



WSM DISK

WORKSHOP MANUAL DISK BRAKES



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Revision summary

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Preface

Use of this manual

This Workshop Manual is intended for trained and qualified service technicians to enable them to perform all required maintenance and repair tasks on VALX products in an efficient, safe and environmentally sound way.

TAKE THE TIME TO READ THIS MANUAL THOROUGHLY BEFORE PERFORMING ANY MAINTENANCE OR REPAIR TASK.

KEEP THIS MANUAL IN A SAFE PLACE, IN THE WORKSHOP.

THIS MANUAL REPLACES ALL PREVIOUS VERSIONS, IF ANY.

Conventions

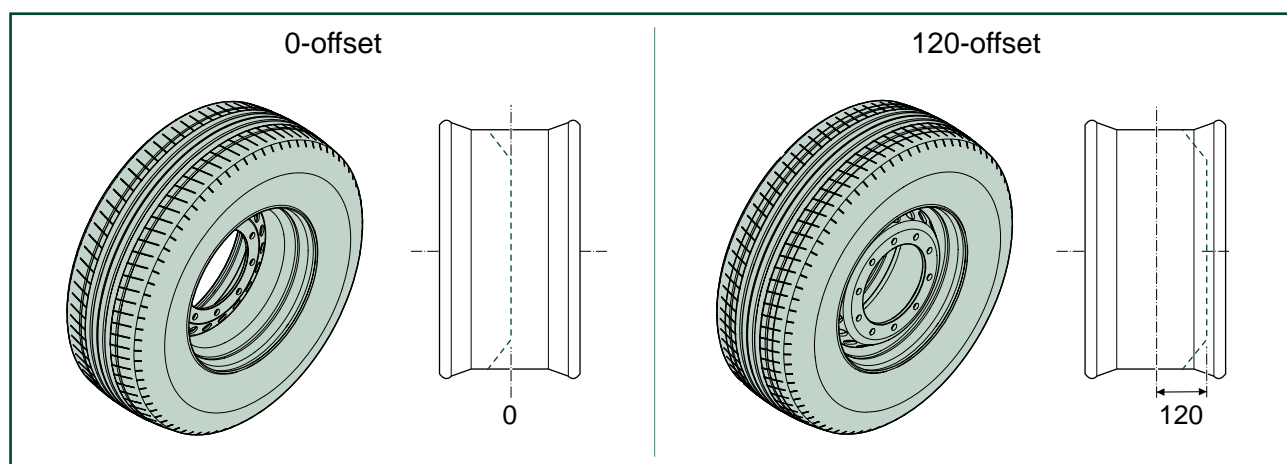
In this manual:

- The steps required to perform a certain task are always numbered. The procedures must imperatively be carried out in the order given.
- Enumerations (without a prescribed order) are always preceded by a dash (-).
- The words 'left' and 'right' are used to indicate a certain part or assembly as viewed from the perspective of the service technician who is doing the job.
- "VALX" is used as a substitute for "VALX B.V."



NOTE

The VALX disk brake trailer axle has been designed for a 0-offset wheel hub or a 120-offset wheel hub. For the illustrations the 120-offset wheel hub is used.



Document code

The document code of this manual can be found in the footer of each page. The document code consists of two fields:

- Document type (WSM = Workshop Manual, TBM = Trailer Builder Manual, DM = Driver Manual)
- Document number

The third field contains the document revision number.

Related documents

The following related documents are available:

- Trailer Builder Manual (TBM_20XX)
- Driver Manual (DM_20XX)
- Air suspension systems (WSM_20XX)

Conversion SI-units – imperial units

SI-units -> non-metric units	non-metric units -> SI-units
1 kg ≈ 2.2046 lb	1 lb ≈ 0.453592 kg
1 mm = 0.03937 in	1 in = 25.4 mm
1 m = 3.28 ft	1 ft = 0.3048 m
1 km = 0.62 mile	1 mile = 1.609 km
1 Nm ≈ 0.7376 ft-lb	1 ft-lb ≈ 1.3558 Nm
1 MPa (10 Bar) = 145 psi	1 psi = 0.0068966 MPa (0.0689 bar)

Service and technical support

For information about specific maintenance or repair tasks, adjustments or test procedures that are beyond the scope of this document, please contact VALX at support@valx.eu.

Make sure that you have the axle type code at hand. See chapter 2.

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Pictograms in this manual

Pictograms for general alerts

In this manual the following pictograms and symbols may be used for general alerts:



NOTE

Important instruction, recommendation or tip that you must always observe.



If the safety instruction is not observed, a potential hazardous situation can occur, causing personal injury or damage to the product, the workshop or the environment.



If the safety instruction is not observed, an imminent hazardous situation will occur, causing severe personal injury or death.

Pictograms for specific alerts

In this manual the following pictograms and symbols are used for specific alerts:



CAUTION

Risk of injury due to hazardous dusts.



CAUTION

Risk of injury due to heavy weight.



CAUTION

Risk of injury: crushing of fingers.



CAUTION

Weight exceeds 25 kg.

Symbols

Sometimes, a picture or a pictogram tells more than text can. For that reason, the maintenance, assembly and disassembly procedures in the chapters 5 through 9 mainly consist of graphical instructions. In these graphical instructions the following pictograms may be used:

Tools



Use a spanner

The value in the left-hand corner is the width across flats.



Use a ring spanner

The value in the left-hand corner is the width across flats.



Use an appropriate torque wrench

Tighten the fastener to the torque (in Nm) given in the left-hand corner.



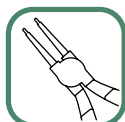
Use a feeler gauge

The value in the left-hand corner is the thickness of the feeler gauge.

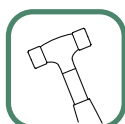


Use a hex key

The value in the left-hand corner is the hex key size.



Use a pair of circlip pliers



Use a hammer



Use an appropriate wire brush



Use a chisel



Use a screwdriver



Use a crowbar

Special tools

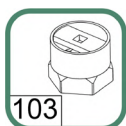


Use the central nut locking tool



Use the socket wrench (width across flats 75)

The value in the left-hand corner is the width across flats.



Use the special socket tool (width across flats 103)

The value in the left-hand corner is the width across flats.

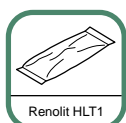
Lubricants



Lubricate with Optimol White Paste



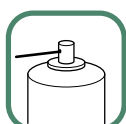
Lubricate with Mobilith SHC 220



Lubricate with Renolit HLT1

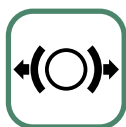


Lubricate with ABS sensor grease



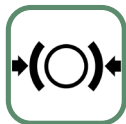
Clean with an appropriate degreasing agent

Miscellaneous



Release the brake

Release the brake prior to this step.



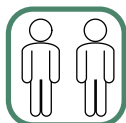
Actuate the brake

Actuate the brake prior to this step.



Visual check

Check for damage, wear, corrosion, correct fastening.



This step requires two trained and qualified service technicians

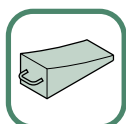


Clean with a lint free cloth

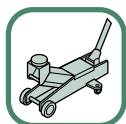


Measure

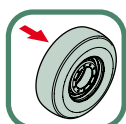
Symbols for quick reference



Place the wheel chocks (see § 6.1)



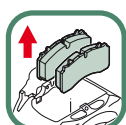
Jack up the trailer (see § 6.2)



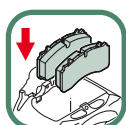
Remove the wheel(s) (see § 6.3)



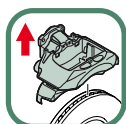
Install the wheel(s) (see § 6.4)



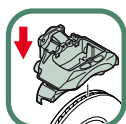
Remove the brake pads (see § 7.4.1)



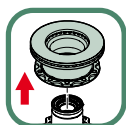
Install the brake pads (see § 7.4.2)



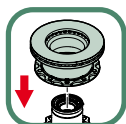
Remove the brake caliper (see § 7.4.3)



Install the brake caliper (see § 7.4.4)



Remove the brake disk (see § 7.4.5)



Install the brake disk (see § 7.4.6)



Replace the guide pin protection caps and the guide pin bushes (see § 7.4.7)



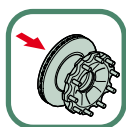
Replace the adjuster protection cap (see § 7.4.8)



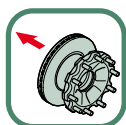
Replace the adjuster gaitor (see § 7.4.9)



Install the ABS sensor (see § 7.4.10)



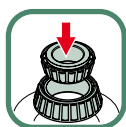
Remove the hub assembly (see § 8.4.1)



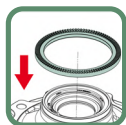
Install the hub assembly (see § 8.4.2)



Remove the inner/outer bearings (see § 8.4.3)



Install the inner/outer bearings (see § 8.4.4)



Install the ABS ring (see § 8.4.5)

1 General safety instructions and regulations

1.1 General

- VALX accepts no liability for any damage or physical injury caused by non-compliance with the safety instructions and regulations in this manual, or by carelessness during any maintenance or repair task on the VALX trailer axle.
- Depending on the trailer type, the specific repair or maintenance task(s) that have to be carried out, the workshop conditions, the environmental circumstances and the cargo that may be loaded, additional safety instructions may be applicable. As VALX has no direct control over these specific working conditions or trailer configurations, it is the workshop's sole responsibility to ensure that the national accident prevention guidelines and the local Health and Safety regulations are adhered to. Please inform VALX immediately if you have dealt with unsafe situations that have not been described.

1.2 This manual

- Read this manual thoroughly before performing any maintenance or repair task on the trailer axle.
- Keep this manual for future reference. Retain the manual in a safe place in the workshop.
- Carry out the procedures in the order given. Do not change the order of the steps.

1.3 Decals and instructions on the product

- Decals or instructions fitted on the product are part of the safety features provided. They must not be covered or removed, but must be present and legible throughout the entire life of the product. Damaged or illegible decals and instructions must be replaced or repaired immediately.

1.4 Warranty and original VALX parts

- All products of VALX are covered by warranty as stipulated in the "VALX Warranty Conditions". The "VALX Warranty Conditions" can also be downloaded from our website www.valx.eu.
- Modification and / or conversion of the product without the written consent of VALX is not allowed at the risk of forfeiting all warranty rights.
- When replacing parts, ONLY use original VALX spare parts. Parts approved by VALX for use in the product periodically undergo severe tests. As a result, VALX is able to warranty the quality of these parts.
- VALX can not assess for every single third-party product whether it can be used for the VALX product without any safety risk. This applies even if such products have already been tested by an accredited test authority. Therefore, the VALX warranty becomes null and void if spare parts other than original VALX parts are used.

1.5 Maintenance and repair

- In order to maintain the safe operation and the roadworthiness of the trailer, all maintenance tasks must be carried out according to the prescribed VALX service intervals (see the maintenance chart in chapter 3), and in accordance with the operation and service instructions of the trailer builder.
- Maintenance and repair is strictly reserved to trained and qualified service technicians.

1.5.1 Before starting work

- Make sure that the trailer is properly secured against rolling. See chapter 6.
- Make sure that unauthorised persons have no access to the working area.
- Make sure that the working area is sufficiently lit and ventilated.
- Dress properly. Do not wear torn or loose fitting clothes, but wear protective clothing. Remove jewellery, watches, etc. to prevent them from being caught in moving parts.
- Wear protective shoes and keep long hair out of the way.
- Use a dust mask when advised.

1.5.2 During work

- Stay alert and watch what you are doing. Use common sense. Do not work on the product when you are tired or have been taking alcohol, medicine or drugs. Do not smoke.
- Use a hoist when lifting 25 kg or more. Only use suitable and technically perfect lifting devices with adequate lifting capacity built in compliance with all safety measures. Fastening of loads and instructions to the operator of the lifting device are restricted to experienced personnel who are within sight or sound of the operator of the lifting device.
- Only use tools, parts, materials, lubricants and service techniques that were approved by VALX. Do not use contaminated or used lubricants. Used lubricants, cleansing agents and expended parts must be disposed of in an environmentally safe way.
- Avoid bodily contact with lubricants.
- Never use worn tools and do not leave tools behind on the trailer axle or on the trailer.
- Never weld on any part of the trailer axle or suspension without the prior written permission of VALX.
- Never re-use self-locking fixing materials. Always replace them.

1.5.3 When work is finished

- Inspect the product. Check for damage, leakage or defects. Any part removed for maintenance or repair purposes must be refitted and checked immediately upon completion of the work.
- Do not clear a product for operation unless it was established that it is absolutely safe and in perfect working order.

1.6 A contribution to the protection of our environment

Please obtain information about recycling or environmentally friendly processing of parts and materials that have been replaced during maintenance or repair tasks.

Almost all used lubricants are considered to be chemical waste. For the disposal of these a specialized company must be contacted.

1.7 Safety instructions when working on the brake system

See chapter 7.

1.8 Safety instructions when working on the wheel hub unit

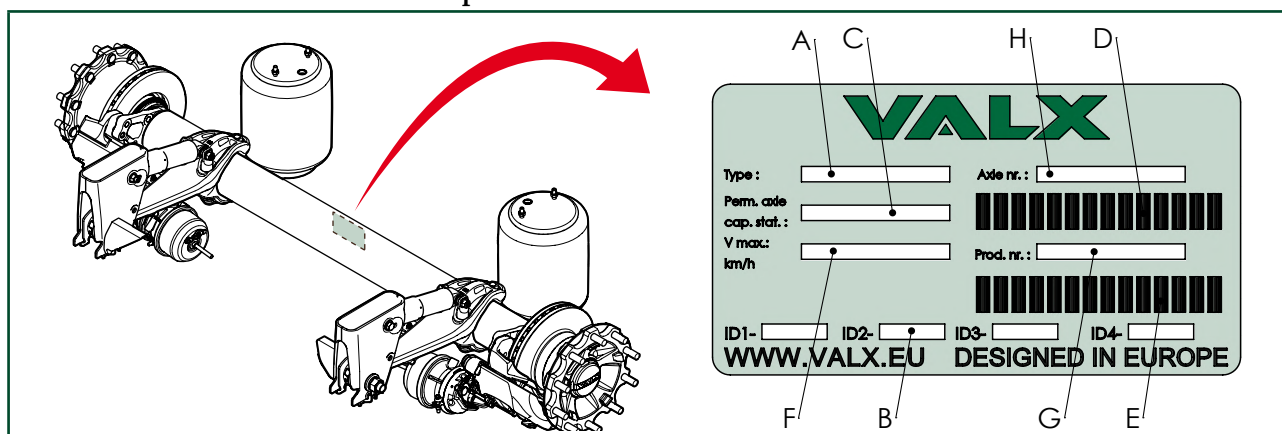
See chapter 8.

1.9 Safety instructions when working on the axle beam

See chapter 9.

2 Explanation of the axle type code

2.1 Location of the identification plate



2.2 Information on the identification plate

The identification plate consists of the following fields:

A Axle type code

The axle type code is built up as shown in the table below.

	Brake type	Brake diameter	Wheel	Steering	Load capacity (in kg)		Wheel bolts	
Drum brake	D							
Disk brake (rotor)	R							
Small 300x200 mm (17.5" rimsize)		S						
Medium 370 mm disk (19.5" rimsize)		M						
Medium 360x200 mm drum (19.5" rimsize)		M						
Large 430 mm disk (22.5" rimsize)		L						
Large 420x180 drum (22.5" rimsize)		L						
Extra large 420x220 (22.5" rimsize)		X						
Single wheel / 0-offset			S					
Double wheel			D					
Single wheel / 120-offset			O					
Rigid axle				X				
E2! energy axle				E				
E2!HD energy axle				G				
Forced steering axle				F				
Self steering axle				S				
Heavy duty rigid axle				H				
9.000 kg					0	9		
10.000 kg					1	0		
11.000 kg					1	1		
12.000 kg					1	2		
13.000 kg					1	3		
6 wheel bolts							0	6
8 wheel bolts							0	8
10 wheel bolts							1	0

- B** Brake approval (with test report number)
C Permissible axle capacity static (in kg)
D Barcode (axle number)
E Barcode (production number)
F Maximum allowable speed (in km/h)
G Production number

H Axle number

The axle number is built up as shown in the table below.

Axle type		Axle specs				ID number	
1	2	3	4	5	6	7	8

Disk brake axle 17,5" incl. ABS	1/9	4					
Disk brake axle 17,5"	1/9	5					
Disk brake axle 19,5" incl. ABS	1/9	6					
Disk brake axle 19,5"	1/9	7					
Disk brake axle 22,5" incl. ABS	1/9	8					
disk brake axle 22,5"	1/9	9					

Drum brake axle 17,5" incl. ABS	2	4					
Drum brake axle 17,5"	2	5					
Drum brake axle 19,5" incl. ABS	2	6					
Drum brake axle 19,5"	2	7					
Drum brake axle 22,5" incl. ABS	2	8					
Drum brake axle 22,5"	2	9					

Single mounting OS = 0			0				
Double mounting			1				
Single mounting OS = 120			2				
Rigid axle (X)				0			
Rorced steering axle (F)				1			
Self steering axle (S)				2			
Energy axle (E/G)				3			
Heavy duty (H)				4			
Load capacity 9.000 kg					9		
Load capacity 10.000 kg					0		
Load capacity 11.000 kg					1		
Load capacity 12.000 kg					2		
Load capacity 13.000 kg					3		
Hub with 6 wheel bolts						6	
Hub with 8 wheel bolts						8	
Hub with 10 wheel bolts						0	

Unique ID number axles							0	1
							9	9

2.3 Ordering of parts

See the parts ordering procedure on www.valx.eu or contact VALX at tel: +31 (0)88 405 88 00.

3 Maintenance chart



NOTE

As road conditions may vary from one country to another, and specific use of the trailer axle may differ per user, the maintenance intervals given below are only indicative. The maintenance tables differentiate between on-road use (X) and off-road use (0).

Inspection item	Maintenance task	See section	Maintenance interval				
			every 3 months	every 6 months	every year	every 3 years	every 5 years
Brake pad ^①	Check the thickness of the friction material of the brake pad (minimum thickness: 2 mm)	7.3.1	0 / X				
Brake disk	Check for cracks, damage, wear and corrosion (minimum thickness of the brake disk: 37 mm)	7.3.2	0	B			
	Check the disk runout (maximum disk runout: 0.15 mm)	7.3.3		0	X		
Brake cylinder ^②	Check the general condition of the brake cylinder (connection, damages, corrosion, leakage)	-	0	X			
Adjuster	Check the correct functioning (recommended clearance between brake pads and brake disk: 0.7 + 0.4 mm)	7.3.5		0	X		
	Check the presence of the adjuster sealing plug	7.3.6		0	X		
Brake calliper ^①	Manually check that the brake calliper slides correctly over the guide pins	7.3.7	0	X			
Hold-down springs	Check for cracks	-	0	X			
Brake wear indicator (option)	Check the correct functioning	-		0 / X			

All parts of the wheel hub unit	Check for damage or wear	-	0	X			
Tyres	Check for damage or uneven wear	-	X / 0				
Outer and inner bearing	Check for play	8.3.1		0	X		
Outer and inner bearing	Replace bearing and bearing grease	8.4.3 & 8.4.4				0	X
Seal	Replace	8.4.3 & 8.4.4				0	X
Wheel nuts ^③	Check for correct fastening	6.4		0	X		

Axle beam	Check for irregularities (paying particular attention to the welds of the spider)	7.3.5		0	X		
	Check for damage, wear or corrosion	7.3.6		0	X		

^① Always check the condition of the protection caps of both the guide pins and the adjuster.
Always check the play of both the calliper and the sliding pins when the brake pads have been removed.

^② Always check that the draining plug(s) at the bottom of the brake cylinder have been removed.

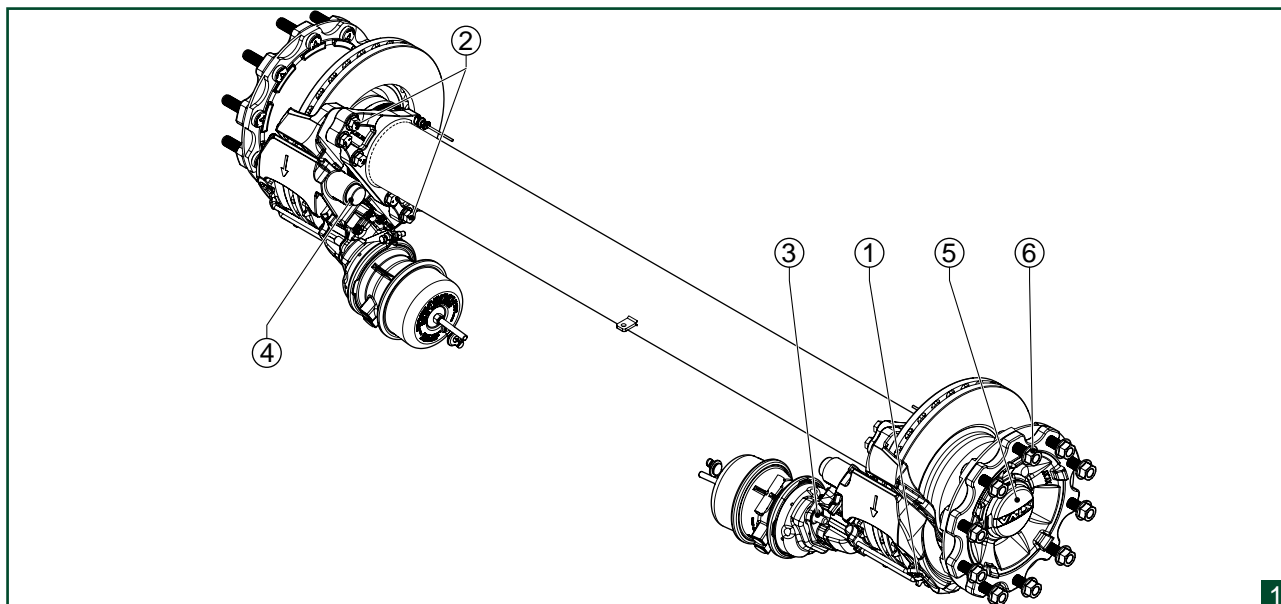
^③ Always check the correct fastening of the wheel nuts after the first journey with a loaded trailer and whenever the wheel in question has been replaced.

4 Tightening torques



NOTE

Always tighten or check the fasteners with a calibrated torque wrench.



