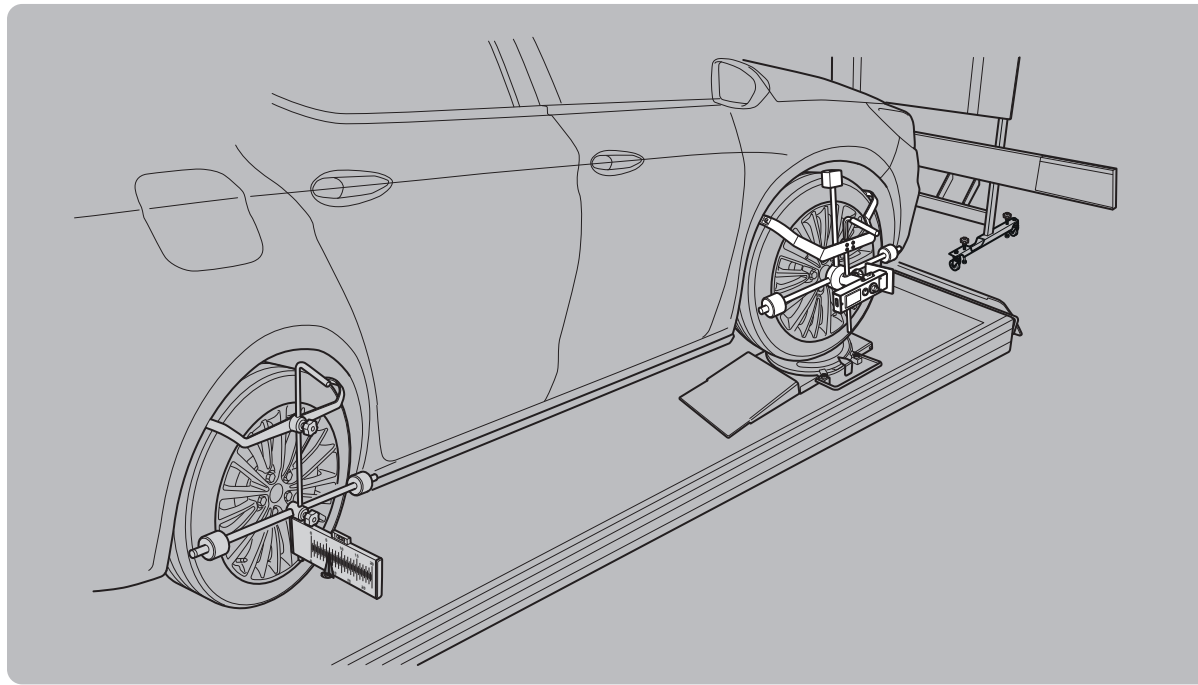




WHEEL ALIGNMENT KIT

Operating Instructions

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2. Product description:

Intended Use

The Wheel Alignment Kit is a system for the calibration and alignment of suspension geometries. The system enables the fast measurement of key variables such as toe, camber, toe-out on turns, caster, king pin inclination/steering axis inclination, steering wheel centring and axial skew.

In combination with the CSC-Tool SE, the Wheel Alignment Kit can be used to quickly check certain suspension geometries, e.g. prior to camera adjustment. With the use of green line lasers it is possible to read off measurement results quickly and accurately and to determine the total toe within one minute.

The wheel alignment assistance software permits the evaluation and documentation of the measured values. The necessary target data for many vehicles are available to users who hold a license (optional).

Important: In the green side bar you can adapt the standard settings and the scope of measurements under Hella Gutmann Solutions GmbH/Settings.

The selection "Extended measurements" provides the option to check and to document the results of the original measurement.

3. Information on Using the Operating Instructions

3.1 About these Operating Instructions

In the operating instructions we have summarised the most important information for you in a clear und understandable form to make starting to work with the CSC-Tool SE WA as straightforward and easy as possible.

3.2 Information on Using the Operating Instructions

These operating instructions contain important information relevant to operator safety.

Please read the operating instructions entirely. Pay special attention to the first pages containing the safety instructions. They are provided solely to assure your safety when working with the device. When working with the device, it is recommended to read the individual work steps in the manual again to prevent hazard of persons and equipment or operating errors.

The device shall be used exclusively by a person qualified in vehicle engineering. Information and knowledge included in this training is not explained further in these operating instructions.

The manufacturer reserves the right to modify these instructions and the device itself without prior notice. We therefore recommend checking it for any updates. These operating instructions must accompany the device in case of sale or any other transfer. The operating instructions must be kept ready to hand and available at all times during the entire service life of the device.

4. Symbols Used

4.1 Marking of Text Parts

	DANGER Text parts marked in this way indicate an imminent dangerous situation, which will lead to death or severe injuries if not avoided.
	WARNING Text parts marked in this way indicate a possibly dangerous situation, which may lead to death or severe injuries if not avoided.
	Caution! This characterisation indicates a possibly dangerous situation, which will lead to minor or slight injuries if it is not avoided.
	This symbol indicates dangerous electric voltage/high voltage.
	NOTICE All texts marked NOTICE indicate a hazard to the device or the environment. The information and instructions shown here must therefore be observed without fail.
	NOTE Texts marked with NOTICE contain important and helpful information. The Observance of these texts is recommended.
	STRUCK-THROUGH WASTE BIN This label indicates that the product must not be discarded as domestic waste. The bar underneath the waste bin indicates whether the product was placed on the market after August 13, 2005.

5. Safety Precautions

5.1 General Safety Precautions

	<ul style="list-style-type: none">• The CSC-Tool SE WA is exclusively intended for use on a vehicle. It is a precondition for use of the CSC-Tool SE WA that the user has a knowledge of technology and is therefore aware of the sources of danger and risks in the repair shop and on motor vehicles.• Before using the device, users must have read the entire operating instructions carefully.• All guidance given in the individual sections of the operating instructions applies. It is important to regard the following measures and safety precautions.• Furthermore, pay attention to all general instructions from labour inspectorates, employers' liability insurance associations and vehicle manufacturers, as well as all laws, stipulations on environmental protection, regulations and instructions which have to be observed by a workshop.
---	--

5.2 Safety Precautions – Risk of Injury

	<p>When working on the vehicle, there is a risk of injury through the vehicle rolling away. Therefore, please note the following:</p> <ul style="list-style-type: none">• Secure the vehicle against rolling.• Additionally set vehicles with automatic transmission to the park position.• Disable the start/stop system to prevent any uncontrolled engine startup.
---	---

5.3 Safety Precautions – Wheel Alignment-Kit

	<p>In order to avoid incorrect handling and injury to the user or Pay attention to the following to prevent a destruction of the Wheel Alignment Kit:</p> <ul style="list-style-type: none">• Set up the Wheel Alignment Kit only in accordance with the assembly instructions.• Protect the Wheel Alignment Kit from strong impacts and do not drop it.• With any damage to the Wheel Alignment Kit, precise alignment of vehicle geometries is no longer guaranteed and warranty and guarantee are thereby rendered void.
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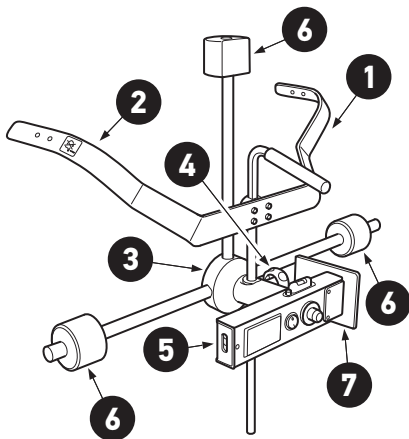
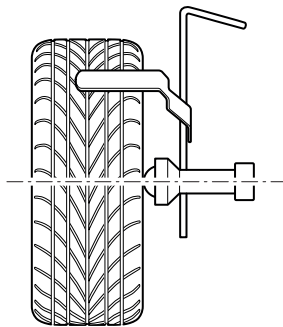
5.4 Safety Precautions – Lasers

 	<p>There is a risk of injury through dazzling the eyes when working with the laser. Therefore, note the following:</p> <ul style="list-style-type: none">• Do not direct the laser beam towards persons, doors or windows.• Never look directly into the laser beam.• Ensure proper room illumination.• Avoid trip hazards.• Secure mechanical parts to prevent them from falling over or coming loose. <p>Laser class 2</p> <p>The accessible laser radiation is within the visible spectral range (400 nm to 700 nm). It is safe for the eyes as long as the exposure time is short (up to 0.25 seconds). Additional radiation shares outside of the wavelength range from 400 nm to 700 nm meet the conditions for Laser class 1. The eye is protected by the eyelid if a user should accidentally, briefly look into the laser beam. Due to the class 2 rating of the laser sight the nomination of a laser protection officer is not necessary.</p>
--	---

5.5 Safety Precautions – Wheel Clamp Module

	<p>WARNING</p> <ul style="list-style-type: none">• Sharp object• Risk of injury/piercing• Always position the wheel clamp module on the rim flange or tire using the handle.
	<p>CAUTION</p> <ul style="list-style-type: none">• Scratching of surfaces• Damage to wheel rims• Always position the spacer set on the rim flange or tire using the handle.

6. Wheel Clamp Module WA

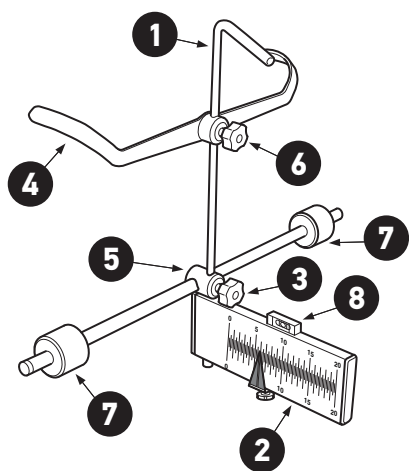


	Name
1	Handle This handle makes it easier to carry the wheel clamp module.
2	Attachment bracket Use this attachment bracket to attach the wheel clamp module to the tire.
3	Shaft with cross connector
4	Screw for locking the shaft with the cross connector Use this set screw to adjust the height of the shaft with the cross connector.
5	Laser module Use the laser to project the real value to the scale of the cross member.
6	Spacer set The spacer set is used to correctly position the wheel clamp module against the tire or the rim.
7	Scale of wheel clamp module Read the test values and measured values from the scale.

Adjusting the wheel clamp module WA correctly:

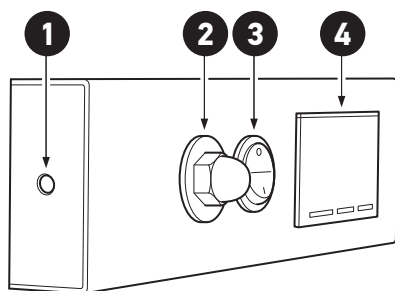
Loosen the set screw of the shaft with the cross connector. Align the shaft with the cross connector to the lug nut and tighten the set screw.

7. Wheel Clamp Module with Hook-On Scale



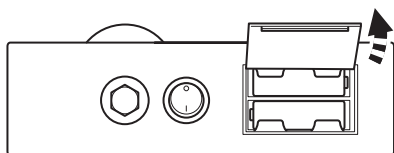
	Name
1	Handle This handle makes it easier to carry the wheel clamp module.
2	Scale of wheel clamp module Read the test values and measured values from the scale.
3	Screw for locking the shaft with the cross connector Use this set screw to adjust the height of the shaft with the cross connector.
4	Attachment bracket Use this attachment bracket to attach the wheel clamp module to the tire.
5	Shaft with cross connector
6	Set screw for attachment bracket Use this set screw to adjust and fix the attachment bracket.
7	Spacer set The spacer set is used to correctly position the wheel clamp module against the tire or the rim.
8	Level gauge Use the level gauge to check whether the wheel clamp module is placed horizontally.

8. Laser Module



	Name
1	Output of the laser beam The laser beam passes out here. Use the laser beam to read the actual value at the scales of the cross member and at the wheel clamp module.
2	Mounting bolt Use this to adjust and secure the laser module.
3	Switch Switch the laser on and off.
4	Battery compartment cover Insert two batteries type AA here.

9. Replacing Type AA Batteries



Proceed as follows to replace the batteries:

1. Switch off the laser beam with the switch.
2. Remove the battery compartment cover, tilting it from the bottom towards the top.
3. Remove the batteries individually.



NOTE

Pay attention to correct installation direction/polarity.

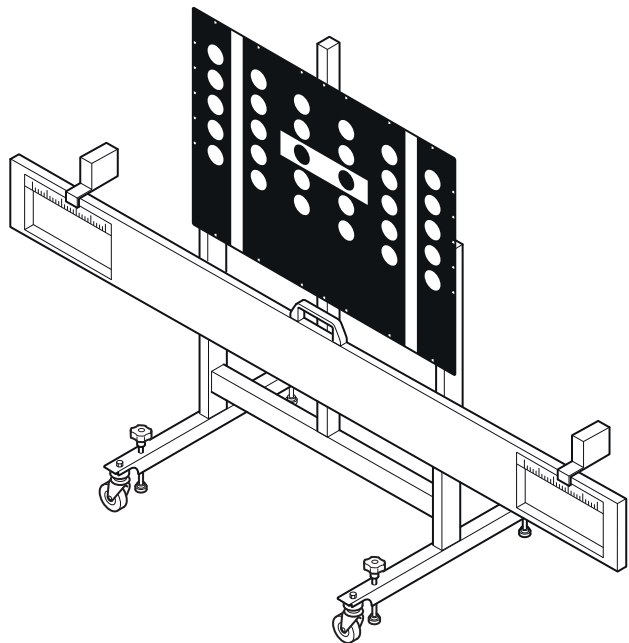
4. Reassemble in the reverse order.

10. Fast Measurements in Combination with the CSC-Tool SE

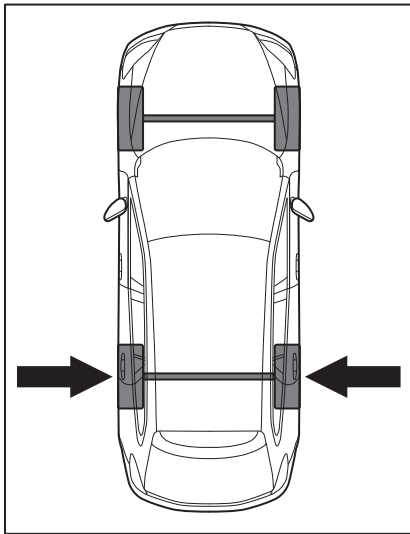
Align the CSC-Tool SE in front of the car according to the relevant operating instructions. All product- and safety-related information in the instructions should be observed!

See below for a description how the total toe on the rear and front axle can be quickly checked in combination with the CSC-Tool SE.

This allows you to determine whether calibration and adjustment of the vehicle sensors is possible or whether wheel alignment measurement should be performed beforehand.



