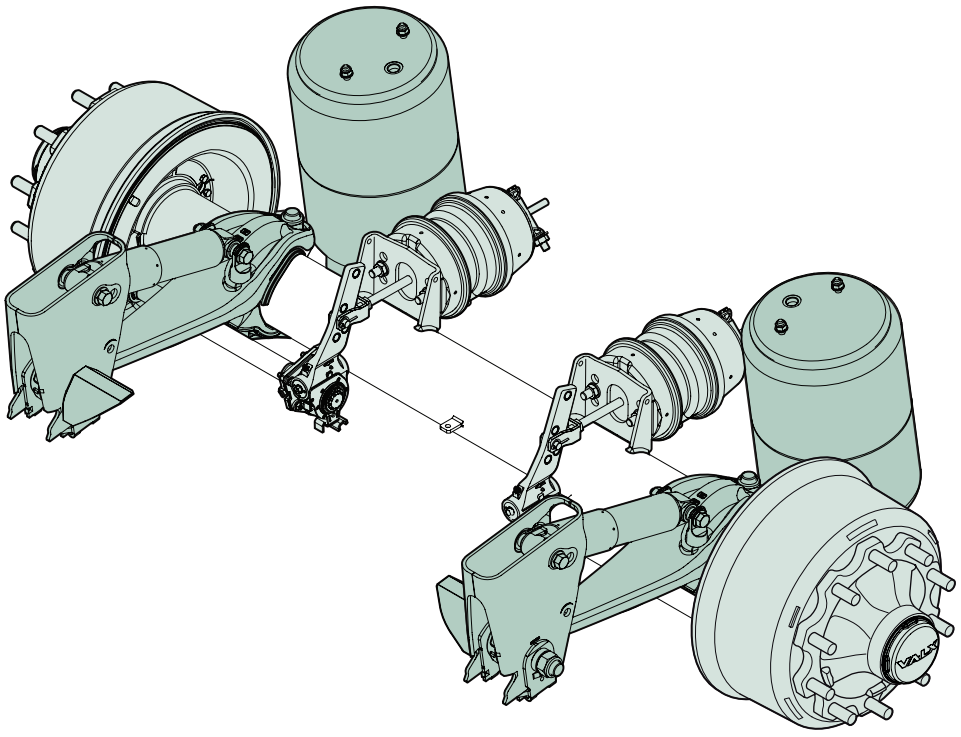
VALX Trailer axles

Trailer builder manual



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Date	Maart 2013

For additional information on assembly, disassembly, adjustments, maintenance and repair, contact VALX B.V.:

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Document code: TBM 2070-01

Revision summary

Date	Revision number	Comment
Juli 2012	01	Initial version

Table of contents

Preface

Use of this manual

This Trailer Builder Manual is intended for trained and for qualified persons to enable them to perform design, installation and repair tasks on VALX products in an efficient, safe and environmentally sound way.

TAKE THE TIME TO READ THIS MANUAL THOROUGHLY BEFORE STARTING WORK ON THE TRAILER, TRAILER AXLE AND/OR ON OTHER VALX COMPONENTS.

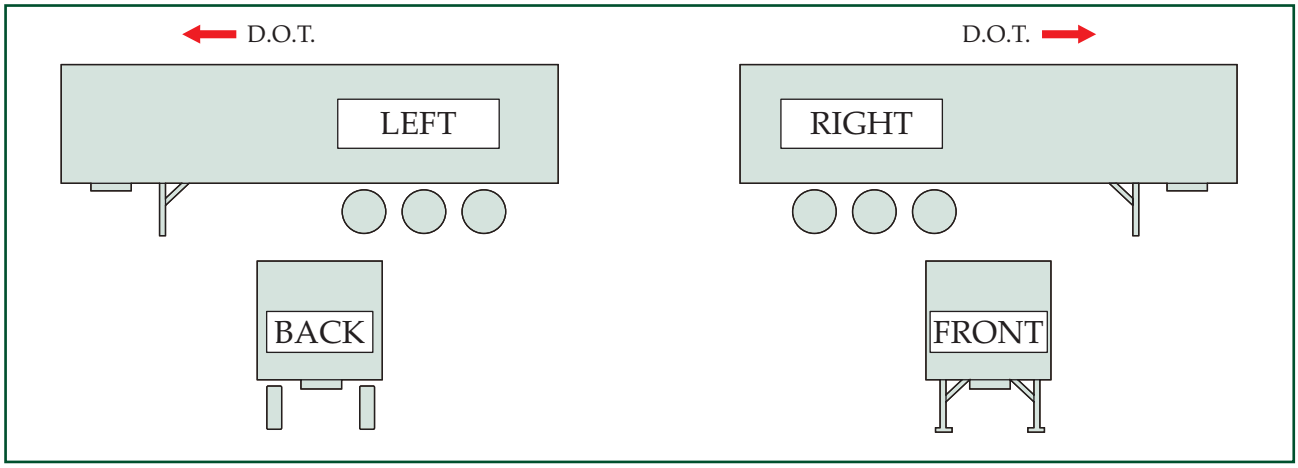
KEEP THIS MANUAL IN A SAFE PLACE, BUT READY TO USE WHEN NEEDED.

THIS MANUAL REPLACES ALL PREVIOUS VERSIONS, IF ANY.

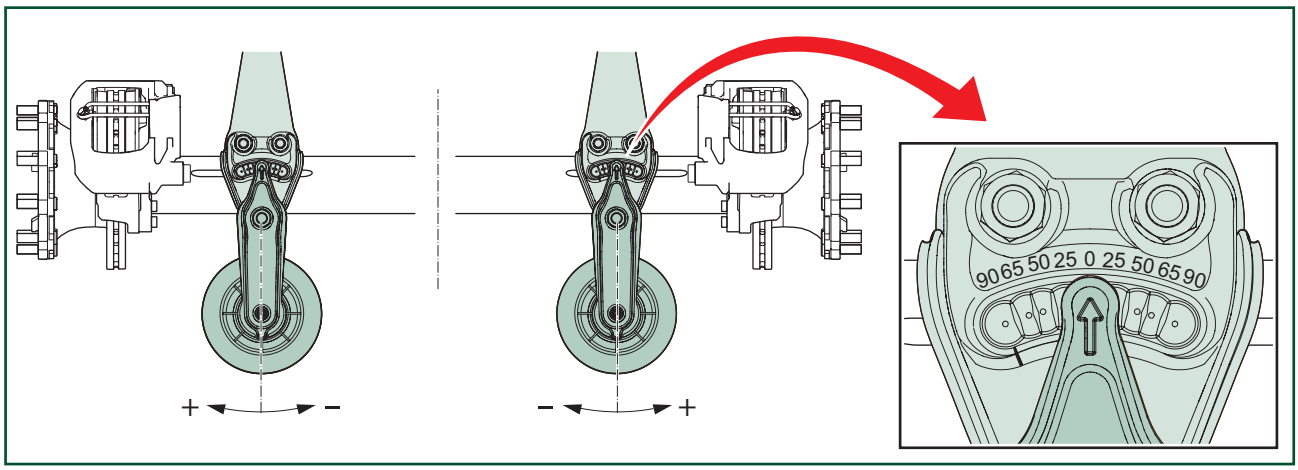
Conventions

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 (-).
- "VALX" is used as a substitute for "VALX B.V."
- The words 'left', 'right', 'back' and 'front' are used to indicate a certain part or assembly based on the direction of travel (D.O.T.) of the trailer. See figure below.

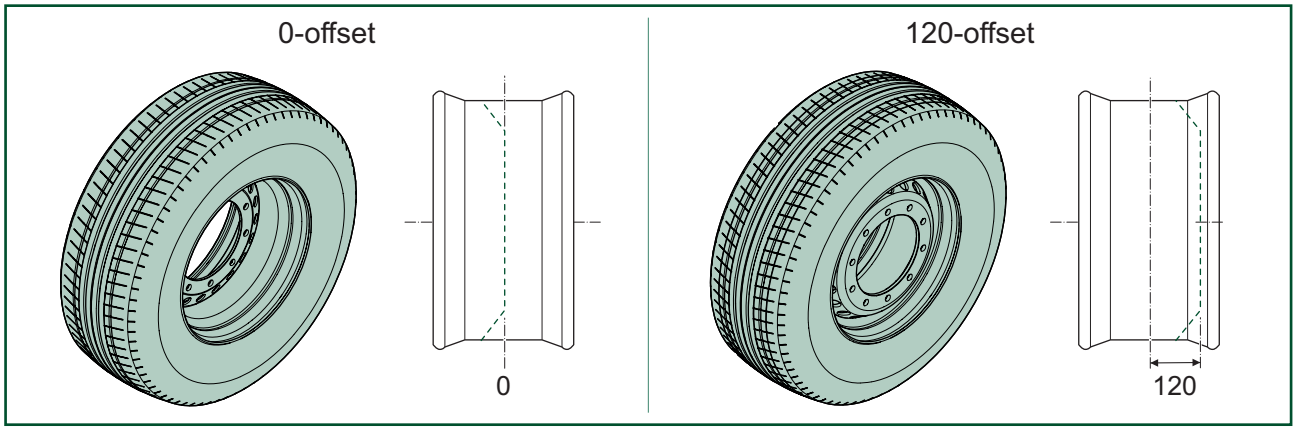


- VALX axles, Equipped with the VALX MBS air suspension can be delivered with a specific air spring offset. Position corrections are indicated with a '+' (towards the outside) and a '-' (towards the inside). See figure below.

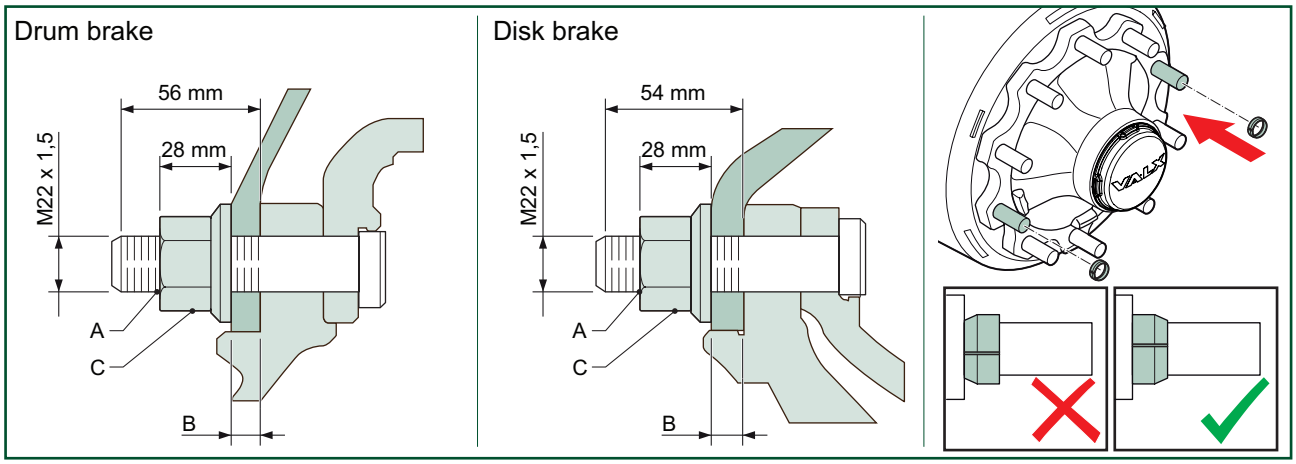


Wheel and tyre combinations

The VALX trailer axle range for **disk** brakes can be delivered with a 0-offset wheel hub or a 120-offset wheel hub.
The VALX trailer axle range for **drum** brakes is delivered with a 0-offset wheel hub. See figure below.



Verify the correct wheel flange is used.



A Make sure that the wheel nut is completely mounted over the thread of the wheel bolt. At least two threat's sticking out of the nut.
B Wheel flange thickness
C Wheel nut

⚠	On the VALX axle both steel and alloy wheels can be mounted. With alloy wheels the use of centering rings is not allowed.
	No grease, oil or paint is allowed on the wheel flange threaded surface or on the wheel nut.

Torques wheel nuts

item	size	width across flats	torque (Nm)
wheel nuts (C)	M22 x 1.5	32	630 Nm ± 30 Nm Check 600 Nm

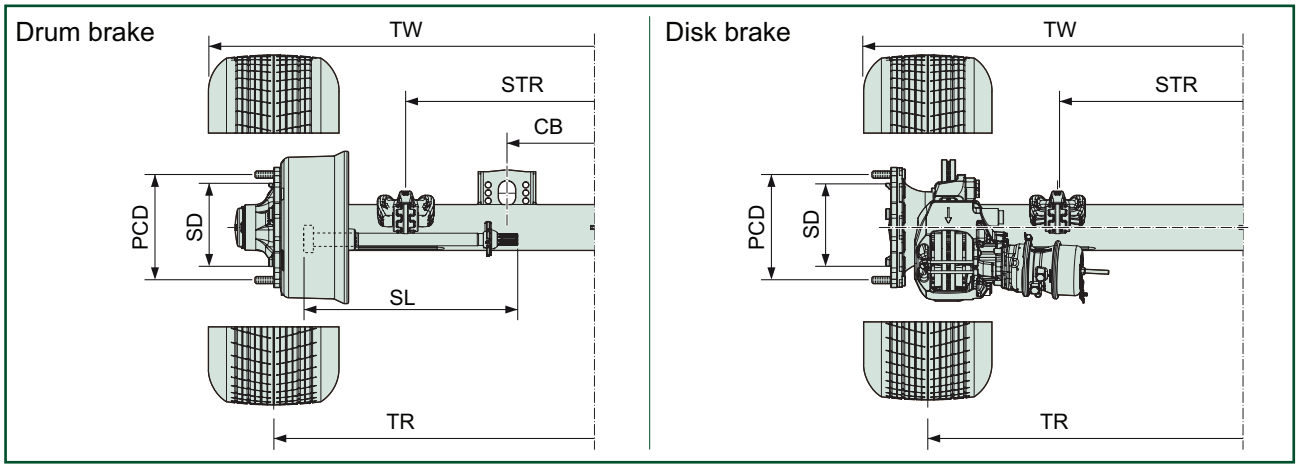
Service and technical support

For information about specific removal or install 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.

Dimension codes in this document

The left figure shows a drum brake axle. The right figure shows a disk brake axle.



TW	**Total axle width**	**SL**	**S-cam dimension**
STR	**Spring track**	**PCD**	**Pitch circle diameter**
CB	**Cylinder bracket distance**	**SD**	**Spigot diameter**
TR	**Track width**		

Document code

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

- Document type (WSM = Workshop Manual, TBM = Trailer Builder Manual, DM = Driver Manual)
- Document number (2070)
- Revision number (-01)

Related documents

The following related documents are available:

- Workshop Manuals (WSM_20XX)
- Driver Manual (DM_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)

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.

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 10 mainly consist of graphical instructions.
In these graphical instructions the following pictograms may be used:

Symbole
Manchmal sagt ein Bild oder Symbol mehr aus als Text. Daher bestehen die Wartungs-, Montage- und Demontageverfahren in Kapitel 5 bis 10 größtenteils aus grafischen Anweisungen.
In diesen grafischen Anwendungen können folgende Symbole verwendet werden:

Symboles
Parfois, une image ou un pictogramme en disent plus qu'un long discours. Pour cette raison, les procédures de maintenance, de montage et de démontage des chapitres 5 à 10 comportent des instructions graphiques.
Dans ces instructions graphiques, les pictogrammes suivants peuvent être employés:

Symbolen
Soms is een afbeelding of een pictogram veelzeggender dan tekst. Daarom bestaan de onderhouds-, montage- en demontageprocedures in hoofdstukken 5 t/m 10 hoofdzakelijk uit grafische instructies.
In deze grafische instructies kunnen de volgende pictogrammen worden gebruikt:

Tools / *Werkzeuge* / Outils / *Gereedschappen*

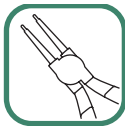
Use a spanner
The value in the left-hand corner is the width across flats.
Maulschlüssel verwenden
Der Wert in der linken Ecke ist die Schlüsselweite.
Utilisez une clé
La valeur de l'angle gauche indique la largeur entre les bords.
Gebruik een steeksleutel
De waarde linksonder is de sleutelwijdte.

Use a ring spanner
The value in the left-hand corner is the width across flats.
Ringschlüssel verwenden
Der Wert in der linken Ecke ist die Schlüsselweite.
Utilisez une clé polygonale
La valeur de l'angle gauche indique la largeur entre les bords.
Gebruik een ringsleutel
De waarde linksonder is de sleutelwijdte.

Use an appropriate torque wrench
Tighten the fastener to the torque (in Nm) given in the left-hand corner.
Geeigneten Drehmomentschlüssel verwenden
Ziehen Sie die Befestigung mit dem Drehmoment an (in Nm), das in der linken Ecke angegeben ist.
Utilisez une clé dynamométrique adaptée
Serrez la fixation au couple (en Nm) indiqué dans l'angle gauche.
Gebruik een geschikte momentsleutel
Draai de sleutel aan tot het linksonder aangegeven draaimoment (in Nm).

Use a feeler gauge
The value in the left-hand corner is the thickness of the feeler gauge.
Fühlerlehre verwenden
Der Wert in der linken Ecke ist die Dicke der Fühlerlehre.
Utilisez un calibre d'épaisseur
La valeur de l'angle gauche est l'épaisseur du calibre.
Gebruik een voelermaat
De waarde linksonder is de dikte van de voelermaat.

Use a hex key
The value in the left-hand corner is the hex key size.
Innensechskantschlüssel verwenden
Der Wert in der linken Ecke ist die Größe des Innensechskantschlüssels.
Utilisez une clé Allen
La valeur de l'angle gauche indique la taille de la clé Allen.
Gebruik een inbussleutel
De waarde linksonder is de maat van de inbussleutel.



Use a pair of circlip pliers
Sicherungsringzange verwenden
Utilisez des pinces à circlip
Gebruik een klemtang

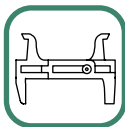
Use a hammer
Hammer verwenden
Utilisez un marteau
Gebruik een hamer

Use an appropriate wire brush
Geeignete Drahtbürste verwenden
Utilisez une brosse métallique adaptée
Gebruik een geschikte staalborstel

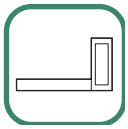
Use a chisel
Meißel verwenden
Utilisez un burin
Gebruik een beitel

Use a screwdriver

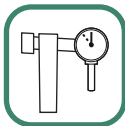
Use a crowbar



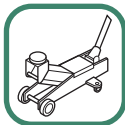
Use an inside calliper



Use a sash angle



Use a measuring probe



Use a jack

Use a sliding caliper

Use a socket wrench
The value in the left-hand corner is the socket wrench size.

Special tools / *Sonderwerkzeuge* / Outils spéciaux / *Speciale gereedschappen*

Use the axle nut locking tool
Werkzeug zum Sichern der Achsmutter verwenden
Utilisez l'outil de blocage d'écrou d'essieu
Gebruik het borggereedschap voor de asmoer

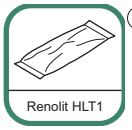
Use the socket wrench (width across flats 75)
Steckschlüssel verwenden (Schlüsselweite 75)
Utilisez la clé à douille (largeur entre les bords 75)
Gebruik de dopsleutel (sleutelwijdte 75)

Use the special torque tool
Spezial-Drehmomentwerkzeug verwenden
Utilisez l'outil dynamométrique spécial
Gebruik de speciale momentsleutel

Lubricants / *Schmiermittel* / Lubrifiants / *Smeermiddelen*

Lubricate with Optimol White Paste
Schmieren mit Optimol White Paste
Lubrifiez avec de la pâte Optimol White
Smeer met Optimol Witte pasta

Lubricate with Mobilith SHC 220
Schmieren mit Mobilith SHC 220
Lubrifiez avec de la Mobilith SHC 220
Smeer met Mobilith SHC 220



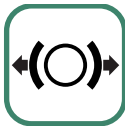
① **Lubricate with Renolit HLT1**
Schmieren mit Renolit HLT1
Lubrifiez avec de la Renolit HLT1
Smeer met Renolit HLT1

① **Lubricate with ABS sensor grease**
Schmieren mit ABS Sensorschmierfett
Lubrifiez avec de la graisse pour capteur ABS
Smeer met ABS sensorvet

Clean with an appropriate degreasing agent
Reinigen mit geeignetem Entfettungsmittel
Nettoyez avec un dégraissant adapté
Reinig met een geschikt ontvettingsmiddel

①Contained in the original VALX Repair Kits.

Miscellaneous / ***Verschiedenes*** / **Divers** / ***Diversen***



Release the brake
Release the brake prior to this step.
Bremse lösen
Bremse vor diesem Schritt lösen.
Relâchez le frein
Relâchez le frein avant cette étape.
De rem loszetten
Voorafgaand aan deze stap de rem loszetten.

Visual check
Check for damage, wear, corrosion, correct fastening.
Sichtprüfung
Prüfung auf Schaden, Verschleiß, Korrosion, korrekte Befestigung.
Contrôle visuel
Contrôlez l'état, l'usure, la corrosion et la fixation correcte.
Visuele controle
Controleer op beschadigingen, slijtage, corrosie en juiste bevestiging.

This step requires two trained and qualified service technicians
Dieser Schritt erfordert zwei ausgebildete und qualifizierte Servicetechniker
Cette étape requiert deux techniciens d'entretien formés et qualifiés
Deze stap vereist twee geschoolde en gekwalificeerde onderhoudsmonteurs

Clean with a lint free cloth
Mit fusselfreiem Tuch reinigen
Nettoyez avec un chiffon non pelucheux
Reinigen met een pluisvrije doek

Measure
Messen
Mesure
Meten

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 remove or install task.
- Depending on the trailer type, the specific remove or install task(s) that need 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 trailer builders 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 starting work on the trailer or on the trailer axle.
- Keep this manual for future reference. Retain the manual in a safe place but ready to use when needed.
- 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 Commitment” supplied with the product. The “VALX Warranty Commitment” 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 warrant 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 Remove or install tasks

- Removal or installation of (parts of) the VALX trailer axle is strictly reserved to trained and qualified service technicians.

1.5.1 Before starting work

- Make sure that the trailer is properly secured.
- 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 jewelery, watches, etc. to prevent them from being caught in moving parts.
- Wear protective shoes and keep long hair out of the way.

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 heavy parts. 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 installation 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 the trailer is ready

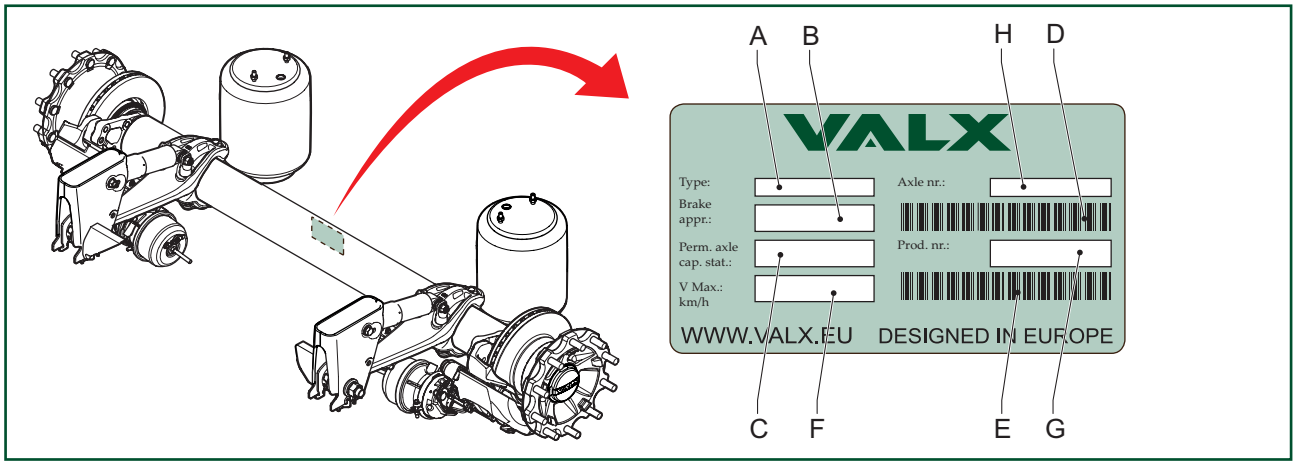
- Inspect the product. Check for damage, leakage or defects. Any part removed for repair purposes must be refitted and checked immediately upon completion of the work.
- Do not clear a product for operation unless it was established that it is absolutely safe and in perfect working order.

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 used during removel or installation of (parts of) the VALX trailer axle.
Almost all used lubricants are considered to be chemical waste. For the disposal of these a specialized company must be contacted.

1.7 Explanation of the axle type code

1.7.1 Location of the identification plate



1.7.2 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	axle type	load capacity (in kg)		wheel bolts	
drum brake	D							
disk brake (rotor)	R							
small diameter (17.5″ rim size)		S						
medium diameter (19.5″ rim size)		M						
large diameter (22.5″ rim size)		L						
single mounting / offset = 0			S					
double mounting			D					
single mounting / offset = 120			O					
rigid axle				X				
E2! energy axle				E				
forced steering				F				
self steering				S				
load capacity 9.000 kg					0	9		
load capacity 10.000 kg					1	0		
load capacity 11.000 kg					1	1		
load capacity 12.000 kg					1	2		
load capacity 13.000 kg					1	3		
hub with 6 wheel bolts							0	6
hub with 8 wheel bolts							0	8
hub with 10 wheel bolts							1	0

B Brake approval (with test report number)
C Permissible axle capacity static (in kg)
D Axle number (barcode type 128)
E Production number (barcode type 128)
F Maximum allowable speed (in km/h)
G Production number
H Axle 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″ rim size) incl. ABS	1/9	4						
disk brake axle (17,5″ rim size)	1/9	5						
disk brake axle (19,5″ rim size) incl. ABS	1/9	6						
disk brake axle (19,5″ rim size)	1/9	7						
disk brake axle (22,5″ rim size) incl. ABS	1/9	8						
disk brake axle (22,5″ rim size)	1/9	9						
drum brake axle (17,5″ rim size) incl. ABS	2	4						
drum brake axle (17,5″ rim size)	2	5						
drum brake axle (19,5″ rim size) incl. ABS	2	6						
drum brake axle (19,5″ rim size)	2	7						
drum brake axle (22,5″ rim size) incl. ABS	2	8						
drum brake axle (22,5″ rim size)	2	9						
single mounting / offset = 0			0					
double mounting			1					
single mounting / offset = 120			2					
no steering				0				
forced steering				1				
self steering				2				
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

1.7.3 Ordering of parts

See the parts ordering procedure on **www.valx.eu** or contact VALX at tel: +31 (0)40-20 88 444.

