Align Mate Laser – User Manual

1. Overview

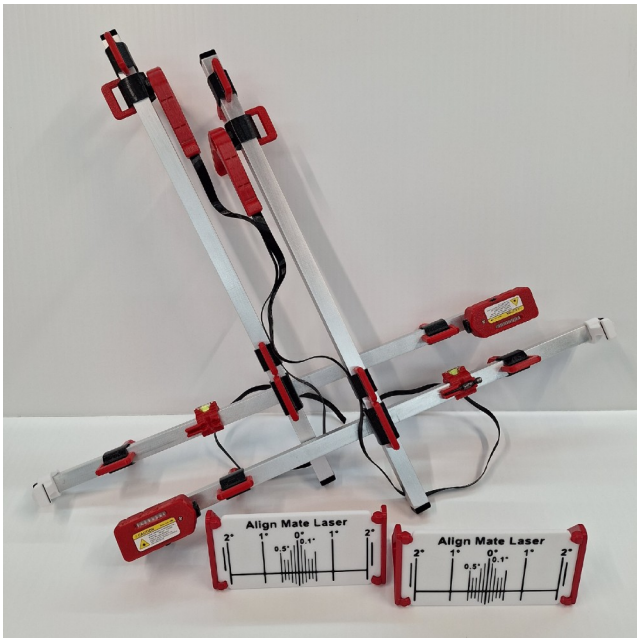
A. Introduction

The **Align Mate Laser** is a portable, rechargeable laser-based measurement tool designed to assist in measuring and adjusting wheel toe alignment.

The system consists of two laser modules that mount to the vehicle wheels and project visible reference beams onto alignment targets. The user references degree markings on the alignment targets to determine the vehicle's toe angle relative to manufacturer specifications.

This product is intended for use on vehicles with compatible wheel sizes (15–22 inches) and rim designs.

This manual provides instructions for safe operation, mounting, calibration, charging, and general use of the product.



Images of the assembled alignment tool.

B. Intended Use

The **Align Mate Laser** tool is intended solely as a visual reference aid for vehicle toe alignment measurement on passenger vehicles. The product is not intended to replace professional alignment equipment or manufacturer-specified service procedures.

C. Limitations

Use of this product does not guarantee correct vehicle alignment. Accurate alignment requires knowledge of vehicle suspension systems and adherence to the vehicle manufacturer's alignment specifications and service procedures. Users are responsible for ensuring proper procedures and specifications are followed for the specific vehicle being serviced.

This product is intended as a measurement aid and does not replace professional alignment equipment or proper vehicle service procedures.

This product is intended for use on vehicles equipped with **wheels 15 to 22 inches in diameter with accessible outer rim lip**. Wheel and tire designs outside this range may not provide adequate mounting support.

D. Liability Statement

The **Align Mate Laser** tool is provided as an alignment reference aid only. The manufacturer and its affiliates assume no responsibility for vehicle damage, personal injury, or other liabilities resulting from improper use, improper installation, failure to follow vehicle manufacturer specifications, or unauthorized modification of the product.

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2. Package Contents

A. Included items

- Two laser mounting assemblies
- Alignment targets
- Storage stand and carrying handle
- Charging cables
- Quick Start guide

B. Required (Not Included)

- USB type C charger (5 V)
- Measuring tape
- Painter’s tape or marking tape

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3. Laser Safety Information

A. Laser Classification

This product contains two visible red semiconductor laser modules classified as:

Each laser module is classified as:

- **Class 3R Laser Product** under IEC 60825-1:2014
- **Class IIIa Laser Product** under 21 CFR 1040.10

Laser specifications:

- Wavelength: 650 nm
- Maximum Output Power: ≤ 5 mW per laser
- Operating Mode: Continuous Wave (CW)

B. Laser Radiation Warning

CAUTION: Laser Radiation. Avoid Direct Eye Exposure.
Do Not Stare Into Beam. Direct viewing of the laser beam may be hazardous to the eyes.

Caution – Use of controls, adjustments, or procedures other than those specified herein may result in hazardous radiation exposure.

C. Safe Use Instructions

To reduce the risk of eye exposure:

- Do not look directly into the laser beam.
- Do not aim the laser at people or animals.
- Do not view the beam with optical instruments such as binoculars or magnifiers.

- Ensure the beam is directed only at the provided alignment targets or intended measurement surfaces.
- Do not operate in areas where bystanders may be exposed to the beam.

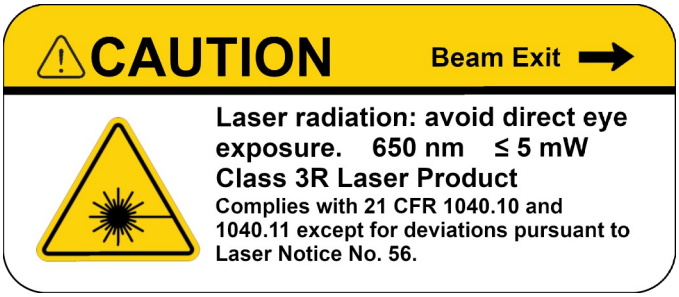
D. Modifications and Service

- Do not modify or disassemble the laser modules.
- There are no user-serviceable parts inside.
- Refer servicing to the manufacturer.
- Unauthorized modification may increase laser radiation exposure and void regulatory compliance.

E. Laser Product Labels

Primary Laser Warning / Aperture Label

Purpose: Combined hazard warning and beam exit identification.

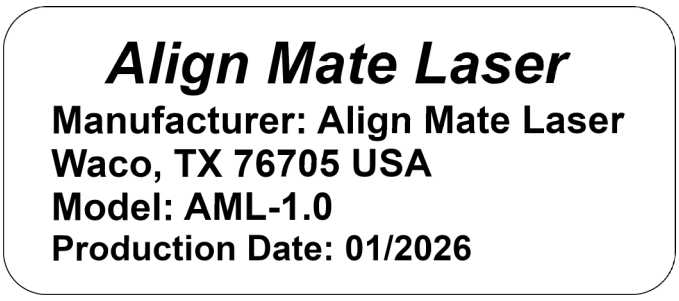


Quantity: 2 labels (one per laser)

Placement:

Affixed to the laser housing immediately adjacent to each laser emission point, with the arrow indicating the beam exit location.

