

# WSM DRUM

WORKSHOP MANUAL DRUM BRAKES



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### Revision summary

Date	Revision number	Comment
June 2010	01	Initial version
August 2011	02	-
December 2011	03	Address update
October 2020	04	General update
May 2022	05	Update bearing bush

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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

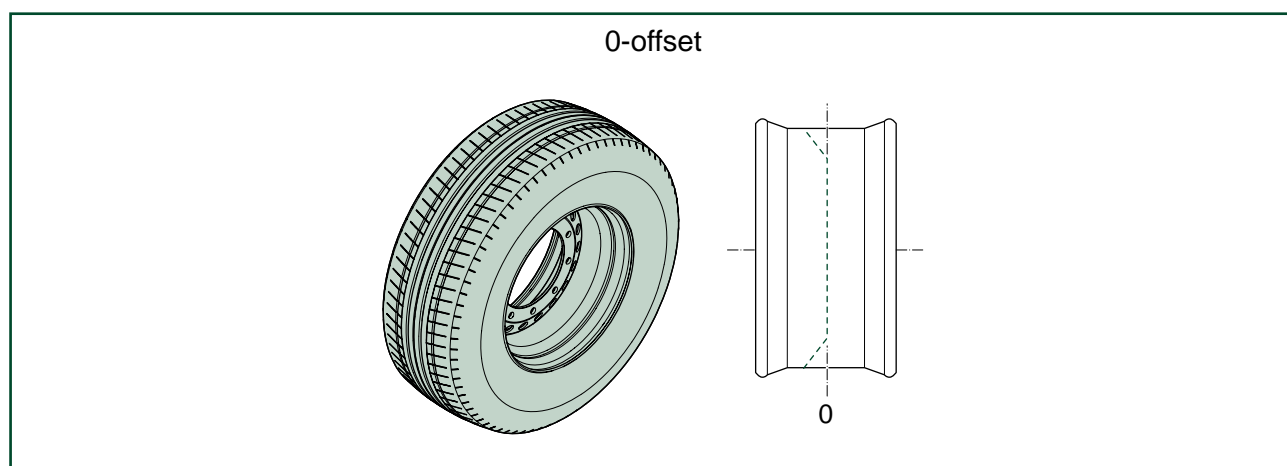
In this manual:

- 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 drum brake trailer axle has been designed for 0-offset wheels.



## 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](mailto:support@valx.eu).

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



## Table of contents

Pictograms in this manual	7
Symbols	8
Symbols for quick reference	11
<b>1 General safety instructions and regulations</b>	<b>13</b>
1.1 General	13
1.2 This manual	13
1.3 Decals and instructions on the product	13
1.4 Warranty and original VALX parts	13
1.5 Maintenance and repair	13
1.6 A contribution to the protection of our environment	14
1.7 Safety instructions when working on the brake system	14
1.8 Safety instructions when working on the wheel hub unit	14
1.9 Safety instructions when working on the axle beam	14
<b>2 Explanation of the axle type code</b>	<b>15</b>
2.1 Location of the identification plate	15
2.2 Information on the identification plate	15
2.3 Ordering of parts	16
<b>3 Maintenance chart</b>	<b>17</b>
<b>4 Tightening torques</b>	<b>18</b>
<b>5 Axle complete</b>	<b>19</b>
5.1 Overview	19
<b>6 Preparatory actions</b>	<b>20</b>
6.1 Place the wheel chocks	20
6.2 Jack up the trailer	21
6.3 Remove the wheel(s)	22
6.4 Install the wheel(s)	23
<b>7 Brake system</b>	<b>25</b>
7.1 Safety instructions	25
7.2 Overview	25
7.3 Periodic maintenance and inspection	26
7.4 Disassembly, assembly and adjustments	32
<b>8 Wheel hub unit</b>	<b>52</b>
8.1 Safety instructions	52
8.2 Overview	52
8.3 Periodic maintenance and inspection	54
8.4 Disassembly, assembly and adjustments	55
<b>9 Axle beam</b>	<b>65</b>
9.1 Safety instructions	65
9.2 Overview	65

## 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.



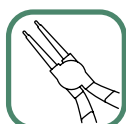
#### Use a feeler gauge

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

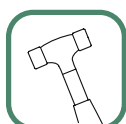


#### Use a hex key

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



#### Use a pair of circlip pliers



#### Use a hammer



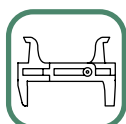
#### Use an appropriate wire brush



#### Use a chisel



#### Use a crowbar



#### Use an inside calliper

## 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.

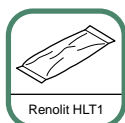
## Lubricants



Lubricate with Optimol White Paste



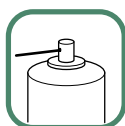
Lubricate with Mobilith SHC 220



Lubricate with Renolit HLT1

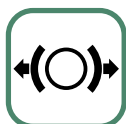


Lubricate with ABS sensor grease



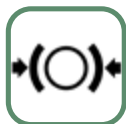
Clean with an appropriate degreasing agent

## Miscellaneous



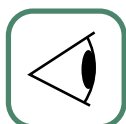
### Release the brake

Release the brake prior to this step.



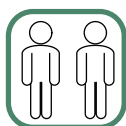
### Actuate the brake

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

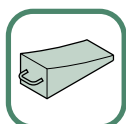


Clean with a lint free cloth

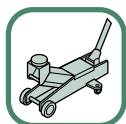


Measure

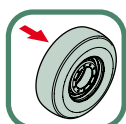
## Symbols for quick reference



Place the wheel chocks (see § 6.1 )



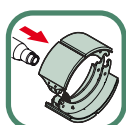
Jack up the trailer (see § 6.2 )



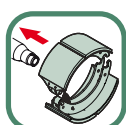
Remove the wheel(s) (see § 6.3 )



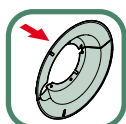
Install the wheel(s) (see § 6.4 )



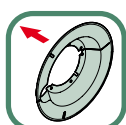
Remove the brake shoes (see § 7.4.1 )



Install the brake shoes (see § 7.4.2 )



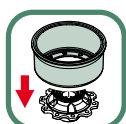
Remove the dust cover (see § 7.4.3 )



Install the dust cover (see § 7.4.4 )



Remove the brake drum (see § 7.4.5 )



Install the brake drum (see § 7.4.6 )



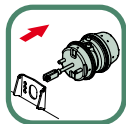
Remove the slack adjuster (see § 7.4.7 )



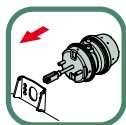
Install the slack adjuster (see § 7.4.8 )



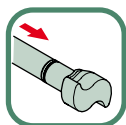
Adjust the slack adjuster (see § 7.4.9 )



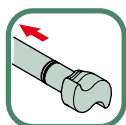
Remove the brake cylinder (see § 7.4.10 )



Install the brake cylinder (see § 7.4.11 )



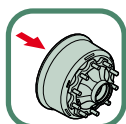
Remove the S-cam and the S-cam bearing (see § 7.4.12 )



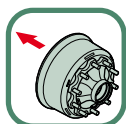
Install the S-cam and the S-cam bearing (see § 7.4.13 )



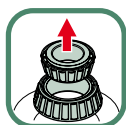
Install the ABS sensor (see § 7.4.14 )



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](http://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**

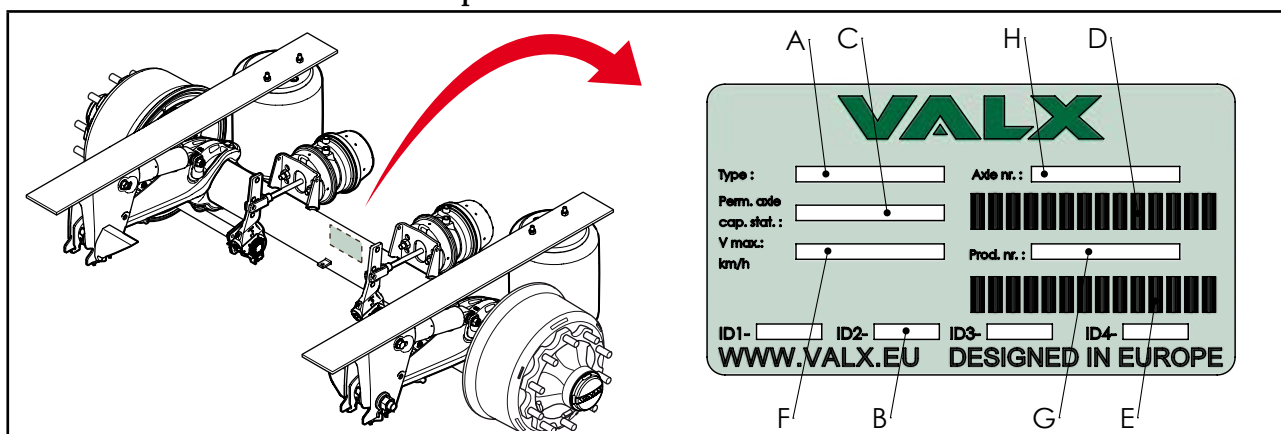
See chapter 8.

### **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			
Forced steering axle (F)				1			
Self steering axle (S)				2			
Energy axle (E/G)				3			
Heavy duty axle (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](http://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 lining	Check the thickness of the brake lining through the hole in the dustcover. (minimum thickness: 5 mm)	7.3.1	0 / X				
Brake drum	Check for cracks, damage or wear	-	0	X			
	Check the internal diameter of the brake drum when replacing brake shoes.	7.3.2					
Brake cylinder <sup>①</sup>	Check the general condition of the brake cylinder (connection, damages, corrosion, leakage)	-	0	X			
Slack adjuster	Check the correct functioning	7.3.4	0	X			
	Lubricate the slack adjuster (2 grease nipples per axle)	7.3.5	0	X			
S-cam bearing	Lubricate the S-cam bearing (4 grease nipples per axle)	7.3.6	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 <sup>②</sup>	Check for correct fastening	6.4		0	X		
Axle beam	Check for irregularities, the brake cylinder seat and the s-cam bearing bracket	-	0	X			
	Check for damage, waer or corrosion	-	0	X			

<sup>①</sup>Always check that the draining plug(s) at the bottom of the brake cylinder have been removed.

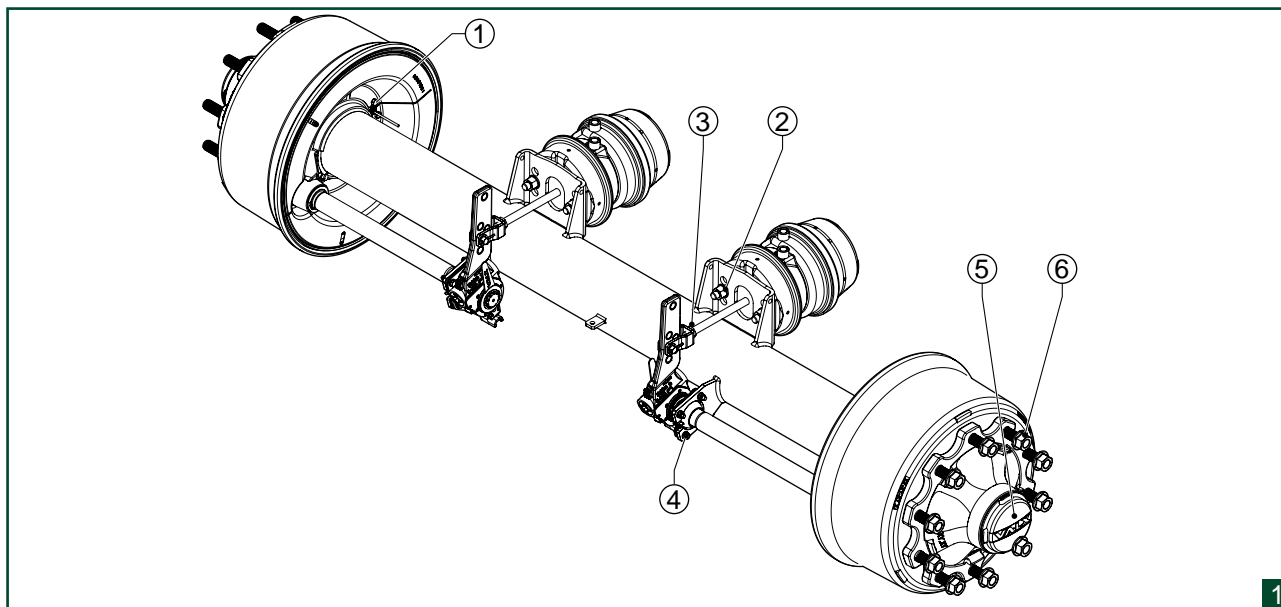
<sup>②</sup>Always check the correct fastening of the wheel nuts after the first journey with a loaded trailer and whenever the wheel in question has been replaced.

## 4 Tightening torques



### NOTE

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



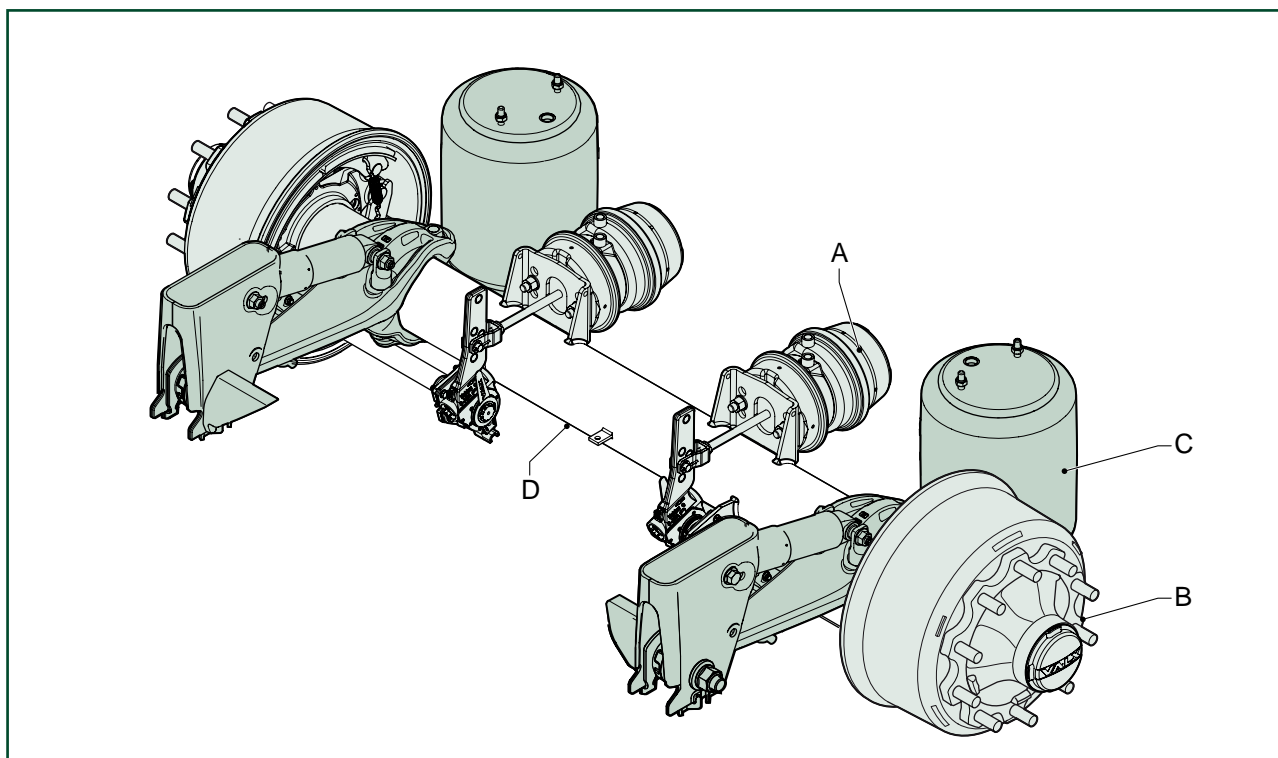
### Torques

Subassembly	Chapter	Item	Size	Width across flats	Inspection	When replacing
Brake system	7	1	Dust cover bolt	M8	13	20 Nm
		2	Brake cylinder nut	M16 x 1.5	24	175 Nm
		3	Set nut yoke	M16 x 1.5	24	60 Nm
		4	Ball bearing nut	M8	13	20 Nm
Wheel hub unit	8	5	Central nut	M55 x 1.5	75	N.A.
		6	Wheel nuts	M22 x 1.5	32	600 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



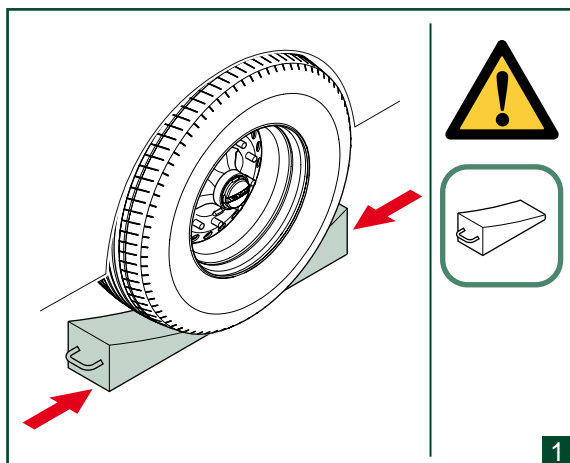
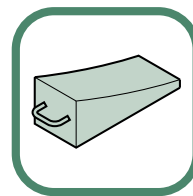
#### NOTE

The VALX drum brake trailer axle has been designed for 0-offset wheels.

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

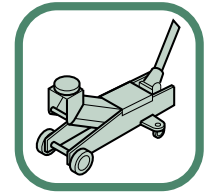
## 6 Preparatory actions

### 6.1 Place the wheel chocks

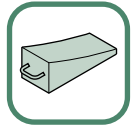


Position the trailer on an even surface and use wheel chocks to secure the trailer against rolling away.

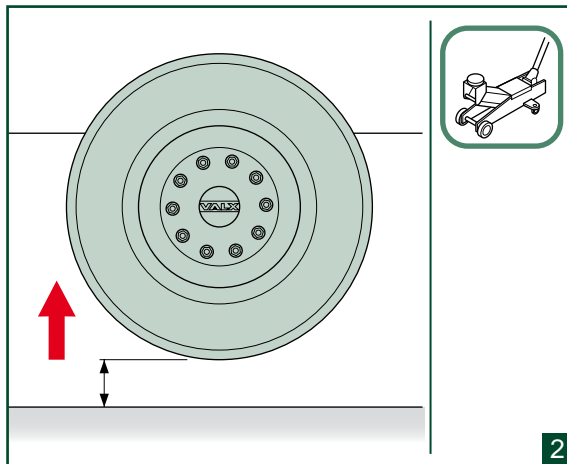
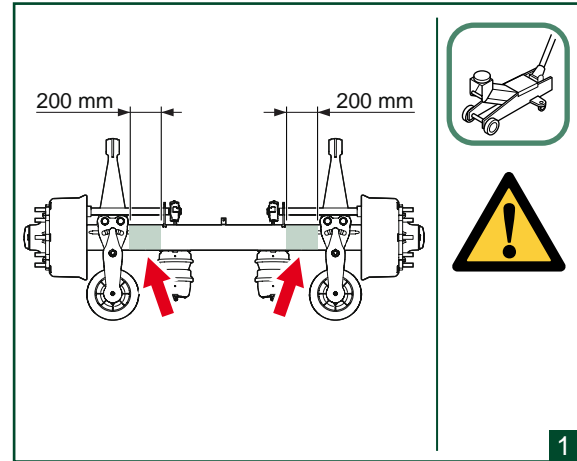
## 6.2 Jack up the trailer



### Previous steps



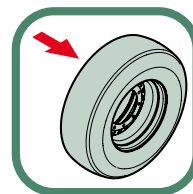
§6.1



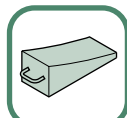
Only use approved devices to jack up the trailer. Place the jack only at the indicated positions.



