

ASSEMBLY INSTRUCTIONS
FOR
2017-2021 Audi RS3, 2018-2021 Audi TTRS
529Innovations Aero 6 FRONT BRAKE KIT WITH
FLEXLINES AND 370mm DIAMETER ROTORS

NOTE: Some cleaners may stain or remove the finish on brake system components. Test the cleaner on a hidden portion of the component before general use.

WARNING

IT IS THE RESPONSIBILITY OF THE PERSON INSTALLING ANY BRAKE COMPONENT OR KIT TO DETERMINE THE SUITABILITY OF THE COMPONENT OR KIT FOR THAT PARTICULAR APPLICATION. IF YOU ARE NOT SURE HOW TO SAFELY USE THIS BRAKE COMPONENT OR KIT, YOU SHOULD NOT INSTALL OR USE IT. DO NOT ASSUME ANYTHING. IMPROPERLY INSTALLED OR MAINTAINED BRAKES ARE DANGEROUS. IF YOU ARE NOT SURE, GET HELP OR RETURN THE PRODUCT. YOU MAY OBTAIN ADDITIONAL INFORMATION AND TECHNICAL SUPPORT BY CALLING 529Innovations AT 701-969-0529, OR VISIT OUR WEB SITE AT WWW.529Innovations.com. USE OF TECHNICAL SUPPORT DOES NOT GUARANTEE PROPER INSTALLATION. YOU, OR THE PERSON WHO DOES THE INSTALLATION MUST KNOW HOW TO PROPERLY USE THIS PRODUCT. IT IS NOT POSSIBLE OVER THE PHONE TO UNDERSTAND OR FORESEE ALL THE ISSUES THAT MIGHT ARISE IN YOUR INSTALLATION.

RACING EQUIPMENT AND BRAKES MUST BE MAINTAINED AND SHOULD BE CHECKED REGULARLY FOR FATIGUE, DAMAGE, AND WEAR.

WARNING

**DO NOT OPERATE ANY VEHICLE ON UNTESTED
BRAKES!**

**SEE MINIMUM TEST PROCEDURE WITHIN AND
ALWAYS UTILIZE SAFETY RESTRAINT SYSTEMS AND ALL OTHER
AVAILABLE SAFETY EQUIPMENT WHILE OPERATING THE VEHICLE**

**DISC BRAKES SHOULD ONLY BE INSTALLED BY SOMEONE
EXPERIENCED AND COMPETENT IN THE INSTALLATION AND
MAINTENANCE OF DISC BRAKES**

**READ ALL WARNINGS, NOTES
AND INSTRUCTIONS PRIOR TO
INSTALLATION**

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Please Read This First

Before any tear-down or disassembly begins, review the following information:

- It is up to the installer to verify that there is adequate clearance with the wheels you will be using with the installation.***
- Due to OEM production differences and other variations from vehicle to vehicle, the fastener hardware and other components in this kit may not be suitable for a specific application or vehicle.***
- It is the responsibility of the purchaser and installer of this kit to verify suitability / fitment of all components and ensure all fasteners and hardware achieve complete and proper engagement. Improper or inadequate engagement can lead to component failure.***

Important and highly recommended: Take photos of brake system before disassembly and during the disassembly process. In the event, trouble-shooting photos can be life savers. Many vehicles have undocumented variations, photos will make it much simpler for 529Innovations to assist you if you have a problem.

