

# BOSCH FWA 4630 Easy 3D Wheel Aligner



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## Marketing Strategy

- Sell differentiation...not price point!
- The new FWA4630 Easy 3D completes the new BOSCH FWA series alignment product portfolio. Be sure to sell both families of alignment in CCD sensor and camera imaging systems.
- The primary goal of offering the Easy 3D is to successfully market the entire line of BOSCH wheel service products.



## Differentiated Product Advantages

### Minimal Space Requirements

- No boom in front
- moveable on the sides

### Ease of an Accurate Installation

- No complex installation process
- No calibration at installation

### Portable

- Floor, rack, multiple bays, pits, etc.
- No height restrictions as vehicle is raised

### Adaptable

- Camera pods can be repositioned without change in measurements during alignment.

### Low Total Cost of Ownership

- Reliable – No electronics at wheel.  
Warranty 1 years parts, 1 year labor.
- Low cost, camera pod field replacement program.
- No routine calibrations
- Fewer Comebacks. e.g.. straighter steering wheels
- Open architecture

### Fast with Repeatable Accuracy

- Camera pod data transfer 850 Mbps
- 27 Hz camera refresh rate

### Adaptive to Vehicle System Calibration

- Adaptive Cruise
- ESC and AAS



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## Easy 3D Customer Profile

### Customer Psychographics = High Quality Customer

- ✓ **Top echelon of service centers – 30-40%**
- ✓ **Accustomed to implementing new equipment and processes**
- ✓ **Well equipped service center**
- ✓ **Good reputation in their market area**
- ✓ **Healthy egos, technology adopters or early adopters**
  - **Like to be 1st to have new technology...will grab hold to “Stereoscopic Triangulation”**
  - **More about results, not price**
- ✓ **Strong alignment business or plans to build the business**
- ✓ **Has not purchased imaging systems in the past due to space constraints**
- ✓ **May not be happy with the other alternative providers: Hunter, JBC.**





## **BOSCH FWA 4630 Easy 3D Alignment System**

**A team engineering effort combining the best of BOSCH and Beissbarth engineering technologies.**

**Result: A new generation of true 3D wheel aligners which fulfil the alignment service requirements of modern workshops.**

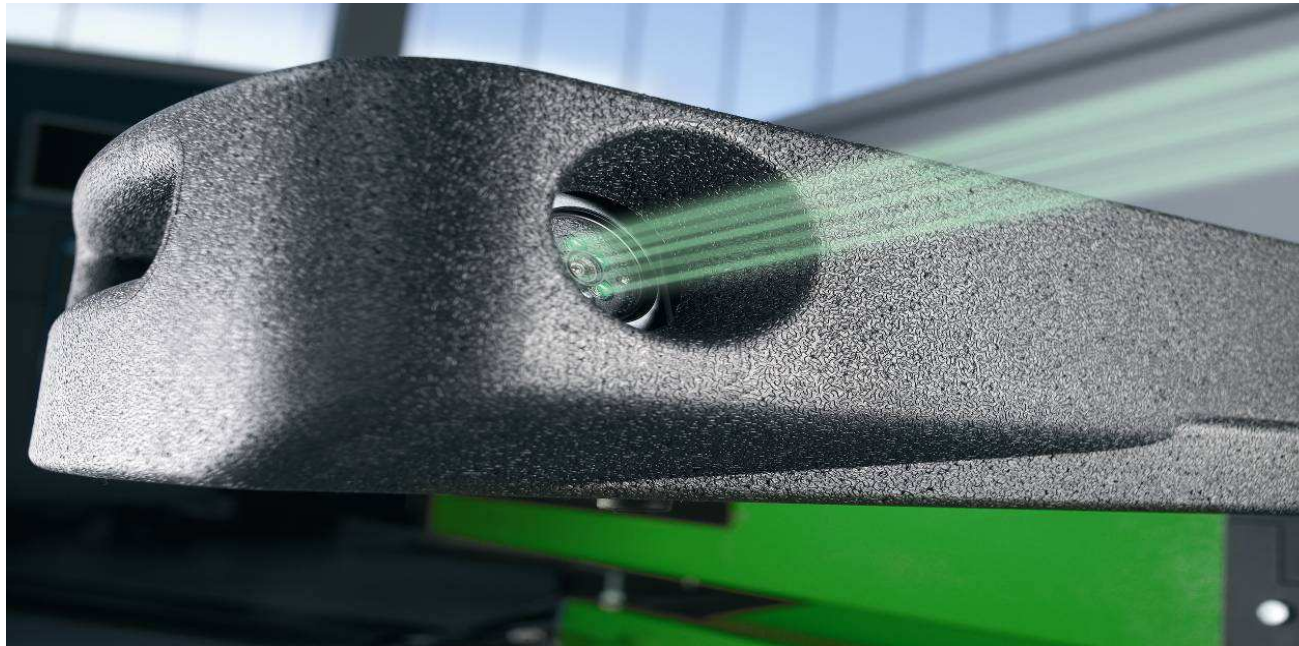


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## BOSCH Easy 3D

The First 'Real 3D' Alignment System  
Utilizes A Stereoscopic Cross Reference Triangulation System

- No Calibration During Installation Required
- Unique Self-Monitoring Measurement Triangulation
  - High Measurement Repeatability
  - Speed and Ease of Use



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**Portable-Hinged Brackets for Unobstructed Walk Around Alignment Rack and Work Bay**

