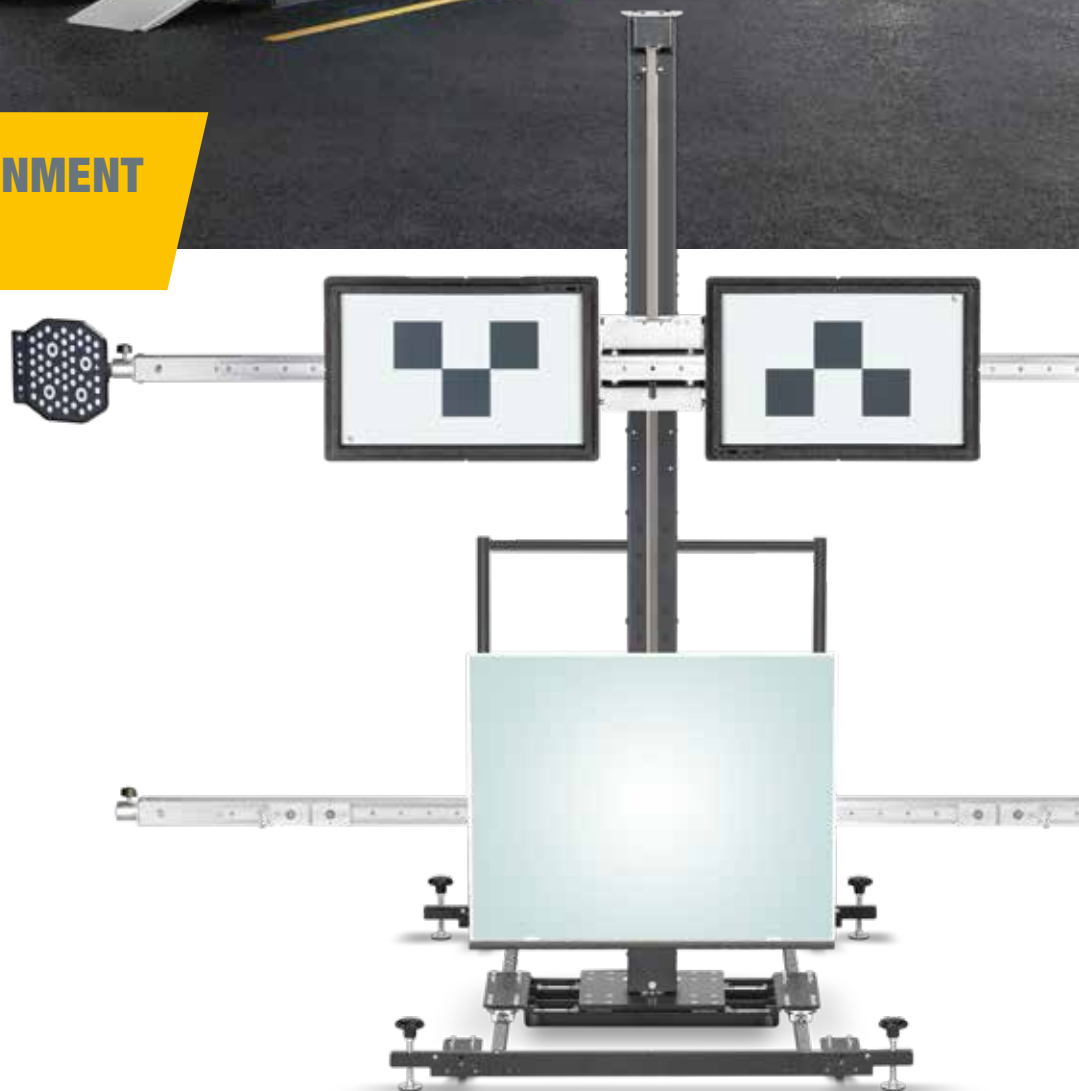


Q.DAS

**CALIBRATION OF SAFETY-RELEVANT
DRIVER ASSISTANCE SYSTEMS**



**FOR THE WHEEL ALIGNMENT
OF TOMORROW**



Q.DAS: Calibration of safety-relevant driver assistance systems

ADAS calibration in the workshop: A highly profitable new service opportunity

In Germany, one in five vehicles is already equipped with camera or radar-based driver assistance systems. In addition to increasing comfort, the systems make an important contribution to driving safety. From 2022, there will be a legal requirement throughout Europe that all vehicle types sold must be equipped with camera and radar-based driver assistance systems as standard.

