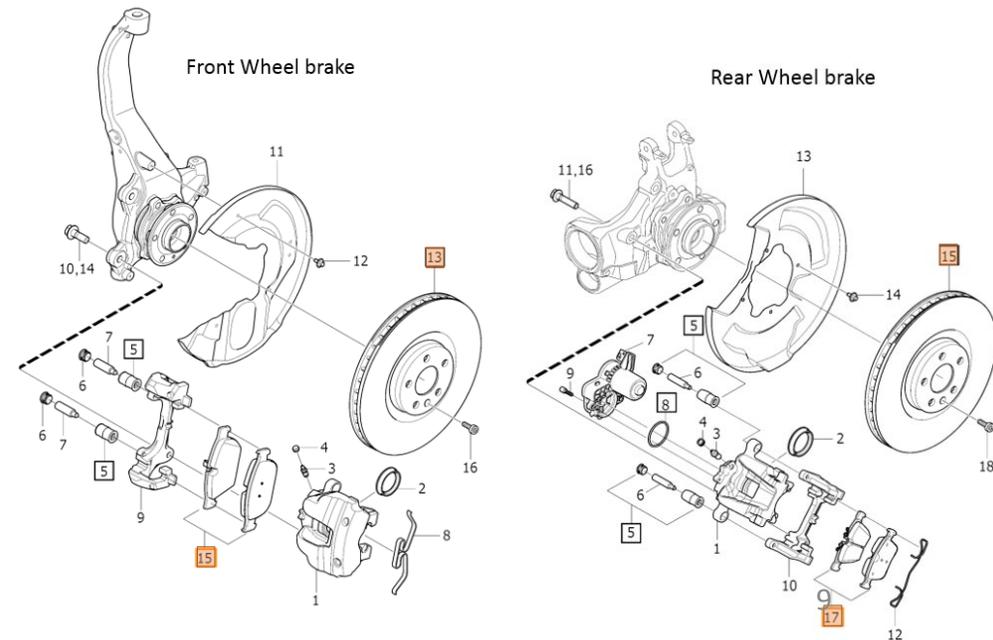
Creep groan

Action:

- Change front/rear discs + front/rear pads according to VIDA

Expectation:

- Issue improved
- VST Operation No.
77064-2 Wheels 4 pcs remove-install/replace
51123-3 Brake pads/discs front 2 wheels replace
51214-3 Brake pads/discs rear 2 wheels replace



Brake squeal

Unknown if frequency comes from front or rear:

- If squeal < 6 kHz noise (low frequency squeal, similar to recording)

- Change front discs + front pads according to VIDA

- VST Operation No.

76062-2 Wheel x2 remove - install / replace

51123-3 Brake pads/discs front 2 wheels replace



- If squeal > 6 kHz noise (high frequency squeal, similar to recording)

- Change rear discs + rear pads according to VIDA

- VST Operation No.

76062-2 Wheel x2 remove - install / replace

51214-3 Brake pads/discs rear 2 wheels replace



Expectation:

- Issue improved

If the origin of the squeal is identified (front or rear axle):

- Look at next pages and identify corresponding brake

Brake squeal: 19" front

- Main squeal issues: 1.4-1.6 kHz warm noise / 2.3-2.6 kHz cold noise

Actions :

- Cars produced before structure week 201640:
 - Change front discs + front pads according to VIDA -> 1.4-1.6 & 2.3-2.6 kHz squeal issue should be solved
 - VST Operation No.
76062-2 Wheel x2 remove - install / replace
51123-3 Brake pads/discs front 2 wheels replace
- All models (if above is not applicable):
 - Change front discs + front pads according to VIDA -> complete solution not available
 - VST Operation No.
76062-2 Wheel x2 remove - install / replace
51123-3 Brake pads/discs front 2 wheels replace

Brake squeal: 18" front

- Main squeal issues: 2.7-2.9 kHz warm noise / 1.6 + 3.2-3.5 kHz cold noise

Action:

- XC90 cars produced before structure week 201640:
 - Change front discs + front pads + front carriers according to VIDA -> 1.6 & 2.7-2.9 kHz squeal issue should be solved
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51123-3 Brake pads/discs front 2 wheels replace
99921-2 Front carriers replace
- XC90 cars produced before structure week 201748:
 - Change front carriers according to VIDA -> 2.7-2.9 kHz squeal issue should be solved
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
99925-2 Front carriers replace
- All models (if above is not applicable):
 - Change front discs + front pads according to VIDA -> complete solution not available
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51123-3 Brake pads/discs front 2 wheels replace

Brake squeal: 17" front

- Main squeal issues: 2.5-2.7 + 3.4-3.6 kHz warm noise / 2.7-3.0 + 7.7-8.2 kHz cold noise

Action:

- Solution coming structure week 201918
 - All models produced before structure week 201918
 - Change front carriers to reinforced carrier according to VIDA (all service parts are reinforced carrier) -> 2.7-3.0 & 3.4-3.6 kHz squeal issues should be solved
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51123-3 Brake pads/discs front 2 wheels replace
- All models (if above is not applicable):
 - Change front discs + front pads according to VIDA -> complete solution not available
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
99925-2 Front carriers replace