**Side to Side Camera Pod Triangulation Automatically Corrects Alignment Measurements When Moved.**



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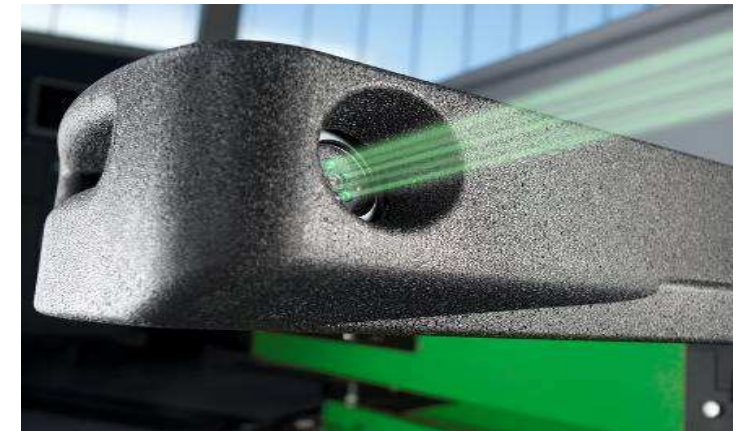
**APPLICATIONS:**  
**Short WB Passenger Cars up to 172" Dually Light Trucks**



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## IN-VEHICLE ROLLING COMPENSATION POSSIBLE

- **Eliminates the Difficult Push-Pull of Larger Vehicles**
- **Unaffected by Engine Powered Movement of Vehicle**
- **Updates quickly with 27 Frames/Second Refresh Rate**



## LOW SERVICE COST

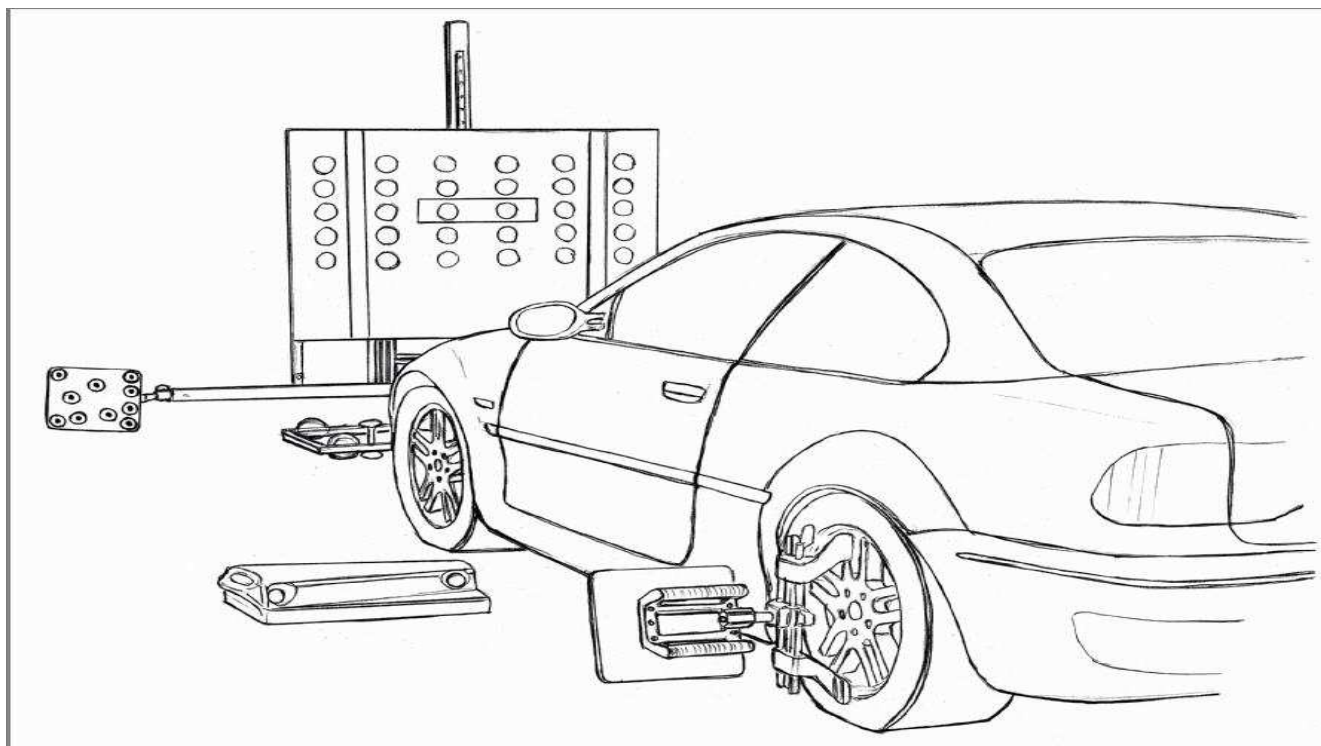
- **No Electronics at the Wheels**
- **Expanded Polypropylene Camera Body w/ Internal Suspension Damping Combines Low Weight with Shock and Drop Resistance.**
- **1 year parts and labor.**
- **Camera pod exchange program offers low replacement cost.**