Workshops now face a choice: Keep business inhouse or give it away?

After many repairs, especially after wheel alignment, ADAS sensors have to be recalibrated. This means new sales potential for workshops.

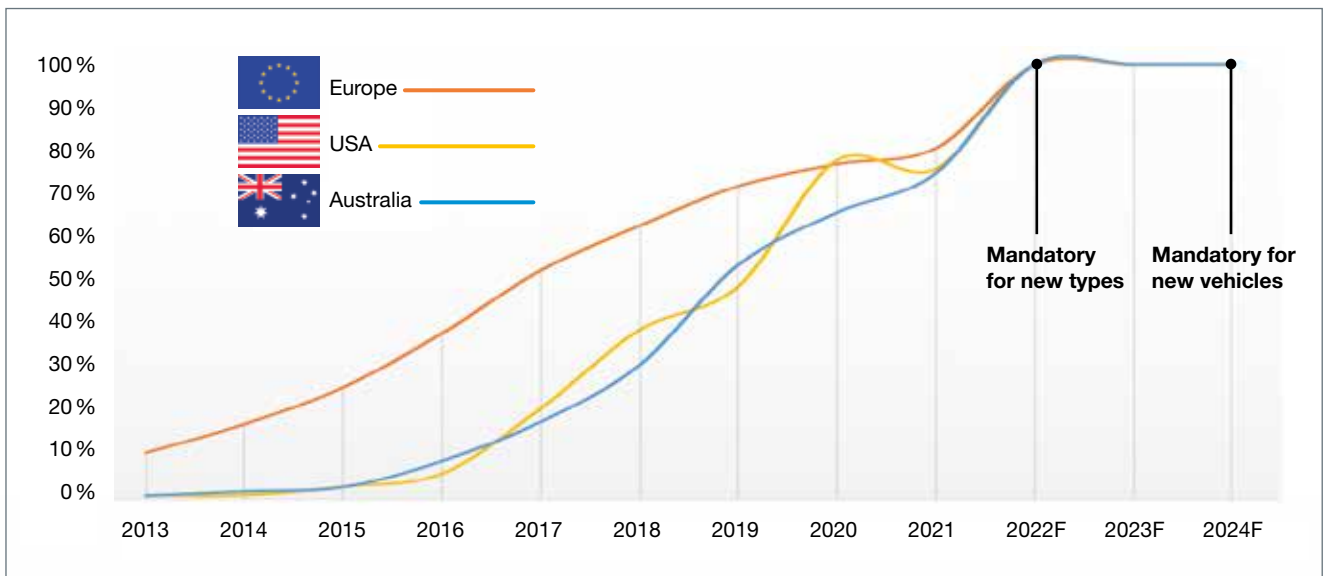
With Q.DAS, the new calibration solution for safety-relevant driver assistance systems, workshops operate this profitable service in their own hands and return vehicles to their customers safely and in line with OEM specifications.



Q.DAS: Fast, safe and manufacturing-compliant positioning and alignment

eTargets: Automatic, digital display of the correct calibration pattern, completely without retooling