11. Overview: Fast Measurement of Total Toe of Rear Axle

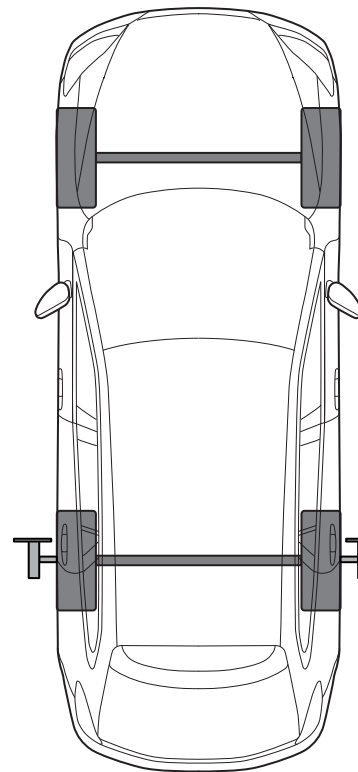
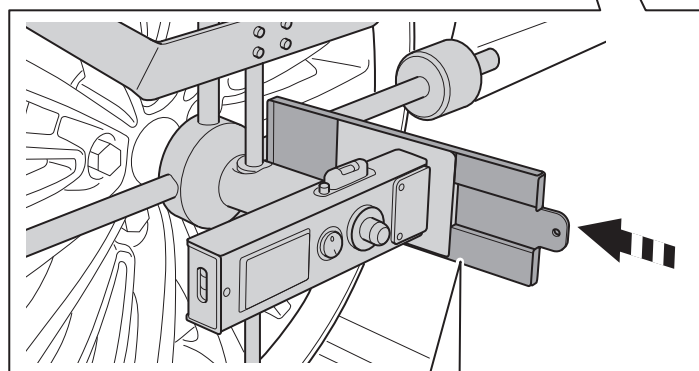


Mount the wheel clamp modules WA with laser modules on the rear axle and mount the sliding scale on the passenger side.

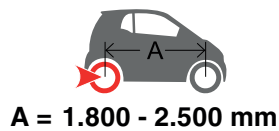
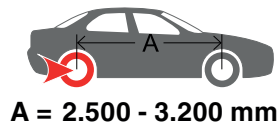
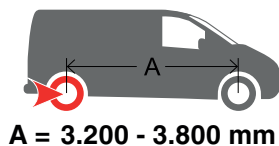
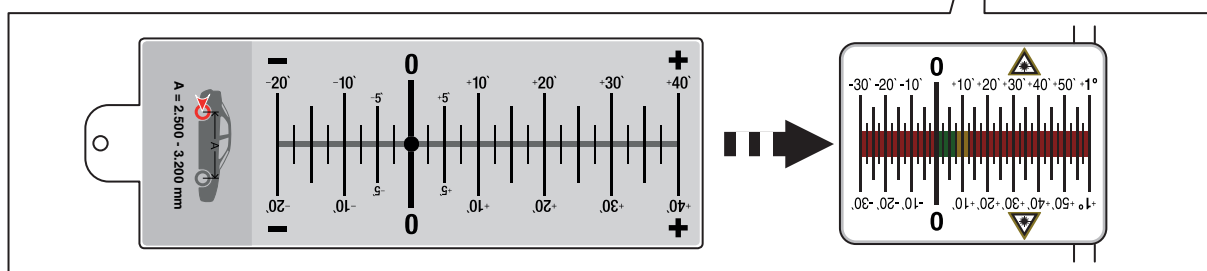
Ensure the right vehicle type when selecting the sliding scale.
The scales are only needed at the rear on the right!

The scales for small and large wheel-bases are available as an option.

Compact cars: 8PZ 015 269-381
Full-size vans: 8PZ 015 269-391

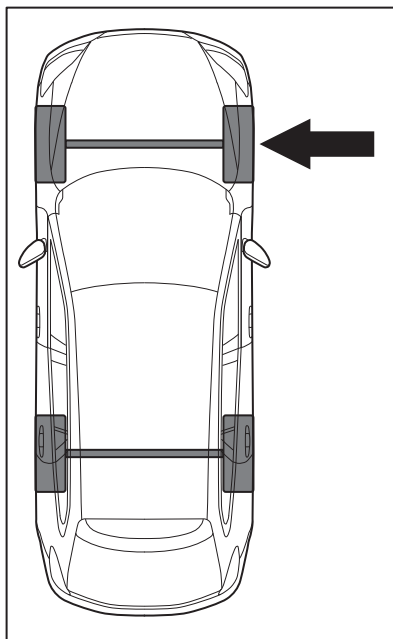
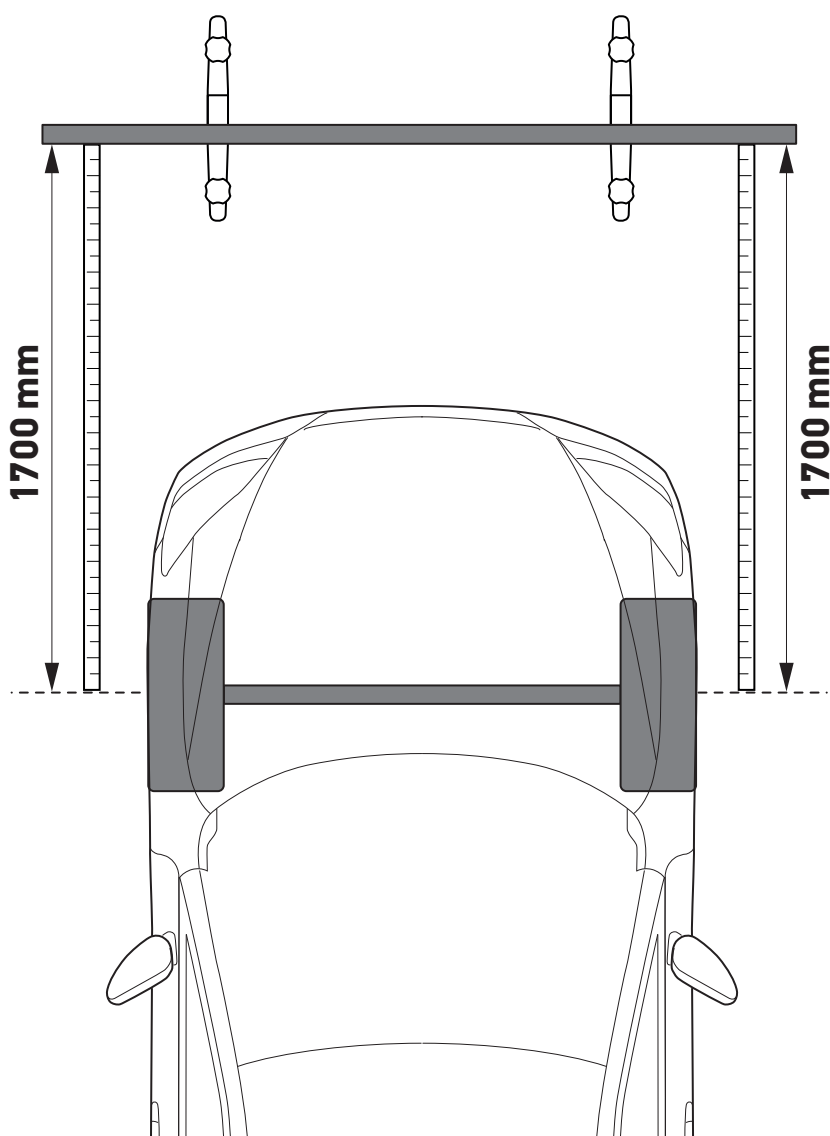


Wheelbase

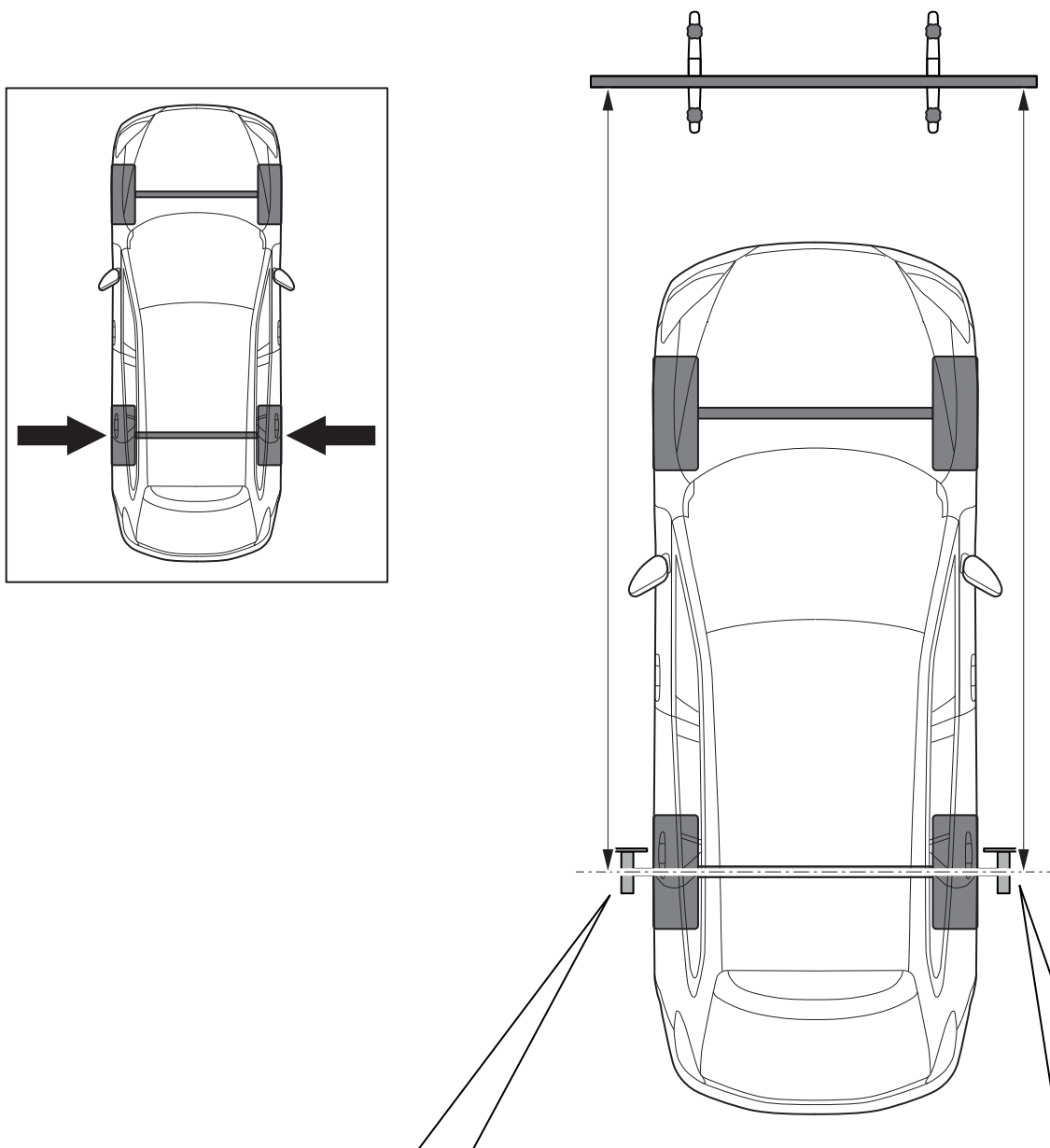


12. Preparation of Measurement

Align the CSC-Tool SE at a distance of 1700 mm from the center of the front axle wheels.



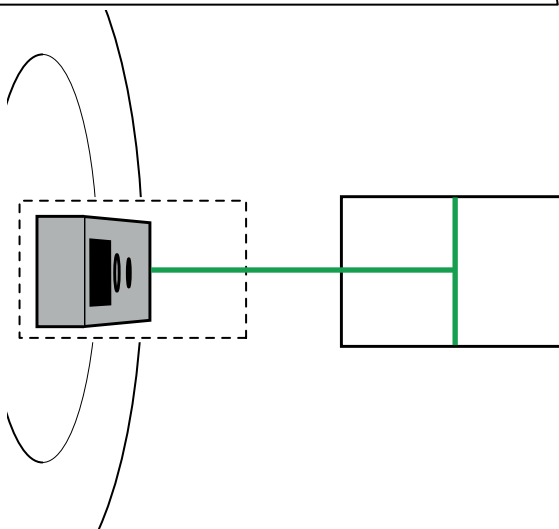
13. Fast Measurement of Total Toe of Rear Axle



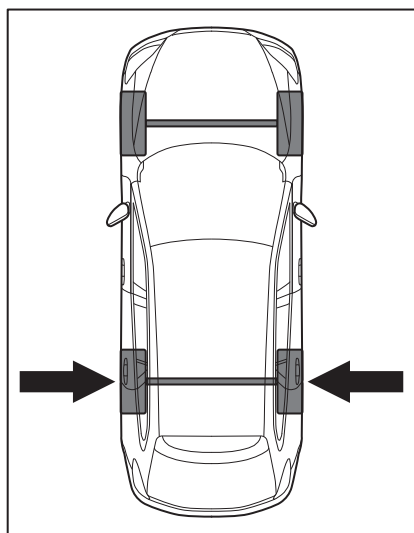
Mount the wheel clamp modules WA with laser modules on the rear axle.

Mount the wheel clamp modules WA on the wheel as described on page 16, in items 1-3.

Turn both lasers on the rear axle to the front until the laser beams are reflected on the scales by both mirrors of the CSC-Tool SE.

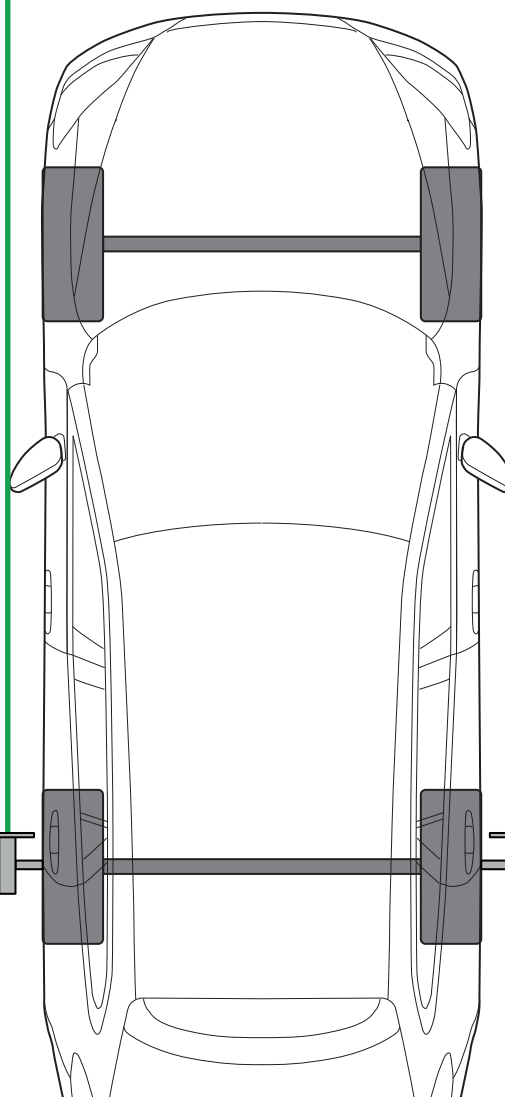
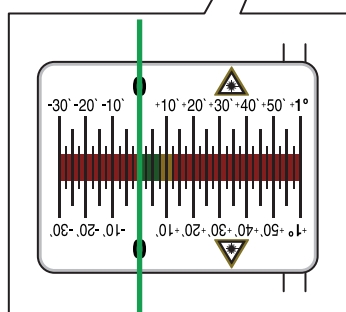
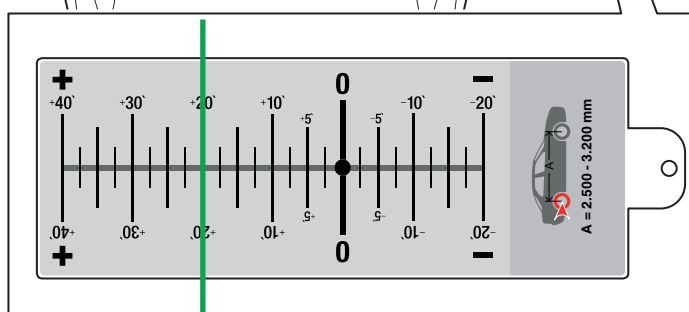


13. Fast Measurement of Total Toe of Rear Axle

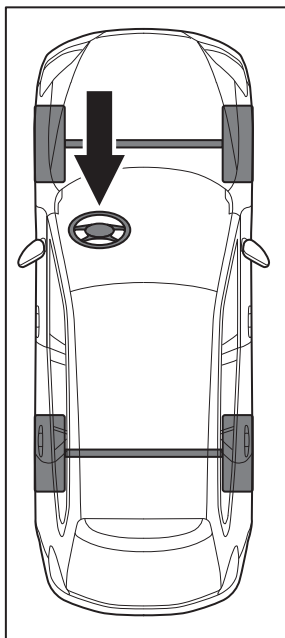
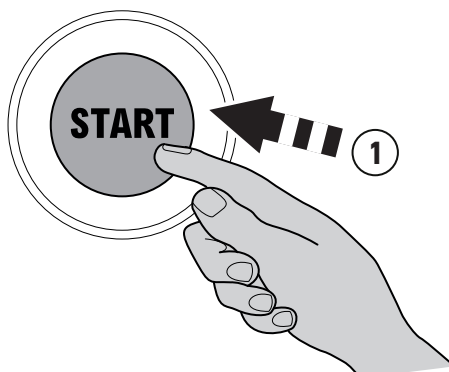


Turn the CSC-Tool SE axially to position it so that 0 appears on the rear scale on the driver side.