Exploded Assembly Diagram

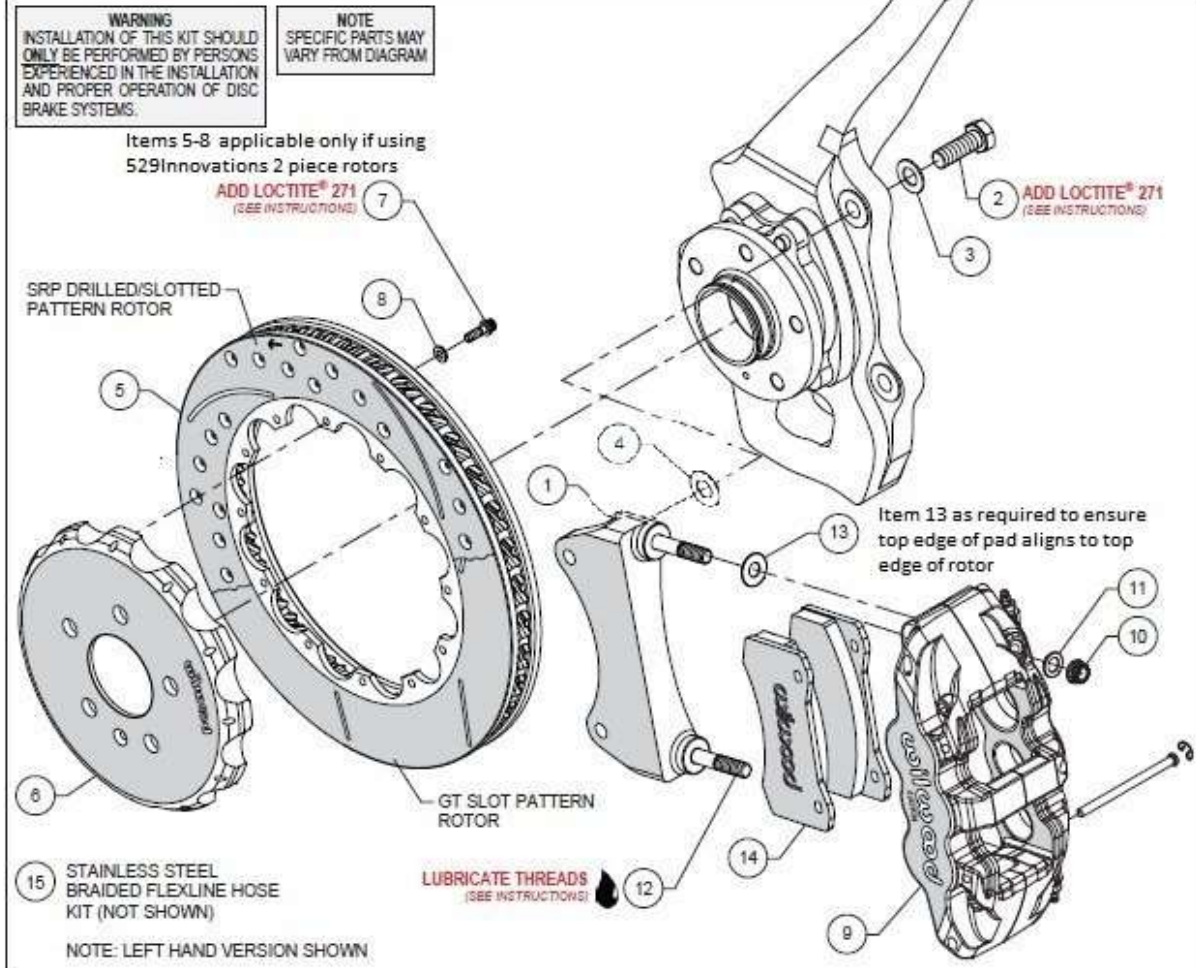


Figure 1. Typical Installation Configuration

Item	Description
1	Bracket, Caliper Mounting
2	Bolt, M14-2.00 x 50mm Long, Hex Head
3	Washer, .578 I.D. x 1.062 O.D. x .063 Thick
4	Shim, .029 Thick (kit dependent /as required)
5	Rotor, GT - 1.25" x XX.00" Dia, 12 x 8.75" Bolt Circle
6	Hat, 12 x 8.75" Bolt Circle
7	Bolt, 1/4-20 x .75" Long, 12 Point
8	Washer, .265 I.D. x .500 O.D. x .063 Thick
9	Caliper, Aero 6
10	Nut, 7/16-20, 12 Point
11	Washer, .453 I.D. x .750 O.D. x .063 Thick
12	Stud, 7/16-14 x 7/16-20 (pre-installed in bracket)
13	Shim, .030 Thick (Optional)
14	Carbotech brake pad kit
15	Braided Stainless Steel Flexline Kit (not shown)

WARNING

INSTALLATION OF THIS KIT SHOULD **ONLY** BE PERFORMED BY PERSONS EXPERIENCED IN THE INSTALLATION AND PROPER OPERATION OF DISC BRAKE SYSTEMS.

General Information and Disassembly Instructions

• *Installation of this kit should **ONLY** be performed by persons experienced in the installation and proper operation of disc brake systems. Before assembling this disc brake kit, double check the following to ensure a trouble-free installation.*

• Make sure this is the correct kit to fit the exact make and model year of your vehicle.

This kit is designed for direct bolt-on installation to 2017 through 2021 model year

Audi RS3, 2018-2021 Audi TTRS, axle hubs.

• Inspect the contents of this kit against the parts list to ensure that all components and hardware are included.

• If you purchased rotors please verify that the factory axle hub center register diameter and lug pattern match those

in the new hat. **NOTE:** *Axle hubs that have been modified with different size studs or lug patterns may require modifications to the new hat that must be performed by a qualified machinist.*

• Verify your wheel clearance

Disassembly

• Disassemble the original equipment front brakes:

 Raise the front wheels off the ground and support the front suspension according to the vehicle manufacturer's instructions.