Mandatory from 2022: AEB (Autonomous Emergency Braking) standard in new vehicles



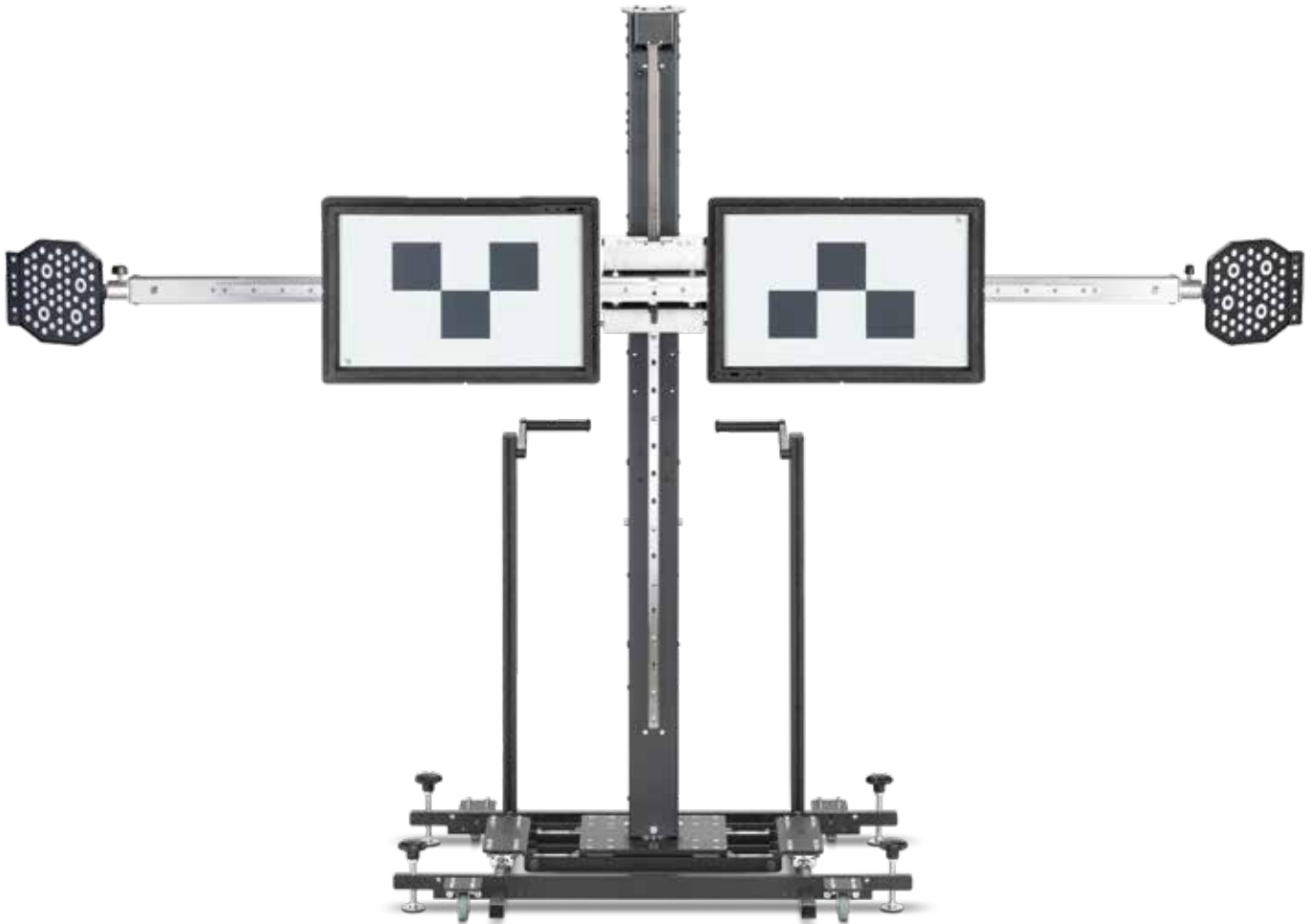
Source: Strategy Analytics 2017; EURONCAP (2021); JATO Dynamics (2016; 2019); ANCAP (2020); IIHS (2020)



Q.mApp software: Guides the user through the entire ADAS calibration, including live data and documentation

Q.Lign: Web-based wheel aligner with permanently free space in front of the stage for ADAS calibration

Q.DAS Standard: Flexible ADAS calibration in the workshop



Q.DAS: OEM-compliant ADAS calibration in combination with wheel alignment

Q.DAS is a modular solution for the calibration of forward-facing, safety-relevant radar, camera and LIDAR systems. Configure your system depending on the volume, budget and available space.

Q.DAS: Beissbarth's fastest solution for OEM-compliant ADAS calibration!

Digital instead of analog

- Camera-based positioning via live display
- No blump bobs or measuring tapes
- Full control over entire calibration
- Direct specs instead of manual value transfer*