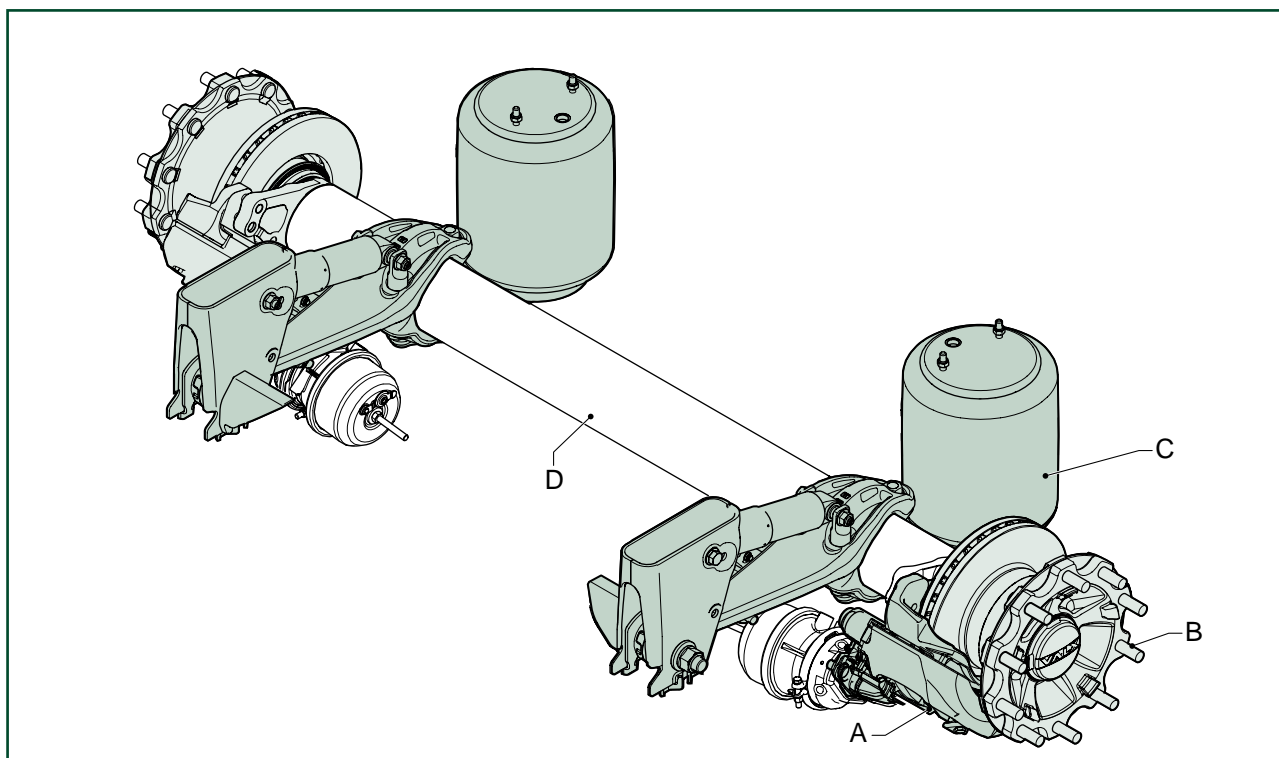
Torques

Subassembly	Chapter		Item	Size	Width across flats	Inspection	When replacing
Brake system	7	1	Hexagon bolt	M10	17	30 Nm	30 Nm + 15 Nm
		2	Flange bolts and flange shoulder bolt	M16 x 1.5	24	250 Nm	290 Nm ± 20 Nm
		3	Brake cylinder nuts	M16 x 1.5	24	175 Nm	210 Nm – 30 Nm ^①
		4	Internal hexagon bolts	M12	14	275 Nm	310 Nm ± 30 Nm
Wheel hub unit	8	5	Central nut	M55 x 1.5	75	N.A.	630 Nm ± 30 Nm
		6	Wheel nuts	M22 x 1.5	32	600 Nm	630 Nm ± 30 Nm

^① The torque refers to WABCO brake cylinders. If other brake cylinders are used, the brake cylinder nuts must be tightened to the torque specified by the supplier.

5 Axle complete

5.1 Overview



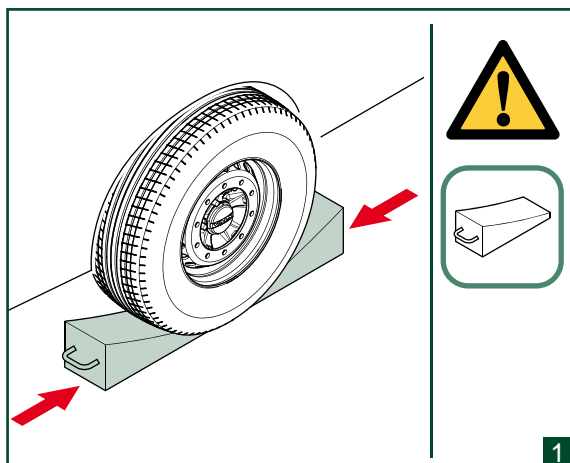
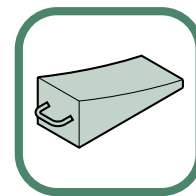
NOTE

The VALX disk brake trailer axle has been designed for a 0-offset wheel hub or a 120-offset wheel hub. The overview drawing shows the 120-offset wheel hub.

- A Brake system (disk brake) (see chapter 7)
- B Wheel hub unit (see chapter 8)
- C Air suspension system
- D Axle beam (see chapter 9)

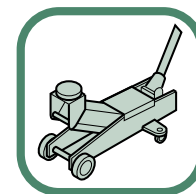
6 Preparatory actions

6.1 Place the wheel chocks

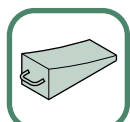


Position the trailer on an even surface and use wheel chocks to secure the trailer against rolling away.

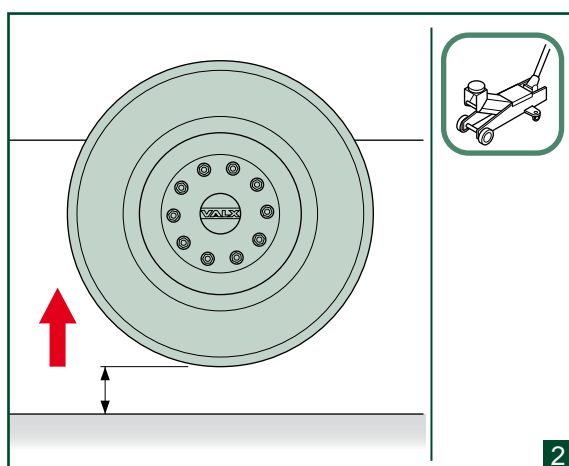
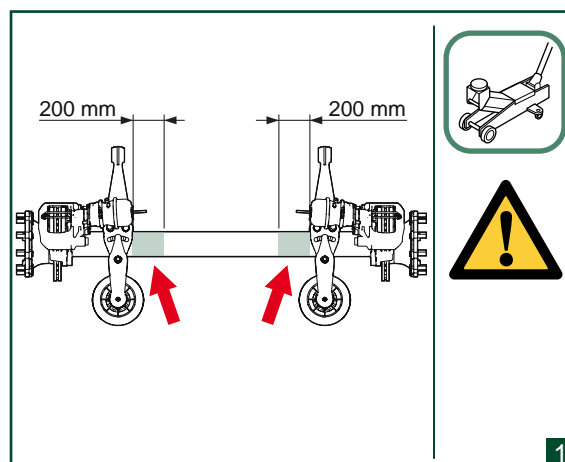
6.2 Jack up the trailer



Previous steps

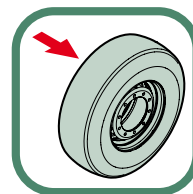


§6.1

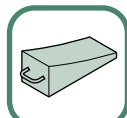


Only use approved devices to jack up the trailer. Place the jack only at the indicated positions.

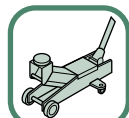
6.3 Remove the wheel(s)



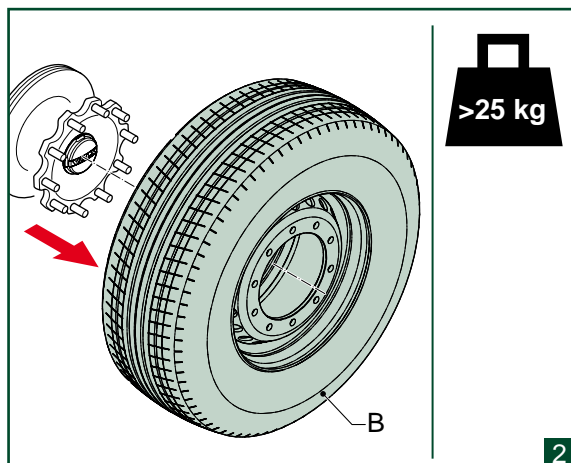
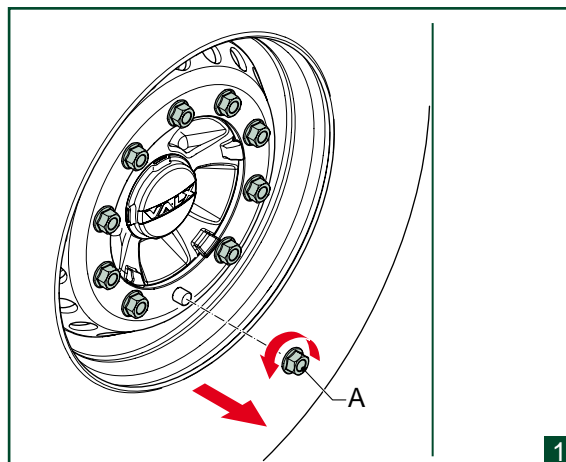
Previous steps



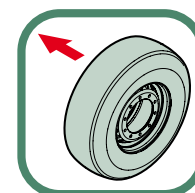
§ 6.1



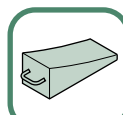
§ 6.2



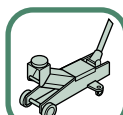
6.4 Install the wheel(s)



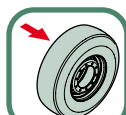
Previous steps



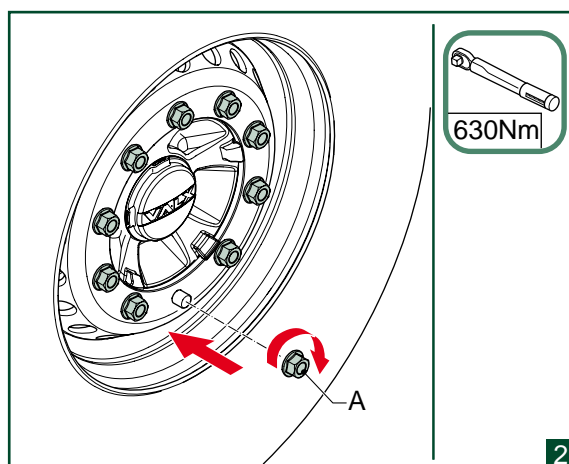
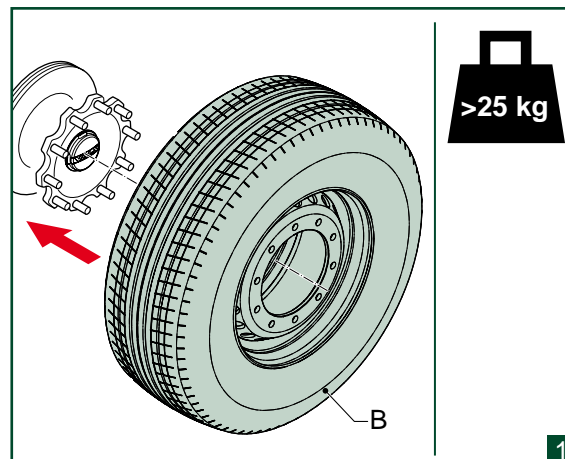
§ 6.1



§ 6.2



§ 6.3



630Nm



No grease, oil or paint is allowed on the threaded surface or on the wheel nut.

Torques

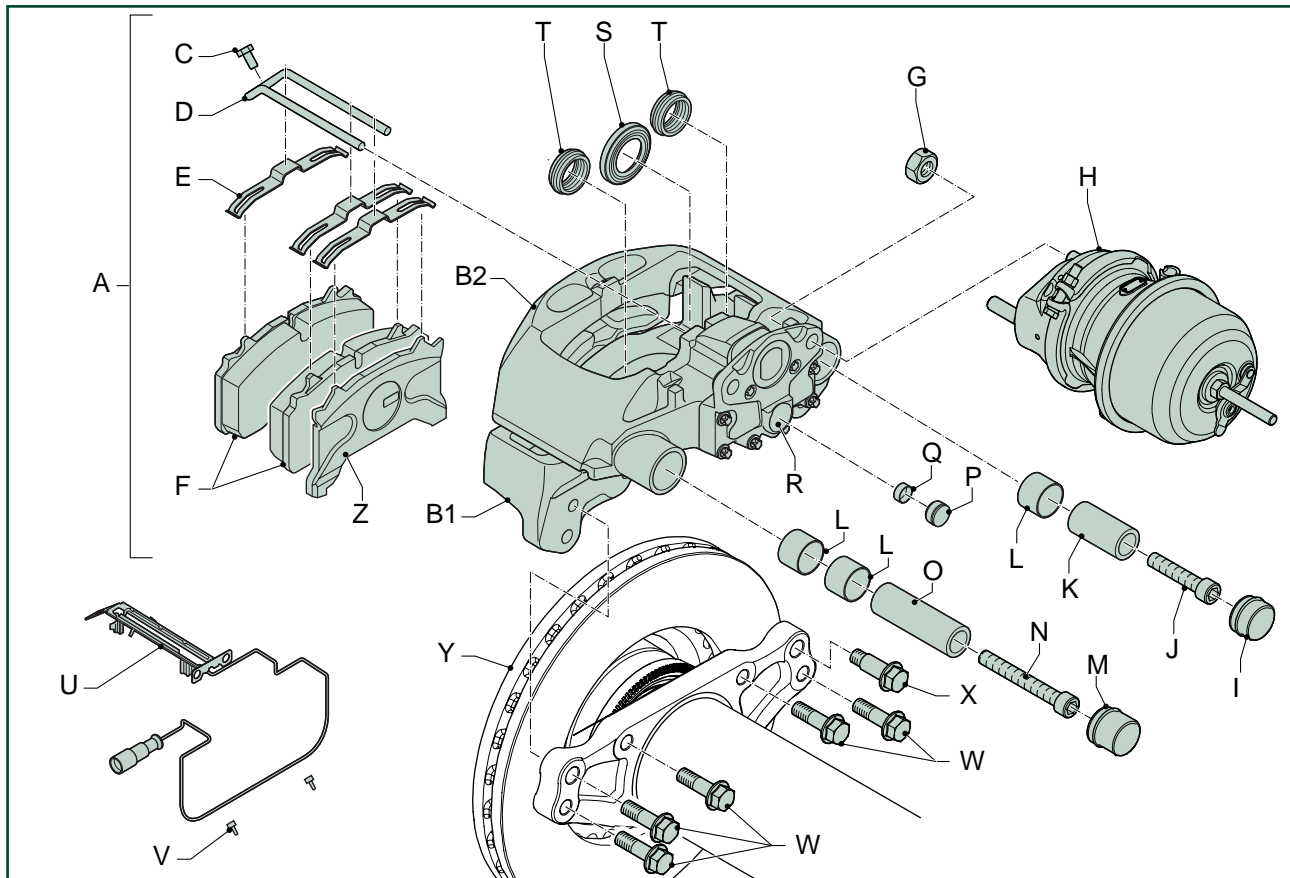
Item	Size	Width across flats	Torque (Nm)
Wheel nuts (A)	M22 x 1.5	32	630 Nm \pm 30 Nm Check 600 Nm

7 Brake system

7.1 Safety instructions

Always observe the general safety instructions and regulations (see chapter 1).

7.2 Overview

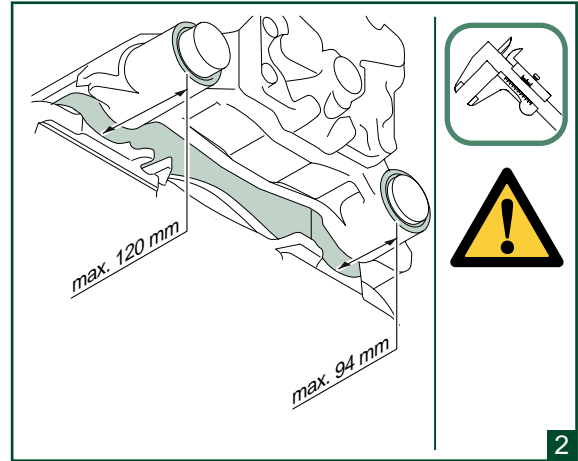
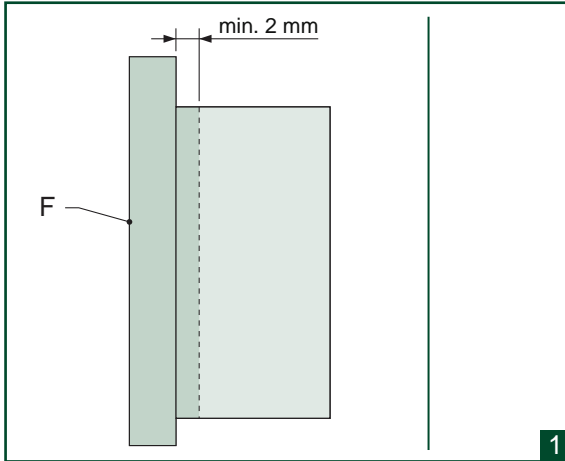


NOTE

The VALX disk brake trailer axle can be equipped with brake disks with a diameter of 370mm or 430mm.

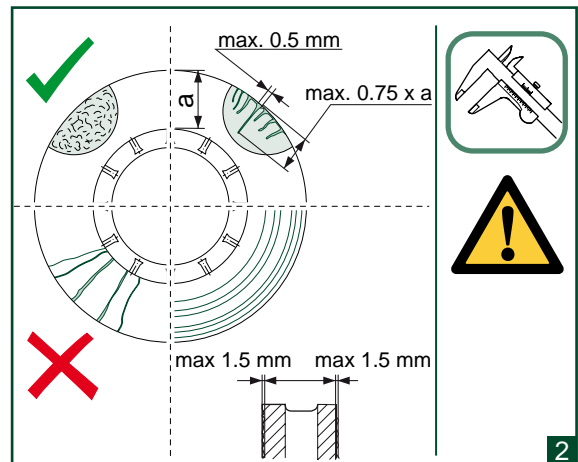
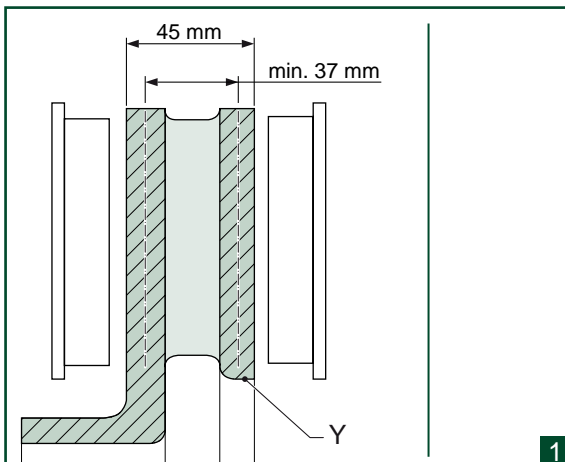
- | | | | |
|----|-------------------------------|---|--|
| A | Brake system complete | N | Internal hexagon bolt (long) |
| B1 | Brake anchor plate | O | Guide pin (long) |
| B2 | Brake calliper | P | Adjuster sealing plug |
| C | Hexagon bolt | Q | Adjuster gaitor |
| D | Brake pad retainer | R | Adjuster |
| E | Hold-down spring | S | Adjuster protection cap |
| F | Brake pad | T | Guide pin protection cap |
| G | Brake cylinder nut | U | Cable guide with wear indicator (option) |
| H | Brake cylinder | V | Clip (option) |
| I | Closing cover (short) | W | Flange bolt |
| J | Internal hexagon bolt (short) | X | Flange shoulder bolt |
| K | Guide pin (short) | Y | Brake disk |
| L | Guide pin bush | Z | Pressure plate |
| M | Closing cover (long) | | |

7.3.1 Check the thickness of the friction material of the brake pad



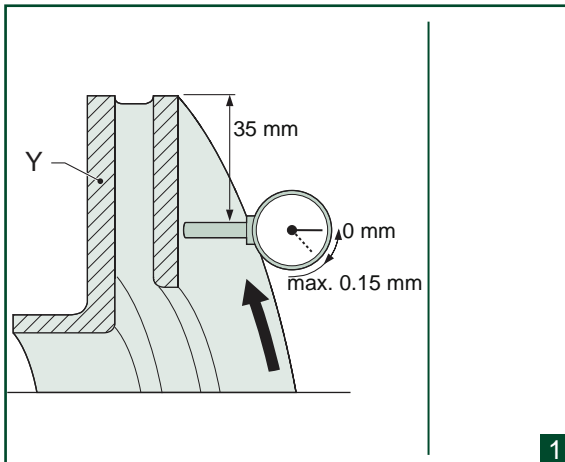
Immediately replace burned, glazed or oil contaminated brake pads.
Always replace all brake pads on the same axle. Replace the brake pads when they reach the wear limit at their thinnest point.

7.3.2 Check the condition of the brake disk

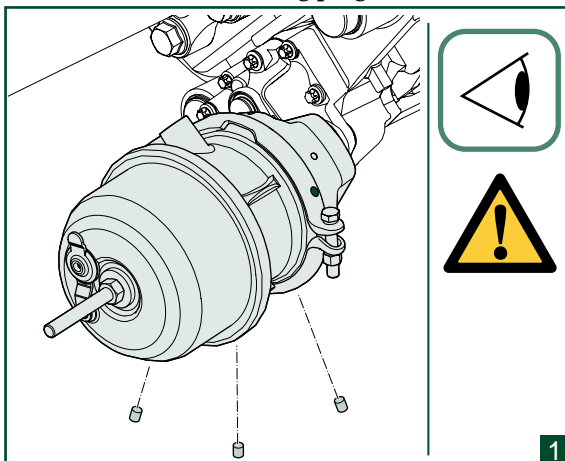


Always replace both brake disks on the same axle in case of cracks or wear or corrosion.

7.3.3 Check the disk runout



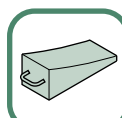
7.3.4 Check the draining plugs



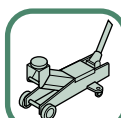
Check if the draining plugs at the bottom side of the brake cylinder have been removed.