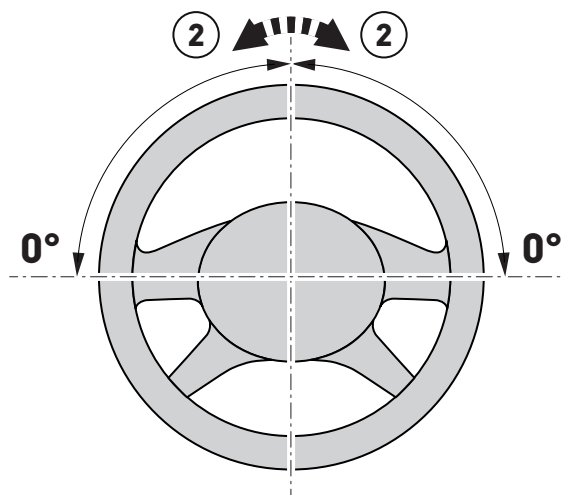
Now read the total toe value off the sliding scale on the passenger side.



14. Fast Measurement of Total Toe of Front Axle Preparation of Measurement



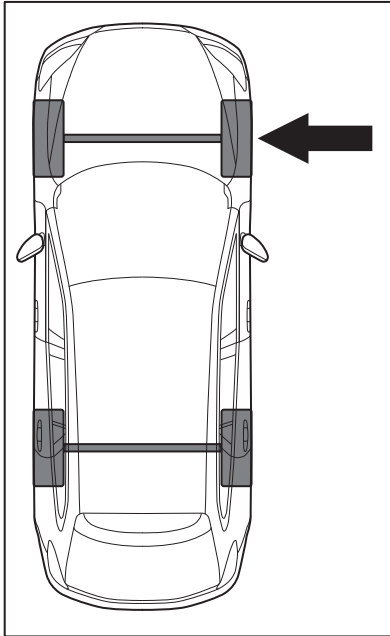
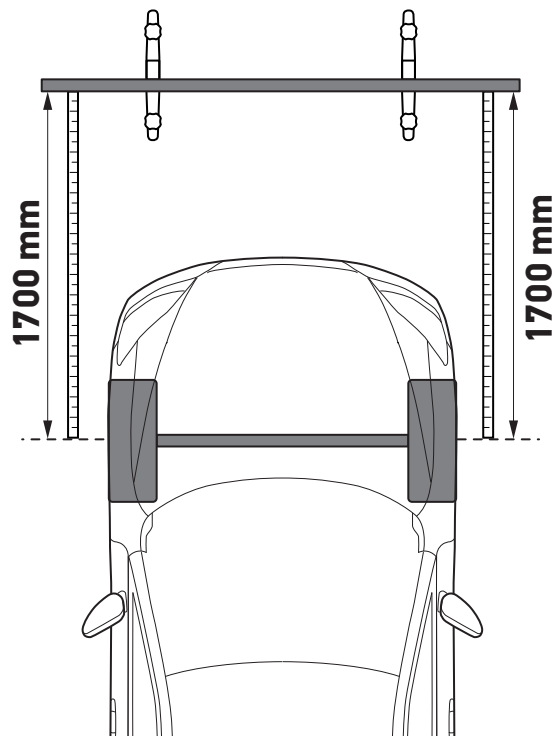
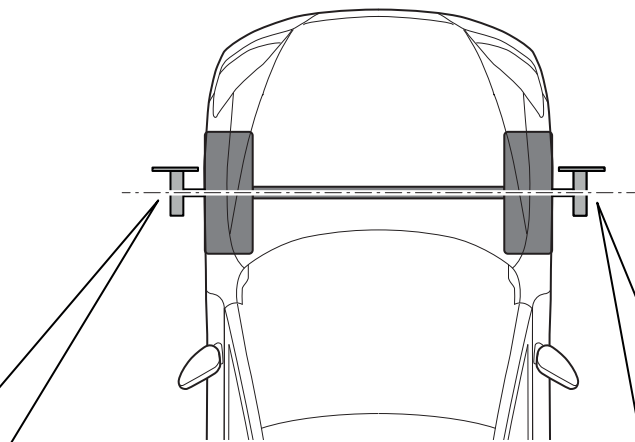
Position the steering wheel so it is absolutely straight
(recommended with the engine running)



Position the steering wheel so it is absolutely straight

14. Fast Measurement of Total Toe of Front Axle Preparation of Measurement

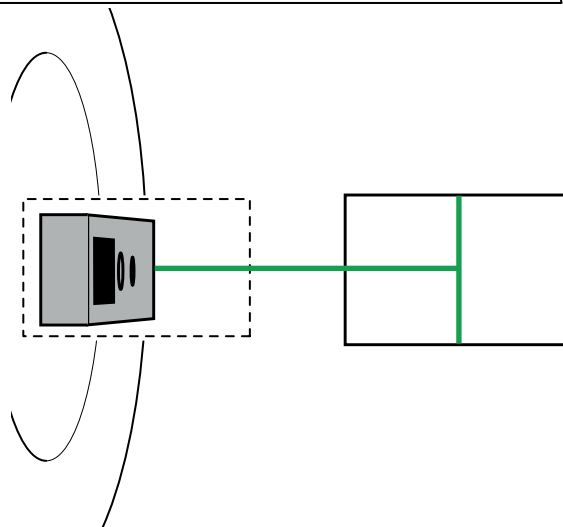
Align the CSC-Tool SE at a distance of 1700 mm from the center of the front axle wheels.



Mount the wheel clamp modules WA with laser modules on the front axle.

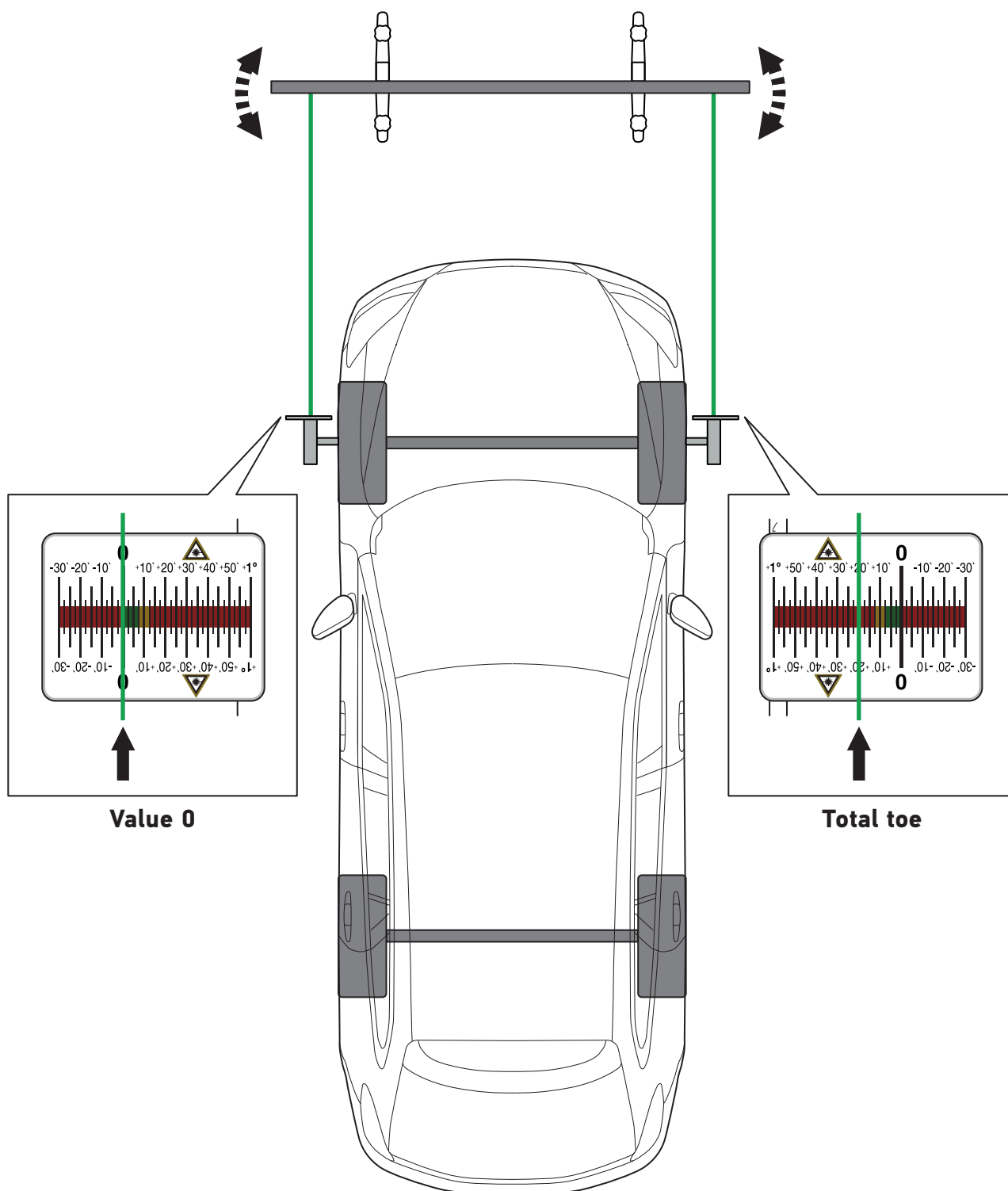
Mount the wheel clamp modules WA on the wheel as described on page 16, in items 1-3.

Turn both lasers on the front axle to the front until the laser beams are reflected on the scales by both mirrors of the CSC-Tool SE.

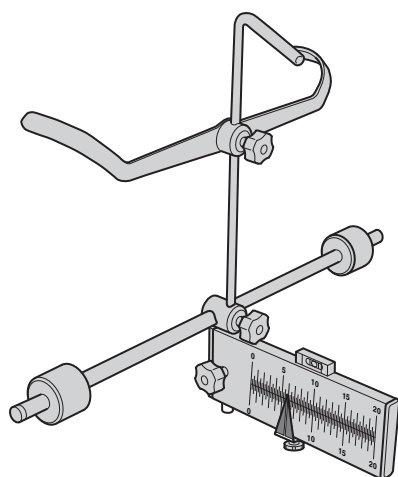


15. Fast Measurement of Total Toe of Front Axle

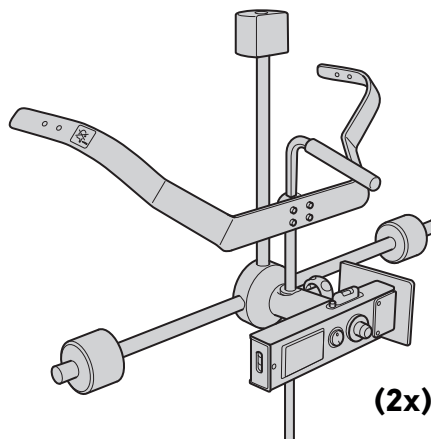
Turn the CSC-Tool SE axially until the value 0 appears on the left or right.
Read off the total toe on the other side.



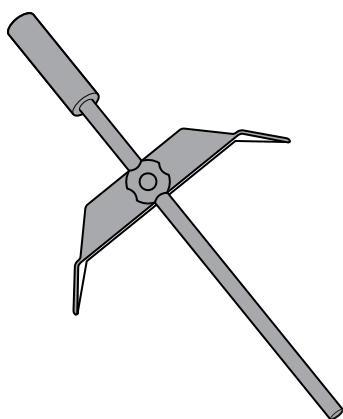
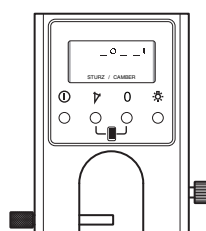
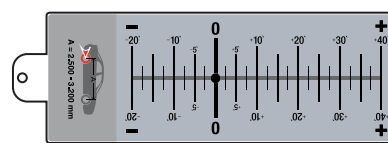
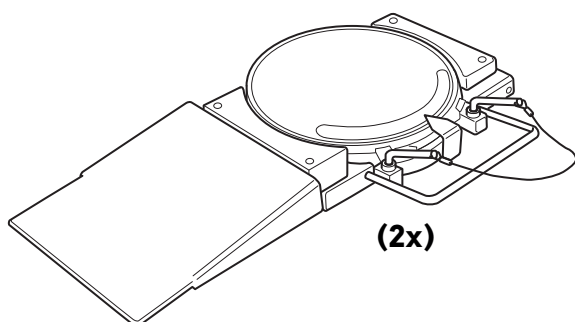
16. Delivery Contents of the Wheel Alignment Kit



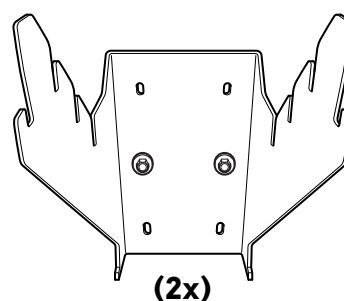
(2x)



(2x)



(2x)



(2x)

17. Preparation of Measurement



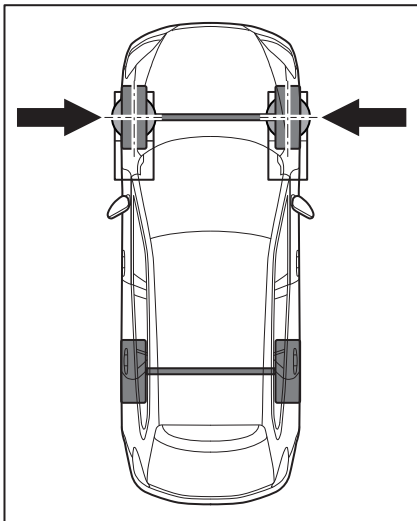
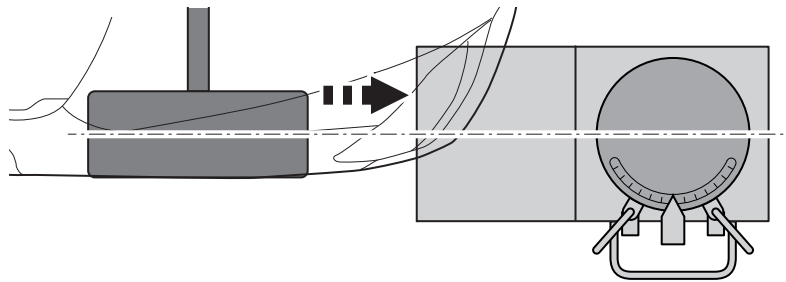
Attention:

The vehicle manufacturer's instructions must be observed without fail!

for example

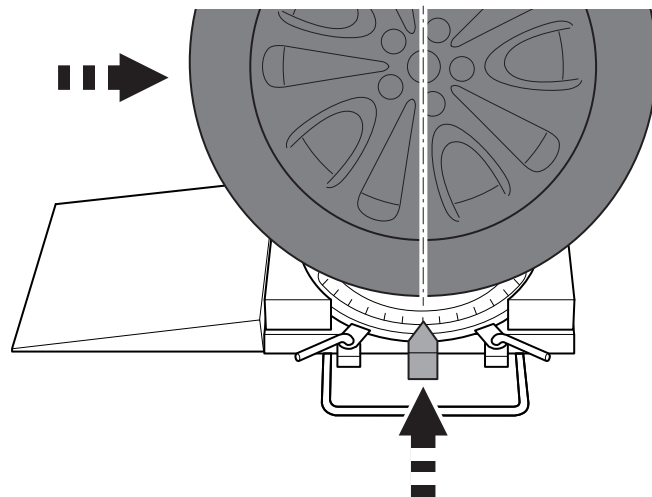
Drive the vehicle onto the wheel alignment measurement surfaces / platform without causing any stresses. Drive the vehicle backwards and forwards several times to ensure the axle components are not under any stress.