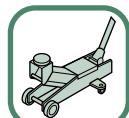
## 6.3 Remove the wheel(s)



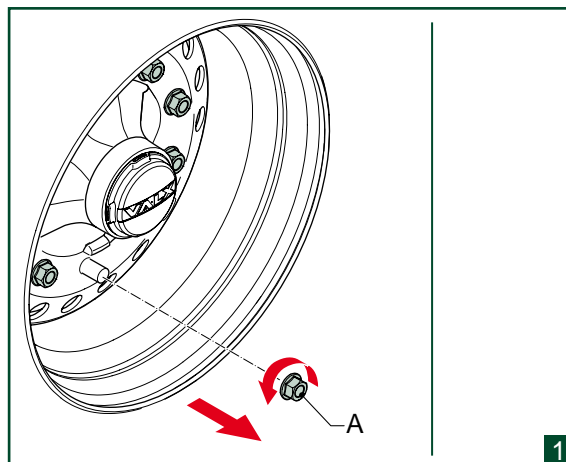
### Previous steps



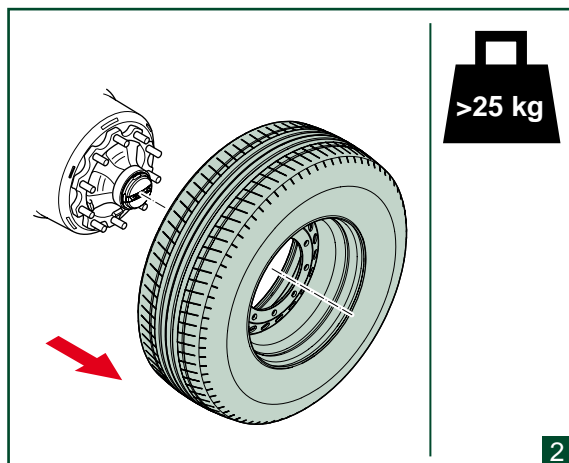
§ 6.1



§ 6.2

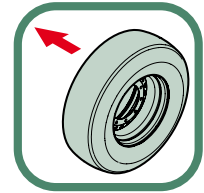


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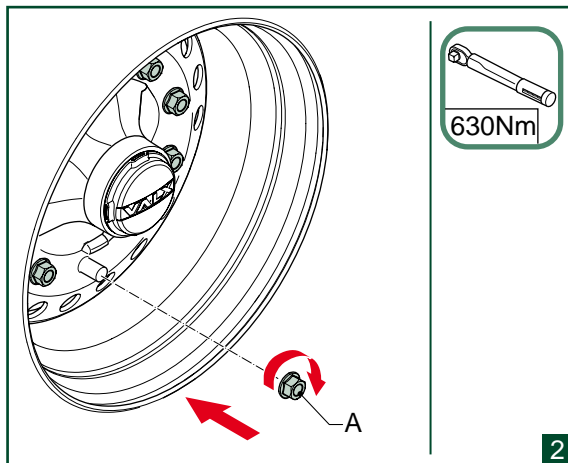
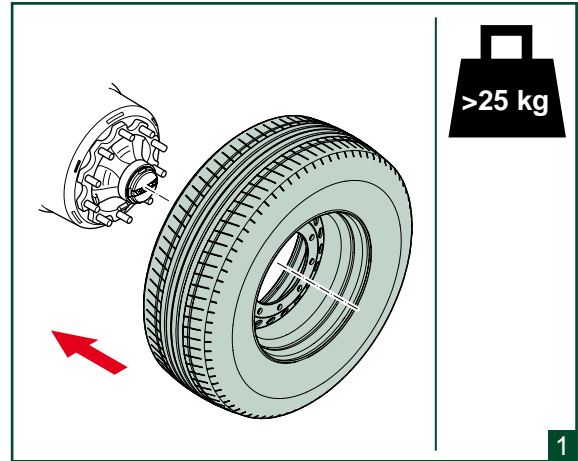
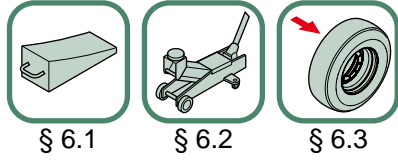


2

## 6.4 Install the wheel(s)



### Previous steps



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

### Torques

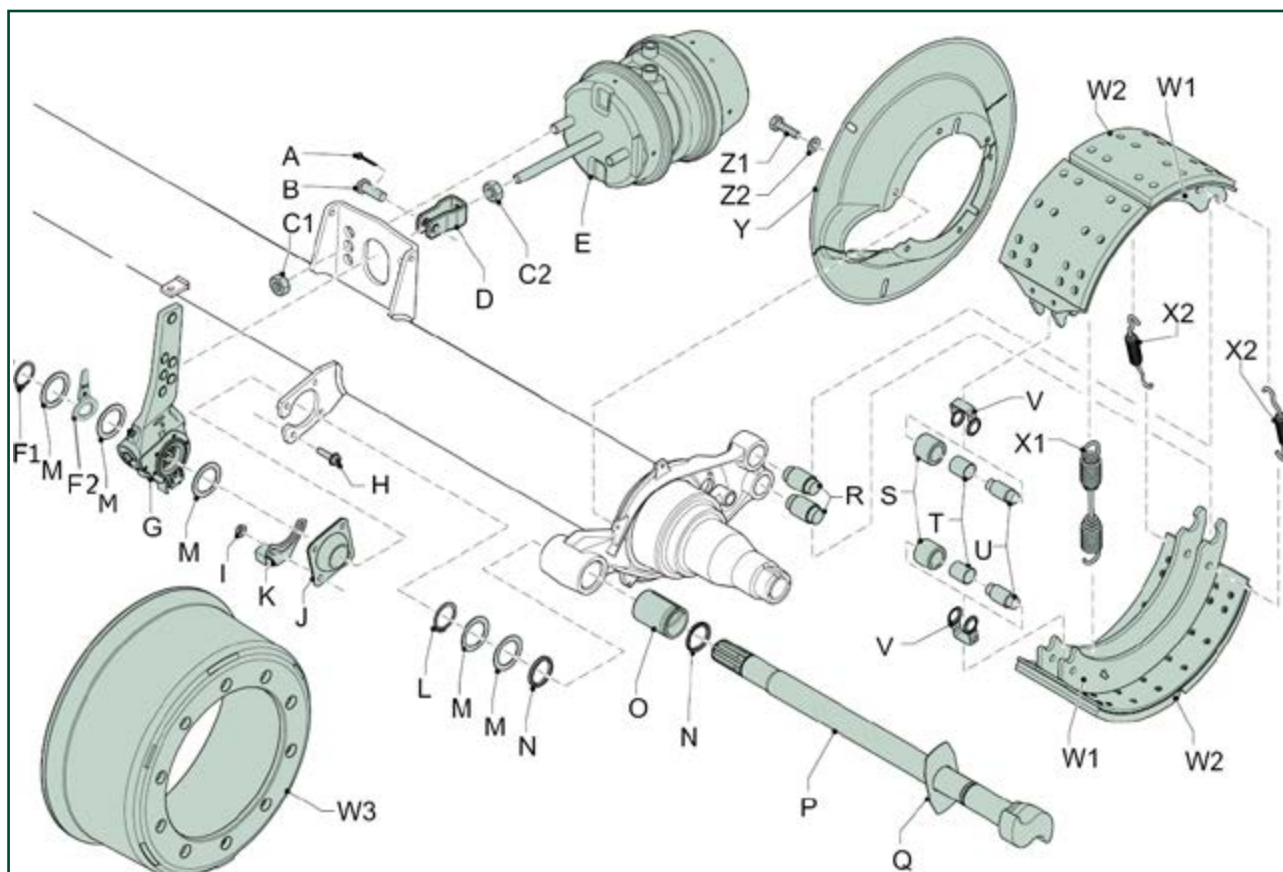
Item	Size	Width across flats	Torque (Nm)
Wheel nuts (A)	M22 x 1.5	32	630 Nm $\pm$ 30 Nm Check 600 Nm

## 7 Brake system

### 7.1 Safety instructions

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

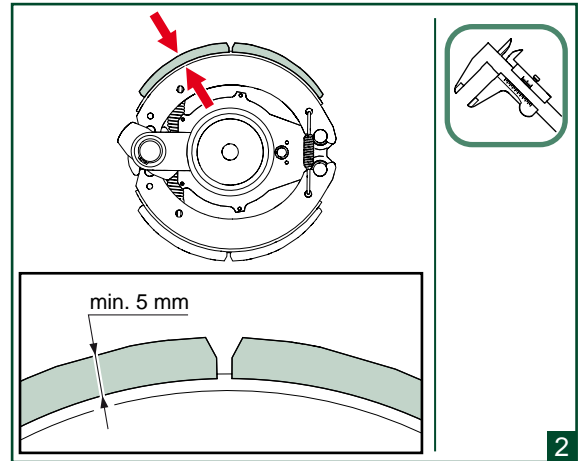
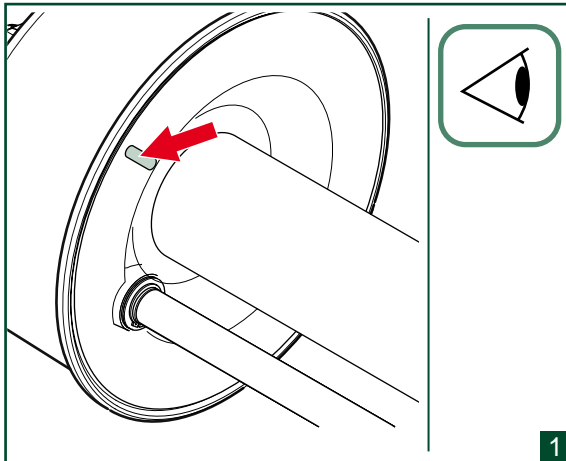
### 7.2 Overview



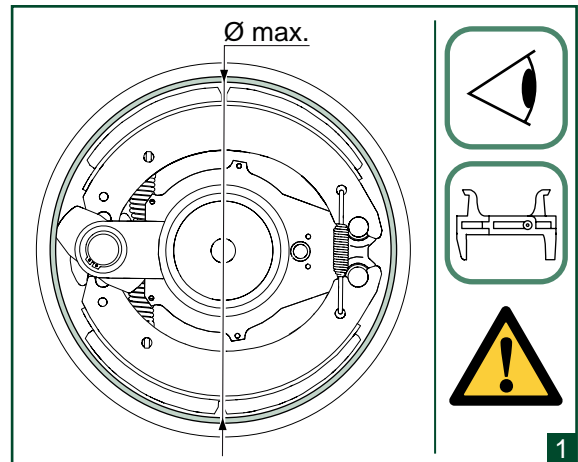
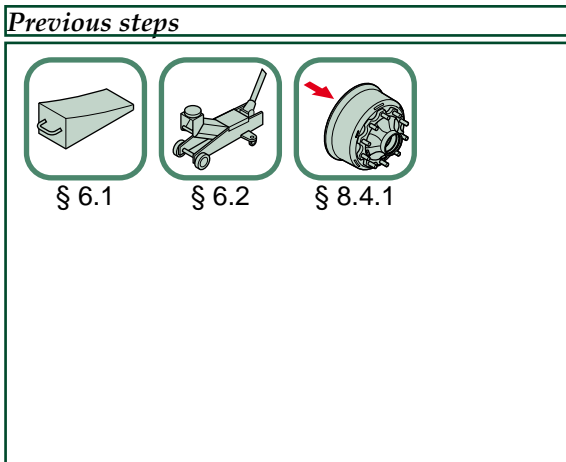
A	Cotter pin	P	S-cam shaft
B	Yoke pin	Q	D-washer
C1	Nut	R	Shoe anchor pin
C2	Set nut	S	Roller
D	Yoke	T	Bush
E	Brake cylinder	U	Roller shaft
F1	Circlip	V	Roller retainer
F2	Wear indicator	W1	Brake shoe
G	Slack adjuster	W2	Brake lining
H	Flange bolt	W3	Brake drum
I	Flange nut	X1	Return spring
J	S-cam bearing	X2	Retaining spring
K	Slack adjuster bracket	Y	Dust cover
L	Circlip	Z1	Bolt
M	Washer	Z2	Washer
N	S-cam seal		
O	S-cam bush		

### 7.3 Periodic maintenance and inspection

#### 7.3.1 Check the thickness of the friction material of the brake lining



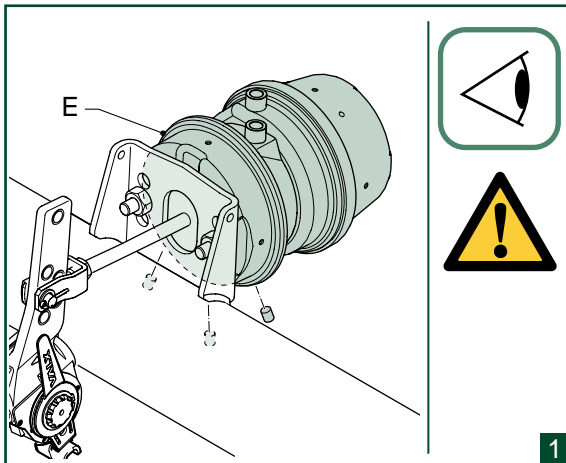
#### 7.3.2 Check the internal diameter of the brake drum



Check the condition of the brake drum and measure the internal diameter at the top and bottom. Replace the brake drum if required. Always replace both drums on the same axle.

Brake	Brake shoe width (mm)	Ø max. wear	Maximum machined Ø (mm)
DR 420 x 180	177.8	425	424
DR 420 x 220	219.1	425	424
DR 360 x 200	200.0	364	363

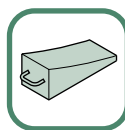
### 7.3.3 Check the draining plugs



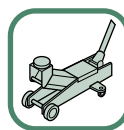
Check if the draining plugs at the bottom side of the brake cylinder have been removed.

### 7.3.4 Check the functioning of the slack adjuster

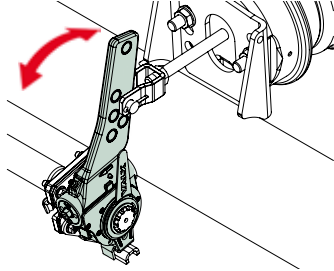
#### Previous steps




§ 6.1




§ 6.2








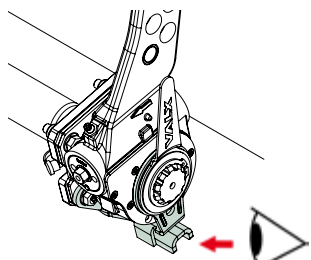
Go to step 2




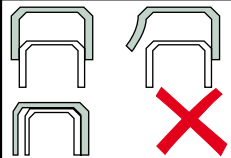

Go to §7.3.5

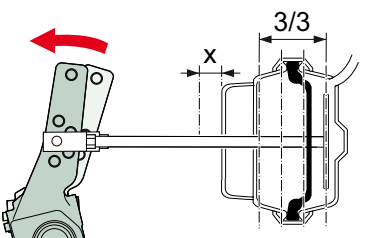
1










2





$X \leq 1/3 =$ 


Go to step 4

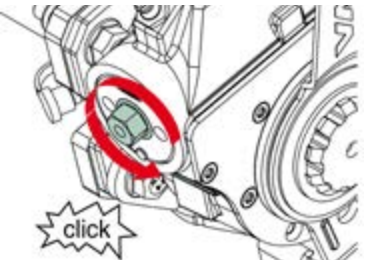
$X > 1/3 =$ 



Go to






3






≥18 Nm

≥18 =




Go to step 5

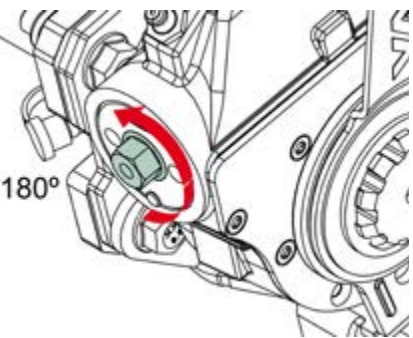
<18 =




Go to



4



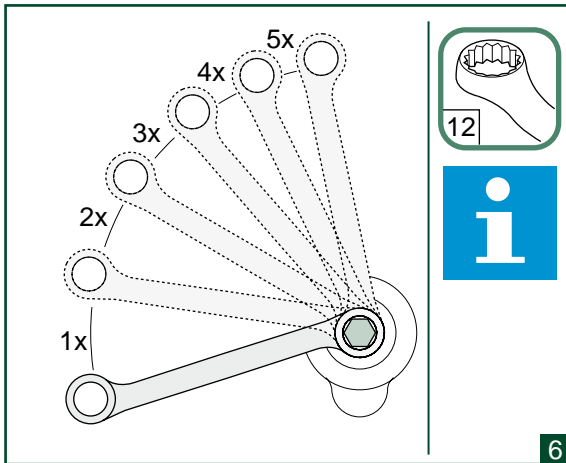


12

5

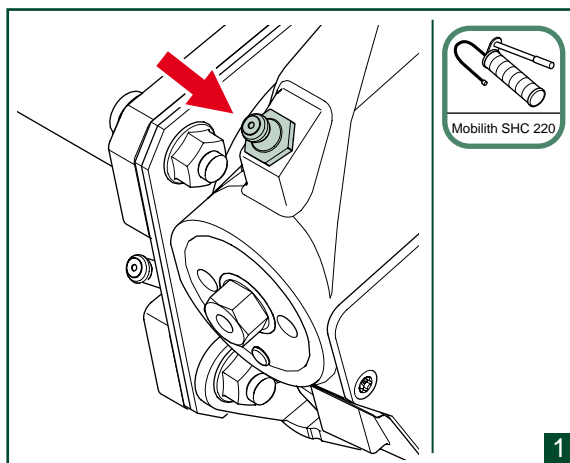


Check the movement of the Slack adjuster (G)

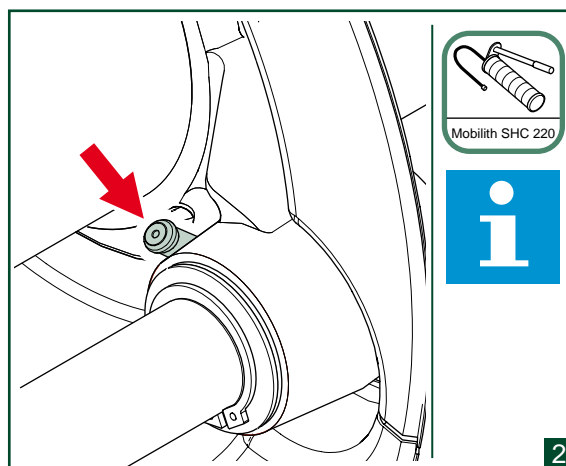
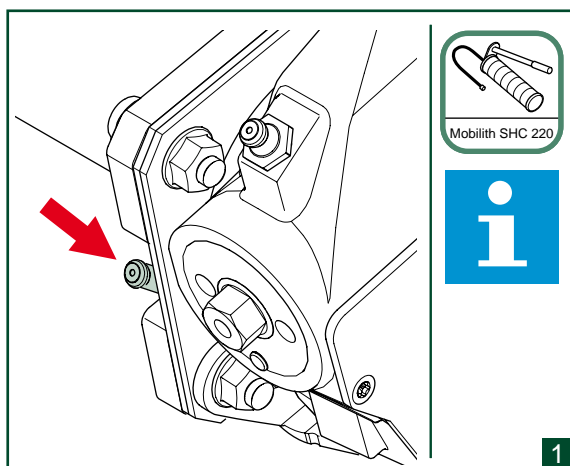


Gently apply the brake 5 times (braking pressure approx. 1 bar). With increasing adjustment the angle of rotation of the ring spanner becomes smaller. The adjuster is working correctly when the ring spanner rotates with every actuation of the brake.

### 7.3.5 Lubricate the slack adjuster



### 7.3.6 Lubricate the S-cam bearing

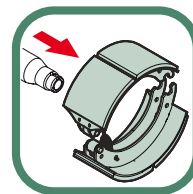


Always lubricate all S-cam bearings (4 grease nipples) on the same axle and manually move the cam shaft whilst greasing till the grease comes out of the bearing.