7.3.5 Check the functioning of the adjuster

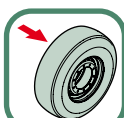
Previous steps



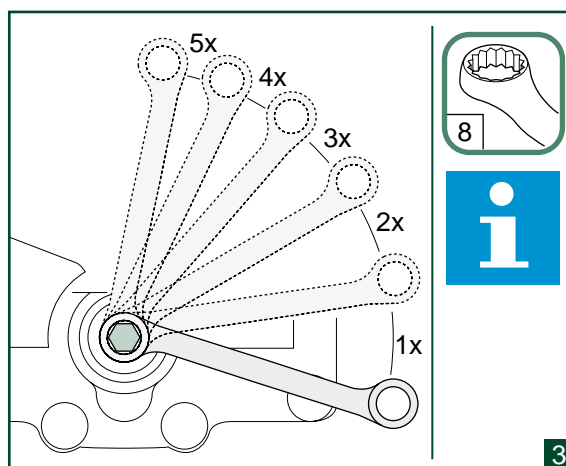
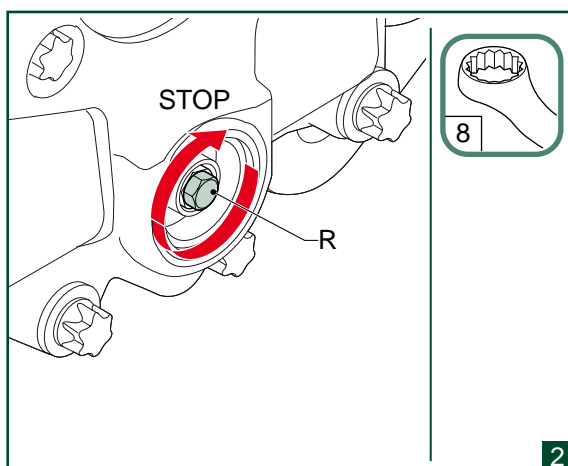
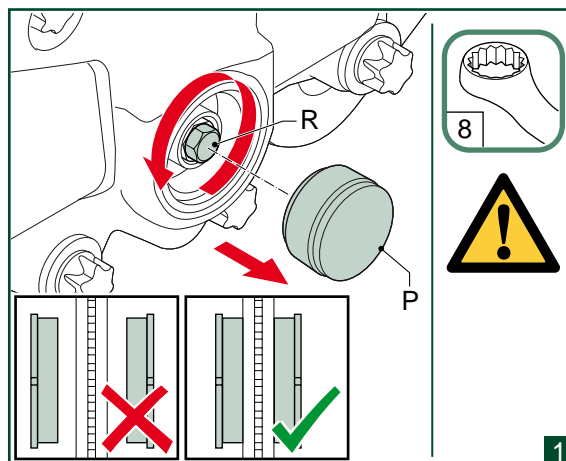
§ 6.1



§ 6.2



§ 6.3

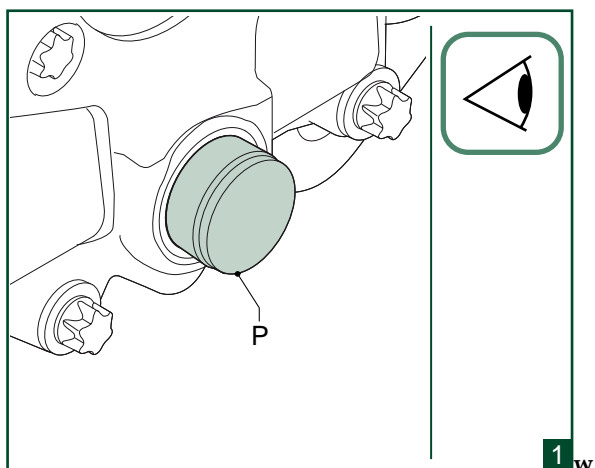


Avoid damage to the adjuster. Make sure that there is sufficient space for the ring spanner. When turning the adjuster counterclockwise, do not overtighten. When turning the adjuster clockwise, the torque is higher than the torque required to turn counterclockwise.



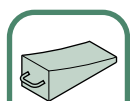
Gently apply the brake 5 times (braking pressure approx. 1 bar). With increasing adjustment the angle of rotation of the ring spanner becomes smaller. The adjuster is working correctly when the ring spanner rotates with every actuation of the brake.

7.3.6 Check the presence of the adjuster sealing plug

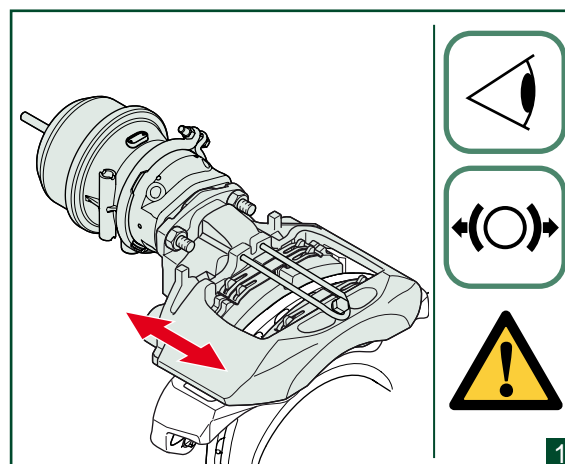


7.3.7 Check the brake calliper movement

Previous steps



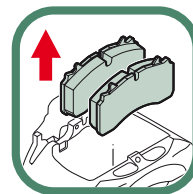
§ 6.1



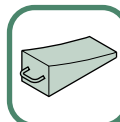
Check that the brake calliper slides smoothly over the guidepins.
Check if the calliper seals are not damaged.

7.4 Disassembly, assembly and adjustments

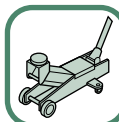
7.4.1 Remove the brake pads



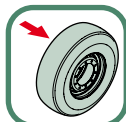
Previous steps



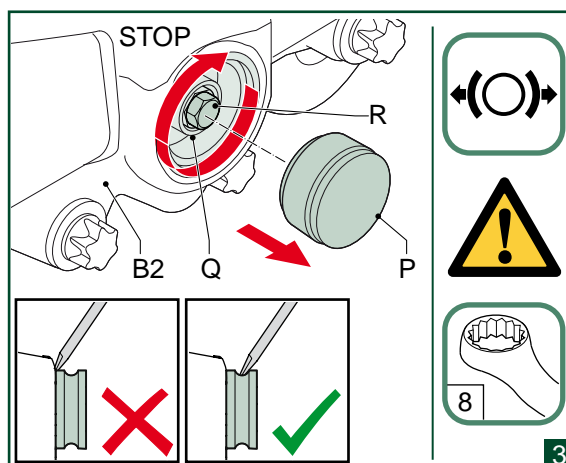
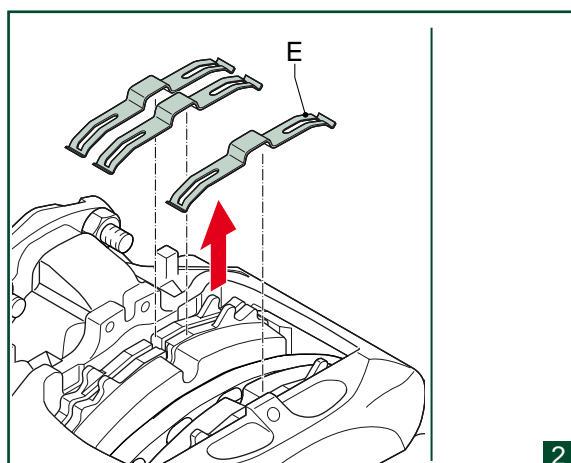
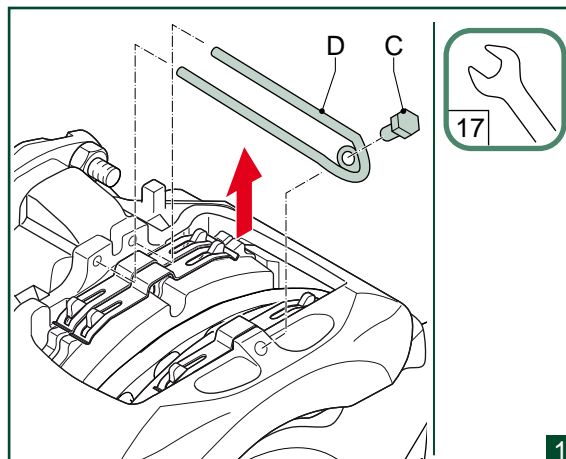
§ 6.1



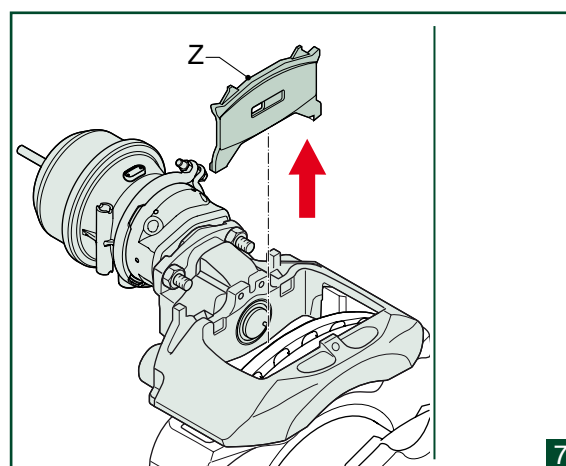
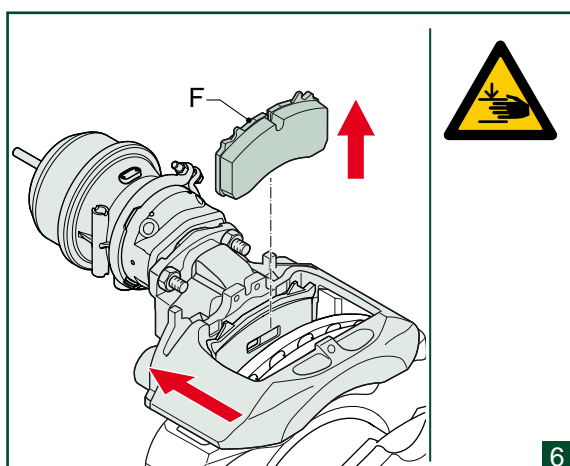
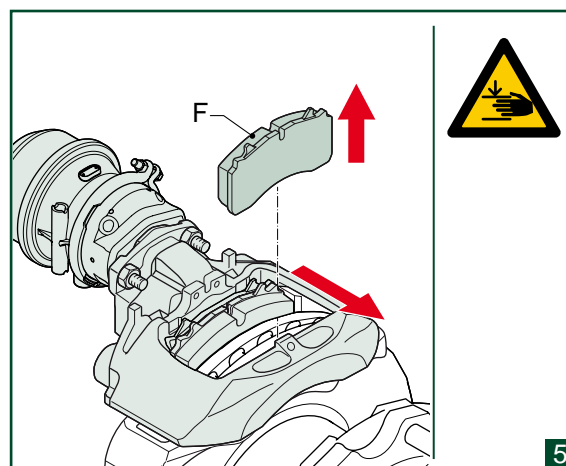
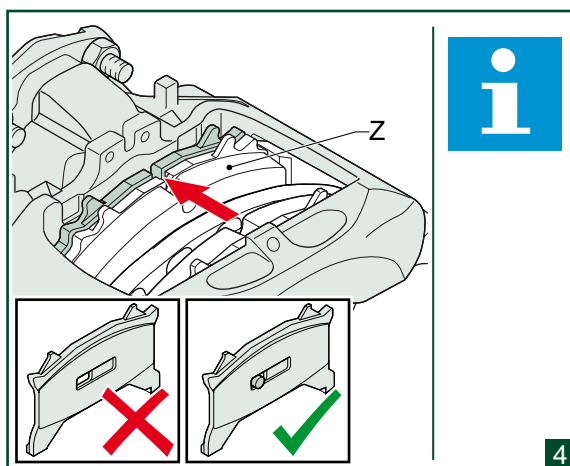
§ 6.2



§ 6.3



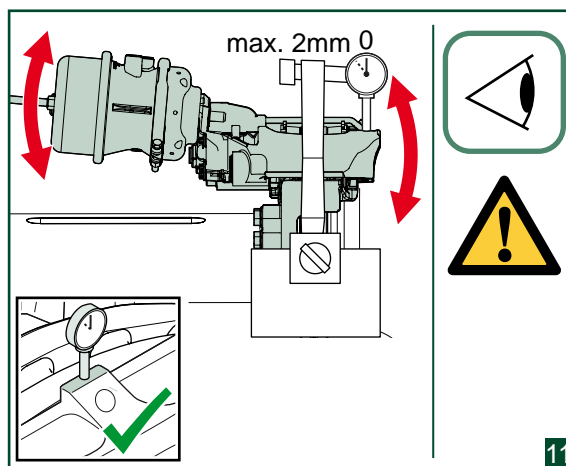
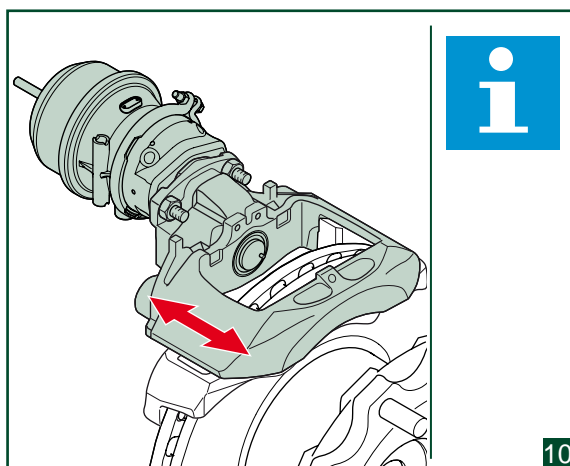
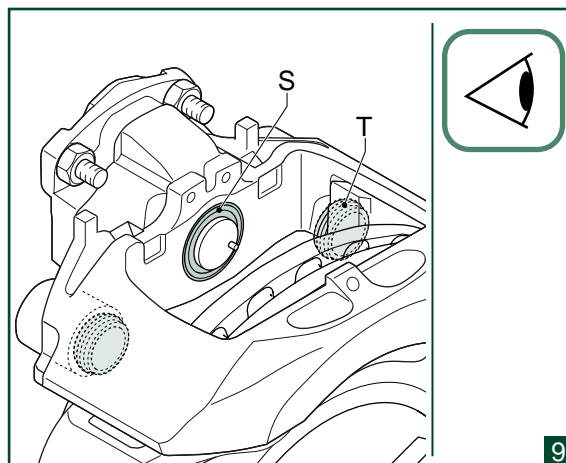
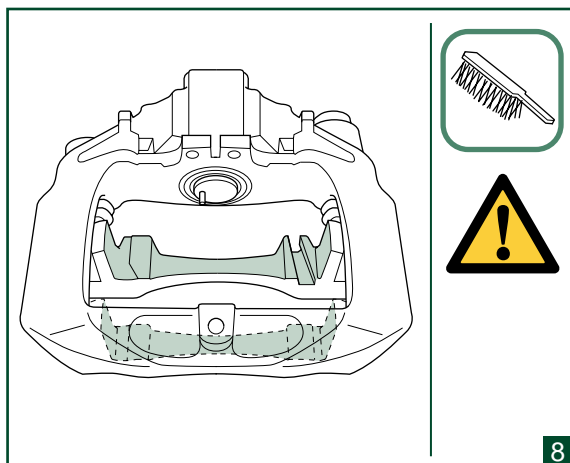
When you remove the adjuster sealing plug (P), be careful not to damage the adjuster gaitor (Q) or the brake calliper (B2).



	<p>While turning the adjuster (R), push the pressure plate (Z) towards the cylinder side to make sure that the pin remains inside the retaining groove of the pressure plate.</p>
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	<p>Do not apply the brake when the brake pads have been removed.</p>
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7.4.1 Remove the brake pads (continued)



Make sure that the guide surfaces are free of grease.

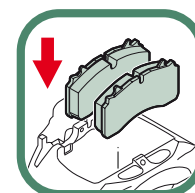


Check that the brake calliper slides smoothly over the guide pins.

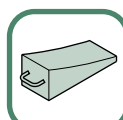


Position the measuring taster on the dedicated machined area.

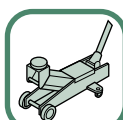
7.4.2 Install the brake pads



Previous steps



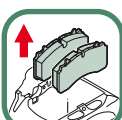
§ 6.1



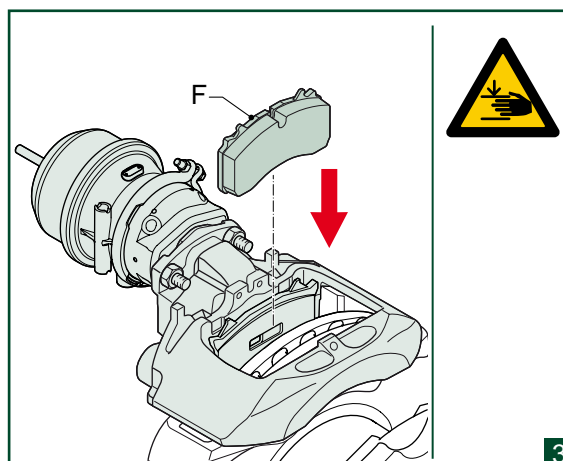
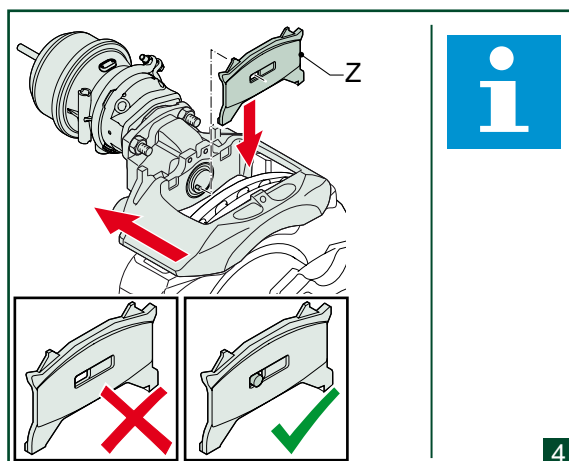
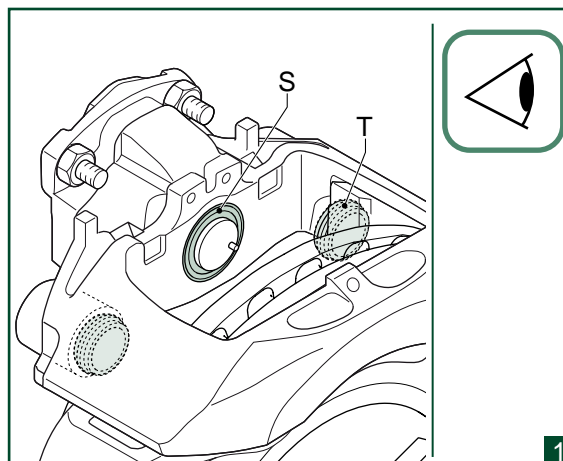
§ 6.2



§ 6.3



§ 7.4.1



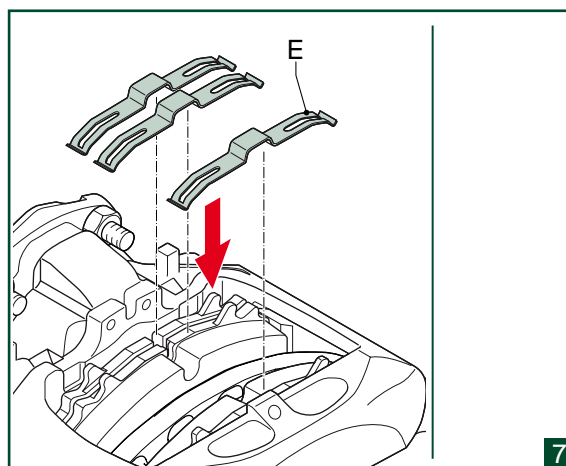
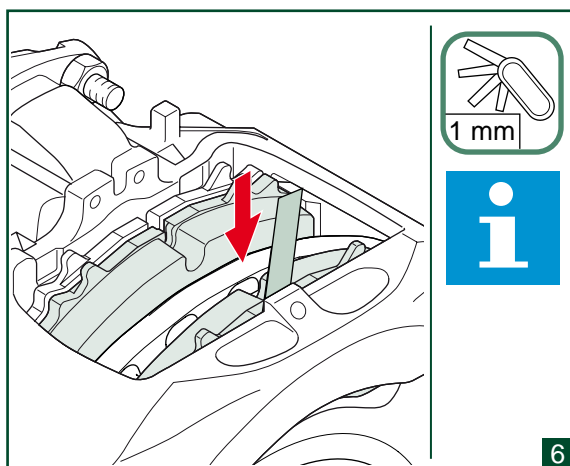
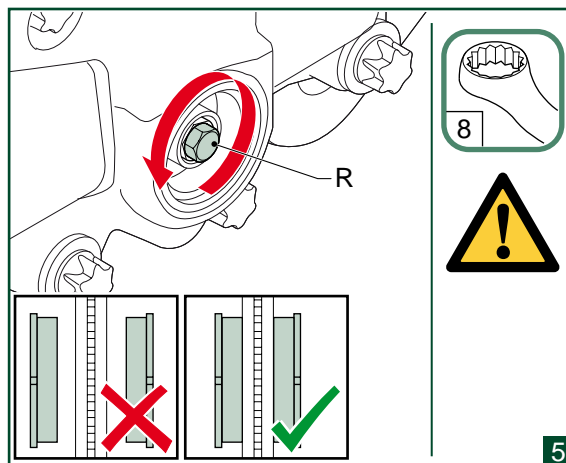
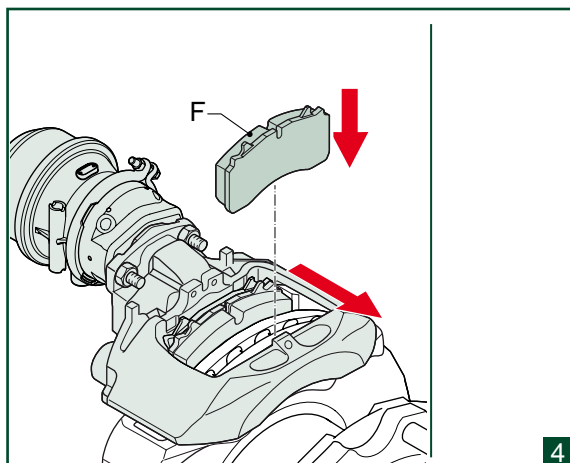
i

Turn the adjuster to make sure that the pin fits inside the retaining groove of the pressure plate (Z).

⚠

Do not apply the brake when the brake pads have been removed.