Wheel alignment and ADAS calibration as one process

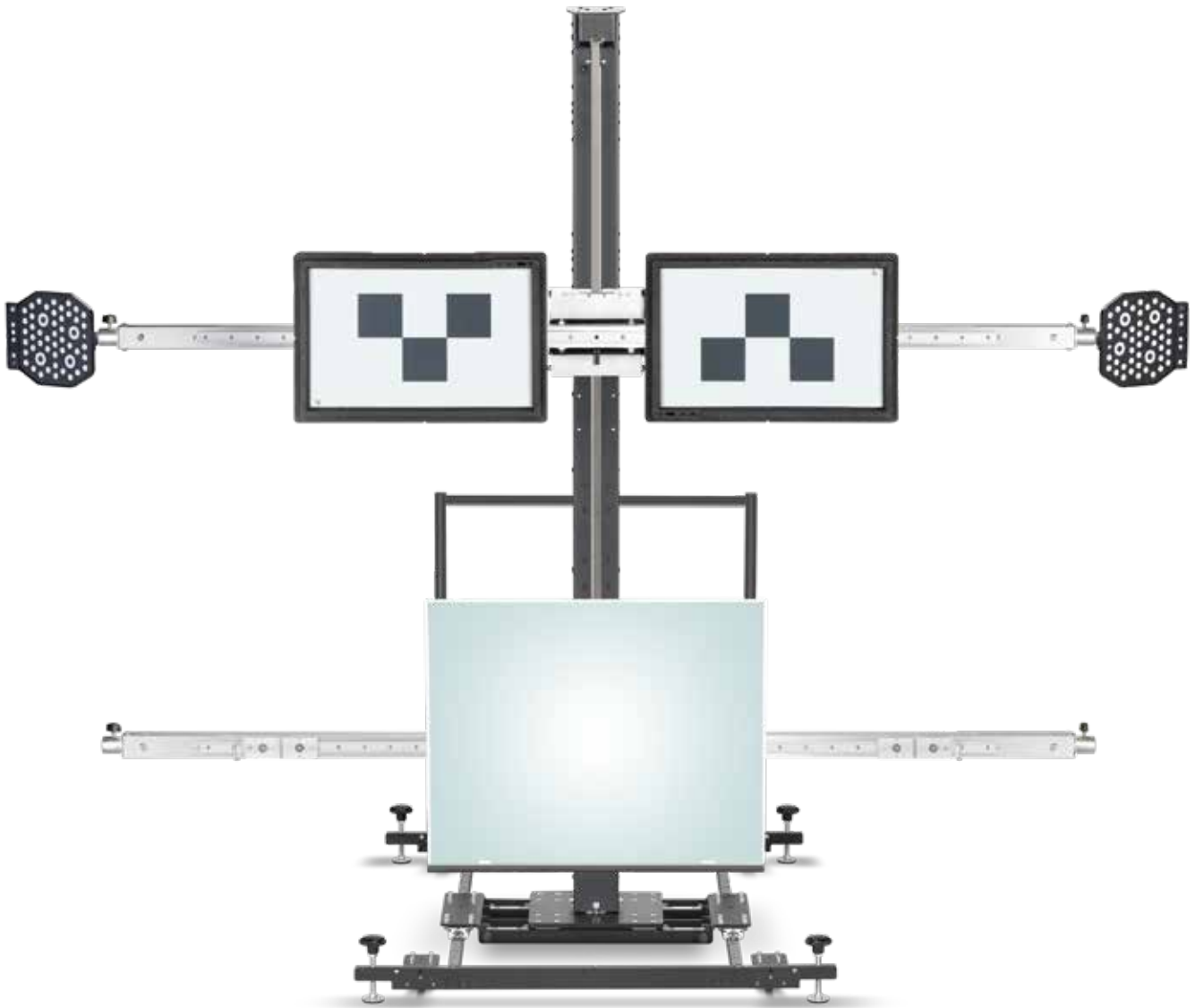
- No retooling
- No moving of measuring devices
- Permanently ready for use
- Guided instructions for setup and positioning
- Automatic compensation of different installation heights
- Meets highest accuracy requirements of OEMs

Calibration of safety-relevant ADAS

- Forward-facing front camera (e.g. lane departure warning)
- Forward-facing front radar (e.g. ACC)
- Suited for occasional as well as power user in calibrating ADAS

*Costs apply, only in combination with Q.Lign wheel aligner

Q.DAS Pro: ADAS calibration on lifts and LTBs



Q.DAS: Modular calibration solution for every workshop

- Free choice of calibration targets and radar mirrors
- Configuration according to calibration volume, budget and space conditions
- No fixed commitment to only one diagnostic tester
- Integrated X-Y slider minimizes leveling
- Motorized height adjustment

Just a few steps to the right system for the ADAS calibration

First, the appropriate system – **Q.DAS Standard** or **Q.DAS Pro** – is selected, depending on the vehicle classes to be served and the calibration volume. The next steps (pages 8–9) are to select the required **targets, radar mirrors**, and the existing **wheel alignment** solution.