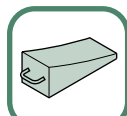


## 7.4 Disassembly, assembly and adjustments

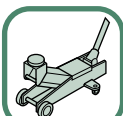
### 7.4.1 Remove the brake shoe



#### Previous steps



§ 6.1



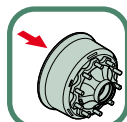
§ 6.2



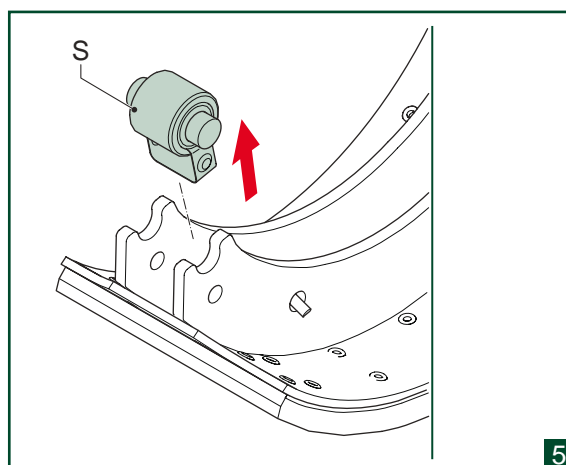
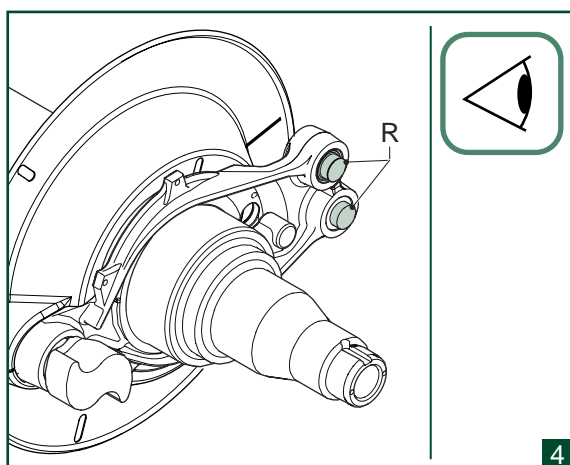
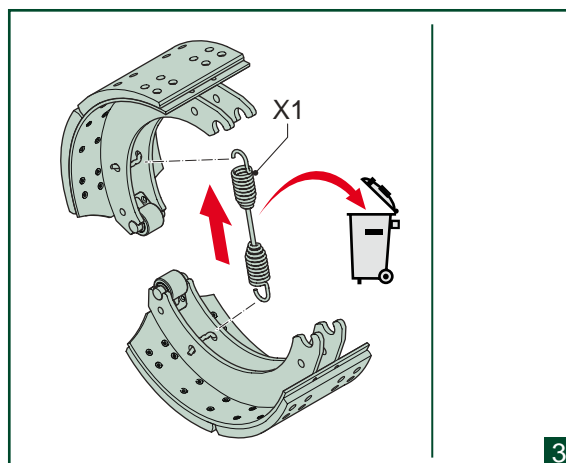
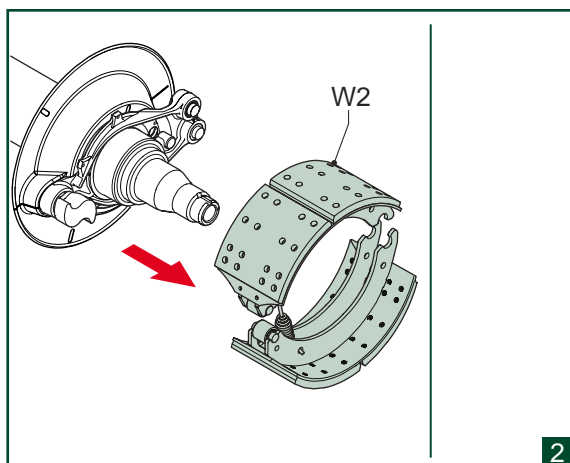
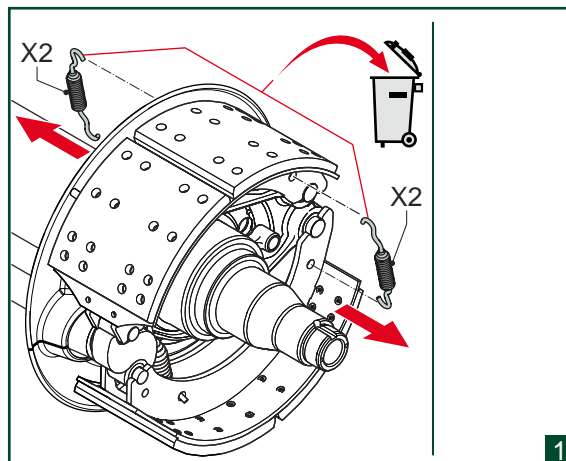
§ 6.3

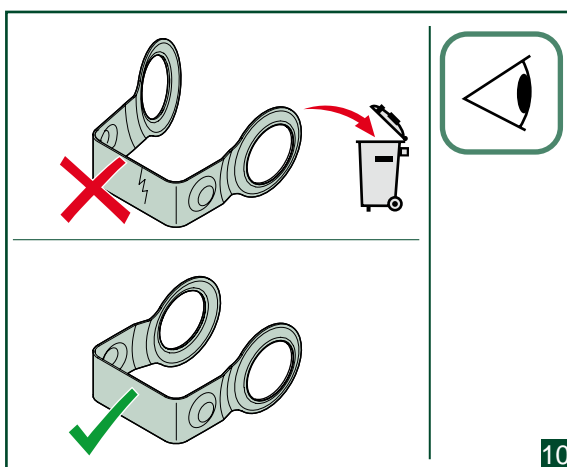
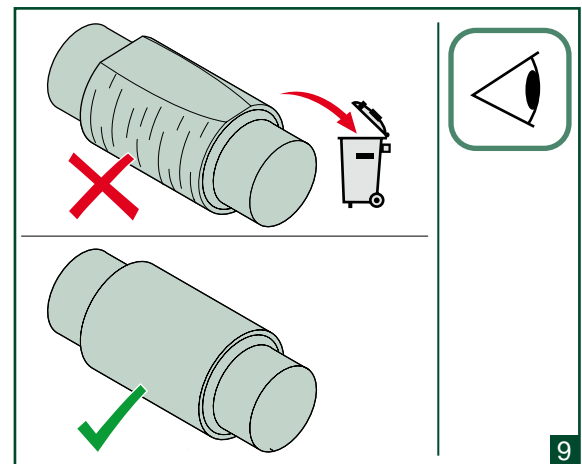
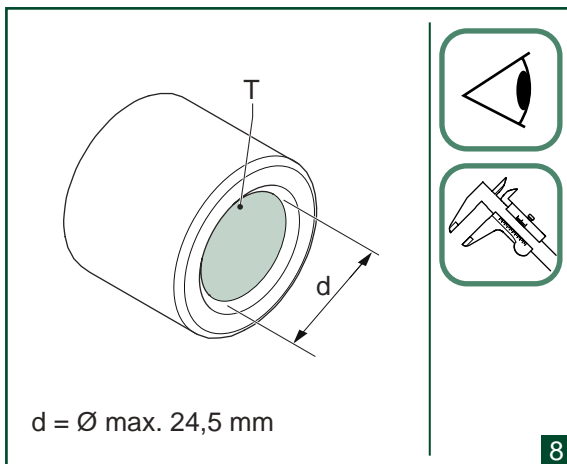
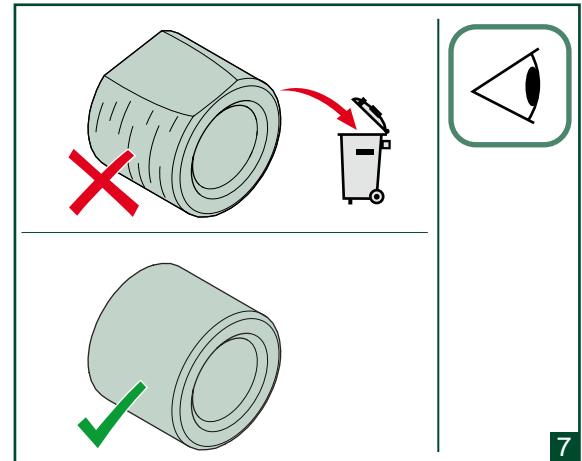
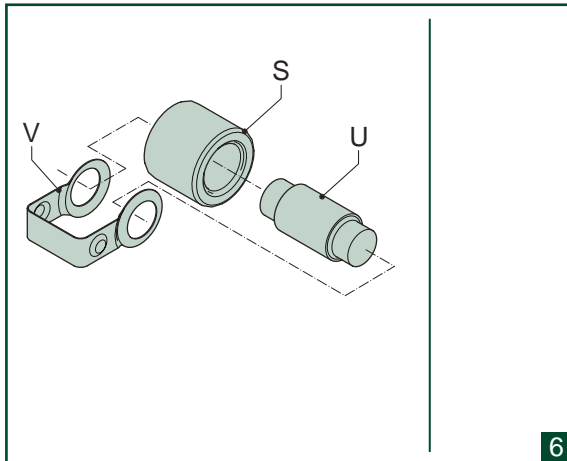


§ 7.4.9

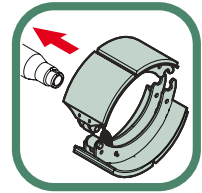


§ 8.4.1

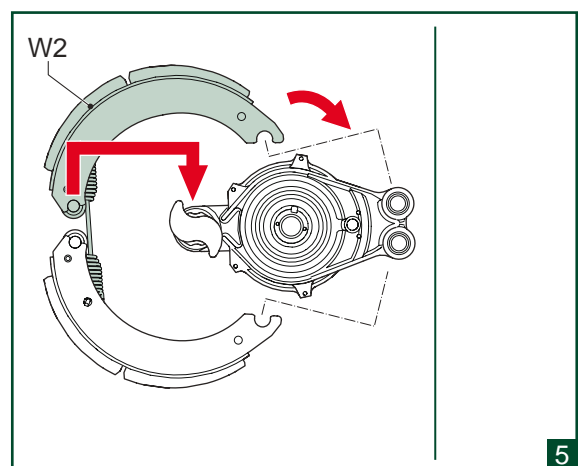
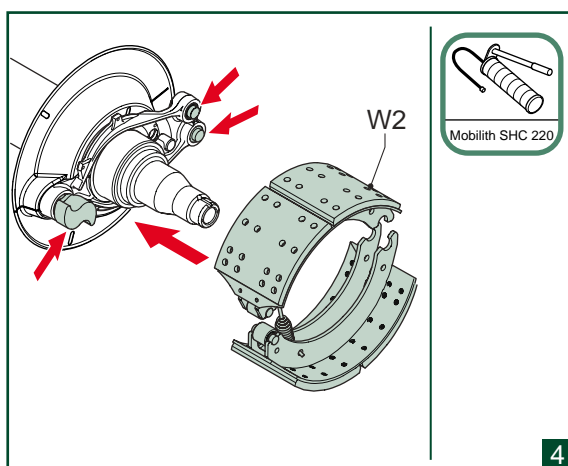
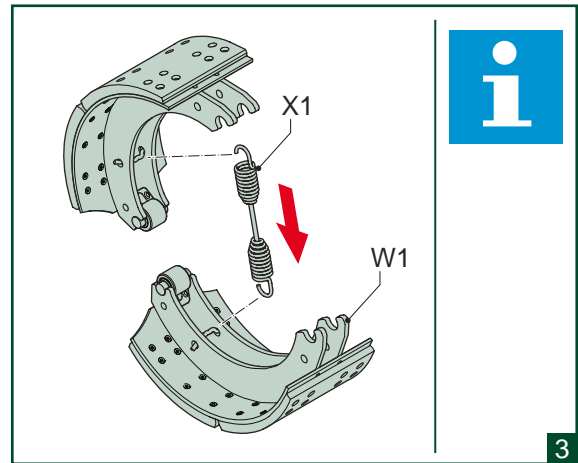
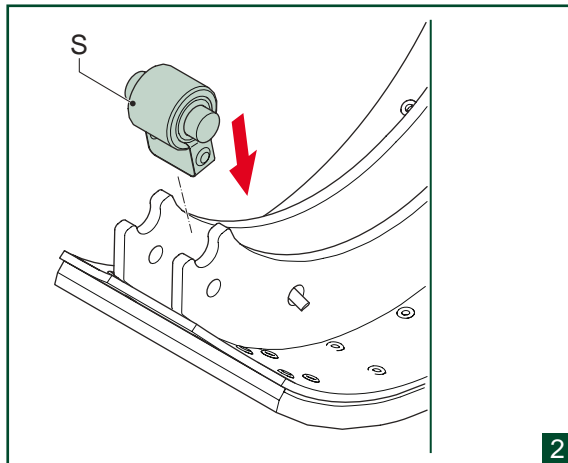
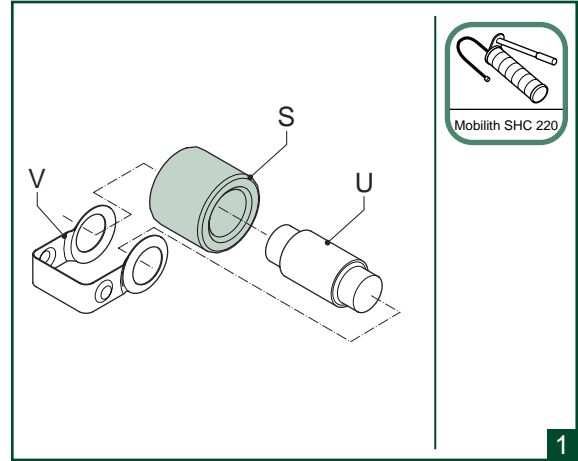
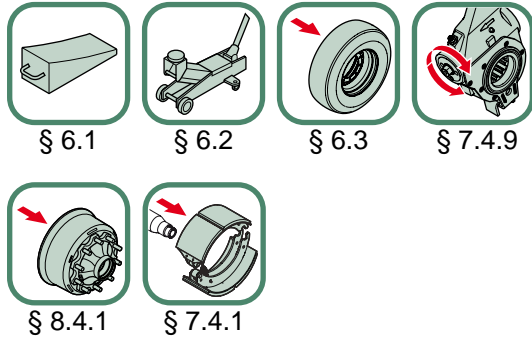




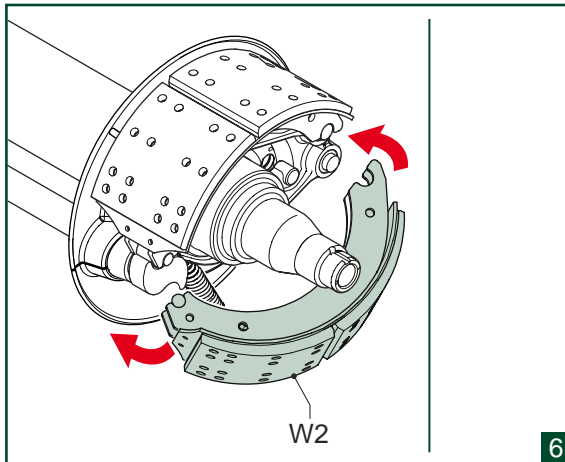
## 7.4.2 Install the brake shoe



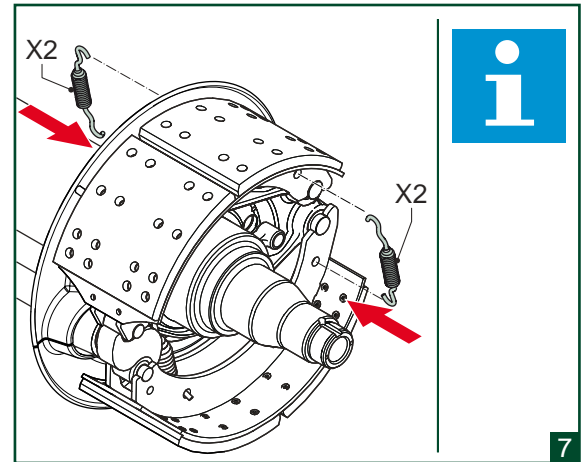
### Previous steps



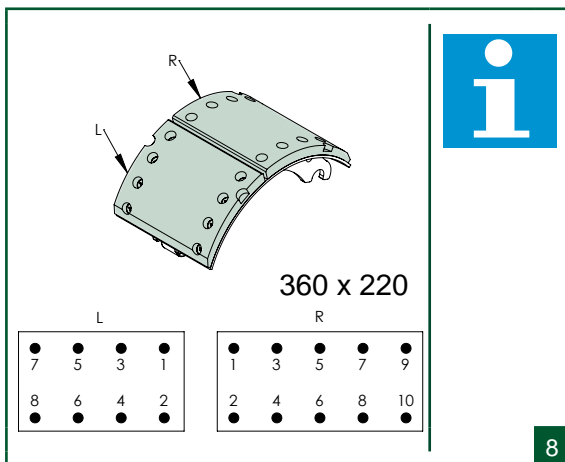
Always replace the return spring (X1) whenever the return spring has been removed.



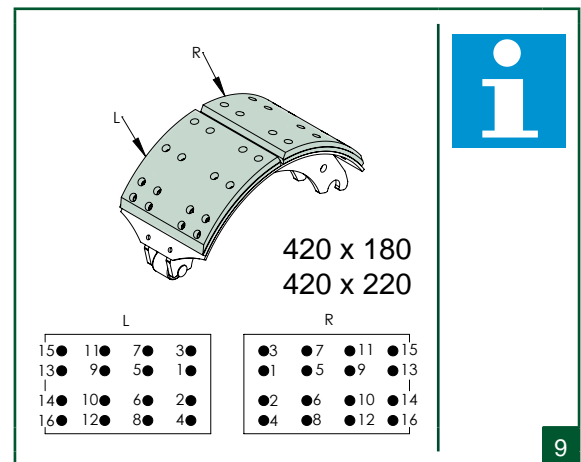
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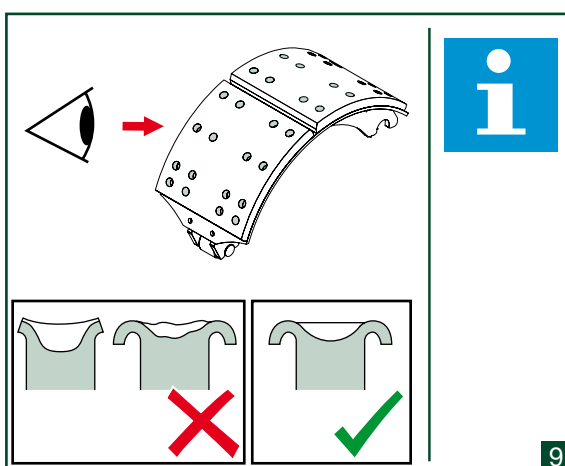
7



8



9



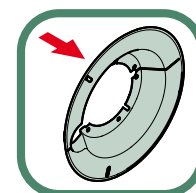
9



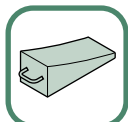
Always replace the retaining springs (X2) whenever the retaining springs have been removed.

When replacing the brake lining(s), apply the rivets in the order given.  
Check that the rivet length, the inner hole wall and strength are correct (20Kn  $\pm$  2Kn).