 Remove the front wheels, calipers and rotors. Dust shields can be left in place if desired but may need to be pulled back to clear the caliper and/or bracket depending on rotor size

• Remove any nicks or burrs on the axle hub and upright that may interfere with the installation of the new brake components.

• Clean and de-grease the axle hub and upright assembly.

• **NOTE:** *The Original Equipment Manufacturer (OEM) pad wear sensor is not used with the new Wilwood calipers. To prevent warning messages from displaying, the sensor wire must remain on the vehicle.*

Either purchase an aftermarket brake pad wear sensor bypass or cut off the sensor and securely connect the two wire ends together. Coil up the wire and securely strap it in an out of the way location, away from any moving or rotating components.

Assembly Instructions

(Numbers in parenthesis refer to the parts list and Figure 1 on the preceding pages):

• The caliper mount bracket (1) should initially be installed with clean, dry threads on the mounting bolts. Orient the bracket as shown in Figure 1 and Photo 1, and install using bolts (2) and washers (3). If supplied with your kit Initially place one .029 thick shim (4) on each bolt between the bracket and upright, Figure 1. Temporarily tighten the mounting bolts.

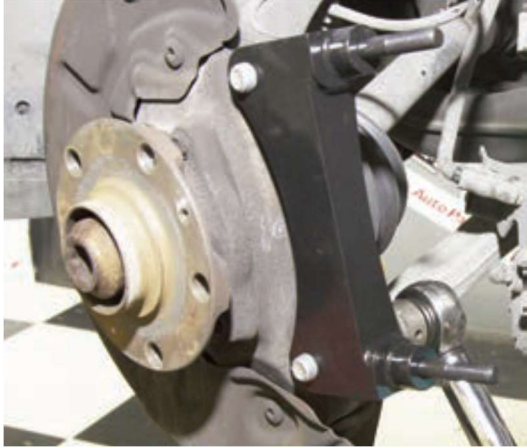


Photo 1

NOTE: The bracket must fit squarely against the mounting points on the upright. Inspect for interference from casting irregularities, machining ridges, burrs, etc. Later, after the caliper alignment has been checked, the mount bolts will be secured using red *Loctite*® 271.

Additional assembly step only if using optional fixed rotors

- Orient the rotor (5) and the hat (6) as shown in Figure 1 and Photo 2. Attach rotor to hat using bolts (7) and washers (8). Using an alternating sequence, apply red *Loctite*® 271 to the threads, and torque to 155 **in-lbs**. For an added measure of security, the bolts may be safety wired using standard 0.032 inch diameter stainless steel safety wire as shown in Figure 3. Please refer to Wilwood's data sheet DS-386 (available at www.wilwood.com/Pdf/DataSheets/ds386.pdf) for complete safety wire installation instructions.
- Slide the hat/rotor (6 and 5) assembly onto the axle hub, Photo 3.

NOTE: The hat must fit flush against the axle hub face or excessive rotor run out may result. Install the OEM hat locator screw to keep the hat/rotor assembly in place while continuing with the installation, Photo 4.