- Check air pressure
- Condition/tread pattern of tires
- Approved wheel rim/tire combination fitted
- Check axle joints and bearings for play
- Vehicle load/additional weights in vehicle
- Engine must be running
- Electronic chassis must be set to basic setting position.

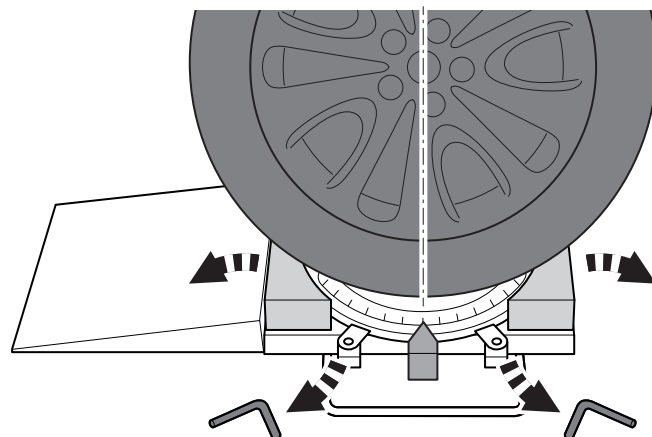


Position the turntables at the same distance in front of the front wheels.

Tip: It is helpful here to place hard rubber mats (not included in the delivery contents) under the turntables. The rubber mats should not be thicker than 5 mm. They firstly prevent the turntables from slipping when the vehicle drives onto them and secondly, avoids damage (scratches) to the running surfaces of the platform.

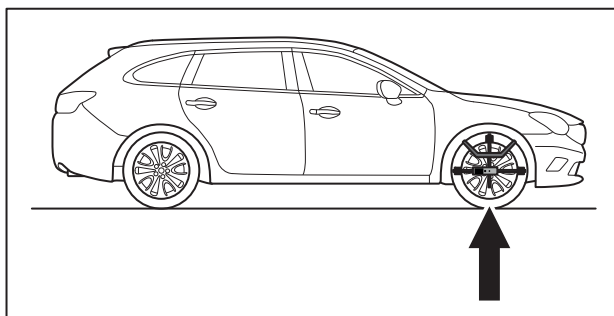


Drive the vehicle onto the center of the turntables



Remove the fixing pins and position retainers

17. Preparation of Measurement

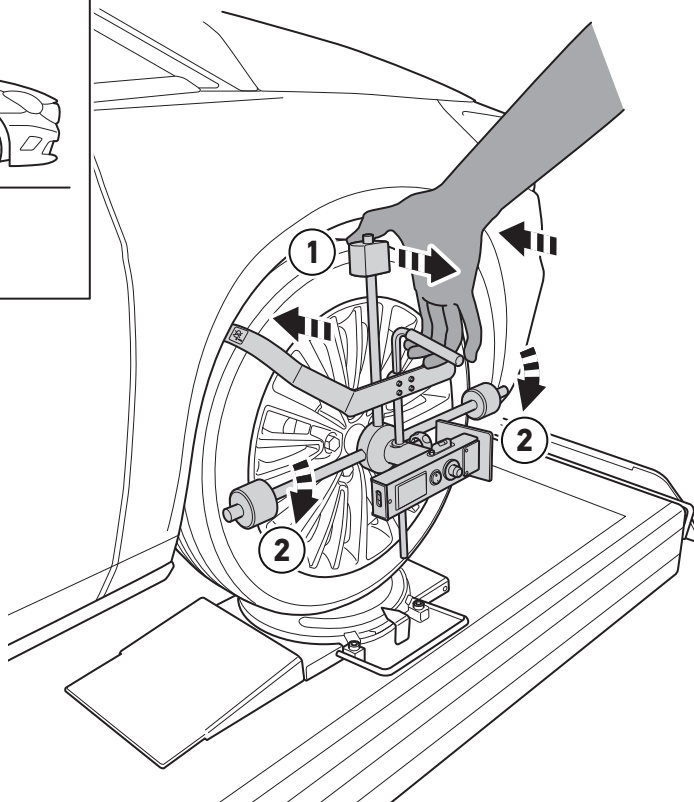


Mount the wheel clamp modules WA with laser modules on the front axle. Align the shaft with the laser to the center of the wheel, see page 5.

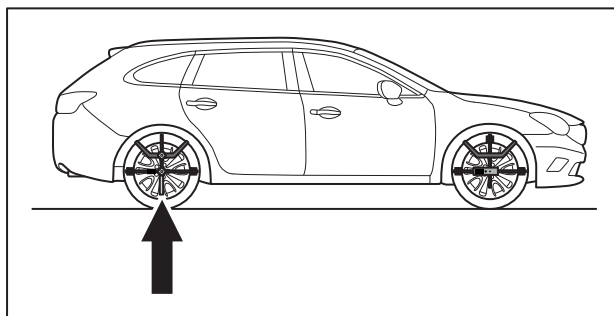
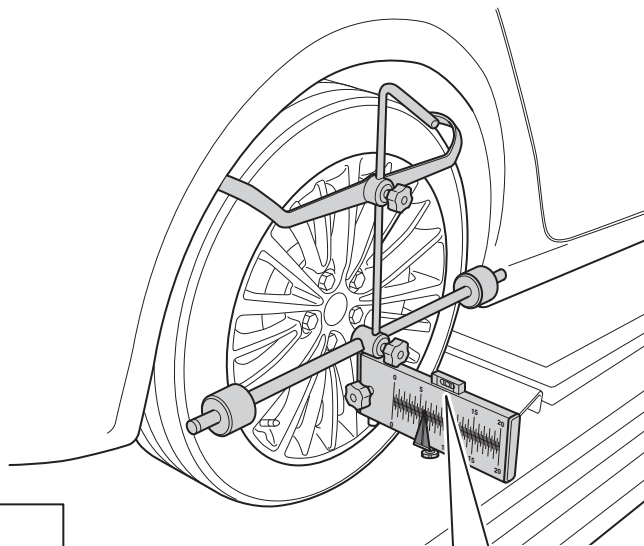
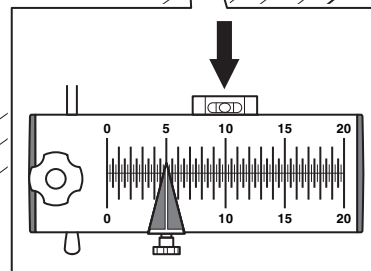
Make sure that the contact cylinders are evenly positioned against the rim flange or the sidewall of the tire. The following method is recommended to ensure optimal positioning of the wheel clamp module WA:

1. Pull back the top part of the vertical rod slightly with your thumb.
2. Attach the wheel clamp module WA to the tire so that the contact cylinders of the horizontal rod are in contact with the tire.
3. Then release the vertical rod.

The wheel clamp module WA is now positioned without play against the rim flange or sidewall of the tire.



Attach the wheel clamp modules with the hook-on scales to the rear axle. Make sure that the contact cylinders are evenly positioned against the rim flange or the sidewall of the tire. Align the scale precisely using the level gauge.

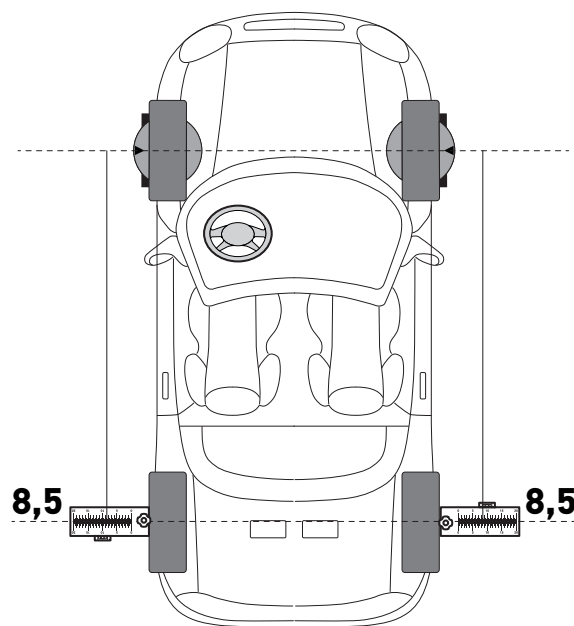


18. Set Position "Straight Ahead"

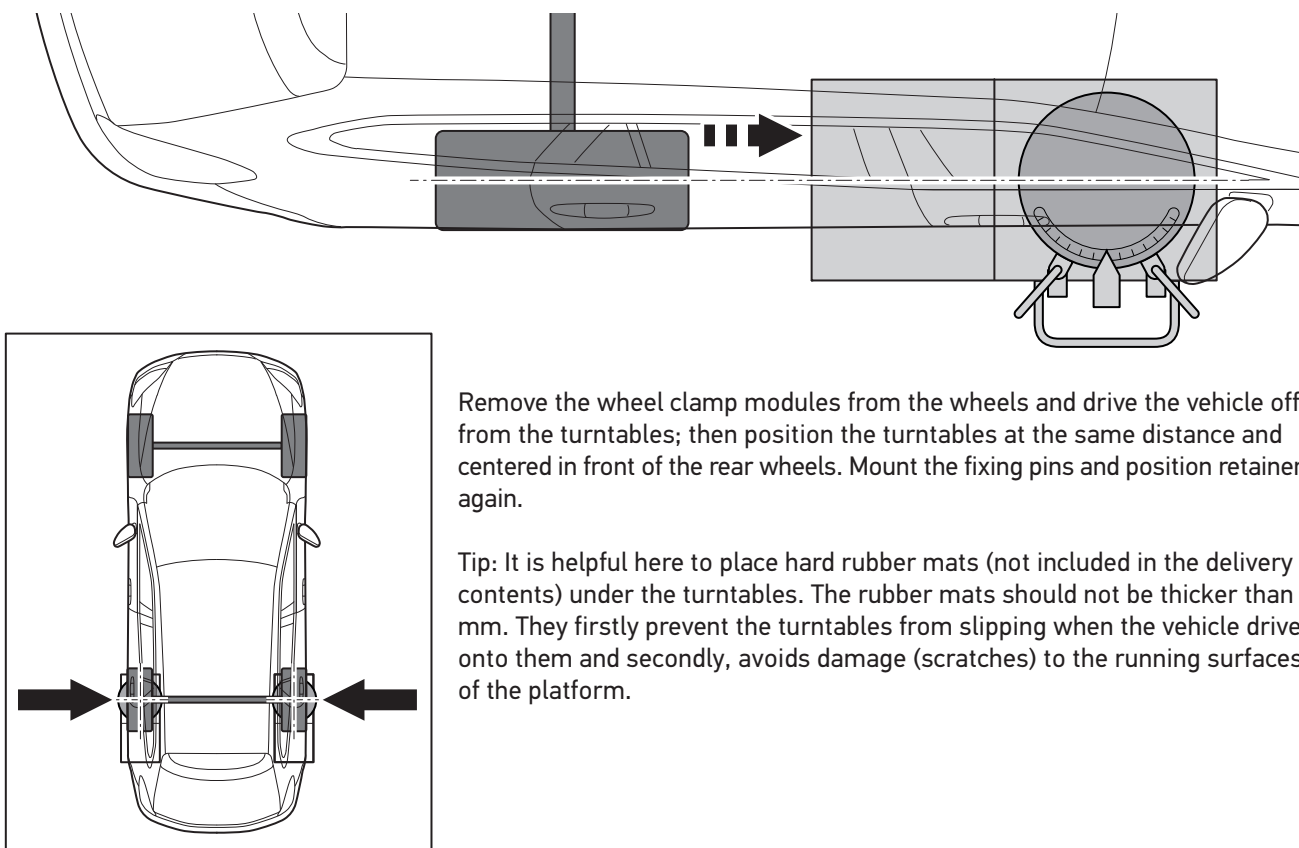
Set Position "Straight Ahead"

Switch on both lasers and align to the scales on the rear axle. Turn the steering wheel until the same value is reached on both scales. For example 8.5.

When the values on the rear axle are identical on the right and left, the front wheels are positioned straight ahead!



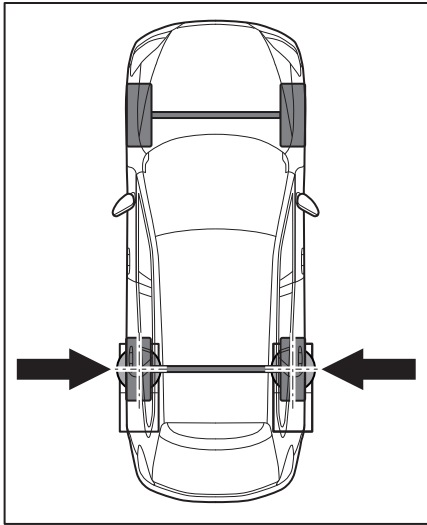
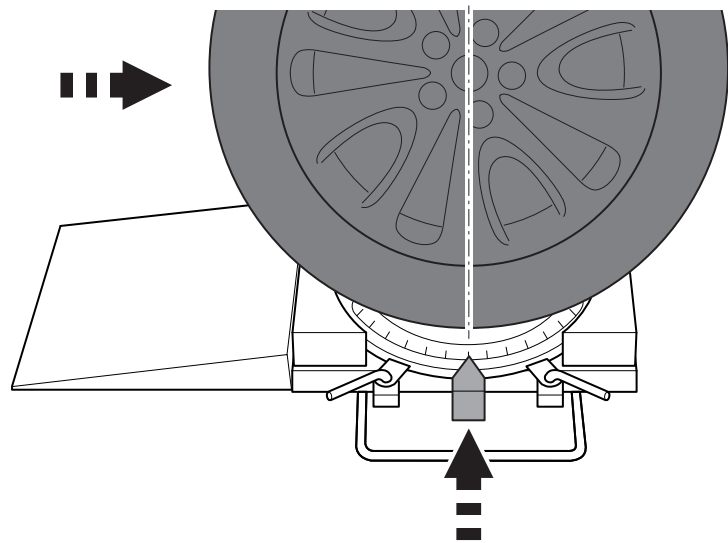
19. Rear Axle: Measuring and Adjusting the Camber with the Software Preparation of Measurement



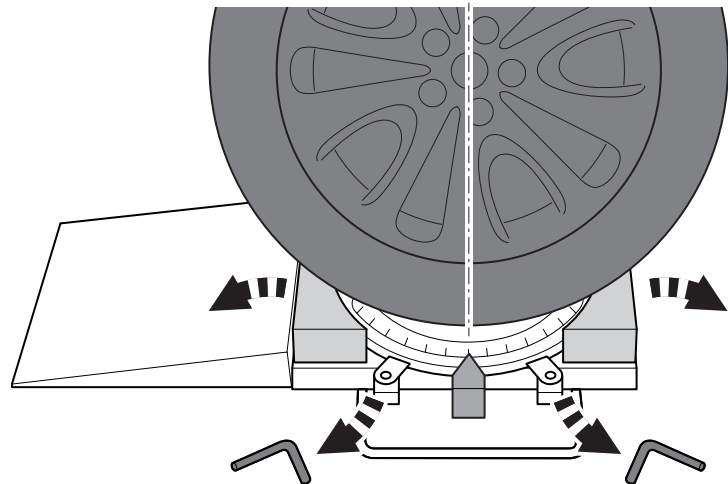
Remove the wheel clamp modules from the wheels and drive the vehicle off from the turntables; then position the turntables at the same distance and centered in front of the rear wheels. Mount the fixing pins and position retainers again.