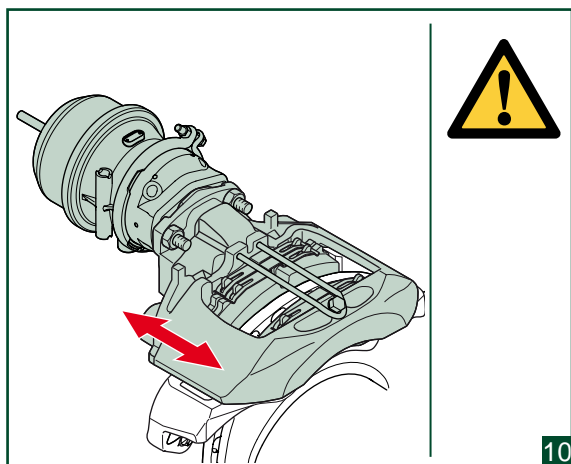
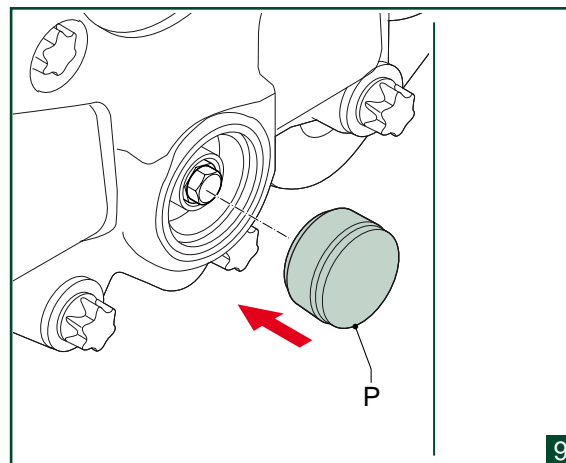
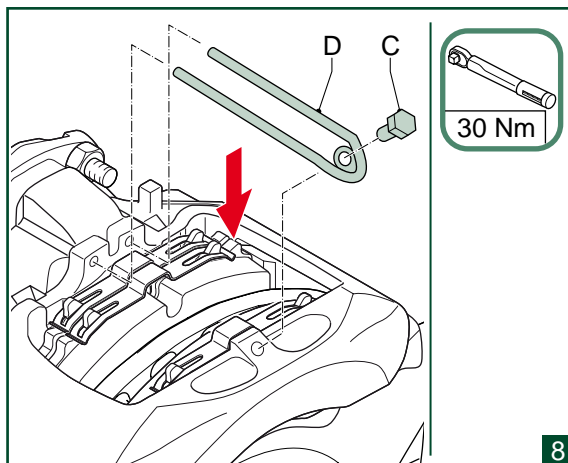
7.4.2 Install the brake pads (continued)



Avoid damage to the adjuster. Make sure that there is sufficient space for the ring spanner.
Do not overtighten.



Always insert the feeler gauge exactly in the centre.

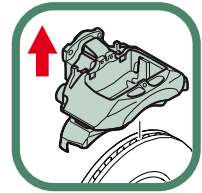


Test the functioning of the brake on a roller brake tester.

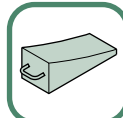
Torques

item	size	width across flats	torque (Nm)
Hexagon bolt (C)	M10	17	30 Nm + 15 Nm Check 30 Nm

7.4.3 Disassembly – brake calliper



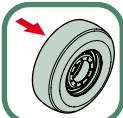
Previous steps



§ 6.1



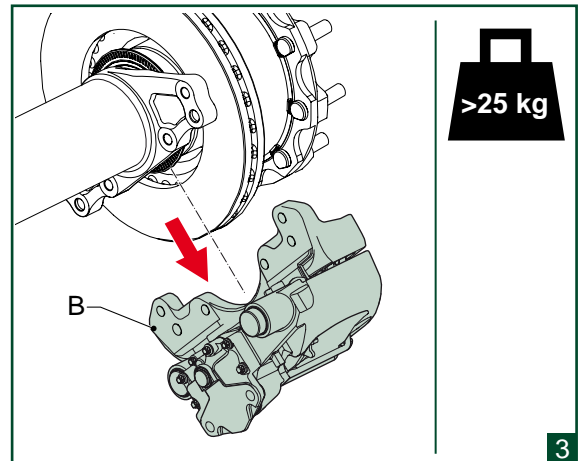
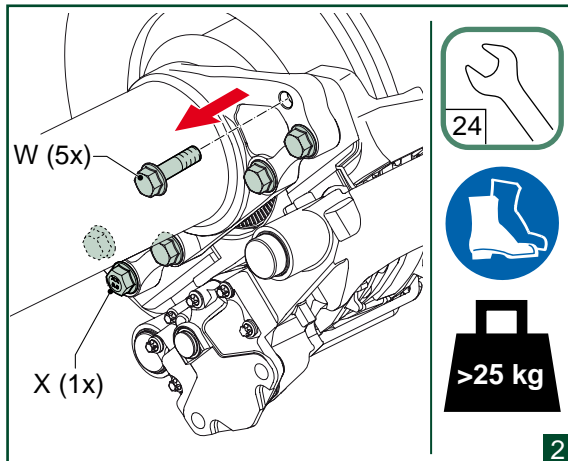
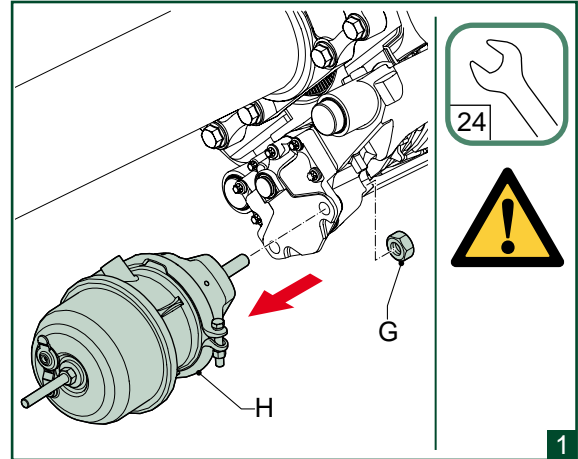
§ 6.2



§ 6.3

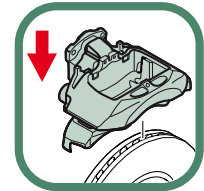


§ 7.4.1

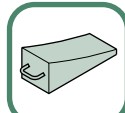


Make sure that the pneumatic system is pressureless.

7.4.4 Assembly – brake calliper



Previous steps



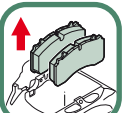
§ 6.1



§ 6.2



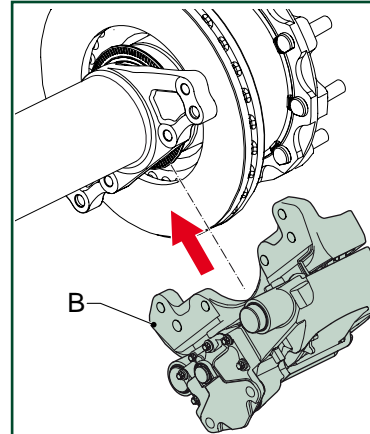
§ 6.3



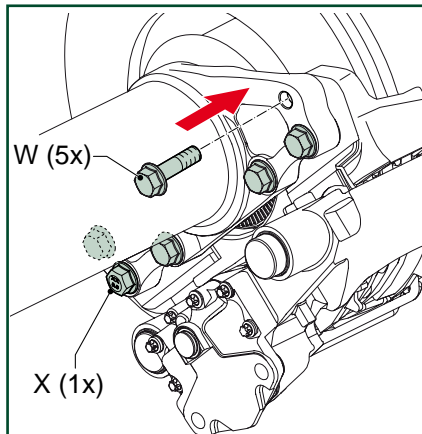
§ 7.4.1



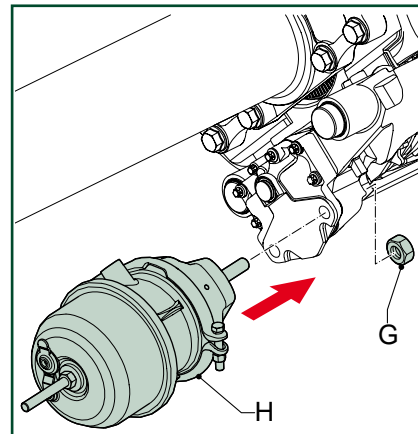
§ 7.4.3



1



2



3

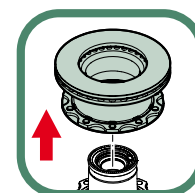


Remove the draining plugs at the bottom side of the brake cylinder.

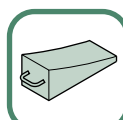
Torques

Item	Size	Width across flats	Torque (Nm)
Flange bolts (W) and flange shoulder bolt (X)	M16 x 1.5	24	290 ± 20 Check 250 Nm
Brake cylinder nuts (G)	M16 x 1.5	24	210 - 30 Check 175 Nm

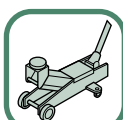
7.4.5 Disassembly – brake disk



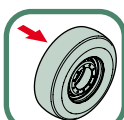
Previous steps



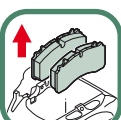
§ 6.1



§ 6.2



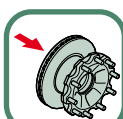
§ 6.3



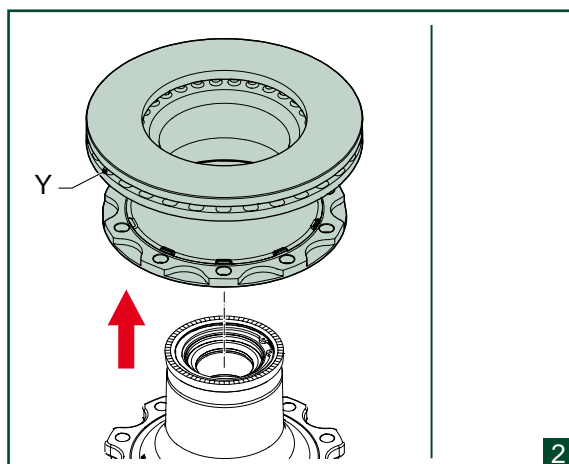
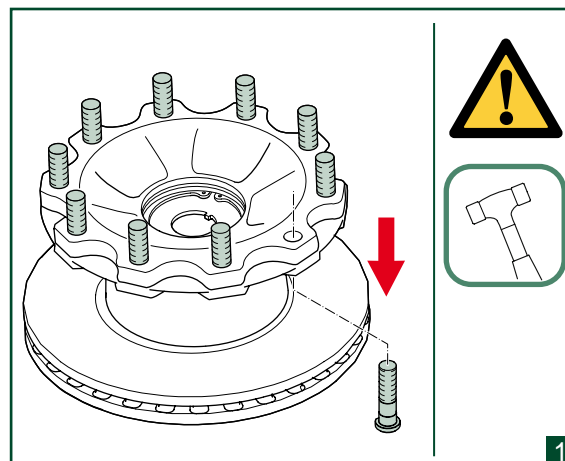
§ 7.4.1



§ 7.4.3

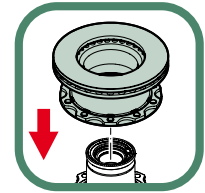


§ 8.4.1

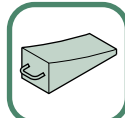


Be careful not to damage the thread of the wheel bolts.

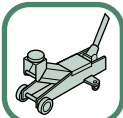
7.4.6 Assembly – brake disk



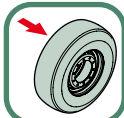
Previous steps



§ 6.1



§ 6.2



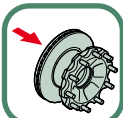
§ 6.3



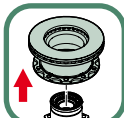
§ 7.4.1



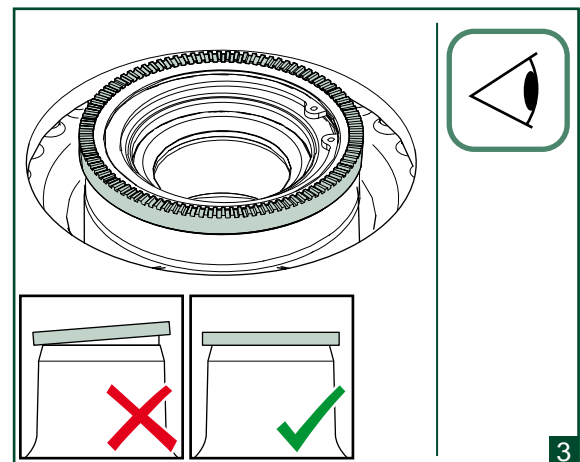
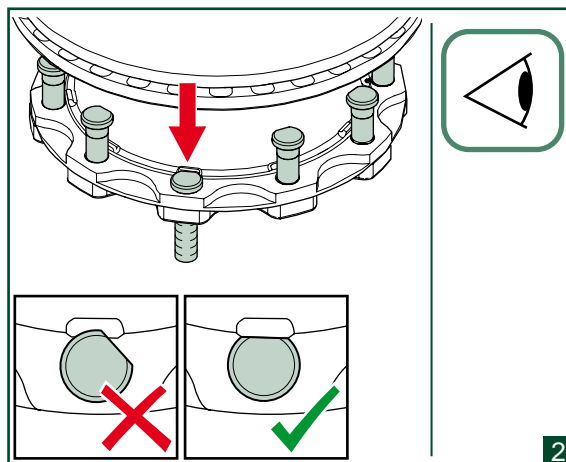
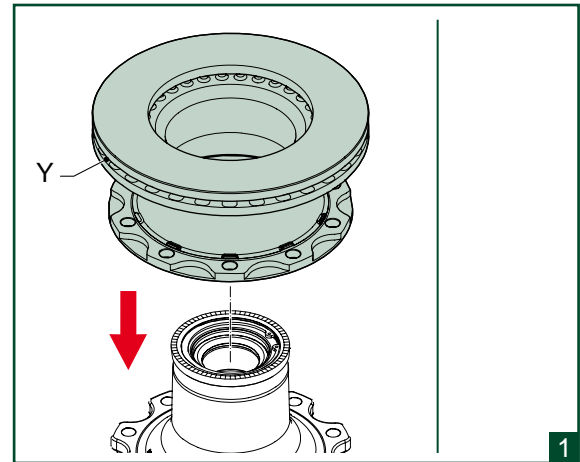
§ 7.4.3



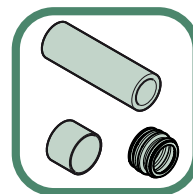
§ 8.4.1



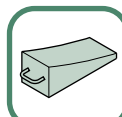
§ 7.4.5



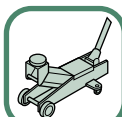
7.4.7 Replace the guide pin protection caps and the guide pin bushes



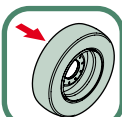
Previous steps



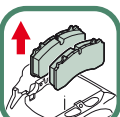
§ 6.1



§ 6.2



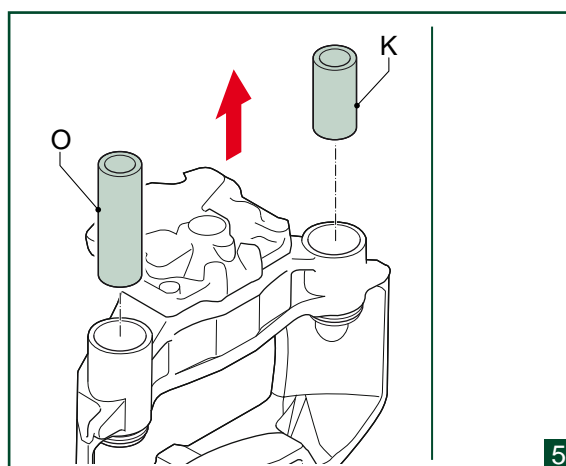
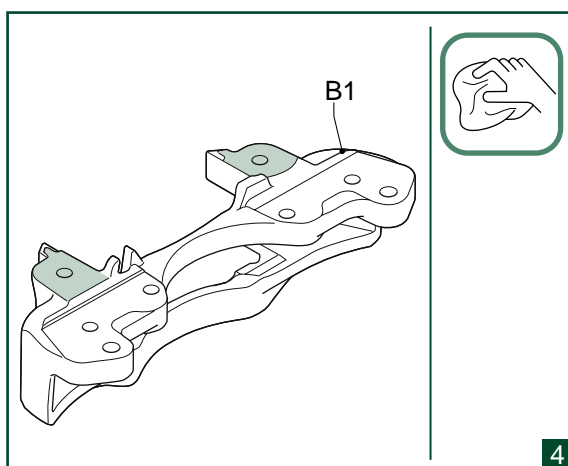
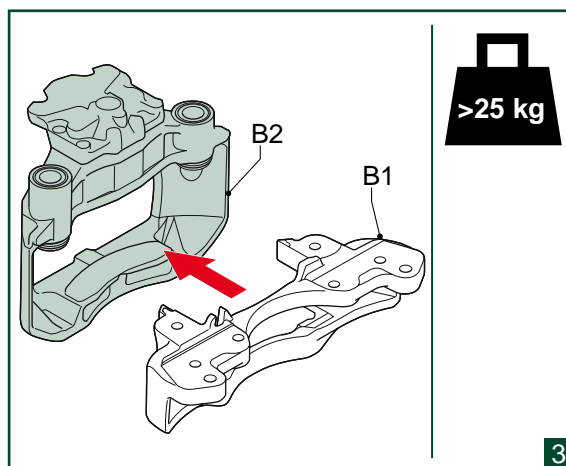
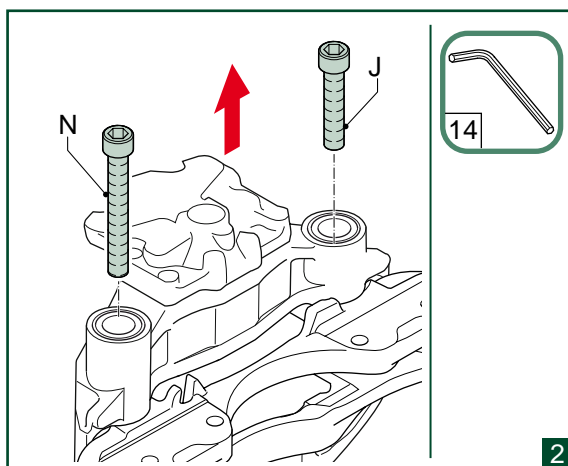
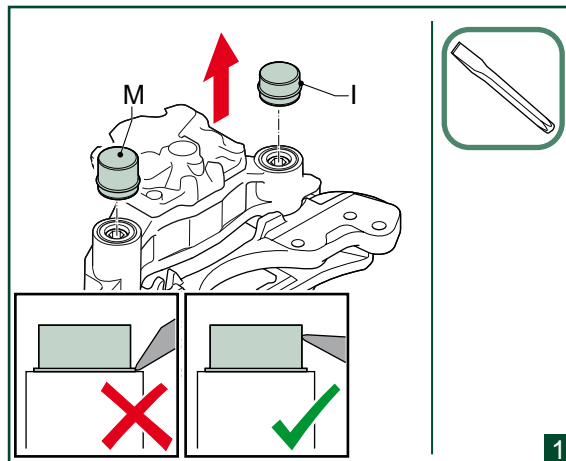
§ 6.3

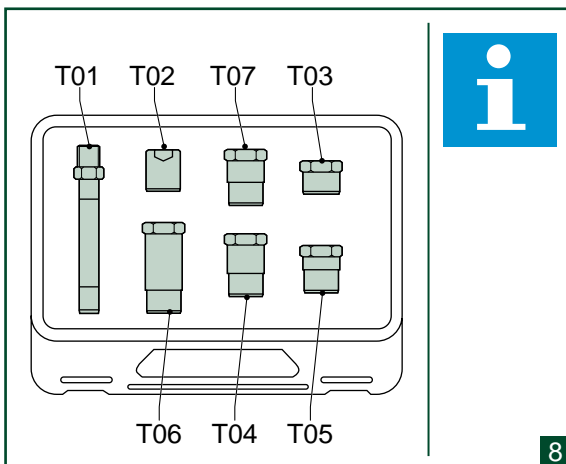
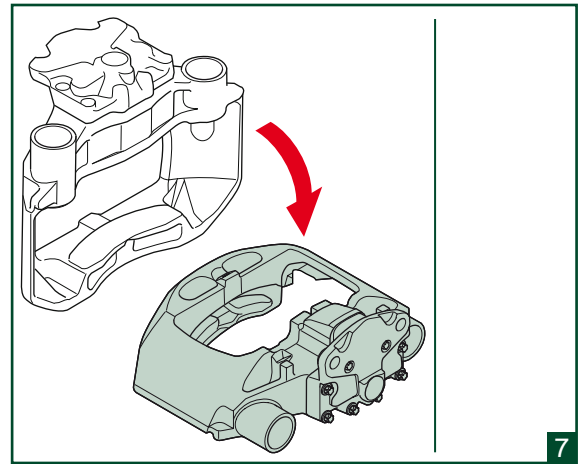
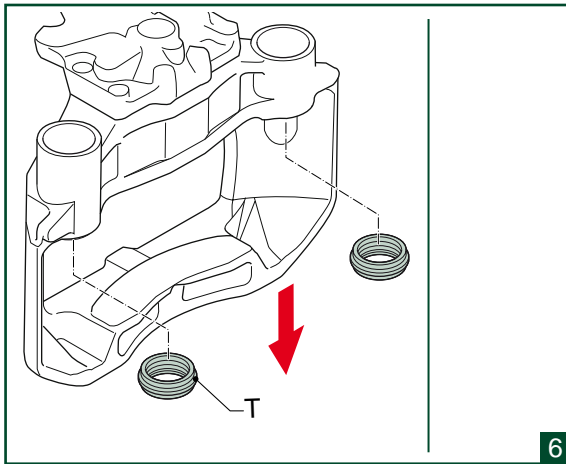