2 Technical specifications / design information

2.1 Axle weights

2.1.1 Drum brake axle

axle type	track width [TR] (in mm)	axle weight (in kg)
DLSX 0910	2140	297
DLSX 0910	2090	295
DLSX 0910	2040	294
DLSX 0910	2010	293

The stated weight is with the automatic slack adjusters, but without wheel nuts and brake cylinders.

2.1.2 Disk brake axle

axle type	track width [TR] (in mm)	axle weight (in kg)
RLOX 0910	2140	305
RLOX 0910	2090	303
RLOX 0910	2040	302
RLOX 0910	2010	301

The stated weight is with PAN 22-1 callipers, but without wheel nuts and brake cylinders.

2.1.3 Air suspension weight per axle

- MBS-100 air suspension (including Ø 300 air spring, bumpstop 30): 128 kg
- MBS-200 air suspension (including Ø 300 air spring, bumpstop 130): 132 kg

2.1.4 Weight difference per axle

- Ø 335 Air spring compared to Ø 300 air spring: + 2 kg
- Bolted hanger bracket compared to standard welded hanger brack: + 9 kg
- ABS set (ABS ring, sensor, sensor bush): + 1 kg
- 0-Offset hub compared to 120-offset hub: - 10 kg
- PAN 19-1 calliper and rotor compared to PAN 22-1 calliper and rotor : - 24 kg

Weight deviations are within the permitted DIN tolerances for the respective manufacturing process.

2.2 Center of gravity

the below values are for drum brake axles type "**DLSX 0910"** and disk brake axles type "**RLOX 0910"**

track width [TR] (in mm)	spring track [STR] (in mm)	Maximum center of gravity (in mm)	suspension type
2140	1400	2.870	MBS
	1300	2.845	MBS
	1200	2.795	MBS
	1100	2.607	MBS
2090	1350	2.793	MBS
	1250	2.767	MBS
2040	1300	2.715	MBS
	1200	2.688	MBS
	1100	2.597	MBS
2010	1300	2.676	MBS
	1200	2.650	MBS

Above values are calculated with 385/65 R22.5 tyres, a lateral acceleration of 0.34 g m/s^2, combined with a roll angle of 4.06°.

2.3 Suspension stroke limitation.

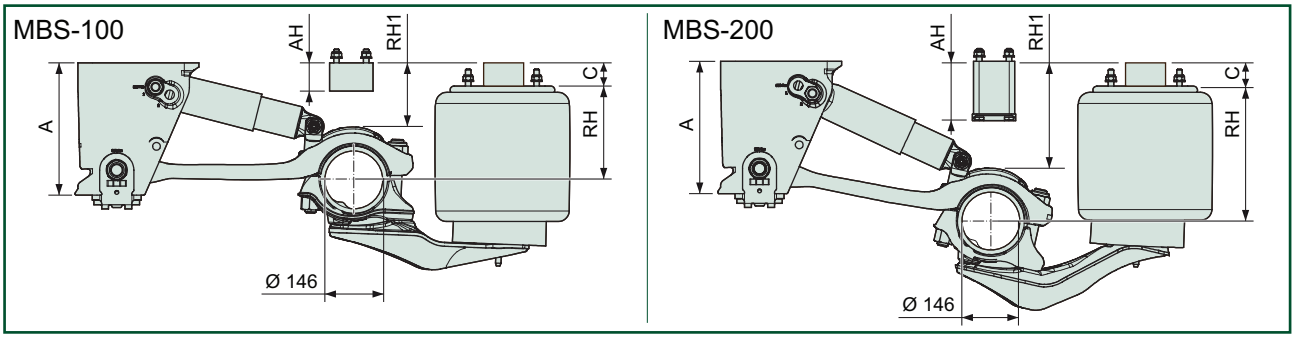
External fixed bump stops, mounted to the chassis beam above the axle are used to limit the upward suspension stroke. When a suspension failure occurs, these bump stops enable the user to proceed to a safe parking area at low speed without causing further damage.
This type of stroke limitation is also very suitable for vehicles that are used in intermodal traffic, where the full load will rest on the bump stop during the sea- or train voyage.

Outward suspension stroke limitation is achieved by the special designed shock absorbers.
Catch straps are therefore not required for the Valx MBS air suspension.

Always use the original Valx shock absorbers that must be mounted in the correct holes in the hanger bracket.
always observe the correct suspension / air spring / bump stop combination.
If in doubt contact support@valx.eu or your local Valx sales representative.

3 Assembly

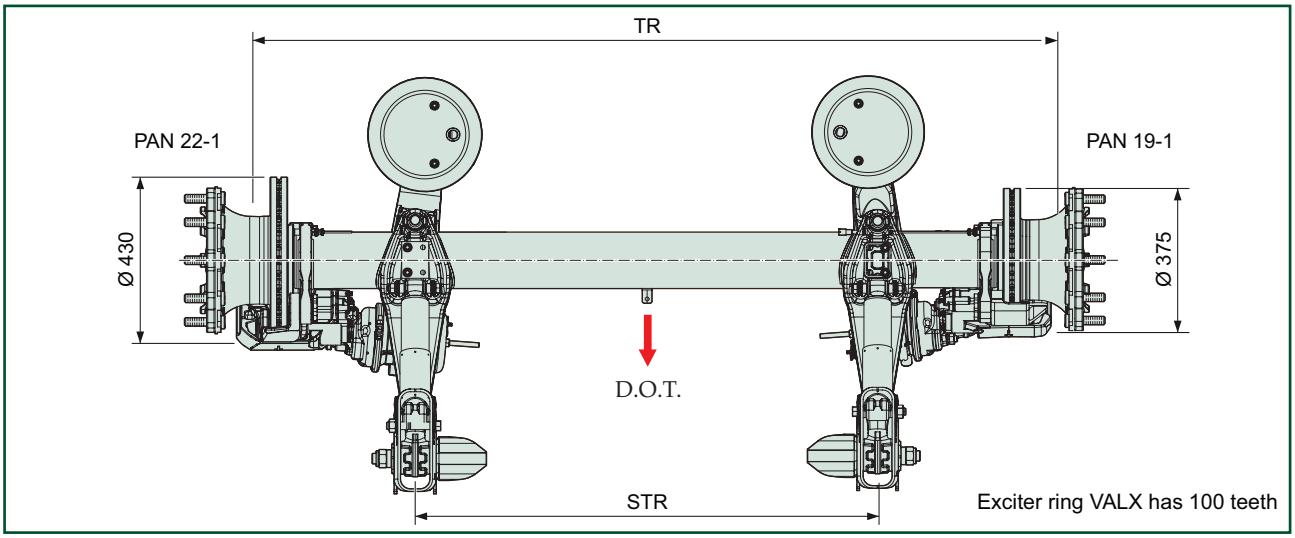
3.1 Mounting height specifications - disk brake axles with PAN 22-1/19-1 calliper - R(L/M)OX 0910



MBS-100 Air suspension							
suspension code	hanger bracket [A] (in mm)	ride height [RH] (in mm)	max. out [RH1] (in mm)	min height [RH1] (in mm) 73+42+AH	bump height [AH] (in mm)	shock absorber position	Pedestal [C]
MBS-110	290	210 - 320	435	145	30	1	0
MBS-120	290	240 - 320	435	175	60	1	0
MBS-130	290	270 - 320	435	205	90	1	0
MBS-140	340	270 - 370	485	205	90	1	50
MBS-150	340	286 - 370	485	221	106	1	50
MBS-160	340	310 - 370	485	245	130	1	50
MBS-170	420	340 - 450	565	275	160	1	130
MBS-180	420	370 - 450	565	305	190	1	130
MBS-190	420	396 - 450	565	321	206	1	130

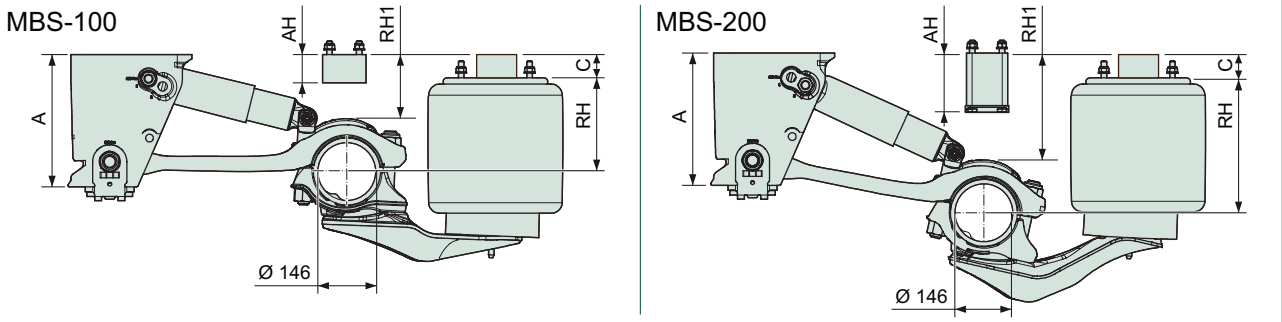
MBS-200 Air suspension							
suspension code	hanger bracket [A] (in mm)	ride height [RH] (in mm)	max. out [RH1] (in mm)	min height [RH1] (in mm) 73+42+AH	bump height [AH] (in mm)	shock absorber position	Pedestal [C]
MBS-210	290	310 - 410	515	245	130	2	0
MBS-220	290	340 - 410	515	275	160	2	0
MBS-230	290	370 - 410	515	305	190	2	0
MBS-240	340	370 - 460	565	305	190	2	50
MBS-250	340	386 - 460	565	321	206	2	50
MBS-260	340	420 - 460	565	355	240	2	50

For different ride heights different mounting sets are required.
Bump height can be varied within the set limitations.



axle type	track width [TR] (in mm)	spring track [STR] (in mm)	wheel offset (in mm)	cylinders
R(L/M)OX 0910	2040	1200-1300	120	Single / Double / Membrane piston
R(L/M)OX 0910	2090	1250-1350	120	Single / Double / Membrane piston
R(L/M)OX 0910	2140	1300-1400	120	Single / Double / Membrane piston

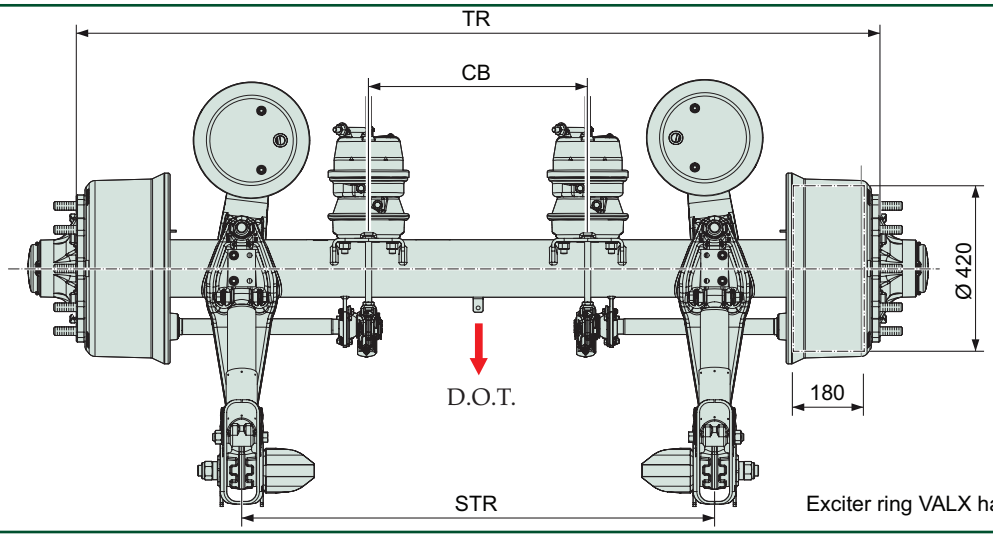
3.2 Mounting height specifications - drum brake axles 420 x 180 - DLSX 0910



MBS-100 Air suspension							
suspension code	hanger bracket [A] (in mm)	ride height [RH] (in mm)	max. out [RH1] (in mm)	min height [RH1] (in mm) 73+42+AH	bump height [AH] (in mm)	shock absorber position	Pedestal [C]
MBS-110	290	210 - 320	435	145	30	1	0
MBS-120	290	240 - 320	435	175	60	1	0
MBS-130	290	270 - 320	435	205	90	1	0
MBS-140	340	270 - 370	485	205	90	1	50
MBS-150	340	286 - 370	485	221	106	1	50
MBS-160	340	310 - 370	485	245	130	1	50
MBS-170	420	340 - 450	565	275	160	1	130
MBS-180	420	370 - 450	565	305	190	1	130
MBS-190	420	396 - 450	565	321	206	1	130

MBS-200 Air suspension							
suspension code	hanger bracket [A] (in mm)	ride height [RH] (in mm)	max. out [RH1] (in mm)	min height [RH1] (in mm) 73+42+AH	bump height [AH] (in mm)	shock absorber position	Pedestal [C]
MBS-210	290	310 - 410	515	245	130	2	0
MBS-220	290	340 - 410	515	275	160	2	0
MBS-230	290	370 - 410	515	305	190	2	0
MBS-240	340	370 - 460	565	305	190	2	50
MBS-250	340	386 - 460	565	321	206	2	50
MBS-260	340	420 - 460	565	355	240	2	50

For different ride heights different mounting sets are required.
Bump height can be varied within the set limitations.



Exciter ring VALX has 100 teeth

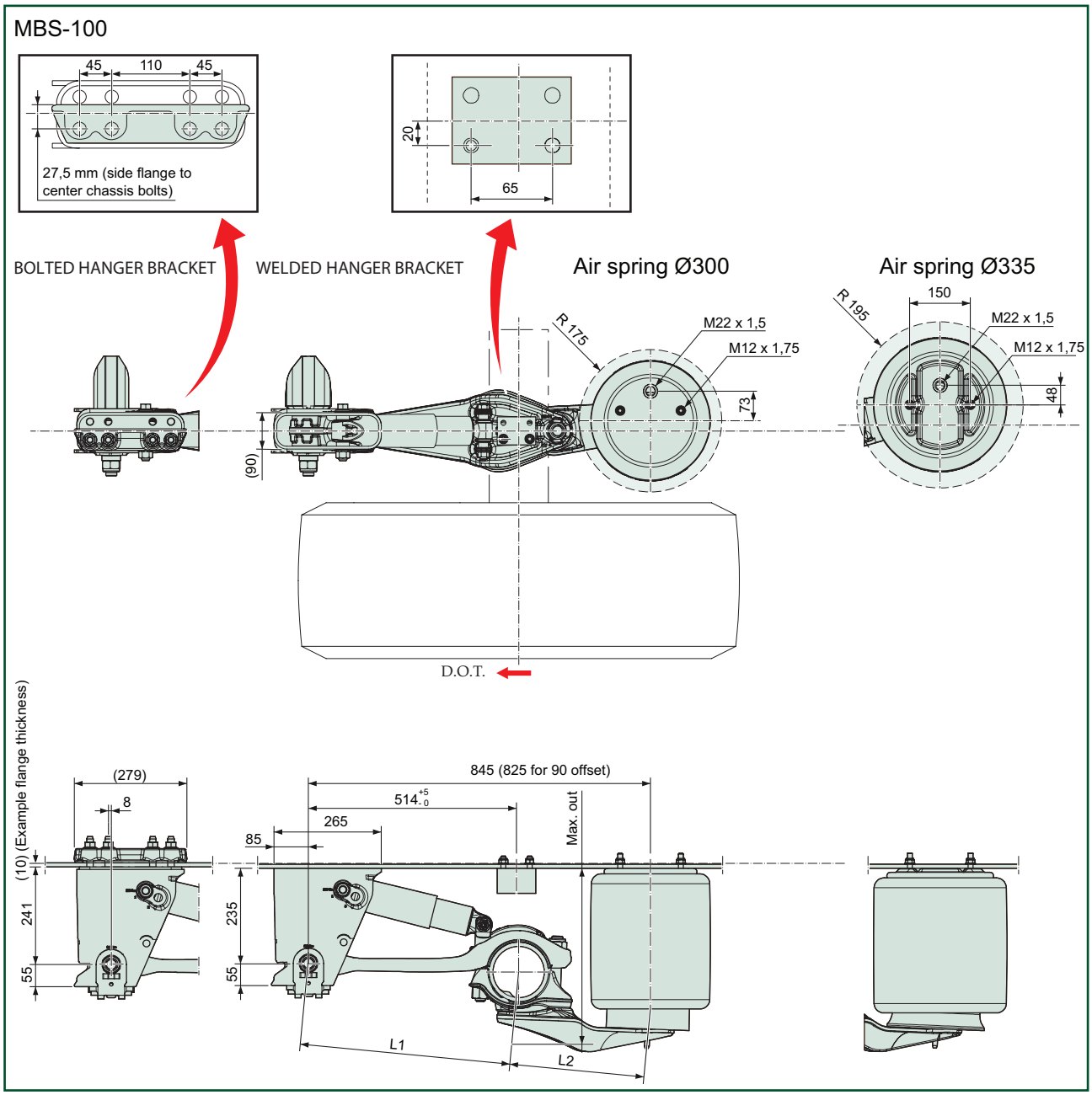
axle type	track width [TR] (in mm)	spring track [STR] (in mm)	wheel offset (in mm)	cylinders	Cilinder bracket distance [CB] (in mm)
DLSX 0910	2040	1200-1300	0	Single / Double	556
DLSX 0910	2090	1250-1350	0	Single / Double	606
DLSX 0910	2140	1300-1400	0	Single / Double	656

3.3 General

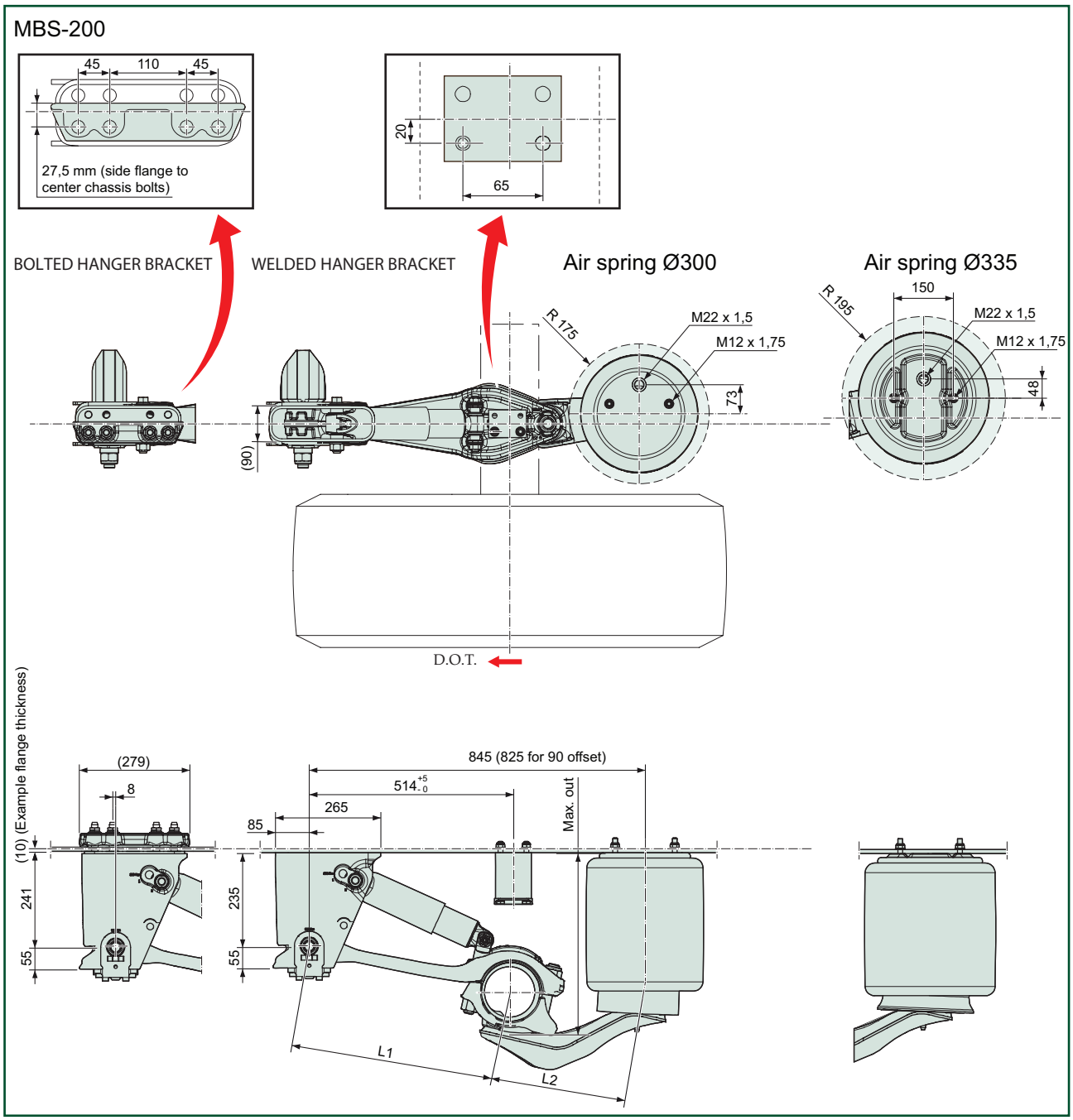
Within the scope of this document it is not possible to describe every single trailer chassis configuration.
We therefore provide some general but binding guidelines on the mounting of the trailer axle: defining the hole pattern, bracing and finishing of the chassis.
Construction of the trailer chassis and mounting of the trailer axle remains the sole responsibility of the trailer builder.
Always observe the general safety instructions and regulations (see chapter 1).

3.4 Air suspension / Air spring

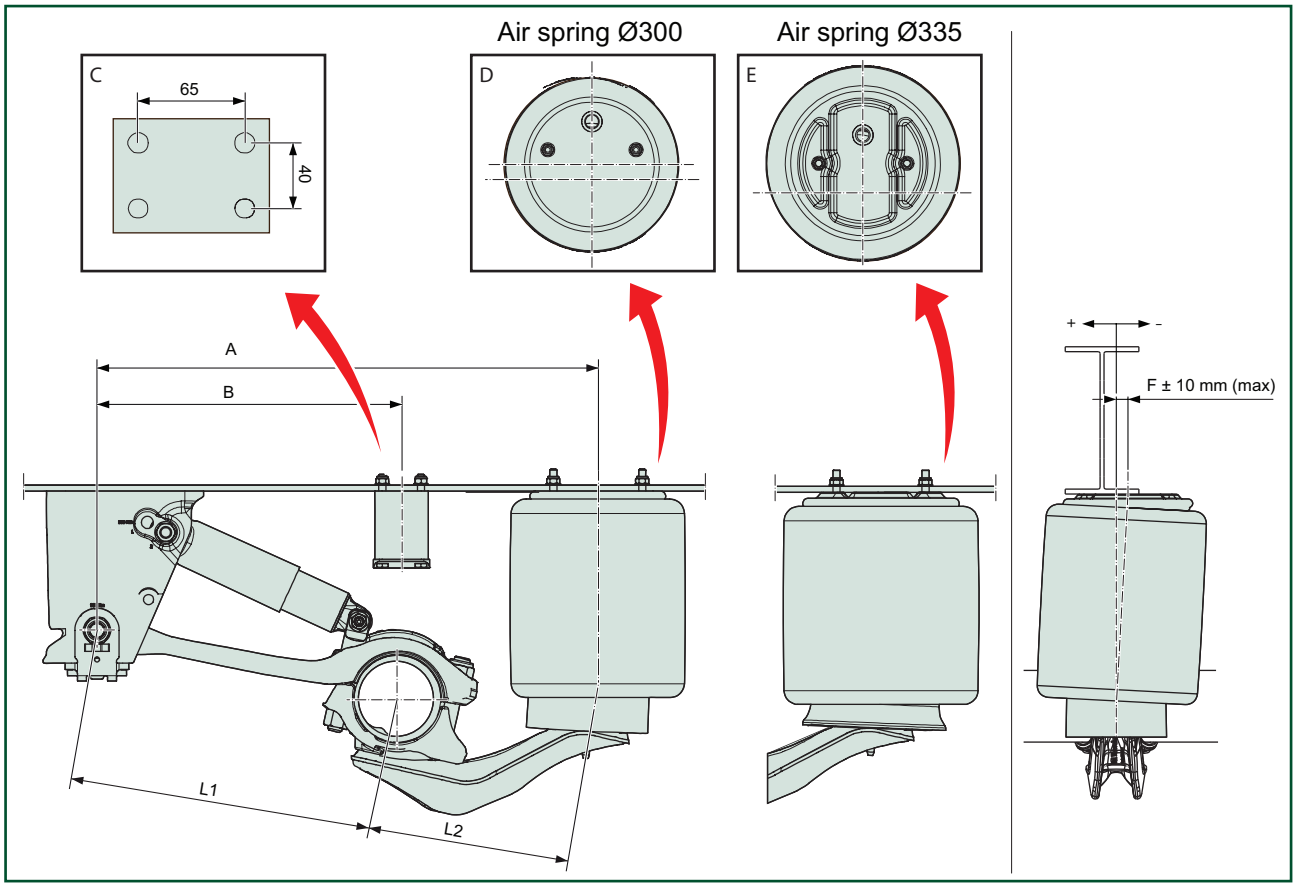
3.4.1 Overview air suspension parts MBS-100.