Step 1: Choice of ADAS calibration system

Description	Q.DAS Standard	Q.DAS Pro
Safety-relevant driver assistance systems	Radar and camera	Radar and camera
Vehicle class	Car	Car and light commercial vehicles
Calibration volume in the workshop	Low to medium	High
Height adjustment	Motorized up to 1700 mm	Motorized up to 2050 mm
Works with all camera calibration targets	•	•
Supports eTargets	•	•
Simultaneous use of radar mirror and camera targets	–	•
Longitudinal fine adjustment without repositioning	200 mm	900 mm
Crosswise fine adjustment without repositioning	200 mm	200 mm
Order number:	8 900 380 010	8 900 380 012

eTarget: E-paper based calibration target displays



DID YOU KNOW?

MONITORS ARE OPTIMIZED FOR THE HUMAN EYE, BUT OFFER LITTLE CONTRAST TO CAMERAS. GLASS-FREE eTARGETS WITH REFLECTIVE TECHNOLOGY SHOW OPTIMAL CUTOFF LINES BETWEEN BLACK AND WHITE EVEN IN LOW LIGHT AND SUNLIGHT CONDITIONS.

eTarget: fast and space-saving solution for workshops – broad manufacturer coverage included

eTarget is an innovative digital calibration target based on e-paper technology - unlike conventional monitors, beamers or other screen solutions.

OEM-compliant calibration targets for precise and fast ADAS calibration with Q.DAS:

- Faster setup times, more space:
15 patterns in one eTarget
- Automatic pattern selection minimizes user errors
- Extremely high contrast, even from different viewing angles
- Reflective technology for all lighting conditions

- Integrated Bluetooth module for app communication
- Lightweight and robust housing
- Downward compatible with previous Beissbarth calibration solutions (BBFAS 1xxx, BBFAS 415)
- Battery operated and power saving – display is maintained even without power



Still available in the Multi-Target Shop

The analog calibration targets for multi-brand calibration in the workshop can be ordered in a sturdy box.

Tablet software Q.mApp: Safe and fast sensor calibration



Choosing the calibration tool



Choosing the car's brand

Bluetooth and WiFi communication

A major advantage of Q.mApp is its communication capability. Both Bluetooth and WiFi communication are used for full integration of Q.DAS.



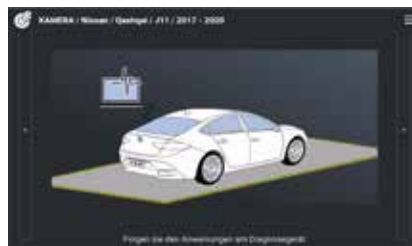
Measuring the distance



Choosing the conventional calibration target



Positioning the eTarget



Examination with the diagnostic device

Innovative tablet software for camera and radar calibrations – consistent, simplified and independent of the vehicle manufacturer

Calibration on different workstations is supported by the software. This includes not only process management and documentation. Even the height offset on leveled test stations (lifting platform, LTB, etc.) is automatically compensated.

The software is seamlessly integrated into the Q.DAS environment and enables visual and digital positioning.



















OEM-compliant ADAS calibration with Q.DAS:

- OEM specs for static ADAS calibrations with broad manufacturer coverage.
- Simplified and consistent step-by-step instructions for the positioning process.
- Height compensation of different installation heights
- Supports optical and digital alignment processes
- Serves as remote control for the eTargets
- Integrated Bluetooth laser for distance and height measurement
- Integrated communication to Q.Lign simplifies alignment of the fixture
- Real-time positioning (only in combination with the distance laser and/or Q.Lign)