Tip: It is helpful here to place hard rubber mats (not included in the delivery contents) under the turntables. The rubber mats should not be thicker than 5 mm. They firstly prevent the turntables from slipping when the vehicle drives onto them and secondly, avoids damage (scratches) to the running surfaces of the platform.

19. Rear Axle: Measuring and Adjusting the Camber with the Software Preparation of Measurement

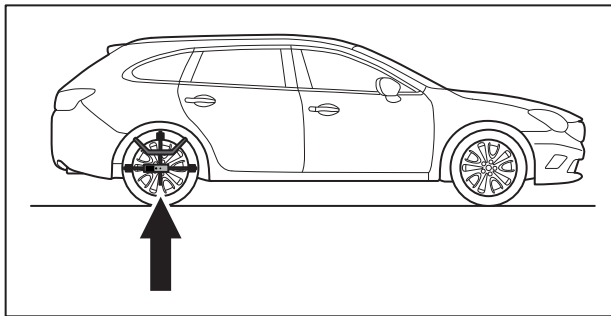


Drive the vehicle onto the center of the turntables

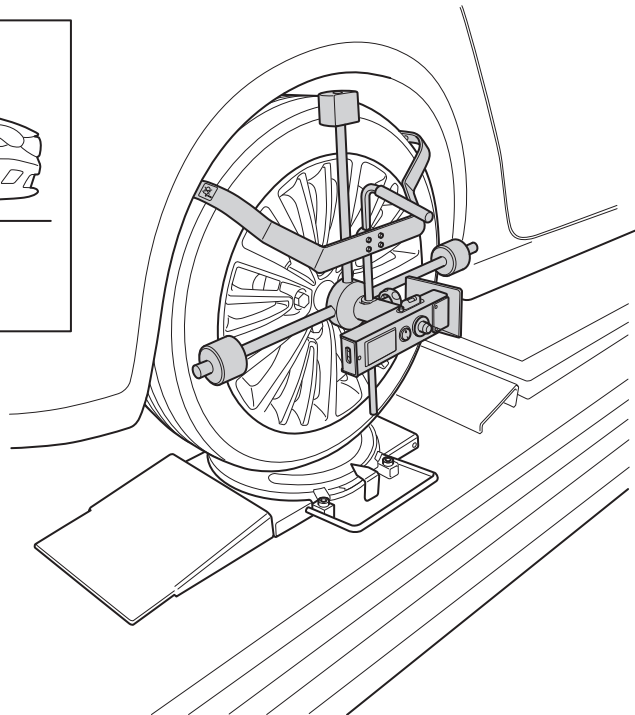
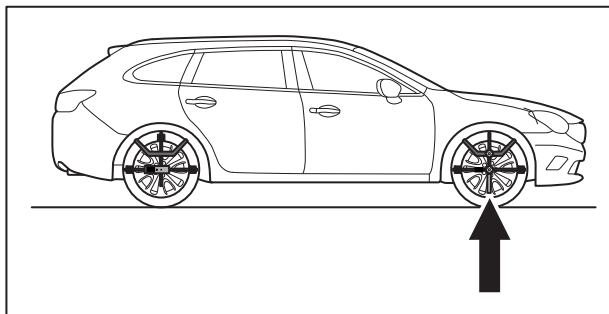


Remove the fixing pins and position retainers

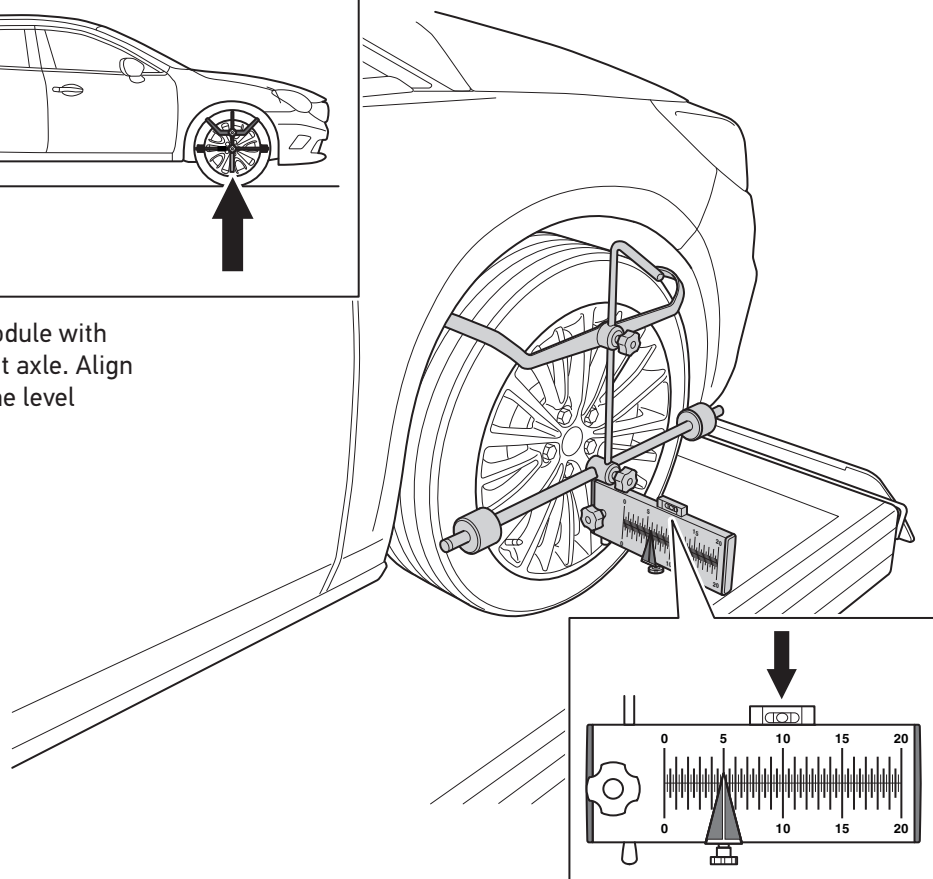
19. Rear Axle: Measuring and Adjusting the Camber with the Software Preparation of Measurement



Mount the wheel clamp modules WA with laser modules on the rear axle.



Mount the wheel clamp module with hook-on scales on the front axle. Align the scale precisely using the level gauge.



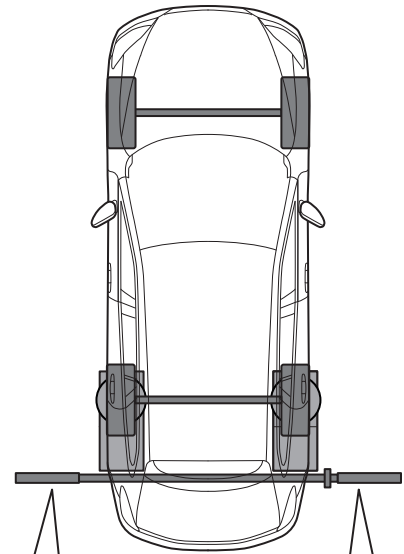
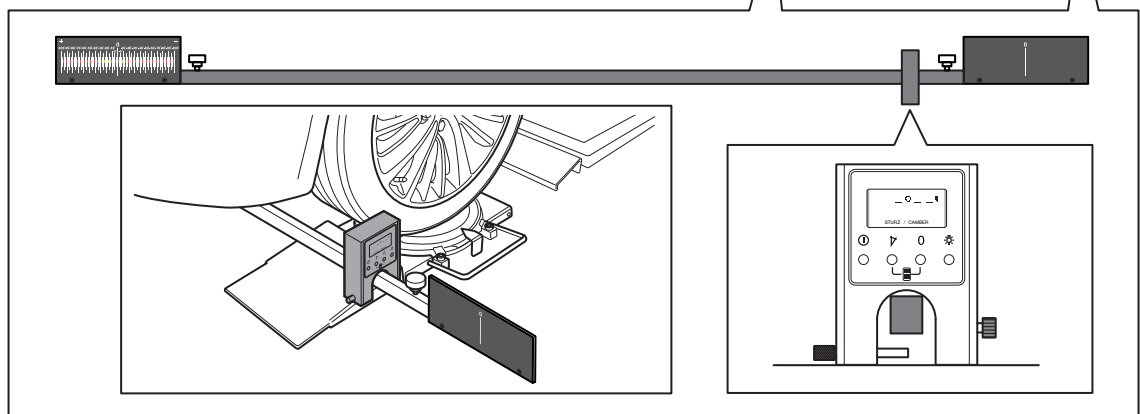
19. Rear Axle: Measuring and Adjusting the Camber with the Software Preparation of Measurement

Zero positioning of the inclinometer:

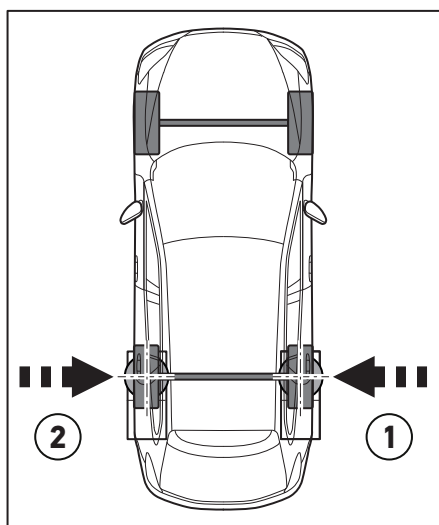
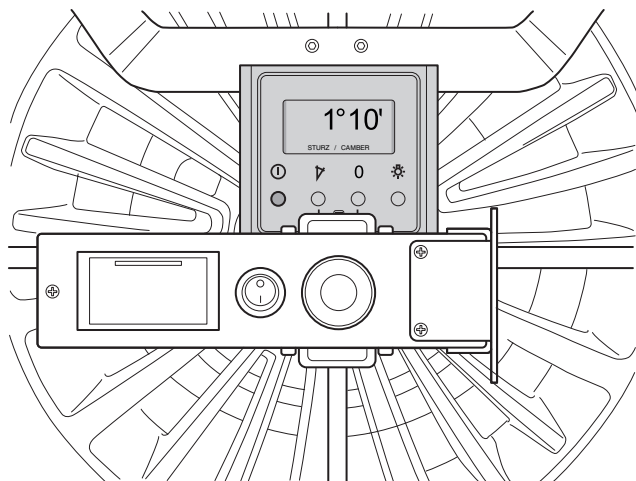
Zero positioning of the inclinometer is necessary if the surface the wheels are standing on is not level or has differing inclinations! This step is not necessary if the vehicle is parked e.g. on a leveled vehicle hoist. Camber is measured using the inclinometer. To measure the camber correctly, equalization with the current wheel surfaces is necessary. This ensures that inclinometer and vehicle have the same angle.

Proceed as follows if the vehicle is on a car hoist.

1. Place the toe scale behind the rear wheels.
2. Fit the inclinometer on the rod of the toe scale with the display to the outside of the vehicle. If the vehicle is parked on the floor, place the rod of the toe scale behind the turntable. Attention! The display of the inclinometer must always be aligned to the outside of the vehicle, regardless of the vehicle side!
3. Switch on the inclinometer.
4. Then push "0". Now the inclinometer adopts the angle value of the wheel contact area.



Put the electric inclinometer onto the measuring shaft and secure it with the knurled screw.
Read the current camber value in the display.
Repeat the above steps for the other side of the vehicle.
Enter the read values in the software.



19. Rear Axle: Measuring and Adjusting the Camber with the Software

REAR AXLE

Check that the basic preconditions for wheel alignment measurement are fulfilled ⓘ

Attach the laser module to the rear axle and the reference scale to the front axle ⓘ

Left

Right

Camber

Measured value ⓘ

+

1

0

10

°

-

1

0

10

°

-1°20' ± 30' (difference on left/right: 30')

Toe

Measured value on front scale ⓘ

Toe present ⓘ

+

°

0° 10' ± 10'

☐
Rear axle not adjustable

Toe required ⓘ

+

°

Adjustment value on front scale ⓘ

-

-

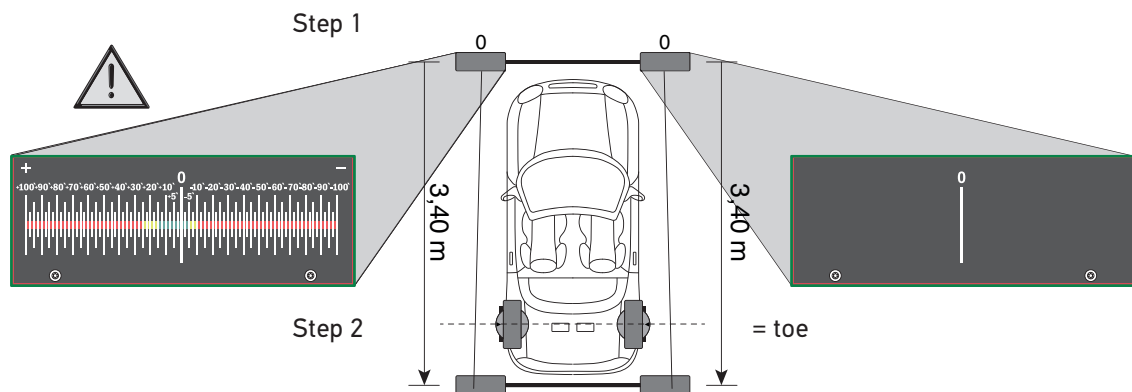
20. Rear Axle: Measuring and Adjusting the Toe with the Software

- Mount the wheel clamp modules WA with laser modules on the rear wheels and the wheel alignment modules with hook-on scales on the front wheels.
- Align both lasers to the scales on the front axle.
- **Read off the values displayed by the line lasers on the front axle scales and enter in the software.**
- Enter the values under the menu point "Crap angle" so that the software is able to calculate the crap angle.

21

20. Rear Axle: Measuring and Adjusting the Toe with the Software

Place the toe scale in front of the front axle and align both lasers to it. Adjust the toe scale so that the lasers strike the zero mark on both sides. Then tighten the set screws of the toe scale. **(Step 1)**



Move the toe scale back by **3.40 m. (Step 2)**

Position the toe scale on the driver side at zero.

Turn the laser modules of the wheel clamp modules so that the laser lines can be seen on the toe scale.

Read off the toe value on the passenger side and enter in the software.

This value is the total toe of the vehicle's rear axle.

Make sure that the correct sign (+ or -) is entered with the value!