3.4.2 Overview air suspension parts MBS-200



3.4.3 Overview sizes air suspension.



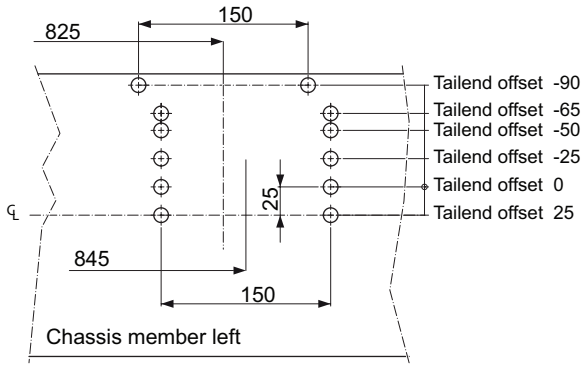
MBS 100								
tail end offset (in mm)	L1 (in mm)	L2 (in mm)	(A) (in mm)	(B) (in mm)	(C) (in mm)	(D) (in mm)	(E) (in mm)	(F) (in mm)
-90	520	325	825 +3 / -3	514 +5 / -0	65 x 40	115	90	0 +/- 10
-65	520	325	845 +3 / -3	514 +5 / -0	65 x 40	90	65	0 +/- 10
-50	520	325	845 +3 / -3	514 +5 / -0	65 x 40	75	50	0 +/- 10
-25	520	325	845 +3 / -3	514 +5 / -0	65 x 40	50	25	0 +/- 10
0	520	325	845 +3 / -3	514 +5 / -0	65 x 40	25	0	0 +/- 10
25	520	325	845 +3 / -3	514 +5 / -0	65 x 40	50	25	0 +/- 10

MBS 200								
tail end offset (in mm)	L1 (in mm)	L2 (in mm)	(A) (in mm)	(B) (in mm)	(C) (in mm)	(D) (in mm)	(E) (in mm)	(F) (in mm)
-90	520	323	825 +3/-3	514 +5/-0	65 x 40	115	90	0 +/- 10
-65	520	323	845 +3/-3	514 +5/-0	65 x 40	90	65	0 +/- 10
-50	520	323	845 +3/-3	514 +5/-0	65 x 40	75	50	0 +/- 10
-25	520	323	845 +3/-3	514 +5/-0	65 x 40	50	25	0 +/- 10
0	520	323	845 +3/-3	514 +5/-0	65 x 40	25	0	0 +/- 10
25	520	323	845 +3/-3	514 +5/-0	65 x 40	50	25	0 +/- 10

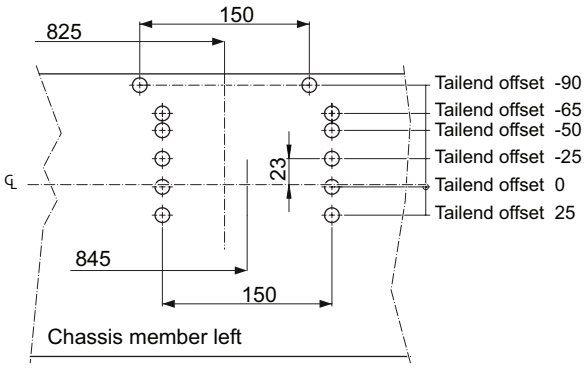
A Center pivot bolt to center air spring
B Center pivot bolt to center bump stop
C Hole pattern bump stop
D Air spring Ø 300 mounting holes (offset -in mm- from trailing arm center)
E Air spring Ø 335 mounting holes (offset -in mm- from trailing arm center)
F Max. offset from upper and lower air spring mounting (in mm)

3.4.4 Defining the hole pattern of the chassis member.

For air spring Ø300

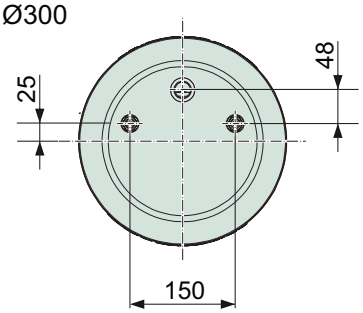


For air spring Ø335

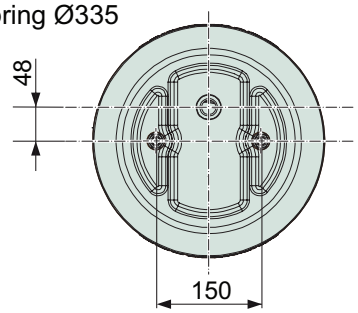


3.4.5 Defining the hole pattern of the air spring.

Air spring Ø300



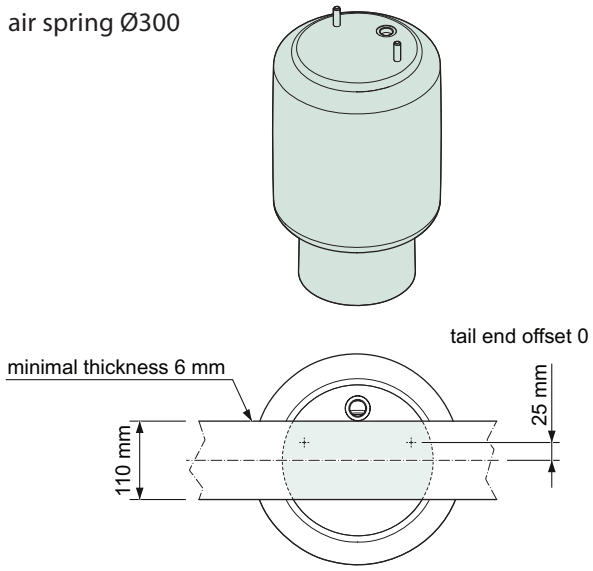
Air spring Ø335



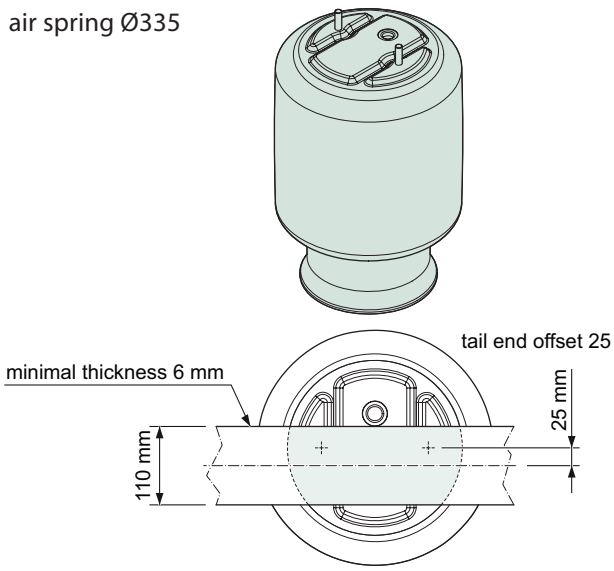
The hole pattern for air spring Ø300 and air spring Ø335 is not the same!
Changing the air spring Ø300 for an airspring Ø335 requires an off set change of 25mm from the tail end!

3.4.6 Position of the air springs on the chassis

air spring Ø300



air spring Ø335



***If chassis is less than 110 mm a support plate min. 110 mm has to be added!**

For hole pattern see section 3.4.4

3.4.6 Spring offset possibilities - disk brake axles with MBS 100 - 200

Configuration: disk brake, 385/65 R22.5 tyres and type 300 air springs (maximum Ø: 350 mm)

wheel offset (in mm)	axle type	track width [TR] (in mm)	spring track [STR] (in mm)	brake cylinders (in inch)	tail end offset					
					+ 25 mm	0 mm	- 25 mm	- 50 mm	- 65 mm	- 90 mm
120	RL/RM OX 0910	2140	1400	20/24	✗	✗	✓	✓	✓	✓
120	RL/RM OX 0910	2140	1300	20/24	✓	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2090	1350	20/24	✗	✗	✓	✓	✓	✓
120	RL/RM OX 0910	2090	1250	20/24	✓	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2040	1300	20/24	✗	✗	✓	✓	✓	✓
120	RL/RM OX 0910	2040	1200	20/24	✓	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2010	1300	20/24	✗	✗	✗	✓	✓	✓
120	RL/RM OX 0910	2010	1200	20/24	✗	✓	✓	✓	✓	✓

✓ = possible, ✗ = not possible.

Configuration: disk brake, 385/65 R22.5 tyres and type 335 air springs (maximum Ø: 390 mm)

wheel offset (in mm)	axle type	track width [TR] (in mm)	spring track [STR] (in mm)	brake cylinders (in inch)	tail end offset					
					+ 25 mm	0 mm	- 25 mm	- 50 mm	- 65 mm	- 90 mm
120	RL/RM OX 0910	2140	1400	20/24	✗	✗	✗	✓	✓	✓
120	RL/RM OX 0910	2140	1300	20/24	✗	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2090	1350	20/24	✗	✗	✗	✓	✓	✓
120	RL/RM OX 0910	2090	1250	20/24	✗	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2040	1300	20/24	✗	✗	✗	✓	✓	✓
120	RL/RM OX 0910	2040	1200	20/24	✗	✓	✓	✓	✓	✓
120	RL/RM OX 0910	2010	1300	20/24	✗	✗	✗	✓	✓	✓
120	RL/RM OX 0910	2010	1200	20/24	✗	✓	✓	✓	✓	✓

✓ = possible, ✗ = not possible.

3.4.7 Spring offset possibilities - drum brake axles MBS 100 - 200

Configuration: 420 x 180 mm drum brake, 385/65 R22.5 tyres and type 300 air springs (**maximum** Ø: 350 mm)

wheel offset (in mm)	axle type	track width [TR] (in mm)	spring track [STR] (in mm)	brake cylinders (in inch)	tail end offset				
					0 mm	- 25 mm	- 50 mm	- 65 mm	- 90 mm
0	DLSX 0910	2140	1.400	24/30	✗	✓	✓	✓	✓
0	DLSX 0910	2140	1.400	24	✗	✓	✓	✓	✓
0	DLSX 0910	2140	1.300	24/30	✓	✓	✓	✗	✗
0	DLSX 0910	2140	1.300	24	✓	✓	✓	✓	✓
0	DLSX 0910	2090	1.350	24/30	✗	✓	✓	✓	✓
0	DLSX 0910	2090	1.350	24	✗	✓	✓	✓	✓
0	DLSX 0910	2090	1.250	24/30	✓	✓	✓	✗	✗
0	DLSX 0910	2090	1.250	24	✓	✓	✓	✓	✓
0	DLSX 0910	2040	1.300	24/30	✗	✓	✓	✓	✓
0	DLSX 0910	2040	1.300	24	✗	✓	✓	✓	✓
0	DLSX 0910	2040	1.200	24/30	✓	✓	✓	✗	✗
0	DLSX 0910	2040	1.200	24	✓	✓	✓	✓	✓
0	DLSX 0910	2010	1.300	24/30	✗	✗	✓	✓	✓
0	DLSX 0910	2010	1.300	24	✗	✗	✓	✓	✓
0	DLSX 0910	2010	1.200	24/30	✓	✓	✓	✓	✗
0	DLSX 0910	2010	1.200	24	✓	✓	✓	✓	✓

✓ = possible, ✗ = not possible.

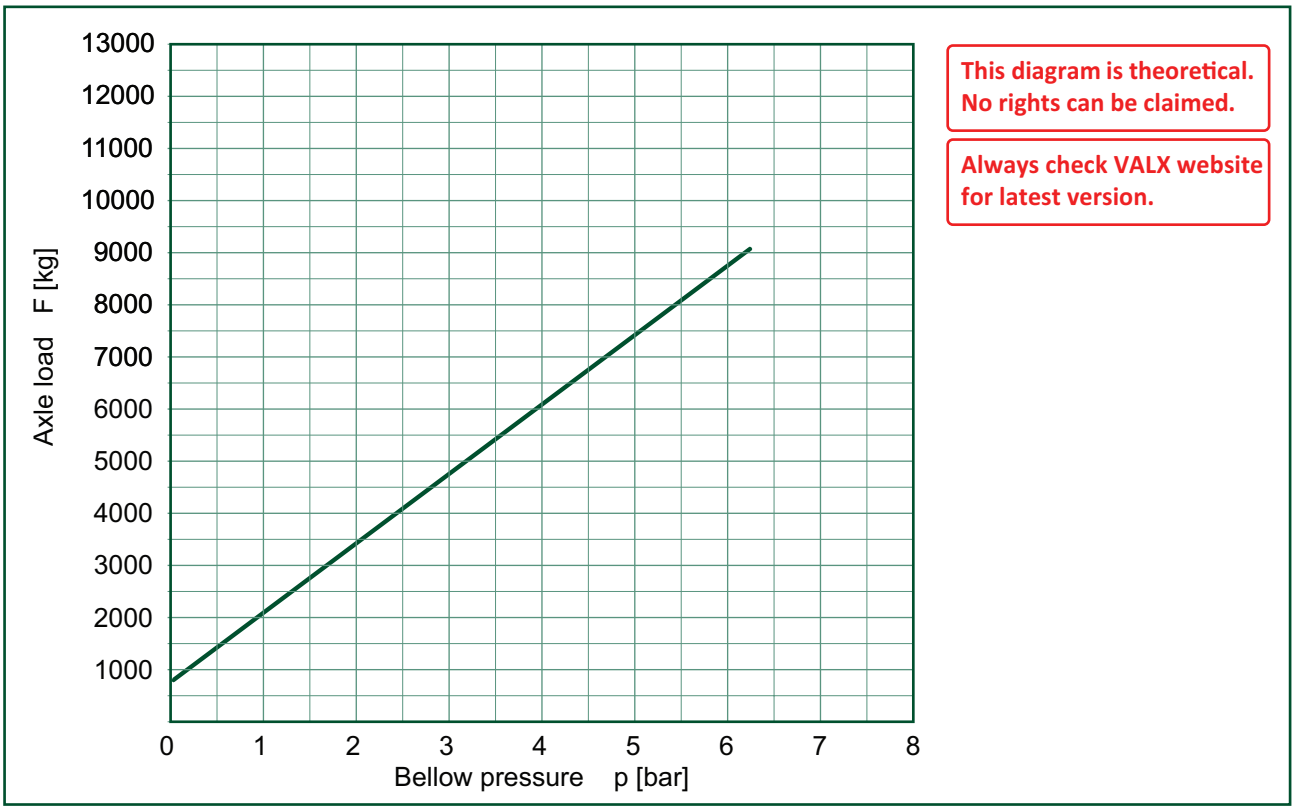
Configuration: 420 x 180 mm drum brake, 385/65 R22.5 tyres and type 335 air springs (maximum Ø: 390 mm)

wheel offset (in mm)	axle type	track width [TR] (in mm)	spring track [STR] (in mm)	brake cylinders (in inch)	tail end offset				
					0 mm	- 25 mm	- 50 mm	- 65 mm	- 90 mm
0	DLSX 0910	2140	1.400	24/30	✗	✗	✓	✓	✗
0	DLSX 0910	2140	1.400	24	✗	✗	✓	✓	✓
0	DLSX 0910	2140	1.300	24/30	✓	✓	✗	✗	✗
0	DLSX 0910	2140	1.300	24	✓	✓	✓	✓	✓
0	DLSX 0910	2090	1.350	24/30	✗	✗	✓	✓	✗
0	DLSX 0910	2090	1.350	24	✗	✗	✓	✓	✓
0	DLSX 0910	2090	1.250	24/30	✓	✓	✗	✗	✗
0	DLSX 0910	2090	1.250	24	✓	✓	✓	✓	✓
0	DLSX 0910	2040	1.300	24/30	✗	✗	✓	✓	✗
0	DLSX 0910	2040	1.300	24	✗	✗	✓	✓	✓
0	DLSX 0910	2040	1.200	24/30	✓	✓	✗	✗	✗
0	DLSX 0910	2040	1.200	24	✓	✓	✓	✓	✓
0	DLSX 0910	2010	1.300	24/30	✗	✗	✗	✓	✓
0	DLSX 0910	2010	1.300	24	✗	✗	✗	✓	✓
0	DLSX 0910	2010	1.200	24/30	✗	✓	✓	✗	✗
0	DLSX 0910	2010	1.200	24	✗	✓	✓	✓	✓

✓ = possible, ✗ = not possible.

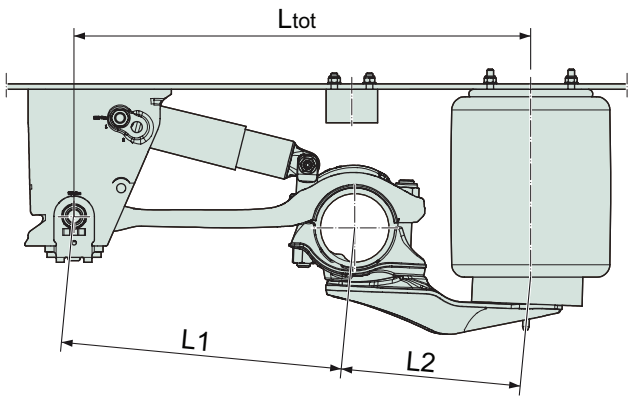
3.4.8 Determination of the relation between the air spring pressure and the axle load.

Air suspension system:	**MBS 100 - 200 Ø 300**
Air spring type:	**MBS Ø 300**
Drawing number:	**US04300F**
Assumed value unsprung mass :	**750kg**
Maximum axle load:	**9 t**



This diagram is theoretical.
No rights can be claimed.

Always check VALX website for latest version.



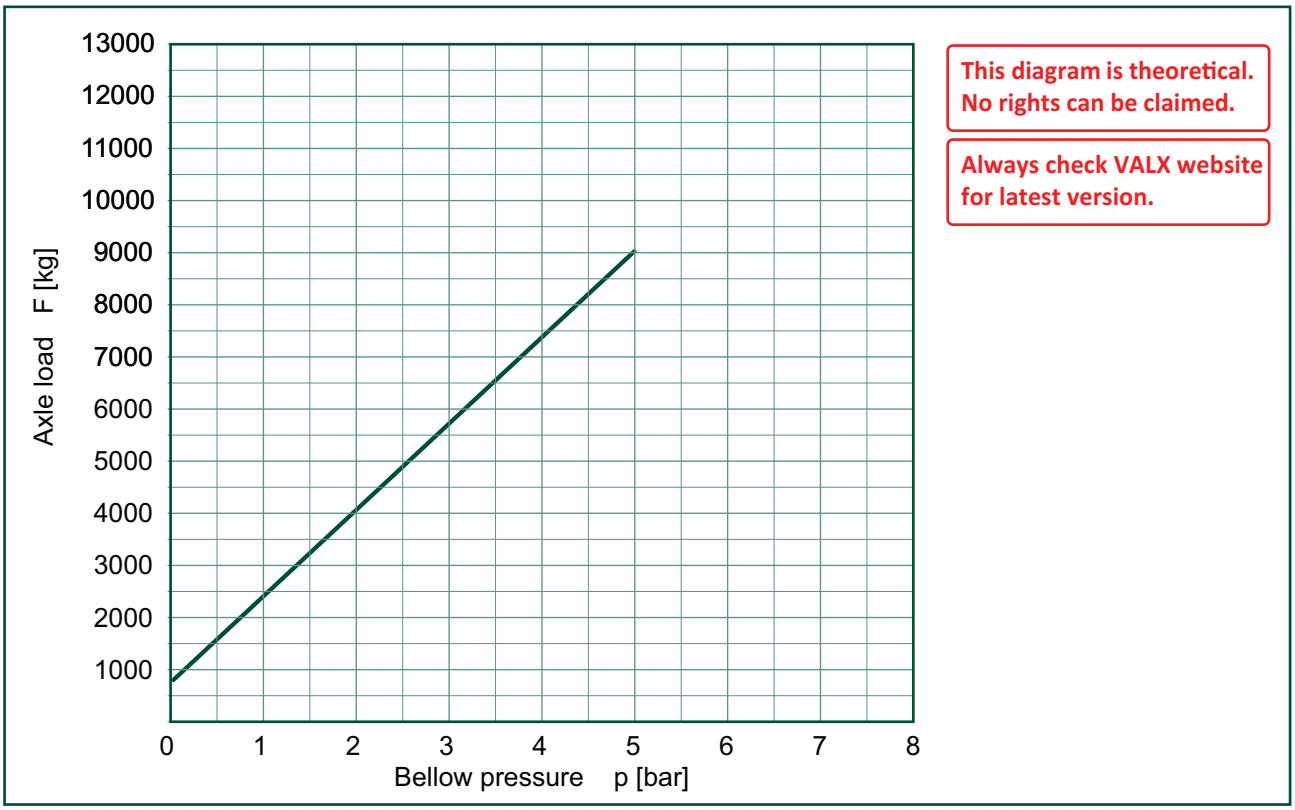
Air spring pressure p [bar]

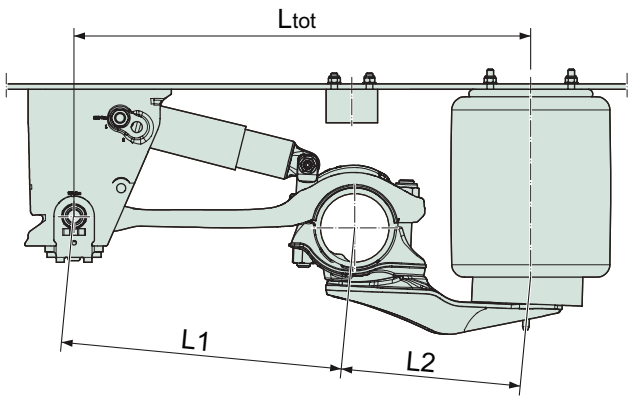
$$P = \frac{\text{axle load - unsprung mass}}{\text{geometry and airspring factor}} = \frac{F - 750}{1335}$$

L_{tot} = 845 mm
L_1 = 520 ± 10 mm
L_2 = 325 ± 10 mm

3.4.9 Determination of the relation between the air spring pressure and the axle load.

Air suspension system:	**MBS 100 - 200 Ø 335**
Air spring type:	**MBS Ø 335**
Drawing number:	**US04335F**
Assumed value unsprung mass :	**750kg**
Maximum axle load:	**9 t**





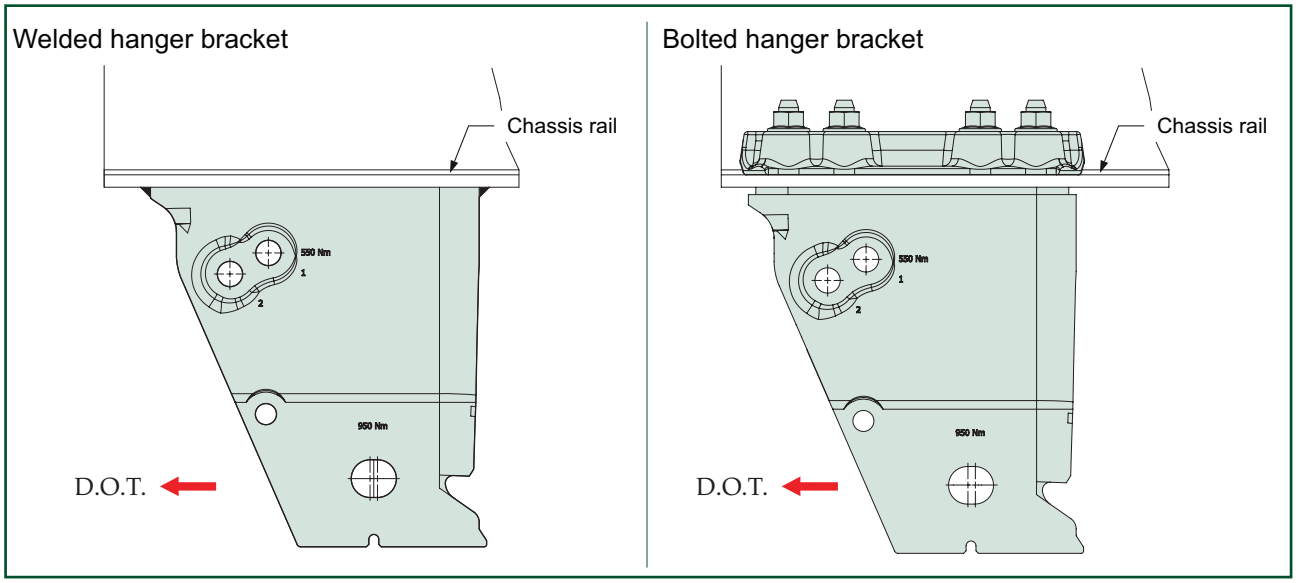
Air spring pressure p [bar]

$$P = \frac{\text{axle load - unsprung mass}}{\text{geometry and airspring factor}} = \frac{F - 750}{1656}$$

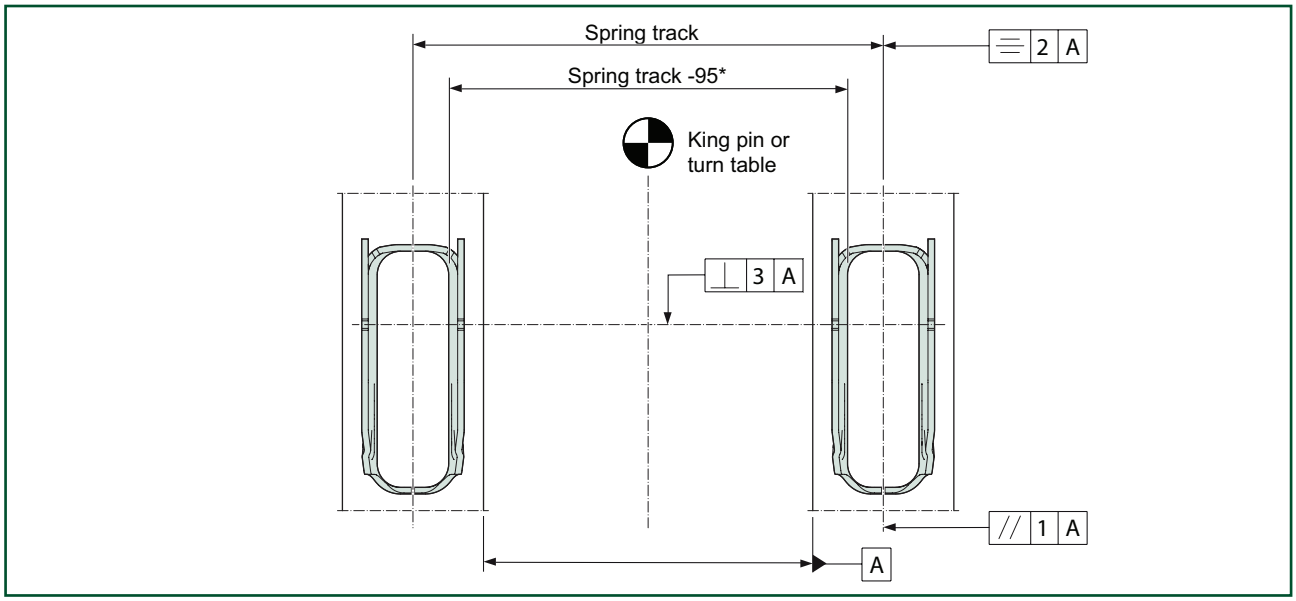
L_{tot} = 845 mm
L_1 = 520 ± 10 mm
L_2 = 325 ± 10 mm