Product Identification Label



Placement:

Affixed to the underside of the laser target in a location accessible during normal handling.

F. Compliance Statement

This product complies with IEC 60825-1:2014 and with applicable requirements of 21 CFR 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 56.

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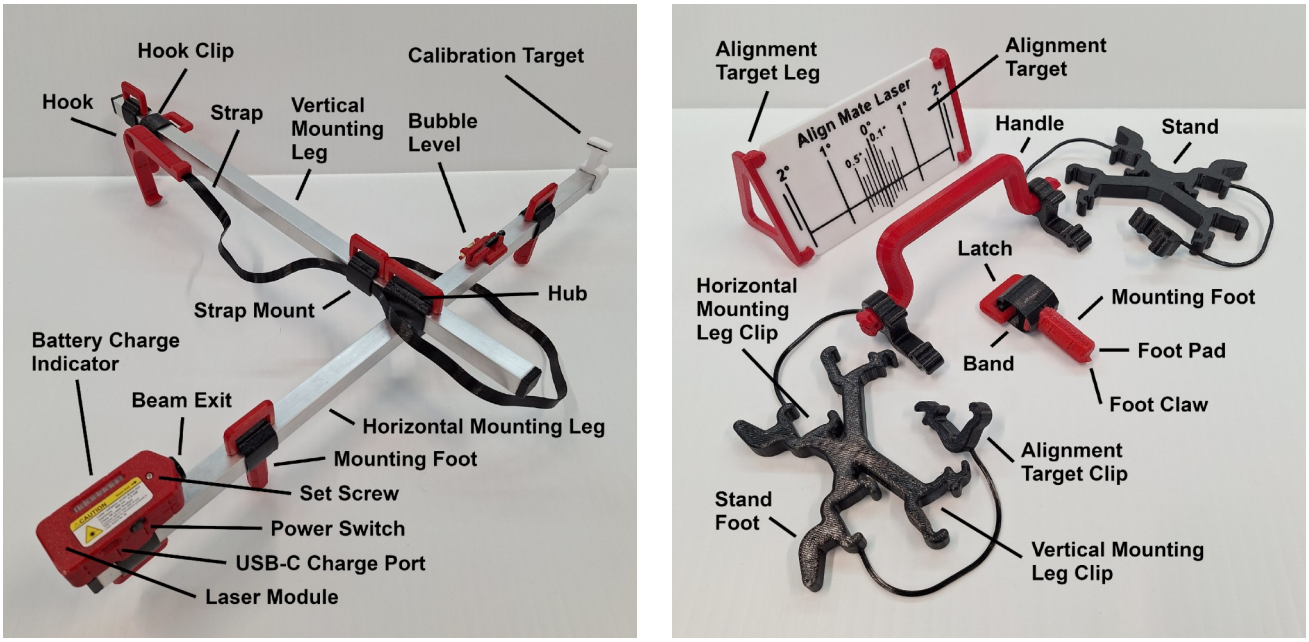
4. Tool Component Identification

The following images identify the primary components of the Align Mate Laser system.



Images of tool components and identification.

A. Component Identification Table

Component	Description
Laser Module	Projects the visible red alignment beam toward the alignment target.
Beam Exit (Laser Aperture)	Opening from which the laser beam exits. Marked with laser aperture labeling.
Power Switch	Turns the laser system on and off.
USB-C Charge Port	Used to charge the internal rechargeable battery.
Battery Charge Indicator	Displays the current battery charge level.
Set Screw	Adjusts the angle of the laser for calibration.

Component	Description
Bubble Level	Assists in leveling the device during setup.
Mounting Foot	Positions the mounting leg parallel to the wheel rim.
Foot Pad	Contact surface that provides a stable base against the wheel.
Foot Claw	Secures the mounting foot to the wheel rim edge.
Horizontal Mounting Leg	Positions the device horizontally relative to the wheel.
Vertical Mounting Leg	Positions the device vertically relative to the wheel.
Alignment Target	Target surface used to reference the laser beam during alignment.
Hub	Connects the vertical and horizontal mounting legs.
Alignment Target Leg	Supports the alignment target in a vertical position.
Alignment Target Clip	Secures the alignment target in position.
Calibration Target	Used during initial setup to verify system alignment.
Stand	Provides freestanding support for storage and calibration.
Horizontal Mounting Leg Clip	Secures the horizontal mounting leg on to the stand.
Vertical Mounting Leg Clip	Secures the vertical mounting leg on to the stand.
Stand Foot	Supports the stand on a flat surface.
Strap	Connects the hook to the strap mount.
Strap Mount	Provides vertical adjustment and positioning support.
Band	Facilitates component movement along the mounting leg.
Hook	Connects the strap to the tire and holds the mounting assembly.
Hook Clip	Secures the hook to the vertical mounting leg.
Latch	Locks adjustable components into position during setup and operation.

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5. Charging and Storage

A. Charging

Each laser module contains an internal rechargeable lithium-ion battery.

The device is charged through the USB-C port located on the side of the laser housing.

Charge using a compliant USB-C charger. Charging occurs at the standard 5 V USB level. The device does not request higher-voltage USB-C power modes.

Charging indicators:

- A red indicator light signifies that charging is in progress.

- A green indicator light signifies that charging is complete.

Battery level indication:

- Four green LEDs indicate a full charge.
- Fewer illuminated LEDs indicate a lower remaining charge level.

A full charge may provide up to approximately 4 hours of operation. Actual runtime may vary depending on usage conditions.

Image of laser with battery charge level lights.