# BOSCH FWA 4630 Easy 3D Wheel Aligner

## EXPANDABLE USE

**Compatibility to Driver Assistance Cruise, ESP and Radar Calibration Devices – NO EXTRA CAMERAS REQUIRED**



## EXPANDABLE USE

**For Merchandising and Audit Use - Quickly Checks Alignment Angles on the Floor**

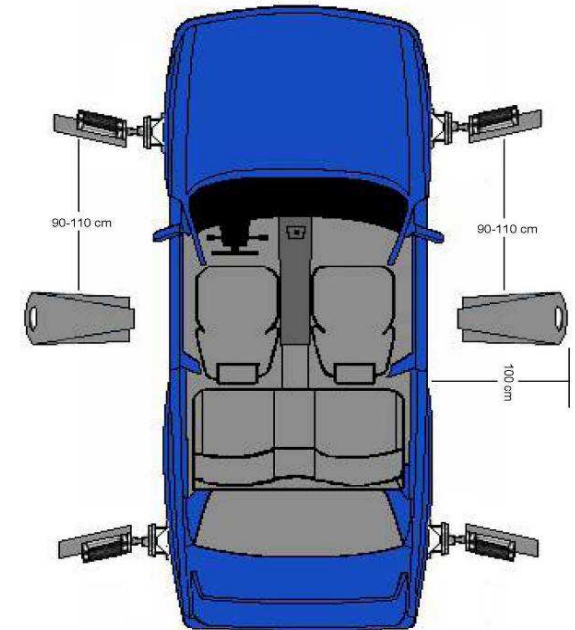


## BOSCH FWA 4630 Easy 3D

**True 3D Camera Vision.  
Automatically Displays Accurate Measurements**

**No Need to Position Camera Pods Exactly  
Across From Each Other  
(20 Degree Side to Side Cross View)**

**Two Side Mounted Camera Pods Use 12 Cameras**  
**(4) Front Stereoscopic Cameras**  
**(4) Rear Stereoscopic Cameras**  
**(2) Cross Reference Cameras**  
**(2) Inclination Cameras**