20. Rear Axle: Measuring and Adjusting the Toe with the Software

- Enter the required toe value in the software.
- Make sure that the correct sign (+ or -) is entered with the value!

REAR AXLE

Check that the basic preconditions for wheel alignment measurement are fulfilled ⓘ

Attach the laser module to the rear axle and the reference scale to the front axle ⓘ

Left

Right

Camber

Measured value ⓘ

+

1

0

10

°

-

1

0

10

°

-1°20' ± 30' (difference on left/right: 30°)

Toe

Measured value on front scale ⓘ

7,25

7,75

Toe present ⓘ

+

20

°

0° 10' ± 10'

☐

Rear axle not adjustable

Toe required ⓘ

+

10

°

Adjustment value on front scale ⓘ

6,3

6,3

After wheel alignment always use the toe scale to check whether the toe is set correctly.

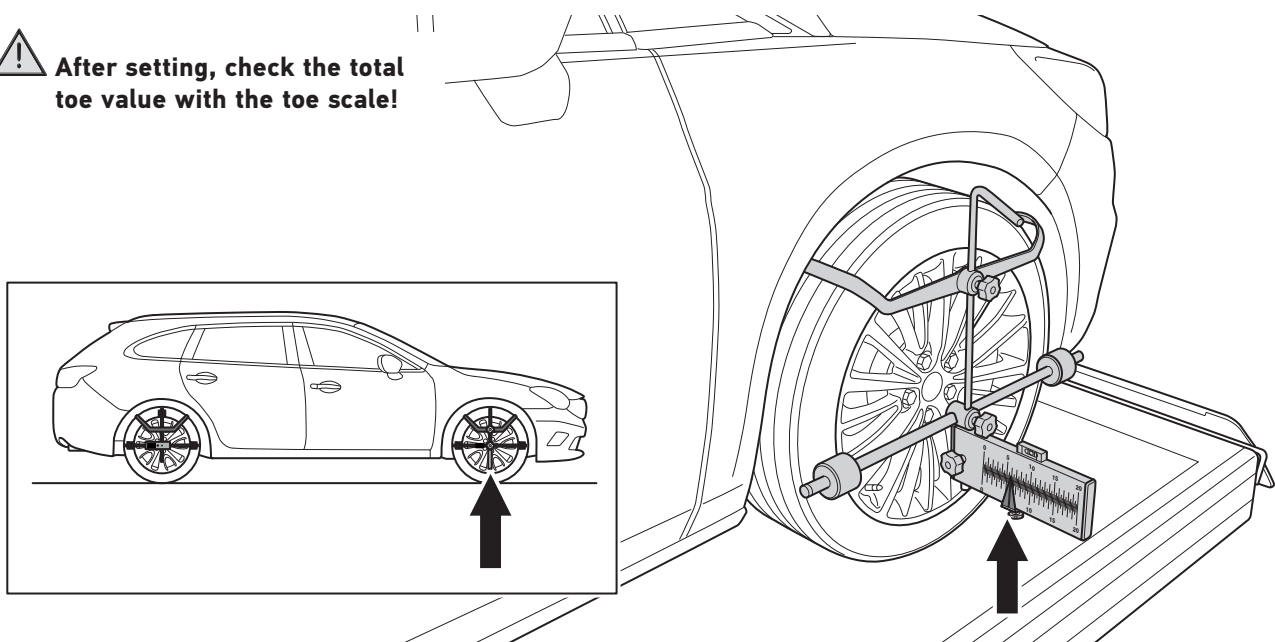
Mark the adjustment value calculated by the software on the left and right with the tips of the arrows on the hook-on scales. See graphic

Align both lasers to the hook-on scales on the front axle.

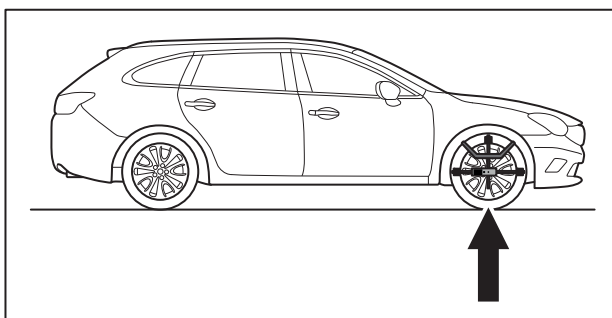
Adjust the toe of the rear axle until the line lasers reach the specified value on the hook-on scales on the front axle.



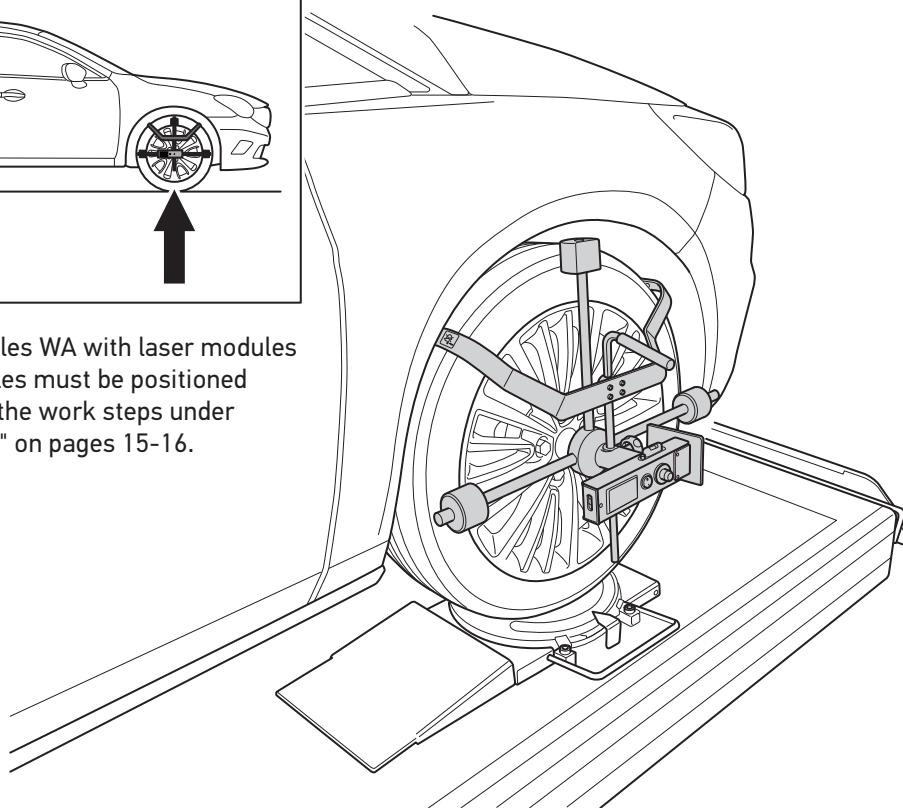
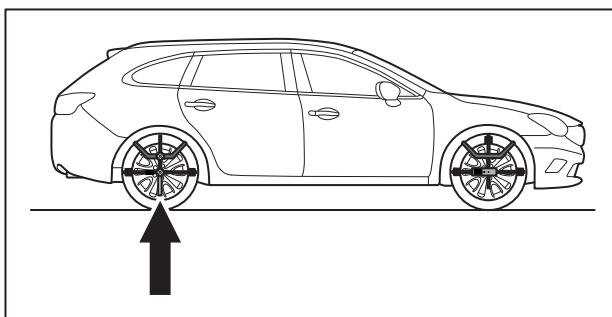
After setting, check the total toe value with the toe scale!



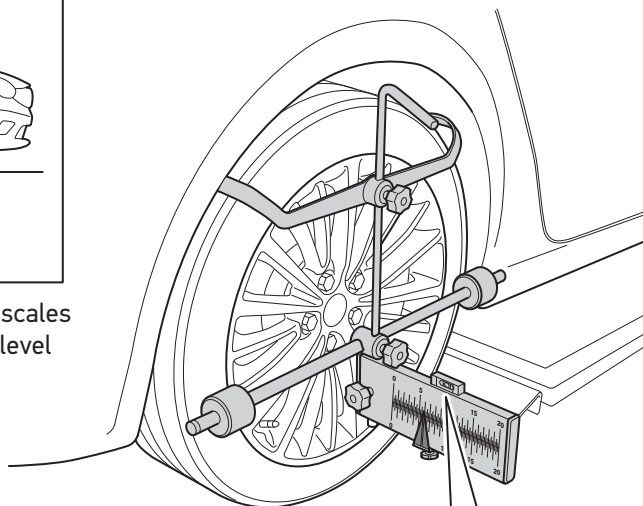
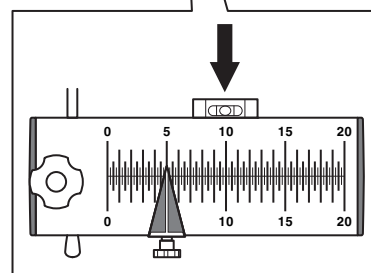
21. Front Axle: Measuring and Adjusting the Camber with the Software



Mount the wheel clamp modules WA with laser modules on the front axle. The turntables must be positioned under the front wheels. Note the work steps under "Preparation of measurement" on pages 15-16.



Attach the wheel clamp modules with the hook-on scales to the rear axle. Align the scale precisely using the level gauge.



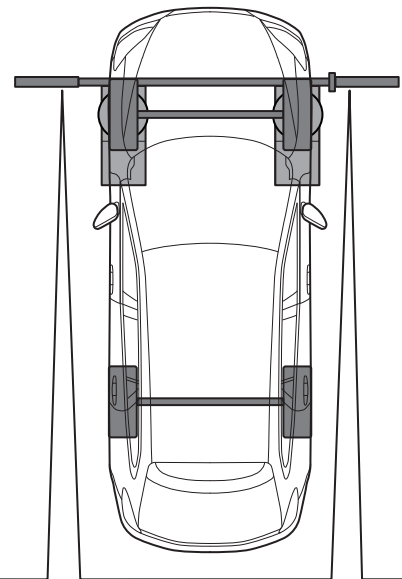
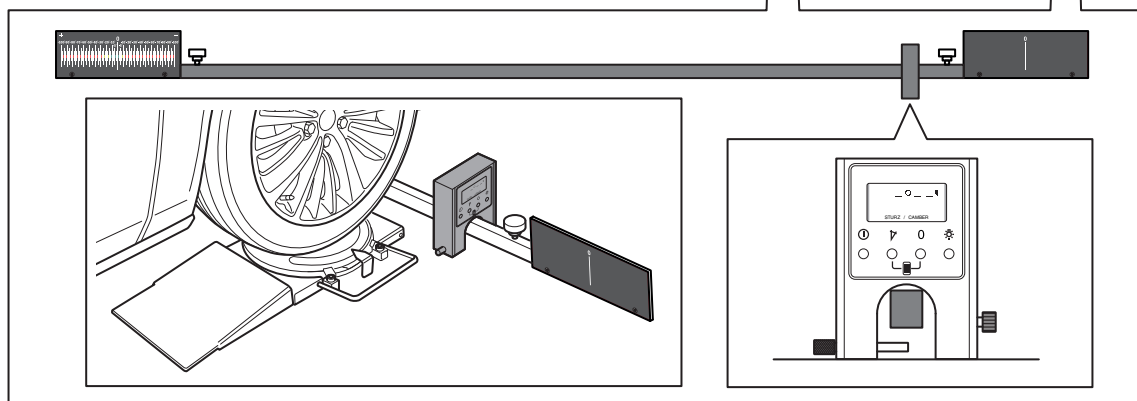
21. Front Axle: Measuring and Adjusting the Camber with the Software

Zero positioning of the inclinometer:

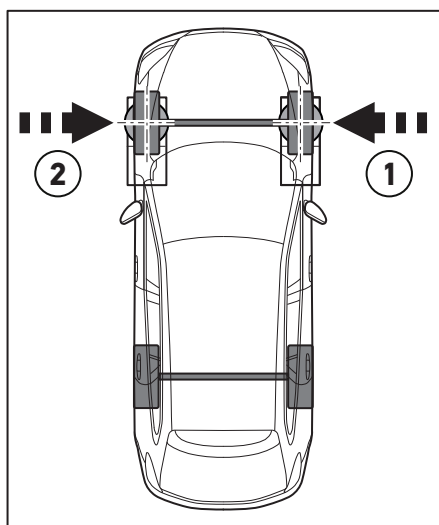
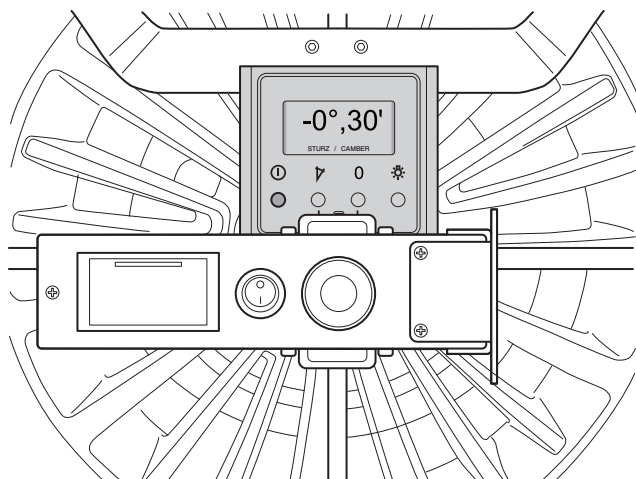
Zero positioning of the inclinometer is necessary if the surface the wheels are standing on is not level or has differing inclinations! This step is not necessary if the vehicle is parked e.g. on a leveled vehicle hoist. Camber is measured using the inclinometer. To measure the camber correctly, equalization with the current wheel surfaces is necessary. This ensures that inclinometer and vehicle have the same angle.

Proceed as follows if the vehicle is on a car hoist.

1. Place the toe scale behind the rear wheels.
2. Fit the inclinometer on the rod of the toe scale with the display to the outside of the vehicle. If the vehicle is parked on the floor, place the rod of the toe scale behind the turntable.
CAUTION! The display of the inclinometer must always be aligned to the outside of the vehicle, regardless of the vehicle side!
3. Switch on the inclinometer.
4. Then push "0". Now the inclinometer adopts the angle value of the wheel contact area.



Put the electric inclinometer onto the measuring shaft and secure it with the knurled screw.
Read the current camber value in the display.
Repeat the above steps for the other side of the vehicle.
Enter the read values in the software.



21. Front Axle: Measuring and Adjusting the Camber with the Software

 FRONT AXLE

Attach the laser module to the front axle and the reference scale to the rear axle ⓘ

Turn the front wheels to the straight-ahead position ⓘ

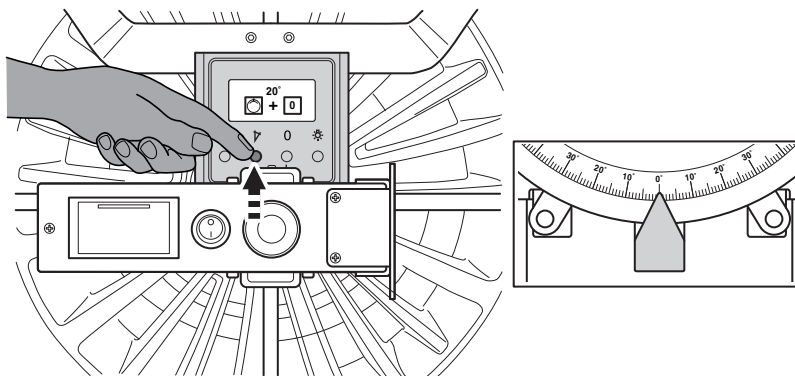
	Left	Right
Camber ▾		
Measured value ⓘ	- 0 0 30 °	- 0 0 32 °
	-0° 32' ± 30' (not adjustable) (difference on the left/right: 30')	
Castor >		
Toe-out on turns >		
Toe >		

22. Front Axle: Measuring Caster / KPI/SAI with the Software

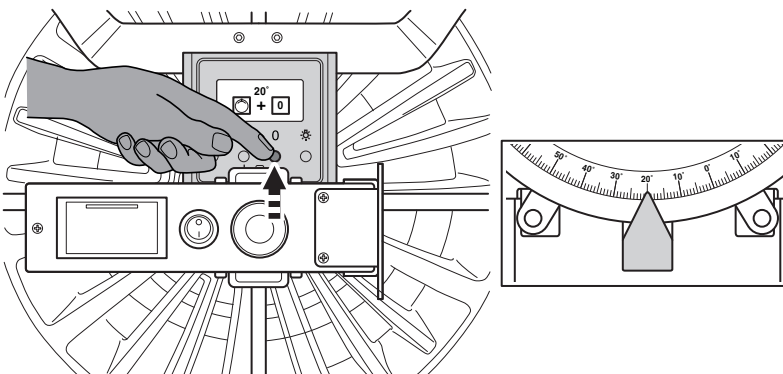
Note:

Set position "straight ahead"
Set the pointers on the turntables to 0.