§ 7.4.1



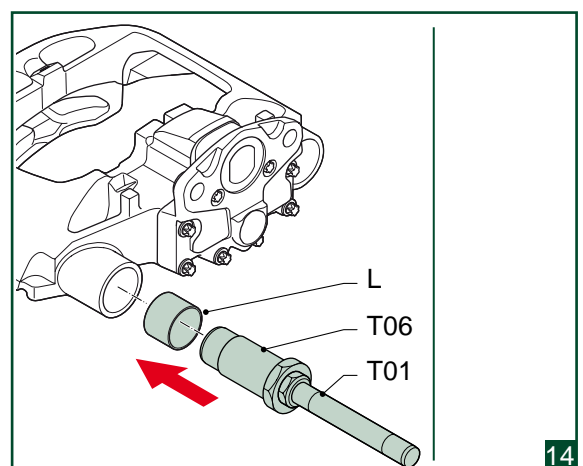
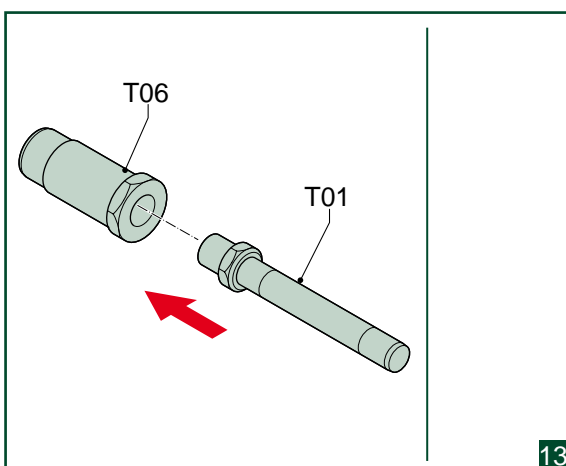
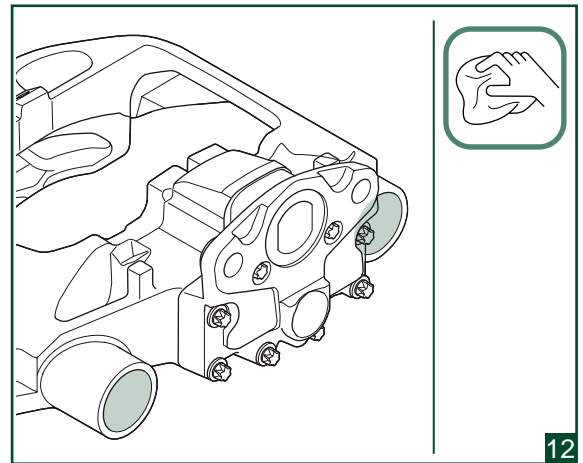
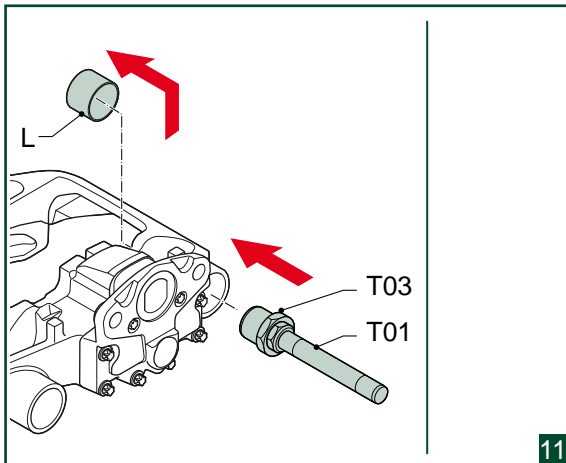
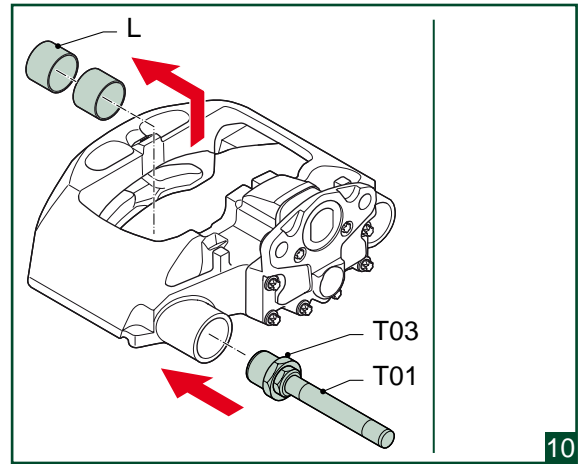
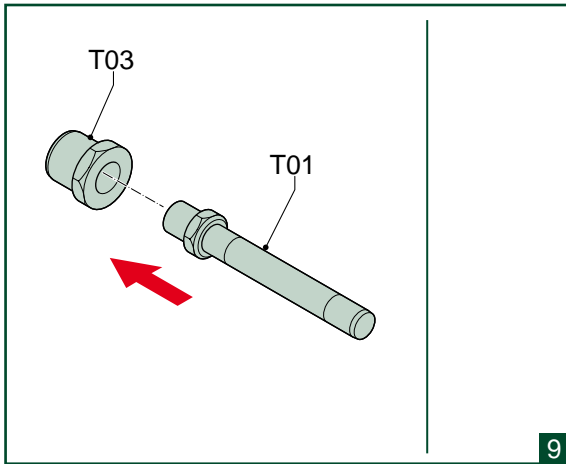
§ 7.4.3

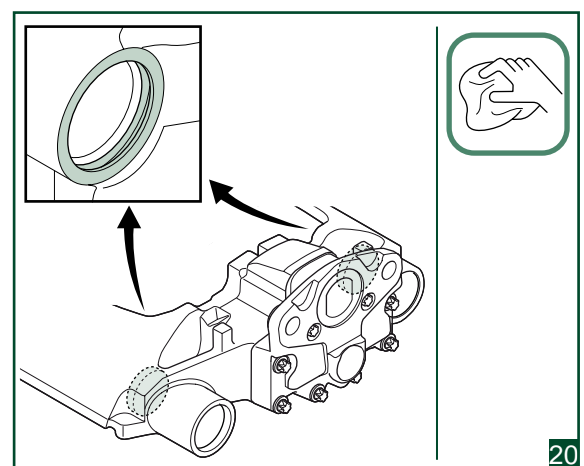
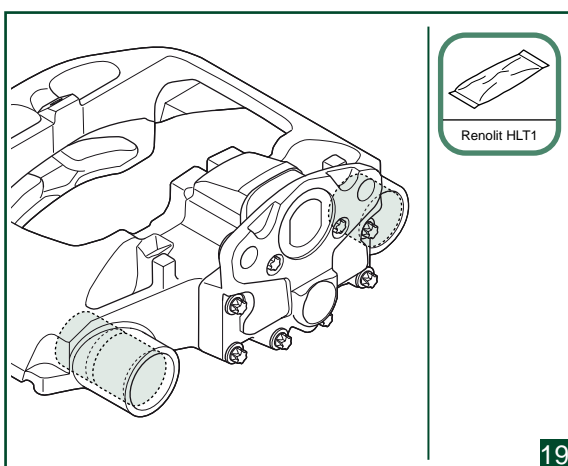
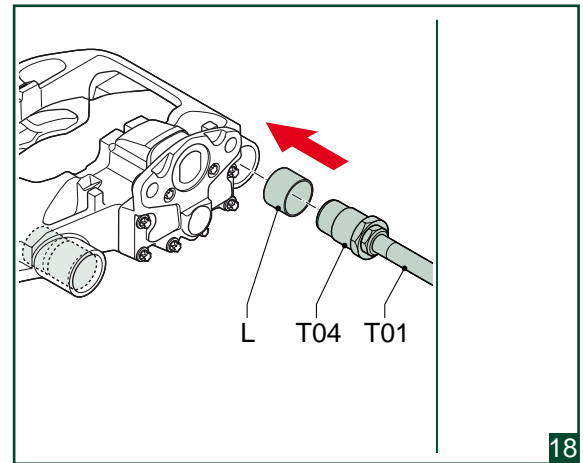
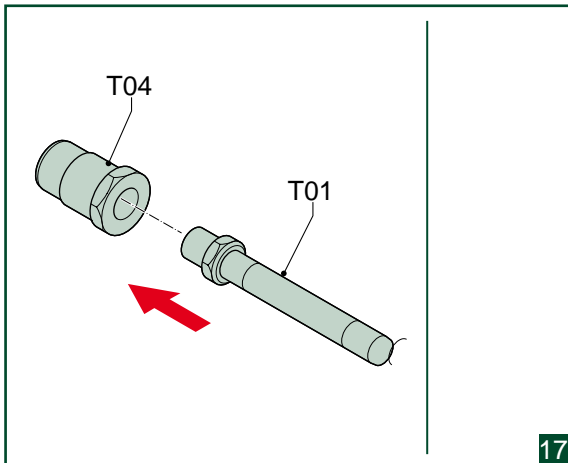
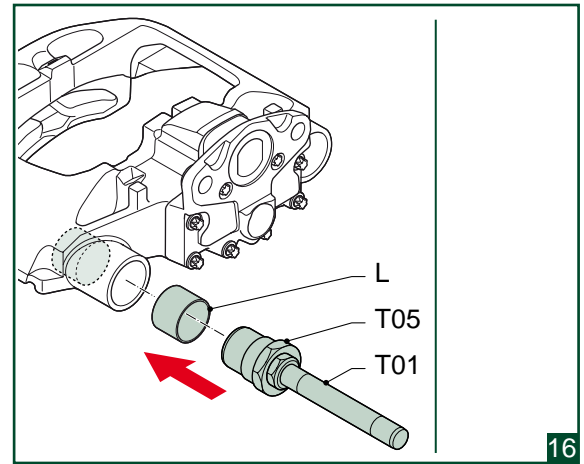
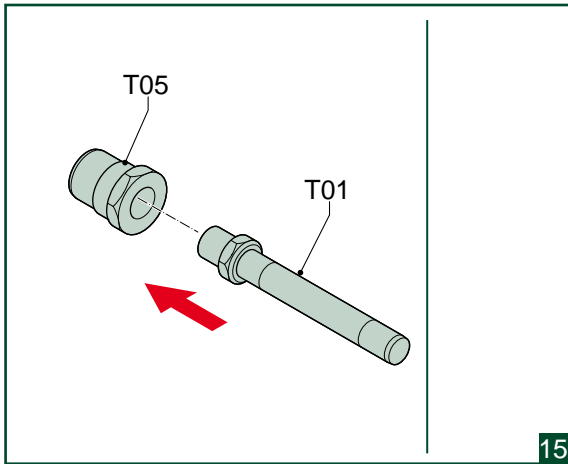




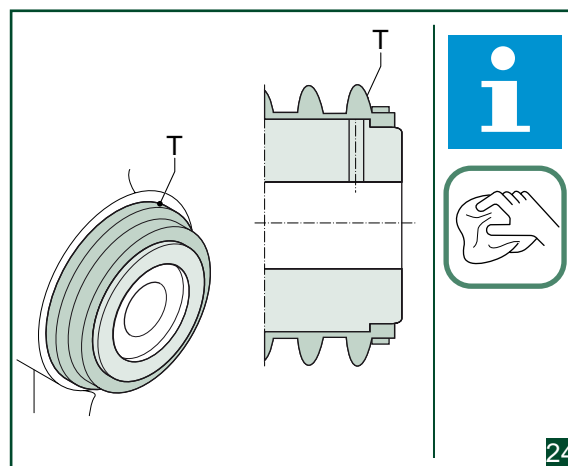
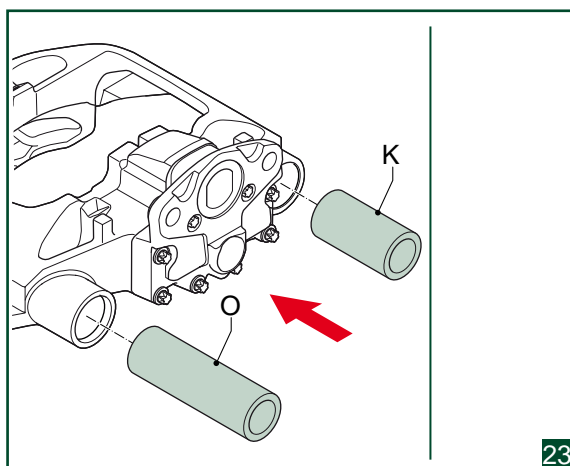
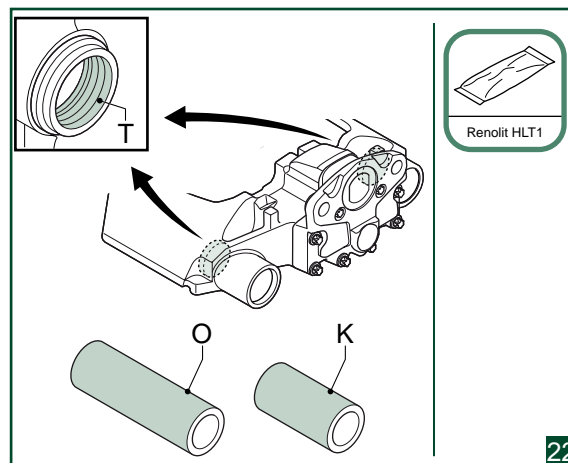
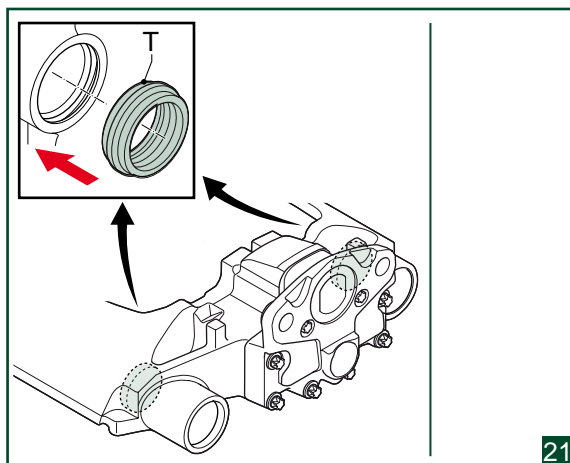
To replace the guide pin bushes use the toolbox.
Observe the instructions included in the toolbox.

7.4.7 Replace the guide pin protection caps and the guide pin bushes (continued)

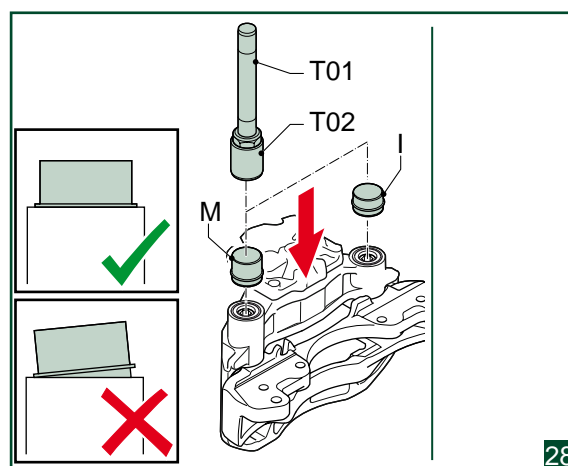
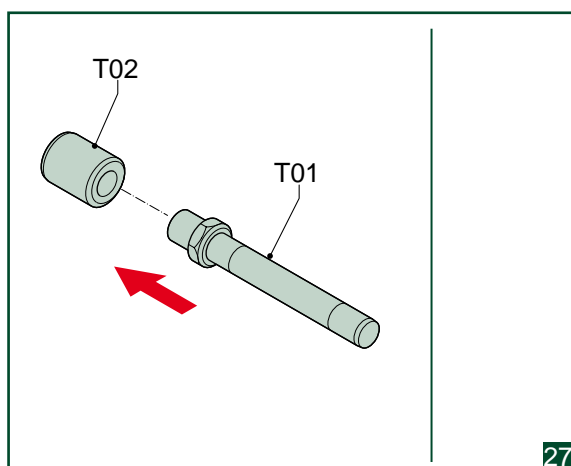
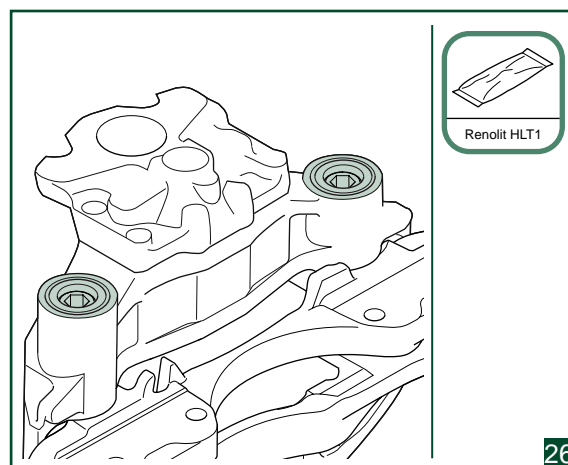
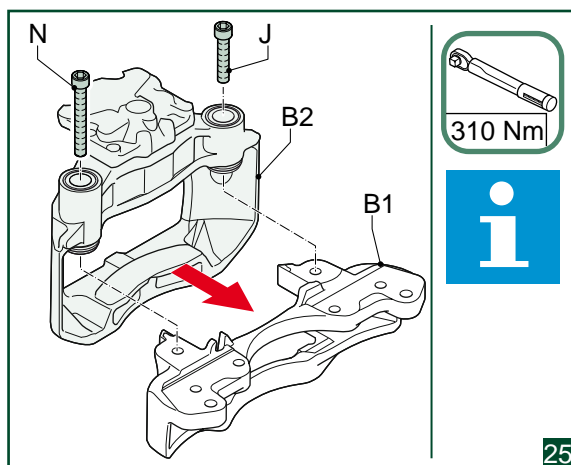




7.4.7 Replace the guide pin protection caps and the guide pin bushes (continued)



Make sure that the beaded edge of the guide pin protection caps (T) have an even and wrinkle-free seat on the brake caliper and on the guide pins (O) and (K).



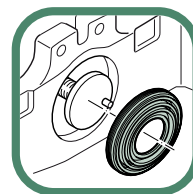
i

First tighten internal hexagon bolt (N) of the long guide pin (O). note: It has a press-fit! Then tighten internal hexagon bolt (J) of the short guide pin (K). note: It has a loose fit.

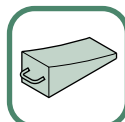
Torques

Item	size	width across flats	torque (Nm)
Internal hexagon bolts (J) and (N)	M12	14	310 Nm \pm 30 Nm Check 275 Nm

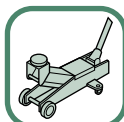
7.4.8 Replace the adjuster protection cap



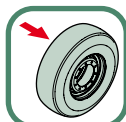
Previous steps



§ 6.1



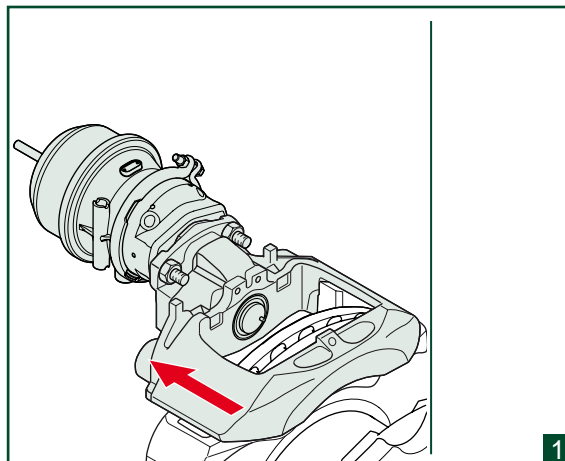
§ 6.2



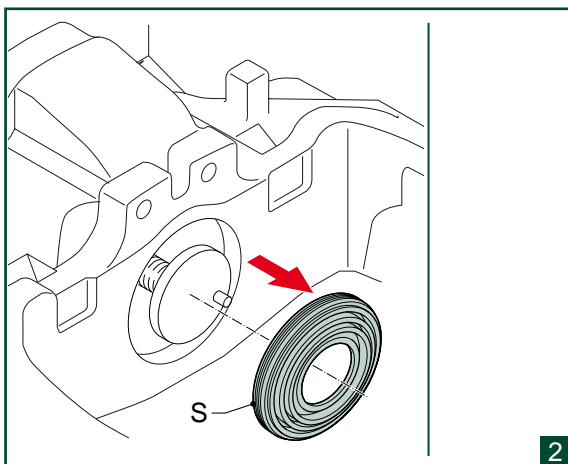
§ 6.3



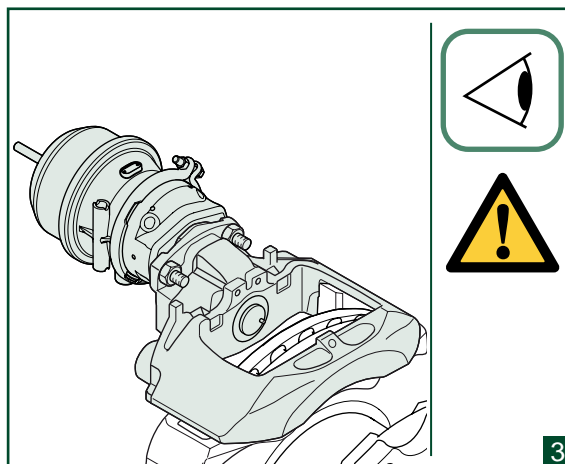
§ 7.4.1



1



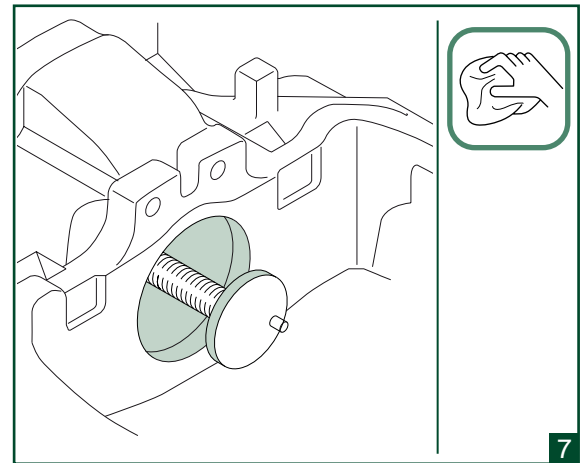
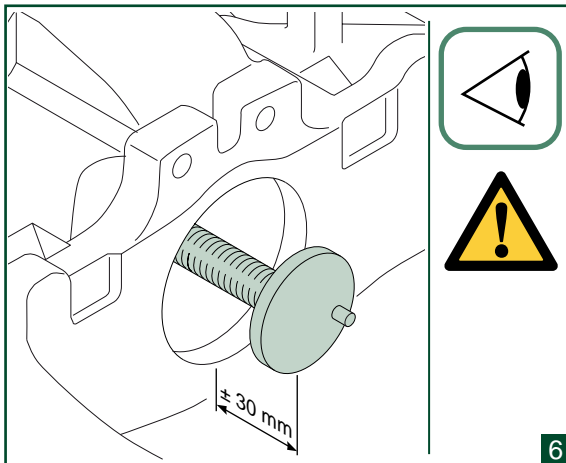
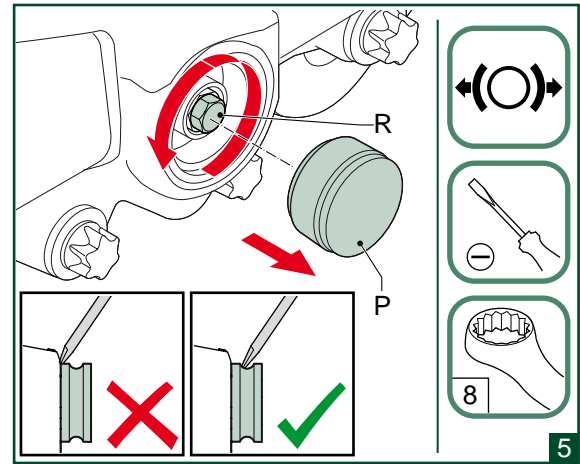
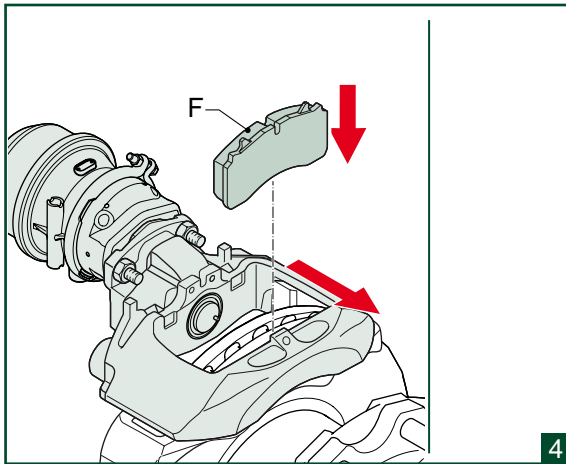
2