Function overview





Wheel alignment and ADAS calibration

Step 2: Selection of the calibration targets


Product	Calibration target	Starter Kit 1	Starter Kit 2	eTarget Kit
				
		Starter kit for most frequent ADAS calibrations	Recommended minimum coverage	Solution for cost-, time-, speed- and error-optimized performance
Nissan Typ 1 8 900 381 139		•		•
Nissan Typ 2 8 900 381 140				•
Universal Typ 2 8 900 381 142				•
Honda Typ 1 8 900 381 143				•
Honda Typ 2 8 900 382 297				•
Honda Typ 3 8 900 382 349		•		•
Mitsubishi Typ 1 8 900 381 218				•
Mazda Typ 1 8 900 382 318		•		•
Mazda Typ 2 8 900 381 234				•
Toyota Typ 1 8 900 382 287		•		•
Toyota Typ 3 8 900 382 355				•
Kia Hyundai Typ 2 8 900 382 320				•
Kia Hyundai Typ 3 8 900 382 316				•
Daimler/Infinity Typ 1 8 900 382 312		•	•	•
Daimler/Infinity Typ 2 8 900 382 319			•	•
Universal Typ 4S 8 900 382 570		•	•	• ¹⁾
Storage box 1 690 381 217		•	•	
Order number		8 900 381 001	8 900 381 002	8 900 380 011

¹⁾ Conventional target boards, non-digital

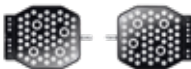

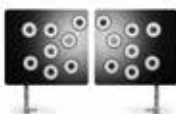
Configuration in just a few steps: Matching the workshop's requirements

Product	Calibration target	Description
Toyota - Typ 2 8 900 382 328		Calibration target for the front camera of various Toyota vehicles as well as Citroën C1 and Peugeot 108
Subaru Typ 2S 8 900 382 590		Calibration target for the front camera of various vehicles from Subaru (mainly domestic market)
Subaru Typ 3S 8 900 382 608		Calibration target for the front camera of various vehicles from Subaru (mainly domestic market)
Volkswagen Group 8 900 381 056		Calibration target for the front camera of all Volkswagen Group vehicles


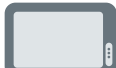
Step 3: Selecting the reflector mirror for radar sensor calibration

Product	Mirror	Description
Radar mirror 8 900 381 150		Reflective mirror with tilt mechanism for calibration of radar sensors. Standard frame: Camera targets or radar mirrors are attached to one measuring beam Pro frame: Camera panels and radar mirrors can be attached to two measuring beams simultaneously at the same time

Step 4: Selecting the wheel alignment system

Product	Target boards	Description
Q.Lign 1 690 200 013		Target boards for digital positioning of Q.DAS with Q.Lign wheel aligner. Scope of delivery: 2 target boards
Easy 3D+ Standard 1 690 701 119		Target boards for digital positioning of Q.DAS with Easy 3D+ wheel aligner. Standard targets suitable for all common installations; special panels recommended for narrow 4-post lifts <2.8 m clearance (order number: 1 690 701 152), scope of delivery: 2 standard target boards.
Easy 3D+ Spezial 1 690 701 152		Target boards for digital positioning of Q.DAS with Easy 3D+ wheel aligner. For narrow 4-post lifts <2.8 m clearance. Scope of delivery: 2 special measuring target boards.
Easy CCD+ (no image)		No additional hardware required. Front CCD sensor heads are inserted into the measuring bar of Q.DAS after wheel alignment to perform ADAS positioning.

Step 5: Selection of the diagnostic tester

Product	Tester	Description
IAM diagnostic tester		Communication with the vehicle can be performed with most diagnostic testers. IAM diagnostic solutions offer various multi-brand coverages. For complete vehicle coverage, multiple diagnostic solutions are often required.
OEM diagnostic tester		Alternatively, workshops specializing in specific brands can use OEM diagnostic solutions. This provides 100% coverage for the respective brand - even for their latest vehicle models.

Q.Lign and Q.DAS for the wheel alignment of tomorrow



Wheel alignment Q.Lign – compatible with Q.DAS

Q.DAS is compatible with Beissbarth's quickest wheel alignment solution. Most value comes when used in combination with Q.Lign. The combined technologies work together seamlessly. Workshop can take their alignment to the next level by adding ADAS calibration - an important service of today and tomorrow that you want to keep inhouse.

ADAS calibration Q.DAS – best with Q.Lign

Q.DAS makes the workshop business even more profitable by calibrating safety-relevant driver assistance systems following the wheel alignment.