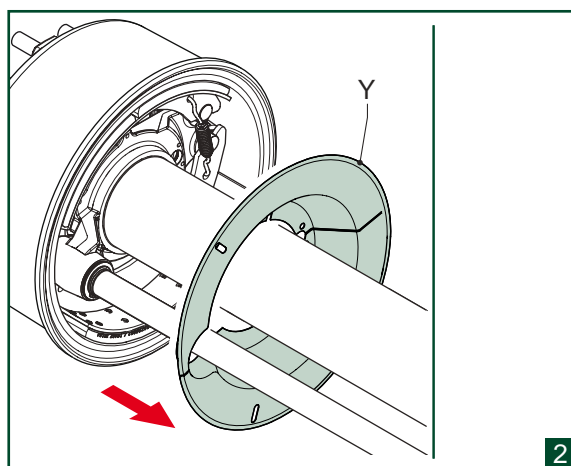
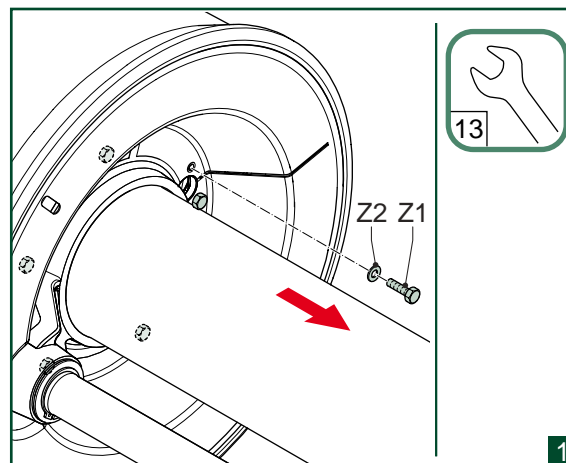
### 7.4.3 Remove the dust cover



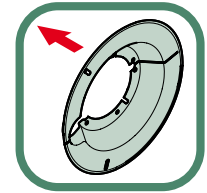
#### Previous steps



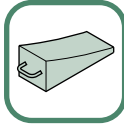
§ 6.1



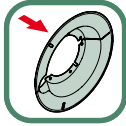
#### 7.4.4 Install the dust cover



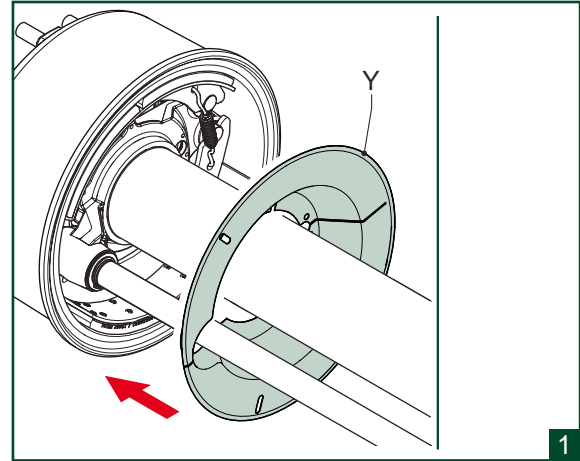
##### Previous steps



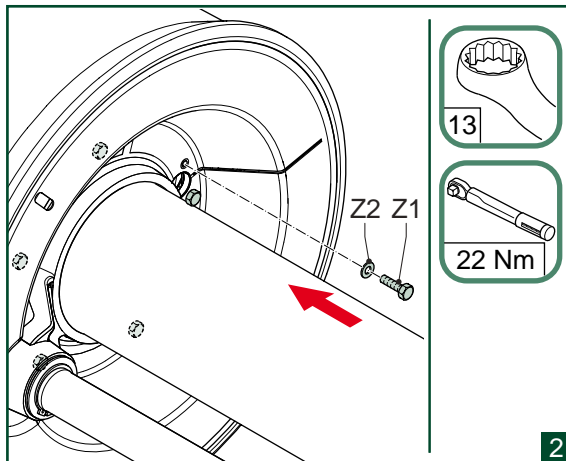
§ 6.1



§ 7.4.3



1

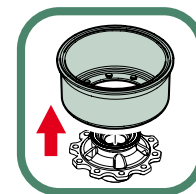


2

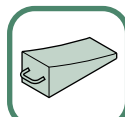
##### Torques

Item	Size	Width across flats	Torque (Nm)
Dust cover bolt (Z1)	M8	13	22 Nm $\pm$ 4 Nm Check 20 Nm

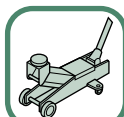
## 7.4.5 Disassembly – brake drum



### Previous steps



§ 6.1



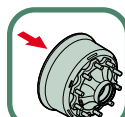
§ 6.2



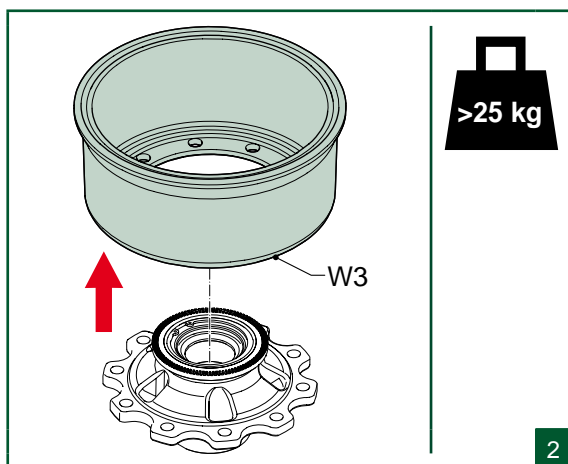
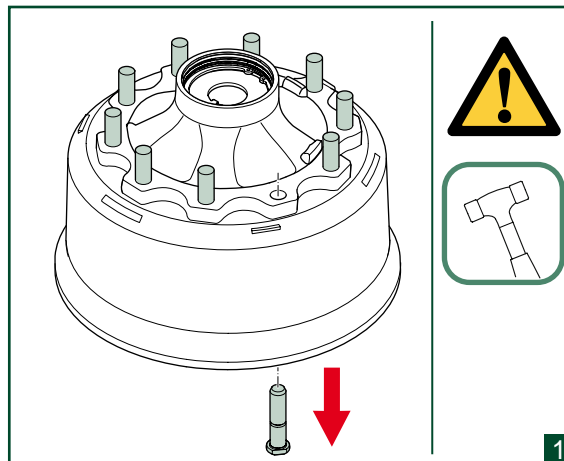
§ 6.3



§ 7.4.9

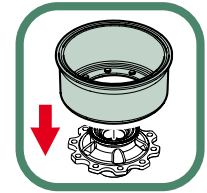


§ 8.4.1

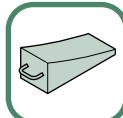


Be careful not to damage the thread of the wheel bolts.

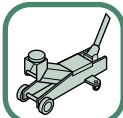
## 7.4.6 Assembly – brake drum



### Previous steps



§ 6.1



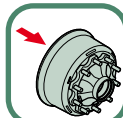
§ 6.2



§ 6.3



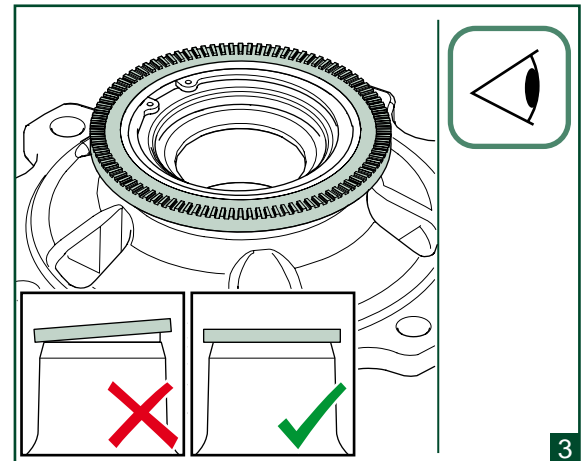
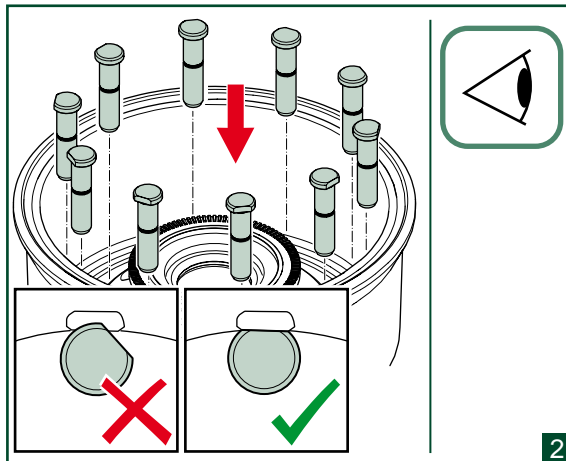
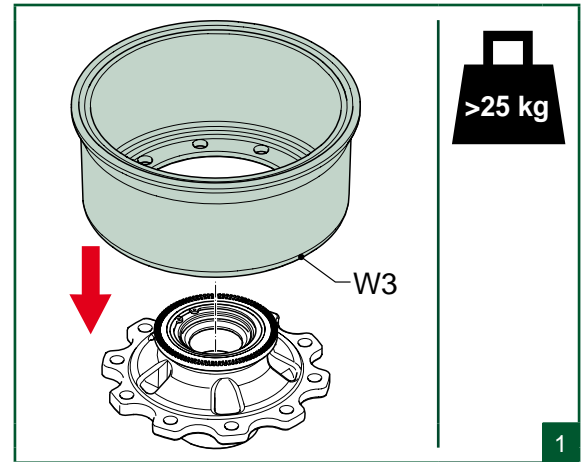
§ 7.4.9



§ 8.4.1

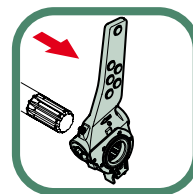


§ 7.4.5

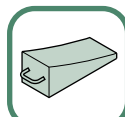




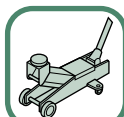
## 7.4.7 Remove the slack adjuster



### Previous steps



§ 6.1



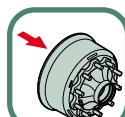
§ 6.2



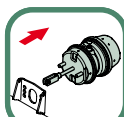
§ 6.3



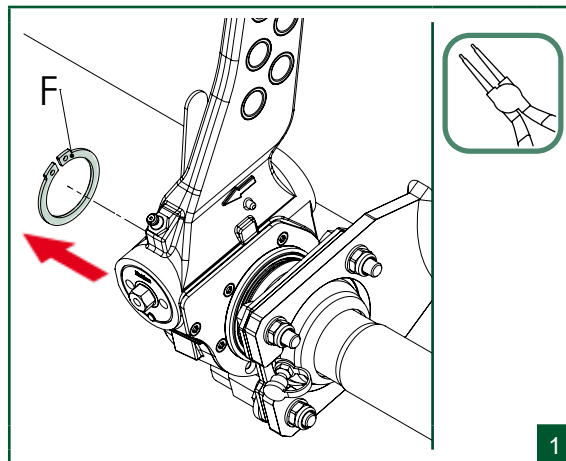
§ 7.4.9



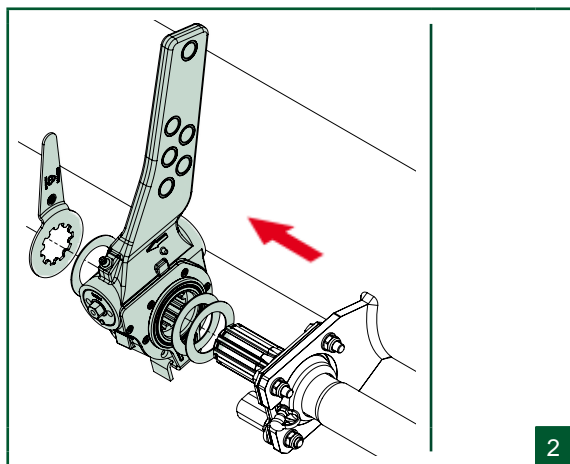
§ 8.4.1



§ 7.4.10

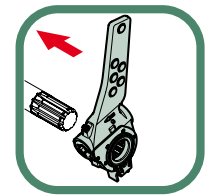


1

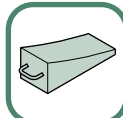


2

## 7.4.8 Install the slack adjuster



### Previous steps



§ 6.1



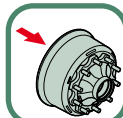
§ 6.2



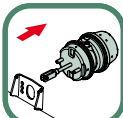
§ 6.3



§ 7.4.9



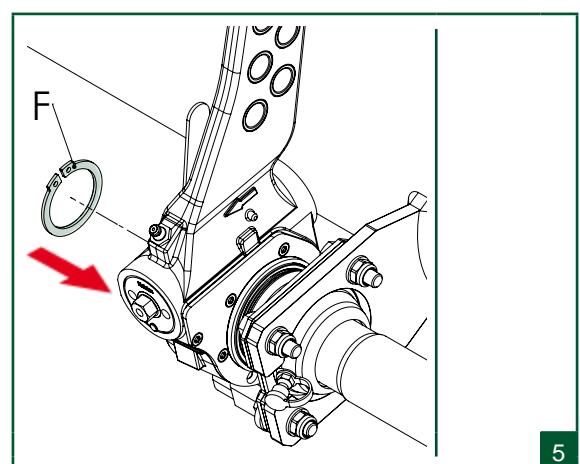
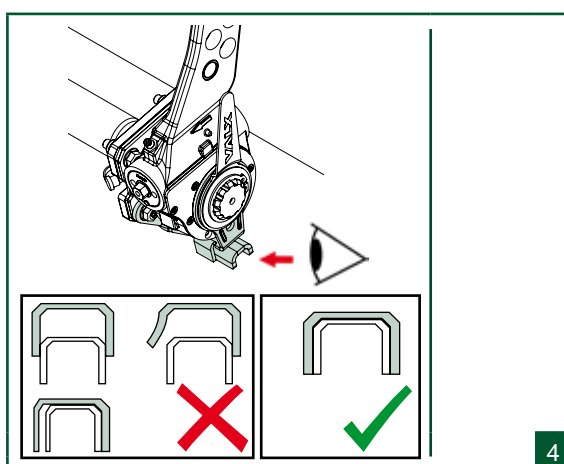
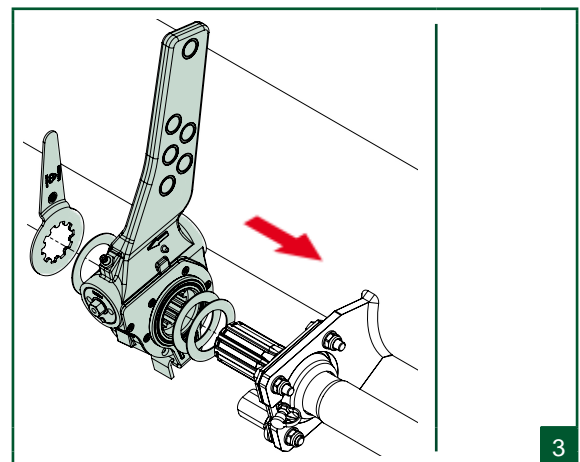
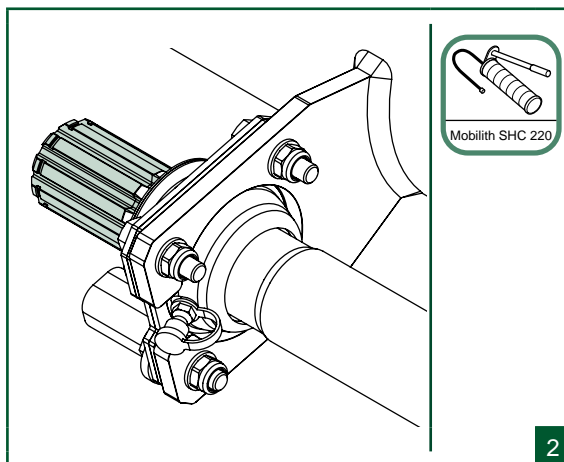
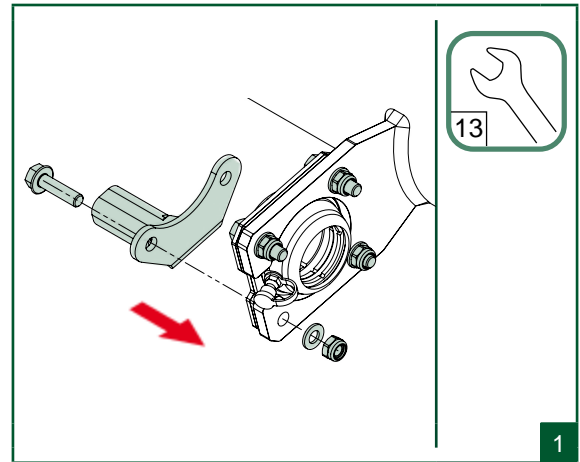
§ 8.4.1



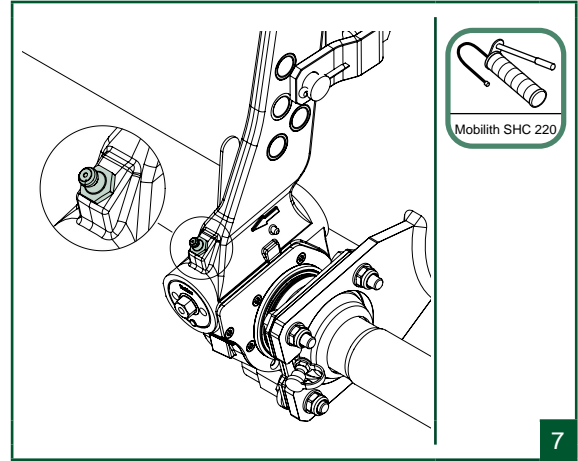
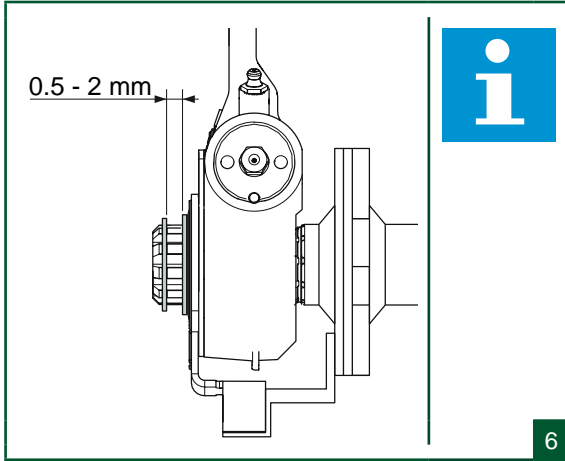
§ 7.4.10



§ 7.4.7

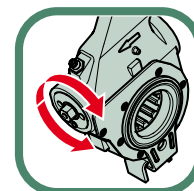


#### 7.4.8 Install the slack adjuster (continued)

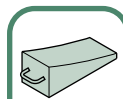


**i** If necessary, use shims to obtain the proper clearance.

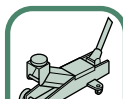
## 7.4.9 Adjust the slack adjuster



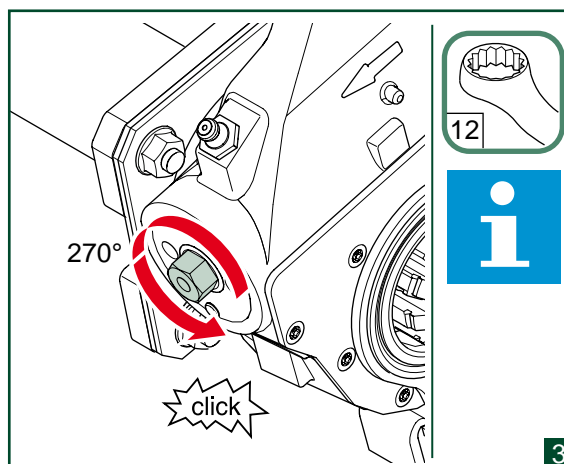
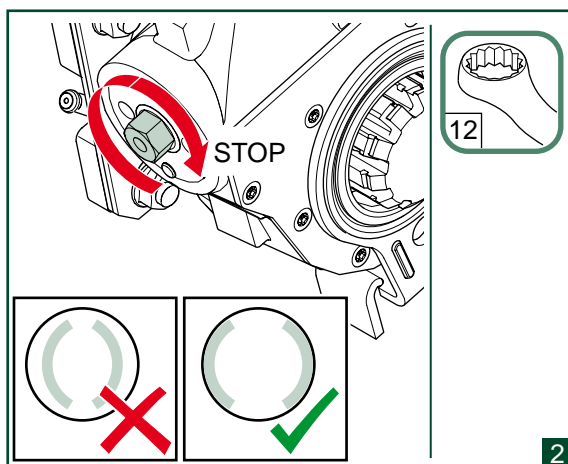
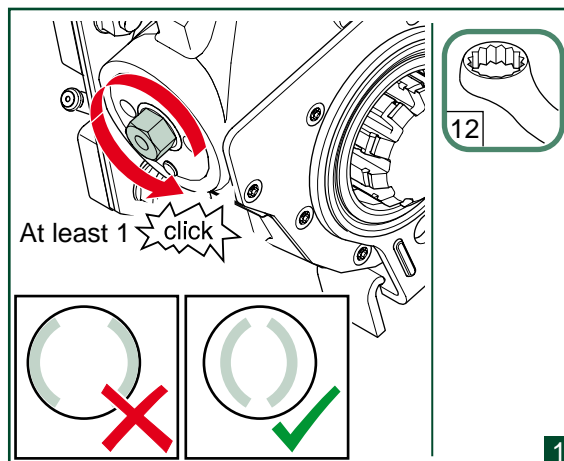
### Previous steps



§ 6.1

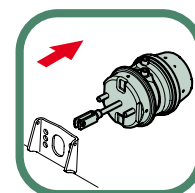


§ 6.2

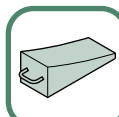


Turn the slack adjuster screw approximately 270° counterclockwise.  
When turning counterclockwise, one or more clicks are heard. When turning clockwise, no clicks are heard.