3

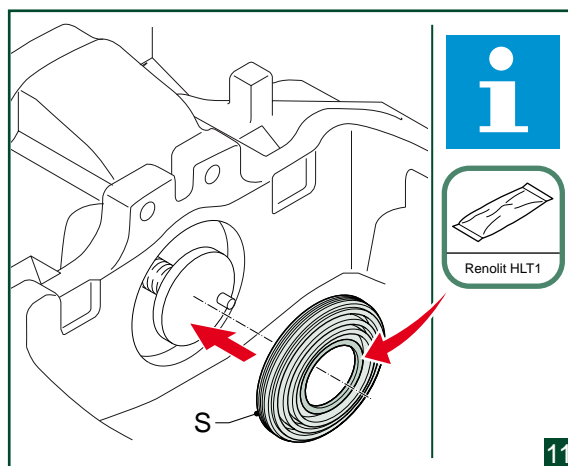
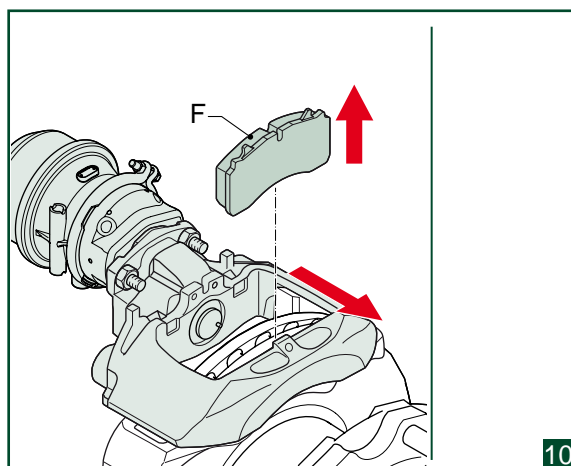
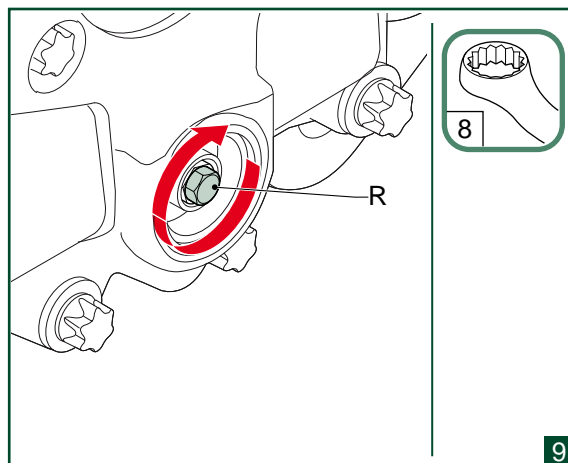
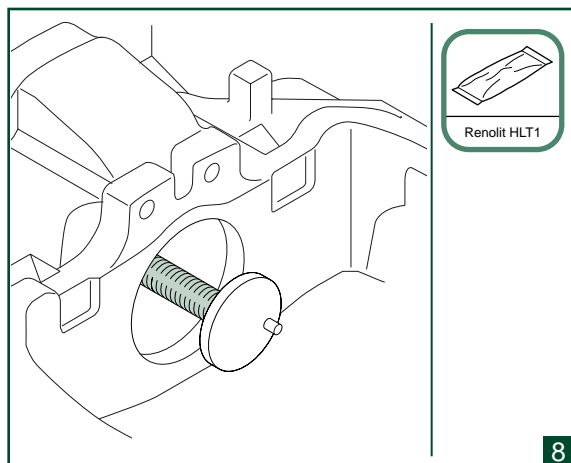


Check if dirt or moisture has entered, check if the sealing seat is damaged. If such is the case, replace the complete brake (see section 7.4.4).



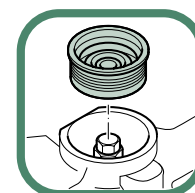
Check the adjuster thread for corrosion or damage.
If such is the case, replace the complete brake (see section 7.4.4).

7.4.8 Replace the adjuster protection cap (continued)

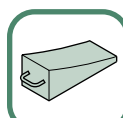


i Make sure that the beaded edge of the adjuster protection cap (S) has an even and wrinkle-free seat in the ring groove of the adjuster.

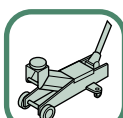
7.4.9 Replace the adjuster gaitor



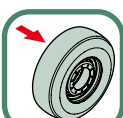
Previous steps



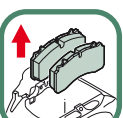
§ 6.1



§ 6.2



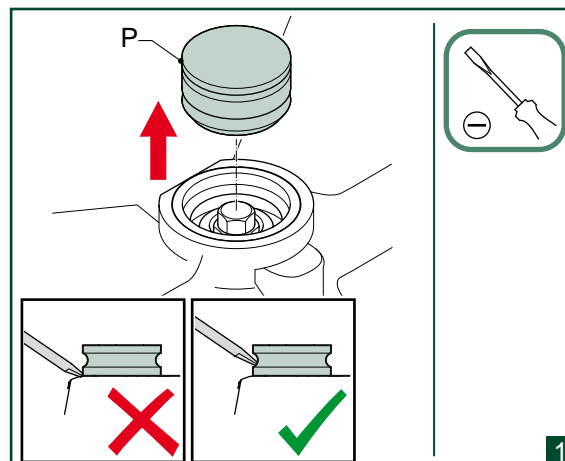
§ 6.3



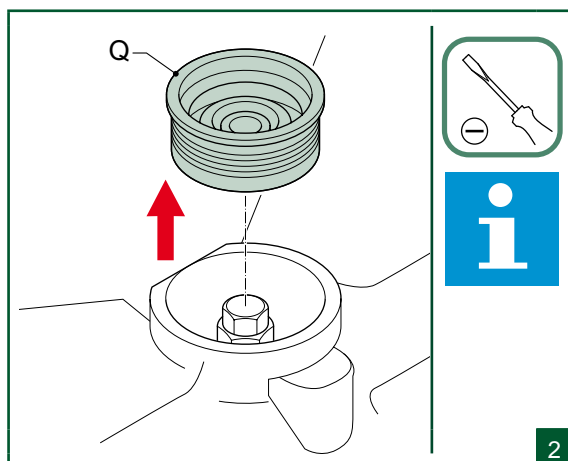
§ 7.4.1



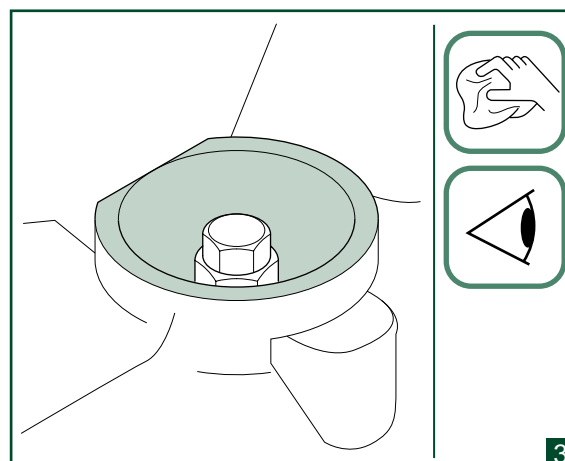
§ 7.4.3



1



2

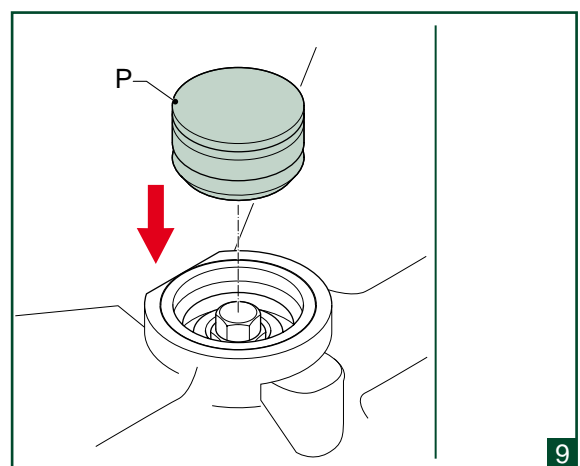
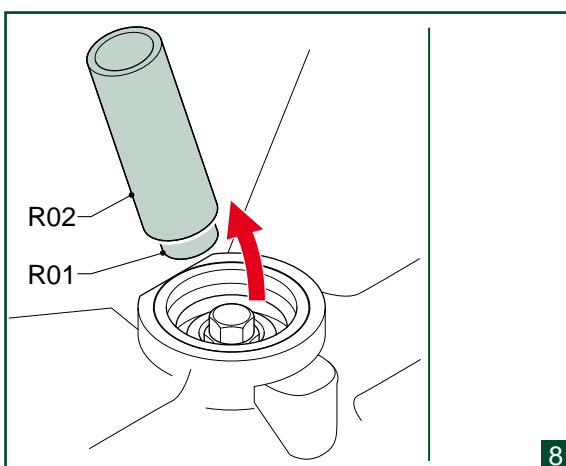
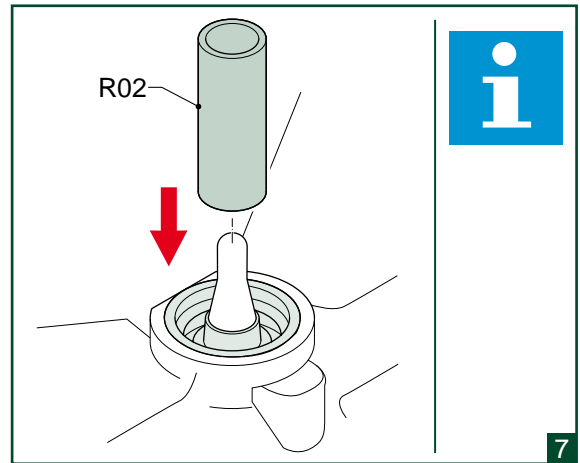
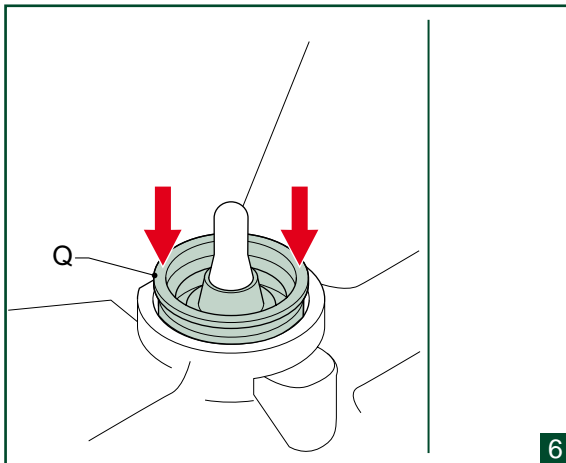
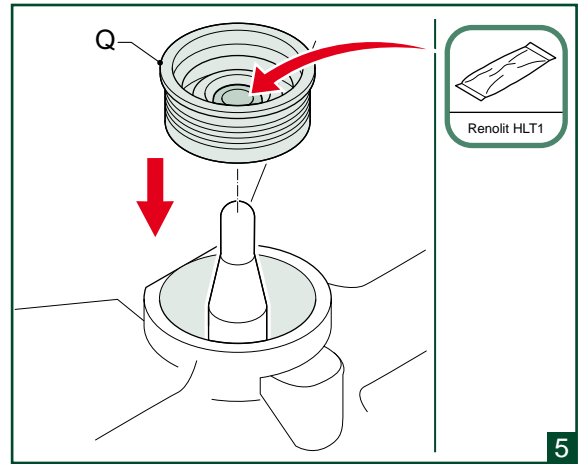
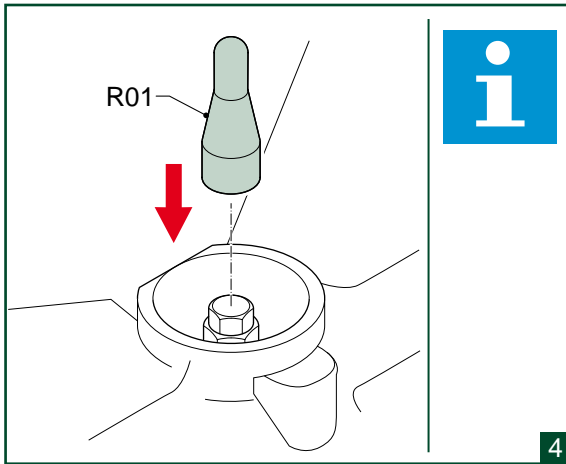


3



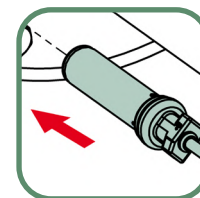
Check for corrosion or damage.
If such is the case, replace the complete brake (see section 7.4.4).

7.4.9 Replace the adjuster gaitor (continued)

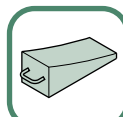


To install the adjuster gaitor (Q) use the tools (R01) and (R02) from the repair kit. Observe the instructions included in the repair kit.

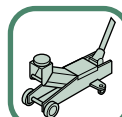
7.4.10 Assembly - ABS sensor



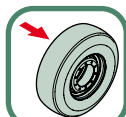
Previous steps



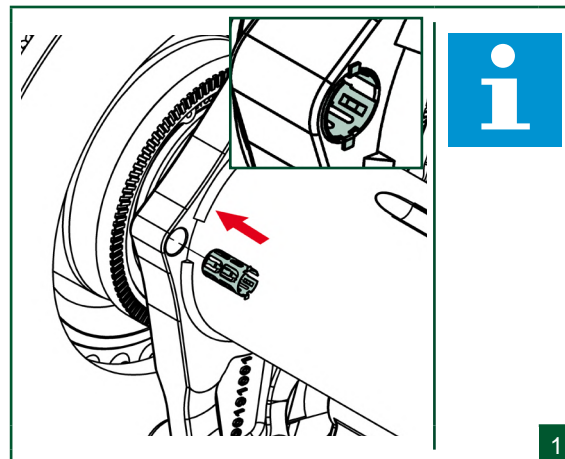
§ 6.1



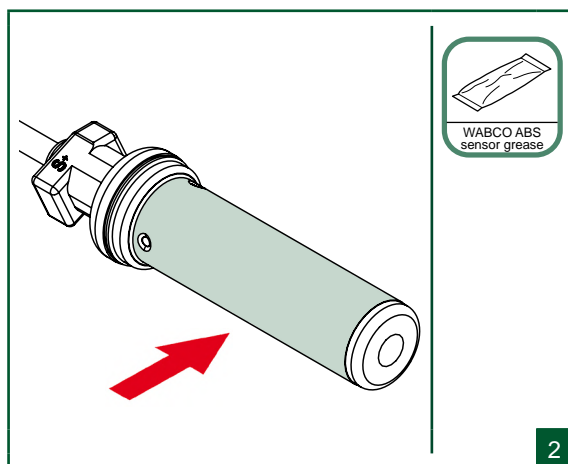
§ 6.2



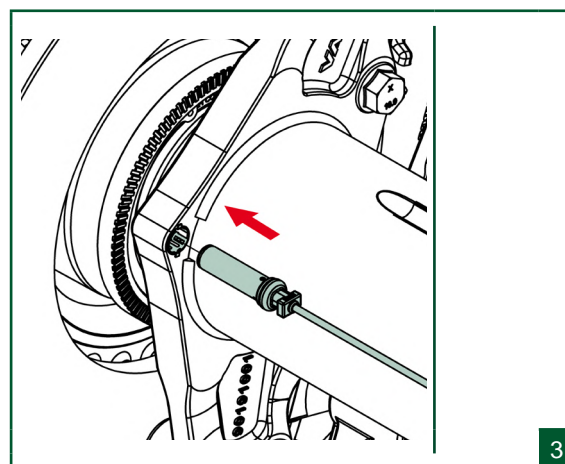
§ 6.3



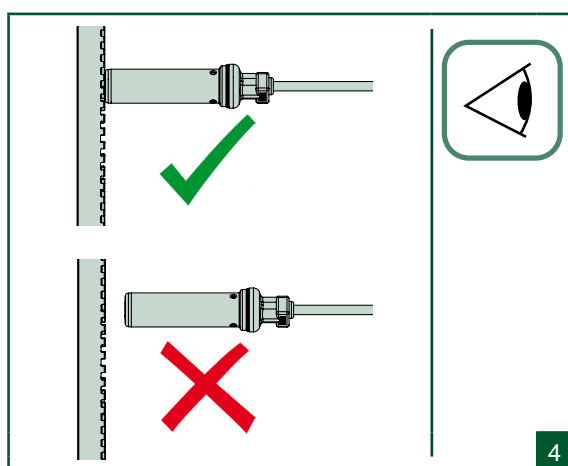
1



2



3



4



Verify the correct position of the ABS bushing.

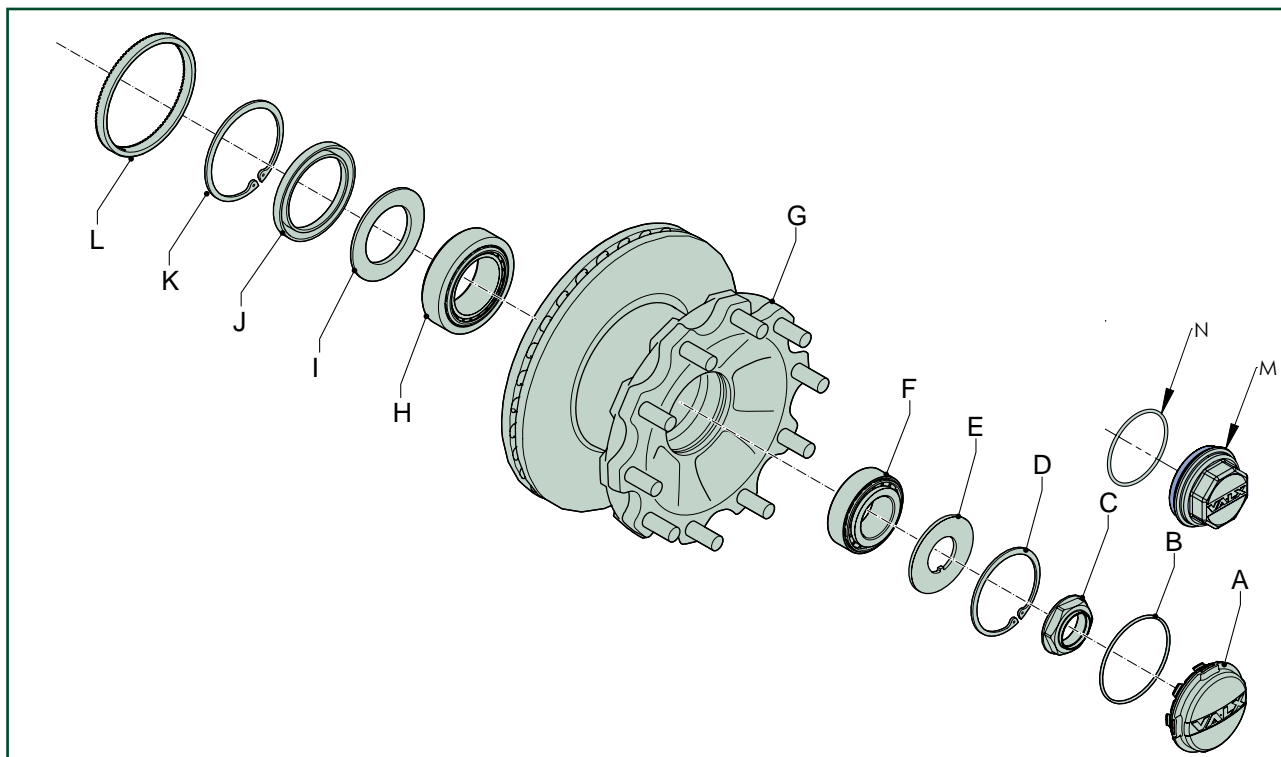
Slide the ABS sensor against the ABS exciter ring, the sensor will adjust automatically.

8 Wheel hub unit

8.1 Safety instructions

Always observe the general safety instructions and regulations (see chapter 1).

8.2 Overview



NOTE

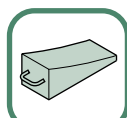
The VALX disk brake trailer axle has been designed for –and can therefore be equipped with– a 0-offset wheel hub or a 120-offset wheel hub. The overview drawing shows the 120-offset wheel hub.

- A Hub cap (plastic)
- B O-ring
- C Central nut
- D Circlip
- E Nut washer
- F Outer bearing
- G Hub disc assy
- H Inner bearing
- I Wear ring
- J Seal
- K Circlip
- L ABS exciter ring (optional)
- M Hub cap (steel)
- N O-ring (for steel hub cap)

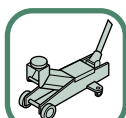
8.3 Periodic maintenance and inspection

8.3.1 Check the bearing play

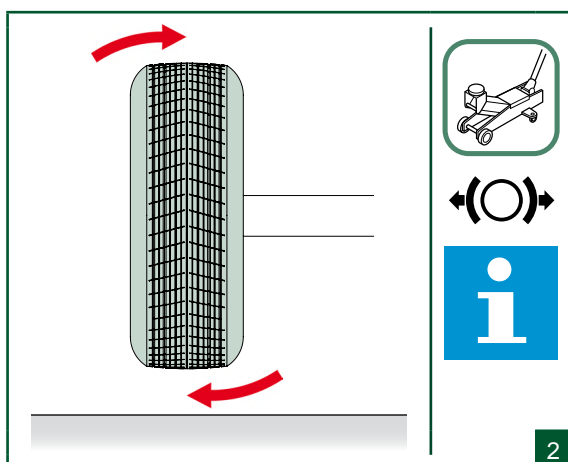
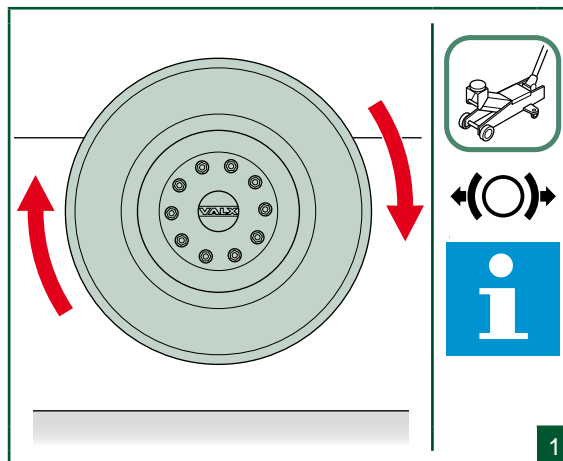
Previous steps



§ 6.1



§ 6.2



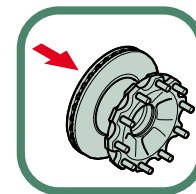
Check if the wheel runs smoothly, without excessive noise. The use of a spinner is not allowed, rotating by hand. If there is noise check the bearing play (2).