Brake squeal: 16" front

- Main squeal issue: 4.1 kHz cold noise

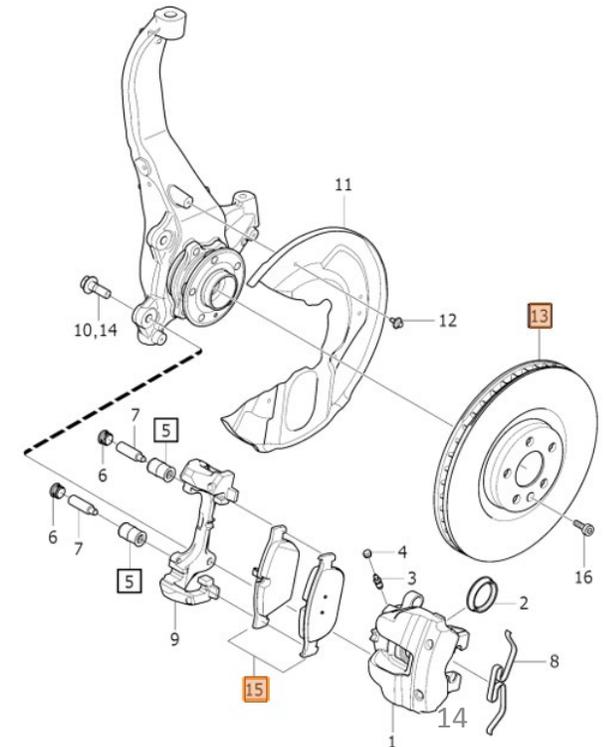
Action:

- Change front discs + front pads according to VIDA

- VST Operation No.
 - 76062-2 Wheel x2 remove - install / replace
 - 51123-3 Brake pads/discs front 2 wheels replace

Expectation:

- 4.1 kHz cold noise squeal Issue solved



Brake squeal: 18" rear

- Main squeal issues: 6.8-7.2 + 8.2-9.0 kHz warm noise / 5.9-6.0 kHz cold noise

Action:

- Cars produced before structure week 201723:
 - Change rear discs + rear pads + rear calipers according to VIDA -> 6.8-7.2 & 8.2-9.0 kHz squeal issues should be solved
 - VST Operation No.
 - 77062-2 Wheel x2 remove-install/replace
 - 51243-3 Brake caliper rear x2 replace
 - 51247-3 Brake discs rear x2 replace
 - 51001-2 Brake system 2 wheels bleeding
- Cars produced before structure week 201748:
 - Change rear discs + rear pads according to VIDA -> 5.9-6.0 & 8.2-9.0 kHz squeal issues should be solved
 - VST Operation No.
 - 76062-2 Wheel x2 remove - install / replace
 - 51214-3 Brake pads/discs rear 2 wheels replace
- All models (if above is not applicable):
 - Change rear discs + rear pads according to VIDA -> complete solution not available
 - VST Operation No.
 - 76062-2 Wheel x2 remove-install/replace
 - 51214-3 Brake pads/discs rear 2 wheels replace

Brake squeal: 17" rear

- Main squeal issues: 6.3-6.7 + 7.4-8.1 kHz warm noise / 6.0-6.7 + 8.5-9.7 kHz cold noise

Action:

- All models produced before structure week 201723 in EU / 201740 in China:
 - Change rear discs + rear pads + rear calipers according to VIDA -> 6.3-6.7 & 7.4-8.1 & 8.5-9.7 kHz issues should be solved
 - VST Operation No.
77062-2 Wheel x2 remove-install/replace
51243-3 Brake caliper rear x2 replace
51247-3 Brake discs rear x2 replace
51001-2 Brake system 2 wheels bleeding
- All models produced between structure week 201740-201830 in EU:
 - Disc out-of-specification regarding Eigen frequencies: Change rear discs + rear pads according to VIDA -> 7.4-8.1 & 8.5-9.7 kHz issue should be solved
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51214-3 Brake pads/discs rear 2 wheels replace
- All models (if above is not applicable):
 - Change rear discs + rear pads according to VIDA -> complete solution not available
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51214-3 Brake pads/discs rear 2 wheels replace

Brake squeal: 16" rear

Main squeal issues: 7.5-8.0 kHz warm noise / 7.5-8.3 + 9.9-10.8 kHz cold noise

Action:

- All models produced before structure week 201717 in EU / 201740 in China:
 - Change rear discs + rear pads + rear calipers according to VIDA -> 7.5-8.0 kHz squeal issue should be solved
 - VST Operation No.
77062-2 Wheel x2 remove-install/replace
51243-3 Brake caliper rear x2 replace
51247-3 Brake discs rear x2 replace
51001-2 Brake system 2 wheels bleeding
- All models (if above is not applicable):
 - Change rear discs + rear pads according to VIDA -> issue should be solved
 - VST Operation No.
76062-2 Wheel x2 remove-install/replace
51214-3 Brake pads/discs rear 2 wheels replace