Photo 2

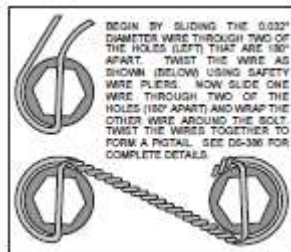


Figure 3. Safety Wire Diagram

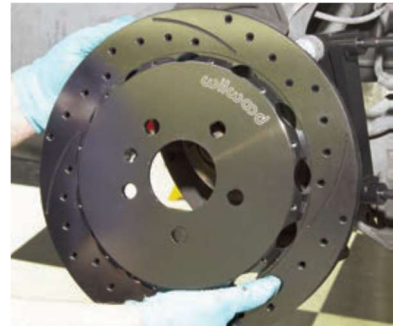


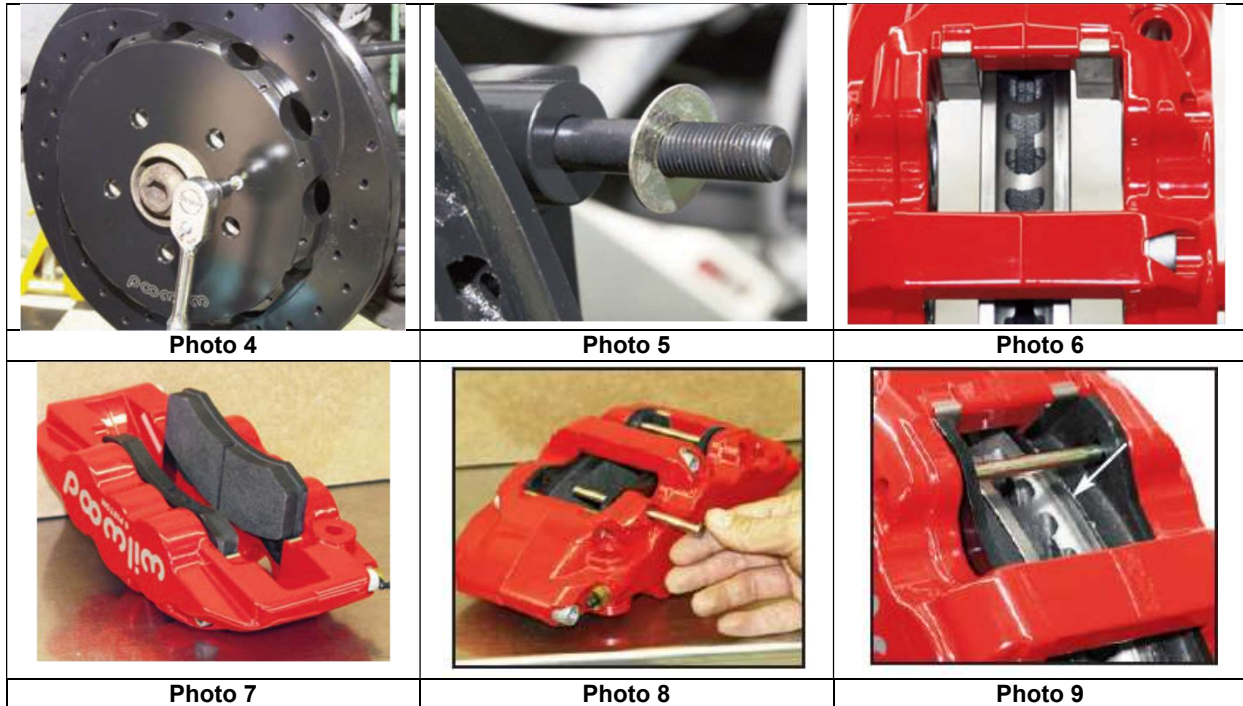
Photo 3

NOTE: This kit contains distinct right and left hand calipers that must be mounted in a specific direction, as described below. Lubricate the caliper mounting studs (12) with lightweight oil. Initially place one .030" thick shim (if supplied) (13) on each stud between the caliper and the bracket, as shown in Figure 1 and Photo 5. Mount the caliper (9) onto the bracket (1) using lock nuts (10) and washers (11), Figure 1. Ensure that the caliper is mounted so the largest pistons are at the rotor exit end of the caliper, in relation to the direction of rotor rotation. Temporarily tighten the nuts and view the rotor through the top opening of the caliper. The rotor should be centered in the caliper, Photo 6. If not, adjust by adding or subtracting shims (4) between the bracket and the upright. Always use the same amount of

shims on each of the two mounting bolts. Once the caliper alignment is correct, remove the bracket mounting bolts (2) one at a time, apply red *Loctite*® 271 to the threads, and torque to 77 ft-lbs.

- Remove the two pad retaining pins from the caliper (9) by carefully popping out the pin retaining clips and sliding out the pins. Insert the brake pads (14) into the caliper from the bottom, Figure 1 and Photo 7. With the friction material facing the rotor, secure the brake pads in place with the pad retaining pins and clips, Photo 8. Reinstall the caliper onto the caliper mounting bracket and temporarily tighten the lock nuts (10). Check that the top of the brake pad is flush with the outside diameter of the rotor, Photo 9. If not, adjust by adding or subtracting shims (13) between the caliper and the bracket. After the caliper pad height is set, torque the caliper lock nuts (10) to 47 ft-lb.

- Temporarily install the wheel and torque the wheel bolts to the manufacturer's specification. Ensure that the wheel rotates freely without any interference.



•NOTE:

*The caliper inlet fitting is a 1/8-27 NPT. Install the stainless steel braided flexline hose kit (15), included with this kit. **Carefully route hoses to prevent contact with moving suspension, brake or wheel components.***

NOTE: *The hose kits are designed for use in many different vehicle applications and it is the installer's responsibility to properly route and ensure adequate clearance and retention for brake hose components.*

•NOTE: *Specified brake hose kits may not work with all Years, Makes and Models of vehicle that this brake kit is applicable to, due to possible OEM manufacturing changes during a production vehicle's life. It is the installer's responsibility to ensure that all fittings and hoses are the correct size and length, to ensure proper sealing and that they will not be subject to crimping, strain and abrasion from vibration or interference with suspension components, brake rotor or wheel.*

- In absence of specific instructions for brake line routing, the installer must use his best professional judgment on correct routing and retention of lines to ensure safe operation. Test vehicle brake system per the 'minimum test' procedure stated within this document before driving. After road testing, inspect for leaks and interference. Initially after install and testing, perform frequent checks of the vehicle brake system and lines before driving, to confirm that there is no undue wear or interference not apparent from the initial test. Afterwards, perform periodic inspections for function, leaks and wear in a interval relative to the usage of vehicle.