Push the angle button on the electric inclinometer.



Swivel the wheel forwards in the wheelhouse to the 20° marking on the turntable and push the 0 button on the electric inclinometer.



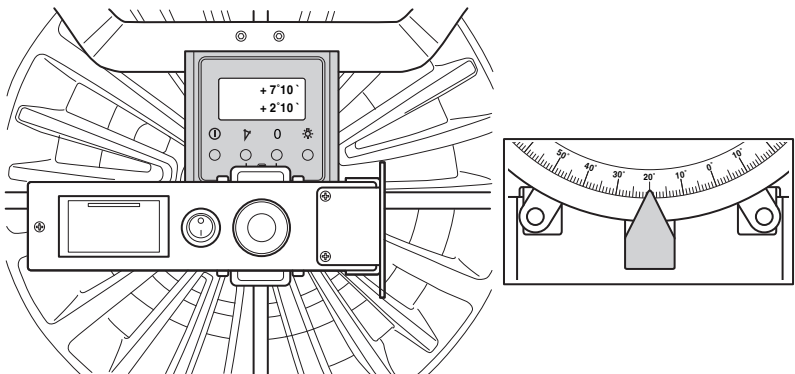
22. Front Axle: Measuring Caster / KPI/SAI with the Software

Now swivel the wheel in the other direction to the 20° marking and read the caster value off the display.

Enter the read values in the software.



To ensure precise measurement of the king pin inclination/steering axis inclination, the foot brake must be applied!



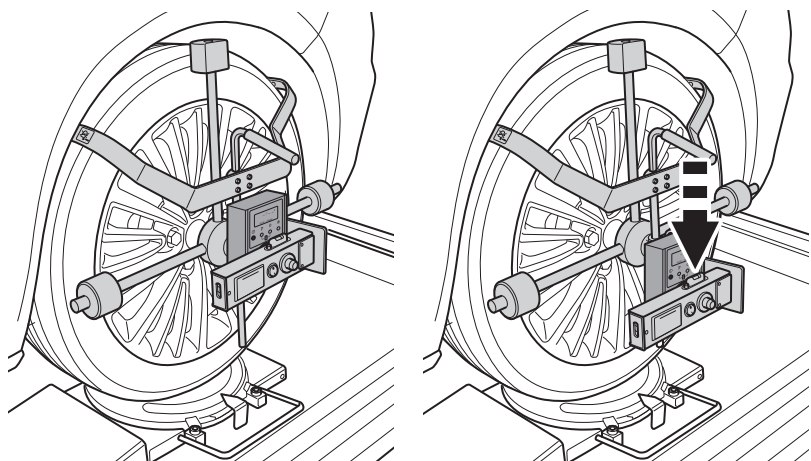
FRONT AXLE

Attach the laser module to the front axle and the reference scale to the rear axle ⁱ

Turn the front wheels to the straight-ahead position ⁱ

	Left	Right
Camber		
Caster	<div> <div>Measured value ⁱ</div> <div> <div>-</div> <div>7</div> <div>0</div> <div>10</div> <div>+</div> </div> <div> <div>-</div> <div>7</div> <div>0</div> <div>15</div> <div>+</div> </div> </div> <div> <div>7° 23' ± 30' (difference on the left/right: 30')</div> </div> <div> ☐ Correction only front turntables </div>	
Toe-out on turns		
Toe		

If the wheelhouse is too small to measure the steer angle, the gauge head can be positioned lower down. This will not impact on the measurement result!

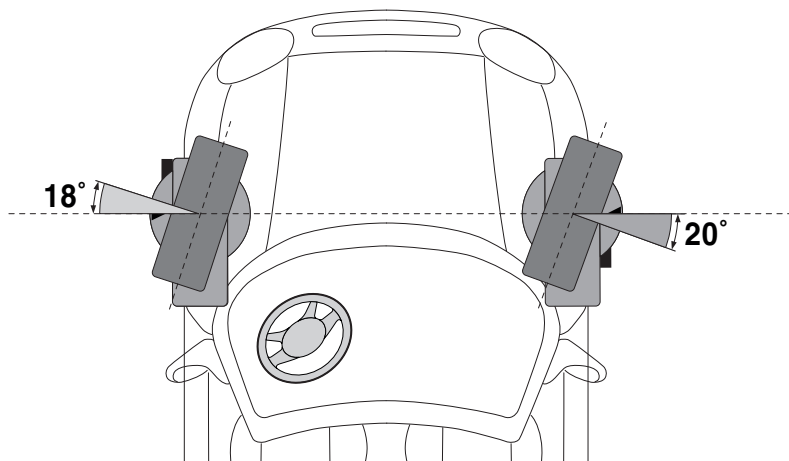


23. Front Axle: Measuring the Toe-Out On Turns with the Software

Attention: Remove the position retainers on the turntables.
Set position "straight ahead"

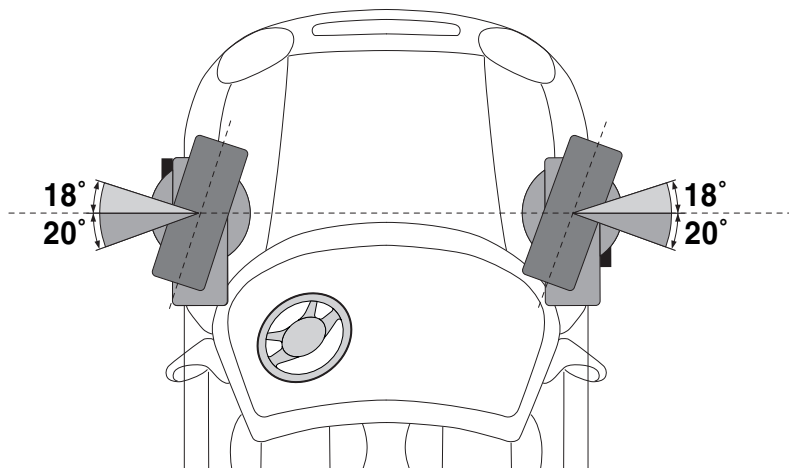
Set the pointers on both turntables to "0"

Swivel the wheel on the passenger side to the 20° marking. Read off the value on the driver side, e.g. 18°. The toe-out on turns is then 2°.



Repeat the procedure on the driver side.

Enter the toe-out on turns for both sides in the software.



FRONT AXLE

Attach the laser module to the front axle and the reference scale to the rear axle ⓘ

Turn the front wheels to the straight-ahead position ⓘ

Left

Right

Camber

>

Castor

>

Toe-out on turns

▼

Measured value ⓘ

-

2

°

+

-

2

°

Toe

>

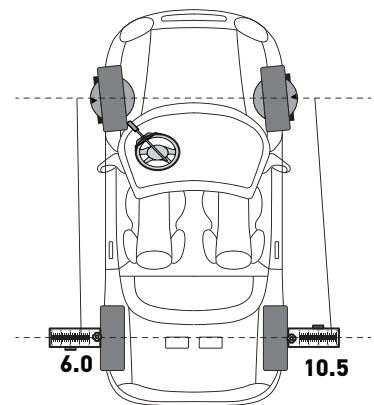
24. Front Axle: Measuring and Adjusting the Toe with the Software

- Measure the wheelbase and enter the value in the software.
- Turn the steering wheel to straight-ahead position and lock it.



Position the steering wheel lock on the A-post, not on the windshield!

- **Read off the values displayed by the line laser on the hook-on scales on the rear axle and enter in the software.**



FRONT AXLE

Attach the laser module to the front axle and the reference scale to the rear axle ①

Turn the front wheels to the straight-ahead position ②

	Left	Right
Camber		
Castor		
Toe-out on turns		
Toe		

Bring the steering wheel to straight-ahead position and lock it with the steering lock ③

Measured value on rear scale ④

6 10,5

Toe present ⑤

+ 0° 10' ± 10'

Toe required ⑥

+ -

Adjustment value on rear scale ⑦

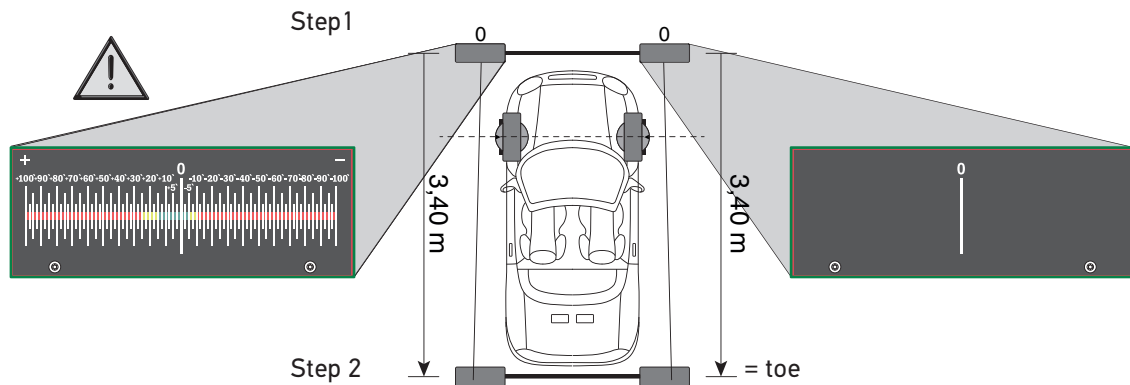
- -

After wheel alignment always use the toe scale to check whether the toe is set correctly.

☐ Crap angle compensation

24. Front Axle: Measuring and Adjusting the Toe with the Software

Place the toe scale in front of the front axle and align both lasers to it. Adjust the toe scale so that the lasers strike the zero mark on both sides. **(Step 1)**



Move the toe scale back by **3.40 m. (Step 2)**

Position the toe scale on the driver side at zero.

Read off the toe value present on the passenger side and enter in the software.

Make sure that the correct sign (+ or -) is entered with the value!

FRONT AXLE

Attach the laser module to the front axle and the reference scale to the rear axle ¹

Turn the front wheels to the straight-ahead position ¹

Left

Right

Camber

Castor

Toe-out on turns

Toe

Bring the steering wheel to straight-ahead position and lock it with the steering lock ¹

Measured value on rear scale ¹

6

10,5

Toe present ¹

-

-12,5

0° 10' ± 10'

Toe required ¹

+

+10

Adjustment value on rear scale ¹

8,9

8,9

After wheel alignment always use the toe scale to check whether the toe is set correctly.

☐
Crap angle compensation

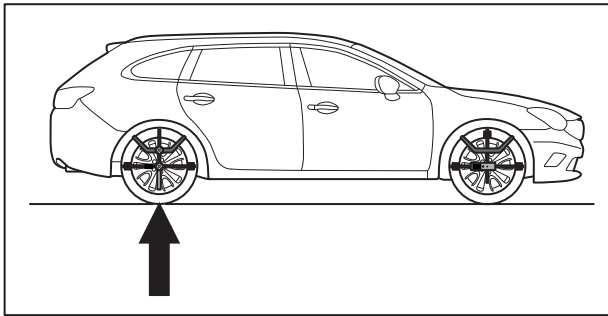
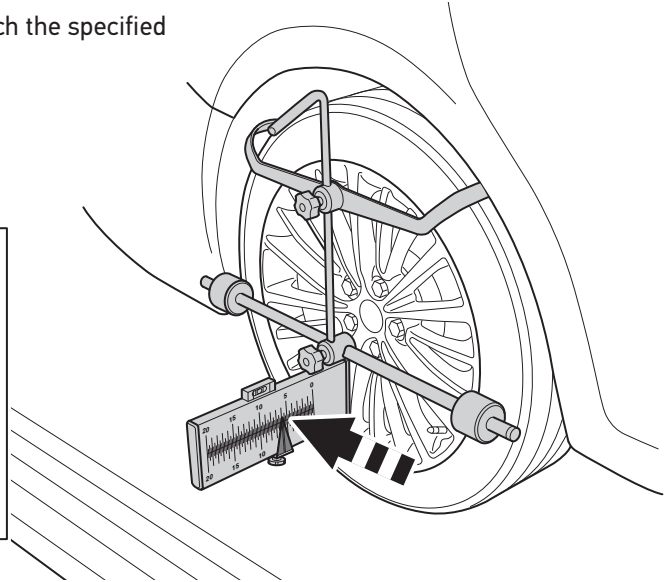
24. Front Axle: Measuring and Adjusting the Toe with the Software

Mark the adjustment value calculated by the software on the left and right with the tips of the arrows on the hook-on scales on the rear axle. In this case 8.9°, see graphic.

Align both lasers to the hook-on scales on the rear axle.

Turn the tie rods of the front axle until the line lasers reach the specified value on the hook-on scales on the rear axle.

 **After setting, check the total toe value with the toe scale!**



25. Alternatively, the toe values can also be determined with the inclinometer. To do so, proceed as follows.

4. Front Axle: Measuring and Adjusting the Toe with the Inclinometer

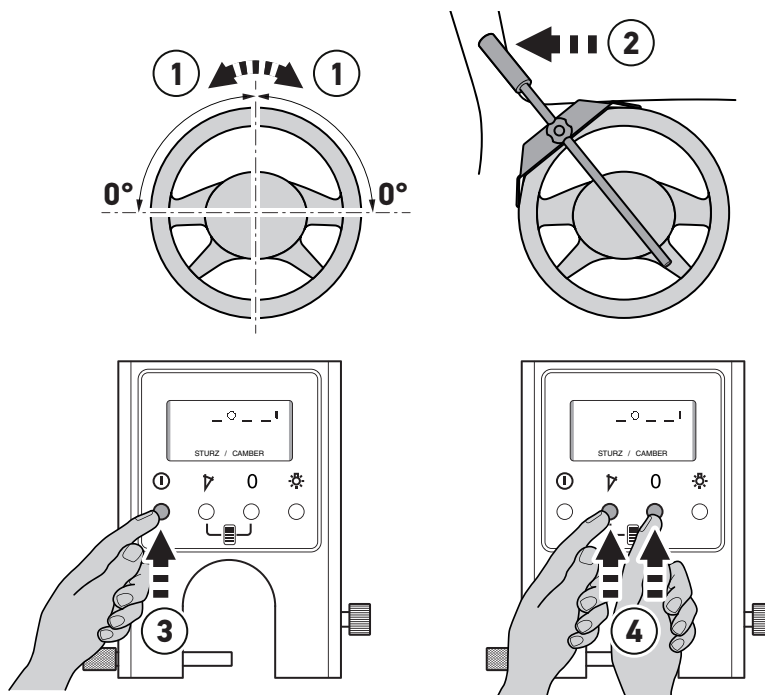
Turn the steering wheel to straight-ahead position and lock it!