3.5 Hanger bracket

3.5.1 Overview hanger bracket

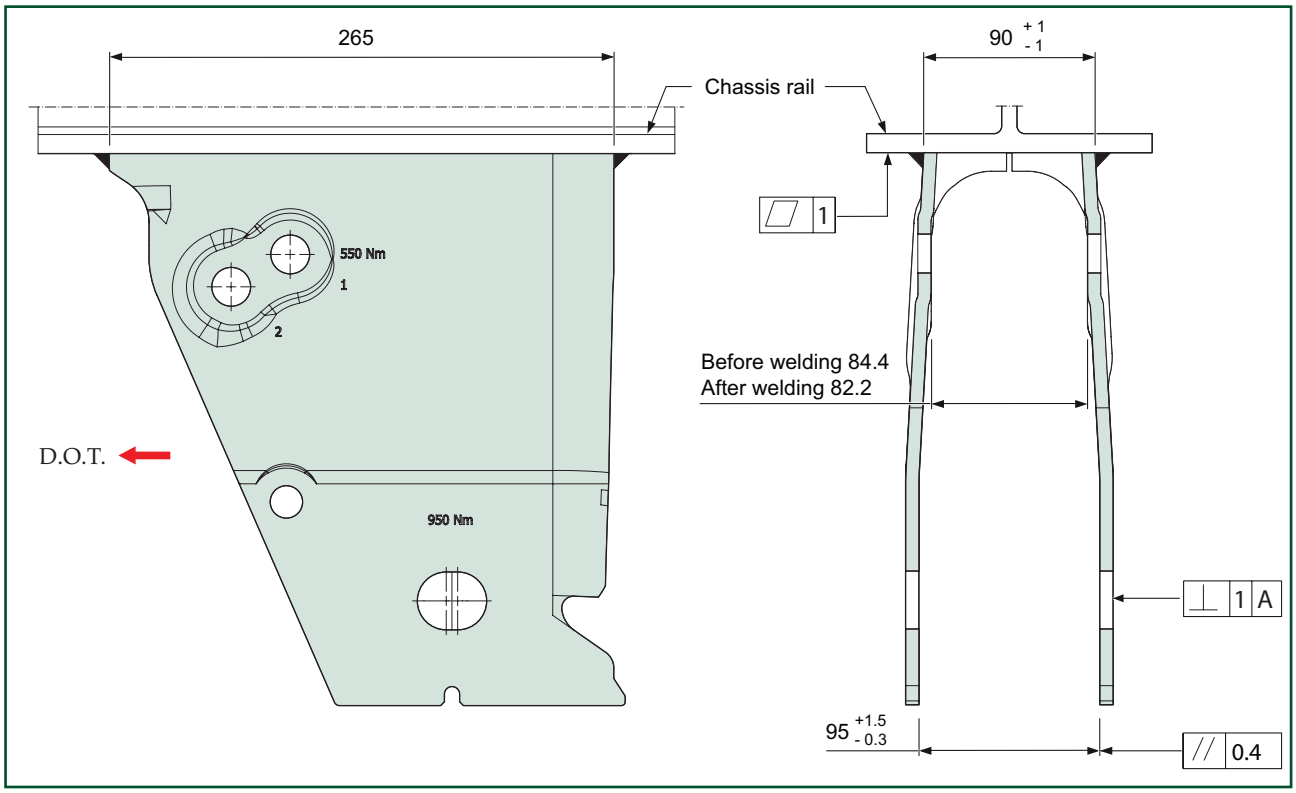


3.5.2 Alignment of the hanger brackets

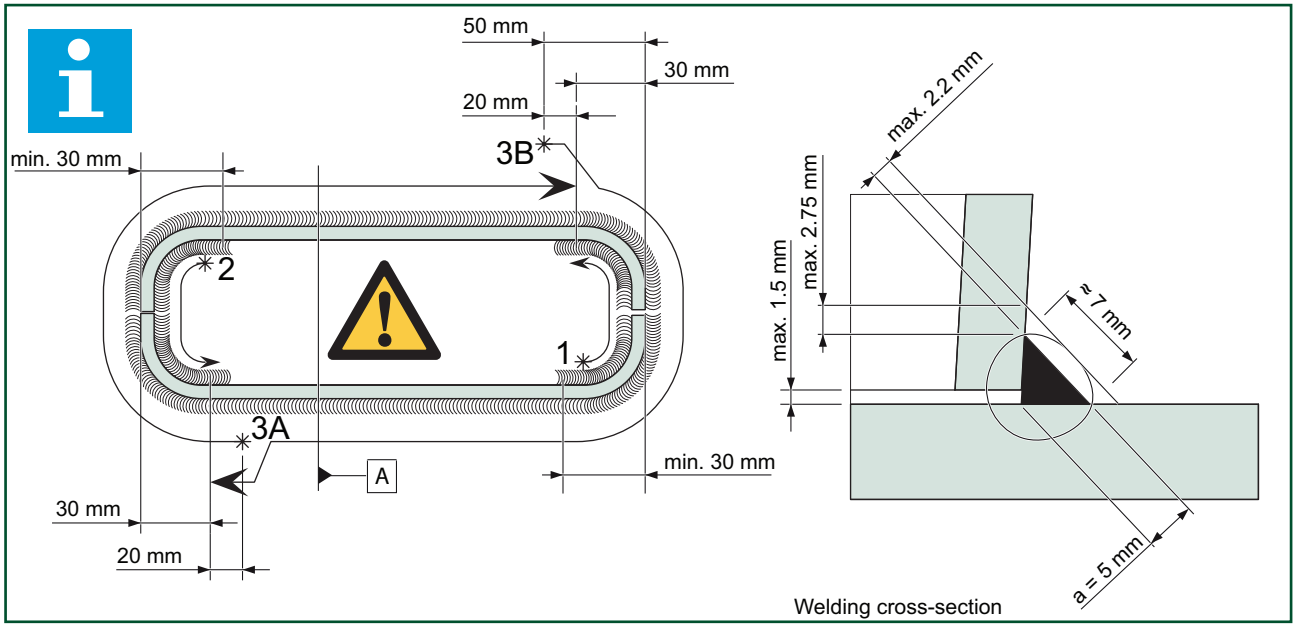


* Dimension check before welding braces.

3.5.3 Overview hanger bracket



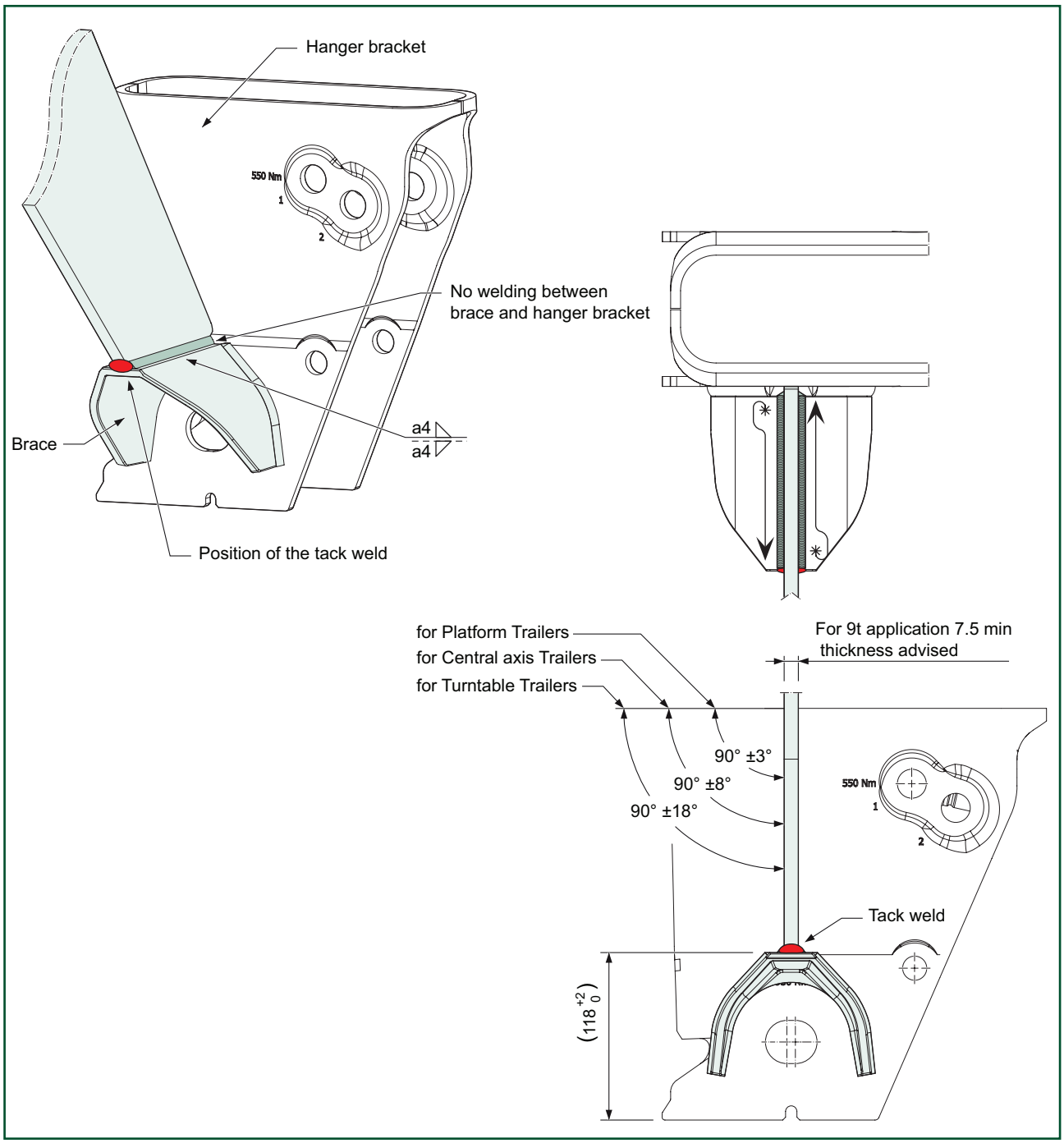
3.5.4 Hanger bracket welding



	Weld the inside of the hanger bracket as well. **For brackets higher than 290 welding inside not necessery.**

	Welding order 1 - 2 - 3A - 3B or mirrored image.

3.5.4 Hanger bracket welding continued

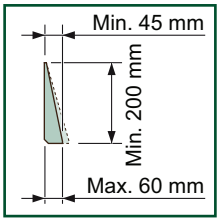


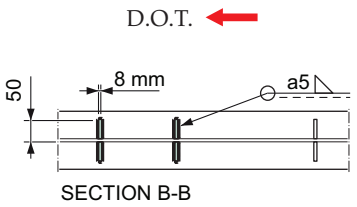
3.5.5 Welding techniques and specifications

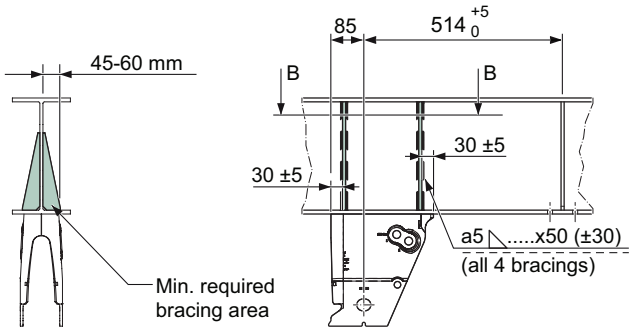
item	specifications
welding wire	in accordance with DIN 8559-SG2 / EN 440-G3 Si1. Material-Nr 1.5125, Ø 1.2 mm
supply	1-wire technique
gas mixture	92-8 Argon / O_2 or Argon /CO_2 / O_2 or Argon / CO_2 , in accordance with DIN and ISO 14175
welding parameters	current: 240 - 340 A pulse voltage: 26 - 40 V

	Protect the trailing arm against welding spatters. Never mount the ground cable on the trailing arm, the hub unit, the wheel or the wheel flange to prevent damage.

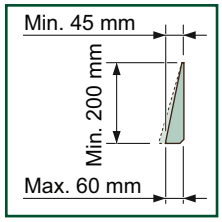
Welded hanger bracket

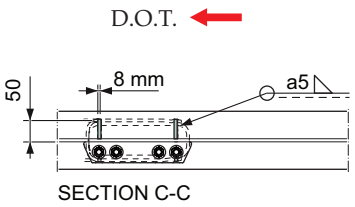


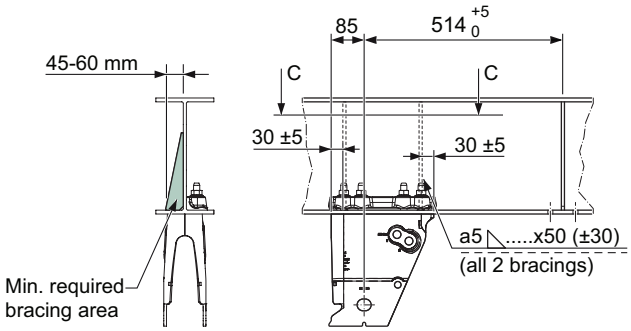




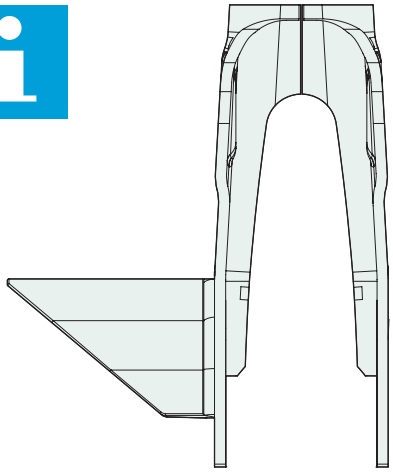
Bolted hanger bracket



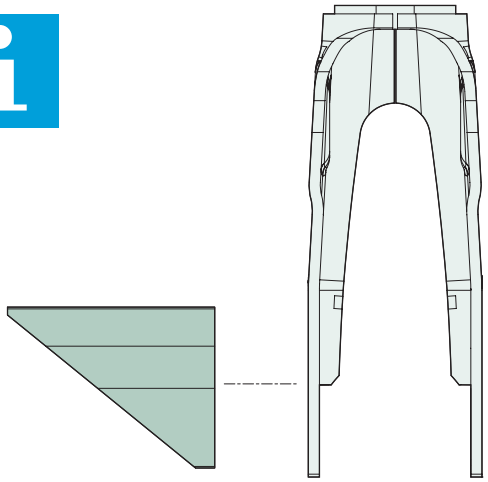




Weld bracing for welded hanger bracket
Right - Left (as drawn)

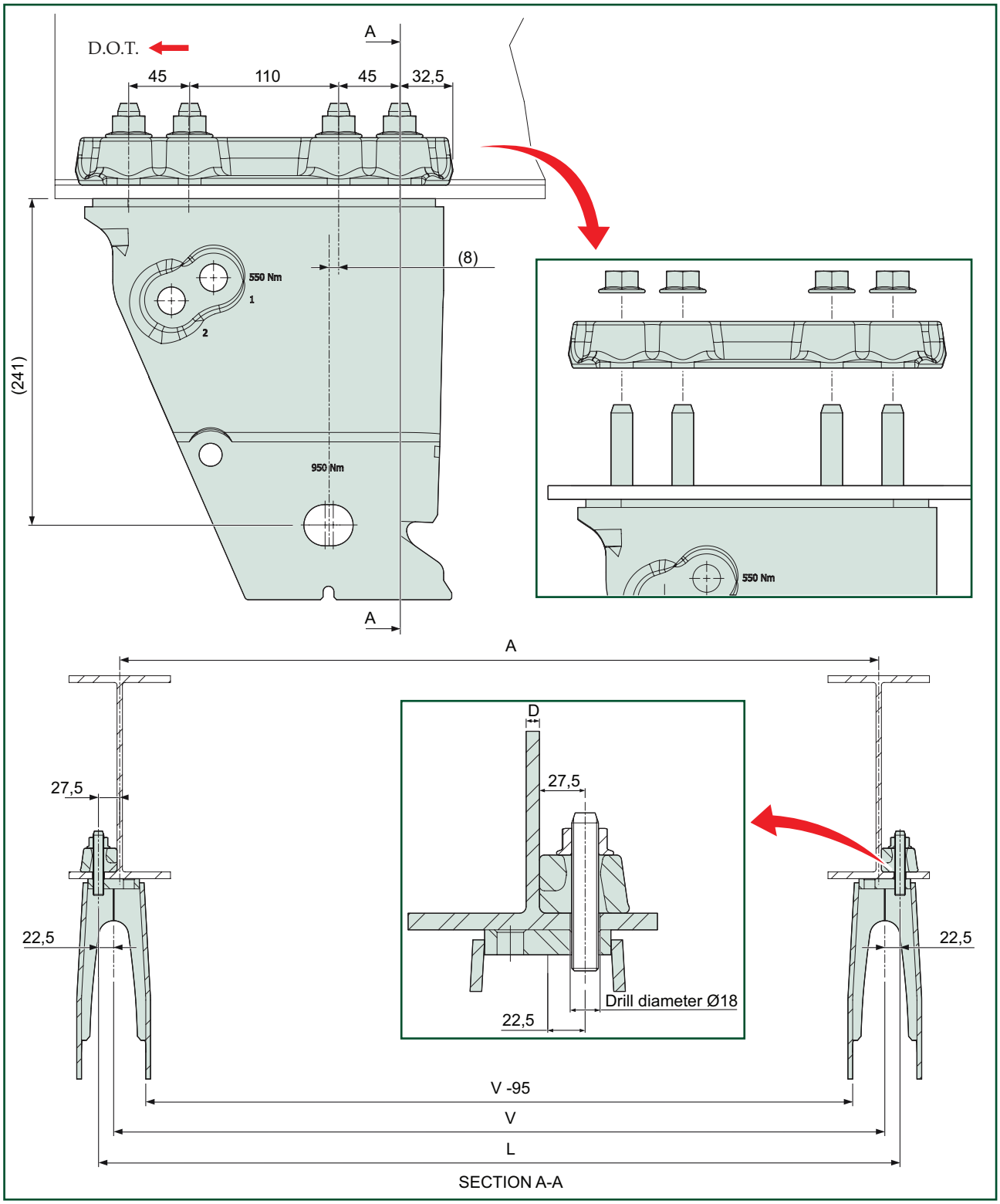


Weld bracing for bolted hanger bracket
Right - Left (as drawn)



For welded hanger brackets the weld bracing is already mounted on the hanger bracket.
For bolted hanger brackets the weld bracing needs to be mounted on the hanger bracket.

3.5.7 Bolted hanger bracket

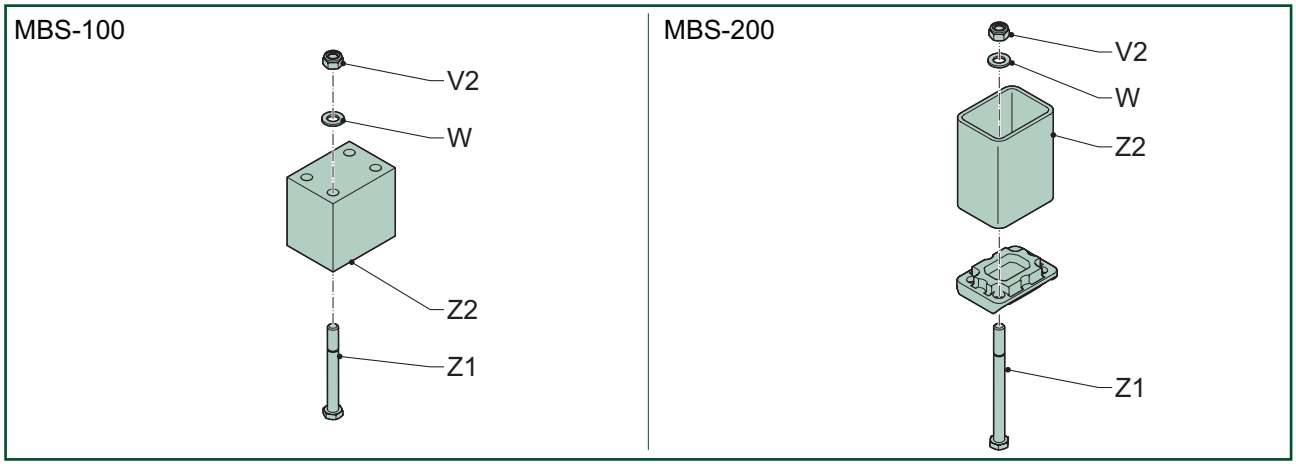


A (in mm)	V (in mm)	L (in mm)	D (in mm)
1200	1218	1263	8
1300	1318	1363	8

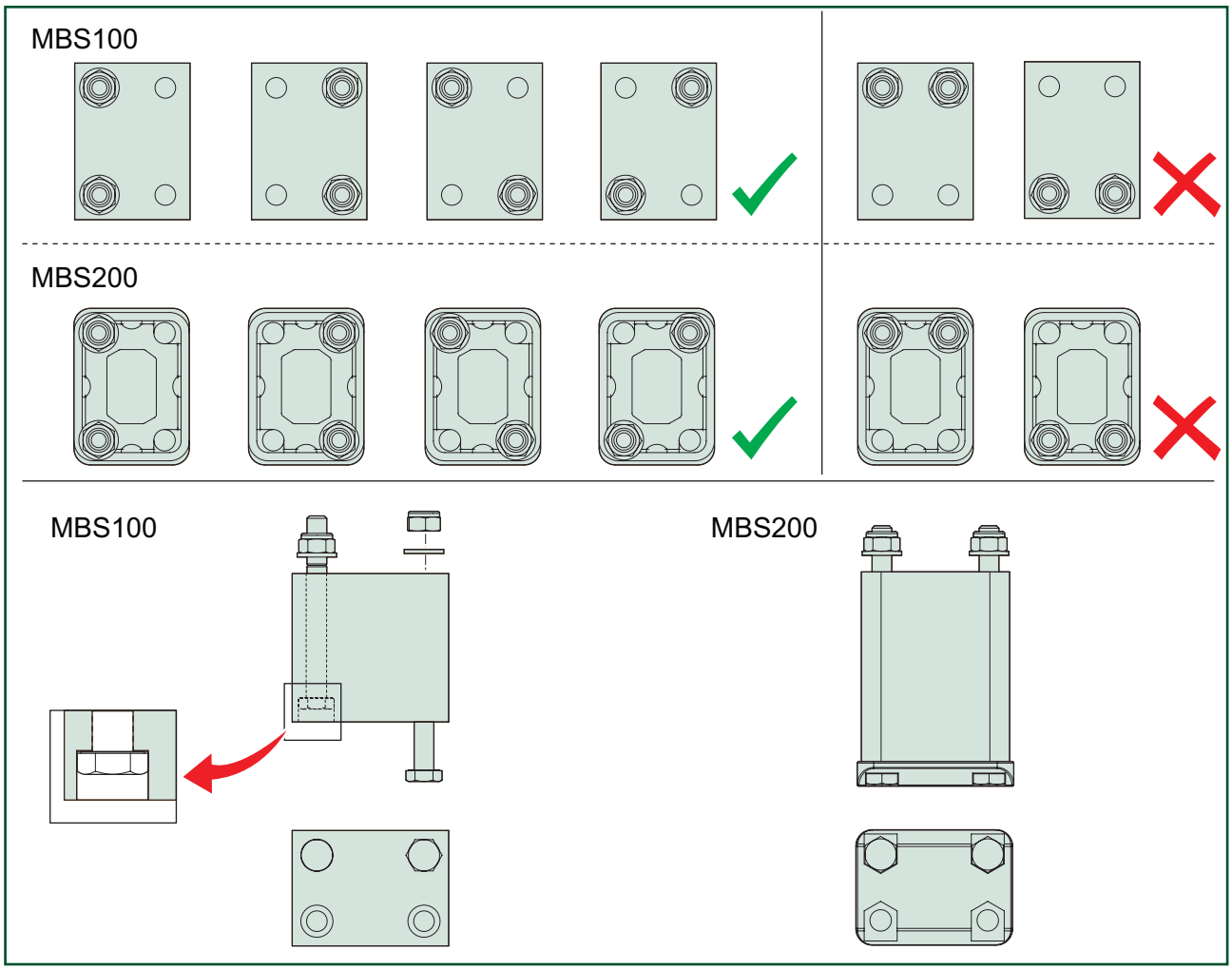
* Check before bolting braces to chassis.