B. Battery and Electrical Safety

- Do not charge the device unattended.
- Do not expose the device to water, excessive humidity, or condensation during charging.
- Do not operate or charge the device if the housing, charging port, or wiring is damaged.
- Do not disassemble or attempt to replace the internal battery.
- Use only the provided charging interface.
- Do not expose the device to excessive heat, open flame, or temperatures above the specified operating range.

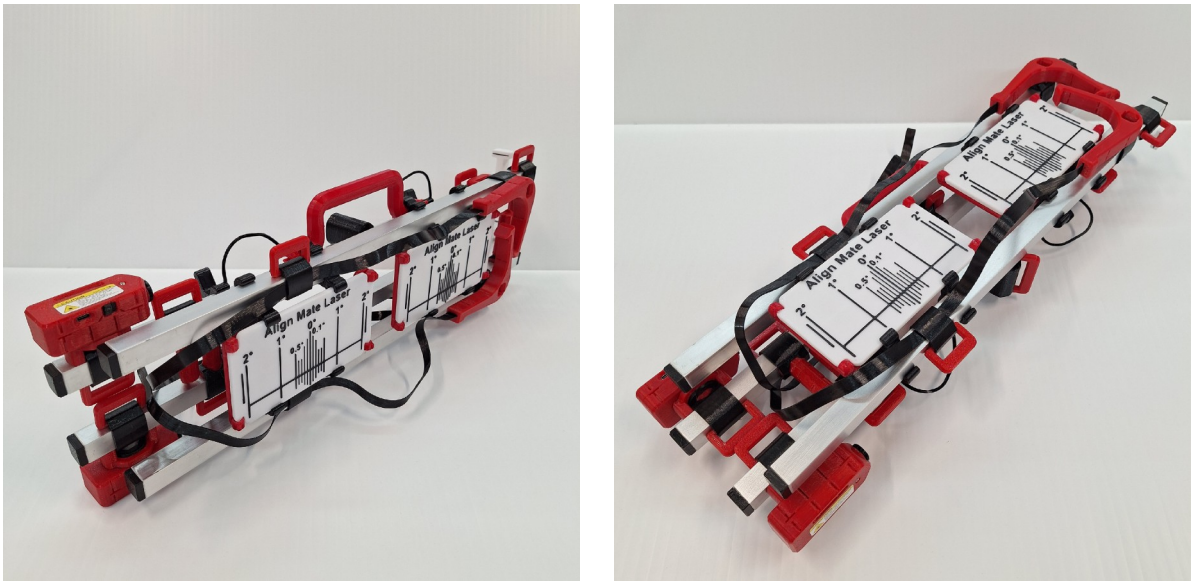
C. Storage

Store the device in a cool, dry location. Avoid excessive vibration, impact, or exposure to moisture.

Store the system on the provided stand when not in use to help protect components and maintain organization.

Ensure all components are clean and dry before storage.

Do not store the product in environments exceeding the specified operating temperature range of 10 °C to 60 °C.



Images of alignment tool in storage configuration.

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6. Handling and Care

This product is a precision measurement instrument and should be handled with care.

- Do not drop the device or subject it to impact.
- Avoid applying excessive force to rigid components.
- Damage to structural components may affect measurement accuracy.
- Inspect the device for damage before use.

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7. Calibration

A. Calibration Overview

Calibration is performed with the wheel mounting assemblies installed on the stand and the stand positioned on a stable, level surface. The stand holds the mounting legs parallel and stable during this procedure.

B. Base Calibration

Install both horizontal mounting legs on the stand so the legs are fully seated in the stand, the lasers are on the outside, and the bubble levels are on top.

1. Select one of the lasers for calibration.
2. Ensure the laser mounting latch is fully closed so the laser housing is firmly secured against the mounting leg.
3. Turn on the laser module. The switch is located on the side of the box.
4. Point the laser at the corresponding calibration target. Make sure the hub latch, handle, and stand cords are not in the laser path.
5. Verify that the laser beam aligns with the calibration line on the target.
6. If adjustment is required, insert the supplied 1.5 mm hex bit into the adjustment set screw on the top of the laser housing. The hex bit is clipped on the side of the bubble level.
7. While observing beam movement on the target, rotate the set screw gradually until the beam aligns with the calibration line.

Avoid positioning your eyes at beam height during adjustment.

Repeat this procedure for the second laser module.

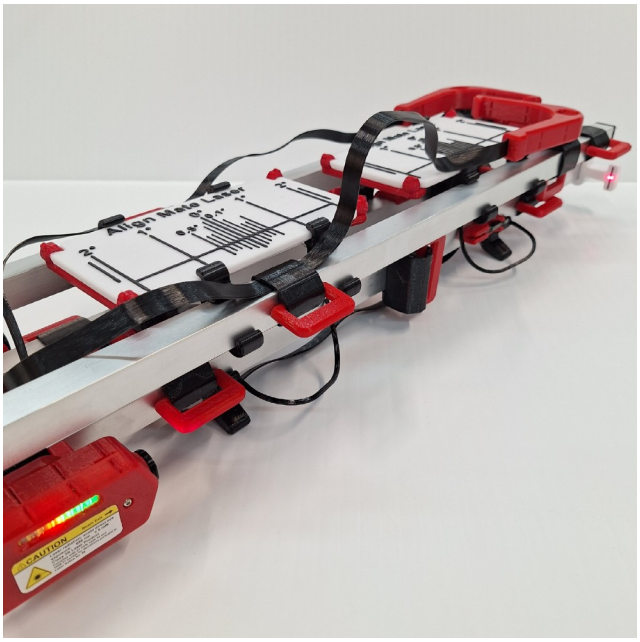

Image of laser pointed at calibration target.

C. Extended Calibration (Optional)

Extended calibration may be performed after completing the base calibration. Both horizontal mounting legs should be fully seated in the stand and parallel with each other.