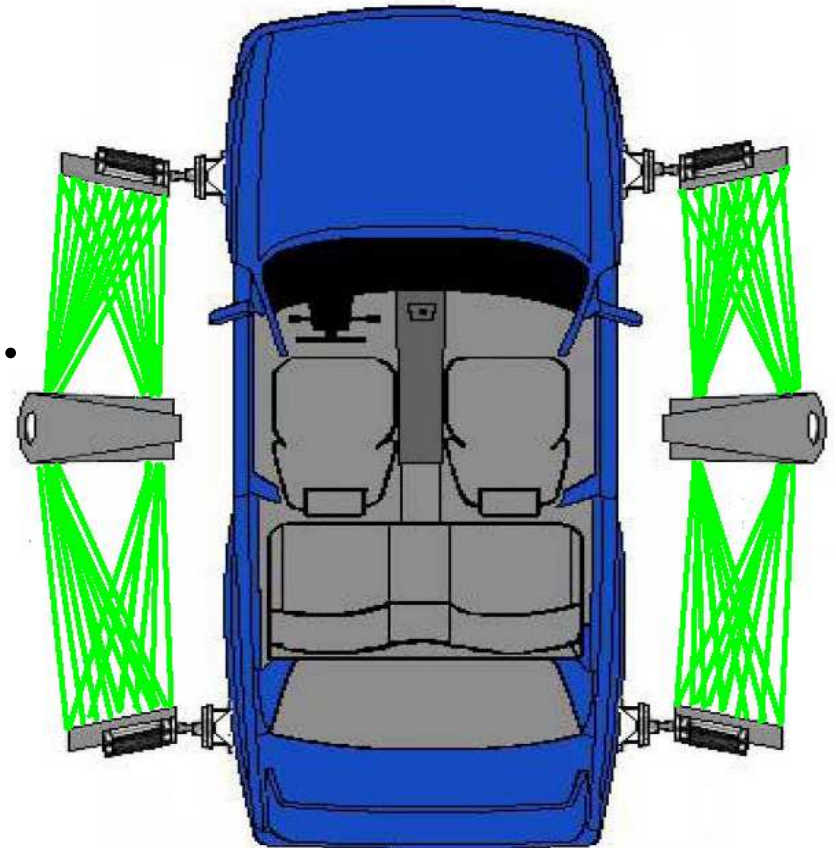


## Theory of Operation

### Stereoscopic Triangulation Viewing of Measurement Boards

**Eight Cameras Total.**

**Two Cameras for each Measurement Board.**



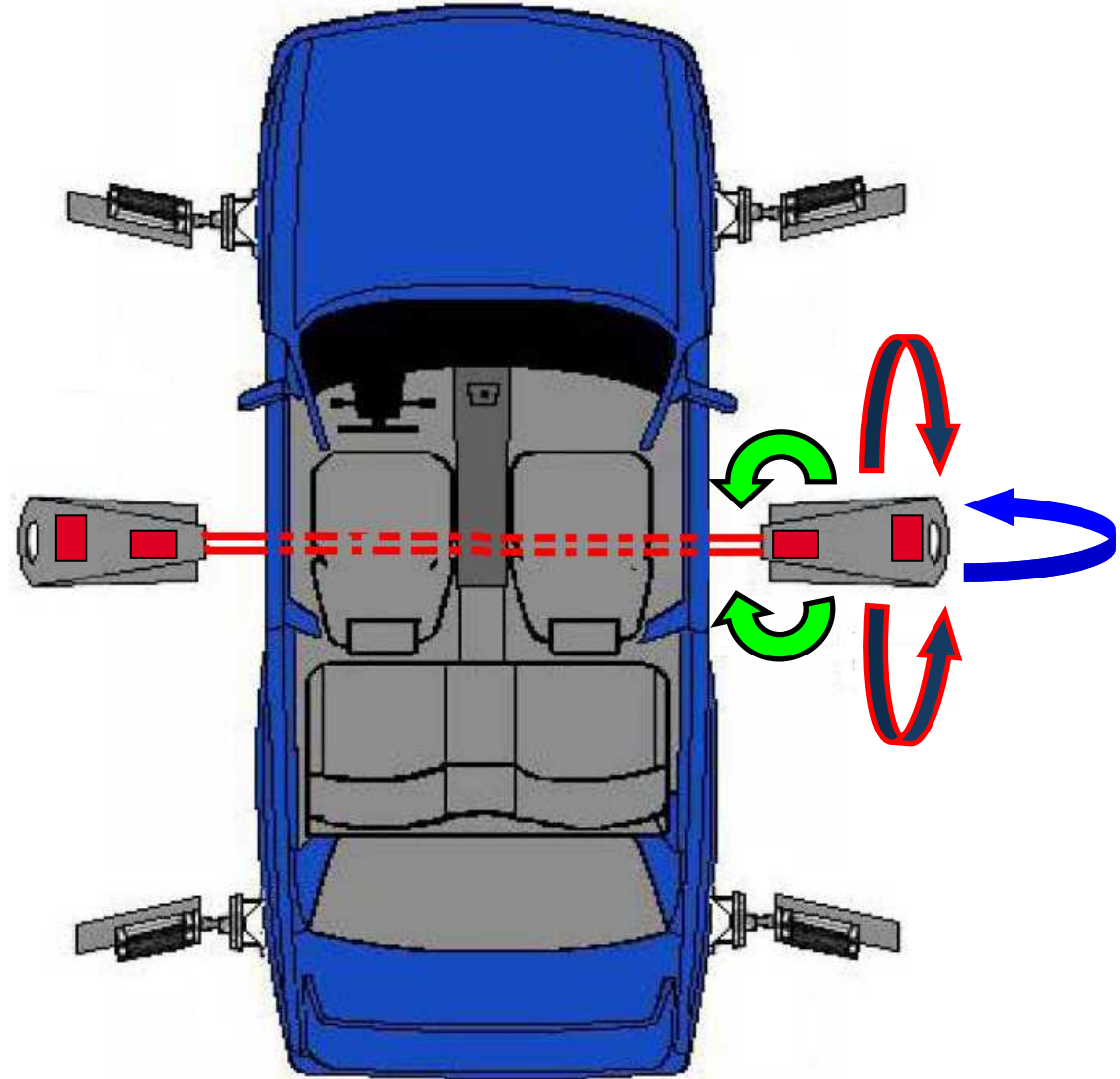
## Theory of Operation

### Cross Reference System

**Four Cameras Total.**

**Two** compensate for any Camera Pod Toe skew or Level (Niveau) change.

**Two** compensate for Camber change.



**Increased Workspace: No Space Required in Front of the Lift.**



**Easy 3D Eliminates Oversized Bay Depth Requirements Due to Fixed Installations in Front of Alignment Rack.**

# BOSCH FWA 4630 Easy 3D Wheel Aligner

## Competitor:

- \* Front bay obstruction due to installation of camera system in front of lift.
- \* Front wheel position must be installed at a fixed distance to the cameras.



## Additional critical items that may require special attention:

- \* Columns of 4 post lifts may block view of cameras on wide track vehicles.
- \* Fixed-permanent installation and/or difficult to reposition to another bay
- \* Calibration systems for vehicle radar and camera system may need additional cameras added to aligner.