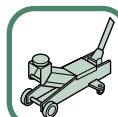
## 7.4.10 Remove the brake cylinder



### Previous steps



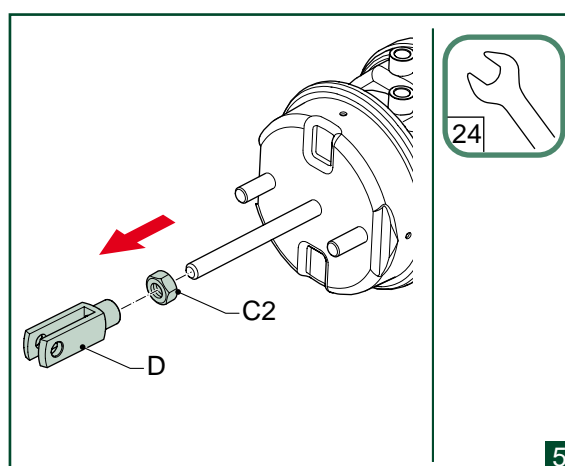
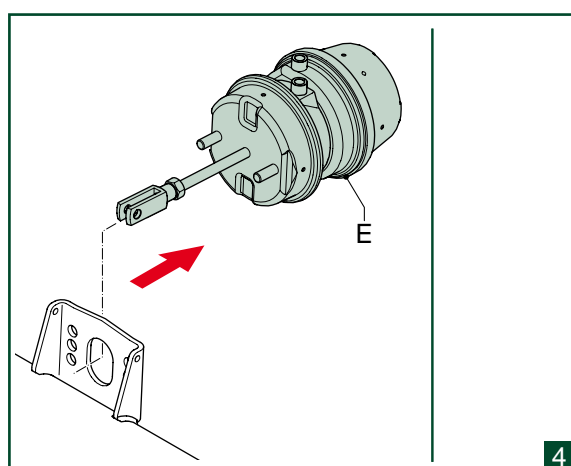
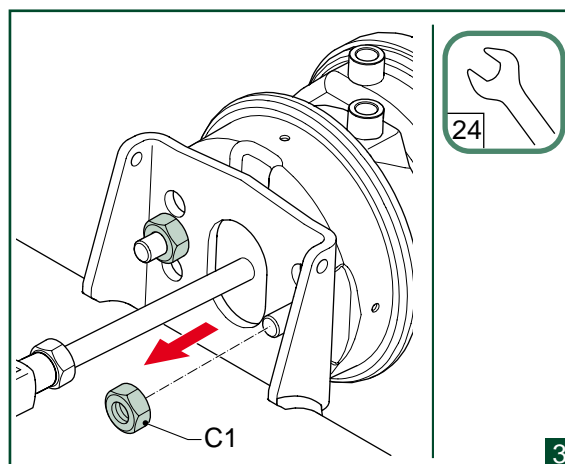
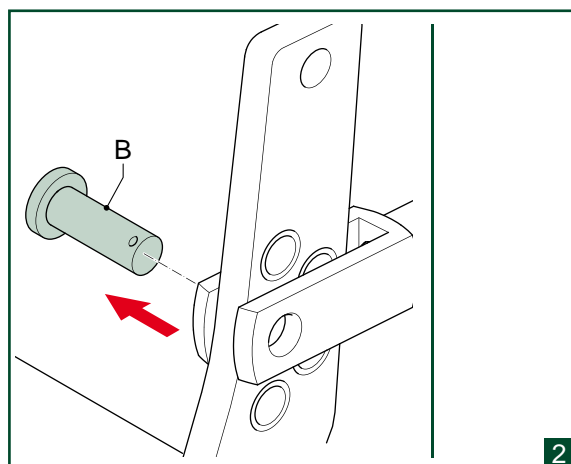
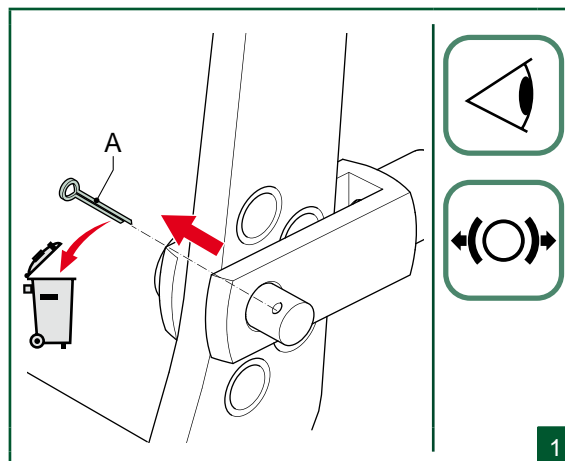
§ 6.1



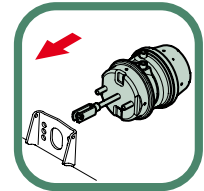
§ 6.2



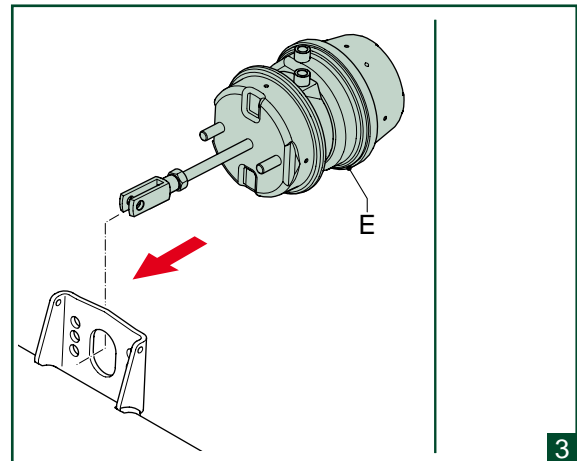
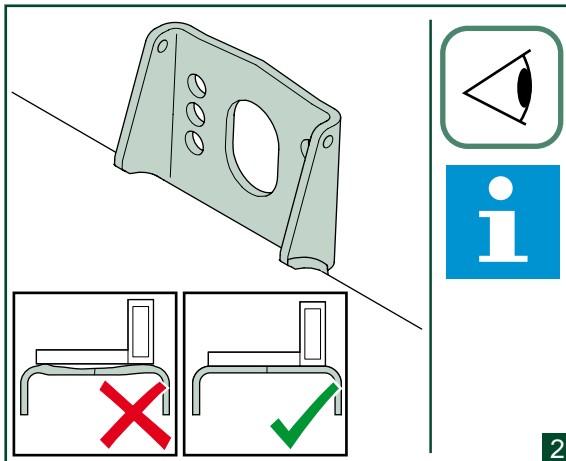
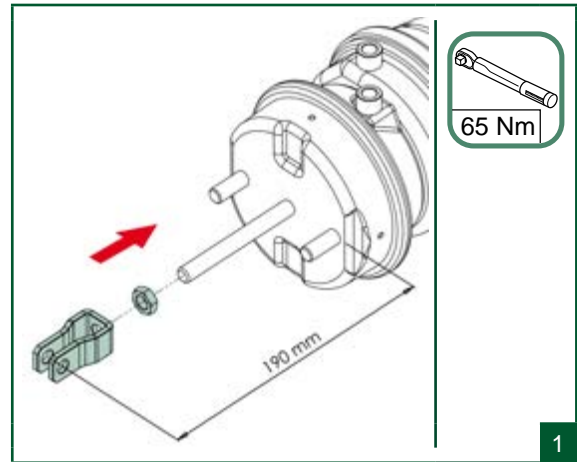
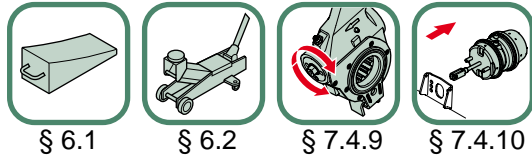
§ 7.4.9



## 7.4.11 Install the brake cylinder



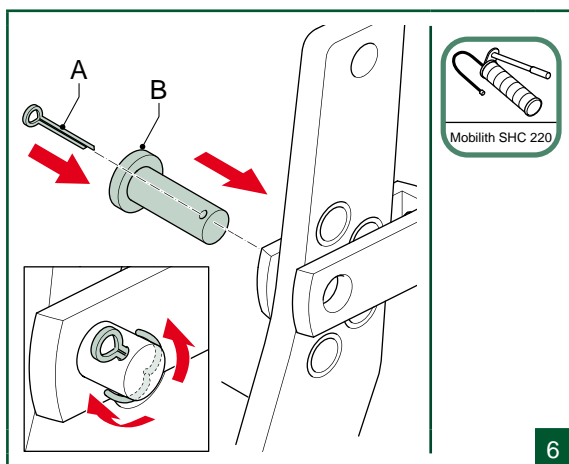
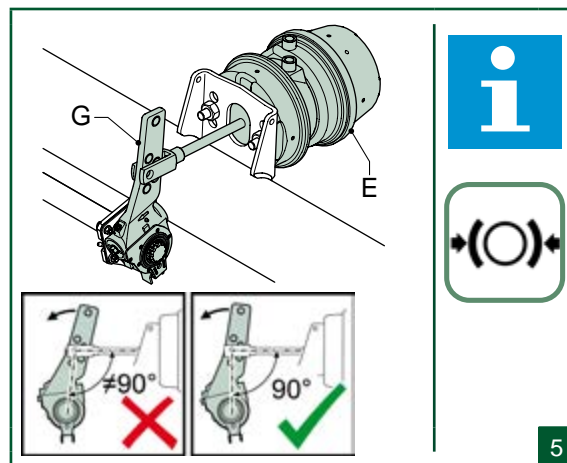
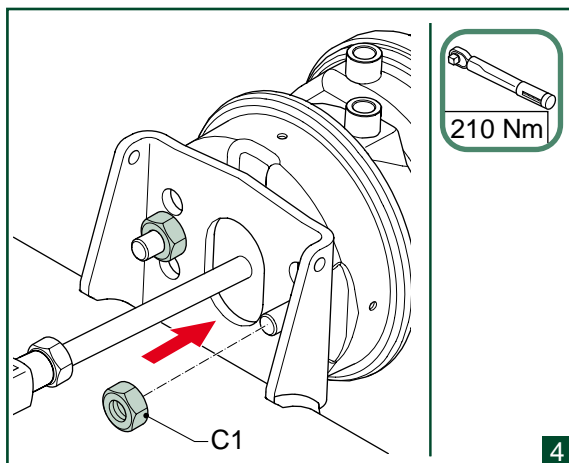
### Previous steps



Check that the brake cylinder seat is within 0.3 mm flat. If not, repair.  
Mount the new brake cylinder using the same holes as before.

### Torques

Item	Size	Width across flats	Torque (Nm)
Set nut (C2)	M16	24	65 Nm $\pm$ 4 Nm Check 60 Nm



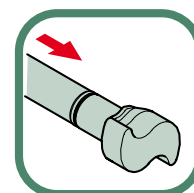
i

When the brake is actuated, the angle must be 90°.

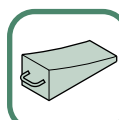
#### Torques

Item	Size	Width across flats	Torque (Nm)
Nut (C1)	M16	24	210 Nm - 30 Nm Check 175 Nm

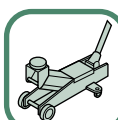
## 7.4.12 Remove the S-cam and the S-cam bearing



### Previous steps



§ 6.1



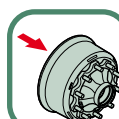
§ 6.2



§ 6.3



§ 7.4.9



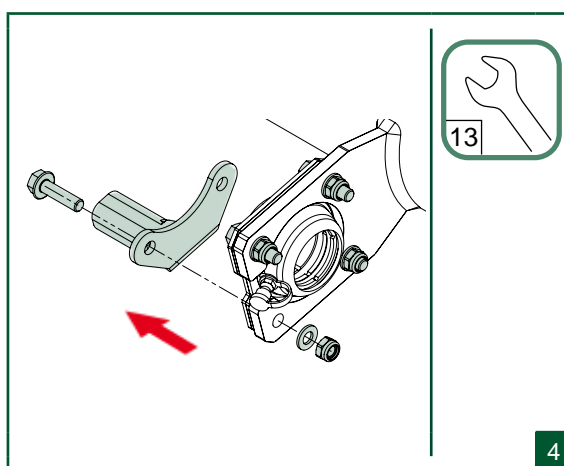
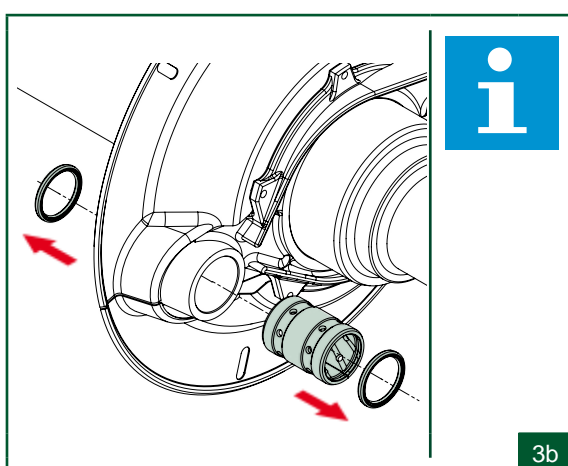
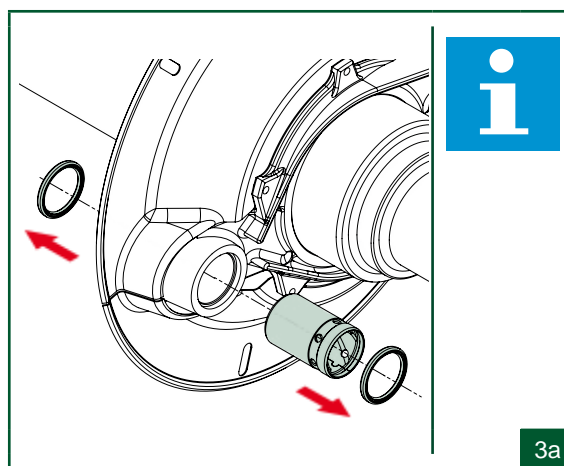
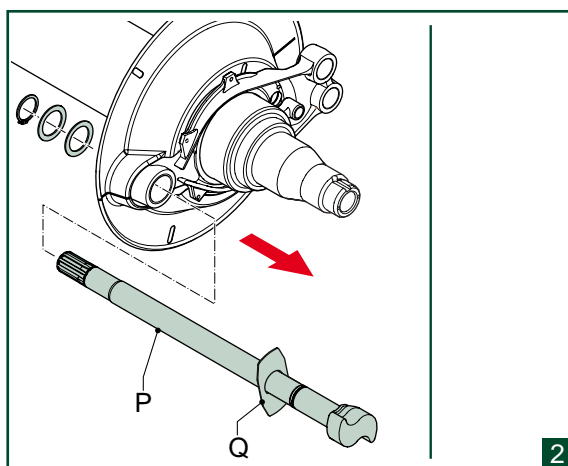
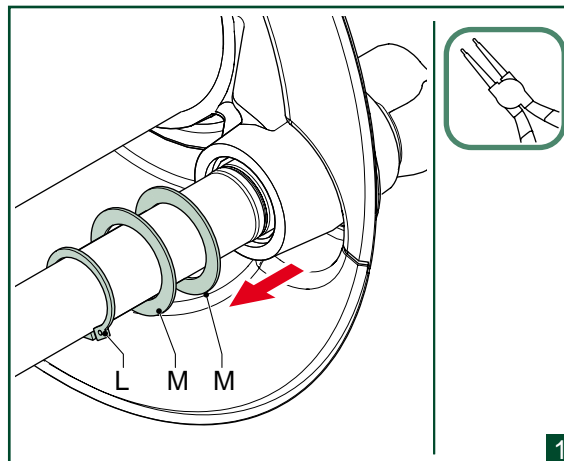
§ 8.4.1



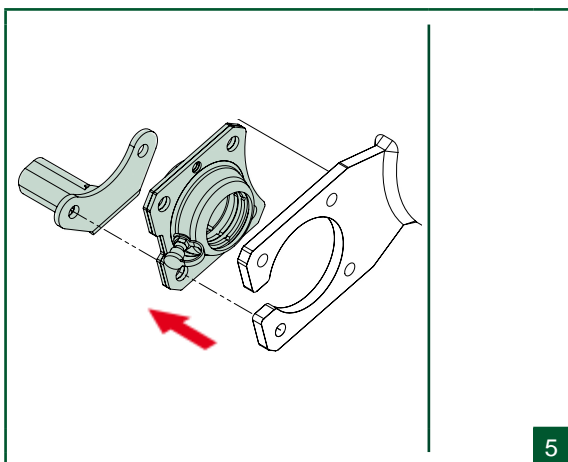
§ 7.4.1



§ 7.4.7

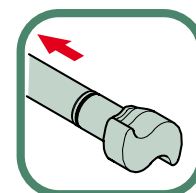




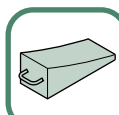


Note the 2 bearing bush types (3a / 3b)

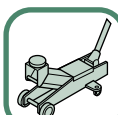
### 7.4.13 Install the S-cam and the S-cam bearing