1. Leave the mounting assemblies installed on the stand.
2. Remove the calibration targets by sliding them off of the end of the legs.
3. Position one of the alignment targets 2 meters from the center of the stand in the path of the laser output.
4. Turn on both lasers and adjust the lasers and target so that both laser beams are on the target and pointed at the extended calibration reference lines. The extended calibration lines are the outermost vertical lines on the alignment target.
5. Verify that the beams align with the extended calibration reference lines on the target.
6. If minor adjustment is required, adjust the set screw while observing beam movement on the target.

If significant correction is required, repeat the base calibration procedure before proceeding.

Replace the calibration targets after extended calibration is complete.

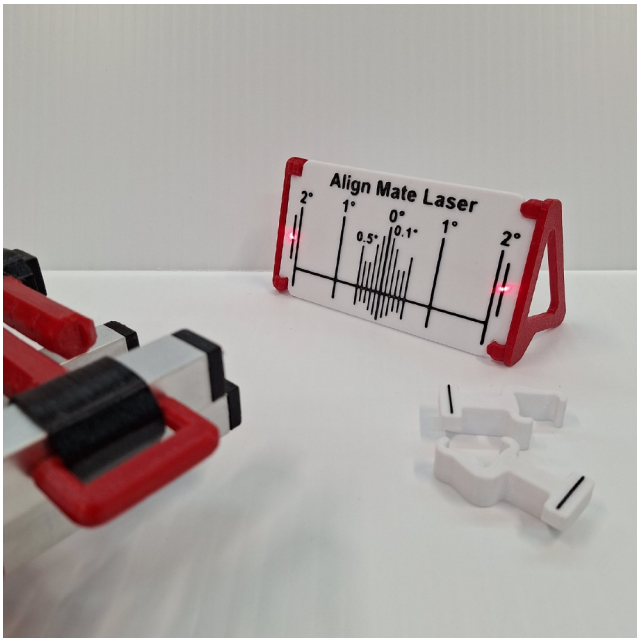

Image of lasers on extended calibration lines (actual calibration should be at 2 meters).

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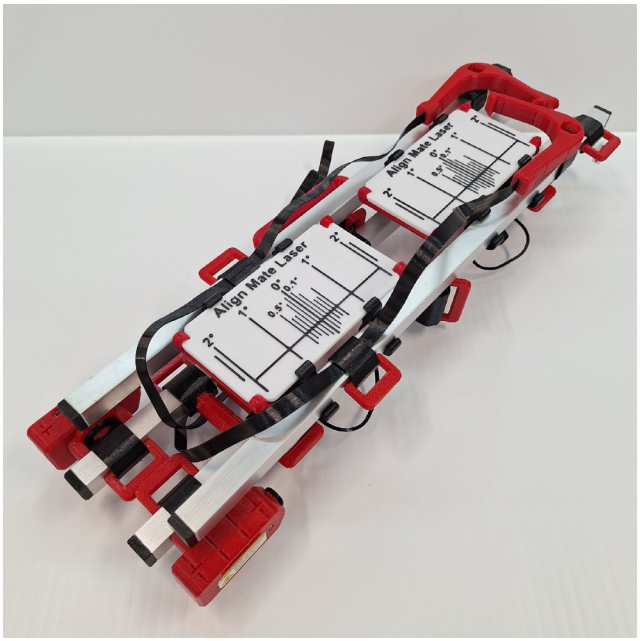
8. Assembly

A. Assembly Overview

The purpose of assembly is to take the two wheel mounting assemblies off of the stand and assemble them for mounting on the vehicle wheels. Each mounting assembly consists of two parts: a vertical mounting leg and a horizontal mounting leg. The alignment targets also need to be removed from the stand. The clips holding these parts can be easily opened because the stand is made from a pliable material.



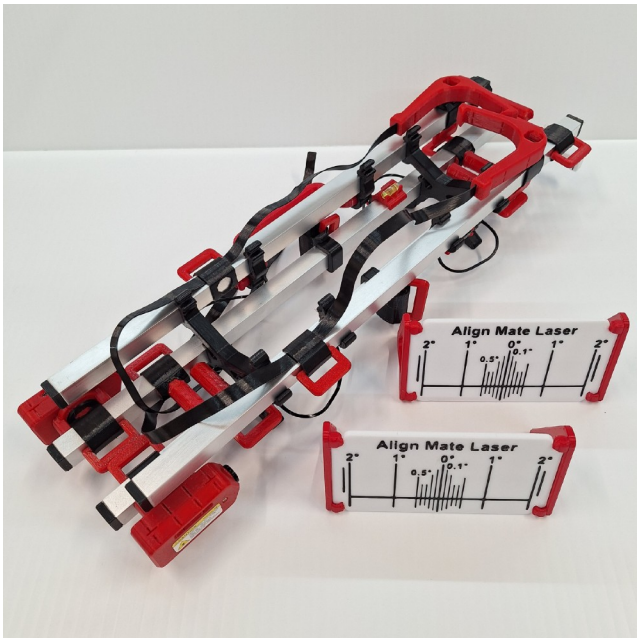
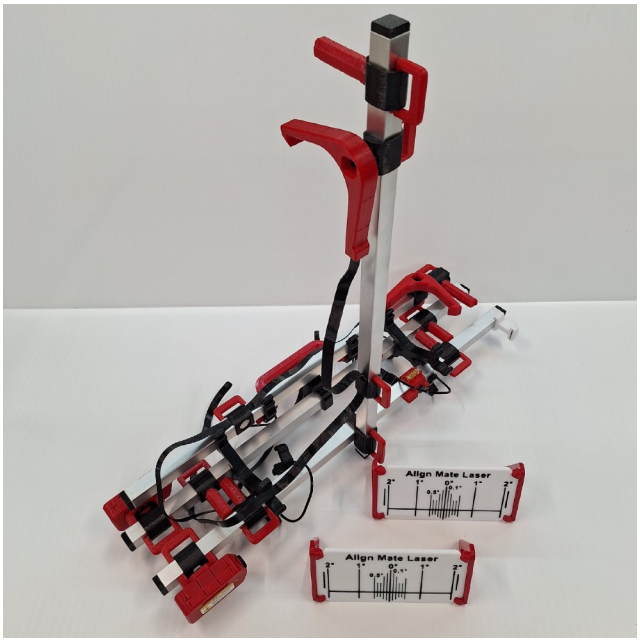