3.6 Bump stop

3.6.1 Overview of the bump stop

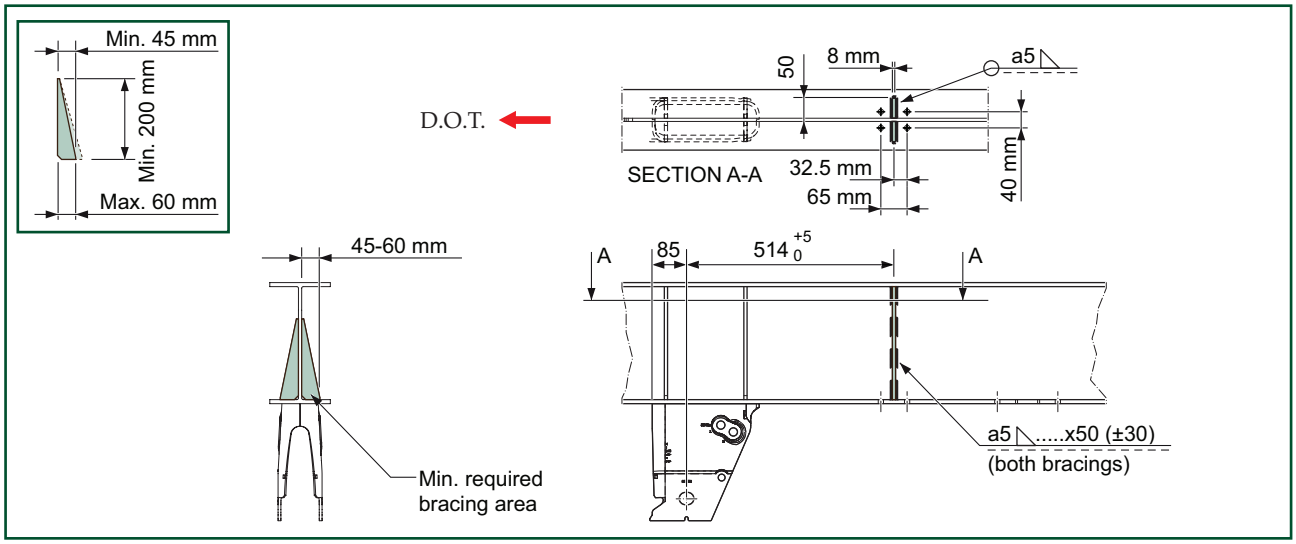


3.6.2 Bump stop – mounting



	The long side of the bump stop must be positioned parallel to the trailer flat.

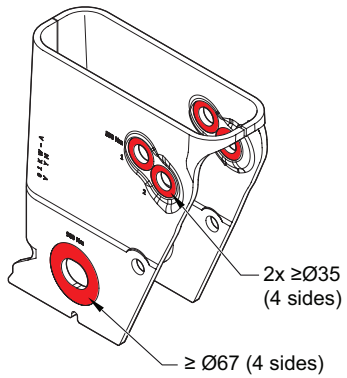
3.6.3 Bump stop – welded bracing



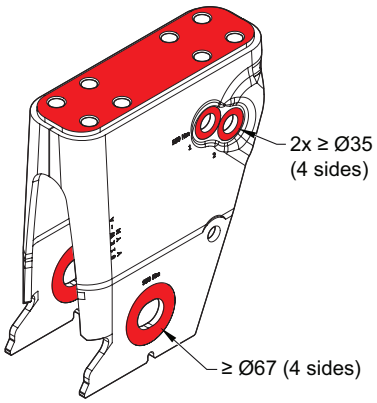
4 Finishing

	No paint is allowed in the red marked areas. The red marked areas are only allowed to be primered, KTL coated (max. 30µm), or zinc dipped (50 - 100µm).

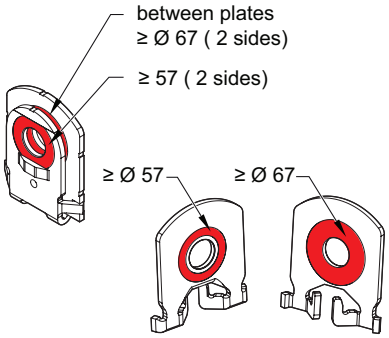
Hanger bracket for welding



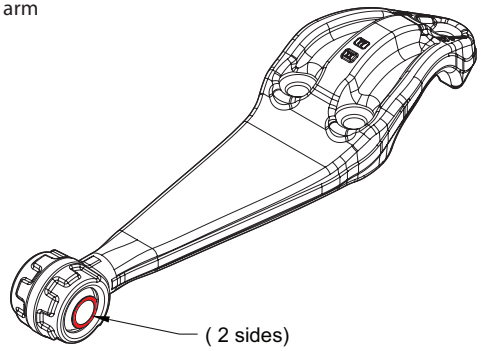
Bolt-on hanger bracket



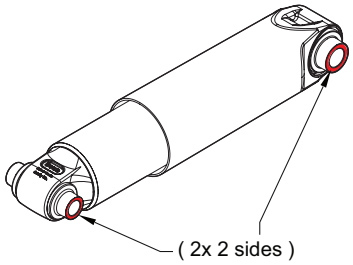
Wear plates



MBS trailing arm



MBS shock absorber

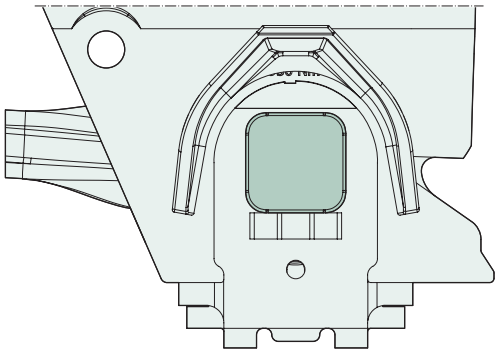


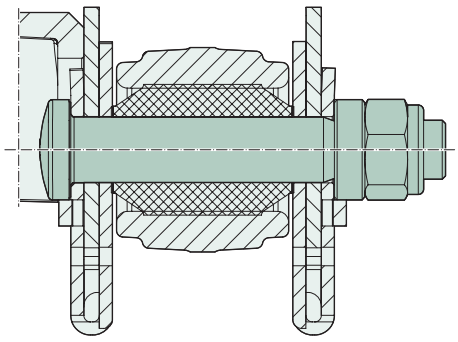
5 Alignment

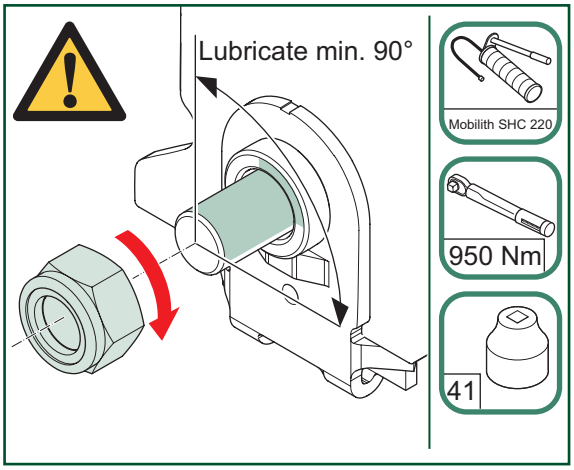
Position the trailer on an even surface.

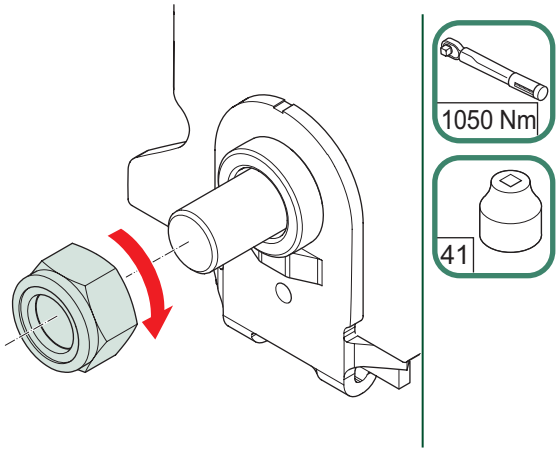
Make sure that the axles are in the nominal driving position.
Fasten the pivot bolt handtight with the axle at ride height.

5.1 Pre mount the pivot bolt





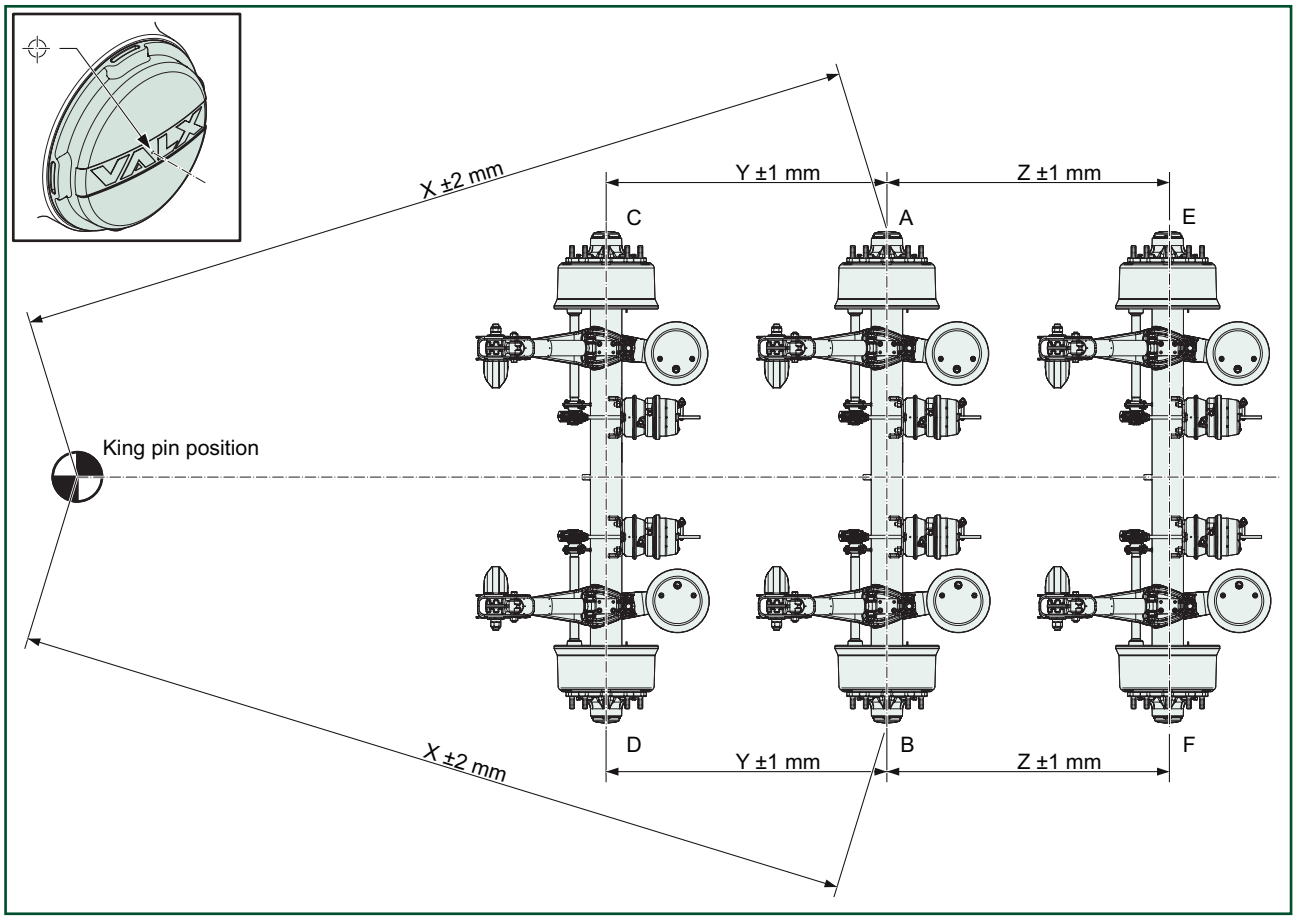




Before tightening to end torque make sure the trailer is at correct driving height.
Apply grease on min. 90° of the thread surface and the ring.
Grease specification: Lithium complex grease (class 2).
After alignment tighten the pivot bolts to a torque of 950 Nm (+50/0) with grease or to 1050 Nm (+50/0) without grease.

5.2 Alignment using a measuring tape

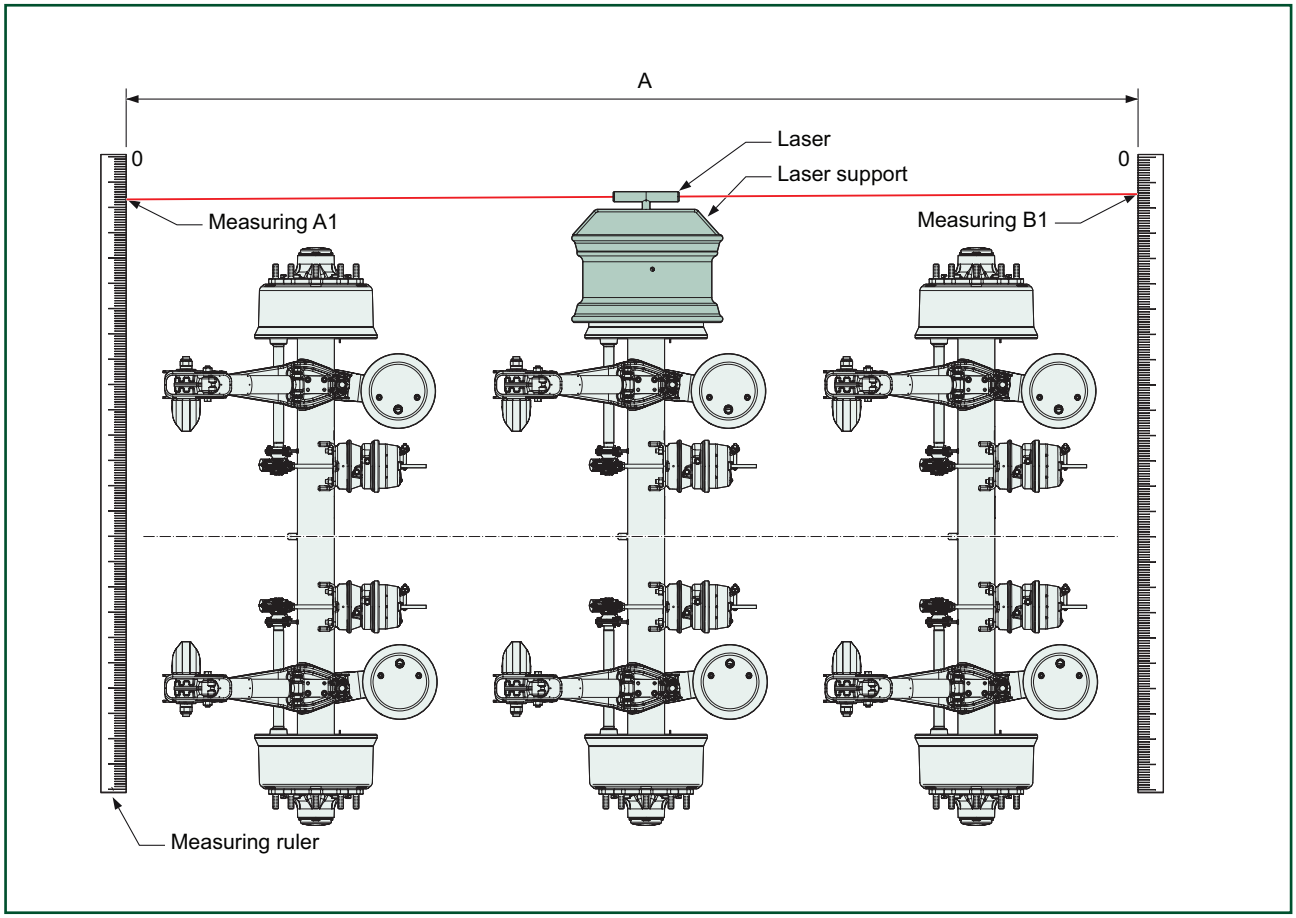
Align the axles within the tolerances given, taking the second axle as a reference.



The figure shows the drum brake axle. For the disk brake axle the same tolerances apply.
A through F are the axle centres.

5.3 Alignment using a laser

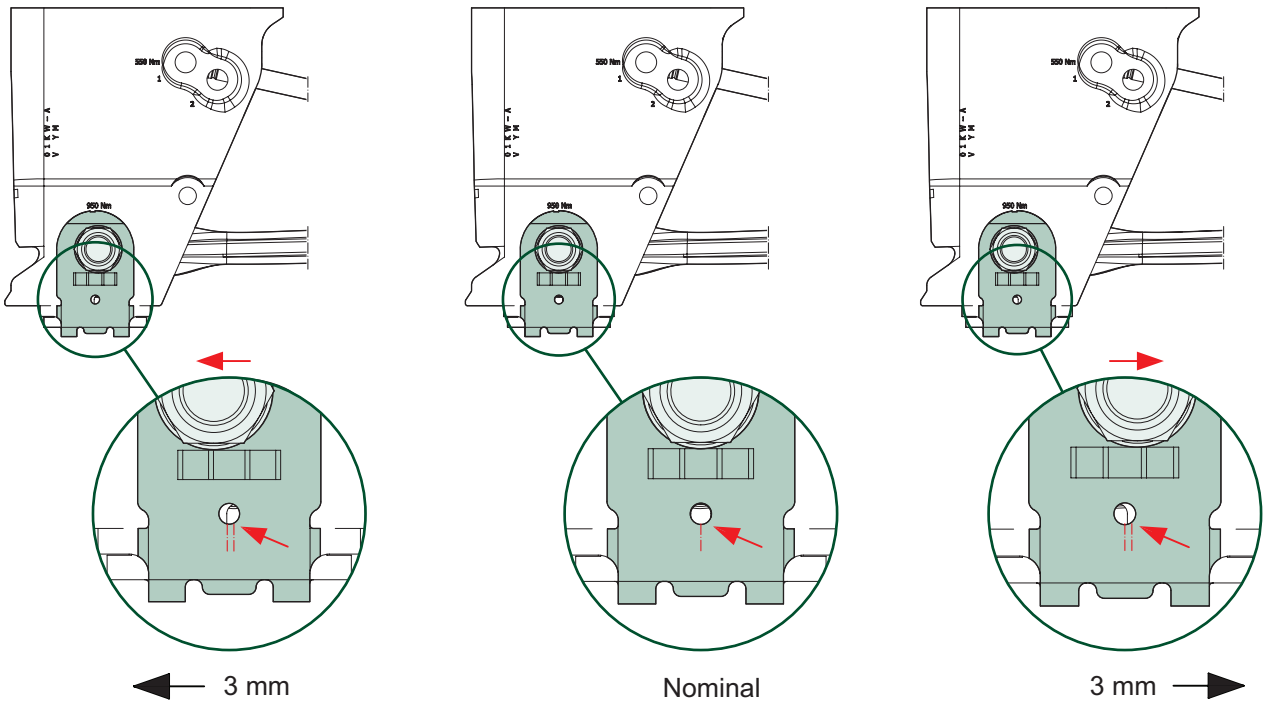
Align the axles within the tolerances given in section 5.1.



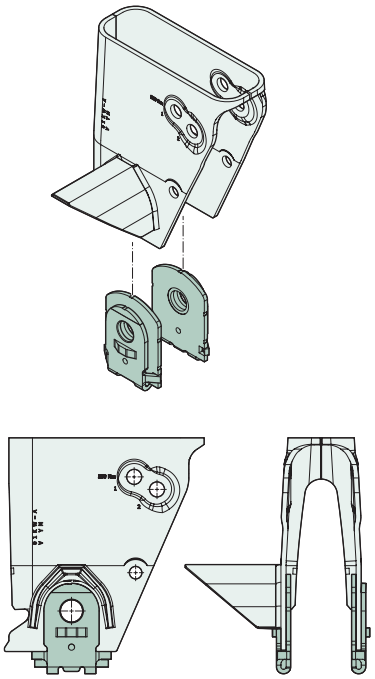
The figure shows the drum brake axle. Positioning the tool for the disk brake is the same.
The tolerances as given in section 5.2 remains the same.

5.4 Adjusting the alignment

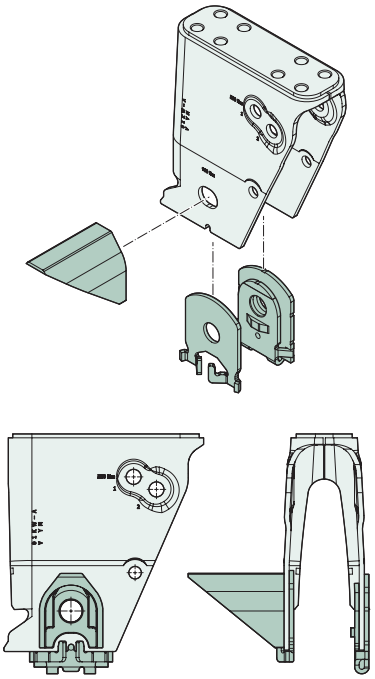
The instructions below apply for all hanger brackets.



Hanger bracket for welding
Right - Left (as drawn)

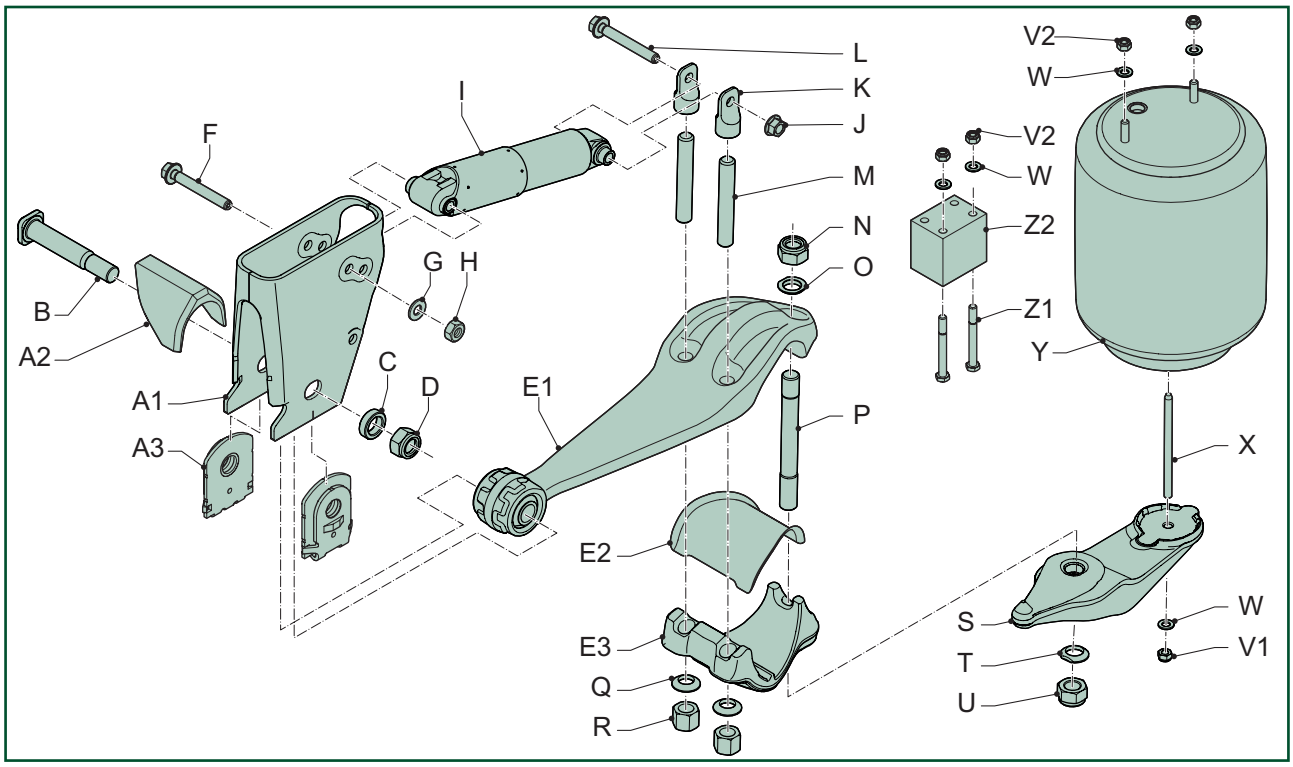


Bolt-on hanger bracket
Right - Left (as drawn)



6 Remove and install tasks

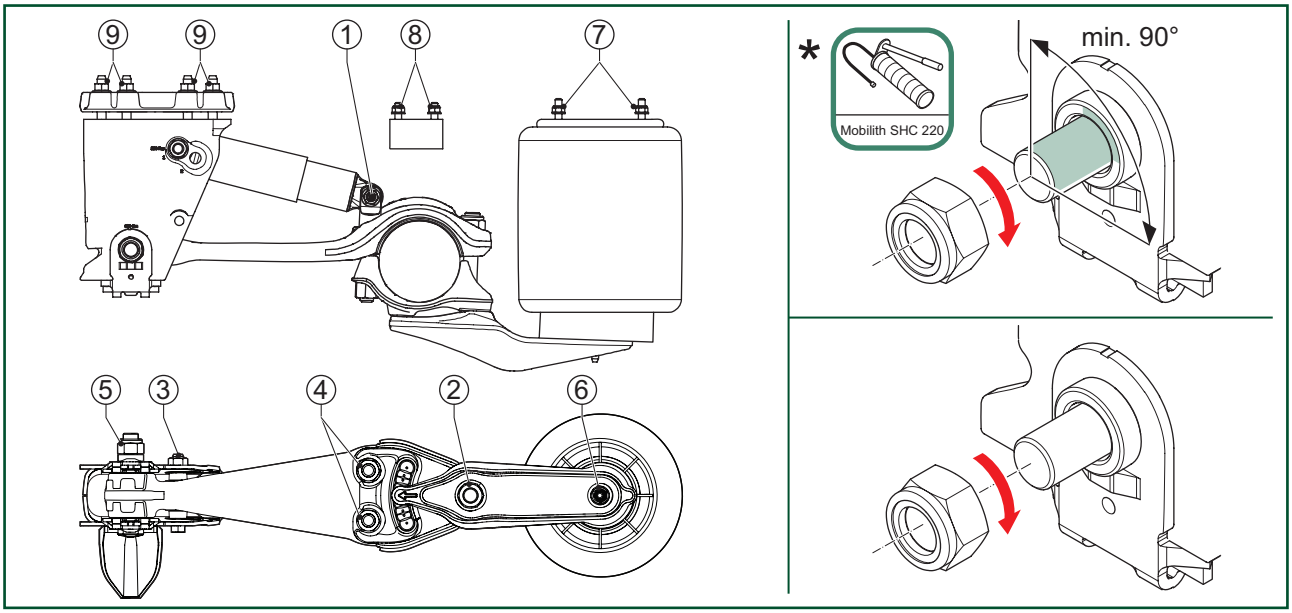
6.1 Exploded view of the air suspension system



A1 Hanger bracket
A2 Weld bracing
A3 Wear plate
B Pivot bolt
C Spacer
D Lock nut
E1 Trailing arm
E2 Zinc plate
E3 Axle seat
F Upper shock absorber bolt
G Washer
H Nut
I Shock absorber
J Lock nut
K Shock absorber mounting ear
L Lower shock absorber bolt
M Threaded end
N Lock nut
O Spherical washer
P Threaded end
Q Spherical washer
R Axle clamping nut
S Tail end
T Spherical washer
U Axle clamping nut
V1 Lock nut
V2 Lock nut
W Washer
X Threaded end
Y Air spring
Z1 Bolt
Z2 Bump