# BOSCH FWA 4630 Easy 3D Wheel Aligner

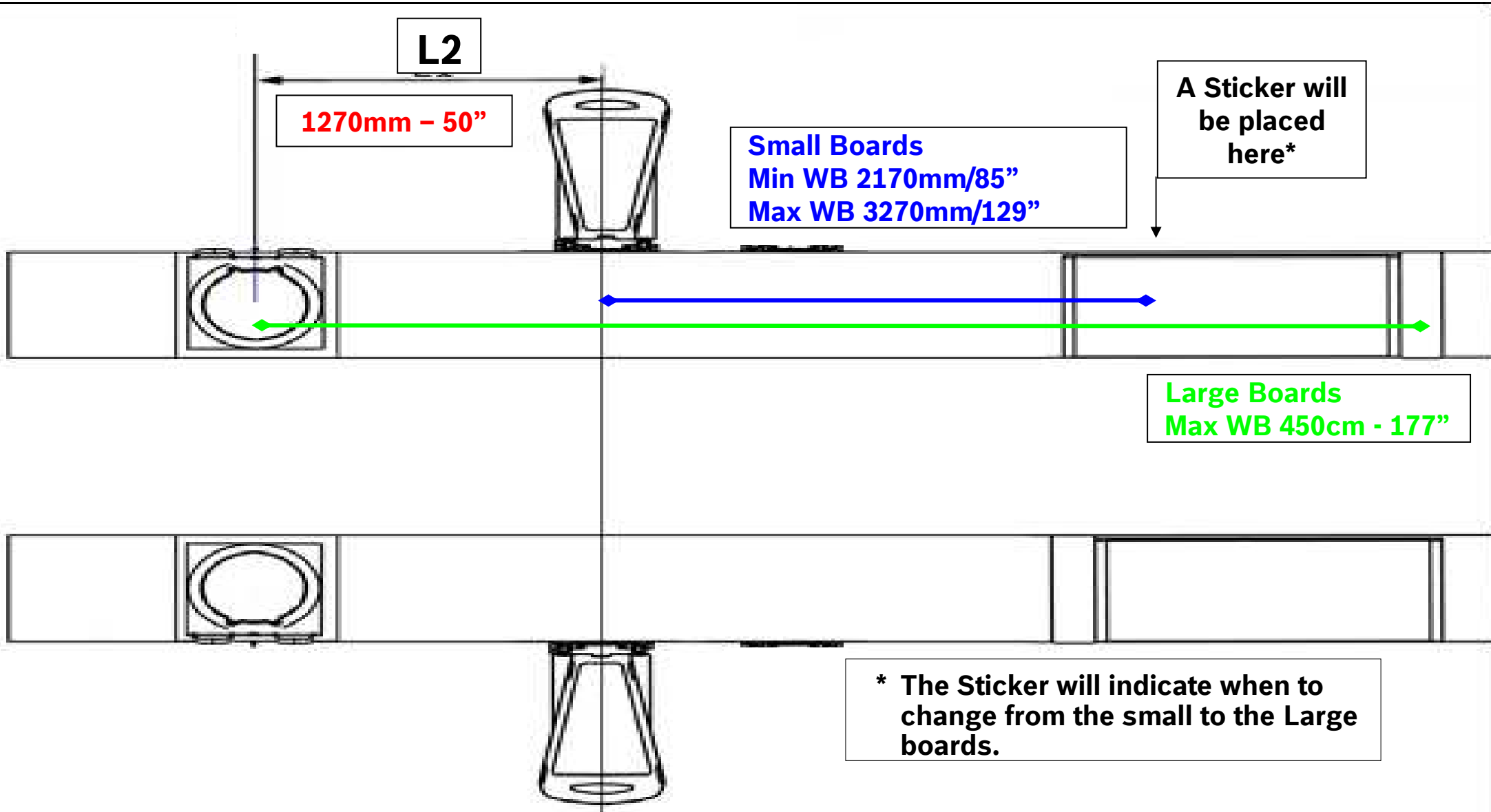
## FAST AND SIMPLE SETUP

- No Installation Calibration Required.
- Portable “Rack to Rack” Alignment or “Rack to Floor” Inspection Use
- Camera Pods Do Not Need Exact Alignment Across From Each Other.



# Easy 3D Lift Layout

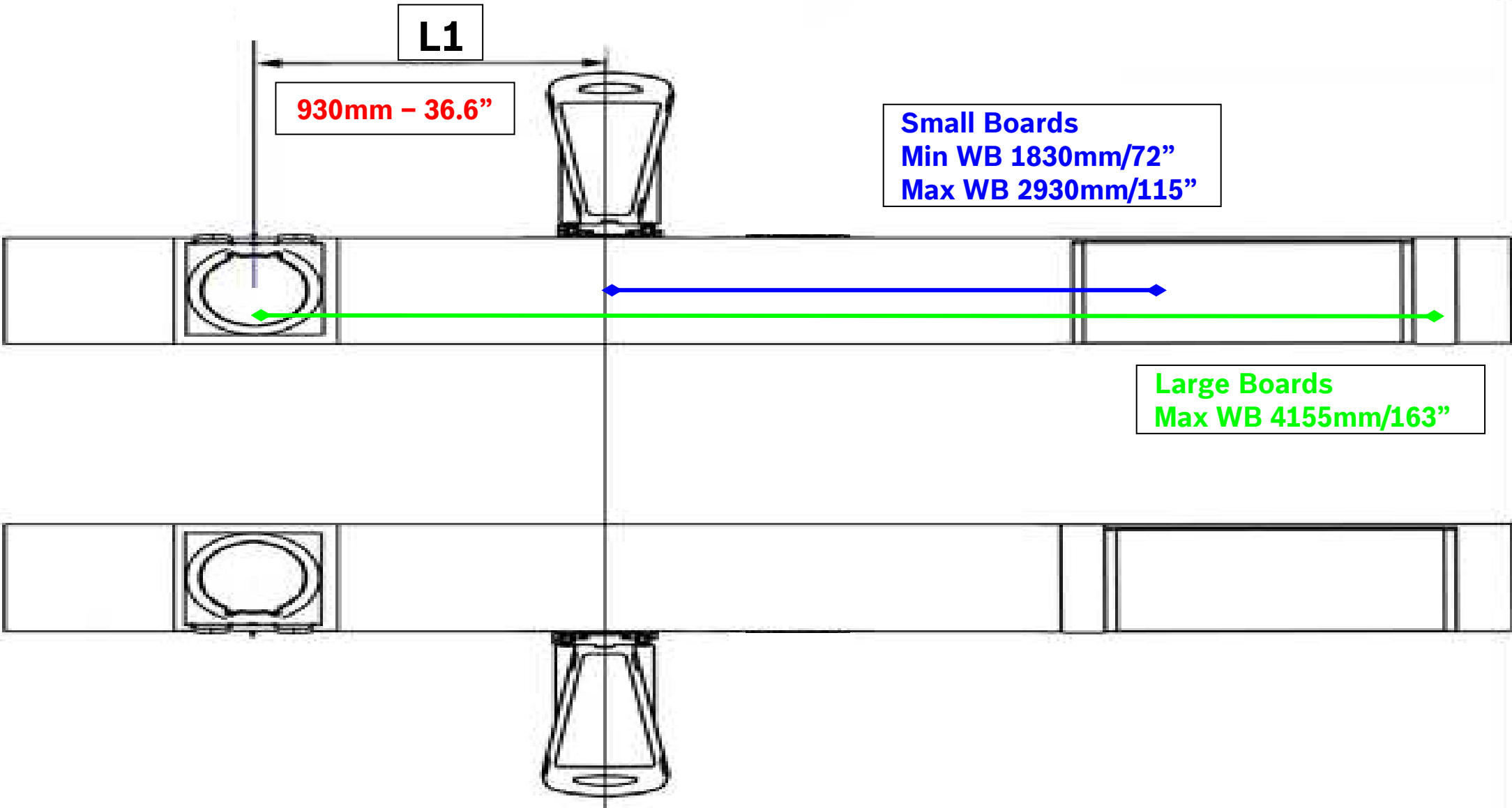
## Most Common Application Installation- USA Shops