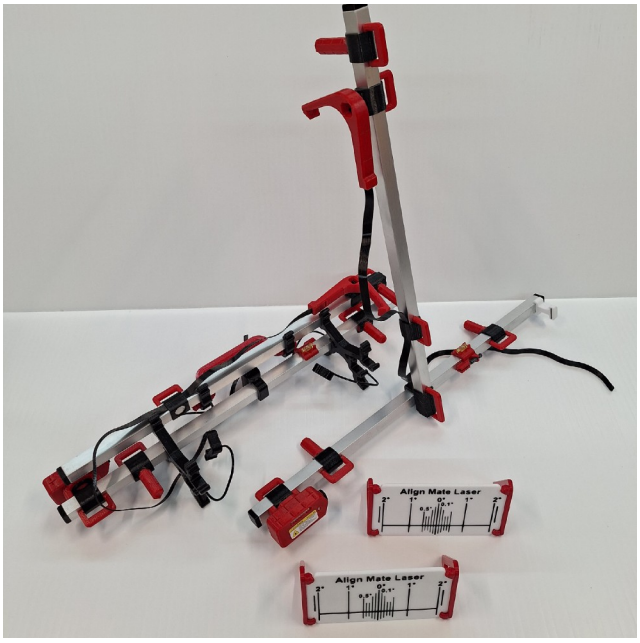
Image of the mounting assemblies on the stand. Image of the alignment targets after being removed.

B. Assembly Steps

Each wheel mounting assembly consists of a horizontal mounting leg, vertical mounting leg, hub, laser, sliding feet, and strap assembly. The **components on the mounting legs** slide for adjustment and **do not need to be removed**.

1. Remove the alignment targets from the stand.
2. Remove the vertical mounting leg from the stand brackets by twisting it free.
3. Ensure the hub latch is fully seated in its groove. The vertical mounting leg will not fit into the hub unless the latch is properly positioned.
4. Slide the vertical mounting leg through the hub opening on the horizontal mounting leg. Ensure the bubble level is on top of the horizontal mounting leg and the foot on the vertical leg is facing the same direction as the feet on the horizontal leg.
5. Remove the horizontal mounting leg from the stand brackets.





6. Position the hub approximately at the midpoint of the horizontal mounting leg and 100 mm (4 inches) from the bottom of the vertical mounting leg.
7. Press the hub latch fully downward to secure both mounting legs.
8. Verify that the hub is held firmly in position on both mounting legs.
9. Repeat this procedure for the second wheel mounting assembly.

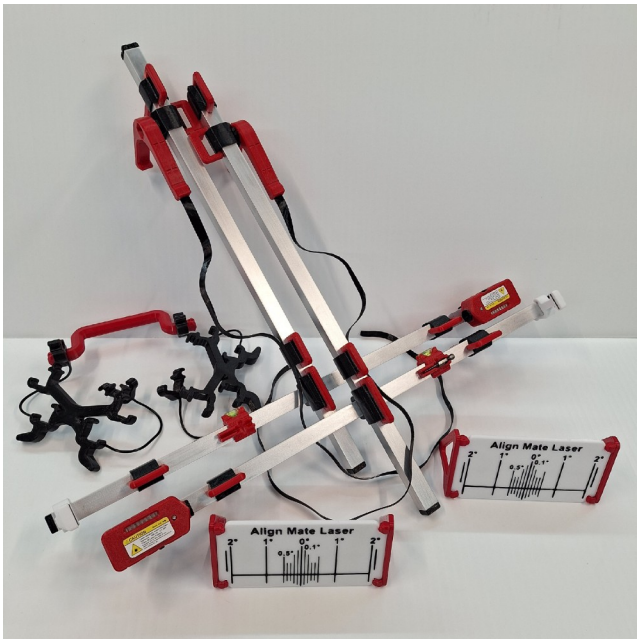


Image of the wheel mounting assemblies after being assembled. Image of mounting assembly.

C. Latch Function

Each adjustable component is secured by a compression band latch.

- When the latch handle is pressed down, the band holds the component firmly in position.
- When the latch handle is raised, the band provides light friction to allow positioning.

The following latches must be fully closed during calibration and vehicle alignment:

- Hub latch
- Laser housing latch
- Strap latch

These latches are critical for maintaining mounting geometry and alignment stability.

Foot and other positioning latches may remain open unless additional stability is required.

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9. Mounting on Vehicle

A. Operating Conditions

- Park the vehicle on a level surface.
- Engage the parking brake before installation.
- Operating temperature range: 10 °C to 60 °C.
- Allow wheels and tires to cool if surface temperatures exceed 60 °C.
- Remove decorative hub caps or wheel covers before installing the mounting assemblies. The mounting feet must contact the wheel rim directly for proper positioning and stability.

B. Mounting Principles

For accurate alignment measurement:

- The strap assembly supports the vertical weight of the tool.
- The feet act as stabilizers and are intended to carry minimal load.
- The mounting legs must remain parallel to the wheel rim.
- The laser housing is calibrated parallel to the mounting legs. Proper mounting is required for accurate measurement.

- The horizontal mounting leg should be positioned approximately halfway between the wheel center and the bottom of the rim. This placement helps maintain proper mounting geometry and measurement accuracy.

The feet must remain in contact with the rim during alignment or measurement accuracy will be affected.

C. Mounting Direction

There are two wheel mounting assemblies, one for each front wheel.

For standard front-wheel alignment, both lasers should point toward the rear of the vehicle and be forward of the mounting hub. This configuration allows the alignment targets to be positioned relative to the vehicle frame and centered steering position.

