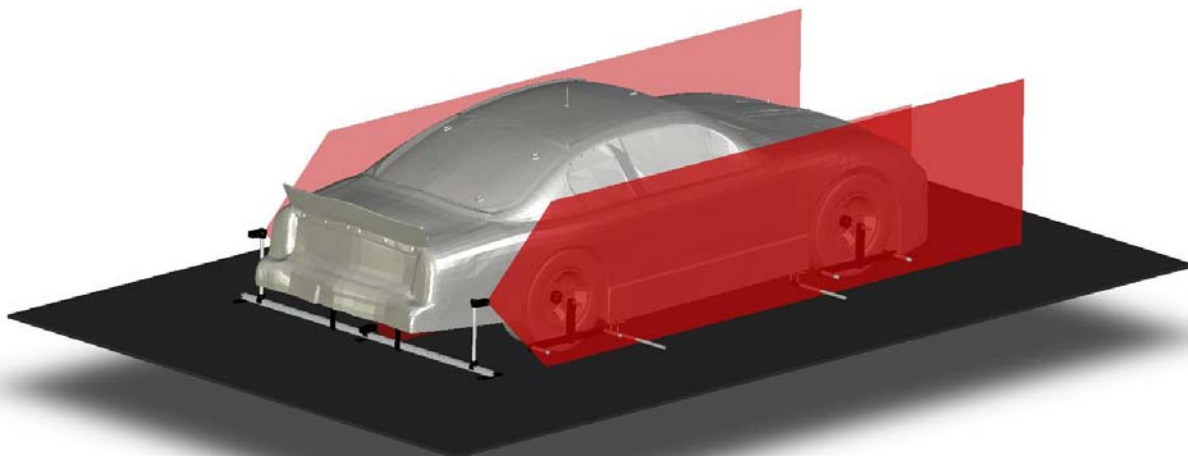




## *Real Square™ 2011 RS400PRO Quick Start User Instructions*

v. 10.1



### **Technical Help:**

Please call 540-483-4442, Monday-Friday 8:00AM-5:30PM or e-mail questions to [tech@drpperformance.com](mailto:tech@drpperformance.com).

## RS400PRO Contents:

- (4) Axle Alignment Fixtures with Hardware (Hub Mount or Spindle Thread-on Mount)
- (4) Wheel Measurement Fixtures with 6" Scales (RF, LF, RR, LR)
- (2) Magnetic or Clamp-on Frame Squares
- (1) RS2 Laser Stand
- (2) Laser Extension Pole Assemblies (RS &LS)
- (2) RS2 Side Laser Assemblies (RS & LS)
- (2) Laser Stand Feet
- (1) Chassis Attachment Kit
- (1) Caster Camber Gauge Adapter
- (4) Axle Alignment Fixture Shaft Locks
- (1) Tool Kit
- (2) Wall Board Storage Systems
- (1) Instructions, Catalog & CD

## Popular Optional Components:

- (1) Centerline Laser
- (2) "Extra" Magnetic or Clamp-on Frame Squares

## Tools Required:

- Basic tools to remove dust caps.
- Digital Level or Protractor.
- (2) Tape Measures



## *RS400PRO Quick Start Instructions*

### **Step 1:**

#### ***Install Axle Alignment Fixtures***

Your system includes (4) bolt-on or (4) Screw-on Axle Alignment Fixtures (AAF's). Remove dust caps as necessary and install. Be sure hub mounting surface is clean and free of burrs. AAF's should mount solid.

#### ***Install Wheel Measurement Fixtures***

Your system includes (4) adjustable wheel measurement fixtures. These fixtures are height adjustable and diameter adjustable. The numbers above the wheel rulers correspond to the tire diameter. Typically, the horizontal bars are adjusted to their lowest point.

Install wheel measurement fixtures. Slide fixture to a consistent point relative to the tire sidewall. Your Tool Kit includes an aluminum spacer block. Use the spacer block to set the location of the wheel fixtures on the AAF shaft. Lightly tighten fixture in place and then level the fixture using a digital level or protractor. Now fully tighten fixture.

#### **Key Points:**

- Set each wheel fixture the same distance from the tire sidewall.
- Level Fixture.
- Once installed, rotate rulers toward the laser stand.

**\*\*Always read measurements with the wheel fixture level\*\***





## **Step 1 Continued:**

### ***Install Frame Squares***

Your system includes (2) magnetic or clamp-on frame squares. Install the frame squares on the frame rail that you normally use as your master rail. If you purchased additional frame squares, place 2 on each frame rail. Always install the frame squares in the same location each time you use the system.