Bleeding the Brake System

Check system for leaks after bleeding.

• Fill and bleed the new system with Hi-Temp^o 570 grade fluid or higher. For severe braking or sustained high heat operation, use racing brake fluid. Used fluid must be completely flushed from the system to prevent contamination.

NOTE: *Silicone DOT 5 brake fluid is **NOT** recommended for racing or performance driving.*

• To properly bleed the brake system, begin with the caliper farthest from the master cylinder. Bleed the outboard bleed screw first, then the inboard. Repeat the procedure until all calipers in the system are bled, ending with the caliper closest to the master cylinder.

NOTE: *When using a new master cylinder, it is important to bench bleed the master cylinder first.*

• Test the brake pedal. It should be firm, not spongy and stop at least 1 inch from the floor under heavy load.

If the brake pedal is spongy, bleed the system again.

If the brake pedal is initially firm, but then sinks to the floor, check the system for fluid leaks. Correct the leaks (if applicable) and then bleed the system again.

• If after following the instructions, you still have difficulty in assembling or bleeding your disc brakes, consult 529Innovations for further assistance.

NEVER allow the contact surfaces of the pads or rotors to be contaminated with brake fluid. Always use a catch bottle with a hose to prevent fluid spill during all brake bleeding procedures

• Make sure pedal is firm: Hold firm pressure on pedal for several minutes, it should remain in position without sinking. If pedal sinks toward floor, check system for fluid leaks. DO NOT drive vehicle if pedal does not stay firm or can be pushed to the floor with normal pressure.

• At very low speed (2-5 mph) apply brakes hard several times while turning steering from full left to full right, repeat several times. Remove the wheels and check that components are not touching, rubbing, or leaking.

• Carefully examine all brake components, brake lines, and fittings for leaks and interference.

• Make sure there is no interference with wheels or suspension components.

• Install the wheel and torque the lug nuts to manufacturer's specifications. and drive vehicle at low speed (15-20 mph) making moderate and hard stops. Brakes should feel normal and positive. Again check for leaks and interference.

• Always test vehicle in a safe place where there is no danger to (or from) other people or vehicles.

• Always wear seat belts and make use of all safety equipment.

WARNING • DO NOT DRIVE ON UNTESTED BRAKES BRAKES MUST BE TESTED AFTER INSTALLATION OR MAINTENANCE MINIMUM TEST PROCEDURE

BEDDING STEPS FOR NEW PADS AND ROTORS – ALL COMPOUNDS

Please refer to the bedding procedures supplied by your pad and rotor manufacturer for specific bedding procedures

• If any amount of brake fade is observed during the bed-in cycle, immediately begin the cool down cycle.

• Drive at a moderate cruising speed, with the least amount of brake contact possible, until most of the heat has dissipated from the brakes. Avoid sitting stopped with the brake pedal depressed to hold the car in place during this time. Park the vehicle and allow the brakes to cool to ambient air temperature.

COMPETITION VEHICLES

• If your race car is equipped with brake cooling ducts, blocking them will allow the pads and rotors to warm up quicker and speed up the bedding process.

- Temperature indicating paint on the rotor and pad edges can provide valuable data regarding observed temperatures during the bedding process and subsequent on-track sessions. This information can be highly beneficial when evaluating pad compounds and cooling efficiencies.

POST-BEDDING INSPECTION – ALL VEHICLES

- After the bedding cycle, the rotors should exhibit a uniformly burnished finish across the entire contact face. Any surface irregularities that appear as smearing or splotching on the rotor faces can be an indication that the brakes were brought up to temperature too quickly during the bedding cycle. If the smear doesn't blend away after the next run-in cycle, or if chatter under braking results, sanding or resurfacing the rotors will be required to restore a uniform surface for pad contact.

PRE-RACE WARM UP

- Always make every effort to get heat into the brakes prior to each event. Use an on-and-off the pedal practice to warm the brakes during the trip to the staging zone, during parade laps before the flag drops, and every other opportunity in an effort to build heat in the pads and rotors. This will help to ensure best consistency, performance, and durability from your brakes.