6.2 Tightening torques of the air suspension system

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



Torques

	item	size	width across flats	inspection	when replacing
1	shockabsorber (bottom)	M16	24	300 Nm	170 Nm + 270°
2	axle clamp (rear)	M27	41	750 Nm	950 Nm (+50 / -0) + apply grease min 90° of the thread surface + ring*
3	shock absorber (top)	M20	24 & 30	450 Nm	550 Nm (+50 / -0)
4	axle clamp (front)	M24	36	650 Nm	800 Nm (+50 / -0)
5	pivot bolt	M27	41	750 Nm	950 Nm (+50 / -0) + apply grease min 90° of the thread surface + ring* Or 1050 Nm (+50 / -0) without grease
6	air spring (bottom)	M12	19	40 Nm	66 Nm (+0 / -16)
7	air spring (top)	M12	19	30 Nm	30 Nm (+10 / -0)
8	bump fastening	M12	19	30 Nm	30 Nm (+10 / -0)
9	bolted bracket	M16	24	300 Nm	170 Nm + 270°

* Grease specification: Litium complex grease (class 2)

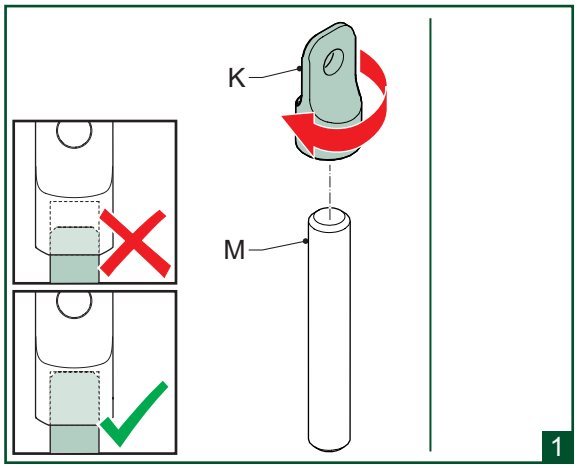
6.3 (Dis)assembly of the air suspension system

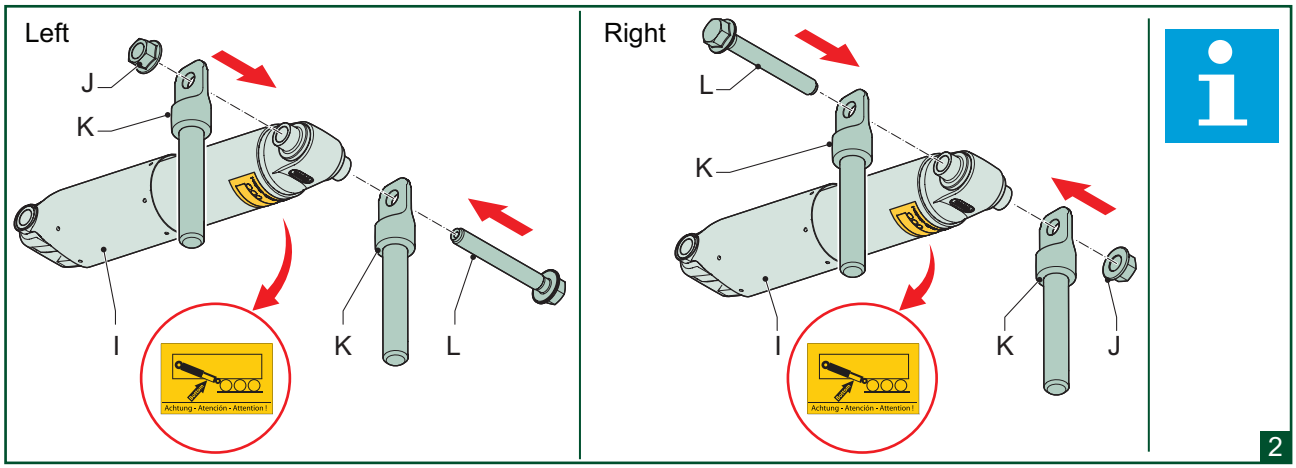
	When loosening the fasteners of the axle clamping, do not re-use these fasteners. Always use new fasteners.

Carry out the following steps in the order given:

1. Loosen the rear axle clamp.
2. Loosen the front axle clamp.
3. Loosen the upper shock absorber bolt.
4. Loosen the lower shock absorber bolt.
5. Loosen the pivot bolt.
6. Loosen the lock nut at the bottom of the air spring.
7. Loosen the lock nuts at the top of the air spring.

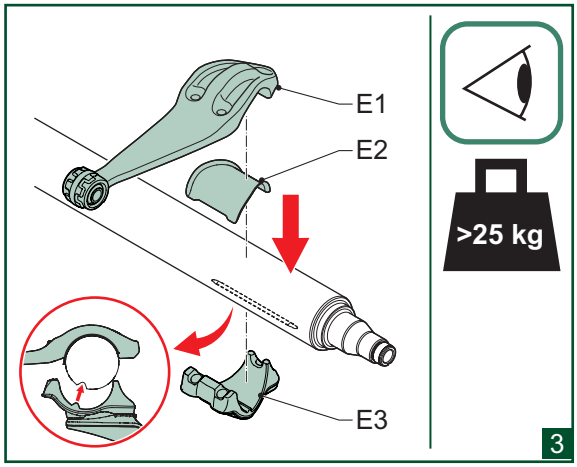
6.4 Prepare the shock absorber

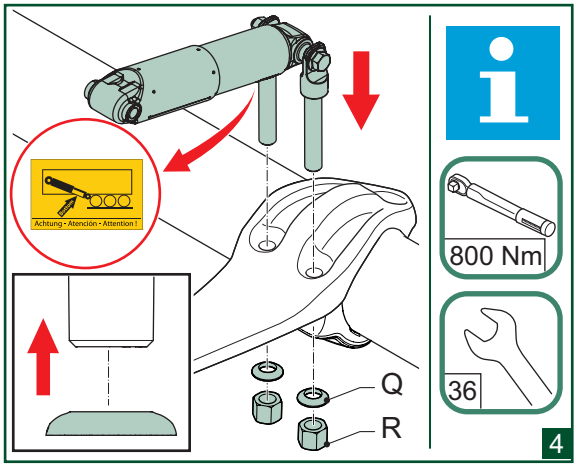




To facilitate replacement of the shock absorber, always fit the lower shock absorber bolt from the inside.
So per axle, left and right differ!

6.5 Fasten the axle clamp (front)



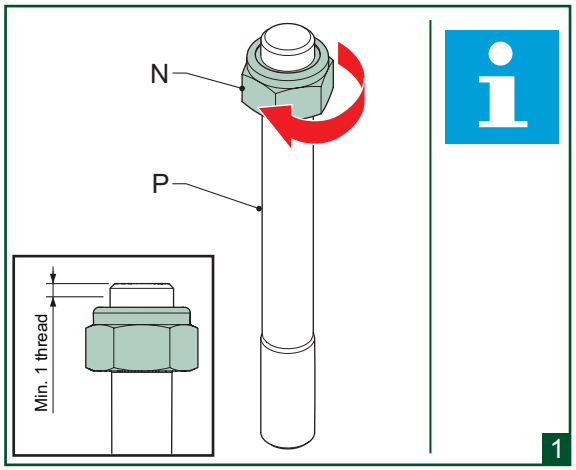


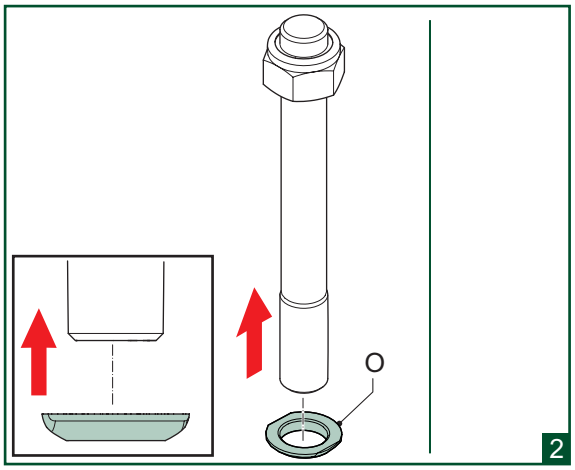
For the tightening torque of the axle clamp (front), see section 6.1.
Always tighten nuts (R) before tightening nuts (U)!

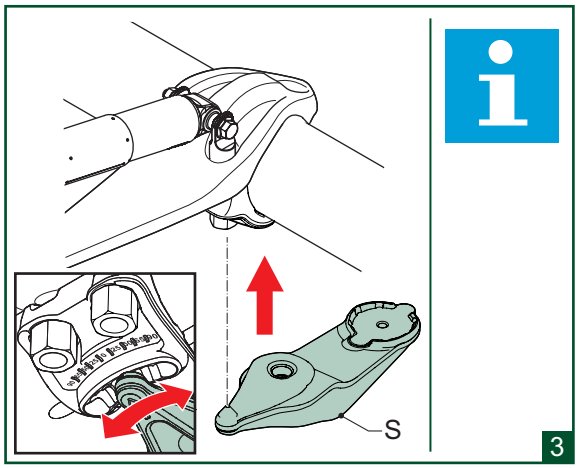
Torques

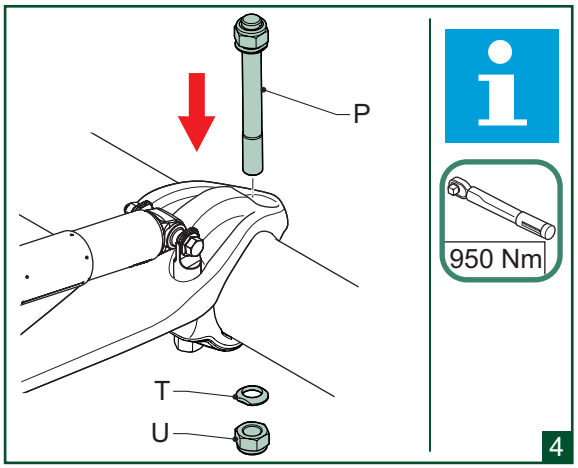
item	size	width across flats	inspection	when replacing
axle clamp (front)	M24	37	650 Nm	800 Nm (+50/0) steps 200 Nm L+R

6.6 Fastening of the axle clamp (rear)









1	Leave one thread free.

3	Check the correct air spring offset.

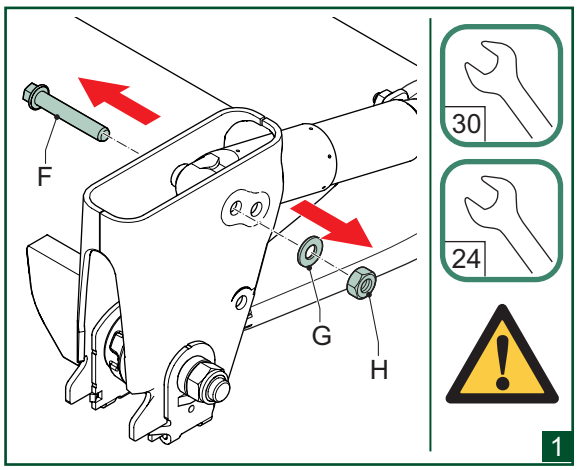
4	Make sure that the spherical washer is positioned correctly in the trailing arm. Make sure to apply the correct tail end offset. See section “conventions”. For the tightening torque of the axle clamp (rear) and the grease specifications, see section 6.1.

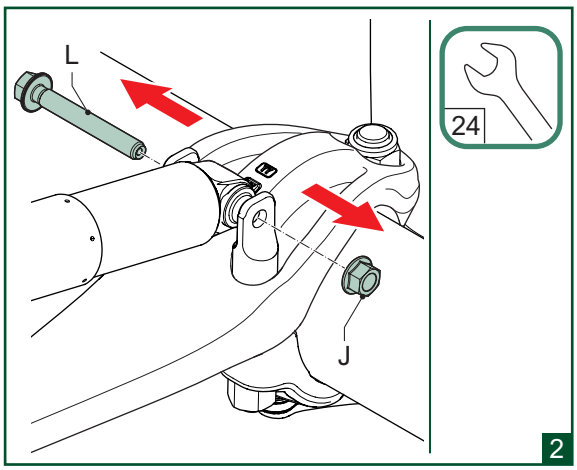
Torques

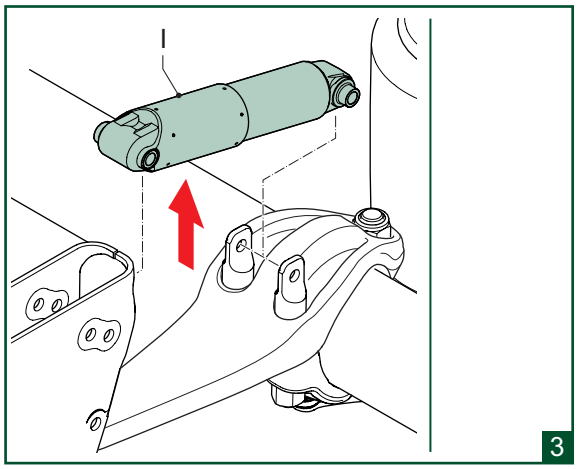
item	size	width across flats	inspection	when replacing
axle clamp (rear)	M27	41	750 Nm	950 Nm (+50/-0) + apply grease min 90° of the thread surface + ring*

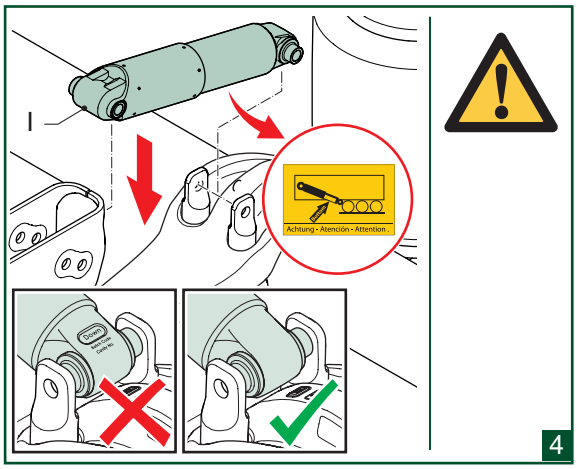
* Grease specification: Litium complex grease (class 2)

6.7 Replace the shock absorber



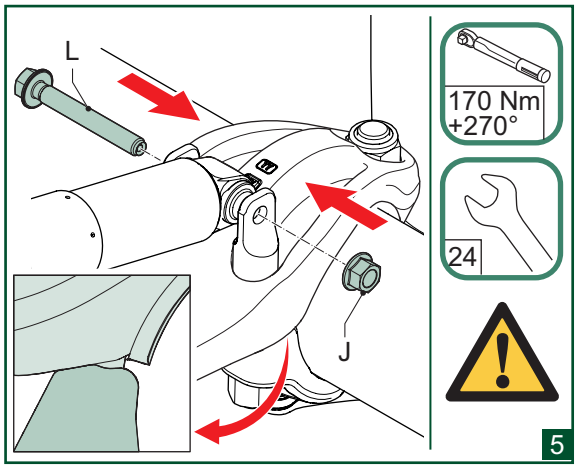


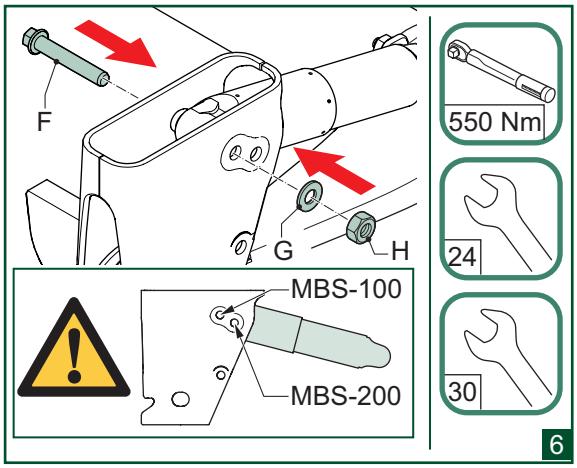




1	Work safely. Make sure that the axle is adequately supported.
4	Make sure the yellow sticker is facing down

6.7 Replace the shock absorber (continued)





5	Bolt shock absorber from inside to outside.

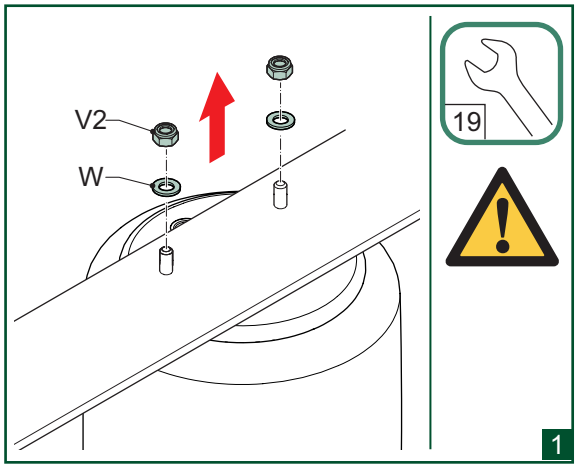
6	Check for correct torque, and use the correct hole for MBS-100 or MBS-200.

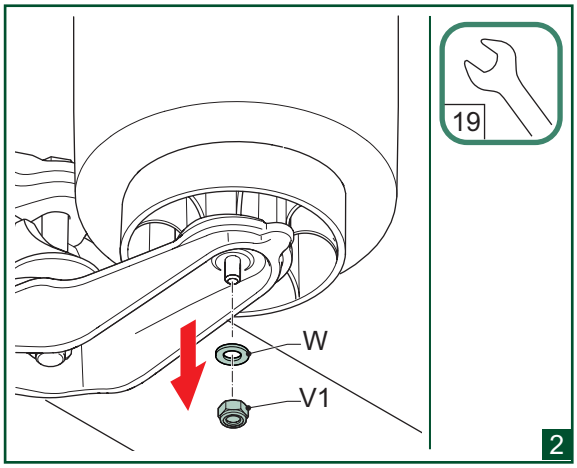
Torques

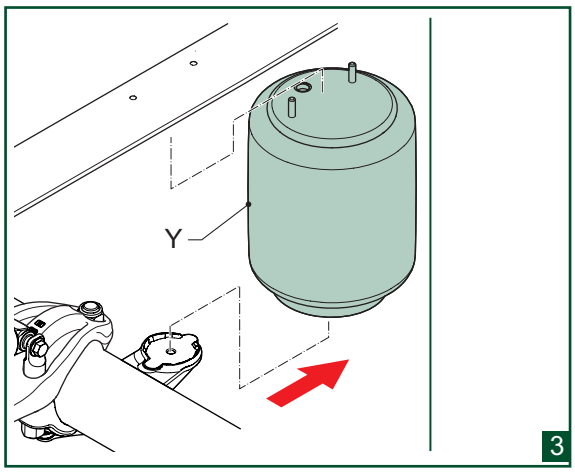
item	size	width across flats	torque (Nm)
upper shock absorber bolt (F)	M20	30	550 Nm (+ 50 Nm - 0 Nm) Check 450 Nm
lower shock absorber bolt (L)	M16	24	170 Nm + 270° Check 300 Nm

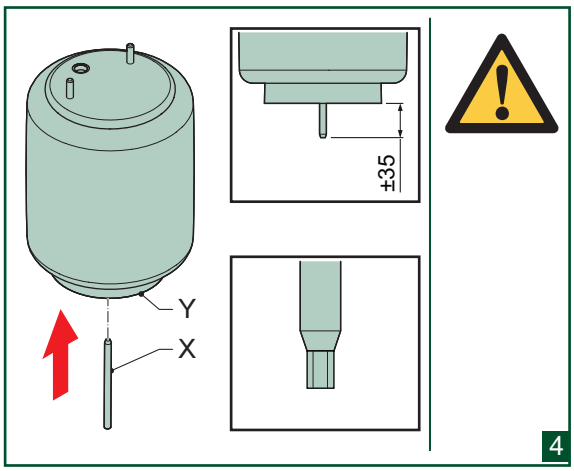
6.8 Replace the air spring

	Before replacement disconnect the air line.



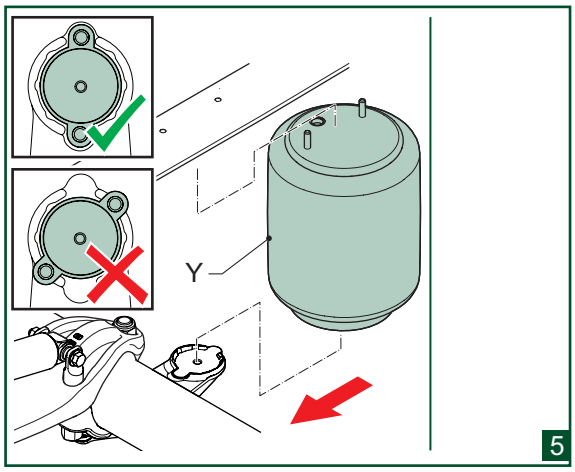


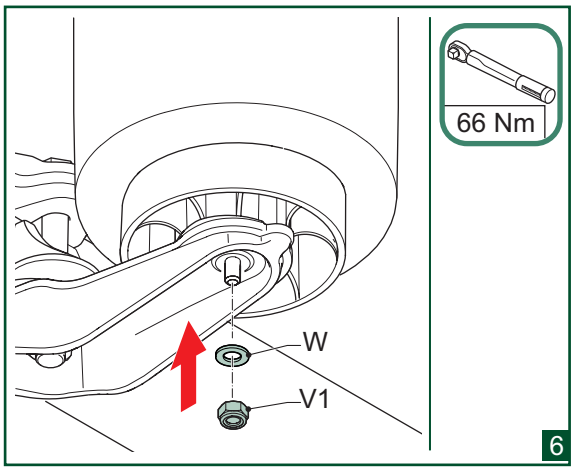


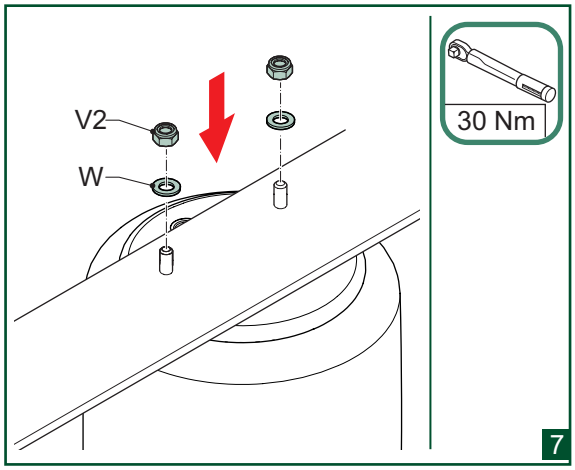


1	Work safely. Make sure that the axle is adequately supported.

4	Make sure the treaded end is completely inserted into the air spring bottom piece.





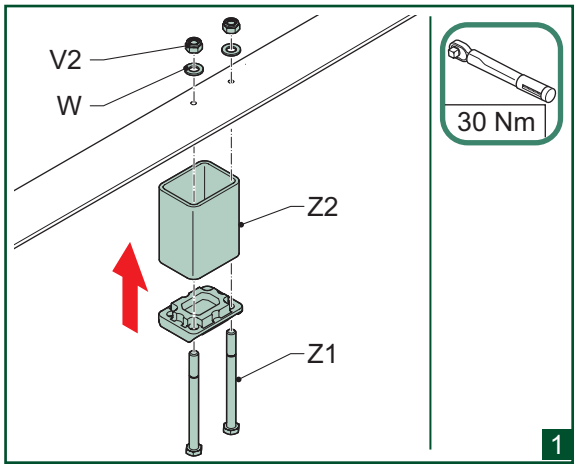


After replacement reconnect the air line.