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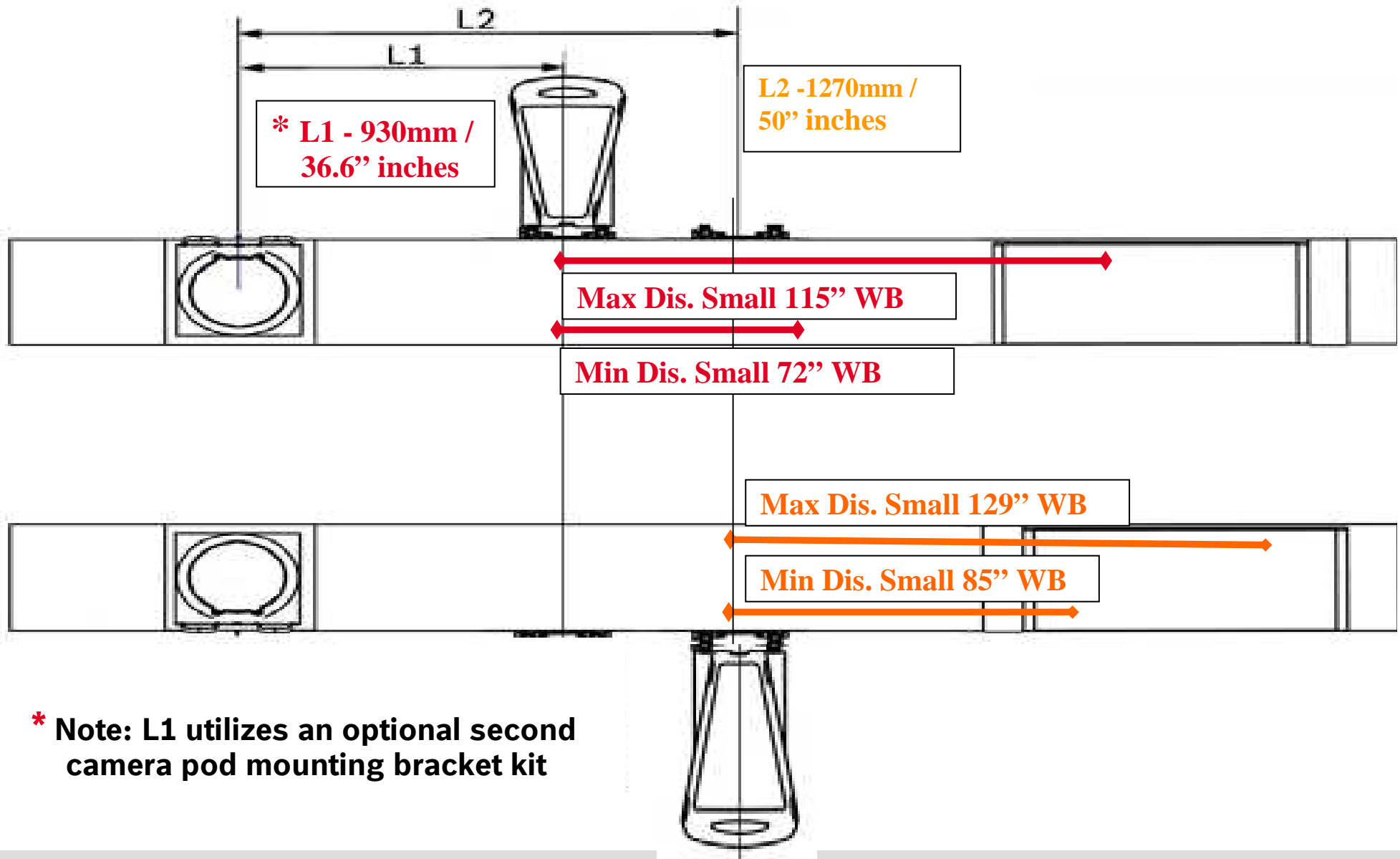
# Easy 3D Lift Layout