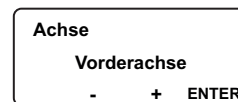
Position the steering wheel lock on the A-post, not on the windshield!

Switch on

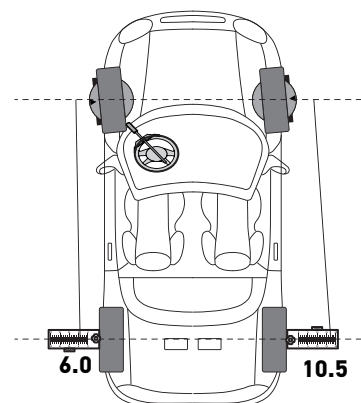
Push the angle and ③ button simultaneously and hold down for 3 secs ④.



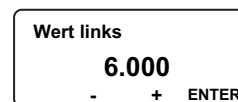
Select the front axle or rear axle with the + or - button and confirm with Enter.



Align both lasers to the hook-on scales on the rear axle.

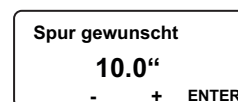


Enter the values displayed by the lasers on the hook-on scales on the left and right by pushing the + or - button and confirm with Enter (example: value on left 6.0, value on right 10.5)



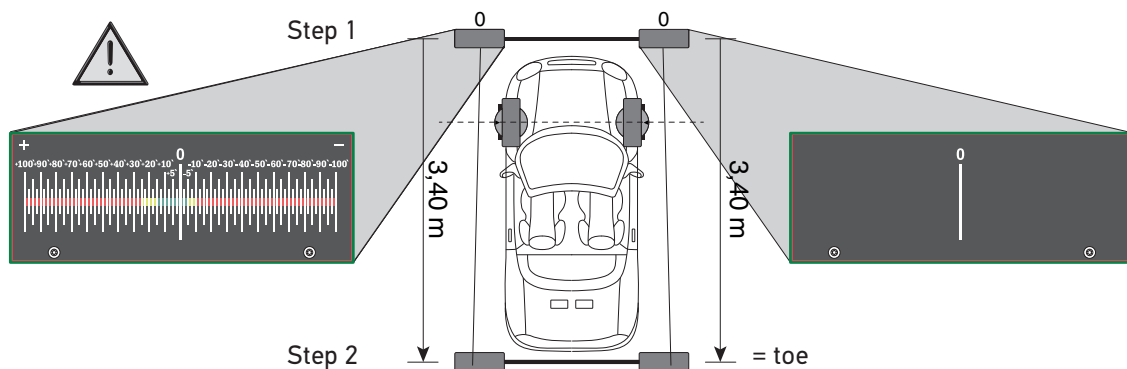
Enter the required toe value (nominal value) by pushing the + or - button and confirm with Enter (example: 10')

Make sure that the correct sign is entered here!



26. Front Axle: Measuring and Adjusting the Toe with the Inclinator

Place the toe scale in front of the front axle and align both lasers to it. Adjust the toe scale so that the lasers strike the zero mark on both sides. **(Step 1)**



Move the toe scale back by **3.40 m. (Step 2)**
Position the toe scale on the driver side at zero.

Read off the toe value present on the passenger side.

Enter the toe value present by pressing the + or - button and confirm with Enter (example: -12.5)

Spur vorhanden
- 12,5"
- + ENTER

Make sure that the correct + or - sign is entered here!

Enter the wheelbase by pressing the + or - button and confirm "Front axle: Measuring and adjusting the toe with the inclinometer" with Enter (center of front axle to center of rear axle)

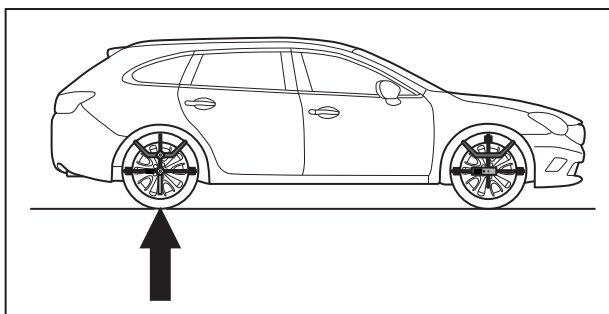
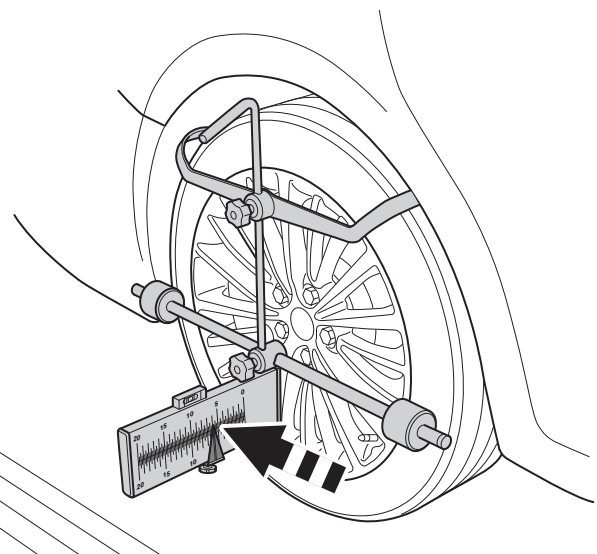
Radstand
2530mm
- + ENTER

Mark the value displayed by the inclinometer on the left/right with the arrows on the hook-on scales.

Wert links / rechts
9,0

Turn the tie rods of the front axle until the line lasers reach the specified value on the hook-on scales on the rear axle.

! After setting, check the total toe value with the toe scale!

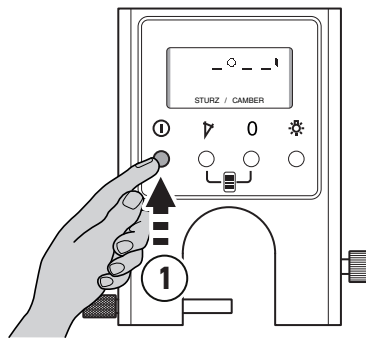
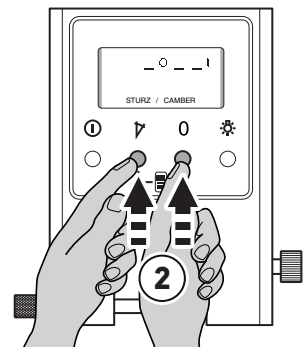


27. Rear Axle: Measuring and Adjusting the Toe with the Inclinator

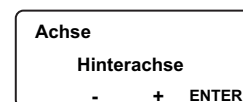
Mount the wheel clamp modules WA with laser modules on the rear axle and the wheel alignment modules with the hook-on scales on the front axle.

Switch on

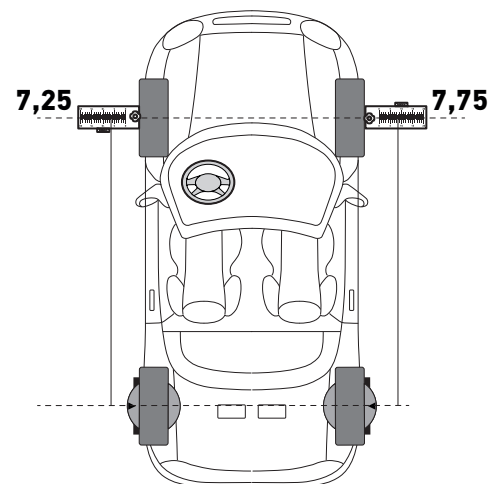
Push the angle and ① button simultaneously and hold down for 3 secs ②.



Select the front axle or rear axle with the + or - button and confirm with Enter.

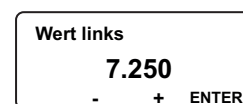


Align both lasers to the hook-on scales on the front axle.

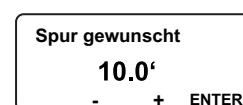


Enter the values displayed by the lasers on the hook-on scales on the left and right by pushing the + or - button and confirm with Enter (example: value on left 6.0, value on right 10.5)

Enter the required toe value (nominal value) by pushing the + or - button and confirm with Enter (example: +10')

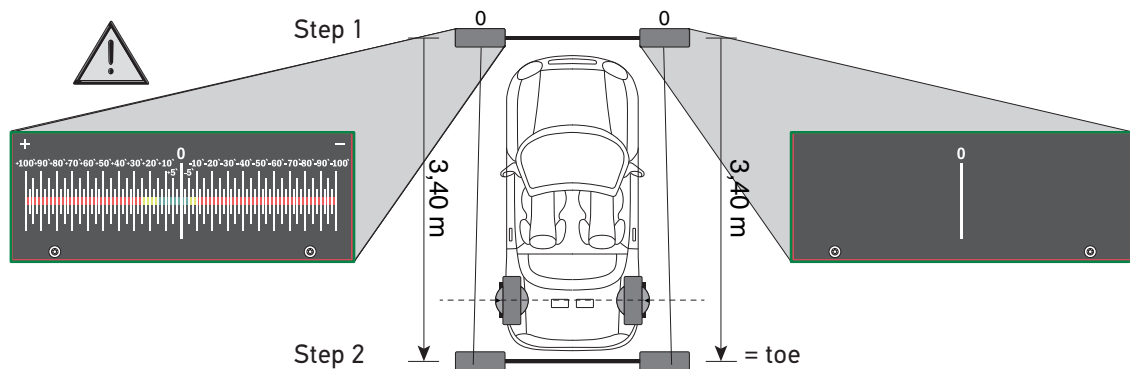


Make sure that the correct sign is entered here!



27. Rear Axle: Measuring and Adjusting the Toe with the Inclinometer

Place the toe scale in front of the front axle and align both lasers to it. Adjust the toe scale so that the lasers strike the zero mark on both sides. **(Step 1)**



Move the toe scale back by **3.40 m. (Step 2)**

Position the toe scale on the driver side at zero.

Read off the toe value present on the passenger side.

Enter the toe value present by pressing the + or - button and confirm with Enter (example: -20 ')

Spur vorhanden		
-	20,0"	+
-		ENTER

Make sure that the correct + or - sign is entered here!

Enter the wheelbase by pushing the + or - button and confirm with Enter (center of front axle to center of rear axle)

Radstand		
-	2530mm	+
-		ENTER

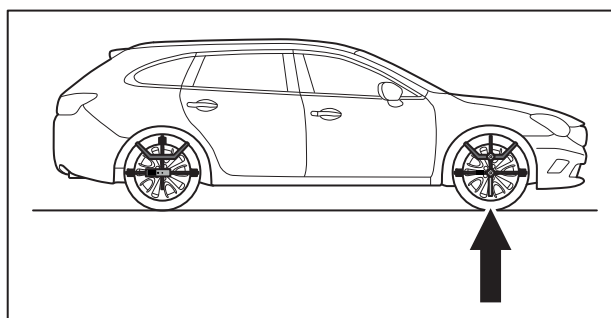
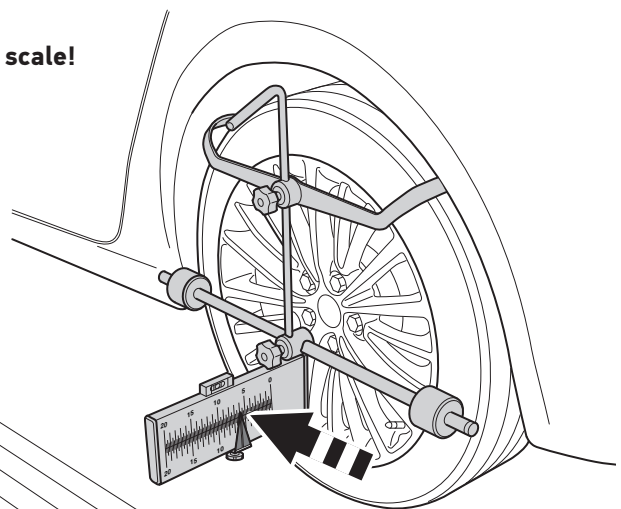
Mark the value displayed by the inclinometer on the left/right with the arrows on the hook-on scales.

Wert links / rechts		
-	6,5	+

Adjust the tie rods of the rear axle until the line lasers reach the specified value on the hook-on scales.



After setting, check the total toe value with the toe scale!



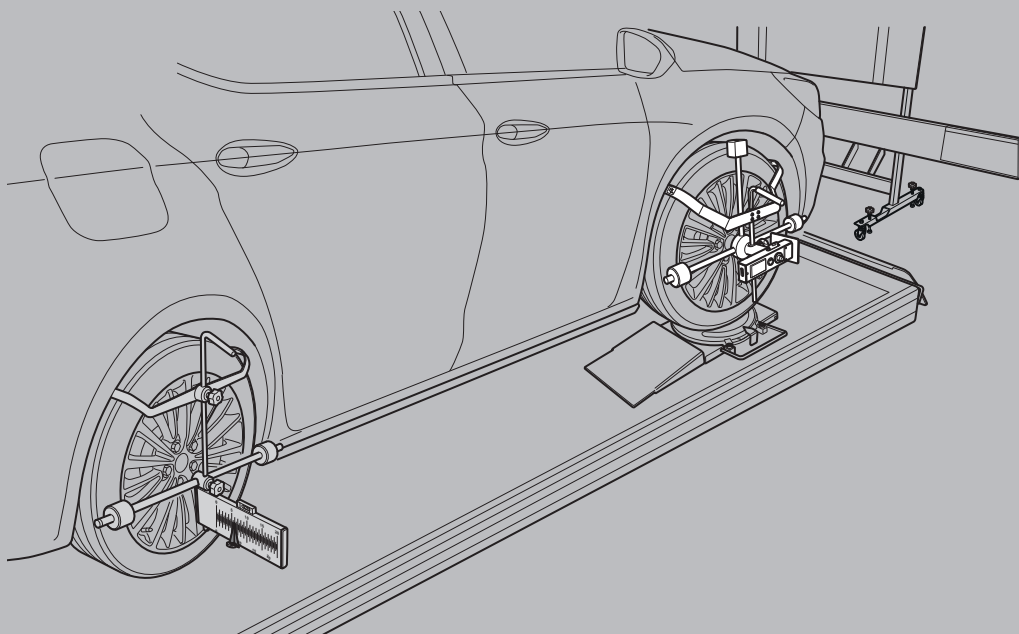
28. Technical Data

Technical data:	
Measuring accuracy:	
Lasers:	+/- 2.5 angular minutes
Inclinometer:	+/- 2.5 angular minutes
Load-bearing capacity of turntables:	700 kg / each
Lasers:	
Operating voltage:	3 V
Power output:	5 mW
Application distance:	4 m
Laser class:	2
Batteries:	2x 1.5V (AA) Mignon alkaline
Operating time of batteries:	approx. 200h
Inclinometer:	
Batteries:	2x 1.5V (AA) Mignon alkaline
Operating time of batteries:	approx. 200-300h



Care and maintenance:

The Wheel Alignment Kit is a high-precision measuring system. Care of its components is strongly advised to prevent any impairment of functional capability and accuracy. You should always clean all components regularly. When doing so, please do not use strong detergents. A fine layer of corrosion may sometimes be seen on the guide shafts after a while. In such cases, you should rub the shafts with very fine sandpaper as soon as possible. Then clean the shafts thoroughly to remove any sanding dust and lightly apply a little acid-free machine oil that is customary in trade. HGS recommends a calibration of the Wheel Alignment Kit by an authorized service provider every two years.



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