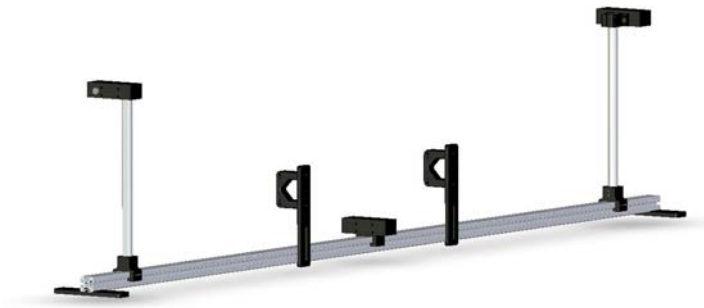
Depending on your chassis type, the magnetic frame square plates can be rotated 180 degrees to square off the outside of the frame rail. The magnets may also be moved to maximize clamping force.

Frame squares are also height adjustable to clear side skirts and rocker panels.

If you use center points as your master points, you can skip this step. However, it is advised to use the frame squares in addition to the chassis center line for a cross reference in the event of chassis damage.

### **Key Points:**

- **Always install the frame squares in the same location each time you use the system.**
- **Once installed, rotate rulers toward the laser stand.**



## **Step 2:**

### ***Assemble and Install Laser Stand***

Locate all components to your laser stand and lay out on floor.

First, slide the chassis mount brackets onto the laser stand using the supplied "t-nuts". Next, slide the left and right side laser extension poles on the stand. Pull the detent knobs to move past each detent. Leave set screws loose. The "flats" on the laser extension poles face out.

On your vehicle, measure the distance from the left side wheel fixture to the right side wheel fixture (outside to outside). Add 2" to this measurement. This is the starting width of the laser extension poles center to center. Find the appropriate detent on each side to achieve this overall width, keeping the laser extension poles centered on the stand.

Once in place, push down on the laser extension poles and tighten set screws.

Now slide your left and right side laser boxes onto the extension poles. The height of the laser boxes is not critical. They are height adjustable to eliminate "breaks" in the laser line due to obstacles.

If you have a centerline laser, install it now. Use the center detent to locate.

Now, hang the laser stand on the chassis. Find a consistent location to use each time to install the system. Tighten chassis mount clamps. The laser extension poles should be 90 degrees or perpendicular to the ground.

At this point you can slide the laser stand side to side to center with the chassis and level the stand using the slotted chassis mount brackets.

**\*\*Remember the laser lines have not yet been aligned parallel.\*\***

### **Key Points:**

- **The first installation will take extra time for set-up. Take your time and do it right.**
- **Leave the laser stand assembled to skip this step in the future.**
- **You can adjust the laser location left to right once installed on the car.**
- **Laser Extension Poles should be perpendicular to the ground.**
- **Laser Stand should be level with ground.**

### **Step 3:**

#### ***Laser Line Alignment***

**\*\*This is the most important step of your system installation.\*\***

With the laser stand mounts tight, adjust the right side laser line so that it hits the same two marks on your right side frame squares. (If you use the left side as your master, reverse this procedure.)

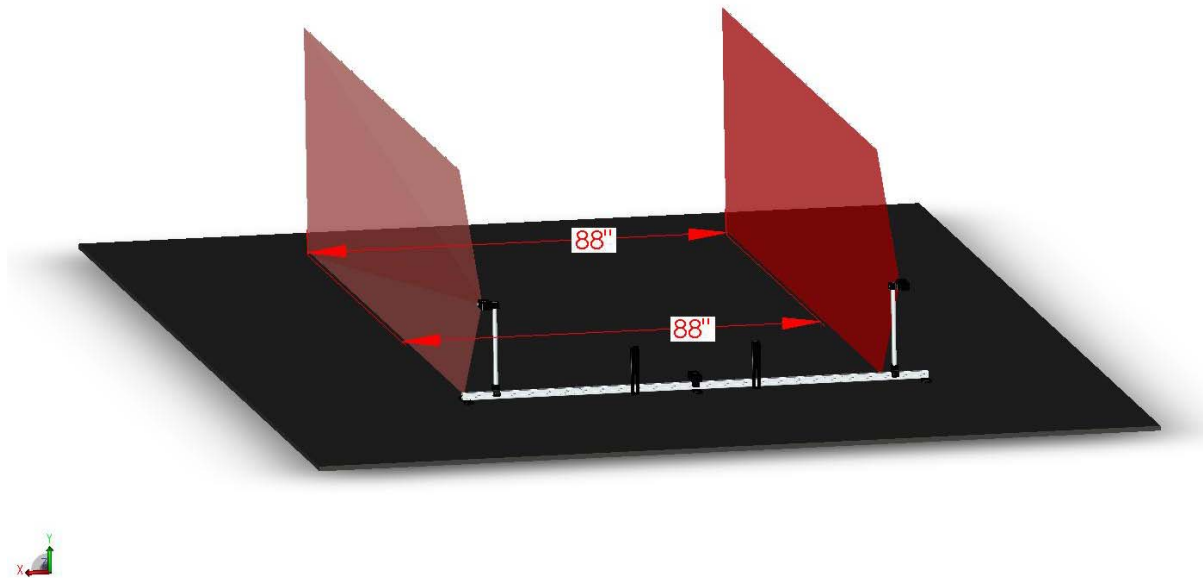
Next, place one tape measure on the floor from right to left in front of the rear tires. Keep the tape measure square with the laser stand. Cut 1". Place a second tape measure, right to left, in front of the front tires. Cut 1".