## Ultra-Short WB Application Installation- USA Shops

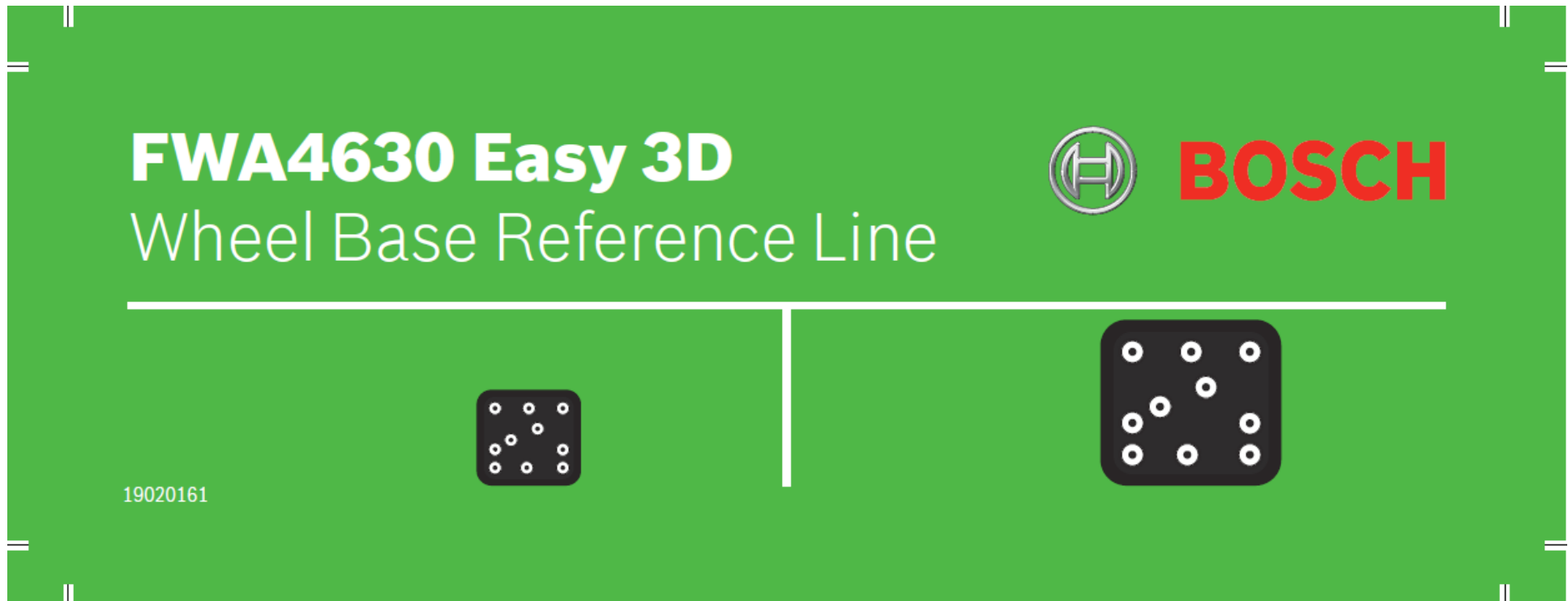


# Easy 3D Lift Layout

## Combination LT and Ultra-Short WB Application Installation- USA Shops



\* Note: L1 utilizes an optional second camera pod mounting bracket kit



**Small and large measurement boards for the rear axle are supplied standard with every FWA4630.**

**This sticker will be supplied with each aligner. It is to be placed on the runway and will let the operator know when to change from the small to the large measurement boards.**

## → **Triangulation Method of measurement**

Easy 3D works according to the **triangulation** method of measurement for each wheel (two cameras are aimed at a single measuring board).

The angle and the distance of the two cameras is given, therefore triangulation can be applied to determine the angle and therefore the distance to the points on the board.