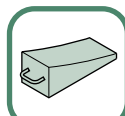
If there is any play, check the bearings.

8.4 Disassembly, assembly and adjustments

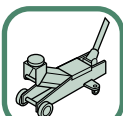
8.4.1 Disassembly – hub complete



Previous steps



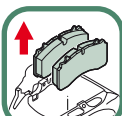
§ 6.1



§ 6.2



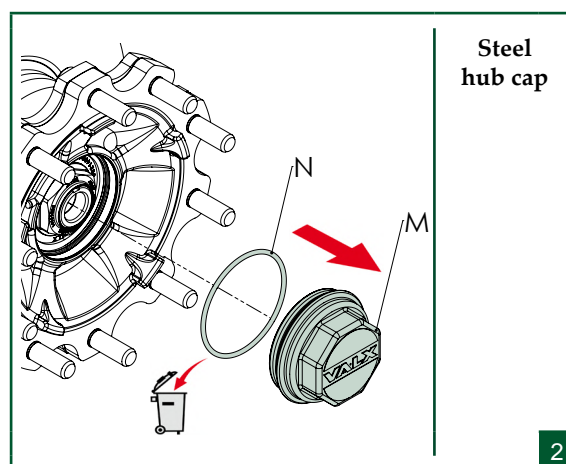
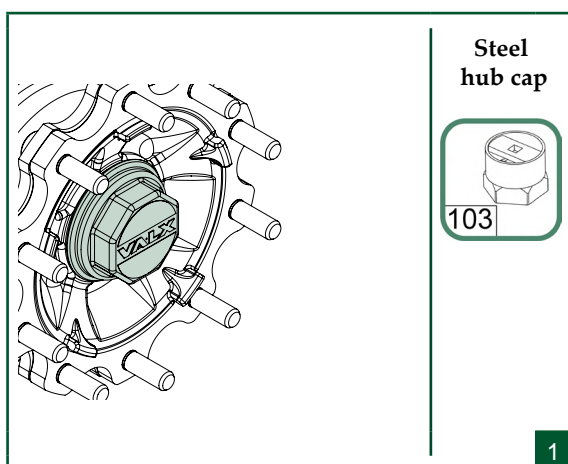
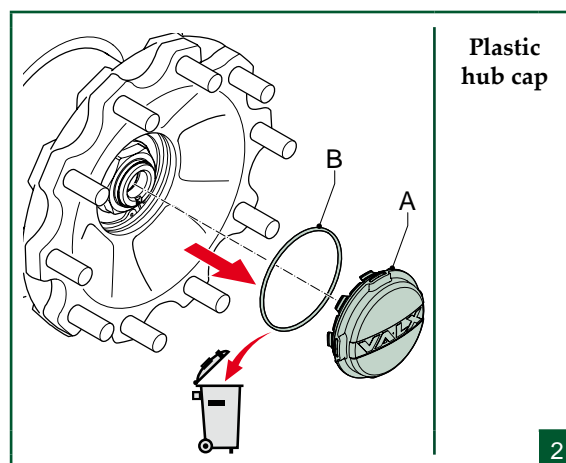
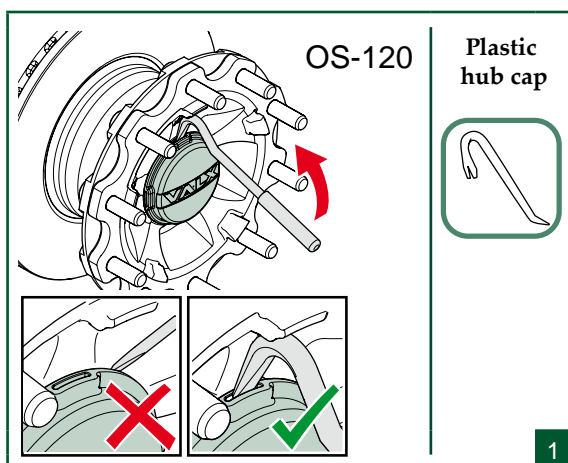
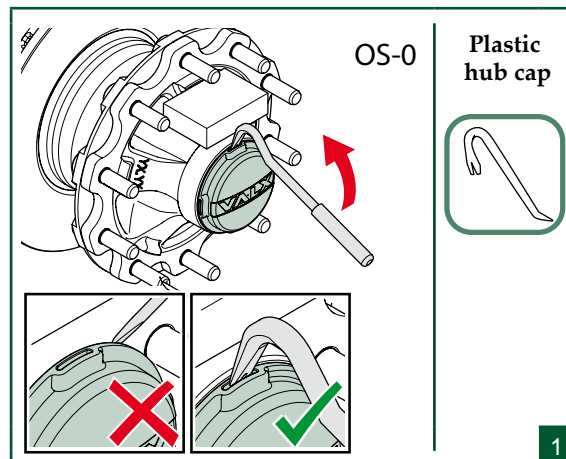
§ 6.3

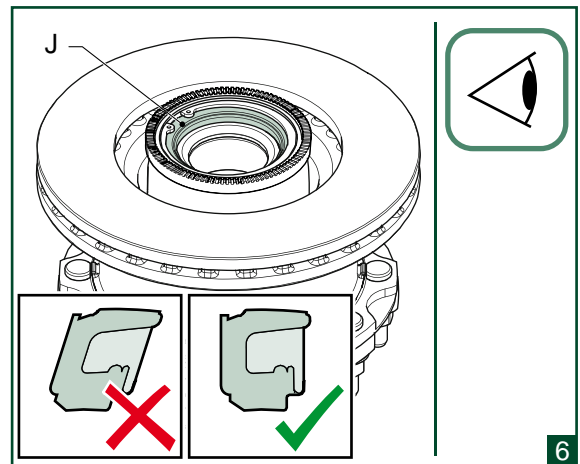
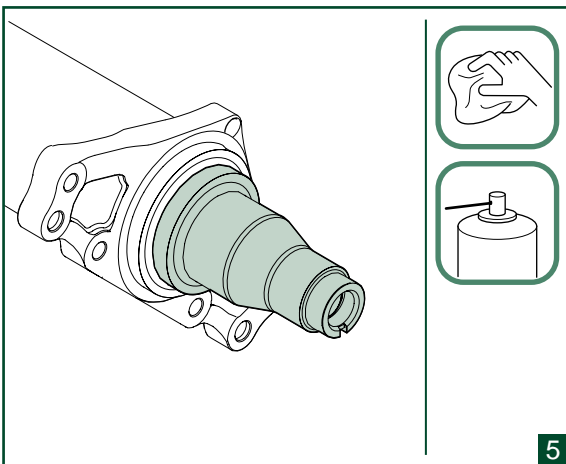
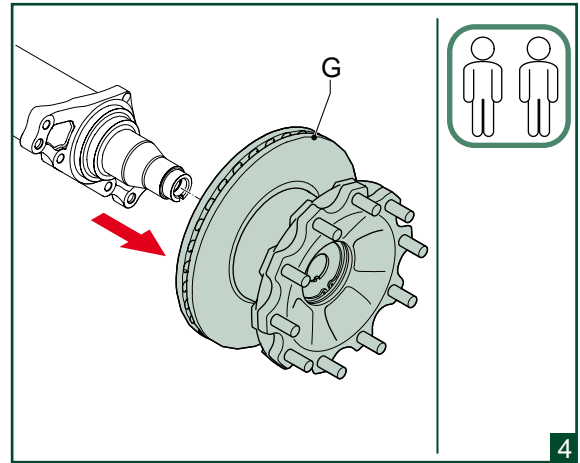
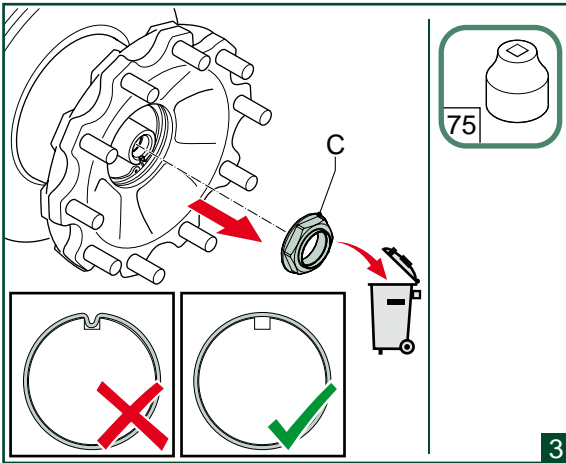


§ 7.4.1

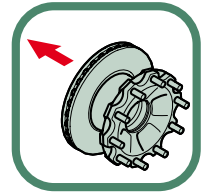


§ 7.4.3

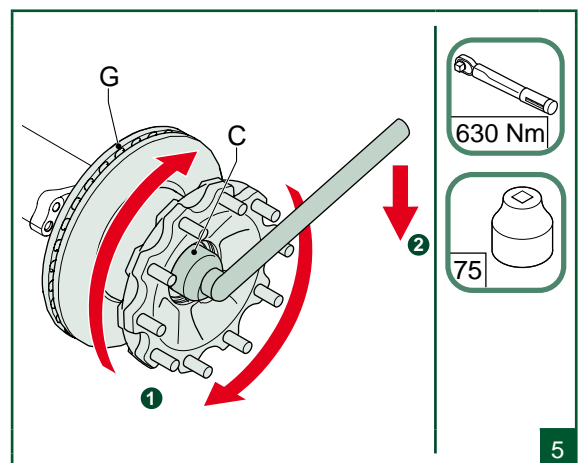
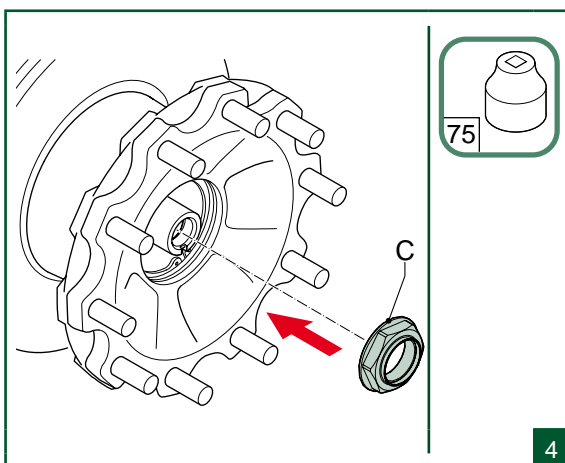
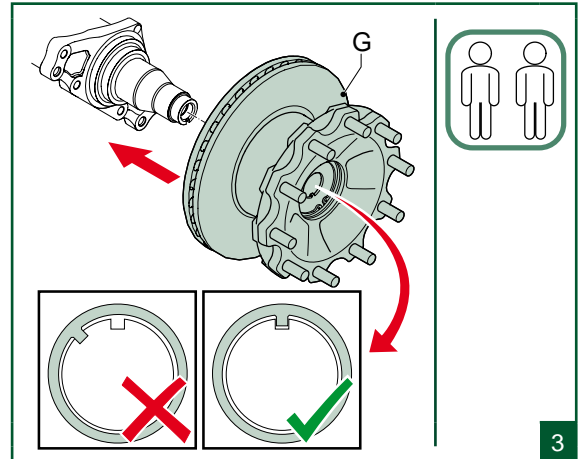
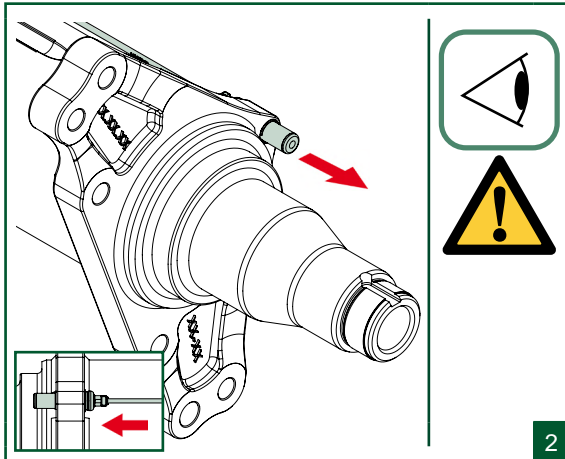
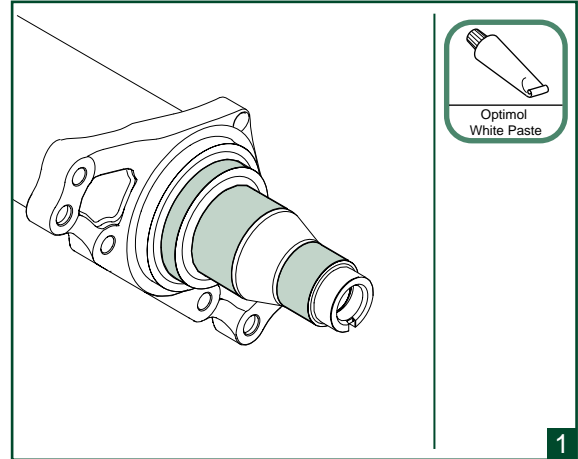
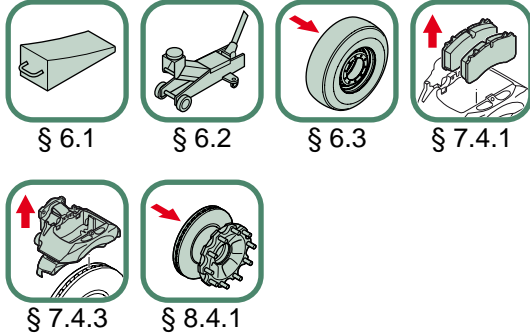




8.4.2 Assembly – hub complete



Previous steps

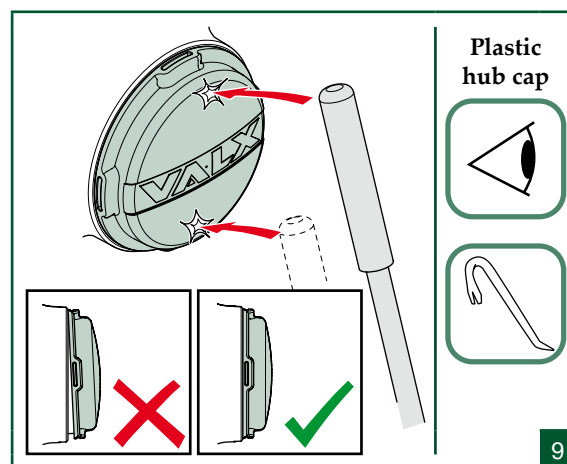
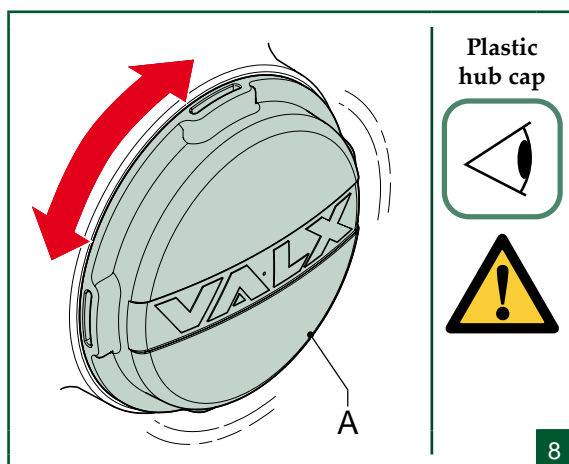
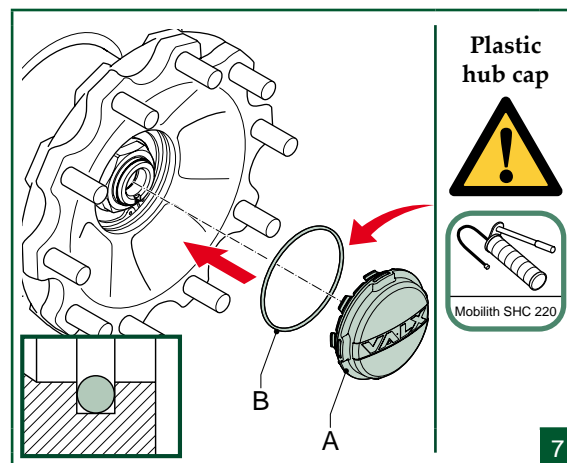
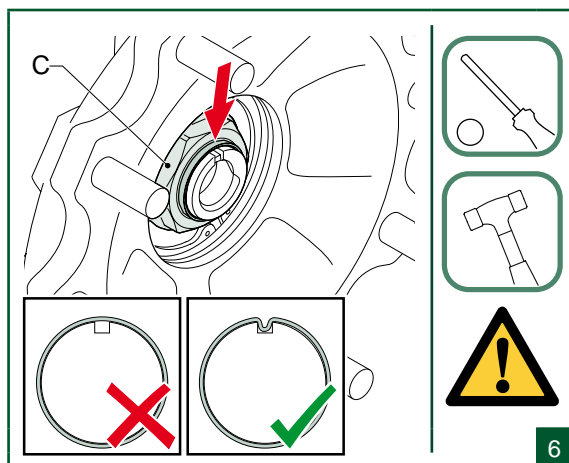


Slide the ABS sensor in as far as possible, the sensor will adjust automatically.

Always replace the (single use) central nut (C) whenever the central nut has been removed.

Torques

Item	Size	Width across flats	Torque (Nm)
Central nut (C)	M55 x 1.5	75	630 Nm \pm 30 Nm

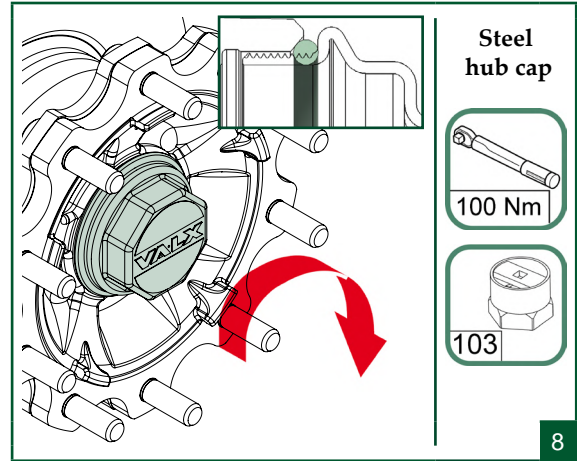
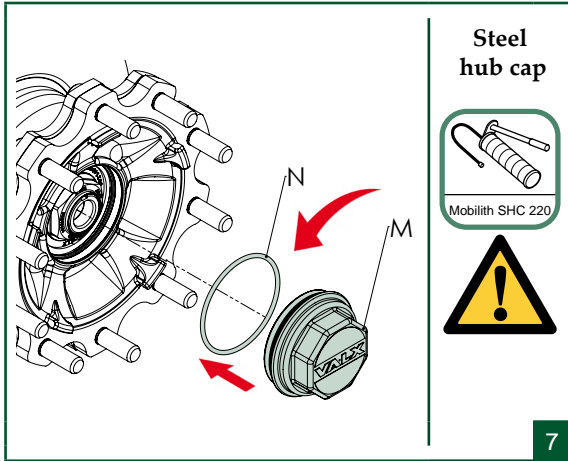


Plastic hub cap instructions



- (7) Always replace the O-ring whenever the hub cap has been removed.
- (7) Always check whether the O-ring (B) is properly seated and not damaged!
- (8) Make sure the plastic hub cap (A) can rotate freely to ensure the O-ring is seated properly.
- (9) Make sure there is no gap between the edge of the hub cap and the hub flange.

8.4.2 Assembly – hub complete



Steel hub cap instructions

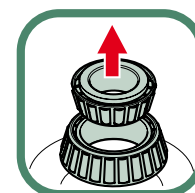
(7) Always replace the O-ring whenever the hub cap has been removed.

(8) Always check whether the O-ring is properly seated and not damaged!