#### Previous steps



§ 6.1



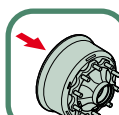
§ 6.2



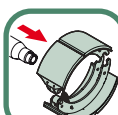
§ 6.3



§ 7.4.9



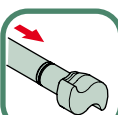
§ 8.4.1



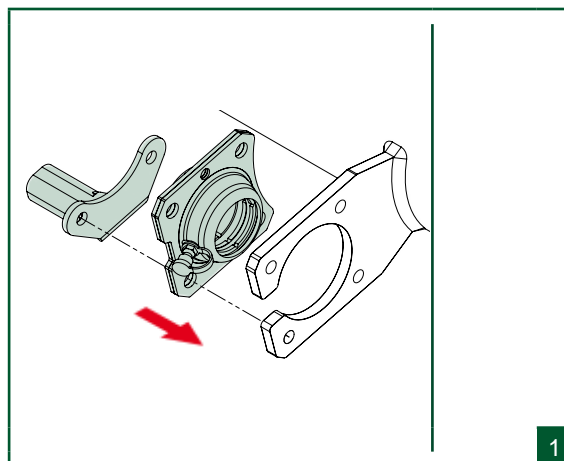
§ 7.4.1



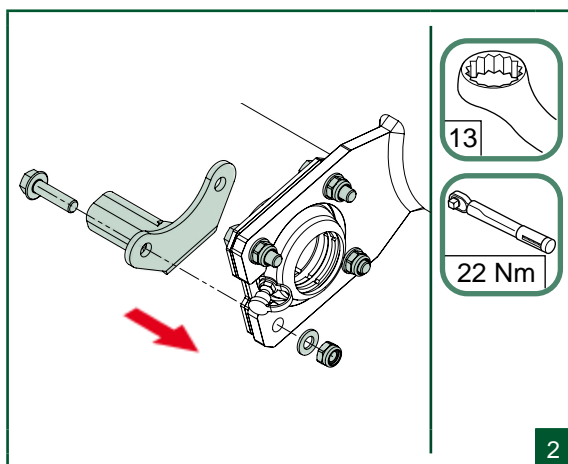
§ 7.4.7



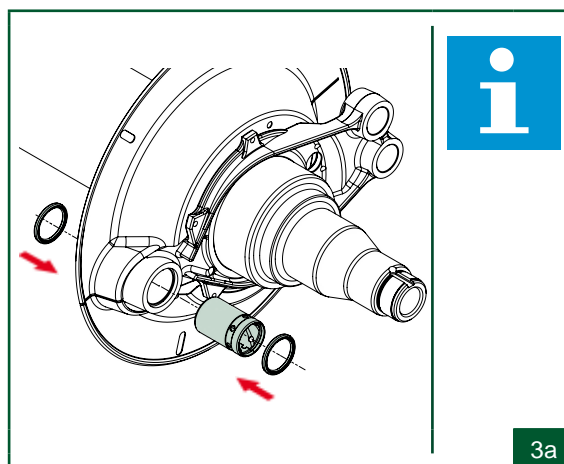
§ 7.4.12



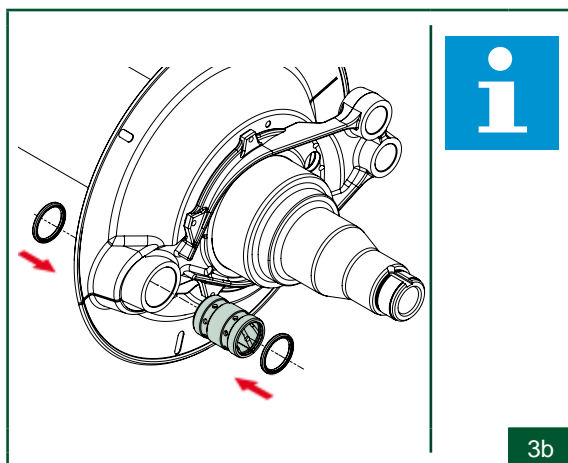
1



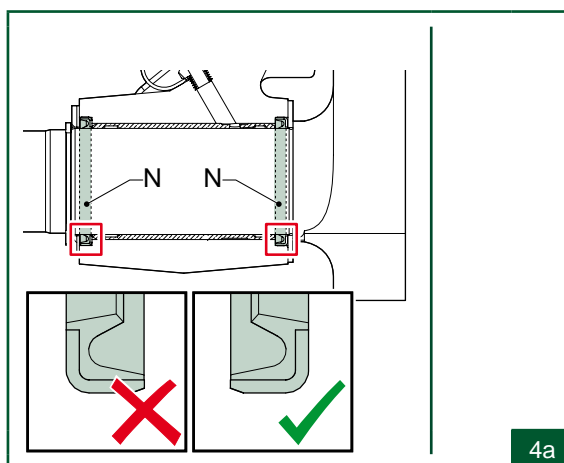
2



3a



3b

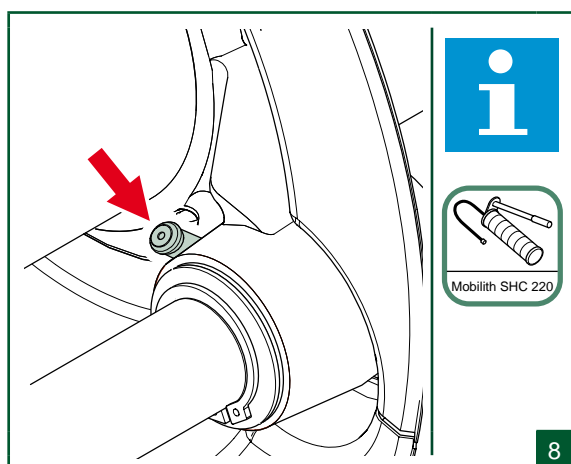
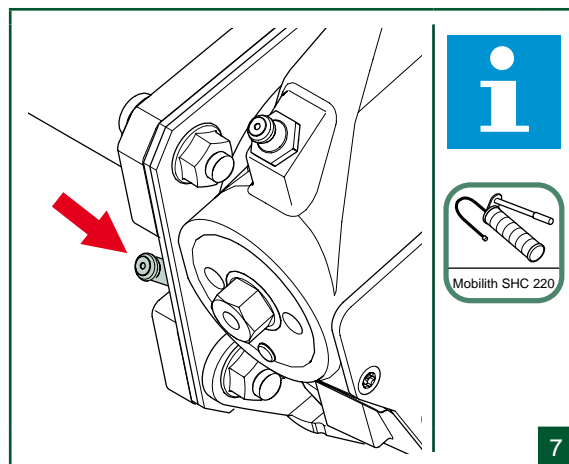
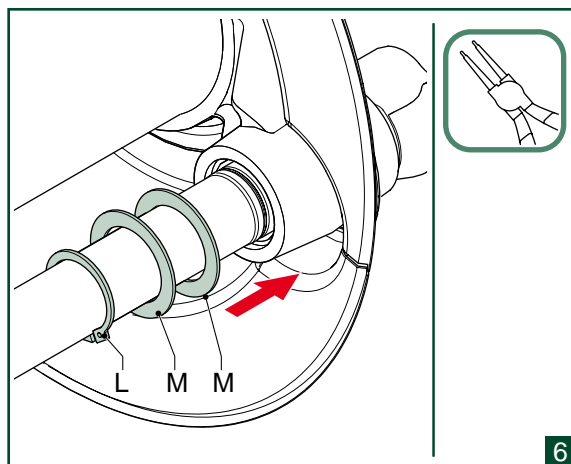
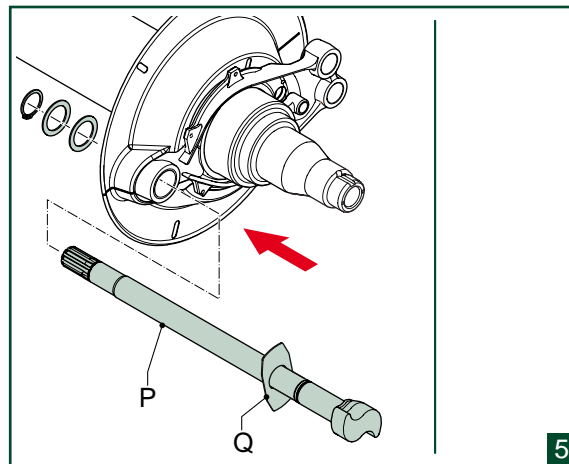
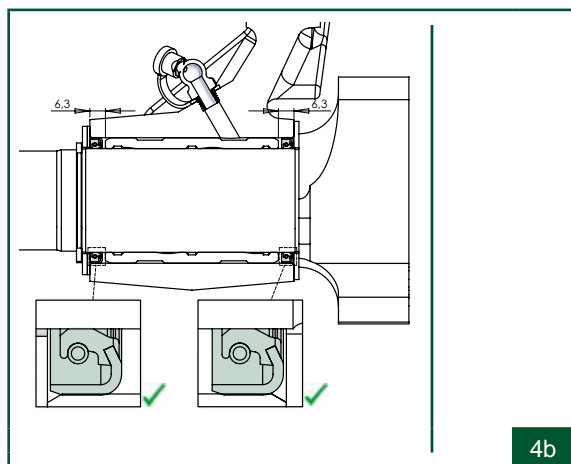


4a



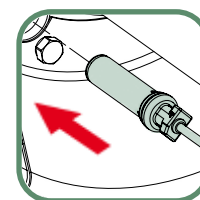
Note the 2 bearing bush types (3a , 4a and 3b , 4b):  
3a: Verify the correct position of the grease groove  
3b: The s-cam bearing bush in picture 3b is symmetrical.

### 7.4.13 Install the S-cam and the S-cam bearing (continued)

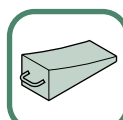


**i** Make sure the s-cam bearing bush is centered in the spider, before mounting the seals.  
Always lubricate all S-cam bearings (4 grease nipples) on each axle.

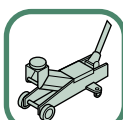
## 7.4.14 Assembly - ABS sensor



### Previous steps



§ 6.1



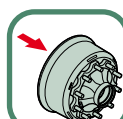
§ 6.2



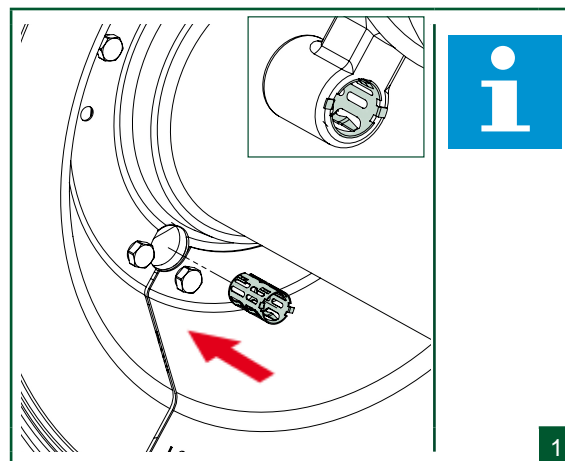
§ 6.3



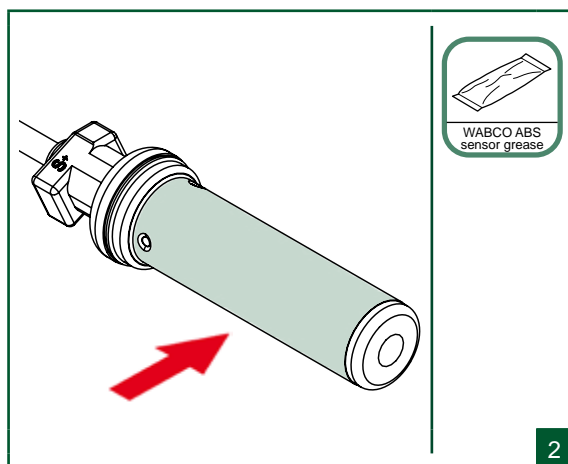
§ 7.4.9



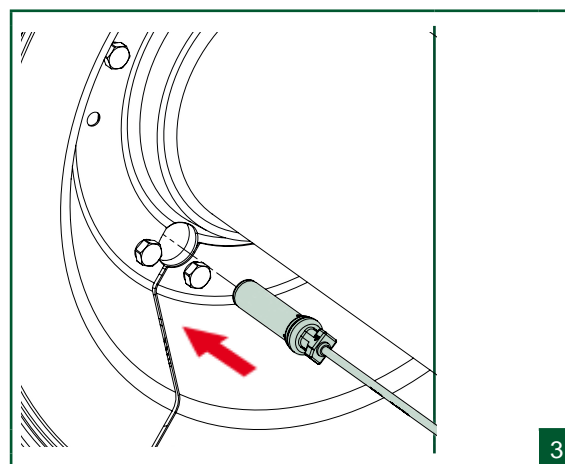
§ 8.4.1



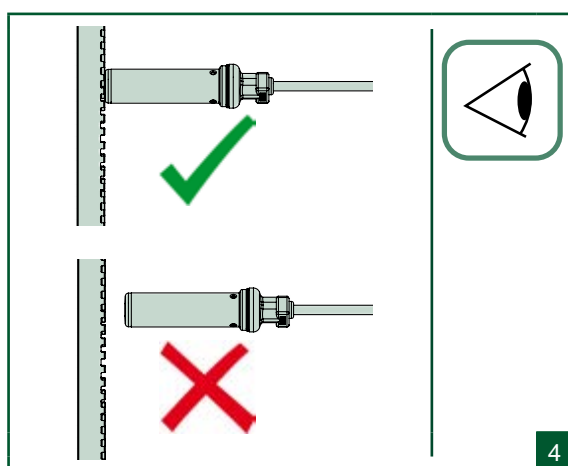
1



2



3



4



Verify the correct position of the ABS bushing.

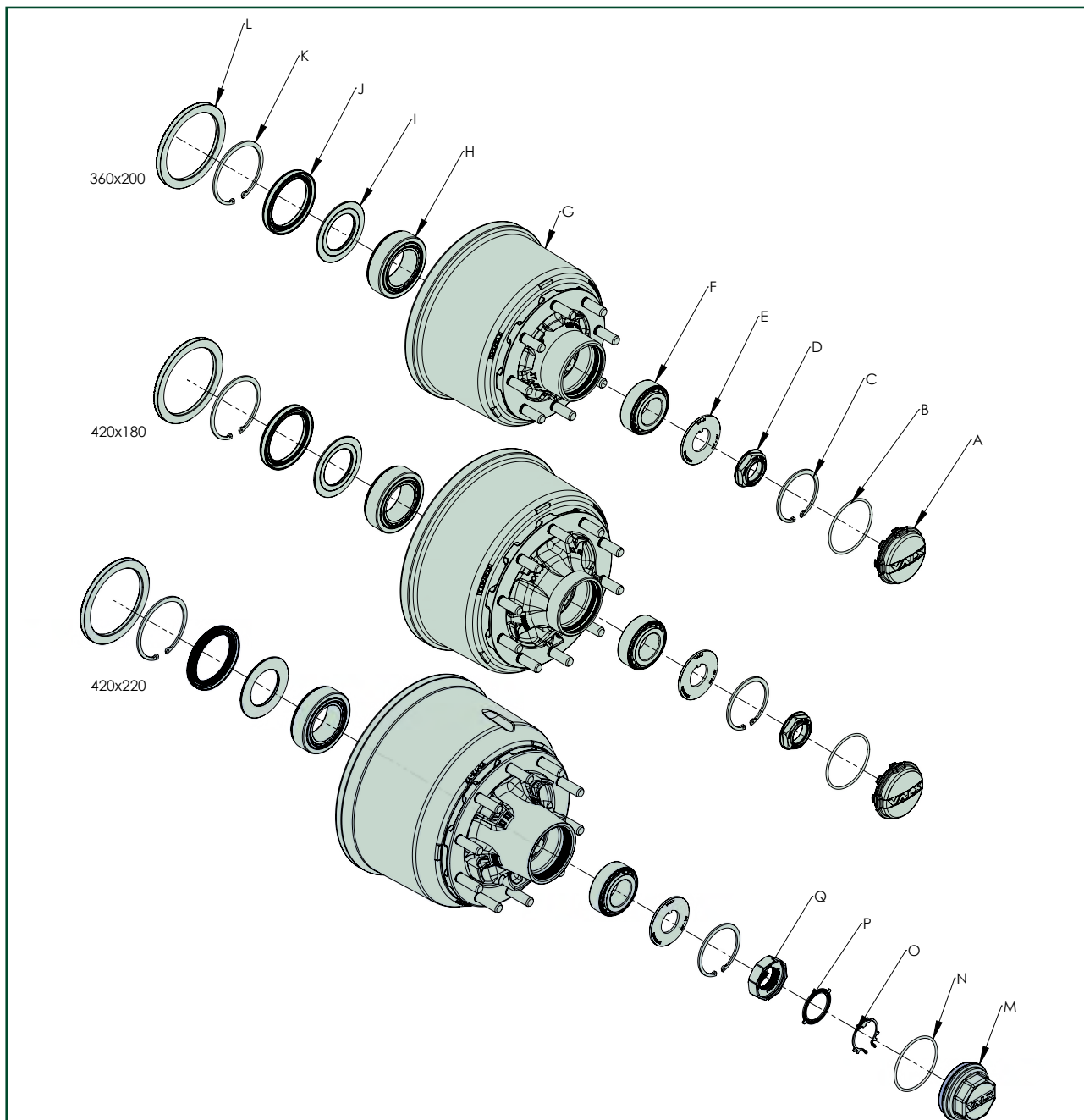
Slide the ABS sensor against the ABS exciter ring, the sensor will adjust automatically.

## 8 Wheel hub unit

### 8.1 Safety instructions

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

### 8.2 Overview



#### NOTE

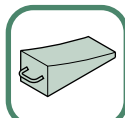
The VALX drum brake trailer axle has been designed for 0-offset wheels.

- |                                |                               |                              |
|--------------------------------|-------------------------------|------------------------------|
| A Hub cap (plastic)            | I Wear ring                   | Q Central nut (multiple use) |
| B O-ring (for plastic hub cap) | J Seal                        |                              |
| C Circlip                      | K Circlip                     |                              |
| D Central nut (single use)     | L ABS exciter ring (optional) |                              |
| E Nut washer                   | M Hub cap (steel)             |                              |
| F Outer bearing                | N O-ring (for steel hub cap)  |                              |
| G Hub drum assy                | O Locking clip                |                              |
| H Inner bearing                | P Locking plate               |                              |

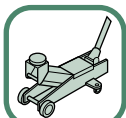
### 8.3 Periodic maintenance and inspection

#### 8.3.1 Check the bearing play

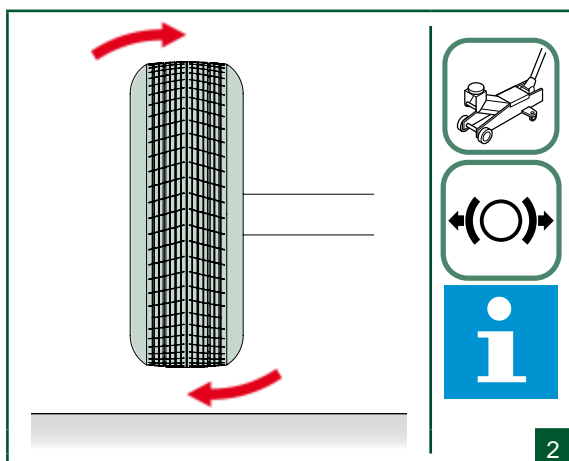
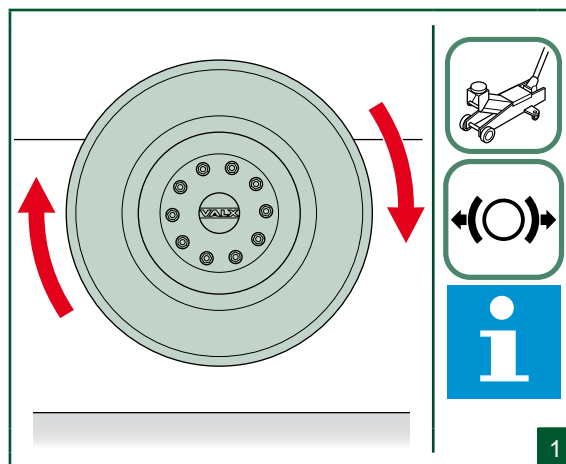
##### Previous steps



§ 6.1



§ 6.2



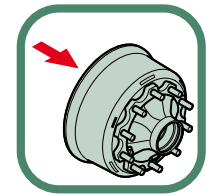
Check if the wheel runs smoothly, without excessive noise. The use of a spinner is not allowed, rotating by hand. If there is noise check the bearing play (2).



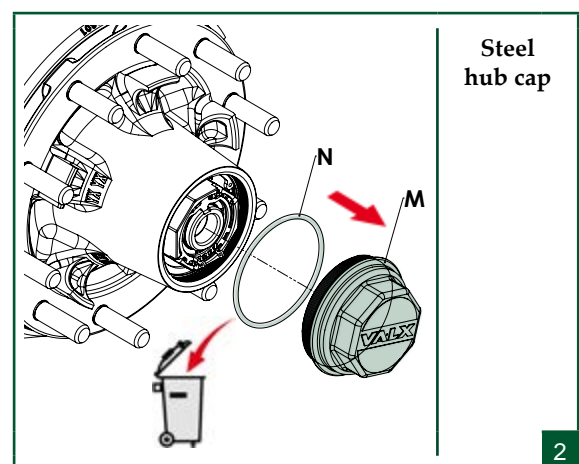
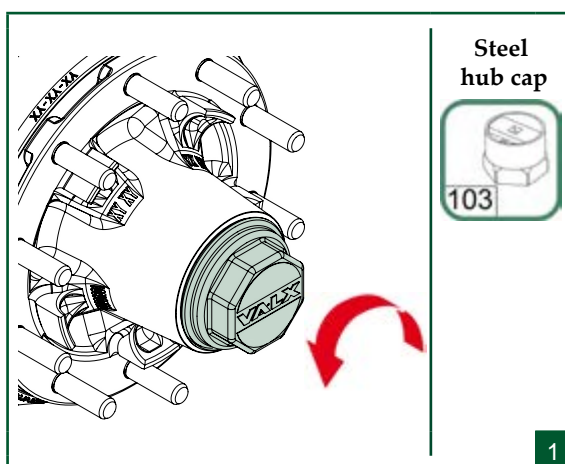
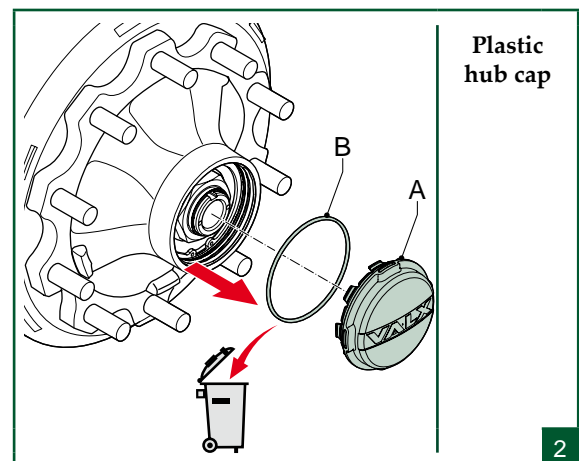
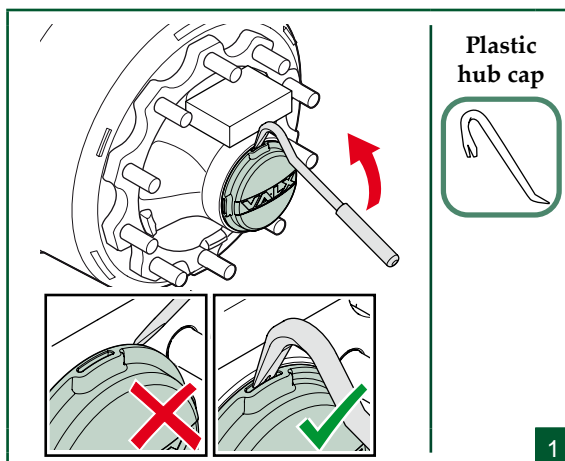
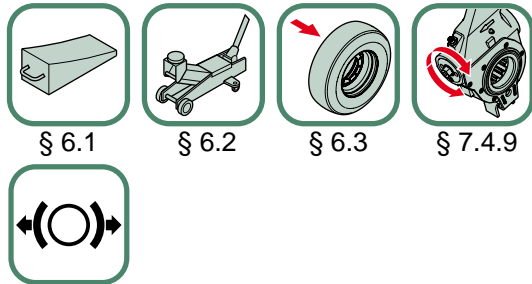
If there is any play, check the bearings.