The assemblies are shipped in a mirrored configuration so that, when mounted on the left and right front wheels, the lasers will point in the same direction.

D. Mounting Procedure

1. Remove the hook from its storage clip.
2. Place the hook securely into the tire tread, or over the top of the tire onto the sidewall if needed.
3. Position the hub between the wheel center and the bottom of the rim.
4. Pull the strap into position and fully close the strap latch so the strap supports the weight of the tool.

The strap should be positioned near the center of gravity so that the tool hangs evenly.

On vehicles with oversized or wide tires, the mounting assembly may not naturally rest against the rim due to tire sidewall shape. In these cases, a small bungee cord or elastic strap may be used to gently pull the mounting assembly toward the wheel rim.

5. Position the feet so that:
    - • The rim pads rest flat on the rim surface.
    - The claws extend slightly beyond the outer edge of the rim.
    - The claws contact the outside edge of the rim to prevent the pads from sliding off.
    - The claws do not contact the tire.
    - The feet are not resting on spokes or raised rim features.
6. Verify that:

- The strap supports the tool evenly.
- The mounting legs are parallel to the rim.
- The horizontal mounting leg is level.
- All rim pads remain seated against the rim surface.
- All claws are outside of the rim.
- The hub, laser housing, and strap latches are fully closed.

The rim pads support the mounting assembly on the rim surface. The claws act as stops against the outer rim edge and help prevent the pads from sliding off the rim.

Image of mounting assembly on the left front wheel. Image of laser pointed at the calibration target.

E. Troubleshooting

Wheel mounting assembly does not remain level

- Confirm the strap and hook are vertical.
- Reposition the strap closer to the center of gravity. The mounting assembly should be level when hung from the hook.

Top foot pad lifts from rim

- Ensure the strap is supporting the tool’s weight.

- Slightly reposition the strap mount higher so the top foot is being pulled towards the rim.

Lower foot pad lifts from rim

- Confirm both of the lower foot claws are positioned down and away from the center.
- Reposition the strap mount closer to the center of gravity.
- Slightly reposition the strap mount lower so the lower feet are being pulled towards the rim.

Tool appears tilted relative to rim

- Confirm the strap is centered and under tension.
- Verify that foot pads are contacting flat rim surfaces.
- Ensure feet are not positioned on spokes or raised features.
- Confirm all foot claws are positioned outward from the center hub.

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10. Alignment Procedure

A. Alignment Overview

The Align Mate Laser system measures toe by projecting reference beams onto alignment targets positioned two meters behind the vehicle’s front wheels. Changes in toe angle cause the laser beam to move across the target scale. The scale markings allow the user to observe toe changes in real time during adjustment. The two-meter target distance increases beam movement for small toe changes, improving measurement accuracy.

The laser calibration may be verified before alignment by directing the laser at the calibration target.

B. Vehicle Preparation

1. Park the vehicle on a level surface.
2. Install both wheel mounting assemblies with the lasers pointing toward the rear of the vehicle.
3. Center the steering wheel so the front wheels are in a straight-ahead position.

If available, a steering wheel lock may be used. If a lock is not used, periodically verify that the steering wheel remains centered throughout the procedure.

The steering wheel must be centered before recording the base measurement.

C. Base Measurement

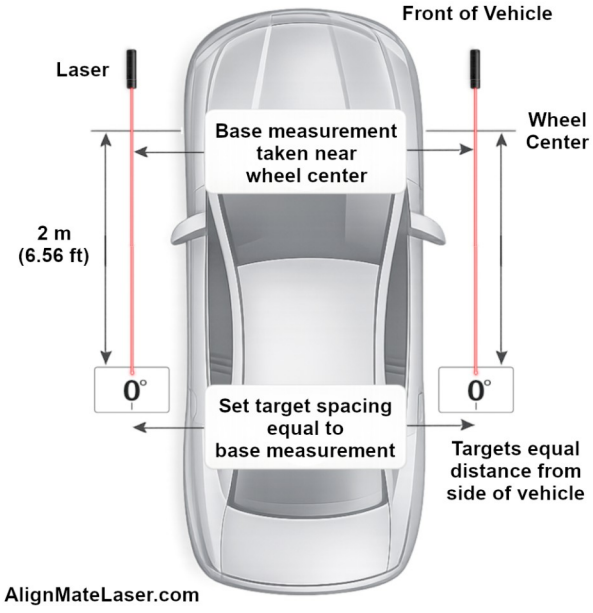
The base measurement establishes the current distance between the two lasers.

1. Extend a measuring tape on the ground across the vehicle behind the front wheels.
2. Position the tape as close to the rear of the front tires as practical.
3. Turn on both lasers.
4. **Accurately** measure the distance between the two laser beam positions on the tape.

Record this distance as the **base measurement**.

Tip: The laser may be difficult to see on the reflective end of the measuring tape, **start your measurement at the 50 mm (2 in.) mark** instead of the end. Ensure you maintain this 50 mm offset when setting the alignment targets.

A matte or non-reflective tape surface is recommended.



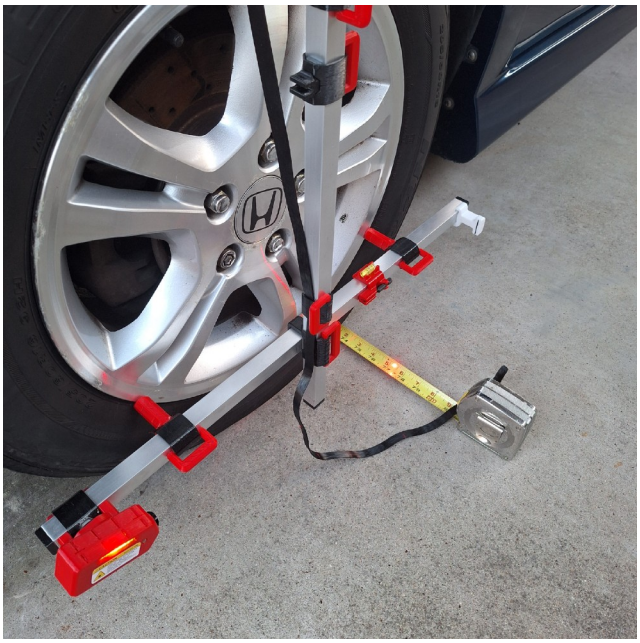


Diagram of alignment setup. Image of laser base measurement using measuring tape.