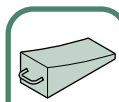
Torques

Item	Size	Width across flats	Torque (Nm)
Steel hub cap	-	103	100 Nm

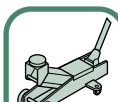
8.4.3 Disassembly – outer bearing and inner bearing



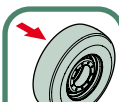
Previous steps



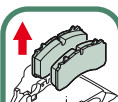
§ 6.1



§ 6.2



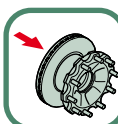
§ 6.3



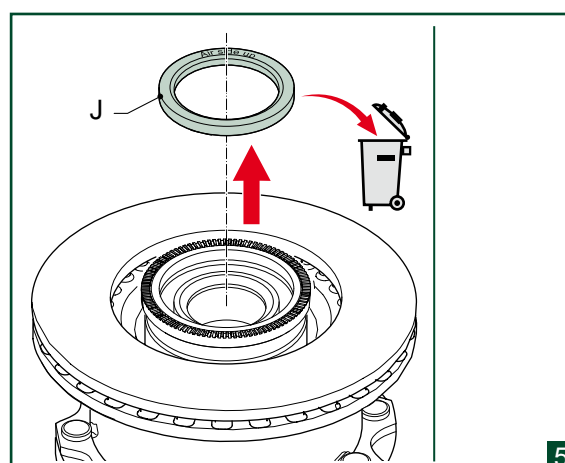
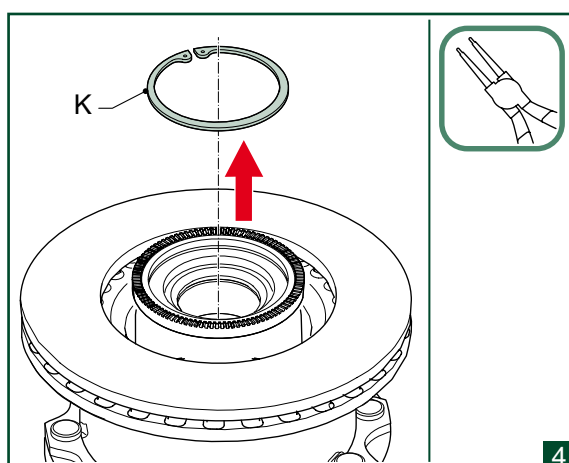
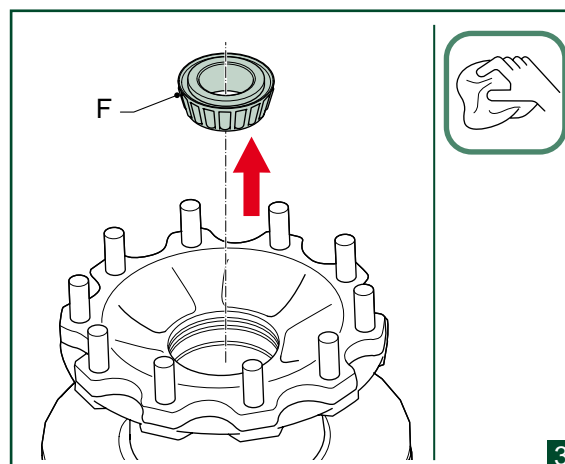
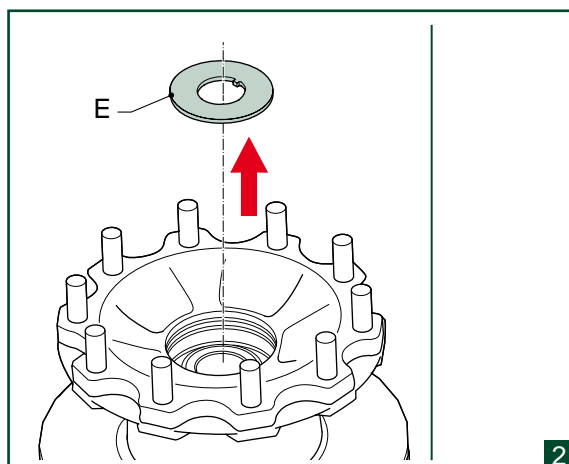
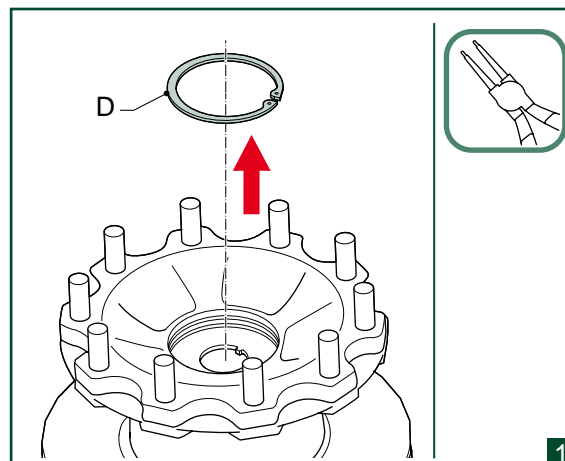
§ 7.4.1

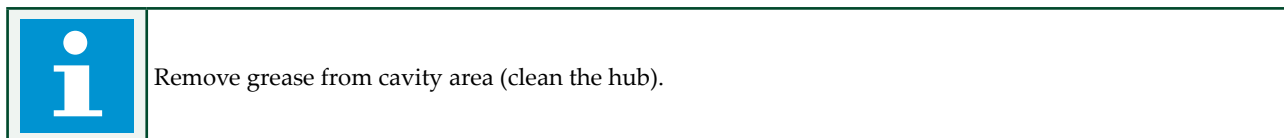
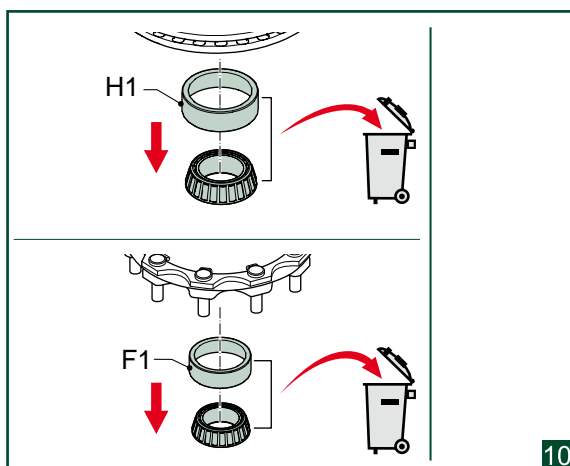
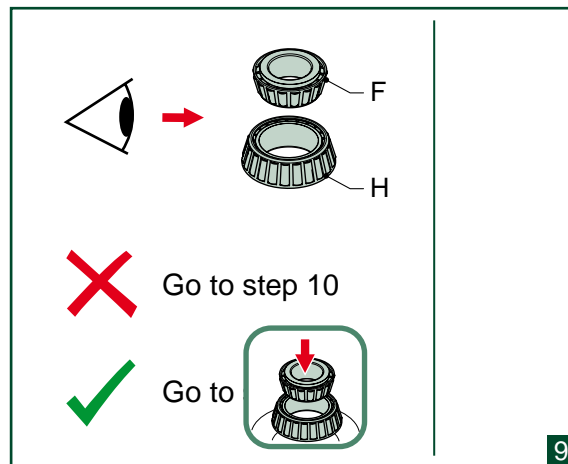
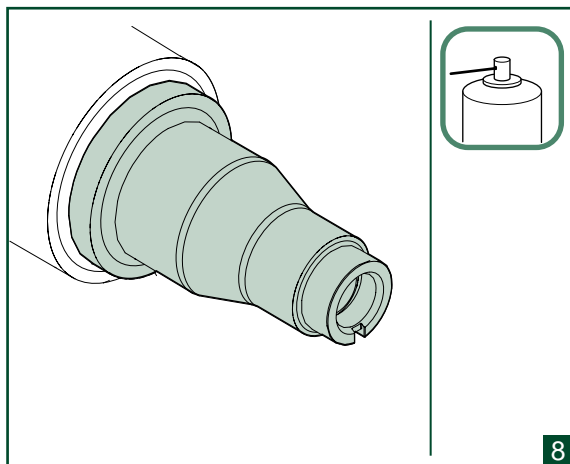
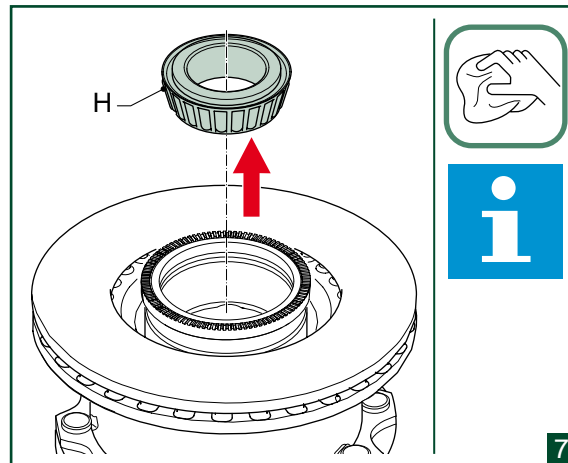
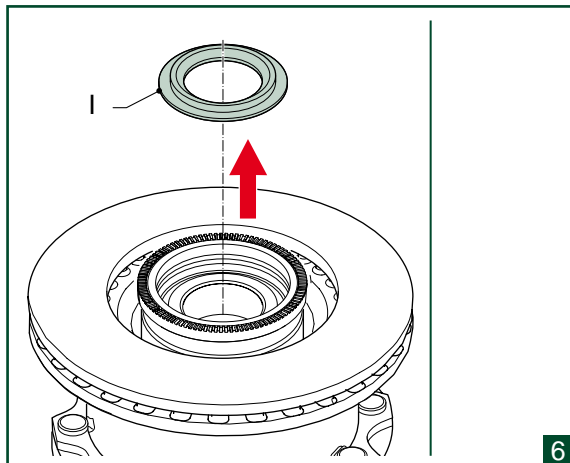


§ 7.4.3

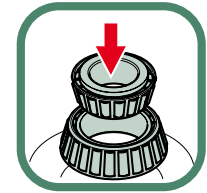


§ 8.4.1

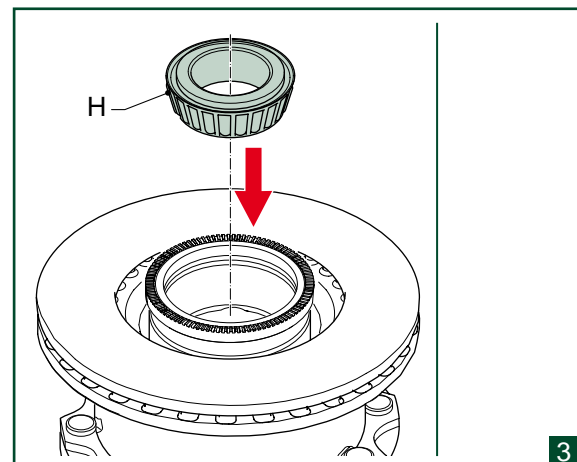
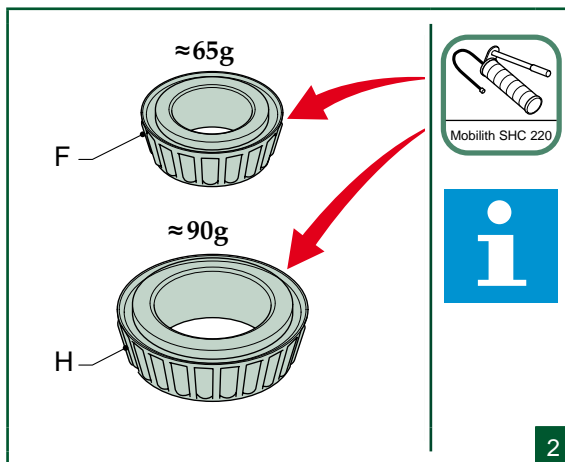
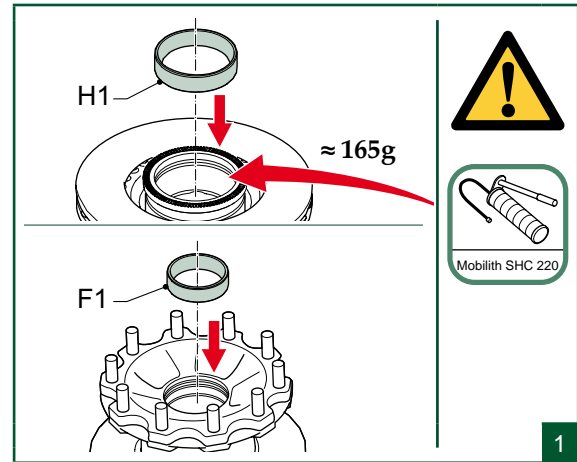
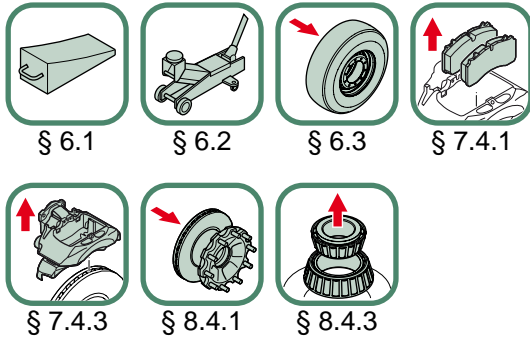




8.4.4 Assembly – outer bearing and inner bearing



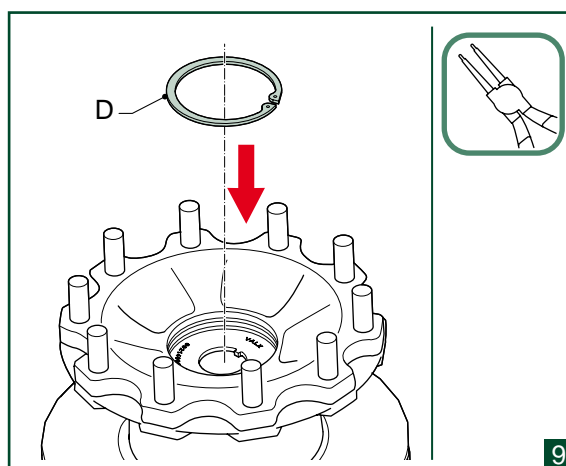
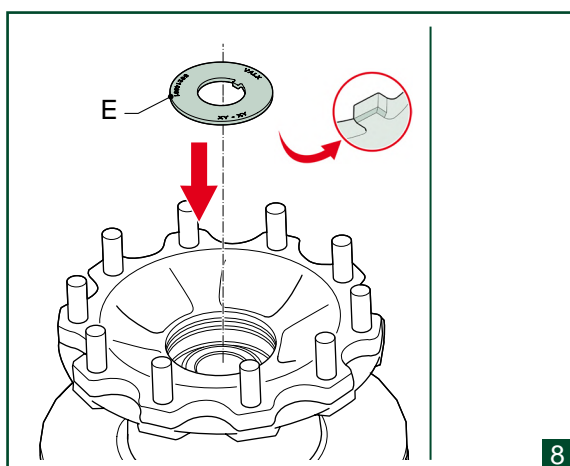
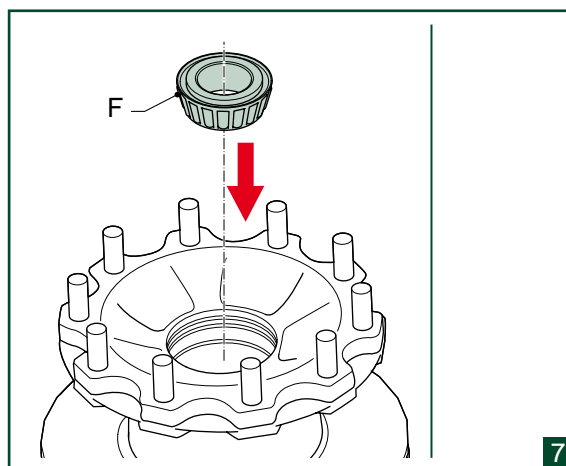
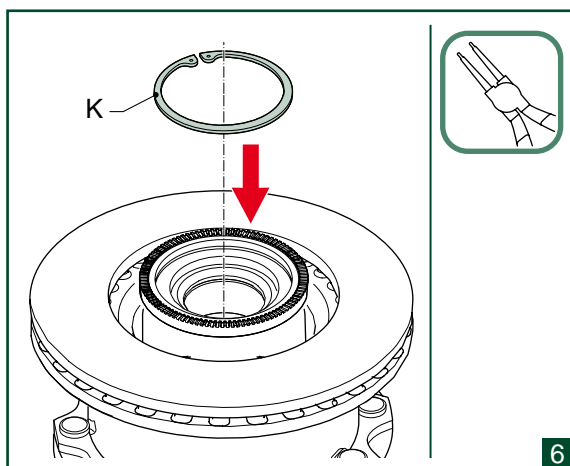
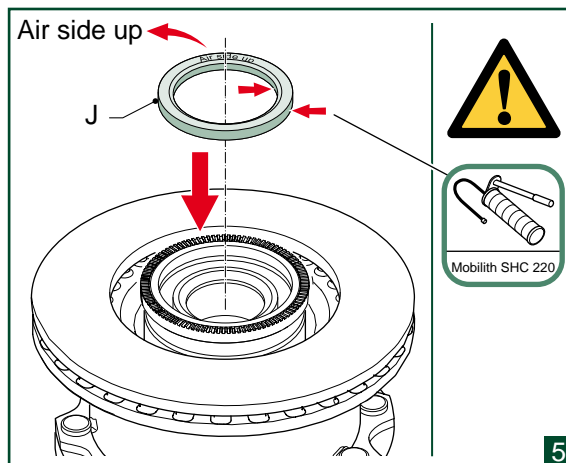
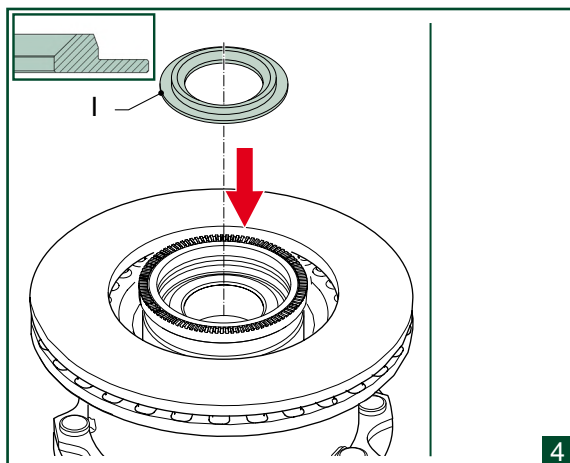
Previous steps



If the bearing cups have been removed in the previous step, replace the complete bearings.

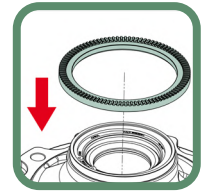


Lubricate the bearings abundantly. Lubricate new bearings until the grease comes out of the bearings, or use new grease to press the existing grease out of a used bearing.

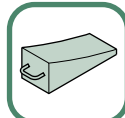


Always replace the seal (J) whenever the seal has been removed. Press the new seal with great care into the hub, making sure that the seal is flat and even.

8.4.5 Assembly – ABS ring



Previous steps



§ 6.1



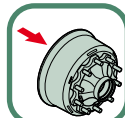
§ 6.2



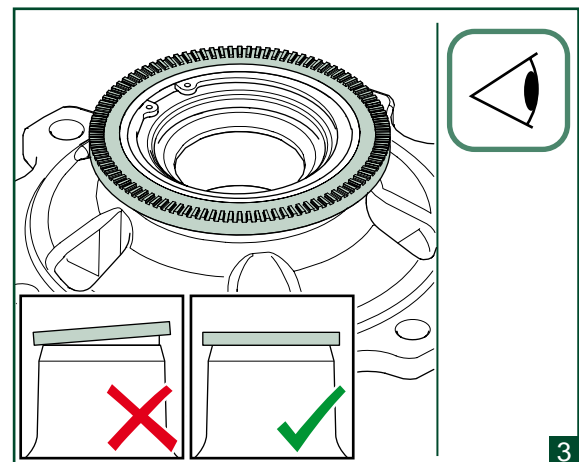
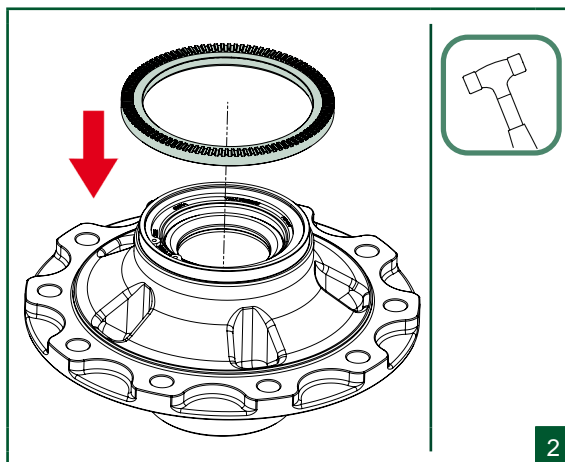
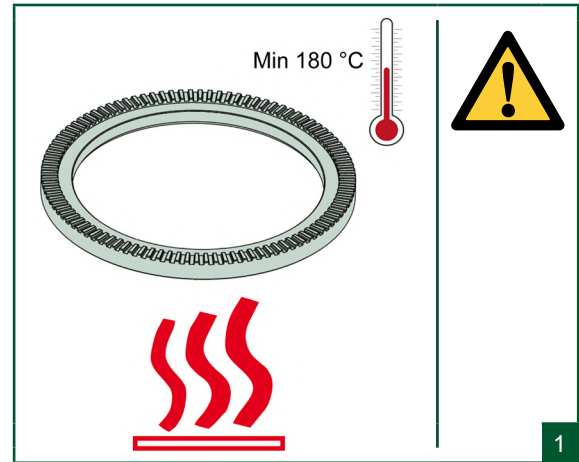
§ 6.3



§ 7.4.9



§ 8.4.1

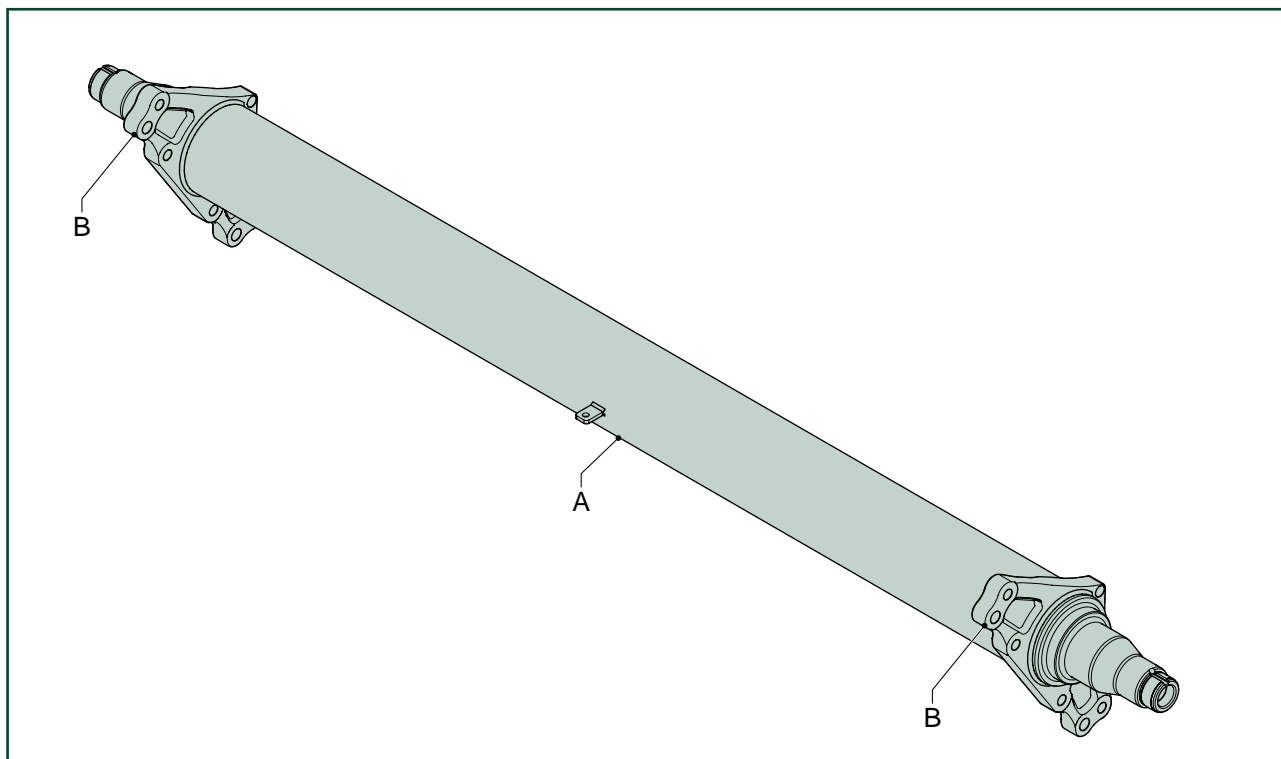


9 Axle beam

9.1 Safety instructions

Always observe the general safety instructions and regulations (see chapter 1).

9.2 Overview



A Axle beam

B Disc brake spider



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