## 8.4 Disassembly, assembly and adjustments

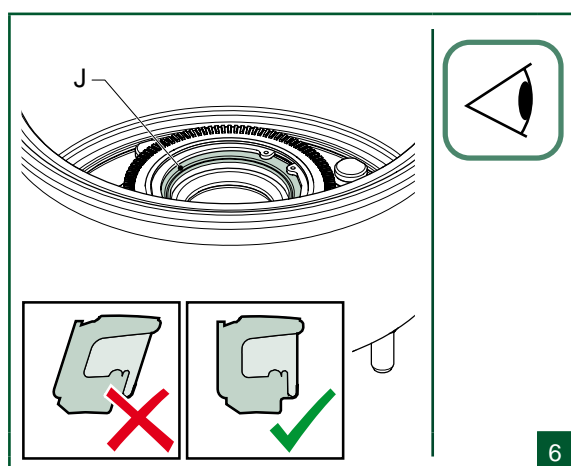
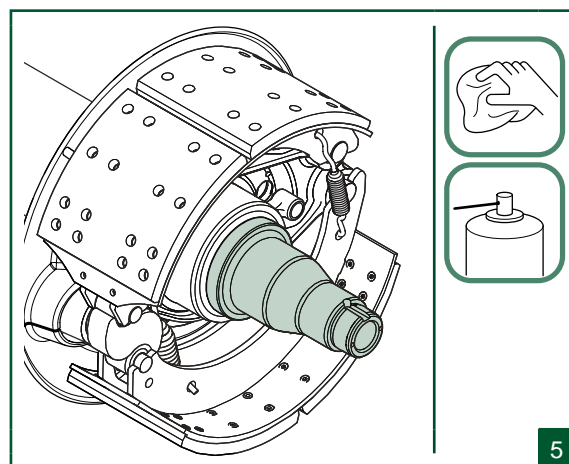
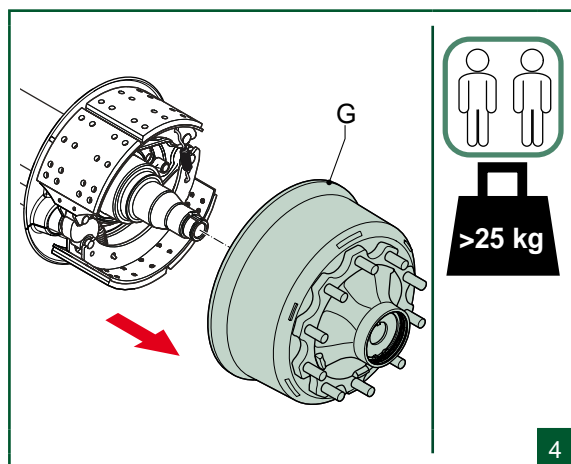
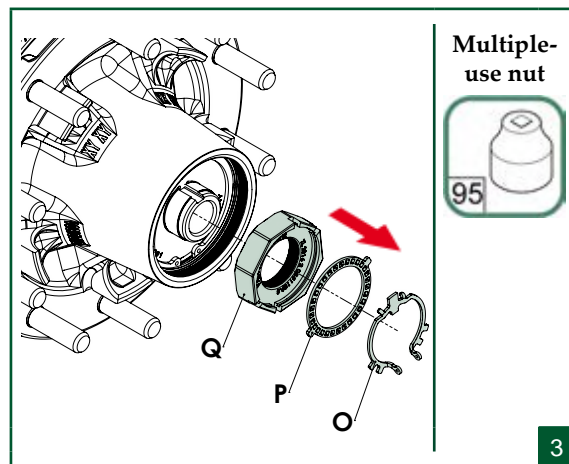
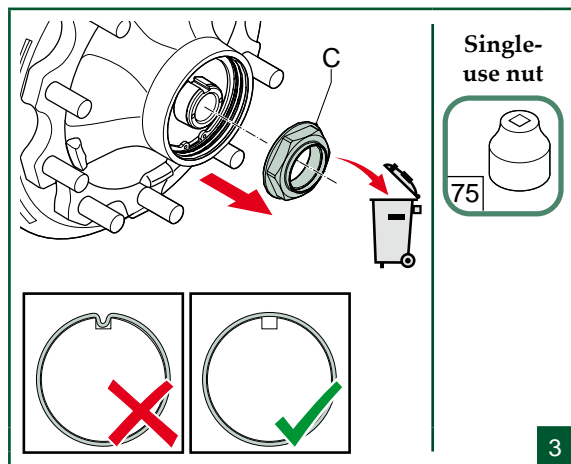
### 8.4.1 Disassembly – hub complete



#### Previous steps

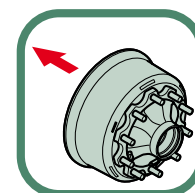


### 8.4.1 Disassembly – hub complete

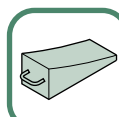




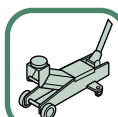
## 8.4.2 Assembly – hub complete



### Previous steps



§ 6.1



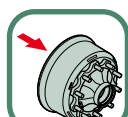
§ 6.2



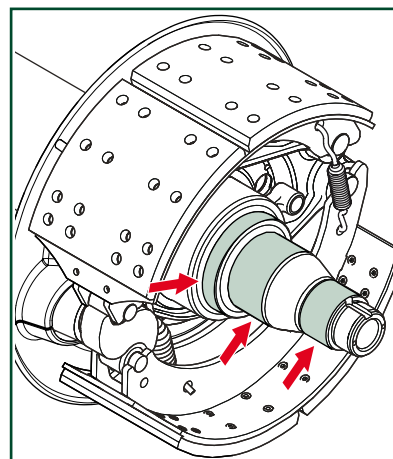
§ 6.3



§ 7.4.9

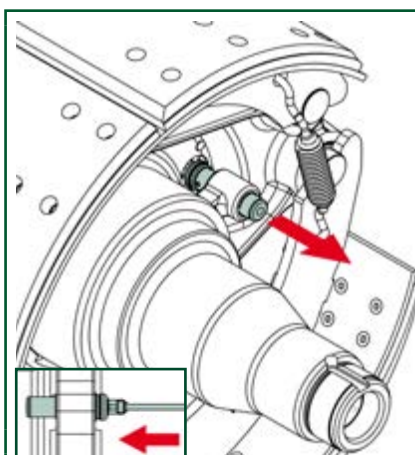


§ 8.4.1

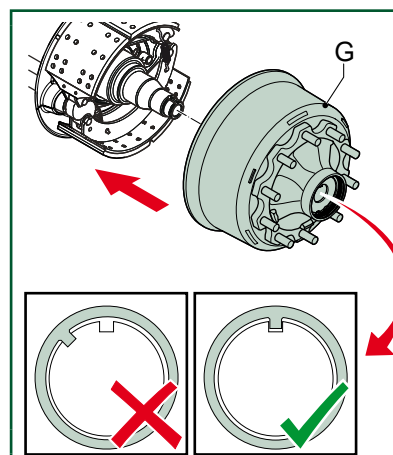


Optinol  
White Paste

1

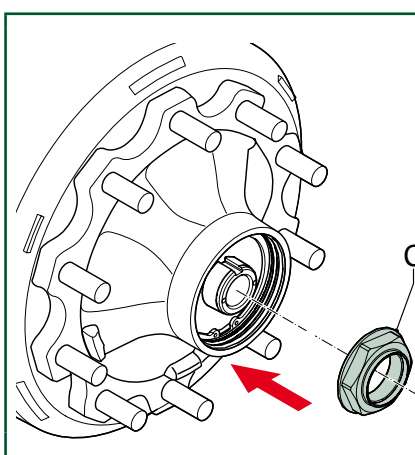


2



>25 kg

3



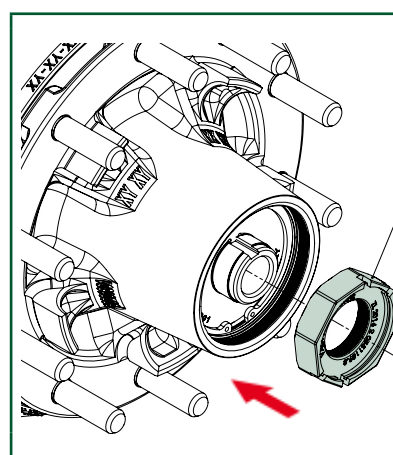
Single-  
use nut



75



4



Multiple-  
use nut



95

4



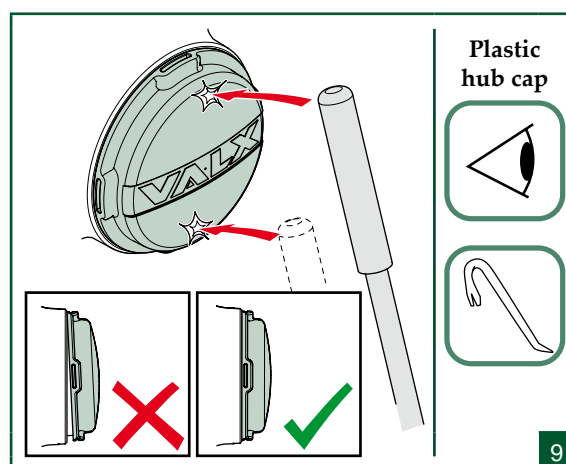
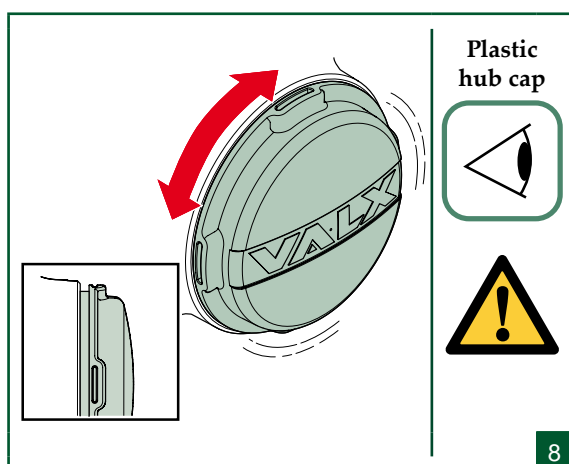
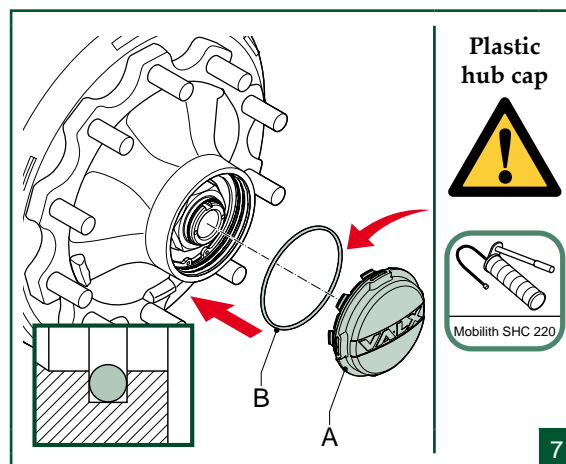
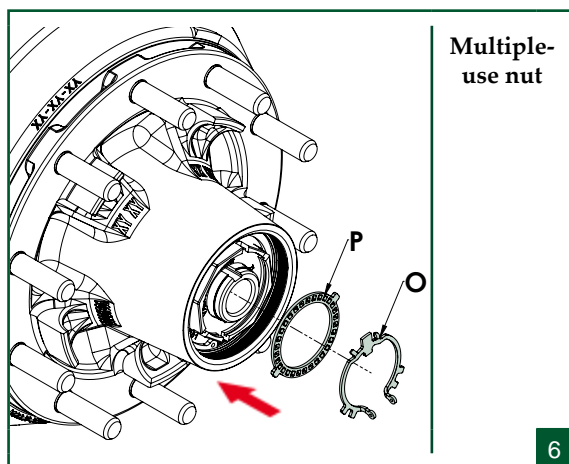
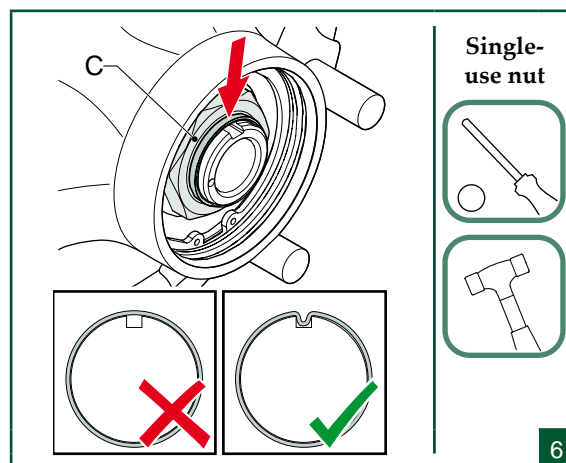
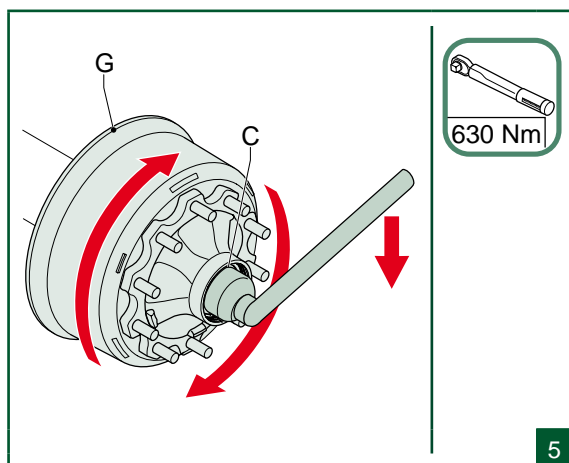
Slide the ABS sensor in as far as possible, the sensor will adjust automatically.

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 or 95	630 Nm $\pm$ 30 Nm

## 8.4.2 Assembly – hub complete



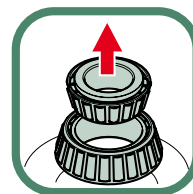
### Plastic hub cap instructions



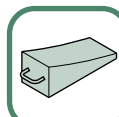
- (7) Always replace the O-ring whenever the hub cap has been removed.
- (7) Always check whether the O-ring (B) is properly seated and not damaged!
- (8) Make sure the plastic hub cap (A) can rotate freely to ensure the O-ring is seated properly.
- (9) Make sure there is no gap between the edge of the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



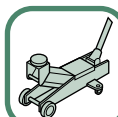
### 8.4.3 Disassembly – outer bearing and inner bearing