D. Alignment Target Placement

Place the alignment targets at 2 meters from the center of the front wheels.

1. Mark a point on the ground 2 meters (6.56 ft) behind each front wheel, parallel with the side of the vehicle. These temporary marks can be made with painter's tape.
2. Place both alignment targets at the 2 meter position close to the sides of the vehicle.

Next, move the alignment targets along the 2 meter distance until they are centered with the sides of the vehicle and the target zero-degree marks are the base measurement apart.

3. Adjust the targets until the distance between the zero-degree marks equals the base measurement and the distance from each target to the side of the vehicle is equal. To center the targets with the side of the vehicle:
    a. Measure from each target to the side of the vehicle.
    b. Subtract the two measurements.
    c. Move the targets half of the subtracted distance.
4. Verify:
    a. Zero-degree marks accurately match the base measurement
    b. Both targets are equal distance from the sides of the vehicle
    c. Targets are at the 2 meter mark
    d. Targets are facing the lasers

The **accuracy of the base measurement** improves the accuracy of the toe alignment.

Images of alignment target set up for an alignment.

E. Toe Adjustment

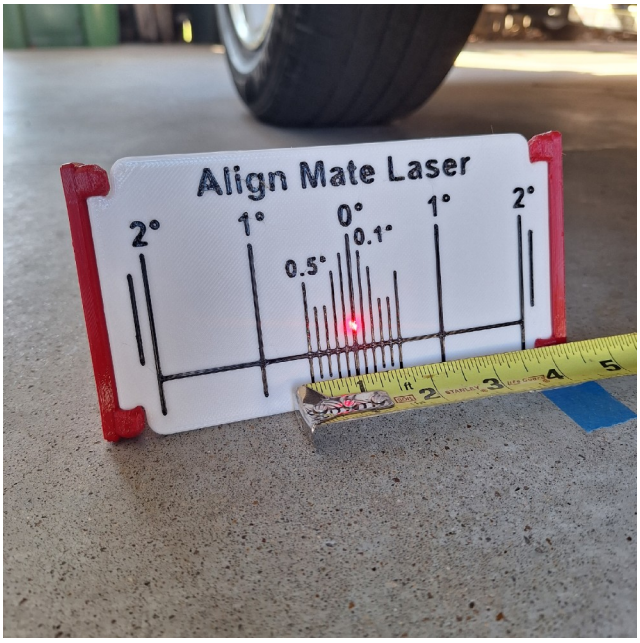
1. Adjust the vehicle’s toe setting according to manufacturer specifications.
2. Observe beam movement across the degree scales on the alignment targets during adjustment.

3. Continue adjusting until the desired toe specification is achieved relative to the zero-degree marks.
4. After adjustment, verify that the steering wheel remains centered.

If the steering wheel is not centered:

- Re-center the steering wheel.
- Re-check toe adjustment.
- Make minor corrections as necessary.

If significant adjustments were made (greater than 1°), repeat the base measurement, alignment target placement, and toe adjustment.



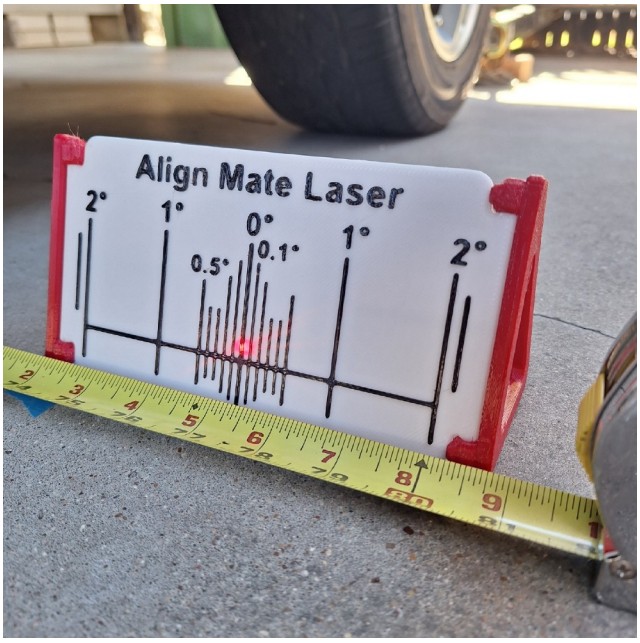


Image of lasers pointing at alignment target.

Final alignment results should be verified through a controlled test drive and steering wheel centering check.

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11. Disassembly

A. Disassembly Overview

The purpose of disassembly is to place the mounting assemblies and alignment targets on the stand for storage and transportation.