Control of Q.DAS and Q.Lign via tablet

Q.Lign and Q.DAS

Wheel alignment systems in comparison

Q.Lign: Practical, simple and fast ADAS calibration



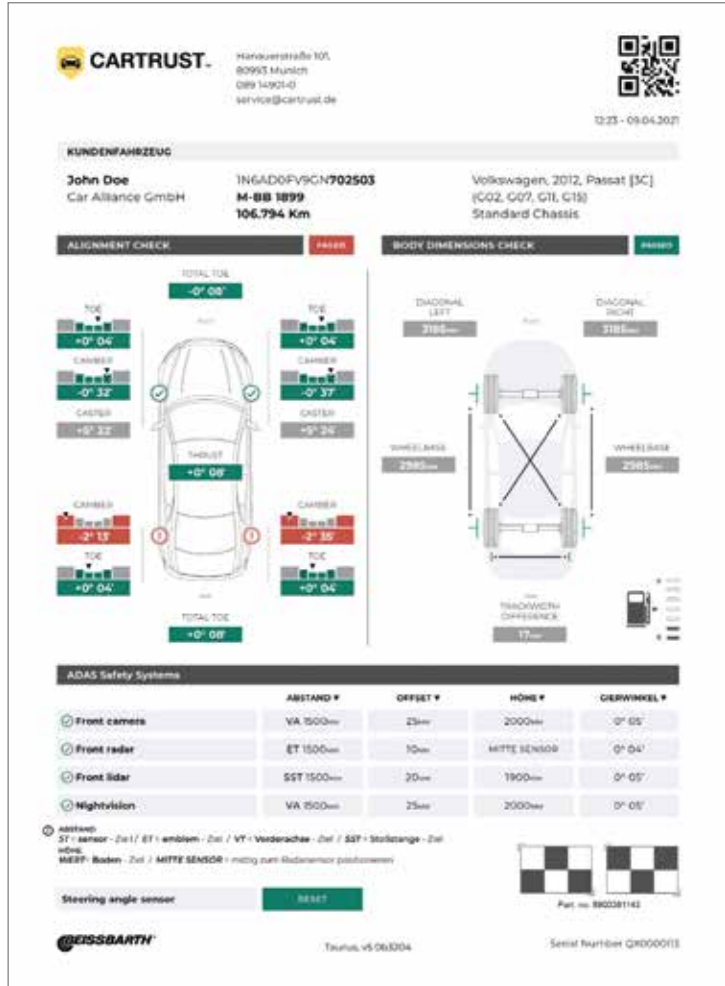
Wheel alignment with Q.Lign



Alignment in seconds with Q.Lign



Checking the steering wheel position before calibration



Alignment and ADAS documentation (in preparation)

Processes in comparison: Q.Lign, Easy 3D+ and Easy CCD+

Description	Q.Lign	Easy 3D+	Easy CCD+
Direct alignment check and adjustment before calibration	•	•	•
High-precision alignment and positioning of the calibration fixture	•	•	•
Use of eTargets	•	•	•
Live values for distance and height of the calibration targets	•	•	-
Live values for yaw angle and offset	•	•	•
Direct adjustment to specs for faster positioning	• ¹⁾	-	-
Following documentation with: <ul style="list-style-type: none"> Position of the calibration system to the vehicle Calibrated sensors Selected calibration targets Wheel alignment printout 	• ¹⁾	-	-
Direct communication with ADAS software Q.mApp	• ¹⁾	-	-

¹⁾ Costs apply

Manufacturer overview for calibration of front camera and radar sensor

Manufacturer	Front camera (Lane assistance functions)		Radar sensor (ACC, emergency brake assist functions)	
	Calibration drive	Static with calibration targets	Calibration drive	Static with reflectors
		Q.DAS		Q.DAS
Alfa Romeo		●		●
Audi		●		●
BMW	●			●
Chrysler	●		●	
Citroën		● ²⁾	●	
FIAT		●		●
Ford	●		●	
Honda		● ¹⁾		
Hyundai		●		
Jaguar	●		●	
Jeep		● ²⁾		● ²⁾
KIA		●		
Land Rover	●		●	
Mazda		●		
Maserati		●		●
Mercedes-Benz		● ¹⁾	●	
Mitsubishi		●		●
Nissan		●		●
Opel		● ²⁾	●	
Peugeot		● ²⁾	●	
Porsche		●		●
Renault		● ²⁾		
SEAT		●		●
Škoda		●		●
Smart		●		
Subaru		● ³⁾		
Suzuki		○		●
Toyota		● ²⁾		
Volkswagen		●		●
Volvo	●		●	

1) Depending on the system with or without calibration drive;
 2) For some vehicle types also with dynamic calibration;
 3) Static calibration followed by a calibration drive;
 ○ In preparation