Torques

item	size	width across flats	torque (Nm)
lock nut (V1)	M12	19	66 Nm (+ 0 Nm - 16 Nm) Check 40 Nm
lock nut (V2)	M12	19	30 Nm (+ 10 Nm - 0 Nm) Check 30 Nm

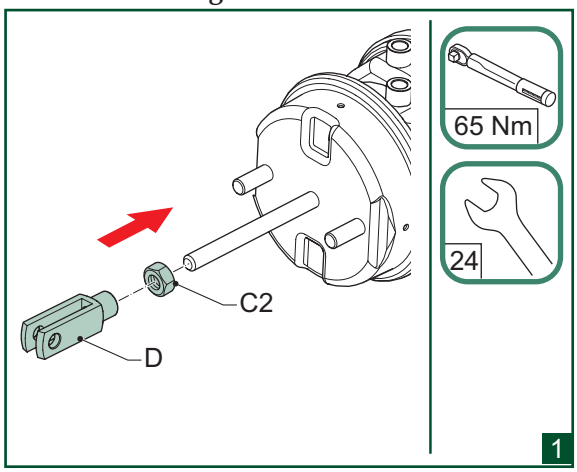
6.9 (Re)Place the bump stop

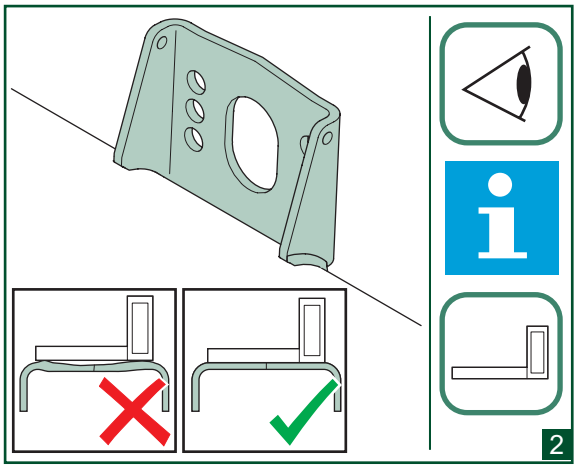


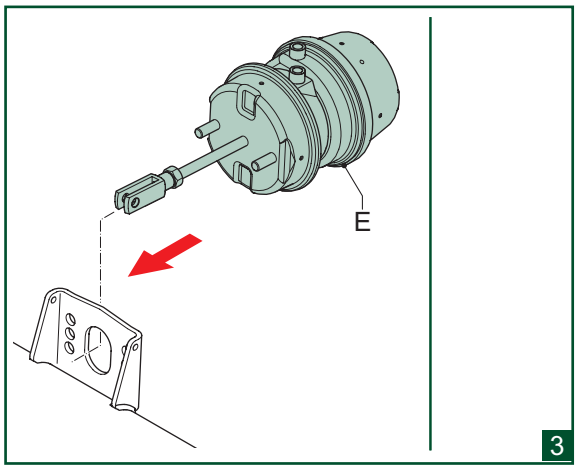
Torques

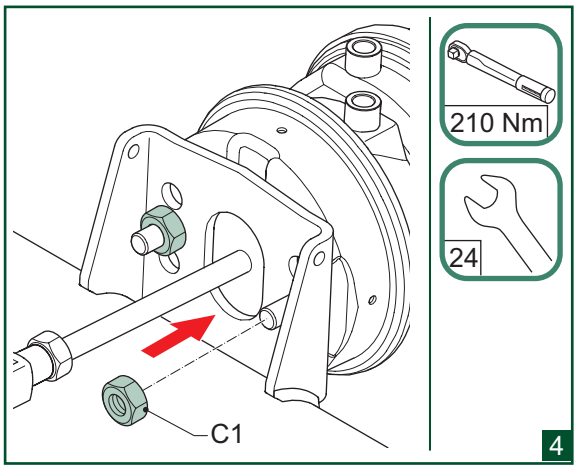
item	size	width across flats	torque (Nm)
lock nut (V2)	M12	19	30 Nm (+ 10 Nm - 0 Nm) Check 30 Nm

6.10 Mounting the brake cilinder





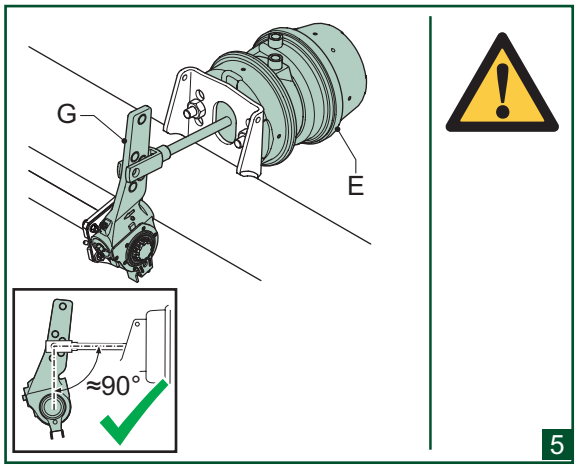


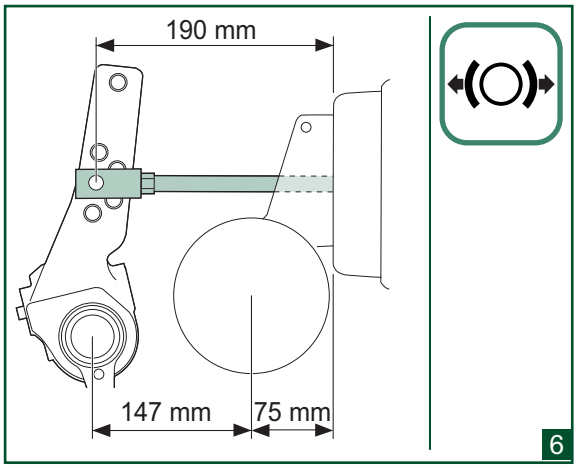


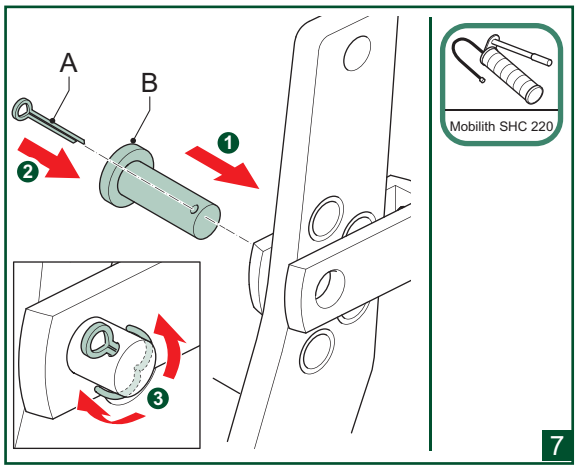
Check that the brake cylinder seat is perfectly flat. If not, repair. Mount the new brake cylinder using the same hole positions as before.
Prüfen, ob der Sitz des Bremszylinders absolut eben ist. Falls nicht, muss er repariert werden. *Den neuen Bremszylinder über die gleichen Bohrungen einbauen, die vorher verwendet wurden.*
Assurez-vous que le siège du cylindre de frein est parfaitement plat. Sinon, réparez. Montez le nouveau cylindre de frein dans les mêmes orifices que précédemment.
Controleer of de zitting van de remcilinder perfect vlak is. Zo niet, verhelp dit. *Monteer de nieuwe remcilinder met gebruikmaking van de eerder gebruikte gaten.*

Torques / *Drehmomente* / Couples de serrage / *Aanhaalmomenten*

item / *Element* élément / *onderdeel*	**size / *Größe* taille / *maat***	**width across flats / *Schlüsselweite* largeur entre les bords / *sleutelwijdte***	**inspection**	**when replacing**
Set nut (C2) *Einstellmutter (C2)* Contre-écrou (C2) *Stelmoer (C2)*	M16	24	60 Nm	65 Nm (±4)
Nut (C1) *Mutter (C1)* Écrou (C1) *Nut (C1)*	M16	24	175 Nm	210 Nm (-30)

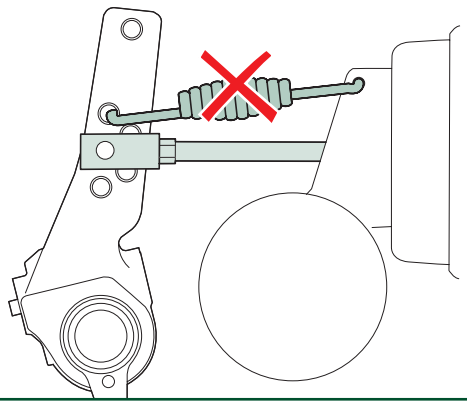




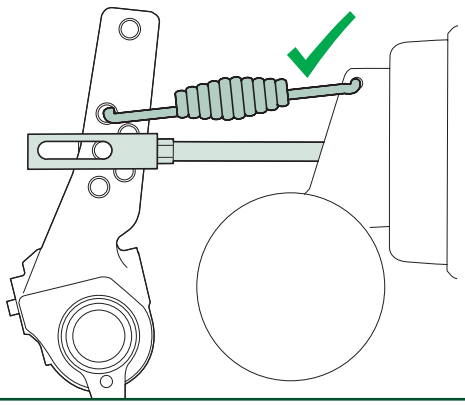


When the brake is actuated, the angle must be approximately 90°.
Der Winkel muss 90° betragen, wenn die Bremse betätigt wird.
Lorsque le frein est actionné, l'angle doit être de 90°.
Bij bediening van de rem moet de hoek 90° zijn.

Forkhead assy



Forkhead slot assy



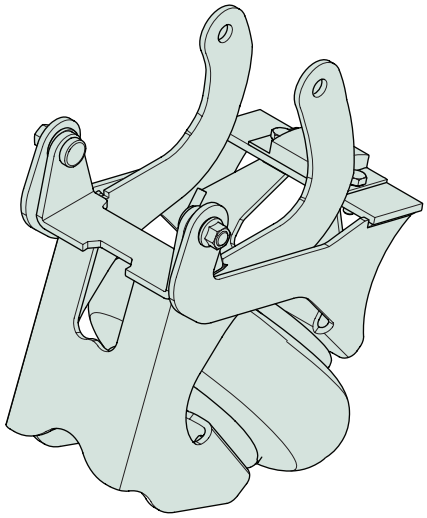
Use external return springs only in combination with slotted forkhead.

7 Axle lift

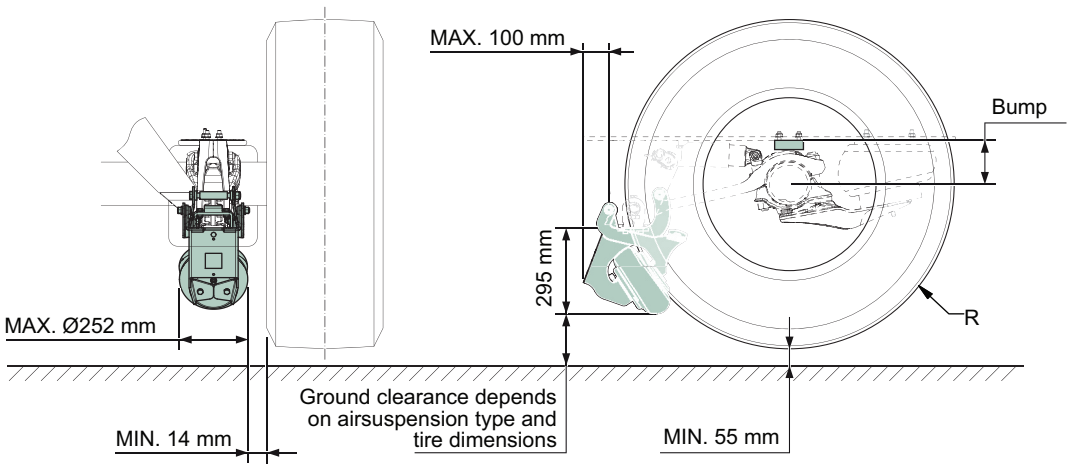
Key features of the axle lift:
- Suitable for retro-fitting
- Fits on both sides (left / right) of the axle
- Fits on both the drum brake axle and the disk brake axle
- Weight: approx. 11.50 kg
- Not lifted pressure: 0 bar

Per axle two axle lifts are required.

7.1 Overview of the axle lift

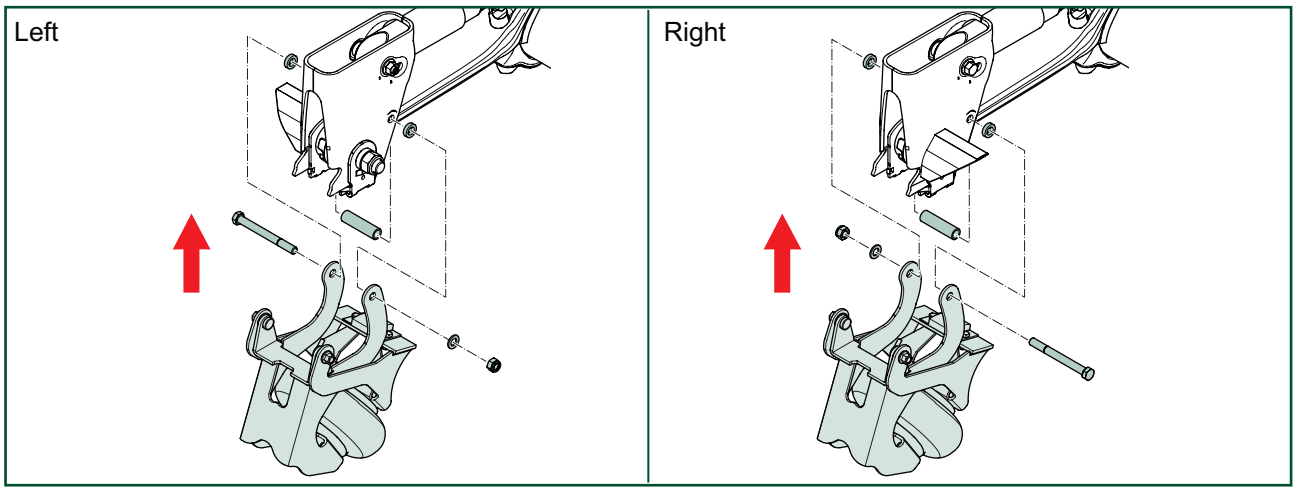


7.2 Ground clearance of the axle lift



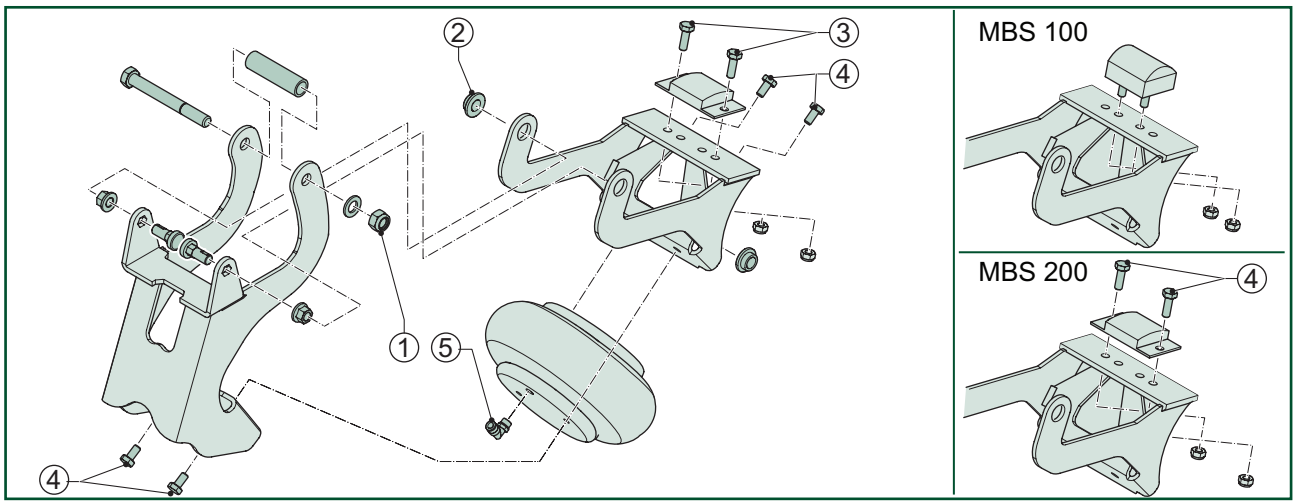
Always check the ground clearance. Minimum ground clearance: 200 mm. The ground clearance at full axle-up travel (loaded without pressure) depends on the type of suspension system and the tyre size. The clearance between the road and the tyre when the axle is lifted is the axle-up travel minus the deformation of the tyre. Above data are calculated with 385/65 R22.5 tyres (R_{stat} 536).

7.3 Assembling the axle lift



To facilitate replacement of the axle lift, always fit the mounting bolt on the inside.

7.4 Tightening torques of the axle lift



Torques

	item	size	width across flats	torque (Nm)
1	mounting nut	M16	24	200 Nm (+ 20 Nm - 20 Nm)
2	pivot point nut	M14	22	150 Nm (+ 10 Nm - 10 Nm)
3	mounting rubber support	M10	17	50 Nm (+ 10 Nm - 10 Nm)
4	air spring mounting	M10	17	30 Nm (+ 10 Nm - 10 Nm)
5	air line connection	¼"	-	20 Nm (+ 10 Nm - 10 Nm)

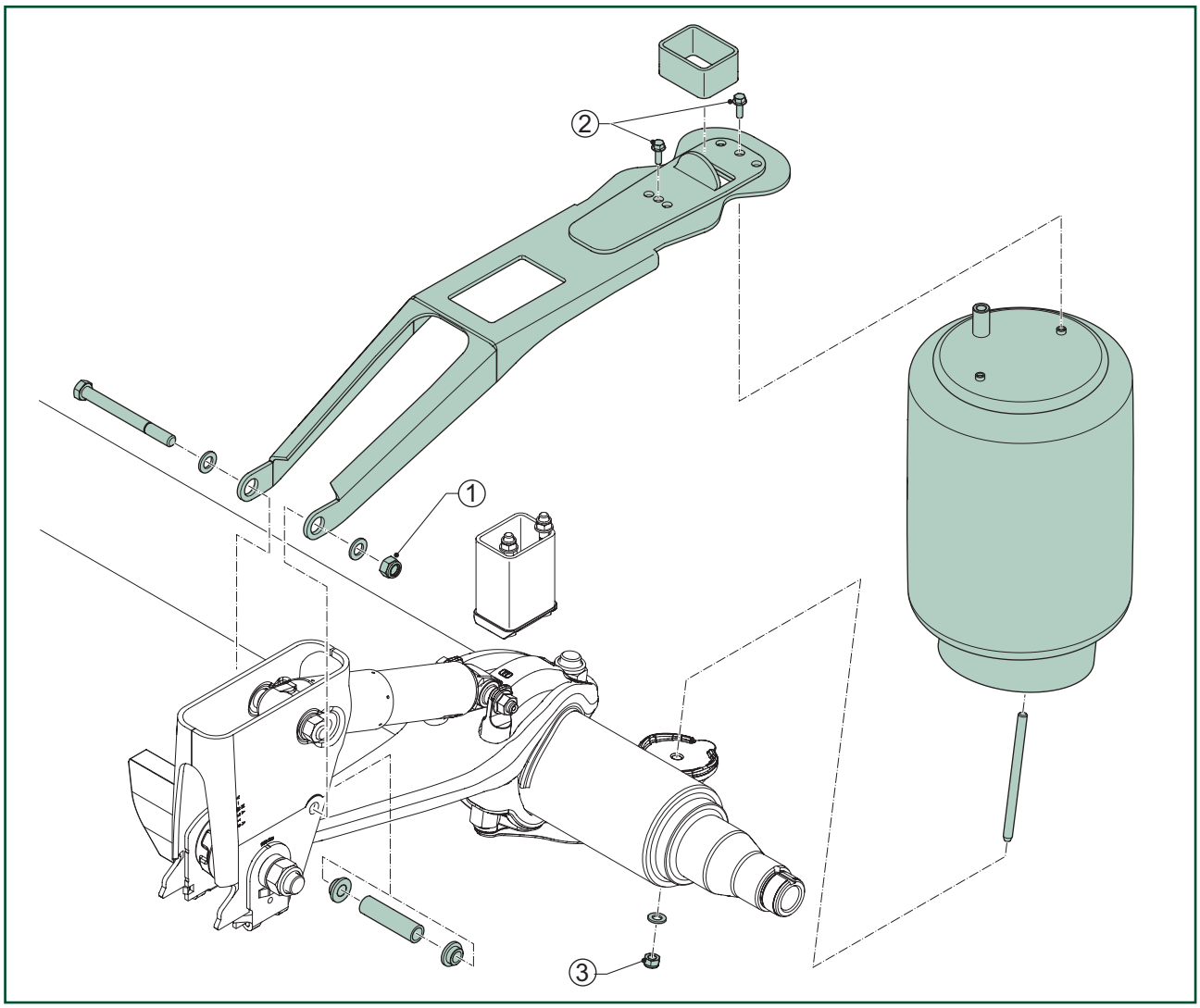
8 Splitter system

There are two types of splitters available.
- Conventional splitter
- Lightweight splitter

8.1 Conventional splitter

	With the conventional splitter ,offset 0mm and offset 25mm are possible.

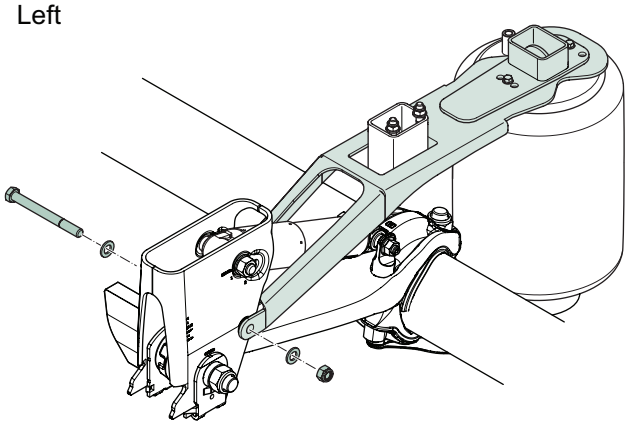
8.1.1 Tightening torques of the conventional splitter.



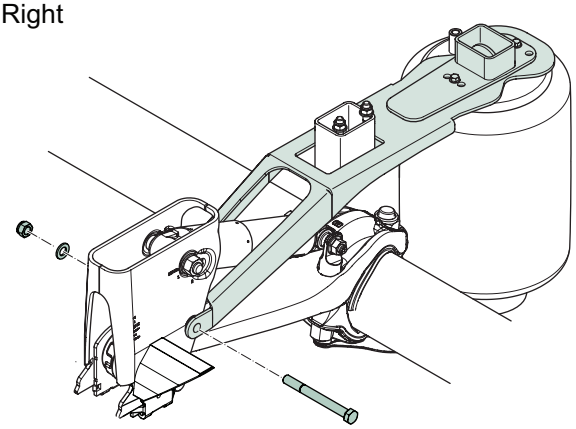
Torques

	item	size	width across flats	torque (Nm)
1	Bolt	M16	24	200 Nm (+ 20 Nm - 20 Nm)
2	Bolt	M8	13	25 Nm (+ 3 Nm - 3 Nm)
3	lock nut (V1)	M12	19	66 Nm (+ 0 Nm - 16 Nm)

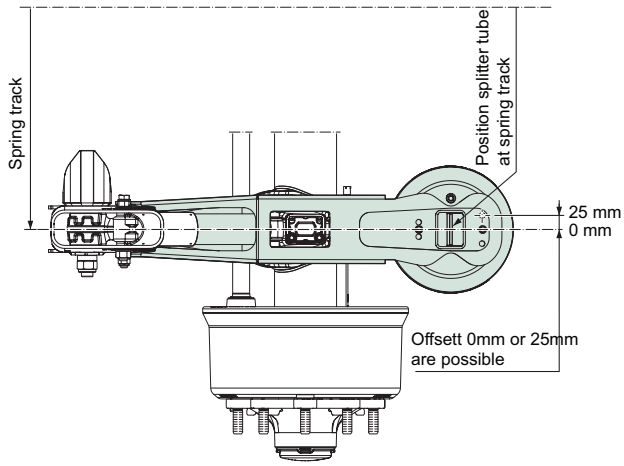
Left

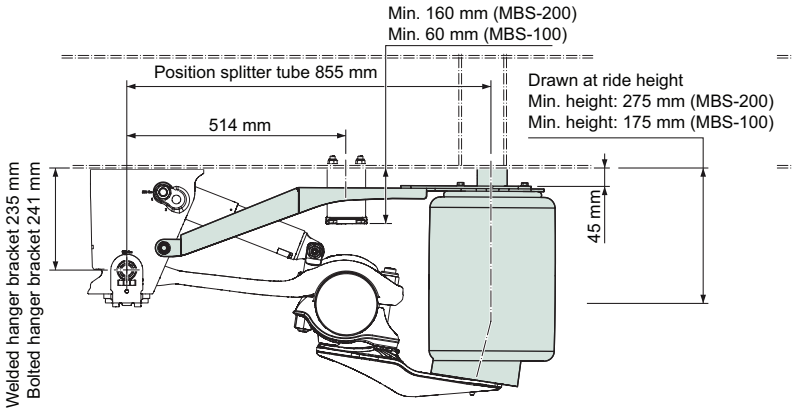


Right

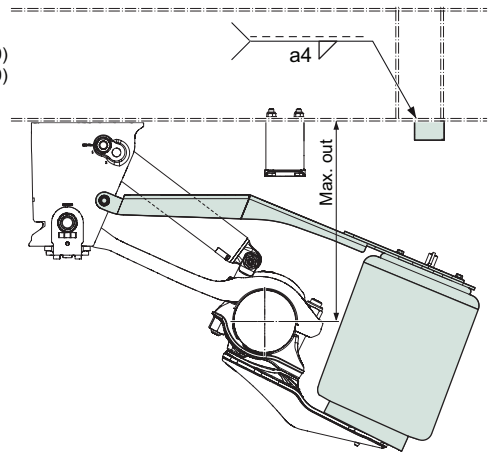


To facilitate replacement of the splitter, always fit the mounting bolt on the inside.