With both tape measures reading 1" on the right side laser, adjust the left side laser so that it reads the same numbers front and rear.

Use the same procedure to set the center line laser.

Now, the right side laser is square with the chassis and the left side (and centerline) is parallel with the right side.

**You can now read all four wheel locations.**



## Quick Tips:

- Always use slip plates under all four wheels during chassis set-up.
- Use your digital level against the wheel measurement fixture uprights to measure camber on all four wheels.
- Rear End Toe: If your axle tubes have "0" toe, the left side wheel fixture should read the exact opposite of the right side. Same with camber.
- Leave your laser stand assembled to facilitate quick set-ups.
- If your laser line becomes faint or fails to come on, replace the batteries.
- If a laser is blinking, check the battery compartment. The batteries may not be in their sockets fully.
- You can make any chassis adjustments without resetting the laser. Double check your frame squares if you think the laser stand has moved.
- Align your chassis using your standard procedure. Then install your Real Square system and record all 10 (or 12 if you have 4 frame squares) measurements. This is now your base line.
- If you have been aligning your right side tires at the wheel centerline, your right rear will show that is to the left at the contact patch (due to wheel camber). Use the chart below to reference wheel centerline measurements.

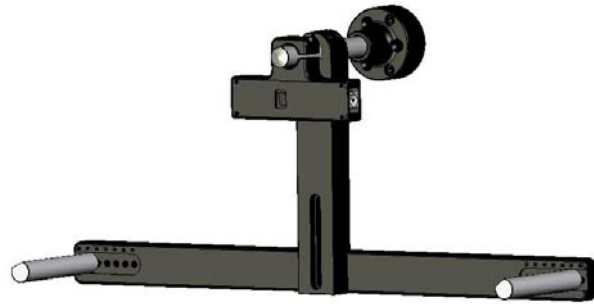
### Wheel Centerline vs. Contact Patch

Tire Diameter	1 Deg	1.5 Deg	2 Deg	2.5 Deg	3 Deg	3.5 Deg	4 Deg	4.5 Deg	5 Deg	5.5 Deg	6 Deg
28"	0.244	0.366	0.488	0.610	0.732	0.854	0.976	1.098	1.220	1.342	1.464
27"	0.236	0.354	0.472	0.590	0.708	0.826	0.944	1.062	1.180	1.298	1.416
26"	0.227	0.341	0.454	0.568	0.681	0.795	0.908	1.022	1.135	1.249	1.362
25"	0.218	0.327	0.436	0.545	0.654	0.763	0.872	0.981	1.090	1.199	1.308
24"	0.209	0.314	0.418	0.523	0.627	0.732	0.836	0.941	1.045	1.150	1.254
23"	0.200	0.300	0.400	0.500	0.600	0.700	0.800	0.900	1.000	1.100	1.200
22"	0.191	0.287	0.382	0.478	0.573	0.669	0.764	0.860	0.955	1.051	1.146

- To check Ackermann, first record your front wheel toe. Then turn your wheels the amount your driver turns the wheels on the track. Typically less than 5 degrees. Now re-read the toe measurements. The toe gain is positive Ackermann, loss is negative.
- To check Bump Steer, compress the front of the chassis from static ride height to full travel. Read wheel movement on your wheel measurement fixtures. Use your bump steer gauge with the optional 81015 bump steer plates.

# REAL SQUARE™

Wheel Alignment Systems for Motorsports



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