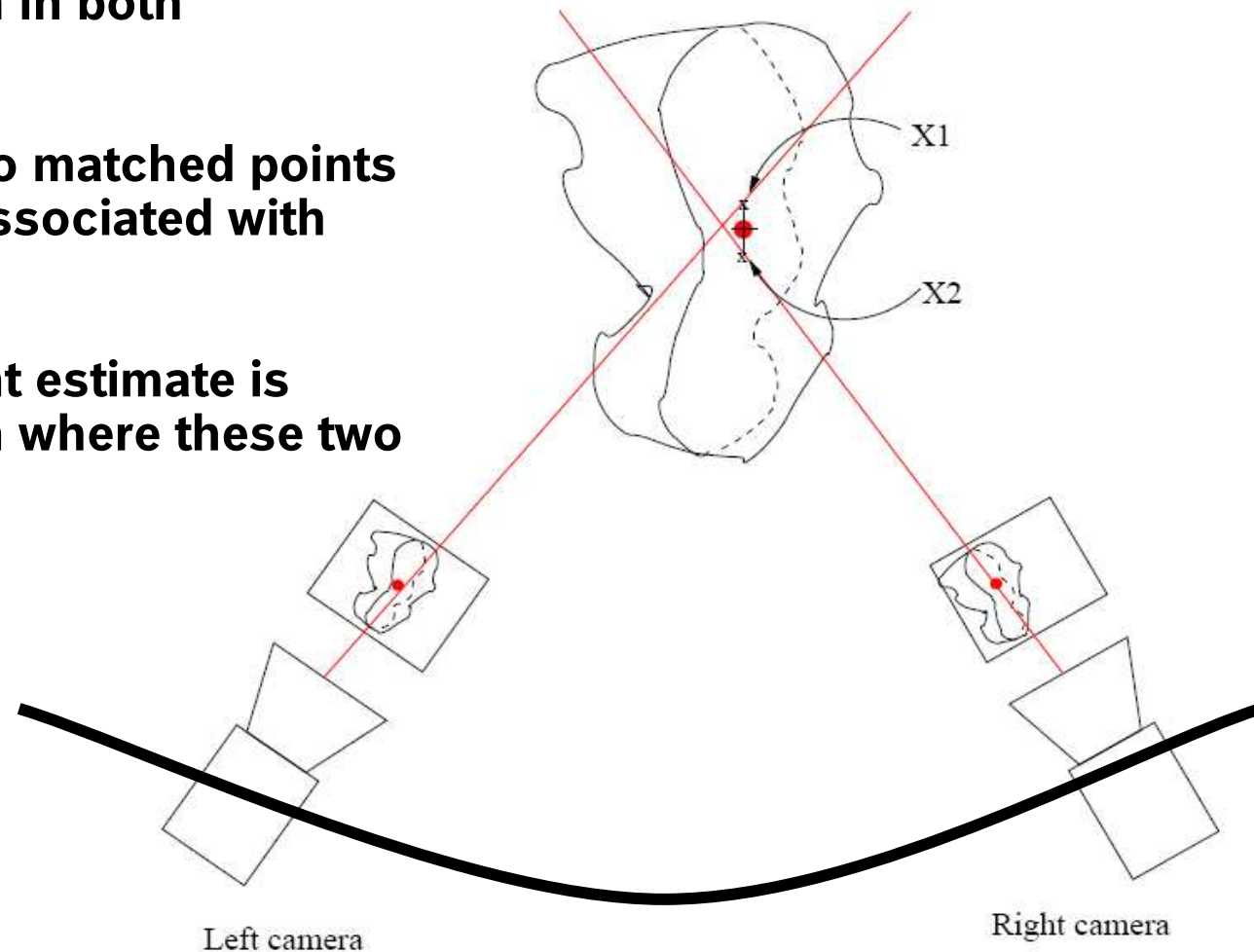
# BOSCH FWA 4630 Easy 3D Wheel Aligner

The triangulation method depicted schematically.

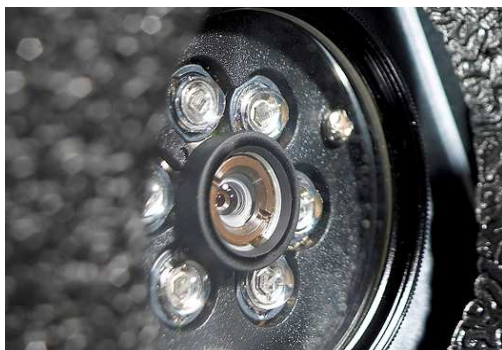
The three dimensional object is seen in both cameras.

Correlation matching has yielded two matched points and the three dimensional rays associated with those are projected forward.

The resulting three dimensional point estimate is seen as the middle point between where these two rays are closest to each other.



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## Bosch Stereo-CCD Cameras

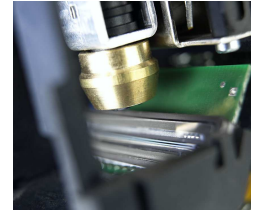
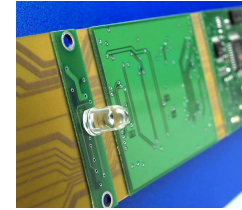


Bosch stereo 3D cameras learn the measurement boards during every compensation and then determine the position of the wheel's axis of rotation. The cross reference cameras uniquely triangulate all four wheel positions to each other. In comparison, most competitor products which aim at defined target points use a single camera and do not triangulate or reference across the middle of the vehicle.

### **Advantages:**

**Bosch 3D stereo cameras are unique in their design and are fundamentally more precise in their measurement capability.**

## The Reference System



The Easy 3D Reference System utilizes two separate systems per camera pod:

- \* Cross referenced camera pod position measurements determine the position of the camera pods to each other and calculate vehicle toe angles, thrust line, setback and offset measurements.
- \* Gravity based pendulum sensors determine camber angle baseline for wheel measurement.

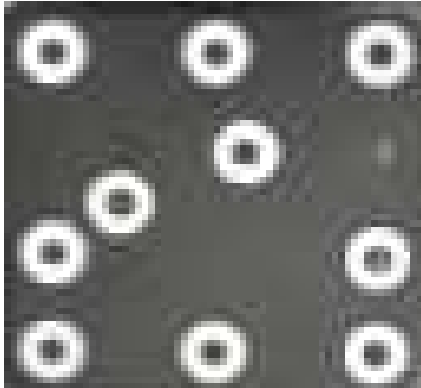
### Advantages: Reference Integration

**The camera pods can be moved during the measurement process without influencing the measurement results. Easy 3D is always ready for operation as long as there is a line-of-sight link between the camera pods.**

**The Easy 3D uniquely triangulates around the vehicle in an “H” pattern with similar advantages that an 8 sensor CCD system triangulates around the vehicle in a rectangle pattern. Calibration can be monitored by these systems. Rear facing camera systems at the front of the work bay do not offer this capability or portability.**

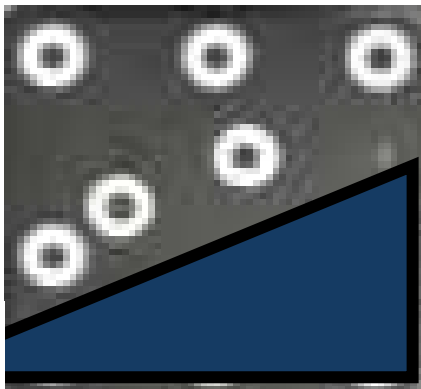
**Extremely mobile in application (lightweight and easy to reposition)**

**Another unique advantage of the Easy 3D.**



**Easy 3D only has to locate 6 of the reflectors to continue with live measurements. Up to 4 reflectors can be covered with no measurement interruption.**

**Decal reflectors can be replaced as needed without the need to exactly reposition them in their original locations.**



**This creates less operator 'down time' and service calls due to dirt, damage or obstructions.**

## Review of Compelling Reasons to Buy

- ✓ **Fewer Space Requirements**
- ✓ **Speed - Quickly Provides Alignment Readings**
- ✓ **Mobile – Flexible – Portable – Adaptable**
- ✓ **Provides Accurate & Repeatable Readings**
- ✓ **Triangulates and Checks Calibrations**
- ✓ **Ease of Installation-No Calibration On-Site**
- ✓ **Bosch Technology Assurance**
- ✓ **Low Total Cost of Ownership**
- ✓ **Superior Warranty**



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