#### Previous steps



§ 6.1



§ 6.2



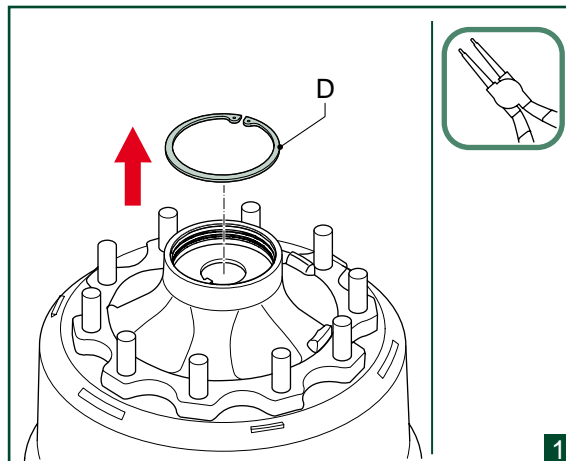
§ 6.3



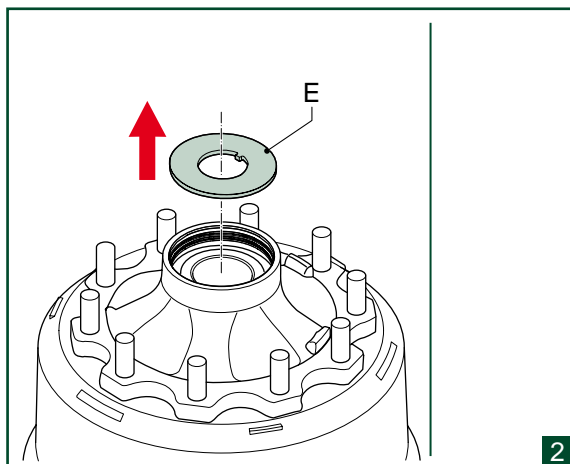
§ 7.4.9



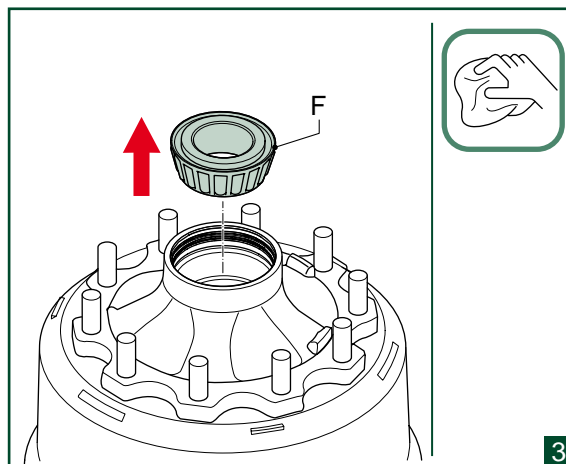
§ 8.4.1



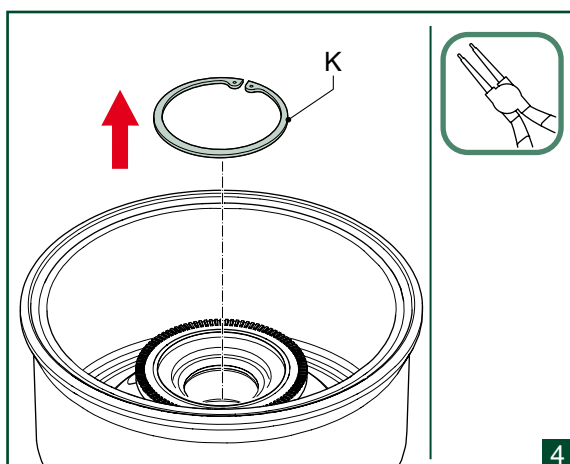
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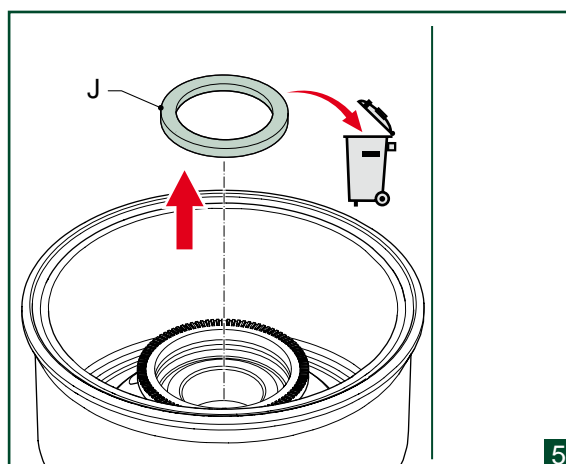
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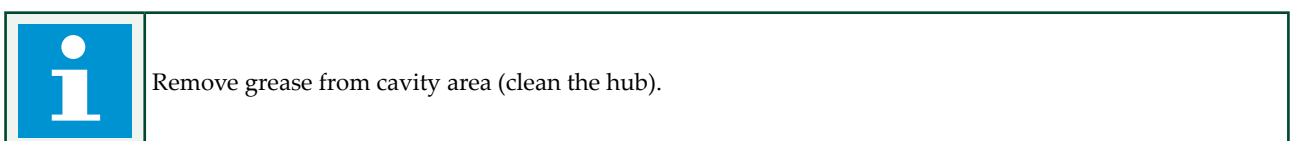
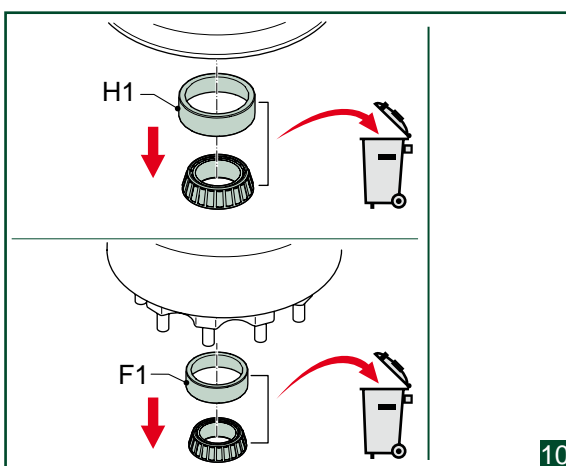
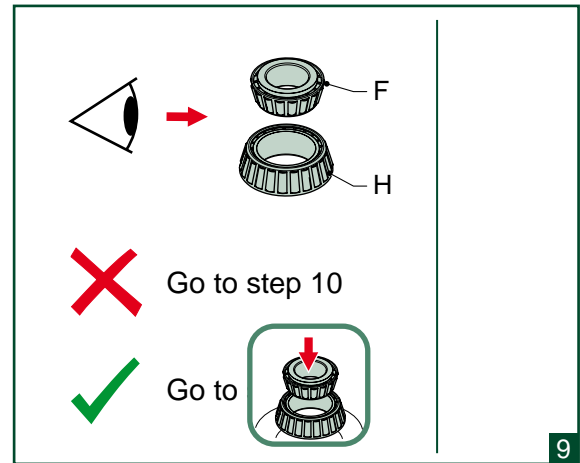
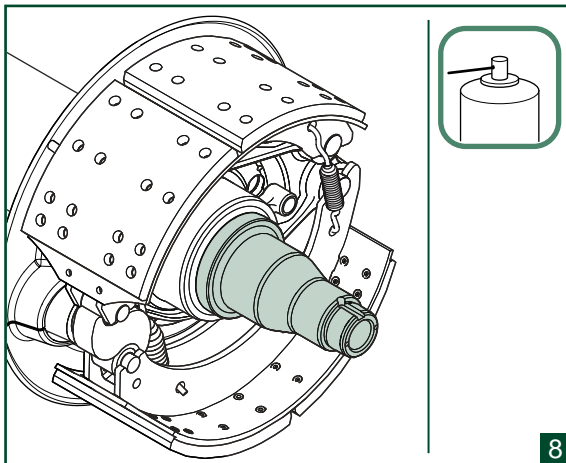
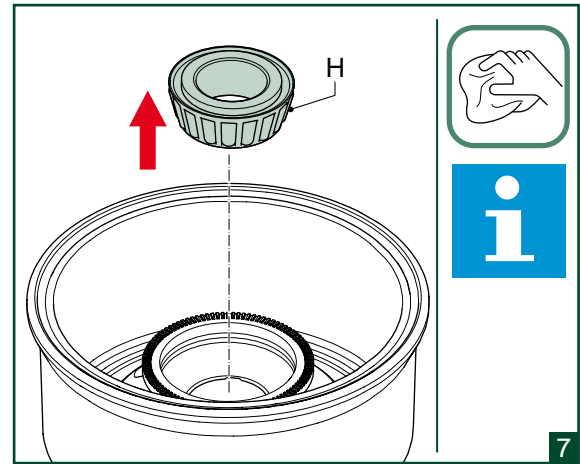
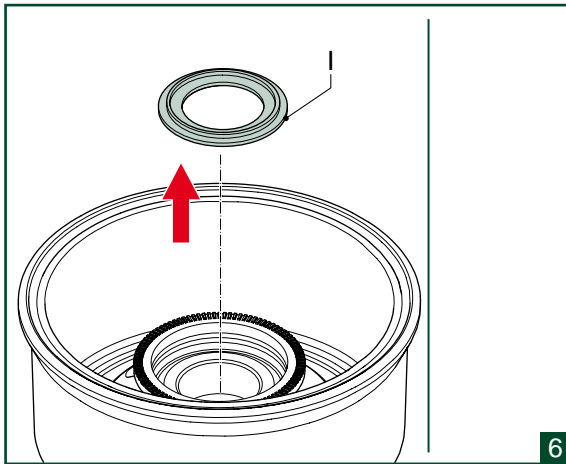
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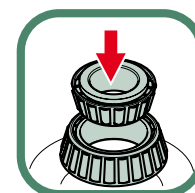
4



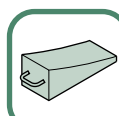
5



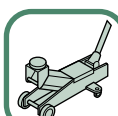
#### 8.4.4 Assembly – outer bearing and inner bearing



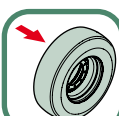
##### Previous steps



§ 6.1



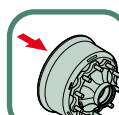
§ 6.2



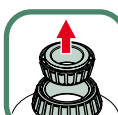
§ 6.3



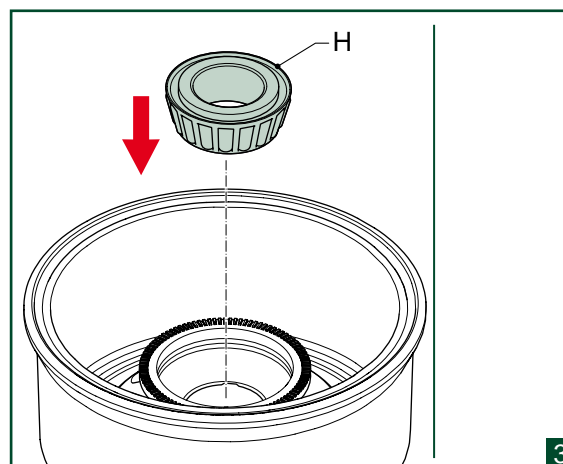
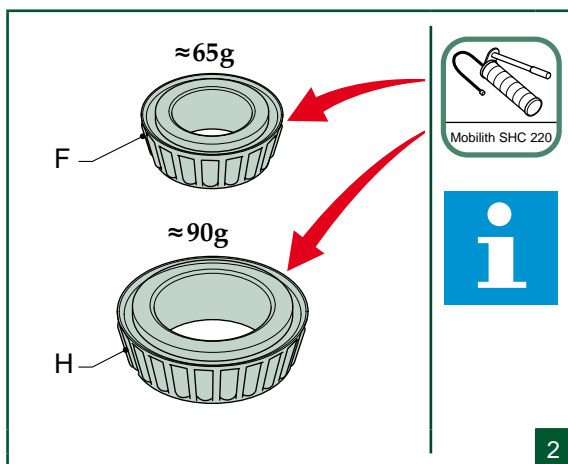
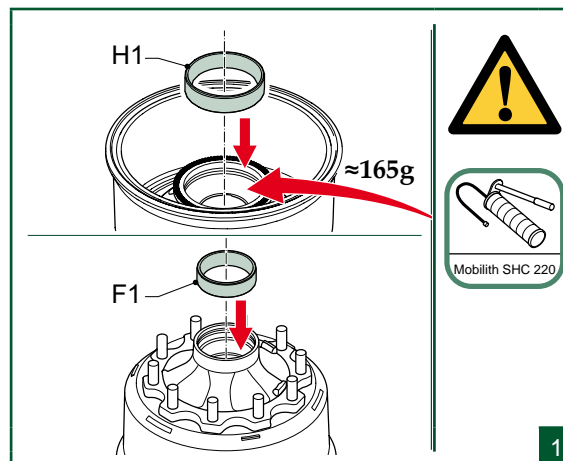
§ 7.4.9



§ 8.4.1



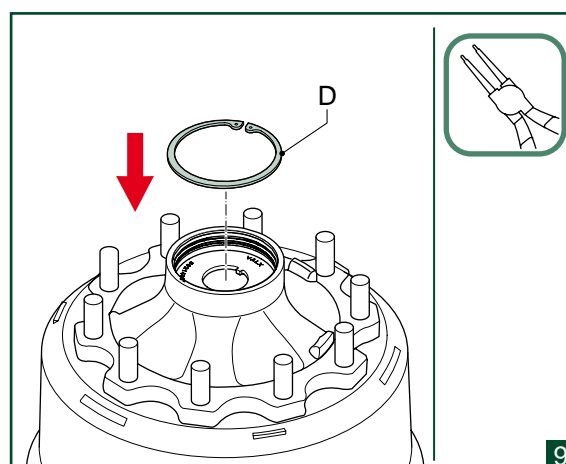
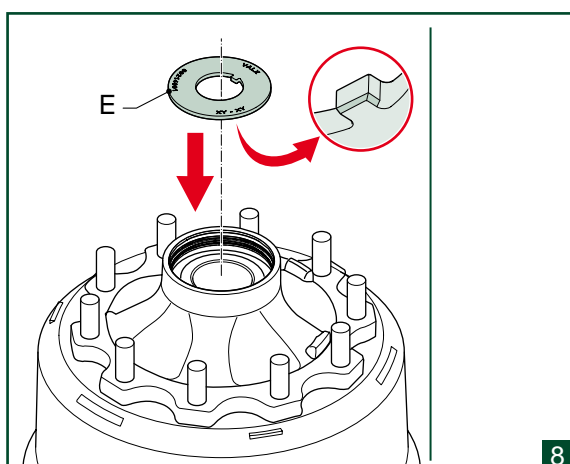
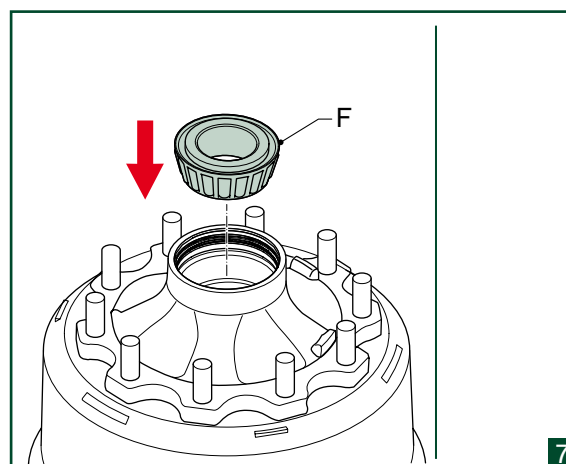
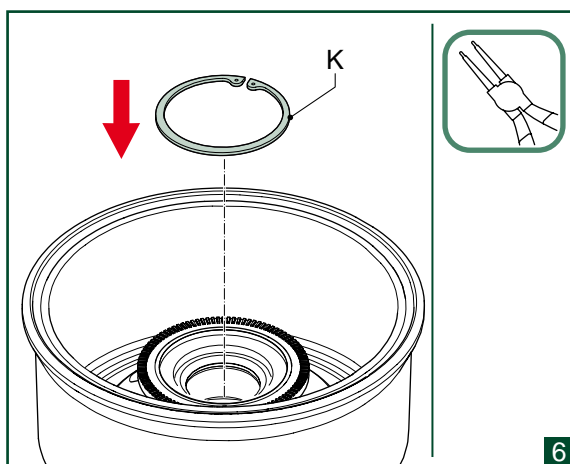
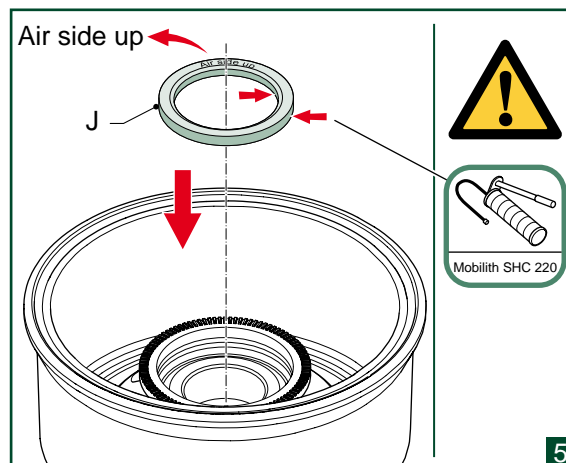
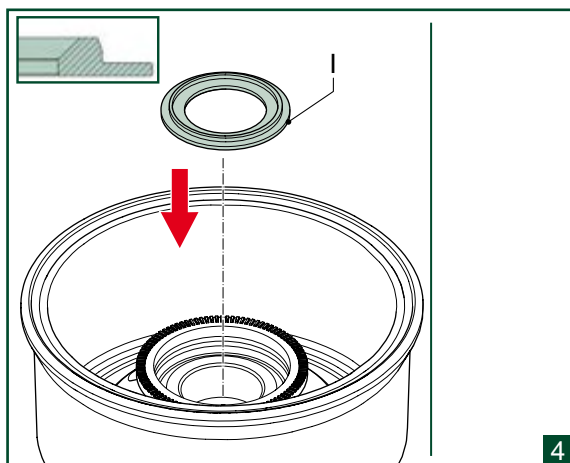
§ 8.4.3



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



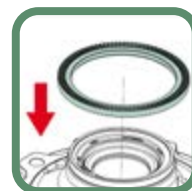
Lubricate the bearings abundantly. Lubricate new bearings until the grease comes out of the bearings, or use new grease to press the existing grease out of a used bearing.



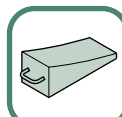
Always replace the seal (J) whenever the seal has been removed. Press the new seal with great care into the hub, making sure that the seal is flat and even.



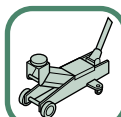
## 8.4.5 Assembly – ABS ring



### Previous steps



§ 6.1



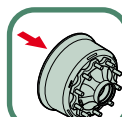
§ 6.2



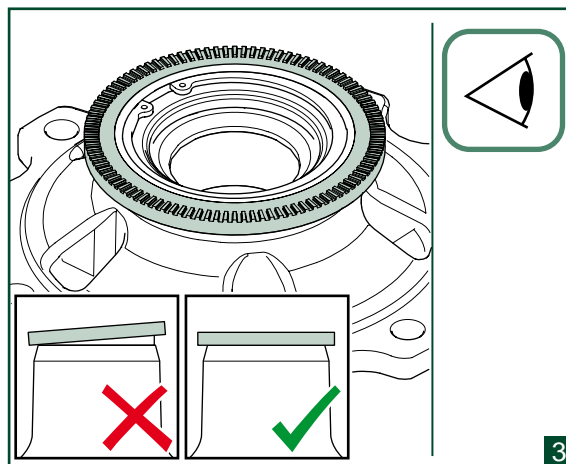
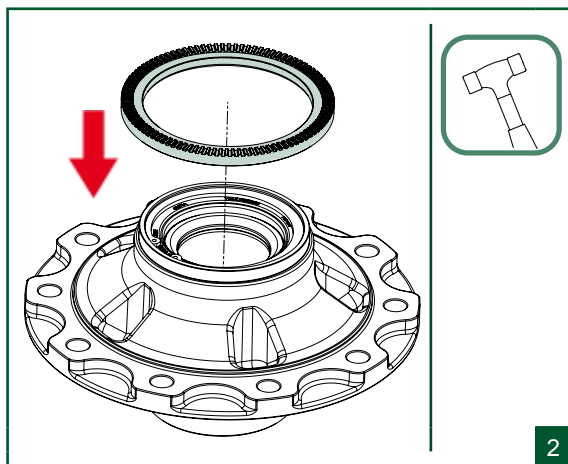
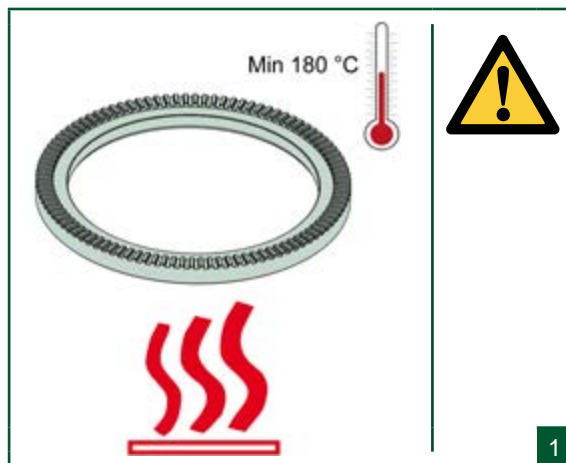
§ 6.3



§ 7.4.9



§ 8.4.1



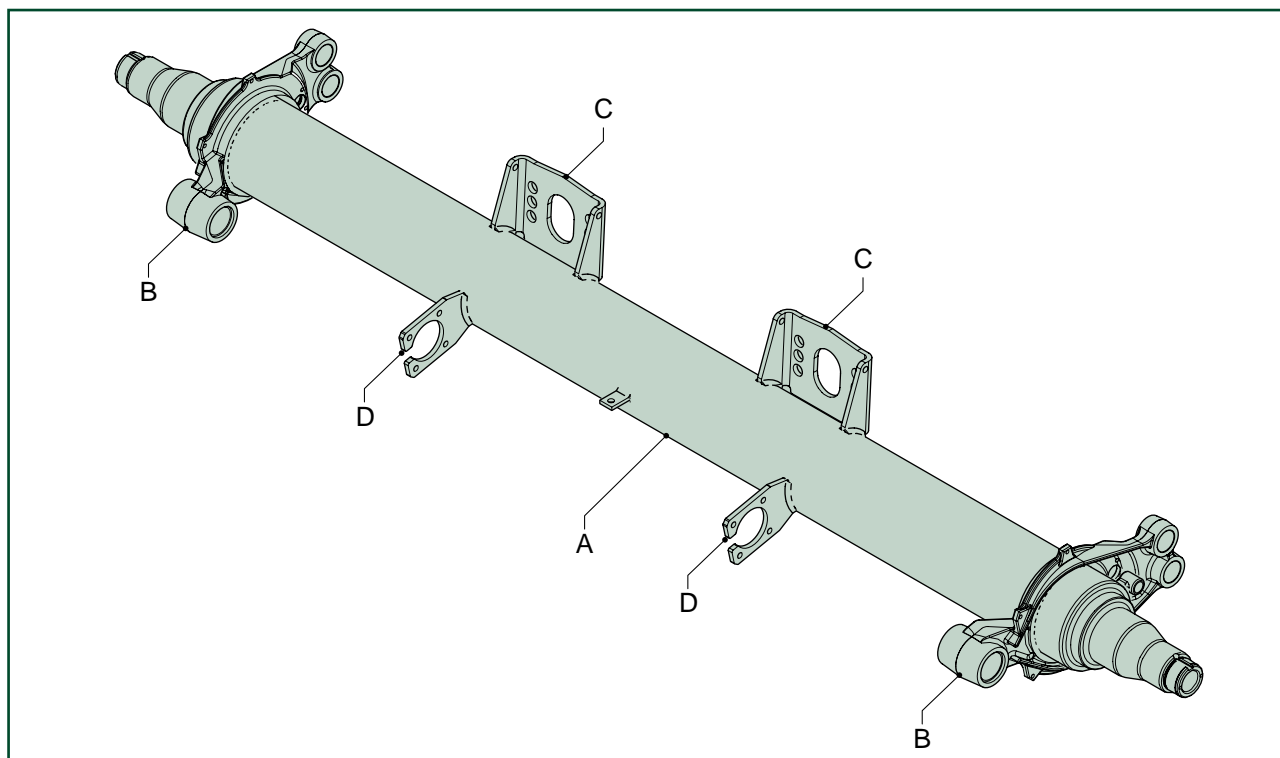


## 9 Axle beam

### 9.1 Safety instructions

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

### 9.2 Overview



- A Axle beam
- B Brake spider
- C Air chamber bracket
- D S-cam bearing bracket



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**Web:** [www.valx.eu/en](http://www.valx.eu/en)