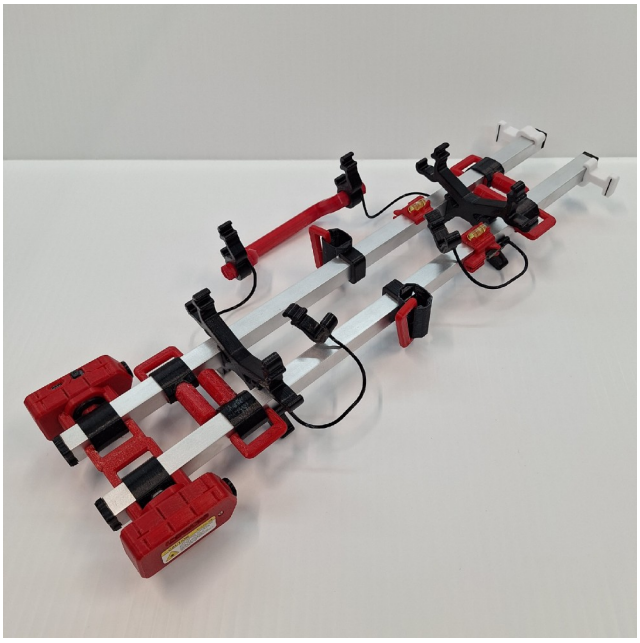
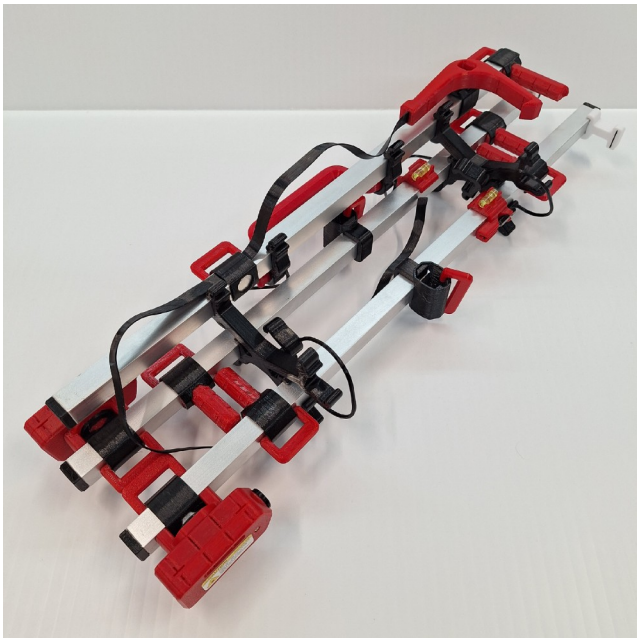


Image of horizontal mounting leg attached to the stand.

B. Disassembly Steps

1. Open the hub latches and remove the vertical mounting legs from the horizontal mounting legs.
2. Start with the side closest to the handle. Insert one of the horizontal mounting legs into the stand’s lower clips. The stand’s lower clips are closer together than the upper clips. The bubble level should be on top of the mounting leg.
3. Insert the other horizontal mounting leg into the stand clips. The bubble level should be on top and both lasers should be at one end. Adjust the feet so they do not collide with each other.
4. Attach the hooks to the hook clips on each respective vertical mounting leg.
5. Insert one of the vertical mounting legs into the stand’s upper clips so that the hook is on top, pointed inward, and on the opposite end from the lasers. Leave some space between the stand and the hook for the alignment target. Adjust the strap mount so it sits next to the stand on the laser side.
6. Attach the handle to the vertical mounting leg so the clips for the targets are on the inside top of the leg. Center the handle and leave space between the stand and the target clips for the alignment targets.



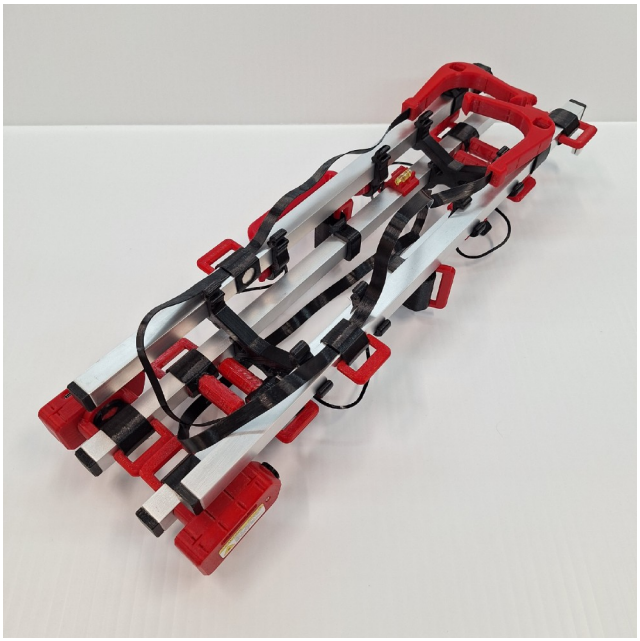
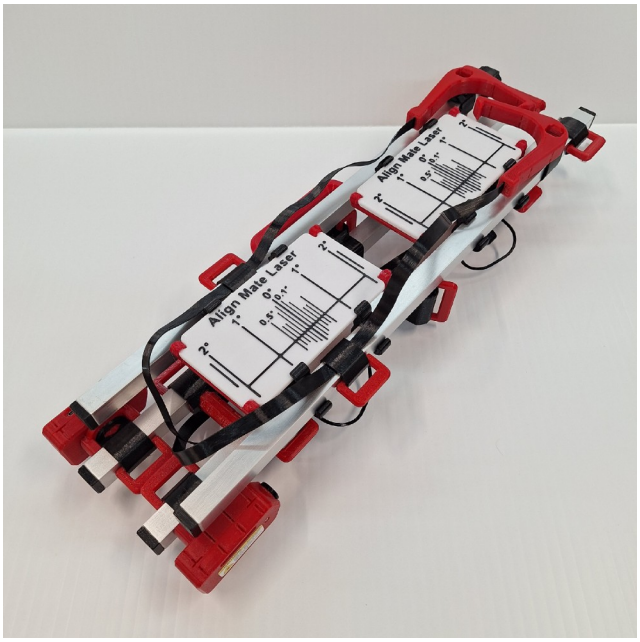


Image of vertical mounting leg and handle attached to the stand.

7. Insert the other vertical mounting leg into the stand clips so the hook is on top and pointed toward the center. Adjust the hook and feet so they do not collide with each other. Adjust the strap mount to sit across from the other.
8. Attach the target clips so they are on the inside top of and across from the handle's strap mounts.
9. Attach the alignment targets by spreading the target clips slightly and placing them between the clips.



Align Mate Laser

Waco, Texas USA
Designed and assembled in the USA
AlignMateLaser.com