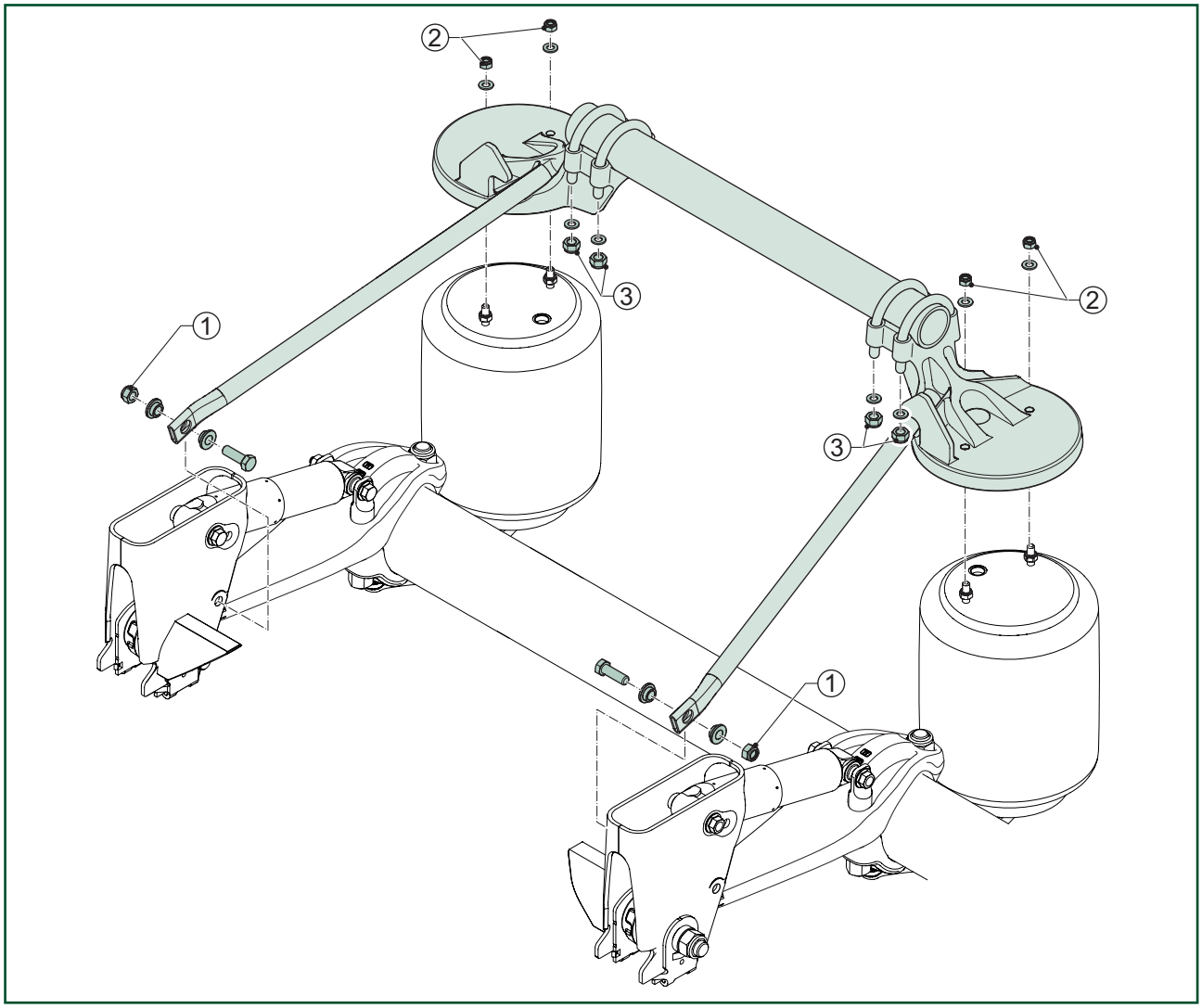


Splitted condition



8.2 Modular splitter

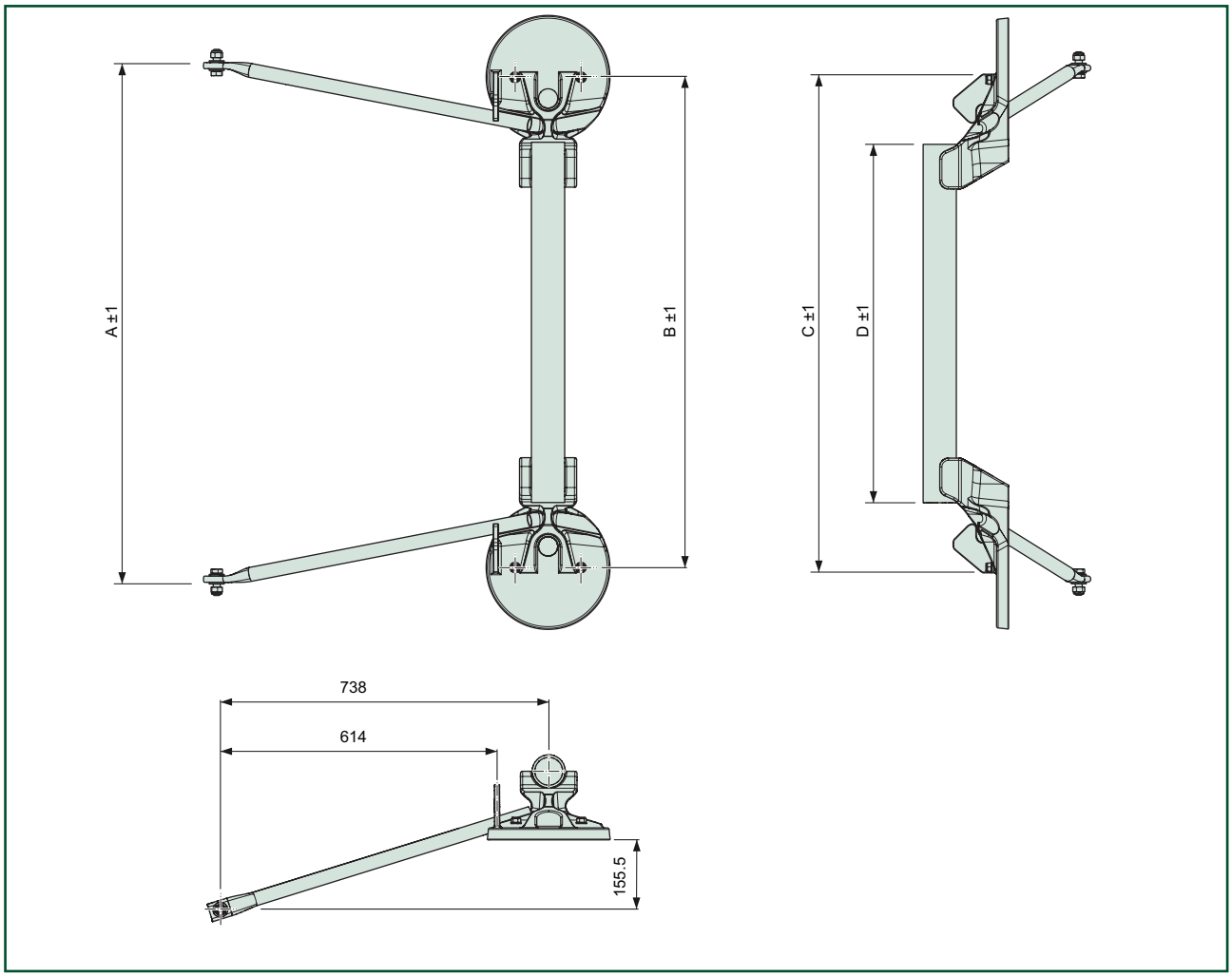
8.1.1 Tightening torques of the lightweight splitter.



To facilitate replacement of the splitter, always fit the mounting bolt on the inside.

Torques

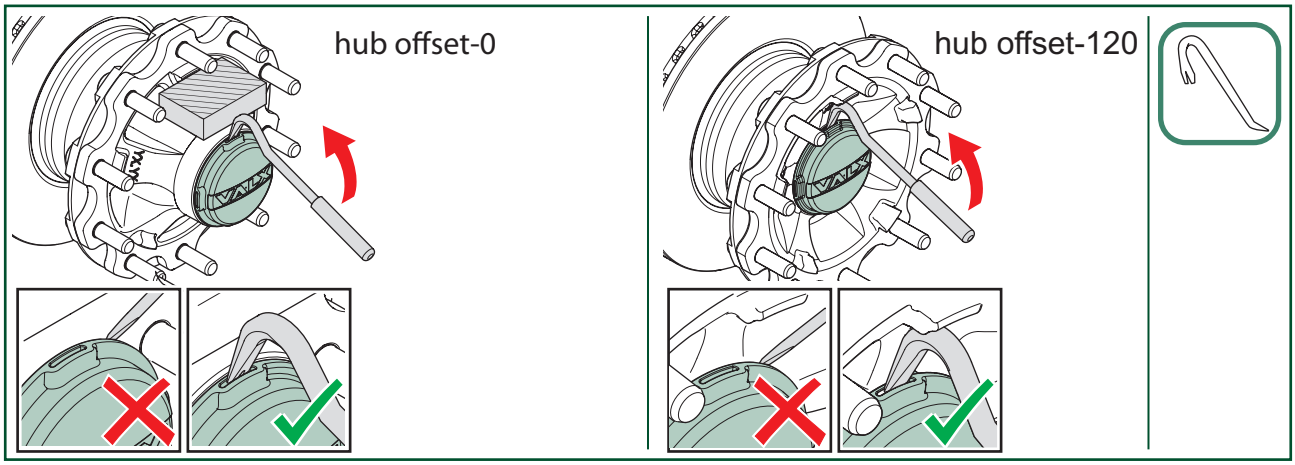
	item	size	width across flats	torque (Nm)
1	Bolt	M16	24	200 Nm (+ 20 Nm - 20 Nm)
2	Bolt	M8	13	25 Nm (+ 3 Nm - 3 Nm)
3	Bolt	M12	19	70 Nm (+ 10 Nm - 10 Nm)



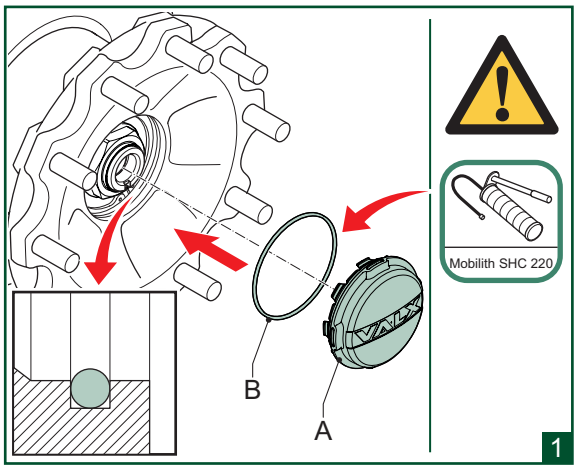
spring track (in mm)	chassis width center to center (in mm)	chassis rail width (in mm)	air spring offset (in mm)	A (in mm)	B (in mm)	C (in mm)	D (in mm)
1200	1200	150	90	1087	1016	1045	720
1300	1300	150	90	1187	1116	1145	820

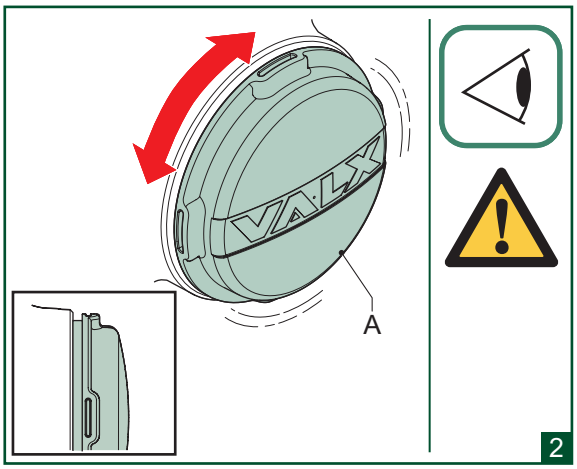
9 Hubcap

9.1 Removing the hubcap



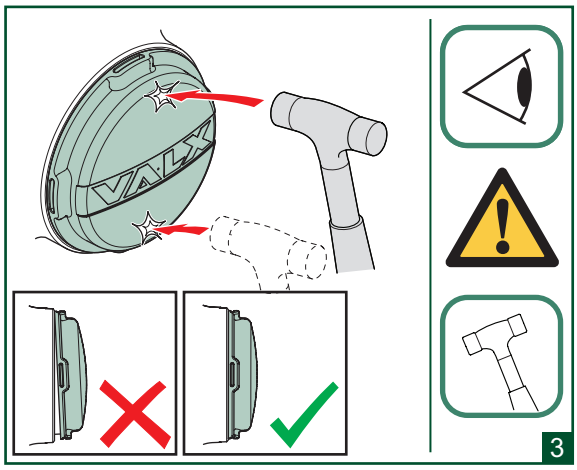
9.2 Mounting the hubcap





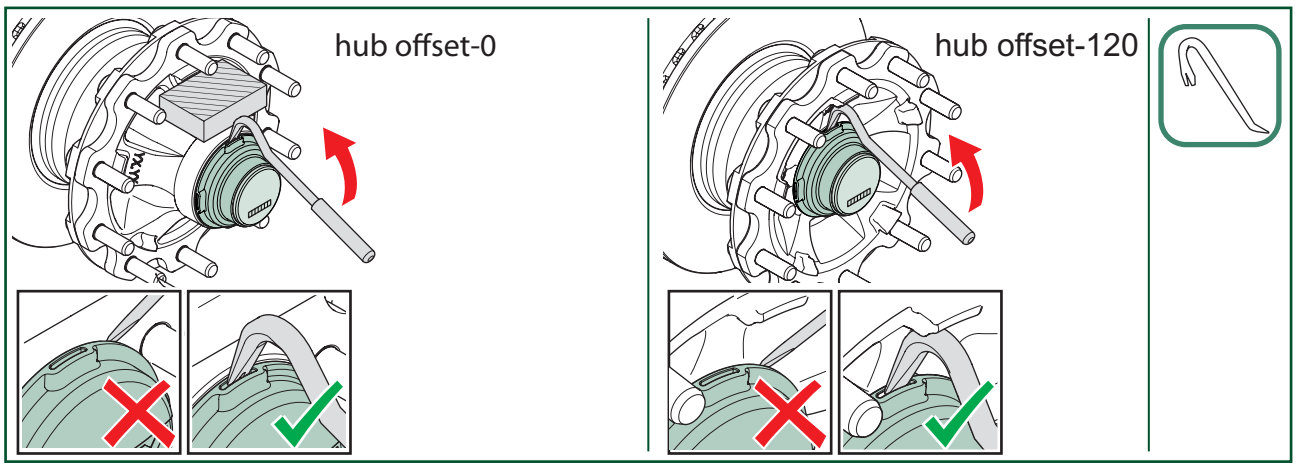
1	Always replace the O-ring (B) whenever the hubcap (A) has been removed. Always check whether the O-ring (B) is properly seated and not damaged.

2	Make sure the hub cap (A) can rotate freely to ensure the O-ring is seated properly before step 3.

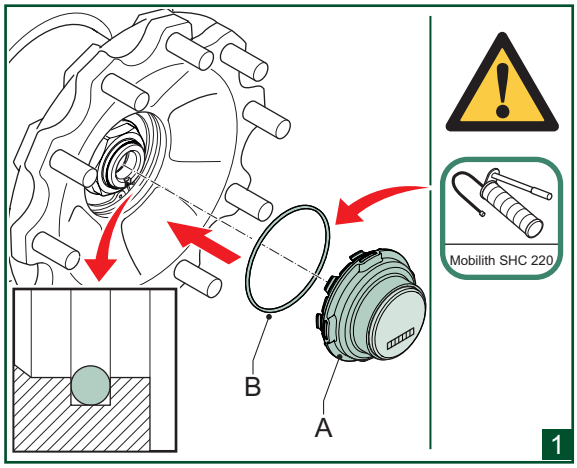


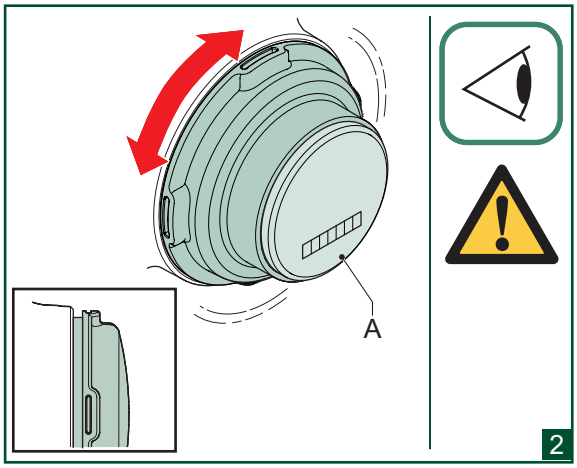
	Make sure there is no gap between the edge of the hub cap and the hub flange, and check that the hub cap cannot be rotated by hand when fitted.

9.3 Removing the hubcap with hubodometer



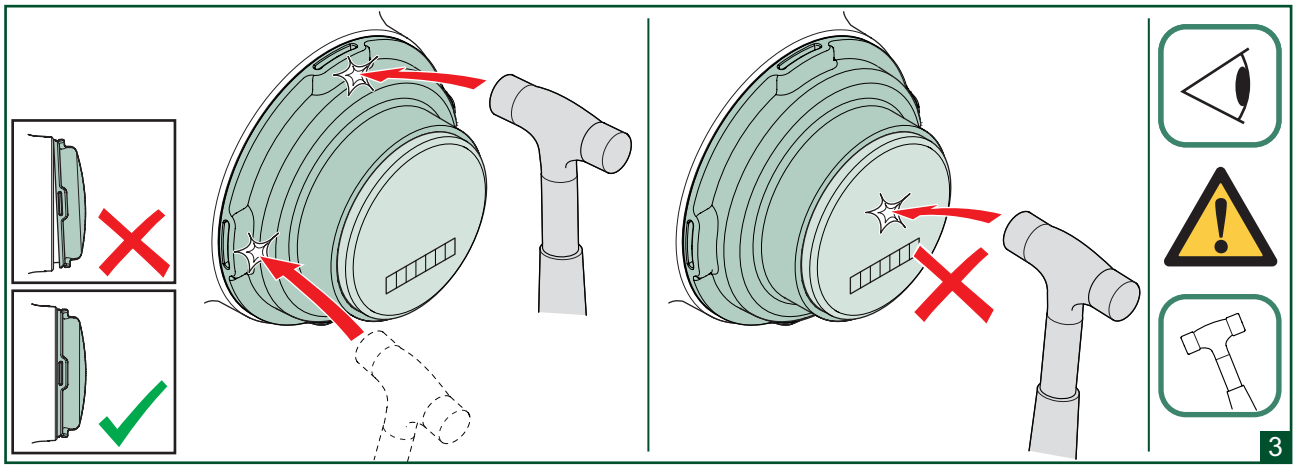
9.4 Mounting a hubcap with hubodometer





1	Always replace the O-ring (B) whenever the hubcap (A) has been removed. Always check whether the O-ring (B) is properly seated and not damaged.

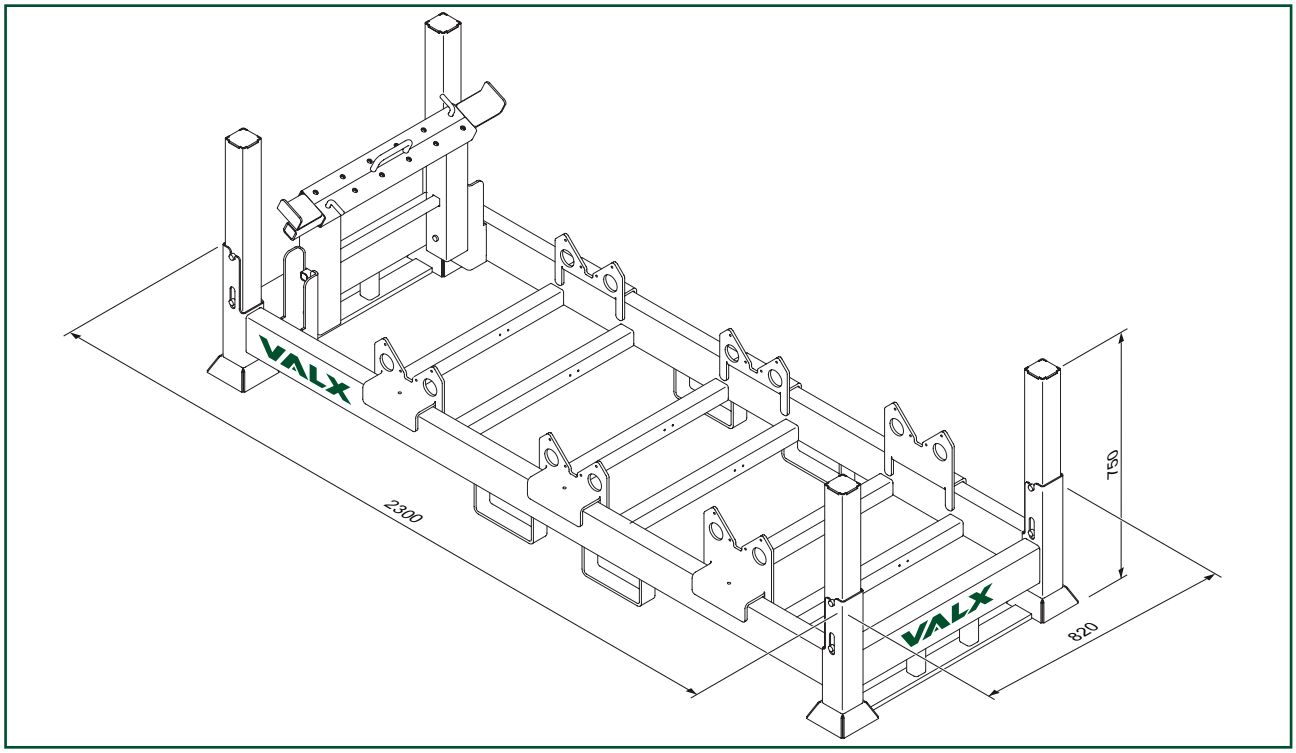
2	Make sure the hub cap (A) can rotate freely to ensure the O-ring is seated properly before step 3.



	Make sure there is no gap between the edge of the hub cap and the hub flange, and check that the hub cap cannot be rotated by hand when fitted.

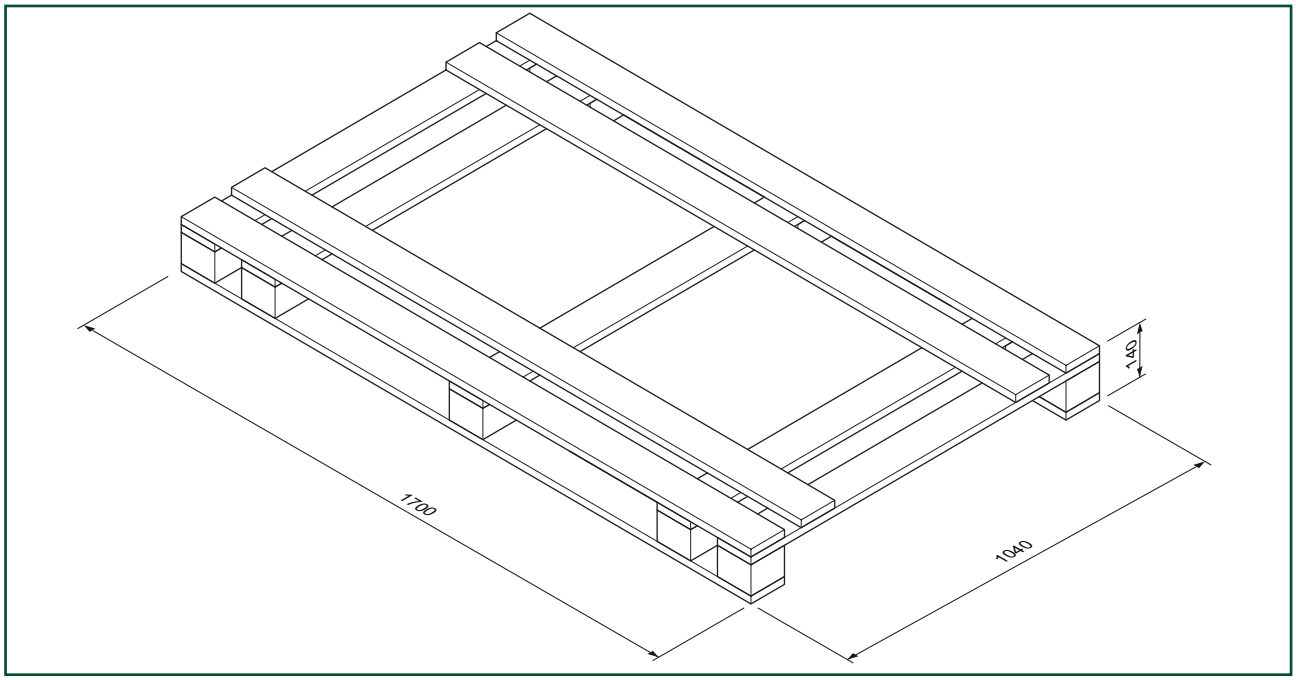
10 Packaging

10.1 Transportation rack (VALX partnumber 90 900 001)



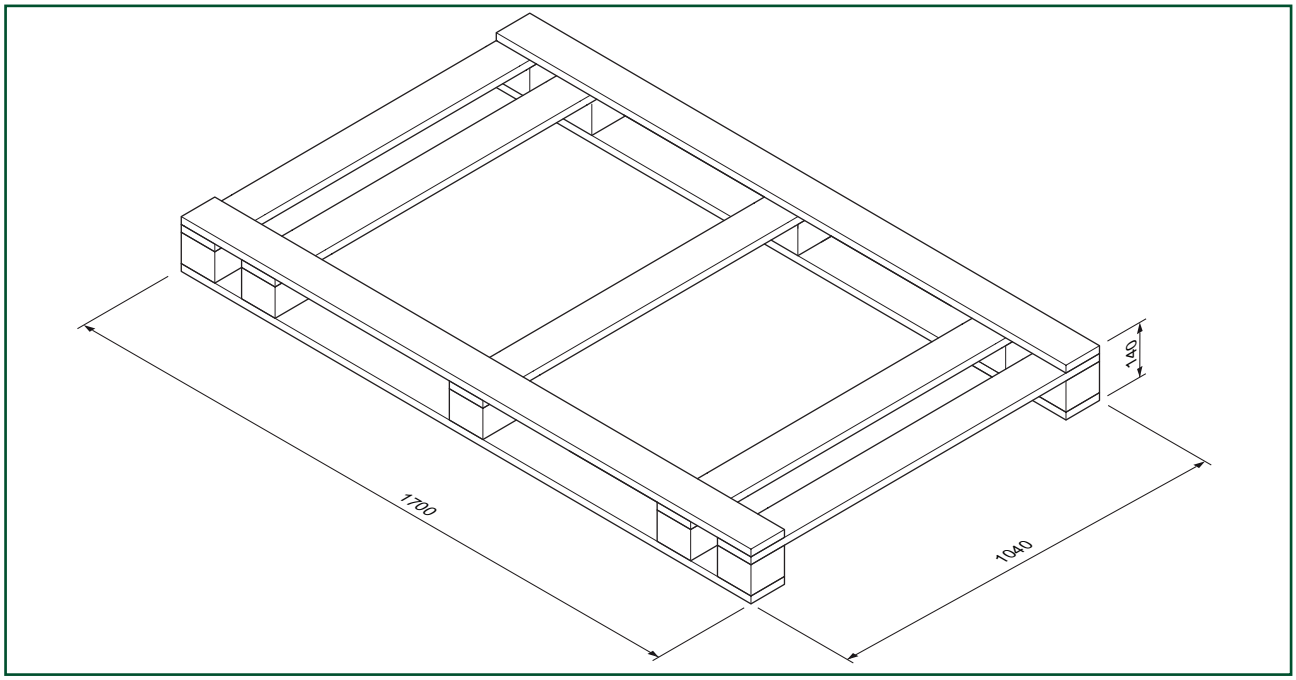
The weight of the transportation rack is approximatily 170Kg.

10.2 Pallet (VALX partnumber 90 900 020)



If you have any questions about the transportation rack, pallet.
Please contact VALX at tel: +31 (0)40-20 88 444.

10.3 Pallet (VALX partnumber 90 900 022)



If you have any questions about the transportation rack, pallet.
Please contact VALX at tel: +31 (0)40-20 88 444.